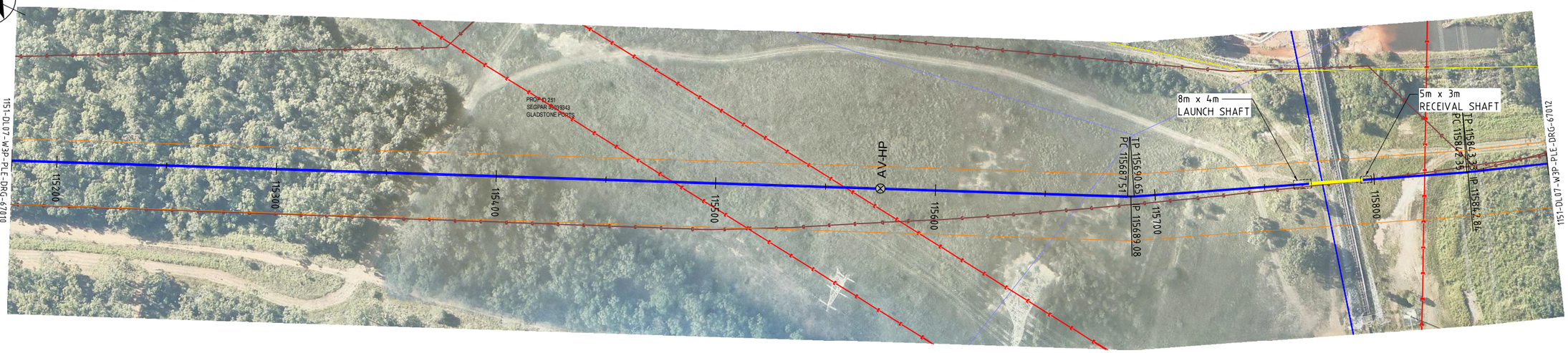

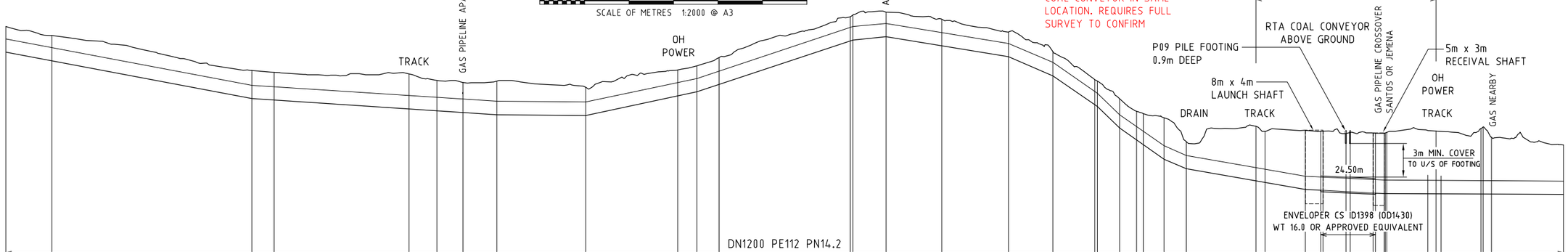

BEFORE YOU DIG
www.byda.com.au
Zero Damage - Zero Harm

LEGEND:

PROPOSED:

- ⊗ - AIR VALVE
- SCOUR VALVE
- ⋈ - ISOLATION VALVE
- ● - CONTROL VALVE
- PIPELINE
- ENVELOPER PIPE

LEGEND:

EXISTING:

- —/— - FENCE
- —G— - GAS
- —E— - ELECT'L POWER (OH or UG)
- —T— - TELSTRA CABLE
- – – – - DRAIN
- —SW— - STORM WATER
- —W— - WATER OTHER
- —S— - SEWER PIPE
- – – – - 100 ARI FLOOD LEVEL
- SURVEYED CADASTRE
- RIGHT OF WAY
- DCDB
- ⌖ - CULTURAL ARTEFACTS
- ▭ - CONSTRUCTION ZONES
- ▨ - LICENSED AREAS
- ▨ - ENVIRONMENTAL CONSTRAINTS
- ▨ - EXTRA WORK AREAS

PLAN

20 0 20 40 60 80 100
SCALE OF METRES 1:2000 @ A3

Datum 6.000m

Chainage	DEPTH TO INVERT	NAT. SURFACE	INVERT OF PIPE
115179.44	2.30	29.50	27.20
115200.00	2.28	28.70	26.43
115290.00	2.54	25.57	23.03
115300.00	2.50	25.40	22.90
115360.59	3.13	25.24	22.11
115373.06	2.72	24.67	21.95
115384.84	2.70	24.49	21.79
115400.00	3.00	24.60	21.60
115440.00	2.53	24.06	21.53
115481.34	2.33	25.61	23.28
115490.00	2.34	25.99	23.65
115500.00	2.43	26.74	24.31
115558.81	2.16	30.38	28.22
115560.00	2.23	30.53	28.30
115575.00	2.22	30.81	28.59
115600.00	2.38	30.15	27.77
115630.00	2.22	29.00	26.79
115650.00	2.19	27.27	25.08
115668.79	2.25	24.73	22.48
115670.00	2.30	24.61	22.31
115680.00	2.62	23.01	20.39
115687.51	2.56	21.90	19.34
115690.65	2.80	21.70	18.90
115700.00	3.70	21.30	17.60
115710.00	2.43	19.16	16.73
115741.30	4.90	20.53	15.63
115745.30	4.58	20.08	15.49
115763.37	5.33	20.19	14.86
115770.37	5.41	20.09	14.68
115771.37	5.43	20.09	14.67
115781.68	5.33	19.89	14.56
115783.55	5.44	19.98	14.54
115793.87	5.50	19.94	14.44
115794.87	5.38	19.93	14.55
115798.87	5.42	19.93	14.51
115799.31	5.44	19.95	14.51
115800.00	5.49	20.00	14.50
115819.22	5.68	20.16	14.49
115822.22	5.64	20.12	14.48
115825.22	5.61	20.09	14.48
115842.35	5.89	20.35	14.46
115843.33	6.02	20.48	14.46
115847.18	5.10	19.55	14.46
115879.44	4.44	18.86	14.42

LONGITUDINAL SECTION

4 0 4 8 12 16 20
VERTICAL SCALE OF METRES 1:400 @ A3

20 0 20 40 60 80 100
HORIZONTAL SCALE OF METRES 1:2000 @ A3

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:__________
RPEQ NO.:__________
DIVISION:__________
SIGNATURE:__________ DATE:___/___/___

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

COMPASS ASSURANCE SERVICES
ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
-							-	
-							-	
-							-	
-							-	
B	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	MM	PS		-	
A	01/06/23	85% SUBMISSION JV REVIEW	TA	MM	PS		-	

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world wide water plus

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CREATIVE CONSTRUCTION™

BMD

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Gladstone Area Water Board

136 Goondoon Street
Gladstone Q 4680

PO Box 466
Gladstone Q 4680

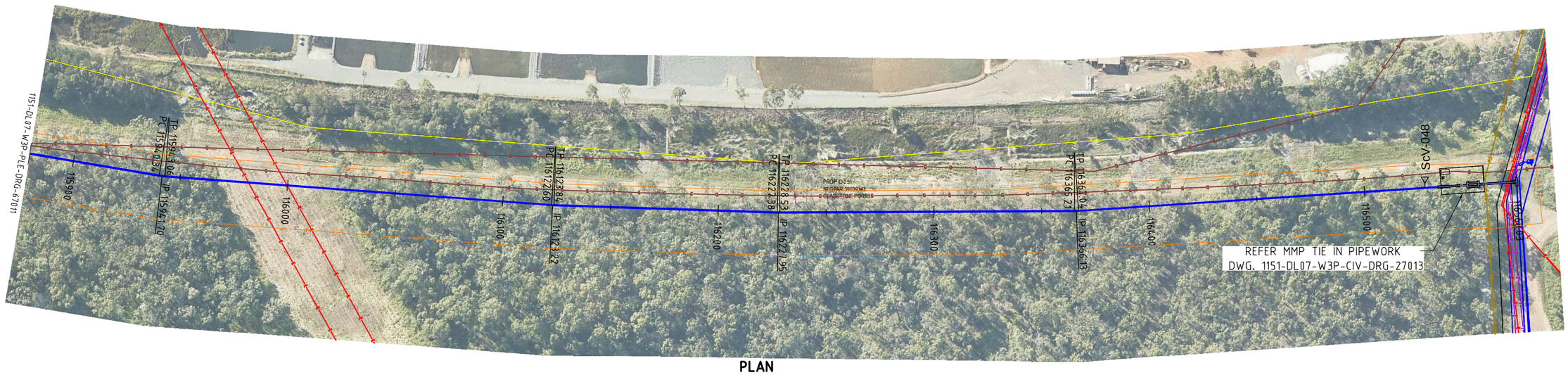
Tel: (07) 4976 3000
ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	04/05/23
DESIGNED BY	MICHAEL MARIES	04/05/23
REVIEWED BY	PETER SEMIANIW	04/05/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 PIPELINE CH 115179.44 -115879.44

1151-DL07-W3P-PLE-DRG-67011

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B



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Zero Damage - Zero Harm

LEGEND:

PROPOSED:

- ⊗ - AIR VALVE
- ⊻ - SCOUR VALVE
- ⋈ - ISOLATION VALVE
- ● - CONTROL VALVE
- ▬ - PIPELINE
- ▬ - ENVELOPER PIPE

LEGEND:

EXISTING:

- —/— - FENCE
- —G— - GAS
- —E— - ELECT'L POWER (OH or UG)
- —T— - TELSTRA CABLE
- – – – - DRAIN
- —SW— - STORM WATER
- —W— - WATER OTHER
- —S— - SEWER PIPE
- – – – - 100 ARI FLOOD LEVEL
- —— - SURVEYED CADASTRE
- —— - RIGHT OF WAY
- —— - DCDB
- ⊕ - CULTURAL ARTEFACTS
- ☐ - CONSTRUCTION ZONES
- ▨ - LICENSED AREAS
- ▨ - ENVIRONMENTAL CONSTRAINTS
- ▨ - EXTRA WORK AREAS

REFER MMP TIE IN PIPEWORK
DWG. 1151-DL07-W3P-CIV-DRG-27013

PLAN

20 0 20 40 60 80 100
SCALE OF METRES 1:2000 @ A3

REFER DWG
1151-DL07-W3P-CIV-DRG-27013
FOR CONNECTION DETAILS

DN1200 PE112 PN14.2

-0.100% -1.000% -0.100%

Datum 0.000m

DEPTH TO INVERT	4.44	3.99	3.99	3.97	3.60	3.47	3.47	3.43	3.27	2.89	2.38	2.57	2.45	2.46
NAT. SURFACE	18.86	18.40	18.35	18.33	17.92	17.77	17.77	17.74	17.57	17.16	15.99	16.04	15.84	15.83
INVERT OF PIPE	14.42	14.40	14.36	14.36	14.32	14.30	14.30	14.30	14.29	14.27	13.61	13.47	13.39	13.37
Chainage	115879.44	115900.00	115940.34	115943.07	115981.77	115999.75	116000.00	116002.68	116011.59	116034.29	116100.00	116114.15	116122.60	116123.85

DEPTH TO INVERT	2.56	2.55	2.54	2.40	2.29	2.28	2.47	2.49	3.39	2.58	3.15	2.48	2.57	2.43	2.34	2.33	2.28	2.26	2.23	2.22
NAT. SURFACE	15.17	14.88	14.87	14.01	13.24	13.23	13.08	12.98	13.21	12.25	12.76	11.81	11.89	11.74	11.64	11.63	11.57	11.54	11.52	11.50
INVERT OF PIPE	12.61	12.34	12.33	11.61	10.96	10.94	10.61	10.49	9.83	9.67	9.61	9.33	9.32	9.31	9.30	9.29	9.29	9.29	9.28	9.28
Chainage	116200.00	116227.38	116228.53	116300.00	116365.22	116367.04	116400.00	116412.17	116478.55	116493.73	116500.00	116528.00	116528.92	116543.80	116550.00	116556.17	116561.90	116564.07	116566.44	116568.03

TRENCH TYPE 4

LONGITUDINAL SECTION

4 0 4 8 12 16 20
VERTICAL SCALE OF METRES 1:400 @ A3

20 0 20 40 60 80 100
HORIZONTAL SCALE OF METRES 1:2000 @ A3

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:__________
RPEQ NO.:__________
DIVISION:__________

SIGNATURE:________________ DATE:___/___/___

PRELIMINARY DRAWING
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COMPASS ASSURANCE SERVICES
ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
-							-	
-							-	
-							-	
-							-	
B	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	MM	PS		-	
A	01/06/23	85% SUBMISSION JV REVIEW	TA	MM	PS		-	

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Gladstone Area Water Board

136 Goondoon Street
Gladstone Q 4680

PO Box 466
Gladstone Q 4680

Tel: (07) 4976 3000
ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	04/05/23
DESIGNED BY	MICHAEL MARIES	04/05/23
REVIEWED BY	PETER SEMIANIW	04/05/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 PIPELINE CH 115879.44 -116568.03

1151-DL07-W3P-PLE-DRG-67012

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B

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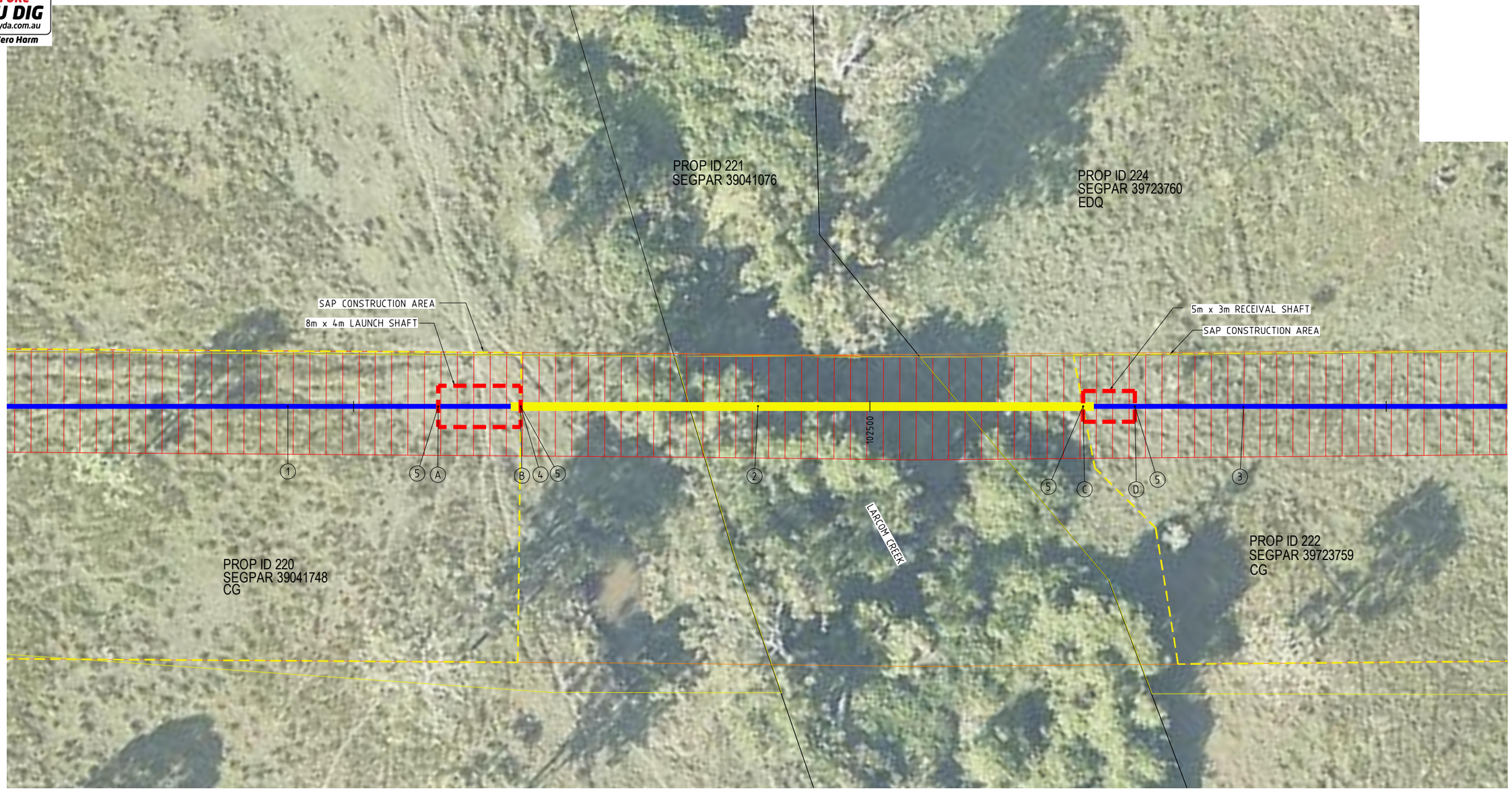

PLAN

4 0 4 8 12 16 20

SCALE OF METRES 1:400 @ A3

NOTE: CRITICAL CROSSING DETAIL
STILL UNDER DEVELOPMENT

SETOUT COORDINATES

POINT	EASTING	NORTHING	R.L.	DESCRIPTION
A	299789.0790	7360033.1276		REAR OF LAUNCH SHAFT
B	299794.7565	7360027.4914		FACE OF LAUNCH SHAFT
C	299833.4139	7359989.1156		REAR OF RECEIVAL SHAFT
D	299836.9624	7359985.5930		FACE OF RECEIVAL SHAFT

MATERIAL TAKE OFF

ITEM	MATERIAL TAKE OFF
1	OD1067 MSCL WT 7.5 SLII (Min. 7 No. LENGTHS BEFORE BEND)
2	ENVELOPER PIPE OD1450 RCP JACKING PIPE GROUTED W/ STEEL COLLARS OR APPROVED EQUIVALENT (56.46m LENGTH)
3	OD1067 MSCL WT 7.5 SLII
4	PRODUCT PIPE OD1067 MSCL WT 7.5 SLII
5	45 DEGREE WELDED BEND 4 No.

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:_____
RPEQ NO.: _____
DIVISION:_____

SIGNATURE:_____ DATE:___/___/___

PRELIMINARY DRAWING
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COMPASS ASSURANCE SERVICES ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
-							-	
-							-	
-							-	
-							-	
B	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	MM	PS		-	
A	26/05/23	85% SUBMISSION JV REVIEW	TA	MM	PS		-	

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McCONNELL DOWELL CREATIVE CONSTRUCTION
BMD

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Gladstone Area Water Board
136 Goondoon Street Gladstone Q 4680 | PO Box 466 Gladstone Q 4680 | Tel: (07) 4976 3800 | ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	04/05/23
DESIGNED BY	MICHAEL MARIES	04/05/23
REVIEWED BY	PETER SEMIANIW	04/05/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
LARCOM CREEK CRITICAL CROSSING
GENERAL ARRANGEMENT

1151-DL05-W3P-CIV-DRG-35140

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B

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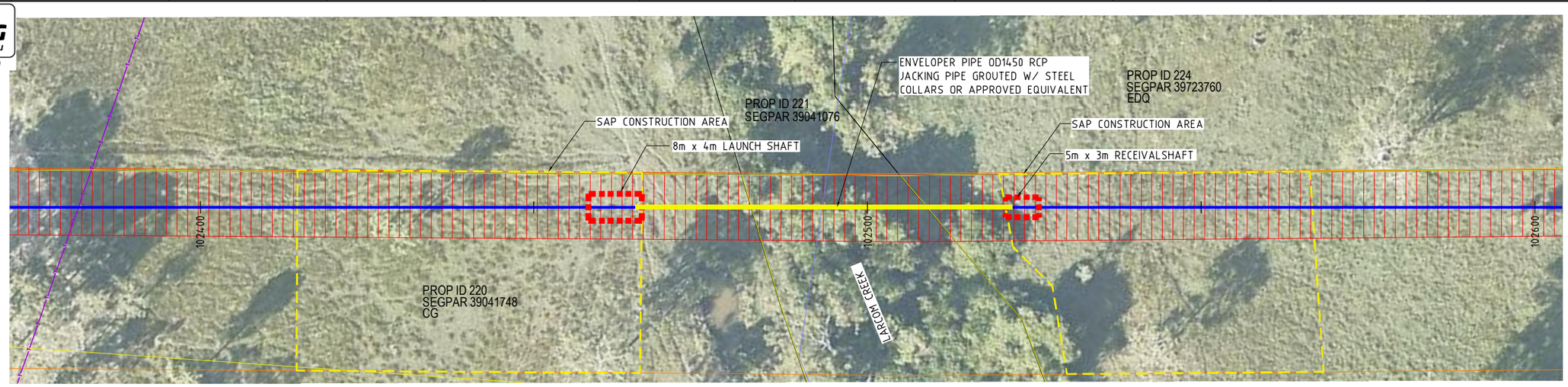


LEGEND:

EXISTING:

- FENCE
- GAS
- ELECT'L POWER (OH or UG)
- TELSTRA CABLE
- DRAIN
- STORM WATER
- WATER OTHER
- SEWER PIPE
- 100 ARI FLOOD LEVEL
- SURVEYED CADASTRE
- RIGHT OF WAY
- DCDB
- CULTURAL ARTEFACTS
- CONSTRUCTION ZONES
- LICENSED AREAS
- ENVIRONMENTAL CONSTRAINTS
- EXTRA WORK AREAS
- BOREHOLE / TEST PIT

PLAN

7 0 5 10 15 20 25 30 35

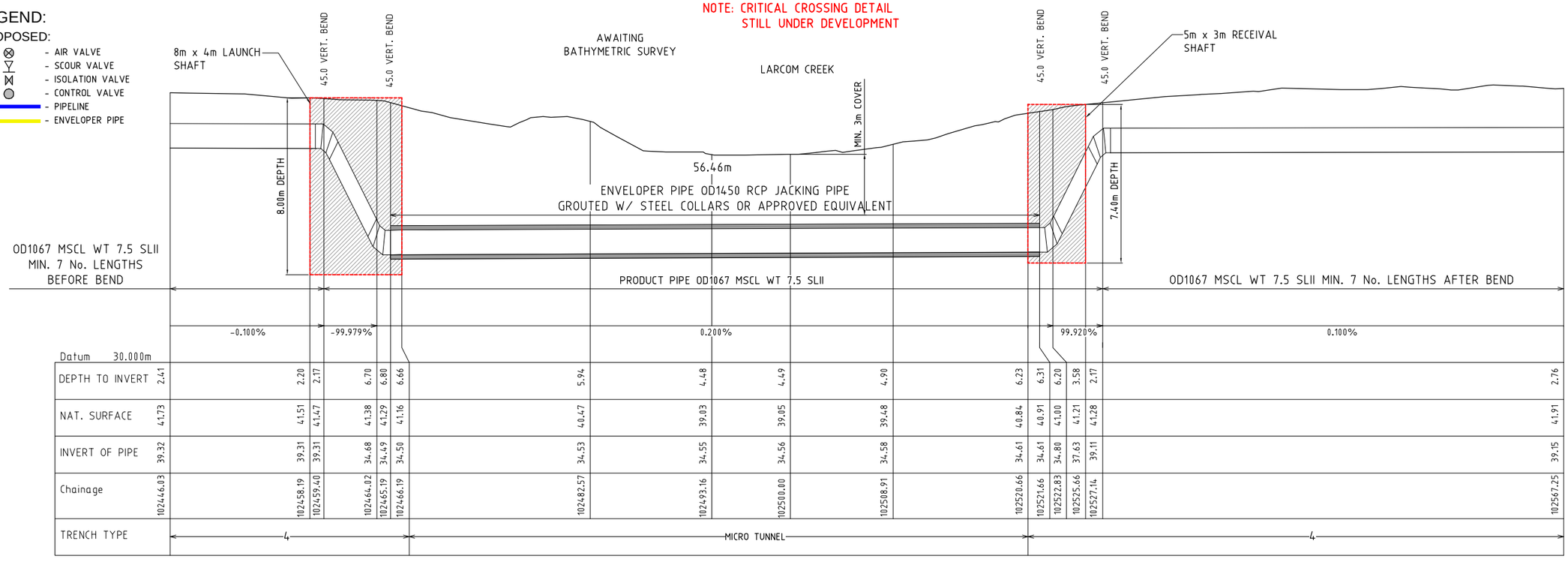
SCALE OF METRES 1:700 @ A3

LEGEND:

PROPOSED:

- AIR VALVE
- SCOUR VALVE
- ISOLATION VALVE
- CONTROL VALVE
- PIPELINE
- ENVELOPER PIPE

NOTE: CRITICAL CROSSING DETAIL
STILL UNDER DEVELOPMENT



AWAITING FURTHER
GEOTECHNICAL INVESTIGATIONS

Datum 30.000m

DEPTH TO INVERT	2.41	2.20	2.17	6.70	6.80	6.66	5.94	4.48	4.49	4.90	6.23	6.31	6.20	3.58	2.17	2.76								
NAT. SURFACE	41.73	41.51	41.47	41.38	41.29	41.16	40.47	39.03	39.05	39.48	40.84	40.91	41.00	41.21	41.28	41.91								
INVERT OF PIPE	39.32	39.31	39.31	34.68	34.49	34.50	34.53	34.55	34.56	34.58	34.61	34.61	34.80	37.63	39.11	39.15								
Chainage	102446.03	102458.19	102459.40	102464.02	102465.19	102466.19	102482.57	102493.16	102500.00	102508.91	102520.66	102521.66	102522.83	102525.66	102527.14	102567.25								
TRENCH TYPE		4					MICRO TUNNEL									4								

LONGITUDINAL SECTION

2 0 2 4 6 8 10

VERTICAL SCALE OF METRES 1:200 @ A3

5 0 5 10 15 20 25

HORIZONTAL SCALE OF METRES 1:500 @ A3

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:
RPEQ NO.:
DIVISION:
SIGNATURE: DATE: / /

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COMPASS ASSURANCE SERVICES ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
-							-	
-							-	
-							-	
-							-	
B	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	MM	PS		-	
A	26/05/23	85% SUBMISSION JV REVIEW	TA	MM	PS			

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McCONNELL DOWELL CREATIVE CONSTRUCTION
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Gladstone Area Water Board
136 Goondoon Street Gladstone Q 4680 | PO Box 466 Gladstone Q 4680 | Tel: (07) 4976 3000 | ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	04/05/23
DESIGNED BY	MICHAEL MARIES	04/05/23
REVIEWED BY	PETER SEMIANIW	04/05/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
LARCOM CREEK CRITICAL CROSSING
DETAILS

1151-DL05-W3P-CIV-DRG-35141

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B

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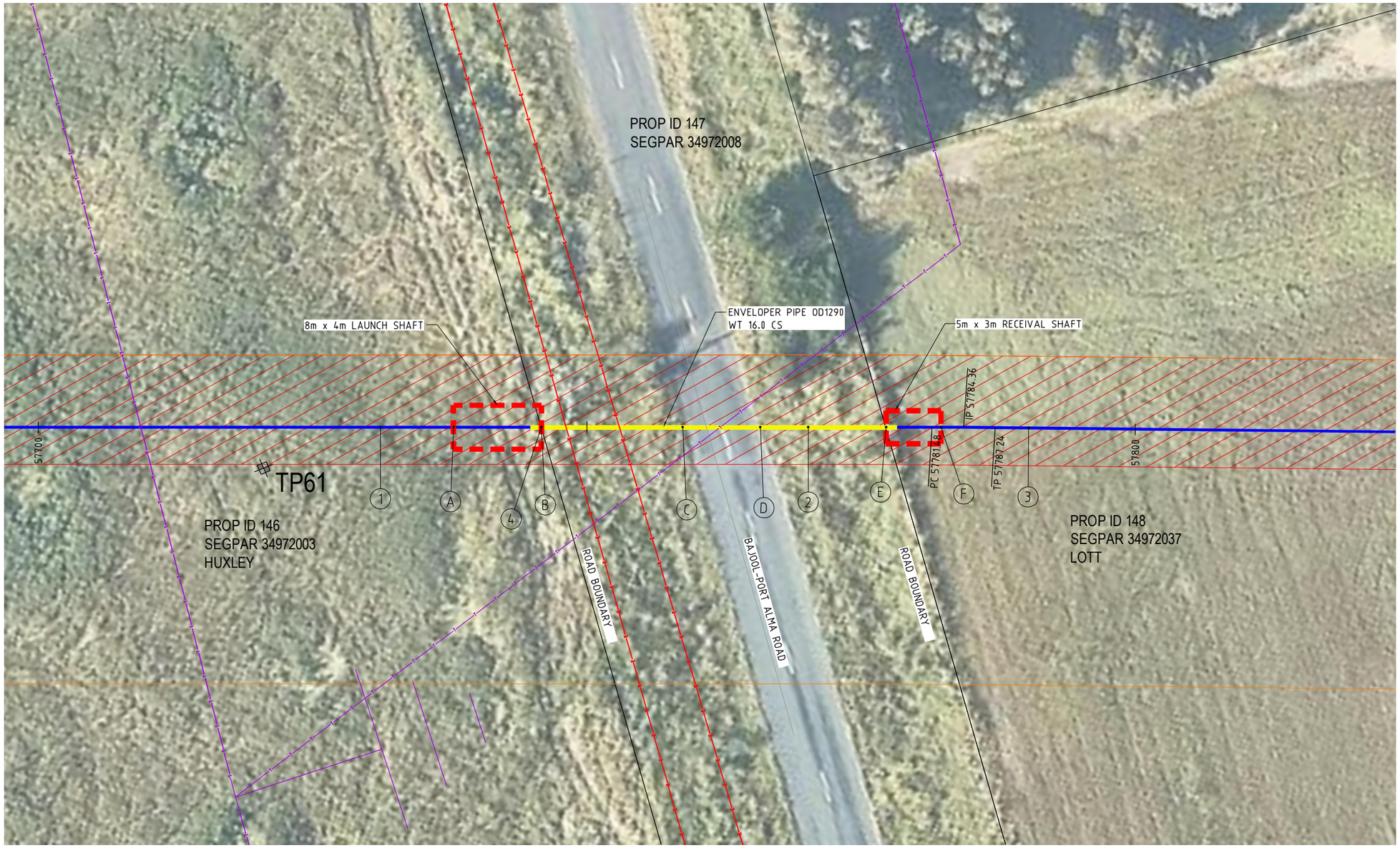

NOTE: CRITICAL CROSSING DETAIL
STILL UNDER DEVELOPMENT

PLAN

4 0 4 8 12 16 20
SCALE OF METRES 1:400 @ A3

SETOUT COORDINATES

POINT	EASTING	NORTHING	R.L.	DESCRIPTION
A	264948.3794	7383406.6353	_	REAR OF LAUNCH SHAFT
B	264955.7379	7383403.4964	_	FACE OF LAUNCH SHAFT
C	264967.5890	7383398.4410	_	ROAD EDGE
D	264974.0921	7383395.6670	_	ROAD EDGE
E	264984.6475	7383391.1643	_	FACE OF RECEIVAL SHAFT
F	264989.2465	7383389.2025	_	REAR OF RECEIVAL SHAFT

MATERIAL TAKE OFF

ITEM	
1	OD1067 MSCL WT 7.5 RRJ-S
2	ENVELOPER PIPE OD1290 WT 16.0 CS (33.43m LENGTH)
3	OD1067 MSCL WT 7.5 RRJ-S
4	PRODUCT PIPE OD1067 MSCL WT 7.5 SLII

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:
RPEQ NO.:
DIVISION:
SIGNATURE: DATE: / /

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

COMPASS ASSURANCE SERVICES ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
-							-	
-							-	
-							-	
B	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	MM	PS		-	
A	26/05/23	85% SUBMISSION JV REVIEW	TA	MM	PS		-	

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McCONNELL DOWELL CREATIVE CONSTRUCTION
BMD

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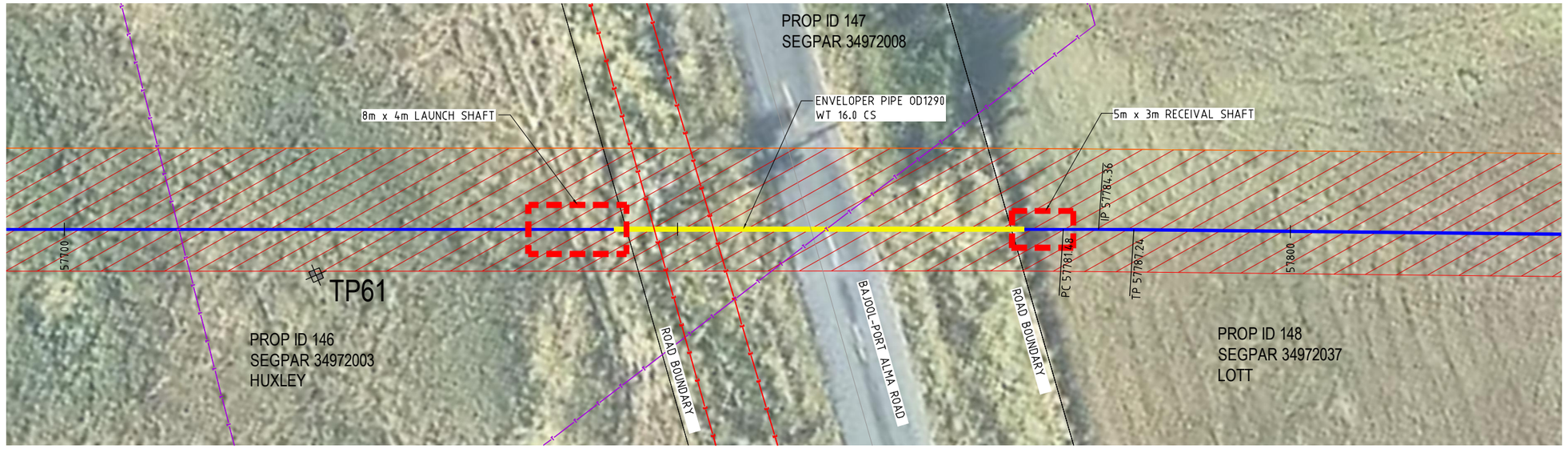
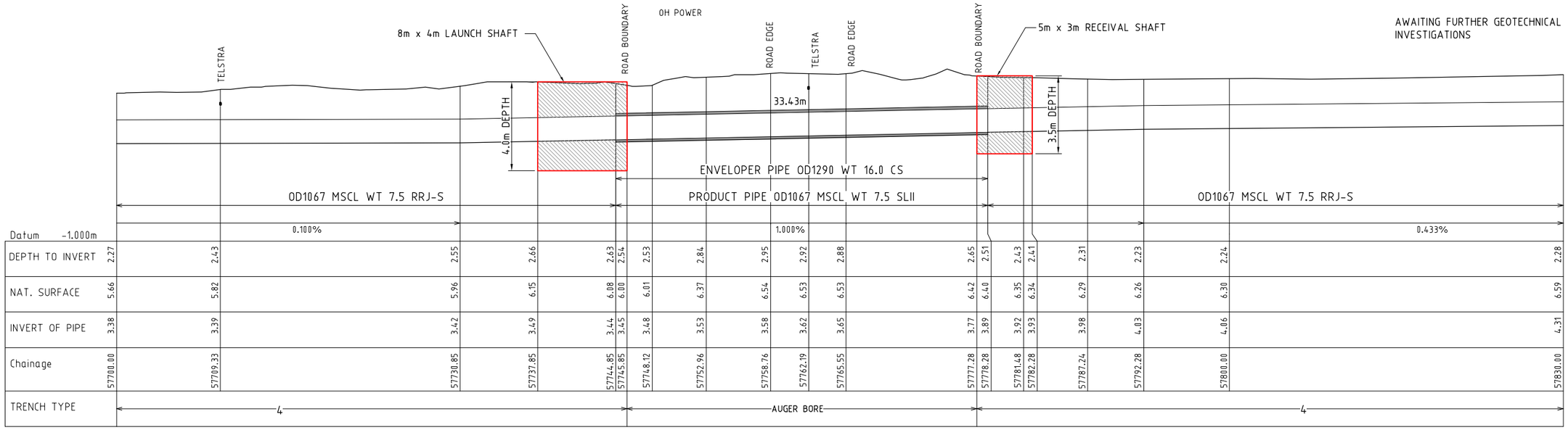
DRAWN BY	TED ALVARADO	04/05/23
DESIGNED BY	MICHAEL MARIES	04/05/23
REVIEWED BY	PETER SEMIANIW	04/05/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
BAJOOL - PORT ALMA ROAD CRITICAL CROSSING
GENERAL ASSEMBLY

1151-DL05-W3P-CIV-DRG-35170

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B





BEFORE YOU DIG
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Zero Damage - Zero Harm

PLAN

4 0 4 8 12 16 20
SCALE OF METRES 1:400 @ A3

LEGEND:

PROPOSED:

- ⊗ - AIR VALVE
- SCOUR VALVE
- ⋈ - ISOLATION VALVE
- ● - CONTROL VALVE
- PIPELINE
- ENVELOPER PIPE

LEGEND:

EXISTING:

- ——/—— - FENCE
- ——G—— - GAS
- ——E—— - ELECT'L POWER (OH or UG)
- ——T—— - TELSTRA CABLE
- — — — - DRAIN
- ——SW—— - STORM WATER
- ——W—— - WATER OTHER
- ——S——S—— - SEWER PIPE
- — — — - 100 ARI FLOOD LEVEL
- ———— - SURVEYED CADASTRE
- ———— - RIGHT OF WAY
- ———— - DCDB
- ⊕ - CULTURAL ARTEFACTS
- ☐ - CONSTRUCTION ZONES
- ▨ - LICENSED AREAS
- ▨ - ENVIRONMENTAL CONSTRAINTS
- ▨ - EXTRA WORK AREAS
- ⊕ - BOREHOLE / TEST PIT

NOTE: CRITICAL CROSSING DETAIL
STILL UNDER DEVELOPMENT

Datum -1.000m

DEPTH TO INVERT	2.27	2.43	2.55	2.66	2.63	2.54	2.53	2.84	2.95	2.92	2.88	2.65	2.51	2.43	2.41	2.31	2.23	2.24	2.28
NAT. SURFACE	5.66	5.82	5.96	6.15	6.08	6.00	6.01	6.37	6.54	6.53	6.53	6.42	6.40	6.35	6.34	6.29	6.26	6.30	6.59
INVERT OF PIPE	3.38	3.39	3.42	3.49	3.44	3.45	3.48	3.53	3.58	3.62	3.65	3.77	3.89	3.92	3.93	3.98	4.03	4.06	4.31
Chainage	57700.00	57709.33	57730.85	57737.85	57744.85	57745.85	57748.12	57752.96	57758.76	57762.19	57765.55	57777.28	57778.28	57781.48	57782.28	57787.24	57792.28	57800.00	57830.00
TRENCH TYPE	4						AUGER BORE						4						

LONGITUDINAL SECTION

2 0 2 4 6 8 10
VERTICAL SCALE OF METRES 1:200 @ A3

4 0 4 8 12 16 20
HORIZONTAL SCALE OF METRES 1:400 @ A3

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:__________
RPEQ NO.: __________
DIVISION:__________

SIGNATURE:__________ DATE:___/___/___

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COMPASS ASSURANCE SERVICES
ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
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-							-	
-							-	
B	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	MM	PS		-	
A	26/05/23	85% SUBMISSION JV REVIEW	TA	MM	PS		-	

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Gladstone Area Water Board

136 Goondoon Street
Gladstone Q 4680

PO Box 466
Gladstone Q 4680

Tel: (07) 4976 3000
ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	04/05/23
DESIGNED BY	MICHAEL MARIES	04/05/23
REVIEWED BY	PETER SEMIANIW	04/05/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
BAJOOL - PORT ALMA ROAD CRITICAL CROSSING
DETAILS

1151-DL05-W3P-CIV-DRG-35171

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B

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PLAN

5 0 5 10 15 20 25

SCALE OF METRES 1:500 @ A3

SETOUT COORDINATES

POINT	EASTING	NORTHING	R.L.	DESCRIPTION
A	307967.0042	7362120.4411		REAR OF LAUNCH SHAFT
B	307972.8747	7362125.8969		FACE OF LAUNCH SHAFT
C	308012.3444	7362161.0671		FACE OF RECEIVAL SHAFT
D	308016.1028	7362164.3658		REAR OF RECEIVAL SHAFT

MATERIAL TAKE OFF

ITEM	
1	DN1200 PE112 PN14.2
2	ENVELOPER RCP (ID1500 (OD1800) SERIES J JACKING PIPE OR APPROVED EQUIVALENT (54.88m LENGTH)

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:_____
RPEQ NO.: _____
DIVISION:_____
SIGNATURE:_____ DATE:__/__/__

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-							-	
-							-	
-							-	
-							-	
-							-	
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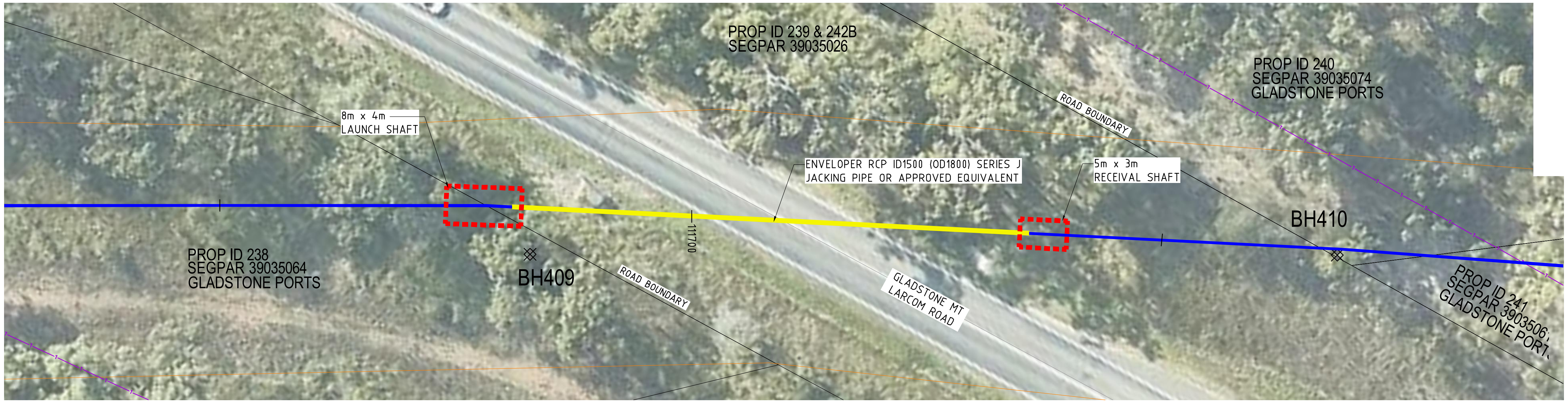
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
GLADSTONE MT LARCOM ROAD CRITICAL CROSSING
GENERAL ARRANGEMENT

1151-DL07-W3P-CIV-DRG-37020

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B



PLAN

SCALE OF METRES 1:500 @ A3

LEGEND:

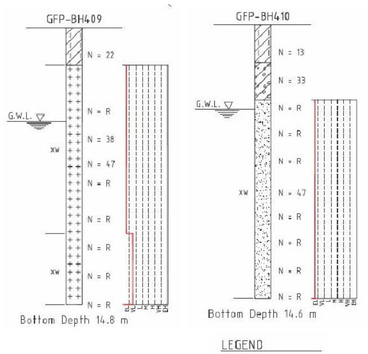
PROPOSED:

- AIR VALVE
- SCOUR VALVE
- ISOLATION VALVE
- CONTROL VALVE
- PIPELINE
- ENVELOPER PIPE

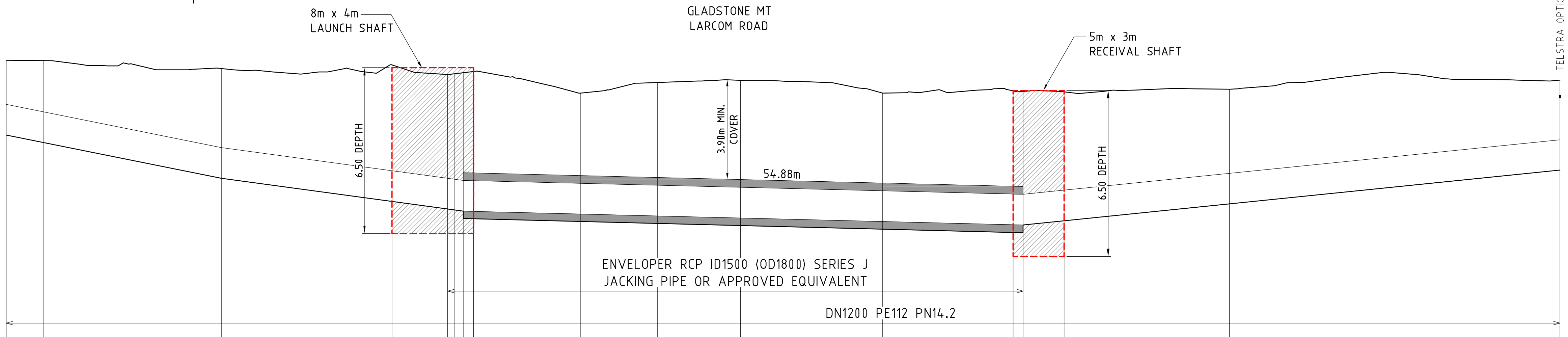
LEGEND:

EXISTING:

- FENCE
- GAS
- ELECT'L POWER (OH or UG)
- TELSTRA CABLE
- DRAIN
- STORM WATER
- WATER OTHER
- SEWER PIPE
- 100 ARI FLOOD LEVEL
- SURVEYED CADASTRE
- RIGHT OF WAY
- DCDB
- CULTURAL ARTEFACTS
- CONSTRUCTION ZONES
- LICENSED AREAS
- ENVIRONMENTAL CONSTRAINTS
- EXTRA WORK AREAS
- BOREHOLE / TEST PIT



BOREHOLE DETAILS
SCALE :



Datum 15.000m

Chainage	DEPTH TO INVERT	NAT. SURFACE	INVERT OF PIPE
111636.15	2.93	27.25	24.33
111639.85	3.20	27.23	24.03
111657.26	4.30	26.93	22.63
111673.95	5.34	27.06	21.72
111679.44	5.26	26.68	21.43
111680.04	5.32	26.71	21.39
111680.95	5.71	26.76	21.04
111681.95	5.78	26.81	21.03
111692.44	5.03	25.95	20.93
111700.00	5.53	26.38	20.85
111708.12	5.69	26.47	20.77
111722.07	5.33	25.96	20.63
111734.83	5.55	26.05	20.51
111735.83	5.23	26.03	20.80
111739.83	5.06	26.01	20.96
111756.04	4.49	26.11	21.62
111788.42	3.54	26.48	22.94

TRENCH TYPE: 4 — AUGER BORE — 4

LONGITUDINAL SECTION

VERTICAL SCALE OF METRES 1:200 @ A3   HORIZONTAL SCALE OF METRES 1:500 @ A3

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME:
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DIVISION:
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B	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	MM	PS	
A	08/06/23	85% SUBMISSION JV REVIEW	TA	MM	PS	

REFERENCE DRAWINGS | NUMBER

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DESIGNED BY	MICHAEL MARIES	04/05/23
REVIEWED BY	PETER SEMIANIW	04/05/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
GLADSTONE MT LARCOM ROAD CRITICAL CROSSING
DETAILS

1151-DL07-W3P-CIV-DRG-37021

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	B

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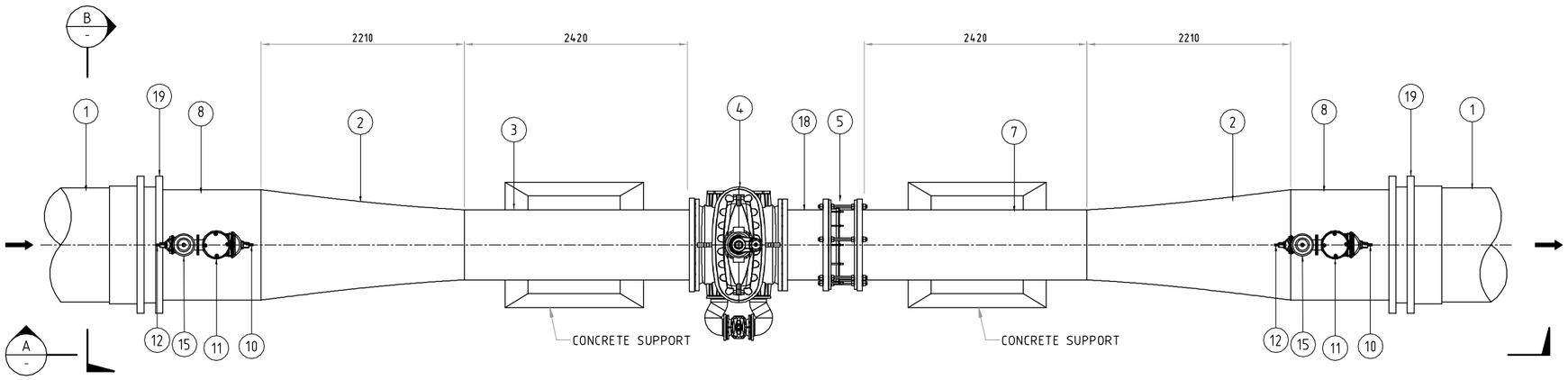
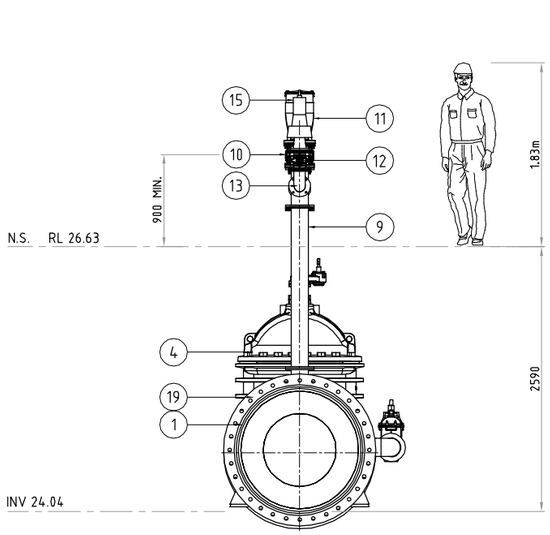
PIPEWORK SCHEDULE

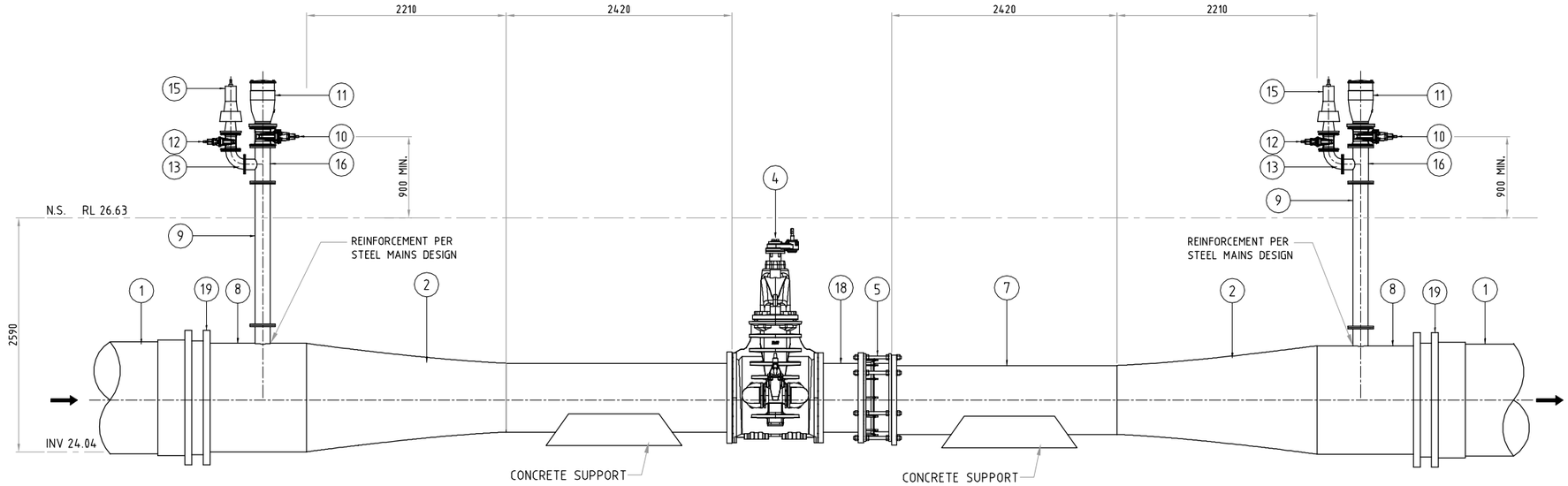
ITEM	DESCRIPTION	QTY	PN RATING	MATERIAL
1	DN1200 HDPE PIPE	1	PN14.2	HDPE
2	DN1200-DN750 WELDED REDUCER	2	PN16	MSCL
3	DN750/DN150 WELD-FL-FL TEE	1	PN16	MSCL
4	DN750 FLANGED GATE VALVE W/ INTEGRAL BYPASS & GEARBOX	1	PN16	DIEL
5	DN750 DISMANTLING JOINT (THRUST TYPE)	1	PN16	DIEL
6	NOT IN USE	-	-	-
7	DN750 FL-WELD PIPE	1	PN16	MSCL
8	DN1200/DN150 WELD-SOC-FL TEE	2	PN16	MSCL
9	DN150 FLANGED PIPE	2	PN16	DIEL
10	DN150 GATE VALVE	2	PN16	DIEL
11	DN150 AIR VALVE	2	PN16	DIEL
12	DN100 FLANGED GATE VALVE	2	PN16	DIEL
13	DN100 FLANGED 90° BEND	2	PN16	DIEL
14	DN150-DN100 FLANGED REDUCER	2	PN16	DIEL
15	DN100 RELIEF VALVE	2	PN16	DIEL
16	DN150/DN100 FLANGED TEE	2	PN16	DIEL
17	DN150 FL-FL PIPE c/w 90° BEND	2	PN16	DIEL
18	DN750 FLANGED PIPE (500mm LONG)	1	-	MSCL
19	DN1200 STUB FLANGE w/ MS BACKING RING	1	PN16	HDPE/MS



PLAN
SCALE: 1:60 @ A3



B SECTION
SCALE: 1:60 @ A3



A SECTION
SCALE: 1:60 @ A3

NOTE:

REFER TO PROJECT NOTES
REFER ENCLOSURE DETAIL DRG
1151-DL00-W3P-CIV-DRG-10010

ISOLATION VALVE ISO-011

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
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-							-	
-							-	
-							-	
D	08/06/23	85% SUBMISSION FOR CLIENT REVIEW	TA	AS	PS		-	
C	26/05/23	85% SUBMISSION JV REVIEW	TA	AS	PS		-	
B	31/03/23	50% SUBMISSION	TA	AS	PS		-	
A	18/03/23	ISSUED FOR CLIENT REVIEW	TA	AS	PS		-	

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ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

Gladstone Area Water Board
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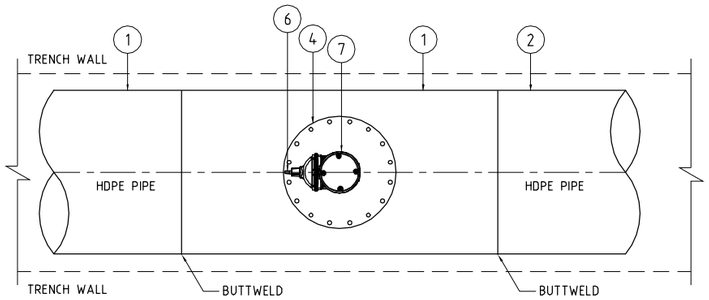
FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 STANDARD DETAILS
ISOLATION VALVE ASSEMBLY

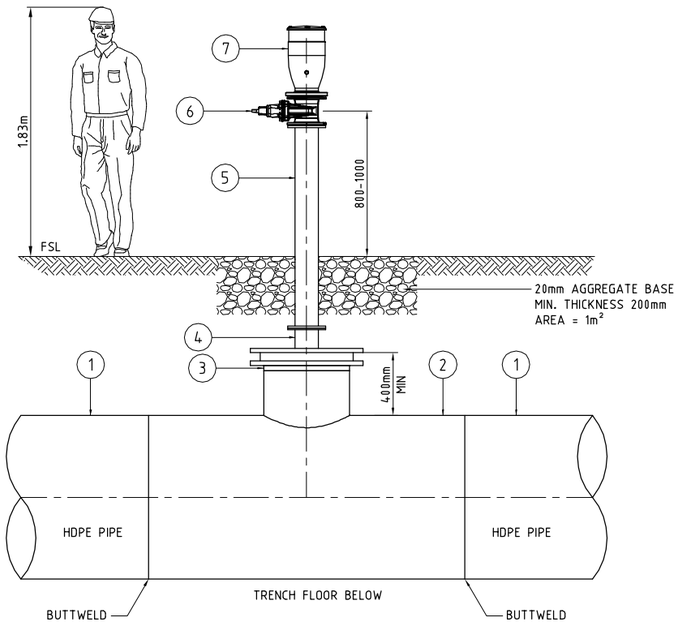
1151-DL07-W3P-CIV-DRG-17001

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	D



AIR VALVE INSTALLATION PLAN

N.T.S.



AIR VALVE INSTALLATION - HDPE ABOVE GROUND

N.T.S.

AIR VALVE PIPEWORK SCHEDULE

ITEM	MATERIAL	DESCRIPTION	PN RATING	DIAMETER
1	HDPE	DN1200 PIPE	PN14.2	DN1200
2	HDPE	DN1200 x 600 FABRICATED TEE	PN14.2	DN1200/600
3	HDPE	DN600 STUB FLANGE W/ GAL BACKING RING	PN14.2	DN600
4	DIEL	DN600 BLIND FLANGE WITH DN150 RISER	PN16	DN150
5	DIEL	DN150 DIEL OR MSCL RISER PIPE, LENGTH TO SUIT	PN16	DN150
6	DIEL	DN150 GATE VALVE	PN16	DN150
7	DIEL	AIR VALVE FLANGED	PN16	DN150

NOTE:

REFER TO PROJECT NOTES
REFER ENCLOSURE DETAIL DRG
1151-DL00-W3P-CIV-DRG-10010

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-							-	
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C	26/05/23	85% SUBMISSION JV REVIEW	TA	AS	PS		-	
B	31/03/23	50% SUBMISSION	TA	AS	PS		-	
A	18/03/23	ISSUED FOR CLIENT REVIEW	TA	AS	PS		-	

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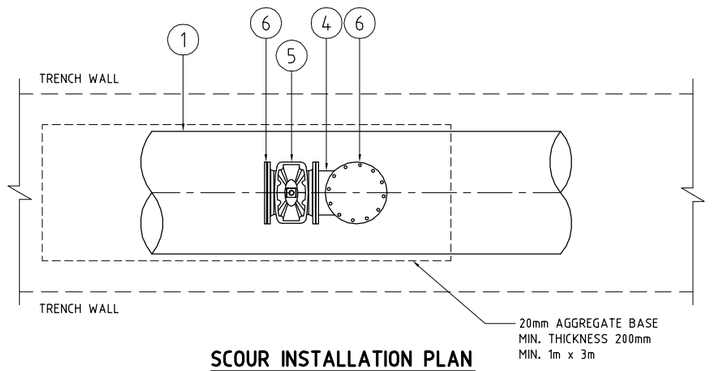
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 STANDARD DETAILS
AIR VALVE ASSEMBLY

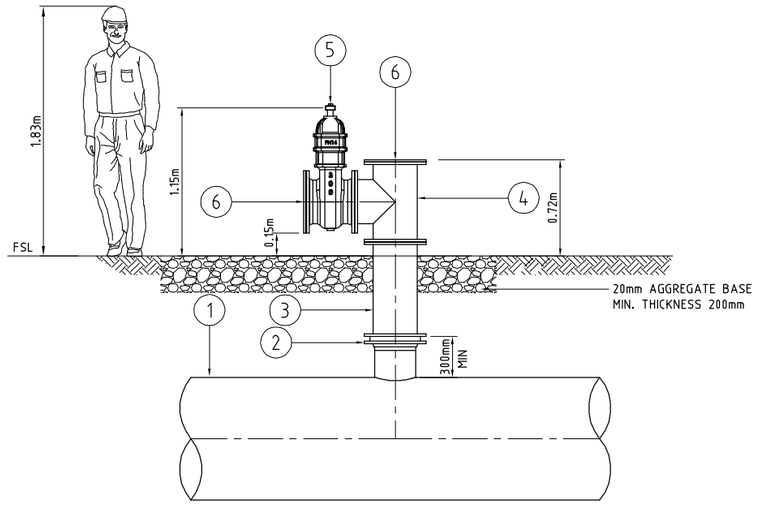
1151-DL07-W3P-CIV-DRG-17002

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	D



SCOUR INSTALLATION PLAN

N.T.S.



SCOUR INSTALLATION - DN1200 HDPE ABOVE GROUND

N.T.S.

SCOUR PIPEWORK SCHEDULE

ITEM	MATERIAL	DESCRIPTION	PN RATING	DIAMETER
1	HDPE	DN1200 PIPE	PN14.2	DN1200
2	HDPE	DN300 STUB FLANGE W/ SS BACKING PLATE	PN14.2	DN1200/300
3	SS316	DN300 FLANGED PIPE	PN16	DN300
4	SS316	DN300 FLANGED TEE	PN16	DN300
5	DIEL	DN300 FLANGED GATE VALVE	PN16	DN300
6	DIEL	DN300 BLIND FLANGE	PN16	DN300

NOTE:

REFER TO PROJECT NOTES
REFER ENCLOSURE DETAIL DRG
1151-DL00-W3P-CIV-DRG-10010

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME: _____
RPEQ NO.: _____
DIVISION: _____
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-							-	
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C	26/05/23	85% SUBMISSION JV REVIEW	TA	AS	PS		-	
B	31/03/23	50% SUBMISSION	TA	AS	PS		-	
A	18/03/23	ISSUED FOR CLIENT REVIEW	TA	AS	PS		-	

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ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 STANDARD DETAILS
SCOUR ASSEMBLY

1151-DL07-W3P-CIV-DRG-17003

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	D

Appendix G

CEMP

Gladstone Area Water Board

Fitzroy to Gladstone Pipeline Construction Environmental Management Plan

1151-DL00-GWB-XEV-MAP-00001

Controlled Document

AUTHORISED BY:	FGP Chief Operating Officer
DATE OF ISSUE:	May 2023
MAINTAINED BY:	FGP Approvals Manager
CURRENT VERSION:	Revision 0, Issue 2
REVIEW DATE:	12 months from 'Date of Issue'
DOCUMENT TYPE	Management Plan

Gladstone Area Water Board
Phone: (07) 4976 3000
Fax: (07) 4972 5632

136 Goondoon Street
Gladstone Q 4680
www.gawb.qld.gov.au

Gladstone Area Water Board

CONTENTS

FIGURES

TABLES

1. VERSION HISTORY

Revision	Issue	Revision Description	Revision Date
A	1	Preliminary draft	15/02/2022
B	1	Draft issued for review	14/03/2022
C	1	Draft issued for review	14/09/2022
0	1	Issued for use	04/05/2023
0	2	Issued for use	31/05/2023

2. ABBREVIATIONS OR DEFINITIONS

Abbreviation	Definition
AHD	Australian Height Datum
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
BGGGTB	Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People
DAF	Department of Agriculture and Fisheries
DES	Department of Environment and Science
CEMP	Construction Environmental Management Plan
CEP	Construction Execution Procedure
CG	Coordinator-General
CPESC	Certified Professional in Erosion and Sediment Control
CHMP	Cultural Heritage Management Plan
CMD	Coastal Management District
DATSIP	Department of Aboriginal and Torres Strait Islander Partnerships
DCCEEW	Department of Climate Change Energy the Environment and Water
DES	Department of Environment and Science
DNRM	Department of Natural Resources and Mines
DoR	Department of Resources
DRDMW	Department of Regional Development, Manufacturing and Water
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
DSI	Detailed Site Investigation
D&C	Design and Construction

Abbreviation	Definition
EA	Environmental Authority
ECI	Early Contractor Involvement
ERA	Environmental Relevant Authority
EIS	Environmental Impact Statement
EMR / CLR	Environmental Management Register / Contaminated Land Register
EMS	Environmental Management System
ESCP	Erosion and Sediment Control Plan
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPI	Environmental Protection Instruction
EP Regulation	*Environmental Protection Regulation 2019*
FGP	Fitzroy to Gladstone Pipeline
GAWB	Gladstone Area Water Board
GED	General Environmental Duty
GRC	Gladstone Regional Council
GSDA	Gladstone State Development Area
GHD	GHD Pty Ltd
Ha	Hectares
HSEQ	Health, Safety, Environment and Quality
ISC	Infrastructure Sustainability Council
JSEA	Job Safety and Environmental Analysis
Km	Kilometres
LGA	Local Government Areas
MBJV	McConnell Dowell and BMD Constructions Joint Venture
MMS	McConnell Dowell Management System
MCU	Material Change of Use
ML	Megalitres
m	Metres
MP	Member of Parliament
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance

Abbreviation	Definition
OPW	Operational Works
PCCC	Port Curtis Coral Coast Aboriginal Peoples Charitable Trust
Personnel	All personnel including sub-contractors working on the FGP
Planning Act	*Planning Act 2016*
PMST	Protected Matters Search Tool
PPE	Personal Protective Equipment
RE	Regional Ecosystem
RRC	Rockhampton Regional Council
RV	Regulated Vegetation
ROW	Right of Way
Qld	Queensland
SAP	Special Area Plan
SARA	State Assessment and Referral Agency
SDA	State Development Area
SDS	Safety Data Sheet
SDPWO Act	*State Development and Public Works Organisation Act 1971*
SGIC SDA	Stanwell-Gladstone Infrastructure Corridor State Development Area
SEIS	Supplementary Environmental Impact Statement
SEP	Site Environmental Plan
SMP	Species Management Program
SWMS	Safe Work Method Statement
TEC	Threatened ecological community
TMP	Traffic Management Plan
TMR	Department of Transport and Main Roads
WTP	Water Treatment Plant

3. INTRODUCTION

On the 23 February 2023, the Queensland Government approved the Fitzroy to Gladstone Pipeline (FGP) to progress to construction. Gladstone Area Water Board (GAWB) has been appointed to manage the design and construction of the FGP. Following construction, GAWB will own and operate the FGP.

The FGP is a critical piece of infrastructure to support the Central Queensland community. Water is integral to the continued operation of Gladstone's industry which supports thousands of jobs and significantly contributes to our regional and state economy.

The FGP will provide long-term water security to industry and urban supply in Gladstone and address the single source water supply risk from Awoonga Dam, which has repeatedly suffered from failed wet seasons. The pipeline will also support the emerging hydrogen and renewables sector that is set to expand in Gladstone.

The FGP traverses the Rockhampton Regional Council and Gladstone Regional Council Local Government Areas (LGAs). The 117 kilometres (km) long pipeline will run from the Lower Fitzroy River at Laurel Bank, with the majority of its length within the Stanwell-Gladstone Infrastructure Corridor State Development Area (SGIC SDA), and then connect with GAWB's existing water infrastructure near Yarwun within the Gladstone State Development Area (GSDA). The FGP includes three facilities; the Fitzroy Intake and Pump Station site, Aldoga Downs Water Treatment Plant (WTP) and Aldoga Reservoirs.

The FGP has the potential to impact upon several environmental factors during the construction phase. Mitigation measures are required to minimise potential impacts and meet regulatory requirements.

The McConnell Dowell and BMD Constructions Joint Venture (MBJV) has been appointed as the design and construction contractor for the FGP. The MBJV will also be responsible for operation and maintenance for five years following construction completion.

This Construction Environmental Management Plan (CEMP) will be implemented to manage potential environmental and social impacts associated with the construction of the FGP and will be supported by Special Area Plans (SAPs) - for Waterways, Yellow Chat, Ornamental Snake and Brigalow, Species Management Program (SMP), Constraints Protocol (under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval for excluded early works) and MBJV environmental aspect-specific sub-plans, as required.

3.1 Purpose of this CEMP

The purpose of this CEMP is to provide an environmental management framework and associated management procedures to avoid or minimise the actual and potential environmental impacts associated with the construction phase of the FGP. Further, it aims to:

- Develop and achieve the FGP's stated environmental objectives and targets
- Outline procedures for the management and monitoring activities of environmental protection issues relevant to construction activities
- Ensure environmental compliance with the legislative framework and conditions of approval
- Fulfil the General Environmental Duty (GED)
- Identify broader issues of organisational risk
- Align with GAWB and MBJV strategic direction.

This CEMP has been developed based on:

- The Planning Environmental Management Plan provided within the EIS (Arup, 2008).

- The CEMP prepared by GHD (GHD, 2022)
- Key primary Project approvals that have been obtained, namely:
    - Commonwealth government EIS approval under the EPBC Act. (Reference: EPBC 2007/3501, approved 4 November 2011) for the proposed construction and operation of a 110 km pipeline and associated infrastructure to transport up to 30 Giga Litres of water per annum from an intake point at Laurel Bank on the Fitzroy River to Gladstone, near Aldoga, Queensland.
    - Queensland government EIS approval framework under Section 26(1) of the State Development and Public Works Organisation Act 1971 (SDPWO Act). The effect of this approval framework is that the Project was declared a 'significant project' (26 July 2007) requiring an EIS. The Coordinator-General (CG) issued an Evaluation Report in 2010 which included stated and recommended conditions of approval. The CG's Evaluation Report has since lapsed; however, it provides guidance on approval requirements and conditions.
- Updated design and land details.
- Updated construction methodologies.
- Environmental and planning environmental approvals and permits and associated conditions.
- Site environmental characteristics.

3.2 Authorisation, Revision and Distribution

This CEMP is intended to be a live document for environmental management for the construction of the FGP. The CEMP will be updated when new information becomes available, such as receipt of development approvals/permits/licences, updated ecological or other field survey data, and design changes.

This CEMP will also have appropriate controls including being authored, reviewed and approved by suitably qualified persons under delegation of authority protocols.

This CEMP is a controlled document, and updates to this document will be provided an updated Revision number including the date and lodged on the document control database (TeamBinder) to ensure the most up to date document is used.

There is no restriction on the distribution of the CEMP within GAWB and MBJV. The controlled copy of the current version of this CEMP will be maintained on TeamBinder and onsite.

3.3 Contact Details

Key contacts for the Project are include in Table 3-1.

Table 3-1 Key Contacts

Contacts	Name	Phone
Chief Operating Officer - FGP	Hugh Barbour (GAWB)	0409 643 040
Project Director	Mark Barrows (MBJV) Grant Flekser (GAWB)	0407 050 161 0437 930 141
Environment & Sustainability Manager	Ben Hooper (MBJV) Simon Wakefield (GAWB)	0499 883 475 0401 712 962
Construction Manager	Prashant Modak (MBJV) – pipeline	0409 256 979

Contacts	Name	Phone
	Gerard Garry (MBJV) - facilities Jim McGinty (GAWB)	0417 708 916 0427 961 165
Cultural Heritage related matters (including finds)	Jillian Leslie (GAWB)	0400 626 214
Discovery of contaminated land	Department of Environment and Science (DES) – Contaminated Land Unit	(07) 3330 6586 (Brisbane)
Discovery of human remains	Queensland Police	000
Fire including bushfire	Queensland Fire and Rescue Services	000
Pollution incident causing serious or material environmental harm or fish kill	DES	1300 130 372
Reporting of sightings of prohibited and restricted pest species	Department of Agriculture and Fisheries (DAF) – Biosecurity Queensland Control Centre	13 25 23
Unexpected heritage artefact/ item find	DES – Cultural Heritage Unit	(07) 3227 6499
Wildlife rescue	DES (select wildlife from the menu provided) RSPCA Queensland	1300 130 372 or 1300 264 625 (RSPCA)

4. PROJECT SCOPE

4.1 Project Description

The FGP is a 117 km pipeline (approximately) that will transport up to 30,000 ML of water per annum from an intake point at Laurel Bank on the Fitzroy River to GAWB's existing water infrastructure near Yarwun (a Project schematic is presented in Figure 4-1).

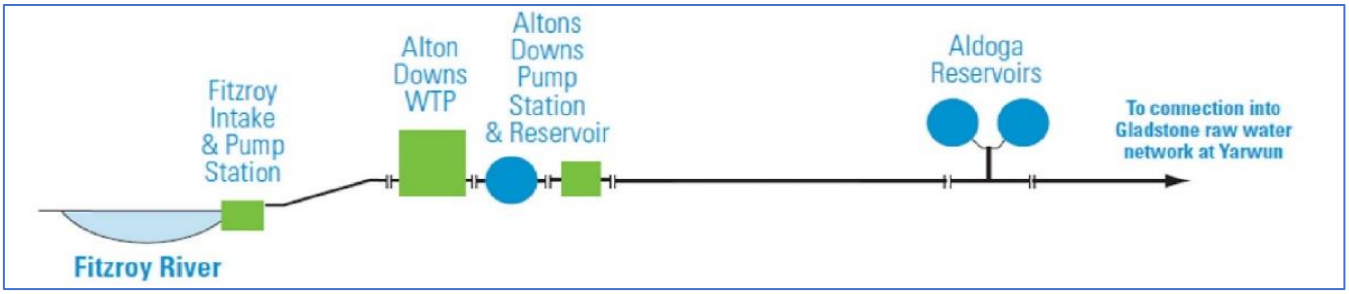

Figure 4-1 Project Schematic

The Project comprises the following key elements:

- An intake and pump station on the southern bank of the Fitzroy River, approximately 17 km upstream of Rockhampton's Alexandra Bridge near Laurel Bank, and in the vicinity of an existing Sunwater pump station that supplies the Stanwell Energy Park
- A Water Treatment Plant (WTP) at Alton Downs near the Fitzroy River, occupying an area of approximately 11.5 hectares (ha).
- A pipeline with a length of approximately 117 km and 1,067 millimetres (mm) in diameter (for much of its length, although varying from 900 mm to 1200 mm), constructed within a right of way (ROW) corridor up to 30 metres (m) in width. Fibre optic cable will run alongside the pipeline within the trench. This will be used to transmit signals along the FGP alignment.
- Pump stations, at the Fitzroy River water intake and Alton Downs WTP, each occupying an area of approximately one hectare. Associated with each pump station there may be:
    - A single building (approximately 30 m x 25 m) housing the pumps, complete with motors, controls and starters
    - A small substation
    - Connection manifolds and valves.
- Reservoirs at Aldoga consisting of two x 50 ML water storage tanks (hydraulically acting as one).

The FGP will be buried for its full length with a minimum depth of cover of 900 mm. The depth of pipe will vary depending upon the pipe material, ground conditions and loading. However, various pieces of small infrastructure may be required on the surface (e.g. pressure release valves, etc.). GAWB is currently securing land access and tenure for the FGP.

An Environmental Impact Statement (EIS) was completed for the overall Project in 2007 (Arup, 2008), with a supplementary EIS (SEIS) completed in 2009 (Arup, 2009). The EIS was assessed under the bilateral agreement between the Queensland and Commonwealth Governments. The CG issued an evaluation of the project's EIS on 2 February 2010 which established the framework for the State approvals required for the Project (noting the report lapsed in February 2018). The Commonwealth approval under the EPBC Act was received on 4 November 2011, varied on 25 October 2021 and 20 June 2022, and remains current.

GAWB and MBJV are in the process of securing approvals for the FGP, which includes approvals under the SGIC SDA and GSDA Development Schemes, the *Planning Act 2016* and other State or local statutory requirements.

4.2 Project Delivery

The FGP is being advanced in three sections:

1. Northern Section – this section encompasses:
    - Fitzroy River Intake Structure and Pump Station
    - Alton Downs WTP
    - Approximately 15 km of pipeline
2. SGIC SDA Section – this section encompasses:
    - Approximately 81 km of pipeline
3. GSDA Section – this section encompasses:
    - Aldoga Reservoirs
    - Approximately 21 km of pipeline
    - Connection to the Gladstone raw water network.

4.3 Scope of Works

Within each of the three sections identified, Northern, SGIC SDA and GSDA, the works will progress in stages. The typical works proposed in each stage are summarised as follows:

4.3.1 *Pre-construction*

The pre-construction activities include:

- Detailed design
- Securing of approvals, permits, licences and land tenure agreements
- Development of required management plans.

4.3.2 *Early Works*

Early works for the FGP are proposed to be undertaken and include:

- Cadastral surveys
- Geotechnical investigations
- Fencing
- Signage
- Works on existing roads and access tracks, and associated drainage
- Works to construct graded unsealed formed site access tracks, and associated drainage
- Temporary site facilities, including laydown areas, workers' accommodation camp at Rockhampton, site offices and amenities.

4.3.3 *Construction*

Construction activities for the FGP are expected to start in August 2023 and finish between late 2025 and early 2026, weather and construction conditions permitting. Figure 4-2 presents an indicative construction timeline.

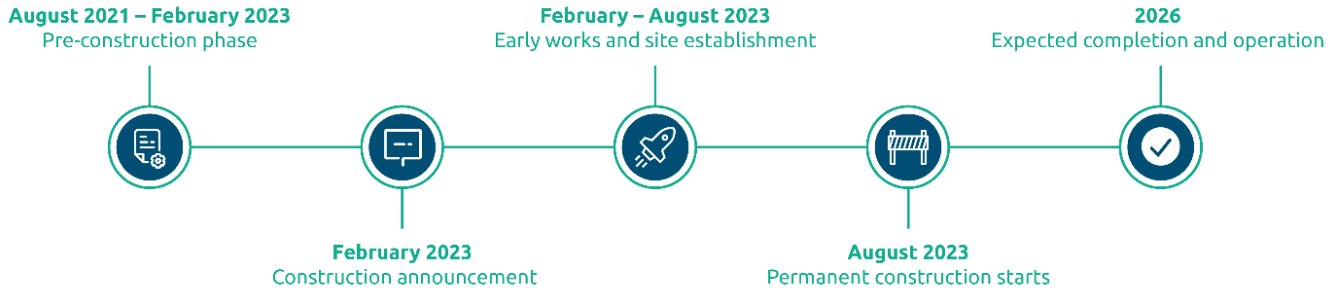

Figure 4-2 Indicative Timeline

The following are some of the activities that may occur in preparation for and during construction (refer to Figure 4-3):

- Survey – In preparation for construction, the ROW will be fully surveyed, and the FGP centre line will be pegged.
- Potholing – Some potholing may need to be carried out to identify the location of existing underground services. This will involve digging small test holes using hydro vacuum excavation and/or hand tools. Any underground services will be identified and marked with survey pegs/conduits. Overhead powerlines will be marked with colour-coded flags.
- Clearing – The ROW will be cleared of all topsoil, vegetation, rocks and other obstructions.
- Grading – Bulldozers and graders will level the ground in certain areas within the ROW to prepare a safe construction platform for the pipeline.
- Pipeline stringing – Pipes will be delivered to the site by truck from a centralised pipe stockpile location and 'strung' along the ROW end-to-end next to where the trench will be dug. The pipes will be laid on skids (timber blocks like railway sleepers used to keep the pipe off the ground) on sand or sawdust bags to protect the pipes from damage.
- Trenching – A trench will be excavated using specialist heavy earthmoving machinery. The trench will generally be 2m deep and deeper as necessary to meet the design requirements. The excavated trench spoil and any necessary imported material will be stockpiled next to the trench within the ROW.
- Trenchless (drilling or tunnelling) – Trenchless drilling or tunnelling is preferred where the conditions do not suit the use of an open trench, such as where the pipeline crosses waterways, rail and main roads. Launch and receival pits are excavated on either side of the crossing location and the pipe is guided through the hole with minimal disturbance to the surface. Trenchless crossing methods involve thrust boring, pipe-jacking, micro-tunnelling and horizontal directional drilling (further details below).
- Pipe laying and backfilling in trenches – After the pipe is laid, the trench will be backfilled and compacted using a combination of imported material (sand or crusher dust) to be placed under and around the pipe and selected trench subsoil for the remainder of the trench. The surface will be reinstated using the stockpiled topsoil and seedstock.
- Air Valves, Isolation Valves, Scour Valves – Valves are required along the length FGP mainly at high and low points. These valves will be aboveground infrastructure.
- Cathodic Protection – The FGP will be protected from corrosion by cathodic protection. Accordingly, cathodic protection test point stands will be required aboveground along the alignment.
- Pipeline cleaning and testing (commissioning) – This process occurs at the end of construction to remove debris from the inside of the pipe, test for leaks and complete performance testing for the operation of the FGP.

- Clean up and rehabilitation – All areas affected by construction will be cleaned up and rehabilitated to pre-construction conditions as far as practicable (noting any reasonable landholder requirements).
- Inspection and maintenance of the pipeline – Once operational, routine inspections will be conducted of the FGP to ensure it is operating safely and within specifications (refer to Section 4.3.7).

Figure 4-3 Pipeline Activities

Construction activities will take place during Monday to Sunday from 6:30am to 6:30pm in consultation and agreement with landholders, except where required for special crossings, hydrostatic testing or critical works. Blasting will not occur on Sundays. There may also be special circumstances where an assessment is made that night works will have a smaller impact on landholders. If work outside routine hours is required, affected landholders will be consulted and the activity conducted in accordance with any relevant regulatory notification requirements.

Construction activities / works for the FGP are defined as per the *Environment Protection and Biodiversity Conservation Regulations 2000* definition for works i.e., for an action, includes earth works, removal or replacement of groundcover, diversion of water flows, tunnelling, drilling or any other sub-surface activity on land or water.
It is noted that access to, and along, the ROW is not considered to be construction activities.

4.3.4 *Key Infrastructure Elements*

Water Pipeline

The FGP will be buried at a nominal depth of 2m with varying cover depending on pipe material, ground conditions and loading (minimum cover 900 mm). It will be laid with a minimum grade of 1 in 500. The annual average flow rate in the pipeline will be up to 30,000 ML per annum with an approximate anticipated maximum operating pressure of 2,500 kPa and will vary along the pipeline route depending on elevation and distance from pump stations.

The main pipeline material is proposed to be mild steel cement lined, with high-density polyethylene used for the sections from the Fitzroy Rover Intake to the WTP and from the Aldoga Reservoirs to the connection with existing water infrastructure near Yarwun. Bulldozers and graders will level the ground in certain areas within the ROW to prepare a safe construction platform. Pipes will be delivered to site by truck then laid next to the trench on skids or sandbags to protect the pipe from damage.

Right of Way

A ROW of 30 m has been nominated for the pipeline, with a reduction in width in sensitive environments, i.e. waterways and Brigalow vegetation community. A typical ROW is provided in Figure 4-4.

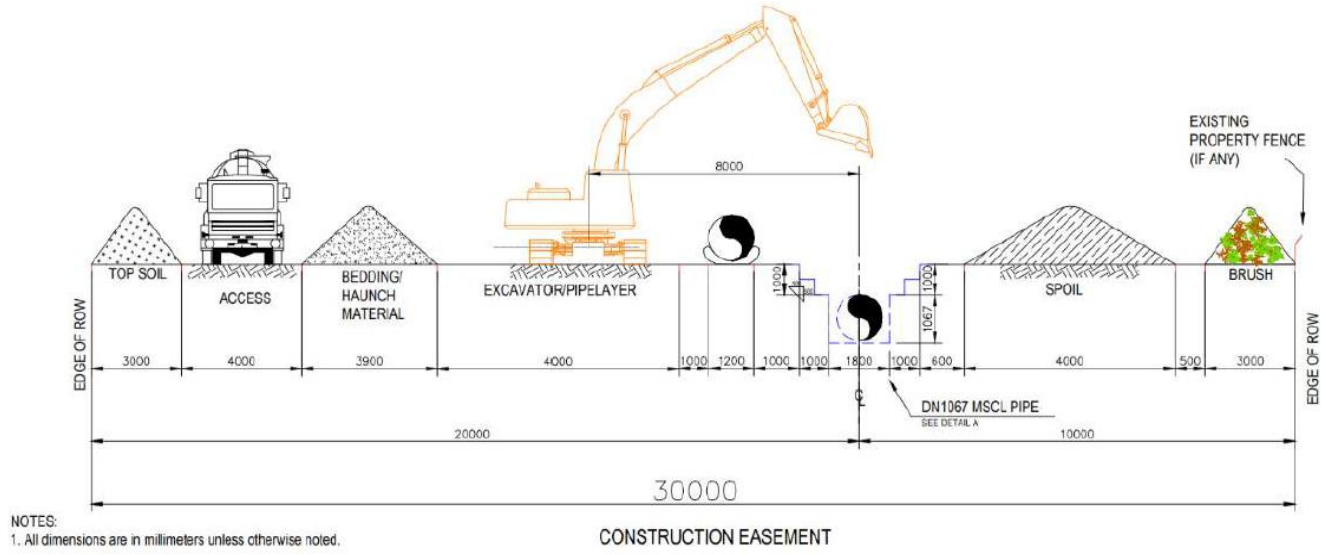

Figure 4-4 Typical ROW

Crossing Methods

Several construction methods have been considered for the pipeline crossing creeks, roads, rails and other infrastructure; it should be noted that trenchless methods have been used for major crossings. Construction methods include:

- Open trenching (non-trenchless):
  - It involves excavation of the trench directly though the stream or roadway. Excavators or backhoes are generally used with the trench spoil to be stockpiled away from the stream bed or road. The prefabricated pipe is strung out, lowered in and the trench backfilled immediately.
  - This method is proposed for minor roads and minor/dry creeks.
- Thrust boring or pipe-jacking:
  - Trenchless method involving launch and receival pits which are excavated on both sides of the crossing location.
  - An enveloper pipe with an open face is pressed into the ground with hydraulic jacks from the launch pit to the reception pit and an auger or drill removes the materials inside the pipe. The carrier pipe is then laid inside the enveloper pipe. The annular space between the enveloper and carrier pipes are then grouted.
  - The launch pit would be approximately 8 m by 4 m and the receival pit approximately 4 m by 3 m.
  - This method is proposed for major road and rail crossings.

- Micro-tunnelling or horizontal directional drilling:
    - Trenchless method involving launch and reception pits on either side of the crossing.
    - A tunnelling machine is used to excavate an underground path for the pipeline.
    - Powerful hydraulic jacks are used to push specially designed enveloper pipes through the ground behind a shield at the same time as excavation is taking place within the shield. The enveloper pipe is pushed from the launch pit to the reception pit. After the installation of the enveloper pipe, the carrier pipe is laid inside the enveloper pipe. The annular space between the enveloper and carrier pipes are then grouted. This method is suitable for sections up to 350 meters in length. Provided the working pits are set well back there is minimal impact to fringing riparian vegetation and river banks.

The use of blasting for pipeline installation is unlikely except at the Aldoga Reservoirs and potentially at some steep sections along the alignment. A Blast Management Plan will be developed to manage any blasting impacts, as required.

Fitzroy River Intake and Pump Station

The construction of the combined intake and pump station structure will require the installation of a temporary sheet piled coffer dam or similar, extending into the river, to allow the foundation of the structure to be dewatered and excavated to the required design level. A U-shaped coffer dam utilising two parallel sheet pile walls, filled with appropriate material and held by longitudinal walers and tie bars, is proposed. The coffer dam will be keyed into the riverbank.

Excavated material will be disposed of at an approved location off the site. Water ingress into the coffer dam will be discharged directly back to the river. Crane access to the riverbank and coffer dam will be required to service the construction works.

The construction of the combined structure will take place within the coffer dam. The structure will be founded on piles and, these piles will be driven in only after the coffer dam is dewatered and dry. Dewatering is expected to be a continuous process for the duration of construction.

A concrete floor will be poured on the base of the excavation once the support piles are installed. The concrete floor will provide a solid dry working floor for the construction of the concrete intake structure and will support the formwork.

Alton Downs WTP and Pump Station

The construction of the Alton Downs WTP will firstly involve the bulk earthworks and site preparation which will flow on to the construction of the concrete structures and reservoirs. Site preparation works will require the clearing of existing trees and vegetation. The vegetation will be mulched for use in the restoration and landscaping of the site on completion, where possible.

Structural steel, pipework, access hatches and other ancillary equipment will be set into the concrete structures, as required. When concrete structures are complete, the remainder of the works will relate to installation of prefabricated equipment.

Aldoga Reservoirs

The Aldoga Reservoirs are to be located near Mt Larcom and will be fully enclosed reinforced concrete storage with 100 ML capacity (2 x 50 ML tanks), with a land area approximately 10.5 ha.

Due to the shape and size of the hilltop location, the Aldoga Reservoirs consist of two circular shaped structures approximately 90 m diameter. Extensive earthworks, including blasting / rock breaking, will be required to establish the site.

Access to the Aldoga Reservoirs will be from a newly formed access off Aldoga Road which is accessed from Gladstone-Mt Larcom Road. The reservoir site will be located on the crest of a hill with access to the site to be constructed as part of the works.

The two circular reservoirs, post tensioned and cast in-situ, will be constructed using traditional well used techniques. Construction of the floor will commence first, followed by the walls. Walls would be poured in quadrants at 2 m lifts (jump form technique). The reservoirs shall generally be reinforced concrete structures. Construction of the reservoirs will require the delivery to site of large quantities of reinforcing steel, formwork and concrete.

Ancillary Works

MBJV is responsible for ancillary works (e.g. workers' accommodation, site facilities, temporary access tracks, and laydown areas). The following ancillary works are being investigated:

- Existing rental, motel and hotel accommodation in the area will be used for short-term labour accommodation needs. An existing Gladstone-based workers' accommodation camp and a temporary camp, to be developed at Gracemere, will be used to accommodate staff.
- Temporary site facilities will be located at each of the major project work locations. Transportable buildings will be utilised to establish temporary site offices to house day-to-day workforce activities such as crib rooms, toilets and offices.
- Domestic sewage will be treated by an approved septic or anaerobic waste treatment system where possible. Minor sites which will only operate on a short-term basis will be pump out systems where waste will be removed and disposed of at an approved local council treatment plant.
- Solid waste management will be sorted and stored onsite, waste will be removed and disposed of at an approved and licensed local council waste management facility.
- Equipment wash down facilities will be placed at strategic points to clean vehicles and construction equipment of weeds, seeds and contaminated soil when transiting between sites.
- Temporary storage and laydown areas, typically one hectare in area will be required at intervals along the pipeline route to unload and store the large quantities of pipe and construction materials and equipment. Gravel hardstand areas and roadways will be laid within the stockpile sites to allow the movement of heavy equipment and to allow loading of trucks and trailers. Each storage area will be fenced for security, with minimal night lighting and regular night-time security patrols.
- Storage and laydown sites will be chosen to allow all weather truck access and provide minimal disruption to vegetation, landowners and the travelling public. The intent will be to utilise a minimal number of pipe storage sites and to reload and haul pipe by truck and trailer to the work locations as required by the construction program.

All activities undertaken at temporary site facilities will be subject to the requirements of this CEMP and other management plans as required.

4.3.5 *Rehabilitation*

All areas affected by construction including ROW, work areas, access tracks and temporary site office areas will be cleaned up and rehabilitated to pre-construction conditions as far as practicable.

Clean up will include removal of waste material and equipment, compaction relief (particularly on heavily trafficked areas) and re-profiling to original or stable contours and re-establishing surface drainage lines. Signs, fences and barriers shall be installed where required to prevent unauthorised access to sensitive areas on the pipeline route, and to prevent damage.

Rehabilitation measures will be conducted according to recommendations in the *Australian Pipeline Industry Association Code of Environmental Practice – Onshore Pipelines 2017* and relevant development permit/approval conditions. It will consider application of vegetation regeneration and/or revegetation techniques to encourage natural regeneration of disturbed vegetation.

Site clean-up and rehabilitation will be conducted in consultation with landowners. It will have a warranty period of not less than 12 months from construction completion, which includes land rehabilitation measures.

4.3.6 *Commissioning*

The commissioning of GAWB's assets will be completed by MBJV in collaboration with Partner, Ventia. A detailed Commissioning Plan is currently being prepared to manage all aspects of commissioning including the water intake and discharge for hydrotesting.

The commissioning process will be undertaken in two stages for each section of the pipeline and its associated facilities. These include pressure testing and leak testing, i.e. hydrotesting.

The FGP will be commissioned in sections between isolation valves and facilities along the alignment. The commissioning will include flushing and filling each section with water to test the pressure of the pipe and for any leaks.

Following the successful commissioning of a particular pipeline section, the water will be stored in the pipeline until the next section is ready for commissioning.

It is expected that approximately 5 ML of water will be required for this testing and most of the hydrotest water be discharged at the end of the pipe into an open swale drain that feeds into Boat Creek. However, there may be some minor discharges along the ROW. The water will only be discharged if it meets the appropriate water quality release criteria and in a manner that does not cause environmental harm. The water is expected to contain residual sediments from pipeline and construction activities.

For any hydrotesting discharges measures will be taken to:

- Reuse water for each section.
- Minimise the waste volumes of water generated.
- Minimise the water to be discharged to the environment.
- Ensure that the water to be discharged meets the requirements of any relevant guidelines, water quality objectives and the requirements of stakeholders.
- Ensure erosion protection measures are in place.

4.3.7 *Operation*

Operational stages of the FGP will be managed in accordance with an Operational Environmental Management Plan and/or other procedures to be prepared.

5. LEGAL AND OTHER REQUIREMENTS

This CEMP has been prepared in general accordance with the relevant requirements of the Queensland *Environmental Protection Act 1994* (EP Act) and associated *Environmental Protection Regulation 2019* (EP Regulation). It has been designed to protect the relevant Environmental Values associated with the construction phase of the Project.

Section 9 of the EP Act describes Environmental Value as:

> *(1) A quality of physical characteristic of the environment that is conducive to the ecological health of public amenity or safety; or*
>
> *(2) Another quality of the environment identified and declared to be an environmental value under an environmental protection policy or regulation.*

In addition, Section 319 of the EP Act provides information about the duty to prevent and minimise environmental harm. The general environmental duty states:

> *A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.*

The general structure of this CEMP has been developed in response to EP Act requirements, as well as the ISO 14001 Plan Do Check Act framework, and incorporates the following key items:

- Environmental Value or Element
- Performance Objectives
- Legislative Requirements
- Performance Criteria
- Implementation
- Monitoring
- Reporting
- Corrective Action.

5.1 Project Legislation

Table 5-1 provides an overarching legislation register, detailing the current applicable relevant acts, regulations and policies that are applicable to the Project in general.

Table 5-1 Legislation, Regulations and Policies

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
Commonwealth			
EPBC Act	Department of Climate Change Energy the Environment and Water (DCCEEW)	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.	The FGP is to comply with the EPBC Approval Conditions (EPBC 2007/3501) through implementation of this CEMP and other management plans as relevant.

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
Native Title Act 1993	Native Title Tribunal	– Provide for the recognition and protection of native title – Establish ways in which future dealings affecting native title may proceed and to set standards for the dealings – Establish a mechanism for determining claims to native title – Provide for, or permit, the validation of past acts, and intermediate period acts, invalidated because of the existence of native title.	Native title is applicable to some parts of the Project. GAWB will manage native title.
State			
Aboriginal Cultural Heritage Act 2003 *Aboriginal Cultural Heritage Act 2003* – Duty of Care Guidelines	Department of Seniors, Disability Services and Aboriginal Torres Strait Islander Partnerships	Provides for effective recognition, protection and conservation of Aboriginal cultural heritage. Require those conducting disturbance activities in areas of significance to take all reasonable and practical measures to avoid harming cultural heritage.	An approved Cultural Heritage Management Plan (CHMP) between GAWB and the Port Curtis Coral Coast Aboriginal Peoples Charitable Trust (PCCC) and Darumbal People will be finalised prior to construction commencing. All parties are to comply with the CHMP as relevant to their works.
Biosecurity Act 2014 *Biosecurity Regulation 2016*	Department of Agriculture and Fisheries (DAF)	Provides biosecurity measures to safeguard our economy, agricultural and tourism industries, environment and way of life, from: pests (e.g. wild dogs and weeds), diseases (e.g. foot-and-mouth disease) and contaminants (e.g. lead on grazing land).	Management of pests and invasive species across the Project will be required by all parties. All personnel have a General Biosecurity Obligation.
Building Act 1975	Department of Communities, Housing and Digital Economy Private certifier	Regulates building development approvals, building work, building classification, building certifiers, and to provide for matters about sustainable buildings, and for other purposes.	This act relates to the WTPs, the pump stations and other buildings or structures required for the FGP.
Coastal Protection and Management Act 1995 *Coastal Protection and Management Regulation 2017*	Department of Environment and Science (DES)	Provides for the protection, conservation, rehabilitation and management of the coastal zone, including its resources and biological diversity.	The SGIC SDA section of FGP includes work in coastal areas. The FGP will comply with the operational works (OPW) (works in a Coastal Management District) approval (2210-31440 SDA) through implementation of this CEMP and other management plans as relevant.
EP Act	DES	The object of this Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development).	For all activities the GED is required.

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
EP Regulation	DES	Prescribes the detail for processes contained in the EP Act. For example, this regulation contains the list of 'prescribed Environmentally Relevant Activities (ERAs)' which are regulated under the EP Act and prescribes the fees to be paid, such as application fees and annual fees for ERAs.	For specific activities that trigger an ERA an environmental authority is required from DES e.g. the WTP.
Environmental Protection (Air) Policy 2019	DES	Purpose of this policy is to achieve the object of the EP Act in relation to the air environment by: – Identifying environmental values to be enhanced or protected – Stating indicators and air quality objectives for enhancing or protecting the environmental values – Providing a framework for making consistent, equitable and informed decisions about the air environment.	Implements requirements for air emissions including dust and odour. The Policy is to be met by implementation of this CEMP and other management plans.
Environmental Protection (Noise) Policy 2019	DES	Purpose of this policy is to achieve the object of the EP Act in relation to the acoustic environment by: – Identifying environmental values to be enhanced or protected – Stating acoustic quality objectives for enhancing or protecting the environmental values – Providing a framework for making consistent, equitable and informed decisions about the acoustic environment.	Implements requirements for noise emissions including vibration. The Policy is to be met by implementation of this CEMP and other management plans.
Environmental Protection (Water and Wetland Biodiversity) Policy 2019	DES	Purpose of this policy is to achieve the object of the EP Act in relation to waters and wetlands by: – Identifying environmental values for waters and wetlands – Identifying management goals for waters – Stating water quality guidelines and water quality objectives to enhance or protect the environmental values – Providing a framework for making consistent, equitable and informed decisions about waters – Monitoring and reporting on the condition of waters.	Provides relevant objectives for waterways and wetlands for the FGP to achieve. The Policy is to be met by implementation of this CEMP and other management plants.
Fisheries Act 1994	DAF	Sets out Fisheries Queensland's responsibilities for the economically viable, socially acceptable and ecologically sustainable development of Queensland's fisheries resources.	The *Fisheries Act 1994* primarily applies to waterways which are classified as waterways for the purpose of waterway barrier works located throughout the Project, and marine

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
			plants located in the SGIC SDA section.
Land Act 1994	Department of Resources (DoR)	Land to which this Act applies must be managed for the benefit of the people of Queensland.	Applies to the FGP and is being managed by GAWB. Appropriate land tenure or agreements may need to be sought by MBJV for ancillary works.
Native Title (Queensland) Act 1993	Native Title Tribunal	In accordance with the Native Title Act 1993 (Cwth), to validate past acts, and intermediate period acts, invalidated because of the existence of native title and to confirm certain rights. To ensure that Queensland law is consistent with standards set by the Native Title Act 1993 (Cwth) for future dealings affecting native title.	Native title is applicable to some parts of the Project. GAWB will manage native title.
Nature Conservation Act 1992 Nature Conservation (Animals) Regulation 2020 *Nature Conservation (Plants) Regulation 2020*	DES	The object of this Act is the conservation of nature while allowing for the involvement of indigenous people in the management of protected areas in which they have an interest under Aboriginal tradition or Island custom.	Relevant for the activities impacting vegetation, animals and their habitat. The Project is to comply with the approved SMP (SMP1141) through implementation of this CEMP and other management plans as relevant.
Planning Act 2016 Planning Regulation 2017	Department of State Development, Infrastructure, Local Government and Planning (DSDILGP)	Establishes Queensland's planning framework and is supported by other Acts and regulations. It also establishes the framework of planning instruments that support the operation of the three main systems: plan-making, development assessment and dispute resolution.	Relevant for all activities. Certain accepted or assessable requirements are to be met, as described further in this CEMP.
Plumbing and Drainage Act 2018	Department of Communities, Housing and Digital Economy	The main purpose of this Act is to regulate the carrying out of plumbing or drainage work in a way that reduces risks to public health and safety, and the environment.	Relevant for buildings and permanent structures and their plumbing standards and outlets.
Queensland Heritage Act 1992	DES	The object of this Act is to provide for the conservation of Queensland's cultural heritage for the benefit of the community and future generations.	Applies to works being Raglan and any incidental potential finds.
State Development and Public Works Organisation Act 1971 State Development and Public Works Organisation (State Development Areas) Regulation 2019	CG DSDILGP	An Act to provide for State planning and development through a coordinated system of public works organisation, for environmental coordination, and for related purposes. The regulation declares SDAs and provides for the implementation of: – SGIC SDA Development Scheme – GSDA Development Scheme.	The CG issued an Evaluation Report in 2010 which included stated and recommended conditions of approval. The CG's Evaluation Report has since lapsed; however, it provides guidance on approval requirements and conditions. The respective SDA Development Schemes apply to temporary and permanent works in the SGIC SDA and the GSDA.

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
Transport Infrastructure Act 1994	Department of Transport and Main Roads (TMR)	The overall objective of this Act is, consistent with the objectives of the *Transport Planning and Coordination Act 1994*, to provide a regime that allows for and encourages effective integrated planning and efficient management of a system of transport infrastructure.	Relevant for use of and impacts to State-controlled transport infrastructure (roads and rail).
Vegetation Management Act 1999 *Vegetation Management Regulation 2012*	DoR	The purpose of this Act is to regulate the clearing of vegetation in a way that— a) conserves remnant vegetation b) conserves vegetation in declared areas c) ensures the clearing does not cause land degradation d) prevents the loss of biodiversity e) maintains ecological processes f) manages the environmental effects of the clearing to achieve the matters mentioned in paragraphs (a) to (e) g) reduces greenhouse gas emissions h) allows for sustainable land use.	Applies to clearing of vegetation associated with the FGP. The Project is to comply with the OPW (vegetation clearing) approvals (2211-32196 SDA and 2302-33153 SDA) through implementation of this CEMP and other management plans as relevant.
Waste Reduction and Recycling Act 2011 *Waste Reduction and Recycling Regulation 2011*	DES	The legislation establishes a framework to modernise waste management and resource recovery practices in Queensland. It will promote waste avoidance and reduction and encourage resource recovery and efficiency.	Provides requirements for the Project's waste generation, storage, transport and disposal.
Water Act 2000 *Water Regulation 2016*	Department of Regional Development, Manufacturing and Water (DRDMW)	– The sustainable management of Queensland's water resources and quarry material by establishing a system – The sustainable and secure water supply and demand management for the south-east Queensland region and other designated regions – The management of impacts on underground water caused by the exercise of underground water rights by the resource sector – The effective operation of water authorities.	Will apply to watercourses impacted and use of water for construction. Where no water entitlement is available, the FGP will comply with *Exemption requirements for constructing authorities for the take of water without a water entitlement.* The FGP will have an allocation of water from the Fitzroy River.
Water Supply (Safety and Reliability) Act 2008	DRWMW	The purpose of this Act is to provide for the safety and reliability of water supply.	GAWB's responsibility and reason for the FGP development.
Local			
Rockhampton Region Planning Scheme	Rockhampton Regional Council (RRC)	The planning scheme sets out RRC's intention for the future development in the planning scheme area, over the	Relevant for the FGP within the RRC LGA.

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
		next twenty (20) years. It provides a means for regulatory and identifying both assessable and accepted development.	
Rockhampton Local Laws	RRC	Under the *Local Government Act 2009*, Council may make and enforce any local law that is necessary or convenient for the good rule and local government of its area. The term "local law" includes "subordinate local law". The Local Laws likely applicable to this Project include: – Local Law No. 4 (Local Government Controlled Areas, Facilities and Roads) 2011 – Subordinate Local Law No. 4 (Local Government Controlled Areas, Facilities and Roads) 2011	Relevant for interactions with RRC owned roads and infrastructure.
Gladstone Regional Council Planning Scheme	Gladstone Regional Council (GRC)	The planning scheme sets out GRC's intention for the future development in the planning scheme area, over the next seventeen years to 2031. It provides a means for regulatory and identifying both assessable and accepted development.	Relevant for the FGP within the GRC LGA.
Gladstone Local Laws	GRC	Under the *Local Government Act 2009*, Council may make and enforce any local law that is necessary or convenient for the good rule and local government of its area. The term "local law" includes "subordinate local law". The Local Laws likely applicable to this Project include: – Local Law No. 4 (Local Government Controlled Areas, Facilities and Roads) 2011 – Subordinate Local Law No 4 (Local Government Controlled Areas Facilities and Roads) 2011.	Relevant for interactions with GRC owned roads and infrastructure.

5.2 Approvals, Permits and Licences

In 2007, the Queensland Government Coordinator-General declared the Project a 'significant project, requiring an EIS under Section 26(1) of the SDPWO Act. An EIS was prepared for the Project under the Queensland and Commonwealth bilateral agreement.

Following the EIS process, the Project obtained the following primary environmental approvals:

- Commonwealth government EIS approval under EPBC Act (reference: EPBC 2007/3501, approved 4 November 2011) for the proposed construction and operation of a 110 km pipeline and associated infrastructure to transport up to 30 Giga Litres of water per annum from an intake point at Laurel Bank on the Fitzroy River to Gladstone, near Aldoga, Queensland.
- Queensland government EIS approval framework under Section 26(1) of the SDPWO Act. The effect of this approval is that the Project was declared a 'significant project' (26 July 2007) requiring

an EIS. The CG issued an Evaluation Report in 2010 which included stated and recommended conditions of approval. The CG's Evaluation Report has since lapsed; however, it provides guidance on approval requirements and conditions.

GAWB and MBJV are currently in the process of obtaining a range of other planning and environmental approvals as summarised in Table 5-2.

5.3 Guidelines and Other Requirements

In order to meet the legislation outlined in Table 5-1, the following requirements, guidelines and policies apply:

- Exemptions / accepted development requirements which outline a range of conditions that can be utilised MBJV, if met then development permits are not required:
    - Accepted development requirements for operational work that is constructing or maintaining waterway barrier works (DAF, 2018)
    - Accepted Development Vegetation Clearing Code (ADVCC): Clearing for Infrastructure (Department of Resources, 2020)
    - Exempt clearing work under the Vegetation Management Act as detailed in List of exempt clearing work (former Department of Natural Resources, Mines and Energy, 2019)
    - Riverine protection permit exemption requirements WSS/2013/726 Version 2.02 (DRDMW, 2023)
    - OSW/2020/5467 Exemption requirements for constructing authorities for the take of water without a water entitlement (DRDMW, 2021).
- Guidelines made under legislative powers that assist in meeting objectives of the legislation:
    - Environmental Protection (Water) Policy 2009: Fitzroy River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Fitzroy River Sub-basin (DES, 2011)
    - Environmental Protection (Water) Policy 2009: Curtis Island, Calliope River and Boyne River Basins Environmental Values and Water Quality Objectives (DES, 2014)
    - Water Plan (Fitzroy Basin) 2011
    - Water Plan (Calliope River Basin) 2006
    - Flora Survey Guidelines – Protected Plants (DES, 2020).
- Other guidelines include, but are not limited to:
    - Best Practice Erosion and Sediment Control (IECA, 2008)
    - Noise Measurement Manual (DES, 2020)
    - Monitoring and Sampling Manual (DES, 2018) (relates to water quality monitoring)
    - Queensland auditor handbook for contaminated land Module 6: Content requirements for contaminated land investigation documents, certifications and audit reports (DES, 2018)
    - National Environmental Protection (Assessment of site Contamination) Measure 1999 (Amended in 2003)
    - National Acid Sulfate Soils Guidance (Commonwealth of Australia, 2018)
        - National Acid sulfate soil sampling and identification methods manual (Commonwealth of Australia, 2018)

- Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines (State of Queensland, 2014).

It is further noted that:

- Pipeline works within wetland protection areas are not high impact earthworks, as defined in Schedule 24 of the *Planning Regulation 2017* i.e.: … establish underground infrastructure … if the excavated land is to be restored.
- Works at the Fitzroy River Intake are not defined as waterway barrier works as per advice received from SARA / DAF via email dated 1/11/2022 (5 m maximum encroachment of waterway which is 300 m wide at this location).
- The pipeline and WTP is accepted development under the RRC Planning Scheme as a utility installation undertaken by public sector entity.
- No clearing permit is required in connection with protected plant trigger mapping at the Aldoga Reservoirs, as ecological surveys conducted in February / April 2022 did not identify the presence of protected plants and an exempt clearing notification submitted to DES on 3 August 2022.

Table 5-2 Approvals and Permits Summary

Approval	Section	Component	Regulatory Authority	Responsible Party	Status / Indicative Timing
Material Change of Use (MCU) Development Permit assessable against the Rockhampton Regional Council Planning Scheme	Northern Section	Fitzroy River Intake and Pump Station	RRC	GAWB	Granted
MCU – Development Permit assessable against the GSDA Development Scheme	GSDA	Aldoga Reservoir	OG	GAWB	Granted
MCU – Development Permit assessable against the SGIC SDA Development Scheme	SGIC SDA	Pipeline and facilities	CG	GAWB	Lodged Q4 2022
MCU (Development Permit assessable against the GSDA Development Scheme) and OPW for vegetation clearing	GSDA	Pipeline	CG	GAWB	Progressing
OPW – Development permit for disturbing marine plants and Tidal Works	SGIC SDA	Pipeline	State Assessment and Referral Agency (SARA), RRC	GAWB	RRC LGA – Lodged Q4 2022 GRC LGA – Lodged Q1 2023
OPW – Development Permit for clearing of native vegetation	Northern Section	Northern Section	SARA	GAWB	Granted
	SGIC SDA	SGIC SDA	SARA	GAWB	Granted
OPW – Development Permit for works in a Coastal Management District - removal of quarry material from State land above high-water mark	SGIC SDA	Pipeline	SARA	GAWB	Granted
MCU / OPW Development Permit assessable against the Rockhampton Regional Council Planning Scheme	Outside ROW	Pipe laydown, camp	RRC	MBJV	Progressing (laydown application lodged Q2 2023)
Environmental Authority	Northern Section	Alton Downs WTP	SARA, DES	MBJV	Progressing
SMP for tampering with animal breeding places	Whole of Project	Pipeline and infrastructure	DES	GAWB	Granted

Approval	Section	Component	Regulatory Authority	Responsible Party	Status / Indicative Timing
Road Corridor Permit	Whole of Project	Pipeline	TMR, GRC, RRC	GAWB / MBJV	In-principle agreements received
Road Corridor Permit	Northern	Pipeline crossing with the Rockhampton Ring Road	TMR	GAWB / MBJV	Progressing
Road Works Approval	Whole of Project	Pipeline	TMR, GRC, RRC	MBJV	Progressing
Construct and Maintain a Driveway	SGIC SDA & GSDA	Aldoga Reservoirs	GRC	MBJV	Progressing
Permitted Road Access Location (s62(1))	Northern	Alton Downs WTP	TMR	GAWB	Granted
Building works approval permit	Northern Section SGIC SDA	Alton Downs WTP, Raglan Pump Station and Reservoir	Council	MBJV	Not commenced
Plumbing or drainage works approval	Northern Section	Alton Downs WTP, Raglan Pump Station and Reservoir	Council	MBJV	Not commenced

6. IMPLEMENTATION AND OPERATION

6.1 FGP Objectives

The objectives established for the FGP are outlined in Table 6-1.

Table 6-1 Project Objectives

Project Objective	Description
Water Security	Deliver infrastructure that connects communities, deliver a sustainable and resilient network and a network that provides for immediate drought response.
Reliability	Deliver a network that runs efficiently, effectively and is fit for its intended purpose, that considers operation and whole-of-life design for replacement and availability of components, and that establishes trust in the local community that GAWB delivers as an authority on time and to its commitments.
Cost	Deliver the works within the agreed construction value and demonstrate a value for money outcome to the State Government. Ensure that cash moves quickly through the supply chain, and all subcontractors, suppliers, professional service providers are paid in a timely manner.
Time	Delivery of the asset as per the delivery program to meet water security and planning objectives.
Safety	Deliver and construct the Project with a zero rate of incidents and be injury free. Create a culture where the safety of the Project workforce, operators of the network and the general community is paramount.
Quality	Ensure that constructed works are fit for purpose and meet all Project design requirements, standards and warranties and achieve a zero defects status.
Environment	Actively manage the Project to eliminate environmental harm and demonstrate genuine sensitivity and care for the environment.
Community and Stakeholders	Engage commercially competitive local suppliers, where possible. Recruit local skilled workers. Develop and maintain productive relationships with community and stakeholders. Effectively plan and deliver communication and engagement strategies to support Project works, minimise impacts to community and stakeholders, contribute to a positive Project reputation and produce economic benefits to the local area.
Values and Behaviours	Alignment with GAWB's corporate philosophy and 'the way we work' including: – Engage –We work together. Always. – Accountable –We all contribute. Openly. – Safety & Wellbeing –We look after ourselves. And each other. – One Team –We Deliver. You and I.
QPP Compliance	Demonstrate and comply with each category of the Queensland Procurement Policy including the Best Practice Principles, Local Benefits Test and all statutory requirements. Demonstrate and comply with the Australian Industry Participation Plan and all other Project-related regulatory requirements.
Skill and System Development	Provide training and skills development opportunities for all people working in the Project team and enable GAWB to increase its overall capability as an organisation. Contribute to local and Indigenous supply chain capability and capacity development and skill development of local and Indigenous labour.

6.2 Environmental Leadership and Commitment

GAWB and MBJV undertake a reflective, resourceful, inclusive, and flexible approach to environmental management and leads by example in ensuring that statutory and contractual requirements are met, and positive environmental performance is maximised.

The approach to environmental leadership is underpinned by an ISO 14001 certified Environmental Management System (EMS) that forms part of the integrated McConnell Dowell Management System (MMS).

In line with the requirements of ISO 14001, MBJV top management, are committed to review and endorse this document as part of a broader review of the MMS every 12 months. This process ensures top management:

- Take accountability for the effectiveness of the environmental management system.
- Make certain that environmental objectives are established and are compatible with the strategic direction and the context of the organisation.
- Ensure the integration of the environmental management system requirements into the organisation's business processes.

For the FGP, MBJV will be working under the McConnell Dowell EMS. McConnell Dowell operates an ISO 14001 certified EMS that forms part of the fully integrated MMS. The MMS provides the framework for managers to implement specified corporate standards and practices in a consistent manner. It defines the application of work practices, processes, and systems for engineering/design, acquisition of materials, equipment and services, construction, and other services related to tendering and project execution.

The environmental management framework applicable to the FGP is shown diagrammatically below (Figure 6-1) and elements of the framework explained in Table 6-2.

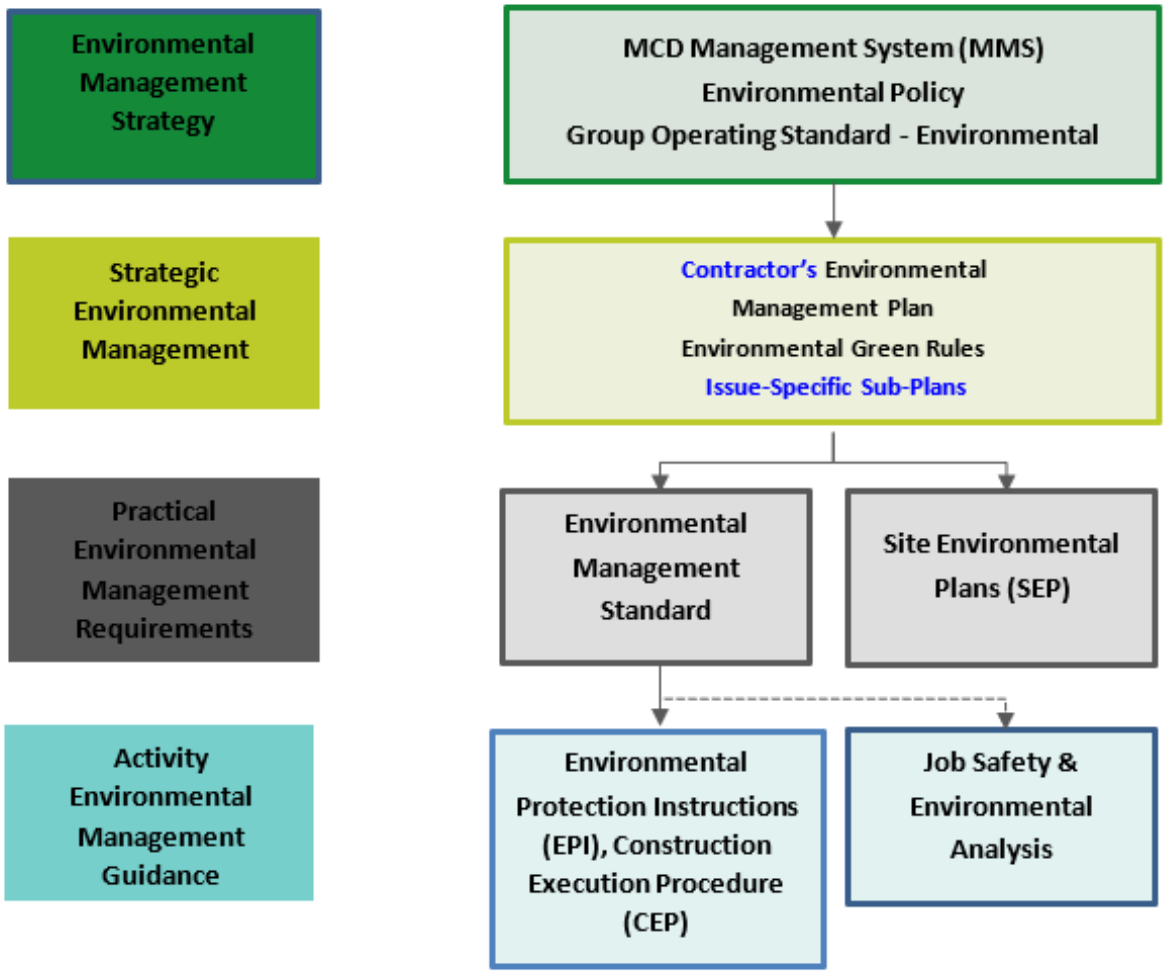

Figure 6-1 Environmental Management System Framework

Table 6-2 Description of environmental management framework documents

Document Type	Description
Environmental and Sustainability Polices	Refer to sections 0 and 6.4 for the Environmental and Sustainability Polices, respectively.
Environmental Management Plan	This document. This CEMP provides a system and set of procedures to ensure that sound and effective controls are established and maintained to manage potential environmental impacts throughout the Project and, wherever practicable, to deliver positive environmental outcomes. As part of our commitment to continuous

Document Type	Description
	improvement we will take a proactive approach to environmental management for the FGP. This document is therefore based upon a risk management process where the environmental risks associated with each element of the FGP are identified and assessed, and appropriate mitigation strategies implemented to eliminate or minimise the subsequent risk.
Issue-Specific Sub-Plans	Documents that focus one specific environmental issue in detail (e.g noise and vibration), outlining risks, opportunities, mitigation and management measures in relation to that environmental issue.
Environmental Green Rules	A suite of ten environmental management rules set to enforce positive messages about what is expected as a minimum standard onsite to minimise our impact on the natural environment and local community.
Site Environmental Plans (SEPs)	SEPs are spatial representations, in the form of an aerial photographs developed for a specific footprint of the FGP to illustrate the key site features relating to environmental management. The SEPs provide a picture of the existing environmental values and demonstrate the location of the site environmental controls and other key environmentally relevant features of the FGP.
Environmental Protection Instructions (EPIs)	EPIs will be adopted from a standard suite of EPIs. They will be amended, if necessary, to meet specific Project requirements. These documents provide a summary of the method of implementation for a number of the environmental controls articulated in the CEMP and issue-specific sub-plans. As the Project progresses there may be a need for new EPIs to cover areas not identified during the pre-mobilisation risk assessment process. Any new EPIs will be developed by the Environmental Management Representative / Environmental Manager / Advisor and will be communicated to the Construction Team through inductions and toolbox talks. If necessary, training on any new EPI will be provided by the Environmental Management Representative / Environmental Manager / Advisor
Construction Execution Procedure (CEP)	CEPs are developed and implemented for each major part of the scope of work, defining the methodology, management strategies, responsibilities, resource requirements, testing and recording requirements, contractual and legal requirements and the identification of separate work packages or stages. Safety and environmental risks are also anticipated, and associated controls recommended within these procedures. Documentation, such as Safe Work Method Statements (SWMSs), CEMP and associated environmental management plans and EPIs are referenced where applicable. CEPs are developed in consultation with the Project Environmental Team to ensure that any required environmental or sustainability controls and opportunities are embedded into the processes adopted. Personnel involved in the specific activity covered by the CEP are inducted into the requirements by the Project Engineer to ensure they understand their responsibility to comply with requirements and to implement any required controls. All CEPs require review and approval by the Environmental Team prior to work commencing on the Project.
Job Safety and Environmental Analysis (JSEA) / Safe Work Method Statement (SWMS)	JSEAs are a tool used to determine safety and environmental risk associated with tasks prior to commencing a component of work. Each task is reduced to individual steps and the potential hazard associated with each step identified. Risk mitigation steps are attributed to each hazard, thus providing a detailed plan for installation of control measures. The main strength of JSEAs prepared on the job is their ability to focus on unique risks at a particular point in time e.g. current conditions, resources, experience of workers and impact with other jobs or people. JSEAs prepared on the job are best carried out close in time and location to the execution of the associated works. It is acceptable to use a pre-existing generic JSEA as a basis to commence the process, but it is essential that current circumstances such as site conditions, level of experience of the crew, prevailing weather conditions, etc are incorporated into the job specific JSEA. A Summary of all hazard identification processes is to be maintained on JSEA /SWMS Register.

6.3 Environmental Policy

MBJV will be utilising McConnell Dowell's Environmental Policy, endorsed by the McConnell Dowell Group CEO and BMD Operations Manager. This document directs the level of commitment to positive and proactive environmental performance for all activities.

The Environmental Policy (refer to Figure 6-2) makes the following key commitments:

- Visible and demonstrated environmental leadership
- Promoting innovative thinking and practices to achieve positive environmental outcomes
- Compliance with applicable environmental obligations
- Monitoring environmental performance and seeking continual improvement
- Prevention of pollution and minimising environmental impacts.

In addition, MBJV will communicate the suite of ten environmental management rules set to enforce positive messages about what is expected as a minimum standard onsite to minimise our impact on the natural environment and local community (refer to Figure 6-3).

ENVIRONMENTAL POLICY

McCONNELL DOWELL
CREATIVE CONSTRUCTION™

McConnell Dowell undertakes a reflective, resourceful, inclusive and flexible approach to environmental management, underpinned by a robust ISO 14001 certified integrated management system. McConnell Dowell acts today with the future in mind and commits to:

- Having visible and demonstrated environmental leadership throughout the business to equip, inspire, empower and lead our people to win and deliver environmentally sound projects.
- Complying with applicable environmental legislation, regulations, codes of practice, customer and project specific requirements.
- Establishing measurable objectives and targets to quantify our environmental performance, committing to and demonstrating continual improvement.
- Ensuring strong and positive leadership engagement with tender and project delivery teams at all levels to understand and resolve the environmental challenges they face.
- Monitoring our environmental performance and identifying initiatives that lead to improved environmental outcomes.
- Developing and implementing methods to protect the environment, prevent pollution and eliminate or minimise significant environmental impacts.
- Ensuring the efficient use of resources including energy, water and materials, and providing responsible waste management.
- Promoting innovative thinking and practices to achieve positive environmental outcomes.
- Understanding our customers, business partners and subcontractors' environmental capabilities and priorities and working together to develop common strategies to achieve shared goals.
- Identifying and communicating non-conformities, lessons learnt and corrective actions arising from environmental incidents to enhance environmental performance.
- Provision of the necessary resources and management support to achieve environmental goals.
- Equipping all employees with the knowledge, skills and resources to achieve our environmental goals. Engaging with employees, subcontractors, customers, and other key stakeholders on environmental issues.

Scott Cummins
Chief Executive Officer
McConnell Dowell Corporation Limited

HSEQ-ENV-POL001-GEN-GRP
REV2 29SEP2021

Figure 6-2 Environmental Policy

Figure 6-3 Environmental Green Rules

6.4 Sustainability Policy

MBJV will be utilising McConnell Dowell's Sustainability Policy, also endorsed by the McConnell Dowell Group CEO. The policy outlines the Group's commitment to sustainability.

The Sustainability Policy (refer to Figure 6-4) makes the following key commitments:

- Business sustainability leadership through professionalism, competence, and industry participation
- Client and community protection through an uncompromising commitment to safety, quality, and the environment
- Team growth through sharing and collaboration and business growth through partnerships, market knowledge, innovation, and adaptability
- Client and community sustainability through long term relationships and acting today with the future in mind
- Actively encouraging continual improvement and promoting innovation, adaptability, and resilience
- Appropriate use of materials, including water and energy, and the resulting generation of waste and carbon emissions in all our activities

- Understanding and reducing use of carbon, energy, materials, and water footprints
- Promotion of sustainable construction practice, including the prevention and mitigation of environmental pollution, climate change adaptation, the efficient and sustainable use of resources and the principles of inclusion, engagement, equality, and diversity.

6.5 Roles and Responsibilities

Protection of the environment is the responsibility of all individuals and organisations involved with the FGP.

All personnel will be made aware of environmental issues associated with the FGP and their responsibilities through training and awareness methods detailed in Section 6.6.

Table 6-3 provides an overview of the minimum environmental roles and responsibilities relating to delivery of the construction phase of the FGP.

SUSTAINABILITY POLICY

McCONNELL DOWELL
CREATIVE CONSTRUCTION

McConnell Dowell undertakes its activities integrating social, environmental, economic and good corporate governance considerations. We do this with the objective of avoiding and mitigating harm to the environment, contributing to and enhancing the resilience of the communities in which we operate, and creating shared value for our customers and our people. We commit to:

- Industry leadership through our professionalism, competence and active industry participation.
- Industry leading approaches to shared value generation through the delivery of safe, smart and efficient infrastructure.
- Accountability and management responsibility through delivering on what we promise and understanding and meeting our customers' needs and community expectations.
- Promotion of sustainable construction practices, including the prevention and mitigation of environmental pollution, climate change adaptation, the efficient and sustainable use of resources, and the principles of inclusion, engagement, equality and diversity.
- Generating growth in our business and the industry by fostering long-term, strong and positive partnerships with customers, communities, regulators, industry bodies and other key stakeholders.
- Addressing the risk of modern slavery across the business and implementation of our Modern Slavery Statement.
- Taking all reasonable steps to prevent modern slavery in our operations and supply chains.
- Ensuring our procurement choices and selection of suppliers and subcontractors is achieved in a balanced and holistic manner which includes sustainability.
- Actively encouraging continual improvement and promoting innovation, adaptability and resilience.
- We actively encourage the implementation of initiatives that leave a positive legacy for our stakeholders, the environment and communities in which we operate.
- Consideration of the appropriate use of materials, including water and energy, and the resulting generation of waste and carbon emissions in all our activities. Understanding and reducing our carbon, energy, materials and water footprints.
- Creating opportunities and involving, engaging and integrating with the communities in which we work.
- Nurturing the health, wellbeing and quality of life of those we work with and alongside. Everyone goes home without harm, every day.
- Protecting our business, our partners and customers through good corporate governance, compliance and sound risk management.

Scott Cummins
Chief Executive Officer
McConnell Dowell Corporation Limited

HSEQ-ENV-POL002-GEN-GRP
REV3 03 JUNE 2021

Figure 6-4 Sustainability Policy

Table 6-3 Roles and Responsibilities

Role	Responsibilities
GAWB Project Team	Manage compliance with the CEMP. Oversee compliance with conditions associated with approvals, permits or licences during the construction. Review of the relevance of the CEMP (and other management plan) and its effectiveness in helping meet the FGP environmental responsibilities. Minimise the potential environmental impacts associated with the FGP. Manage tender documents and contracts for construction and operation/maintenance and incorporating the requirements for complying with this CEMP and other management plans. Ensure that the CEMP and associated sub-plans are developed and implemented by MBJV, in accordance with this CEMP and any approvals, permits or licences. Ensure all relevant management plans and surveys are prepared, implemented and undertaken by MBJV. Oversee the implementation of all management plans. Work with MBJV to obtain necessary approvals under relevant legislation, not including any approvals for construction activities which are MBJV's responsibility. Ensure MBJV has obtained all necessary approvals under relevant legislation. Ensure the design meets relevant environmental legislation and approval conditions. Communicate with regulatory authorities as required. Allocate resources and personnel to oversee and monitor compliance with the CEMP and/or other management plans.
Project Director	Promote at all times the company's policies, procedures and standards relating to environmental management and ensure that they are complied with. Ensure sufficient resources are available to achieve the policy, objectives, and targets and that those resources have sufficient skills to conduct the roles competently. Report performance on a regular basis to internal and external stakeholders. Report significant incidents internally and externally as required by law and Contract Conditions.
Project Manager	Overall environmental performance of the FGP. Ensure the FGP achieves legislative compliance. Provide leadership in the development of the CEMP and authorise its use. Nominate key personnel, assigning environmental responsibilities and allocating sufficient resources to achieve implementation of this plan. Ensure all personnel are familiar with and implement all relevant environmental controls as required. Monitor environmental performance to ensure compliance and continued improvement. Participate in the review of the EMS and this CEMP. Encourage all personnel to maintain acceptable environmental management work practices and foster awareness of environmental matters. Encourage the reporting of incidents, events and other concerns and ensure appropriate feedback on proposed corrective actions.
Construction Manager	Overall environmental performance of project area/s assigned to them. Ensure the project area/s achieve legislative compliance. Nominate key personnel, assigning environmental responsibilities and allocating sufficient resources to achieve implementation of this plan in their area/s of responsibility. Ensure all personnel are familiar with and implement all relevant environmental controls as required. Monitor environmental performance to ensure compliance and continued improvement.

Role	Responsibilities
Environmental Representative/ Environmental Manager	Functional and technical leader for the FGP's environmental obligations. Principal contact for internal and external communication in relation to environmental matters. Oversee all environmental management aspects of the FGP. Authority to stop a particular task or activity in circumstances where environmental controls or mitigation measures have not been implemented, have been implemented incorrectly/inadequately, are ineffective or where activities may otherwise be considered to lead to environmental harm. In such circumstances, prescribe corrective action that will be implemented before work recommences. Develop, review, and ensure this CEMP and sub plans are correctly implemented. Ensure measures are put in place to manage and mitigate environmental risks and issues as identified. Ensure that environmental plans, procedures, and work instructions as applicable are prepared, reviewed, and approved prior to commencement of work. Ensure all significant environmental issues are reflected in the significant environmental aspects identified for the Project. Investigates and reports significant environmental incidents or complaints internally and externally as required by law and the Project Conditions. Ensure that all key environmental aspects and associated impacts are incorporated into the CEMP, and that suitable control measures are proposed to minimise the Project's environmental impact. Ensure that all relevant environmental permits are obtained for the FGP. Ensure all personnel and contractors engaged to work on the FGP are appropriately inducted and trained in environmental issues and controls relevant to the FGP. Ensure monitoring programs, which assess the performance of the CEMP and specific plans, are implemented. Report internally and externally in accordance with Project and other requirements. Investigate and report incidents and non-conformance and ensure corrective and preventive action is taken and is effective. Provide leadership sufficient to inspire and influence others to achieve the FGP objectives and targets. Manage, track compliance with all environmental approvals, licences, permits and other obligations. Lead the tracking of environmental and sustainability targets for the FGP. Ensure appropriate environmental training is identified in a Training Needs Analysis and that training is provided to all personnel where required. Review and update this plan, as required. Prepare environmental data for monthly reports.
Environmental Advisor	Support the Environmental Representative/Environmental Manager to ensure that all key environmental aspects and associated impacts are incorporated into the CEMP, and that suitable control measures are proposed to minimise the FGP's environmental impact. Support the Environmental Representative/Environmental Manager that all relevant environmental permits are obtained for the FGP. Ensure all personnel and contractors engaged to work on the FGP are appropriately inducted and trained in environmental issues and controls relevant to the FGP. Ensure monitoring programs which assess the performance of the CEMP and sub plans, and any associated documents are implemented. Report any environmental incidents to the Environmental Representative/Environmental Manager/HSE Manager. Investigate and report incidents and non-conformance and ensure corrective and preventive action is taken and is effective.
Sustainability Manager/Advisor	Drive compliance with the GAWB's sustainability requirements. Ensure monitoring programs which assess the performance of the Sustainability Management Plan, and any associated documents are implemented.

Role	Responsibilities
Engineering/Design Manager	Provide effective environmental leadership. Ensure designs are undertaken in accordance with the requirements of the scope of works, technical requirements, relevant standards, and this CEMP. Ensure design has minimal environmental impact. Ensure processes and resources are in place to adhere to environmental and sustainability obligations where they affect design or are affected by design. Participate in incident and non-conformance report investigations and ensure that corrective and preventative action proposed is implemented effectively.
Supervisor/Superintendent/Foreperson	Ensure that requirements of this CEMP are communicated to all personnel under his/her control. Be aware of all environmental risks, issues and concerns relating to his/her area of work. Be aware of all approval and contractual conditions relating to his/her area of work. Perform surveillance and monitoring of environmental controls to ensure they are adequately established, effective and maintained.
All personnel	Familiarise themselves with their responsibilities within this CEMP and EMS. Attend all site inductions and Pre-Start Talk and Site Attendance Record. Participate in site inspections, audits, environmental meetings, Toolbox Talks, environmental forums etc. where requested/required. Comply with all site environmental rules. Use or implement all controls established for eliminating or controlling environmental risks including those found in environmental documentation e.g., WMS, plans, work instructions, procedures etc. Stop work if the environment is placed at risk and discuss strategies to rectify environmental concern(s) immediately with the site foreman. If it is not resolved satisfactorily, the project manager is to be contacted. Report all hazards, incidents, near misses immediately to the site foreman as soon as it is safe to do so and prior to leaving the site. All personnel are responsible for complying with their GED and Duty to Notify in accordance with the EP Act. Actively participate in reviews of the JSEAs SWMSs etc., and in risk assessments for task(s) where the environment is to be directly affected. Site personnel, through the induction process, are empowered to refuse to complete a task that puts the environment at risk. When the circumstances of a work activity change, all relevant personnel will be informed. Should the change result in necessary changes to the EMS, CEMP, JSEA, SWMS or any other environmental documentation, then these documents must be revised and approved by the construction manager and environmental representative and communicated at the following Toolbox Talk to the necessary employee. All personnel are empowered to identify, implement, and advise of any concerns relating to any activity onsite and EMS, CEMP, JSEA, SWMS or any other environmental documentation. Comply with all environmental responsibilities assigned in relevant legislation, approvals, permits procedures, EMS, plans, job descriptions or any other environmental documentation. Raise any environmental issues or concerns immediately or during meetings with environmental representative or project manager. Uphold an active interest in workplace environmental management.

6.6 Training

6.6.1 *Environmental Awareness Training*

All Project staff, contractors and visitors who come onsite should be made aware of and commit to, via induction, the requirements of the CEMP to allow them to complete their task in an environmentally safe

manner. This should include all elements, sensitive areas and any relevant licencing or permit requirements for specific activities.

All personnel will receive training of a type and level of detail that is appropriate for the environmental aspects of their routine and emergency work assignments. As a minimum, all personnel are required to satisfactorily complete the Project Induction Training. Other mechanisms of raising environmental awareness are through toolbox talks, pre-start meetings, Health, Safety, Environment and Quality (HSEQ) alerts and more specialised training. Attendance records and assessments of all training and briefing sessions will be maintained.

Other training needs are assessed on a job-by-job, and position-by-position basis, as outlined in the HSEQ Training Matrix.

Table 6-4 Environmental Awareness Training Methods

Training Method	Description
Project Induction	The induction includes a presentation of the requirements of this plan and associated documents. All personnel are to attend the Project induction prior to starting work onsite. The purpose of the induction is to ensure that, at a minimum, the employee or sub-contractor understands: • Key issues relevant to the Project and existing environment • Environmental Policy and the environmental management framework • Concepts of environmental protection, due diligence, and duty of care • Environmental management and controls (working at and near waterways, vegetation clearing, stockpiling, etc. • Cultural heritage protocols • Environmental permits, approvals, licences, and relevant conditions • Roles and responsibilities relating to environmental management for the Project and consequences of non-compliance • Emergency response for dealing with an environmental emergency.
Pre-Start Meetings	Pre-Start meetings will be undertaken at the beginning of each day/shift before work commences with all personnel present (including sub-contractors as required). Specific environmental issues relevant to the shift's work will be raised and discussed at these meetings.
Toolbox Talks	Toolbox Talks will be undertaken once a week to discuss large site wide issues, upcoming works and give updates on any recent incidents and their outcomes. Issue-specific environmental awareness training will be provided to the workforce (including sub-contractors) via Toolbox Talks, to provide site personnel with ongoing environmental training and information throughout the works. Examples of training includes land/marine based spill response training or correct erection of a silt fence/silt curtains.
Specialised Training	Training for specific staff based on position and responsibilities. For example, noise and vibration monitoring, spill prevention and control, erosion, and sediment control.
HSEQ Alerts	HSEQ alerts are descriptions of serious HSEQ incidents and lessons learnt from other MCD Group and BMD Constructions projects and facilities and relevant industry incident. They are sent out to all MBJV Group management and HSEQ staff and are presented and discussed at Pre-Start Meetings and Toolbox Talks and posted on notice boards.

6.6.2 *Competency and Training*

The environmental competency and experience requirements for all staff positions are contained in the relevant Position Descriptions. Recruitment and procurement processes are conducted with the aim of engaging personnel with the required appropriate competency and experience.

Evidence of appropriate competency and training will be recorded.

6.7 Communication

6.7.1 *Internal Communication*

Environmental communication will primarily be through the Project Induction, Pre-Start Meetings and Toolbox Talks. However, communications can also occur during site inspections or through members of the environmental or management teams.

When the circumstances of a work activity change, all relevant personnel will be informed. Should the change result in necessary changes to the EMS, JSEAs CEMP, SWMSs or any other environmental documentation, then these documents will be revised and approved by the construction manager and environmental representative and communicated at the following Toolbox Talk to all personnel.

Within the construction team, procedures will be implemented to ensure management techniques are being adhered to, that personnel have the opportunity to raise concerns and address outcomes of incident reviews and changes to protocols are communicated.

6.7.2 *External Communication and Consultation*

The Project Manager is responsible for coordinating communications with all external parties. GAWB and MBJV will endeavour to effectively manage consultation and liaison with the community as an important element of the FGP. MBJV acknowledge that the nature of the FGP and direct interface with the public will require the implementation of protocols and procedures to ensure minimal impacts on the community and the GAWB's public reputation, while ensuring the public are kept well informed of the project and its progress.

Refer to Section 9.2 procedures for complaint management.

6.7.3 *Community*

The Communication Plan will be implemented for the FGP's interaction with the community and other stakeholders. The plan has a procedure and register for complaints received from the impact of construction activities. For elements within this plan there are certain reporting requirements that should be outlined for which type of complaint they apply.

The Communications Plan will also be implemented for informing landholders and other stakeholders of FGP construction information planning, contact details and processes for queries or complaints.

6.7.4 *Regulators*

Communication with regulators as part of the environmental management of the FGP will be a very high priority. Correspondence with the regulators will be transparent, upfront and carried out by the appropriate people responsible for the subject. All formal correspondence with regulators will be directed through or approved by the GAWB.

6.8 Record Management

All records and documentation will be kept for a minimum of five years and made available for regulatory agencies as requested.

TeamBinder, a construction project management document management system developed by InEight will be implemented for the FGP.

7. ENVIRONMENTAL ELEMENTS

Environmental control plans, SAPs and an SMP have been developed and will be implemented, as described throughout this CEMP with provisions for:

- Stating location-specific mitigation strategies
- Detailing the ROW and where restrictions in width and timing occur
- That no unnecessary clearing will be undertaken
- Minimising clearing along the ROW especially in sensitive habitat areas, wetlands and waterways
- Minimising impacts to waterways and riparian vegetation
- Detailing rehabilitation and revegetation in sensitive areas that will experience clearing
- Detailing ecologically sensitive weed management that will be undertaken.

The identified environmental elements for the CEMP described within this section are as follows:

- Project Environmental Management
- Climate Impacts
- Land Use and Infrastructure
- Erosion and Sediment Control
- Contaminated Land
- Acid Sulfate Soils
- Flora Management
- Fauna Management
- Bushfire Management
- Biosecurity (Fauna and Biosecurity Zones)
- Biosecurity (Flora)
- Water Resources and Water Quality
- Air Environment
- Waste Management
- Hydrotesting and Commissioning
- Noise and Vibration
- Transport and Access
- Cultural Heritage
- Social and Economic
- Handling and Storage of Dangerous and Hazardous Goods
- Rehabilitation and Revegetation
- Landscape and Visual Amenity.

7.1 Project Environmental Management

Table 7-1 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for Project environmental management.

Table 7-1 Project Environmental Management Control Plan

Element	Project Environmental Management
Performance Objectives	– To minimise the impacts of the FGP on the environment and ensure that all relevant requirements identified in the EIS and approvals as they are obtained are accounted for in the environmental management documentation.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1)
	• Development requirements or guidelines:
	  • ISO 14001:2015 - Environmental management systems
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • EPBC Act approval
	  • MCU development permits
	  • OPW development permits.

Performance Criteria	– All the requirements outlined in this CEMP and supporting documents are implemented. – Consultative relationship is established with landowners and other stakeholders to allow timely notifications of planned construction activities. – All personnel are inducted onto the FGP, including Cultural inductions. – All complaints are responded to in a timely manner and in accordance with GAWB's procedure. – Achieve an Excellent Rating in accordance with Infrastructure Sustainability Council (ISC) manual version 1.2.
Implementation	**Design** – Environmental issues will be addressed during the detailed design. – Collaboration between MBJV and environment and land team during detailed design will occur to incorporate recommendations from the EIS, approvals and stakeholders. – Detailed design will consider conditions of approvals. – Commitments outlined in the CG's Evaluation Report, Appendix 4 will be implemented. – Issued for Construction drawings will be provided to the relevant authority as required by conditions of approvals. **Construction** – Within 20 business days after the commencement of the action, the person taking the action must advise DCCEEW in writing the actual date of commencement. – All other notifications will be in accordance with conditions of approvals. – All personnel will receive an induction on the requirements of the CEMP and be committed to its implementation. – The Environmental Representative / Manager and Environmental Advisor will be responsible to implement the requirements of the CEMP including checks and audits. – All personnel will always be mindful of the provisions of the CEMP to identify and notify non-conformances. – The Environmental Representative / Manager and Environmental Advisor will undertake environmental site checks for all work areas during construction of the FGP. – Environmental audits will be undertaken by an external party every 6 months in accordance with CG's Evaluation Report Condition 1. – Checklists will be developed for all environmental elements identified in this CEMP. – Communications plan will be implemented for informing landholders and other stakeholders of Project planning, contact details and processes for queries or complaints.

	– A Constraints Protocol has been approved by DCCEEW and will be implemented for "excluded early works" (this will not be required following the approval of this CEMP by the CG) defined as: • works to construct graded unsealed formed site access tracks, and associated drainage • works on existing roads and access tracks, and associated drainage • the establishment of temporary site facilities, including laydown areas, accommodation camps, site offices and amenities. – SAPs will be implemented, as described and where required throughout this CEMP with the following provisions: • Stating location-specific mitigation strategies • Outlining site-specific construction (refer to Section 4.3.3) timing constraints, i.e. May to September in wetland protection areas and Yellow chat area (between Port Alma Railway and Raglan Creek, approximate FGP chainage 54000 to 73000), and one week for trenched crossing (pipe installation and ground stabilisation) in waterways associated with the Yellow chat area. • Outlining site-specific ROW constraints i.e. 15 m clearing width for trenched waterways associated with the Yellow chat and Brigalow vegetation habitats. • That no unnecessary clearing will be undertaken • That, as far as reasonably practicable, construction activities will be limited to existing clearings • That established sensitive flora species will not be cleared, wherever reasonably practicable • That wherever reasonably practicable, trees with hollows will not be cleared, or new constructed hollows installed • That wherever reasonably practicable, damage to the edges of remnant communities will be minimised and erosion controls implemented • Detailing a rehabilitation plan for each sensitive area impacted during construction • Detailing a revegetation plan for each sensitive area that will experience clearing • Detailing ecologically sensitive weed management that will be undertaken.
Monitoring	– Monitoring of environmental outcomes and performance criteria will be undertaken during construction of the FGP as part the EMS and general environmental management. – Environmental site inspections undertaken by the Environmental Representative/Manager, Environmental Advisor during construction and check that environmental management is in place as outlined in the CEMP. – Environmental audits will be undertaken by GAWB during construction monthly (or as determined). – Formal audits will be undertaken by an independent and appropriately qualified person on a six-monthly basis.
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to external upon request, including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Formal audit reports will be provided to the CG within 30 business days of the end of the monitoring period.
Corrective Action	– Should any audits/checks undertaken during construction of the FGP identify non-conformances with the CEMP, MBJV will notify GAWB. Corrective actions will be implemented to address the non-conformance. A non-conformance report will be completed by the MBJV and filed by both GAWB and MBJV.

7.2 Climate Impacts and Sustainability

The potential impacts of local climate and seasonal changes during the construction of the FGP include:

- Dry conditions are likely to increase the amount of dust generated from construction activities
- Increased wind speeds during a storm are likely to increase the impact of dust-generating activities
- Erosion is likely to increase following a severe storm or flood event
- Wet weather can hamper construction activities and vehicle access to Project areas
- Droughts can impact construction activities due to the lack of construction water
- High temperatures and humidity can potentially affect construction workers, resulting in sunburn and/or sunstroke
- A cyclonic event or severe storm has the potential to cause flooding of construction areas and halt works for periods of time.

Table 7-2 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for climate impacts.

Table 7-2 Climate Impacts Control Plan

Element	Climate Impacts
Performance Objectives	– To minimise the risks to the environment, property and personnel arising from local climatic conditions and extreme climatic events.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1)
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • EPBC Act approval
	  • MCU development permits
	  • OPW development permits.

Performance Criteria	– Planning and monitoring is undertaken during the construction phase to prepare for weather changes and climatic events. – No injuries to personnel or impacts to assets as a result of extreme climatic events. – Achieve an Excellent Rating in accordance with ISC manual version 1.2.
Implementation	**Pre-construction** – Taking into account seasonal conditions when scheduling work. – Preparing and implementing an Emergency Management Plan for the FGP during construction. **Construction** – Construction at sensitive sites such as wetlands and waterways will be conducted during the dry season (May to September) where reasonably practicable refer to the relevant SAP. – Short- and long-term weather forecasts will be checked on a regular basis to enable planning measures as outlined below: • Increased dampening of surfaces to reduce dust during windy conditions where practicable • Where wind speeds are excessive (approximately 10 m/s) and work is undertaken within 100 m of sensitive receptors, dust mitigation measures will be put in place to prevent dust nuisance • Sediment control measures will be checked before and after rainfall events • Works will cease during electrical storms or extreme climatic events where continuation of work impacts negatively on surrounding environment or community • Personnel will be advised of health and safety procedures in the event of a heatwave during staff induction and work hours modified where reasonably practicable to avoid the hottest time of day • Construction in flood prone areas will cease as soon as reasonably practicable prior to a predicted flood event and any machinery or stored fuels are removed from the area where reasonably practicable.

	– Develop and implement an Infrastructure Sustainability Management Plan by a suitably qualified person.
Monitoring	– Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include regular checks of weather forecasts. – Environmental checklists will include description of weather conditions at the time of inspection. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB and external auditors upon request, including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP. – Internal and external environmental audit results.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures. Corrective action will be implemented to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action to address the non-conformance. A non-conformance report will also be filed by GAWB. – All employees will be retrained in procedures where the procedures are modified or new ones adapted. – Employees that knowingly undertake an action that does not conform to the FGP's procedures or CEMP will be retrained. – Practices, procedures and management plans will be reviewed and updated where necessary.

7.3 Land Use and Infrastructure

Land tenure will be appropriately sought and actioned by GAWB unless otherwise identified.

The FGP impacts numerous different land uses and existing infrastructure.

Table 7-3 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for land use and infrastructure.

Table 7-3 Land Use and Infrastructure Control Plan

Element	Land Use and Infrastructure
Performance Objectives	– To minimise potential impacts on land use activities and local/regional infrastructure as a result of the FGP.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1)
	  • *Land Act 1994*
	  • *Plumbing and Drainage Act 2018*
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • Easements and other land use agreements as appropriate and defined by GAWB
	  • Land use agreements and licences
	  • Easement conditions
	  • Infrastructure crossing deeds and wayleaves

Performance Criteria	– Minimal disruption to land uses – Minimal disruption to local/regional infrastructure – Consultative relationship established with landowners and other stakeholders. – Cooperative working relationship with other uses in the multi-use corridors (i.e. SGIC SDA and GSDA). – Comply with the requirements of the land use, access and crossing agreements.
Implementation	**Design** – Infrastructure owners/authorities for road, rail, transmission lines, pipelines and other third-party infrastructure will be consulted by GAWB and MBJV prior to construction to determine requirements for crossing methods for infrastructure, safety protocols and obtain all relevant licenses and permits. – For any features (e.g. dams) identified within the ROW, consultation will take place with the landholders to minimise or avoid impacts. – GAWB and MBJV will identify an appropriate method of construction to minimise disruption to land use and infrastructure (e.g. trenchless crossing of major road, rail and waterways). **Pre-Construction** – GAWB and MBJV will prepare, implement and maintain a suitable Communication Plan. – MBJV will identify via Before You Dig Australia (BYDA) and positive identification via potholing where required, the location of third-party infrastructure (e.g. on drawings, during pegging and site set-out, etc) and specify buffer/separation distances where applicable. – MBJV will develop plans to ensure timely notification of planned activities during construction. **Construction** – The location of existing fences and gates impacted by construction will be determined by the GAWB and MBJV and included on construction drawings and/or during pegging and site set-out. – Temporary gates will be installed by the MBJV as approved by GAWB where required and in consultation with landowners, marrying locks where appropriate. – GAWB and MBJV will maintain a stakeholder list (as per the Communication Plan) to include: • Property specific information such as access protocols for each property on the alignment • Contact details of landowners and other stakeholders and community groups in the Project area.

	– MBJV will regularly consult and communicate with landowners and relevant stakeholders, as approved by GAWB. – GAWB and MBJV will have regular consultation scheduled to inform landholders of FGP progress and also allow the identification any issues the landholders may have in relation to the FGP. – GAWB and MBJV will log queries and complaints and respond to them in a timely manner with due respect and consideration to all parties. – All existing property gates will be left as found or otherwise instructed by the landholder. – MBJV will ensure the minimum cover over the pipeline will be in accordance with negotiated easement agreements and licences and is intended to permit existing land uses to be resumed following construction as far as is reasonably practicable. – Construction activities will be undertaken to mitigate or avoid impacts to land where reasonably practicable. – Construction of the intake will be undertaken with consideration of Sunwater's existing operations to prevent impacts to the functioning of their intake and pumps as far as reasonably practicable (i.e. in accordance with any agreement reached with Sunwater). – Consultation will occur with relevant community groups in the Project area, as per the Communication Plan. **Rehabilitation** – Rehabilitation of the construction footprint will occur in accordance with the Rehabilitation and Revegetation Plan (refer to Section 7.21) as soon as reasonably practicable after construction to enable existing use of the land to resume as much as possible. – Backfilled soils will be compacted to a level that return the levels to its original contours and surrounding soils with the aim of preventing trench subsidence. During final re-profiling of the soil, mounding may be required to compensate for potential subsidence.
Monitoring	– Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and compliance with land tenure agreements. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records to be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures. Corrective action (with approval from GAWB) will be implemented to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.

7.4 Erosion and Sediment Control

Potential impacts arising from erosion and dispersive soil disturbance are expected from construction activities including:

- Clearing (where earth is exposed as a result of clearing)
- Excavation and other earthworks.

As the soils are generally considered highly dispersive, rain events or other contact with water is likely to result in the break-down of soils into clays, sand silt and clay, creating sediment and nutrient laden runoff into local waterways.

Erosion and sediment control management strategy will focus on prevention of runoff contamination rather than treatment and will include:

- Staged clearing of site areas to ensure the minimum amount of site is exposed at any one time.
- Early installation of erosion and sediment controls in each zone as works progress to ensure controls are in place before significant disturbance to areas occur.
- Early installation of site cross drainage to allow the controlled flow of clean water from upstream catchments through the site at the earliest possible stage.
- Diversion of clean water from upslope of the site through the installation of the final turf lined catch drains located at the top of batters.
- Progressive rehabilitation of the pipeline ROW and cut and fill batters as works progress in each zone.
- Use of temporary ground cover covers such as binding sprays and site mulch for coverage of temporary stockpiles and high risk areas.

Table 7-4 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing erosion and sediment.

Table 7-4 Controls and Mitigations for Erosion and Sediment Control

Element	Erosion and Sediment Control
Performance Objectives	– To implement and maintain erosion and sediment control measures where necessary throughout construction. – To minimise erosion or sedimentation as a result of the construction works is minimised – To minimise areas of exposed soils during construction and to revegetate as soon as possible.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • Environmental Protection (Water and Wetland Biodiversity) Policy 2019 • Environmental Protection (Water) Policy 2009: Fitzroy River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Fitzroy River Sub-basin (DES, 2011) • Environmental Protection (Water) Policy 2009: Curtis Island, Calliope River and Boyne River Basins Environmental Values and Water Quality Objectives (DES, 2014) • *Fisheries Act 1994* • EP Act • Development requirements or guidelines: • Riverine protection permit exemption requirements WSS/2013/726 Version 2.02 (DRDMW, 2023) • Accepted development requirements for operational work that is constructing or maintaining waterway barrier works (DAF, 2018) • Best Practice Erosion and Sediment Control (IECA, 2008). • Permits, approvals and licence conditions: • CG's Evaluation Report

	• MCU development permits • OPW development permits.
Criteria	– Erosion and Sediment Control Plans (ESCPs), and its implementation in line with the International Erosion and Sediment Association, Best Practice Erosion and Sediment Control, 2008. – RPEQ certified ESCPs, where required – No erosion or sediment build up off-site of the Project areas. – No erosion or sedimentation of waterways.
Mitigation Measures	**Pre-construction** – Prior to commencing construction, a site-specific soil survey will be undertaken to inform Site-specific ESCPs in accordance with the *International Erosion and Sediment Association, Best Practice Erosion and Sediment Control, 2008*. – ESCPs will be developed prior to the commencement of construction by MBJV, certified by independent third party and approved by GAWB. **Construction** – Surface disturbances will be kept to the minimum necessary to undertake the works. – The area and duration of exposed soil will be kept to the minimum during construction work. – The construction area and access routes will be clearly delineated to prevent disturbance to areas outside the construction footprint. – All personnel will be made aware that the majority of the ROW has dispersive soils prone to erosion. – Earthworks will be completed, and protection placed over exposed soils as soon as, and where reasonably practicable. – Temporary drains or bunds will be constructed where necessary to direct run-off and any overland flow from upslope of excavations, away from the construction footprint. – ESCPs will be implemented and maintained including sediment barriers, sediment basins, sediment fences etc. – Sediment control devices will be checked regularly and emptied as soon as reasonably practicable after rainfall events. – All necessary sediment and erosion control devices will in place prior to the commencement of works at a site. – During grading and trenching in the ROW, topsoil and subsoil will be stockpiled separately and topsoil later reused for restoration of the ROW. Topsoil stripping, typically 100 mm, will occur. – Accumulated sediment from erosion and sediment controls will be cleaned out when it reaches a depth of 300 mm or one-half the height of the control, whichever is the lesser. – Any dewatering discharges will be released to areas that have suitable sediment and erosion controls to ensure there are no impacts from erosion and sedimentation into waterways. – Sediment will be placed in a disposal area or, if appropriate, mixed with dry soil onsite. – Sediment will be deposed of in a manner that will not create an erosion hazard. – New sediment fences will not be established on top of accumulated sediment. – Soil stockpile heights will be appropriate to prevent excessive wind blow dust and will not be in close proximity to watercourses. – Erosion and sediment control measures, such as silt fences, will be installed between stockpiles and waterways. – Sediment and dust loss from stockpiles will be minimised by stormwater flow diversions around stockpiles, stabilisation or covering of the stockpile surface, and downstream sediment containment devices where run-off is expected. Sediment fencing will be installed around all stockpiles. – Topsoil and subsoil piles excavated from or adjacent to wetlands and waterways will be placed at least 10m from the top of bank on either side of each waterway with appropriate sediment controls installed during wetland and waterway works until reinstatement. – Perimeter diversion drains or bunds will be placed around any long-term stockpiles (i.e. reserved topsoil for revegetation). – Long-term stockpiles will be suitably stabilised with appropriate erosion preventative measures (e.g. covers). – Soils rated as having 'moderate' or worse erosion potential will require specific management during construction of the pipeline and will not be left exposed for any significant period of time without stabilisation.

	– Where necessary, a light application of agricultural lime will be applied to the surface of topsoils re-used following embedment of the pipeline to limit dispersion potential until grass cover can be reinstated. However, should potentially dispersive soils be retained for re-use onsite, treatment with the addition of lime or gypsum at a rate of 2.5 kg/m³ is common. Topsoil of local origin used near waterways will be treated promptly if to be left exposed. – Disturbed area will be promptly revegetation or covering/sealing of the backfilled trench, avoiding leaving excavations opened over weekend/ extended breaks where practicable. – Temporary drains or bunds will be constructed where necessary to direct run-off and any overland flow from upslope of excavations, away from the construction footprint. – During the wet season the pipeline trench will be constructed in manageable lengths so that temporary stockpiling of spoil is minimised. – Backfill will be compacted where possible to reduce the risk of surface erosion and trench subsidence and revegetated areas should be watered to promote reinstatement of grass cover during 'dry spells' – Erosion and sediment control devices will be maintained at any sites where there is exposed soil (i.e. after construction is completed and before rehabilitation measures are established and deemed to be effective). **Rehabilitation** (refer to Section 7.21) – Any land disturbed due to the laying of the pipeline will be rehabilitated to its previous condition where practicable). – Backfill will be machine compacted to reduce the risk of surface erosion and trench subsidence post construction and rehabilitation. – Adequate cover will be placed on all disturbed areas prior to the removal of stormwater runoff controls. – Temporary stormwater and sediment control devices will be removed only once groundcover is established.
Inspection and Monitoring	– Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Monitoring weather conditions • Checking for areas of potential erosion • Inspection of erosion and sediment controls at implementation and performance, weekly, and before and after rain to verify their correct function as per the ESCPs • Monitoring Project area boundaries, waterways and sensitive areas for erosion and the deposition of sediment • Review and update of the ESCPs to ensure that the current version is suitable for the construction activities • Daily checks of weather forecasts. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Failures of the ESCPs should be reported as required. This is relevant for the design of the plan, implementation, or maintenance of controls. – Events outside of the designed capacity of the ESCP should also be reported if erosion and sedimentation has had an offsite impact.
Corrective Actions	– Review and update of the ESCP if the current control are not performing including: • Existing controls and identifying new or addition controls • Procedures to maintain the controls. – MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.

7.5 Contaminated Land

Disturbance to contaminated land has the potential to result in further land contamination or contamination of waterways with subsequent ecological or safety impacts. There are seven properties intersected by the FGP ROW that have been identified as potentially contaminated. There is the potential for unknown contaminated sites to exist on land associated with the FGP as a result of past land uses. There is also the potential for construction activities to contaminated land due to spills and uncontrolled releases.

Table 7-5 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing contaminated land.

Table 7-5 Contaminated Land Control Plan

Element	Contaminated Land
Performance Objectives	– To minimise the impacts caused from existing contaminated land and prevent land contamination occurring as a result of the FGP. – To protect life, health and well-being of human and fauna, aesthetic enjoyment, and local amenity.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1), specifically:
	  • *Environmental Protection Act 1994*
	  • *Environmental Protection Regulation 2019*
	• Development Requirements or guidelines
	  • Queensland auditor handbook for contaminated land Module 6: Content requirements for contaminated land investigation documents, certifications, and audit reports (DES, 2018)
	  • National Environmental Protection (Assessment of site Contamination) Measure 1999 (Amended in 2003)
	  • Heads of EPA Australia and New Zealand (HEPA) (2020) PFAS National Environmental Management Plan (NEMP), Version 2.0
	  • Department of Health 2017 – Health Based Guidance Values for PFAS for use in Site Investigations in Australia, Food Standards Australia New Zealand.
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • MCU development permits
	  • OPW development permits
	  • Soil Disposal Permits (if removing contaminated land from a property listed on the DES Environmental Management Register (EMR) or Contaminated Land Register (CLR), noting no properties were on the CLR).

Performance Criteria	– Contaminated land or sites in the Project area identified and managed or removed prior to construction in those areas. – No contaminated land created as a result of the FGP.
Implementation	**Pre-construction** – Prior to construction, MBJV will carry out contamination land site investigations for the ROW, with a focus on properties identified on the EMR (and other properties of concern) that are within the ROW: • Lot 101 on DS185 • Lot 1 on RP911260 • Lot 7 on SP145439 • Lot 8 on SP218634 • Lot 1 on SP144430 • Lot 91 on SP122250 • Lot 140 on SP122252 • Lot 3 on SP101558

	• Lot 1 on SP234061 • Lot 12 on SP190336 • Lot 167 on CP859402. – PFAS will be investigated on the ROW closest to the Rockhampton airport. – The investigations will include soil and water sampling of areas of environmental interest and confirm their contamination status. The investigation should consider sampling and analysis for all relevant contaminants of potential concern based on the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (Amended in 2003). – If an area within the ROW is suspected of being potentially contaminated, works in that area will not begin until a site investigation can be completed, and the contamination identified and managed. **Construction** – All personnel will be made aware of the signs of contaminated land: • Suspected buried waste material • Discoloured/odorous soil • Evidence of previous cattle or sheep dips. – Disturbance on the above-mentioned lots will be minimised where possible and managed in accordance with the contaminated land site investigation. – Soil Disposal Permits from DES will be obtained if contaminated material is to be removed from EMR properties along the ROW (or where contaminated is identified on other properties, or as the result of a spill during the construction phase, the material will be managed in accordance with the trackable waste provisions of the EP Regulation). This will include agreement from the spoil recipient for spoil acceptance. – MBJV will develop procedures in accordance with the contaminated land assessment for management of spoil from EMR sites or other potentially contaminated land so that: • Potentially contaminated soil is not transported to a different property without the appropriate Soil Disposal Permit / Waste Transport Certificate • Risk associated with leachate is identified and managed (e.g. contaminated stockpiles may be required to be bunded) • Management measures are to be adopted specific to the contaminant of concern following the site investigations. – If an area within the ROW is suspected of being potentially contaminated, works in that area will cease until a further site investigation can be completed, and the contamination identified and appropriately managed. – All hazardous materials to be handled and stored in accordance with Handling and Storage of Dangerous and Hazardous Goods control plan, refer to Section 7.20. – Any refuelling undertaken at site will be undertaken in a designated refuelling area, away from waterways, with nozzles with stop valves to reduce the risk of contamination to the environment, and personnel will be trained appropriately. – Spills will be managed in accordance with the Handling and Storage of Dangerous and Hazardous Goods control plan, refer to Section 7.20. – Appropriately stocked spill kits will be located in each construction area and along the ROW and personnel will be trained appropriately in the use.
Monitoring	– All personnel will maintain visual checks for signs of contamination. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Monitoring of EMR or other potentially contaminated properties will occur in accordance with the findings of the contaminated land assessment. • Checking for evidence of any spills or releases. • Inspections of hazardous materials storage areas to ensure storage is in accordance with the Handling and Storage of Dangerous and Hazardous Goods control plan, refer to Section 7.20 and that spill kits are readily available and well maintained, stocked and functional. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Completed environmental checklists/reports during the construction phase

	• Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results • Waste Transport Certificates / Soil Disposal Permits, where relevant. – Records of contaminated site locations and remediation to be maintained during construction by the GAWB and MBJV. – Records will be maintained of spill incidents and actions taken during construction by GAWB and MBJV.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor or operator and filed by both the GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – The source of contamination will be identified and corrective actions will be implemented such as remediating the area, modifying the controls, or modifying procedures that may be inadequate. – Any contaminated material will be collected, placed in secure containers and disposed of appropriately. – All personnel will be retrained in procedures where the procedures are modified or new ones adapted. – Practices, procedures and management plans will be annually reviewed and updated where necessary.

7.6 Acid Sulfate Soils

Acid sulfate soils (ASS) are likely to occur in areas of the Project where excavation to depth below 5 m Australian height datum (AHD) are required which is primarily within the SGIC SDA section. If ASS are excavated and exposed to air, i.e. oxidised, the potential environmental impacts may include:

- Reduction in water quality resulting in damage to estuarine environments and reduction of wetland biodiversity
- Acidification
- Heavy metal precipitation (e.g. aluminium, iron and manganese), which causes poor plant productivity and smothers plant vegetation and microhabitat
- Corrosion of infrastructure.

Table 7-6 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing ASS.

Table 7-6 Acid Sulfate Soils Control Plan

Element	Acid Sulfate Soils
Performance Objectives	– To minimise the potential for environmental impacts arising from the inappropriate handling or management of ASS. – To take all reasonable and practicable measures to prevent or minimise the effects of the Project on nearby contaminated land and associated groundwater.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1) • Development Requirements or guidelines • National Acid Sulfate Soils Guidance (Commonwealth of Australia, 2018): • National Acid sulfate soil sampling and identification methods manual (Commonwealth of Australia, 2018) • Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines (State of Queensland, 2014) • Permits, approvals and licence conditions: • CG's Evaluation Report • MCU development permits • OPW development permits.
Performance Criteria	– Management of ASS in accordance with State and National ASS guidance and the ASS Management Plan. – No environmental harm to occur due to exposure of ASS, acidic water or leachate. – No release of acidic waters or leachate from the construction works.
Implementation	**Pre-construction** – An ASS investigation will be undertaken, including: • Investigations within the SGIC SDA and the GSDA where land has been identified as high risk for ASS, where land elevation is below 5 m AHD, or where land is below 20 m AHD and excavation is required to depths that are less than 5 m AHD. • Investigations are to be undertaken in accordance with the Acid Sulfate Soil Sampling and Analysis Plan for the FGP (PSK, dated 10 May 2023) as approved by DoR on 16/05/2023. • The findings of the ASS investigations are to outline mitigation measures to be adopted and any required verification testing. • The risk of actual ASS to impact upon Project infrastructure is to be identified, mitigation identified and ASS Management Plan to be updated accordingly. **Construction** – A site-specific ASS Management Plan will be developed, as required, to address the requirements of the ASS Investigation and in consideration of adopted construction methodologies. The ASS

	Management Plan will meet the requirements outlined in Queensland Acid Sulfate Soil Technical Manual, Soil Management Guidelines (State of Queensland, 2014). – All personnel will be made aware of the signs of ASS. – Identified areas of ASS will be clearly shown on construction plans. – Maintain sufficient liming products (agricultural and hydrated) for onsite purposes. – At a minimum, mitigation measures in the ASS Management Plan will include: • Where ASS investigations have identified the need to neutralise spoil this will be carried out within 24 hours of it being exposed at the designated rate and liming verification sampling and analysis be undertaken to confirm that adequate lime has been used. • A designated bunded area will be used for neutralisation (if not in-situ). • Surface run-off is to be controlled and captured through appropriate stormwater management. • Discharge procedures for ASS leachate from the trench. The pH of any water pooled onsite (groundwater seepage and after rainfall events), that requires to be discharged off site for any reason, will be monitored. If the pH is acidic the water will be treated with hydrated lime if necessary. • Appropriate disposal or use of neutralised ASS is to be identified.
Monitoring	– Monitoring will be undertaken in accordance with the ASS Investigations and within the ASS Management Plan. – Routine daily visual observance will be undertaken during construction for signs of untreated ASS. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Confirming ASS material has been moved to the treatment area or treated in-situ • Checking of bunding around ASS treatment areas • Monitoring pH in any retention ponds (i.e. pH range of 6.5-8.5). – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – ASS testing results and treatment measures during construction.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.

7.7 Flora Management

The main potential impacting processes to terrestrial flora associated with the clearing of the nominally 30 m wide ROW and construction of the FGP are:

- Reduction of flora habitats
- Removal of individual species of significance
- Disturbance to aquatic and terrestrial vegetation
- An increase in remnant vegetation edge effects.

Table 7-7 shows the performance objectives, legislative requirements, performance criteria and mitigations measures requirements for clearing vegetation throughout the various construction phases.

Table 7-7 Controls and Mitigations for Protected Flora and Vegetation Clearing

Element	Vegetation Clearing
Performance Objectives	– To minimise the impact of clearing on the natural environment. – To rehabilitate impacted areas to the state that was present prior to the FGP construction or as close as practically possible.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Fisheries Act 1994* (regarding marine plants) • *Nature Conservation Act 1992* • *Nature Conservation (Plants) Regulation 2020* • *Nature Conservation (Animals) Regulation 2020* • *Vegetation Management Act 1999* • *Water Act 2000* • *Environmental Offsets Act 2014* • Development requirements or guidelines: • Flora Survey Guidelines – Protected Plants (DES, 2020) • Accepted Development Vegetation Clearing Code (ADVCC): Clearing for Infrastructure (DoR, 2020) • Restoration of Fish Habitats – Fisheries guidelines for marine areas (FHG 002) • AS4970 – Tree Protection on Development Sites • Riverine protection permit exemption requirements WSS/2013/726 Version 2.02 (DRDMW, 2023) • Accepted development requirements for operational work that is constructing or maintaining waterway barrier works (DAF, 2018) • Permits, approvals and licence conditions: • CG's Evaluation Report • EPBC Act approval • Protected Plants Exemption Notification • MCU development permits • OPW development permits • SAPs • SMP.
Performance Criteria	– Minimise disturbance to flora within the Project area. – Disturbed areas rehabilitated to a condition consistent with the surrounding undisturbed environment where practicable. – No clearing outside of the construction footprint area unless authorised. – Construction activities timing restrictions adhered to in accordance with relevant SAPs.

Mitigation Measures	**Pre-construction** – Project areas requiring vegetation clearing will be clearly delineated to ensure disturbance to areas being retained is minimised. Limits of clearing will be delineated on-ground using barrier tape and signage prior to works commencing. – Vegetation to be protected will be shown as 'exclusion zones' and clearly marked with barrier tape (or similar) and signage to prevent personnel from entering these areas. No adverse damage to any vegetation outside the approved clearing limits will be permitted unless approved by the GAWB and relevant regulatory agencies. – All exclusion areas will be clearly shown and labelled on all operational and management drawings and plans. – Restricted width clearing areas will be cleared marked on the alignment sheets and with barrier tape and signage at required locations on the ROW and at Project facilities. – SAPs for Waterways, Yellow Chat, Ornamental Snake and Brigalow have been prepared and will be implemented in areas where specific mitigations measures have been identified including restrictions on the construction activities period and clearing disturbance limits. – A suitably qualified person (such as a qualified ecologist and/or licensed fauna spotter/catcher) will be engaged to undertake a pre-clearance survey to inspect vegetation to be removed and that it does not consist of protected plant species. If protected flora species are encountered in areas where a Clearing Permit has not been obtained, works will cease, GAWB notified, and a Clearing Permit obtained (refer to the Flora Survey Guidelines – Protected Plants). – The pre-clearance survey will form part of a pre-clearance report. **Construction** – All relevant site personnel including contractors will be made aware via inductions, toolbox talks and site information sheets, of the sensitive environs they will be working in and around and be advised of specific limitations to construction works being undertaken. – All vegetation clearing will comply with all approval conditions and only occur in areas clearly marked during the pre-clearance surveys. – The clearing footprint and areas of exclusion will remain adequately marked for the duration of the clearing activities. – The Project area and access routes will be clearly delineated to prevent disturbance to areas outside the approved construction footprint. – Vegetation clearing will be undertaken progressively, and vegetation will be felled in the direction of the Project area to avoid impacts to adjoining retained vegetation and habitat. – Non-hollow bearing trees will be cleared before hollow bearing trees in order to allow fauna the opportunity to relocate of their own accord. – Hollow bearing trees will be clearly flagged, and surrounding vegetation removed with the hollow bearing tree left standing for at least one night to encourage fauna to relocate of its own accord. Hollow bearing trees will be inspected to determine if hollows are occupied. If hollows are found not to be occupied, hollows can be salvaged, and the tree felled. – No clearing of riparian vegetation is permitted at Gavial Creek, Bob's Creek, Inkerman Creek, Horrigan Creek and Raglan Creek. Clearing of riparian vegetation at Twelve Mile, Raglan and Larcom Creeks should be avoided and only permitted if GAWB and the relevant regulatory agency is notified, and all required approvals obtained and/or in accordance with exemption requirements. – Where trees and vegetation cannot be preserved aboveground, stabilising root material will be undisturbed wherever possible. – SAPs - for Waterways, Yellow Chat, Ornamental Snake and Brigalow and the SMP will be implemented. – Cleared or trimmed vegetation will be stockpiled separately from topsoil. It will then be mulched and respread on the ROW as part of Rehabilitation Plans or disposed of offsite at an approved location. – Soil (including topsoil) and vegetation stripped from the ROW will be stored adjacent to the site where it originated. No soil or vegetation material will be translocated for storage along the ROW. This excludes the requirement for soil not to be stored near or in a waterway. – Construction activities will be scheduled to minimise the time between clearing and rehabilitation of a particular area. The schedule should be such that the works are completed in a progressive manner. **Rehabilitation** – All rehabilitation activities will be undertaken in accordance with the rehabilitation requirements outlined in Section 7.21 (Rehabilitation and Revegetation) and Section 5.22 (Landscape and Visual Amenity) as well as the SMP and SAPs.
Inspections and Monitoring	– Inspections and monitoring will be undertaken in accordance with the requitements outlined in the approved SAPs for Waterways, Yellow Chat and Ornamental Snake and Brigalow.

	– Inspections and monitoring will commence prior to clearing activities being undertaken so that pre-disturbance baseline vegetation condition can be established (i.e. pre-clearance survey). – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Identification of non-conformances from the procedures outlined in this CEMP or approval/permit conditions. • Monitoring of disturbed areas and identification of any areas that have been disturbed without approval. • Integrity of vegetation clearing boundaries. • Monitoring of establishment of vegetation in rehabilitated areas. – Environmental audits will be undertaken by GAWB during construction on a quarterly basis (or as otherwise determined by approval conditions).
Reporting	– Reporting will be undertaken in accordance with approval conditions, the SMP and relevant SAPs. – Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Environmental checklists during construction • A regular ROW surveillance program report • Reports of any environmental incidents or non-conformances with the CEMP.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. – A non-conformance report including an investigation and any amendments to procedures will be instigated if vegetation clearing occurs outside approved areas. – All personnel and sub-contractors will modify work practices as required and instructed by the Environmental Manager/Officer, with managerial support. – Corrective actions will be undertaken in accordance with the SMP, SAPs and approval condition requirements.

7.8 Fauna Management

The potential impacts to fauna include direct fauna impacts and indirect impacts to fauna habitat. These impacts may include:

- Vegetation clearing and habitat disturbance
- Habitat fragmentation and disturbance to wildlife movement corridors
- Trench fall (entrapment of fauna within open trenches during construction)
- Disturbance to active or non-active animal breeding places
- Potential fauna mortality due to vehicle strikes.

Table 7-8 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for fauna management and protection.

Table 7-8 Fauna Management Control Plan

Element	Fauna Management
Performance Objectives	– To minimise the impact of the Project on fauna and fauna habitat. – To avoid clearing and disturbing vegetation and fauna habitat outside of the ROW and approved disturbance areas – To rehabilitate impacted areas to pre-disturbance condition or as close as practically possible where areas are not required to be kept clear for operation.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Fisheries Act 1994* (regarding waterway barrier works / fish passage) • *Nature Conservation Act 1992* • *Nature Conservation (Animals) Regulation 2020* • *Vegetation Management Act 1999* • *Vegetation Management Regulation 2012* • Development Requirements or guidelines: • Accepted development requirements for operational work that is constructing or maintaining waterway barrier works (DAF, 2018) • Permits, approvals and licence conditions: • CG's Evaluation Report • EPBC Act approval • Protected Plants Exemption Notification • MCU development permits • OPW development permits. • SAPs • SMP.
Performance Criteria	– Vegetation and fauna habitat features cleared or disturbed only within approved areas and boundaries. No non-approved areas are to be cleared. – No injuries or fatalities to fauna species are to occur as a result of construction and operational activities. – Disturbed areas rehabilitated to pre-disturbance condition or condition that is consistent with the surrounding environment, as far as reasonably practicable.
Implementation	**Design** – Construction activities will be sited in accordance with the approved State and Commonwealth approval conditions. – Design will include measures to reduce the impact to flora and fauna by selecting trenchless construction methods for major creek/waterway crossings and minimising clearing and disturbance widths in sensitive habitats, where possible.

	– Design measures at the Fitzroy River Intake will be incorporated to reduce the risk of fauna being impinged on the intake screens. **Pre-construction** – Prior to construction works commencing, all relevant site personnel including contractors will be made aware via inductions, toolbox talks and site information sheets of the sensitive environs they will be working in and around and be advised of specific limitations to construction works being undertaken in or adjacent to threatened fauna habitat. Personnel will also be made aware of the protected fauna they may encounter. – Project areas requiring vegetation clearing and habitat disturbance will be clearly delineated to ensure disturbance to areas being retained is minimised. Limits of clearing are to be delineated on-ground using barrier tape and signage prior to works commencing. – SAPs for Waterways, Yellow Chat, Ornamental Snake and Brigalow and SMP have been prepared and will be implemented in areas where specific mitigations measures have been identified including restrictions on the construction activities period and clearing disturbance limits. – A suitably qualified person (such as a qualified ecologist and/or licensed fauna spotter/catcher) will undertake a detailed pre-clearance survey identifying animal breeding places within the ROW and at Project facilities, and where possible, salvage and relocate identified breeding places. – The pre-clearance survey will form part of a pre-clearance report. – Where occupied breeding places are identified as part of the pre-clearance survey, these are to be left undisturbed, marked and a temporary buffer clearly established around the breeding place. A minimum 20 m temporary buffer will be established for ground habitat features. The temporary buffer is to remain in place until the breeding period has finished or until the young have been relocated by a fauna spotter/catcher. – Signage, including road signage, will be erected in the vicinity of exclusion areas and environmental buffer areas to warn of the potential presence of fauna in the area. – Site inductions will include information on the identification of protected fauna species. **Construction** – SAPs - for Waterways, Yellow Chat, Ornamental Snake and Brigalow and the SMP will be implemented. – The SMP will be implemented including the clearing of breeding places protocol. – Where reasonably practicable and as outlined in the SAPs, construction activities at sensitive areas such as waterways and specific fauna habitats will only be undertaken between May and September, inclusive. – The clearing footprint and areas of exclusion will remain adequately marked for the duration of the clearing activities. – Project areas and access routes will be clearly delineated to prevent disturbance to areas outside the approved construction footprint. – A suitably qualified person (e.g. ecologist and/or fauna spotter/catcher) will be present for all clearing activities and will conduct a walk-through survey prior to commencement of clearing and prior to clearing works. The spotter/catcher will reinspect the area of cleared vegetation immediately after clearing to locate any potentially injured fauna that will then be taken to a wildlife carer or veterinarian. The suitably qualified person will implement SMPs during clearing, it is preferable that fauna move of their own accord into the adjacent areas of habitat to be retained. Any fauna that is captured will be relocated into the adjacent habitat at least 200 m from the clearing area if clearing works are yet to be completed. Any relocation will be undertaken by a suitably qualified ecologist and/or fauna spotter/catcher with all relevant and required permits. – Mature hollow-bearing trees will be retained and protected wherever reasonably practicable. Where this cannot be achieved, hollow limbs and/or trunks should be left on the ground adjacent to the ROW (or relocated to within areas of remnant vegetation) to provide habitat for ground-dwelling fauna. – Hollow bearing trees will be clearly flagged, and surrounding vegetation removed with the hollow bearing tree left standing for at least one night to encourage fauna to relocate of its own accord. Hollow bearing trees will be inspected to determine if hollows are occupied. If hollows are found not to be occupied, hollows can be salvaged, and the tree felled. – Where occupied breeding places are identified and delaying the clearing of the breeding place is not feasible, (i.e. the clearing is critical to the activity schedule) the breeding place will not be disturbed for a minimum of 24 hours while clearing is undertaken around the breeding place as recommended by a fauna spotter/catcher. – Where unoccupied breeding places are identified and where feasible, consideration will be given to relocating the breeding structure by the fauna spotter/catcher to suitable habitat at least 200 m away from the clearing area.

- Relocated occupied or unoccupied breeding places will be retained intact to the greatest extent possible. As far as practical, the site of the relocation is to replicate the height and orientation of the original breeding or nesting structure.
- Pre- and post-works surveys of creeks (including soil profiles) will be undertaken to ensure the creek profile is restored.
- Fauna will not be fed and direct contact with fauna will be avoided (unless by a suitably qualified person).
- Logs and fallen vegetation will be used as a habitat feature post-construction to provide protection and potential habitat for native fauna (in agreement with landholders as required).
- Trees adjacent to working areas will be lopped, with complete-to-ground clearing being avoided where reasonably practicable so that some fauna habitat can remain.
- Cleared vegetation will be stockpiled so as not to impede wildlife, surface drainage and avoid damage to adjacent live vegetation.
- Habitat green waste from clearing operations will be used to provide fauna habitat in rehabilitated areas.
- Project area access is only to occur along designated site access tracks.
- Where practicable, travel during dusk, dawn and at night when fauna is most active, will be avoided.
- Vehicle operators will abide by vehicle speed limits and access to any restricted areas or exclusion zones must be limited to critical site-specific activities.
- For access along the ROW in Yellow Chat habitat (approximate FGP chainage 54000 to 73000) during October to April inclusive will be undertaken to minimise noise impacts such as reduced speeds in sensitive areas.
- Directional lighting and shields will be installed to minimise light spill outside of the immediate work areas having consideration for health and safety requirements.
- A procedure will be implemented that outlines appropriate trench management such as:
    - Construction activities will be planned and occur progressively to minimise the period of time the trench is open and the length of open trench, as far as reasonably practicable.
    - Where a trench remains open overnight or for extended lengths, the ends of the trench left open will be ramped to a gentle incline (<50%) to allow fauna to escape; escape ramps and trench plugs (temporary barriers in the open trench) will be established for every 500 m of open trench; additional methods may be adopted to create 'ladders' at regular intervals to assist small fauna to exit the trench (e.g. branches, ramped gangplanks, etc.); and/or sawdust filled hessian bags (shelter sites) will be placed intermediate to the escape ramps.
    - At the start of work hours and on a daily basis, all personnel will inspect the entire open length of the trench for entrapped or injured wildlife. If required, wildlife handlers (e.g. fauna spotter/catchers) will be called to site to attend to fauna issues.
    - Suitably qualified persons (e.g. licensed fauna spotter/catchers) will remove wildlife from the trenches, identify, record data and release the captures into nearby vegetated areas. Personnel will be legally permitted (DES, Damage Mitigation Permit), trained in appropriate handling protocols, and will possess the necessary Personal Protection Equipment (PPE) for the handling of animals.
- Any displaced fauna will be relocated to more suitable similar habitat within the surrounding area, as far as reasonably practicable.
- Fauna exclusion fences will be established where required to prevent relocated fauna inadvertently re-entering construction areas, as far as reasonably practicable. However, any temporary fencing necessary along the outer ROW boundary to contain construction works should allow passage of fauna from either side of such fencing.
- The use of barbed wire will be avoided and used only where essential to exclude stock from adjoining pastoral activities.

Aquatic Fauna and Temporary Waterway Barrier Works

- Where reasonably practicable, trenched creek and wetland crossings will be undertaken during low or no flow periods. If the works result in the temporary isolation of pools and they become susceptible to drying or poor water quality, then any resident native fish that are trapped will be relocated to areas away from impacts.
- Temporary waterway barrier works, including access tracks and erosion and sediment control measures, are to meet the Accepted Development Requirements for operational work that is constructing or maintaining waterway barrier works (DAF, 2018).

Rehabilitation

- All rehabilitation activities will be undertaken in accordance with the rehabilitation requirements outlined in Section 7.21 as well as the SMP and SAPs.

Monitoring	– Inspections and monitoring will be undertaken in accordance with the requitements outlined in the approved SMP and approved SAPs for Waterways, Yellow Chat and Ornamental Snake and Brigalow. – Inspections and monitoring will commence prior to clearing activities being undertaken so that pre-disturbance baseline vegetation condition can be established (i.e. pre-clearance survey). – Environmental site inspections undertaken by the Environmental Representative/Manager, Environmental Advisor during construction will include the following: • Identification of non-conformances from the procedures outlined in this CEMP or approval/permit conditions. • Monitoring of fauna presence in the Project area and noting of the number of fauna fatalities or required relocations. • Monitoring of establishment of vegetation in rehabilitated areas. – Environmental audits will be undertaken by GAWB during construction on a quarterly basis (or as otherwise determined by approval conditions).
Reporting	– Reporting will be undertaken in accordance with approval conditions, the SMP and relevant SAPs. – Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	– In the event that fish that have been trapped by the works, fish salvage activities in accordance with the Fisheries Queensland Guidelines for Fish Salvage (available at www.daf.qld.gov.au) will be implemented immediately. – MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Corrective actions will be undertaken in accordance with the SMP, SAPs and approval condition requirements.

7.9 Bushfire Management

The potential impacts from bushfire impacts are associated with all phases of construction. These impacts may include:

- Loss of above ground infrastructure
- Loss of life
- Loss of biodiversity.

Table 7-10 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing bushfires.

Table 7-9 Bushfire Control Plan

Element	Bushfire
Performance Objectives	– To avoid impacts to flora and fauna due to uncontrolled bushfires caused by MBJV. – To avoid impacts to property, plant or equipment and people due to uncontrolled bushfires caused by MBJV.
Legislative Requirements	– Legislation (as per Section 5.1), specifically: • Legislation, specifically: • *Fire and Emergency Services Act 1990* • Development Requirements or guidelines • Rockhampton Region Local Disaster Management Group - Bushfire Management Study, Strategy and Mitigation Plan Summary • Gladstone Regional Council - Local Disaster Management Plan • MBJV Emergency Response Plan • Permits, approvals and licence conditions: • CG's Evaluation Report • EPBC Act approval • Landowners' requirements • MCU development permits • OPW development permits.
Performance Criteria	– No uncontrolled bushfires caused by MBJV or its sub-contractors.
Implementation	**Pre-construction** – A risk assessment will be undertaken with key stakeholders including Queensland Fire and Emergency Services, RRC and GRC. – Bushfire response methods and evacuation plans will be included in the Emergency Response Plan. – Chemical and hydrocarbon storage areas will be located in areas with low bushfire potential. **Construction** – Fire risks will be assessed for each Project area prior to works commencing. – Project areas will have adequate road access for emergency vehicles and evacuation. – An adequate and accessible water supply will be provided in tanks at the Project area for firefighting purposes. – Fire breaks will be developed to provide setbacks between buildings/structures and high risk vegetation and provide access for emergency vehicles. – Hot works will be undertaken as per requirements of Hot Works Permits. – Smoking will not be permitted outside of designated smoking areas. – No intentional fires or wood fired barbeques will be permitted.
Monitoring	– Routine daily observance will be undertaken by all personnel during construction to assess high fire danger conditions (e.g. high temperatures, high wind, and dry undergrowth).

	– Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Identification of fuel loads • Monitoring of fire breaks • Monitoring of fire-fighting water supplies. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request including: • Environmental checklists during construction • External environmental audit reports during construction • A regular ROW surveillance program report • Non-conformance reports during construction and operation.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.

7.10 Biosecurity (Fauna and Biosecurity Zones)

The potential impacts from the biosecurity issues of pest fauna and biosecurity zones are associated with all phases of construction. These impacts may include:

- Attraction of pest fauna species
- Introduction or increase in extent of pest fauna
- Spread of pathogens or disease which impact native or agricultural species.

Table 7-10 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing introduced pests/fauna.

Table 7-10 Introduced/Pest Fauna Control Plan

Element	Introduced/Pest Fauna
Performance Objectives	– To minimise the impact of introduced/pest fauna species (hereafter referred to as pest fauna) – To minimise the spread of pest fauna species as a result of the FGP – To adhere to the requirement of the relevant Biosecurity Zones.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Biosecurity Act 2014* • *Biosecurity Regulation 2016* • Development Requirements or guidelines • General biosecurity obligation • Specific OCG, DAF, RRC and GRC requirements. • Permits, approvals and licence conditions: • CG's Evaluation Report • EPBC Act approval • Landowners' requirements • MCU development permits • OPW development permits.
Performance Criteria	No introduction or increase of pest fauna as a result of FGP construction activities.
Implementation	**Pre-construction** – Biosecurity Zones relevant to the FGP are: • Grape phylloxera Risk and Exclusion Zones • Sugar Cane Pest Zones 3 & 4 • Cattle Tick Infested Zone. – GAWB and MBJV will not be moving any grapes or sugar cane (or soils associated with the plants) or cattle, the latter may be conducted by the landholder subject to their property management requirements. – Consultation will occur with landholders and formal agreements put in place outlining specific biosecurity requirements related to construction activities and accessing their property. **Construction** – All food wastes or waste that would attract animals, will be kept in containers/bins/skips which have lids and do not allow the access of animals. Lunch and meals will be designated to crib rooms or sheds which animals cannot enter. – All putrescible waste will be stored in secure temporary holding containers and transported off site to a licensed waste management facility. – All personnel will not bring domestic animals to the Project area.

Monitoring	– Routine daily visual observance will be undertaken by all personnel during construction for conformance with the CEMP. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Identification of non-conformances from the procedures outlined above • Monitoring of pest animal species occurrence in the construction areas. – If a suspected matters of biosecurity concern are discovered onsite (including Red Imported Fire Ant previously reported in the GRC LGA but identified as since eradicated), DAF will be contacted immediately. – A ROW surveillance program will include Biosecurity Monitoring Schedule for introduced pests. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Environmental checklists during construction • External environmental audit reports during construction • A regular ROW surveillance program report • Non-conformance reports during construction and operation.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Any newly identified weed and pest species will be managed in accordance with OCG, DAF, RRC and GRC requirements to prevent their growth and proliferation. – If increased densities of pest animals are observed, or new pest animals are identified, humane pest controls will be implemented to manage numbers to the scope agreed with GAWB.

7.11 Biosecurity (Flora)

The potential impacts from biosecurity issues are likely to be limited to direct impacts associated with construction of the proposed pipeline. These impacts may include:

- Increase in the spread of weeds (restricted, invasive or other environmental weeds)
- Introduction of weed species
- Spread of floral pathogens which impact native and agricultural species
- Reduction in native vegetation or agricultural health.

Table 7-11 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for weed management.

Table 7-11 Weed Management Control Plan

Element	**Weed Management**
Performance Objectives	– To minimise the impact of weeds in the Project area and surrounding lands – To minimise the spread of weeds during construction of the FGP.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Biosecurity Act 2014* • *Biosecurity Regulation 2016* • Development Requirements or guidelines: • General biosecurity obligation • Specific OCG, DAF, RRC and GRC requirements. • Vehicle and Machinery Cleandown Procedures (DAF, 2019) • Vehicle and Machinery Inspection Procedure, Biosecurity Queensland Checklists (DAF, 2013). • Permits, approvals and licence conditions: • CG's Evaluation Report • EPBC Act approval • Landowners' requirements • MCU development permits • OPW development permits.
Performance Criteria	– No introduction of new weed species to the Project area. – Presence of Restricted Invasive Plants are no greater that observed during baseline surveys and/or in surrounding land undisturbed by construction.
Implementation	**Pre-construction** – Prior to construction, weed specific surveys will be completed by MBJV in areas before construction teams enter and a detailed Weed Management Plan developed that will address the following: • Requirements of legislation • Consultation with environmental officers from Gladstone and Rockhampton Regional Council areas • Mapping of existing weed infestations • Management prioritisation of weed species • Strategies for preventing weed spread • Weed removal strategies • Weed monitoring protocols • Follow-up weed management methods and protocols. – Consultation will occur with landholders and formal agreements put in place outlining specific biosecurity requirements related to construction activities and accessing their property. **Construction**

	– All personnel will be trained with respect to weeds (e.g. colour photos, precautions, procedures, fact sheets) will be included as part of the environmental induction to be completed prior to commencement of work on the site. – Equipment and material introduced to the region, especially those from interstate, will be screened for weed species or items likely to contain weed seeds such as soil, as far as reasonably practicable. – Access roads will be identified and adhered to during construction to prevent transport of weeds from or to other areas. – Infested areas not essential for access will be avoided. If infested areas need to be cleared, then appropriate weed management or containment measures will be implemented in accordance with the Weed Management Plan. – Temporary Weed wash down bays will be installed at strategic locations within the Project footprint and meet good practice design requirement. Wash-down facilities should be situated so as not to allow mud to adhere to vehicles and machinery on exit from key weed-affected sites. – Vehicles and machinery will be subject to wash-down in accordance with the requirements of the Weed Management Plan. – All vehicles and machinery that have come from weed infested areas that require access to Project areas will be visually checked for soil/organic matter prior arrival onsite. – Vehicles and machinery will be subject to wash-down before entering sites where a request for wash-down by the landholder is identified in the Weed Management Plan and associated documentation. Proof of washdown (e.g. washdown certificates) will kept in the vehicle once it has been washed down. – Clothing and footwear will be free of mud and seeds before stepping in vehicles, as far as reasonably practicable. – Soil stripped and stockpiled from areas containing known weed infestations, particularly of declared weeds, will be stored separately and are not to be moved to areas free of weeds. – Disturbed topsoil and vegetation will be returned as close as possible to the original sites (where practicable) in order to limit the potential spread of weeds and pathogens. – All soil and plants imported to the site will be certified as weed free by the supplier using the Queensland Government Weed Hygiene Declaration Form or equivalent. – Chemical control of weeds will only be done by trained and/or qualified operators. – Only chemicals registered with the Australian Pesticides and Veterinary Medicines Authority for the target weed will be used, appropriate personal protective equipment (PPE) will be used and Safety Data Sheets will be available from the Operator. – Weed eradication programs will be implemented if required, to mitigate Project impacts in consultation with landowners taking into account site-specific requirements such as organic farming practices and withholding periods. – Entry and exit points to construction areas at which weed hygiene protocols become effective will be identified and brought to the attention of relevant personnel. – Temporary weed wash-down bays will be established and maintained to reduce weed spread, in accordance with the Weed Management Plan.
Monitoring	– A weed survey of the construction area will be undertaken prior to construction commencement. – Routine daily visual observance by will be undertaken all personnel during construction will be undertaken to identify weed infestations. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Identification of non-conformances from the procedures outlined above • Monitoring of weeds present in the Project area and any instances of new infestations • Mapping (i.e. GIS locations) of weed infestation • A photographic record of weeds and weed management • Inspections of wash-down areas and procedures. – Weed inspections of the Project area will be undertaken by a suitably qualified person as required during operation to monitor the effectiveness of the CEMP and to maintain a record of weed status in the Project area. – If a suspected matters of biosecurity concern are discovered onsite, DAF will be contacted immediately. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including:

	• Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Weed maintenance schedule and vehicle/machinery wash-down records during construction. – Weed management activities and weed status post construction.
Corrective Action	– The MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Identified weed and pest species will be managed in accordance with OCG, DAF, RRC, and GRC requirements to prevent their growth and proliferation.

7.12 Water Resources and Water Quality

The potential impacts on water resources resulting from the construction of the Project have been assessed and include:

- Potential water quality degradation through:
  - Accidental releases / spills of polluting substances (e.g. hydrocarbons, chemicals, litter and ASS)
  - Disturbance of contaminated / acidic soils
  - Sediment laden stormwater discharge from Project areas during construction impact on the water quality and bank stability of receiving watercourses
  - Discharge of groundwater and surface water from the pipeline trench.
- The extraction of water from existing surface water and groundwater sources for construction purposes.

Table 7-12 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing water resources and maintaining water quality.

Table 7-12 Water Resources and Water Quality Control Plan

Element	Water Resources and Water Quality
Performance Objectives	– To minimise and manage adverse impacts to surface and groundwater during construction of the FGP.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1), specifically:
	  • *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*
	  • *Water Act 2000*
	  • *Water Regulation 2016*
	• Development Requirements or guidelines:
	  • Environmental Protection (Water) Policy 2009: Fitzroy River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Fitzroy River Sub-basin (DES, 2011)
	  • Environmental Protection (Water) Policy 2009: Curtis Island, Calliope River and Boyne River Basins Environmental Values and Water Quality Objectives (DES, 2014)
	  • Water Plan (Fitzroy Basin) 2011
	  • Water Plan (Calliope River Basin) 2006
	  • OSW/2020/5467 Exemption requirements for constructing authorities for the take of water without a water entitlement (DRDMW, 2021)
	  • Monitoring and Sampling Manual (DES, 2018)
	  • Best Practice Erosion and Sediment Control (IECA, 2008)
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • MCU development permits
	  • OPW development permits.

Performance Criteria	– No long-term impacts to surface or groundwater quality as a result of the FGP. – No visible signs of water quality deterioration as a result of FGP construction activities. – No water quality changes (upstream / downstream; baseline / during construction) in the following parameters: • Turbidity – 20 NTU or 10% increase (whichever is greatest) • pH – 1.0 pH unit change • Dissolved oxygen – 10% decrease

	– Waterway beds and banks rehabilitated as soon as reasonably practicable after construction.
Implementation	**Design** – Detailed design will include measures to reduce the impact to waterways in accordance with the waterway SAPs with trenchless methods identified for the following: • Gavial Creek • Bob's Creek • Inkerman Creek • Twelve Mile Creek • Marble Creek • Horrigan Creek • Raglan Creek • Larcom Creek – Detailed design crossing plans will identify significant environmental features. – Protection structures will be designed to prevent bed and bank disturbance at the intake location as far as reasonably practicable. – Infrastructure that is prone to damage from inundation will be located outside of flood risk areas. – Alton Downs WTP will be designed to include appropriate sludge management. – Water sensitive urban design principles will be implemented for the FGP. **Construction** – Where reasonably practicable, trenched creek and wetland crossings will be undertaken during low or no flow periods. – Trenched waterway crossings will be planned to enable minimal vegetation removal as far as reasonably practicable. – The SAP – Waterways will be implemented for key waterway crossings. – Contaminated land control plan will be implemented, refer to Section 7.5. – ASS control plan will be implemented, refer to Section 7.6. – Where avoiding disturbance of ASS is not practicable, soils will be treated appropriately, and the generation of acid run-off will be minimised (or avoided), refer to Section 7.6. – Trenchless entry/exit point will be located away from sensitive locations with drill operations will stop as soon as reasonably practicable, upon detection of any lubricant release. – Erosion and sediment control measures will be implemented at waterway crossings and across the ROW. Diversion and erosion controls, including sediment basins, will be designed and implemented with reference to Best Practice Erosion and Sediment Control (IECA, 2008), including requirements for emergency planning as applicable, refer to Section 7.4. – Erosion and sediment control measures, such as silt fences, will be installed between stockpiles and waterways, refer to Section 7.4. – Temporary drains or bunds will be constructed where necessary to direct run-off and any overland flow from upslope of excavations, away from the construction footprint. – Any dewatering discharges will be released to ensure there are no and impacts from erosion and sedimentation into waterways. – No stockpiles will be located within 3 m of waterways. Stockpiles will be protected from overland flow. – Earthworks will be minimised near waterways. – Stream bed material will be replaced over the pipe trench following trenching and additional scour protection provided where necessary. – Fuel and chemical handling, storage, distribution and spill response during construction will be managed in accordance with Section 7.20. – Natural drainage patterns will be restored following construction, as far as reasonably practicable. – Ponded / trench water at the construction sites will be disposed of appropriately. If required, treat water prior to release. – A high level of housekeeping will be implemented to prevent litter entering waterways including the provision of waste bins, regular site inspections and staff training in waste disposal procedures. – Hydrotest water discharges will be followed in accordance with approval requirements and Section 7.15. – Any water bodies or bores used for extraction of construction water will be monitored for water levels and water quality extraction will cease if unacceptable impacts are identified. The OSW/2020/5467

	Exemption requirements for constructing authorities for the take of water without a water entitlement (DRDMW, 2021) will be met. – Compound wastewater will be disposed of offsite at a licensed facility. **Rehabilitation** – Rehabilitation of waterways will occur as soon as reasonably practicable after completion of the crossing, refer to Section 7.21. – Fertilisers and pesticides used for revegetation activities will be applied during favourable weather conditions to prevent spray drift (i.e. no high winds or runoff) and at the minimum required amount.
Monitoring	– Routine daily visual observance will be undertaken by all personnel during construction for conformance with this control plan. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Weather conditions (i.e. if significant rainfall is forecast) • Waterway condition • Water levels • Water quality observations. – Water quality monitoring and assessment will be implemented onsite to identify, measure, record and report on water quality prior to any discharges. – Monitoring will be undertaken for turbidity, pH, dissolved oxygen, and electrical conductivity. – Monitoring will be undertaken to detect changes between upstream and downstream conditions and/or between baseline and during construction: • Turbidity – 20 NTU or 10% increase (whichever is greatest) • pH – 1.0pH unit change • Dissolved oxygen – 10% decrease – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – All personnel will be retrained in procedures where the procedures are modified or new ones adapted. – Visual checks (and sampling for applicable analytes if required) of captured stormwater will be conducted prior to release. If the water does not meet discharge criteria it will be either treated onsite or disposed of at a licensed wastewater facility.

7.13 Air Environment

Atmospheric emissions from construction activities will depend on a combination of the potential for emission (the type of activities), meteorological conditions and the effectiveness of control measures. In general terms, there are two sources of emissions that will need to be controlled to minimise the potential for adverse environmental effects:

- Exhaust emissions from site plant, equipment and vehicles
- Fugitive dust emissions from site activities.

Table 7-13 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing air quality.

Table 7-13 Air Environment Control Plan

Element	**Air Environment**
Performance Objectives	– To minimise the air quality impacts arising from the Project during construction. – To be efficient in the use of resources and minimise emissions where practical.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Environmental Protection (Air) Policy 2019* • *National Greenhouse and Energy Reporting Act 2007* • Permits, approvals and licence conditions: • CG's Evaluation Report • MCU development permits • OPW development permits.
Performance Criteria	– Minimise dust generation during construction. – Minimise air emissions (such as exhaust) and energy use for all activities. – Respond to and close out all complaints relating to air quality in a timely manner and in accordance with GAWB's policy and Section 9.2.
Implementation	**Construction** <u>Dust</u> – Directly affected landowners will be informed of potential temporary dust generation prior to the commencement of activities likely to generate dust. – Dust and particulate matter will not exceed any of the following levels when measured at any nuisance sensitive or commercial place: • Dust deposition of 120 mg per square metre per day over a 30 day averaging period, when monitored in accordance with Australian Standard AS/NZS 3580.10.1:2003: Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method (or more recent editions). – Respirable crystalline silica dust risk assessments and monitoring (as required) will be conducted . – Construction vehicles will be confined to designated access tracks in the Project area, as far as reasonably practicable. – Access tracks will be dampened where required and particularly in windy conditions to reduce the generation of dust from construction traffic. – Water sourced for dampening of roads will not be unduly saline, acidic or otherwise contaminated, to minimise impacts to soils and waterways. – Construction vehicles will travel at safe speeds suitable to the conditions with due care and attention, particularly on unsealed access tracks. – Dusty materials will be stored, handled and transported appropriately. – A water truck or similar will be used onsite (where practical) and along access roads (where appropriate) to minimise dust. – Where wind speeds are considered excessive (approximately 10 m/s) and work is undertaken within 100 m of sensitive receptors, dust mitigation measures will be put in place to prevent dust nuisance as far as reasonably practicable.

	– Where required and practicable, rumble strips or similar method will be used at the entrance/exit of construction areas to reduce the amount of mud or soil that is transported onto hard-surfaced roads. – Hoarding and gates will be used to prevent dust breakout where appropriate. – Hard-surfaced roads used for access to Project areaa will be cleaned to the extent reasonably practicable to remove dust, mud or other debris that could generate a dust nuisance. – Trench spoil and topsoil will not be stockpiled to heights greater than 3 m and long-term stockpiles will be stabilised or vegetated to reduce dust generation. – Exposed ground surfaces will be revegetated as soon as reasonably practicable following construction activity. – If all reasonably practicable dust suppression methods fail to adequately prevent or suppress nuisance dust resulting in unacceptable impacts, suspension of construction activities until conditions generating dust have subsided will be considered. <u>Air emissions</u> – Energy use, resource use and greenhouse gas emissions will be recorded. – All vehicles and equipment used onsite will undergo regular maintenance in accordance with manufacturers requirements to minimise air emissions. – Plant, equipment and vehicles will be turned off when not in use to prevent unnecessary idling. – The number of vehicles used will be minimised to that essential for efficient construction activities. – Carpooling / busing to work sites where possible to reduce the number of vehicle movements associated with the Project. – The number of plant and equipment movements will be minimised by ensuring, wherever possible, that all staged works are completed prior to departure from the work area.
Monitoring	– MBJV will monitor resource use of greenhouse gas emissions as identified by GAWB. – Routine daily visual observance will be undertaken by all personnel to monitor dust generation and implement additional controls as required. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Identification of non-conformances from the implementation of the CEMP • Monitoring of dust control measures implementation and effectiveness. – Continuous monitoring dust deposition will be undertaken at sensitive receptors with dust deposition gauges to be installed at representative sites. – Respirable crystalline silica dust monitoring (as required). – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records to be kept onsite/TeamBinder and made available to GAWB or external auditors upon request, including: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – MBJV will meet any required reporting for resource use of greenhouse gas emissions. – Any non-compliances / complaints relating to air quality impacts will be recorded and addressed in accordance with the complaints procedure, refer to Section 9.2.
Corrective action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Where air quality complaints or reports are received, MBJV will ensure the complaint/report is investigated, refer to Section 9.2. Work on the causative aspect may need to cease until corrective actions are implemented. – Where DES receives air quality complaints, and they consider the complaint reasonable, DES may ask to qualitatively or quantitatively monitor the air quality to ensure the FGP is not emitting contaminants to the air in exceedance of the *Environmental Protection (Air) Policy 2019*. If exceedances are recorded or poor air quality is observed, MBJV will investigate the construction aspect accountable and review the

	relevant procedures and practices within 24 hours of determining that the air quality is poor as a result of the Project's construction aspect/s. – All personnel and sub-contractors will be retrained in air quality management if non-conformances are identified and will modify work practices as required.

7.14 Waste Management

Potential waste sources include (but are not limited to):

- Debris from vegetation clearings
- Building waste
- Wash-down wastewater
- General waste from staff
- Sewage (blackwater)
- Trench water due to ground water infiltration and rain events
- Hazardous and regulated wastes
- Hydrocarbon wastes from end-use
- Regulated waste.

These waste streams being managed incorrectly has the potential to impact to the surrounding land and water environment.

Table 7-14 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for waste management.

Table 7-14 Waste Management Control Plan

Element	Waste Management
Performance Objectives	– To reduce the amount of waste produced during the construction of the FGP and to maximise recycling and reuse opportunities. – To manage waste generated during construction of the FGP in a manner that minimises the risk of it negatively impacting on the surrounding environment.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Environmental Protection Regulation 2019* • *Waste Reduction and Recycling Act 2011* • *Waste Reduction and Recycling Regulation 2011* • Development Requirements or guidelines • AS1940: The storage and handling of flammable and combustible liquids • Permits, approvals and licence conditions: • CG's Evaluation Report • MCU development permits • OPW development permits.
Performance Criteria	– No adverse impacts on the surrounding environment or human health from the management of waste during the construction phase. – Waste management hierarchy implemented to managing waste through avoiding the generation of waste; maximising re-use and recycling of all materials where possible and treating and disposing all those materials that are unable to be re-used or recycled in accordance with relevant legislation and guidelines. – Achieve an Excellent Rating in accordance with ISC manual version 1.2.
Implementation	**Design** – The design will endeavour to find balance between cut and fill to minimise the requirement to stockpile excess soil, remove excess soil from the site or import fill material. – The design will consider waste minimisation when designing and selecting equipment. **Construction** – Waste management will be undertaken to incorporate the waste management hierarchy, waste management procedures, training of relevant personnel and monitoring and reporting requirements.

	– All personnel will be made aware of the requirements of the CEMP as part of their inductions, prior to commencing work. – A program for strict litter control will be implemented throughout Project areas. This will include site-wide signage; an adequate number of litter bins (which by design exclude birds and vermin); bin clearance on a regular basis; daily maintenance of crib rooms to achieve cleanliness; and educational signage within crib rooms on the linkage between poor waste management practices, increases in pest animal populations, and subsequent impacts to native fauna. – Cleared vegetation will be stockpiled so as not to impede wildlife, surface drainage and avoid damage to adjacent live vegetation. It will then be mulched and respread on the ROW or disposed of offsite at an approved location in line with rehabilitation and revegetation management (refer to Section 7.21) and approved by GAWB. – Suppliers will be encouraged to reduce and/or collect packaging. – Sorting and storage recyclable wastes (such as oils, steel and plastic) will occur, and arrangement for the transfer of the recyclables to a licenced recycling facility. – All waste receptacles will be covered to prevent water infiltration and wind from causing litter. – Any temporary waste storage areas will not be located within 50 m of a waterway and will be appropriately contained to prevent litter, soil contamination or attraction of vermin. – To avoid impacts arising from the release of wash-down wastewater, equipment will be washed down in a suitable wash- down facility that is bunded and filtered, and at least 50 m from any waterways. – Sewage disposal will be managed through the use of mobile chemical treatment systems, approved septic systems or via connection with the municipal waste sewage infrastructure, depending on location of the site. – All 'trackable wastes' under the *Environmental Protection Regulation 2019 (Qld)* leaving the site will be traced. – Hazardous and regulated wastes will be controlled as per any local government or legislative requirements, stored in bunded containers / areas in accordance with AS1940 and transported and disposed of by an appropriately licensed contractor, refer to Section 7.20. – All containers will be secured to prevent movement during a flood event. – Safety Data Sheets (SDS) will be kept onsite during construction. – Depending on the quality of the material excavated, it may be practical to utilise excess material from some work sites as fill for other work sites. Excess spoil will be disposed of at the nearest approved locations along ROW, generally by agreement with landowners or local council and in accordance with Section 7.4. – Excess spoil that cannot be disposed of in the vicinity it came from will be hauled to approved disposal sites (including relevant landholders who may wish to use the excess spoil) and nominally disused borrow pits. Spoil disposal sites will be located and managed to reduce erosion, runoff into local waterways and to prevent the distribution of weeds. – Upon completion of construction in each area along the ROW, all wastes will be removed and disposed of at a licensed waste management facility. – Appropriately stocked spill kits will be located in each construction area and along the ROW and personnel will be trained appropriately in the use. – Efficient use of resources will be implemented through procurement planning and ordering materials as close as possible to required quantity to avoid oversupply.
Monitoring	– Routine daily visual observance will be undertaken by all personnel during construction to monitor the site for litter or other waste issues. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Monitoring of waste management practices to identify non-conformances from the implementation procedures outlined above and possible improvements in waste management practices • Recording of the amount of waste being re-used, recycled and disposed of • Checking of waste storage areas • Checking for windblown litter. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase

	• Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. • Quantities of wastes generated and disposed of • External environmental audit reports that review waste management practices. • Waste Transport Certificates / Soil Disposal Permits (where relevant)
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Increase recycling and reuse where possible. – Increase storage capacity or increase frequency of offsite disposal if necessary. – Repair or replace receptacles if they do not meet the requirements of the CEMP. – Retrain staff in waste management if the CEMP is not being implemented. – Incorporate additional waste minimisation measures as identified during reviews.

7.15 Hydrotesting and Commissioning

The potential impacts on surface water resulting from the hydro testing and commissioning of the FGP have been assessed and include:

- Potential water contamination through the release of hydrotesting water (e.g. wastewater from treatment process)
- Erosion and sedimentation where hydrotesting water is discharged.

Table 7-15 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for hydrotesting and commissioning.

Table 7-15 Hydrotesting and Commissioning Control Plan

Element	Hydrotesting and Commissioning
Performance Objectives	To minimise the potential impacts from hydrotesting and commissioning of the pipeline and Alton Downs WTP on the local environment, particularly waterways.
Legislative requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Environmental Protection (Water and Wetland Biodiversity) Policy 2019* • *Water Act 2000* • *Water Regulation 2016* • Development Requirements or guidelines: • Environmental Protection (Water) Policy 2009: Fitzroy River Sub-basin Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of the Fitzroy River Sub-basin (DES, 2011) • Environmental Protection (Water) Policy 2009: Curtis Island, Calliope River and Boyne River Basins Environmental Values and Water Quality Objectives (DES, 2014) • Water Plan (Fitzroy Basin) 2011 • Water Plan (Calliope River Basin) 2006 • OSW/2020/5467 Exemption requirements for constructing authorities for the take of water without a water entitlement (DRDMW, 2021) • Monitoring and Sampling Manual (DES, 2018) • Permits, approvals and licence conditions: • CG's Evaluation Report • MCU development permits • OPW development permits.
Performance Criteria	– No depletion or degradation of any waterway as a result of hydrotesting, or commissioning. – Minimise hydrotest water consumption through re-use of water. – No adverse impacts to the local environment due to the discharge of water.
Implementation	**Construction / Commissioning** – The FGP will be commissioned in sections between isolation valves and facilities along the alignment, this will minimise the quantity of water required and discharged. – Hydrotest water used during testing and commissioning of the Alton Downs WTP, pipeline and reservoirs will be reused within the system and passed down the pipe if of sufficient quality, to minimise disposal. – Hydrotest water disposed during commissioning to land or waterways will be in compliance with regulatory requirements and have relevant controls in place to reduce impacts. – Hydrotest water will be discharged in a way that ensures there are no and impacts from erosion and sedimentation into waterways. – Hydrotest water disposal will not occur on areas of exposed soil in dry ephemeral creeks without appropriate erosion prevention measures such as a rock lined channel or into a grassed area.

	– Where water has been in the pipe for long periods (e.g. six months) and requires discharged, an assessment will be made of the need for aeration prior to discharge. – Chlorination will not be used for hydrotesting.
Monitoring	– Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Inspection of the waterway where the test water is to be discharged to identify appropriate disposal site • Inspection of the waterway following discharge to monitoring for erosion and sedimentation • Monitoring of water quality and if necessary, treatment will be undertaken prior to discharge of water.
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Records will be maintained of the water quality of test water prior to discharge and of the locations and quantities of discharge.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – All personnel will be retrained in procedures where the procedures are modified, or new ones adapted. – Visual checks (and sampling for applicable analytes if required) of captured hydrotest water will be conducted prior to release. If the water does not meet discharge criteria it will be either treated onsite or disposed of at a licensed wastewater facility.

7.16 Noise and Vibration

The potential sources of noise and vibration associated with construction of the FGP include:

- Set up of ancillary facilities
- Construction of access tracks
- Delivery of equipment and materials
- Various types of machinery use during construction
- Blasting (associated with the Aldoga Reservoirs).

Although sensitive receptors (residents) are sparse along the ROW, noise and vibration emissions have the potential to negatively impact adjacent sensitive receptors and fauna habitat). Vibration may also result is structural impact to other infrastructure or buildings.

Table 7-16 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing noise and vibration.

Table 7-16 Noise and Vibration Control Plan

Element	Noise and Vibration Management
Performance Objectives	– To manage the construction of the FGP in a way that minimises the impact of noise and vibration on the local community. – To control noise generation from the FGP to within the relevant noise standards.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Environmental Protection (Noise) Policy 2019* • Development Requirements or guidelines • Noise Measurement Manual (DES, 2020) • AS1055: Acoustics – Description and Measurement of Environmental Noise • Permits, approvals and licence conditions: • CG's Evaluation Report • Landowners' requirements • MCU development permits • OPW development permits.
Performance Criteria	– Noise generated from the construction of the FGP is maintained within relevant standards. – Respond to and close out all complaints in a timely manner and in accordance with GAWB's policy and Section 9.2.
Implementation	**Design** – Impacted landholder agreements for access routes and construction activities, including work on Sundays, will be prepared and signed in consultation with landholders. – During design, measures to reduce noise will be incorporated for the construction phase of the FGP including housing the pump and equipment in a building that includes specific noise mitigation measures. – Acoustic advice will be sought to check that the FGP noise management is providing the appropriate noise attenuation to the outside environment so that noise levels at the nearest sensitive receptors are within noise standards. – Dilapidation surveys will be undertaken for structures that may be affected by the construction work in accordance with the Dilapidation and Assessment Survey Management Plan. **Construction** – Noise mitigation strategies will be implemented where practicable to reduce the potential for adverse noise impacts and complaints. – The quietest plant and equipment will be selected as far as reasonably practicable. – All equipment and plant will be regularly maintained to manufacturers' specifications.

	– Equipment use will be timed to minimise noise impacts (i.e. construction activities managed to avoid audible noise to the nearest noise sensitive receiver). – Heavy materials will be placed not dropped into dump trucks where practicable. – Horns and reversing alarms will be at the minimum volume level as far as practicable without compromising safety requirements. – Non-tonal / broadband type reversing alarms will be used where practicable. – Stockpiled materials will be used as “noise barriers” to shield sensitive receivers where practicable. – Diesel powered equipment (including, but not limited to excavators, front end loaders, dump trucks) with appropriate mufflers will be used where practicable. – Exhaust brakes will be minimised onsite. – Loading/unloading will be performed with consideration to any nearby sensitive receptors such as residential properties. – Construction activities will be undertaken 6:30 am and 6:30 pm every day, or any other time in agreement with GAWB and impacted stakeholders as relevant. – For access along the ROW in Yellow Chat habitat (approximate FGP chainage 54000 to 73000) during October to April inclusive will be undertaken to minimise noise impacts such as reduced speeds in sensitive areas. – In response to a complaint, the source of excessive noise or vibration will be immediately shut down until adequate monitoring and reporting has been undertaken and the complaint resolved. **Community Liaison** – Impacted landholders will be informed about when they may be affected by works, and the duration of the works prior to any works occurring. – A 24 hour contact number for the FGP will be implemented for the construction phase so that residents always have an immediate point of contact when they have questions or concerns. – All complaints received will be handled in accordance with the complaints/incidents procedure, refer to Section 9.2. **Blasting** – Where blasting is required (e.g. at Aldoga Reservoirs) a Blasting Management Plan will be prepared and implemented to detail safety measures and other management measures. – The Blasting Management Plan will be developed and implemented and comply with the *Environment Protection (Noise) Policy 2019*. – Pre- and post-construction building and infrastructure surveys on properties / infrastructure potentially susceptible to vibration damage from construction works will be undertaken. – Noise, vibration and blasting monitoring will be conducted with consideration to the relevant guidelines and standards, including but not limited to: • Noise Measurement Manual (DES, 2020) • AS 1055 – 1997 Acoustics – Description and Measurement of Environmental Noise. – Blasting activities, where required, will not take place on a Sunday or public holiday.
Monitoring	– Routine daily visual observance will be undertaken by all construction personnel during construction to monitor construction noise levels and prevent excessive noise. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Inspections of equipment maintenance records • Monitoring construction activities for non-conformances with the above procedures • Review of incidents/complaints register for noise related incidents. – Peak particle velocity (mm/s) via vibration will be monitoring at selective sites. – Construction noise levels will be monitored, including: • Background noise monitoring will be undertaken at the various identified sensitive receptor locations to assess the ambient noise levels in the immediate surrounding area • Attended spot check monitoring will be undertaken at the potentially most exposed receivers in proximity to construction activities • In response to a compliant.

	– Monitoring in the case of a complaint being received will be undertaken by an experienced and qualified noise and vibration specialist. The equipment used for the measurements will have current calibration certificates and will be appropriate for the measurements with regards to the relevant standards. – An additional monitoring program will be developed and undertaken during construction activities that are expected to generate significant noise and/or vibration (e.g. blasting and work outside regulated work hours). – Monitoring will be undertaken in accordance with the Blast Management Plan – Dilapidation surveys are to be undertaken at nominated sensitive receptors/infrastructure to define and document the existing structural integrity, and condition of the building and structures. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results • Dilapidation reports, as required – Any non-compliances / complaints relating to noise impacts will be recorded and addressed in accordance with the complaints procedure, refer to Section 9.2.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Modification or substitution of work methods will be undertaken wherever possible to minimise noise and vibration impacts, including: • Works programming assessments • Selective use of enhanced equipment/plant • Noise barriers or earthen bunds • Equipment/plant substitution.

7.17 Transport and Access

Impacts from traffic generated by construction of the FGP will consist of the following:

- Transportation of construction equipment to/from site
- Delivery of pipe
- Delivery of construction materials
- Construction workers transport
- Direct impacts, such as from pipeline crossings of roads.

These activities will impact traffic across various locations and its access points.

Table 7-17 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing transport and access.

Table 7-17 Transport and Access Control Plan

Element	Transport and Access
Performance Objectives	– To minimise the impacts on transport and access arising from the Project.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1), specifically:
	  • Transport Infrastructure Act 1994
	• Development Requirements or guidelines
	  • Australian Pipeline Industry Association Vehicle Safety Guidelines
	• Permits, approvals and licence conditions:
	  • Road Works Approval / Road Corridor Permits / Traffic Control Permits (TMR)
	  • Road Reserve Works Permit (RRC)
	  • Works on Road Corridor Permit (GRC)
	  • Road Closure Permit (Queensland Police)
	  • Works within a railway corridor - Permission to interfere with railways
	  • Wayleave agreements with Aurizon and Queensland Rail
	  • CG's Evaluation Report
	  • Landowners' requirements
	  • MCU development permits
	  • OPW development permits.

Performance Criteria	– No transport or access related incidents arising as a result of the FGP.

Implementation	**Design and Pre-construction**
	– Access routes will be determined in consultation with landholders during the detailed design.
	– Landholder agreements for access routes will be prepared and signed in consultation with landholders.
	– Traffic Management Plans (TMPs) will be developed prior to construction to address site specific details for FGP. TMPs will be developed in negotiation with RRC and GRC and TMR before the commencement of construction. The plans will also take into consideration relevant approval conditions and will detail:
	  • Site accesses, including the provision of signage and traffic control during construction at site accesses and pipeline crossings
	  • Temporary speed reductions as required at site accesses or on unsealed roads in the vicinity of sensitive receptors
	  • Temporary traffic control measures
	  • Vehicle parking and access

	• Options for carpooling or use of buses by construction personnel to reduce traffic generation resulting from the FGP. – All permits and approvals required under the *Transport Infrastructure Act 1994* will be obtained including: • Approval for works within a state-controlled road corridor / road corridor permits • Approval for works within a railway corridor. **Pre-construction** – Road/intersection improvements will be undertaken at: Laurel Banks Road, Laurel Banks Road/Rockhampton Ridgelands Road intersection and Rockhampton Ridgelands Road. – Consultation will occur with TMR regarding the Rockhampton Ring Road and relevant road corridor permit required including the FGP basis of design. – The crossing of TMR roads and rail networks will be undertaken by trenchless methods to minimise impacts to traffic and transport. – Roads, particularly unsealed roads used during construction will be maintained by MBJV: • Possible road/intersection improvements required to enable safe access during construction of the Project will be discussed with the TMR and undertaken where necessary. – Where possible, construction ancillary facilities will be accessed via existing public roads. Where this is not possible, existing private access tracks on private property will be used but only with the permission of the landowner. Consultation will occur with each landowner whose property is required for access and agree on the terms and conditions relating to access arrangements. – Local road and access closures will be minimised where possible. Alternate access arrangement will be provided if access closures are required. – Access to the ROW will be by routes agreed with landholders through signed agreements with vegetation clearing minimised wherever possible. – Access for emergency vehicles will be maintained along emergency access routes, with suitable alternative access arrangements provided where required. – All drivers will comply with the road rules on local and state-controlled roads and the site rules on the ROW. Further, all drivers will be required to drive to the road conditions. – Prior to being used onsite, plant, equipment and vehicles will undergo a mechanical inspection to ensure that the plant or vehicle is in good working order, and the appropriate emission controls are in place and not modified. – All trucks will be loaded so as not to exceed the legal weight limitations in force at the time, noting weight restrictions of any bridges along designated routes.
Monitoring	– Routine daily visual observance will be undertaken by all personnel during construction to monitor transport and access issues and identify non-conformances. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and any relevant TMPs. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Any non-compliances / complaints relating to transport and access will be recorded and addressed in accordance with the complaints procedure, refer to Section 9.2. – Road Dilapidation Report(s) will be prepared for affected roads (public and private) likely to be used by construction traffic prior to commencement of construction to assess the current condition of the road and describe mechanisms to restore damage that may result due to construction traffic related to the FGP.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV.

	– Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Identify the source of traffic/transport impact and repair any damage, modify the controls, or modify procedures that may be inadequate. – All personnel will be retrained in procedures where the procedures are modified or new ones adapted.

7.18 Cultural Heritage

The FGP has the potential to impact upon known and unknown cultural heritage values (both Indigenous and non-Indigenous).

Cultural heritage items that have been identified that may be impacted by the ROW and require management, include:

- PCCC / Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda (BGGGTB) People:
    - Debitage
    - Artefact scatters
- Darumbal People
    - Isolated Stone artefacts
    - Scarred trees.

Within the ROW, between the Fitzroy and Gladstone there are two Historical Archaeological Sites that may be directly impacted by the FGP:

- Woolwash - Frogmore Pipeline
- Stone Culvert and Twelve Mile Road

Table 7-18 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing cultural heritage values.

Table 7-18 Cultural Heritage Control Plan

Element	**Cultural Heritage**
Performance Objectives	To minimise the impact of the Project on Aboriginal and historic cultural heritage.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1), specifically: • *Native Title Act 1993* • *Aboriginal Cultural Heritage Act 2003* • *Aboriginal Cultural Heritage Act 2003 – Duty of Care Guidelines* • *Queensland Heritage Act 1992* • Permits, approvals and licence conditions: • Cultural Heritage Management Plans • Native Title Assessment / Indigenous Land Use Agreements (to be developed)
Performance Criteria	– Comply with the CHMP and the *Aboriginal Cultural Heritage Act 2003.* – Manage all incidental cultural heritage finds during construction in accordance with the CHMP. – No impact to known historical heritage items.
Implementation	**Pre-construction** – An Aboriginal Cultural Heritage survey of the FGP will be undertaken to determine the nature and extent of subsurface archaeological material within the ROW prior to construction and before any ground disturbing activities. In accordance with CHMP, the survey of the ROW will be undertaken by representatives of the BGGGTB and Darumbal People. – The environmental induction will include training for all personnel with regard to their obligations under the CHMP and the measures to be taken in the event of an historic or Aboriginal cultural heritage find. Additional inductions from the BGGGTB and Darumbal People will also be implemented. **Construction** – The approved CHMPs with the PCCC (now BGGGTB) and Darumbal People will be implemented for the FGP. The CHMPs and the Cultural Heritage Protocols provide details of the measures to be taken in the event of an Aboriginal cultural heritage find during construction.

	– A basic level of photographic recording, which captures the nature of the item and its context within the cultural environment and within the Project area, will be undertaken prior to works commencing in the area. – In the event of incidental historic cultural heritage finds during construction, works will cease in the area until the nature of the site can be assessed, recorded and or retrieved by a Durumbal / BGGGTB People representative and/or cultural heritage specialist and in consultation with DES. – In the event of any finds of skeletal debris, the local Police will be notified immediately.
Monitoring	– Cultural heritage survey will be undertaken in accordance with the CHMP prior to any ground disturbing activities. – Routine daily visual observance will be undertaken by all personnel during construction (including earthworks during operations) for items of cultural heritage significance. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan. – Monitoring will be undertaken during earthworks by representatives of the BGGGTB and Darumbal People, as required. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP – Internal and external environmental audit results. – Reporting to DES in the event of a cultural heritage find during construction (refer to Table 3-1 for contact details).
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both the GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – Retrain all personnel and sub-contractors in cultural heritage management if the CHMP is not being implemented and modify work practices as required. – Notification to the relevant BGGGTB and Darumbal People or appropriately qualified cultural heritage advisor for assessment of the find.

7.19 Social and Economic

Temporary impacts to landholders may occur during construction of the pipeline and associated infrastructure, e.g. intake facility and WTP and may include:

- Traffic impacts on local roads as a result of construction vehicles and machinery
- Temporary access delays during pipeline construction across local roads
- Amenity impacts associated with noise and dust generated during construction
- Disruption to grazing land, fencing and gates, irrigation, farm dams and other agricultural land.

In addition, the FGP will provide support the local communities and business across the region with employment opportunities and economic benefits.

Table 7-19 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing the social and economic environment.

Table 7-19 Social and Economic Environment Control Plan

Element	Social and Economic
Performance Objectives	– To minimise impacts to the community during construction of the FGP. – To maximise economic opportunities during the construction of the FGP.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1), specifically:
	• Development Requirements or guidelines:
	  • Queensland Government Building and Construction Contracts Structured Training Policy (the 10 percent policy)
	  • Local Industry Policy
	  • CHMPs and relevant Indigenous participation requirements
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • Landowners' requirements
	  • MCU development permits
	  • OPW development permits
	  • Road Works Approval / Road Corridor Permits / Traffic Control Permits (TMR)
	  • Road Reserve Works Permit (RRC)
	  • Works on Road Corridor Permit (GRC)
	  • Road Closure Permit (Queensland Police).

Performance Criteria	– Comply with the *Queensland Government Building and Construction Contracts Structured Training Policy (the 10 percent policy)*. – Comply with the *Local Industry Policy* through the development of a Local Industry Participation Plan in consultation with the Department of Tourism, Regional Development and Industry. – Adhere to the GAWB and MBJV's EMS. – Achieve an Excellent Rating in accordance with ISC manual version 1.2.
Implementation	**Planning** – A Project office will be established in Rockhampton which will potentially increase the opportunities for local and Indigenous residents in Rockhampton to gain employment on the FGP. – Impacted landholder agreements for access routes and construction activities will be prepared and signed in consultation with landholders. **Construction** – Mitigation measures will be implemented to address the accommodation impacts for the FGP include: • Local labour and sub-contractors will be employed where practicable

	• Works will be planned to avoid concurrent operations where practicable • A workers accommodation camp will be developed in Gracemere. **Community Liaison** – Impacted landholders will be informed about when they may be affected by works, and the duration of the works prior to any works occurring. – A 24 hour contact number for the FGP will be implemented for the construction phase so that residents always have an immediate point of contact when they have questions or concerns. – All complaints received will be handled in accordance with the complaints/incidents procedure, refer to Section 9.2.
Monitoring	– Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Monitoring will be undertaken as required of Human Resourcing, housing and Industrial Relations. • Monitoring will be undertaken in accordance with the Air Environment, Noise and Vibration, Transport and Access and Cultural Heritage Control Plans (Sections 7.13, 7.16, 7.17, and 7.18, respectively) – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Local and First Nations employment numbers • Local and First Nations business employed • Reports of any environmental incidents or non-conformances with the CEMP. – Internal and external environmental audit results.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.

7.20 Handling and Storage of Dangerous and Hazardous Goods

The potential impacts from the transport, storage and handling of dangerous and hazardous goods during construction of the FGP have been assessed and include:

- Pollution of land
- Pollution of water
- Impacts to flora and fauna
- Impacts to human health.

Table 7-20 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for handling and storage of dangerous goods.

Table 7-20 Handling and Storage of Dangerous Goods

Element	Handling and Storage of Dangerous Goods
Performance Objectives	– To manage the purchase, handling, storage and disposal of dangerous goods onsite in a manner that does not cause harm to the environment, Project personnel or the public.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 5.1), specifically:
	  • *Dangerous Goods Safety Management Act 2001*
	• Development Requirements or guidelines
	  • AS1940: The storage and handling of flammable and combustible liquids
	  • AS2187: The storage, transport and use of explosives
	  • The Australian Code for the Transport of Dangerous Goods by Road and Rail
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • MCU development permits
	  • OPW development permits.

Performance Criteria	– No contamination of the environment and no injuries to personnel or the public from the storage or handling on dangerous goods.

Implementation	**Construction**
	– All personnel will receive an induction prior to commencing work on the site in the handling and storage of dangerous goods and in spill containment procedures.
	– A hazard identification and risk assessment process will be undertaken for the storage of dangerous goods in Project areas.
	– The SDS for all dangerous goods and hazardous materials will be kept onsite/TeamBinder.
	– Licenses or permits will be obtained from the relevant local governments if required for flammable and combustible liquids.
	– Risks posed by dangerous goods and hazardous materials stored or handled during construction will be minimised where reasonably practicable through:
	  • Minimisation of the quantities kept onsite.
	  • Compliance with SDS instructions.
	  • Segregation of incompatible dangerous goods and hazardous materials.
	  • Appropriate separation of dangerous goods and hazardous materials storage areas from people and property.
	  • Storage of flammable or combustible dangerous goods away from ignition sources.
	– Flammable and combustible liquids will be stored in bunded containers / areas in accordance with AS1940 and transported and disposed of by an appropriately licensed contractor.
	– Liquid dangerous goods will be stored in bunded containers with sufficient capacity to contain the potential spillage and any rainfall (i.e. 110% of the largest tank).
	– Personal protective equipment will be provided to personnel required to work with dangerous goods.

	– If a spill occurs: • cease the activity • contain the spill • clean up the spill • commence incident management and response process, refer to Section **9.1**. – Appropriately stocked spill kits will be located in each construction area and along the ROW and personnel will be trained appropriately in the use. – Any refuelling undertaken at site will be undertaken in a designated refuelling area, away from waterways, with nozzles with stop valves to reduce the risk of contamination to the environment. – Portable fire extinguishers will be available if required at Project areas and in vehicles. – Plant and equipment will be maintained in accordance with manufacturers' specification to minimise the leakage of oil, fuel, hydraulic and other fluids. – Regulated wastes will be transported by a licensed contractor to a licensed waste management facility able to accept the waste. – Explosives (dangerous goods class 1) will be used if the drill and blasting option is pursued in accordance with a Blasting Management Plan. Explosives will be stored in accordance with AS2187: The storage, transport and use of explosives and will be handled by a licensed explosives expert. Noting these would only be brought onto the Site on the day of discharge (i.e. not stored on the ROW).
Monitoring	– Routine daily visual observance will be undertaken by all personnel during construction for possible incidents related to dangerous goods and hazardous materials. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Inspecting the dangerous goods storage area(s) • Checking for evidence of spills or releases • Recording of any spills occurring at Project areas and implementing corrective actions • Inspecting spill kits to ensure they are readily available and well maintained, stocked and functional. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Inventory of dangerous goods and hazardous materials at the site during construction and operation including their storage requirements, locations and SDS.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB. – The following corrective actions will be undertaken: • Immediately clean up the spill and dispose of any contaminated material • Repair the containment facilities to reduce the risk of further spills occurring • In addressing a major spill involving dangerous goods DES and local authority will be contacted as required. – Non-compliance with the implementation measures above will be corrected immediately and a non-conformance report completed.

7.21 Rehabilitation and Revegetation

The construction of the FGP will result in temporary and permanent impacts. These impacts primarily relate to ground disturbance, vegetation clearing and fauna habitat clearing of Project areas and include temporary impacts that are restricted to the construction period as well as permanent impacts for access and maintenance purposes (i.e. 10 m wide maintenance access track). In addition, some areas would be used on a temporary basis for access to the ROW, laydown areas and to accommodate workers to support the construction.

Table 7-22 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for landscape and visual amenity management.

Table 7-21 Rehabilitation and Revegetation Control Plan

Element	Rehabilitation and Revegetation
Performance Objectives	– To create stable landforms with similar land use capability and or suitability that existed prior to the disturbance unless an alternative end land use is pre-determined and or agreed. – To reinstated and rehabilitate marine plants to pre-disturbance conditions.
Legislative Requirements	– Compliance with: • Legislation (as per Section 5.1) • Permits, approvals and licence conditions: • CG's Evaluation Report • EPBC Act approval • Landowners' requirements • MCU development permits • OPW development permits.
Performance Criteria	– No environmental harm to occur due to rehabilitation and revegetation activities. Landform is stable, shows negligible movement and represents the pre-disturbance conditions. – All rehabilitation and revegetation areas remain in good health. – Vegetation composition represents pre-disturbance conditions. – All disturbed land reinstated to pre-disturbance profiles so that the spatial extent of terrestrial and marine plants represents pre-disturbance levels. – Species richness, density and cover representative of pre-disturbance conditions.
Implementation	**Pre-construction** – The ROW and facility locations will be inspected and surveyed prior to construction in order to establish baseline conditions and to: • Identify trees and vegetation that are required to be protected / retained • Identify marine plant species and number of individuals impacted • Identify any weeds and pests to be managed • Identify any contamination sources • Identify the condition of the land. – Prior to clearing activities, where possible, marine plants will be removed and relocated to a suitable area within the ROW or a suitable nursery with plant health monitored during daily inspections. Following construction activities, surviving plants will be relocated back to the area they were removed from. – Vegetation clearance, including at sensitive sites, will be minimised where practicable. **Construction** – Rehabilitation and remediation controls contained in the SAPs - for Waterways, Yellow Chat, Ornamental Snake and Brigalow vegetation habitats will be implemented. – Reinstatement will commence as soon as practicable after construction activities and no later than one month after completion of works impacting marine plants.

	– Any land disturbed due to the laying of the pipeline will be rehabilitated to its pre-clearance or disturbance condition where practicable. – Topsoil will be stripped and reused for rehabilitation and landscaping purposes. – Soils will be replaced so that the topsoil depth is consistent with pre-clearance depths and profiles. – Ground cover will be established at disturbed sites following respreading of topsoil. Ground cover can include organic material, leaf litter, mulch, hydromulch, living or dead plant material, rocks, logs, other woody materials or erosion control materials. – Disturbed areas may also be sown with a cover crop immediately following topsoil respreading in areas with high erosion potential. – Backfill will be machine compacted to reduce the risk of surface erosion and trench subsidence post construction and rehabilitation. – Adequate cover will be placed on all disturbed areas prior to the removal of stormwater runoff controls. – At the end of construction, all areas of exposed soil will be mulched and/or grassed to minimise any ongoing erosion issues from Project areas. – Temporary stormwater and sediment control devices will be removed only once groundcover is established. – Temporary hoardings, barriers, traffic management and signage will be removed when no longer required. – Waterway crossings and wetlands will be revegetated with trees, shrub and grasses endemic to the area, sufficient to re-establish a riparian environment and protect bed and banks from erosion as per the Riverine protection permit exemption requirements WSS/2013/726 Version 2.02 (DRDMW, 2023). – Rehabilitation will include the following measures, to be undertaken progressively as works are staged: • Recontouring and compaction • Topsoil replacement • Weed control • Erosion protection • Revegetation, consistent with pre-clearance and surrounding conditions.
Monitoring	– Pre-clearance surveys will be undertaken for Project areas to assess pre-disturbed conditions. – Photo monitoring sites will be established. – Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and include monitoring for: • Landform stability, soil cover and erosion. • Rehabilitation health • Species diversity • Foliage cover at reference sites • Induction or presence of weeds. – Monitoring for marine plant rehabilitation will be undertaken in accordance with the SAP – Waterways. – Post-rehabilitation and revegetation monitoring will be undertaken for a period of five years or until the revegetation has stabilised and in good health.
Reporting	– Environmental records to be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed monitoring reports • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	– MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.

	– Where either natural regeneration or reinstatement of the relocated marine plants fails to meet the performance criteria, assisted revegetation and direct planting will be undertaken with a species mix and density that is consistent with the pre-clearance conditions, as outlined in the SAP – Waterways.

7.22 Landscape and Visual Amenity

The construction of the FGP would create short-term impacts. These impacts would primarily relate to the visual appearance of the construction works that would be temporary, restricted to the construction period. Some areas would be used on a temporary basis for storage areas and accommodate workers to support the construction.

Table 7-22 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for landscape and visual amenity management.

Table 7-22 Landscape and Visual Amenity Management Control Plan

Element	Landscape and Visual Amenity
Performance Objectives	– To minimise visual modification impacts upon landscape and visual amenity that arise during construction and operation. – To return visual amenity back to pre-disturbance condition where possible.
Legislative Requirements	– Compliance with: • Legislation (as per Legislation (as per Section 5.1) • Permits, approvals and licence conditions: • CG's Evaluation Report • Landowners' requirements • MCU development permits • OPW development permits.
Performance Criteria	– Protect and/or reasonably restore landscape and visual amenity. – Stable landforms with similar land use capability and or suitability that existed prior to the disturbance unless an alternative end land use is pre-determined and or agreed.
Implementation	**Construction** – Project areas will be inspected prior to construction to • Identify trees and vegetation that are required to be protected / retained • Identify any weeds and pests to be managed • Identify any contamination sources • Identify the condition of the land. – Vegetation clearance, including at sensitive sites, will be minimised where practicable. – Topsoil and cleared vegetation will be stripped and reused for rehabilitation and landscaping purposes. – Temporary hoardings, barriers, traffic management and signage will be removed when no longer required. – Lighting of compounds and works sites will be restricted low impact lighting for security purposes, where and when required. – Lighting spill will be minimised by directing lights away from sensitive receptors. – Temporary storage facilities will be located out of sight of residential areas where practicable. – A high level of housekeeping will be maintained with materials and machinery being stored tidily during construction, and where possible behind solid hoardings. – Roads providing access to site compounds and work areas will be maintained free of dust and mud as far as reasonably practicable. – Upon completion of construction, all construction materials will be removed to a suitable location. – Screen planting and/or natural vegetation revegetation will be undertaken as required at locations outside the ROW (e.g facility sites). – Appearance of other features such as signs and fencing will be considered minimise visual amenity impacts. – Rehabilitation (refer to Section 7.21) will include the following measures, to be undertaken progressively as works are staged:

	• Recontouring and compaction • Topsoil replacement • Weed control • Erosion protection • Revegetation, consistent with surrounding conditions.
Monitoring	– Weekly environmental inspections will be undertaken by the Environmental Representative/Manager, Environmental Advisor during construction to ensure environmental management is implemented in accordance with this control plan and will include: • Identification of visual amenity issues • Identification of landscaping vegetation health. – Post-rehabilitation and landscaping monitoring will be undertaken on a monthly basis. – Environmental audits will be undertaken by GAWB during construction quarterly (or as determined).
Reporting	– Environmental records will be kept onsite/TeamBinder and made available to GAWB or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	– Undertake a site inspection following a complaint of a visual amenity issue. Inspect the area for where the complaint was made and if complaint is valid undertake appropriate management measures to rectify. – MBJV will notify GAWB of any non-conformances with the above measures and corrective action (with approval from GAWB) will be taken to address the non-conformance. A non-conformance report will be completed by MBJV and filed by both GAWB and MBJV. – Where GAWB is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. A non-conformance report will also be filed by GAWB.

8. PERFORMANCE AND EVALUATION

The MBJV Environmental Representative/Manager and Environmental Advisor will implement the requirements of the CEMP with support from GAWB. The environmental performance of the FGP will be determined by implementing environmental monitoring programs and site inspection programs consistent with this CEMP. Compliance with environmental requirements will be assessed during site inspections, monitoring and environmental audits. All environmental management matters and monitoring, inspection and audits will be documented and recorded.

Based on the type of inspection, monitoring or audit, they should be carried out by suitably qualified persons. For example, a daily inspection should be complete by a person who understands the operations and controls in the area.

MBJV will implement any changes necessary to its EMS, management plans, procedures and processes in response to Project changes with the intention to drive continuous improvement for the FGP.

8.1 Monitoring and Inspections

The FGP's environmental performance will be tracked through regular monitoring and inspections. The aim of the monitoring and inspections will be to show the effectiveness or suitability of controls should there be an incident or complaint.

Monitoring activities will be conducted by suitably qualified persons. Monitoring will be carried out in accordance with guidelines and standards and conditions of approvals and the requirements of the SMP and SAP – Waterways.

The inspections will also be conducted by suitably qualified persons and review all environmental controls that are relevant to the construction activities underway at the time of the inspections. Implementation of all mitigation measures should be verified and recorded as suitable and effective. The date and time of the inspections will be recorded as well as comments on non-conformance and corrective action taken. Copies of the site inspection checklist will be signed and maintained onsite and in TeamBinder.

The results of the monitoring programs and inspections will be interpreted and reviewed regularly. Results will be reported to relevant authorities within agreed timeframes as determined in approval conditions. The incident management procedures will describe the procedures for instances, where monitoring results trigger the need for a management and/or reporting response.

Where a non-conformance is identified and does not present a significant risk of environmental harm, and can be corrected promptly, the corrective action will be closed out on the checklist. Where the risk of environmental harm is more significant and/or the corrective action cannot be undertaken promptly, the action will be recorded in the corrective action register.

Where a non-compliance, incident or near miss is observed during inspections, the incident investigation and reporting procedure will be followed.

An overview of the monitoring and inspection is provided in Table 8-1 and monitoring program is outlined in Table 8-2.

Table 8-1 Monitoring and Inspection Requirements

Monitoring/Inspection Requirement	Description
Inspection	Regular (weekly) environmental compliance inspections are carried out by the Environmental Representative / Manager and Environmental Advisor for the FGP and relevant work areas. The findings of the Inspection are recorded on Weekly Site Environmental Inspection Report, in which required remedial actions are also recorded, including a responsibility and timeline for completion. These shall be monitored to ensure that they are closed out in the required time frame.

Monitoring/Inspection Requirement	Description
Monitoring	Monitoring and inspection will be conducted on a routine basis; however, additional monitoring may be required in the event of an incident, complaint or change in circumstances. The Environmental Representative/ Manager is responsible for the implementation of onsite environmental measurements, including delegation to appropriate personnel on the Project.
Calibration of Monitoring Equipment	Monitoring equipment will be calibrated prior to use and in line with user manuals for the equipment. Any equipment identified as having doubtful accuracy or precision will be removed from use and recalibrated. Where any monitoring equipment is found to be out of calibration, the validity of the previous monitoring results will be assessed and documented. Calibration of monitoring equipment will be recorded on Equipment Calibration Record.

8.2 Analysis and Evaluation

Monitoring and inspection results will be used to assess the environmental performance of the Project against the relevant criteria depending upon the aspect and the monitoring requirements. The Environmental Representative / Manager is responsible for checking monitoring and inspection results against the environmental obligations and identifying any non-conformances. The Environmental Representative/Manager or Environmental Advisor also is also responsible for raising a non-conformance, incident and/ or corrective action as necessary.

8.3 Environmental Auditing

GAWB will undertake compliance audits on a quarterly basis or otherwise determined. These audits will be conducted to measures the Project's environmental performance against this CEMP, other relevant management plans and against conditions of approvals.

In addition, third party audits to verify compliance with all applicable environmental requirements will be conducted on a six-monthly basis and/or as specified by relevant approval conditions. This will include verifying compliance with at least the following requirements:

- CEMP relevant to construction (this plan)
- EMS
- Applicable legislative and approval requirements
- Other applicable environmental requirements.

Audits will be conducted by an appropriately qualified person, independent of the construction activities or operations being audited. The audit results, conclusions and corrective actions required will be communicated to those responsible for implementing the corrective actions.

An audit report will be prepared to summarise the findings of the audits including non-compliances, corrective actions, revised practices and evidence to support the findings of the audit. The audit reports will be provided to the Coordinator-General within 30 business days of the end of the monitoring period to which the audit relates and made available to other relevant environmental authorities as required.

The audit period will begin on commencement of construction and end once all audit report corrective actions have been completed.

Table 8-2 Monitoring Program

Environmental Issue	Document Reference	Location onsite	Monitoring Parameter	Frequency	Record	Responsibility
Flora and Fauna	Fauna Management Control Plan Flora Management Control Plan Rehabilitation and Revegetation Control Plan Landscape and Visual Amenity Control Plan Species Management Program	Entire Project Area	Adherence to minimum areas of site clearance and disturbance/damage around Project areas.	At all times	Acceptance/sign off	Environmental Representative / Manager
		As required	All fauna identified during construction activities (refer to relevant SAPs)	At all times	Inspection	Environmental Representative / Manager
		As required	All vegetation removed or disturbed must be tracked in a vegetation tracking register. Rehabilitation performance. (refer to relevant SAPs)	At all times	Register	Environmental Representative / Manager
Weed, pest and disease	Pest and Weed Management Sub-Plan	Entire Project Area	Monitoring and control to prevent outbreak of weeds, pests, and diseases	Pre-construction and at all times	Inspection	Environmental Representative / Manager
Materials, fuel, and waste management	Dangerous and Hazardous Goods Control Plan Waste Management Control Plan Sustainability Management Plan (SMP)	Entire Project Area	Waste to be avoided, reused, or recycled in preference to disposal	At all times, at least weekly	Inspection; monthly National Green House Emission Reporting data	Environmental Representative / Manager
		Construction waste storage locations	Correct waste classification for all waste	At all times, at least weekly	Inspection; monthly National Green House Emission Reporting data	Environmental Representative / Manager
Hazardous materials	Dangerous and Hazardous Goods Control Plan	Entire Project Area	Observation of vehicle/plant maintenance and refuelling activities	At all times	Inspection	Environmental Representative / Manager

Environmental Issue	Document Reference	Location onsite	Monitoring Parameter	Frequency	Record	Responsibility
Water quality	Water Resources and Water Quality Control Plan	Receiving environment	Turbidity, pH, dissolved oxygen, electrical conductivity	Prior to active discharge to storm water drainage systems or marine environment (via overflow or pumping), during rainfall events when runoff from site	Water quality readings	Environmental Representative / Manager
Air quality	Air Environment Control Plan	Entire Project Area at sensitive receptors installed at representative sites.	g/m2/month Respirable crystalline silica dust as required	Continuous dust deposition monitoring In response to a complaint	Records	Environmental Representative / Manager
Noise and Vibration	Noise and Vibration Control Plan	At selected sites with the potential for high vibration e.g. blasting / rock breaking at Aldoga Reservoirs	Peak particle velocity (mm/s) via vibration	During high vibrational activities In response to a complaint	Records	Environmental Representative / Manager Acoustic consultant
		At selected sites	Leq ,15min dB(A), airborne noise	In response to a complaint	Records	Environmental Representative / Manager Acoustic consultant
Material Movement	Dangerous and Hazardous Goods Control Plan Waste Management Control Plan	Entire Project Area	Material movement	At all times, at least weekly	Waste Transport Certificate	Environmental Representative / Manager

8.4 Environmental Recording

TeamBinder, a construction project management document management system developed by InEight will be implemented for the FGP.

Records collected as part of environmental management activities will be retained by GAWB and MBJV for the legally required period of time. Environmental records include but may not be limited to:

- Site inspection checklists
- Environmental audit reports
- Monthly reports
- Training records
- Monitoring data
- Complaints and associated records of communication
- Non-conformance and incident records including investigation and close out details
- Meeting minutes.

Records of all activities for monitoring, inspections and audits will be recorded for the purpose of any condition compliance required. Environmental files will be kept onsite and made available to GAWB or external auditors upon request. This file will contain the following:

- Completed environmental checklists/reports during the construction phase
- Reports of any environmental incidents or non-conformances with the CEMP
- Internal and external environmental audit reports including audit action plans
- Annual audits regarding compliance with EPBC Act approval conditions.

8.5 Reporting

TeamBinder will be implemented for the FGP that will be able to generate dashboards and reporting.

Reporting requirements will evolve as the FGP progresses. In the early phases, emphasis is on the establishment of systems, controls, and competence of all personnel, while later the emphasis will shift to monitoring performance. When nearing completion (as applicable) the focus will be on final reports to address approval requirements.

The Environmental Management Representative/Environmental Manager is responsible for managing environmental performance reporting. The Project Manager is responsible for submitting the reports required externally.

Routine reporting requirements are summarised in Table 8-3, noting other Project / legislative reporting requirements will be relevant from time to time.

Table 8-3 Reporting Requirements

Reporting Requirement	Reporting Frequency	Responsibility
Weekly inspection checklist and reports	Weekly	Environment Manager
Monthly Reports (including training records, monitoring data, regulator interactions)	Monthly	Project Manager
Annual Status Reports	Yearly	Environment Manager
Project completion report	Project completion	Project Manager
Approval condition closeout report	Project completion/when required (e.g., permit closeout/surrender)	Environment Manager

Reporting Requirement	Reporting Frequency	Responsibility
Incidents/Complaints Register	As required	Environment Manager
Non-conformances	As required	Environment Manager
Corrective Action Register	Monthly	Environment Manager
Pre-clearance Reports	Monthly	Environment Manager
Weed wash-down Register during construction	Monthly	Environment Manager
Internal and external environmental audit reports	As completed	Environment Manager
Sustainability data (including energy use, water use, waste generation and meeting minutes)	Monthly	Environment Manager
Greenhouse gas emissions data	Monthly	Environment Manager
Quantities of wastes generated and disposed	Monthly	Environment Manager
Records of Hydrotest water quality prior to discharge and of the locations and quantities of discharge	Prior to and Monthly during commissioning	Environment Manager
Review of the CEMP	Yearly	Environment Manager

9. INCIDENTS, NON-CONFORMANCES, COMPLAINTS AND EMERGENCIES

9.1 Incidents and Non-Conformances

All personnel must always be mindful of the provisions of the CEMP to identify and notify non-incidents conformances to GAWB and relevant regulatory agency as required. Incidents will be managed and investigated, and reports raised, tracked, and closed out.

The cause of all incidents will be subject to an investigation, convened by the Environmental Representative / Manager to determine the root causes of the incident and to ensure that remedial/corrective action is able to be implemented to ensure a repeat of the incident is avoided.

Environmental impact is defined as the following:

- Environmental Impact may be direct or indirect
- Harm to the environment involving removal or destruction of native flora and fauna or the removal and destruction of the habitat of native flora and fauna
- Alteration of the environment to its potential or actual detriment or degradation
- Alternation of the environment to the potential or actual detriment or degradation of an environmental principle
- Alteration of the environment of a prescribed kind.

Environmental incidents and near-misses are defined as follows:

- Serious Environmental Impact can be defined as:
    - Environmental harm that – Is permanent, of high impact or on a wide scale
    - Is significant or in an area of high conservation value or special significance
    - Results in actual or potential loss, property damage or damage costs of $100,000 or more (to financial year ending 30 June 2023, after which this is increased by the consumer price index), or could result in costs of more than $100,000 for action to prevent or minimise harm and to rehabilitate and restore the environment
    - An incident or set of circumstances during or as a consequence of which, there is or is likely to be a leak, spill or other escape or deposit of a substance (liquid, solid, gas), as a result of which pollution (material environmental harm) has or is likely to occur.
- Material Environmental Impact can be defined as:
    - Environmental harm that - Is not trivial or negligible in nature, extent, or context
    - Could cause loss or damage to property of more than $10,000 but less than $100,000 (to financial year ending 30 June 2023, after which this is increased by the consumer price index)
    - Could result in costs of more than $10,000 but less than $100,000 (2022/2023) for action to prevent or minimise harm and to rehabilitate and restore the environment to its condition before the harm.
- Minor environmental incident can be defined as:
    - An environmental incident that does not result in serious or material environmental harm but does result in degradation to the receiving environment that is contained without further impact or rectified in a timely manner, at a cost less than $10,000.

- A Near-miss environmental incident is an event where environmental damage/loss/impact could have occurred but did not (i.e., Spill to impervious surface, hardstand, spoil, or bare earth (where topsoil has been stripped), less than 5L and cleaned up with no residual impact to the environment i.e., hydraulic hose burst resulting in 2L spray to asphalt.). Near-misses must be raised and discussed to drive continual improvement in environmental best practice.
- A Hazard is a source or situation that may pose a risk of harm to a person or the environment (i.e., an in-secure hydraulic hose presenting the potential for drip of a hydrocarbon onto soil, resulting in land contamination. The hazard must be raised, and a corrective action assigned. This method will capture the required data for reporting purposes.

A summary and review of incidents for the duration of the Project and for the relevant month will be included in the Monthly Report.

9.1.1 *Notification Procedure*

GAWB and MBJV parent companies, and applicable regulatory agency (where relevant) will be notified of incidents that trigger notification as defined in the Incident Reporting and Investigation procedure. These triggers include offsite discharges, unauthorised disturbance or destruction of fauna, flora or heritage sites and breaches and non-conformances of licences and permits issued for the FGP.

The Project Manager is responsible for notifying GAWB and parent companies of reportable incidents. Depending on the nature of the incident and/or non-compliance (and project approval), the Environmental Representative / Manager is responsible for notifying the relevant regulatory agency.

9.2 Complaints

To minimise impacts to the community during construction of the FGP, a complaints procedure will be implemented by MBJV in consultation with GAWB and with consideration of relevant approval conditions. The procedure includes:

- All complaints are responded to in a timely manner and in accordance with GAWB's policy.
- Corrective action to address any complaint is taken as soon as possible or an explanation given to the complainant.
- Adherence to GAWB and MBJV's EMS.

The complaint procedure includes:

- A 24 hour contact number for the Project will be implemented for the construction phase to provide the community and stakeholders with a channel of communication to the Project team particularly if there is a complaint.
- Information updates will be distributed to relevant stakeholders (e.g. adjacent properties) at regular intervals during construction and when disturbance is expected from a particular construction activity.
- An incidents/complaints report form (categorised as a complaint for tracking purposes) will be in place prior to the commencement of construction and will be used to record the following information:
    - Date, time and nature of the incident/complaint
    - Contact details of the complainant – where available
    - Whether it is a repeat complaint
    - Nature of the enquiry or issue of concern
    - Record of communication with the complainant
    - The person responsible for investigating/addressing the complaint.

- The outcome of the complaint investigation and any remedial/corrective actions taken by the construction team to cease the impact.

9.3 Emergencies

MBJV has developed an Emergency Response Procedure in accordance with the CEMP, and GAWB and MBJV's EMS.

10. REVIEW AND IMPROVEMENT

10.1 CEMP Review

GAWB and MBJV is responsible for the updating and review of this plan. The CEMPs will remain up to date with the most current information, revised and reviewed as required to maintain currency. Where non-conformances or incidents resolve findings that can be implemented as a positive change, that change should also be made in this document if relevant. The review will consider the following:

- Changes in legislative requirements (including conditions of approvals)
- Amendments to approvals and permits
- Environmental performance, findings of environmental audits and inspections
- Outcomes of regulatory agency consultation
- Outcomes of consultation with communities and resolution of complaints
- Changes in external and internal policies, standards and guidelines.

This CEMP will be reviewed, at a minimum, on an annual basis by Project leadership. The Environmental Representative / Manager will be responsible for ensuring this is carried out. The review will ensure the continuing suitability, adequacy and effectiveness of the CEMP, and the EMS. The review will include assessing opportunities for improvement. Further the review will include:

- Progress of the implementation of this CEMP
- Effectiveness of this CEMP
- Adequacy of resources
- Effectiveness of training and training requirements
- Results of inspections and audits
- Critical non-conformances or repeated non-conformances
- Overall performance against environmental compliance obligations
- Organisational changes, changes to legislation and other obligations.

Records of the review will be recorded and any actions arising will be recorded in the corrective actions register.

10.2 Document Control

This CEMP is a controlled document, and updates to this document will be provided an updated Revision number including the date and lodged in TeamBinder to ensure the most up to date document is used.

This CEMP will also have appropriate controls included authored, reviewed and approved by suitably qualified persons under a delegation of authority protocols.

10.3 Management of Change

Management of change will be undertaken in line with the MBJV Change Management Procedure.

- Environment changes could introduce circumstances that lead to:
- Uncertainty amongst workers and sub-contractors
- Lack of confidence amongst workers
- Increased potential for unidentified hazards leading to increased risk
- Unplanned events and short cuts in work practices
- Fatigue/workplace stresses
- Potential breaches of licence and permit of contract conditions.

The key aspects to the change management procedures are:

- Identifying changes and their potential impact

- Assessing the change using a risk-based approach
- Stopping work where applicable
- Utilising existing risk management procedures
- Involving workers and managers according to the level of risk
- Establishing control measures
- Documenting necessary change controls
- Documenting further actions
- Monitoring new change controls
- Reviewing new change controls.

Appendix H

State Code 16

State code 16: Native vegetation clearing

State Development Assessment Provisions Guidance material: State code 16: Native vegetation clearing provides the assessment criteria for assessable development involving clearing of native vegetation. For development involving clearing of vegetation, must comply with the code by either:

- Demonstrating compliance all relevant performance outcomes. or
- Demonstrating compliance with the Purpose Statement, even if it does not comply with some or all of the relevant performance outcomes.

As the proposed clearance of native vegetation is for "public safety, relevant infrastructure activities and / or consequential development of IPA approval", the following performance objectives (POs) are applicable as outlined in Table 16.1: General PO1 – PO3 and PO4 - PO18. Assessment of the FGP against these prescribed PO's is addressed below in Table 16.2.

Table 16.1: Relevant code provisions for each type of development

Clearing purpose	Relevant provisions	FGP GSDA alignment applicability
Material change of use and / or reconfiguring a lot and / or operational work		
Public safety, **relevant infrastructure activities** and / or **consequential development of IPA approval**	Table 16.2 and Table 16.3	Applicable – water infrastructure meets relevant infrastructure requirements
Extractive industry	Table 16.2 and Table 16.4	Not applicable
Coordinated project (agriculture)	Table 16.2 and Table 16.5	Not applicable
Coordinated project (**extractive industry**)	Table 16.2 and Table 16.6	Not applicable
Coordinated project (all other purposes)	Table 16.2 and Table 16.7	Not applicable – the Project is not currently a coordinated project
Material change of use and / or reconfiguring a lot for all other purposes	Table 16.2 and Table 16.8	Not applicable
Material change of use and / or reconfiguring a lot for which there will be no **clearing as a result of the material change of use** or **reconfiguring a lot**	Table 16.9	Not applicable
Material change of use and / or reconfiguring a lot for which **clearing** is limited to **clearing** that could be done as **exempt clearing work** for the purpose of the development prior to the material change of use or reconfiguring a lot application being approved	Table 16.2 and Table 16.10	Not applicable
Operational work		
Necessary environmental clearing	Table 16.2 and Table 16.11	Not applicable
Control non-native plants or **declared pests**	Table 16.2 and Table 16.12	Not applicable
Encroachment	Table 16.2 and Table 16.13	Not applicable
Fodder harvesting	Table 16.2 and Table 16.14	Not applicable
Managing thickened vegetation	Table 16.2 and Table 16.15	Not applicable

Table 16.2: General

Performance outcomes	Acceptable outcomes	Response
PO1 Clearing of **vegetation** is consistent with any **notice requiring compliance** on the land subject to the development application, unless a **better environmental outcome** can be achieved.	No acceptable outcome is prescribed.	**Complies with PO1** The majority of clearing associated with the FGP GSDA alignment is defined as 'self-assessable' under the GSDA Development Scheme (refer to Section 6.2.6 of the Planning Report). The clearing that is identified as assessable and therefore subject to this State Code includes: • Category B endangered RE on Lots 7 SP177782 and 21 SP115224 • Category X areas over road reserves. There are no notices requiring compliance for Lot 7 SP177782 and 21 SP115224 (Category B endangered RE). Notices requiring compliance do not apply to Category X areas over road reserves.
PO2 Clearing of **vegetation** is consistent with **vegetation management requirements** for **particular regulated areas** unless a **better environmental outcome** can be achieved.	No acceptable outcome is prescribed.	**Complies with PO2** There are no particular regulated areas for Lot 7 SP177782 and 21 SP115224. Particular regulated areas do not apply to road reserves.
PO3 Clearing of **vegetation** in a **legally secured offset area**: 1. is consistent with the **offset** delivery plan; or 2. is consistent with an **agreement** for the **offset area** on the land subject to the development application; or 3. only occurs if an additional **offset** is provided.	No acceptable outcome is prescribed.	**Complies with PO3** Clearing is not within a legally secured, designated offset area.

Table 16.3: Public safety, relevant infrastructure activities and / or consequential development of IPA approval

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
PO4 Clearing of **vegetation** and **adverse impacts of clearing vegetation** do not occur unless the application has demonstrated that the **clearing** and the **adverse impacts of clearing** have been: 1. reasonably avoided; or 2. reasonably minimised where it cannot be reasonably avoided.	No acceptable outcome is prescribed.	**Complies with PO4** The FGP GSDA alignment was selected based on a number of requirements including minimising impact upon environment, cultural heritage and community values. Where practical, the FGP GSDA alignment selection process has: • Maximised use of previously cleared areas • Follows existing linear infrastructure where practical • Is located within the appropriate precinct of the GSDA The majority of clearing for the FGP GSDA alignment is defined as 'self-assessable' under the GSDA Development Scheme, refer to Section 6.2.6 of the Planning Report. The clearing that is assessable and therefore subject to this State Code includes: • Category B endangered RE on Lots 7 SP177782 and 21 SP115224, where 0.45 ha of the mapped polygon will be cleared, of which 0.225 ha is vegetation, the remainder is grassed and unwooded areas. • Category X areas over road reserves, where 1.75 ha of clearing is required. The FGP GSDA alignment within Lots 7 SP177782 and 21 SP115224 follows existing linear infrastructure alignments where the endangered RE polygon has already been fragmented, with only the fragmented portion of the RE polygon to be cleared. Refer to Section 3.5.4.1 of the Planning Report. Clearing of Category X vegetation within road reserves cannot be avoided. The FGP GSDA alignment intersects a number of minor road reserves and the alignment follows Aldoga Road for a portion of its length to minimise impact to private land and clearing of other categories of vegetation. During construction, a Construction Environmental Management Plan (CEMP) will be implemented to mitigate impacts. A copy of the draft CEMP is provided in Appendix G of the Planning Report.

Performance outcomes	Acceptable outcomes	Response
Clearing associated with wetlands		
PO5 Clearing of **vegetation** within a natural **wetland** and/or within 100 metres of the **defining bank** of a natural **wetland** maintains the composition, structure and function of any **regional ecosystem** associated with any natural **wetland** to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat.	**AO5.1 Clearing** does not occur in a natural **wetland** or within 100 metres of the **defining bank** of any natural **wetland**. OR **AO5.2 Clearing** within 100 metres of the **defining bank** of any natural **wetland**: 1. does not occur within 10 metres of the **defining bank** of any natural **wetland**; and 2. does not exceed widths in reference table 1 in this code.	**Complies with PO5** Clearing that is assessable development will not occur within 100 m of a MSES high ecological significance wetland or Wetland Protection Area.
PO6 Where **clearing** of **vegetation** in a **regional ecosystem** associated with a natural **wetland** does not maintain the composition, structure and function of the **regional ecosystem**, and cannot be avoided and has been mitigated, an **offset** is provided for any acceptable **significant residual impact**.	No acceptable outcome is prescribed.	**Not applicable** Clearing will not occur within a regional ecosystem associated with a wetland. The endangered RE polygon to be partly cleared is mapped as a heterogeneous polygon containing RE 11.11.4/11.11.15/11.11.4c/11.11.5/11.11.18. none of these REs are associated with wetlands.
Clearing associated with watercourses and drainage features		
PO7 Clearing of **vegetation** within a **watercourse** and/or **drainage feature** and/or within the relevant distance (listed in reference table 2) of a **watercourse** and/or **drainage feature,** maintains the composition, structure and function of the **regional ecosystem** associated with the **watercourse** and/or **drainage feature** to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat.	**AO7.1 Clearing** does not occur in any of the following areas: 1. inside the defining bank of a **watercourse** or **drainage feature**; and 2. within the relevant distance of the **defining bank** of any **watercourse** or **drainage feature** in reference table 2 of this code. OR **AO7.2 Clearing** within any **watercourse** or **drainage feature**, or	**Complies with PO7** The assessable Category B endangered vegetation is greater than 100 m from a watercourse or drainage feature mapped on the Vegetation Management Map. Assessable clearing of Category X vegetation within road reserves occurs 10 m or more away from watercourses or drainage features mapped on the Vegetation Management Map. Assessable clearing will not occur within the defined distance (as per table 2) of a watercourse.

Performance outcomes	Acceptable outcomes	Response
	within the relevant distance of the **defining bank** of any **watercourse** or **drainage feature** in reference table 2 of this code: 1. does not exceed the widths in reference table 1 of this code; and 2. does not occur within 10 metres of the **defining bank**, unless **clearing** is required into or across the **watercourse** or **drainage feature**.	
PO8 Where **clearing** of **vegetation** in a **regional ecosystem** associated with a **watercourse** and/or **drainage feature** does not maintain the composition, structure and function of the **regional ecosystem**, and cannot be avoided and has been mitigated, an **offset** is provided for any acceptable **significant residual impact**.	No acceptable outcome is prescribed.	**Complies with PO8** Refer to the response to PO7. Assessable clearing will not occur within the defined distance (as per table 2) of a watercourse.
Connectivity		
PO9 Regional ecosystems on the subject land and any adjacent land retain sufficient **vegetation** to: 1. maintain **ecological processes**; and 2. ensure the **regional ecosystem** remains in the landscape despite **threatening processes**.	**AO9.1 Clearing** occurs in accordance with reference table 3 in this code.	**Complies with PO9** The mapped Category B endangered RE polygon is 7.5 ha in size; however, the area of remnant vegetation (mapped as three vegetation polygons) over Lots 7 SP177782 and 21 SP115224 is greater than 20 ha in size. The clearing proposed within these lots is 0.225 ha of vegetation, or approximately 1% of the remnant vegetation community within the lots. As such, the proposed clearing area is very minor and will not affect ecological processes. Clearing of Category X vegetation within road reserves is unavoidable. Vegetation in road reserves has previously been impacted by clearing for infrastructure and is predominately regrowth or planted species.

Performance outcomes	Acceptable outcomes	Response
Soil erosion if the local government is not the assessment manager for the development application		
PO10 Clearing of **vegetation** does not result in **accelerated soil erosion** within or outside the land the subject of the development application.	**AO10.1 Clearing** only occurs if an **erosion and sediment control plan** is developed and implemented to prevent increased **soil erosion and instability** resulting from the **clearing**.	**Complies with PO10** The two dominant soil types within the GSDA alignment include Tenosols and Sodosols both of which are susceptible to erosion upon exposure. During the construction phase, erosion and sediment controls will be implemented in accordance with the CEMP and earthworks are to adhere to an Erosion and Sediment Control Plan (ESCP). The ESCP will be developed in accordance with current best practices for construction projects and to align with the International Erosion Control Association (ICEA) guideline. The revegetation of disturbed areas with local native flora species and the stockpiled vegetation (topsoil, mulch etc.) will be utilised in the rehabilitation process, where possible.
Salinity		
PO11 Clearing of **vegetation** within 100 metres of a **salinity expression area** does not contribute to or accelerate **land degradation** through either of the following: 1. **waterlogging**; 2. the **salinisation** of **groundwater**, surface water or soil.	**AO11.1 Clearing** does not occur within 100 metres of a **salinity expression area**.	**Complies with PO11** The assessable clearing will not occur within 100 m of a salinity expression area. A CEMP will be implemented and appropriate revegetation will occur to minimise land degradation risks where possible.
Conserving least concern regional ecosystems - Minimising clearing of areas temporarily required to enable construction of the infrastructure		
PO12 Clearing of **vegetation** for temporary use areas to construct necessary infrastructure, such as temporary use roads or access tracks, maintains the composition, structure and function of **least concern regional ecosystems**.	**AO12.1 Clearing** for temporary use areas to construct necessary infrastructure does not occur in a **least concern regional ecosystem**. OR **AO12.2** Total **clearing** for temporary use areas to construct necessary infrastructure in any **regional ecosystem** combined does not exceed the widths prescribed in table reference table 1 of this code. OR	**Complies with PO12** Clearing of least concern regional ecosystems is 'self-assessable' under the GSDA development Scheme and therefore not subject to this State Code.

Performance outcomes	Acceptable outcomes	Response
	AO12.3 Total **clearing** for temporary use areas to construct necessary infrastructure in any **regional ecosystem** combined does not exceed areas prescribed in table reference table 1 of this code.	
PO13 Where **clearing** of **vegetation** in a **regional ecosystem** for temporary use areas to construct necessary infrastructure does not maintain the composition, structure and function of the **regional ecosystem**, and cannot be avoided and has been mitigated, the **cleared** area is **rehabilitated**.	No acceptable outcome is prescribed.	**Complies with PO13** Refer to the response to PO12.
Conserving endangered and of concern regional ecosystems		
PO14 Clearing of **vegetation** maintains the composition, structure and function of **endangered regional ecosystems** and/or **of concern regional ecosystems**.	**AO14.1 Clearing** does not occur in an **endangered regional ecosystem** or an **of concern regional ecosystem**. OR **AO14.2** Total **clearing** of **endangered regional ecosystems** and **of concern regional ecosystems** combined does not exceed the widths prescribed in table reference table 1 of this code. OR **AO14.3** Total **clearing** of **endangered regional ecosystems** and **of concern regional ecosystems** combined does not exceed areas prescribed in table reference table 1 of this code.	**Complies with PO14** The clearing that is subject to this State Code includes Category B endangered RE on Lots 7 SP177782 and 21 SP115224. Clearing cannot be avoided due to alignment and other infrastructure constraints. Table 1 of this code identifies that clearing is not to exceed 10 m in width or 0.5 ha. The clearing over the two lots in wooded vegetation (i.e. not cleared grassland) is 10 m in width and 0.225 ha in area (total). The clearing meets AO14.2 and AO14.3.

Performance outcomes	Acceptable outcomes	Response
PO15 Where **clearing** of **vegetation** in an **endangered regional ecosystem** or an **of concern regional ecosystems** does not maintain the composition, structure and function of the **regional ecosystem**, and cannot be avoided and has been mitigated, the cleared area: 1. is **rehabilitated**; or 2. where the **cleared** area cannot reasonably be **rehabilitated**, an **offset** is provided for any acceptable **significant residual impact**.	No acceptable outcome is prescribed.	**Complies with PO15** The assessable clearing of Category B endangered RE will not result in a significant residual impact. The Queensland Environmental Offsets Policy – draft Significant Residual Impacts Guideline, identifies that a significant residual impact for dense REs may occur for linear infrastructure is the proposed clearing is greater than 10 m in width. As the clearing width of the Category B endangered RE proposed for the GSDA alignment at this location is 10 m wide, a significant residual impact will not occur.
Essential habitat excluding essential habitat for *Phascolarctos cinereus* (koalas) if development is assessable under Schedule 10, Part 10 of the Planning Regulation 2017		
PO16 Clearing of **vegetation** in a **regional ecosystem** that is an area of **essential habitat** maintains the composition, structure and function of the **regional ecosystem** for each **protected wildlife** species individually.	**AO16.1 Clearing** does not occur in **essential habitat**. OR **AO16.2 Clearing** in **essential habitat** does not exceed the widths prescribed in reference table 1 of this code. OR **AO16.3 Clearing** in **essential habitat** does not exceed the areas prescribed in table reference table 1 of this code.	**Complies with PO16** The assessable clearing that is subject to this State Code includes: • Category B endangered RE on Lots 7 SP177782 and 21 SP115224. No essential habitat is mapped as occurring over these properties. • Category X areas over road reserves where essential habitat is not mapped.
PO17 Where **clearing** of **vegetation** in a **regional ecosystem** that is an area of **essential habitat** does not maintain the composition, structure and function of the **regional ecosystem**, and cannot be avoided and has been mitigated, an **offset** is provided for any acceptable **significant residual impact for** each **protected wildlife** species individually.	No acceptable outcome is prescribed.	**Not applicable** Refer to the response to PO16.

Performance outcomes	Acceptable outcomes	Response
Acid sulfate soils if the local government is not the assessment manager for the development application		
PO18 Clearing of **vegetation** does not result in, or accelerate, disturbance of acid sulfate soils or changes to the hydrology of the location that will result in either of the following: 1. aeration of horizons containing iron sulphides; 2. mobilisation of acid or metals.	**AO18.1 Clearing** does not occur in **land zone 1**, **land zone 2** or **land zone 3**. OR **AO18.2 Clearing** in **land zone 1**, **land zone 2** or **land zone 3** in areas below the five metre Australian Height Datum only occurs where: 1. **mechanical clearing** does not disturb the soil to a depth greater than 30 centimetres; and 2. acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual.	**Complies with PO18** The assessable clearing of Category B endangered RE is for the mixed RE polygon of 11.11.4/ 11.11.15/ 11.11.4c/ 11.11.5/ 11.11.18. As such, assessable clearing is not proposed in land zone 1, 2 or 3. Nevertheless, investigations will to be undertaken on land identified to be a potential ASS risk (i.e. below 5 m AHD), by the Construction Contractor and if encountered, ASS will be required to be managed as per the Department of Environment and Science (DES) soil management guidelines and in the Queensland Acid Sulfate Soil Technical Manual together with a CEMP.

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The Power of Commitment

From:	sdainfo
To:	Rachael Leeson
Subject:	FW: AP2022/006: GAWB pipeline SDA application GSDA - amended drawings
Date:	Friday, 8 December 2023 4:50:28 PM
Attachments:	image005.png image007.png image008.png image009.png image010.png image011.jpg image012.png image013.jpg image014.png 12559247-LET_Amended Drawings for SDA Application.pdf image001.png

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From: Amanda Smedley <Amanda.Smedley@ghd.com>
Sent: Friday, December 8, 2023 2:53 PM
To: sdainfo <sdainfo@dsdip.qld.gov.au>
Cc: Amanda Koenig <Amanda.Koenig@coordinatorgeneral.qld.gov.au>; Sally Chapman <Sally.Chapman@coordinatorgeneral.qld.gov.au>; ClarkE@gpcl.com.au; Planning <Planning@gpcl.com.au>; Luke Stalley <lstalley@gawb.qld.gov.au>
Subject: AP2022/006: GAWB pipeline SDA application GSDA - amended drawings

Good afternoon

Regarding AP2022/006: GAWB pipeline SDA application GSDA

Please find attached a file containing three amended drawings and a supporting cover letter following the project meeting this week. If you have any questions please reach out to myself or Luke Stalley.

Regards

Amanda Smedley (she/her) | A GHD Associate
BSc (Hons) mEIANZ
Senior Environmental Scientist

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From: Amanda Koenig <Amanda.Koenig@coordinatorgeneral.qld.gov.au>
Sent: Monday, November 27, 2023 4:04 PM
To: Amanda Smedley <Amanda.Smedley@ghd.com>
Cc: Melanie Harris <Melanie.Harris@coordinatorgeneral.qld.gov.au>
Subject: GAWB pipeline SDA application GSDA

Hi Amanda

GPC's referral entity response to the GAWB water pipeline application in the Gladstone SDA is due tomorrow. They have requested an extension to providing a response to us which will be processing shortly. We will let you know the date their response is due.

They have raised some issues in relation to the information response (copy of the email is provided below). We thought we would provide this to you for any comments you may have.

GPC response

Prior to the lodgement of the Development Application GPC had been in discussions with GAWB regarding the alignment of the FGP and the design of infrastructure i.e. scour and air valves, as the location and design would render parts of the land unviable for other users. These matters were raised in pre-lodgement discussions with GAWB (October 2022) who advised in writing (November 2022) that *GAWB had undertaken a valve rationalisation exercise which decreased the number and footprint of isolation, air and scour valves*. Design features were also mentioned with the potential *adaption of the air valve design to have the smallest above ground impact as possible.* GAWB also advised that a scour valve configuration would remove the need for a large underground pit.

Original application 11 November 2022

Flow meter and flow control valve near Mt Miller connection point
Isolation valves every 5km
230 scour valves in total development footprint at spacing's of 200m to 800m
240 air valves in total development footprint at spacing's of 500m to 1km

Formal application 26 June 2023

Flow meter and flow control valve near Mt Miller connection point (identified as small box on plan – refer to Drawing 27013) plan not provided.
Isolation valves every 5km
230 scour valves in total development footprint at spacings of 200m to 800m (3 scour valves on Port Land)
240 air valves in total development footprint at spacings of 500m to 1km (15 air valves on Port Land)

Information Request 8 August 2023

GPC had previously raised matters relating to rationalising the number of valves within the corridor and also lowering the valves where possible to allow for other users and maintenance vehicles to traverse the corridor. These matters were formerly raised within an information request.

- Air valve assembly – amend plans and provide further detail with a view of reducing impacts along the transport corridor;
- Scour valves and manholes – amend plans to locate scour valves at ground level and/or increase separation distance to be >50m;

Proposal plans – provide for construction plans and critical crossing detail plans; and

- Temporary construction areas – identify probably temporary construction areas on map.

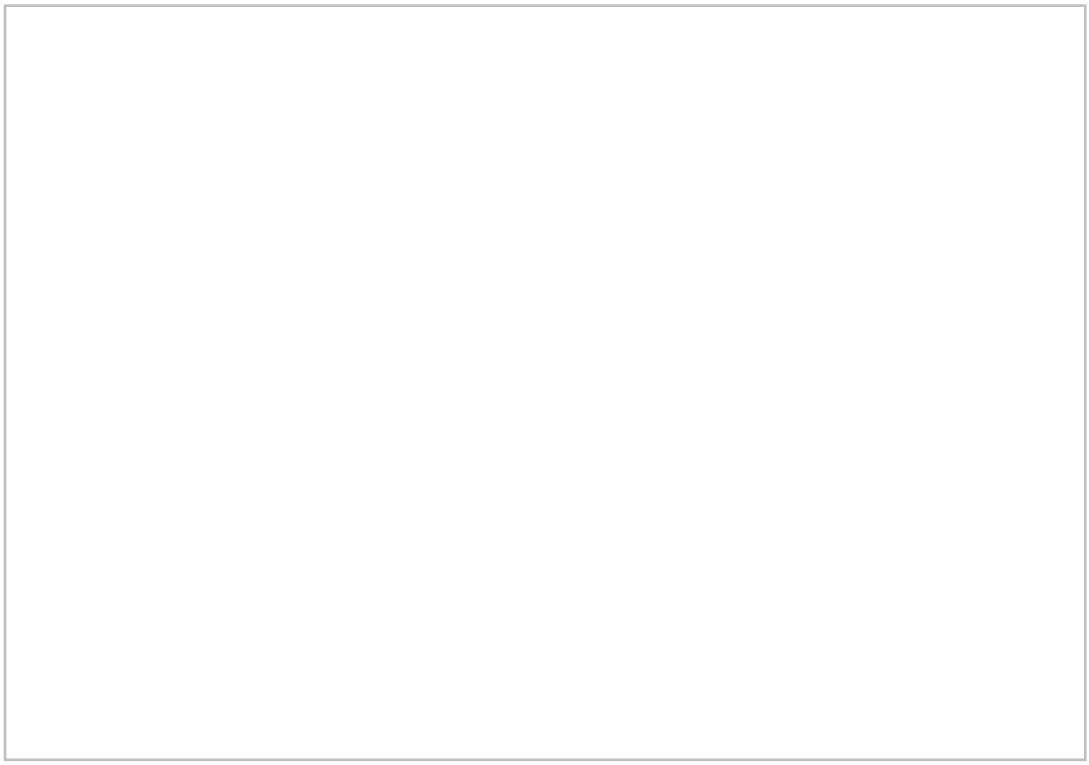
The Applicant provided their response on 25 October 2023 a summary of their response to the further information is provided below, followed by GPC's comments -

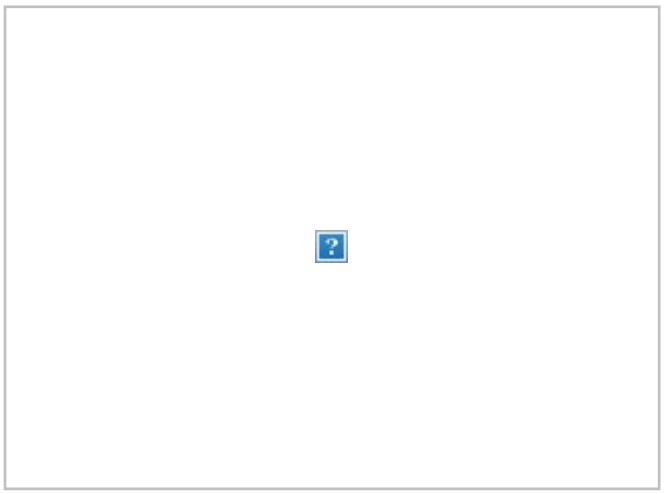
- Rationalisation of the number and footprint of isolation and air valves (AV's) was undertaken with 15 air valves located on GPC land (discrepancy note provided below). AV's are also proposed to be protected with a post and rail arrangement. The area for all fencing around isolation, air and scour valves is approximately 2m x 3m at a height of 1m above NGL. The Applicant advised that 'trafficability along the ROW should not be compromised given a three-metre wide maintenance track which is proposed to be retained adjacent to and for the length of the pipeline alignment'. It should be noted that isolation valves (IV's) have also been included in the revised plans.
- Rationalisation of scour valves (SV's) was undertaken with 3 SV's on GPC land (discrepancy note provided below). SV's are also proposed to be protected with a post and rail arrangement which was not previously illustrated on any plans. All AVs, SV and Ivs are located directly on the pipeline (they are not offset) with trafficability maintained through ROW easement.
- For construction proposal plans were provided.
- Temporary construction areas have been investigated however due to time impacts additional workspace will not be considered at this time.
- Revised 'for construction' plans provided.

<u>GPC comment</u>

No reduction in valves occurred on Port land with 16 AVs, 4 SVs and 1 IV illustrated on the plans, an increase (NB: increase 3 extra valves in total).

Plans highlighting a compound area (240m^2 on Lot 7 SP145439) for an above ground tie-in to the GAWB system at Mt Miller was included in the response to the information request (illustrated below). This has not been included in previously discussions or plans.





Fencing (2m x 3m approx.) is illustrated in the plans and is to be provided around ALL valves, this was not previously provided.

Increase in height of the air valve from 900mm to 1000mm

Kind regards,
Amanda

Amanda Koenig

Principal Project Officer
Planning and Development Services – Office of the Coordinator-General
Department of State Development, Infrastructure, Local Government and Planning

*Microsoft teams – **meet now***

P 3452 7575 (Monday, Wednesday, Thursday and Friday)
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Your ref: AP2022/006
Our ref: 12559247

08 December 2023

Amanda Koenig
Principal Project Officer
Planning and Development Services - Office of the Coordinator General
PO Box 15517
1 William Street
Brisbane QLD 4000

Provision of amended drawings: SDA Application for a MCU for a utility installation (water pipeline) and operational works (vegetation clearing) in the GSDA

Dear Amanda

Thank you for facilitating the meeting between the Office of the Coordinator-General (OCG), Gladstone Ports Corporation (GPC) and Gladstone Area Water Board (GAWB) on Tuesday 05 December 2023 to discuss some technical matters raised by GPC. Please refer Table 1 that provides GAWB responses to GPC comments.

Table 1 GAWB responses to GPC comments

Item	GPC Comment	GAWB Response
1	No reduction in valves occurred on Port land with 16 AVs, 4 SVs and 1 IV illustrated on the plans, an increase (NB: increase 3 extra valves in total).	Review and rationalisation of the number and footprint of air, scour and isolation valves has occurred as part of both the Safety in Design / Hazard and Operability Analysis (SiD / HAZOP) and construction review processes. The number of valves was unable to be further reduced due to undulating nature of the topography and the valve functionality requirements – air valves (AV) at high points, scour values (SV) at low points and isolation valves (IV) in selected locations to enable pipeline sections shut down.
2	Plans highlighting a compound area (240m^2 on Lot 7 SP145439) for an above ground tie-in to the GAWB system at Mt Miller was included in the response to the information request (illustrated below). This has not been included in previously discussions or plans.	The compound area has been reduced by revising the width from 12m to 10m. The solar panel has been relocated to the opposite side of the pipeline and next to the electricity cabinet.
3	Fencing (2m x 3m approx.) is illustrated in the plans and is to be provided around ALL valves, this was not previously provided.	Each valve is to be protected with a post and rail fence arrangement to avoid collisions and for safety in the event of air or water pressure release. All AV's, SVs and IVs are located directly on the pipeline i.e., they are not offset, with trafficability maintained.
4	Increase in height of the air valve from 900mm to 1000mm	The 100mm increase in height of the air valve has occurred as part of the SiD / HAZOP reviews to improve maintenance ergonomics.

Please find attached latest drawings for the compound (Lot 7 SP145439). The drawings have been revised in accordance with 05 December 2023 meeting discussions, the amendments are:

– the compound width has been reduced to 10m
– the solar panel has been relocated to the opposite side of the pipeline and next to the electricity cabinet.
– pipework and fittings are relocated, to the extent possible, below surface level.

Please refer to the following drawings for details:

Table 2 Amended Drawings

DOCUMENT REFERENCE	VERSION	DESCRIPTION	AMENDMENT DESCRIPTION
1151-DL07-W3P-PLE-DRG-67012	3	DL07 PIPELINE CH 115879.44-116568.03	Pipework and fittings redesigned to below surface level
1151-DL07-W3P-CIV-DRG-27013	3	DL07 CONNECTION DETAILS - MMP TIE IN PIPEWORK PLAN	Compound width reduced and solar panel relocated to opposite side of pipeline near to electrical cabinet
1151-DL07-W3P-CIV-DRG-27014	1	DL07 CONNECTION DETAILS - MMP TIE IN PIPEWORK SECTIONS	Compound width reduced and solar panel relocated to opposite side of pipeline near to electrical cabinet

We trust the above information request responses are sufficient to allow your assessment of the application. Please do not hesitate to contact the undersigned should you have any questions in relation to the above matters.

Regards

Amanda Smedley
Senior Environmental Scientist

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amanda.smedley@ghd.com

Luke Stalley
Gladstone Area Water Board
FGP Approvals Manager

+61 7 3020 8032
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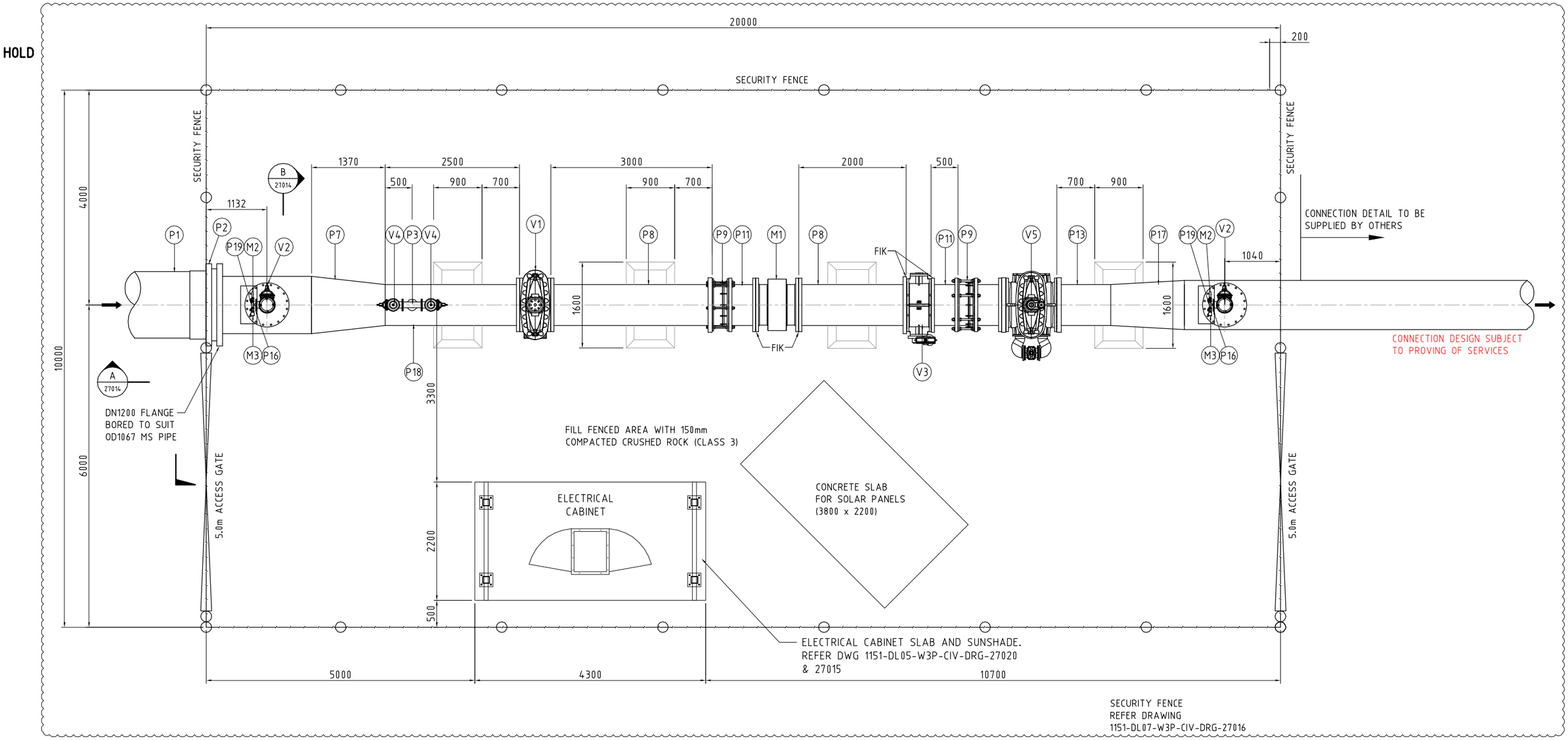
HOLD



PLAN

0.75 0 0.75 1.5 2.25 3.0 3.75

SCALE OF METRES 1:75 @ A3

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME: PETER SEMIANIW
RPEQ NO.: 15975
DIVISION: CIVIL
SIGNATURE: DATE: 07 / 12 / 23

ISSUED FOR CONSTRUCTION

COMPASS ASSURANCE SERVICES ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
							-	
							-	
3	07/12/23	GATES RELOCATED	TA	AS	PS		-	
2	06/12/23	FENCE MOVED TO LA BOUNDARIES	TA	AS	PS		-	
1	27/10/23	CONTROL VALVE CHANGED	TA	AS	PS		-	
0	02/10/23	ISSUED FOR CONSTRUCTION	TA	AS	PS		-	

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DO NOT SCALE

INITIALS SHOWING (●) ASTERISK INDICATE ORIGINAL SIGNATURE HAS BEEN SIGNED OFF AS PER DATE INDICATED

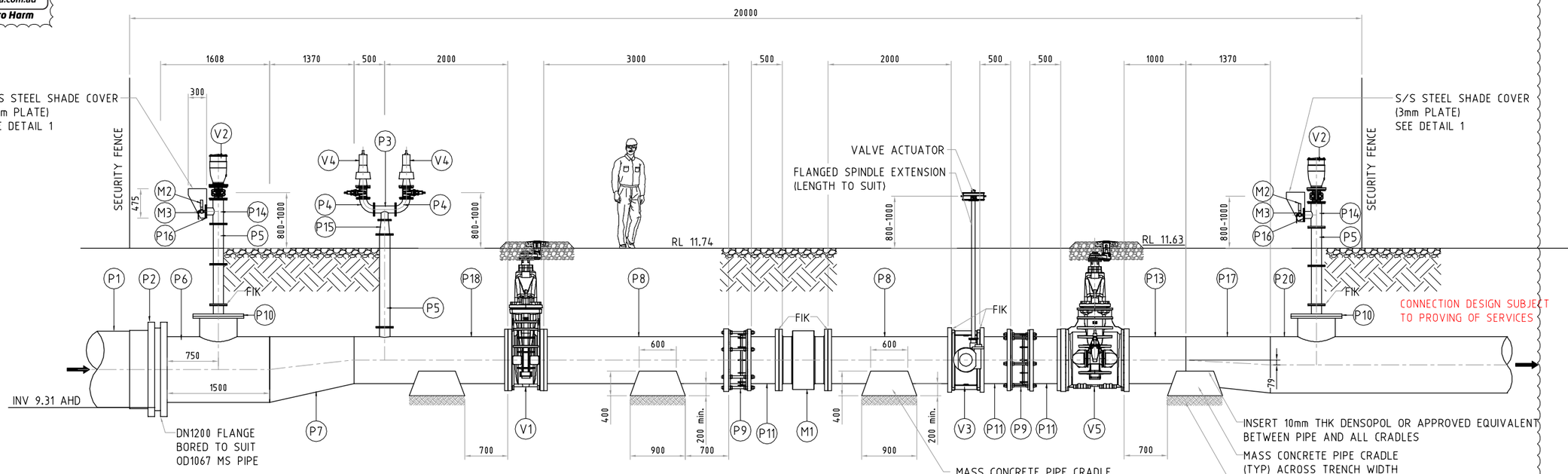
Gladstone Area Water Board
136 Goondoon Street Gladstone Q 4680 | PO Box 466 Gladstone Q 4680 | Tel: (07) 4976 3800 | ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	26/09/23
DESIGNED BY	ANDREW SINN	26/09/23
REVIEWED BY	PETER SEMIANIW	26/09/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 CONNECTION DETAILS
MMP TIE IN PIPEWORK PLAN

1151-DL07-W3P-CIV-DRG-27013

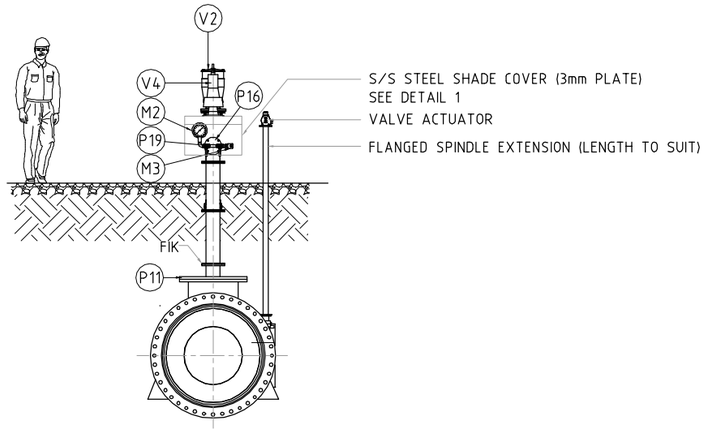
PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	3



A 27013 **SECTION**
SCALE: 1:75 @ A3

PIPEWORK SCHEDULE

ITEM	DESCRIPTION	QTY	MATERIAL	REMARKS	RATING
P1	DN1200 PE112 PN14.2 PIPE	1	HDPE		PN14.2
P2	DN1200 HDPE STUB FLANGE c/w BACKING RING	1	MS		PN16
P3	DN100 FLANGED TEE	1	DIEL		PN16
P4	DN100 FLANGED 90° BEND	2	DIEL		PN16
P5	DN150 FLANGED PIPE (LENGTH TO SUIT)	3	DIEL		PN16
P6	OD1067 / OD508 TEE FL-FL-WE (w/ 1200 FLANGE)	1	MSCL		PN16 MIN
P7	OD1067 / OD762 WE-WE ECCENTRIC REDUCER	1	MSCL		PN16 MIN
P8	DN750 FLANGED PIPE	2	MSCL		PN16 MIN
P9	DN750 DISMANTLING JOINT	2	DIEL	THRUST TYPE	PN16
P10	DN500 BLIND FLANGE c/w DN150 FLANGED RISER	2	MSCL		PN16 MIN
P11	DN750 FLANGED PIPE (500mm LONG)	3	MSCL		PN16 MIN
P12	DN100 FLANGED PIPE (150mm LONG)	2	DIEL		PN16
P13	DN750 FL-WE PIPE	2	MSCL		PN16 MIN
P14	DN150/DN100 FLANGED TEE	2	DIEL		PN16
P15	DN150-DN100 FLANGED REDUCER	1	DIEL		PN16
P16	DN100 BLIND FLANGE c/w 25mm TAPPING	2	S/S		PN16
P17	DN900 / OD762 WE-WE ECCENTRIC REDUCER	1	MSCL		PN16 MIN
P18	OD762 / DN150 FL-WE TEE	1	MSCL		PN16
P19	DN25 S/S TEE (MALE NTP)	1	S/S		
P20	OD900 / OD508 FL-FL-WE TEE	1	MSCL		PN16 MIN
V1	DN750 GATE VALVE c/w GEARBOX	1	DIEL		PN16
V2	DN150 CSA FOX 3F RFP AIR VALVE c/w GATE VALVE	2	DIEL		PN16
V3	DN750 MODULATING BUTTERFLY VALVE w/ ROTORK ACTUATOR	1	DIEL		PN16
V4	DN100 CSA MOD. VFCA RELIEF VALVE c/w GATE VALVE	2	DIEL		PN16
V5	DN750 GATE VALVE w/ INTEGRAL BYPASS & GEARBOX	1	DIEL		PN16
M1	DN750 MAGNETIC FLOW METER	1	DIEL	BURIED	PN16
M2	PRESSURE GAUGE w/ DN15 BALL VALVE	2			
M3	PRESSURE TRANSMITTER w/ DN15 BALL VALVE	2			



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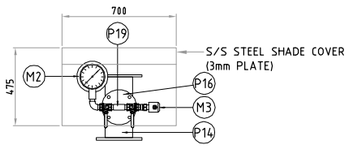

1 - **DETAIL**
SCALE: 1:30 @ A3

HOLD

NOTE:
ALL STAINLESS STEEL PIPE TO BE SS316 SCHEDULE 10.

FIK = FLANGE INSULATION KIT
(KLINGER C4430 FIK OR APPROVED EQUIVALENT)

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME: PETER SEMIANIW
RPEQ NO.: 15975
DIVISION: CIVIL
SIGNATURE: DATE: 27 / 10 / 23

ISSUED FOR CONSTRUCTION

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
							-	
							-	
							-	
							-	
1	27/10/23	CONTROL VALVE CHANGED	TA	AS	PS		-	
0	02/10/23	ISSUED FOR CONSTRUCTION	TA	AS	PS		-	

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BMD

DO NOT SCALE

INITIALS SHOWING (●) ASTERISK INDICATE ORIGINAL SIGNATURE HAS BEEN SIGNED OFF AS PER DATE INDICATED

Gladstone Area Water Board
136 Goondoon Street Gladstone Q 4680 | PO Box 466 Gladstone Q 4680 | Tel: (07) 4976 3000 | ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	26/09/23
DESIGNED BY	ANDREW SINN	26/09/23
REVIEWED BY	PETER SEMIANIW	26/09/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 CONNECTION DETAILS
MMP TIE IN PIPEWORK SECTIONS

1151-DL07-W3P-CIV-DRG-27014

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	1

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LEGEND:

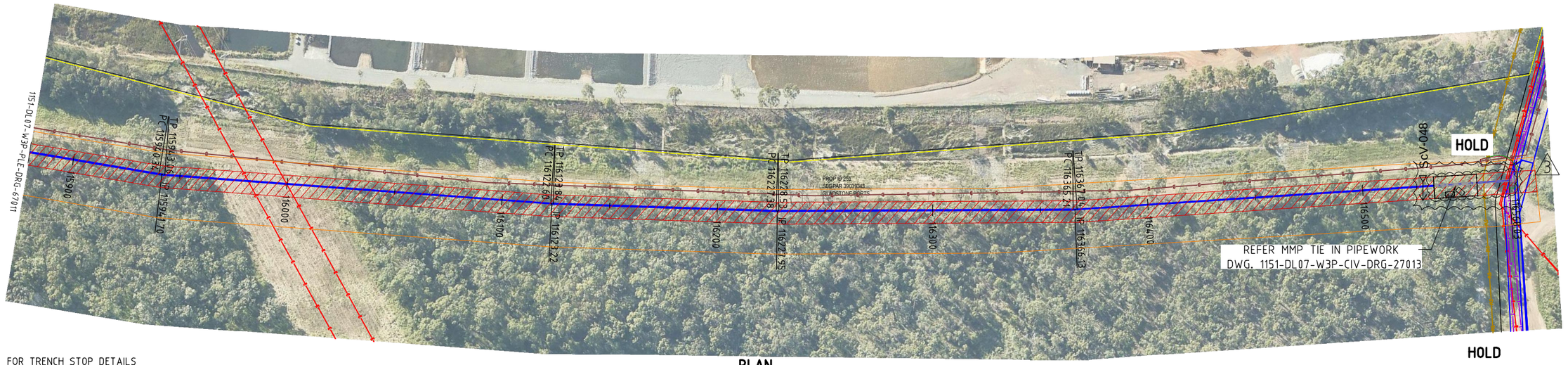
PROPOSED:

- AIR VALVE
- SCOUR VALVE
- ISOLATION VALVE
- CONTROL VALVE
- PIPELINE
- ENVELOPER PIPE

LEGEND:

EXISTING:

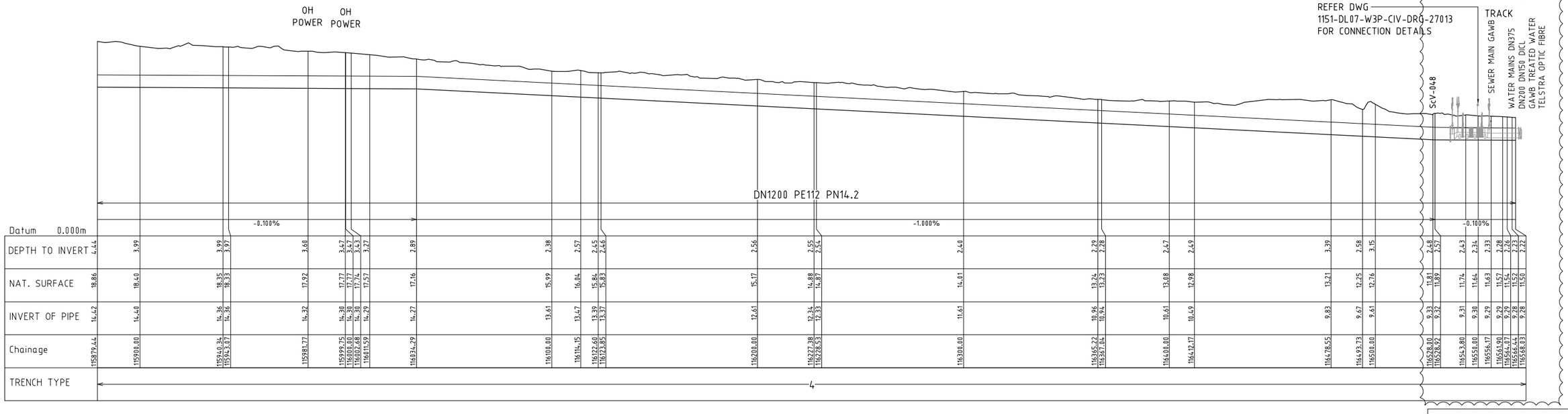
- FENCE
- GAS
- ELECT'L POWER (OH or UG)
- TELSTRA CABLE
- DRAIN
- STORM WATER
- WATER OTHER
- SEWER PIPE
- 100 ARI FLOOD LEVEL
- SURVEYED CADASTRE
- RIGHT OF WAY
- DCDB
- CONSTRUCTION ZONES
- LICENSED AREAS



FOR TRENCH STOP DETAILS
REFER PROJECT NOTES

PLAN

20 0 20 40 60 80 100
SCALE OF METRES 1:2000 @ A3



LONGITUDINAL SECTION

4 0 4 8 12 16 20
VERTICAL SCALE OF METRES 1:400 @ A3

20 0 20 40 60 80 100
HORIZONTAL SCALE OF METRES 1:2000 @ A3

REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
NAME: PETER SEMIANIW
RPEQ NO.: 15975
DIVISION: CIVIL
SIGNATURE: DATE: 07 / 12 / 23

ISSUED FOR CONSTRUCTION

COMPASS ASSURANCE SERVICES ISO 9001

REV	DATE	REVISION DESCRIPTION	DRN	CHKD	EXT. APP.	GAWB ACC.	REFERENCE DRAWINGS	NUMBER
-							-	
-							-	
-							-	
-							-	
3	07/12/23	GATES RELOCATED	TA	MM	PS		-	
2	06/12/23	FENCE MOVED TO LA BOUNDARIES	TA	MM	PS		-	
1	27/10/23	MMP TIE IN PIPEWORK UPDATED	TA	MM	PS		-	
0	27/09/23	ISSUED FOR CONSTRUCTION	TA	MM	PS		-	

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INITIALS SHOWING (●) ASTERISK INDICATE ORIGINAL SIGNATURE HAS BEEN SIGNED OFF AS PER DATE INDICATED

Gladstone Area Water Board
136 Goondoon Street Gladstone Q 4680 | PO Box 466 Gladstone Q 4680 | Tel: (07) 4976 3000 | ABN: 88 409 667 181

DRAWN BY	TED ALVARADO	27/09/23
DESIGNED BY	MICHAEL MARIES	27/09/23
REVIEWED BY	PETER SEMIANIW	27/09/23
ACCEPTANCE BY		
RPEQ APPROVAL		
GAWB ACCEPTANCE		

FITZROY TO GLADSTONE PIPELINE PROJECT
DL07 PIPELINE CH 115879.44 -116568.03

1151-DL07-W3P-PLE-DRG-67012

PROJECT No.	SIZE	DRAWING No.	SCALE	REV
GAWB #	A3	XXX-X-XXXX	AS NOTED	3

Translocation and Propagation Plan for Listed Threatened Plants– Gladstone State Development Area

Fitzroy to Gladstone Pipeline Project

Gladstone Area Water Board (GAWB)

July 2023

BASE/

Gladstone Area Water Board

Document Control

Title	Fitzroy to Gladstone Pipeline – Translocation and Propagation Plan within the GSDA
Job Number	J0208
Client	Gladstone Area Water Board (GAWB) Pty Ltd

Document Issue

Issue	Date	Prepared By	Reviewed/Approved By
Rev A – Pre-contractor draft – for client review	30/06/2023	Dr Craig Streatfeild, Andrew Craig	Simon Wakefield (GAWB)
Rev B – Response to client review	07/07/2023	Dr Craig Streatfeild	Simon Wakefield (GAWB)
Rev 0 – Final for submission	10/07/2023	Dr Craig Streatfeild	Simon Wakefield (GAWB)

Contents

1. Introduction

The Fitzroy to Gladstone Pipeline Project (FGP or the Project) was declared a 'significant project' by the Coordinator-General that required an Environmental Impact Statement (EIS) under the *State Development and Public Works Organisation Act 1971* (SDPWO Act). An EIS was prepared for the FGP under the Queensland and Commonwealth bilateral agreement (*Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act] Referral Reference EPBC 2007/3501, 11 July 2007).

Key primary Project approvals that have been obtained include:

- Commonwealth government EIS approval under the EPBC Act. (Reference: EPBC 2007/3501, approved 4 November 2011) for the proposed construction and operation of a 110 km pipeline and associated infrastructure to transport up to 30 Giga Litres of water per annum from an intake point at Laurel Bank on the Fitzroy River to Gladstone, near Aldoga, Queensland.
- Queensland government EIS approval framework under Section 26(1) of the SDPWO Act. The Coordinator-General issued an Evaluation Report in 2010 (CGER) which included stated and recommended conditions of approval. The CG's Evaluation Report has since lapsed; however, it provides guidance on approval requirements and condition.

The EIS determined that two threatened plants (*Cycas megacarpa* and *C. ophiolitica*) had the potential to occur in the Project area and be impacted by construction activities. Although neither species was found during ecological assessments, the CGER included a condition (Condition 13) that required a Threatened Species Translocation and Propagation Plan (TSTPP) to be prepared and included as part of Project's Construction Environmental Management Plan (CEMP).

1.1 Overview of the FGP

The FGP traverses the Rockhampton Regional Council (RRC) and Gladstone Regional Council (GRC) Local Government Areas (LGAs). The 117 km) long pipeline starts at the Lower Fitzroy River at Laurel Bank and connects to GAWB's existing water infrastructure near Yarwun within the Gladstone State Development Area (GSDA). (Figure 1). The FGP will be constructed within a right of way (ROW) corridor of up to 30 metres (m) in width. The majority of the FGP is within the Stanwell-Gladstone Infrastructure Corridor State Development Area (SGIC SDA).

The FGP is being advanced in three sections:

- Northern Section – this section encompasses:
  - Fitzroy River Intake Structure and Pump Station
  - Alton Downs WTP
  - Approximately 15 kilometres (km) of pipeline
- SGIC SDA Section – this section encompasses:
  - Approximately 81 km of pipeline
- GSDA Section – this section encompasses:
  - Aldoga Reservoirs
  - Approximately 21 km of pipeline
  - Connection to the Gladstone raw water network.

1.2 Purpose and Objectives

This TSTPP has been developed in accordance with the National Multi-Species Recovery Plan for Cycads (Queensland Herbarium, 2007), the Guidelines for the Translocation of Threatened Plants in Australia (Commander et al., 2018) and the conditions stipulated under the EPBC Act approval.

The TSTPP has been prepared to address Condition 13 of the CGER. The EIS identified two cycad species (*C. megacarpa* and *C. ophiolitica*) as potentially occurring within the project footprint. A commitment was made to translocate any individuals encountered during construction of the Project. Post-EIS ecological surveys undertaken in 2022 confirmed potential cycad habitat and also potential habitat for Quassia (*Samadera bidwillii*). Although the commitment in the EIS and the intent of Condition 13 was in relation to the two cycad species, the processes included in this TSTPP are generally relevant to all three species and other threatened plants if they are encountered.

The objectives of this TSTPP are to:

- Address the CGER approval Condition and include a process to be undertaken to:
    - Salvage and propagate healthy Cycas spp. and *Samadera bidwillii*. Individuals, if encountered, from the Project area to a translocation recipient area. Establishment of all three species includes replacing salvaged and translocated plants which do not survive at a 4:1 ratio with seedlings or juvenile cycads of the same species.
    - To protect, maintain and monitor translocated cycads in line with the performance measures of this TSTPP.
- Provide information in relation to the Project area, temporary storage area and translocation site.
- Outline a translocation program and protocol for the salvage, propagation and planting of *C. megacarpa, C. ophiolitica* and *S. bidwillii* which will be relevant to other threatened plant species, if encountered.
- Describe the proposed management measures to ensure the success of the translocation program.
- Identify parameters and performance criteria to monitor and assess the success of the translocation program.

This TSTPP will be reviewed and updated as required and following identifying any new information, receipt of relevant approval conditions and continual improvement initiatives.

It should be noted that general environmental management measures for the FGP are outlined in the Construction Environment Management Plan (CEMP; document number 1151-DL00-GWB-XEV-MAP-00001). This TSTPP should be read in conjunction with the CEMP.

Figure 1 Project Layout

2. Baseline Assessments

Detailed ecological surveys were undertaken in 2008 (Arup, 2008) during development of the EIS and more recently in February and April 2022 (GHD, 2022). These assessments included desktop searches of historical records, field surveys, and habitat availability assessments.

2.1 EIS Surveys

Ecological assessments undertaken for the EIS (Arup, 2008) included desktop analysis and field surveys. The desktop analysis of State and Commonwealth databases identified potential habitat for two cycad tree species, *C. megacarpa* and *C. ophiolitica* as occurring within the pipeline footprint. The area of potential habitat for these species was identified within the GSDA section of the alignment and approximately 2 km east of Yarwun as outlined in Chapter 6 of the EIS[1] and shown on Figure 2. Although potential habitat was identified within the Project area, neither species was identified during field surveys (Arup, 2008). Furthermore, no listed threatened plant species were identified as occurring within the Project area.

2.2 Post EIS Surveys

Detailed post-EIS ecological surveys were undertaken at the Project area in February and April 2022 (GHD, 2022). The purpose of these surveys was to undertake an updated assessment of the ecological values and to assess similarities between the ecological values presented in the EIS and current ecological values. No conservation significant flora species were recorded during the post-EIS field surveys; however, suitable habitat was recorded in the eastern section of the GSDA for the two cycad species outlined in the EIS (*C. megacarpa* and *C. ophiolitica*) and *Samadera bidwillii*. Potential habitat for these species occurred in the same areas as outlined in the EIS (Arup, 2008).

Targeted searches for threatened plants were also undertaken within Protected Plants Flora Survey Trigger Areas as shown in GHD, 2022. Surveys comprised timed meander and systematic transect search methods within the Trigger Areas as per the requirements of the Flora Survey Guidelines – Protected Plants (DES, 2020) and opportunistic searches for threatened plant species in potentially suitable habitat beyond the Trigger Areas. No threatened plant species were identified as occurring either within the Trigger Areas or within 100 m of the Trigger Areas.

[1] https://eisdocs.dsdip.qld.gov.au/Gladstone-Fitzroy%20Pipeline/EIS/EIS/eis-chapter-6-terrestrial-flora.pdf

N
W
E
S

Queensland Government

SMEC
Member of the Surbana Jurong Group

0 170 340
Meters

1:12,500 (when printed @ A4)

Legend

- Study Area
- Potential Threatened Flora Habitat
- GSDA Pipeline Alignment
- Waterways
- Main Roads
- Railways

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2.Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

SMEC Disclaimer:
Maps are for graphical purposes only. The information on this map is from a computer database accessed using a Geographic Information System (GIS). They do not represent a legal survey and the information provided includes inherent errors. SMEC cannot guarantee the accuracy of the information contained on this map. Each user of this map is responsible for determining its suitability for his or her intended use or purpose.

Gladstone Area Water Board
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Ph: 07 4976 3000 www.gawb.qld.gov.au

PROJECTION UTM Zone 56
(Datum GDA2020)

Compiled by:ZD17041

Fitzroy to Gladstone Pipeline
Potential Threatened Flora Habitat
Figure 2
000-G-MAP-2405 Version:4 Date:10/07/2023

3.P re-construction Assessments

3.1 Pre-clearance Surveys

Pre-clearance surveys will be undertaken at the Project area including in potentially suitable habitats east of Yarwun (as outlined in the EIS (Arup, 2008) and the 2022 Baseline Ecology Assessment Report (GHD, 2022)) that have the potential to contain the three listed plant species. These surveys will be undertaken by suitably qualified ecologists and undertaken no less than four weeks prior to clearing activities (or earlier where possible). The purpose of these surveys is to:

- Assess the presence of either *C. megacarpa* and *C. ophiolitica* or *S.bidwillii* and if present, the number of individuals of each species impacted.
- Map and tag the extent and individual locations of each species within the Project area.
- Record baseline data (as outlined below) for each species confirmed present within the Project area. This will be used to monitor individuals following translocation, to inform management actions for translocated specimens and to evaluate the ongoing and overall success of a translocation program.
- Confirm suitable locations for a temporary storage site (if required).
- Confirm suitable locations for translocation recipient site/s within the rehabilitated areas of the Project area.

The pre-clearance surveys of threatened plants (including *C. megacarpa*, C. *ophiolitica* and *S.bidwillii*) within suitable habitat will consist of a systematic walk over and inspection of the Project area. The location of all threatened plants within the Project area will be recorded with a hand-held GPS receiver. Each individual will be assigned a unique identification number that is to be recorded on fire-proof tags (e.g., aluminium plant tags) and attached in a secure manner to the plant (e.g., with fine-gauge wire at the base of a mature but not senescent leaf). The Queensland Herbarium (or other approved organisation) will be consulted to confirm individuals where confirmation is not possible in the field.

The following data will also be recorded:

- Evidence of current disturbance (e.g., recent fire event, insect damage, damage from pest animals).
- Severity of any damage arising from current disturbance factors.
- Age class/maturity of the individual – seedling, juvenile, adult at reproductive maturity.
- Sex (if identifiable).
- Height class, with classes based on 25 centimetre (cm) intervals (i.e. seedling, 0 - 25 cm, 26 - 75 cm, 76 - 100 cm etc.)
- Georeferenced photographs of each plant.

All data will be collated and stored in accordance with the CEMP.

3.2 Temporary Storage Site

Temporary storage and horticultural management of salvaged plants, particularly for cycads, can improve the survival rate of translocated individuals, particularly if they have been damaged during the salvage process (Australian Pacific LNG, 2014). Salvaged plants that are not immediately translocated to a permanent recipient site will be stored and maintained at a temporary storage site prior to being planted at their permanent recipient site. The location of the temporary storage site

will be determined by a suitably qualified ecologist if pre-clearance surveys encountered threatened plants.

In general, the temporary storage site should meet the following criteria:

- Large enough to salvaged individuals, and any collected seeds or plant cuttings and propagated individuals.
- Appropriately secured.
- If in the field, the site does not impact the health of the salvaged individuals form activities such as cattle grazing, aerial spraying, general weed management etc. Temporary fencing should be erected around the site to ensure no disturbance by livestock and feral animals.
- The site should be free of restricted weeds or environmental weed species. Where weed infestations exist within the temporary storage site, they will be managed to avoid impacts to individual plants.
- The site should be in an area where there is minimal risk of flooding events.
- Soils within the storage site should not be prone to significant erosion that would impact stored plants.
- The site should have sufficient water available.
- The site should have a low bushfire risk and be positioned to reduce the risk of wildfire impacting the stored plants.
- Where possible, the site should be nearby areas where the species occur naturally to increasing the likelihood that local pollinators are present.

3.3 Translocation to Recipient Site

Individuals salvaged from the Project area and individuals propagated from seed will be translocated back into suitable sites within the Project area as determined by a suitably qualified ecologist.

The suitability of a translocation site will be determined by considering a range of factors including:

- The number of individuals to be translocated.
- Site accessibility to facilitate ongoing management and monitoring.
- Suitable habitat, microclimates, topography and associated plant communities.
- Absence of know threats.

4. Translocation Plan

A range of translocation plans and programs have been prepared and implemented for cycads in Central Queensland (NGH Environmental, 2021) and Quassia (BASE, 2021). The translocation processes utilised in these programs have been considered in the preparation of this TSTPP as have the general policies and guidelines outlined in Commander et al. (Guidelines for the Translocation of Threatened Plants in Australia; 2018) and the National Multi-Species Recovery Plan for Cycads (Queensland Herbarium, 2013).

All cycads and Quassia located within the Project area that cannot be avoided will be salvaged and translocated as part of this TSTPP. If individuals are encountered, and they cannot be salvaged for translocation, the location of these individuals will be noted with the data outlined in Section 3 recorded.

4.1 Salvage from the Impact Area

Translocation of *C. megacarpa*, C. *ophiolitica* and *S.bidwillii* can in general, be undertaken throughout the year but preferably prior to the start of new growth. Although these species can be tolerant of minor root damage, the chances of survival can be maximised by retaining a solid root ball. If plants are encountered and require salvage, all works will be undertaken by a suitably qualified ecologist with experience in plant salvage and translocation.

Following the process outlined in previous translocations programs (Australian Pacific LNG, 2014; Santos GLNG 2013; QGC, 2016, BASE, 2021; NGH Environmental, 2021) a general salvage process has been developed and outlined below:

- Site preparation will be undertaken prior to salvage to ensure unimpeded access, any weeds are treated to minimise the spread of weed propagules, collection of data records etc.
- Marker paint or fluorescent dye will be used to mark the north side of each mature plant. This will ensure plants can be replanted with a similar north-south orientation.
- The area surrounding the individual plants will be cleared by hand.
- The trunks and around the crown area (not the crown itself) will be sprayed with an anti-transpirant to prevent plants drying out.
- Plants will be carefully removed from the ground and carefully preserve the rootball(s) of soil for each plant and to retain as much soil around the rootball(s) as possible in order to avoid damaging the root system.
- Plant removal will be done by hand where possible or by mechanical removal where topography and soil types allow.
- Damaged roots will be trimmed with clean/sterile secateurs and fungicide powder applied to prevent infection. Vitamin B or seaweed emulsion will also be applied to encourage root growth.
- Care will be taken whilst transporting the plants to avoid bruising the trunks/stems. Any large or heavy plants will be loaded using a soft sling (or equivalent) on a backhoe or excavator bucket and packed using rolls of hessian sacking or similar.
- Plants at the temporary storage site will be potted up or woven grow bags depending on the size of the individual.
- Plant rootballs will be re-packed to promote new roots to grow. This soil will be free of weed seeds. Backfill around the plant will use topsoil removed from the hole.

- Any significant damage incurred as part of the salvage process will be recorded in the translocation database. Where appropriate, damage will be treated with an appropriate disinfection and/or protection product as determined by the suitably qualified ecologist.

4.2 Temporary Storage Site

Individual plants will be transported to temporary storage site, as required. Plants will be potted into suitable pots or grow bags, depending on the size of the individual. Pots or grow bags will be elevated off the surface of the storage facility to facilitate drainage of excess water. Care will be taken to ensure that individuals receive appropriate levels of watering to avoid drying out or root rot forming.

4.3 Permanent Recipient Site

Actions to be undertaken at the permanent recipient site will ultimately be determined by a suitably qualified ecologist. As a recipient site will be located within rehabilitated areas of the Project area, mitigation and management actions will be undertaken on accordance with the FGP Operational Environment Management Plan. However, the general process is outlined below:

- Prior to translocation, weed management will be undertaken as required to remove significant weed species from within the immediate vicinity and surrounds of the recipient site.
- Appropriate fauna pest management will be undertaken to minimise impact to plants.
- The site will have adequate water available to meet the water demands of individual plants.
- Holes at the recipient site will be dug by hand or with an excavator or backhoe and will only be marginally larger than the rootball of the plants being transplanted. Soil within each hole will be loosened prior to planting.
- Plants will be carefully removed from its pot/bag whilst preserving the rootball and retaining as much soil around the rootball as possible and to avoid damaging the root system.
- Any damaged roots will be trimmed with clean/sterile secateurs. Fungicide powder will be applied to the rootball to prevent infection and vitamin B or seaweed will also be applied to encourage root growth.
- Plants will be positioned with the marked side facing north (i.e. a similar position from its original location).
- The rootball of each plant will be re-packed with sandy loam to promote new roots to grow. Plants will be backfilled using the topsoil removed from the hole and ensure soil is weed free.
- Plants will be staked for stability where necessary.
- If required, trunks of the plants will be sprayed again with an anti-transpirant to minimise moisture loss.
- The crowns and foliage on each plant will be sprayed with an insecticide at manufacturer suggested an application rates.
- Translocated plants and surrounds will be thoroughly watered.
- The location and condition of each plant will be recorded and photographed. All recorded data will be managed in accordance with the CEMP.

4.4 Propagation

Propagation will be undertaken to replace any relocated individuals that have not survived the translocation process. To address this requirement, seeds will be collected, propagated and maintained within the temporary storage site or suitable alternative location as determined by the suitably qualified ecologist. Propagation will be undertaken until the replacement plants are planted within the recipient sites. Seed collection and propagation will be undertaken by, or under the guidance of, the suitably qualified ecologist.

To account for potential mortality rates, sufficient seed should be collected to replace 50% of the total number of individuals translocated. Additional seed should also be collected to account for other factors such as non-viable seed, seedling mortality and survival rate of propagated stock following planting. Seed will be collected from individuals within the Project area, if encountered.

4.5 Seed Collection Methods

Seed collection will be undertaken in accordance with all relevant Department of Environment and Science (DES) requirements including collection guidelines and requirements outlined in the Code of Practice for the harvest and use of protected plants (DES, 2020) and other requirements as determined by the suitably qualified ecologist.

5. Management Actions

Following the establishment of translocated individuals at the recipient site, a range of management measures will be undertaken to ensure the survival of the translocated plants. For propagated plants, management will be undertaken as directed by the suitably qualified ecologist or nursery specialists (should propagation be undertaken within an external nursery).

Table 1 presents management actions based on the key risks to translocated plants and will be updated by the suitably qualified ecologist, as required. Performance criteria are also outlined in Table 1. Management actions and performance criteria will be updated following the pre-clearance surveys and following receipt of approval conditions, as required.

The need for corrective actions will be determined during monitoring activities (refer to Section 6). Where required, corrective actions will be implemented and monitored until the performance criteria are attained.

Table 1 Preliminary Performance Criteria and Corrective Action

Item	Risk	Management Action	Performance Criteria	Monitoring / Trigger for Further Action	Corrective Action
Desiccation	Insufficient water leading to the plants failing to thrive and plant mortality.	• Controlled watering during exceptionally dry periods. • Sufficient water availability to ensuring translocated plants and seedlings receive adequate water during the established phase and to provide a fire management capacity.	No plant mortality.	Decrease in plant health and/or plant mortality.	• Increase watering rates or water availability in consultation with the suitably qualified ecologist. • Undertake additional supplemental planting.
Water logging	Over watering leading to root rot and loss and plant mortality.	• Monitor watering rates to ensure that plants are not over watered. • Soil in pots / bags should be damp and not wet. • Monitor root health periodically for evidence of root rot. • Treat rot with suitable fungicide.	No plant mortality.	Decrease in plant health and/or plant mortality.	• Decrease watering rates and review watering strategy in consultation with the suitably qualified ecologist. • Undertake additional supplemental planting.
Erosion	Erosion causing damage to translocated plants.	• Vegetate disturbed areas. • Implement erosion and sediment controls as per the CEMP. • Ensure translocated plants are planted to a suitable depth and stabilised.	No obvious signs of erosion that leads to plant damage or mortality.	• Obvious signs of erosion. • Obvious signs of bare ground that was not reinstated effectively.	• Review adherence to the CEMP Erosion and Sediment Control Plan. • Implement additional erosion and sediment controls in consultation with a Certified Practicing Erosion and Sediment Control Professional. • Reinstate vegetation groundcovers as per the requirements of the CEMP.
Weed presence and cover	Invasive or declared weeds have the potential to limit the successful establishment or recruitment of translocated individuals.	• Manual and targeted control of weeds in accordance with CEMP and manufacturer's specifications and actions outlined in the Relevant Special Area Plans (i.e. suitable weed controls from the Waterway or Brigalow plans. • Herbicides will only be used by trained personnel, in accordance to manufactures instructions and with appropriate Personal Protective Equipment (PPE).	• No new Restricted Invasive Plants listed under the *Biosecurity Act 2014* are introduced to any of the rehabilitated areas. • No increase of Restricted Invasive Plants than observed during baseline surveys and/or in surrounding undisturbed land.	• An increase in percent weed cover from baseline and/or previous monitoring events. • An outbreak of weed species not previously recorded in the disturbed areas or in surrounding undisturbed land. • An increase in the presence of weeds as determined from photo monitoring. • Interim performance targets are not attained, or completion criterion is not attained and/or maintained.	• Review adherence to CEMP Biosecurity Control Plans including weed hygiene procedures to ensure compliance and to update restrictions. • Review timing and frequency of weed management measures and implement alternative weed management timeframes. • Investigate alternative weed management control actions (e.g. spot spraying and/or injection of herbicides) and implement. • Undertake additional weed management measures until weed populations are reduced.

Item	Risk	Management Action	Performance Criteria	Monitoring / Trigger for Further Action	Corrective Action
Grazing	Damage to plants from livestock grazing.	• Livestock will be excluded from the recipient site if impacts are considered to be a significant risk at each recipient site. • Grazing for fuel control may be permitted once translocated plants are established as determined by a suitably qualified Ecologist.	No plant damage or mortality due to grazing.	• Obvious signs of livestock grazing on translocated plants. • Livestock located in the recipient site during establishment. • Damaged fencing is observed.	• Repair the recipient area boundary fencing. • Suitably qualified ecologist to revisit grazing practices.
Feral animals	Feral animals leading to plant damage and mortality.	Undertake feral animal management in accordance with the requirements of the CEMP.	No plant damage or mortality due to damage caused by feral animals.	• Any increase in sightings/signs of pest animals above baseline levels and/or previous monitoring event. • Observation of, or signs of, a feral animal not identified as occurring during the previous surveys.	• Review adherence to the CEMP. • Investigate potential sources or reasons for an increase in pest animal numbers and rectify. • Increase the frequency or revise the type of invasive pest animal control efforts in accordance with DAF guidelines, and in conjunction with neighbouring landowners.
Fire	Fires leading to loss of storage and propagation areas and plant mortality.	• Controlled burns will be undertaken in consultation with the Queensland Fire and Rescue Service, landowners and a suitably qualified ecologist. Burns will be undertaken and in accordance with the recommended fire management guidelines for Regional Ecosystems. • Create and maintain firebreaks around the boundary of storage and recipient areas to minimise unplanned fires from adjacent properties.	No evidence of unplanned fire within the storage and recipient areas.	• Unplanned fire within the recipient site. • Planned fires become out of control or the required burning regime is not achieved.	• If an uncontrolled bushfire has impacted the site review the fire management strategies and adherence to these strategies. • All fire breaks will be reinstated as required.
Insect attack and fungal infections	Boring insect attacks or fungal infections leading to significant plant damage.	• Treat with a fungicide powder where fungal infections and/or damage are evident. • Apply an insecticide if insect damage is considered likely to cause death to individuals.	No obvious signs of insect attack or fungal infections.	No signs of insect attack or fungal infections.	• Review fungal and insecticide treatment in consultation with a suitable qualified ecologist. • Revise the application rates and or types of insect and fungal controls.

6. Monitoring

Monitoring will commence once any threatened plant is encountered within the Project area that could not be avoided and had to be relocated to the temporary storage site. Monitoring will continue through to the plant(s) being established within the permanent recipient site and for a period of five years post translocation to the recipient site.

Monitoring will generally be undertaken as outlined in the preliminary monitoring schedule shown in Table 2 within the recipient sites. Mortality rates are generally highest within the first 12 months but generally declines during the subsequent four to five years. Therefore, the preliminary monitoring program will span five years with monitoring intervals commencing monthly and decreasing to annually as outlined in Table 2. Recipient sites will only be determined if the presence of threatened plants is identified during the pre-clearance surveys outlined in Section 3.1 and those plants require translocation due unavoidable impacts.

6.1 Monitored Attributes

Monitoring will be determined by a suitably qualified ecologist but as a minimum, will involve the following:

- Visually inspect each translocated individual
- Observation data for each translocated individual will be recorded against its unique identification code on a spreadsheet pro-forma. As a minimum, the following data will be collected during each monitoring event:
    - Plant growth against the photos taken during translocation
    - Any male specimens shedding pollen
    - The development of any seeds and the number of seeds present
    - Any seeds dropped from the parent plants within the recipient sites
    - Presence / absence of insects against a photo log
    - Presence / absence of insect attack
    - Presence / absence of putative pollinators against a photo log
    - Presence / absence of disease and/or fungal issue including root rot
    - If a plant appears to have died, a photograph of the individual may be taken during the field inspection
- Monthly rainfall data from the onsite rain gauge
- Signs of fire
- Damaged or broken fence lines
- Obvious signs of erosion
- Obvious signs of grazing on translocated plants
- Signs of feral animals
- Presence of weeds.

Each translocated plant will be photo-logged on an annual basis. Photos will be taken in a north, east, south and westerly direction from a consistent location adjacent to the translocated individual. A permanent feature will be included within the photo frame to provide a fixed reference point. A record of the photos will be maintained, including GPS location, date, time, and direction at which the photograph was taken.

Monitoring data and photographs will be stored in accordance with the CEMP record management requirements.

Table 2 Preliminary Monitoring Schedule

Translocated Process	Monitoring Attributes	Monitoring Frequency	Monitoring Method	Monitoring Locations
Salvaged individuals	As per section 6.1	• Monthly for first 12 months • Every 3 months for the second 12 months • Every 6 months for the third 12 months • Annually for the fourth and five 12-month period.	Photo points Visual inspections	Location of translocated individuals
Propagated individuals	As per section 6.1	• Monthly for first 12 months • Every 3 months for the second 12 months • Every 6 months for the third 12 months • Annually for the fourth and five 12-month period.	Photo points Visual inspections	Location of translocated individuals

7. Data Management, Reporting, Auditing and Review

7.1 Data Management

GAWB as the approval holder and /or MBJV via contractual agreements, will be responsible for overseeing and managing monitoring activities as required by approval conditions and as outlined in this TSTPP and CEMP. This will include maintaining data records to confirm all activities associated with the rehabilitation have been undertaken as outlined in this TSTPP, the CEMP and/or any subsequent approval conditions. These records will be made available to the Office of the Coordinator General upon request.

7.2 Reporting

GAWB and / or MBJV will report on the progress of the translocation program (if required to be undertaken) annually for the five years, or as otherwise required conditions. The first annual report will cover the 12 months following the commencement of translocation and the establishment period.

Annual reporting will present on the results of each year's monitoring activities and will include a brief commentary on how the management strategies are contributing to the required conservation outcome. The inclusions of the annual report will be determined by approval conditions but will generally include the following:

- Any raw data collected during the previous year
- Description of the outcome of the visual inspections
- Results of the floristic assessments and comparisons to pre-disturbance conditions and the interim performance targets
- Photo point results
- A description on any threats, exotic species, or other disturbances
- Recommendations for any corrective actions

7.3 Auditing and Review

Internal audits/reviews of management and monitoring activities will be undertaken in response to a trigger for further action (outlined in Table 1) being triggered and non-compliances with the CEMP. External auditing will be undertaken as required by the CGER and will be published in compliance reports, as required. Reports will include details on the progress towards achieving the performance criteria and/or completion criteria once they have been finalised.

The effectiveness of the translocation program will be reviewed annually and amended (if required) to incorporate changes identified through corrective actions as determined by monitoring activities. Changes may include amendments to management actions, identification of additional monitoring activities and responses to adaptive management triggers.

8. References

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DES (2020). Code of Practice For the harvest and Use of Protected Plants Under and Authority Guide.

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SANTOS GLNG 2013. *Cycas megacarpa* Management and Translocation Plan.