APPENDIX D

Concept Design

LAKE MACDONALD DAM
UPGRADE CONCEPT DESIGN 2017

DRAWING LIST

DRAWING No.	TITLE
60542495-101	LOCALITY PLAN AND DRAWING INDEX
60542495-102	EXISTING CONDITIONS
60542495-103	SITE LAYOUT - DURING CONSTRUCTION
60542495-104	GENERAL ARRANGEMENT
60542495-105	TEMPORARY WORKS - PUMP SYSTEM PLAN
60542495-106	NOT REQUIRED
60542495-107	TEMPORARY WORKS - SPILLWAY DEMOLITION PLAN - FOR WORKING PLATFORM
60542495-108	TEMPORARY WORKS - SPILLWAY DEMOLITION DETAILS
60542495-109	TEMPORARY WORKS - SHEETPILE - LONG SECTION
60542495-110	TEMPORARY WORKS - WORKING PLATFORM - SECTIONS
60542495-111	CELLULAR SPILLWAY STRUCTURE - PLAN
60542495-112	SECANT PILE CELLS - DETAILS
60542495-113	SPILLWAY STRUCTURE - PLAN AND SECTION
60542495-114	SPILLWAY STRUCTURE - TYPICAL SECTIONS
60542495-115	EMBANKMENT DEMOLITION & FOUNDATION EXCAVATION - PLAN
60542495-116	EMBANKMENT FOUNDATION WORKS - PLAN AND SECTION
60542495-117	EMBANKMENT RECONSTRUCTION - PLAN
60542495-118	EMBANKMENT RECONSTRUCTION - LEFT EMBANKMENT
60542495-119	EMBANKMENT RECONSTRUCTION - RIGHT EMBANKMENT
60542495-120	SADDLE DAM - PLAN AND LONG SECTION
60542495-121	SADDLE DAM - TYPICAL SECTIONS
60542495-122	OUTLET WORKS - SECTIONS AND DETAILS
60542495-201	RIGHT EMBANKMENT - FOUNDATION IMPROVEMENTS - GEOLOGY SECTION - UPSTREAM
60542495-202	RIGHT EMBANKMENT - FOUNDATION IMPROVEMENTS - GEOLOGY SECTION - DOWNSTREAM

LOCALITY PLAN
SCALE A

NOT FOR CONSTRUCTION

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE A 0 2 4 5km
1 : 200,000 (A3) 1 : 100,000 (A1)

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DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

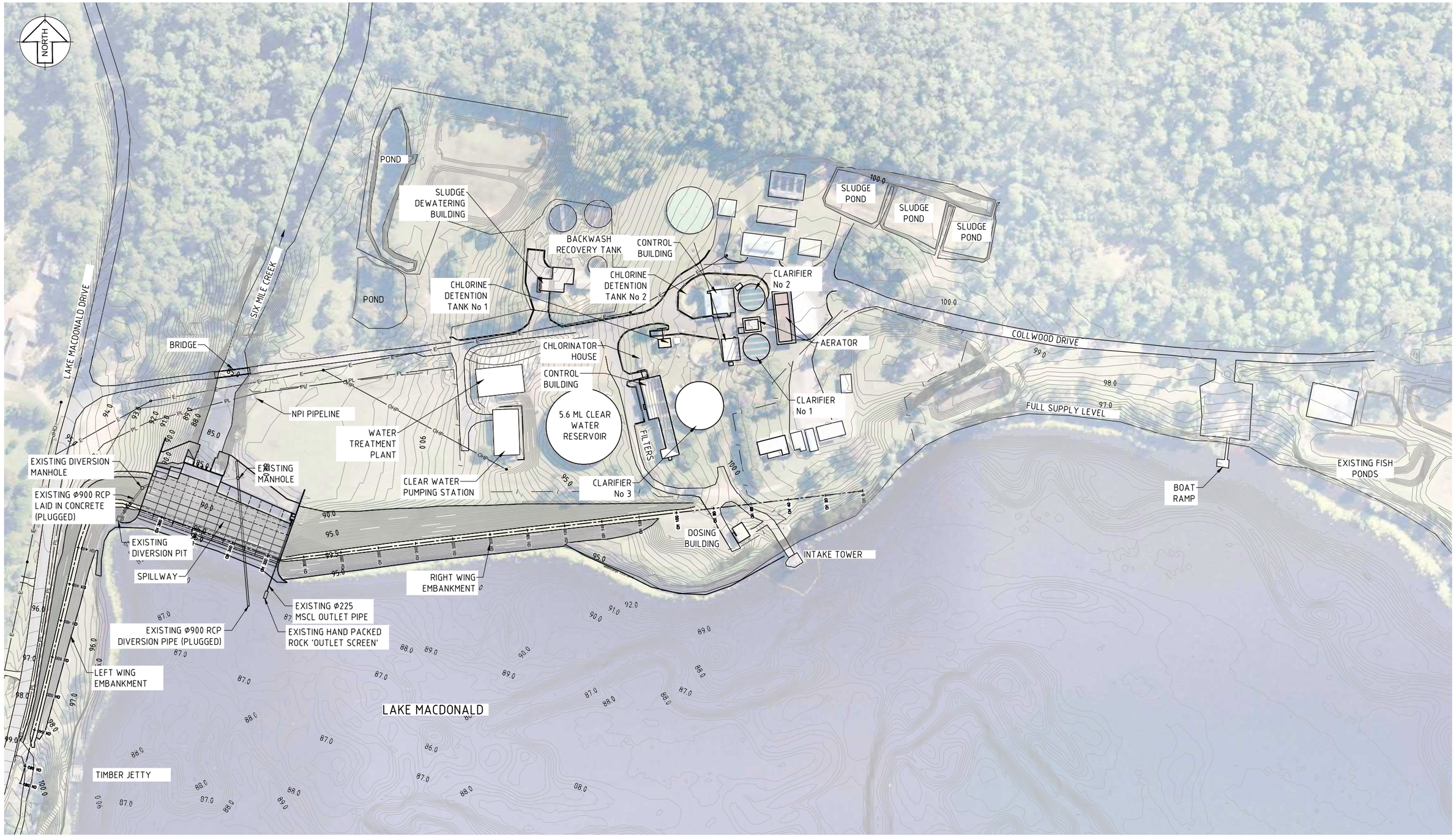
LOCALITY PLAN AND DRAWING INDEX

Status

Drg No. 60542495-101

Rev. 0

LAST MODIFIED: 09/11/2018 10:07 AM CAD REF: P:\60551\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EDI\60542495-101.DWG



SOURCE: AERIAL PHOTO FROM NEARMAP

LAYOUT PLAN
SCALE A

LEGEND

- OHP — OVERHEAD POWER LINE
- PL — NPI PIPELINE
- E — ELECTRICAL CABLE

NOT FOR CONSTRUCTION

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE A 0 10 20 30 40 50m
1 : 2000 (A3) 1 : 1000 (A1)

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APPROVED	SQB	DATE	05.10.2017

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LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

EXISTING CONDITIONS

Status

Drg No. 60542495-102

Rev. 0

LAST MODIFIED:19/9/2018 4:31 PM
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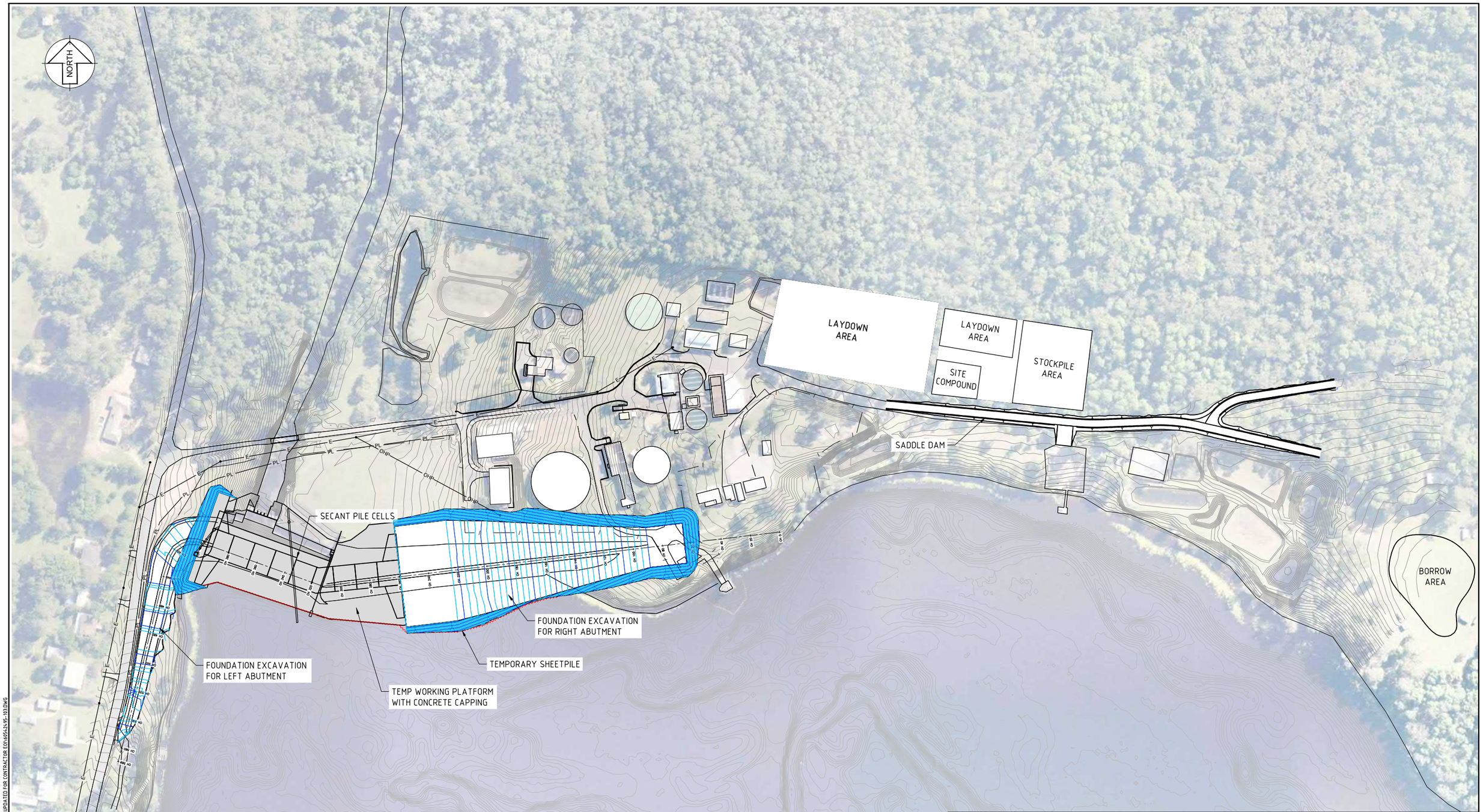

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. CONFIRM PROPERTY BOUNDARIES FOR BATCH PLANT AND COMPOUND AREA.
2. BORROW AREA TO BE IDENTIFIED, TESTED, PREPARED, AND REHABILITATED.
3. SPOIL AREA(S) TO BE IDENTIFIED, PREPARED, AND REHABILITATED.
4. HAUL ROADS, SECURITY FENCING, GATES, AND ACCESS LOCATIONS TO BE IDENTIFIED.

LAYOUT PLAN

SCALE 1:1250

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Scale

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SOURCE: AERIAL PHOTO FROM NEARMAP

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

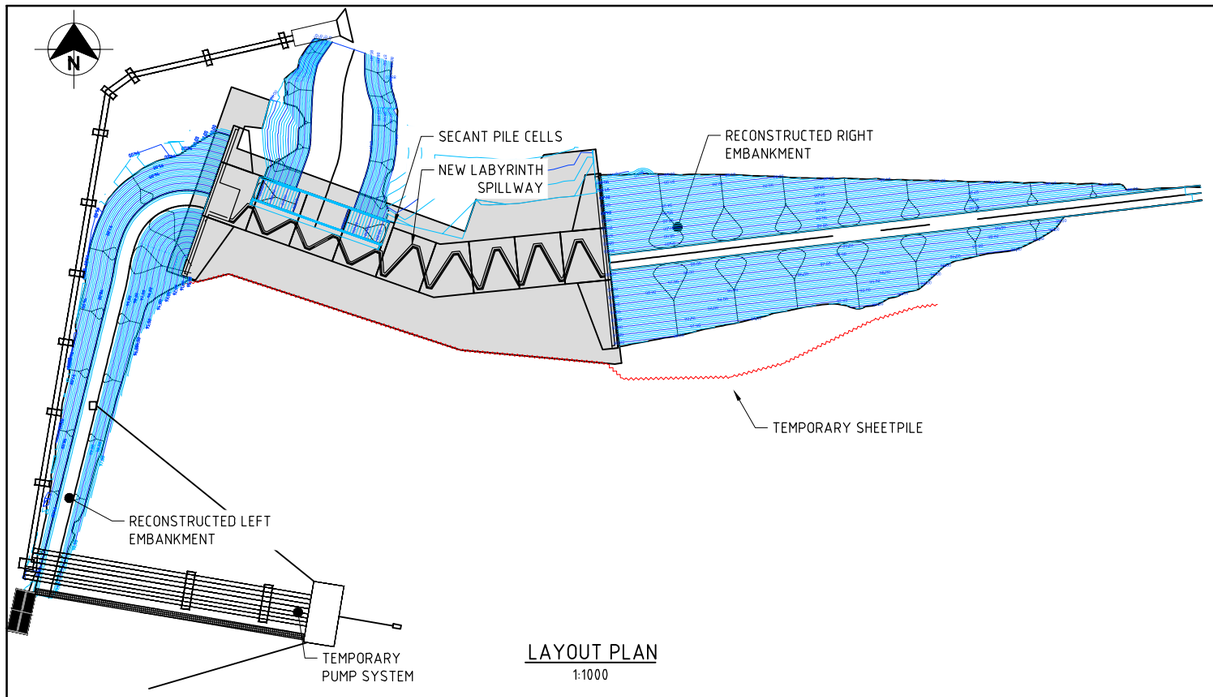
SITE LAYOUT
DURING CONSTRUCTION

Status

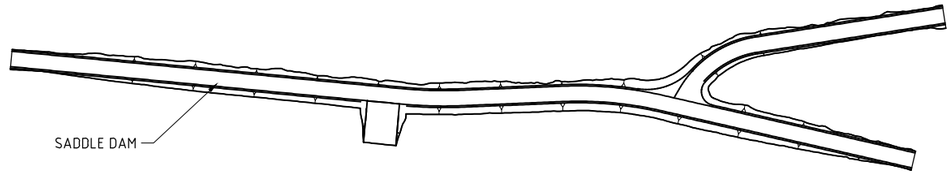
Drg No. 60542495-103

Rev. 0

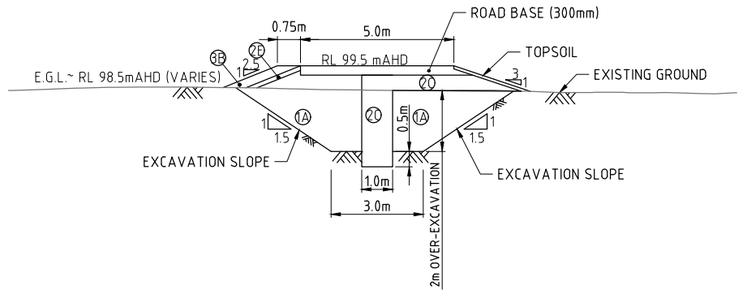
LAST MODIFIED: 10/11/2018 3:25 PM CAD REF: P:\60SX\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-103.DWG



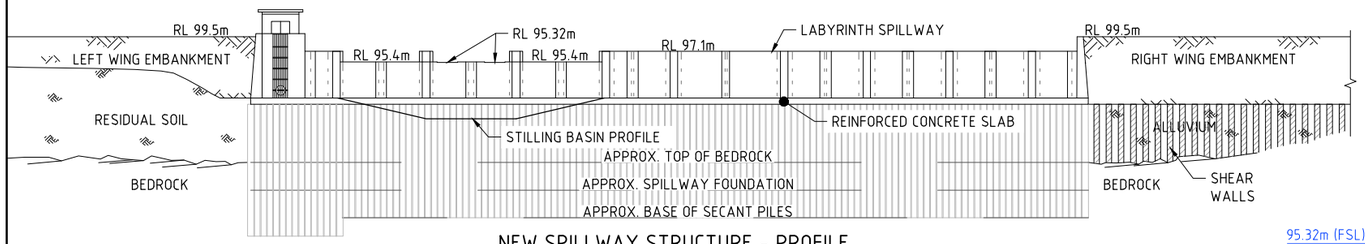
LAYOUT PLAN
1:1000



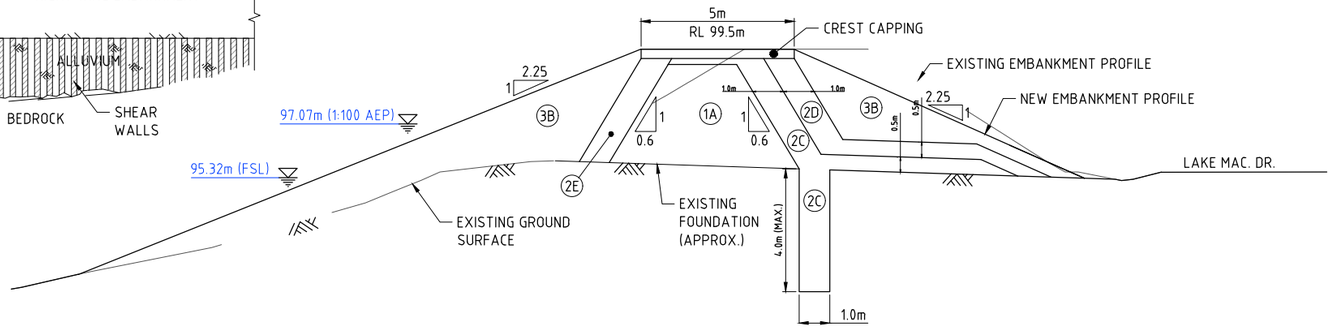
LAYOUT PLAN - SADDLE DAM
1:1000



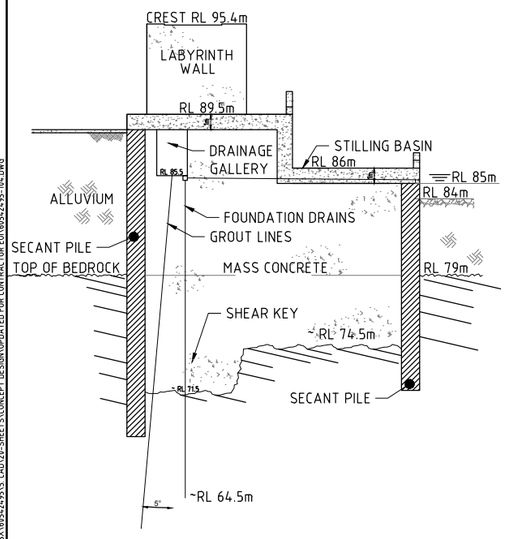
SADDLE DAM SECTION
1:100



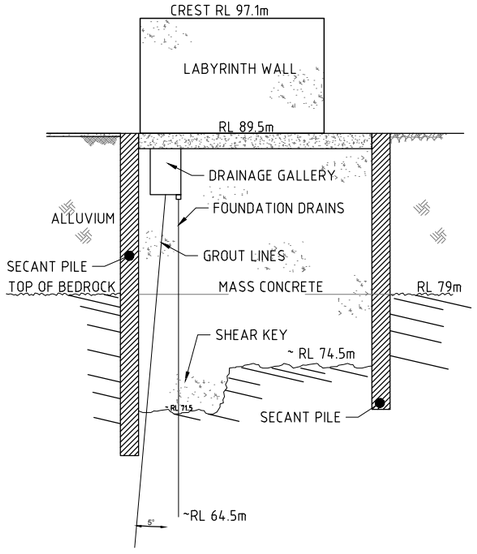
NEW SPILLWAY STRUCTURE - PROFILE
1:500



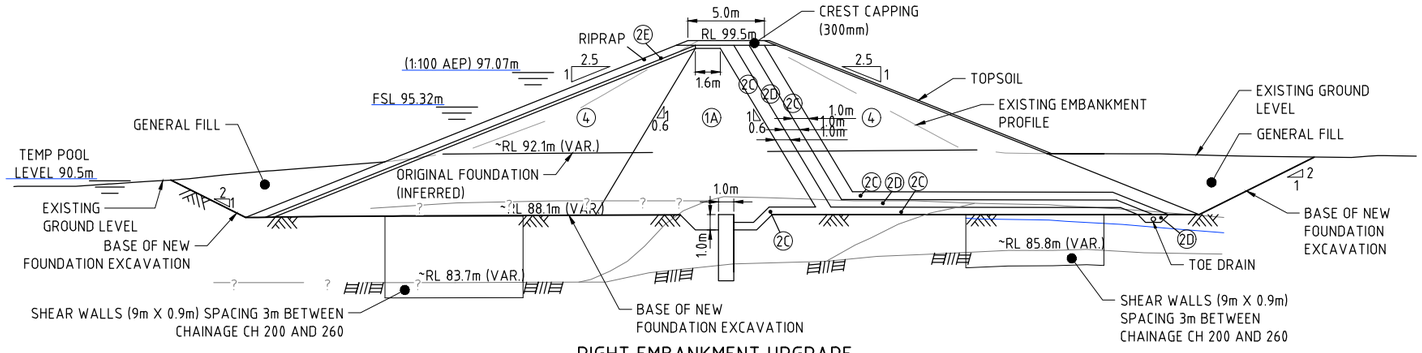
LEFT EMBANKMENT UPGRADE
1:100



LOWER-LEVEL SPILLWAY SECTION
1:200



UPPER-LEVEL SPILLWAY SECTION
1:200



RIGHT EMBANKMENT UPGRADE
1:200

NOT FOR CONSTRUCTION

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LAST MODIFIED:19/10/2018 2:25 PM

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD.
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE E: 0 1 2 3 4 5m — 1:200 (A3) 1:100 (A1)
SCALE D: 0 2 4 6 8 10m — 1:400 (A3) 1:200 (A1)
SCALE B: 0 10 20 25m — 1:1000 (A3) 1:500 (A1)
SCALE A: 0 10 20 30 40 50m — 1:2000 (A3) 1:1000 (A1)

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APPROVED	SQB	DATE	05.10.2017

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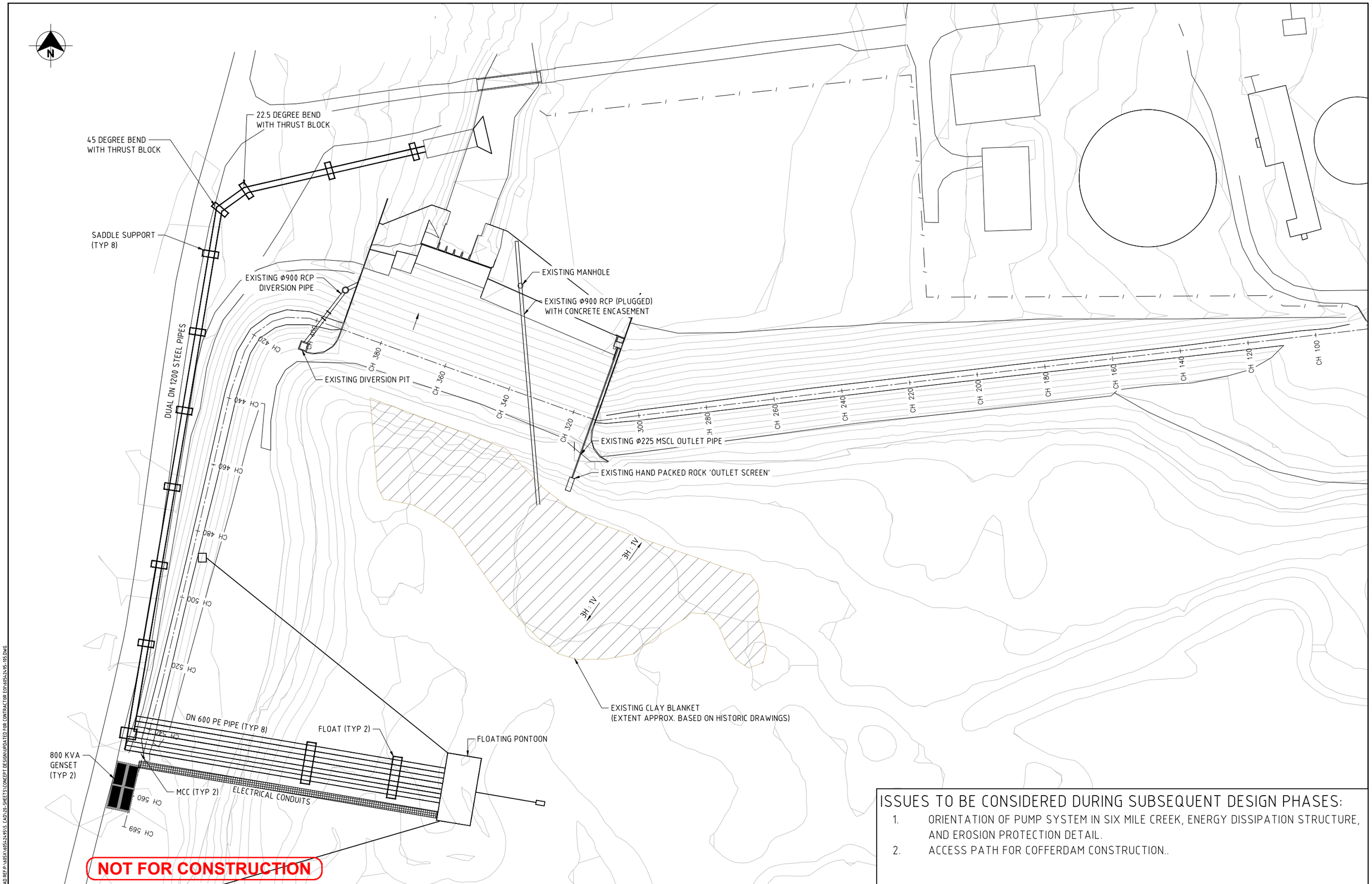
LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

GENERAL ARRANGEMENT

Status

Drg No. 60542495-104

Rev. 0



ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. ORIENTATION OF PUMP SYSTEM IN SIX MILE CREEK, ENERGY DISSIPATION STRUCTURE, AND EROSION PROTECTION DETAIL.
2. ACCESS PATH FOR COFFERDAM CONSTRUCTION..

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD.
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE B 0 10 20 25m
1 : 1000 (A3) 1 : 500 (A1)

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DRAWN	PT	CHECKED	CM
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LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

TEMPORARY WORKS

Status

Drg No. 60542495-105

Rev. 0

LAST MODIFIED:19/11/2018 3:16 PM

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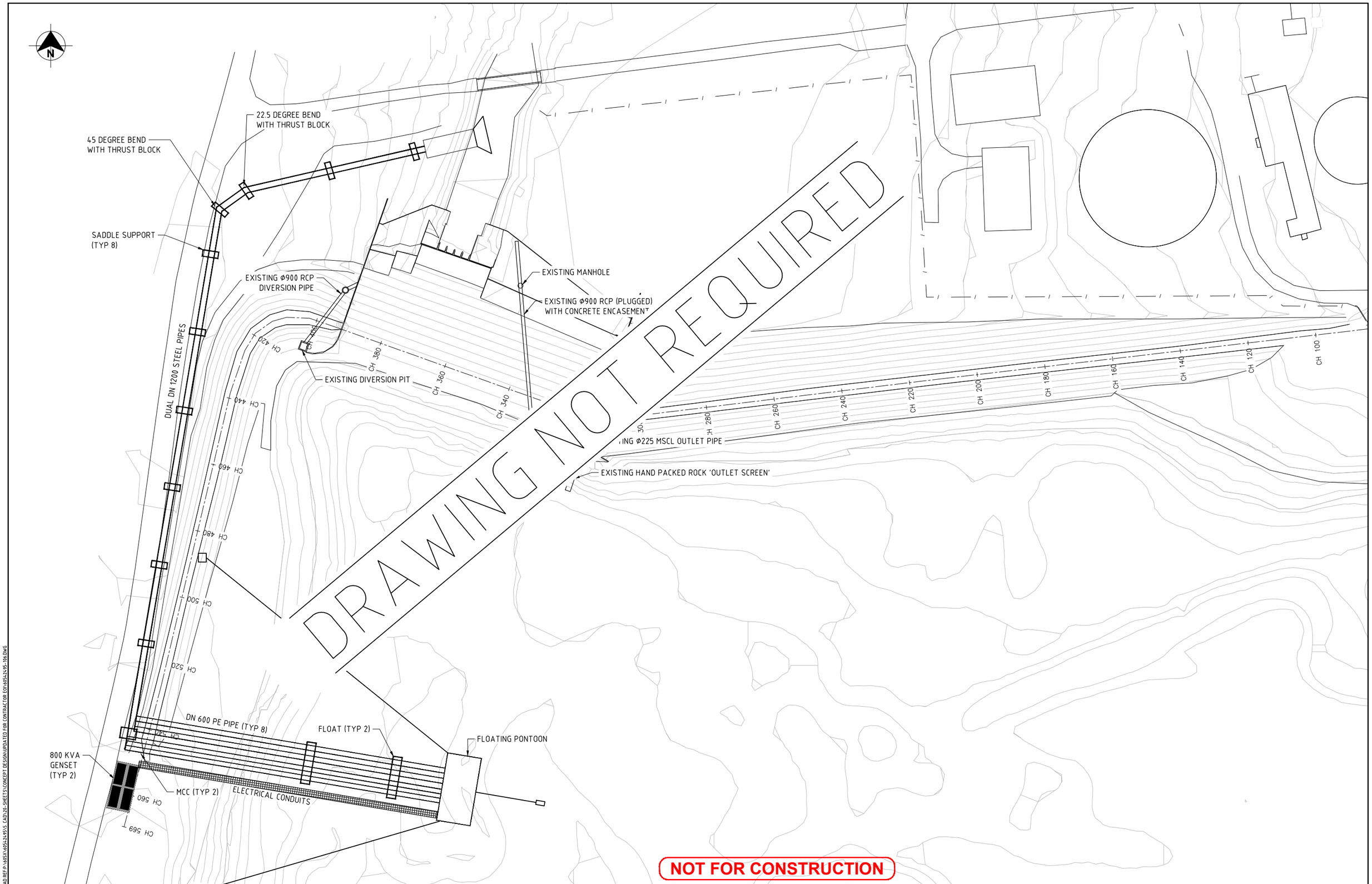

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LAST MODIFIED:19/11/2018 2:23 PM

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD.
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE B 0 10 20 25m
1 : 1000 (A3) 1 : 500 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

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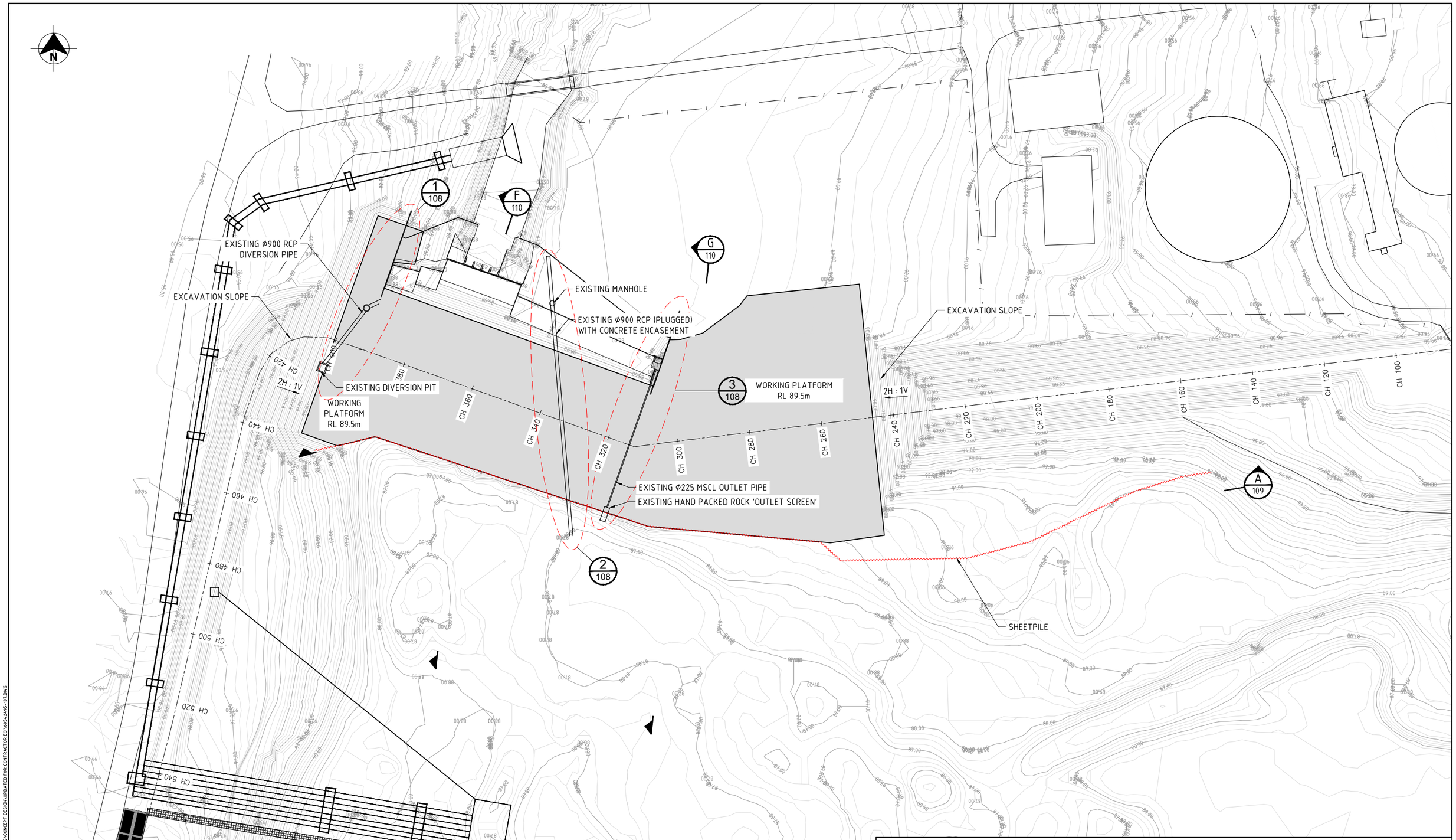
LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

TEMPORARY WORKS
LOW FLOW CHANNEL APPROACH

Status

Drg No. 60542495-106

Rev. 0



ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. STAGING DETAILS FOR ESTABLISHMENT OF WORKING PLATFORM.
2. LOCAL TRENCH TO REMOVE EXISTING Φ225 MSCL OUTLET PIPE FOR SECANT CELL CONSTRUCTION.
3. ACCESS PATHS FOR DEMOLITION. POTENTIAL FOR UPSTREAM AND DOWNSTREAM ACCESS.

NOT FOR CONSTRUCTION

CAD REF:P:\AESX\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EDN\60542495-107.DWG

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE B 0 10 20 25m
1 : 1000 (A3) 1 : 500 (A1)

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DRAWN	PT	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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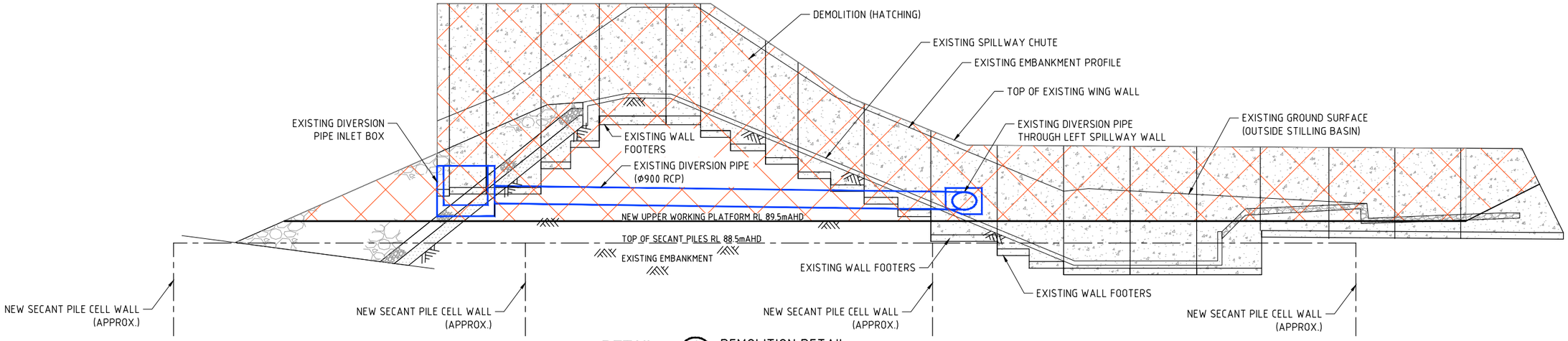
LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

TEMPORARY WORKS
SPILLWAY DEMOLITION PLAN
FOR WORKING PLATFORM

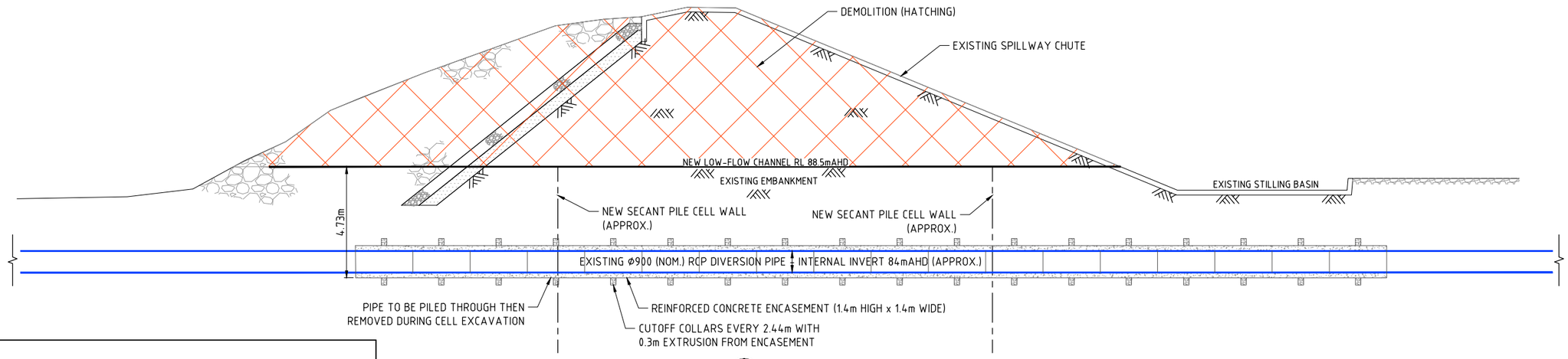
Status

Drg No. 60542495-107

Rev. 0



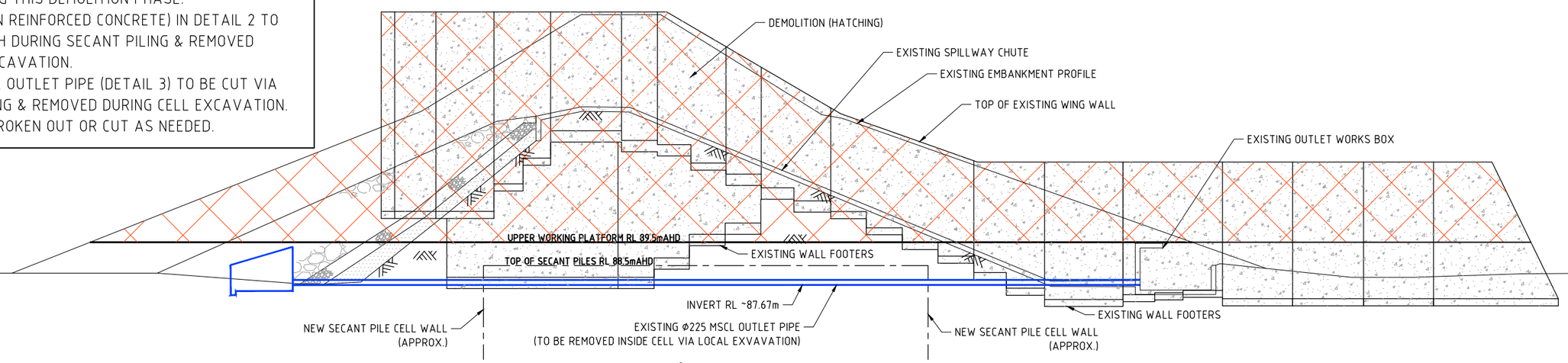
DETAIL 1/107 SCALE E — DEMOLITION DETAIL LEFT SPILLWAY WALL



DETAIL 2/107 SCALE E — DEMOLITION DETAIL CENTRAL SPILLWAY AREA

NOTES:

1. EXISTING RCP (IN REINFORCED CONCRETE) IN DETAIL 1 REMOVED DURING THIS DEMOLITION PHASE.
2. EXISTING RCP (IN REINFORCED CONCRETE) IN DETAIL 2 TO BE CUT THROUGH DURING SECANT PILING & REMOVED DURING CELL EXCAVATION.
3. EXISTING ØMCSL OUTLET PIPE (DETAIL 3) TO BE CUT VIA LOCAL TRENCHING & REMOVED DURING CELL EXCAVATION.
4. WALLS TO BE BROKEN OUT OR CUT AS NEEDED.



DETAIL 3/107 SCALE E — DEMOLITION DETAIL RIGHT SPILLWAY WALL

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale: SCALE E 0 1 2 3 4 5m — 1:200 (A3) 1:100 (A1)

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DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

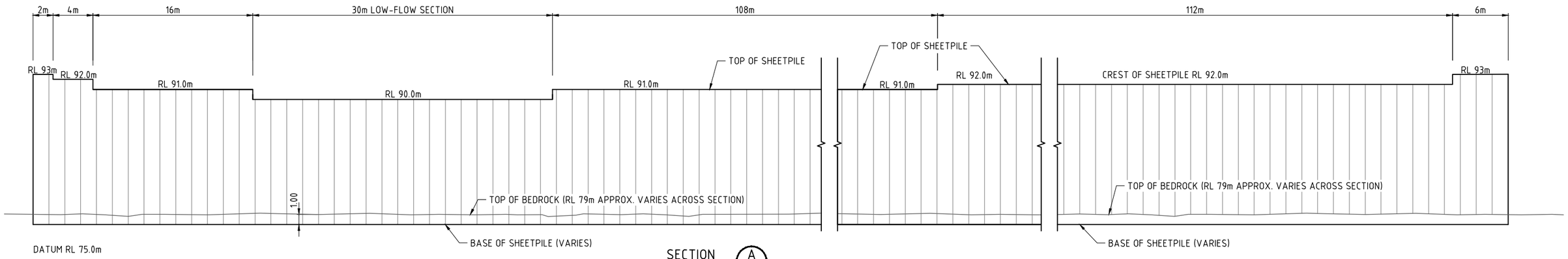
TEMPORARY WORKS
SPILLWAY DEMOLITION DETAILS

Status

Drg No. 60542495-108

Rev. 0

LAST MODIFIED:10/11/2018 2:23 PM CAD REF:P:\605\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EDI\60542495-108.DWG



SECTION A 107
SCALE D

NOT FOR CONSTRUCTION

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD.
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE D 0 2 4 6 8 10m
1 : 400 (A3) 1 : 200 (A1)

SCALE E 0 1 2 3 4 5m
1 : 200 (A3) 1 : 100 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	PT	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

AECOM

RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

TEMPORARY WORKS
SHEETPILE LONG SECTION

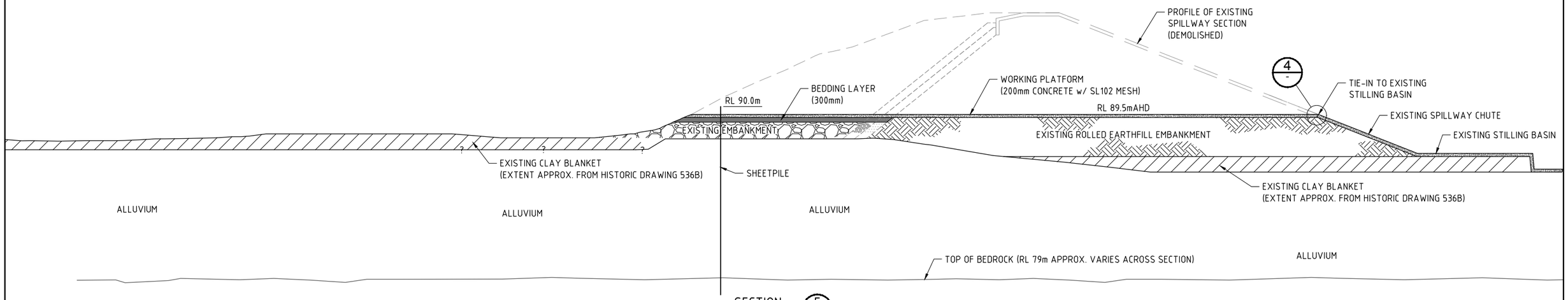
Status

Drg No. 60542495-109

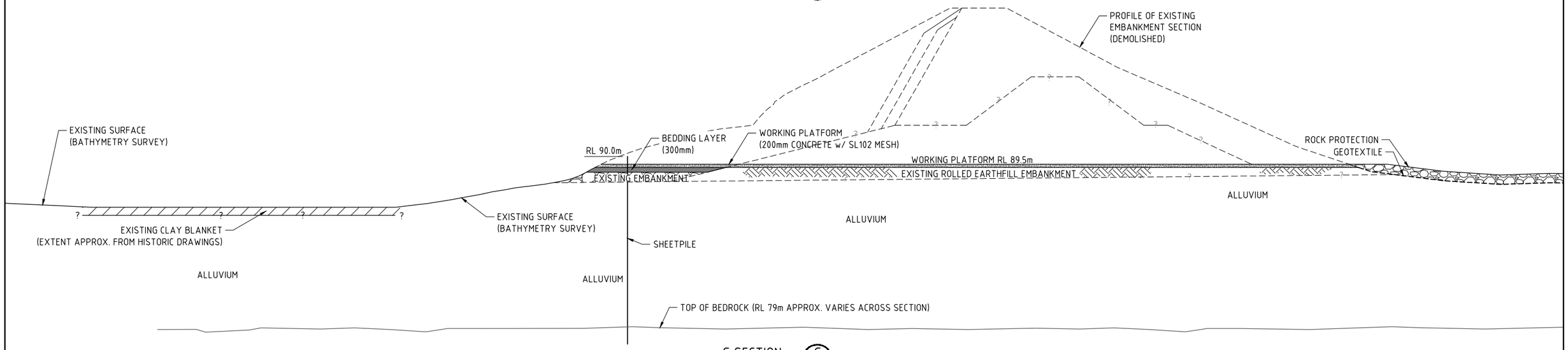
Rev. 0

LAST MODIFIED:10/11/2018 2:23 PM

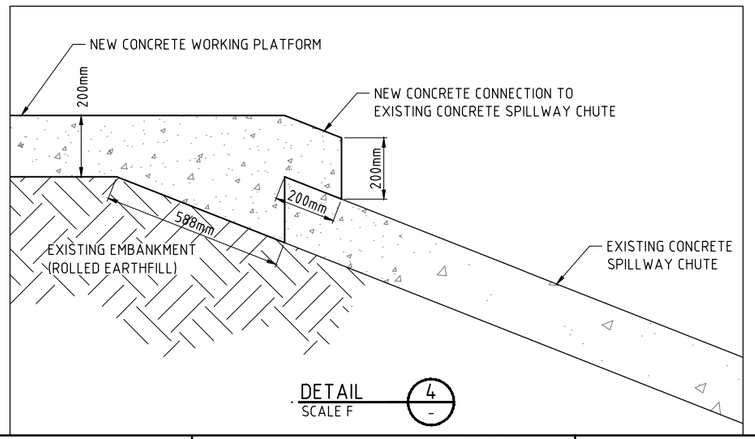
CAD REF:P:\605\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EDI\605-2495-109.DWG



SECTION F / 107
SCALE X



G SECTION G / 107
SCALE X



DETAIL 4 / -
SCALE F

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. CONNECTION DETAIL BETWEEN WORKING PLATFORM AND EXISTING SPILLWAY CHUTE SLAB.
2. CUTTING OF EXISTING SPILLWAY CHUTE SLAB IN RELATION TO EXISTING JOINTS AND DEADMAN ANCHORS.

NOT FOR CONSTRUCTION

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE X 0 1.0 2.0 3.0 4.0 5.0m — 1 : 125 (A1)
SCALE F 0 1.0 2.0 2.5m — 1 : 100 (A3) 1 : 50 (A1)

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DESIGNED	CM	CHECKED	CD
DRAWN	PT	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

AECOM

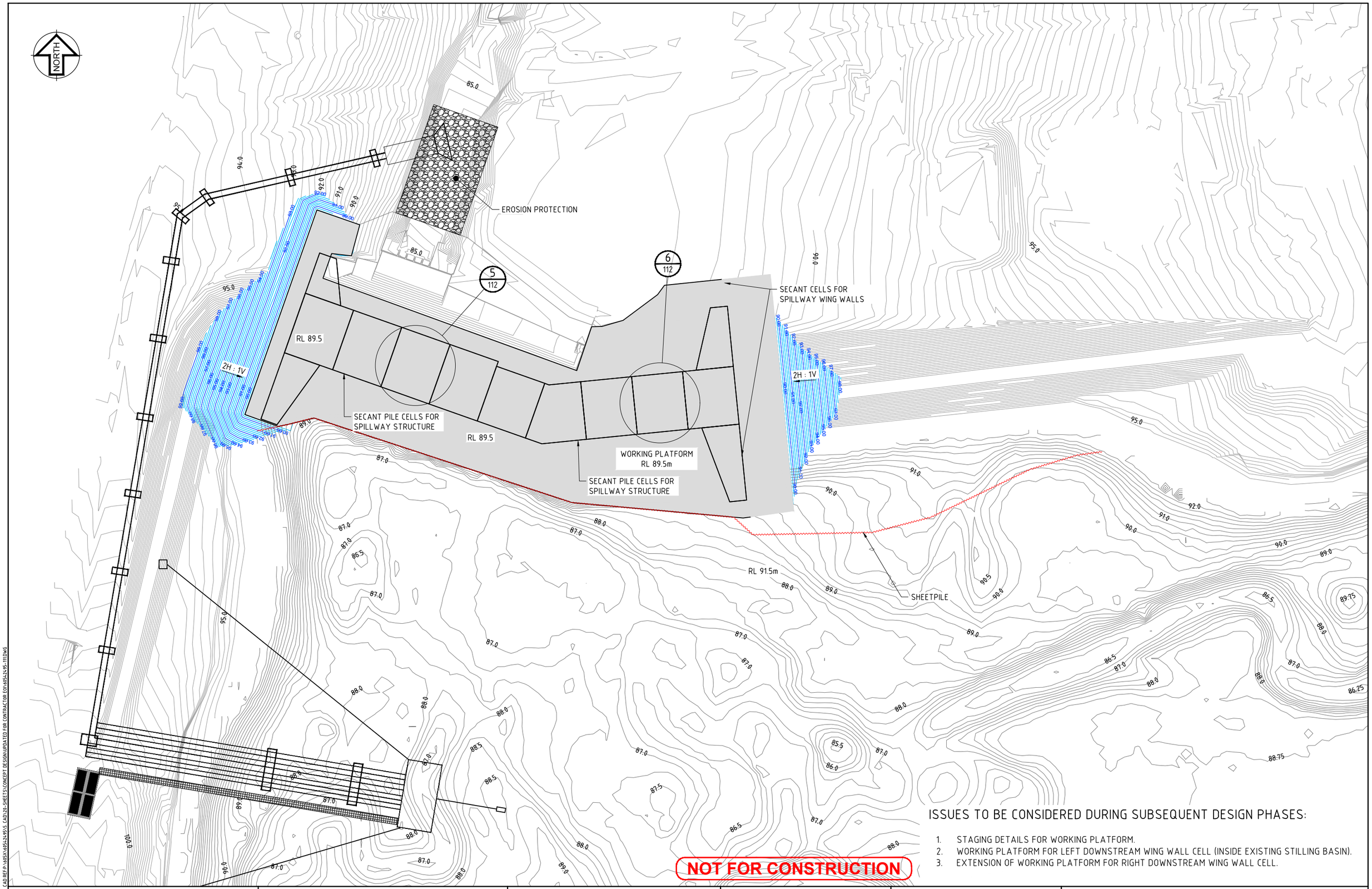
RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

TEMPORARY WORKS
WORKING PLATFORM SECTIONS

Status
Drg No. 60542495-110
Rev. 0

LAST MODIFIED:19/11/2018 3:23 PM
CAD REF:P:\605X\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-110.DWG



ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. STAGING DETAILS FOR WORKING PLATFORM.
2. WORKING PLATFORM FOR LEFT DOWNSTREAM WING WALL CELL (INSIDE EXISTING STILLING BASIN).
3. EXTENSION OF WORKING PLATFORM FOR RIGHT DOWNSTREAM WING WALL CELL.

CAD REF:P:\605X\60542495\5. CAD\28-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-111.DWG

LAST MODIFIED:10/11/2018 2:23 PM

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE B 0 10 20 25m
1 : 1000 (A3) 1 : 500 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

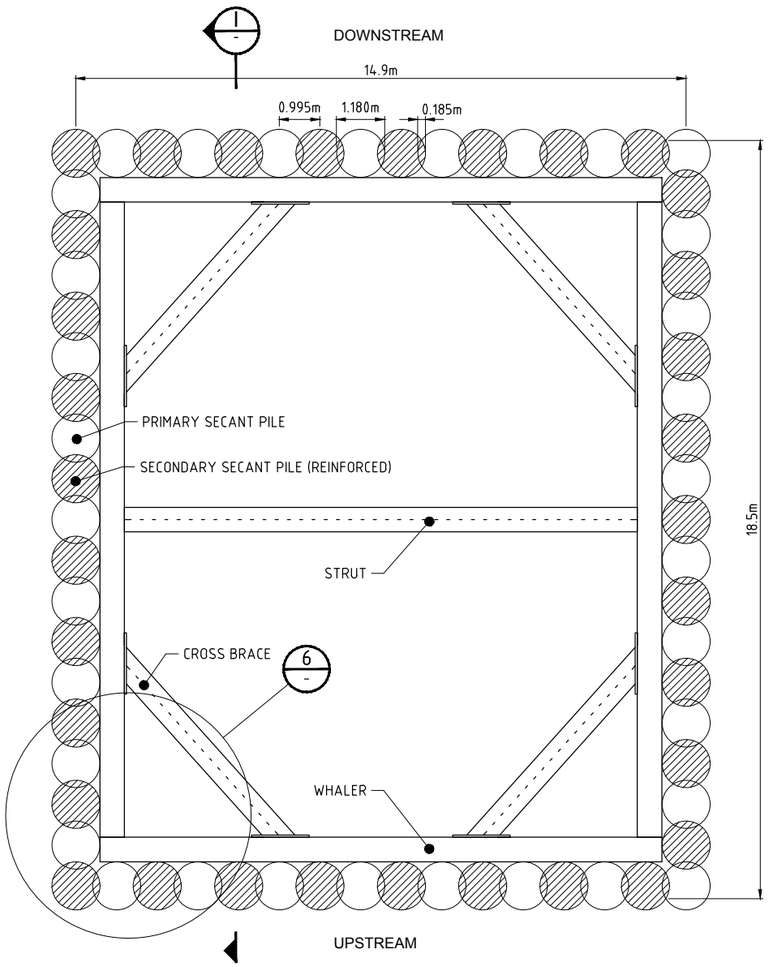
LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

CELLULAR SPILLWAY STRUCTURE
PLAN

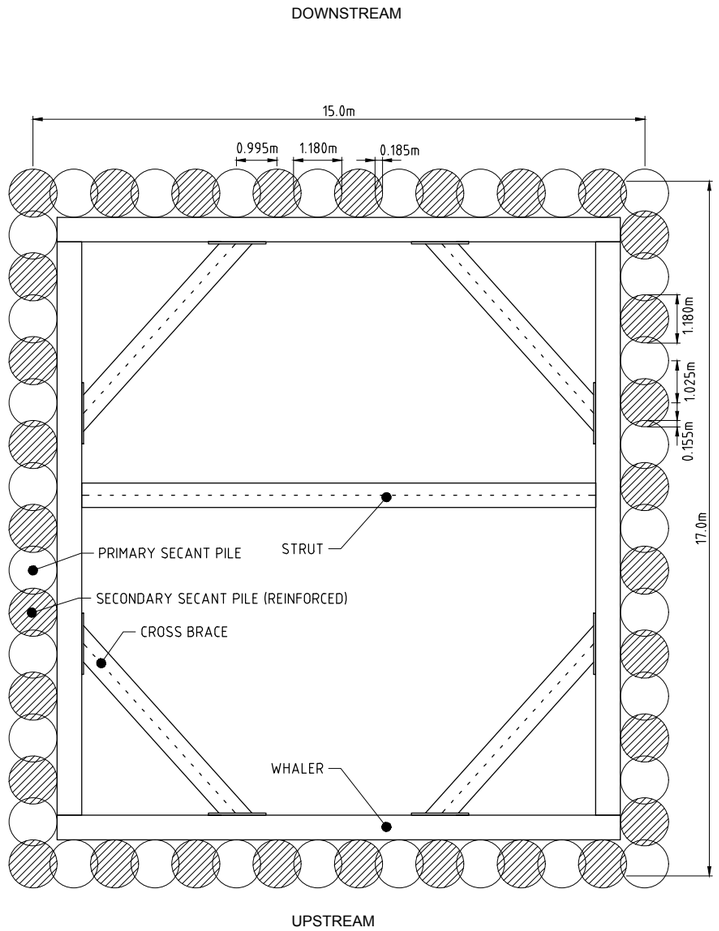
Status

Drg No. 60542495-111

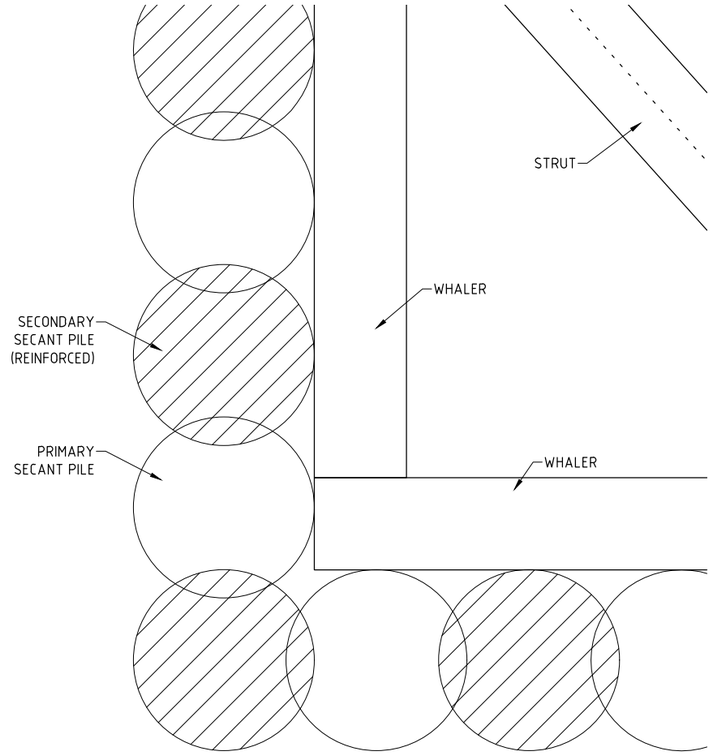
Rev. 0



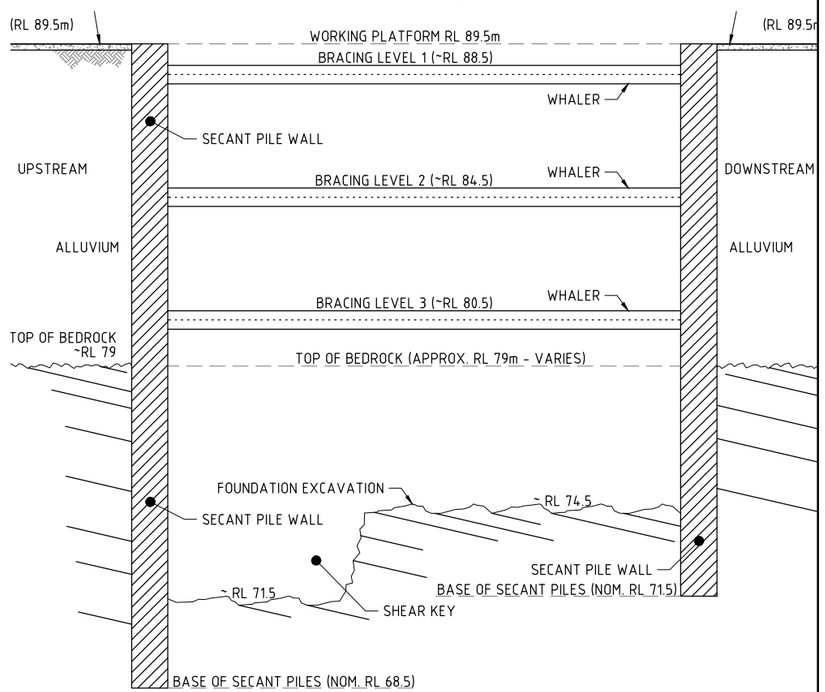
DETAIL 5 (111) SECANT PILE CELL LOWER-LEVEL SPILLWAY
SCALE A



DETAIL 6 (111) SECANT PILE CELL UPPER-LEVEL SPILLWAY
SCALE A



DETAIL 6
SCALE H



SECTION 1
SCALE E

NOTES:

1. ACTUAL CELL DIMENSIONS DEPENDENT UPON SECANT PILE DIMENSIONS SELECTED IN FINAL DESIGN.

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. RE-EVALUATE THE BRACING DESIGN ONCE SECANT PILE DESIGN IS FINALISED.
2. CONSIDER THE MAXIMUM CELL HEIGHT ACROSS THE SPILLWAY STRUCTURE FOR BRACING DESIGN.
3. CONNECTION DETAILS OF WHALERS AND STRUTS.

NOT FOR CONSTRUCTION

BRACING ELEMENTS

LEVEL	ELEMENT	SECTION SIZE
1	WALER	800 WB 192 Kg/m
1	STRUT	400 WC 181 Kg/m
2 + 3	WALER	1000 WB 296 Kg/m
2 + 3	STRUT	500 WC 383 Kg/m

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE A 0 1.50 3.00 3.75m — 1 : 150 (A3) 1 : 75 (A1)
SCALE E 0 1 2 3 4 5m — 1 : 200 (A3) 1 : 100 (A1)
SCALE H 0 200 400 600 800 1000mm — 1 : 40 (A3) 1 : 20 (A1)

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DESIGNED	CM	CHECKED	CD
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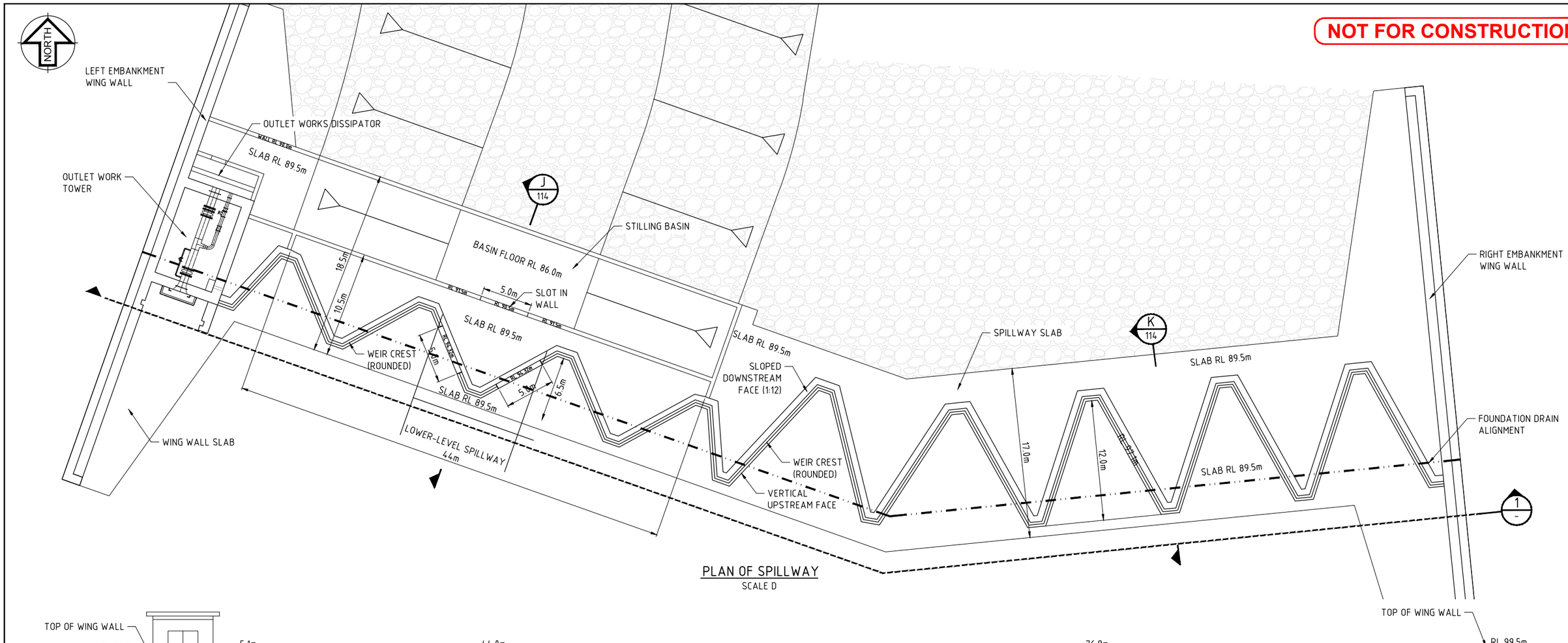
LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

SECANT PILE CELLS
DETAILS

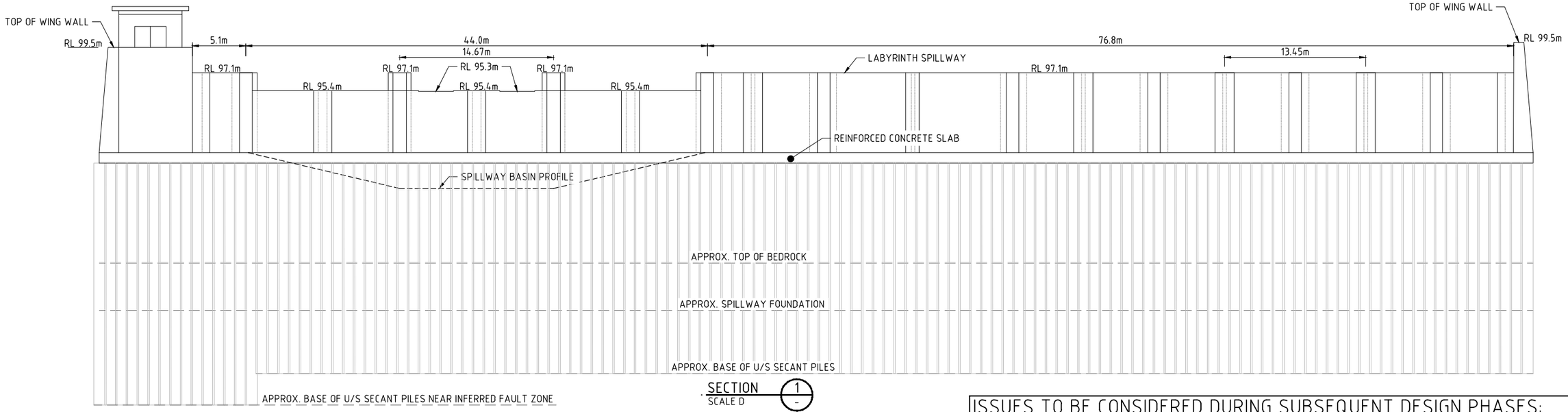
Status
Drg No. 60542495-112
Rev. 0

LAST MODIFIED:11/7/2017 11:33 AM CAD REF:P:\605X\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-112.DWG

NOT FOR CONSTRUCTION



PLAN OF SPILLWAY
SCALE D



SECTION 1
SCALE D

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. CFD OR PHYSICAL MODELLING TO ASSESS SPILLWAY RATING CURVE AND DOWNSTREAM EROSION POTENTIAL.

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE D 0 2 4 6 8 10m
1 : 400 (A3) 1 : 200 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

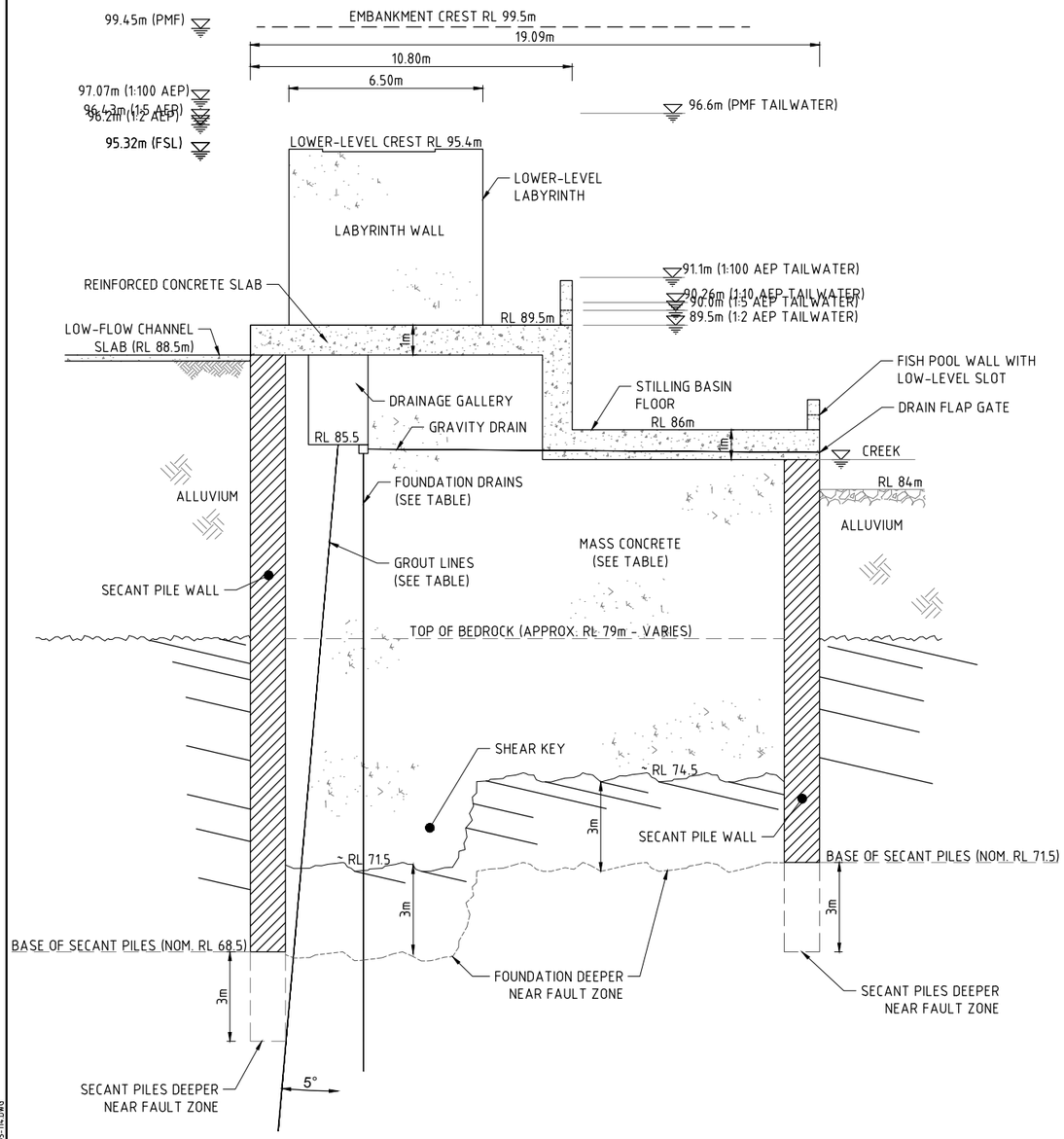
SPILLWAY STRUCTURE
PLAN AND SECTION

Status

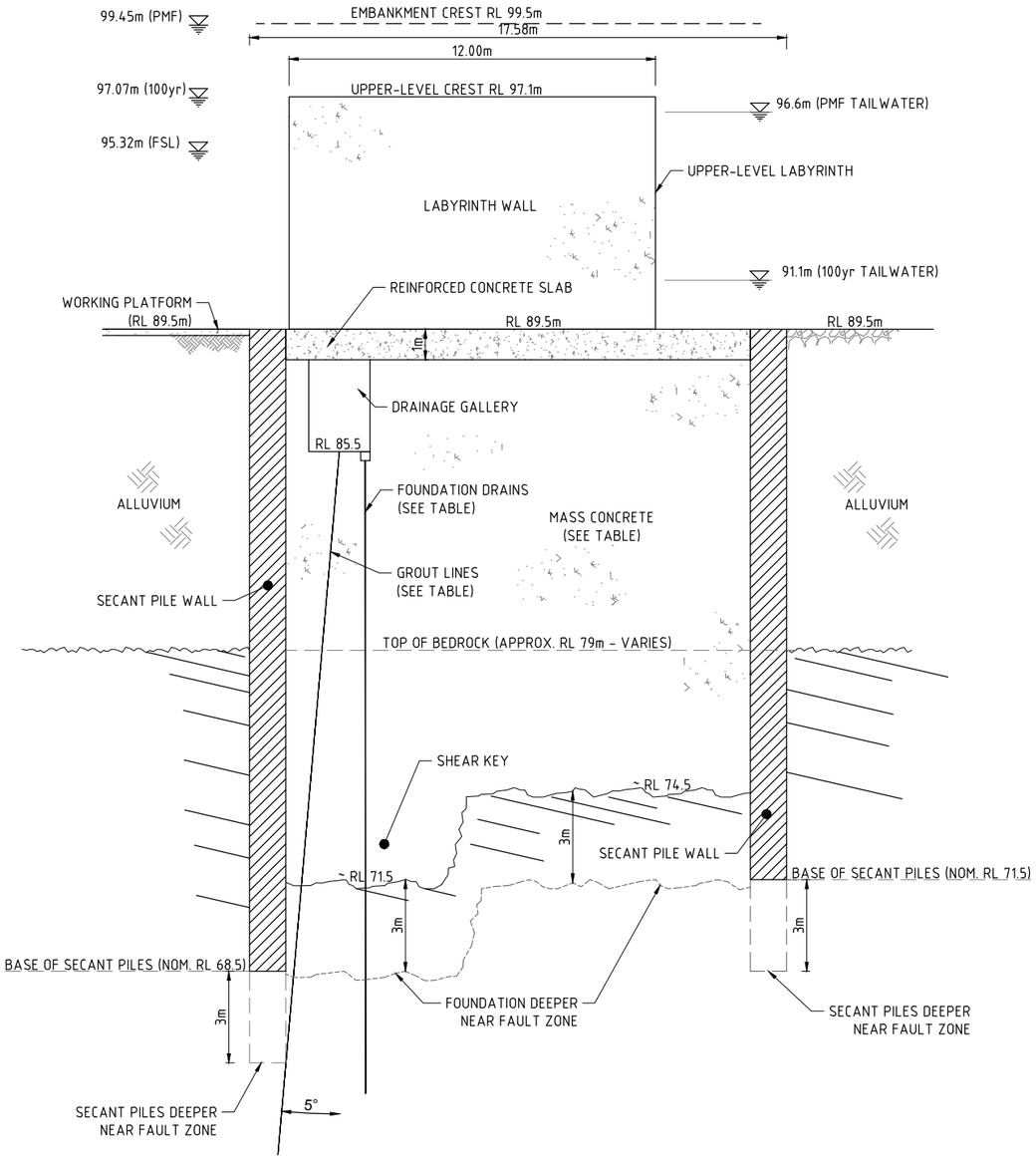
Drg No. 60542495-113

Rev. 0

LAST MODIFIED:11/7/2017 11:33 AM
CAD REF:P:\605X\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-113.DWG



SECTION J 113 SPILLWAY STRUCTURE LOWER LEVEL SECTION
SCALE E



SECTION K 113 SPILLWAY STRUCTURE UPPER-LEVEL SECTIONS
SCALE E

SPILLWAY STRUCTURE ELEMENTS	
ITEM	DESCRIPTION
MASS CONCRETE	- 20 MPa MASS CONCRETE - KIBBLE PLACEMENT IN 1m VIBRATED LIFTS - GREEN-CUT PREPARATION OF LIFT JOINTS & HYDRO DEMO OF SECANT PILES
SPILLWAY SLAB	- REINFORCED CONCRETE - GREEN-CUT PREPARATION OF JOINT WITH MASS CONCRETE
LABYRINTH WALLS	- REINFORCED CONCRETE - FORMED WALLS REINFORCED INTO SPILLWAY SLAB
CELL STRUCTURE	- SECANT PILE (Ø1180mm) WALLS
GROUT CURTAIN	- SINGLE STAGE GROUT CURTAIN - 12m BELOW FOUNDATION
FOUNDATION DRAINS	- SINGLE LINE 3.5m OFF UPSTREAM FACE - DRAIN HOLES 3M O.C. - GRAVITY DRAIN OUTLETS IN LOWER-LEVEL CELL VIA FLAP GATE IN STILLING BASIN - PUMPED OUTLET IN OUTLET TOWER

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. DEWATERING OF CELL FOUNDATION.
2. REINFORCEMENT DETAILS FOR SLABS AND WALLS.
3. CONSTRUCTION TRANSITION FROM LOW-FLOW CHANNEL TO NEW STILLING BASIN (i.e. CONSTRUCTION OF SLAB ABOVE RL 88.5m, PREPARATION OF D/S CHANNEL AND SUBSEQUENT REMOVAL OF D/S CELL WALL.

NOT FOR CONSTRUCTION

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE E 0 1 2 3 4 5m
1:200 (A3) 1:100 (A1)

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DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

SPILLWAY STRUCTURE
TYPICAL SECTIONS

Status
Drg No. 60542495-114
Rev. 0

LAST MODIFIED:6/20/2018 10:29 AM
CAD REF:P:\605\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EDIT\605-2495-114.DWG

FURTHER INVESTIGATION AND/OR DESIGN OF TEMPORARY WORKS REQUIRED TO MANAGE IMPACTS ON EXISTING INFRASTRUCTURE

DEMOLISHED RIGHT EMBANKMENT TO NEW EMBANKMENT FOUNDATION

WORKING PLATFORM RL 89.5m

SHEETPILE

SHEETPILE

DEMOLITION OF LEFT EMBANKMENT TO NATURAL GROUND

CH 60 CH 80 CH 100 CH 120 CH 140 CH 160 CH 180 CH 200 CH 220 CH 240 CH 260 CH 280 CH 300 CH 320 CH 340 CH 360 CH 380 CH 400 CH 420 CH 440 CH 460 CH 480 CH 500 CH 520 CH 540 CH 560 CH 569

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. TRAFFIC IMPACTS TO LAKE MACDONALD DRIVE.
2. EROSION AND SEDIMENT CONTROLS.
3. ACCESS TO LEFT EMBANKMENT.

NOT FOR CONSTRUCTION

CAD REF: N:\65X\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-115.DWG

LAST MODIFIED: 10/11/2018 2:36 PM

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE B 0 10 20 25m 1 : 1000 (A3) 1 : 500 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	PT	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

AECOM

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AECOM Australia Pty Ltd A.B.N. 20 093 846 925

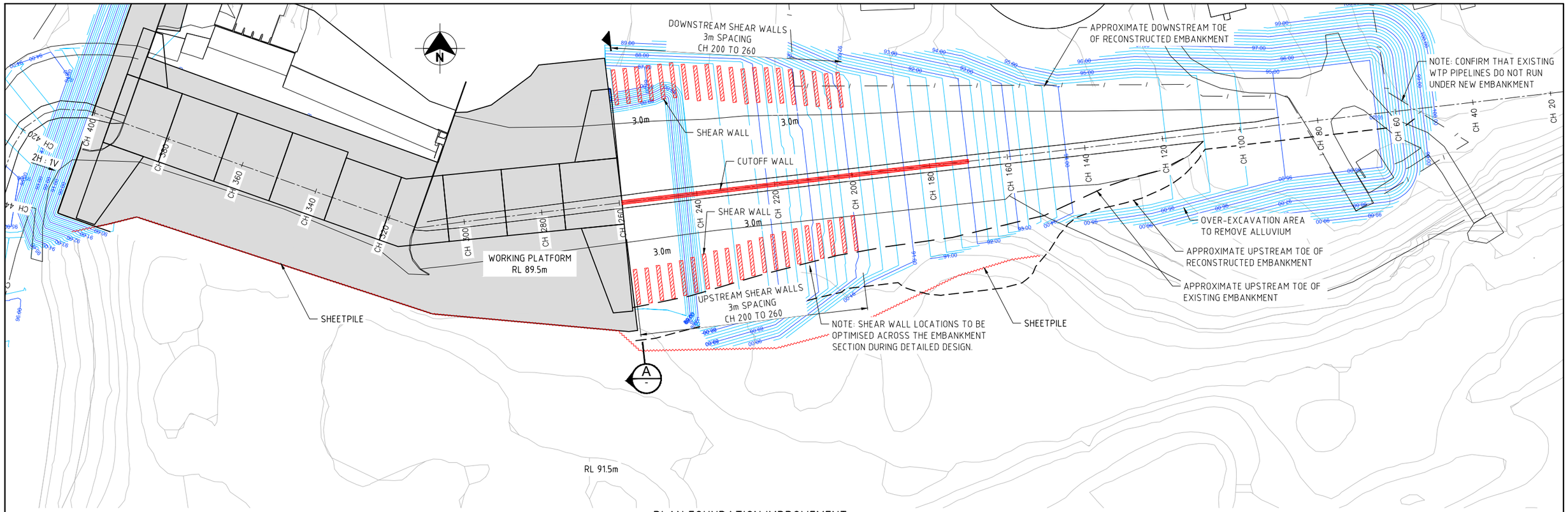
LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

EMBANKMENT DEMOLITION & FOUNDATION EXCAVATION PLAN

Status

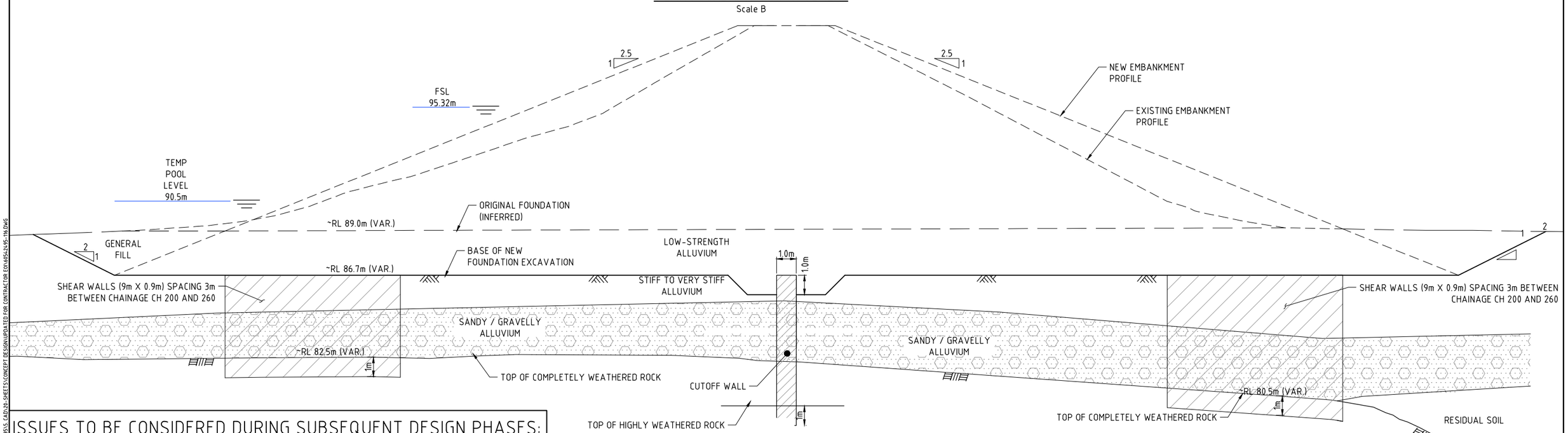
Drg No. 60542495-115

Rev. 0



PLAN FOUNDATION IMPROVEMENT

Scale B



SECTION A RIGHT EMBANKMENT
SCALE E CHAINAGE 255

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. REFINEMENT OF SHEAR WALL LOCATIONS.
2. TEMPORARY ACCESS PLATFORM FOR SHEAR WALL CONSTRUCTION.

NOT FOR CONSTRUCTION

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE E: 0 1 2 3 4 5m — 1 : 200 (A3) 1 : 100 (A1)

SCALE B: 0 10 20 25m — 1 : 1000 (A3) 1 : 500 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SQB	DATE	05.10.2017

AECOM

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AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

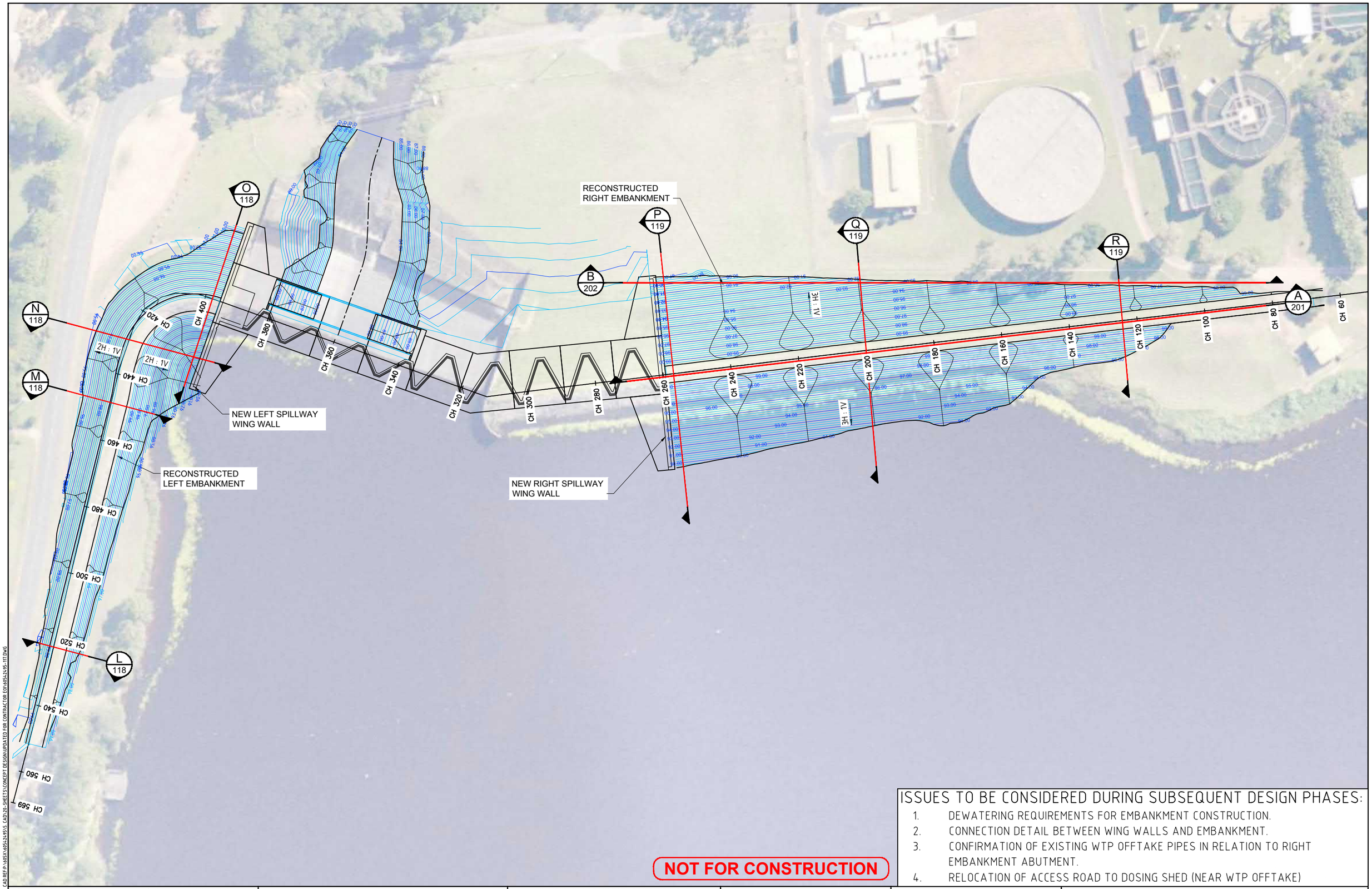
EMBANKMENT FOUNDATION WORKS
PLAN AND SECTION

Status

Drg No. 60542495-116

Rev. 0

LAST MODIFIED: 19/11/2018 3:25 PM CAD REF: P:\605X\60542495\5. CAD\25-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-116.DWG



NOT FOR CONSTRUCTION

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. DEWATERING REQUIREMENTS FOR EMBANKMENT CONSTRUCTION.
2. CONNECTION DETAIL BETWEEN WING WALLS AND EMBANKMENT.
3. CONFIRMATION OF EXISTING WTP OFFTAKE PIPES IN RELATION TO RIGHT EMBANKMENT ABUTMENT.
4. RELOCATION OF ACCESS ROAD TO DOSING SHED (NEAR WTP OFFTAKE)

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE B 0 10 20 25m
1 : 1000 (A3) 1 : 500 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

EMBANKMENT RECONSTRUCTION
PLAN

Status

Drg No. 60542495-117

Rev. 0

LAST MODIFIED:12/1/2017 9:49 AM

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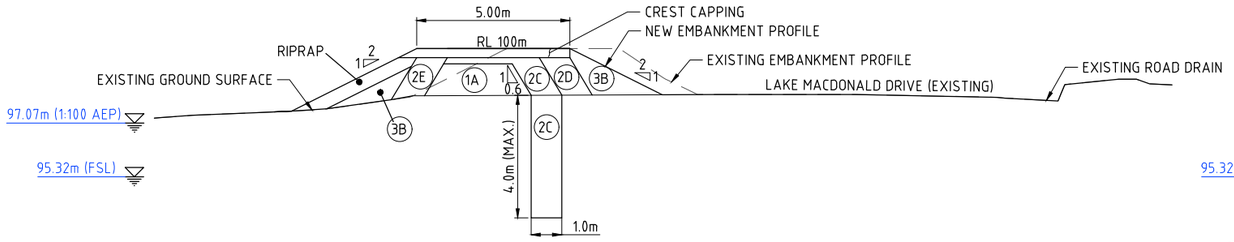
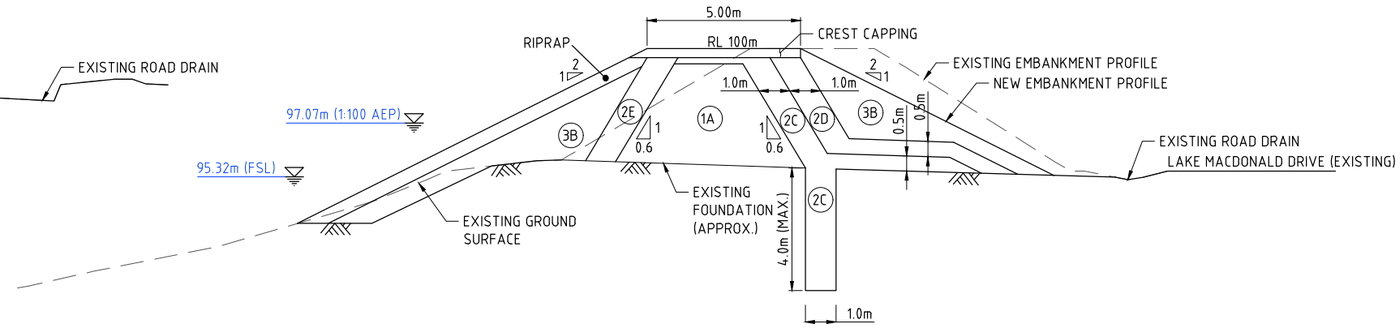
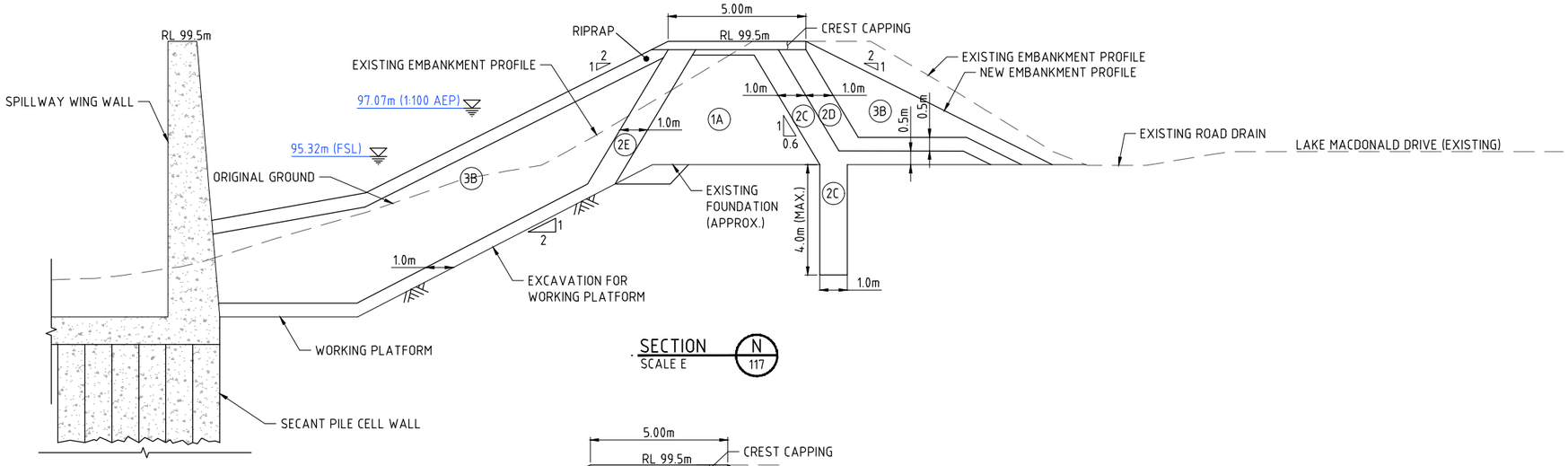


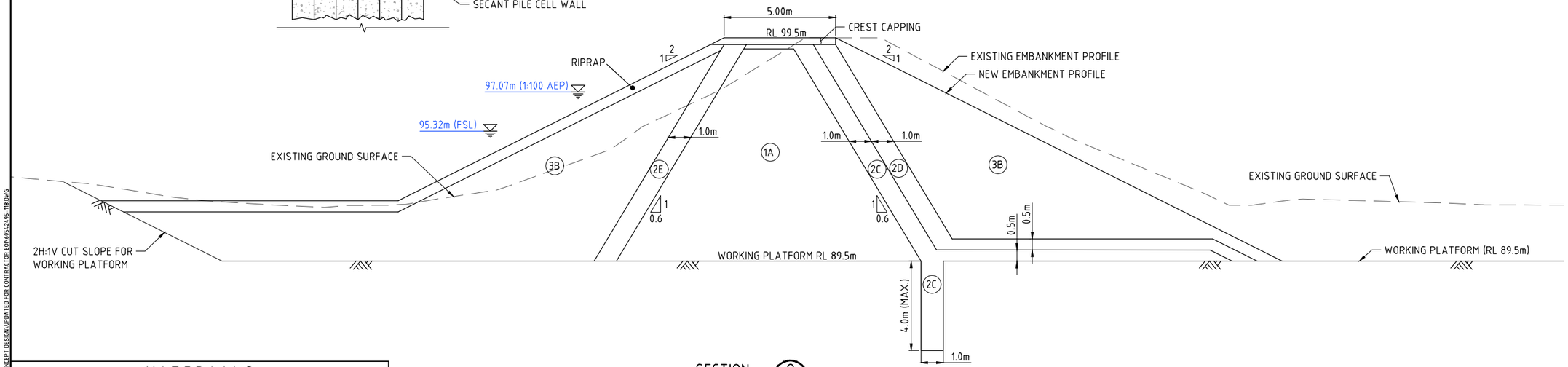
SECTION L
SCALE E 117



SECTION M
SCALE E 117



SECTION N
SCALE E 117



SECTION O
SCALE E 117

MATERIALS	
ZONE	DESCRIPTION
1A	NEW EARTHFILL CORE
2C	NEW FINE FILTER
2D	NEW COARSE FILTER
2E	NEW FINE FILTER
3B	NEW ROCKFILL SHOULDER

NOT FOR CONSTRUCTION

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE E 0 1 2 3 4 5m
1 : 200 (A3) 1 : 100 (A1)

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DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

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AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

EMBANKMENT RECONSTRUCTION
LEFT EMBANKMENT

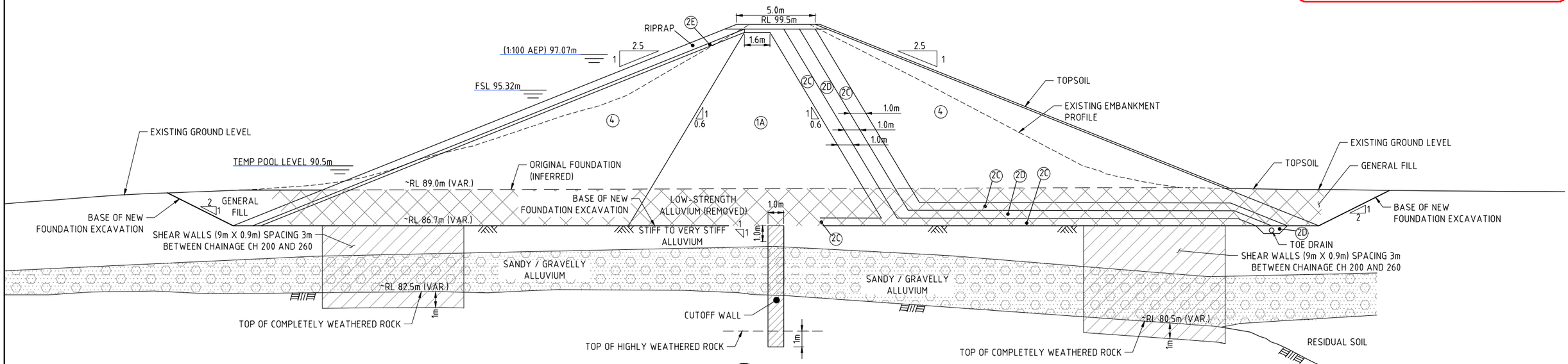
Status

Drg No. 60542495-118

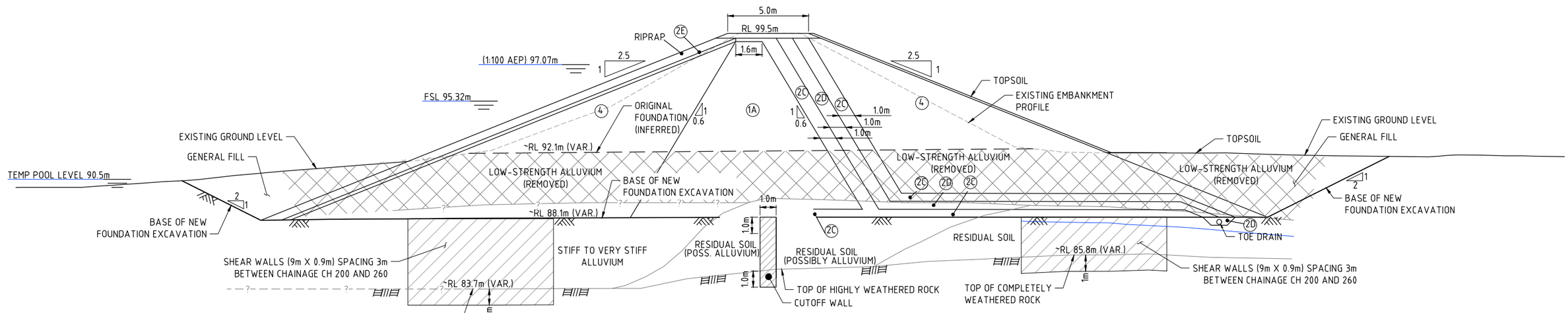
Rev. 0

LAST MODIFIED:12/1/2017 8:49 AM
CAD:REF:P:\605X\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\605x24595-118.DWG

NOT FOR CONSTRUCTION

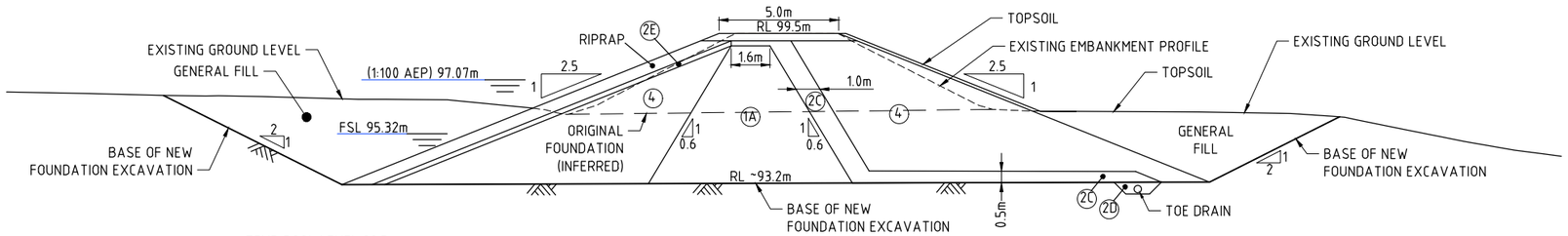


SECTION P 117 RIGHT EMBANKMENT CHAINAGE 255
SCALE 1:125



SECTION Q 117 RIGHT EMBANKMENT CHAINAGE 200
SCALE 1:125

MATERIALS	
ZONE	DESCRIPTION
1A	NEW EARTHFILL CORE
2C	NEW FINE FILTER
2D	NEW COARSE FILTER
2E	NEW UPSTREAM FILTER
4	NEW EARTHFILL SHOULDER



SECTION R 117 RIGHT EMBANKMENT CHAINAGE 125
SCALE 1:125

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE 0 1 2 3 4 5
1:250 (A3) 1:125 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

AECOM

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AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

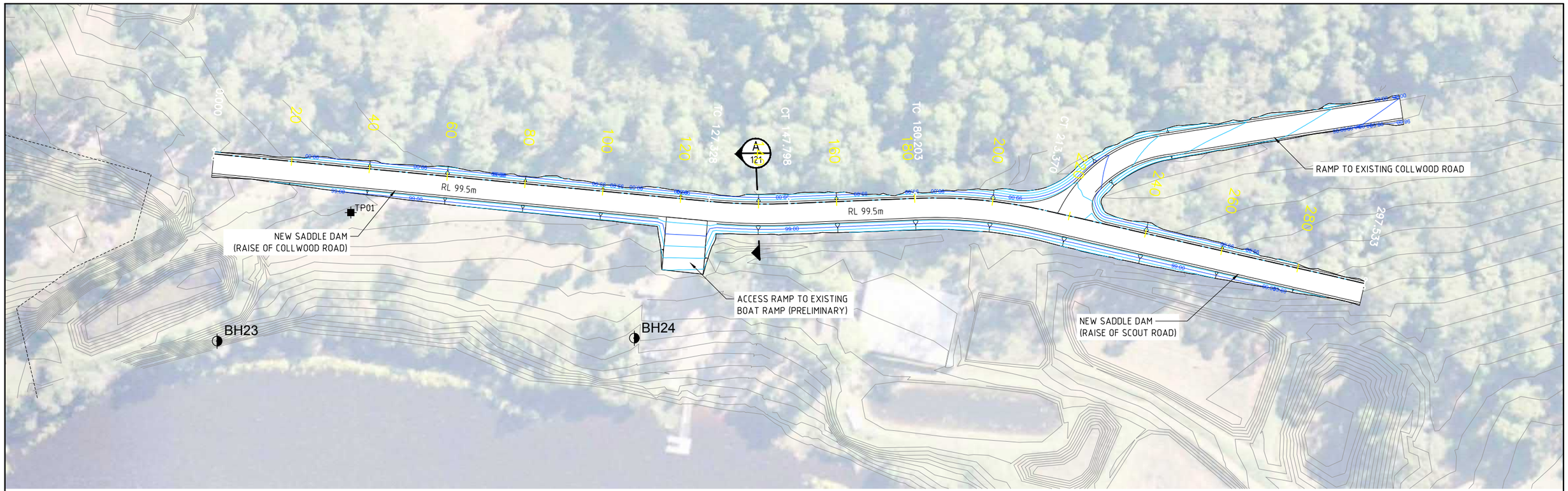
EMBANKMENT RECONSTRUCTION
RIGHT EMBANKMENT

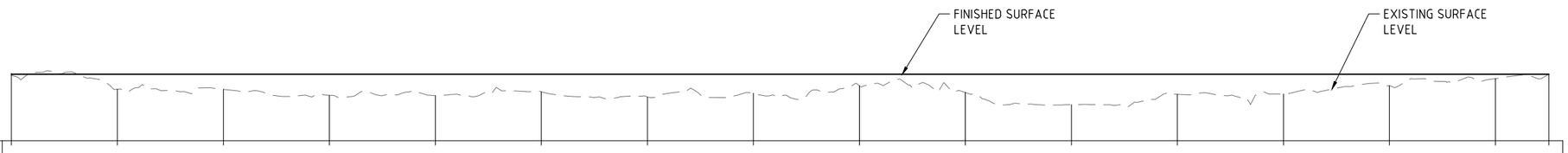
Status

Drg No. 60542495-119

Rev. 0

LAST MODIFIED:11/20/2017 1:46 PM CAD REF:P:\60SX\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-119.DWG





DATUM97

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EXISTING LEVELS	99.500	98.940	98.937	98.710	98.701	98.844	98.644	98.789	99.070	98.819	98.358	98.747	98.761	99.070	99.339	99.500
CHAINAGES	0.000	20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	200.000	220.000	240.000	260.000	280.000	290.105

LONGITUDINAL SECTION - CONTROL MCS01

SCALE 1:500 A1 HORIZONTAL
SCALE 1:100 A1 VERTICAL

NOTES:

1. THE PROPOSED SADDLE DAM WOULD BE CONSTRUCTED VIA RAISE OF COLLWOOD ROAD AND SCOUT ROAD.

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. DESIGN AND LAYOUT FOR BOAT ACCESS RAMP.
2. ROADWAY DESIGN.
3. DETAILED SURVEY OF LOCATION IS NEEDED.
4. POTENTIAL IMPACTS TO THE HATCHERY, INCLUDING ACCESS.

NOT FOR CONSTRUCTION

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE B 0 10 20 25m
1 : 1000 (A3) 1 : 500 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	PT	CHECKED	CM
APPROVED	SQB	DATE	05.10.2017

AECOM

RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

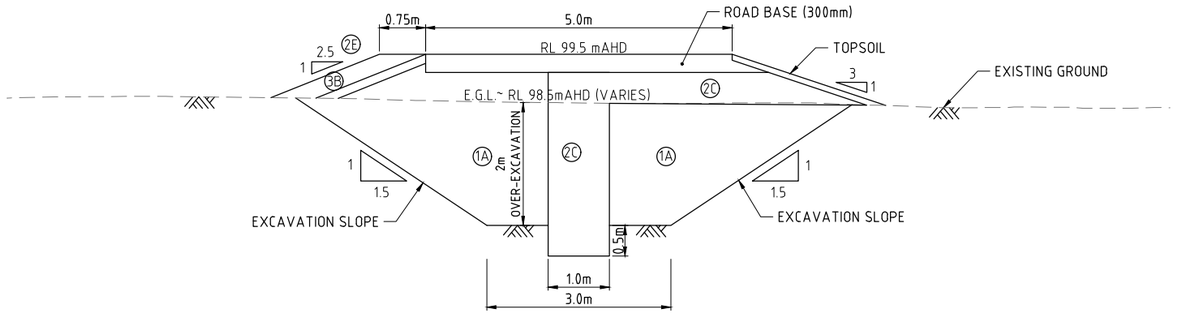
SADDLE DAM
PLAN AND LONG SECTION

Status

Drg No. 60542495-120

Rev. 0

LAST MODIFIED:10/10/2017 3:06 PM CAD REF:P:\60SX\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EDIT\60542495-120.DWG



SECTION A 120
SCALE: F

MATERIALS	
ZONE	DESCRIPTION
1A	NEW EARTHFILL CORE
2C	NEW FINE FILTER
2E	NEW FINE FILTER
3B	NEW ROCKFILL SHOULDER

NOT FOR CONSTRUCTION

ISSUES TO BE CONSIDERED DURING SUBSEQUENT DESIGN PHASES:

1. ROAD DESIGN.
2. RAMP TO COLLWOOD DRIVE (NORTHEAST SIDE OF SADDLE DAM).

This drawing is confidential and shall only be used for the purposes of this project.

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE F 0 1.0 2.0 2.5m
1 : 100 (A3) 1 : 50 (A1)

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED	CM	CHECKED	CD
DRAWN	PT	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

AECOM

RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

SADDLE DAM
TYPICAL SECTIONS

Status
Drg No. 60542495-121
Rev. 0

LAST MODIFIED:10/11/2017 2:42 PM
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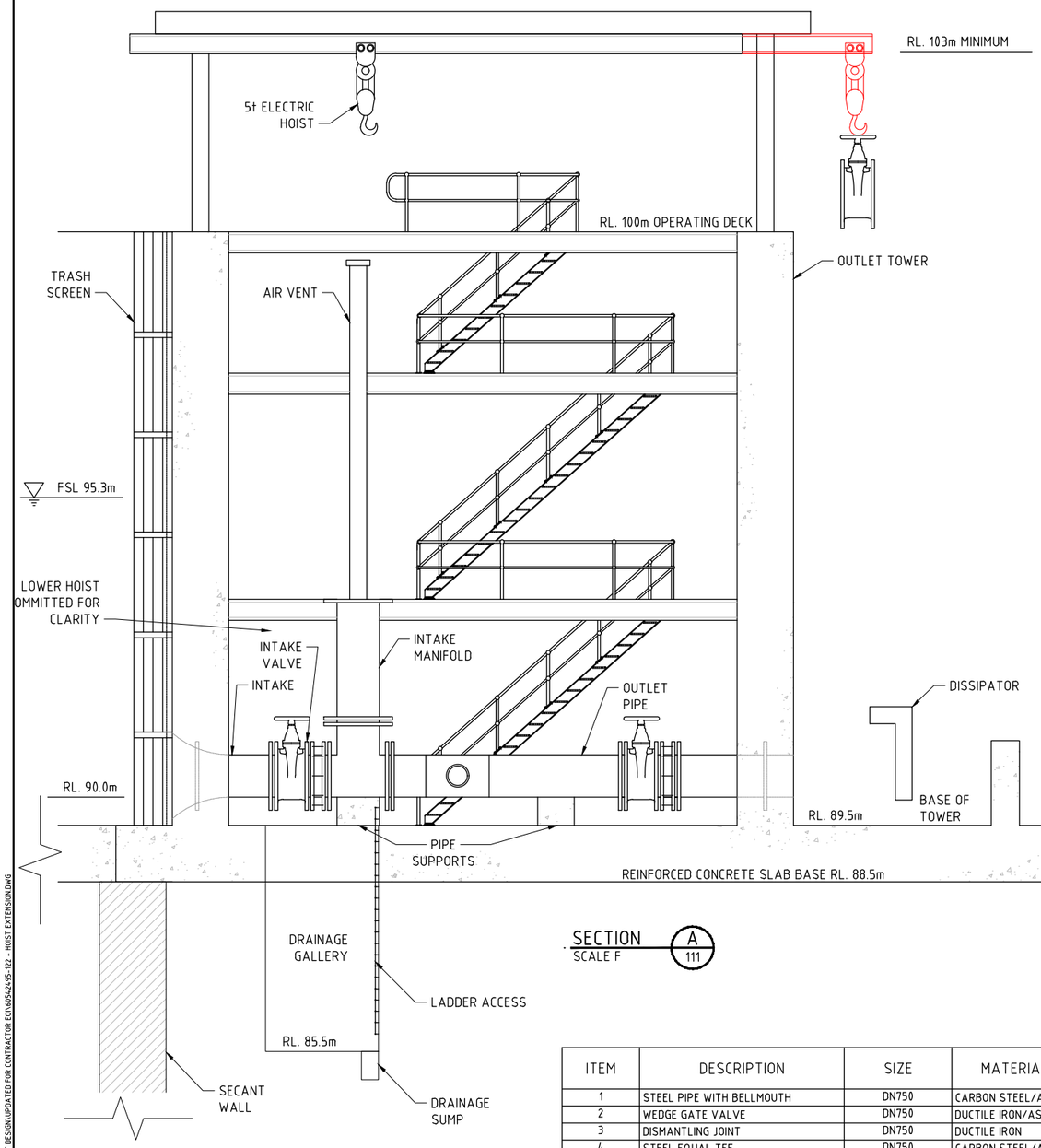
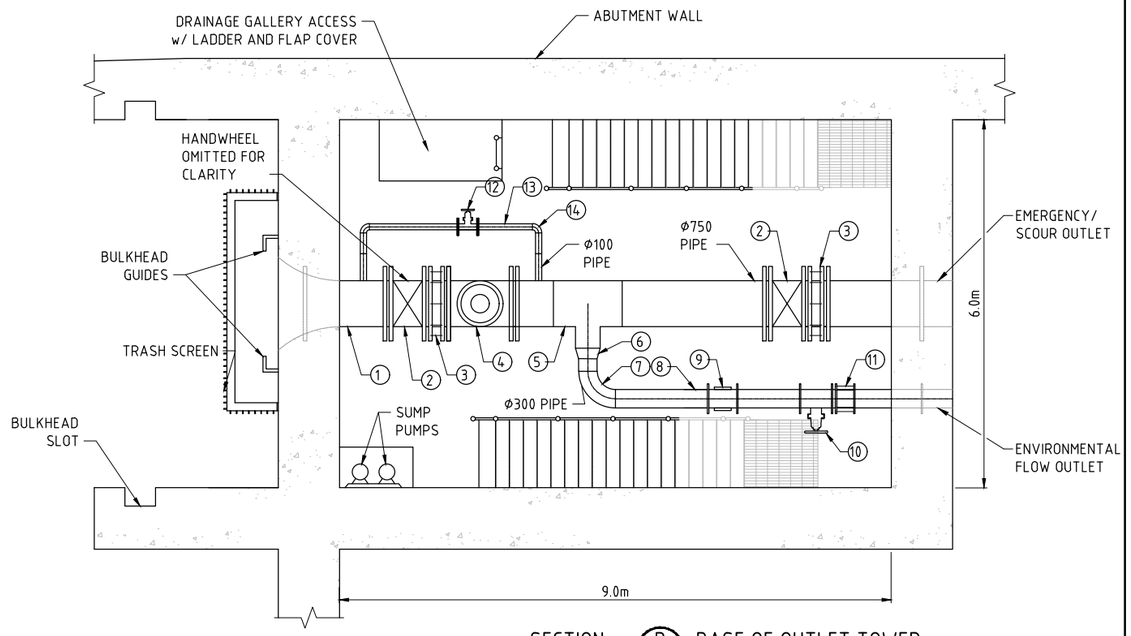
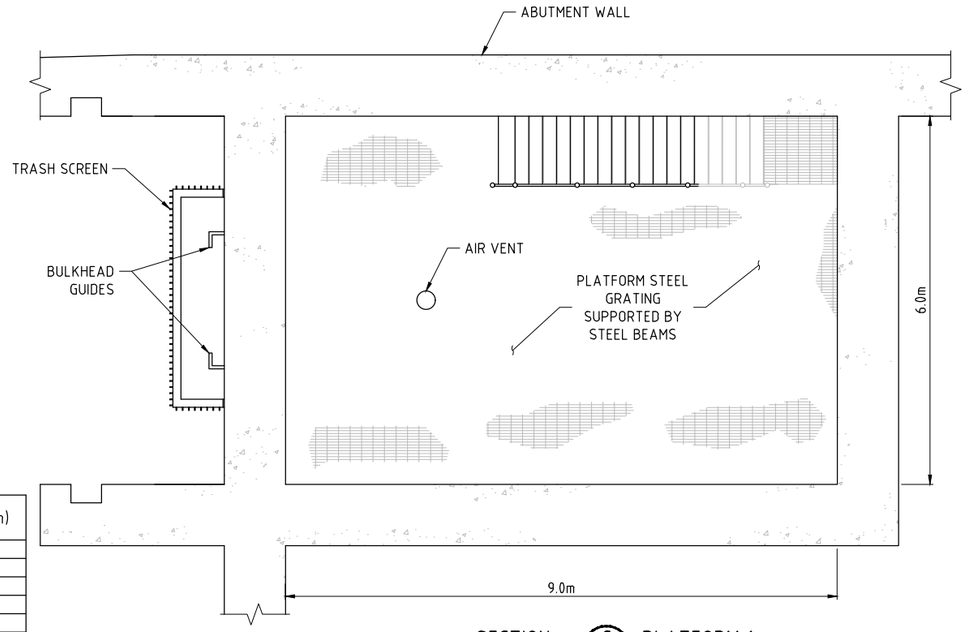


SECTION A 111
SCALE F



SECTION B -
SCALE F
BASE OF OUTLET TOWER



SECTION C -
SCALE F
PLATFORM 1

ITEM	DESCRIPTION	SIZE	MATERIAL/STANDARD	QTY/LENGTH (m)
1	STEEL PIPE WITH BELLMOUTH	DN750	CARBON STEEL/ANSI B36.10	11.0
2	WEDGE GATE VALVE	DN750	DUCTILE IRON/ASME B16.34	3.0
3	DISMANTLING JOINT	DN750	DUCTILE IRON	3.0
4	STEEL EQUAL TEE	DN750	CARBON STEEL/ANSI B16.9	2.0
5	STEEL TEE	DN750X400	CARBON STEEL/ANSI B16.9	1.0
6	CONCENTRIC REDUCER	DN400X300	CARBON STEEL/ANSI B16.9	1.0
7	LONG RADIUS STEEL BEND	DN300	CARBON STEEL/ANSI B16.28	1.0
8	STEEL PIPE	DN300	CARBON STEEL/ANSI B36.10	3.0
9	MAGNETIC FLOW METER	DN300	ANSI B16.5 FLANGES	1.0
10	NEEDLE VALVE	DN300	DUCTILE IRON/ASME B16.34	1.0
11	DISMANTLING JOINT	DN300	DUCTILE IRON	1.0
12	BUTTERFLY VALVE	DN100	DUCTILE IRON/ASME B16.34	1.0
13	STEEL PIPE	DN100	CARBON STEEL/ANSI B36.10	2.0
14	SHORT RADIUS STEEL BEND	DN100	CARBON STEEL/ANSI B16.28	2.0

NOTE

1. ELECTRICAL AND CONTROL EQUIPMENT AND CABLING NOT SHOWN. ALL SWITCHBOARDS AND CONTROL CABINETS WILL BE HOUSED AT THE OPERATING DECK LEVEL WITHIN THE BUILDING

NOT FOR CONSTRUCTION

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE F 0 1.0 2.0 2.5m
1:100 (A3) 1:50 (A1)

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DESIGNED	CM	CHECKED	CD
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

AECOM

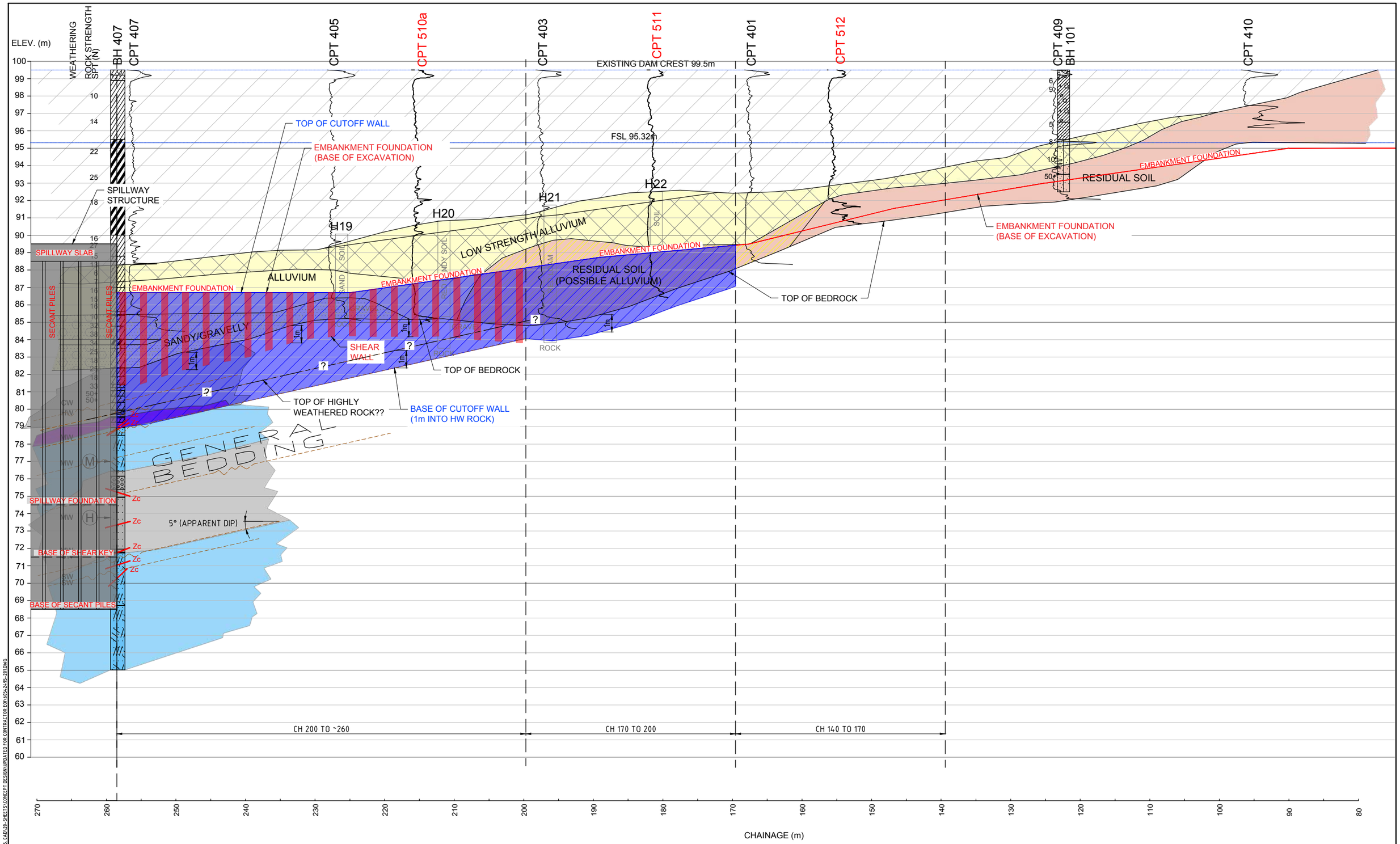
RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

OUTLET WORKS
SECTIONS

Status
Drg No. 60542495-122
Rev. 0

LAST MODIFIED:12/1/2017 1:27 PM CAD REF:P:\60SX\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EDIT\60542495-122 - HOIST EXTENSION.DWG



NOTES:

1. DISTORTED SCALE (2.5V:1H).
2. APPARENT DIPS SHOWN IN CONSIDERATION OF VERTICAL EXAGGERATION. ACTUAL APPARENT DIPS ARE FLATTER. SMALL CROSS (x) INDICATES INDETERMINATE APPARENT DIP.
3. PLANS AND SECTIONS MUST BE READ WITH GEOTECHNICAL REPORT (AECOM, 2017).

SECTION A 117

(M) MEDIUM STRENGTH ROCK
(H) HIGH STRENGTH ROCK

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale
SCALE C 0 5 10 12.5m (HORIZONTAL) 1:500 (A3) 1:250 (A1)
SCALE E 0 1 2 3 4 5m (VERTICAL) 1:200 (A3) 1:100 (A1)

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DESIGNED	CD	CHECKED	CM
DRAWN	CM	CHECKED	CM
APPROVED	SOB	DATE	05.10.2017

AECOM

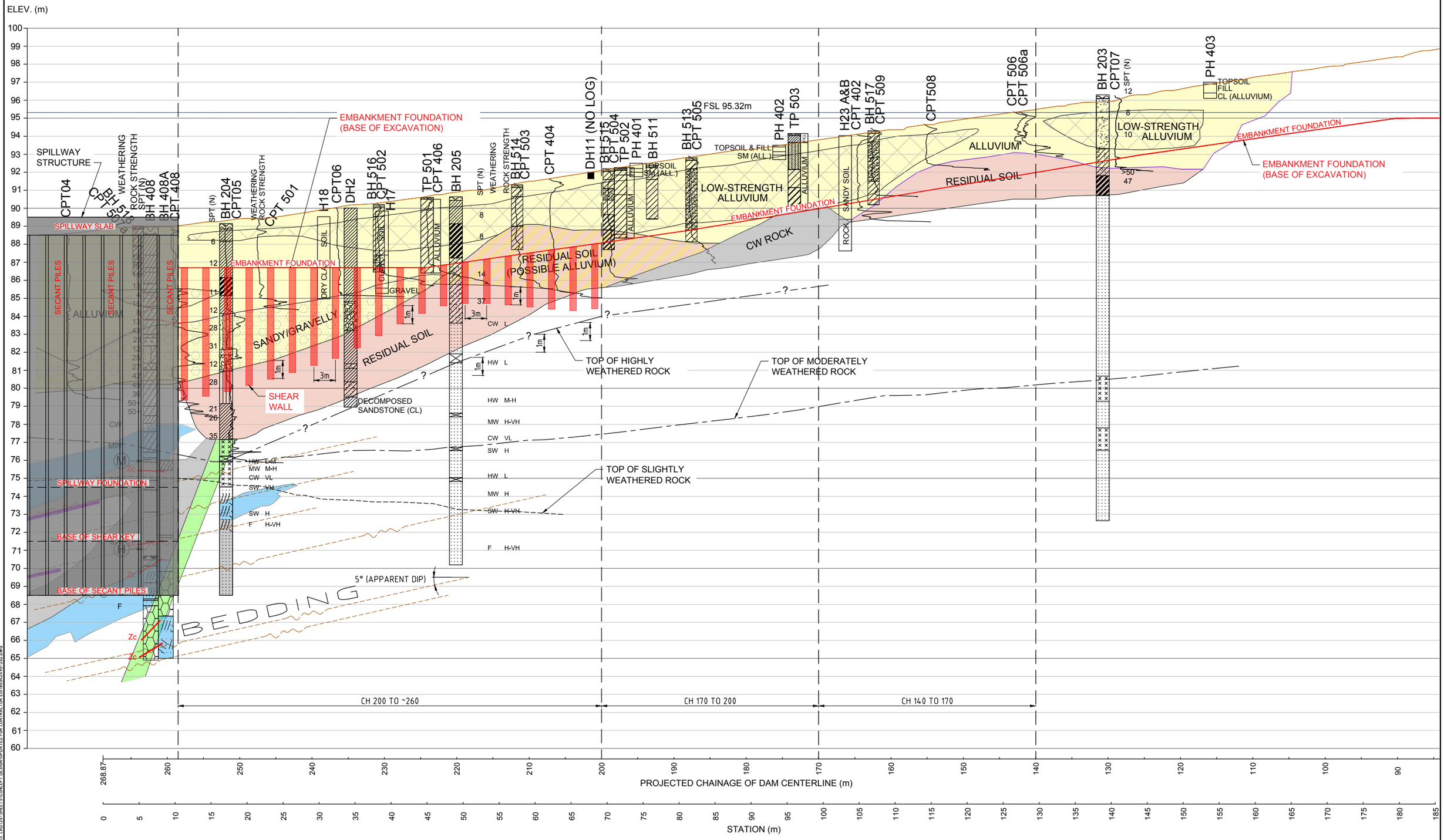
RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

RIGHT EMBANKMENT
FOUNDATION IMPROVEMENTS
GEOLOGY SECTION - UPSTREAM

Status
Drg No. 60542495-201
Rev.

LAST MODIFIED:10/10/2017 5:38 PM
CAD REF:P:\605\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\605-24495-201.DWG



NOTES:

1. DISTORTED SCALE (2.5V:1H).
2. APPARENT DIPS SHOWN IN CONSIDERATION OF VERTICAL EXAGGERATION. ACTUAL APPARENT DIPS ARE FLATTER. SMALL CROSS (x) INDICATES INDETERMINATE APPARENT DIP.
3. PLANS AND SECTIONS MUST BE READ WITH GEOTECHNICAL REPORT (AECOM, 2017).

SECTION B 117

M MEDIUM STRENGTH ROCK

H HIGH STRENGTH ROCK

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REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
0	CM	05.10.2017	ISSUED AS CONCEPT	CD

Scale

SCALE C 1 : 500 (A3) 1 : 250 (A1) (HORIZONTAL)

SCALE E 1 : 200 (A3) 1 : 100 (A1) (VERTICAL)

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DESIGNED	CD	CHECKED	CM
DRAWN	CM	CHECKED	CM
APPROVED	SQB	DATE	05.10.2017

AECOM

RPEQ No.
AECOM Australia Pty Ltd A.B.N. 20 093 846 925

LAKE MACDONALD - UPGRADE CONCEPT DESIGN 2017

RIGHT EMBANKMENT
FOUNDATION IMPROVEMENTS
GEOLOGY SECTION - DOWNSTREAM

Status

Drg No. 60542495-202

Rev.

LAST MODIFIED: 10/10/2017 5:38 PM

CAD REF: P:\60SX\60542495\5. CAD\20-SHEETS\CONCEPT DESIGN\UPDATED FOR CONTRACTOR EOI\60542495-202.DWG