











Chalumbin Wind Farm

Estimated monthly soil loss during dry season construction (t/ha)

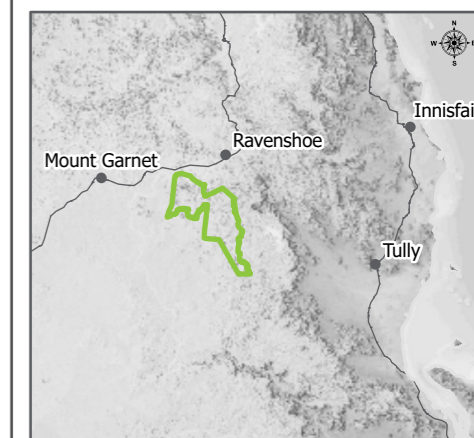
Sheet 3 of 4

Figure 2.2

-  Project Area Boundary
-  Project footprint Stages 1 & 2
-  Watercourse
-  Local surface water flow paths
-  Turbine
-  Met-mast
-  Facilities
-  Existing HV Transmission Line
-  Lot Boundary
-  Easement

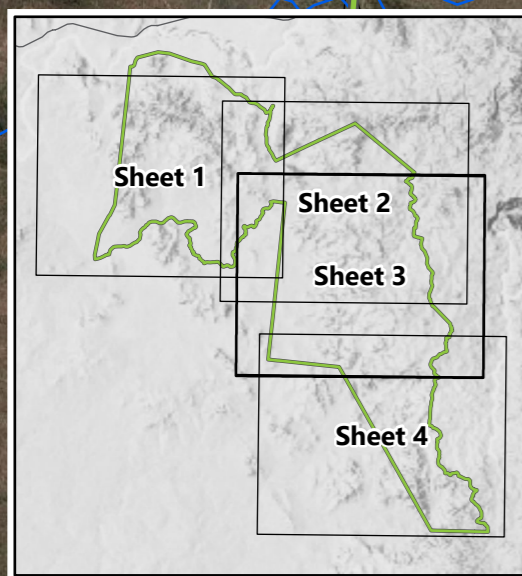
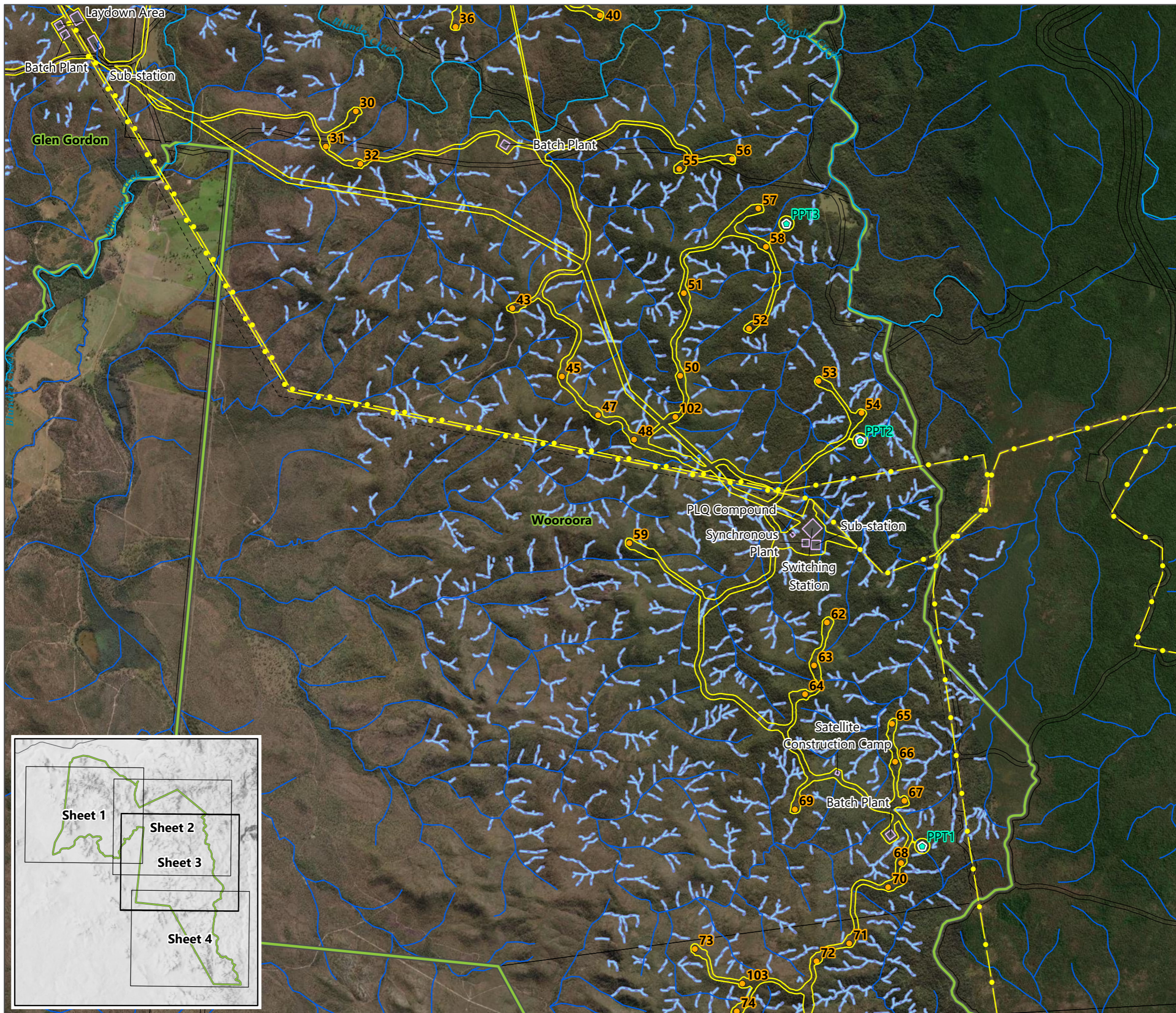
Date: 11/10/2022
Project: EPU-004

Author: TOD
Reviewed: NOD



Scale: 1:50,000@A3

Data Source(s):
Digital Cadastral Database - Department of Resources (2022)
© State of Queensland (Department of Resources) 2022, Maxar













Chalumbin Wind Farm

Estimated monthly soil loss during dry season construction (t/ha)

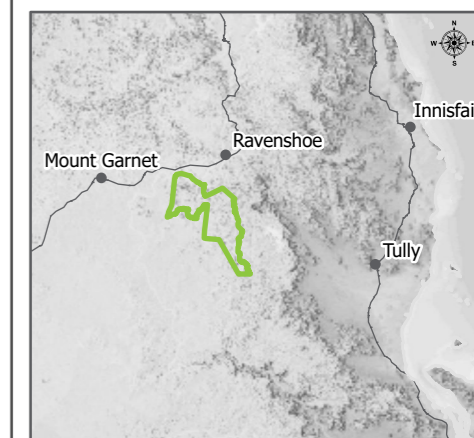
Sheet 4 of 4

Figure 2.2

-  Project Area Boundary
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-  Turbine
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-  Lot Boundary
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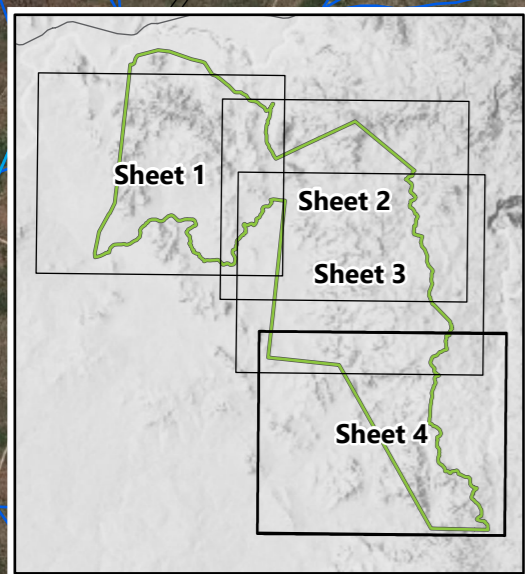
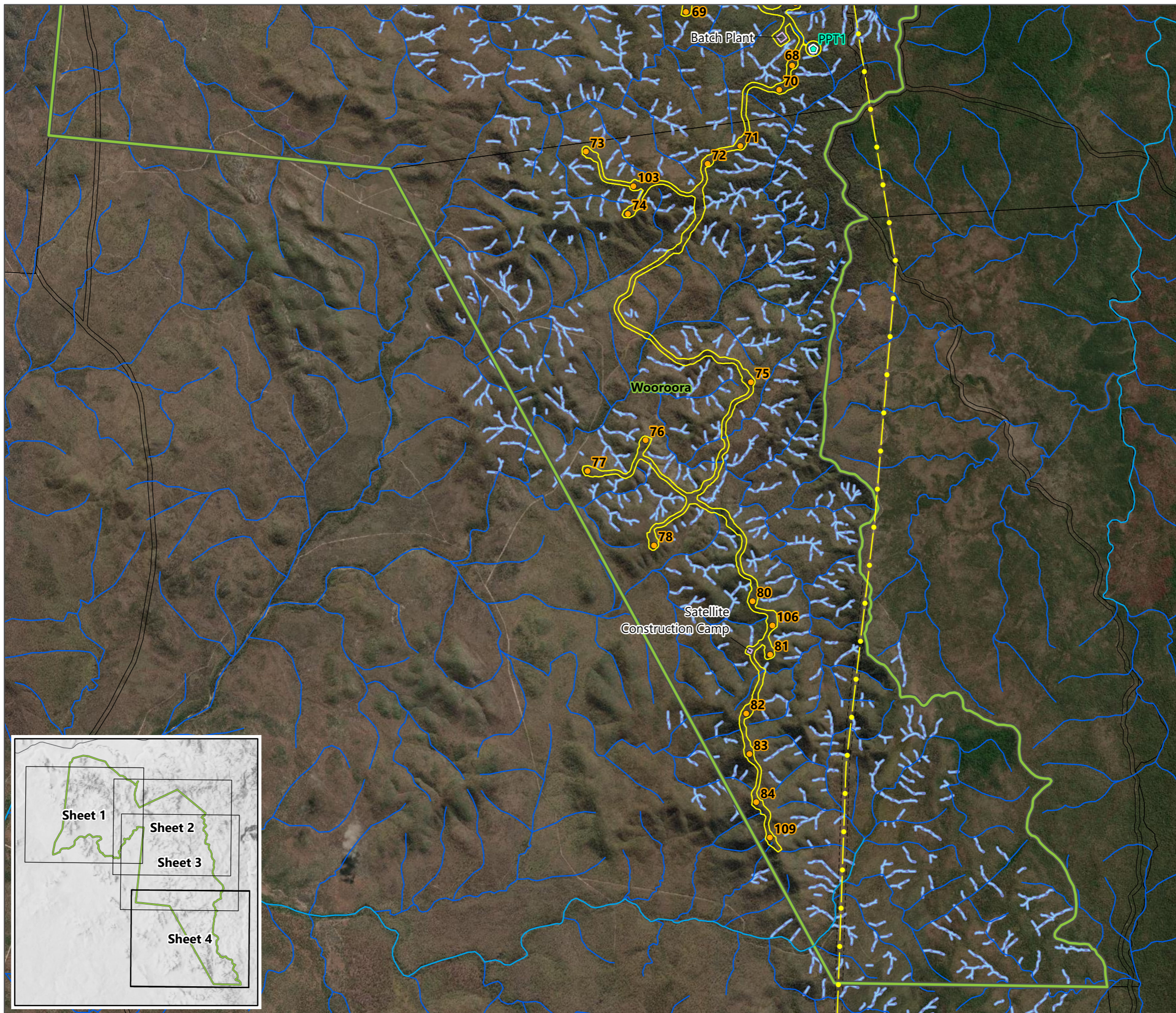
Date: 11/10/2022
Project: EPU-004

Author: TOD
Reviewed: NOD



Scale: 1:50,000@A3

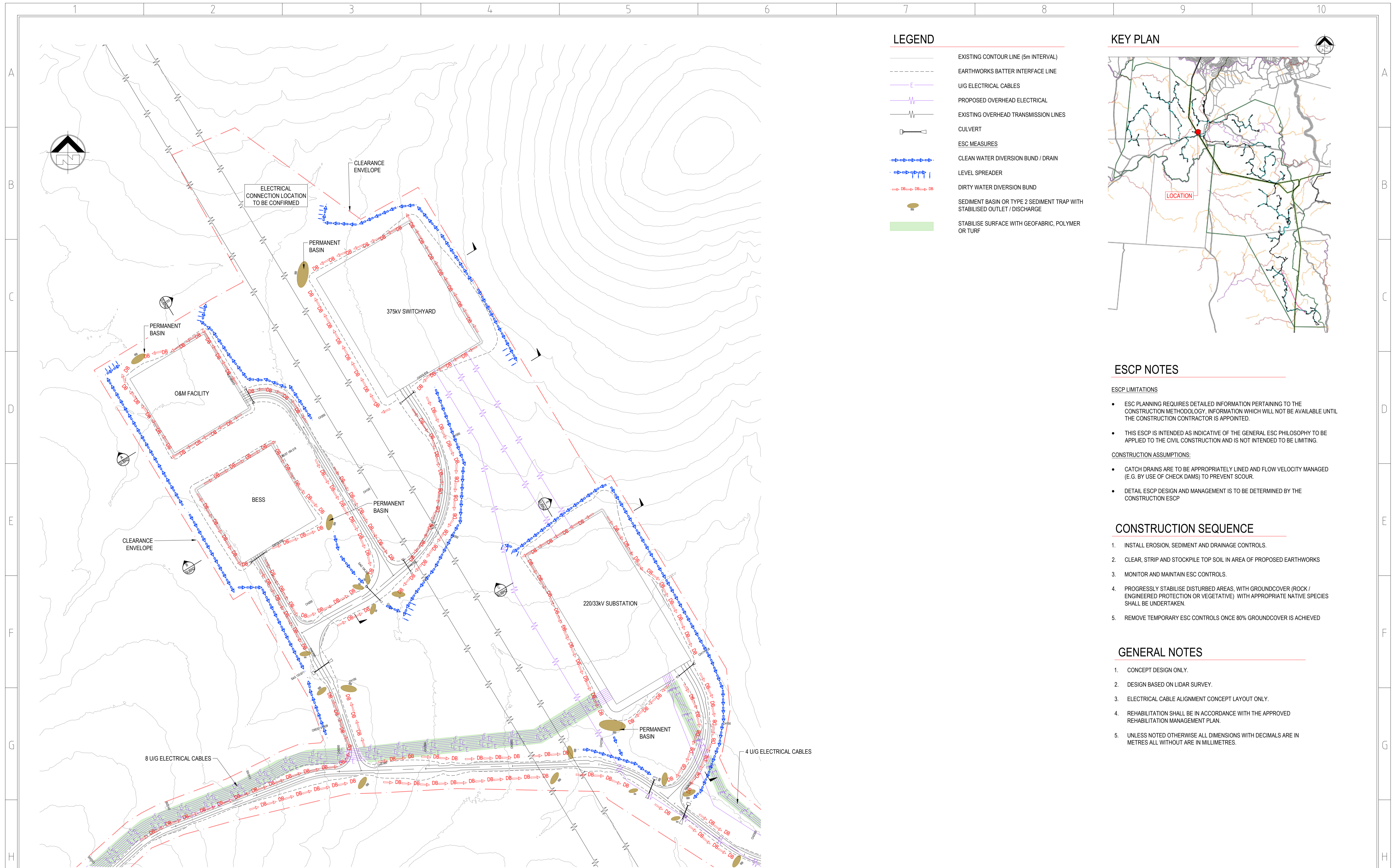
Data Source(s):
Digital Cadastral Database - Department of Resources (2022)
Earthstar Geographics, © State of Queensland (Department of Resources) 2022





Attachment C

Functional Layouts and ESCPs for Infrastructure and Watercourse Crossings



LEGEND

- EXISTING CONTOUR LINE (5m INTERVAL)
- EARTHWORKS BATTER INTERFACE LINE
- U/G ELECTRICAL CABLES
- PROPOSED OVERHEAD ELECTRICAL
- EXISTING OVERHEAD TRANSMISSION LINES
- CULVERT
- ESC MEASURES
- CLEAN WATER DIVERSION BUND / DRAIN
- LEVEL SPREADER
- DIRTY WATER DIVERSION BUND
- SEDIMENT BASIN OR TYPE 2 SEDIMENT TRAP WITH STABILISED OUTLET / DISCHARGE
- STABILISE SURFACE WITH GEOFABRIC, POLYMER OR TURF

KEY PLAN



ESCP NOTES

- ESCP LIMITATIONS**
- ESC PLANNING REQUIRES DETAILED INFORMATION PERTAINING TO THE CONSTRUCTION METHODOLOGY, INFORMATION WHICH WILL NOT BE AVAILABLE UNTIL THE CONSTRUCTION CONTRACTOR IS APPOINTED.
 - THIS ESCP IS INTENDED AS INDICATIVE OF THE GENERAL ESC PHILOSOPHY TO BE APPLIED TO THE CIVIL CONSTRUCTION AND IS NOT INTENDED TO BE LIMITING.
- CONSTRUCTION ASSUMPTIONS:**
- CATCH DRAINS ARE TO BE APPROPRIATELY LINED AND FLOW VELOCITY MANAGED (E.G. BY USE OF CHECK DAMS) TO PREVENT SCOUR.
 - DETAIL ESCP DESIGN AND MANAGEMENT IS TO BE DETERMINED BY THE CONSTRUCTION ESCP

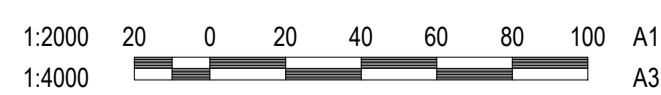
CONSTRUCTION SEQUENCE

1. INSTALL EROSION, SEDIMENT AND DRAINAGE CONTROLS.
2. CLEAR, STRIP AND STOCKPILE TOP SOIL IN AREA OF PROPOSED EARTHWORKS
3. MONITOR AND MAINTAIN ESC CONTROLS.
4. PROGRESSIVELY STABILISE DISTURBED AREAS, WITH GROUND COVER (ROCK / ENGINEERED PROTECTION OR VEGETATIVE) WITH APPROPRIATE NATIVE SPECIES SHALL BE UNDERTAKEN.
5. REMOVE TEMPORARY ESC CONTROLS ONCE 80% GROUND COVER IS ACHIEVED

GENERAL NOTES

1. CONCEPT DESIGN ONLY.
2. DESIGN BASED ON LIDAR SURVEY.
3. ELECTRICAL CABLE ALIGNMENT CONCEPT LAYOUT ONLY.
4. REHABILITATION SHALL BE IN ACCORDANCE WITH THE APPROVED REHABILITATION MANAGEMENT PLAN.
5. UNLESS NOTED OTHERWISE ALL DIMENSIONS WITH DECIMALS ARE IN METRES ALL WITHOUT ARE IN MILLIMETRES.

NORTHERN SUBSTATION - LAYOUT - SHOWING ESC AND TEMPORARY WORKS



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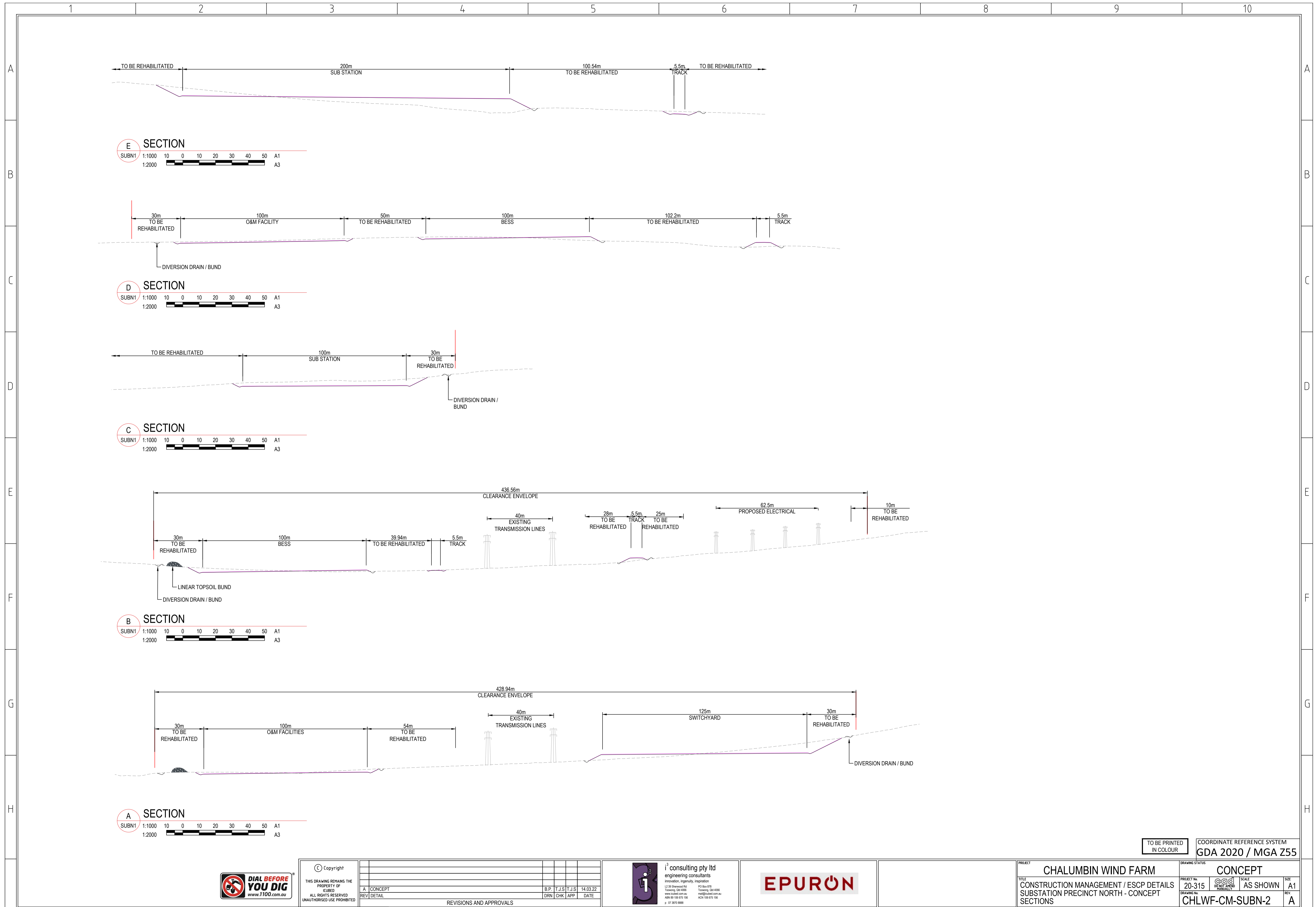
A CONCEPT		B.P.	T.J.S.	T.J.S.	14.03.22
REV: DETAIL		DRN	CHK	APP	DATE
REVISIONS AND APPROVALS					

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 www.i3consult.com.au mail@i3consult.com.au
 ABN 69 158 675 156 ACN 158 675 156
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PROJECT CHALUMBIN WIND FARM		DRAWING STATUS CONCEPT	
TITLE CONSTRUCTION MANAGEMENT / ESCP DETAILS SUBSTATION PRECINCT NORTH - CONCEPT LAYOUT		PROJECT No 20-315	SCALE AS SHOWN
		DRAWING No CHLWF-CM-SUBN-1	SIZE A1
			REV A



TO BE PRINTED IN COLOUR
 COORDINATE REFERENCE SYSTEM
 GDA 2020 / MGA Z55



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REV	DETAIL	DRN	CHK	APP	DATE
A	CONCEPT	B.P.	T.J.S.	T.J.S.	14.03.22
REVISIONS AND APPROVALS					

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PROJECT	CHALUMBIN WIND FARM			DRAWING STATUS	CONCEPT	
TITLE	CONSTRUCTION MANAGEMENT / ESCP DETAILS SUBSTATION PRECINCT NORTH - CONCEPT SECTIONS			PROJECT No.	20-315	SCALE
				AS SHOWN	SIZE	A1
				DRAWING No.	CHLWF-CM-SUBN-2	REV
						A

LEGEND

- EXISTING CONTOUR LINE (5m INTERVAL)
- EARTHWORKS BATTER INTERFACE LINE
- ELECTRICAL CABLES
- DIRTY WATER DIVERSION BUND
- SEDIMENT BASIN OR TYPE 2 SEDIMENT TRAP WITH STABILISED OUTLET / DISCHARGE

ESCP NOTES

ESCP LIMITATIONS

- ESC PLANNING REQUIRES DETAILED INFORMATION PERTAINING TO THE CONSTRUCTION METHODOLOGY, INFORMATION WHICH WILL NOT BE AVAILABLE UNTIL THE CONSTRUCTION CONTRACTOR IS APPOINTED.
- THIS ESCP IS INTENDED AS INDICATIVE OF THE GENERAL ESC PHILOSOPHY TO BE APPLIED TO THE CIVIL CONSTRUCTION AND IS NOT INTENDED TO BE LIMITING.

CONSTRUCTION ASSUMPTIONS:

- CATCH DRAINS ARE TO BE APPROPRIATELY LINED AND FLOW VELOCITY MANAGED (E.G. BY USE OF CHECK DAMS) TO PREVENT SCOUR.
- DETAIL ESCP DESIGN AND MANAGEMENT IS TO BE DETERMINED BY THE CONSTRUCTION ESCP

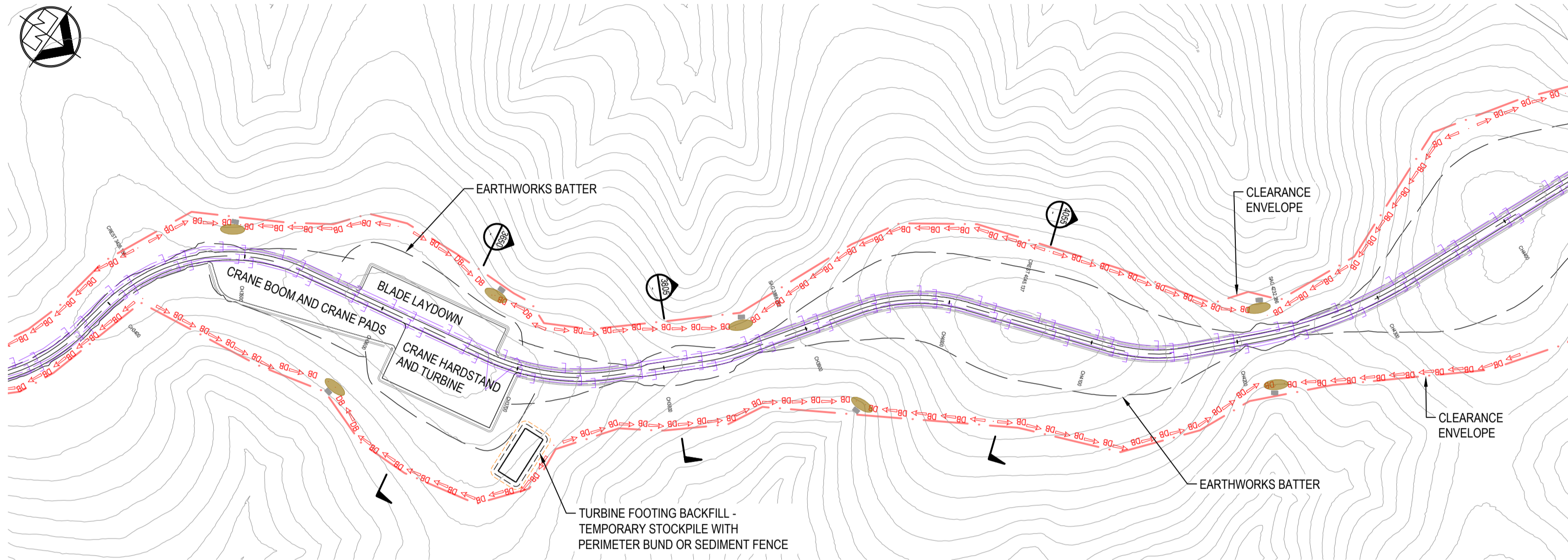
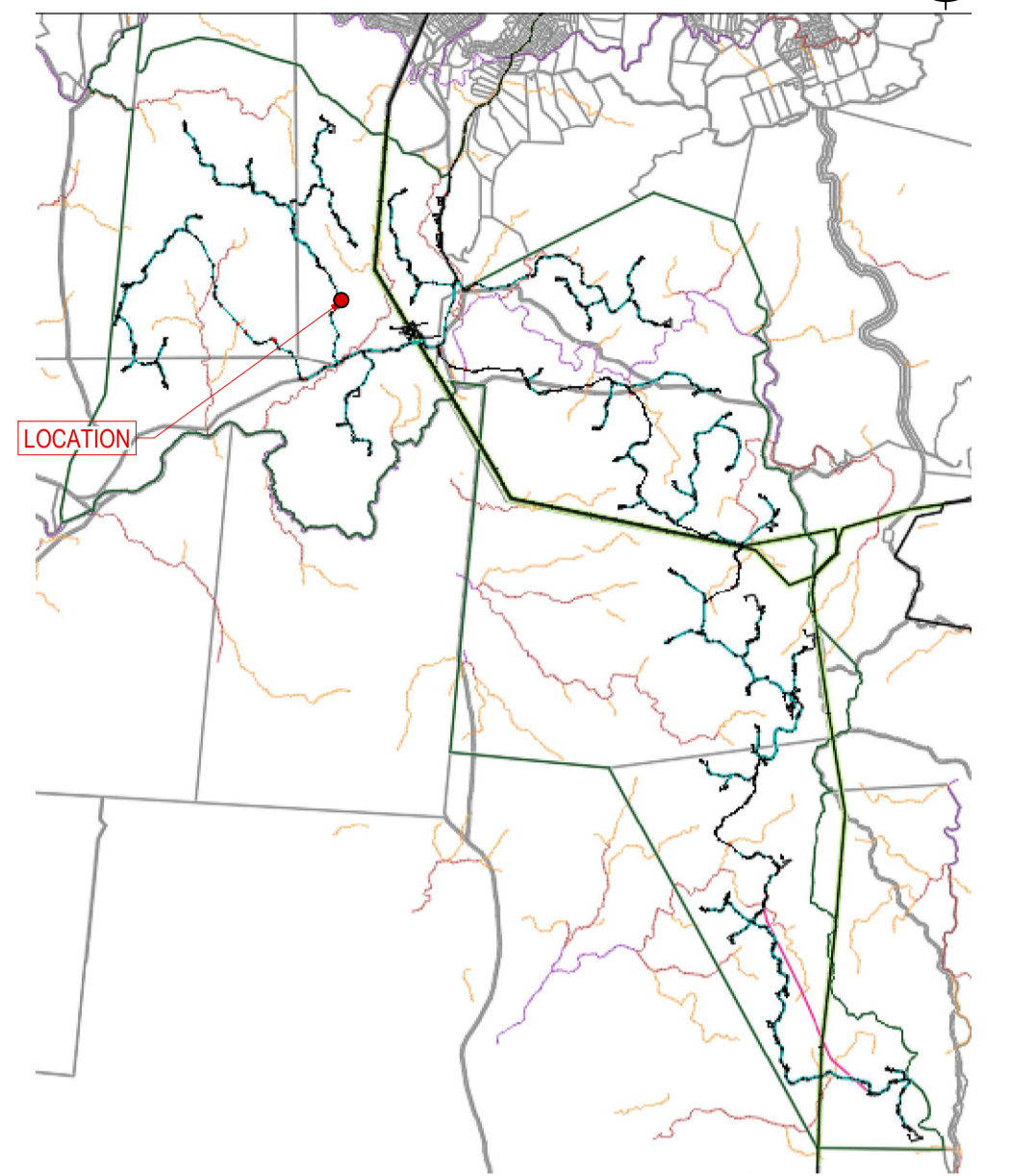
CONSTRUCTION SEQUENCE

1. INSTALL EROSION, SEDIMENT AND DRAINAGE CONTROLS.
2. CLEAR, STRIP AND STOCKPILE TOP SOIL IN AREA OF PROPOSED EARTHWORKS
3. MONITOR AND MAINTAIN ESC CONTROLS.
4. PROGRESSIVELY STABILISE DISTURBED AREAS, WITH GROUND COVER (ROCK / ENGINEERED PROTECTION OR VEGETATIVE) WITH APPROPRIATE NATIVE SPECIES SHALL BE UNDERTAKEN.
5. REMOVE TEMPORARY ESC CONTROLS ONCE 80% GROUND COVER IS ACHIEVED

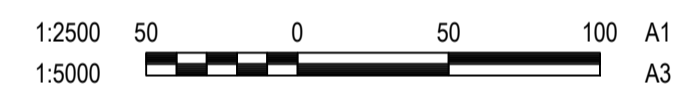
GENERAL NOTES

1. CONCEPT DESIGN ONLY.
2. DESIGN BASED ON LIDAR SURVEY.
3. ELECTRICAL CABLE ALIGNMENT CONCEPT LAYOUT ONLY.
4. REHABILITATION SHALL BE IN ACCORDANCE WITH THE APPROVED REHABILITATION MANAGEMENT PLAN.
5. UNLESS NOTED OTHERWISE ALL DIMENSIONS WITH DECIMALS ARE IN METRES ALL WITHOUT ARE IN MILLIMETRES.

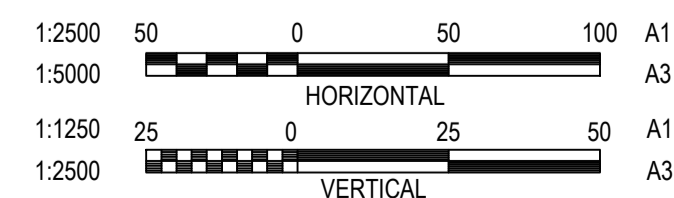
KEY PLAN



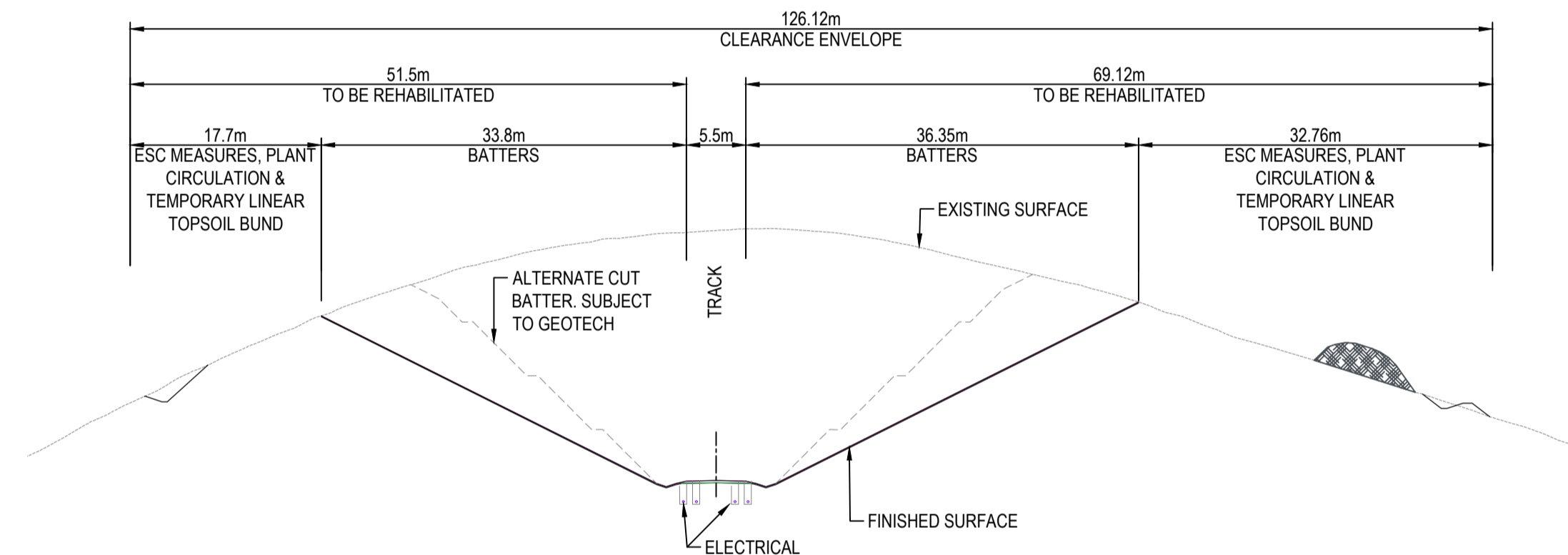
TRACK 06 - PART LAYOUT - SHOWING ESC AND TEMPORARY WORKS



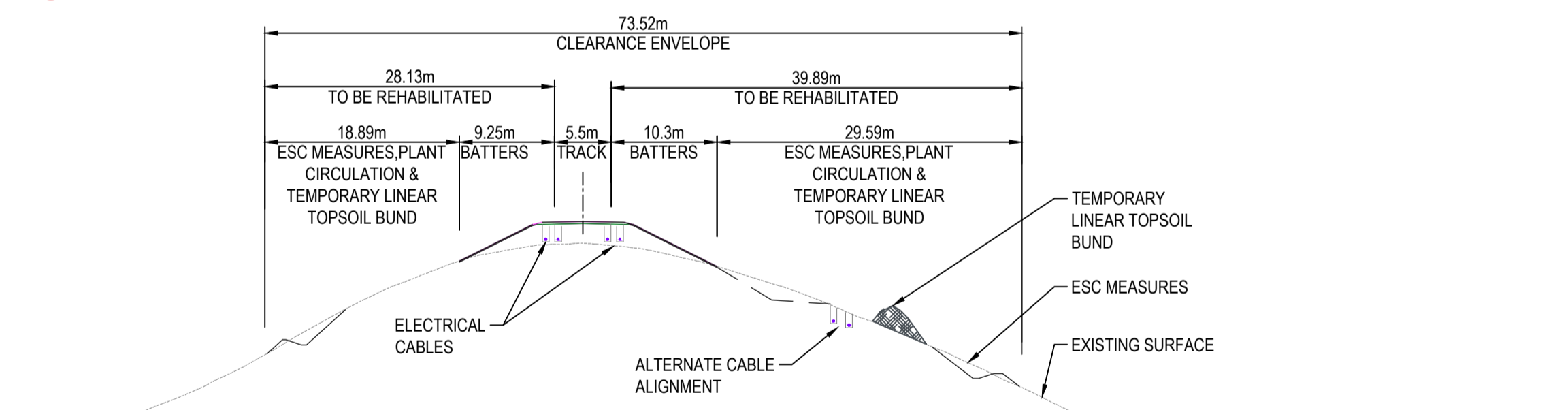
TRACK 06 LONGITUDINAL SECTION



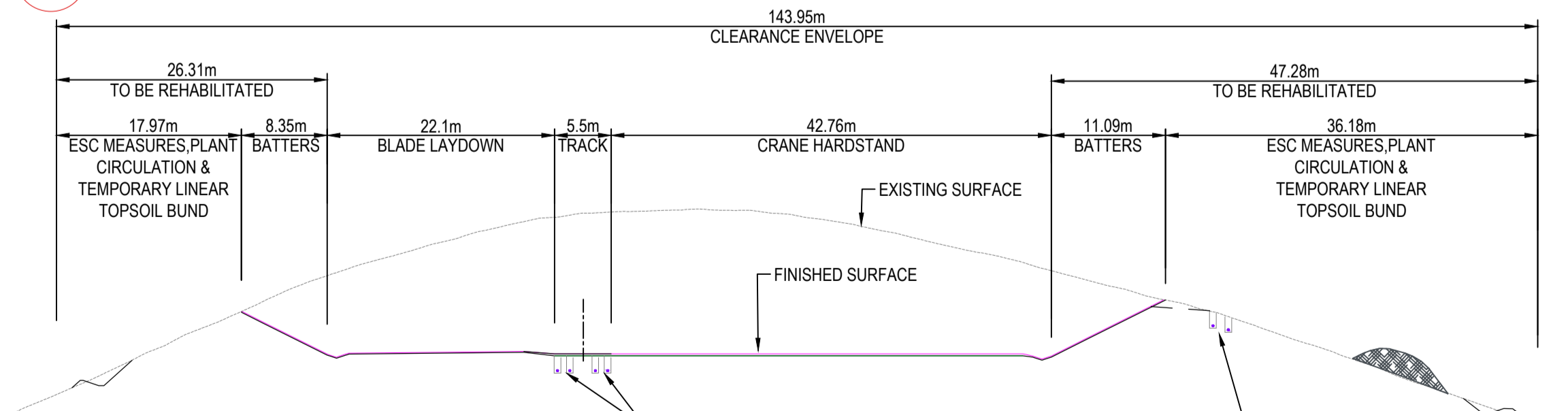
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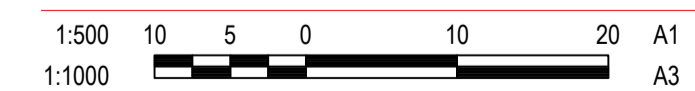
3805 CROSS SECTION CH 3805



3605 CROSS SECTION CH 3605



TRACK 06 - CROSS SECTIONS



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REV	DESCRIPTION	DRN	CHK	APP	DATE
B	CONCEPT				11.03.22
A	CONCEPT				9.03.22
R	DETAIL				

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www.i3consult.com.au mail@i3consult.com.au
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CHALUMBIN WIND FARM
CONSTRUCTION MANAGEMENT / ESCP DETAILS
TURBINE & TRACK DETAILS - CONCEPT
PART TRACK 06

PROJECT: CHALUMBIN WIND FARM
DRAWING STATUS: CONCEPT
PROJECT NO: 20-315
SCALE: AS SHOWN
DATE: 11.03.22
DRAWING NO: CHLWF-CM-TR-6

SIZE: A1
REV: B

LEGEND

- EXISTING CONTOUR LINE (5m INTERVAL)
- EARTHWORKS BATTER INTERFACE LINE
- OVERHEAD ELECTRICAL CABLES
- DIRTY WATER DIVERSION BUND
- SEDIMENT BASIN OR TYPE 2 SEDIMENT TRAP WITH STABILISED OUTLET / DISCHARGE
- SURFACE WATER FLOWS

ESCP NOTES

ESCP LIMITATIONS

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- DETAIL ESCP DESIGN AND MANAGEMENT IS TO BE DETERMINED BY THE CONSTRUCTION ESCP

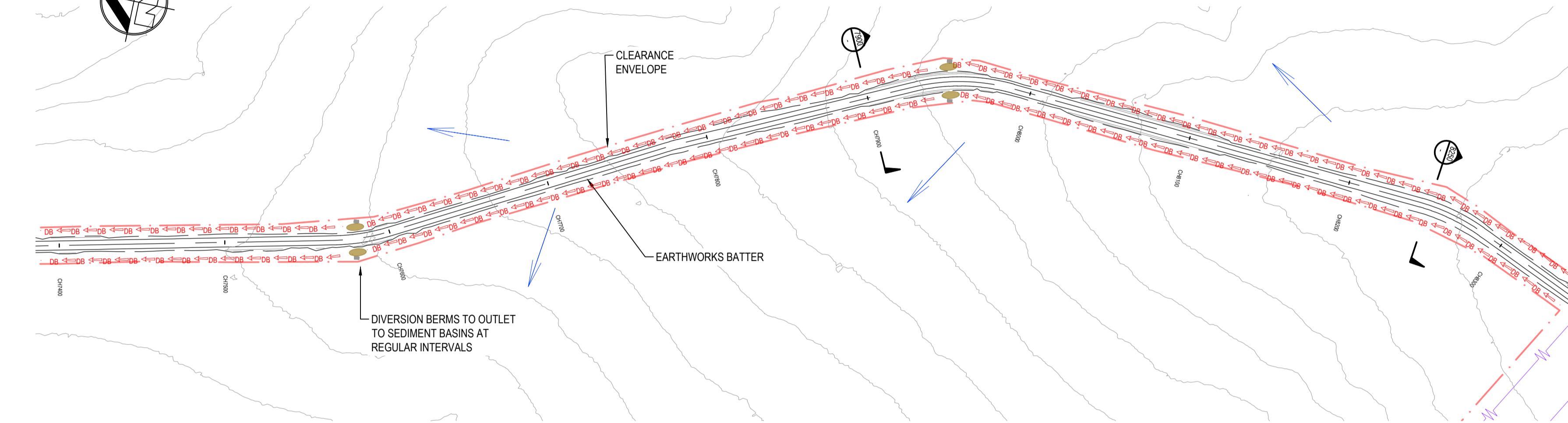
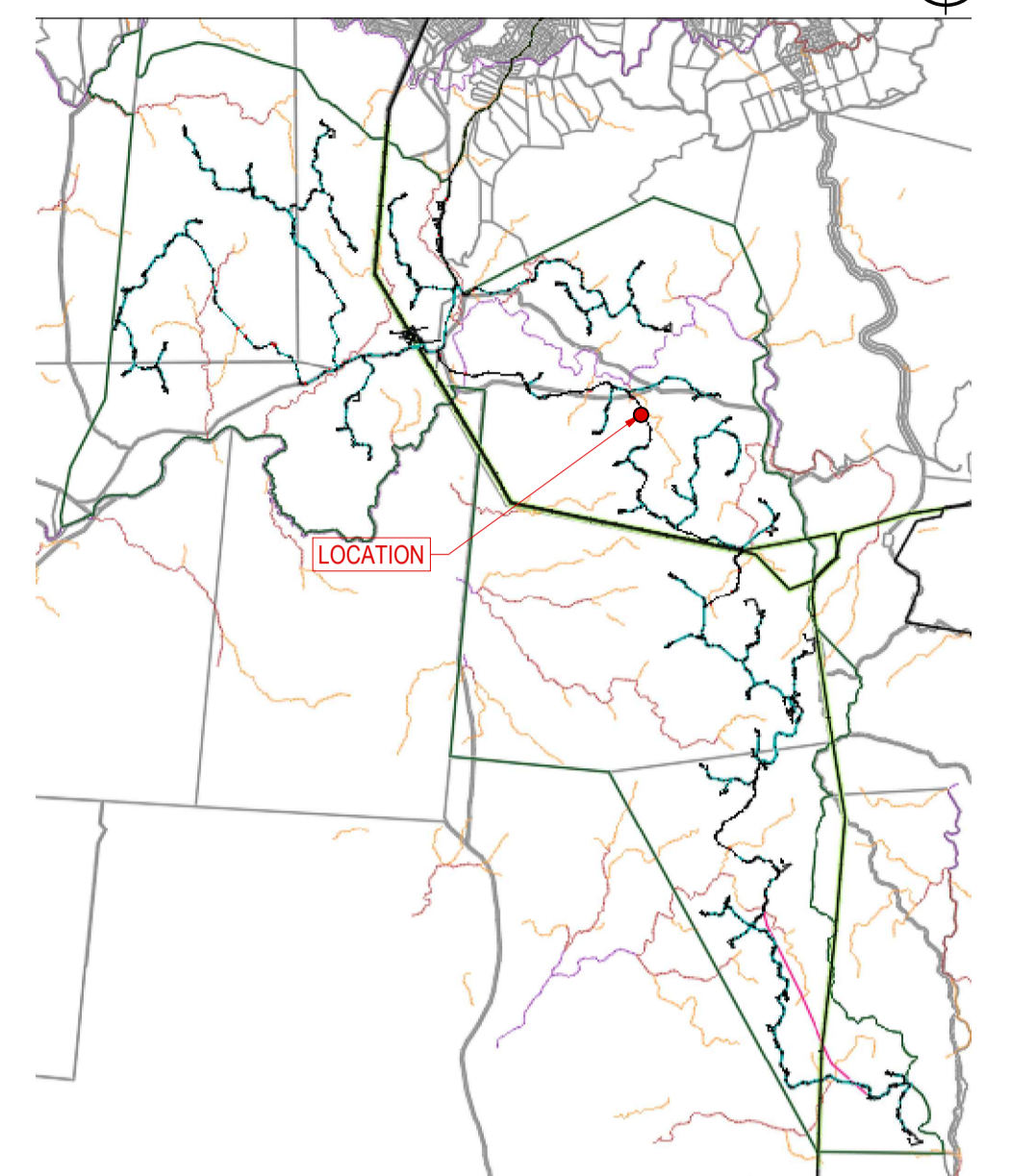
CONSTRUCTION SEQUENCE

1. INSTALL EROSION, SEDIMENT AND DRAINAGE CONTROLS.
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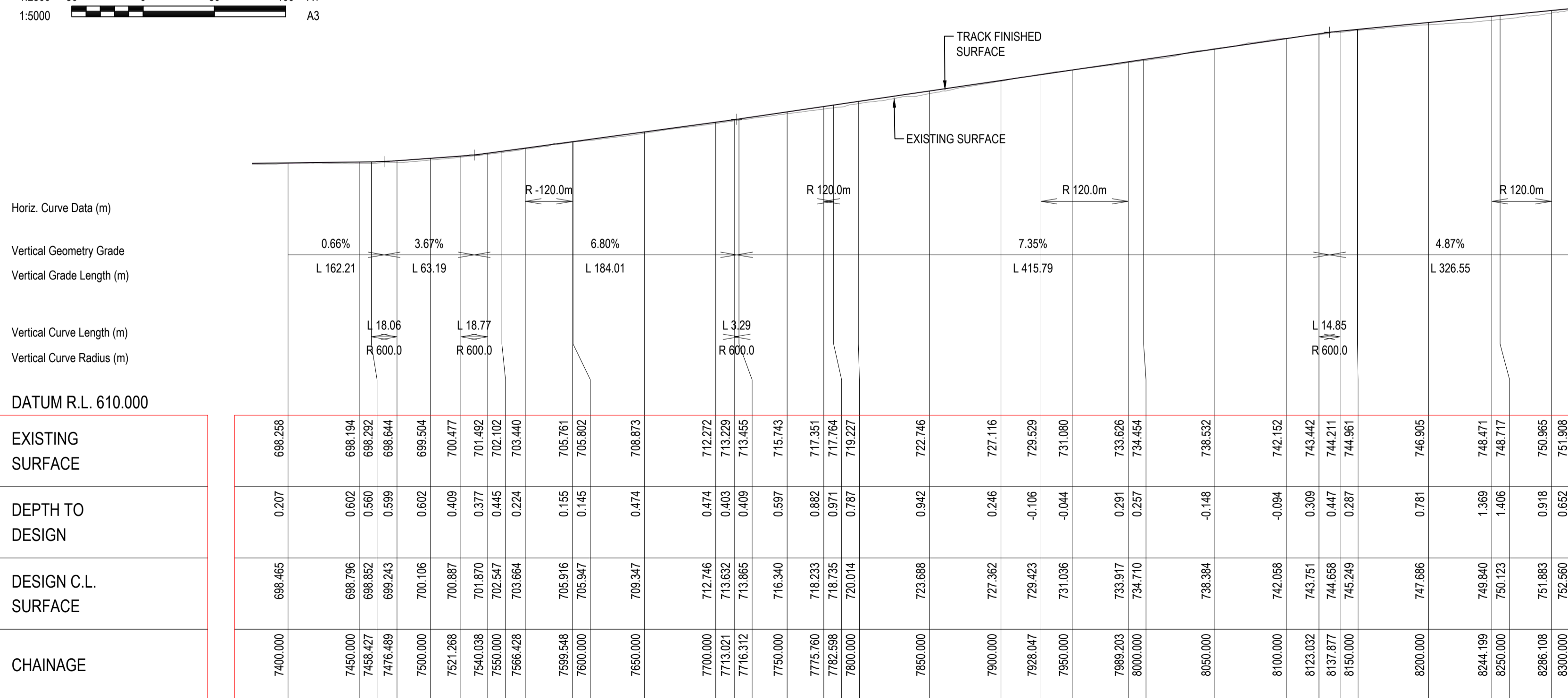
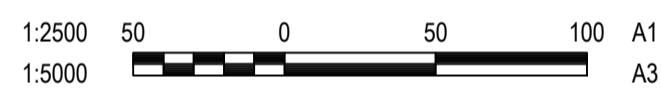
GENERAL NOTES

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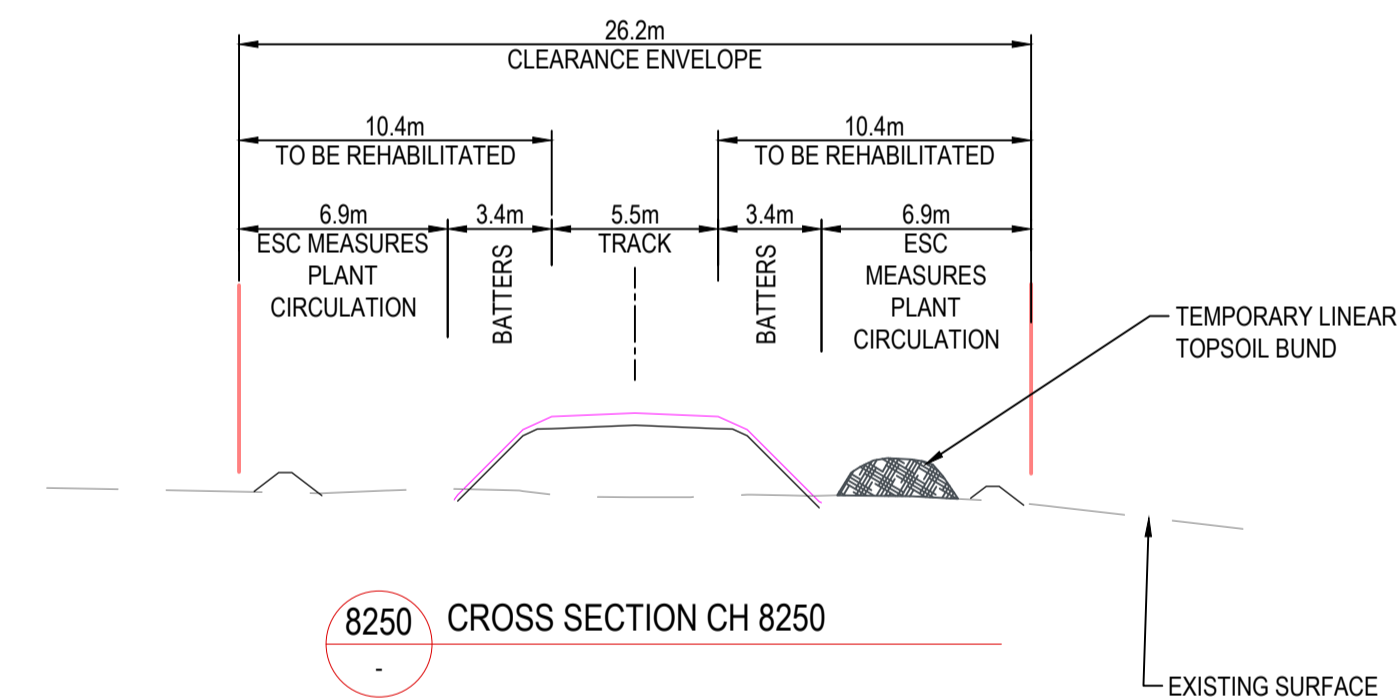
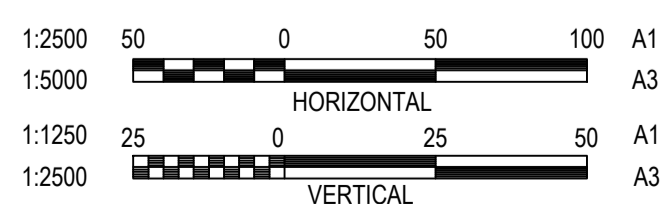
KEY PLAN



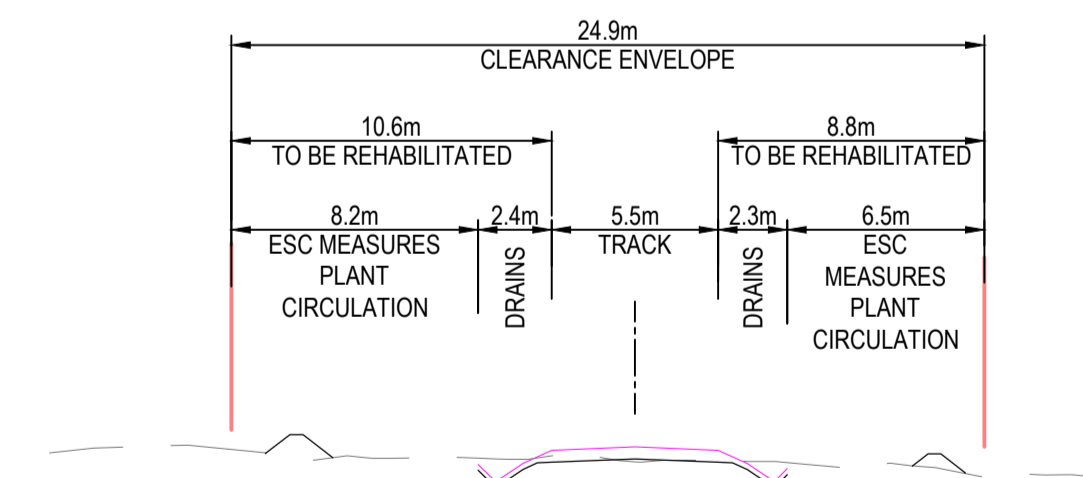
TRACK 25- PART LAYOUT - SHOWING ESC AND TEMPORARY WORKS



TRACK 25 LONGITUDINAL SECTION

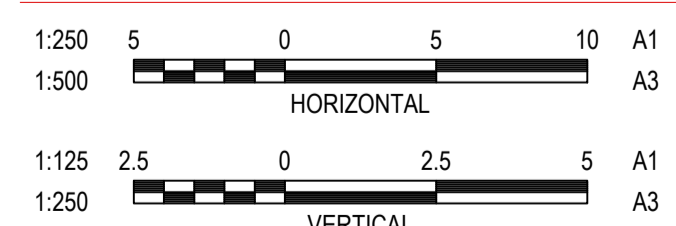


8250 CROSS SECTION CH 8250

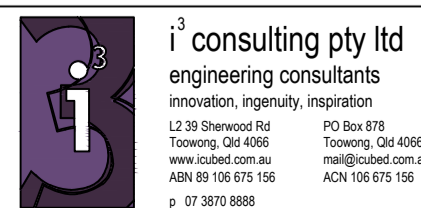


7900 CROSS SECTION CH 7900

TRACK 25 - CROSS SECTIONS

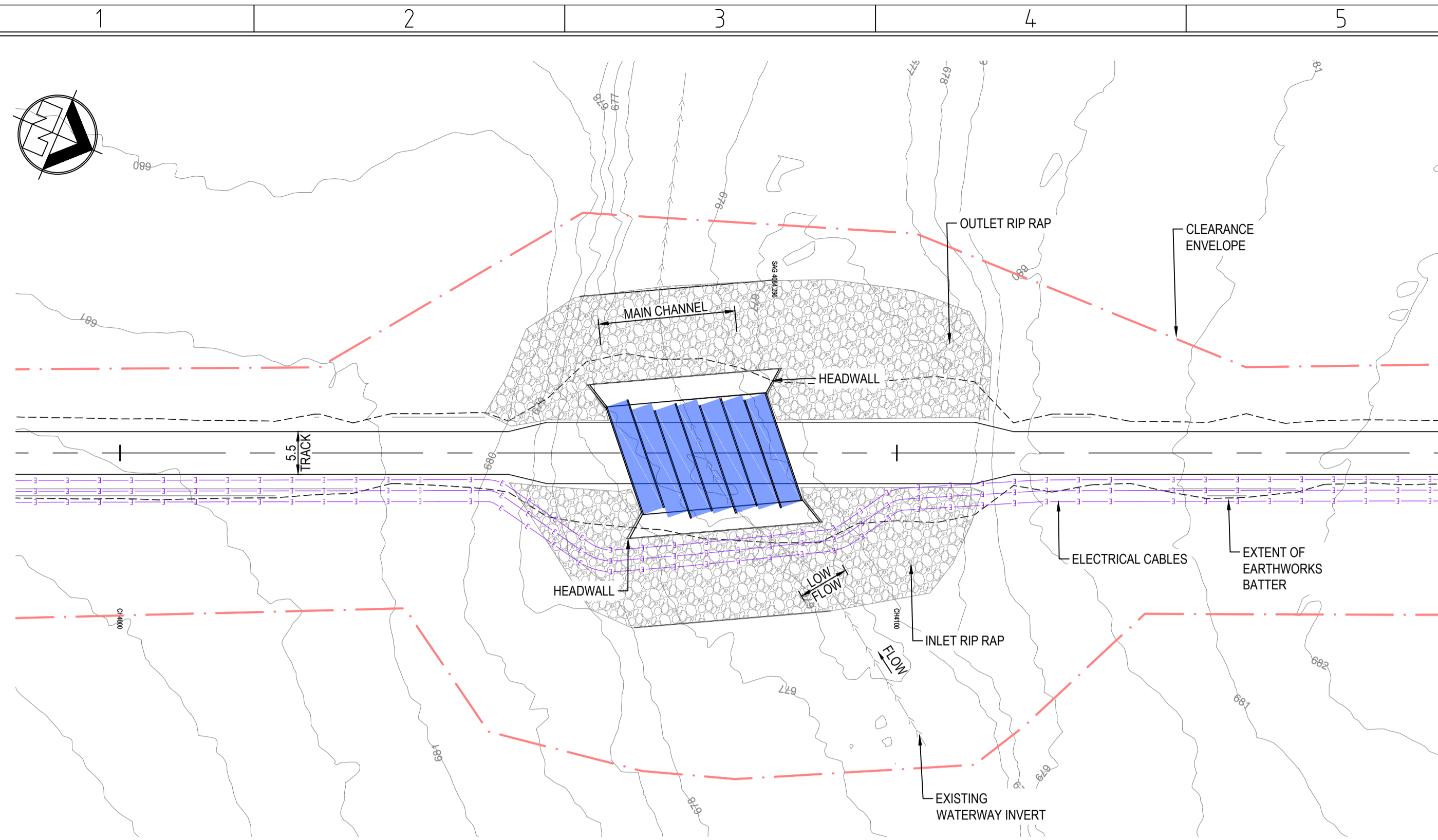


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A	CONCEPT	B.P.	T.J.S. J.M. 23.03.22
REV	DETAIL	DRN	CHK APP DATE
REVISIONS AND APPROVALS			

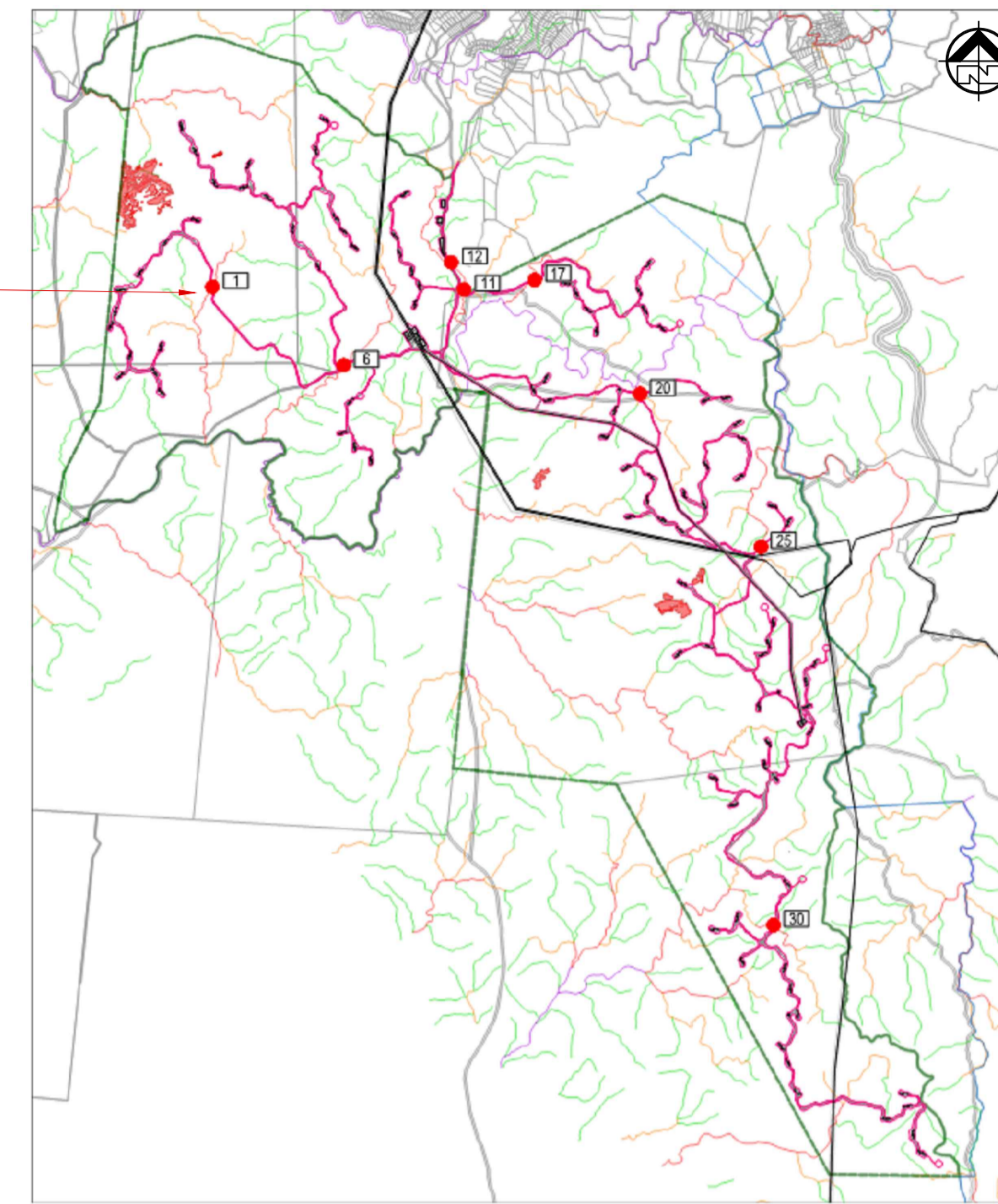
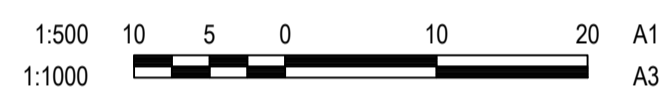


PROJECT: CHALUMBIN WIND FARM		DRAWING STATUS: CONCEPT	
TITLE: CONSTRUCTION MANAGEMENT / ESCP DETAILS		SCALE: AS SHOWN	
PART TRACK 25		SIZE: A1	
DRAWING No: CHLWF-CM-TR-25		REV: A	

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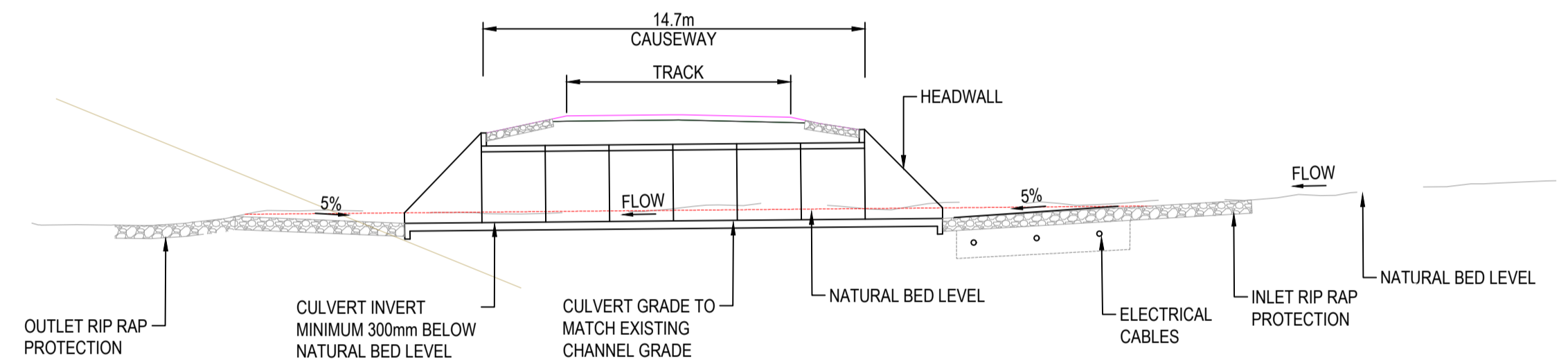
WATERWAY CROSSING 01 LAYOUT - HIGH RISK



HIGH RISK WATERWAY BARRIER WORKS - KEY PLAN

WATERWAY BARRIER WORKS NOTES

- EXISTING WATER COURSE DRAWN USING LIDAR SURVEY AND ONLINE MAPPING.
- CONCEPT DESIGN ONLY.
- CROSSING IS A DESIGNATED HIGH IMPACT (RED) WATERWAY AND WORKS SHALL BE IN ACCORDANCE WITH DAF WATERWAY BARRIER WORKS, SECTION 1.1 OF TABLE 1, "ACCEPTED DEVELOPMENT REQUIREMENTS FOR OPERATIONAL WORK THAT IS CONSTRUCTING OR RAISING WATERWAY BARRIER WORKS".
- UNLESS NOTED OTHERWISE ALL DIMENSIONS WITH DECIMALS ARE IN METRES ALL WITHOUT ARE IN MILLIMETRES.
- IMPACTS ON WATER QUALITY ARE TO BE MINIMISED BY UNDERTAKING THE WORKS TO THE STANDARD AS SET OUT IN THE "BEST PRACTICE EROSION AND SEDIMENT CONTROL" BY IECA AUSTRALIA.



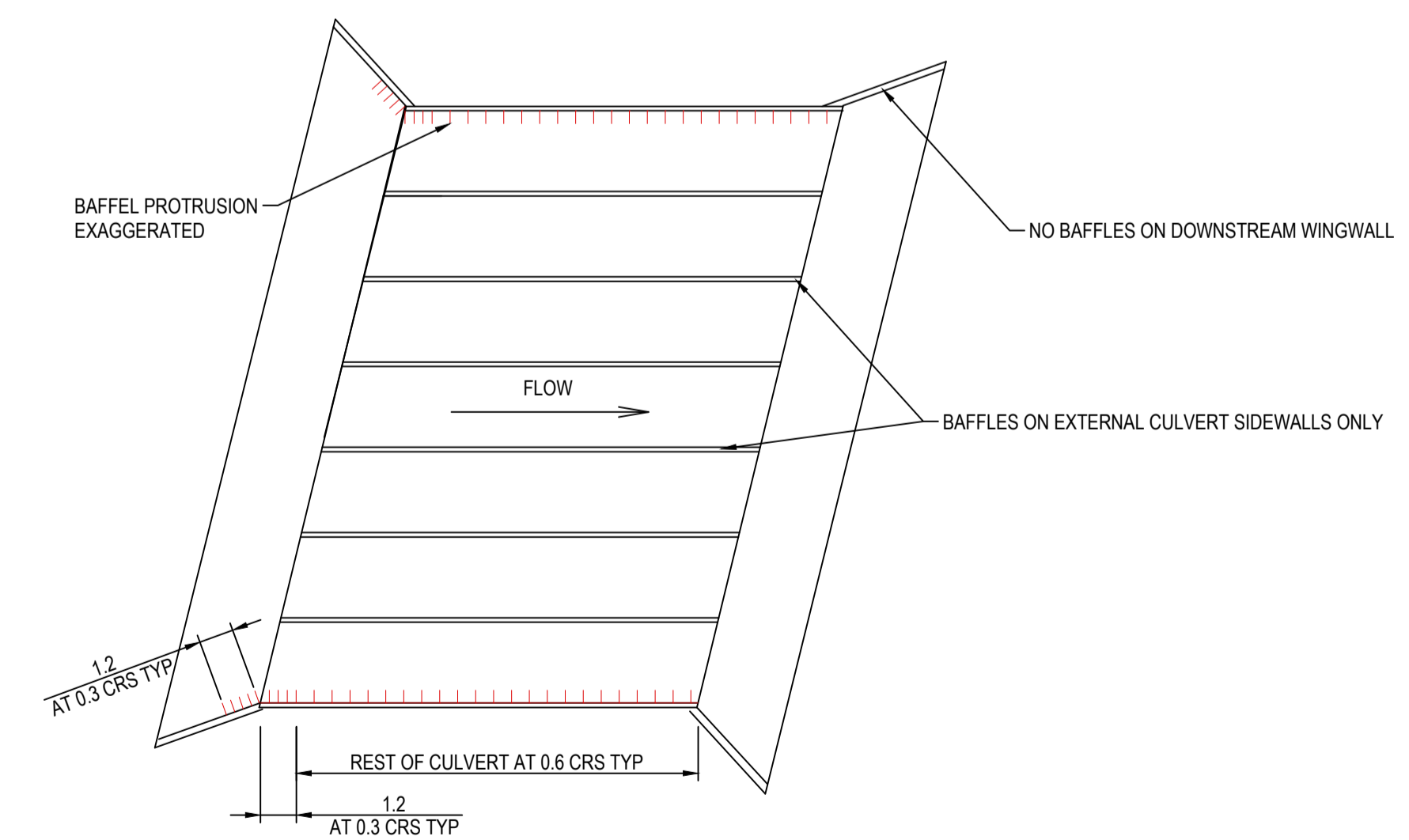
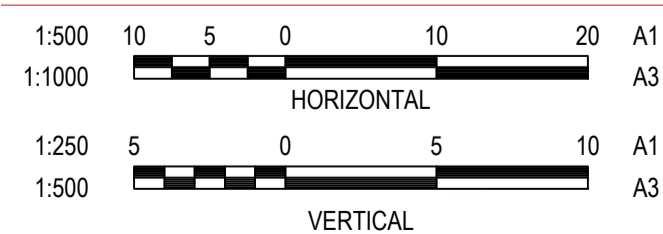
WATERWAY CROSSING 01 - CULVERT SECTION



Vertical Curve Length (m)	Vertical Curve Radius (m)	Vertical Grade Length (m)	Vertical Geometry Grade	Horizontal Curve Data (m)
L 21.06	R 600.0	L 116.13	-2.70%	
L 68.05	R 600.0	L 44.88	-6.21%	
L 9.45	R 600.0	L 75.03	5.13%	
		L 102.10	3.55%	

Chainage	Existing Surface	Depth to Design	Design C.L. Surface
4000.000	681.910	0.292	682.203
4025.641	681.326	0.163	681.509
4046.696	680.126	0.445	680.571
4047.018	680.108	0.443	680.551
4050.000	679.727	0.645	680.373
4084.296	676.082	3.311	679.393
4100.000	677.389	2.209	679.598
4115.071	679.769	0.413	680.182
4150.000	681.712	0.261	681.973
4151.345	681.804	0.238	682.042
4160.000	682.074	0.350	682.424

WATERWAY CROSSING 01 TRACK - LONGITUDINAL SECTION - HIGH RISK



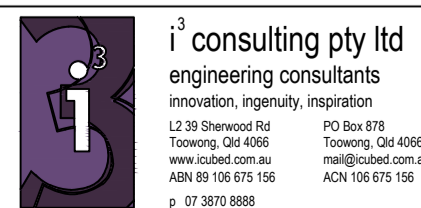
FISHWAY BAFFLE SETOUT PLAN

NTS

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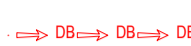








REV	DESCRIPTION	DATE	DRN	CHK	APP
B	CONCEPT	23.03.22			
A	CONCEPT	4.03.22			
REV	DETAIL				



PROJECT	DRAWING STATUS	PROJECT NO.	SCALE	SIZE
CHALUMBIN WIND FARM	CONCEPT	20-315	AS SHOWN	A1
TITLE		DRAWING NO.		REV.
WATERWAY CROSSING 01 FUNCTIONAL LAYOUT		CHLWF-WWBW-X01-1		B

LEGEND

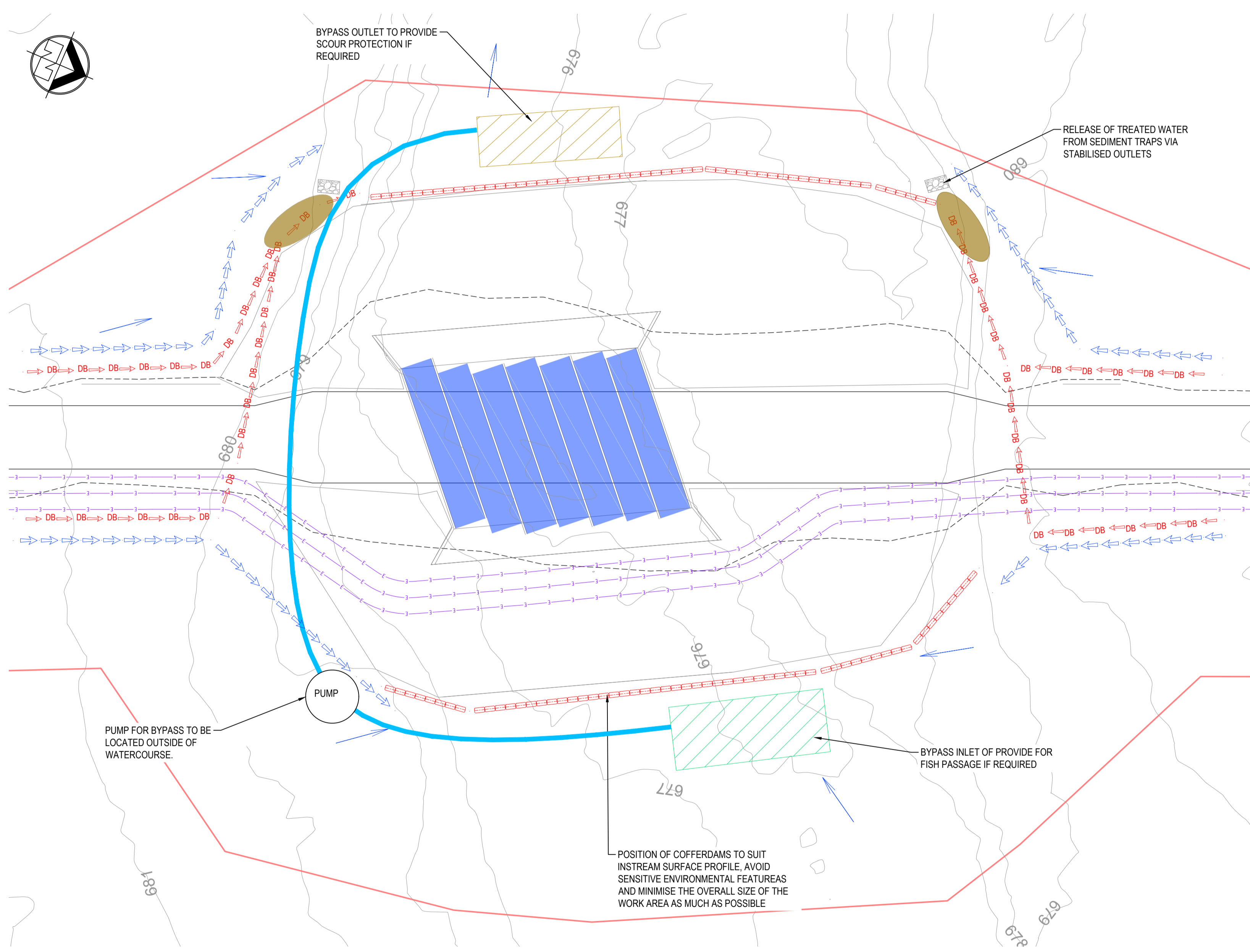
-  SURFACE WATER FLOWS
-  PERIMETER BUND FOR CLEAN WATER DIVERSION
-  DIRTY WATER DIVERSION BUND
-  COFFERDAM
-  SEDIMENT BASIN OR TYPE 2 SEDIMENT TRAP
-  STABILISED OUTLET / DISCHARGE
-  PIPE FOR PUMPED BYPASS
-  BYPASS INLET
-  BYPASS OUTLET

ESPC NOTES

- ESPC LIMITATIONS**
- ESPC PLANNING REQUIRES DETAILED INFORMATION PERTAINING TO THE CONSTRUCTION METHODOLOGY, INFORMATION WHICH WILL NOT BE AVAILABLE UNTIL THE CONSTRUCTION CONTRACTOR IS APPOINTED.
 - THIS ESPC IS INTENDED AS INDICATIVE OF THE GENERAL ESC PHILOSOPHY TO BE APPLIED TO CULVERT CONSTRUCTION AND IS NOT INTENDED TO BE LIMITING.
 - ESC FOR INSTREAM WORKS MAY DIFFER FROM THAT WHICH IS SHOWN, BUT WILL MEET THE IECA 2008 BEST PRACTICE ESC STANDARDS
- CONSTRUCTION NOTES:**
- WORKS ARE TO BE UNDERTAKEN DURING LOW OR NO FLOW CONDITIONS BETWEEN JULY AND OCTOBER, PREFERABLY DURING AUGUST OR SEPTEMBER.
 - NO ACCESS / DISTURBANCE TO AREAS OUTSIDE OF PERIMETER BUNDS AND CULVERT / TRACK EXTENT WIDTH WITHIN WATERCOURSE (EXCEPT COFFERDAMS).
- CONSTRUCTION ASSUMPTIONS:**
- MATERIAL RECOVERED FROM THE WATERCOURSE IS LOADED DIRECTLY ONTO A TRUCK AND CARTED AWAY, HENCE NO SOIL STOCKPILE AREA (PREFERRED).
 - PREFABRICATED CULVERTS, ROCK AND ROAD BASE MATERIAL ARE TRUCKED IN AS REQUIRED, HENCE NO LAYDOWN AREA (PREFERRED).
 - ESPC REVISION IS REQUIRED IF THE ABOVE ASSUMPTIONS ARE INCORRECT (THIS ESPC IS NOT LIMITING)
 - USE OF LONG REACH EQUIPMENT TO MINIMIZE THE EXTENT OF CREEK BED ACCESS BY MACHINERY AS MUCH AS POSSIBLE.
 - CATCH DRAINS ARE TO BE APPROPRIATELY LINED AND FLOW VELOCITY MANAGED (E.G. BY USE OF CHECK DAMS) TO PREVENT SCOUR.
 - MAXIMISE GROUND COVER BY:
 - ESTABLISHING STABLE TRACK SURFACES (E.G. COMPACTED ROAD BASE OR EQUIVALENT) ON CROSSING TRACK APPROACHES PRIOR TO COMMENCEMENT OF INSTREAM WORKS.
 - APPLICATION OF EROSION CONTROL BLANKETS (ROLL ON OR HYDRAULICALLY APPLIED) TO DISTURBED CREEK BANKS.
 - SEDIMENT TRAP TYPE, DESIGN AND MANAGEMENT IS TO BE DETERMINED BY THE CONSTRUCTION ESPC

CONSTRUCTION SEQUENCE

1. INSTALL EROSION, SEDIMENT AND DRAINAGE CONTROLS.
2. ISOLATE THE INSTREAM WORK AREA - INSTALL COFFERDAMS AND PUMPED BYPASS.
3. DEWATER WORK AREA (IF REQUIRED), PUMPING DIRTY WATER TO SEDIMENT BASINS / TYPE 2 TRAPS FOR TREATMENT.
4. COMMENCE WORK.
5. MAINTAIN ESC CONTROLS.
6. UPON COMPLETION OF WORKS, STABILISE DISTURBED SOIL SURFACES WITHIN AND ADJACENT WATERCOURSE WITH GROUND COVER (ROCK / ENGINEERED PROTECTION OR VEGETATIVE) AND REVEGETATE CREEK BANKS WITH APPROPRIATE NATIVE SPECIES.
7. REMOVE TEMPORARY ESC CONTROLS ONCE 80% GROUND COVER IS ACHIEVED



WATERWAY CROSSING 01 ESPC LAYOUT - HIGH RISK



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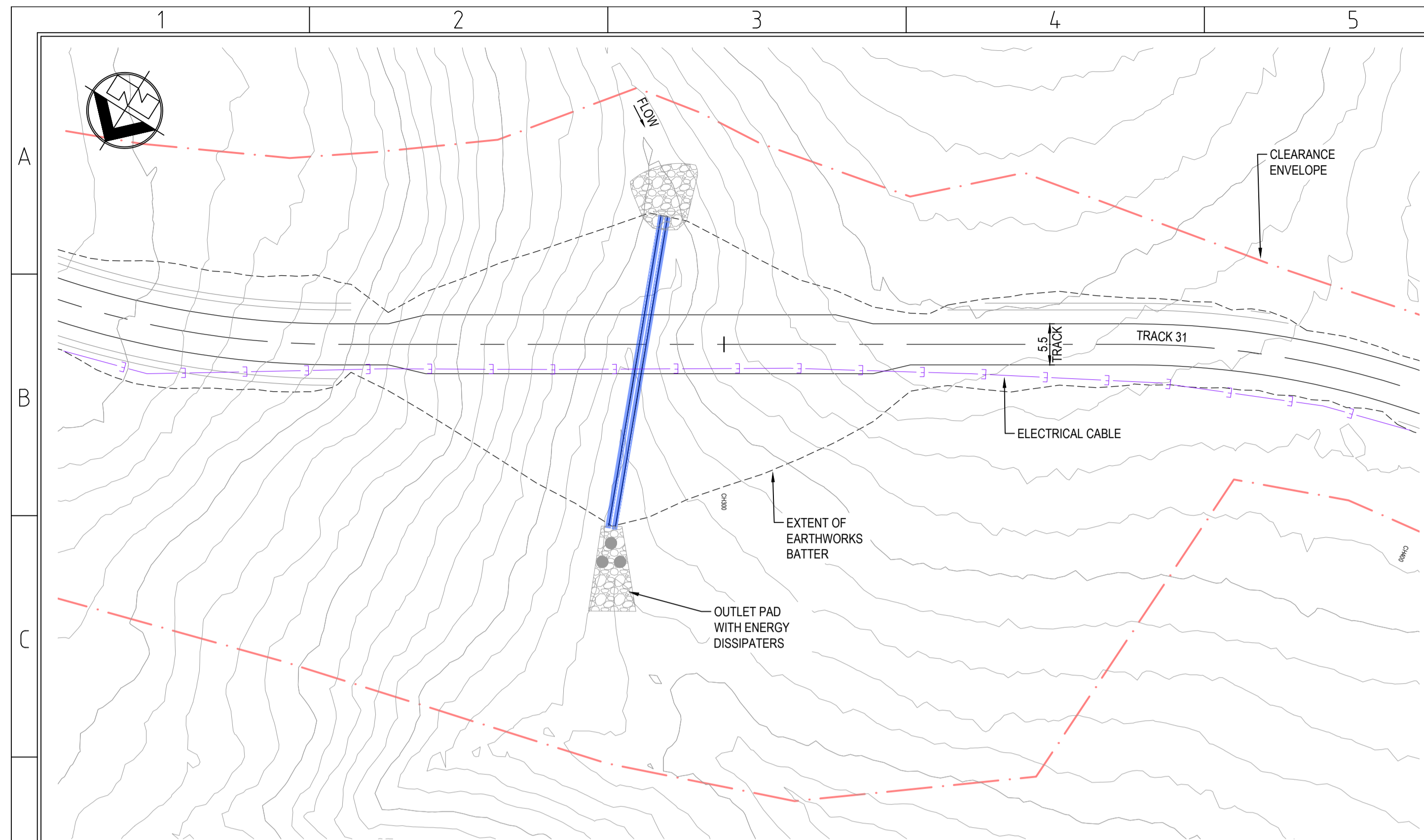
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REV	DETAIL	DRN	CHK
B	CONCEPT	B.P.	T.J.S
A	CONCEPT	B.P.	T.J.S
		APP	DATE
			23.03.22
			4.03.22
REVISIONS AND APPROVALS			

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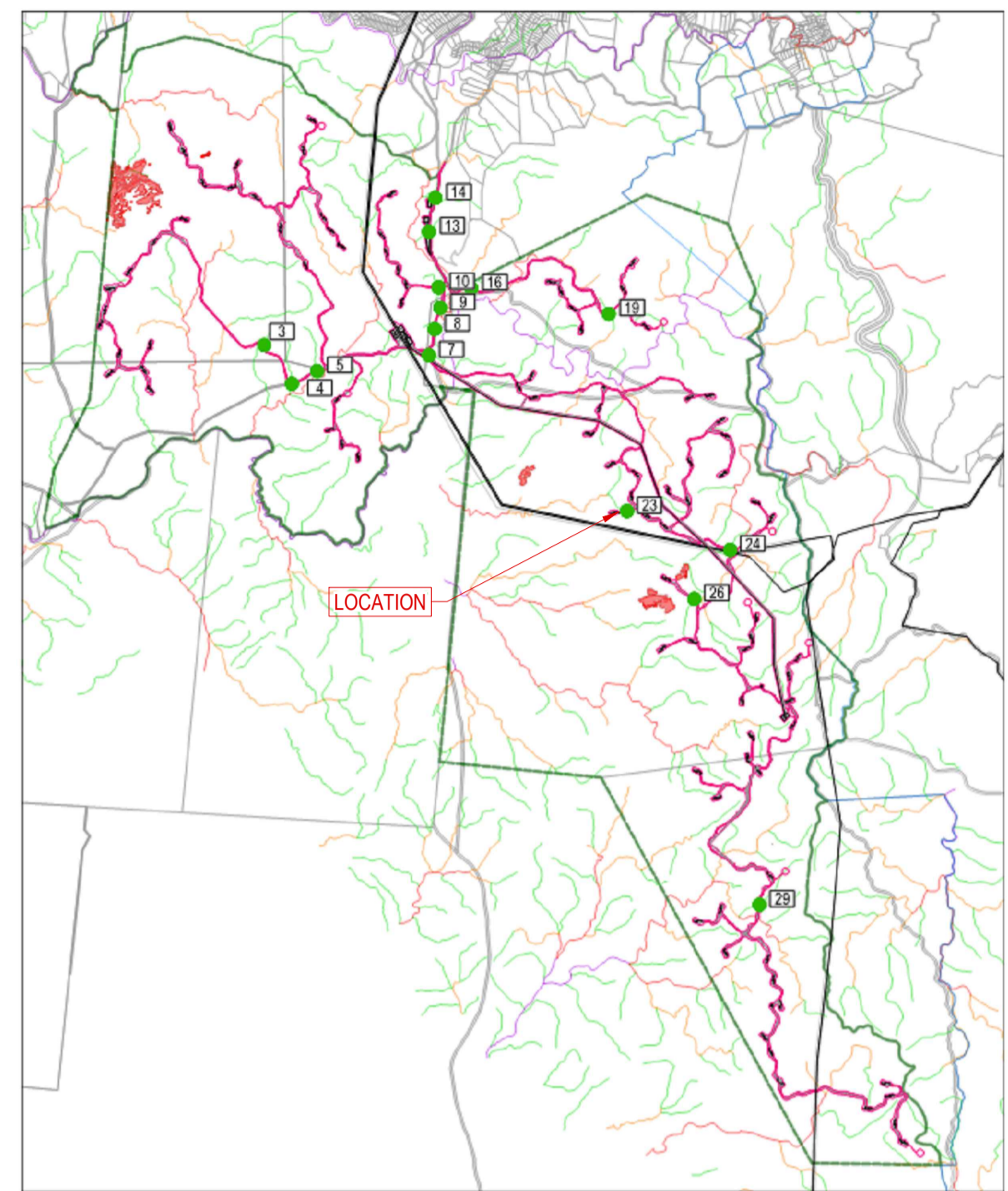
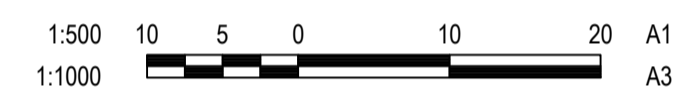
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PROJECT: CHALUMBIN WIND FARM		DRAWING STATUS: CONCEPT	
TITLE: WATERWAY CROSSING 01 EROSION AND SEDIMENT CONTROL PLAN WATERWAY BARRIER WORKS - HIGH RISK		PROJECT No: 20-315	SCALE: AS SHOWN
		DRAWING No: CHLWF-WWBW-X01-2	SIZE: A1
			REV: B



WATERWAY CROSSING 23 LAYOUT - LOW RISK



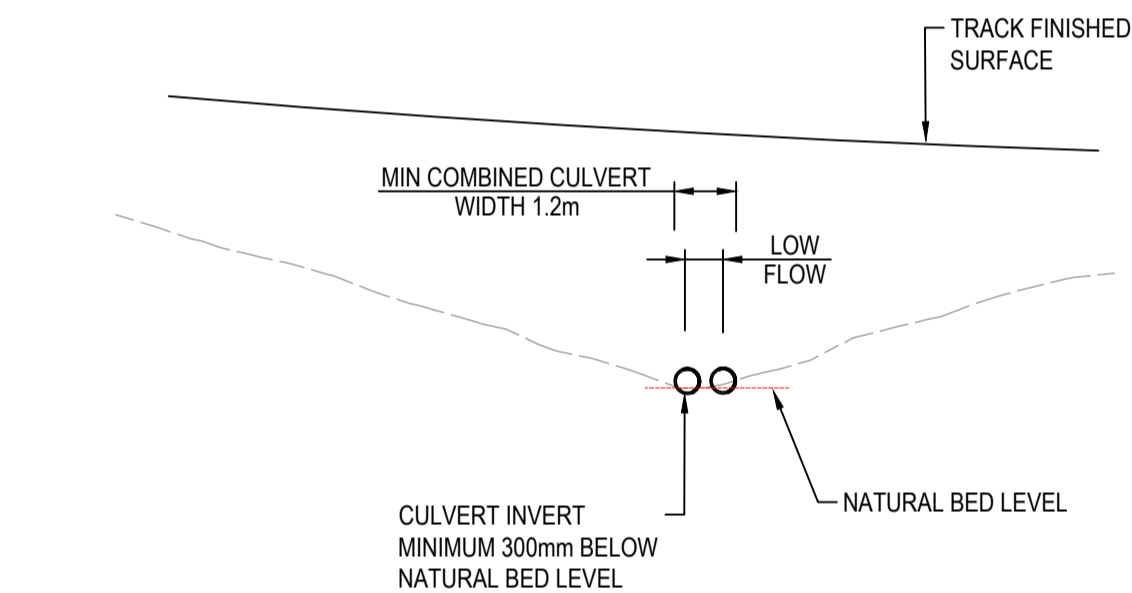
LOW RISK WATERWAY BARRIER WORKS - KEY PLAN

WATERWAY BARRIER WORKS NOTES

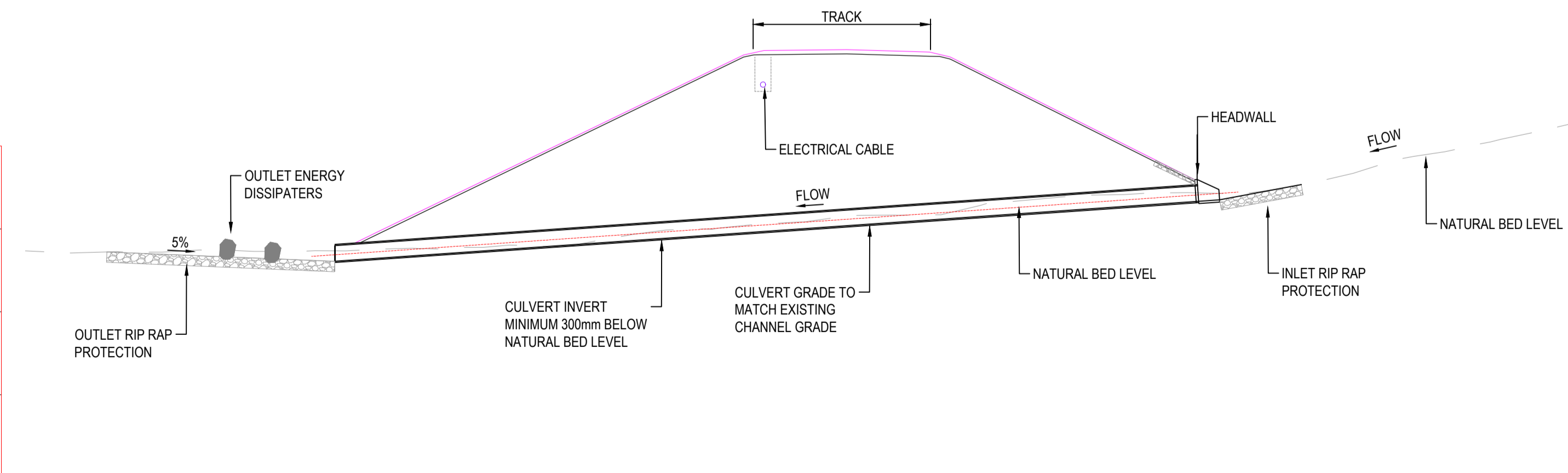
- EXISTING WATER COURSE DRAWN USING LIDAR SURVEY AND ONLINE MAPPING.
- CONCEPT DESIGN ONLY.
- CROSSING IS A DESIGNATED LOW IMPACT (GREEN) WATERWAY AND WORKS SHALL BE IN ACCORDANCE WITH DAF WATERWAY BARRIER WORKS, SECTION 1.3 OF TABLE 1, "ACCEPTED DEVELOPMENT REQUIREMENTS FOR OPERATIONAL WORK THAT IS CONSTRUCTING OR RAISING WATERWAY BARRIER WORKS".
- UNLESS NOTED OTHERWISE ALL DIMENSIONS WITH DECIMALS ARE IN METRES ALL WITHOUT ARE IN MILLIMETRES.
- IMPACTS ON WATER QUALITY ARE TO BE MINIMISED BY UNDERTAKING THE WORKS TO THE STANDARD AS SET OUT IN THE "BEST PRACTICE EROSION AND SEDIMENT CONTROL" BY IECA AUSTRALIA.

Vertical Curve Length (m)	L 87.84		L 71.66		L 10.91		L 93.28					
Vertical Curve Radius (m)	R 600.0		R 600.0		R 600.0		R 600.0					
Vertical Geometry Grade	-17.19%		-2.55%		-4.36%							
Vertical Curve Length (m)	L 87.84		L 71.66		L 10.91		L 93.28					
Vertical Curve Radius (m)	R 600.0		R 600.0		R 600.0		R 600.0					
Horizontal Curve Data (m)	R -120.0m						R 120.0m					
DATUM R.L. 760.000												
EXISTING SURFACE	827.427	827.289	825.222	820.524	820.018	811.741	812.451	814.666	814.472	813.971	813.616	813.619
DEPTH TO DESIGN	0.045	-0.133	-0.742	-0.543	-0.254	4.230	3.364	0.582	0.399	0.396	0.549	0.629
DESIGN C.L. SURFACE	827.472	827.157	824.481	819.980	819.765	815.972	815.815	815.248	814.871	814.367	814.165	814.148
CHAINAGE	200.000	201.636	217.407	248.188	250.000	300.000	305.247	327.534	338.448	350.000	354.621	355.000

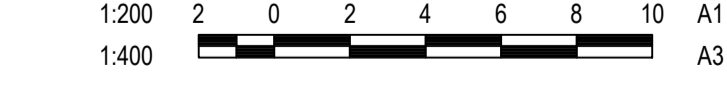
WATERWAY CROSSING 23 TRACK - LONGITUDINAL SECTION - LOW RISK



WATERWAY CROSSING 23



WATERWAY CROSSING 23 - CULVERT SECTION



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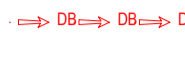









REV	DETAIL	DATE	APP	CHK	DRN
A	CONCEPT	23.03.22	J.M.	T.J.S.	B.P.

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PROJECT	DRAWING STATUS	SCALE	SIZE
CHALUMBIN WIND FARM	CONCEPT	AS SHOWN	A1
TITLE	PROJECT NO.	DRAWING NO.	REV.
WATERWAY CROSSING 23 FUNCTIONAL LAYOUT WATERWAY BARRIER WORKS - LOW RISK	20-315	CHLWF-WWBW-X23-1	A

LEGEND

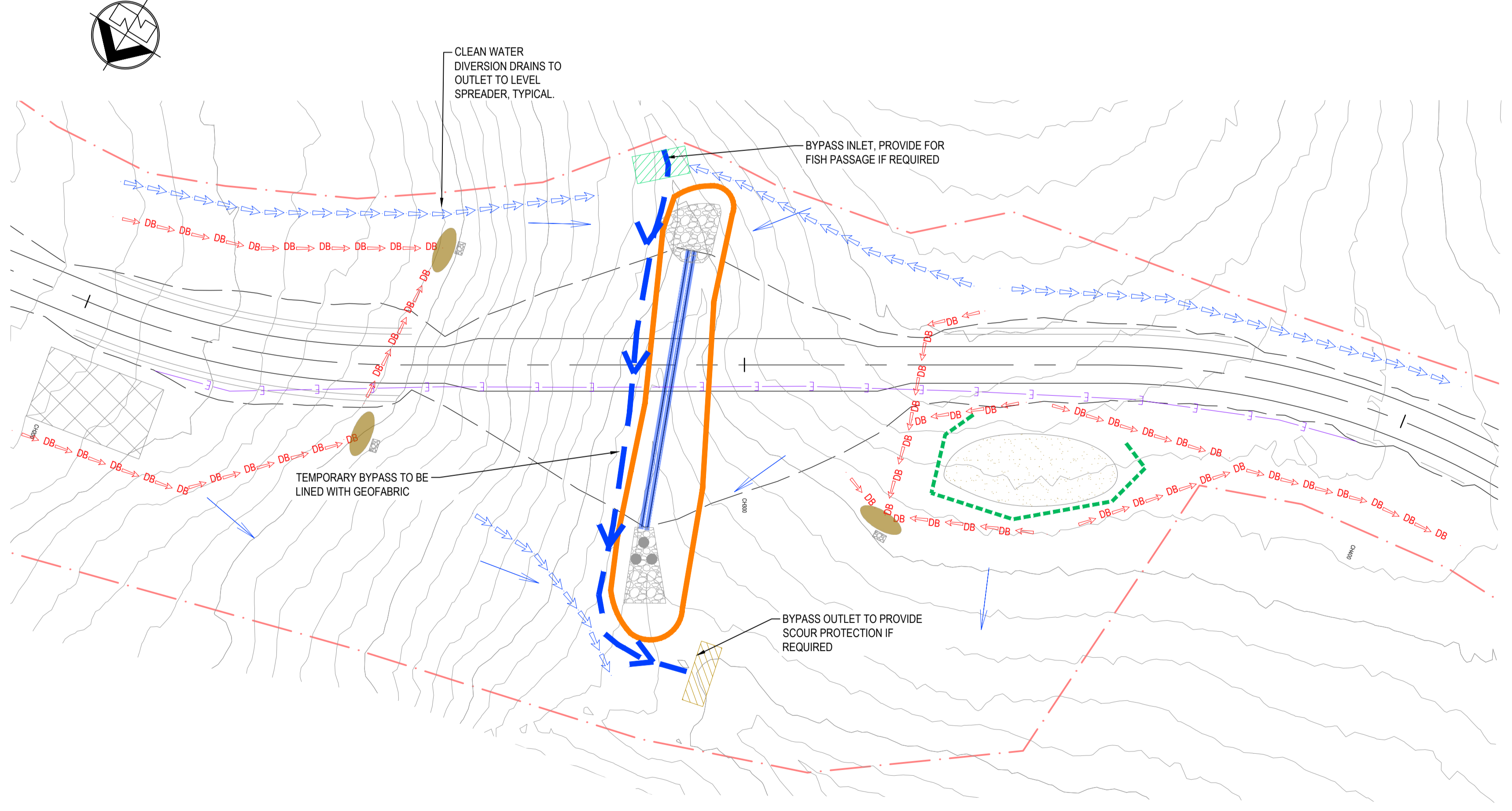
-  SURFACE WATER FLOWS
-  PERIMETER BUND FOR CLEAN WATER DIVERSION
-  DIRTY WATER DIVERSION BUND
-  ISOLATION BARRIER
-  FILTER FENCE OR TYPE 3 SEDIMENT TRAP
-  SEDIMENT BASIN OR TYPE 2 SEDIMENT TRAP
-  STABILISED OUTLET / DISCHARGE
-  TEMPORARY BYPASS
-  BYPASS INLET
-  BYPASS OUTLET
-  SITE LAYDOWN
-  STOCKPILE

ESPC NOTES

- ESPC LIMITATIONS**
- ESC PLANNING REQUIRES DETAILED INFORMATION PERTAINING TO THE CONSTRUCTION METHODOLOGY, INFORMATION WHICH WILL NOT BE AVAILABLE UNTIL THE CONSTRUCTION CONTRACTOR IS APPOINTED.
 - THIS ESPC IS INTENDED AS INDICATIVE OF THE GENERAL ESC PHILOSOPHY TO BE APPLIED TO CULVERT CONSTRUCTION AND IS NOT INTENDED TO BE LIMITING.
 - ESC FOR INSTREAM WORKS MAY DIFFER FROM THAT WHICH IS SHOWN, BUT WILL MEET THE IECA 2008 BEST PRACTICE ESC STANDARDS
 - REFER TO THE CHALUMBIN WINDFARM PRELIMINARY ESPC FOR FURTHER INFORMATION.
- CONSTRUCTION NOTES:**
- WORKS ARE TO BE UNDERTAKEN DURING LOW OR NO FLOW CONDITIONS BETWEEN JULY AND OCTOBER, PREFERABLY DURING AUGUST OR SEPTEMBER.
 - NO ACCESS / DISTURBANCE TO AREAS OUTSIDE OF PERIMETER BUNDS AND CULVERT / TRACK EXTENT WIDTH WITHIN WATERCOURSE (EXCEPT TO THE AREAS SHOWN).
- CONSTRUCTION ASSUMPTIONS:**
- CATCH DRAINS ARE TO BE APPROPRIATELY LINED AND FLOW VELOCITY MANAGED (E.G. BY USE OF CHECK DAMS) TO PREVENT SCOUR.
 - MAXIMISE GROUND COVER BY:
 - ESTABLISHING STABLE TRACK SURFACES (E.G. COMPACTED ROAD BASE OR EQUIVALENT) ON CROSSING TRACK APPROACHES PRIOR TO COMMENCEMENT OF INSTREAM WORKS.
 - APPLICATION OF EROSION CONTROL BLANKETS (ROLL ON OR HYDRAULICALLY APPLIED) TO DISTURBED CREEK BANKS.
 - SEDIMENT TRAP TYPE, DESIGN AND MANAGEMENT IS TO BE DETERMINED BY THE CONSTRUCTION ESPC

CONSTRUCTION SEQUENCE

1. INSTALL EROSION, SEDIMENT AND DRAINAGE CONTROLS.
2. ISOLATE THE INSTREAM WORK AREA - INSTALL ISOLATION BARRIER AND BYPASS.
3. DEWATER WORK AREA (IF REQUIRED), PUMPING DIRTY WATER TO SEDIMENT BASINS / TYPE 2 TRAPS FOR TREATMENT.
4. COMMENCE WORK.
5. MAINTAIN ESC CONTROLS.
6. UPON COMPLETION OF WORKS, STABILISE DISTURBED SOIL SURFACES WITHIN AND ADJACENT WATERCOURSE WITH GROUND COVER (ROCK / ENGINEERED PROTECTION OR VEGETATIVE) AND REVEGETATE CREEK BANKS WITH APPROPRIATE NATIVE SPECIES.
7. REMOVE TEMPORARY ESC CONTROLS ONCE 80% GROUND COVER IS ACHIEVED



WATERWAY CROSSING 23 ESPC LAYOUT - LOW RISK



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REV	DETAIL	DRN	CHK
A	CONCEPT	B.P.	T.J.S.
		J.M.	23.03.22
REVISIONS AND APPROVALS		DATE	

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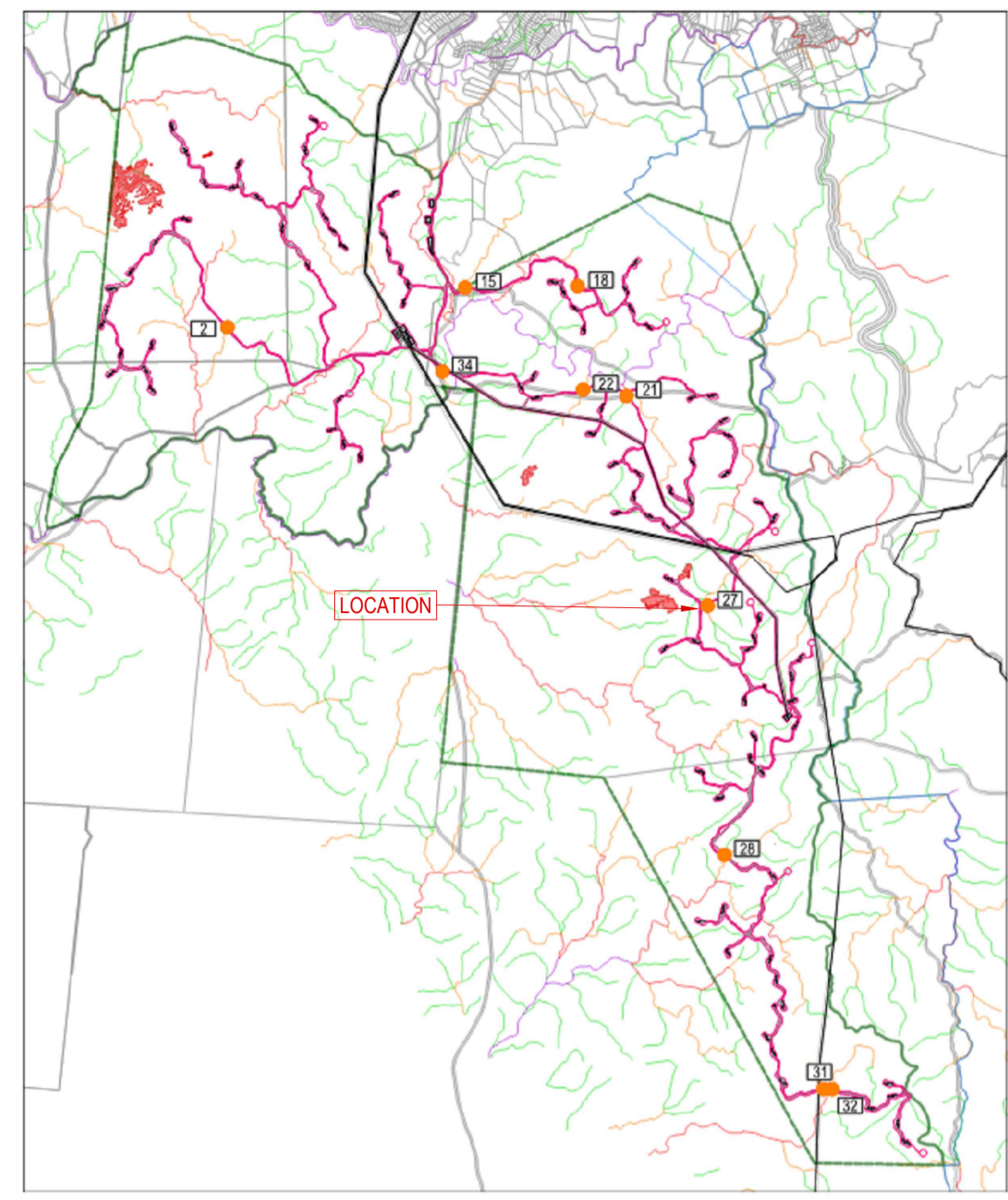
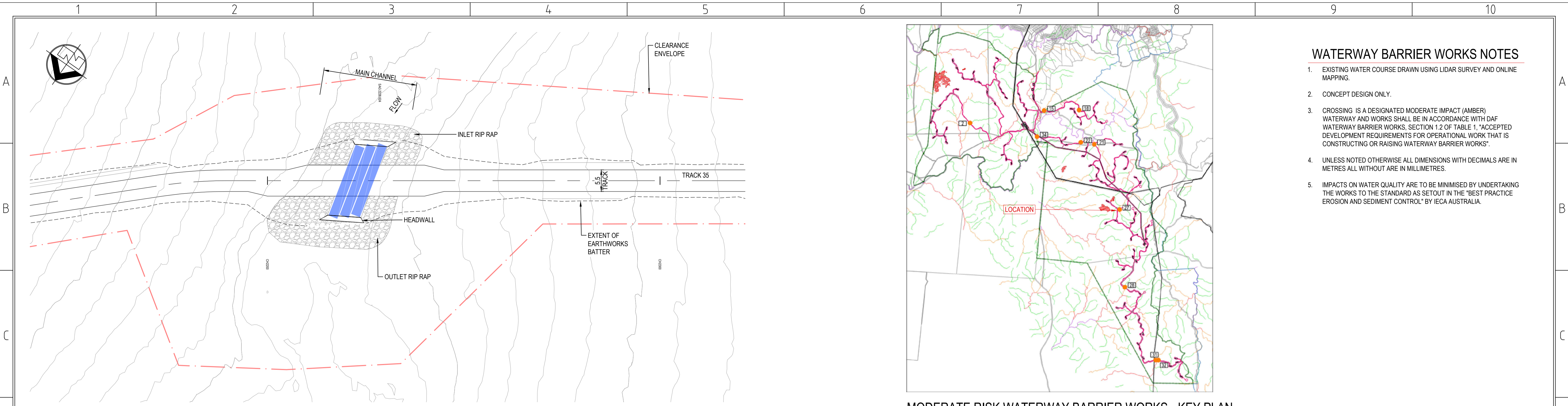
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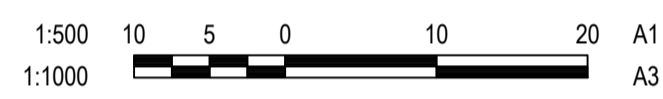
PROJECT		DRAWING STATUS	
CHALUMBIN WIND FARM		CONCEPT	
TITLE	PROJECT No.	SCALE	SIZE
WATERWAY CROSSING 23 EROSION AND SEDIMENT CONTROL PLAN WATERWAY BARRIER WORKS - LOW RISK	20-315	AS SHOWN	A1
DRAWING No.	DATE	REV	
CHLWF-WWBW-X23-2		A	

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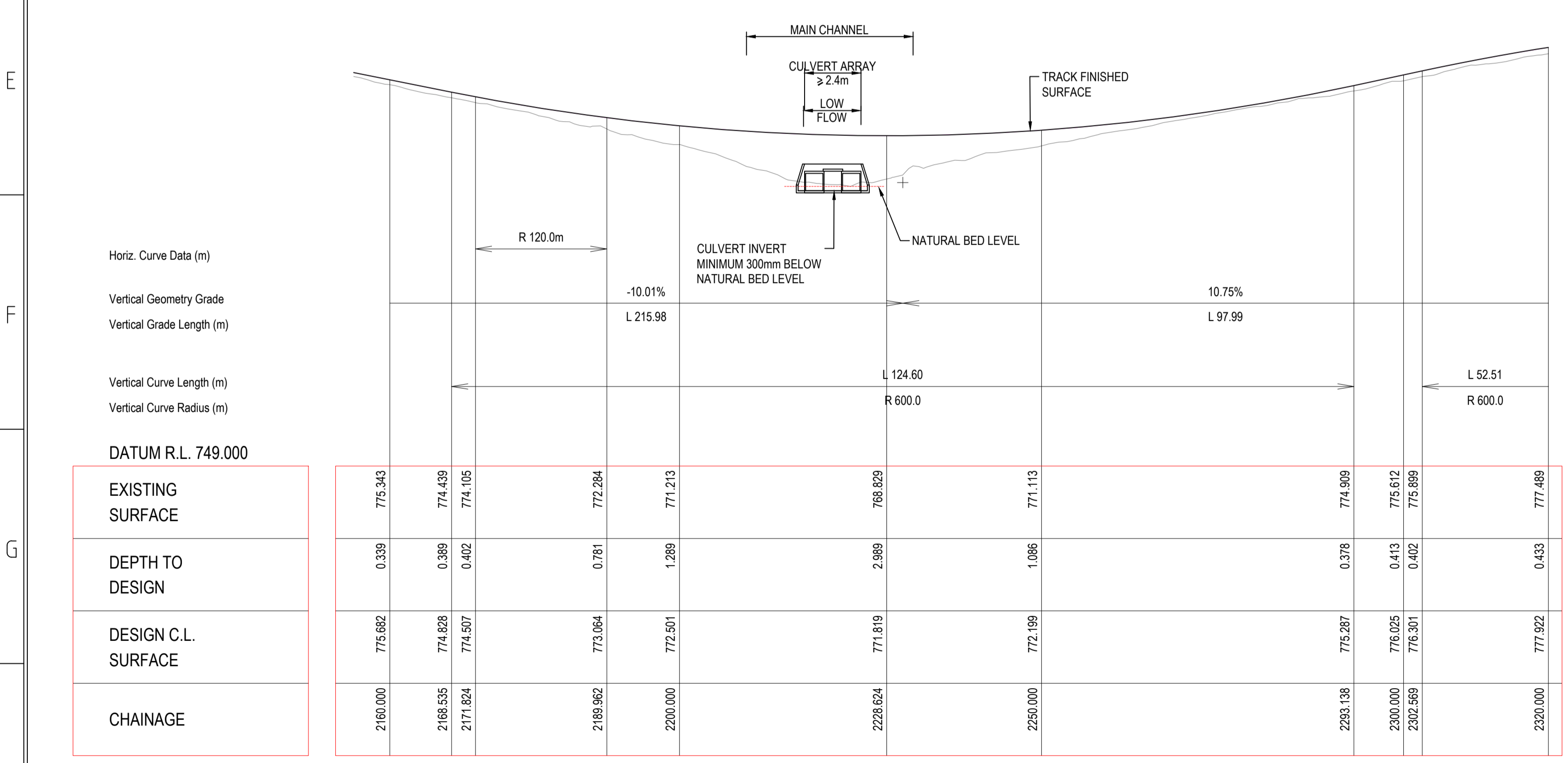


- ### WATERWAY BARRIER WORKS NOTES
- EXISTING WATER COURSE DRAWN USING LIDAR SURVEY AND ONLINE MAPPING.
 - CONCEPT DESIGN ONLY.
 - CROSSING IS A DESIGNATED MODERATE IMPACT (AMBER) WATERWAY AND WORKS SHALL BE IN ACCORDANCE WITH DAF WATERWAY BARRIER WORKS, SECTION 1.2 OF TABLE 1, "ACCEPTED DEVELOPMENT REQUIREMENTS FOR OPERATIONAL WORK THAT IS CONSTRUCTING OR RAISING WATERWAY BARRIER WORKS".
 - UNLESS NOTED OTHERWISE ALL DIMENSIONS WITH DECIMALS ARE IN METRES ALL WITHOUT ARE IN MILLIMETRES.
 - IMPACTS ON WATER QUALITY ARE TO BE MINIMISED BY UNDERTAKING THE WORKS TO THE STANDARD AS SET OUT IN THE "BEST PRACTICE EROSION AND SEDIMENT CONTROL" BY IECA AUSTRALIA.

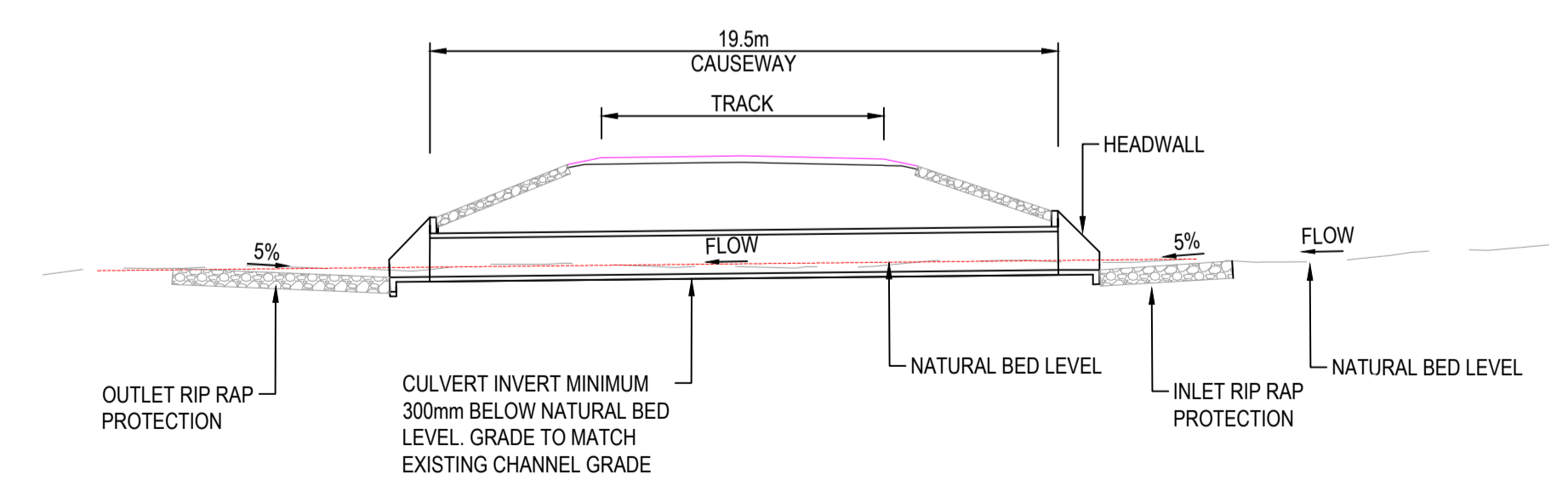
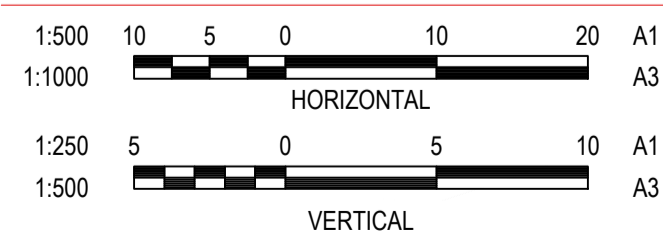
WATERWAY CROSSING 27 LAYOUT - MODERATE RISK



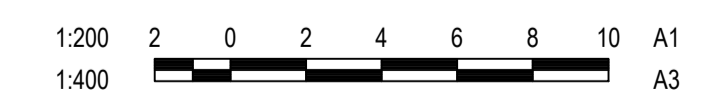
MODERATE RISK WATERWAY BARRIER WORKS - KEY PLAN



WATERWAY CROSSING 27 TRACK - LONGITUDINAL SECTION - MODERATE RISK



WATERWAY CROSSING 27 - CULVERT SECTION



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A	CONCEPT	B.P.	T.J.S.	J.M.	23.03.22

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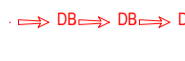









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PROJECT	CHALUMBIN WIND FARM		DRAWING STATUS	CONCEPT	
TITLE	WATERWAY CROSSING 27 FUNCTIONAL LAYOUT WATERWAY BARRIER WORKS - MODERATE RISK		PROJECT No.	20-315	SCALE
DRAWING No.	CHLWF-WWBW-X27-1		DATE	AS SHOWN	SIZE
					A1
					REV
					A

LEGEND

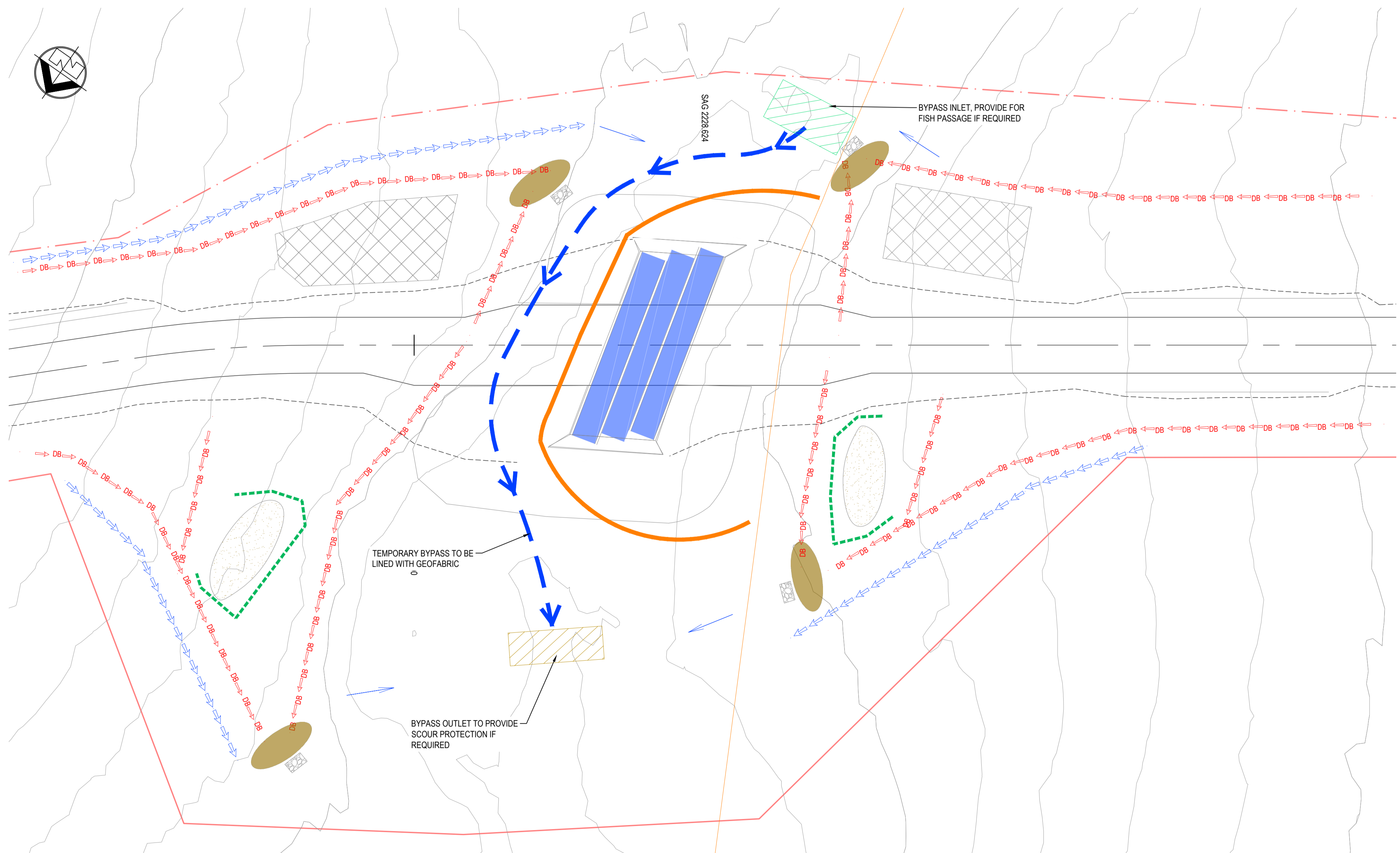
-  SURFACE WATER FLOWS
-  PERIMETER BUND FOR CLEAN WATER DIVERSION
-  DIRTY WATER DIVERSION BUND
-  ISOLATION BARRIER
-  FILTER FENCE OR TYPE 3 SEDIMENT TRAP
-  SEDIMENT BASIN OR TYPE 2 SEDIMENT TRAP
-  STABILISED OUTLET / DISCHARGE
-  TEMPORARY BYPASS
-  BYPASS INLET
-  BYPASS OUTLET
-  SITE LAYDOWN
-  STOCKPILE

ESPC NOTES

- ESPC LIMITATIONS**
- ESC PLANNING REQUIRES DETAILED INFORMATION PERTAINING TO THE CONSTRUCTION METHODOLOGY, INFORMATION WHICH WILL NOT BE AVAILABLE UNTIL THE CONSTRUCTION CONTRACTOR IS APPOINTED.
 - THIS ESPC IS INTENDED AS INDICATIVE OF THE GENERAL ESC PHILOSOPHY TO BE APPLIED TO CULVERT CONSTRUCTION AND IS NOT INTENDED TO BE LIMITING.
 - ESC FOR INSTREAM WORKS MAY DIFFER FROM THAT WHICH IS SHOWN, BUT WILL MEET THE IECA 2008 BEST PRACTICE ESC STANDARDS
 - REFER TO THE CHALUMBIN WINDFARM PRELIMINARY ESPC FOR FURTHER INFORMATION.
- CONSTRUCTION NOTES:**
- WORKS ARE TO BE UNDERTAKEN DURING LOW OR NO FLOW CONDITIONS BETWEEN JULY AND OCTOBER, PREFERABLY DURING AUGUST OR SEPTEMBER.
 - NO ACCESS / DISTURBANCE TO AREAS OUTSIDE OF PERIMETER BUNDS AND CULVERT / TRACK EXTENT WIDTH WITHIN WATERCOURSE (EXCEPT TO THE AREAS SHOWN).
- CONSTRUCTION ASSUMPTIONS:**
- USE OF LONG REACH EQUIPMENT TO MINIMIZE THE EXTENT OF CREEK BED ACCESS BY MACHINERY AS MUCH AS POSSIBLE.
 - CATCH DRAINS ARE TO BE APPROPRIATELY LINED AND FLOW VELOCITY MANAGED (E.G. BY USE OF CHECK DAMS) TO PREVENT SCOUR.
 - MAXIMISE GROUND COVER BY:
 - ESTABLISHING STABLE TRACK SURFACES (E.G. COMPACTED ROAD BASE OR EQUIVALENT) ON CROSSING TRACK APPROACHES PRIOR TO COMMENCEMENT OF INSTREAM WORKS.
 - APPLICATION OF EROSION CONTROL BLANKETS (ROLL ON OR HYDRAULICALLY APPLIED) TO DISTURBED CREEK BANKS.
 - SEDIMENT TRAP TYPE, DESIGN AND MANAGEMENT IS TO BE DETERMINED BY THE CONSTRUCTION ESPC

CONSTRUCTION SEQUENCE

1. INSTALL EROSION, SEDIMENT AND DRAINAGE CONTROLS.
2. ISOLATE THE INSTREAM WORK AREA - INSTALL ISOLATION BARRIER AND BYPASS.
3. DEWATER WORK AREA (IF REQUIRED), PUMPING DIRTY WATER TO SEDIMENT BASINS / TYPE 2 TRAPS FOR TREATMENT.
4. COMMENCE WORK.
5. MAINTAIN ESC CONTROLS.
6. UPON COMPLETION OF WORKS, STABILISE DISTURBED SOIL SURFACES WITHIN AND ADJACENT WATERCOURSE WITH GROUND COVER (ROCK / ENGINEERED PROTECTION OR VEGETATIVE) AND REVEGETATE CREEK BANKS WITH APPROPRIATE NATIVE SPECIES.
7. REMOVE TEMPORARY ESC CONTROLS ONCE 80% GROUND COVER IS ACHIEVED



WATERWAY CROSSING 27 ESPC LAYOUT - MODERATE RISK



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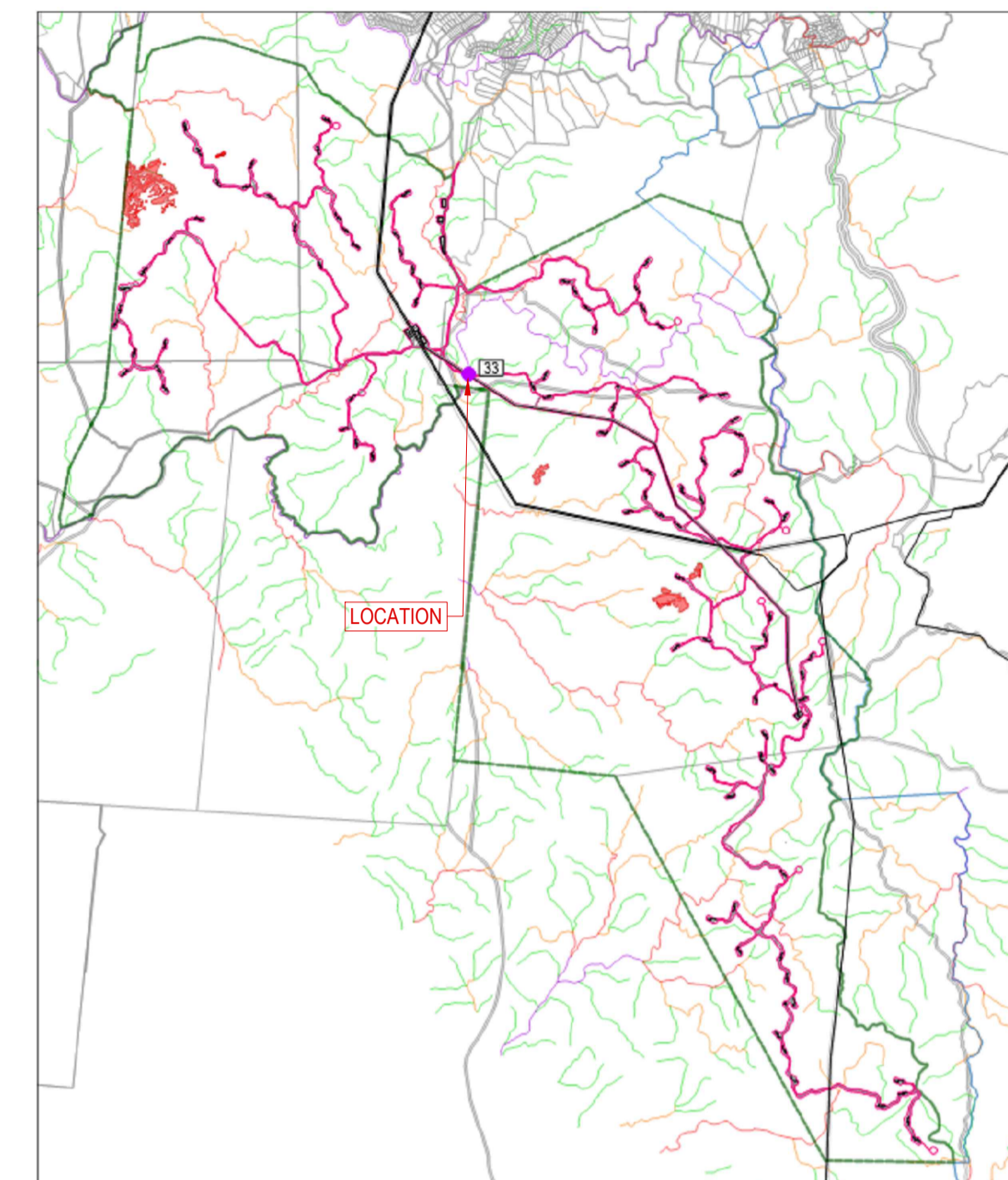
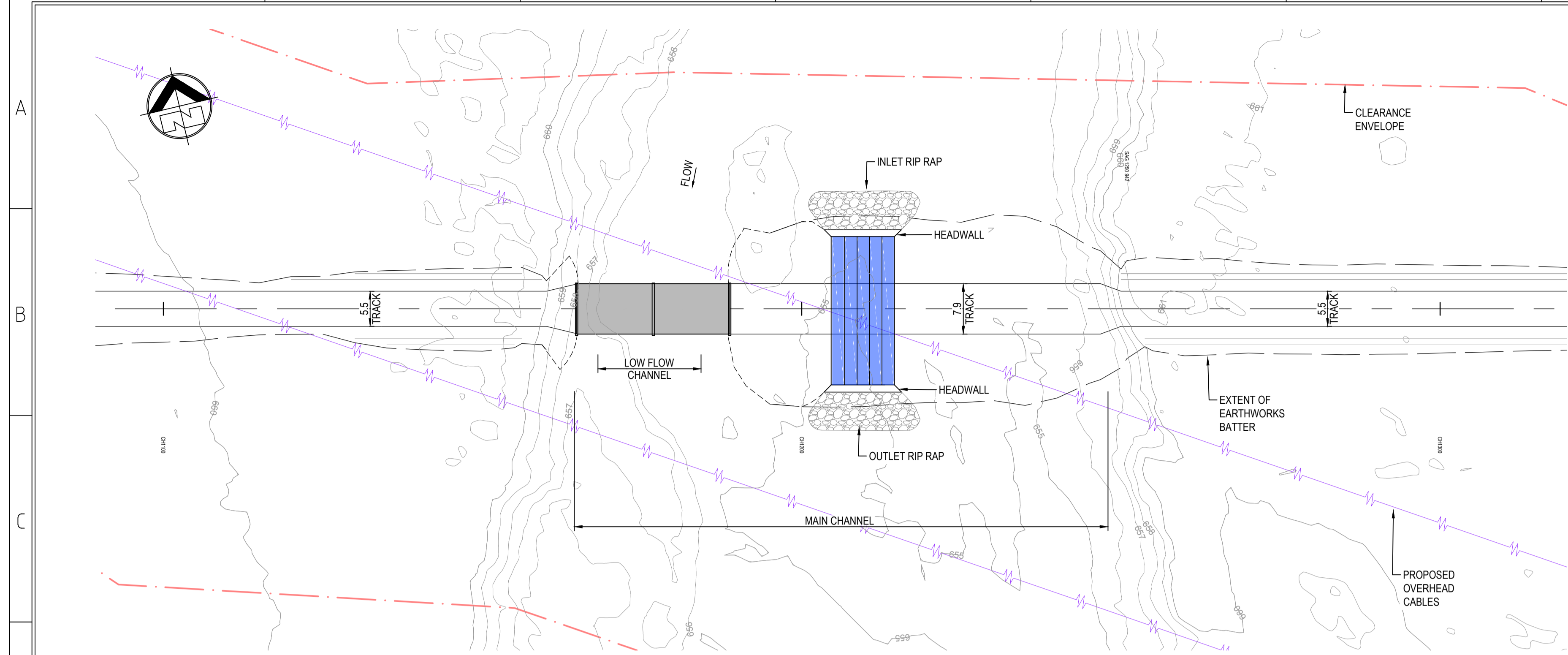
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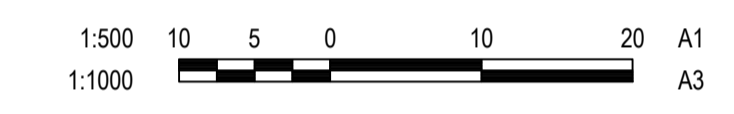
PROJECT	CHALUMBIN WIND FARM		
DRAWING STATUS	CONCEPT		
TITLE	WATERWAY CROSSING 27	PROJECT No.	20-315
EROSION AND SEDIMENT CONTROL PLAN	SCALE	AS SHOWN	SIZE A1
WATERWAY BARRIER WORKS - MODERATE RISK	DRAWING No.	CHLWF-WWBW-X27-2	REV. A



WATERWAY BARRIER WORKS NOTES

- EXISTING WATER COURSE DRAWN USING LIDAR SURVEY AND ONLINE MAPPING.
- CONCEPT DESIGN ONLY.
- LOW FLOW AND MAIN CHANNEL TO BE CONFIRMED WITH DETAILED SURVEY AND A SITE VISIT.
- CROSSING IS A DESIGNATED MAJOR IMPACT (PURPLE) WATERWAY AND WORKS SHALL BE CARRIED OUT TO APPROVED OPERATIONAL WORKS DRAWINGS.
- UNLESS NOTED OTHERWISE ALL DIMENSIONS WITH DECIMALS ARE IN METRES ALL WITHOUT ARE IN MILLIMETRES.
- IMPACTS ON WATER QUALITY ARE TO BE MINIMISED BY UNDERTAKING THE WORKS TO THE STANDARD AS SET OUT IN THE 'BEST PRACTICE EROSION AND SEDIMENT CONTROL' BY IECA AUSTRALIA.

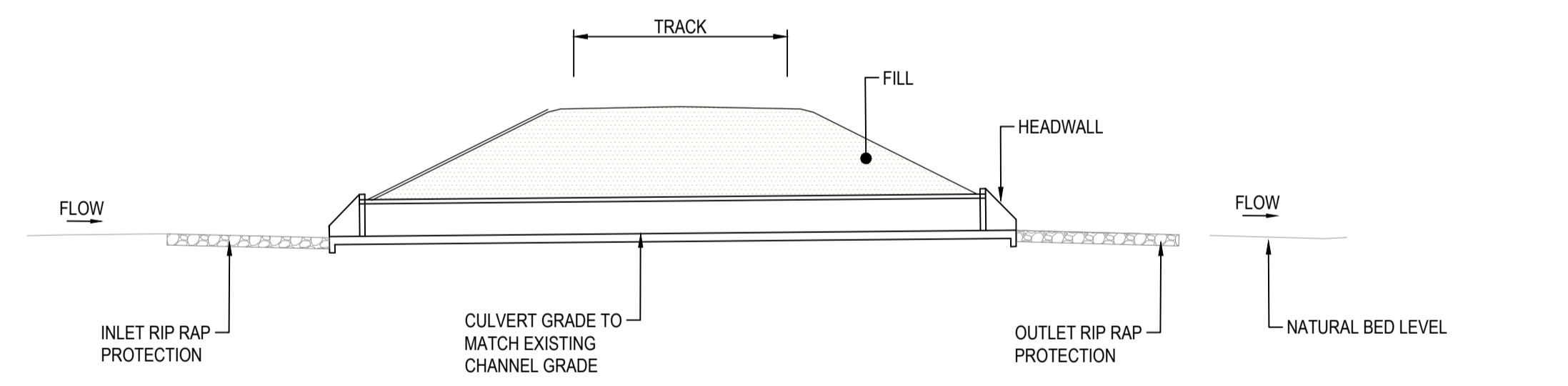
WATERWAY CROSSING 33 LAYOUT - MAJOR



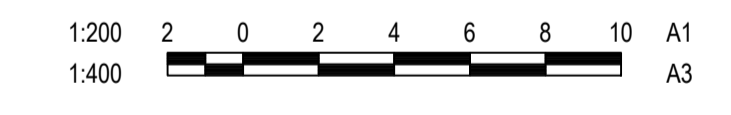
MAJOR RISK WATERWAY BARRIER WORKS - KEY PLAN

The longitudinal section diagram shows the vertical profile of the crossing. It includes a bridge, relief culverts for flood overbank, and a track finished surface. The main channel has a scour protection to piers. The diagram shows the existing surface, fill, and the track finished surface. The vertical geometry includes grades of -0.16%, -0.69%, and 0.47%. Vertical curve lengths are L 455.19, L 3.18, L 92.54, L 6.97, and L 139.84. Vertical curve radii are R 600.0 and R 600.0.

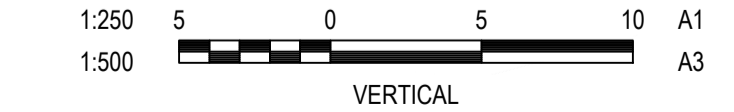
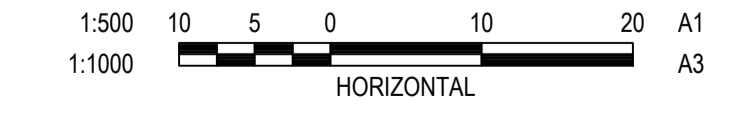
Chainage	Existing Surface (m)	Depth to Design (m)	Design C.L. Surface (m)
1130.000	660.761	-0.017	660.745
1150.000	661.120	-0.408	660.712
1156.138	660.947	-0.246	660.702
1159.313	660.155	0.533	660.688
1200.000	655.412	5.114	660.406
1246.784	657.042	3.040	660.082
1250.000	659.775	0.293	660.088
1250.942	660.346	-0.279	660.088
1253.751	661.067	-0.993	660.074
1280.000	660.884	-0.887	660.197



WATERWAY CROSSING 33 - RELIEF CULVERT SECTION



WATERWAY CROSSING 33 TRACK - LONGITUDINAL SECTION - MAJOR



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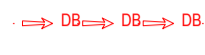







REV	DETAIL	DRN	CHK	APP	DATE
A	CONCEPT	B.P.	T.J.S.	J.M.	23.03.22

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PROJECT	CHALUMBIN WIND FARM		DRAWING STATUS	CONCEPT	
TITLE	WATERWAY CROSSING 33 FUNCTIONAL LAYOUT		PROJECT No.	20-315	SCALE
			DRAWING No.	CHLWF-WWBW-X33-1	AS SHOWN
					SIZE
					A1
					REV
					A

LEGEND

-  SURFACE WATER FLOWS
-  PERIMETER BUND FOR CLEAN WATER DIVERSION
-  DIRTY WATER DIVERSION BUND
-  COFFERDAM
-  ISOLATION BARRIER
-  FILTER FENCE OR TYPE 3 SEDIMENT TRAP
-  SEDIMENT BASIN OR TYPE 2 SEDIMENT TRAP
-  STABILISED OUTLET / DISCHARGE
-  SITE LAYDOWN
-  STOCKPILE

ESPC NOTES

ESPC LIMITATIONS

- ESP PLANNING REQUIRES DETAILED INFORMATION PERTAINING TO THE CONSTRUCTION METHODOLOGY, INFORMATION WHICH WILL NOT BE AVAILABLE UNTIL THE CONSTRUCTION CONTRACTOR IS APPOINTED.
- THIS ESPC IS INTENDED AS INDICATIVE OF THE GENERAL ESC PHILOSOPHY TO BE APPLIED TO BRIDGE AND CULVERT CONSTRUCTION AND IS NOT INTENDED TO BE LIMITING.
- ESC FOR INSTREAM WORKS MAY DIFFER FROM THAT WHICH IS SHOWN, BUT WILL MEET THE IECA 2008 BEST PRACTICE ESC STANDARDS
- REFER TO THE CHALUMBIN WINDFARM PRELIMINARY ESPC FOR FURTHER INFORMATION.

CONSTRUCTION NOTES:

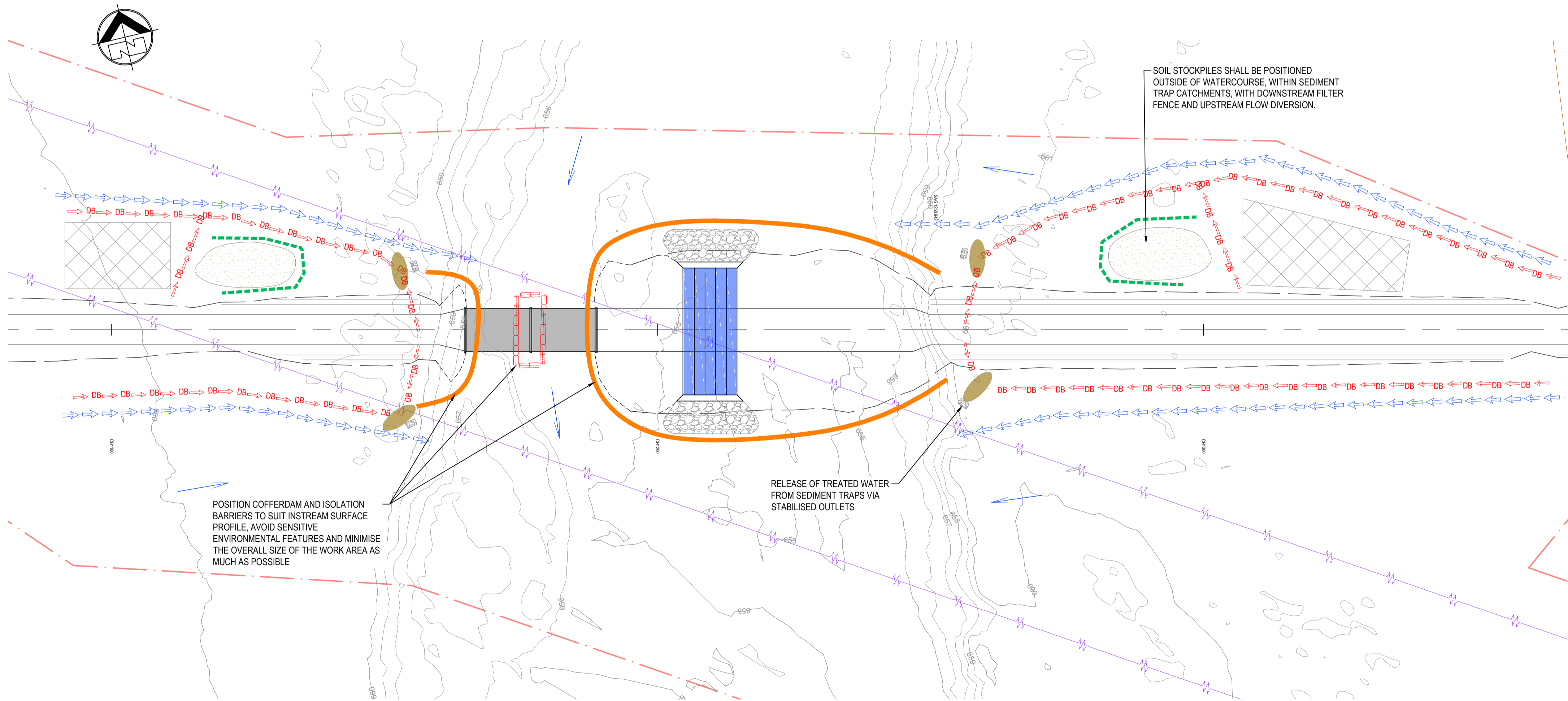
- WORKS ARE TO BE UNDERTAKEN DURING LOW OR NO FLOW CONDITIONS BETWEEN JULY AND OCTOBER, PREFERABLY DURING AUGUST OR SEPTEMBER.
- NO ACCESS / DISTURBANCE TO AREAS OUTSIDE OF PERIMETER BUNDS, ISOLATION BARRIERS AND CULVERT / TRACK EXTENT WIDTH WITHIN WATERCOURSE, (EXCEPT COFFERDAMS).

CONSTRUCTION ASSUMPTIONS:

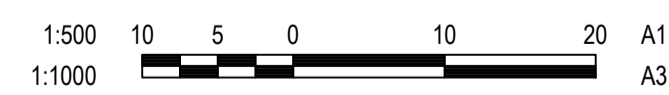
- USE OF LONG REACH EQUIPMENT TO MINIMIZE THE EXTENT OF CREEK BED ACCESS BY MACHINERY AS MUCH AS POSSIBLE.
- CATCH DRAINS ARE TO BE APPROPRIATELY LINED AND FLOW VELOCITY MANAGED (E.G. BY USE OF CHECK DAMS) TO PREVENT SCOUR.
- MAXIMISE GROUND COVER BY:
 - ESTABLISHING STABLE TRACK SURFACES (E.G. COMPACTED ROAD BASE OR EQUIVALENT) ON CROSSING TRACK APPROACHES PRIOR TO COMMENCEMENT OF INSTREAM WORKS.
 - APPLICATION OF EROSION CONTROL BLANKETS (ROLL ON OR HYDRAULICALLY APPLIED) TO DISTURBED CREEK BANKS.
 - MAINTAIN VEGETATIVE BUFFER BETWEEN SOIL STOCKPILES AND SEDIMENT TRAPS
- SEDIMENT TRAP TYPE, DESIGN AND MANAGEMENT IS TO BE DETERMINED BY THE CONSTRUCTION ESPC

CONSTRUCTION SEQUENCE

1. INSTALL EROSION, SEDIMENT AND DRAINAGE CONTROLS.
2. ESTABLISH ISOLATION BARRIER WITHIN WATERCOURSE, ISOLATE THE INSTREAM WORK AREA - INSTALL COFFERDAMS AND PUMPED BYPASS.
3. DEWATER WORK AREA (IF REQUIRED), PUMPING DIRTY WATER TO SEDIMENT BASINS / TYPE 2 TRAPS FOR TREATMENT.
4. COMMENCE WORK.
5. MAINTAIN ESC CONTROLS.
6. UPON COMPLETION OF WORKS, STABILISE DISTURBED SOIL SURFACES WITHIN AND ADJACENT WATERCOURSE WITH GROUND COVER (ROCK / ENGINEERED PROTECTION OR VEGETATIVE) AND REVEGETATE CREEK BANKS WITH APPROPRIATE NATIVE SPECIES.
7. REMOVE TEMPORARY ESC CONTROLS ONCE 80% GROUND COVER IS ACHIEVED



WATERWAY CROSSING 33 ESPC LAYOUT - MAJOR RISK



POSITION COFFERDAM AND ISOLATION BARRIERS TO SUIT INSTREAM SURFACE PROFILE, AVOID SENSITIVE ENVIRONMENTAL FEATURES AND MINIMISE THE OVERALL SIZE OF THE WORK AREA AS MUCH AS POSSIBLE

RELEASE OF TREATED WATER FROM SEDIMENT TRAPS VIA STABILISED OUTLETS

SOIL STOCKPILES SHALL BE POSITIONED OUTSIDE OF WATERCOURSE, WITHIN SEDIMENT TRAP CATCHMENTS, WITH DOWNSTREAM FILTER FENCE AND UPSTREAM FLOW DIVERSION.

TO BE PRINTED IN COLOUR COORDINATE REFERENCE SYSTEM GDA 2020 / MGA Z55



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REV	DETAIL	DRN	CHK
A CONCEPT		B.P.	T.J.S.
		J.M.	23.03.22
		DATE	

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PROJECT	CHALUMBIN WIND FARM
TITLE	WATERWAY CROSSING 33 EROSION AND SEDIMENT CONTROL PLAN WATERWAY BARRIER WORKS - MAJOR RISK
DRAWING No.	CHLWF-WWBW-X33-2

DRAWING STATUS	CONCEPT
PROJECT No.	20-315
SCALE	AS SHOWN
SIZE	A1
REV	A