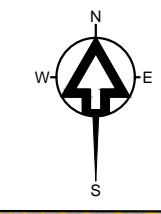


Appendix 24.

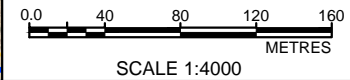
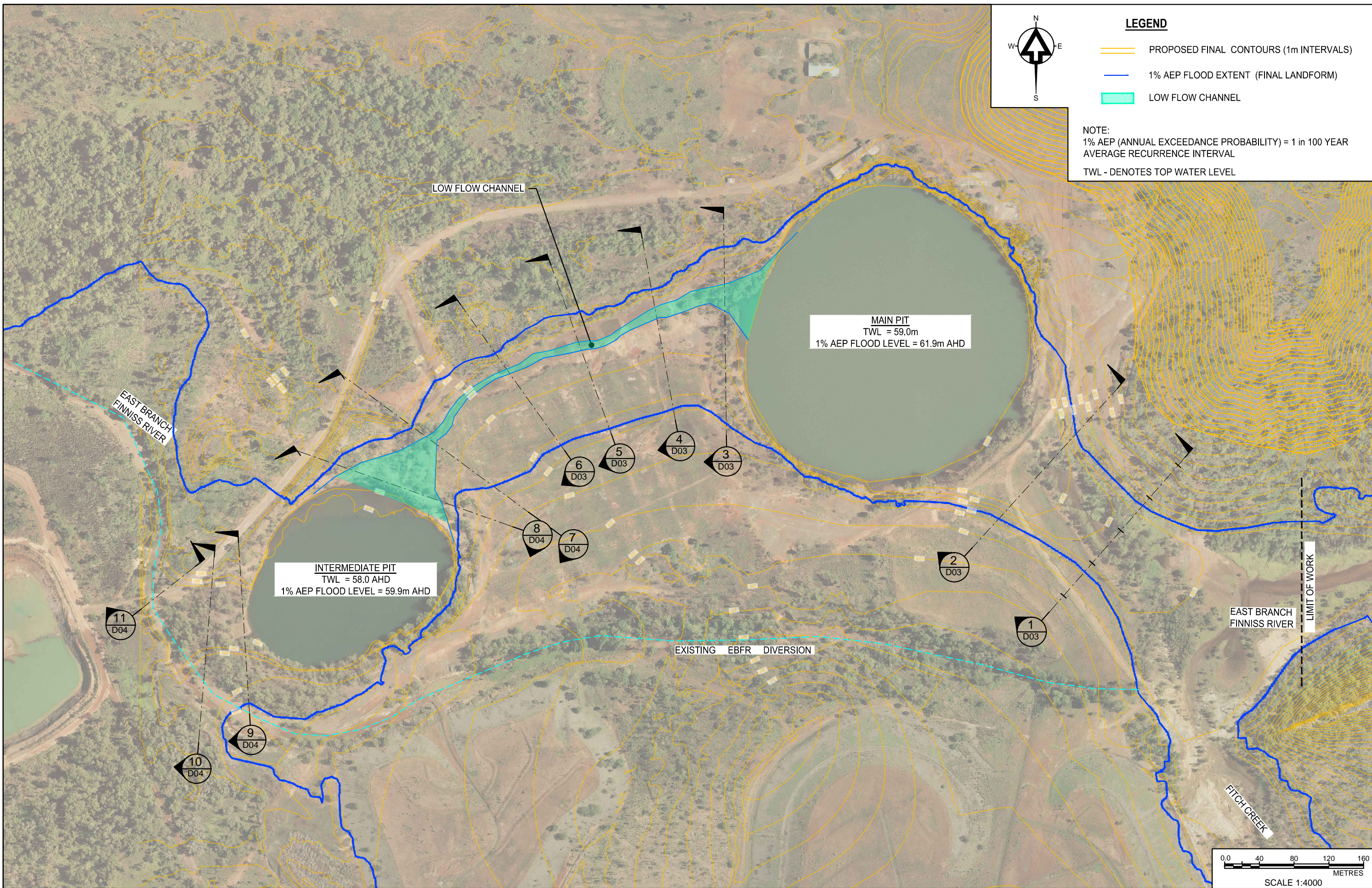
SLR Consulting Australia (2020o) *Reinstatement of EBFR Design Drawings*. Issued to the Department of Primary Industry and Resources, Northern Territory.





- LEGEND**
- PROPOSED FINAL CONTOURS (1m INTERVALS)
 - 1% AEP FLOOD EXTENT (FINAL LANDFORM)
 - LOW FLOW CHANNEL

NOTE:
 1% AEP (ANNUAL EXCEEDANCE PROBABILITY) = 1 in 100 YEAR AVERAGE RECURRENCE INTERVAL
 TWL - DENOTES TOP WATER LEVEL



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No.	DESCRIPTION	DATE	INIT.	DEPT./COMPANY.
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Plot Date: 11/06/2020				



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DRAWN M Skoljarev DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGNED P Cupitt DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGN PROJECT LEADER D O'Toole DATE: 20.05.2020	NTG PROJECT MANAGER J Hartnett DATE: 20.05.2020



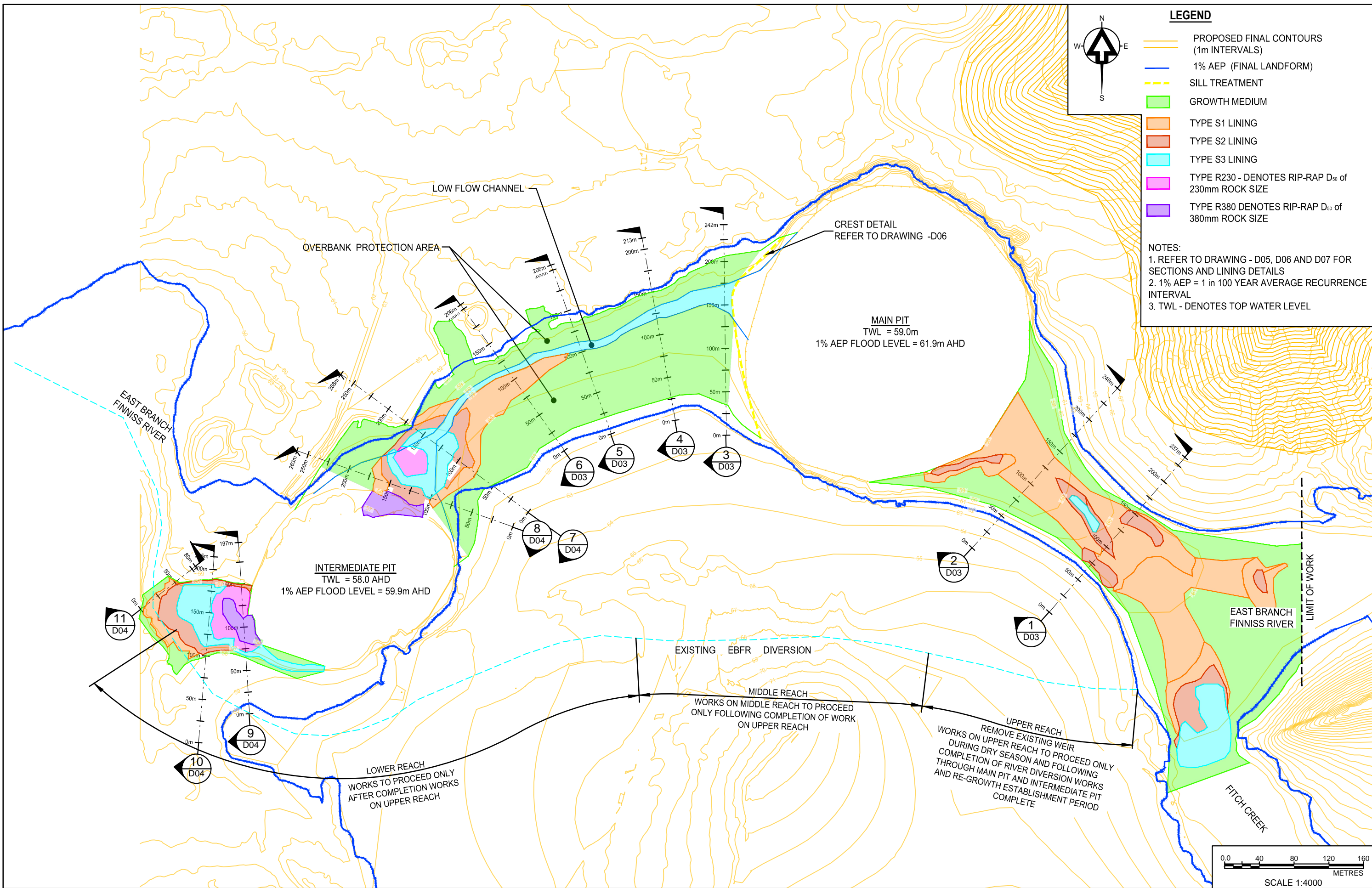
RUM JUNGLE REHABILITATION STAGE 2A DETAILED ENGINEERING DESIGN				
REINSTATEMENT OF EAST BRANCH FINNISS RIVER GENERAL ARRANGEMENT				
NTG PROJECT No. N/A	NTG ASSET No. N/A	SHEET No. 1 OF 7	NTG DRAWING No. 680.10421.RFR.D01	AMENDMENT 1
				SHEET SIZE A3

LEGEND

- PROPOSED FINAL CONTOURS (1m INTERVALS)
- 1% AEP (FINAL LANDFORM)
- SILL TREATMENT
- GROWTH MEDIUM
- TYPE S1 LINING
- TYPE S2 LINING
- TYPE S3 LINING
- TYPE R230 - DENOTES RIP-RAP D₅₀ OF 230mm ROCK SIZE
- TYPE R380 DENOTES RIP-RAP D₅₀ OF 380mm ROCK SIZE

NOTES:

1. REFER TO DRAWING - D05, D06 AND D07 FOR SECTIONS AND LINING DETAILS
2. 1% AEP = 1 IN 100 YEAR AVERAGE RECURRENCE INTERVAL
3. TWL - DENOTES TOP WATER LEVEL



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AMENDMENTS				
		Plot Date: 11/06/2020		

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DESIGNED P Cupitt DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGN PROJECT LEADER D O'Toole DATE: 20.05.2020	NTG PROJECT MANAGER J Hartnett DATE: 20.05.2020

Northern Territory Government

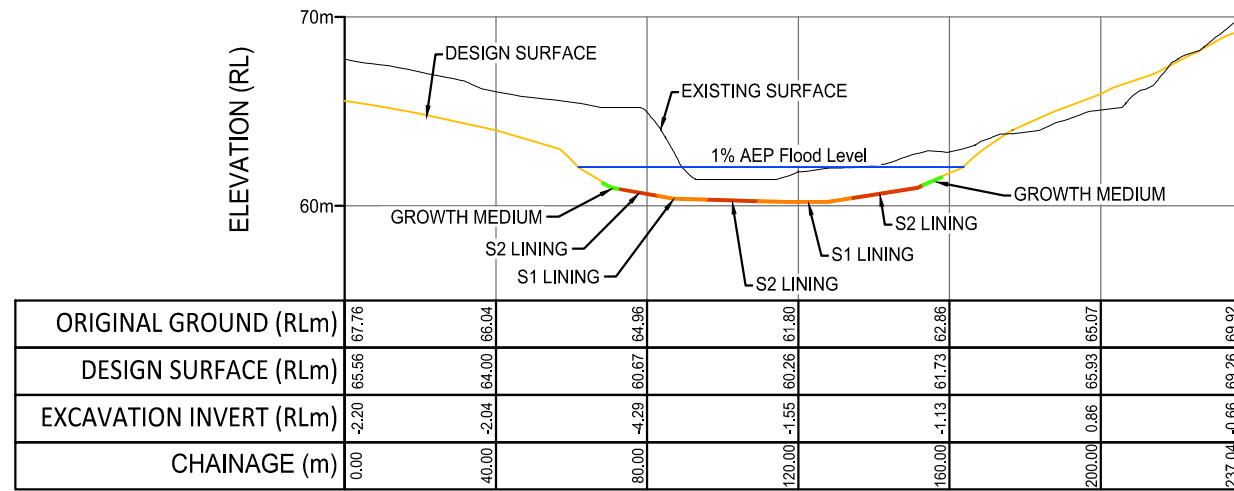
RUM JUNGLE REHABILITATION
 STAGE 2A DETAILED ENGINEERING DESIGN

**REINSTATEMENT OF EAST BRANCH FINNISS RIVER
 EXISTING AND FINAL CONTOURS PLAN**

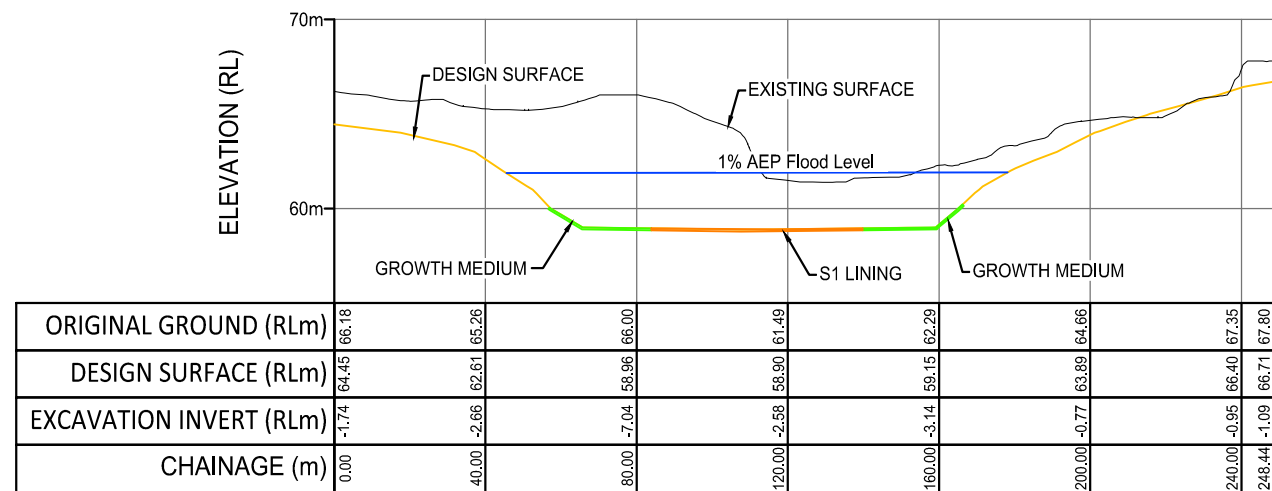
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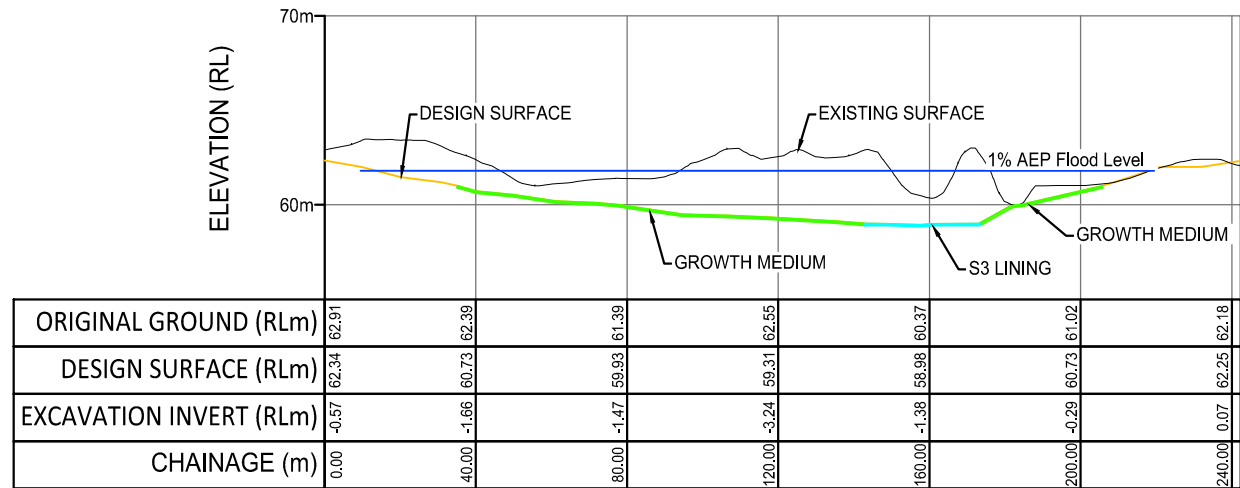
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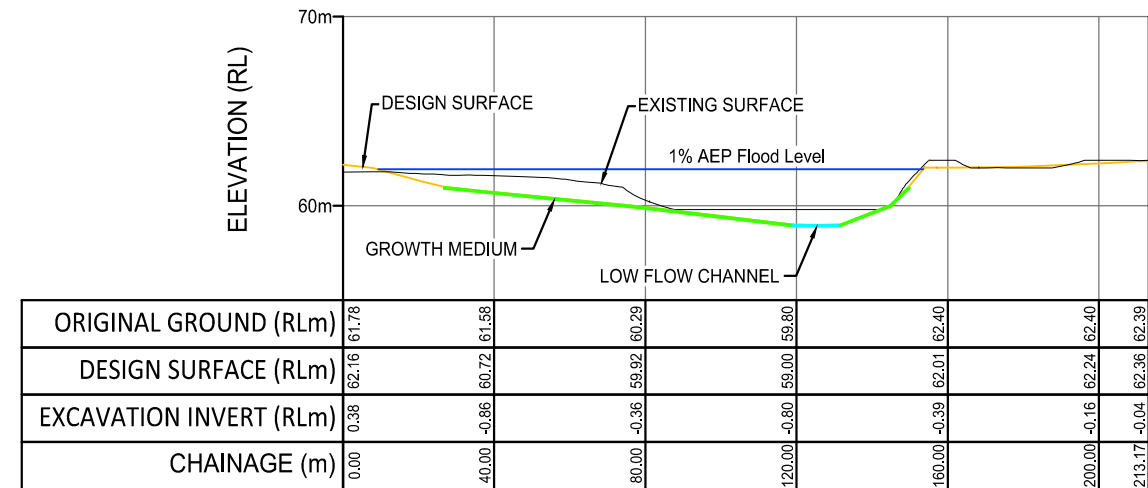
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 SCALE H - 1: 2000
 V - 1: 400



SECTION 2
 SCALE 1: 2000
 V - 1: 400



SECTION 3
 SCALE 1: 2000
 V - 1: 400

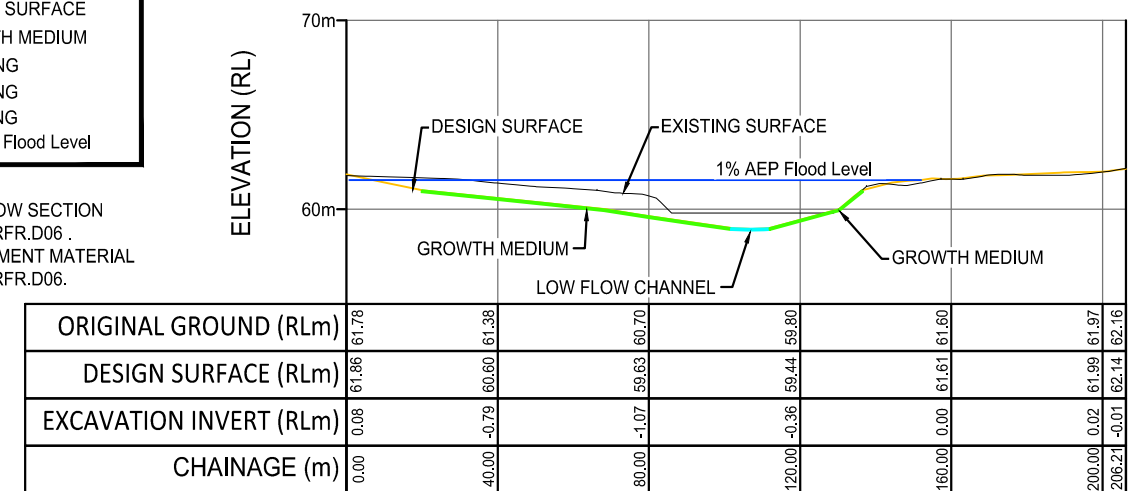


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 V - 1: 400

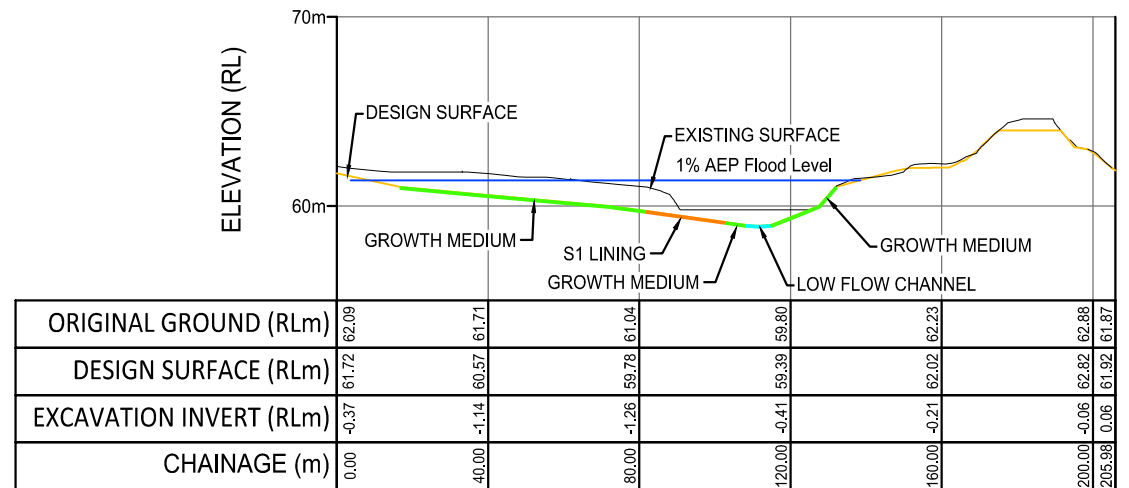
LEGEND

- EXISTING SURFACE
- DESIGN SURFACE
- GROWTH MEDIUM
- S1 LINING
- S2 LINING
- S3 LINING
- 1% AEP Flood Level

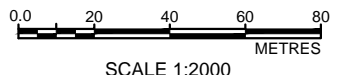
NOTE:
 FOR TYPICAL LOW FLOW SECTION REFER TO DRAWING RFR.D06.
 FOR SURFACE TREATMENT MATERIAL REFER TO DRAWING RFR.D06.



SECTION 5
 SCALE 1: 2000
 V - 1: 400



SECTION 6
 SCALE 1: 2000
 V - 1: 400



No.	DESCRIPTION	DATE	INIT.	DEPT./COMPANY.
1	ISSUED FOR IMPLEMENTATION	10/06/20	MS	SLR
AMENDMENTS				
Plot Date: 11/06/2020				

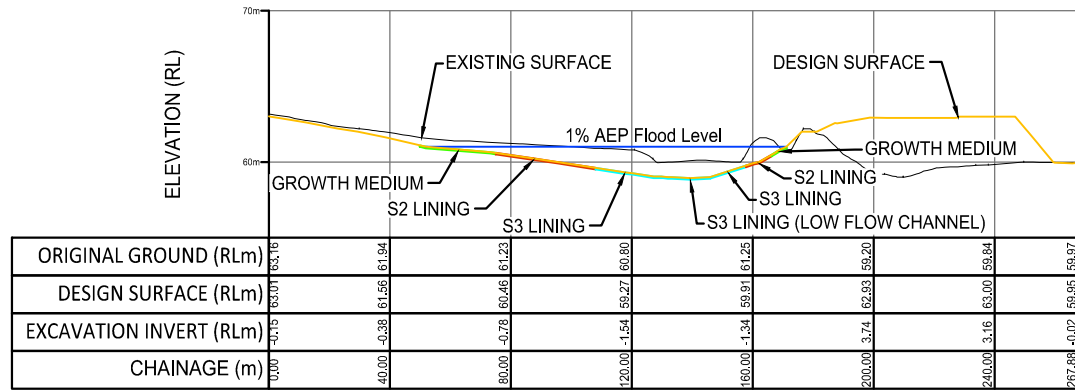
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DRAWN M Skoljarev DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGNED P Cupitt DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGN PROJECT LEADER D O'Toole DATE: 20.05.2020	NTG PROJECT MANAGER J Hartnett DATE: 20.05.2020

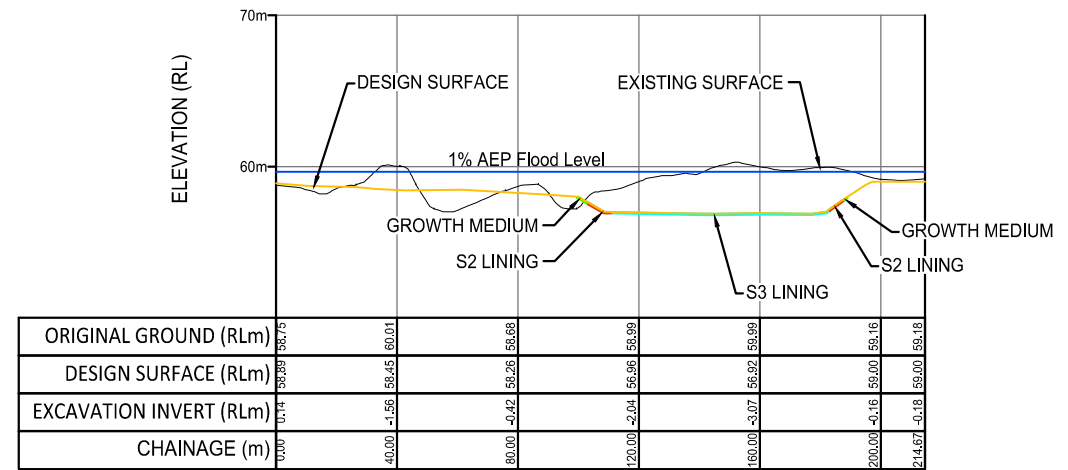


RUM JUNGLE REHABILITATION STAGE 2A DETAILED ENGINEERING DESIGN				
SURFACE TREATMENT SECTIONS SHEET 1 OF 2				
NTG PROJECT No.	NTG ASSET No.	SHEET No.	NTG DRAWING No.	AMENDMENT
N/A	N/A	3 OF 7	680.10421.RFR.D03	1
				SHEET SIZE A3

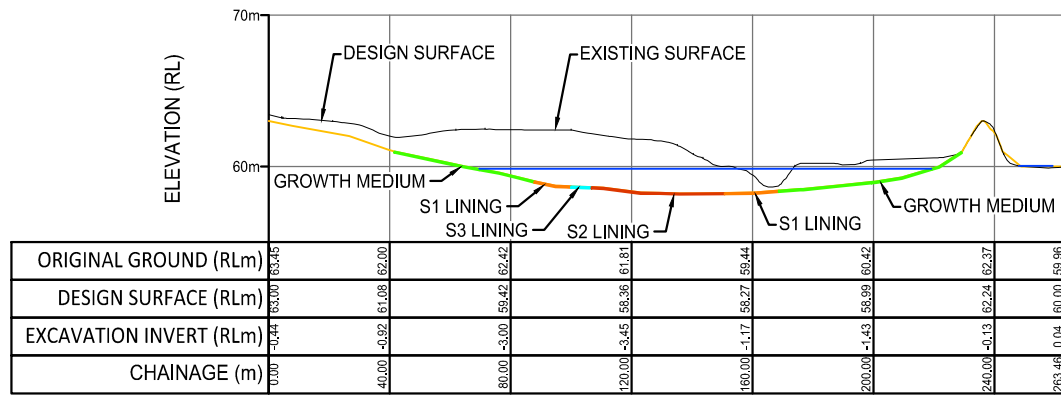
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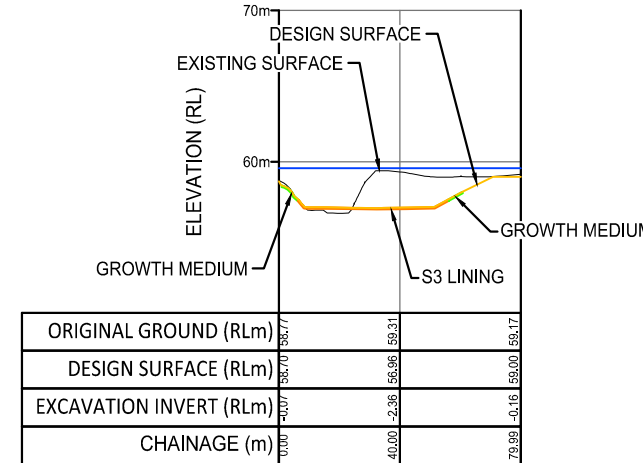
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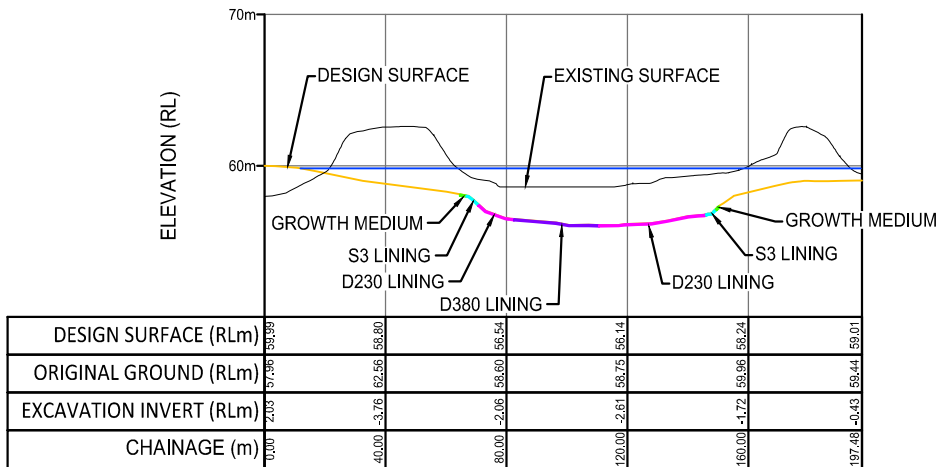
SECTION 10
 SCALE H - 1: 2000
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SECTION 8
 SCALE H - 1: 2000
 V - 1: 400



SECTION 11
 SCALE H - 1: 2000
 V - 1: 400



SECTION 9
 SCALE H - 1: 2000
 V - 1: 400

LEGEND	
	EXISTING SURFACE
	DESIGN SURFACE
	GROWTH MEDIUM
	S1 LINING
	S2 LINING
	S3 LINING
	D230 LINING
	D380 LINING
	1% AEP Flood Level

NOTE:
 FOR TYPICAL LOW FLOW SECTION REFER TO DRAWING RFR.D06.
 FOR SURFACE TREATMENT MATERIAL REFER TO DRAWING RFR.D06.



No.	DESCRIPTION	DATE	INIT.	DEPT./COMPANY.
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AMENDMENTS				
Plot Date: 11/06/2020				



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DESIGNED P Cupitt DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGN PROJECT LEADER D O'Toole DATE: 20.05.2020	NTG PROJECT MANAGER J Hartnett DATE: 20.05.2020

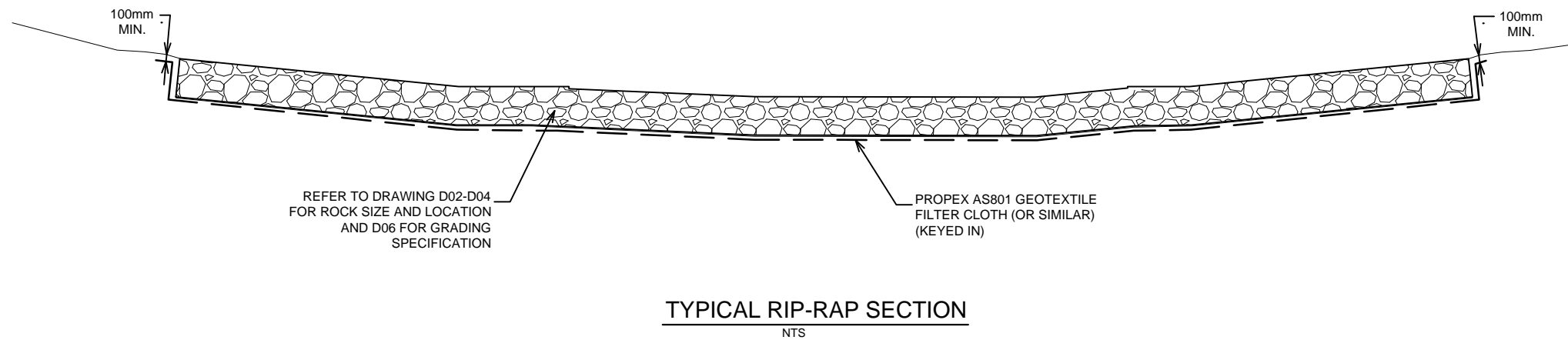
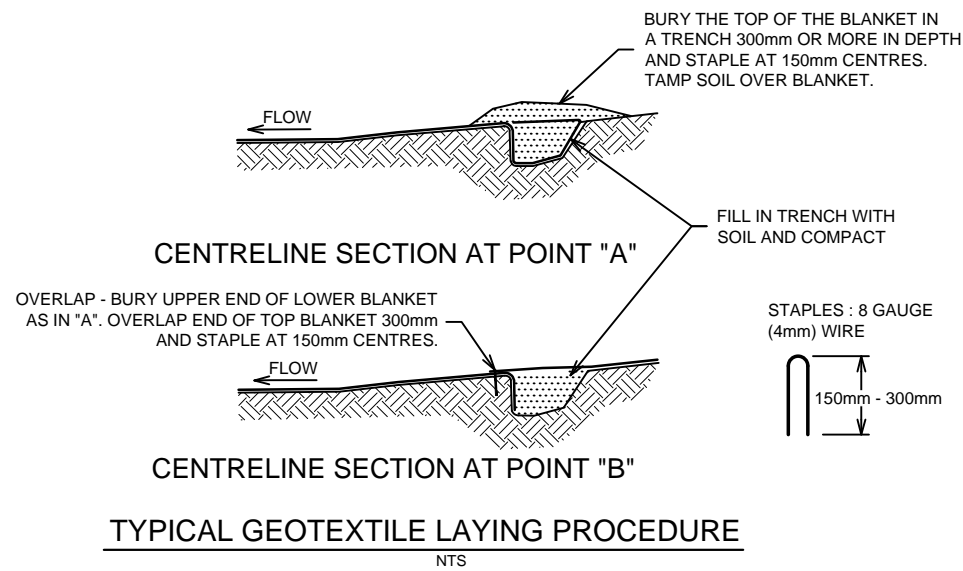
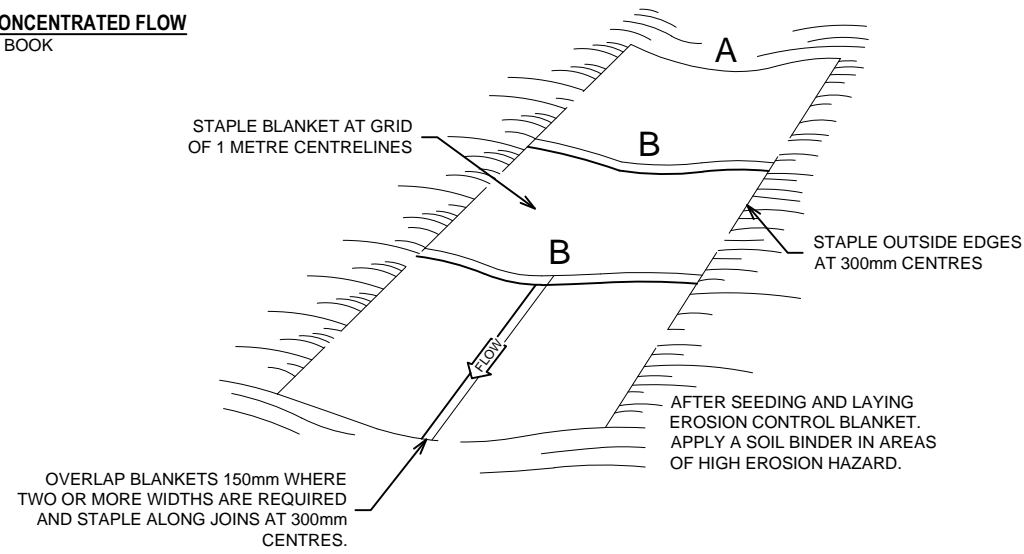


RUM JUNGLE REHABILITATION
 STAGE 2A DETAILED ENGINEERING DESIGN

**SURFACE TREATMENT
 SECTIONS SHEET 2 OF 2**

NTG PROJECT No.	NTG ASSET No.	SHEET No.	NTG DRAWING No.	AMENDMENT	SHEET SIZE
N/A	N/A	4 OF 7	680.10421.RFR.D04	1	A3

INSERT 1
SD 5-7 RECP: CONCENTRATED FLOW
 SOURCE - BLUE BOOK



CONSTRUCTION NOTES:

- RIP-RAP SHOULD OVERLAY A 1M DEEP BASE OF STABILISED AND WELL COMPACTED MATERIAL WHICH IS NON-DISPERSIVE AND WITH PERMEABILITY NON GREATER THAN 1×10^{-6} m/s.
- USE GRADED DURABLE RIP-RAP (ROCK). RIP-RAP SHOULD NOT BE SINGLE SIZED, BUT SHOULD BE A WELL-GRADED MIXTURE DESIGNED TO ENSURE THAT ALL GAPS BETWEEN LARGE ROCKS ARE FILLED WITH ROCK OF PROGRESSIVELY SMALLER SIZE SO THAT NO SIGNIFICANT VOIDS OCCUR IN THE RIP-RAP BLANKET. GRADING RECOMMENDATIONS ARE PROVIDED IN TABLE 1 BELOW.
- ROCK FOR RIP RAP SHOULD BE HARD, TOUGH AND DURABLE WITH A CRUSHING STRENGTH OF AT LEAST 25MPa. THE ROCK SHOULD BE FREE OF DEFINED CLEAVAGE PLANES AND SHOULD NOT BE ADVERSELY AFFECTED BY REPEATED WETTING AND DRYING. ROCK SHOULD PREFERABLY BE PREDOMINANTLY ANGULAR IN SHAPE WITH NOT MORE THAN 25% OF ROCKS, DISTRIBUTED THROUGH THE GRADATION, HAVING A LENGTH MORE THAN TWICE THE BREADTH AND THICKNESS.
- USE PROPEX AS801 NON-WOVEN GEOTEXTILE FILTER CLOTH (GEOTEXTILE) (OR SIMILAR) BETWEEN THE RIP RAP AND THE PARENT MATERIAL. MAXIMUM RESISTANCE BETWEEN THE RIP RAP AND THE CLOTH IS REQUIRED. THIS CAN BE ACHIEVED BY:
 - ENSURING PREPARATION OF THE BANK TO A ROUGH AND UNEVEN BATTER BEFORE PLACING THE CLOTH.
 - NOT STRETCHING CLOTH TIGHTLY OVER THE UNDERLYING BANK
 - AVOID CLOTHS WITH LOW FRICTION SURFACES
 - LAY GEOTEXTILE IN "SHINGLE-FASHION", WITH THE END OF EACH UPSTREAM ROLL OVERLAPPING THOSE DOWNSTREAM. ENSURE EACH ROLL IS ANCHORED PROPERLY AT ITS UPSLOPE END.
- REFER TO DRAWING RFR.D06 FOR RIP-RAP DETAILS

NOTE:
 ALL DISTURBED AREAS (OUTSIDE ROCK RIP RAP) SHOULD BE REVEGETATED AS PER PROJECT REVEGETATION PLAN.

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No.	DESCRIPTION	DATE	INIT.	DEPT./COMPANY.
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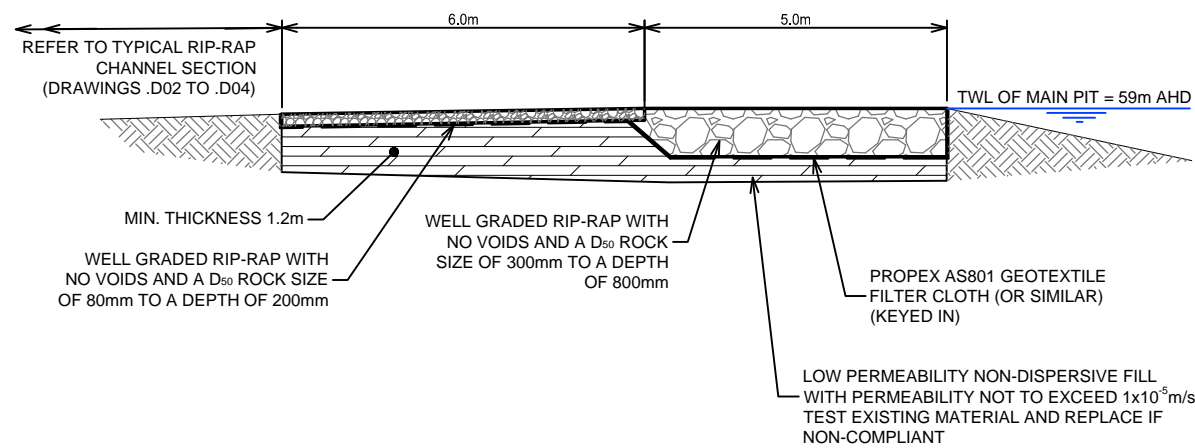
DRAWN M Skoljarev DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGNED P Cupitt DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGN PROJECT LEADER D O'Toole DATE: 20.05.2020	NTG PROJECT MANAGER J Hartnett DATE: 20.05.2020



RUM JUNGLE REHABILITATION
 STAGE 2A DETAILED ENGINEERING DESIGN

**REINSTATEMENT OF EAST BRANCH FINNISS RIVER
 DETAILS SHEET 1**

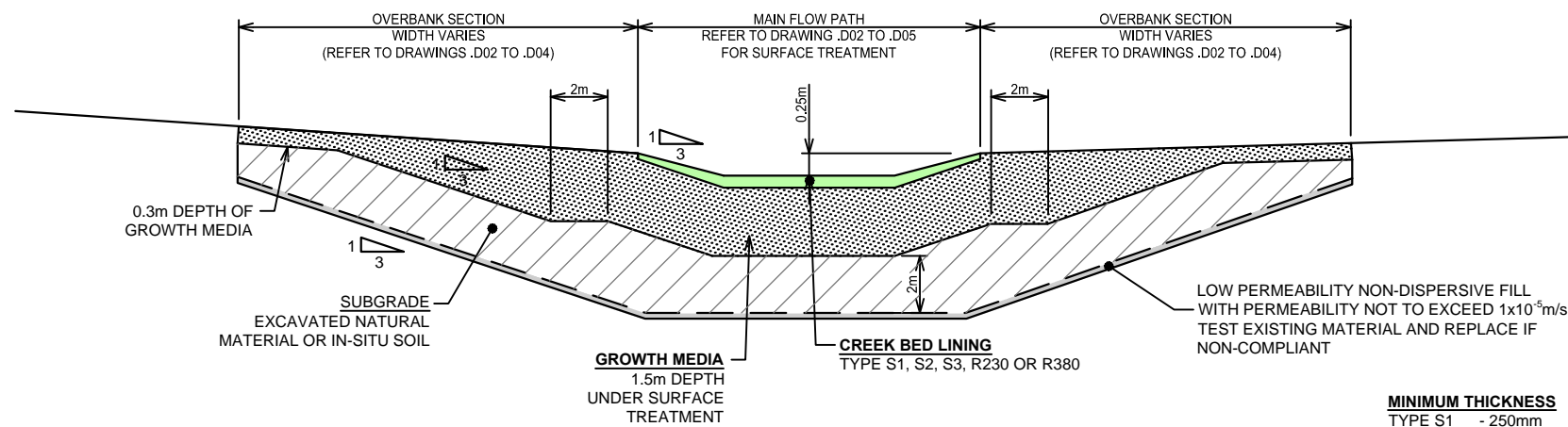
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MAIN PIT SPILLWAY CREST DETAIL

NTS

NOTE:
CREST IS NOT LEVEL BUT FOLLOWS SURFACE CONTOUR OF FLOW PATH.
REFER SECTION 3 ON DRAWING .D03.



TYPICAL SECTION FOR CHANNEL REINSTATEMENT DESIGN

NTS

MINIMUM THICKNESS

- TYPE S1 - 250mm
- TYPE S2 - 300mm
- TYPE S3 - 500mm
- TYPE R230 - D50 OF 230mm ROCK AT A DEPTH OF 350mm
- TYPE R380 - D50 OF 380mm ROCK AT A DEPTH OF 600mm

MATERIAL SPECIFICATIONS FOR CONSTRUCTION WITH FLOOD ENVELOPE		
TYPE S1: RIP-RAP SOIL SAND MIX (FINE)		
PERCENTAGE BY WEIGHT	SPECIFICATION	
MINIMUM	MAXIMUM	
10%	15%	GROWTH MEDIUM
0%	5%	MEDIUM TO COARSE SAND (0.25 to 1.0mm)
15%	20%	COARSE SAND (1.0 to 2.0mm)
15%	20%	FINE GRAVEL (2.0 to 3.4mm)
20%	25%	COARSE GRAVEL (3.4 to 10mm)
30%	35%	GRADED RIP-RAP, 10 to 100mm, WITH D ₅₀ of 70mm TO A DEPTH OF 150mm
TYPE S2: RIP-RAP SOIL SAND MIX (MEDIUM)		
PERCENTAGE BY WEIGHT	SPECIFICATION	
MINIMUM	MAXIMUM	
10%	15%	GROWTH MEDIUM
0%	5%	MEDIUM TO COARSE SAND (0.25 to 1.0mm)
10%	15%	COARSE SAND (1.0 to 2.0mm)
10%	15%	FINE GRAVEL (2.0 to 3.4mm)
25%	30%	COARSE GRAVEL (3.4 to 10mm)
35%	40%	GRADED RIP-RAP, 10 to 160mm, WITH D ₅₀ of 100mm TO A DEPTH OF 100mm
TYPE S3: RIP-RAP SOIL SAND MIX (COARSE)		
PERCENTAGE BY WEIGHT	SPECIFICATION	
MINIMUM	MAXIMUM	
10%	15%	GROWTH MEDIUM
0%	5%	MEDIUM TO COARSE SAND (0.25 to 1.0mm)
5%	10%	COARSE SAND (1.0 to 2.0mm)
5%	10%	FINE GRAVEL (2.0 to 3.4mm)
20%	25%	COARSE GRAVEL (3.4 to 10mm)
50%	55%	GRADED RIP-RAP, 10 to 200mm, WITH D ₅₀ of 150mm TO A DEPTH OF 250mm
RIP-RAP		
RIP-RAP IS DESIGNATED BY THE D ₅₀ (EG: R250 HAS A D ₅₀ 250mm). REFER TO DRAWING -D02 FOR APPLICATION AREAS AND REFER TO SPECIFICATION ON -D06 FOR GRADING REQUIREMENTS FOR RIP-RAP. RIP-RAP MUST BE WELL GRADED WITH FEW VOIDS.		
GROWTH MEDIUM		
REFER TO GENERAL SPECIFICATIONS		
EXCAVATED NATURAL MATERIAL		
REFER TO GENERAL SPECIFICATIONS		

NOTE 1
THE CONTRACTOR IS REQUIRED TO IMPLEMENT THE LANDFORM AS SPECIFIED. REVEGETATION IS NOT PART OF THIS CONTRACT.

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FILE LOCATION: C:\temp\680.10421 RUM JUNGLE\Flood-MPS\FINAL DRAWINGS\680.10421.RFR.D01 to D06 (REV A).dwg

No.	DESCRIPTION	DATE	INIT.	DEPT./COMPANY.
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AMENDMENTS				
Plot Date: 11/06/2020				

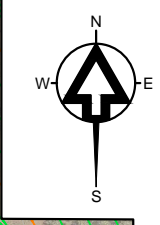


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DESIGNED P Cupitt DATE: 20.05.2020	CHECKED P Delaney DATE: 20.05.2020
DESIGN PROJECT LEADER D O'Toole DATE: 20.05.2020	NTG PROJECT MANAGER J Hartnett DATE: 20.05.2020



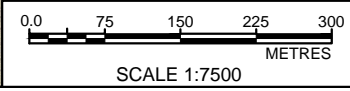
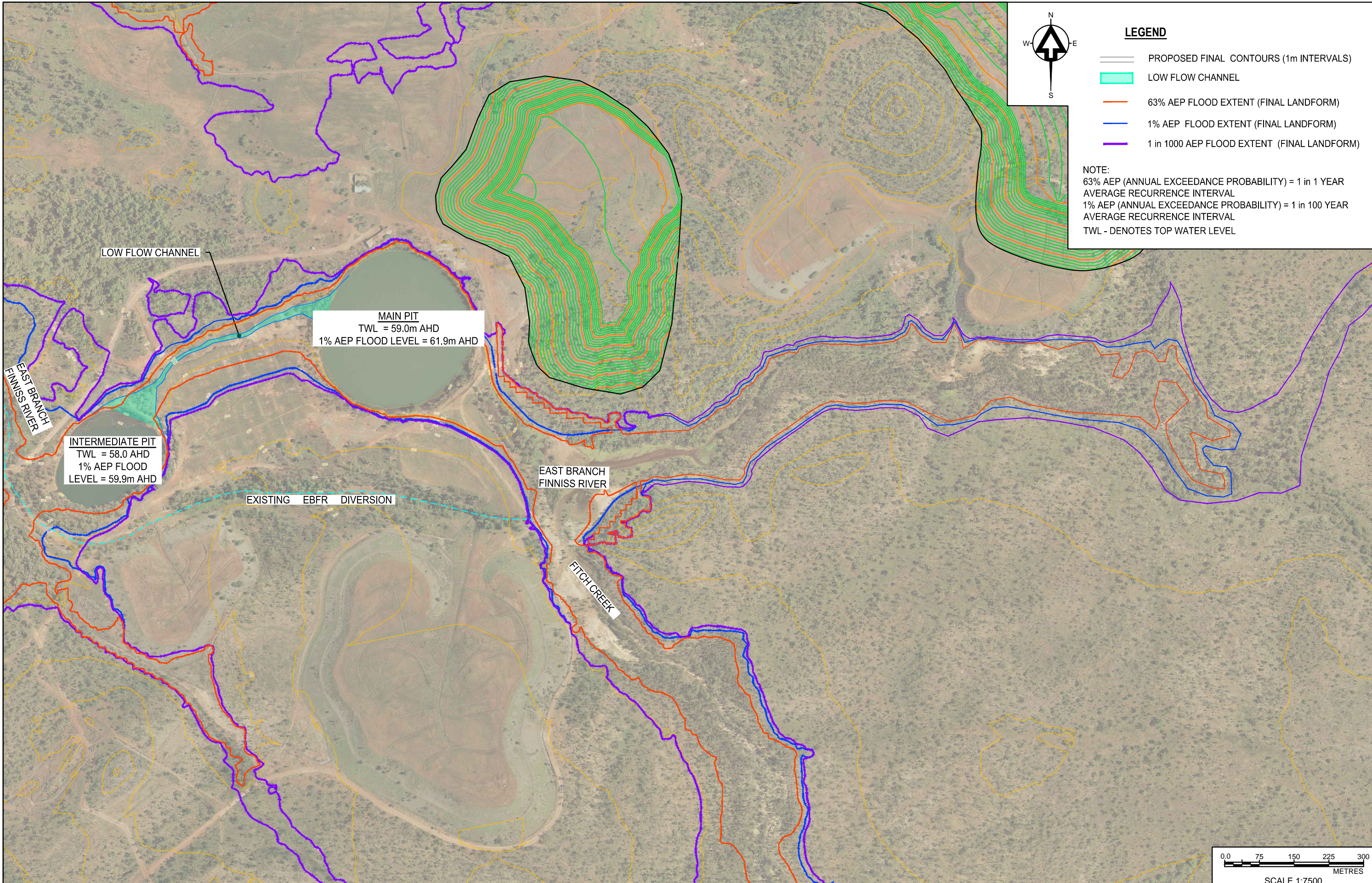
RUM JUNGLE REHABILITATION STAGE 2A DETAILED ENGINEERING DESIGN				
REINSTATEMENT OF EAST BRANCH FINNISS RIVER DETAILS SHEET 2				
NTG PROJECT No.	NTG ASSET No.	SHEET No.	NTG DRAWING No.	AMENDMENT
N/A	N/A	6 of 7	680.10421.RFR.D06	1
				SHEET SIZE A3



LEGEND

- PROPOSED FINAL CONTOURS (1m INTERVALS)
- LOW FLOW CHANNEL
- 63% AEP FLOOD EXTENT (FINAL LANDFORM)
- 1% AEP FLOOD EXTENT (FINAL LANDFORM)
- 1 in 1000 AEP FLOOD EXTENT (FINAL LANDFORM)

NOTE:
 63% AEP (ANNUAL EXCEEDANCE PROBABILITY) = 1 in 1 YEAR AVERAGE RECURRENCE INTERVAL
 1% AEP (ANNUAL EXCEEDANCE PROBABILITY) = 1 in 100 YEAR AVERAGE RECURRENCE INTERVAL
 TWL - DENOTES TOP WATER LEVEL



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Plot Date: 11/06/2020				



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DRAWN M Skoljarev DATE: 22.05.2020	CHECKED P Delaney DATE: 22.05.2020
DESIGNED P Cupitt DATE: 22.05.2020	CHECKED P Delaney DATE: 22.05.2020
DESIGN PROJECT LEADER D O'Toole DATE: 22.05.2020	NTG PROJECT MANAGER J Hartnett DATE: 22.05.2020



RUM JUNGLE REHABILITATION STAGE 2A DETAILED ENGINEERING DESIGN				
REINSTATEMENT OF EAST BRANCH FINNISS RIVER FLOOD INUNDATION AND WSF POSITION				
NTG PROJECT No.	NTG ASSET No.	SHEET No.	NTG DRAWING No.	AMENDMENT
N/A	N/A	7 OF 7	680.10421.RFR.D07	1
				SHEET SIZE A3
Ver. Jan' 2020				