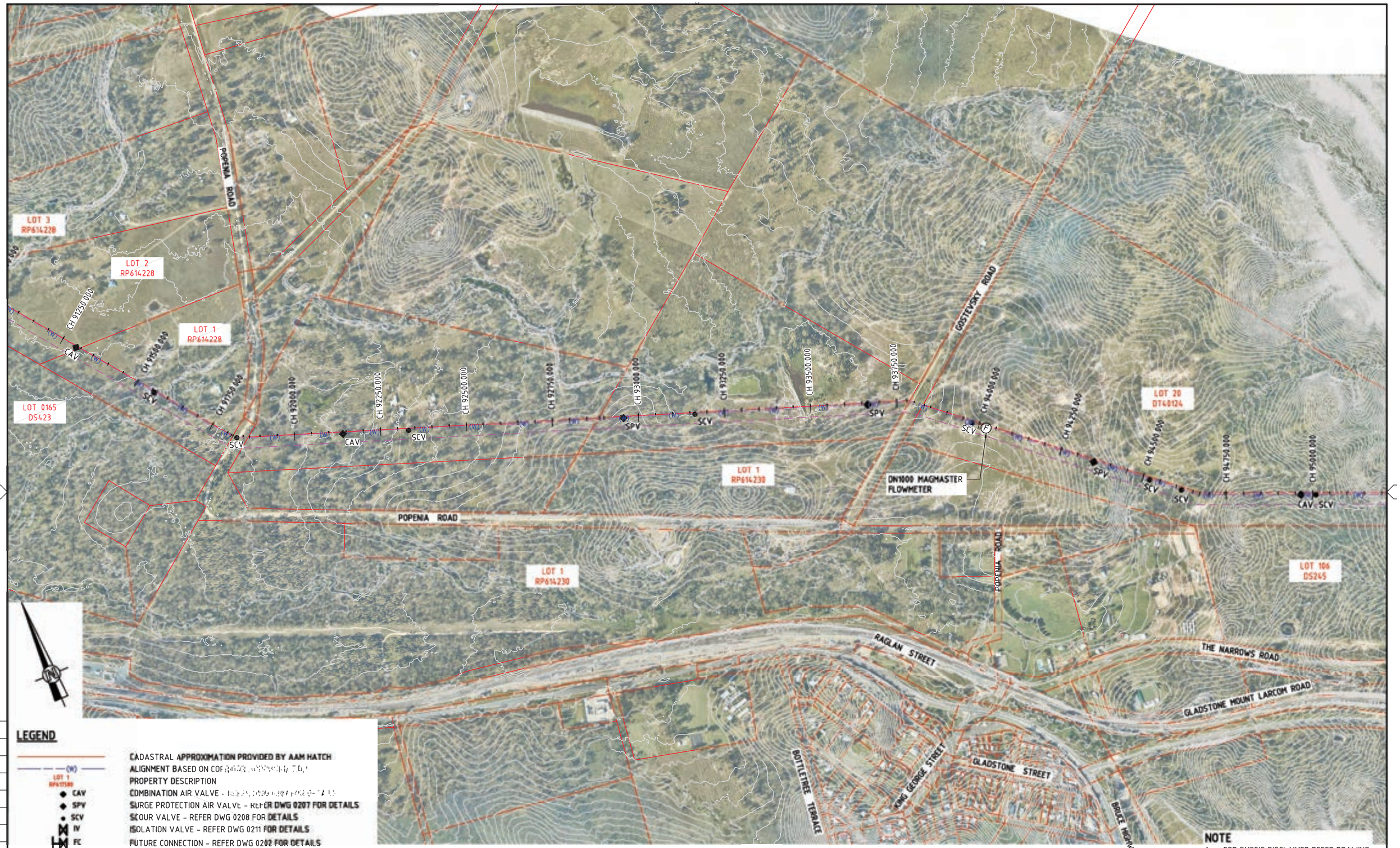


LEGEND

- LOT 1 RP617580
- CAV
- SPV
- SCV
- IV
- FC

CADASTRAL APPROXIMATION PROVIDED BY AAM HATCH
ALIGNMENT BASED ON COF [illegible]
PROPERTY DESCRIPTION
COMBINATION AIR VALVE - [illegible]
SURGE PROTECTION AIR VALVE - REFER DWG 0207 FOR DETAILS
SCOUR VALVE - REFER DWG 0208 FOR DETAILS
ISOLATION VALVE - REFER DWG 0211 FOR DETAILS
FUTURE CONNECTION - REFER DWG 0202 FOR DETAILS
RIGHT OF WAY

NOTE

1. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\-GFP-DE Project\110_CADD\CAD\DWG\01 30 GL\34200 RAGLAN PUMP STATION TO ALDOGA PIPELINE\30032687-DWG-34200-C-6018.dwg
PLOT DATE: 18 May 2022 TIME: 19:54:49

EXTERNAL REFERENCE FILES
X_5000_DWG_LEGEND
X_30032656_SMEC_A1
X_VALVES
X_CONTOUR 1mt INTERVAL
X_DCDB
SS_30032687_GFP_Arial Image
X_30032687_GFP_Arial Image_6
X_30032687_GFP_Arial Image_5
X_30032687_GFP_ROW
X_30032687_GFP_Alignment_2022

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	20.08.21	30% CONCEPT DESIGN	006	MSL
B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL
C	30.06.22	OPTIMISED CONCEPT DESIGN	006	MSL
D	18.11.22	UPDATED RIGHT OF WAY	037	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	C.BOU
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	D.TAYLOR

SCALES AT A1 SIZE DRAWING
SCALE X 0 100 200 250m
1 : 10000 (A3) 1 : 5000 (A1)

NOT FOR CONSTRUCTION

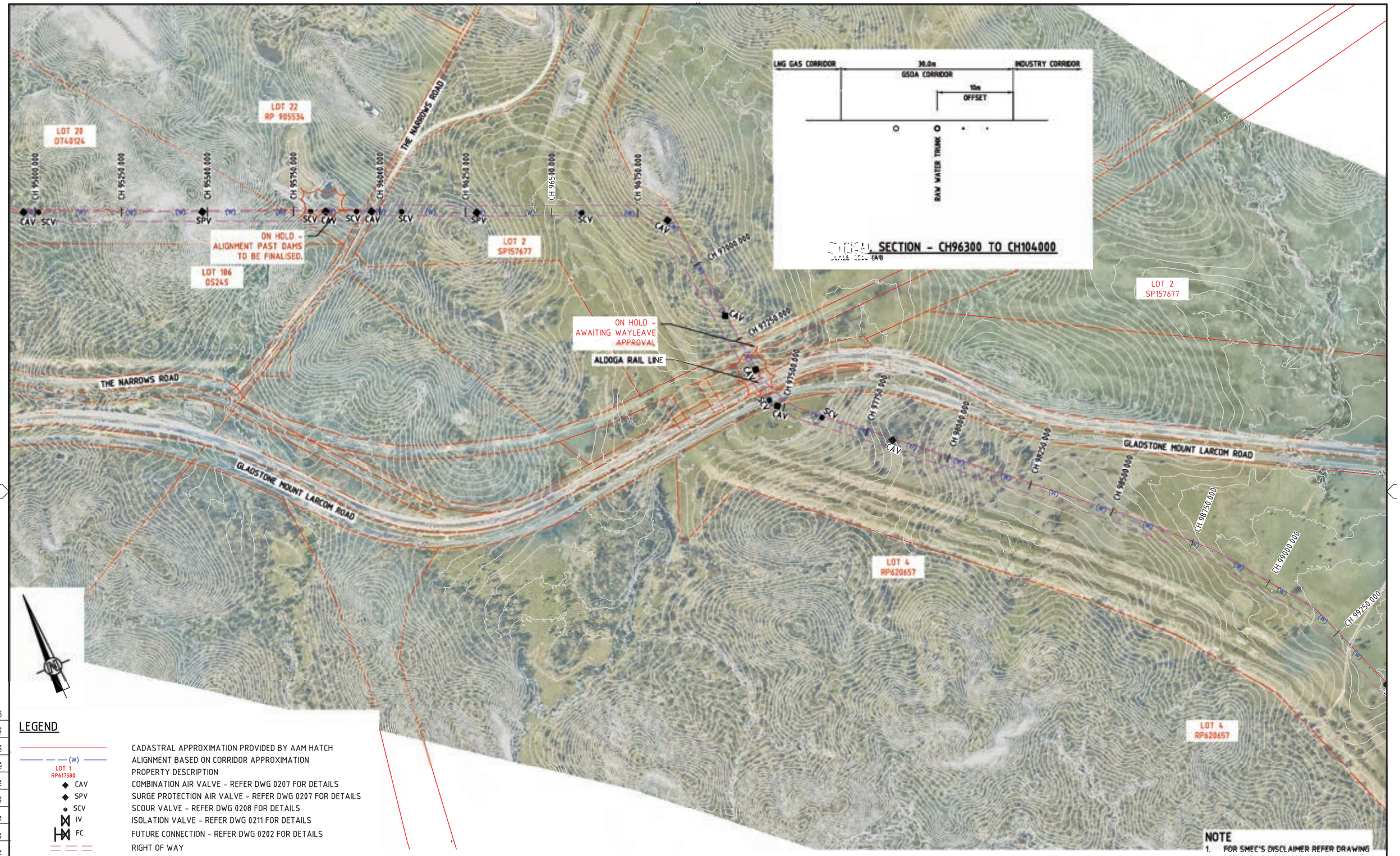
DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT
Gladstone Area Water Board

PROJECT TITLE
FITZROY TO GLADSTONE PIPELINE PROJECT
30GLA - RAGLAN PUMP STATION TO ALDOGA PIPELINE
LAYOUT PLAN
CH91500 TO CH95500
SHEET 5

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
1:5000	CONCEPT DESIGN	30032687-DWG-34200-C-6018	D

150 mm ON ORIGINAL
A1



LEGEND

LOT 1
RP617580

CADASTRAL APPROXIMATION PROVIDED BY AAM HATCH
ALIGNMENT BASED ON CORRIDOR APPROXIMATION
PROPERTY DESCRIPTION
COMBINATION AIR VALVE - REFER DWG 0207 FOR DETAILS
SURGE PROTECTION AIR VALVE - REFER DWG 0207 FOR DETAILS
SCOUR VALVE - REFER DWG 0208 FOR DETAILS
ISOLATION VALVE - REFER DWG 0211 FOR DETAILS
FUTURE CONNECTION - REFER DWG 0202 FOR DETAILS
RIGHT OF WAY

NOTE

1. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\-GFP-DE Project\110_CADD\CAD\DWG\01 30 GL\34200 RAGLAN PUMP STATION TO ALDOGA PIPELINE\30032687-DWG-34200-C-6019.dwg

PLOT DATE: 12 May 2022 TIME: 20:07:06

EXTERNAL REFERENCE FILES
X_5000_DWG_LEGEND
X_30032656_SMEC_A1
X_VALVES
X_CONTOUR 1mt INTERVAL
X_DCDB
SS_30032687_GFP_Arial Image
X_30032687_GFP_ROW
X_30032687_GFP_Arial Image_S
X_30032687_GFP_Alignment_2022

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	20.08.21	30% CONCEPT DESIGN	006	MSL
B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL
C	30.06.22	OPTIMISED CONCEPT DESIGN	006	MSL
D	18.11.22	UPDATED RIGHT OF WAY	037	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	C.BOU
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	D.TAYLOR

SCALES AT A1 SIZE DRAWING
SCALE X 0 100 200 250m
1 : 10000 (A3) 1 : 5000 (A1)

DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT
Gladstone Area Water Board

PROJECT TITLE
FITZROY TO GLADSTONE PIPELINE PROJECT
30GLA - RAGLAN PUMP STATION TO ALDOGA PIPELINE
LAYOUT PLAN
CH95500 TO CH99522.718
SHEET 6

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
1:5000	CONCEPT DESIGN	30032687-DWG-34200-C-6019	D

150 mm ON ORIGINAL
A1

STANDARD PIPELINE NOTES:

1. SERVICES SHOWN ARE APPROXIMATE ONLY AND ARE THOSE RECEIVED FROM DBYD TO DATE (VALID FOR LIMITED PERIOD). EXACT LOCATION TO BE DETERMINED ON SITE.
2. BOREHOLES SHOWN ARE APPROXIMATE ONLY AND ARE THOSE RECEIVED TO DATE. EXACT LOCATION TO BE DETERMINED ON SITE.
3. MINIMUM PIPELINE COVER = 900mm (EXCEPT IN FLOOD PRONE AREAS)
4. MINIMUM PIPELINE COVER IN FLOOD PRONE AREAS = 1200mm (CH 4100 TO CH 44300 & CH 49400 TO 75000)
5. MAXIMUM PIPELINE COVER = 3500mm
6. MINIMUM PIPELINE COVER UNDER ROADS = 900mm
7. MINIMUM PIPELINE COVER UNDER CREEKS = 1200mm
8. MAXIMUM DESIGN PRESSURE FOR PIPELINE = 210m

STANDARD CROSSING NOTES:

1. REFER TO PIPELINE LONG PROFILE DRAWINGS FOR DETAILS OF PIPE AND FITTINGS
2. ALL PIPE JOINTS TO BE WELDED WITHIN CONCRETE ENCASEMENT SECTION AND ENCASING PIPE
3. CLASS AND DETAILS OF ENCASING PIPE TO BE DETERMINED BY SPECIALIST DRILLING CONTRACTOR.
4. REINFORCED CONCRETE ENCASING PIPE TO BE USED FOR RAIL CROSSINGS AND COMBINED ROAD & RAIL CROSSINGS.
5. FOR ALL OTHER CROSSINGS, TYPE OF ENCASING PIPE TO BE DETERMINED BY SPECIALIST DRILLING CONTRACTOR AND APPROVED BY PRINCIPAL CONTRACTOR.
6. ENCASING PIPE TO BE INSTALLED BY THRUST BORING OR MICRO TUNNELLING METHOD.
7. ENCASING PIPE TO EXTEND MIN 2m PAST TOE OF BATTER FOR ROAD/RAIL EMBANKMENT.
8. ENCASING PIPE TO EXTEND MIN 2.0m PAST EDGE OF CREEK

TRENCH TYPES FOR PIPELINE SECTIONS NOTES:

1. GROUND CONDITIONS BETWEEN 0 TO 1200 AND 90575 TO 117400 ARE ASSUMED FOR DESIGN PURPOSES
2. ALL SOIL CLASSIFICATIONS ARE BASED ON PRELIM DMR BOREHOLE INVESTIGATIONS AND THEREFORE ARE SUBJECT TO CHANGE
3. ACTUAL GROUND CLASSIFICATIONS & TRENCH TYPE TO BE DETERMINED ON-SITE BY EXPERIENCED GEOTECHNICAL ENGINEER

LEGEND

	CADASTRAL APPROXIMATION BASED ON ASSUMPTION FROM IMAGE INFORMATION
	STANWELL-GLADSTONE INFRASTRUCTURE CORRIDOR APPROXIMATION BASED ON CADASTRAL APPROXIMATION
	GLADSTONE STATE DEVELOPMENT AREA CORRIDOR APPROXIMATION BASED ON CADASTRAL APPROXIMATION
(W)	PRELIMINARY ALIGNMENT BASED ON CORRIDOR APPROXIMATION
LOT 1 RP617580	PROPERTY DESCRIPTION
CAV / CAV	COMBINATION AIR VALVE (PLAN & L.S.) - REFER DWG 30032656-DWG-34000-C-0207 FOR DETAILS
SPV / SPV	SURGE PROTECTION AIR VALVE (PLAN & L.S.) - REFER DWG 30032656-DWG-34000-C-0207 FOR DETAILS
SCV / SCV	SCOUR VALVE (PLAN & L.S.) - REFER DWG 30032656-DWG-34000-C-0208 FOR DETAILS
IV	ISOLATION VALVE (PLAN & L.S.) - REFER DWG 30032656-DWG-34000-C-0211 FOR DETAILS
F	MAGMASTER FLOWMETER (PLAN) - REFER DWG 30032656-DWG-34000-C-0209 FOR DETAILS
V(-) 11.25°B + 3.83°	VERTICAL BEND WITH PIPE DEFLECTIONS
V-3.83°	VERTICAL PIPE DEFLECTIONS
H(-) 11.25°B + 3.83°	HORIZONTAL BEND WITH PIPE DEFLECTIONS
H-3.83°	HORIZONTAL PIPE DEFLECTIONS
OF	EXISTING OPTIC FIBRE CABLE
G	EXISTING GAS SERVICE (ALINTA)
G	EXISTING GAS SERVICE (APA GROUP)
E	EXISTING ENERGEX SERVICE
OH	EXISTING OVERHEAD ELECTRICITY SERVICE
T	EXISTING TELSTRA SERVICE
S	EXISTING SLURRY PIPE
GFP-TP205	TEST PIT LOCATION (2008)
GFP-BH409	BORE HOLE LOCATION (2008)
TP40	TEST PIT LOCATION (2007)

NOTE

1. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112

NOT FOR CONSTRUCTION

150 mm ON ORIGINAL

A1

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\-GFP-DE Project\110_CADD\CAD\DWG\01 30 GL\34200 RAGLAN PUMP STATION TO ALDOGA PIPELINE\30032687-DWG-34200-C-6034.dwg

PLOT DATE: 31 May 2022 TIME: 20:53:38

EXTERNAL REFERENCE FILES: X_30032656_SMEC_A1

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	20.08.21	30% CONCEPT DESIGN	006	MSL
B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL
C	30.06.22	OPTIMISED CONCEPT DESIGN	006	MSL
D	18.11.22	UPDATED RIGHT OF WAY	037	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	C.BOU
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	D.TAYLOR

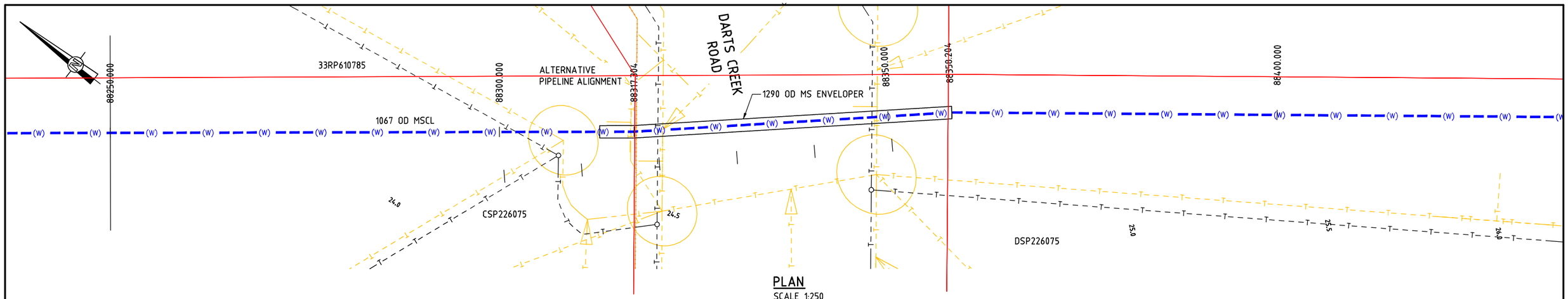
SCALES AT A1 SIZE DRAWING

DESIGNER: SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

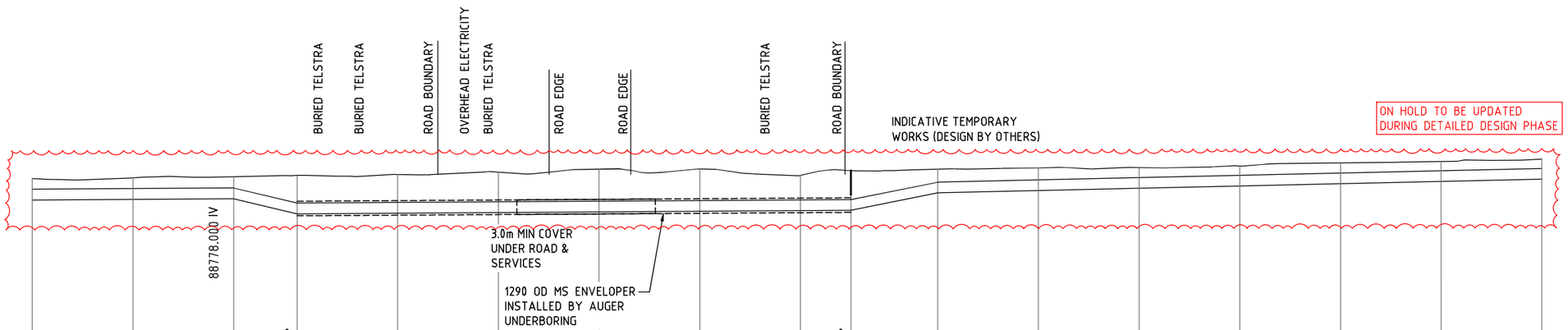
CLIENT: Gladstone Area Water Board

PROJECT TITLE: FITZROY TO GLADSTONE PIPELINE PROJECT
30GLA - RAGLAN PUMP STATION TO ALDOGA PIPELINE
PLAN AND LONGITUDINAL SECTION
GENERAL NOTES & LEGEND

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
	CONCEPT DESIGN	30032687-DWG-34200-C-6034	D



PLAN
SCALE 1:250



DATUM R.L. -2.00			88778.000 IV		V-11.25°B	V11.25°B H4.95°							V11.25°B H4.99°	V-11.25°B										
PIPE INVERT	21.874	21.940	22.005	20.505	20.567	20.629	20.691	20.753	20.816	20.847	22.583	22.808	23.033	23.259	23.484	23.709	23.934							
SURFACE LEVEL	24.018	24.064	24.182	24.316	24.395	24.638	24.949	24.957	24.329	24.794	24.943	25.063	25.115	25.245	25.584	25.727	25.947							
CHAINAGE	88760.000	88770.000	88780.000	0.000	(88786.293)	10.000	20.000	30.000	40.000	50.000	55.000	(88841.356)	88850.000	88860.000	88870.000	88880.000	88890.000	88900.000	88910.000					

LONGITUDINAL SECTION
SCALE 1:250

NOTE
1. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME
V:_Vault\Projects\3003\30032687\-GFP-DE Project\110_CADD\CAD\DWG\01 30 GL\34200 RAGLAN PUMP STATION TO ALDOGA PIPELINE\30032687-DWG-34200-U-6152.dwg

PLOT DATE 21 May 2022 TIME 21:00:52

EXTERNAL REFERENCE FILES
X_CONTOURS_CORRIDOR
X_SERVICES_DRYD_CORRIDOR
X_34200_VALVES
X_30032656_SMEC_A1
X_30032687_GFP_Alignment_2022
X_DCD0

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	20.08.21	30% CONCEPT DESIGN	006	MSL
B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL
C	20.09.22	OPTIMISED CONCEPT DESIGN	035	DT
D	18.11.22	UPDATED RIGHT OF WAY	037	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	DILIP.MG
DESIGNER	B.BEALING
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	D.TAYLOR

SCALES AT A1 SIZE DRAWING
SCALE 1:250 2.5 0 5 10

DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT
Gladstone Area Water Board

PROJECT TITLE
FITZROY TO GLADSTONE PIPELINE PROJECT
30GLA - RAGLAN PUMP STATION TO ALDOGA PIPELINE
PLAN AND LONGITUDINAL SECTION
ALTERNATIVE ROUTE
DART'S CREEK ROAD CROSSING

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
	CONCEPT DESIGN	30032687-DWG-34200-U-6152	D

150 mm ON ORIGINAL
A1

STANDARD NOTES:

1. ALL DIMENSIONS IN mm UNLESS NOTED OTHERWISE.
2. UNREINFORCED CONCRETE TO BE CLASS N20 AND REINFORCED CONCRETE TO BE CLASS N25 U.N.O. FOR AGGRESSIVE CONDITIONS USE SPECIAL GRADES OF CONCRETE AS DIRECTED ON DESIGN DRAWINGS.
3. ALL TEMPORARY FENCING TO BE PROVIDED AS PER LANDOWNER REQUIREMENTS.
4. PIPELINE PRESSURE RATINGS AS FOLLOWS:
   ALTON DOWNS TO RAGLAN = PN21
   RAGLAN TO ALDOGA = PN21
   ALDOGA TO MT MILLER = PN16 (C)
5. MINIMUM PIPELINE COVER = 900mm (EXCEPT IN FLOOD PRONE AREAS)
6. MINIMUM PIPELINE COVER IN FLOOD PRONE AREAS = 1100mm
   MAXIMUM PIPELINE COVER = 3500mm U.N.O.

STANDARD PIPE TRENCH NOTES:

1. USE EMBEDMENT TYPES ONLY AS DIRECTED ON DESIGN DRAWINGS.
2. LAY GEOTEXTILE FILTER FABRIC LAID AGAINST THE TRENCH FLOOR AND WALL SUCH THAT IT FULLY ENCASES OVER EXCAVATION. PROVIDE MIN 250mm LAP AT ALL FILTER FABRIC JOINTS.
3. ALL DESIGN TO AS2566.1.
4. FOR ALL PIPE JOINTS OTHER THAN WELDS CONCRETE SURROUND TO TERMINATE 500 CLEAR OF EACH SIDE OF JOINT AND USE TYPE A TRENCH AT JOINT.

ACCESS MANHOLE & TEE BRANCHES NOTES:

1. DEPTH OF MAIN MAY BE LOCALLY INCREASED TO ACHIEVE SPECIFIED COVER.
2. TEE FABRICATION DETAILS IN ACCORDANCE WITH AS 1579.

AIR VALVE NOTES:

1. DEPTH MAY BE LOCALLY INCREASED TO ACHIEVE SPECIFIC COVER.
2. ISOLATION VALVE TO BE GATE VALVE TYPE. ISOLATING VALVE TO BE INSTALLED SUCH THAT THE AIR VALVE CAN BE REMOVED AND SERVICED WITH THE ISOLATION VALVE IN PLACE.
3. FLANGED BRANCH DIAMETER TO MATCH AIR VALVE FLANGE DIAMETER, AS SHOWN IN DESIGN DRAWINGS.

PIPE FITTINGS & BENDS - STEEL FABRICATION NOTES:

1. SEE AS 1579 FOR ALTERNATIVE BEND DETAILS AND FABRICATION REQUIREMENTS.
2. ALL WELDING TO BE IN ACCORDANCE WITH AS/NZS 1544.1 CATEGORY SP.
3. FLANGE DRILLING TO COMPLY WITH AS 4087. ALL FLANGES SHALL BE RAISED FACED OR O-RING AS SPECIFIED ON DETAIL DRAWING. FULL FACE GASKETS TO BE USED WITH RAISED FACED FLANGES.
4. GASKETS AND 'O' RING TO COMPLY WITH SPECIFICATION.
5. PIPE TO BE IN ACCORDANCE WITH AS 1579 AND CEMENT LINING IN ACCORDANCE WITH AS 1281 TO SUIT DESIGN PRESSURES.
6. FITTINGS TO BE LINED OR COATED AS SPECIFIED INTERNALLY AND COATED WITH MEDIUM DENSITY PE TO AS 4321 OR PAINTED WITH HIGH BUILD EPOXY OR APPROVED EQUIVALENT.
7. FLANGE BOLTING DETAILS AS PER MANUFACTURERS RECOMMENDATIONS.
8. REINFORCING COLLARS REQUIRED FOR HIGH PRESSURE APPLICATIONS AS SPECIFIED.

SCOUR CONNECTION & DISCHARGE NOTES:

1. OBTAIN DRAINAGE AUTHORITY APPROVAL FOR SUMP &/OR DISCHARGE POINT PRIOR TO CONSTRUCTION OF SCOUR.

CONFINED SPACE NOTES:

1. WARNING SIGNAGE TO BE PROVIDED FOR ALL CONFINED SPACES IN ACCORDANCE WITH AS1319 - SAFETY SIGN FOR THE OCCUPATIONAL ENVIRONMENT.
2. ALL CONSTRUCTION AND O & M WORKS IN ACCORDANCE WITH AS2865:2001 - SAFE WORKING IN A CONFINED SPACE.

MARKER POSTS NOTES:

1. TYPE, LOCATION AND ORIENTATION OF MARKERS TO BE IN ACCORDANCE WITH GLADSTONE AREA WATER BOARD REQUIREMENTS.
2. DISTANCE TO AND SIZE OF MAIN/FITTING TO BE AS SHOWN ON MARKER.
3. LOCATE MARKERS AT RIGHT ANGLES TO THE MAIN WITH MARKINGS FACING TOWARDS THE VALVE OR HYDRANT
4. METALLIC MARKER PLATES TO BE REFLECTIVE WHITE WITH NON-REFLECTIVE LETTERING. LETTERING COLOUR TO BE HOMEBUSH RED (R22), TO AS 2700. MARKER PLATE LETTERS TO BE 80 HIGH x 40 WIDE x 10 STROKE WIDTH AS.
5. COLOURED MARKER DISKS TO BE INSTALLED FOR THE APPROPRIATE USAGE.
6. WATERMAIN MARKER POSTS TO BE CONSTRUCTED AT PROPERTY BOUNDARIES AND AT ALL HORIZONTAL BENDS, ROAD, RAIL AND CREEK CROSSINGS, AS WELL AS VALVE AND METER LOCATIONS.

GRADIENT TRENCH STOP NOTES:

1. PROVIDE TRENCH STOPS (IF REQUIRED) AT LOCATIONS SPECIFIED IN DESIGN DRAWINGS. LOCATE TRENCH STOPS AT SOCKET ENDS AS SHOWN ON DRAWINGS.
2. GRADIENT TRENCH STOPS AND CONCRETE SURROUND TO BE LOCATED 500mm FROM SOCKET END OF PIPE. ALL BAGS TO BE SEALED TO PREVENT LOSS OF CONTAINED MATERIAL.
3. FOR GRADES 5% TO 14% USE TRENCH STOPS. FOR GRADES 15% TO 29% USE BULKHEADS AND TRENCH STOPS.
4. ABOVE REQUIREMENT APPLIES TO BOTH POSITIVE AND NEGATIVE SLOPES.
5. FOR ALL PIPE JOINTS OTHER THAN WELDS CONCRETE SURROUND TO TERMINATE 500 CLEAR OF EACH SIDE OF PIPE JOINT AND USE TYPE A TRENCH AT PIPE JOINT.
6. SEAL BAGS TO PREVENT LEAKAGE OF CONTAINED MATERIAL.

BULKHEAD NOTES:

1. CONSTRUCT CONCRETE BULKHEADS (IF REQUIRED) AT LOCATIONS SPECIFIED IN DESIGN DRAWINGS. LOCATE BULKHEADS AT SOCKET ENDS AS SHOWN ON DRAWINGS.
2. KEY CONCRETE BULKHEADS INTO SIDES AND BOTTOM OF TRENCH AGAINST A BEARING SURFACE OF UNDISTURBED SOIL.
3. FOR SLOPES 15% TO 29% USE BULKHEADS AND TRENCH STOPS. FOR SLOPER >30% USE WELDED JOINTS AND BULKHEADS.
4. DO NOT DEFORM PIPES DURING PLACEMENT OF CONCRETE.
5. PROVIDE A CONTINUOUS DRAINAGE PATH THROUGH BULKHEADS
6. COMPRESSIBLE MEMBRANE AROUND PIPE TO BE 3 THICK RUBBER FOR BULKHEADS ON SLOPES

FENCING NOTES:

1. ALL TEMPORARY AND PERMANENT FENCING IN ACCORDANCE WITH DMR-1601 UNLESS OTHERWISE NOTED.

STANDARD CROSSING NOTES:

1. REFER TO PIPELINE LONG PROFILE DRAWINGS FOR DETAILS OF PIPE AND FITTINGS
2. ALL PIPE JOINTS TO BE WELDED WITHIN CONCRETE ENCASEMENT SECTION AND ENCASING PIPE
3. CLASS AND DETAILS OF ENCASING PIPE TO BE DETERMINED BY SPECIALIST DRILLING CONTRACTOR.
4. REINFORCED CONCRETE ENCASING PIPE TO BE USED FOR RAIL CROSSINGS AND COMBINED ROAD & RAIL CROSSINGS.
5. FOR ALL OTHER CROSSINGS, TYPE OF ENCASING PIPE TO BE DETERMINED BY SPECIALIST DRILLING CONTRACTOR AND APPROVED BY PRINCIPAL CONTRACTOR.
6. ENCASING PIPE TO BE INSTALLED BY THRUST BORING OR MICRO TUNNELING METHOD.
7. ENCASING PIPE TO EXTEND MIN 2m PAST TOE OF BATTER FOR ROAD/RAIL EMBANKMENT.
8. ENCASING PIPE TO EXTEND MIN 2.0m PAST EDGE OF CREEK
9. REINSTATEMENT OF EXTERNAL PIPE PROTECTION AT WELDED JOINTS IS NOT REQUIRED FOR CONCRETE ENCASED PIPE.

VALVE AND FITTING NOTES:

1. ALL VALVES AND FITTINGS TO BE PN21 RATED FOR ALTON DOWNS TO ALDOGA U.N.O.
2. ALL VALVES AND FITTINGS TO BE PN16 FROM ALDOGA TO MT MILLER.

WELDED JOINTS:

1. WELDED JOINTS SHALL BE EITHER BALL AND SOCKET TYPE OR COLLAR WELDS.
2. AFTER WELDING AND TESTING OF JOINT, INTERNAL CEMENT MORTAR LINING SHALL BE POINTED AS PER MANUFACTURERS RECOMMENDATIONS.
3. THE JOINTS SHALL BE COATED EXTERNALLY WITH A HEAT SHRINK SLEEVE \ WRAP AS SPECIFIED.

BURIED FLANGE JOINTS:

1. ALL BURIED FLANGE JOINTS SHALL BE DENSO WRAPPED AS SPECIFIED.
2. ALL NUTS, BOLTS & WASHERS SHALL BE GRADE 8.8 GALVANISED STEEL.

FLANGE JOINTS IN PITS:

1. ALL NUTS, BOLTS & WASHERS SHALL BE GRADE 316 S.S. AS SPECIFIED

CATHODIC PROTECTION & INDUCED CURRENT NOTES:

1. CATHODIC PROTECTION LOOPS AND LUGS TO BE PROVIDED FOR ALL RRJ PIPES.
2. CATHODIC PROTECTION TO BE PROVIDED AS SPECIFIED ON DESIGN DRAWINGS.
3. PIPES TO BE PROTECTED AGAINST INDUCED OR STRAY ELECTRICAL CURRENTS AS SPECIFIED ON DESIGN DRAWINGS.

BLASTING NOTES:

1. ALL BLASTING IN ACCORDANCE WITH AS 2187 AND STATUATORY REQUIREMENTS.
2. ALL AFFECTED UTILITIES & STAKEHOLDERS TO BE CONSULTED FOR APPROVAL IN ADVANCE OF WORKS.

NOTE

1. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112

NOT FOR CONSTRUCTION

150 mm ON ORIGINAL

A1

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\-GFP-OE Project\110_CADD\CAD\DWG\01 30 GL\34000 PIPELINE TYPICAL & STANDARD DETAILS\30032687-DWG-34000-C-0200.dwg

PLOT DATE: 06 Apr 2022 TIME: 12:36:04

EXTERNAL REFERENCE FILES: x_30032656_SMEC_A1

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	20.08.21	30% CONCEPT DESIGN	006	MSL
B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL
C	27.05.22	OPTIMISED CONCEPT DESIGN	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	J.HAYDON
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	A.ZANETTI

SCALES AT A1 SIZE DRAWING

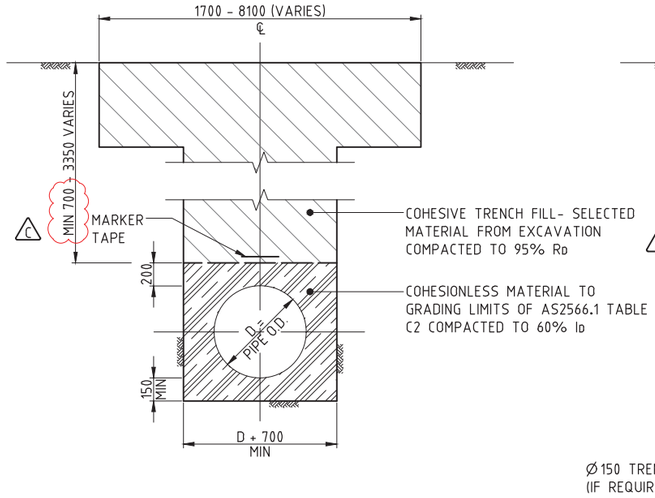
DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT: Gladstone Area Water Board

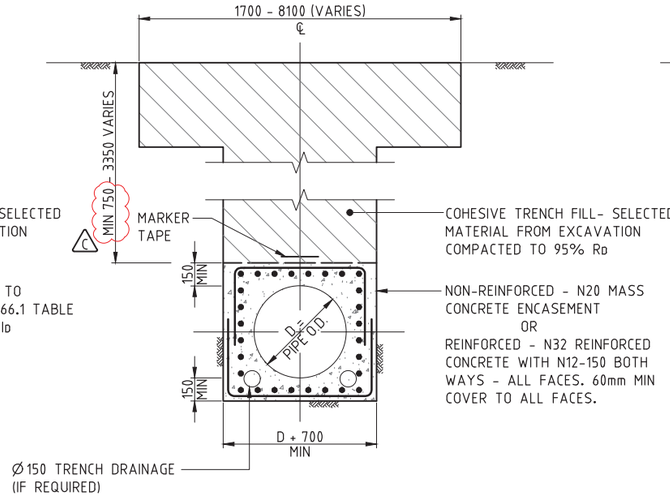
PROJECT TITLE: GLADSTONE - FITZROY PIPELINE PROJECT
30GLA - PIPELINE STANDARD DRAWINGS

TYPICAL DETAILS GENERAL NOTES

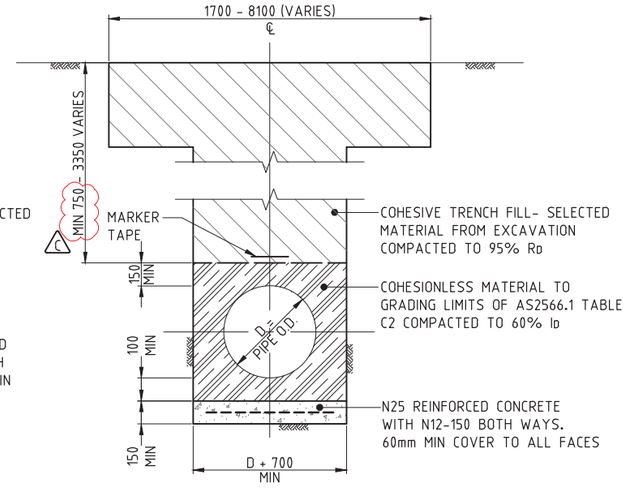
SCALE	PHASE	PROJECT / DRAWING No.	REVISION
N.T.S.	CONCEPT DESIGN	30032687-DWG-34000-C-0200	C



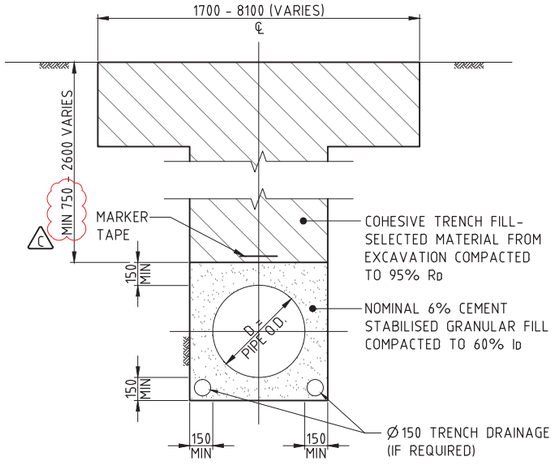
TYPICAL PIPE TRENCH SECTION
TYPE A - STANDARD (>750 COVER)
TYPE B - FLOOD PRONE AREAS (>1100 COVER)



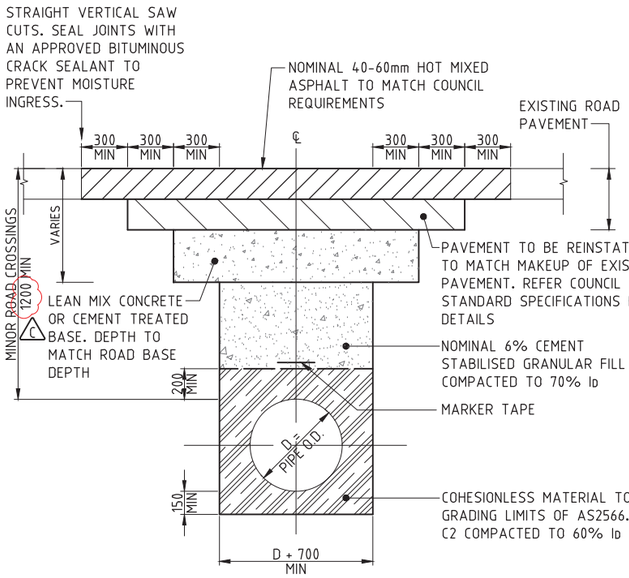
TYPICAL PIPE TRENCH SECTION
TYPE C - NON REINFORCED
TYPE H - REINFORCED



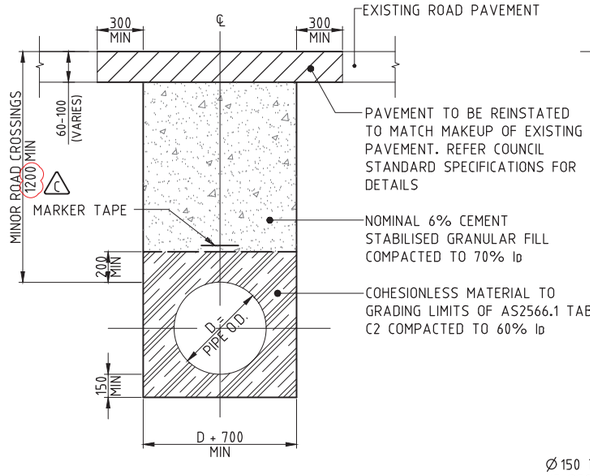
TYPICAL PIPE TRENCH SECTION
TYPE G - POOR INADEQUATE FOUNDATION
REQUIRING OVER-EXCAVATION



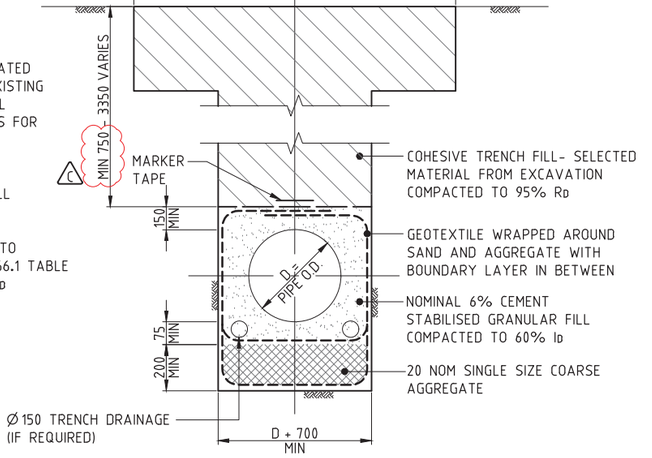
TYPICAL PIPE TRENCH SECTION
TYPE L - CEMENT STABILISED FILL SYSTEM
INADEQUATE TRENCH WALL STIFFNESS



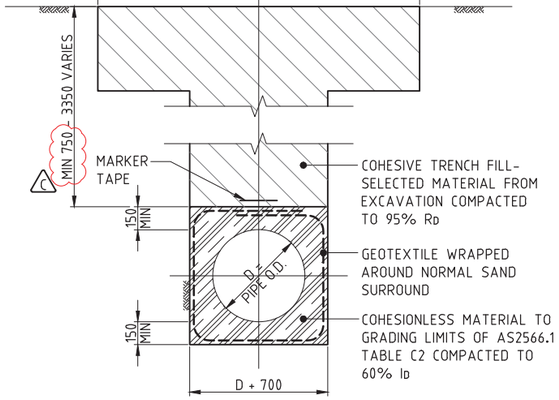
TYPICAL PIPE TRENCH SECTION
TYPE D - MINOR SEALED ROAD CROSSING AT 1200 MINIMUM ⚠℄
COVER NOTE: FOR OPEN CUT METHOD ONLY



TYPICAL PIPE TRENCH SECTION
TYPE F - MINOR UNSEALED ROAD CROSSING AT 1200 MINIMUM ⚠℄
COVER NOTE: FOR OPEN CUT METHOD ONLY



TYPICAL PIPE TRENCH SECTION
TYPE E - POOR FOUNDATION
REQUIRING OVER-EXCAVATION



TYPICAL PIPE TRENCH SECTION
TYPE M - GEOTEXTILE SURROUND SYSTEM
GROUNDWATER SEEPAGE CONDITIONS

LEGEND
RD = DRY DENSITY RATIO AS1256.5.4.1 (COHESIVE MATERIAL)

ID = DENSITY INDEX AS1256.E6.1 (COHESIONLESS MATERIAL)

NOTES:
1. FOR STANDARD NOTES REFER DRAWING 30032687-DWG-24000-C-0200.
2. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112.

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\-GFP-OE Project\110_CADD\CAD\DWG\01 30 GL\34000 PIPELINE TYPICAL & STANDARD DETAILS\30032687-DWG-34000-C-0201.dwg
PLOT DATE: 7 Apr 2022 TIME: 11:46:28

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
X_30032656_SMEC_A1	A	20.08.21	30% CONCEPT DESIGN	006	MSL
	B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL
	C	27.05.22	OPTIMISED CONCEPT DESIGN	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	J.HAYDON
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	A.ZANETTI

SCALES AT A1 SIZE DRAWING
SCALE H 0 200 400 600 800 1000mm
1 : 40 (A3) 1 : 20 (A1)

DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

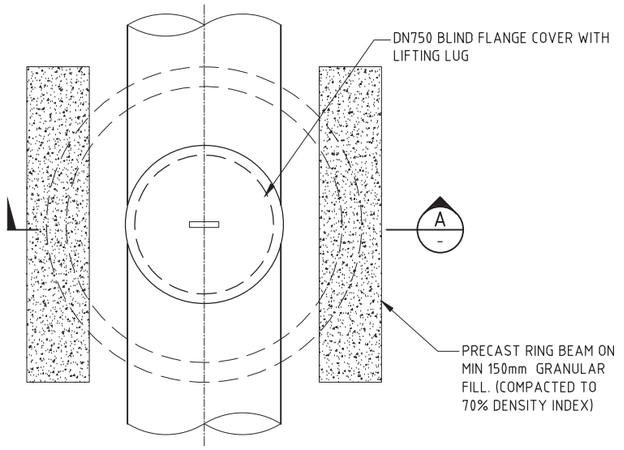
CLIENT: Gladstone Area Water Board

PROJECT TITLE
GLADSTONE - FITZROY PIPELINE PROJECT
30GLA - PIPELINE STANDARD DRAWINGS
TYPICAL DETAILS
PIPE TRENCHES & EMBEDMENT

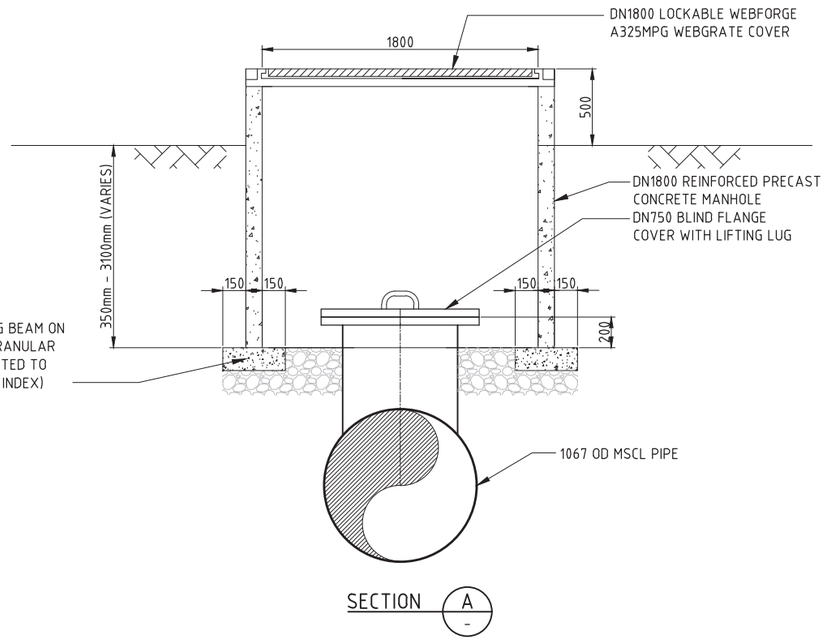
SCALE	PHASE	PROJECT / DRAWING No.	REVISION
1:20	CONCEPT DESIGN	30032687-DWG-34000-C-0201	C

A1 150 mm ON ORIGINAL

NOTES:
FOR STANDARD NOTES REFER DRAWING
30032656-DWG-24000-C-0200

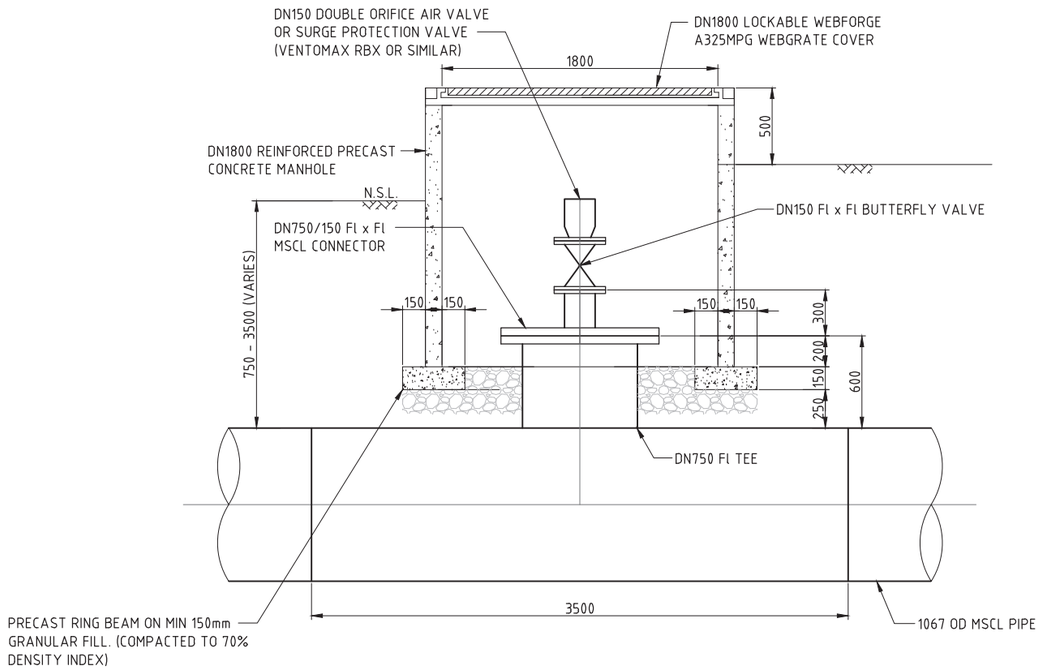


PLAN UNDER COVER SLAB



ACCESS MANHOLE

CHAINAGE	DESCRIPTION	STRUCTURE
285.000	11.25 & 22.5 deg bends	New Access Manhole
64250.000	45 deg bend	New Access Manhole
73817.000	22.5 deg bend	New Access Manhole
101296.000	22.5 deg bend	New Access Manhole



COMBINED AIR/SURGE PROTECTION
VALVE & ACCESS MANHOLE DETAIL

CHAINAGE	DESCRIPTION	STRUCTURE	CHAINAGE	DESCRIPTION	STRUCTURE
8000.000	11.25 deg bend	Combined CAV/AM	66425.000	22.5 deg bend	Combined SPV/AM
16767.000	11.25 deg bend	Combined SPV/AM	68915.000	11.25 deg bend	Combined CAV/AM
190399.000	11.25 deg bend	Combined CAV/AM	72361.000	45 deg bend	Combined SPV/AM
29185.000	22.5 deg bend	Combined CAV/AM	72442.000	45 deg bend	Combined SPV/AM
29256.000	11.25 deg bend	Combined CAV/AM	73483.000	45 deg bend	Combined SPV/AM
40712.000	11.25 deg bend	Combined SPV/AM	73576.000	45 deg bend	Combined SPV/AM
45210.000	11.25 deg bend	Combined SPV/AM	110664.000	22.5 deg bend	Combined SPV/AM
46403.000	11.25 deg bend	Combined CAV/AM	110772.000	22.5 deg bend	Combined SPV/AM
46923.000	11.25 deg bend	Combined CAV/AM	112135.000	22.5 deg bend	Combined CAV/AM
56827.000	45 deg bend	Combined CAV/AM	112906.000	11.25 deg bend	Combined SPV/AM
56937.000	45 deg bend	Combined CAV/AM	113120.000	11.25 deg bend	Combined SPV/AM
65084.000	11.25 deg bend	Combined CAV/AM			
65598.000	11.25 deg bend	Combined CAV/AM			
65654.000	11.25 deg bend	Combined CAV/AM			

NOTE
1. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\-GFP-OE Project\110_CADD\CAD\DWG\01 30 GL\34000 PIPELINE TYPICAL & STANDARD DETAILS\30032687-DWG-34000-C-0203.dwg
PLOT DATE: 04 Jan 2022 TIME: 16:58:18

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
X_30032656_SMEC_A1	A	20.08.21	30% CONCEPT DESIGN	006	MSL
	B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	J.HAYDON
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	A.ZANETTI

SCALES AT A1 SIZE DRAWING
SCALE 0 200 400 600 800 1000mm
1 : 40 (A3) 1 : 20 (A1)

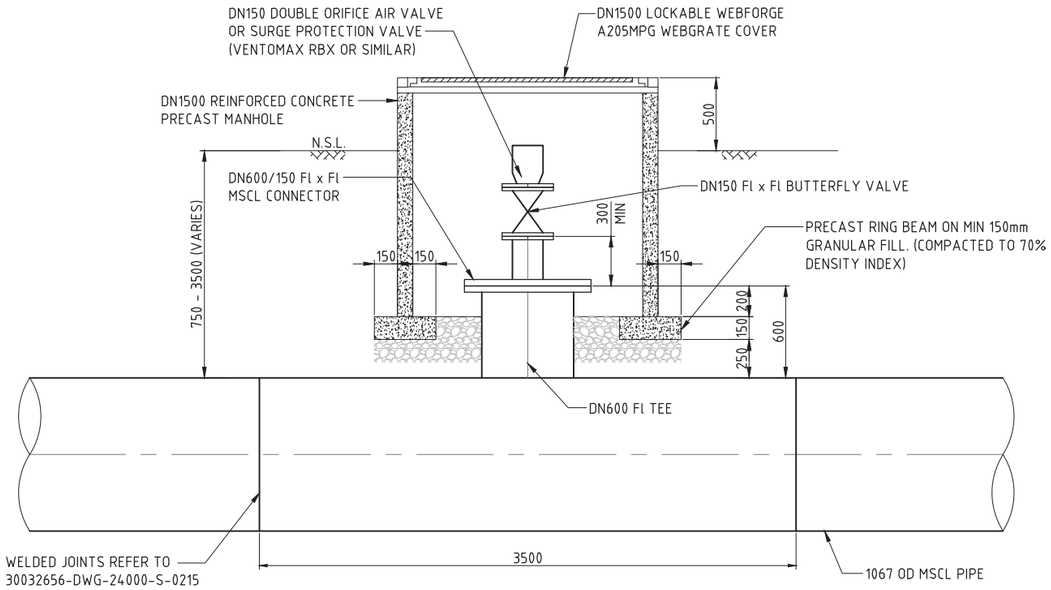
DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT
Gladstone Area Water Board

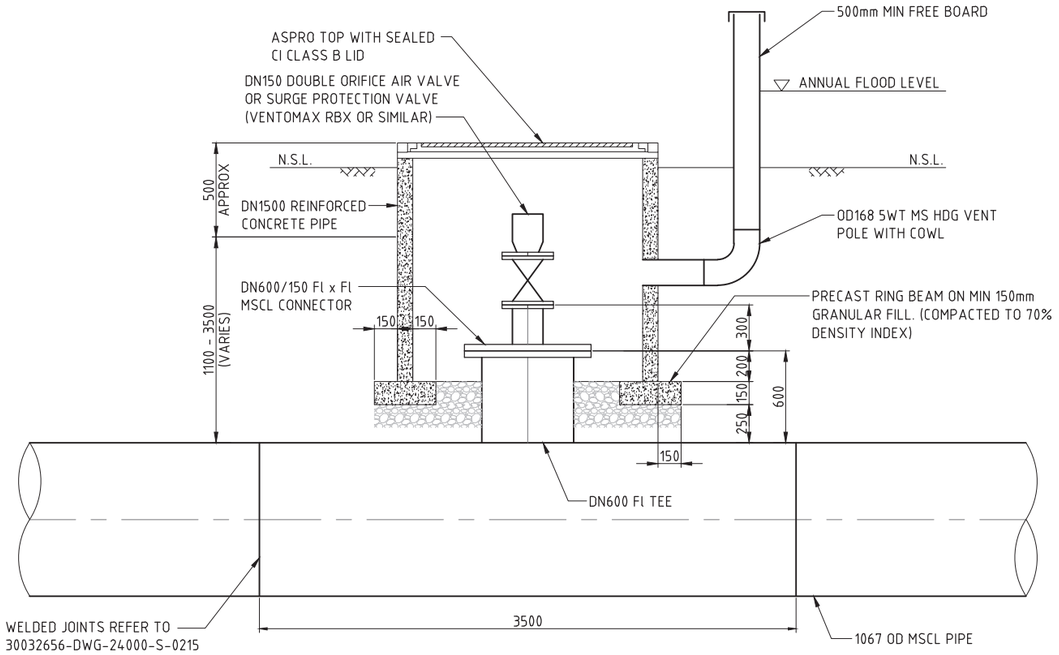
PROJECT TITLE
GLADSTONE - FITZROY PIPELINE PROJECT
30GLA - PIPELINE STANDARD DRAWINGS
TYPICAL DETAILS
ACCESS MANHOLE

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
1:20	CONCEPT DESIGN	30032687-DWG-34000-C-0203	B

A1 150 mm ON ORIGINAL



COMBINED AIR/SURGE PROTECTION VALVE & ACCESS MANHOLE



COMBINED AIR/SURGE PROTECTION VALVE & ACCESS MANHOLE ON FLOOD PRONE AREA

ASSUMPTIONS

1. DEPTH MEASURED FROM GROUND LEVEL TO INVERT OF CHAMBER BASE
2. DENSITY OF INSITU/BACKFILL MATERIAL = 18 KN/M3

NOTES:

1. FOR STANDARD NOTES REFER DRAWING 30032656-DWG-34000-C-0200.
2. GROUND LEVEL AND INVERT LEVEL TO BE DOCUMENTED WITH UPDATED SURVEY DURING NEXT STAGE OF THE DESIGN.
3. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112.

CHAINAGE	STRUCTURE	FLOOD LEVEL
8000	Air Valve	11.90
8817	Air Valve	11.88
9615	Air Valve	11.84
10371	Air Valve	11.68
10809	Air Valve	11.58
11490	Air Valve	11.44
11706	Air Valve	11.39
12120	Air Valve	11.31
14101	Air Valve	10.88
14618	Air Valve	10.77
15400	Air Valve	10.61
15750	Air Valve	10.53
16525	Air Valve	10.37
17100	Air Valve	10.25
17825	Air Valve	10.09
18670	Air Valve	9.92
18845	Air Valve	9.88
19399	Air Valve	9.76
19630	Air Valve	9.71
20200	Air Valve	9.59
20620	Air Valve	9.50
21425	Air Valve	9.33
22018	Air Valve	9.20
22238	Air Valve	9.15
23300	Air Valve	8.93
23960	Air Valve	8.79
24428	Air Valve	8.69
25026	Air Valve	8.56
25611	Air Valve	8.44
27122	Air Valve	8.12
27850	Air Valve	7.96
29185	Air Valve	7.68
29255	Air Valve	7.66
29856	Air Valve	7.54
30448	Air Valve	7.41
31200	Air Valve	7.25
32000	Air Valve	7.08
32500	Air Valve	6.97
33035	Air Valve	6.86
33980	Air Valve	6.66
35200	Air Valve	6.40
35860	Air Valve	6.26
36408	Air Valve	6.14
37200	Air Valve	5.97
37962	Air Valve	5.81
38400	Air Valve	7.8
39200	Air Valve	7.8
40000	Air Valve	7.8
41264	Air Valve	7.8
41850	Air Valve	7.8

CHAINAGE	STRUCTURE	FLOOD LEVEL
43000	Air Valve	7.8
43768	Air Valve	7.8
44550	Air Valve	7.8
46403	Air Valve	7.8
46800	Air Valve	7.8
48190	Air Valve	7.8
4860	Air Valve	7.8
49816	Air Valve	7.8
51400	Air Valve	7.8
52200	Air Valve	7.8
53000	Air Valve	7.8
53800	Air Valve	7.8
54521	Air Valve	7.8
55273	Air Valve	7.8
55850	Air Valve	7.8
56216	Air Valve	7.8
56826	Air Valve	7.8
57230	Air Valve	7.8
59882	Air Valve	7.8
60709	Air Valve	7.8
61500	Air Valve	7.8
62300	Air Valve	7.8
63800	Air Valve	7.8
64600	Air Valve	7.8
65083	Air Valve	7.8
65598	Air Valve	7.8
65654	Air Valve	7.8
68915	Air Valve	7.8
70192	Air Valve	7.8
71700	Air Valve	7.8
72705	Air Valve	7.8
74527	Air Valve	7.8
75100	Air Valve	7.8

SCHEDULE OF AIR VALVES IN FLOOD PRONE AREAS

NOT FOR CONSTRUCTION

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\~GFP-OE Project\110_CADD\CAD\DWG\01 30 GL\34000 PIPELINE TYPICAL & STANDARD DETAILS\30032687-DWG-34000-C-0207.dwg
PLOT DATE: 04 Jan 2022 TIME: 16:58:19

EXTERNAL REFERENCE FILES: X_30032656_SMEC_A1

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	20.08.21	30% CONCEPT DESIGN	006	MSL
B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	J.HAYDON
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	A.ZANETTI

SCALES AT A1 SIZE DRAWING: SCALE 0 200 400 600 800 1000mm; 1 : 40 (A3) 1 : 20 (A1)

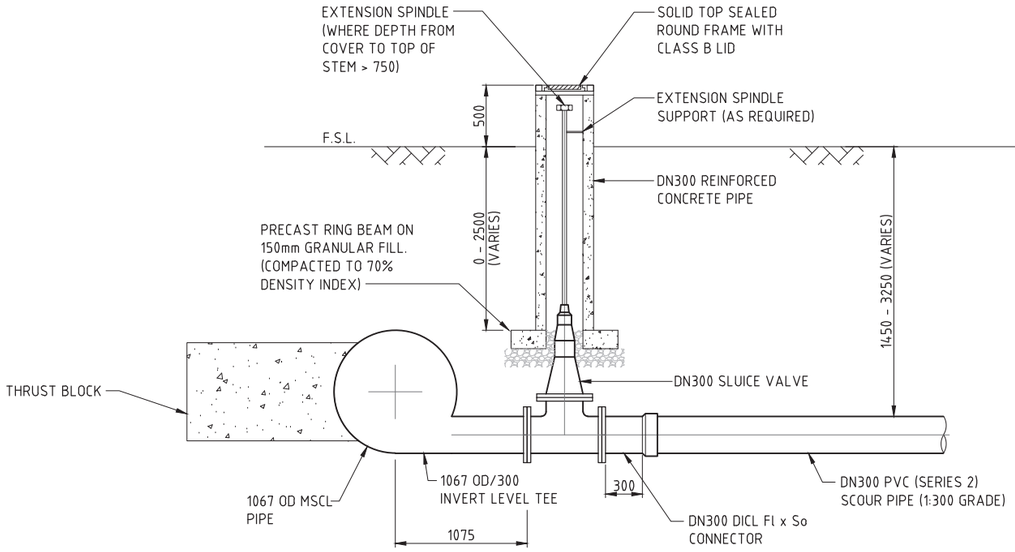
DESIGNER: SMEC — Member of the Surbana Jurong Group — © ABN 47 065 475 149 — LEVEL 6, 480 ST PAULS TERRACE FORTITUDE VALLEY QLD 4006 — SMEC PROJECT No 30032687

CLIENT: Gladstone Area Water Board

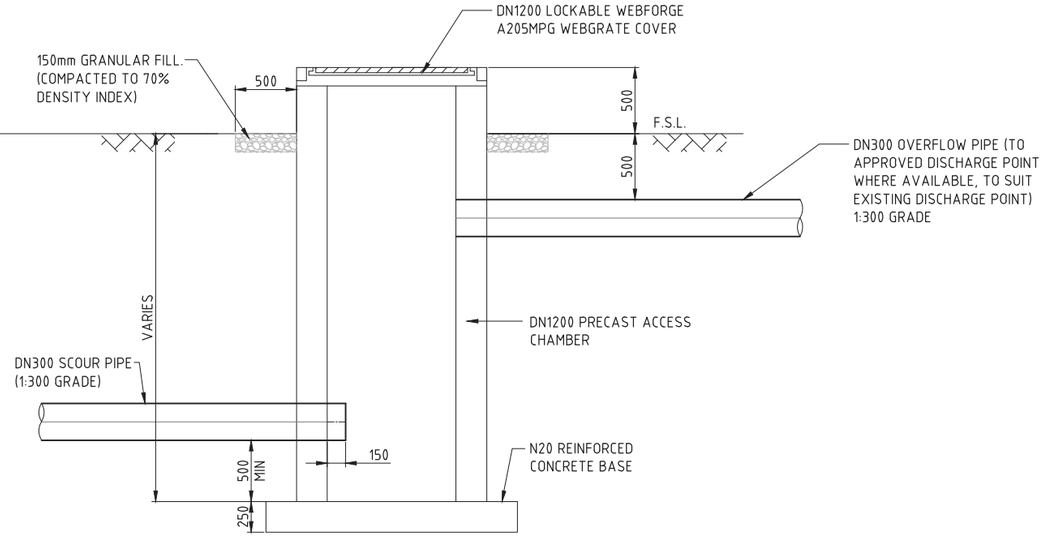
PROJECT TITLE: GLADSTONE - FITZROY PIPELINE PROJECT
30GLA - PIPELINE STANDARD DRAWINGS
TYPICAL DETAILS
AIR RELIEF & SURGE PROTECTION

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
1:20	CONCEPT DESIGN	30032687-DWG-34000-C-0207	B

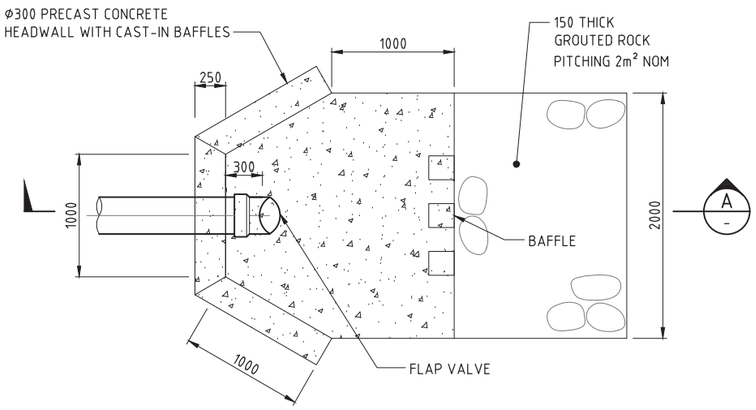
150 mm ON ORIGINAL
A1



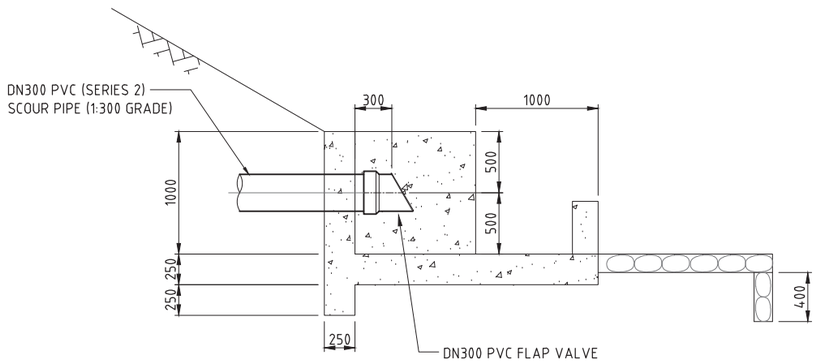
SCOUR CONNECTION DETAIL



DISCHARGE OUTLET - PUMP OUT PIT (AS REQUIRED)



PLAN



SECTION A

NOTES:

1. FOR STANDARD NOTES REFER DRAWING 30032656-DWG-24000-C-0200.
2. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112.

DISCHARGE OUTLET - APPROVED DISCHARGE POINT

DRAWING FILE LOCATION / NAME	PLOT DATE	TIME
V:_Vault\Projects\3003\30032687\-GFP-QE Project\110_CADD\CAD\DWG\01 30 GL\34000 PIPELINE TYPICAL & STANDARD DETAILS\30032687-DWG-34000-C-0208.dwg	4 Jan 2022	16:58:19

EXTERNAL REFERENCE FILES	REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
x_30032656_SMEC_A1	A	20.08.21	30% CONCEPT DESIGN	006	MSL
	B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	J.HAYDON
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	A.ZANETTI

NOT FOR CONSTRUCTION

SCALES AT A1 SIZE DRAWING

SCALE 0 500 1000 1250mm

1 : 50 (A3) 1 : 25 (A1)

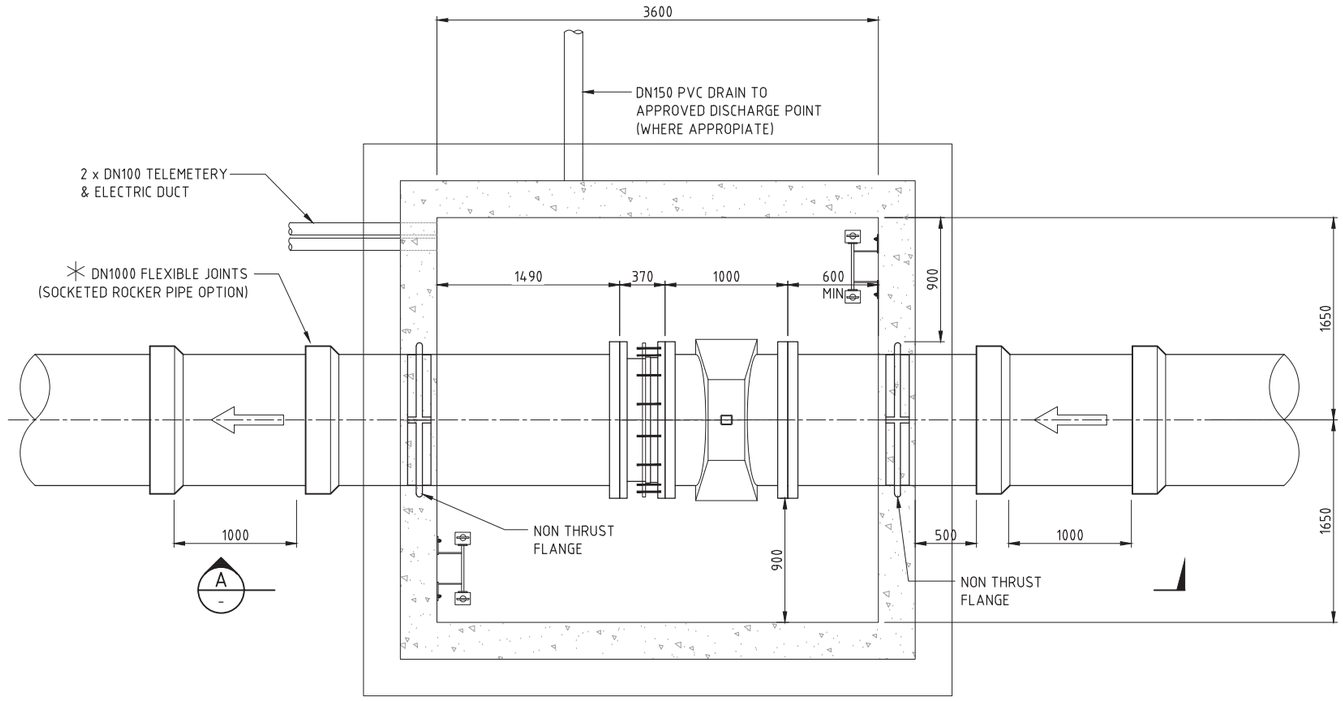
DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT
Gladstone Area Water Board

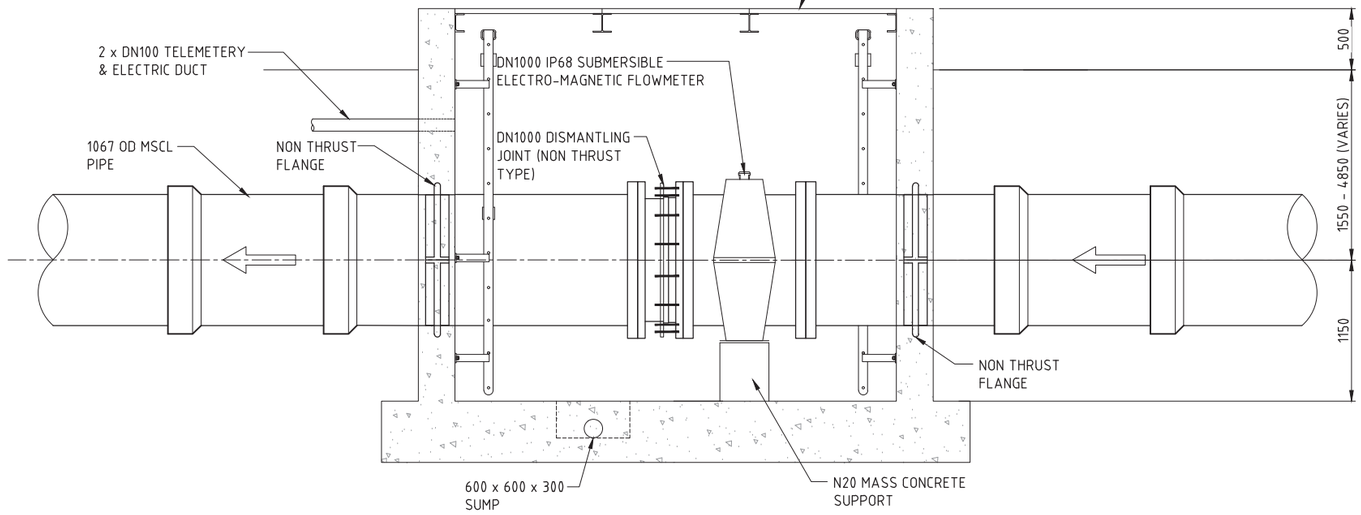
PROJECT TITLE
GLADSTONE - FITZROY PIPELINE PROJECT
30GLA - PIPELINE STANDARD DRAWINGS
TYPICAL DETAILS
SCOURCONNECTION & DISCHARGE OUTLETS

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
1:25	CONCEPT DESIGN	30032687-DWG-34000-C-0208	B

150 mm ON ORIGINAL
A1



PLAN - UNDER COVER SLAB



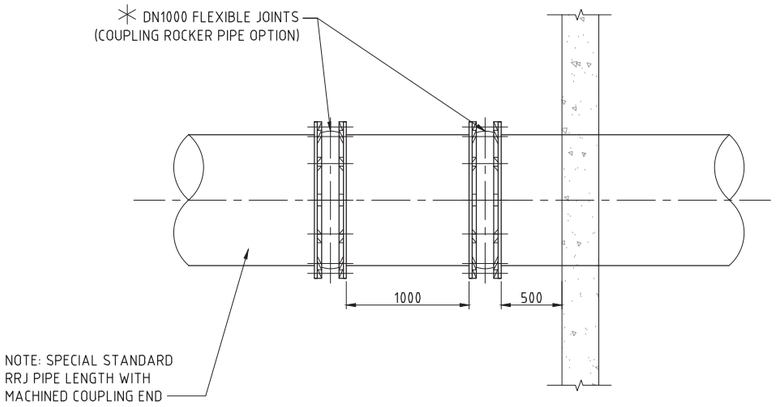
SECTION A -

FLOWMETER CHAMBER

NOTES:

1. FOR STANDARD NOTES REFER DRAWING 30032656-DWG-24000-C-0200
2. CLEARANCE FOR FLOWMETER AS FOLLOWS - 10 x DIAMETER UPSTREAM 5 x DIAMETER DOWNSTREAM
3. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112

✳ FOR TRENCH TYPES A & B USE SOCKETED ROCKER PIPE ARRANGEMENT. FOR TRENCH TYPE L & H USE COUPLING ROCKER PIPE ARRANGEMENT.



ALTERNATIVE FLEXIBLE JOINT ARRANGEMENT

NOT FOR CONSTRUCTION

150 mm ON ORIGINAL

A1

DRAWING FILE LOCATION / NAME: V:_Vault\Projects\3003\30032687\-GFP-OE Project\110_CADD\CAD\DWG\01 30 GL\34000 PIPELINE TYPICAL & STANDARD DETAILS\30032687-DWG-34000-C-0209.dwg

PLOT DATE: 4 Jan 2022 TIME: 16:58:20

EXTERNAL REFERENCE FILES:
X_34000_FLOW_MET_PIT_PLAN
X_34000_FLOW_MET_PIT_ELEV
X_30032656_SMEC_A1

REV	DATE	AMENDMENT / REVISION DESCRIPTION	WVR No.	APPROVAL
A	20.08.21	30% CONCEPT DESIGN	006	MSL
B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	J.HAYDON
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	A.ZANETTI

SCALES AT A1 SIZE DRAWING

SCALE 0 500 1000 1250mm

1 : 50 (A3) 1 : 25 (A1)

DESIGNER

SMEC

Member of the Surbana Jurong Group

© ABN 47 065 475 149

LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT

Gladstone Area Water Board

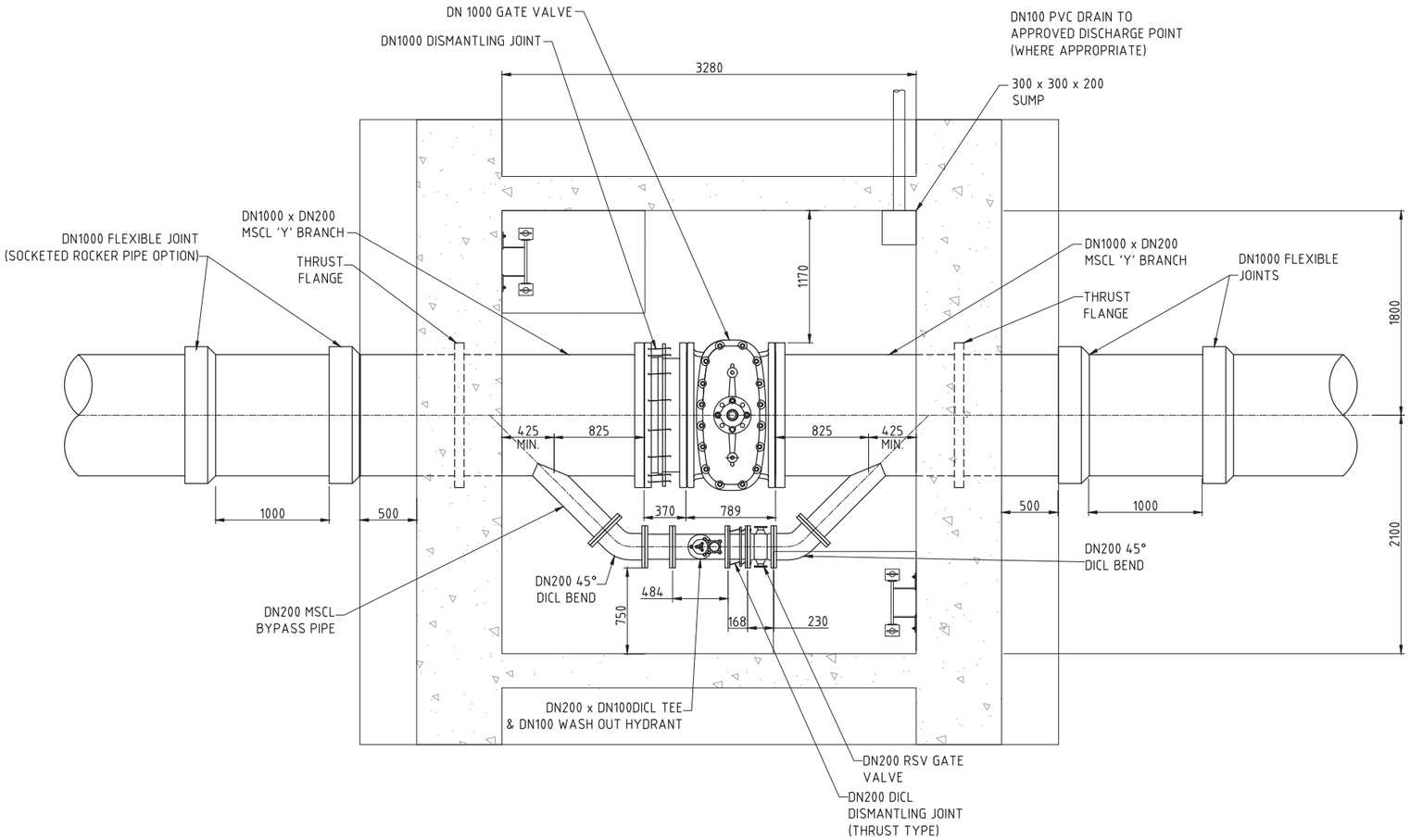
PROJECT TITLE

GLADSTONE - FITZROY PIPELINE PROJECT
30GLA - PIPELINE STANDARD DRAWINGS
TYPICAL DETAILS
FLOWMETER CHAMBER

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
1:25	CONCEPT DESIGN	30032687-DWG-34000-C-0209	B

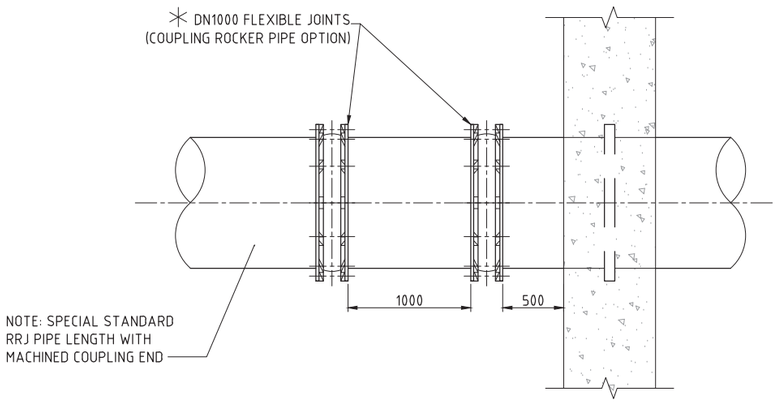
NOTES:

1. FOR STANDARD NOTES REFER DRAWING 08164-DWG-24000-C-0200
2. FOR SMEC'S DISCLAIMER REFER DRAWING 30032687-DWG-32000-G-0112



PLAN

✳ FOR TRENCH TYPES A & B USE SOCKETED ROCKER PIPE ARRANGEMENT. FOR TRENCH TYPE L & H USE COUPLING ROCKER PIPE ARRANGEMENT.



ALTERNATIVE FLEXIBLE JOINT ARRANGEMENT

ISOLATION VALVE CHAMBER - GATE VALVE (WITH BYPASS)

NOT FOR CONSTRUCTION

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	B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	J.HAYDON
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	A.ZANETTI

SCALES AT A1 SIZE DRAWING

SCALE G 0 500 1000 1250mm
1 : 50 (A3) 1 : 25 (A1)

DESIGNER
SMEC
Member of the Surbana Jurong Group
© ABN 47 065 475 149
LEVEL 6, 480 ST PAULS TERRACE
FORTITUDE VALLEY QLD 4006
SMEC PROJECT No 30032687

CLIENT
Gladstone Area Water Board

PROJECT TITLE
GLADSTONE - FITZROY PIPELINE PROJECT
30GLA - PIPELINE STANDARD DRAWINGS
TYPICAL DETAILS
ISOLATION VALVE CHAMBER

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
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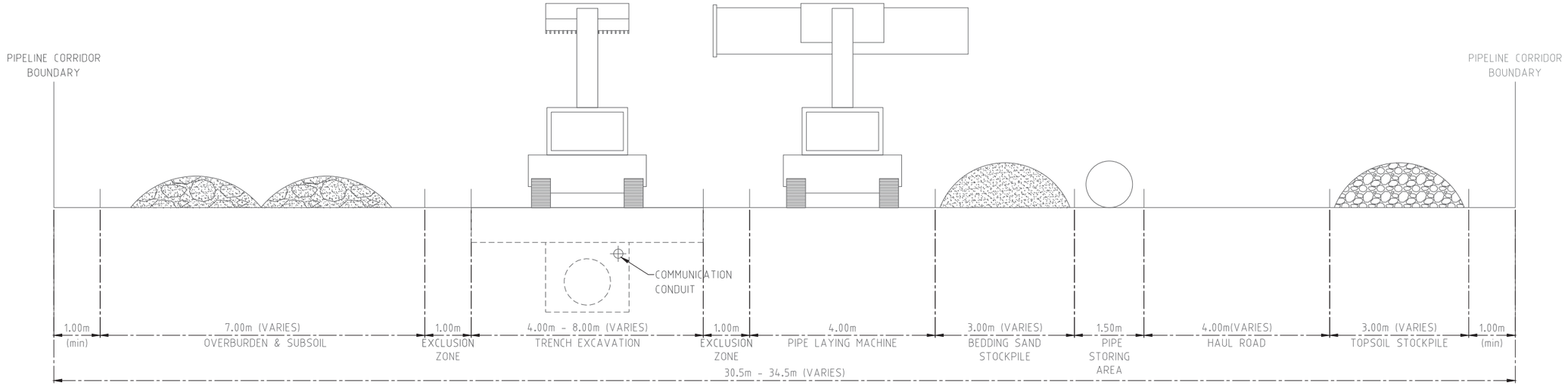

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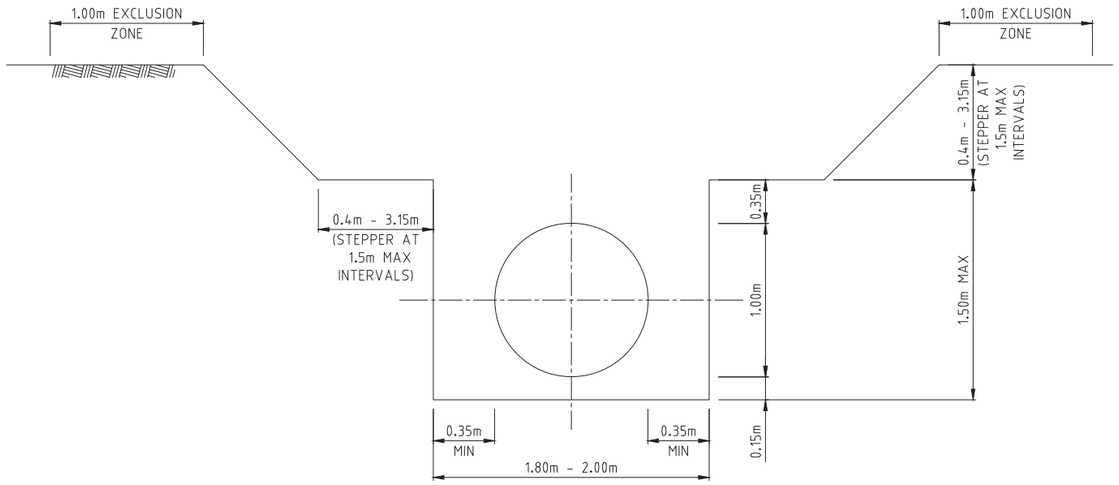
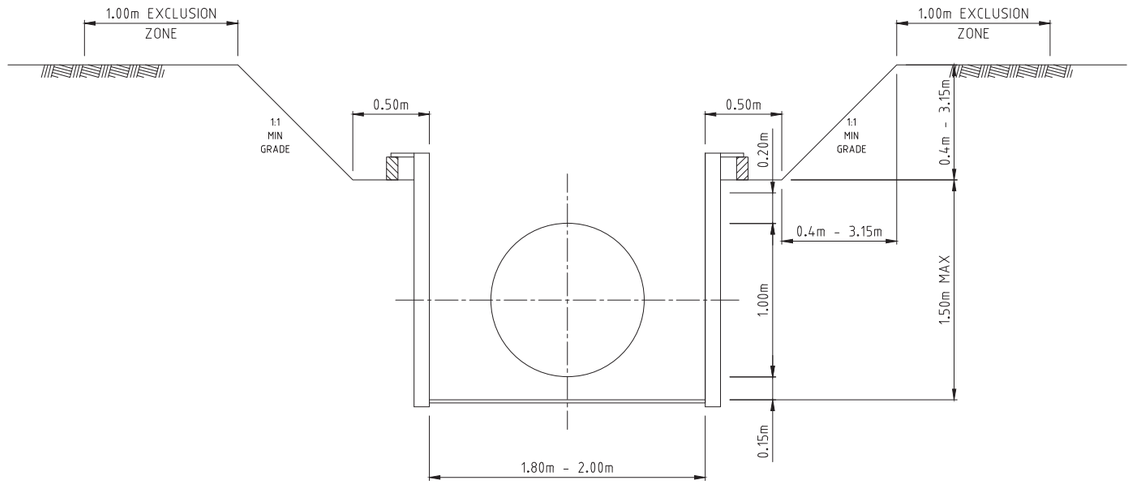


TYPICAL STANDARD TRENCH SUPPORT DETAIL

(0.75 - 3.5m COVER (COHESIVE GROUND)

SCALE H



TYPICAL STANDARD TRENCH SUPPORT DETAIL

(0.75 - 2.5m COVER (NON-COHESIVE GROUND)

SCALE H

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TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	C.BOU
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	D.TAYLOR

SCALES AT A1 SIZE DRAWING

SCALE H 0 0.2 0.4 0.6 0.8 1.0m

1 : 40 (A3) 1 : 20 (A1)

DESIGNER

SMEC

Member of the Surbana Jurong Group

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LEVEL 6, 480 ST PAULS TERRACE

FORTITUDE VALLEY QLD 4006

SMEC PROJECT No 30032687

CLIENT

Gladstone Area Water Board

NOT FOR CONSTRUCTION

PROJECT TITLE

FITZROY TO GLADSTONE PIPELINE PROJECT

30GLA - PIPELINE STANDARD DRAWINGS

TYPICAL DETAILS

TYPICAL PIPELINE CONSTRUCTION DETAILS

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34300 - ALDOGA TO MT MILLER PIPELINE	
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30032687-DWG-34300-C-8001	KEY PLAN
30032687-DWG-34300-C-8015	LAYOUT PLAN CH109895.963 TO CH111500 SHEET 1
30032687-DWG-34300-C-8016	LAYOUT PLAN CH111500 TO CH115500 SHEET 2
30032687-DWG-34300-C-8017	LAYOUT PLAN CH115500 TO CH117408.460 SHEET 3
30032687-DWG-34300-C-8040	PLAN AND LONGITUDINAL SECTION GENERAL NOTES & LEGEND
30032687-DWG-34300-M-8301	CONNECTION VALVE PIT
30032687-DWG-34300-U-8150	PLAN AND LONGITUDINAL SECTION MT LARCOM ROAD / YARWUN RAIL CROSSING
30032687-DWG-34300-U-8151	PLAN AND LONGITUDINAL SECTION MT LARCOM GLADSTONE ROAD CROSSING
30032687-DWG-34300-U-8152	PLAN AND LONGITUDINAL SECTION MT LARCOM GLADSTONE ROAD CROSSING/ TARGINIE ROAD CROSSING
30032687-DWG-34300-U-8153	PLAN AND LONGITUDINAL SECTION RTA COAL CONVEYOR CROSSING
30032687-DWG-34300-L-8600	MT MILLER PIPELINE CONNECTION DETAIL PIPING PLAN
35000 - ALDOGA RESERVOIR	
30032687-DWG-35000-G-7000	GENERAL COVER SHEET
30032687-DWG-35000-P-7006	P & ID
30032687-DWG-35000-C-7010	LOCALITY PLAN
30032687-DWG-35000-C-7011	OVERALL LAYOUT PLAN
30032687-DWG-35000-C-7013	LAYOUT PLAN RESERVOIR AREA
30032687-DWG-35000-L-7600	SETOUT PLAN PIPING
30032687-DWG-35000-U-7090	JOHN'S HILL GEOPHYSICAL SURVEY GEOTECHNICAL LAYOUT PLAN & SECTION
30032687-DWG-35000-U-7091	GEOTECHNICAL INVESTIGATION LAYOUT PLAN
30032687-DWG-35000-U-7092	GEOTECHNICAL DRAWING GEOPHYSICAL SECTIONS
30032687-DWG-35000-E-7400	ELECTRICAL SITE LAYOUT
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30032687-DWG-35000-J-7500	CONTROL SYSTEM NETWORK DIAGRAM
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30032687-DWG-36100-C-1011	OVERALL LAYOUT PLAN
30032687-DWG-36100-C-1012	LAYOUT PLAN
30032687-DWG-36100-C-1024	PLAN AND LONGITUDINAL SECTION GENERAL NOTES AND LEGEND GENERAL NOTES & LEGEND
30032687-DWG-36100-M-1301	PUMPWELL GENERAL ARRANGEMENT PLAN
30032687-DWG-36100-M-1302	PUMPWELL GENERAL ARRANGEMENT SECTIONS
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30032687-DWG-36100-E-1400	HV POWER SUPPLY PROTECTION AND METERING SINGLE LINE DIAGRAM
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30032687-DWG-36100-E-1425	ELECTRICAL SITE LAYOUT
30032687-DWG-36100-E-1426	IT-S1 22kV SWITCHBOARD TYPICAL PLC TIER GENERAL ARRANGEMENT
30032687-DWG-36100-E-1440	HV SWITCHROOM LAYOUT DRAWING
30032687-DWG-36100-E-1455	LV CONDUIT AND CABLE TRAY ROUTE CONTROL BUILDING GENERAL ARRANGEMENT
30032687-DWG-36100-E-1470	EARTHING LAYOUT EARTH GRID DESIGN
30032687-DWG-36100-E-1471	EARTHING LAYOUT EARTH BAR AND CONNECTION DETAILS
30032687-DWG-36100-J-1500	CONTROL SYSTEM NETWORK DIAGRAM
36200 - ALTON DOWNS PUMP STATION & RESERVOIR	
30032687-DWG-36200-G-3000	GENERAL COVER SHEET
30032687-DWG-36200-P-3005	PROCESS & INSTRUMENTATION DIAGRAM SHEET 1
30032687-DWG-36200-P-3006	PROCESS & INSTRUMENTATION DIAGRAM SHEET 2
30032687-DWG-36200-P-3007	PROCESS & INSTRUMENTATION DIAGRAM SHEET 3
30032687-DWG-36200-C-3010	LOCALITY PLAN
30032687-DWG-36200-M-3355	PIPELINE ARRANGEMENT PLAN
30032687-DWG-36200-M-3356	MECHANICAL - IN BUILDING PIPELINE SECTIONS
30032687-DWG-36200-E-3400	HV POWER SUPPLY PROTECTION AND METERING SINGLE LINE DIAGRAM
30032687-DWG-36200-E-3401	ELECTRICAL OVERAL SITE LAYOUT
30032687-DWG-36200-E-3409	ALTON DOWNS OVERALL SINGLE LINE DIAGRAM OVERVIEW
30032687-DWG-36200-E-3440	PUMP STATION BUILDING HV SWITCHROOM LAYOUT
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30032687-DWG-36200-E-3470	PUMP STATION BUILDING EARTHING LAYOUT
30032687-DWG-36200-E-3472	SLUDGE DEWATERING BUILDING EARTHING LAYOUT
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30032687-DWG-36300-P-5004	PROCESS & INSTRUMENTATION DIAGRAM SHEET 1
30032687-DWG-36300-P-5005	PROCESS & INSTRUMENTATION DIAGRAM SHEET 2
30032687-DWG-36300-P-5006	PROCESS & INSTRUMENTATION DIAGRAM SHEET 3
30032687-DWG-36300-P-5007	PROCESS & INSTRUMENTATION DIAGRAM SHEET 4
30032687-DWG-36300-P-5008	PROCESS & INSTRUMENTATION DIAGRAM SHEET 5
30032687-DWG-36300-P-5009	PROCESS & INSTRUMENTATION DIAGRAM SHEET 6
30032687-DWG-36300-C-5010	LOCALITY PLAN
30032687-DWG-36300-C-5011	OVERALL LAYOUT PLAN
30032687-DWG-36300-C-5012	LAYOUT PLAN
30032687-DWG-36300-C-5035	SERVICES
30032687-DWG-36300-L-5600	PIPING GENERAL ARRANGEMENT OVERALL LAYOUT PLAN
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30032687-DWG-36300-U-5091	GEOTECHNICAL LONGITUDINAL SECTION
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30032687-DWG-36300-M-5356	MECHANICAL - IN BUILDING PIPELINE SECTIONS
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30032687-DWG-36300-E-5406	MAIN SWITCHBOARD LV SINGLE LINE DIAGRAM SHEET 2
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30032687-DWG-36300-E-5460	ELECTRICAL SITE LAYOUT
30032687-DWG-36300-E-5470	EARTHING LAYOUT EARTH GRID DESIGN
30032687-DWG-36300-J-5500	CONTROL SYSTEM NETWORK DIAGRAM

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THE 1,952 DRAWINGS PROVIDED INCLUDED ALL DISCIPLINES IN ALL AREAS THAT WERE COVERED DURING THE DETAILED DESIGN PHASE. DUE TO THE LARGE AMOUNT OF DRAWINGS, SMEC HAS ONLY REVIEWED SPECIFIC ITEMS. THE DRAWINGS PRODUCED BY SMEC ARE BASED ON THE CDUJV DRAWINGS. THE CONFIDENCE LEVEL, CONSIDERED TO BE MOST APPROPRIATE FOR CONCEPT DESIGN PURPOSES, WILL VARY DEPENDING ON THE CONSERVATISM OF THE USER AND THE NATURE OF THE DISCIPLINE.

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A1

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PLOT DATE: 21 Nov 2022 TIME: 17:39:38

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EXTERNAL REFERENCE FILES: X_30032656_SMEC_A1

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B	14.01.22	CONCEPT DESIGN-ECI PHASE	006	MSL

TITLE	NAME
DRAFTER	SUCHITH.R
DRAFTING CHECK	C.BOU
DESIGNER	M.SERRANO LOPEZ
DESIGN CHECK	J.WAGENAAR
PROJECT MANAGER	M.SERRANO LOPEZ
PROJECT DIRECTOR	D.TAYLOR

SCALES AT A1 SIZE DRAWING

DESIGNER: SMEC Member of the Surbana Jurong Group © ABN 47 065 475 149 LEVEL 6, 480 ST PAULS TERRACE FORTITUDE VALLEY QLD 4006 SMEC PROJECT No 30032687

CLIENT: Gladstone Area Water Board

PROJECT TITLE: FITZROY TO GLADSTONE PIPELINE PROJECT 30GLA - ENTIRE SITE

OVERALL DRAWING INDEX SHEET 2

SCALE	PHASE	PROJECT / DRAWING No.	REVISION
N.T.S.	CONCEPT DESIGN	30032687-DWG-32000-G-0112	B

Appendix F

Draft Construction Environmental Management Plan (CEMP)

Construction Environmental Management Plan

Fitzroy to Gladstone Pipeline

Gladstone Area Water Board

11 November 2022

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100 Goondoon Street, Level 2
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Last saved date	11 November 2022
File name	https://projectsportal.ghd.com/sites/pp14_03/gawbgfpsecondaryappr/ProjectDocs/CEMP/20220914_12559247-REP-C_FGP CEMP.docx
Author	Tom Jefferys
Project manager	Amanda Smedley
Client name	Gladstone Area Water Board
Project name	FGP Project - Secondary Approvals
Document title	Construction Environmental Management Plan | Fitzroy to Gladstone Pipeline
Revision version	Rev D
Project number	12559247

Document status

Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4	Prelim Draft A	T. Jefferys S. Brown	A Smedley	*ASmedley*	S. Wilson	*SWilson*	15/02/2022
S4	Draft B	T. Jefferys	A Smedley	*ASmedley*	S. Wilson	*SWilson*	14/03/2022
S4	Draft C	T. Jefferys	A Smedley	*ASmedley*	S. Wilson	*SWilson*	14/09/2022
S4	Draft D	T. Jefferys	A Smedley	*ASmedley*	S. Wilson	*SWilson*	11/11/2022

Contents

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Figure Index

Terms and Acronyms

Table 1.1 Terms and Acronyms

Abbreviation	Definition
AHD	Australian Height Datum
ASRIS	Australian Soil Resource Information System
ASS	Acid sulfate soils
BGGTP	Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People
DES	Department of Environment and Science
CEMP	Construction Environmental Management Plan
CPESC	Certified Professional in Erosion and Sediment Control
CHMP	Cultural Heritage Management Plan
CMD	Coastal management district
DAF	Department of Agriculture and Fisheries
DATSIP	Department of Aboriginal and Torres Strait Islander Partnerships
DAWE	Department of Agriculture, Water and the Environment
DERM	Department of Environment and Resources
DES	Department of Environment and Science
DNRM	Department of Natural Resources and Mines
DoR	Department of Resources
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
DSDIP	Department of State Development, Infrastructure and Planning
EA	Environmental Authority
ECI	Early Contractor Involvement
ERA	Environmental Relevant Authority
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
ESCP	Erosion and Sediment Control Plan
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FGP	Fitzroy to Gladstone Pipeline
the Delivery Authority	Gladstone Area Water Board
GRP	glass reinforced plastic
GSDA	Gladstone State Development Area
GFP	Gladstone to Fitzroy Pipeline
GDE	Ground water dependent ecosystem
GHD	GHD Pty Ltd
Ha	Hectares
Km	Kilometres
Lat	Latitude
LGA	Local Government Areas

Abbreviation	Definition
Long	Longitude
ML	Megalitres
MCU	Material Change of Use
m	Metres
MSCL	Mild steel cement lined
MP	Member of parliament
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
OEMP	Operational Environmental Management Plan
PCCC	Port Curtis Coral Coast Aboriginal Peoples Charitable Trust
PESCP	Progressive Erosion and Sediment Control Plan
Planning Act	*Planning Act 2016*
PMST	Protected Matters Search Tool
RE	Regional ecosystem
RV	Regulated vegetation
RIFA	Red Imported Fire Ant
ROW	Right of Way
Qld	Queensland
SAP	Special Area Plan
SDA	State Development Area
SDPWOA	*State Development and Public Works Organisation Act 1971*
SGIC SDA	Stanwell-Gladstone Infrastructure Corridor State Development Area
SEIS	Supplementary Environmental Impact Statement
SPP	*State Planning Policy 2017*
TEC	Threatened ecological community
TMR	Department of Transport and Main Roads
WTP	Water Treatment Plant

1. Introduction

The Department of Regional Development, Manufacturing and Water (the Department) has appointed Gladstone Area Water Board (GAWB) as the Delivery Management Proponent for pre-construction activities for the Fitzroy to Gladstone Pipeline Project (previously referred to as the Gladstone to Fitzroy Pipeline/GFP), (herein referred to as FGP Project or the Project).

The Project has the potential to provide water security to urban and industrial customers and, potentially provide water for the emerging hydrogen industry in the Gladstone region.

The FGP traverses the Rockhampton Regional Council and Gladstone Regional Council Local Government Areas (LGAs). The 116 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 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.

This overarching Construction Environmental Management Plan (CEMP) will be used to inform the Construction Contractor's CEMPs developed for the Project. The Project is currently in the Early Contractor Involvement (ECI) stage and this CEMP will be provided to the potential contractors for their information.

1.1 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.

This CEMP has been developed based on:

– The Planning Environmental Management Plan (PEMP) provided within the EIS (Arup, 2008).
– Environmental and planning approvals and permits that have been obtained, namely:
  - Commonwealth government EIS approval under the *Environment Protection and Biodiversity Conservation Act 1999* (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 Co-ordinator General's Evaluation Report has since lapsed; however, it provides guidance on approval requirements and conditions.
– Updated design and land details.
– Amendments to regulatory requirements since the EIS was approved in 2010.
– Site environmental characteristics.

This CEMP will provide a basis for the Construction Contractor's CEMP and other management plans to be developed by the Construction Contractor. The Construction Contractor's CEMP and other management plans will be required to be submitted to and approved by the Delivery Authority and other parties as relevant.

1.2 Authorisation, Revision and Distribution

This CEMP is to be used in the forming of ECI contracts and later stages of the Project as relevant.

This CEMP is intended to be a live document for environmental management for the construction of the Project. 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.

The Delivery Authority will carry out necessary revisions of this CEMP and distribute as required.

1.3 Contact Details

Key contact details are to be included within the CEMP once known. Examples would include:

– Key Delivery Authority personnel
– Key Construction Contractor personnel
– Department of Environment and Science (DES) pollution hotline: 1300 130 372
– RSPCA Queensland: 1300 264 625 (for reporting risk of orphaned wildlife).

1.4 Limitations

This CEMP was prepared by GHD in performing services under the Service Provider Agreement dated 4 June 2015 between GHD and GAWB (the **Contract**). The report does not amend the Contract or take away from the rights or obligations of GAWB and GHD under the Contract or in respect of the standard and quality of the services performed under the Contract. If there is any inconsistency between the Contract and this report, the Contract prevails to the extent of the inconsistency.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

2. Project Scope

2.1 Project Description

The FGP is a 116 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 the Delivery Authority's existing water infrastructure at Yarwun (a Project schematic is presented in Figure 2.1).

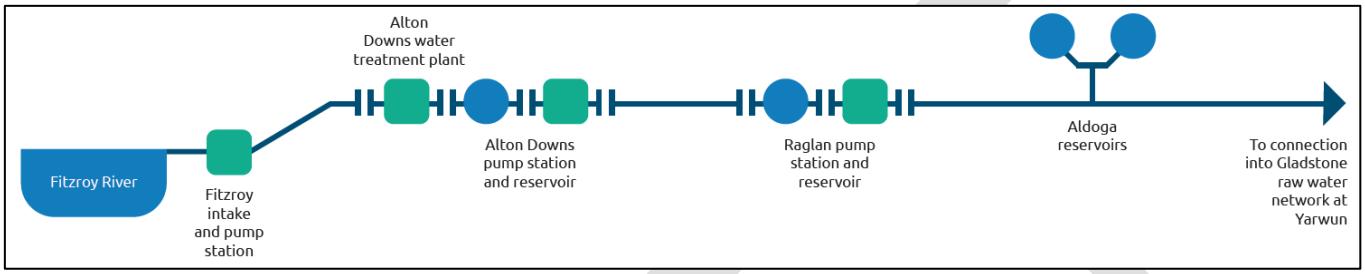

Figure 2.1 Project Schematic

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 116 km and 1,067 millimetres (mm) in diameter, 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.
- Three pump stations, one located at the Fitzroy River water intake, one at the Alton Downs WTP, and another near Raglan (within Gladstone Regional Council LGA), 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
- A water storage tank of 10–15 ML located at the Raglan booster pump station
- Reservoirs at Aldoga consisting of two water storage tanks of approximately 100 ML.

The FGP will be buried for its full length with a nominal 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.). The Delivery Authority 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 OCG 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). In addition, Commonwealth approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was received on 4 November 2011 and varied on 25 October 2021 and 20 June 2022.

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

.

2.2 Project Delivery

The Project is being advanced in three sections:

1. Northern Section – this section encompasses:
    - Fitzroy River Intake Structure and Pump Station
    - Alton Downs WTP
    - Approximately 15.5 km of pipeline
2. SGIC SDA Section – this section encompasses:
    - Raglan Pump Station and Reservoir
    - Approximately 81 km of pipeline
3. GSDA Section – this section encompasses:
    - Aldoga Reservoirs
    - Approximately 18.5 km of pipeline
    - Connection to the Gladstone raw water network.

2.3 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

2.3.1 Pre-construction

The pre-construction activities include:

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

2.3.2 Construction

2.3.2.1 Early Works

Early works for the water pipeline, pump stations and reservoirs (as relevant for the three sections of the Project) are proposed to be undertaken and include:

– The erection of fencing
– The erection of signage
– Works on existing roads and access tracks, and associated drainage
– Works to construct graded unsealed formed site access tracks, and associated drainage
– The establishment of temporary site facilities, including laydown areas, accommodation camps, site offices and amenities.

2.3.2.2 Key Infrastructure Elements

2.3.2.2.1 Water Pipeline

The pipe will be buried with varying cover depending on pipe material, ground conditions and loading. 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 pipeline material is proposed to be mild steel cement lined with a possibility of using glass reinforced plastic. 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

The EIS (Arup, 2008) nominated a ROW of 30 m for the pipeline, with potential for reduction in width in sensitive environment. A typical ROW is provided in Figure 2.2.

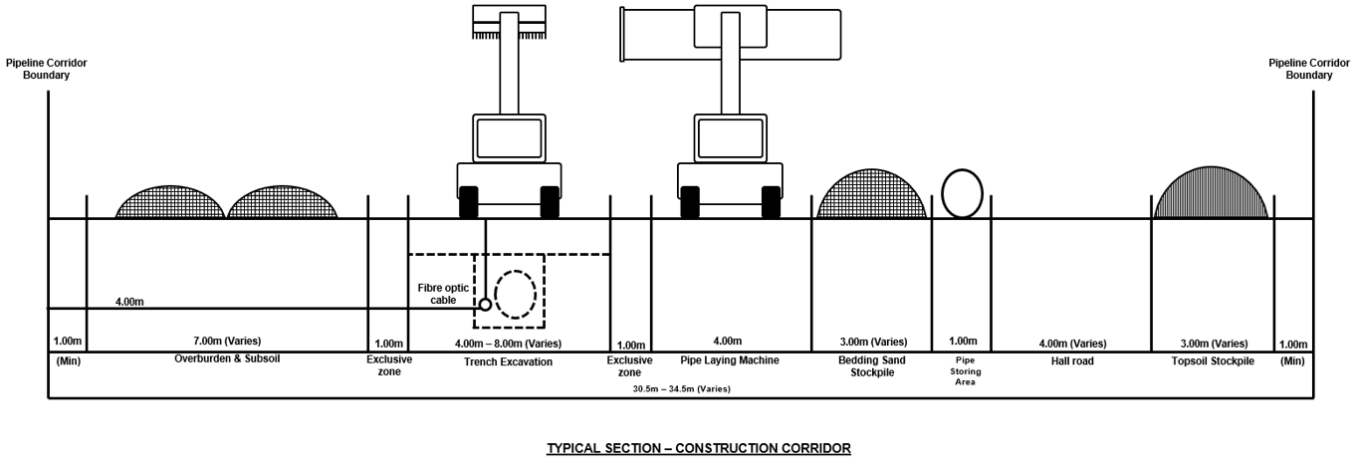

Figure 2.2 Typical ROW

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 are the preferred methods. 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 in short steep sections between Raglan and Aldoga Reservoirs and Aldoga to Yarwun.

2.3.2.2.2 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, 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.

2.3.2.2.3 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.

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.

2.3.2.2.4 Raglan Pump Station and Reservoir

The Raglan Pump Station and Reservoir site will be located midway along the pipeline on an area of approximately 6 ha, adjacent to the SGIC SDA where pumps will lift the water to deliver it to the Aldoga Reservoir.

The pump station will be a steel portal frame building with tilt-up concrete panel walls and steel roof. The reservoir will have a capacity of 15 ML and be of 46 m diameter and approximately 10 m high with construction methodology similar to the Aldoga Reservoirs, as described below.

2.3.2.2.5 Aldoga Reservoirs

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

Due to the shape and size of the hilltop location of the 100 ML Aldoga Reservoirs, it is proposed that the final detailed design for construction will be two circular shaped structures, approximately 90 m diameter. Extensive earthworks, including blasting, 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.

2.3.2.2.6 Ancillary Works

The Construction Contractor will be responsible for ancillary works (e.g. workers' accommodation, site facilities, temporary access tracks, and laydown areas) including any associated approvals under appropriate planning legislation. The EIS (Arup, 2008) identified the following ancillary works as being likely:

- Existing rental, motel and hotel accommodation in the area will be used for labour accommodation needs where possible and depending upon timing, temporary construction camps may also need to be investigated 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 catering, toilets and offices.
- Domestic waste 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 on site, waste will be removed and disposed of at an approved 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.

2.3.3 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.

2.3.4 Operation

Operational stages of the Project will be managed in accordance with an Operational EMP and/or other procedures to be prepared.

3. 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.

3.1 Project Legislation

Table 3.1 provides an overarching legislation register, detailing the current applicable relevant acts, regulations and policies that are applicable to the Project in general.

Table 3.1 Legislation, Regulations and Policies

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
Commonwealth			
EPBC Act	Department of Agriculture, Water and Environment (DAWE)	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 Project 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. The Delivery Authority 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) has been executed between GAWB and the Port Curtis Coral Coast Aboriginal Peoples Charitable Trust (PCCC) and Darumbal People. 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 particular matters about sustainable buildings, and for other purposes.	This act relates to the WTP's, the pump stations and other buildings or structures required for the Project.
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 Project includes work in coastal areas. Appropriate permits are being sought and the coastal areas are to be protected where practical.
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 a General Environmental Duty of Care is required.
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 an Environmental Authority is required from DES. This applies to the WTP and extensive excavation works (such as the Aldoga Reservoirs).

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
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 plants.
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 plants.
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 Project 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 primarily applies to waterways which are classified as waterways for the purpose of waterway barrier works located throughout the Project, and marine plants located in the SGIC SDA section.
Land Act 1994	Department of Resources	Land to which this Act applies must be managed for the benefit of the people of Queensland.	Applies to the Project and is being managed by the Delivery Authority. Appropriate land tenure or agreements may need to be sought by the Construction Contractor for ancillary works.

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
Native Title (Queensland) Act 1993	Native Title Tribunal	In accordance with the *Native Title Act 1993*, 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* for future dealings affecting native title.	Native title is applicable to some parts of the Project. The Delivery Authority 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.
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.	Potentially applies to works being the Raglan Reservoir and Pump Station, 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.	Applies to temporary and permanent works in the SGIC SDA and the GSDA.
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).

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
Vegetation Management Act 1999 *Vegetation Management Regulation 2012*	Department of Resources	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 Project where not regulated by the SDA development scheme. .
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.
Water Supply (Safety and Reliability) Act 2008	DRWMW	The purpose of this Act is to provide for the safety and reliability of water supply.	Overall powers of the Delivery Authority.
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 next twenty (20) years. It provides a means for regulatory and identifying both assessable and accepted development.	Relevant for the Project within the Council local government area.

Legislation and subordinate documentation	Regulatory Authority	Purpose	Relevance
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 Council 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 Project within the Council local government area.
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 Council owned roads and infrastructure.

3.2 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 (EPBC Act Referral Reference EPBC 2007/3501, approved 11th July 2007).

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 Co-ordinator General's Evaluation Report has since lapsed; however, it provides guidance on approval requirements and conditions.

The Delivery Authority is currently in the process of obtaining a range of other planning and environmental approvals as summarised in Table 3.2.

The Construction Contractor will be required to obtain:

1. The approvals, permits and licences identified in Table 3.2
2. Any required approvals, permits or licences required for ancillary works (such as temporary access tracks, laydown areas, site offices and accommodation)
3. Other approvals, permits or licences if directed by the Delivery Authority.

This CEMP will be reviewed and updated as appropriate upon receipt of approvals, permits or licences.

Table 3.2 Approvals and Permits Being Obtained by the Delivery Authority and Construction Contractor

Approval	Section	Component	Regulatory Authority	Responsible Party	Status / Indicative Timing
MCU Development Permit assessable against the Rockhampton Regional Council Planning Scheme	Northern Section	Fitzroy River Intake and Pump Station	RRC	GAWB	Lodged Q4 2022
Operational works development permit for construction or raising waterway barrier works	Northern Section	Fitzroy River Intake and Pump Station	SARA	GAWB	Progressing Q4 2022
Operation works development permit for disturbing marine plants and Tidal Works	SGIC SDA	Pipeline	Council	GAWB	Progressing Q4 2022
Operational Works Development Permit for clearing of native vegetation	Northern Section	Northern Section	SARA	GAWB	Lodged Q4 2022
	SGIC SDA	SGIC SDA	SARA	GAWB	Lodged Q4 2022
Operational Works Development Permit for works in a Coastal Management District - removal of quarry material from State land above high-water mark	SGIC SDA	Pipeline	SARA, Council	GAWB	Progressing Q4 2022
Operational Works Referral for works within 25 m of Transport Corridor	Whole of Project	Whole of Project	SARA	GAWB	Progressing Q4 2022
Environmental Authority	Northern Section	Alton Downs WTP	DES	Contractor	Not commenced
	GSDA	Aldoga Reservoirs	DES	Contractor	Not commenced
DES	SMPs	Whole of Project	DES	GAWB	Progressing Q4 2022
SDA Application (MCU) - SGIC SDA	SGIC SDA	Pipeline and facilities	GC	GAWB	Progressing Q4 2022
SDA Application (MCU and operational works for vegetation clearing) - GSDA	GSDA	Pipeline, WTP	OG	GAWB	Progressing Q4 2022
SDA Application (MCU) GSDA Aldoga Reservoirs	GSDA	Aldoga Reservoir	OG	GAWB	Received
Road Corridor Application	Northern & SGIC SDA	Pipeline	RRC	GAWB	Lodged Q4 2022
Works on Road Application	SGIC SDA & GSDA	Pipeline	GRC	GAWB	Lodged Q4 2022
Road Works Approval (s33(1))	Whole of Project	Pipeline	TMR, GRC, RRC	Contractor	Not commenced
Construct and Maintain a Driveway	SGIC SDA & GSDA	Aldoga Reservoirs & Raglan Pump Station and Reservoirs	GRC	GAWB	Progressing
Road Corridor Permit	Whole of Project	Pipeline	TMR, GRC, RRC	GAWB	Lodged Q4 2022

Approval	Section	Component	Regulatory Authority	Responsible Party	Status / Indicative Timing
Road Corridor Permit	Northern	Pipeline crossing with the Rockhampton Ring Road	TMR	Contractor	Not commenced
Permitted Road Access Location (s62(1)	Northern	Alton Downs WTP	TMR	GAWB	Lodged Q4 2022
Road Works Approval (s33(1))	Northern	Alton Downs WTP	TMR	Contractor	Not commenced
Biosecurity instrument permit	Whole of Project	Whole of Project	DAF	Contractor	Not commenced
Building works approval permit	Northern Section SGIC SDA	Alton Downs WTP, Raglan Pump Station and Reservoir	Department of Communities, Housing and Digital Economy	Contractor	Not commenced
Plumbing or drainage works approval	Northern Section	Alton Downs WTP, Raglan Pump Station and Reservoir	Department of Communities, Housing and Digital Economy	Contractor	Not commenced
Soil disposal permit (for land on EMR/CLR)	Northern Section	Whole of Project	DES	Contractor	Not commenced
Notification of work affecting electricity entities	Whole of Project	Whole of Project	Energy Australia/ Powerlink	Contractor	Not commenced
Approval for connection of supply/load increase	Whole of Project	Whole of Project	Energy Australia / Powerlink	Contractor	Not commenced
Licence to use explosives	Whole of Project	All	Resources Safety and Health Queensland	Contractor	Not commenced

3.3 Guidelines and Other Requirements to be Met

In order to meet the legislation outlined in Table 3.1, the following requirements, guidelines and policies apply:

- Accepted development requirements which outline a range of conditions that can be utilised by the Construction Contractor, 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)
  - Riverine protection permit exemption requirements WSS/2013/726 Version 2.01 (former Department of Natural Resources, Mines and Energy, 2019)
  - 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).
- Commonwealth Guidelines for EPBC MNES include, but are not limited to:
  - Houston, W. & A. Melzer (2008). Yellow chat (Capricorn subspecies) *Epthianura crocea macgregori* recovery plan. Report to Department of the Environment, Water, Heritage and the Arts, Canberra. Queensland Environmental Protection Agency, Brisbane.
  - Department of Agriculture, Water and the Environment (2021). National Recovery Plan for the Grey-headed Flying-fox *Pteropus poliocephalus*. Canberra: Commonwealth of Australia.
- 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).

4. Implementation and Operation

4.1 Roles and Responsibilities

Table 4.1 provides an overview of the minimum environmental roles and responsibilities relating to delivery of the construction phase of the FGP.

Table 4.1 Roles and Responsibilities

Role	Responsibility
Delivery Authority	– Complying with the CEMP. – Complying with conditions associated with approvals, permits or licences during the documentation and pre-construction stages. – Review of the relevance of this CEMP and its effectiveness in helping meet the Project's environmental responsibilities. – Minimisation of the potential environmental impacts associated with the Project. – Management of tender documents and contracts for construction and operation/maintenance and incorporating the requirements for complying with this CEMP and other management plans. – Ensuring that an Execution CEMP is developed by the Construction Contractor, which is in accordance with this CEMP and any approvals, permits or licences. – Ensuring all relevant management plans and surveys are prepared and undertaken by the Construction Contractor. – Overseeing its implementation of all management plans. – Obtaining necessary approvals under relevant legislation, not including any approvals for construction activities unless specifically agreed with the Construction Contractor. – Communicating with regulatory authorities. – Allocating resources and personnel to monitor compliance with the CEMP or other management plans.
Construction Contractor	– Complying with this CEMP during pre-construction and construction phases. – Developing, implementing and complying with the Construction Contractor's CEMP which is consistent with this CEMP and any approvals, permits or licences. – Ensuring that all sub-contractors comply with the Project management plans. – Complying with all the environmental provisions of the Construction Contract. – Complying with all plans prepared by the proponent as part of its commitments under this CEMP and any approvals, permits or licences. – Allocating resources and personnel to implement the requirements of the Execution CEMP. This would include one or more environmental officers to implement and check the necessary environmental controls during construction as required by the CEMP and to carry out inductions. – Obtaining any approvals under relevant legislation except those to be obtained by the Delivery Authority. In particular, the Construction Contractor will be responsible for applying for, obtaining and ensuring compliance with approvals relating to construction activities, with responsibility for reporting on such activities to the Delivery Authority. – Along with compliance to the CEMP itself, preparing and implementing specific management plans and Special Area Plans. Special Area Plans are management plans where site-specific mitigation/measurement measures are required due to the nature or sensitivity of the area. Where these are required, they are described in their relevant control plan. – Clean up and rehabilitating construction sites.

Role	Responsibility
All staff	– Complying with the CEMP and any approvals, permits or licences – All staff are responsible for complying with their General Environmental Duty (GED) and Duty to Notify in accordance with the EP Act (as detailed below). – GED: • Section 319 of the EP Act states that every person has a GED. This GED requires that a person must not carry out an 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. In deciding measures to be undertaken to fulfil the GED the following must be considered: • The nature of the harm or potential harm • The sensitivity of the receiving environment • The current state of technical knowledge for the activity • The likelihood of successful application of the different measures that might be taken • The financial implications of the different measures as they would relate to the type of activity. • Compliance with the GED is a defence to offences related to causing unlawful environmental harm. If defendants can show that the harm happened while a lawful activity apart from the EP Act was being carried out and they fulfilled their GED, then they cannot be found guilty of causing unlawful environmental harm. – Duty to Notify: • Section 320 of the EP Act requires that on becoming aware of serious or material environmental harm being caused by an activity that they are involved in, a person has a duty to report that harm, unless the harm is authorised by the Administering Authority (i.e. is undertaken in accordance with an approval or condition of a permit/license). This is the duty to notify environmental harm. Failure to fulfil this duty is an offence and can lead to prosecution.

4.2 Training

4.2.1 Induction

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.

The Delivery Authority will be responsible for approving any induction material.

4.2.2 Competency and Training

The Delivery Authority and Construction Contractor should allow that all Project staff are suitably qualified for their role. Evidence of appropriate competency and training is to be recorded.

4.3 Communication

4.3.1 Consultation

Appropriate consultation methods for Project staff are to be nominated by the Delivery Authority and the Construction Contractor. These may include ‘toolbox’ meetings, task reviews, notices at workplaces, etc.

4.3.2 Community

A management plan for the Project's interaction with the community and other stakeholders should be implemented. This should have a procedure and register for complaints received from the impact of construction activities. For particular elements within this plan there are certain reporting requirements that should be outlined for which type of complaint they apply. A Communications Plan is to be implemented for informing landholders and other stakeholders of Project planning, contact details and processes for queries or complaints.

4.3.3 Regulators

It is important to highlight communication with regulators as part of the environmental management of the Project. Correspondence with the regulators should 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 Delivery Authority.

4.4 Record Management

All records are to be kept for a minimum of five years and made available for the Delivery Authority and agencies as requested.

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

5. Environmental Elements

Environmental Sub Plans and Sensitive Area Plans are to be developed and implemented, as described throughout this CEMP with provisions for:

- Stating location-specific mitigation strategies
- Detailing the construction corridor to be used in these locations, constrained where appropriate
- 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.

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
- 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
- Landscape and Visual Amenity.

5.1 Project Environmental Management

Table 5.1 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for Project environmental management.

Table 5.1 Project Environmental Management Control Plan

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

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 3)
	• Development requirements or guidelines:
	  • ISO 14001:2015 - Environmental management systems
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • [Other conditions to be incorporated as they are obtained].

Performance Criteria	– All the requirements outlined in this CEMP and supporting documents are implemented. – Consultative relationship is established with landowners and other stakeholders, including the development of Special Area Plans to allow timely notifications of planned construction activities. – All complaints are responded to in a timely manner and in accordance with the Delivery Authority policy.
Implementation	**Design** – Consideration of environmental issues during Project siting and design – Collaboration between the design team and environment and land team prior to finalisation of design to incorporate recommendations from the EIS and approvals. **Construction** – Within 20 business days after the commencement of the action, the person taking the action must advise the department in writing the actual date of commencement. – All Project staff will receive an induction on the requirements of the CEMP and be committed to its implementation. – Environmental officer(s) will be appointed for the construction phase to implement the requirements of the CEMP including checks and audits. – Construction personnel will always be mindful of the provisions of the CEMP to identify and notify non-conformances. – The Construction Contractor's environmental officer will undertake environmental site checks for all work areas during construction of the Project. – Environmental audits will be undertaken by an external party regularly as determined by the Delivery Authority. – Checklists will be developed for the relevant construction tasks 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. – Special Area Plans will be developed and implemented, as described and where required throughout this CEMP with the following provisions: • Stating location-specific mitigation strategies • Detailing the construction corridor to be used in these locations, constrained where appropriate • 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	The Delivery Authority to include monitoring of Project environmental outcomes and performance criteria during construction of the Project as part of its' Environmental Management System.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	Should any audits/checks undertaken during construction of the Project identify non-conformances with the CEMP, the Construction Contractor will notify the Delivery Authority. Corrective actions (with approval from the Delivery Authority) will be implemented to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor.

5.2 Climate Impacts

The likely impacts of local climate and seasonal changes during the construction of the Project 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 construction sites
– 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 5.2 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for climate impacts.

Table 5.2 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 3)
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • [Other conditions to be incorporated as they are obtained].

Performance Criteria	– Planning and monitoring is undertaken during the construction phase to prepare for weather changes and climatic events. – Target of no injuries to personnel as a result of extreme climatic events.
Implementation	**Pre-construction** – Taking into account seasonal conditions when scheduling work. – Preparing and implementing an Emergency Management Plan for the Project during construction. **Construction** – Construction at sensitive sites such as wetlands and creeks will conducted during the dry season (April to September) where reasonably practicable. – 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.
Monitoring	– During construction, the Construction Contractor's environmental officer and site supervisors will undertake regular checks of weather forecasts and check that the necessary measures are in place as outlined above. – Environmental checklists will include description of weather conditions at the time of inspection.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following:

	• Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP. – Internal and external environmental audit results.
Corrective Action	– The Construction Contractor will notify the Delivery Authority of any non-conformances with the above measures. Corrective action (with approval from the Delivery Authority) will be implemented to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – 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 Project's procedures or CEMP will be retrained. – Practices, procedures and management plans will be reviewed and updated where necessary.

5.3 Land Use and Infrastructure

Land tenure will be appropriately sought and actioned by the Delivery Authority unless otherwise identified.

The Project impacts numerous different land uses and existing infrastructure.

Table 5.3 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for land use and infrastructure.

Table 5.3 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 Project.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 3)
	  • *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 the Delivery Authority
	  • [Other conditions to be incorporated as they are obtained].

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 corridor (the SGIC).
Implementation	**Design** – Infrastructure owners/authorities for road, rail, transmission lines, pipelines and other third-party infrastructure will be consulted by the Delivery Authority 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 Project corridor, consideration will be given to minor realignment of the pipeline (within the existing corridor) where possible to minimise or avoid impacts. – Delivery Authority / Construction Contractor will identify an appropriate method of construction to minimise disruption to land use and infrastructure (e.g. horizontal directional drilling or pipe-jacking under major road crossings. **Pre-Construction** – Delivery Authority will prepare, implement and maintain a suitable Engagement Plan. – Construction Contractor will identify via Dial Before You Dig (DBYD) 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. – The Construction Contractor, in consultation with the Delivery Authority, 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 Delivery Authority and included on construction drawings and/or during pegging and site set-out. – Temporary gates will be installed by the Construction Contractor as approved by the Delivery Authority where required and in consultation with landowners, marrying locks where appropriate. – The Delivery Authority will maintain a stakeholder list (as per the Engagement 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. – The Construction Contractor will regularly consult and communicate with landowners and relevant stakeholders, as approved by the Delivery Authority.

	– The Delivery Authority will have regular consultation scheduled to inform landholders of Project progress and also allow the identification any issues the landholders may have in relation to the Project. – The Construction Contractor and Delivery Authority 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 i.e. if found open will be left open. – The Delivery Authority 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 Project's Stakeholder Engagement Plan. **Rehabilitation** – Rehabilitation of the construction footprint will occur 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	– Routine monitoring will be undertaken during construction as part of environmental checks and other land agreements.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures. Corrective action (with approval from the Delivery Authority) will be implemented to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority.

5.4 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.

Table 5.4 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing erosion and sediment.

Table 5.4 Controls and Mitigations for Erosion and Sediment Control

Element	**Erosion and Sediment Control**
Performance Objectives	– Erosion and sediment control measures are implemented and maintained where necessary throughout construction. – Minimisation of erosion or sedimentation occurring as a result of the construction works. – Areas of exposed soils during construction are minimised and revegetated as soon as possible.
Legislative Requirements	– Compliance with: • Legislation (as per Section 3), 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). • Development requirements or guidelines: • Riverine protection permit exemption requirements WSS/2013/726 Version 2.01 (former Department of Natural Resources, Mines and Energy, 2019) • Best Practice Erosion and Sediment Control (IECA, 2008). • Permits, approvals and licence conditions: • CG's Evaluation Report • [Other conditions to be incorporated as they are obtained].
Criteria	– Erosion and Sediment Control Plans (ESCPs), and their implementation will be 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 construction sites. – 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 the Construction Contractor, certified by independent third party and approved by the Delivery Authority. **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. – Significant ground disturbing activities will be scheduled during the dry season (April to September) where reasonably practicable. – 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 Project corridor has dispersive soils prone to erosion. – Earthworks will be completed, and protection placed over exposed soils as soon as, and where reasonably practicable. – 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. – 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. – 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. – The Construction Contractor will develop a procedure to discharge water from the trench. This procedure shall mitigate risks and impacts from erosion and sedimentation into waterways. – Sediment will be placed in a disposal area or, if appropriate, mixed with dry soil on site. – 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. – 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 on site, 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** – Agricultural land disturbed due to the laying of the pipeline will be rehabilitated to its previous condition where practicable. – 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 the site. – Remove temporary stormwater and sediment control devices only once groundcover is established.
Inspection and Monitoring	– Erosion and sediment controls will be inspected at implementation, weekly, and before and after rain to verify their correct function as per the ESCPs. – Construction site boundaries, waterways and sensitive areas will be monitored for erosion and the deposition of sediment.

	– The ESCPs will be reviewed and updated to ensure that the current version is suitable for the construction activities.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational 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. – Review of the Controls. – Review of the procedures to maintain the controls. – The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority.

5.5 Contaminated Land

Impacts to contaminated land have the potential to result in further land contamination or contamination of waterways with subsequent ecological or safety impacts. There are seven properties that have been identified as potentially contaminated. There is also the potential for unknown contaminated sites to exist on land associated with the Project as a result of past land uses.

Table 5.5 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing contaminated land.

Table 5.5 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 Project.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 3), 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)
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • [Other conditions to be incorporated as they are obtained such as Soil Disposal Permit].

Performance Criteria	– Contaminated land or sites in the Project area are identified and managed or removed prior to construction in those areas. – No contaminated land is created as a result of the Project.
Implementation	**Pre-construction** – Prior to construction, the Delivery Authority or Construction Contractor will carry out contamination investigations for the properties identified on the Environmental Management Register (EMR) that are within the ROW: • Lot 101 on DS185 • Lot 1 on RP911260 • Lot 7 on SP145439 • Lot 8 on SP218634 • Lot 1 on SP4430 • Lot 91 on SP122250 • Lot 140 on SP122252. – 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). – The Delivery Authority will consult with directly affected landowners to identify any known contaminated sites in the ROW. In consultation with the property owner and at the discretion of DES additional sites may be recorded on the EMR or Contaminated Land Register (CLR). – 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** – Construction 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.

	– The Construction Contractor will obtain Soil Disposal Permits from DES if contaminated material is to be removed from EMR or other contaminated properties. This will include agreement from the spoil recipient for spoil acceptance. – The Construction Contractor will develop procedures within their Construction Contractor's CEMP for management of spoil from EMR or other potentially contaminated land so that: • Potentially contaminated soil is not transported to a different property without the appropriate Soil Disposal Permit • 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. – The Construction Contractor will prepare an Unexpected Findings Protocol in the CEMP. In summary, if an area within the ROW is suspected of being potentially contaminated, works in that area are to cease until a 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, refer to Section 5.19. – Procedures for all fuel transport and unloaded operations will be developedand personnel will be trained appropriately. – Spills will be managed in accordance with the Handling and Storage of Dangerous and Hazardous Goods, refer to Section 5.19. – Appropriately stocked spill kits will be located in each construction area along the corridor.
Monitoring	– Monitoring of EMR or other potentially contaminated properties will occur in accordance with the findings of the relevant site investigations. – Construction personnel will maintain visual checks for signs of contamination. – Routine environmental checks will be undertaken to ensure hazardous materials are stored in accordance with the Handling and Storage of Dangerous and Hazardous Goods, refer to Section 5.19 and that spill kits are readily available and functional.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Records of contaminated site locations and remediation to be maintained during construction by the Delivery Authority and the Construction Contractor. – Records will be maintained of spill incidents and actions taken during construction by the Delivery Authority and the Construction Contractor.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) 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 Delivery Authority and the constructor or operator. – Where the Delivery Authority 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 the Delivery Authority. – 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 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 Project's procedures or CEMP will be retrained – Practices, procedures and management plans will be annually reviewed and updated where necessary.

5.6 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 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 5.6 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing acid sulfate soils (ASS).

Table 5.6 Acid Sulfate Soils Control Plan

Element	Acid Sulfate Soils (ASS)
Performance Objectives	– To minimise the potential for environmental impacts arising from the inappropriate handling or management of ASS and – 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 3) • 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 • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Management of ASS in accordance with National Acid Sulfate Soils Guidance (Commonwealth of Australia, 2018) – No release of acidic waters or leachate from the construction works.
Implementation	**Pre-construction** – The Delivery Authority is to confirm the requirements of ASS Investigations. Considerations include: • 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 Australia height datum (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 meet the National Acid Sulfate Soils Guidance, specifically the National Acid sulfate soil sampling and identification methods manual (Commonwealth of Australia, 2018). • The findings of the ASS Investigations are to outline mitigation measures to be adopted and any required verification testing. • The risk of actual acid suflate soils (AASS) to impact upon Project infrastructure is to be identified and mitigation identified. **Construction** – The Construction Contractor will develop a site-specific ASS Management Plan, as required, to address the requirements of the ASS Investigations 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). – Construction staff will be made aware of the signs of ASS. – Identified areas of ASS will be clearly shown on construction plans.

	– 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. • The Construction Contractor will develop a procedure to discharge water 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. Bags of hydrated lime will be kept onsite in a dry state for this purpose, but used as approved by the Delivery Authority. • Appropriate disposal or use of neutralised ASS is to be identified.
Monitoring	– Monitoring as identified following ASS Investigations and within the ASS Management Plan. – Routine daily visual observance during construction and operational maintenance for signs of untreated ASS. – Environmental site checks during construction and operational maintenance should include: • Checking of bunding around ASS treatment areas • pH checking in any retention ponds.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational 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	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the constructor or operator. – Where the Delivery Authority 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 the Delivery Authority.

5.7 Flora Management

The main potential impacting processes to terrestrial flora associated with the clearing of the (generally) 30 m wide ROW and construction of the pipeline are:

– Reduction of flora species habitat
– Removal of individual species of significance
– Reduction of wildlife corridor functionality
– Remnant vegetation edge effects
– Riparian vegetation disturbance.

Table 5.7 shows the performance objectives, legislative requirements, performance criteria and mitigations measures requirements for clearing vegetation throughout the various construction phases.

Table 5.7 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 Project taking place or as close as practically possible.
Legislative Requirements	– Compliance with: • Legislation (as per Section 3), specifically: • *Fisheries Act 1994* (regarding marine plants) • *Nature Conservation Act 1992* • *Nature Conservation (Plants) Regulation 2020* • *Vegetation Management Act 1999* • Development requirements or guidelines: • Flora Survey Guidelines – Protected Plants (DES, 2020) • Accepted Development Vegetation Clearing Code (ADVCC): Clearing for Infrastructure (Department of resources, 2020) • Riverine protection permit exemption requirements WSS/2013/726 Version 2.01 (former Department of Natural Resources, Mines and Energy, 2019) • Permits, approvals and licence conditions: • CG's Evaluation Report • Protected Plants Exemption Notification • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Minimised disturbance to flora within the Project area. – Remediation of disturbed areas to a condition consistent with the surrounding undisturbed environment where practicable. – No clearing outside of the construction footprint area unless authorised.
Mitigation Measures	**Pre-construction** – Design will incorporate measures to minimise vegetation impacts which include route and site selection to avoid vegetated areas and selection of trenchless creek crossing methods in sensitive areas. Trenchless creek crossing methods to be implemented for main creek crossings. – Suitably qualified person will conduct a walkover the ROW to identify areas where adverse impacts on flora communities and threatened species are possible. This will be documented in the CEMP and SAPs. – Identify and confirm native vegetation clearing (as per the *Vegetation Management Act 1999*) that is exempt or will meet the ADVCC: Clearing for infrastructure. Document these areas. – Delivery Authority will obtain relevant development permits for operational works that involves clearing native vegetation in accordance with the *Planning Act 2016* and *Vegetation Management Act 1999*. – Delivery Authority to obtain a development permit for operational work for removal or damage of marine plants for works in relevant areas of the SGIC SDA.

	– Delivery Authority has confirmed areas that are mapped as high risk for protected plants and undertaken required surveys as per the Flora Survey Guidelines – Protected Plants. An Exemption Notification has been submitted and acknowledged. – Construction Contractor will identify areas required for ancillary works or areas where disturbance is required outside the approved ROW or construction footprint. • Ancillary works will occur in previously disturbed areas (i.e. Category X vegetation) and areas that are not mapped as high risk for protected plants where possible • A suitably qualified persons will undertake environmental assessment of the areas • Any required notifications (i.e. under the ADVCC: Clearing for Infrastructure) and any permits/approvals will be obtained • Areas will be identified on plans and delineated in the field prior to the commencement of construction. – A site-specific Vegetation Clearing Control Plan will be developed by the Construction Contractor for approval by the Delivery Authority prior to implementation. – SAPs will be prepared and implemented in areas where specific mitigations measures have been identified. – The Construction Contractor's will engage a suitably qualified person to inspect vegetation to be removed, that it does not consist of protected species. This inspection will form part of a pre-clearing report to be submitted to the Delivery Authority. **Construction** – The site induction which all construction staff will receive will address impacts on flora and fauna within the Project area including their responsibilities and the management processes that have been implemented to mitigate the impacts. – The construction area and access routes to be clearly delineated to prevent disturbance to areas outside the approved construction footprint. – No vegetation removal to occur until relevant clearing approvals are obtained and submitted to the Delivery Authority. – Areas of remnant vegetation impacted by the alignment will be identifiable on all drawings and clearly marked in field to ensure that clearing is minimised where possible. – In the event protected plant species are encountered during construction in areas where an Exemption Notification has not been obtained, works will cease, the Delivery Authority notified, and a Clearing Permit obtained (refer to the Flora Survey Guidelines – Protected Plants). – In the event marine plants are identified in areas that are not subject to the Development Permit, works will cease, and a new Development Permit obtained. – Watercourse riparian vegetation clearing will be undertaken in accordance with the Riverine protection permit exemption requirements WSS/2013/726 Version 2.01 (former Department of Natural Resources, Mines and Energy, 2019): • Clearing at each watercourse crossing is to be minimised where practical. • At each watercourse clearing limits are imposed: • Clearing less than 0.5 ha of Category B regulated vegetation that is a least concern RE • Clearing less than 0.5 ha of Category R, C or X regulated vegetation. – Clearing around Inkerman and Marble Creeks will be minimised where significant vegetation has been identified. [Further advice may be provided following ecological surveys.] – Specific trees (that may or may not requested by the Delivery Authority) to be protected during construction will be clearly flagged to prevent accidental removal. – Features such as stockpiles, access tracks and site facilities will be located in areas of existing disturbances. – Construction equipment will stay within the areas approved for disturbance. – Cleared vegetation will be stockpiled so as not to impede wildlife, surface drainage and avoid damage to adjacent live vegetation. – All mangrove material removed during works will be mulched and reused on site for revegetation purposes where practicable or disposed of offsite (subject to Development Permit conditions). – Trees will be lopped within the clearing zone in preference to complete removal. – Within areas where clearing must occur for construction purposes, but not within the footprint of final structures, clearing completely to ground level will be minimised where practical. Slashing of existing vegetation layers will be undertaken, so that the diversity of native plant species retained (and seed bank) is maximised. – 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.

	– 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. – Soil (including topsoil) and vegetation stripped from the ROW will be stored adjacent to the site where it originated. No soil or vegetation material is to be translocated for storage along the corridor. This excludes the requirement for soil not to be stored near or in a waterway. – When trenching across a part of a wetland, topsoil will be stockpiled and replaced after works to enable ground layer species to re-establish. **Rehabilitation** – The Construction Contractor will develop and implement Rehabilitation Plans that considers soil type and existing local ground layer vegetation characteristics (i.e. native or improved pastures) along the alignment. The Rehabilitation Plans are to be approved by the Delivery Authority. – Wetlands will be restored as far as reasonably practicable [to be further detailed following ecological survey]. – Agricultural land disturbed due to the laying of the pipeline will be rehabilitated to its previous condition where practicable. – Subject to approval of the Rehabilitation Plans, cleared native vegetation will be mulched and spread with topsoil at revegetation areas (including temporary access tracks that are only longer used) as soon as reasonably practicably after the completion of construction works. – Local provenance native plant seed will be used, where possible for rehabilitation within any areas of remnant or remnant regrowth vegetation that supports a ground cover of native grasses. – Watercourse crossings / disturbed areas are to 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 2.01 (former Department of Natural Resources, Mines and Energy, 2019).
Inspections and Monitoring	– Inspections or monitoring as identified following ecological site surveys. – Routine daily visual observance by all construction personnel during works for conformance with CEMP. – Inspections to be undertaken by the Construction Contractor's Environmental Officer or suitably qualified person prior to vegetation clearing to confirm clearing footprints and identify protected species – Environmental site checks undertaken by the Construction Contractor's Environmental Officer and supervisors during construction should include the following: • 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. – External environmental audits by the Delivery Authority's Environmental Officer during construction to be carried out monthly (or as determined).
Reporting	– Environmental checklists during construction – A regular ROW surveillance program report – Non-conformances with the Flora Management Plan are to be reported as required.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority is responsible for the non-conformance, it will report on non-conformances and corrective action will be taken to address the non-conformance. – Amend procedures if vegetation clearing occurs outside approved areas. – All Project employees and sub-contractors will modify work practices as required and instructed by the Environmental Manager/Officer, with managerial support.

5.8 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
– Disturbance to wetlands and waterways
– Trench fall (entrapment of fauna within open trenches during construction)
– Disturbance to active or non-active animal breeding places.

Table 5.8 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for fauna management and protection.

Table 5.8 Fauna Management Control Plan

Element	Fauna Management
Performance Objectives	– To minimise the impact of the Project on fauna and fauna habitat. – To rehabilitate impacted areas to the state that was present prior to the Project taking place 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 3), 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 Approval for MNES, namely the Squatter pigeon, Yellow chat (dawson) and Grey-headed flying fox • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Minimal fauna fatalities and disturbance to habitat areas. – Remediation of disturbed areas to a condition consistent with the surrounding environment, as far as reasonably practicable.
Implementation	**Design** – Design will include measures to reduce the impact to aquatic flora and fauna such as the selection of trenchless methods for creek/waterway crossings. – Design measures at the Fitzroy River Intake will be incorporated to prevent bed scour and reduce the potential for macroinvertebrate and fish entrainment including: • Placing the intake at a depth that aims to prevent bed scour • Providing an adequate distance between the pump and the intake screens to reduce the risk of fauna being impinged on the intake screens (i.e. reduced flow velocity) • Designing the intake will include scour protection by using suitable rock/grout construction. – Design will minimise the removal of sensitive vegetation or ecosystems where reasonable and practical. **Pre-construction** – The Construction Contractor will engage a suitably qualified person (such as a licensed fauna spotter catcher) to undertake a detailed pre-construction survey identifying animal breeding places within the footprint (such as the ROW and ancillary work areas). – An appropriate SMP will be prepared and implemented for the Project (potentially different SMPs will be prepared for different sections of the Project).

- Waterways will be mapped for the purpose of waterway barrier works are to be identified with regards to the ROW and any ancillary works (such as temporary access tracks):
  - Where a pipeline waterway crossing is via trenchless methods (e.g. horizontal directional drilling) than works are not waterway barrier works.
  - Where a pipeline is to be trenched through a waterway (not-preferred) design will consider restoration of natural creek profiles.
  - Temporary waterway barrier works, including access tracks and erosion and sediment control measures, will meet the Accepted development requirements for operational work that is constructing or maintaining waterway barrier works (DAF, 2018).
- All construction personnel will be informed of environmental responsibility with respect to minimising the risk of fauna injury or mortality. Site inductions will include information on the identification of protected fauna species.

Construction

- Where reasonably practicable, construction at sensitive sites such as wetlands and creek crossings will be scheduled to take place in the dry season between April and September. These works require methodology approval by the Delivery Authority prior to commencement.
- Where reasonably practicable, the timing of vegetation clearance will be selected to minimise impacts (direct and indirect disturbances) to affected fauna habitats during optimum breeding periods. All clearing activities should be scheduled and the schedule approved by the Delivery Authority prior to commencement.
- A SAP for areas near confirmed yellow chat habitat, that is, construction works in areas along the pipeline alignment between the Port Alma Railway and Horrigan Creek, will be created and included in the CEMP, noting:
  - Construction works will be undertaken during the period between May and September inclusive, where possible.
  - For those crossings not being constructed by trenchless methods, width of disturbance for each watercourse crossing will be reduced to 15 m.
  - Works will be programmed to ensure that trenched crossings will be completed and stabilised within one week.
  - Creek water levels will be monitored during creek crossing construction to allow early identification of changed water levels that may affect yellow chat habitat and appropriate corrective action to be undertaken.
  - Water from the coffer dam will be pumped downstream so that downstream flows are not reduced.
  - Permanent construction roads will not be built across creeks or wetlands.
- Pre- and post-works surveys of creeks (including soil profiles) will be undertaken to ensure the creek profile is restored.
- 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.
- 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 upon approval by the Delivery Authority to provide protection and potential habitat for native fauna (in agreement with landholders as required).
- Where approved or requested by the Delivery Authority, trees adjacent to working areas will be lopped, with complete-to-ground clearing being avoided where reasonably practicable.
- Cleared vegetation will be stockpiled so as not to impede wildlife, surface drainage and avoid damage to adjacent live vegetation.
- A suitably qualified person (e.g. licensed fauna spotter catcher) will be present during all clearing. The suitably qualified person will enact the SMPs and their instruction will be adhered to by the Construction Contractor.
- A Damage Mitigation Permit will be required from DES to interfere with wildlife.
- Habitat green waste from clearing operations will be used to provide fauna habitat in rehabilitated areas.
- Travel near dawn or dusk will be minimised by adhering to standard daytime work hours, limit haulage and delivery of materials to the day time and/or minimise the number of vehicles travelling during this period through the use of busses to transport construction personnel.

- Directional lighting and shields will be installed to minimise light spill outside of the immediate work areas having consideration for health and safety requirements.
- The Construction Contractor will prepare a procedure that outlines appropriate trench management. Key measures include:
  - 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, construction personnel will inspect the entire open length of the trench for entrapped or injured wildlife. If required, wildlife handlers (e.g. licensed fauna spotter catchers) will be called to site to attend to fauna issues.
  - Monitoring for fauna is to be undertaken throughout the entire length of the trench regardless of fauna habitat status.
  - Wildlife handlers (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 stipulated by the Delivery Authority in design 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.
- Where reasonably practicable, habitat enhancements will be placed in retained remnant habitat within or directly adjacent to the ROW (e.g. artificial roost boxes for microbats). [This will be further defined in approvals/permits and following ecology survey.]
- The use of barbed wire will be avoided and used only where essential to exclude stock from adjoining pastoral activities.

<u>Aquatic Fauna and Temporary Waterway Barrier Works</u>

- In-stream works will be approved by the Delivery Authority and will be timed in a manner that minimises impacts to aquatic fauna as far as reasonably practicable. In this regard, in-stream construction works will avoid spring and summer months, where practicable, as this represents the wet season when creeks are most likely to be flowing and the critical migratory period of most Australian freshwater fish. 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).
- Key requirements for all temporary works:
  - The dimensions of the temporary barrier will be limited to the minimum practicable for the site and purpose.
  - The method of draining the water will not cause fish to become trapped or stranded or have detrimental impacts on the wellbeing of fish.
  - If there is more than one temporary waterway barrier in the location, the most downstream waterway barrier will be removed first.
  - All waterway barrier material will be removed from within the waterway and disposed of at least 50m away from the waterway.
  - DAF will be notified prior to, but not more than twenty business days before works commences.
  - DAF will be notified post work and within 15 business days of completion of works.
  - Works will not commence during times of elevated flow.
  - Other than spoil deliberately used for re-profiling to restore bed and banks to natural profiles, spoil from excavation will be removed from tidal land and other wetlands and waterways.
  - All material used in the works will be ASS free or have been treated to accepted standards to prevent movement of sediment, runoff and leachate to fish habitats.

	• Provisions will be made to minimise the risk of fish kills arising from the works e.g. through entrapment of fish upstream or between works. – Key requirements for grey/tidal waters include: • Works will commence and finish within a maximum time of 180 calendar days. Instream sediment control measures associated with the works will be removed within this period. • In tidal waterways, tidal exchange and flow at the site will not be impeded for more than 21 days. After 21 days, tidal flushing will be restored. • Areas containing marine plants will be kept free of ponded water to prevent stress and possible mortality of marine plants. – Key requirements for purple and red waterways: • Works will commence and finish within a maximum time of 180 calendar days. – Key requirements for amber and green waterways: • Works will commence and finish within a maximum timeframe of 360 days. – If the Accepted development requirements for operational work that is constructing or maintaining waterway barrier works cannot be met than appropriate permits are to be obtained for waterway barrier works. **Rehabilitation** – Habitat features such as hollows and log piles will be salvaged and placed innearby habitat areas. – Where practicable, revegetation activities will be commenced in and adjacent to construction areas as soon as possible after the completion of construction.
Monitoring	– The Construction Contractor will perform routine daily visual observance by all personnel during construction for conformance with the measures above, specifically observations of the trench for any entrapped fauna. – Environmental site checks will be undertaken by the Construction Contractor's Environmental Officer and/or Supervisors during construction should include the following: • Identification of non-conformances from the procedures outlined above • Monitoring of fauna presence in the Project area and noting of the number of fauna fatalities or required relocations.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational 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. – Fish kills will be reported to DES on 1300 130 372. – The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority.

5.9 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 spread of pest fauna species
– Spread of pathogens or disease which impact native or agricultural species.

Table 5.9 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing introduced pests/fauna.

Table 5.9 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 project. – To adhere to the requirement of the relevant Biosecurity Zones.
Legislative Requirements	– Compliance with: • Legislation (as per Section 3), specifically: • *Biosecurity Act 2014* • *Biosecurity Regulation 2016* • Development Requirements or guidelines • Biosecurity instrument permit • Permits, approvals and licence conditions: • CG's Evaluation Report • [Other conditions to be incorporated as they are obtained].
Performance Criteria	No increase in pest fauna as a result of Project activities.
Implementation	**Pre-construction** – Construction Contractor will confirm Biosecurity Zones impacts, at the time of preparing this CEMP the Biosecurity Zones included: • Grape phylloxera Risk and Exclusion Zones • Sugar Cane Pest Zones 3 & 4 • Cattle Tick Area. – Construction Contractor will identify any specific requirements of the Biosecurity Zones and develop appropriate sub-plans and permits (if required). **Construction** – The Project will not deliberately introduce any invasive species. – As part of environmental monitoring the Construction Contractor will implement a Biosecurity Monitoring schedule to be approved by the Delivery Authority. The monitoring schedule shall cover construction and rehabilitation of the Project and highlight areas requiring treatment of pest species. – 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. – Construction staff will not bring domestic animals to the Project area.
Monitoring	– Routine daily visual observance by all construction personnel during construction for conformance with the measures above – Environmental site checks will be undertaken by the Construction Contractor's environmental officer during construction should include the following: • Identification of non-conformances from the procedures outlined above • Monitoring of pest animal species occurrence in the construction areas. – If a suspected Red Imported Fire Ant nest is discovered on site, DAF will be contacted immediately. – A ROW surveillance program will include Biosecurity Monitoring Schedule for introduced pests.

Reporting	– 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	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority.

5.10 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)
– Spread of floral pathogens which impact native and agricultural species
– Reduction in native vegetation or agricultural health.

Table 5.10 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for weed management.

Table 5.10 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 Project.
Legislative Requirements	– Compliance with: • Legislation (as per Section 3), specifically: • *Biosecurity Act 2014* • *Biosecurity Regulation 2016* • Development Requirements or guidelines: • Biosecurity instrument permit • Permits, approvals and licence conditions: • CG's Evaluation Report • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– No introduction of new weed species to the area. – No major infestations as a result of the Project. – Development and implementation of a weed management plan.
Implementation	**Pre-construction** – Prior to construction, weed specific surveys will be completed by the Construction Contractor's Environmental Officer 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 • Landowner requirements for specific properties • Strategies for preventing weed spread • Weed removal strategies • Weed monitoring protocols • Follow-up weed management methods and protocols. **Construction** – 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 by all staff 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.

	– Vehicles and machinery will be subject to wash-down in accordance with the requirements of the Weed Management Plan, which may have requirements including wash-down off-site when departing from areas known to be infested with weed species. In such cases, 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. – All vehicles and machinery that have come from weed infested areas that require access to a construction site will be visually checked for soil/organic matter prior arrival on site. – 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. – 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 prior to construction commencement. – Routine daily visual observance by all construction personnel during construction will be undertaken to identify weed infestations. – Environmental site checks undertaken by the Construction Contractor's environmental officer will include the following: • 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. – External environmental audits will be undertaken by the Delivery Authority's environmental officer during construction to be carried out every two months or as determined by the Delivery Authority. – Weed inspections of the entire Project will be undertaken by a suitably qualified person as required during operation to monitor the effectiveness of the Weed Management Plan and to maintain a record of weed status in the Project area.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational 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. – Records of weed management and weed status during operation.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority.

5.11 Water Resources and Water Quality

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

– Potential water contamination through the release of polluting substances (e.g. oil, litter and acid sulfate soils) resulting from spillages at the Project site or, through the disturbance of contaminated material
– The impact of surface and stormwater discharge from the Project site during construction works on the water quality and bank stability of receiving watercourses
– The extraction of water from existing water sources for construction purposes.

Table 5.11 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 5.11 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 Project.
Legislative Requirements	– Compliance with: • Legislation (as per Section 3), 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 • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– No long-term impacts to surface or groundwater quality as a result of the Project. – No visible signs of water quality deterioration as a result of the Project. – Where monitoring is agreed to take place, the below parameters apply: • Change (Upstream / Downstream) • Suspended Solids – 5mg/L or 10% increase (whichever is greatest) • pH – 1.0pH unit change • Dissolved Oxygen – 10% decrease – Implementation of erosion and sediment control measures. – Appropriate storage and handling of oils, fuels and other chemicals to prevent spillage. – Rehabilitation of waterway beds and banks as soon as reasonably practicable after construction. – Management of ASS to prevent acidification of waterways.

Implementation	**Design** – Design will include measures to reduce the impact to waterways, such as the selection of trenchless methods for creek/waterway crossings, in particular at: • Eight Mile/Inkerman Creek • Raglan Creek • Horrigan Creek • Gavial Creek • Bob's Creek. – Detailed crossing plans will be developed for crossings prior to construction with significant environmental features identified. – 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 disposal. – Water sensitive urban design principles will be implemented for the Project. **Pre-construction** – Where required, approvals and permits will be obtained prior to construction at creek crossings. – The Construction Contractor will develop a Water Quality Monitoring Program as part of the CEMP. The Water Quality Monitoring Program is to consider upstream and downstream monitoring during creek works, and during water discharge. **Construction** – Where reasonably practicable, trenched creek and wetland crossings will be undertaken during low or no flow periods. – Trenched creek crossings will be planned to enable minimal vegetation removal as far as reasonably practicable. – Special Area Plans will be developed and implemented for all key waterway crossings. – Locate of trenchless entry/exit point away from sensitive locations with the cessation of drill operations as soon as reasonably practicable, upon detection of any lubricant release. – Erosion and sediment control measures will be implemented at creek crossings and across the project areas. – No stockpiles will be within 3 m of watercourses. Stockpiles will be protected from overland flow. – Cut and fill construction near waterbodies is to be minimised. – Where necessary, silt fences will be installed between stockpiles and waterways. – Stream bed material will be replaced over the pipe trench following trenching and additional scour protection provided where necessary. – Implement measures for managing fuel and chemical handling, storage, distribution and spill response during construction. – Natural drainage patterns will be restored following construction, as far as reasonably practicable. – 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). – Ponded water at the construction sites will be disposed of appropriately. If required, treat water prior to release. – Construction site housekeeping will be adequate to prevent litter entering waterways including the provision of waste bins, regular site inspections and staff training in waste disposal procedures. – Measures for the disposal of hydrotest water will be followed in accordance with approval requirements, refer to Section 5.14. – 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. – A Groundwater Management Plan will be prepared and implemented. – 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. **Rehabilitation** – Rehabilitation of creeks will occur as soon as reasonably practicable after completion of the crossing.

	– 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 the measures above. – Environmental site checks will be undertaken by the Construction Contractor's environmental officer during construction should include identification of non-conformances from the procedures outlined above. – The Construction Contractor should develop and implement an effective water monitoring and assessment program implemented on-site to identify, measure, record and report on the effectiveness of the erosion and sediment controls.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – All personnel will be retrained in procedures where the procedures are modified or new ones adapted. – Visual checks (and sampling for applicable anolytes if required) of capturedstormwater will be conducted prior to release.

5.12 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 5.12 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing air quality.

Table 5.12 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 3), specifically: • *Environmental Protection (Air) Policy 2019* • *National Greenhouse and Energy Reporting Act 2007* • Permits, approvals and licence conditions: • CG's Evaluation Report • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Dust generation during construction is reduced to a minimum. – Air emissions (such as exhaust) and energy use are minimised for all activities. – All complaints relating to air quality are responded to in a timely manner and in accordance with the Delivery Authority policy.
Implementation	**Pre-construction** – Delivery Authority will define any required air emission (other than dust) requirements. Such as reporting of vehicle/plant use for calculation of greenhouse gas emissions. **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 milligrams 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). • A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (um) (PM10) suspended in the atmosphere of 50 micrograms per cubic metre (with five days exceedances allowed in any one year period). These 5 days exceedances per year are based on the natural events such as bushfires and dust storms. – 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 construction sites 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> – Construction Contractor will undertake required tracking of resource use of greenhouse gas emissions (such as vehicle use). – All vehicles and equipment used on site 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 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	– Construction Contractor will monitor resource use of greenhouse gas emissions as identified by the Delivery Authority. – Routine daily visual observance will be undertaken by all construction personnel to monitor dust generation and implement additional controls as required. – Environmental site checks will be undertaken by the Construction Contractor's environmental officer during construction will include the following: • Identification of non-conformances from the implementation procedures outlined above • Monitoring of dust control measures implementation and effectiveness.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Construction Contractor will meet any required reporting for resource use of greenhouse gas emissions. – Any complaints relating to air quality impacts will be recorded and addressed in accordance with the complaints procedure.
Corrective action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – Where air quality complaints or reports are received the Construction Contractor will ensure the complaint/report is investigated, refer to Section 7.2. 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 the Construction Contractor (if not the Delivery Authority) to qualitatively or quantitatively monitor the air quality to ensure the Project is not emitting contaminants to the air in exceedance of the

[redacted]	*Environmental Protection (Air) Policy 2019*. If exceedances are recorded or poor air quality is observed, the Construction Contractor is to 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 the Air Management Plan is not being implemented and will modify work practices as required.

5.13 Waste Management

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

– Debris from vegetation clearings
– Building waste
– Wash-down waste water
– 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 would amount to impacts to the surrounding environment.

Table 5.13 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for waste management.

Table 5.13 Waste Management Control Plan

Element	**Waste Management**
Performance Objectives	– To reduce the amount of waste produced during the Project and to maximise recycling and reuse – To manage waste generated during construction of the Project in a manner that minimises the risk of it negatively impacting on the surrounding environment
Legislative Requirements	– Compliance with: • Legislation (as per Section 3), 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 • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– No adverse impacts on the surrounding environment or human health from the management of waste during the construction and operational phases. – Waste management hierarchy will be implemented as a guideline 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.
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. **Construction** – A Waste Management Plan will be developed and implemented. The plan will outline activities to be undertaken to incorporate the waste management hierarchy, waste management procedures, training of relevant personnel and monitoring and reporting requirements. This plan will incorporate relevant conditions from obtained approvals. – All Project staff will be made aware of the requirements of the waste management plan as part of their inductions, prior to commencing work. – A program for strict litter control will be implemented throughout the construction site. 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 Plans and approval by the Delivery Authority. – 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 wastes to a licenced waste management 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. – Water within the trenches is expected to be relatively benign, except for sediment and impacts from ASS. The Construction Contractor will develop a procedure to dispose of the water with proper measures to mitigate impacts from erosion and acidity during this activity. – 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. – All containers will be secured to prevent movement during a flood event. – Safety Data Sheets will be kept on site during construction. – Hydrocarbon wastes will be controlled as per any local government or legislative requirements, emergency use of a spill kit, bunded and/or contained to avoid release and transported and disposed of by an appropriately licensed contractor. – 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 5.5. – 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 corridor, all wastes will be removed and disposed of at a licensed waste management facility. – A spill kit will be kept at each construction area along the corridor. – 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 by all personnel during construction to monitor the site for litter or other waste issues. – Environmental site checks undertaken by the Construction Contractor's environmental officer during construction will include the following: • Monitoring of waste management practices to identify non-conformances from the implementation procedures outlined above and possible improvements in waste management practices • Recording the amount of waste being re-used, recycled and disposed • Checking of waste storage areas.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – The above including

	• Quantities of wastes generated and disposed of • External environmental audit reports review waste management practices.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – 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 Waste Management Plan. – Retrain staff in waste management if the Waste Management Plan is not being implemented. – Incorporate additional waste minimisation measures as identified during reviews.

5.14 Hydrotesting and Commissioning

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

– Potential water contamination through the release of polluting substances (e.g. chlorine, waste water from treatment process) from the testing and commissioning procedures at the Project site and water treatment plants

Table 5.14 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for hydrotesting and commissioning.

Table 5.14 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 3), 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 • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Relevant permits obtained prior to obtaining water from the Fitzroy River for construction or commissioning. – As far as reasonably practicable, water provided for hydrotesting or commissioning does not result in material depletion or degradation of any water resource. – Hydrotest water consumption reduced through re-use of water. – As far as reasonably practicable, discharge of water used does not adversely impact the local environment.
Implementation	**Construction / Commissioning** – A procedure will be developed by the Construction Contractor and approved by the Delivery Authority for discharge of water from pipelines or in relation to hydro testing. This shall include, but not limited to the controls and mitigations listed below. – Where reasonably practicable, water used during testing and commissioning of the Alton Downs WTP, pipeline and reservoirs will be reused within the system or passed down the pipe if of sufficient quality, in preference to disposal. – Water disposed during commissioning to land or waterways will be in compliance with regulatory requirements and have relevant controls in place to reduce impacts. – Test 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 from the pipeline, an assessment will be made of the need for aeration prior to discharge. – Chlorinated water will be tested and treated (if necessary) prior to disposal to ensure it is in line with regulatory requirements.
Monitoring	– Inspection of the waterway where the test water is discharged to identify appropriate disposal site. – Monitoring of water quality and if necessary, treatment prior to discharge of water.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational 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	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – All employees 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.

5.15 Noise and Vibration

The potential sources of noise and vibration include:

– Set up of Ancillary facilities
– Construction of access tracks
– Various types of machinery use during construction
– Blasting (associated with the Aldoga Reservoirs).

Noise and vibration emissions have the potential to negatively impact adjacent sensitive receptors (such as residents and other land users) and fauna habitat. Vibration may also result is structural impact to other infrastructure or buildings.

Table 5.15 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing noise and vibration.

Table 5.15 Noise and Vibration Control Plan

Element	**Noise and Vibration Management**
Performance Objectives	To manage the construction of the Project in a way that minimises the impact of noise on the local community To control noise generation from the Project to within the relevant noise standards.
Legislative Requirements	– Compliance with: • Legislation (as per Section 3), 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 • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Noise generated from the Project is maintained within relevant standards. – All complaints are responded to in a timely manner and in accordance with the Delivery Authority policy.
Implementation	**Design** – During design measures to reduce noise will be incorporated for the construction phase of the Project including housing the pump and equipment in a building that includes specific noise mitigation measures. Acoustic advice will be sought to check that the structure is providing the appropriate noise attenuation to the outside environment so that noise levels at the nearest sensitive receptors are within noise standards. **Construction** – Although there are no construction noise limits during the daytime periods prescribed at present, noise mitigation strategies will be implemented where practicable to reduce the potential for adverse noise impacts and complaints. – The Construction Contractor will develop a Noise and Vibration Management Plan as part of their documentation for approval by the Delivery Authority and implementation. – 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 on site. – Loading/unloading will be performed with consideration to any nearby sensitive receptors such as residential properties. – Construction activities are to be undertaken 6:30 am and 6:30 pm Monday to Saturday (excluding public holidays), or on any other day at any time except by agreement with the Delivery Authority and impacted parties as relevant. – A Monitoring Schedule 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). *Community Liaison* – Residents informed about when they may be affected by works, and the duration of the works. – A 24 hours contact number for the Project 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 7. *Blasting* – Where blasting is required (for example at Aldoga Reservoirs) a Blasting Operations Plan will be prepared and implemented to detail safety measures and other management measures. – Blasting program will comply with the *Environment Protection (Noise) Policy 2019 (Qld)*. – Noise, vibration and blasting monitoring will be conducted with considerationto 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.
Monitoring	– Routine daily visual observance by all construction personnel during construction to monitor construction noise levels and prevent excessive noise. – Scheduled noise monitoring as planned or as required by complaints. – Environmental site checks undertaken by the Construction Contractor's environmental officer will include the following: • Inspections of equipment maintenance records • Monitoring construction activities for non-conformances with the above procedures • Review of incidents/complaints register for noise related incidents – Noise levels for equipment will be monitored.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Additional records include: • Records of noise incidents and how they were addressed • External environmental audit reports to review noise practices and generation.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) 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 Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – 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.

5.16 Transport and Access

Impacts from traffic generated by construction of the pipeline 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 on the Project and its access points.

Table 5.16 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing transport and access.

Table 5.16 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 3), specifically:
	  • Transport Infrastructure Act 1994
	• Development Requirements or guidelines
	  • Australian Pipeline Industry Association Vehicle Safety Guidelines
	• Permits, approvals and licence conditions:
	  • Road Corridor Permits (state-controlled roads)
	  • Road Reserve Works Permit - For construction works in the road corridor
	  • Works on Road Corridor Permit - For construction works in the road reserve or construction works in the road reserve
	  • Works within a railway corridor - Permission to interfere with railways
	  • CG's Evaluation Report
	  • [Other conditions to be incorporated as they are obtained].

Performance Criteria	– No transport or access related incidents arising as a result of the Project.
Implementation	**Construction** – Traffic Management Plans will be developed prior to construction to address site specific details for each element of the Project. The traffic management plans will be developed in negotiation with Rockhampton Regional Council and Gladstone Regional Council and the Department of Transport and Main Roads 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 Project. – All permits and approvals required under the *Transport Infrastructure Act 1994* will be obtained including: • Approval for works within a state controlled road corridor • Approval for works within a railway corridor. – Access to and from construction areas will be via designated routes, as far as reasonably practicable.

	– Road/intersection improvements will be undertaken at: Laurel Banks Road, Laurel Banks Road/Rockhampton Ridgelands Road intersection, and Rockhampton Ridgelands Road. – The crossing of major roads (Ridgelands, Capricorn, Mt Larcom, Mt Larcom Gladstone Roads and the Mt Larcom Gladstone Road and Calliope River Targinie Road intersection) and rail networks will be undertaken by trenchless methods where practicable to minimise impacts to traffic and transport. – Roads, particularly unsealed roads used during construction will be maintained by the Construction Contractor: • Possible road/intersection improvements required to enable safe access during construction of the Project will be discussed with the Department of Transport and Main Roads and undertaken where necessary. – 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.
Monitoring	– Routine daily visual observance by all construction personnel during construction to monitor transport and access issues and identify non-conformances. – Environmental site checks undertaken by the Construction Contractor's environmental officer during construction will include the identification of non-conformances from the implementation procedures outlined above or from the relevant Traffic Management Plan.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP • Internal and external environmental audit results. – Transport or access related incidents/complaints will be recorded in the incidents/complaints register.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the constructor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – 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.

5.17 Cultural Heritage

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

Table 5.17 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for managing cultural heritage values.

Table 5.17 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 3), 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 Plan • Native Title Assessment • CG's Evaluation Report • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Compliance with the CHMP and the *Aboriginal Cultural Heritage Act 2003.* – All incidental cultural heritage finds during construction are managed in accordance with the CHMP. – No impact to known historical heritage items.
Implementation	**Pre-construction** – In the pre-construction period, a management plan will be required to provide directions on the protection and management of historical sites that have been found. **Construction** – An approved CHMP with the PCCC and Darumbal People has been executed. – A survey of the pipeline will be completed to determine the nature and extent of subsurface archaeological material within the Project corridor prior to construction. As part of the CHMP an Aboriginal cultural heritage survey of the Project area will be undertaken by representatives of the PCCC and Darumbal People. – The CHMP will detail the measures to be taken in the event of an Aboriginal cultural heritage find during construction. – The environmental induction will include a basic level of 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. – 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 cultural heritage specialist and in consultation with DES.
Monitoring	– Routine daily visual observance by all personnel during construction (including earthworks during operations) for items of cultural heritage significance. – Cultural heritage survey will be undertaken as part of the CHMP. – Monitoring during earthworks by representatives of the Aboriginal parties.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase

	• Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP – Internal and external environmental audit results. – Reporting to DES in accordance with Section 4.3.3 in the event of a cultural heritage find during construction.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – Retrain all Project employees and sub-contractors in cultural heritage management if the CHMP is not being implemented and modify work practices as required. – Notification to the relevant Aboriginal party or appropriately qualified cultural heritage advisor for assessment of the find.

5.18 Social and Economic

Temporary impacts to landholders may occur during construction of the pipeline and associated infrastructure, intake 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.

Table 5.18 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 5.18 Social and Economic Environment Control Plan

Element	**Social and Economic**
Performance Objectives	– To minimise impacts to the community during construction of the Project. – To maximise economic opportunities during the construction of the Project.
Legislative Requirements	– Compliance with: • Legislation (as per Section 3) • Development Requirements or guidelines: • Queensland Government Building and Construction Contracts Structured Training Policy (the 10 percent policy) • Local Industry Policy • CHMP and relevant Indigenous participation requirements • Permits, approvals and licence conditions: • CG's Evaluation Report • [Other conditions to be incorporated as they are obtained].
Performance Criteria	– Compliance with the *Queensland Government Building and Construction Contracts Structured Training Policy (the 10 percent policy)*. – Compliance 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. – Adherence to the Delivery Authority's and the Construction Contractor's Health, Safety and Environment Management System.
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 Project. **Construction** – Mitigation measures will be implemented to address the accommodation impacts for the Project include: • Local labour and sub-contractors will be employed where practicable. • Works will be planned to avoid concurrent operations where practicable. • Rental properties will be secured in advance to accommodate the workers for the duration of the construction phase of the Project, particularly in Rockhampton, where practicable • Camp accommodation may be used if necessary. • Implementation of other Control Plans within this CEMP (such as Transport and Access, Section 5.16.
Monitoring	– Monitoring as required of Human Resourcing, housing and Industrial Relations.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational phase • Reports of any environmental incidents or non-conformances with the CEMP

	• Internal and external environmental audit results.
Corrective Action	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority.

5.19 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 Project have been assessed and include:

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

Table 5.19 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 5.19 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 on site in a manner that does not cause harm to the environment, Project personnel or the public.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 3),
	  • *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
	  • [Other conditions to be incorporated as they are obtained].

Performance Criteria	– Target of no contamination of the environment and no injuries to personnel or the public from the storage or handling on dangerous goods
Implementation	**Construction** – All site 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 the construction corridor. – The Safety Data Sheets (SDS) for all dangerous goods and hazardous materials will be kept on site. – 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 on site. • 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 • Liquid dangerous goods will be stored in bunded containers with sufficient capacity to contain the potential spillage. • Personal protective equipment will be provided to personnel required to work with dangerous goods. • Spill kits will be available at all construction sites along the Project area and any spills will be cleaned up immediately.

	• Where practicable, any refuelling undertaken at site will be undertaken in a designated refuelling area to reduce the risk of contamination to the environment. • Portable fire extinguishers will be available if required at the site. • Regulated wastes will be transported by a licensed contractor to a licensed waste management facility able to accept the waste. • Explosives will be stored in accordance with AS2187: The storage, transport and use of explosives and will be handled by a licensed explosives expert.
Monitoring	– Routine daily visual observance by all personnel during construction for possible incidents related to dangerous goods and hazardous materials. – Environmental site checks undertaken by the environmental officer will include the following: • An inspection of the dangerous goods storage area(s) • A record of any spills occurring at the Project site and corrective actions. – Regular monitoring of the signage at the intake point to ensure that it is clearly visible.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational 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	– The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Constructor Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority. – The following corrective actions should 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.

5.20 Landscape and Visual Amenity

The construction of the Project 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 to support the construction.

Table 5.20 shows the performance objectives, legislative requirements, performance criteria, mitigations measures, inspections, monitoring, reporting and corrective action requirements for landscape and visual amenity management.

Table 5.20 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.

Legislative Requirements	– Compliance with:
	• Legislation (as per Section 3)
	• Permits, approvals and licence conditions:
	  • CG's Evaluation Report
	  • [Other conditions to be incorporated as they are obtained].

Performance Criteria	– Protection and/or reasonable restoration of landscape and visual amenity.
Implementation	**Construction** – The pipeline corridor will be inspected prior to construction to identify trees and vegetation that are required to be protected/ retained. – Vegetation clearance at sensitive sites will be minimised where practicable. – 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. – 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 at key locations outside the pipeline corridor, particularly where the alignment is in close to sensitive receptors and trees have been removed for construction. – Appearance of other features such as signs and fencing will be considered minimise visual amenity impacts. – Construction Contractor will include Rehabilitation Plans which 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	– Routine monitoring during construction as part of environmental inspections. – Monitoring as required by the Rehabilitation Plans.
Reporting	– Environmental records to be kept on site and made available to the Delivery Authority or external auditors upon request. This file will contain the following: • Completed environmental checklists/reports during the construction phase • Completed environmental checklists/reports during the operational 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. – The Construction Contractor (if not the Delivery Authority) will notify the Delivery Authority of any non-conformances with the above measures and corrective action (with approval from the Delivery Authority) will be taken to address the non-conformance. A non-conformance report will be completed by the Construction Contractor and filed by both the Delivery Authority and the Construction Contractor. – Where the Delivery Authority 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 the Delivery Authority.

6. Monitoring, Inspections, Audits and Records

The Construction Contractor will appoint an Environmental Officer(s) to implement the requirements of the CEMP and develop and implement a detailed Construction Contractor's CEMP. The environmental performance of the Project will be determined by developing and implementing environmental monitoring programs and site inspection programs consistent with this CEMP. Compliance with environmental requirements such as approval conditions, management standards, this CEMP and the Construction Contractor's CEMP 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 a suitably qualified person. For example, a daily inspection should be complete by a person who understands the operations and controls in the area.

6.1 Environmental Monitoring

The Construction Contractor is required to develop and implement an environmental monitoring program consistent with the requirements of this CEMP. The monitoring program will address the EIS commitments and approval, permit and licensing conditions. Monitoring activities will be conducted by a person who is suitably trained and qualified. Monitoring will be carried out in accordance with guidelines and standards specified in conditions of approvals.

The results of the monitoring programs 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.

6.2 Environmental Inspections

The Construction Contractor will be required to conduct regular environmental site inspections at a frequency appropriate to the work activity being undertaken and/or as specified by relevant approval conditions. The inspections will 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. While specifications, authorities, and permit conditions may stipulate certain frequencies and reporting, the aim of monitoring and inspections should be to show the effectiveness or suitability of controls should there be an incident or complaint.

The date and time of the inspections shall be recorded as well as comments on non-conformance and corrective action taken. Copies of the site inspection checklist will be signed and maintained. Where the non-conformance 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 an incident or near miss is observed during inspections, the incident investigation and reporting procedure will be followed.

6.3 Environmental Auditing

Audits to verify compliance with all applicable environmental requirements will be conducted at appropriate intervals and/or as specified by relevant approval conditions. This will include verifying compliance with at least the following requirements:

– The CEMP relevant to construction (this plan)
– The Construction Contractor's CEMP

– The Delivery Authorities Health, Safety and Environment Management Standards
– The Delivery Authorities Health, Safety and Environment Compliance Guidelines
– Applicable legislative and approval requirements
– Other applicable environmental requirements,

Audits will be conducted by competent auditors 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 and any corrective and preventive actions. The environmental audit reports will be made available to relevant environmental authorities as required by conditions of approvals.

6.4 Environmental Recording

The Construction Contractor and the Delivery Authority will ensure that TeamBinder is used to ensure that only current documentation is in use.

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

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

– Site inspection checklists
– Environmental audit reports
– Training records
– Monitoring data
– Complaints and associated records of communication
– 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 on site and made available to the Delivery Authority 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 (this plan and the Construction
– Contractor's CEMP
– Internal and external environmental audit reports including audit action plans
– Annual audits on the Project from the Delivery Authority on compliance with EPBC conditions.

7. Incidents, Non-conformances, Complaints and Emergencies

7.1 Incidents and Non-Conformances

Construction personnel must always be mindful of the provisions of the CEMP to identify and notify non-incidents conformances to the Delivery Authority and Regulatory Agency as required. This includes reporting incidents and non-compliances as required by Table 7.1.

Table 7.1 Incident / Non-conformance Classification

Classification	Description	Reporting
Insignificant	Negligible on-site / offsite environmental impact and of low significance.	Logged with monthly environmental data.
Minor	On-site/off-site environmental localised impact, immediately contained.	Logged with monthly environmental data, reported within a week to the Delivery Authority.
Moderate	On-site/off-site environmental short-term impact, immediately recoverable.	Incident report completed and reported to Delivery Authority within 12 hours
Major	On-site/off-site environmental medium-term impact or repeated non-compliance with potential in some jurisdictions for prosecution.	Incident report and investigation completed and reported to Delivery Authority within 2 hours.
Catastrophic	Significant on site/offsite environmental long-term harm that is not recoverable. Significant fines and prosecution at company and individual level may apply in some jurisdictions.	Incident report and investigation completed and reported to Delivery Authority within a timeframe agreed with/by the Delivery Authority.

7.2 Complaints

To minimise impacts to the community during construction of the Project, a complaints procedure will be developed and implemented by the Construction Contractor in consultation with the Delivery Authority and with consideration of relevant approval conditions.

– All complaints are responded to in a timely manner and in accordance with the Delivery Authority policy.
– Corrective action to address any complaint is taken as soon as possible or an explanation given to the complainant.
– Adherence to the Delivery Authority's and the Construction Contractor's Health, Safety and Environment Management System.

The complaint procedure shall include, but is not limited to the following:

– A 24 hours 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 particually 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 register 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
    - Record of communication with the complainant
    - Corrective Action undertaken and date of action

- The person responsible for investigating/addressing the complaint.

7.3 Emergencies

The Construction Contractor will develop an Emergency Response Procedure in accordance with the CEMP, and the Delivery Authority's and the Construction Contractor's Health, Safety and Environment Management System.

8. Review and Improvement

The Delivery Authority is responsible for the updating and review of this plan. Further the Construction Contractor will also be required to update its' CEMP. The CEMPs should 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.

The review will ensure the continuing suitability, adequacy and effectiveness of the CEMP, and the Health, Safety and Environment Management System. The review will include assessing opportunities for improvement.

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The Power of Commitment

Appendix G

SARA Pre-Lodgement Advice

Queensland Government

SARA reference: 2203-27746 SPL

17 May 2022

GHD Pty Ltd (Gladstone)
PO Box 373
GLADSTONE QLD 4680
amanda.smedley@ghd.com

Attention: Amanda Smedley

Dear Sir/Madam

SARA Pre-lodgement advice - Fitzroy to Gladstone Pipeline Project

I refer to the pre-lodgement meeting held on 18 March 2022 in which you sought advice from the State Assessment and Referral Agency (SARA) regarding the proposed development at the above address. This notice provides advice on aspects of the proposal that are of relevance to SARA.

SARA's understanding of the project

The Fitzroy to Gladstone Pipeline Project is a 116-kilometre pipeline that will transport up to 30,000 megalitres (ML) of water per annum from an intake point at Laurel Bank on the Fitzroy River to existing water infrastructure at Yarwun. The pipeline traverses the Rockhampton Regional Council and Gladstone Regional Council local government areas (LGAs). The pipeline will run the majority of its length within the Stanwell-Gladstone Infrastructure Corridor State Development Area (SGIC SDA), and then connect with existing water infrastructure near Yarwun within the Gladstone State Development Area (GSDA). The pipeline is approximately 1m in diameter, will be buried >750mm in depth within a 30m wide right of way. Other infrastructure associated with the pipeline includes:

- 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
- A water treatment plant (WTP) at Alton Downs near the Fitzroy River, occupying an area of approximately 11.5 hectares (ha)
- Three pump stations, located at the Fitzroy River water intake, at the Alton Downs WTP, and near Raglan (within Gladstone Regional Council LGA), 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
    - A small substation

Fitzroy/Central regional office
Level 2, 209 Bolsover Street,
Rockhampton
PO Box 113, Rockhampton QLD 4700

    - Connection manifolds and valves
- A water storage tank of 10–15 ML located at the Raglan booster pump station
- Two water storage tanks of approximately 100 ML capacity at Aldoga.

Supporting information

The advice in this letter is based on the following documentation that was submitted with the pre-lodgement request or tabled at the pre-lodgement meeting.

Drawing/report title	Prepared by	Date
Gladstone-Fitzroy Pipeline Project, 30GLA – Entire Site, Overall Locality Plan (Drawing No. 3003-DWG-32000-G-0106, Revision A	SMEC	20 August 2021
Gladstone-Fitzroy Pipeline Project 30GLA, Overall Site Plan Sheet 1 (Drawing No. 3003-2656-DWG-32000-G-0100, Revision A)	SMEC	20 August 2021
Gladstone-Fitzroy Pipeline Project 30GLA, Overall Site Plan Sheet 2 (Drawing No. 3003-2656-DWG-32000-G-0101, Revision A)	SMEC	20 August 2021
Gladstone-Fitzroy Pipeline Project 30GLA, Overall Site Plan Sheet 3 (Drawing No. 3003-2656-DWG-32000-G-0102, Revision A)	SMEC	20 August 2021
Gladstone-Fitzroy Pipeline Project 30GLA, Overall Site Schematic Layout (Drawing No. 3003-2656-DWG-32000-G-0103, Revision A)	SMEC	20 August 2021
Gladstone-Fitzroy Pipeline Project 30GLA – Entire Site, Project Reference Numbers (Drawing No. 3003-2656-DWG-32000-G-0104)	SMEC	20 August 2021
Assessable Development Review, Fitzroy to Gladstone Pipeline Project	GHD	8 March 2022
Email: GAWB FGP - Request for Pre-lodgement Meeting	Gladstone Area Water Board (GAWB)	8 March 2022
Email: 2203-27746 SPL Additional information for WWBW consideration	GAWB	30 March 2022
Gladstone-Fitzroy Pipeline Project, 30GLA – Intake Pump Station, Locality Plan (Drawing No. 30032656-DWG-36100-C-1010, revision A)	SMEC	20 August 2021
Gladstone-Fitzroy Pipeline Project, 30GLA – Intake Pump Station, Overall Layout Plan (Drawing No. 30032656-DWG-36100-C-1011, revision A)	SMEC	20 August 2021
Gladstone-Fitzroy Pipeline Project, 30GLA – Intake Pump Station, Pumpwell General Arrangement Plan (Drawing No. 30032687-DWG-36100-M-1301, revision B)	SMEC	14 January 2022

Pre-lodgement meeting record

Meeting date	18 March 2022
Meeting location	Microsoft Teams meeting
Meeting chair	Tracey Beath

Meeting attendees	Refer to **Attachment 1**

Pre-lodgement meeting notes

Waterway barrier works (WWBW)	
1.	GHD • Accesses are still to be identified (by the contractor) and are expected to meet the Department of Agriculture and Fisheries' *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (the WWBW ADR). • Scour protection is unlikely to be needed on the trenchless areas. This will need to be confirmed where trenching is occurring. GAWB • The pump station is within the high banks of the Fitzroy River. More concept plans/details can be provided (*Note: Provided to SARA on 30/3/22)*. The intake will have fish screening. DAF • Trenchless/horizontal directional drilling may not be waterway barrier works. Temporary works to facilitate this may need to comply with the WWBW ADR. • Based on the information provided, it is hard to tell if the pump station/intake would be WWBW. It is noted there is no relevant work type in the WWBW ADR. • Any scour protection work needed along the top of the pipeline may trigger WWBW.
Wetland protection area	
2.	GHD • Reducing the right of way (ROW) will be prioritised in areas of ecological significance. • Ecological studies for the project have looked at matters of State environmental significance. DES • Temporary and potential permanent impacts should be discussed in the application.
Taking or interfering with water / Interfering with quarry material	
3.	Department of Regional Development, Manufacturing and Water (DRDMW) *Taking or interfering with water* • It is understood the project will access water from releases from the Rookwood Weir. A formal process to authorise this access has not yet occurred. A decision authorising access to the water may no be made until December 2022. Once GAWB have a water entitlement, the works should be accepted development. *Interfering with quarry material* • If the excavated material is treated as waste, there are no issues related to removing quarry material. GAWB • The timeframes for the water entitlement decision may have an impact on approvals required for the project. Further clarification is sought on when the proposed works would be accepted development. *(See post-meeting advice provided below)*

Clearing native vegetation	
4.	GHD • GHD considers the 'urban area/urban purpose' exemption would apply in the GSDA. SARA is requested to confirm if this determination is correct. *(See post-meeting advice provided below)* • In some areas, the ROW may need to be wider than the requirements listed in the Department of Resources' *Clearing for infrastructure accepted development vegetation clearing code*. • The *Environment Protection and Biodiversity Conservation Act 1999* approval for the project is still current. • The ecologist has noted some vegetation mapping could be updated. Department of Resources (Resources) • Application information should include the full clearing footprint. Provision of GIS files is extremely helpful for SARA's assessment. • The applicant should ensure they are considering the correct GIS layers when reviewing vegetation clearing matters or responding to State code 16: Native vegetation clearing of the *State Development Assessment Provisions* (SDAP). The glossary in SDAP State code 16 identifies the relevant mapping layer for a term used in the code. • Resources prefer vegetation mapping is updated by a Property Map of Assessable Vegetation (PMAV) process. It is desirable that ground-truthing of an area (rather than just a point) is provided.
Tidal works	
5.	Department of Environment and Science (DES) • Underboring is generally not assessable development. • It is desirable that at least preliminary plans reviewed by a Registered Professional Engineer of Queensland (RPEQ) are included in application material for assessable tidal works. Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) • The pre-lodgement material refers to tidal works including works that are below highest astronomical tide (HAT). These references to a tidal plane should instead refer to mean high water springs (MHWS).
Queensland heritage places	
6.	• *(See post-meeting advice provided below)*
Marine plants	
7.	GHD • A significant residual impact assessment is likely to be required. Department of Agriculture and Fisheries (DAF) • Further information can be provided to the applicant regarding details to include on plans (e.g. permanent and temporary impact areas, HAT etc). *(See post-meeting advice provided below)*

General	
8.	Resources • Where the pipeline is under a watercourse, tenure under the *Land Act 1994* may not be required if the project has necessary approvals under the *Water Act 2000*. • Further advice about State land matters will be provided after the meeting. *(See post-meeting advice provided below)* • Owners consent will be required from Resources for a development application for tidal works. • Other matters for consideration include mining tenements (exploration permits) and a Key Resource Area. GAWB • An assessment of native title has been done. • There are no issues with DRDMW forwarding the presentation to another team in the department. DSDILGP • The project could be split into three applications (one for each project section). It may be suitable to split up the various approvals required but it is suggested a combined application be provided for marine plants and tidal works (where required). • It is suggested the application material includes advice from the local government (where applicable) confirming the proposed development is not assessable under the council's planning scheme. • DSDILGP will confirm the technical agency contact details for referrals for an application in a State Development Area.

Pre-lodgement advice

The following advice outlines the aspects of the proposal that are of relevance to SARA.

SARA's jurisdiction and fees	
1.	The development application/s may require lodgement or referral to SARA under various provisions of the Planning Regulation 2017. SARA can provide further advice in relation to assessment triggers and fees as works for specific applications are confirmed. The below advice relates to development applications under the *Planning Act 2017*.
Key matters and action items	
2.	The provided pre-lodgement material requested SARA advice in relation to operational works matters. However, it is noted: • section 1.2 (Approvals/permits not relevant to this advice request) of the provided *Assessable Development Review* (GHD, 8 March 2022) refers to "MCU Development Permit[s] assessable against the [Gladstone and Rockhampton] Planning Scheme[s]". • section 3.6 (Queensland Heritage Places) and 3.7 (Operational Works that is Tidal Works or Works in Coastal Management District) includes content and queries for SARA related to material change of use triggers. GHD advised on 29 April 2022 that the proposed works: • under the *Rockhampton Region Planning Scheme*, will only require a development application for a material change of use for the intake facility at the Fitzroy River

	• under the *Our Place Our Plan Gladstone Regional Council Planning Scheme*, will not require a development application for a material change of use. Advice provided in relation to a material change of use development application are based on the above points.
3.	Where a development application includes works that are impacting one or more matters of State environmental significance (MSES), the application should include an assessment of whether the works are having a significant residual impact (for each MSES). The State may apply a condition requiring an offset where a significant residual impact on MSES is proposed. As a Commonwealth assessment has been carried out for the project, it is recommended the development application material include a brief summary of whether a Commonwealth offset has been applied for any specific matters of National environmental significance (MNES). This will assist in determining whether an offset condition can be applied by the State (where relevant).
Waterway barrier works (WWBW)	
4.	Pipeline crossings Where horizontally directionally drilled underneath waterways, the proposed works will not raise the bed level or reduce the cross-sectional width of the waterway and do not constitute waterway barrier works. If trenching is proposed within waterways, the works are likely to be waterway barrier works. Once the design/location is finalised, the applicant should confirm if the works can be carried out under the Department of Agriculture and Fisheries' *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (the WWBW ADR). Prescribed work type 7.2 (Temporary waterway barrier works within a major impact (purple), high impact (red), moderate impact (amber) or low impact (green) waterway) may be applicable. If water crossings of the pipeline will result in raising of the waterway bed, or require erosion protection within the waterway, then the works are likely to constitute waterway barrier works and require a development approval. Further pre-lodgement advice should be requested with site specific details for each waterway crossing where horizontal directional drilling is not proposed.
5.	Pump station and intake at the Fitzroy River Additional plans provided to SARA following the meeting show the pump station is not located in or nearby waterways. The pump station would not be waterway barrier works. The provided plans indicate the intake structure will comprise of 4 x 1.8m wide intake screens with wing walls and apron slab. Based on the available plans/information, it is unclear if the proposed intake structure will reduce the cross-sectional area of the waterway. It is recommended the applicant provide plans showing the bank-to-bank profile of the waterway in relation to the proposed structure. This will aid in confirming whether the intake structure is waterway barrier works.
6.	Intake at the Fitzroy River If the proposed intake structure reduces the cross-sectional area of the waterway, it will be assessable development requiring a development approval for operational works (waterway barrier works). The works will not meet the WWBW ADR as there is no relevant prescribed

	work type. SARA can provide further pre-lodgement advice if a development application is required.
7.	Intake at the Fitzroy River The intake structure should be appropriately screened to prevent the entrapment and entrainment of all native fish in pumping equipment. For more information regarding fish screening on water intake pipelines, it is recommended the applicant consult *The practical guide to modern fish protection screening in Australia* and *Design specifications for fish-protection screens in Australia*.
8.	Tidal waterways Coastal sites that are located beyond the tidal (grey) zone shown on the *Queensland waterway for waterway barrier works* spatial data layer but which, on ground, have tidal features, such as marine plants (mangroves, seagrass or salt marsh), marine fauna, salt or brackish water, or tidal ebb and flow, should be treated as tidal (grey zone) waterways. If these features are present, the waterway in the proposed works location should be treated as a tidal (grey) waterway.
Wetland protection area	
9.	You have advised: • the only works proposed within a wetland protection area are for the pipeline; and • the pipeline will be buried, with the natural land profile restored after construction. Based on the information provided, SARA confirms the development described above is not high impact earthworks, as it meets criteria (b)(i) of the 'high impact earthworks' definition in schedule 24 of the Planning Regulation 2017. If the final design for the project includes other works within a wetland protection area, the applicant should determine if the additional works would be high impact earthworks and whether assessment by SARA would be required.
Taking or interfering with water / Interfering with quarry material	
10.	Water supply Section 9A of the *Fitzroy Basin Water Management Protocol* identifies a portion of water to be granted as water allocations from the Rookwood Weir Water Supply Scheme. A formal process under the *Water Plan (Fitzroy Basin) 2011* is yet to be developed however GAWB will be engaged by the Department of Regional Development, Manufacturing and Water (DRDMW) or Sunwater, depending on the process decided upon for granting the water allocations, and will be granted either a Resource Operations Licence or a water allocation. It is anticipated the water entitlement granted to GAWB will contain the relevant specifications for the take of water to be considered accepted development as per Schedule 7, Part 3 section 5(c) of the Planning Regulation 2017. Please note a decision on water entitlements may not be made until December 2022. If works for taking water from the Fitzroy River (i.e. the intake and pump station at Laurel Bank) are to be constructed prior to receiving a water entitlement, the proposed work would be assessable development for taking water.
Clearing native vegetation	
11.	Urban area / urban purpose Section 3.5.3 of the provided *Assessable Development Review* (GHD, 8 March 2022) refers to the development schemes of the SGIC SDA and the GSDA when considering if an area

	meets the 'urban area' definition in schedule 24 of the Planning Regulation 2017. Part (b) of the 'urban area' definition refers to "a map in a planning scheme". The SDA development schemes are not a planning scheme for the purpose of this definition, as they have not been made under the *Planning Act 2016*. The applicant's determination regarding the applicability of the 'urban area' definition to the northern section of the project and the SGIC SDA is supported. SARA considers the exemptions for clearing vegetation for an urban purpose in an urban area may be applicable in the GSDA. The Gladstone Regional Council's planning scheme identifies the purpose of the Special Purpose zone as providing for uses including those associated with water supply facilities and other related network elements. This infrastructure supports land uses associated with residential, industrial, sporting, recreation and commercial purposes. Please note this exemption does not apply to all regulated vegetation (e.g. category B vegetation that is an endangered regional ecosystem). It is recommended the applicant seeks independent legal advice if additional advice regarding this matter is required.
12.	Assessable development The applicant's determination regarding the need for a development approval for operational work under the *Planning Act 2016* is supported. Please note a relevant purpose determination must be obtained from the Department of Resources prior to lodging a development application (see further details below).
Tidal works and works in a coastal management district	
13.	Tidal works Based on the information provided, tidal works for the project (other than underboring – see meeting notes) would be assessable development (operational work for prescribed tidal works). A development application for tidal works in tidal waters will require assessment by SARA for maritime safety matters.
14.	Operational works (other than tidal works) in a coastal management district The pre-lodgement material refers to operational works above HAT. These references to a tidal plane should instead refer to MHWS. Please note this may increase the extent of project works to be considered for this matter.
15.	Operational works (other than tidal works) in a coastal management district You have advised some of the proposed works are considered excluded works. If required, SARA can provide confirmation of proposed works that are considered to be excluded works (minor works) once the location/design details are finalised.
16.	Operational works (other than tidal works) in a coastal management district The pre-lodgement material refers to operational works above HAT. These references to a tidal plane should instead refer to MHWS. Please note this may increase the extent of project works to be considered for this matter.
17.	Determining the assessment manager It is understood the exact location/design of any assessable work is still to be finalised. You have advised the works will occur in the Rockhampton and Gladstone local government areas. Based on the plans provided, it appears the works are located outside the Port of Gladstone strategic port land.

	Once details of proposed assessable works are finalised, the applicant should confirm if the assessment manager is identified in schedule 8 of the Planning Regulation 2017. If not, a request for an assessment manager determination under section 48 of the *Planning Act 2016* will need to be submitted to the Minister for State Development, Infrastructure, Local Government and Planning. A request for a ministerial determination should be submitted as early as possible to avoid potential delay to project timeframes.
18.	Material change of use in a coastal management district You have advised that development within the coastal management district is not assessable development for a material change of use under the local government planning schemes. Based on this information, SARA's referral trigger for a material change of use involving work in a coastal management district would not be applicable.
Queensland heritage places	
19.	The ROW for the proposed works is more than 75m from the heritage register boundary of the Raglan Homestead. Any development applications under the *Planning Act 2016* for development located more than 75m from the heritage register boundary will not require assessment by SARA for Queensland heritage matters.
20.	An exemption certificate under the *Queensland Heritage Act 1992* will not be required as the proposed development is not within the heritage register boundary for the Raglan Homestead.
Lodgement material	
21.	It is recommended that the following information is submitted when lodging or referring an application to SARA: • DA form 1. • A full response to the relevant sections of the State Development Assessment Provisions (SDAP), which may include: o State code 7: Maritime safety o State code 8: Coastal development and tidal works o State code 10: Taking or interfering with water o State code 11: Removal, destruction or damage of marine plants (Further information regarding SDAP State Code 11 is provided in Attachment 2) o State code 16: Native vegetation clearing o State code 18: Constructing or raising waterway barrier works in fish habitats (Further information regarding SDAP State Code X is provided in Attachment 3) • Landowner's consent (where relevant). • Relevant plans as per the DA Forms guide

Additional information

Please note the following information is not an exhaustive list of what may be required for the development.

Tidal works	
1.	Tidal works – maritime safety If there are any planned on-water works or works that may affect/influence the safety of other mariners/waterway users, a Marine Execution Plan (MEP) would be required to be submitted to the Regional Harbour Master (RHM) Gladstone for assessment prior to the commencement of the project. The MEP can be emailed to Gladstone.maritime@msq.qld.gov.au. Prior to the works commencing, wording for inclusion in a Notice to Mariners should also be emailed to the RHM Gladstone.
Taking or interfering with water / Interfering with quarry material	
2.	Exemption requirements for constructing authorities for the take of water without a water entitlement Section 99 of the Water Act 2000 (Water Act), in combination with sections 23 and 24 of the Water Regulation 2016 provides a statutory authorisation for a constructing authority to take water. The statutory authorisation is subject to the condition that the taking of water is done in accordance with DRMDW's Exemption requirements for constructing authorities for the take of water without a water entitlement. It is the responsibility of the person/entity who intends to use the exemption requirements to ensure they are able to comply with all of the requirements which can be found on the 'Water authorisations' page of the Queensland Government website. The constructing authority, contractor, subcontractor or other agent acting on the constructing authority's behalf, must notify the chief executive of DRDMW ten business days before taking any water under section 99 of the Water Act. Notification can be submitted on the 'Water authorisations' page of the Queensland Government website.
3.	Riverine Protection Permit exemption requirements / Quarry Material Allocation Notice Excavation, placing of fill or destroying vegetation within a watercourse, lake or spring requires authorisation under the Water Act via a riverine protection permit. A riverine protection permit will be required if the proposed works are unable to be carried out as exempt works in accordance with DRDMW's Riverine Protection Permit Exemption Requirements. It is the responsibility of the person/entity who intends to use the exemption requirements to ensure they are able to comply with all of the requirements which can be found on the 'Riverine protection permits' page of the Queensland Government website. Excavated material that is not waste material may require a quarry material allocation notice under the Water Act. The DRDMW Water Management and Use team can be contacted on 1800 822 100 or via email to centralwaterservices@rdmw.qld.gov.au if clarification is required of any advice provided above.

Clearing native vegetation	
4.	Relevant purpose determination Requests for a relevant purpose determination under section 22A of the *Vegetation Management Act 1999* must be lodged in writing directly to Resources and can be sent to the nearest business centre or via email to vegetation.support@resources.qld.gov.au. There is no fee for these requests. The application form and further information and assistance to apply for a section 22A determination is available on the 'Development approvals for clearing native vegetation' page of the Queensland Government website.
5.	Amending regulated vegetation mapping Section 3.5.2 of the provided *Assessable Development Review* (GHD, 8 March 2022) notes on-site discrepancies have been identified with the State's regulated vegetation management mapping. Changes to the State mapping should be done via a Property Map of Assessable Vegetation (PMAV) application. If a detailed PMAV application is made, it is recommended this process be finalised prior to lodging a development application to clear regulated vegetation under the *Planning Act 2017*. Further information on how to apply for a PMAV, the required supporting information, and any fee is available on the 'Property reports and vegetation mapping' page of the Queensland Government website.
State land tenure	
6.	Chapter 1, part 4, division 3 of the *Land Act 1994* relates to non-tidal boundary watercourses and section 13AB specifically relates to leases that can be applied to a non-tidal boundary watercourse. It is important to note that this section specifies that only the State can be the lessee of non-tidal boundary watercourse land. DRDMW may be considered an appropriate lessee. This tenure allocation is considered an applicant driven process as there are no requirements from Resources for tenure to occur where the water pipeline crosses a non-tidal boundary watercourse. Section 123 of the *Coastal Protection and Management Act 1995* provides the right to occupy and use tidal land when a development permit has been granted for operational work that is tidal works. If works satisfy provisions associated with section 123(1)(b)(ii), no additional tenure is required to accommodate the water pipeline across a tidal watercourse. Prior to starting the development assessment process, the applicant should ensure they hold the appropriate tenure required to carry out the proposed development. If the applicant does not hold the appropriate tenure for State land, it is recommended that they contact the State Land Asset Management Team at SLAM-Rockhampton@resources.qld.gov.au to discuss options and begin proceedings under the *Land Act 1994*. Land tenure can take considerable time to finalise therefore it is highly recommended the applicant engages with Resources early to minimise delays to the project. It is also critical that the applicant has an accurate understanding of the pipeline alignment and all land tenures (including non-tidal boundary watercourses and tidal watercourses) that will be impacted by the project.
Owners consent	
7.	A development application for a material change of use or works on premises below high-water mark and outside a canal under the *Planning Act 2016* that includes state land will require owner's consent from the Department of Resources. Owner's consent must be obtained before an application can be lodged and properly made with an assessment manager. Further information is available on the 'Owner's consent for a development application' page on the Queensland Government website. Owner's consent cannot be granted until the appropriate tenure or interests in State land

	that supports the proposed development is secured by the applicant under the *Land Act 1994*. Further information is available on the 'State land' page on the Queensland Government website.
Stock route management	
8.	The proposed development adjoins the stock route network. The local government is responsible for day-to-day management of the stock route network under their stock route network management plan. A local government planning scheme may also have requirements for development of land on or adjacent to the stock route network. In the event that any impacts to the network are anticipated (e.g. construction of infrastructure), the proponent should ensure the works do not adversely impact the pasture on the stock route or harm or impede the safe passage of travelling stock and/or authorised person/s under the *Stock Route Management Act 2002*. The location and extent of Queensland's stock route network, including stock route reserves (e.g. camping and watering facilities) can be viewed on the State Planning Policy Integrated Mapping System or alternatively at the Queensland Globe.
Mining and extractive resources	
9.	Key Resource Area (KRA) The proposed pipeline route intersects the separation area of KRA 20 Yarwun. Earth Commodities Gladstone Pty Ltd currently operates a quarry within the KRA. Resources recommends the proponent liaise with the quarry operator so the pipeline works can be carried out without impacting the quarry operation.
10.	Mining and petroleum tenements The proposed pipeline route partly intersects various mining and petroleum tenements. Resources recommends the proponent liaise with the tenure applicant/holders (contact details are provided in Attachment 4). The online mapping system GeoResGlobe can be used to access the up-to-date information on mining tenements.

This advice outlines aspects of the proposed development that are relevant to SARA's jurisdiction. This advice is provided in good faith and is:

- based on the material and information provided to SARA
- current at the time of issue
- not applicable if the proposal is changed from that which formed the basis of this advice.

The advice in this letter does not constitute an approval or an endorsement that SARA supports the development proposal. Additional information may be required to allow SARA to properly assess the development proposal after a formal application has been lodged.

For further information please contact Tracey Beath, Senior Planning Officer, on (07) 4924 2917 or via email RockhamptonSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

Anthony Walsh
Manager Planning

enc Attachment 1 – Pre-lodgement meeting attendance record
Attachment 2 – Addressing SDAP State code 11
Attachment 3 – Addressing SDAP State code 18
Attachment 4 – Contact details for mining and petroleum tenement holders

Development details	
Proposal:	Fitzroy to Gladstone Pipeline Project
Street address:	From Hanson Road, Yarwun to 99 Ski Gardens Road, Alton Downs
Real property description:	Various
SARA role:	Referral agency
Assessment Manager:	TBC
Assessment criteria:	State Development Assessment Provisions (SDAP): State code 7: Maritime safety State code 8: Coastal development and tidal works State code 10: Taking or interfering with water State code 11: Removal, destruction or damage of marine plants State code 16: Native vegetation clearing State code 18: Constructing or raising waterway barrier works in fish habitats
Existing use:	NA
Relevant site history:	Nil

Attachment 1 — Pre-lodgement meeting attendance record

Meeting attendees:

Name	Position	Organisation
Tracey Beath	Senior Planning Officer	Department of State Development, Infrastructure, Local Government and Planning (DSDILGP)
Anthony Walsh	Manager Planning	DSDILGP
Sarah Foley	Principal Heritage Officer	Department of Environment and Science (DES)
Edward Close	Senior Environmental Officer [coastal/wetlands]	DES
Riley Logan	Fisheries Biologist	Department of Agriculture and Fisheries
Melanie Harris	Manager	Office of the Coordinator-General
David Lin	Natural Resource Management Officer [vegetation]	Department of Resources (Resources)
Nick Domalewski	Planning Officer (Planning)	Resources
Tammy Kennedy	Project Officer [water]	Department of Regional Development, Manufacturing and Water
Kristine Palm	Corporate Counsel	Gladstone Area Water Board (GAWB)
Simon Wakefield	Consultant	GAWB
Amanda Smedley	Environmental Scientist	GHD
Shannon Brown	Graduate Environmental Scientist	GHD

Attachment 2 — Addressing SDAP State code 11

The proposed works will involve the removal, destruction or damage of marine plants.

Marine plants include:

- any plant (a tidal plant, including marine algae) that usually grows on or adjacent to tidal lands whether it is living, dead, standing or fallen; or
- any plant material on tidal land (up to the level of Highest Astronomical Tide (HAT)).

Plants such as mangroves, mangrove fern, saltcouch or samphire species are considered marine plants regardless of whether or not they are above or below the level of HAT.

Marine plants do not include:

- a plant that is prohibited matter or restricted matter under the *Biosecurity Act 20*14; or
- a plant that is controlled biosecurity matter or regulated biosecurity matter under the *Biosecurity Act 2014*.

Marine plant protection applies irrespective of the tenure (e.g. unallocated state land and all state tenured lands, including private freehold and leasehold lands) of the land on which the plant occurs, the time the plant has been growing at the location, or the degree of or purpose of the disturbance.

The application material states that due to the large diameter of the pipeline, the area of marine plants to be removed, destroyed or damaged at the drilling entry and exit sites will be greater than the 25 m2 allowed for in the accepted development requirements. The applicant further acknowledged that a development approval is required for assessable development that is the removal, destruction and damage of marine plants. If possible, relocating the entry exit sites outside of tidal lands and to avoid marine plants would remove the need for an approval and potential fees for this component of the works.

If a development application for operational works is required, the applicant will need to provide the following in an application for a development approval:

- Completed copy of DA form 1;
- A full response to the relevant sections of State Code 11 of the State Development Assessment Provisions (SDAP): Removal, destruction or damage of marine plants. Particular attention should be paid to the following performance outcomes (POs):
    - All development – PO1 to PO15;
- Relevant plans as per SARA's DA Forms guide: Relevant plans, including:
    - the total amount of marine plants that will be disturbed, identifying portion of permanent and/or temporary disturbance (in square meters or hectares);
    - the location of the marine plants to be disturbed in relation to the development works;
    - the level of HAT, mean high water spring tide, and low water spring tide;
    - location and extent of fish habitat within the development area, including creeks, sand and/or yabby banks, drainage lines, lagoons and marshes.

  Note: All plans should be able to be read to scale at A3 size.

PO1 to PO15 of the State code address critical issues relating to coastal development proposals which create the need to remove, destroy or damage marine plants. The following advice is provided in relation to performance outcomes in SDAP State code 18:

- PO1 demonstrate the design, construction and maintenance of the development does not result in adverse impacts to marine plants and fish habitat.
- PO2 demonstrate development is designed, constructed and maintained to avoid and minimise impacts on matters of state environmental significance.

  - Development must be designed to avoid and minimise the spatial extent of disturbance to the greatest extent possible. Works are not supported where there are alternative designs, methods or locations available that have lesser spatial impact on marine plants or other tidal fish habitat.
  - Relocating the entry/exit sites outside of tidal lands and to avoid marine plants would remove the need for an approval and potential fees for this component of the works.
  - If impacts to marine plants cannot be avoided, the application will need to provide details on why the entry exit points are required to be on tidal land and whether there are other viable alignments which avoid and minimise the removal, destruction and damage of marine plants and provide adequate plans quantifying impacts.
  - The application will need to provide plans that depict the location of all marine plants, proposed to be disturbed (i.e. plan view maps). These plans must identify all marine plants by species, detail all permanent and temporary marine plant disturbance areas and ensure levels of highest astronomical tide (HAT) are on all relevant plans. The application will need to demonstrate the works will be undertaken in a manner that minimises the footprint of impacts to marine plants.
- PO3 Where development impacts on matters of state environmental significance, development mitigates impacts and provides an offset for any acceptable significant residual impact on matters of state environmental significance.
  - It is necessary to demonstrate that every reasonable effort has been made to avoid minimise and mitigate impacts to marine plants. Only then can an offset be considered.
  - Any rehabilitation of marine plants on site may help to reduce the scale of the Significant Residual Impact (SRI). Options to mitigate the SRI to marine plants must be pursued before an offset can be considered. Refer to the *Significant Residual Impact Guideline* for further information.
- PO4 Demonstrate aspects of development are only permitted on tidal land where there is a functional requirement and the development cannot be feasibly located elsewhere.
  - It is understood the pipeline will be horizontally directionally drilled beneath tidal lands, however the application should discuss any viable alternative pipeline alignments which avoid impacts to tidal land and marine plants.
  - Ancillary works which as laydown yards for pipe and machinery, site sheds etc should not be on tidal lands.
- PO6 The design, construction and maintenance of the development does not result in adverse impacts on fisheries resources.
  - Construction laydown areas and any access requirements should be located to avoid impacts to fisheries resources.
- PO7 The development is designed, constructed and maintained to encourage fish habitats and fisheries resource values to naturally regenerate.
  - The application should demonstrate the restoration of natural profiles and substrates occurs on tidal land containing marine plants to encourage the natural recruitment of marine plants. A relevant restoration and monitoring plan will need to be included in the application.
- PO8 Development likely to cause drainage or disturbance to acid sulfate soils, must prevent the release of contaminants and impacts on fisheries resources and fish habitats.
  - Acid sulfate soils may be present within the works footprint. A response to this PO must demonstrate that there are sufficient controls in place to manage acid sulfate soil. An acceptable outcome to demonstrate compliance with PO8 would be to manage soils in accordance with the current Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines.

- PO9 The development maintains or restores drainage, erosion, accretion and scour patterns, and the extent and timing of tidal and freshwater inundation of waterways and foreshore.
    - This PO is particularly relevant for the entry and exit drill points near tidal lands. The application should detail how the proposed works are unlikely to modify these processes.
- PO22 and PO23 Temporary works are designed, constructed and maintained to be in place for the shortest possible time or are undertaken for a specified period and is designed to be completely removed and fish habitat is restored to pre-existing or improved condition on completion. No acceptable outcome is prescribed.
    - Temporary works and/or temporary impacts to marine plants are likely to be required during the drilling of entry and exit site and the application will need to detail how the spatial and temporal impacts have been minimised and mitigated to allow for the natural regeneration of marine plants at the site.

It is recommended the applicant seeks further prelodgement advice once further information and detailed plans can be provided regarding waterway crossings that are not proposed to be horizontally directionally drilled; and pump inlets/outlets/pumping stations

Attachment 3 — Addressing SDAP State code 18

In a development application for operational works involving constructing or raising waterway barrier works, the following will need to be provided:

- Completed copy of DA Form 1 including Template 4 – Waterway barrier works;
- A full response to the relevant parts of the most up to date, applicable version of the SDAP State Code 18: Constructing or raising waterway barrier works in fish habitats. Particular attention should be paid to the following performance outcomes (POs):
    - All development - PO1 to PO22;
- Relevant plans as per SARA's DA Forms guide: Relevant plans, including:
    - Detailed plans clearly showing the location of the proposed works in relation to existing waterways;
    - Detailed plans clearly showing a cross section of the proposed waterway barrier works in relation to the existing bed and banks of each impacted waterway;
    - A longitudinal section of the proposed waterway barrier works in relation to the bed of the waterway upstream and downstream of the works;

  Note – all plans should be able to be read to scale at A3 size
- Written documentation discussing the following:
    - Details of the purpose of the proposed works (e.g. water pipeline.);
    - A description of the waterway proposed to be impacted (e.g. condition, size, connectivity, general hydrology) and nature of the impact;
    - A description of the work method (e.g. timing, equipment to be used);
    - A detailed description of the alternatives considered to reduce impacts on the waterway, as applicable (e.g. alternative designs, locations, setbacks/buffer distances, etc.);
    - Details of on-site mitigation actions, during and after the development;
    - The extent of any future maintenance works required for the continued safe operation of the proposed structure or facility; and
    - Impacts to fish passage. It must firstly be demonstrated that impacts to waterways providing for fish passage have been avoided. Where avoidance is not reasonably possible, impacts to waterways providing for fish passage must be mitigated. An environmental offset pursuant to the *Environmental Offsets Act 2014* may need to be provided for any significant residual impact.

The following advice is provided in relation to performance outcomes in SDAP State code 18:

- PO1 Waterway barrier works (i.e. water intake) do not result in adverse impacts on waterways.
    - Demonstrate how the design, construction and maintenance of the development has been planned to not result in adverse impacts to waterways and fish habitats.
    - Demonstrate that the development footprint and construction timeframe are minimised.
    - Demonstrate how the design and construction of the waterway barrier works minimises impacts to the physical habitat features of the waterway and or proposes restoration where necessary.
    - Demonstrate how changes to the hydrology of the waterway are avoided and/ or minimised and localised.
- PO2 Development is designed, constructed and maintained to avoid and minimise impacts on matters of state environmental significance.

    - Waterways providing for fish passage are an MSES under the *Environment Offsets Act 2014*. It is necessary to provide details on how impacts to waterways providing for fish passage will be avoided, and where avoidance is not reasonably possible, how impacts to waterways providing for fish passage have been minimised.
    - The application will need to demonstrate how the works have minimised the spatial (e.g. within and across the entire waterway); and temporal impacts to fish passage (e.g. impacts to times of fish migration at the site are minimised during construction and through the chosen design). With respect to fish passage demonstrate the preferred designs of the water intake are the least impact viable way of achieving project objectives.
- PO3 Where development impacts on matters of state environmental significance, development mitigates impacts and provides an offset for any acceptable significant residual impact on matters of state environmental significance.
    - The application should demonstrate that the proposed waterway barrier has incorporated design features which mitigate impacts to fish passage.
    - Notwithstanding measures to avoid and mitigate impacts to waterways providing for fish passage, the works may result in a Significant Residual Impact (SRI) and may require an environmental offset. An environmental offset will not be considered until it has been demonstrated that all reasonable measures have been taken to firstly avoid and/or minimise/mitigate impacts to waterways providing for fish passage (see the Queensland Environmental Offsets Policy).
- PO4 Aspects of development are only permitted within a waterway where there is a functional requirement and the development cannot be feasibly located elsewhere. Ancillary elements are to be located outside of the waterway.
- PO6, PO7 and PO9: All components of the waterway barrier works are designed, constructed, operated and maintained to provide lateral and longitudinal fish passage for all pathways of potential fish movement and for all members of the fish community.
    - The water intake must does not result in adverse impacts to fisheries resources (i.e entraining or killing fish).
    - For the water intake to minimise impacts on fish passage the design of the intake should ensure the aperture of mesh screening is small enough to exclude all size classes of fish expected at this location within this river system.
    - Approach velocities are an important factor to be considered regarding the provision of adequate fish passage past the barrier. To ensure approach velocities both across and toward water intakes do not trap and kill fish and maintain adequate fish passage, it is recommended the velocities should be no greater than 0.1m/s,
- PO17 The development is designed, constructed and maintained to avoid and minimise adverse impacts to beds, banks and vegetation adjacent to the permanent development footprint.

Attachment 4 — Mining and petroleum tenements

There are currently two mining tenements (EPG 2018 and EPM 26476) partly within the proposed pipeline route. In relation to the Geothermal Exploration Permit (EPG) 2018, this tenure is still at application stage (the application was lodged on 18/11/21). Resource recommends consultation with the tenure applicant/holder and the contact details are provided below:

Tenure: EPG 2018
Applicant: WITHIN ENERGY PTY LTD
Authorised Representative: Adam Stepanoff
12765 New England Highway Hodgson Vale QLD 4352
Phone: 0477762057
Email: adam@refinegroup.com.au

Tenure: EPM 26476
Holder: RAGLAN RESOURCES PTY LTD
Authorised Holder Representative: UTM Global Pty Ltd
G P O BOX 1661 BRISBANE QLD 4001
Email: reception@utmglobal.com.au

The proposed pipeline route intersects six Petroleum Pipeline Licences (PPL) at different locations. Resources recommends consultation with the PPL holders. Holder contact details are as follows:

Tenement	Holder	Authorised Representative
PPL30	JEMENA QUEENSLAND GAS PIPELINE (1) PTY LTD	Jemena Gas Pipelines Holdings Pty Ltd Jemena Gas Pipelines Holdings Pty Ltd PO BOX 16182 567 Collins Street MELBOURNE VIC 3000 Mobile: 0401301104 Email: GasMarketsAM@jemena.com.au
PPL60	AUSTRALIAN GAS NETWORKS (QLD) LIMITED	Craig de Laine, General Manager PO Box 6468 Halifax Street Adelaide SA 5000 (08) 8418 1129 Craig.delaine@agnl.com.au
PPL154	APA WGP PTY LTD	QGC Pty Limited GPO Box 3107 Brisbane QLD 4001 Phone: 30247806 Email: QGC-Tenures@shell.com
PPL163	AUSTRALIA PACIFIC LNG GLADSTONE PIPELINE PTY LIMITED	Australia Pacific LNG Pty Limited C/ Tenure Manager GPO Box 148 Brisbane QLD 4001 Phone: 0410700528 Email: tenures@originenergy.com.au
PP 166	SANTOS GLNG PTY LTD	Santos Limited Team Leader Tenures Compliance Level 22, Santos Place 32 Turbot Street BRISBANE QLD 4000 Phone: 610738383946 Email: tenures@santos.com
PPL2016	ARROW BOWEN PIPELINE PTY LTD	FERGUSON, Suzanne C/- Tenement Manager GPO Box 5262 Brisbane QLD 4001 Phone: 61073012 4000 Email: tenementmanagement@arrowenergy.com.au

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