

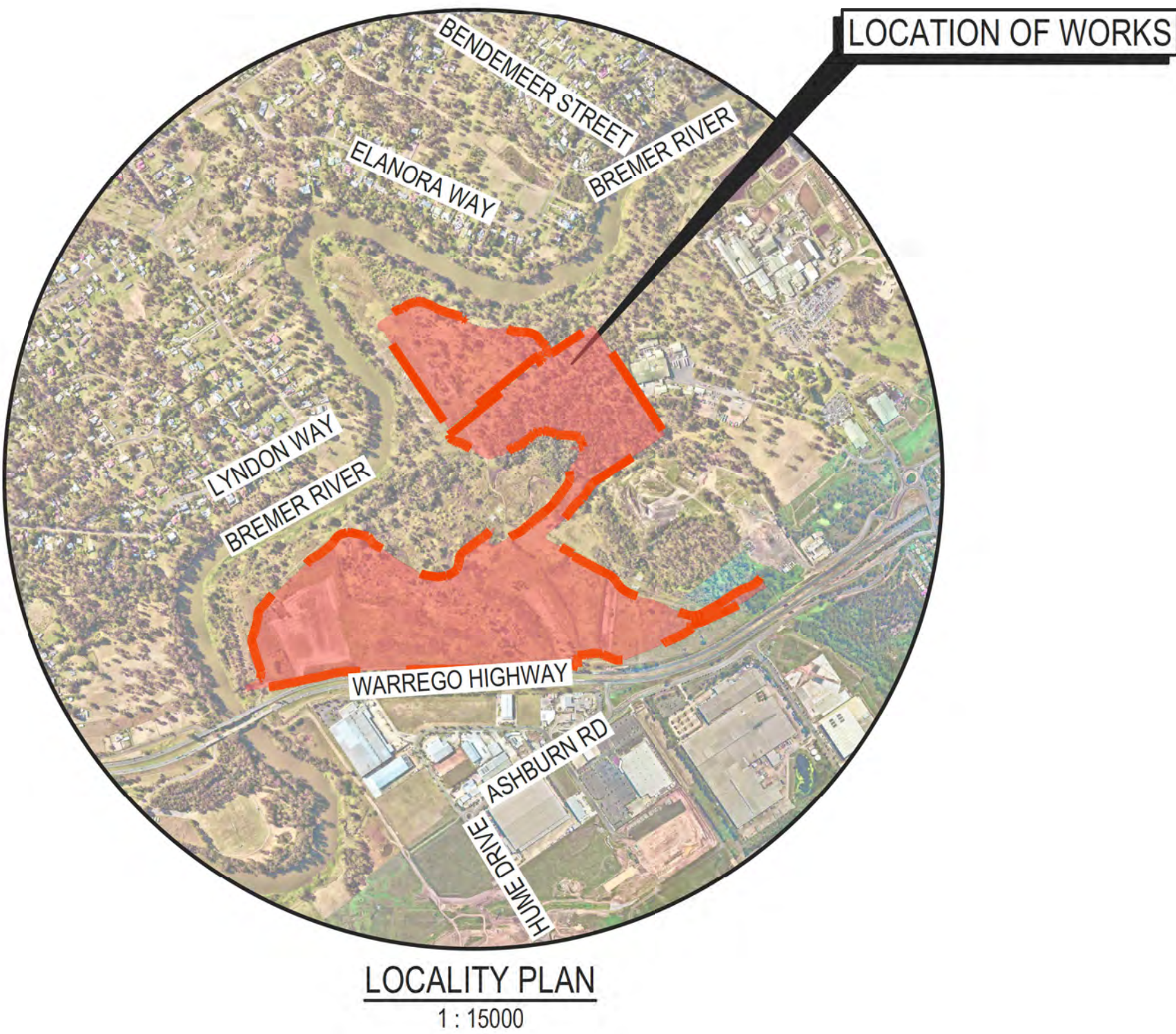
## APPENDIX 3: ENGINEERING REPORT




CITISWICH - STAGE 7  
OPERATIONAL WORKS - BULK EARTHWORKS  
IPSWWICH CITY COUNCIL

DRAWING SCHEDULE

DRAWING NUMBER	DESCRIPTION
GENERAL	
CTW-AAP-OP-00-DRG-CV-0001	COVER SHEET, LOCALITY PLAN AND DRAWING SCHEDULE
CTW-AAP-OP-00-DRG-CV-0041	SAFETY IN DESIGN SHEET 1
CTW-AAP-OP-00-DRG-CV-0042	SAFETY IN DESIGN SHEET 2
CTW-AAP-OP-00-DRG-CV-0061	GENERAL ARRANGEMENT PLAN
CTW-AAP-OP-00-DRG-CV-0071	EXISTING SURVEY PLAN
EARTHWORKS	
CTW-AAP-OP-00-DRG-CV-0100	BULK EARTHWORKS LAYOUT PLAN OVERALL
CTW-AAP-OP-00-DRG-CV-0101	BULK EARTHWORKS LAYOUT PLAN SHEET 1
CTW-AAP-OP-00-DRG-CV-0102	BULK EARTHWORKS LAYOUT PLAN SHEET 2
CTW-AAP-OP-00-DRG-CV-0103	BULK EARTHWORKS LAYOUT PLAN SHEET 3
CTW-AAP-OP-00-DRG-CV-0104	BULK EARTHWORKS LAYOUT PLAN SHEET 4
CTW-AAP-OP-00-DRG-CV-0105	BULK EARTHWORKS LAYOUT PLAN SHEET 5
CTW-AAP-OP-00-DRG-CV-0106	BULK EARTHWORKS LAYOUT PLAN SHEET 6
CTW-AAP-OP-00-DRG-CV-0121	BULK EARTHWORKS SITE SECTIONS SHEET 1
CTW-AAP-OP-00-DRG-CV-0122	BULK EARTHWORKS SITE SECTIONS SHEET 2
CTW-AAP-OP-00-DRG-CV-0123	BULK EARTHWORKS SITE SECTIONS SHEET 3
CTW-AAP-OP-00-DRG-CV-0124	BULK EARTHWORKS SITE SECTIONS SHEET 4
CTW-AAP-OP-00-DRG-CV-0170	EROSION AND SEDIMENT CONTROL LAYOUT PLAN OVERALL
CTW-AAP-OP-00-DRG-CV-0182	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS SHEET 1
CTW-AAP-OP-00-DRG-CV-0183	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS SHEET 2
CTW-AAP-OP-00-DRG-CV-0184	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS SHEET 3



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HAZARD / RISK ASSESSMENT REGISTER - CIVIL WORKS

PROJECT		CITISWICH STAGE 7												
LOCATION		WARREGO HIGHWAY, BUNDAMBA QLD												
PROJECT NUMBER		30139240												
PROJECT DESCRIPTION		BULK EARTHWORKS												

A HAZARD is something with the potential to cause harm.

RISK is a combination of the likelihood of the harm occurring and the severity of the harm should it occur.

CONTROLS are measures to eliminate or reduce risk to an acceptable level.

ABNORMAL RISKS are aspects of our project, structure or materials as identified by our design which may present significant hazards that are unusual, not obvious or may be difficult to manage

RISK ID NO	PROJECT PHASE	HAZARD / RISK DESCRIPTION	RISK MANAGER	CONSEQUENCE / LIKELY HARM	LIKELIHOOD	SEVERITY	INITIAL RISK RATING = L X S	TREATMENT OPTION MITIGATION PLAN FOR AVOIDANCE CONTROLS TO BE PROVIDED	CONSEQUENCE / LIKELY HARM	LIKELIHOOD	SEVERITY	RESIDUAL RISK RATING = L X S	ADOPTED TREATMENT - REASON - BY WHOM	COMMENT
1	Design/ Construction	Construction under traffic and within public space	Contractor	Personal injury, disability or death by worker or public	4	5	20	Civil contractor to install temporary physical barriers (including but not limited to separation zones, water barriers, flagging, fencing) as required under their site safety management plan. installation of appropriate warning signs, reduction of speed limits and use of flagman or electric stop/go signage. removal of the above controls to be carefully timed	Provides visual and physical barrier	2	4	8	Treatment to be adopted by civil contractor	
2	Design/ Construction	Existing services	Contractor	Damage to public infrastructure	3	1	3	Both underground and overhead services existing in the vicinity of the site. location and depths / clearances to be determined of all services prior to commencement of works on site	Contractor to locate and ensure all services are protected where required. care must be taken when working near existing services. any damage to be reinstated/repaired to the satisfaction of the asset owner, council, client and superintendent as applicable at the contractor's expense.	2	1	2	Treatment to be adopted by civil contractor	
3	Construction	Soil disturbance and erosion	Contractor	Environmental Impact to downstream waterway flood corridor	3	1	3	Indicative Erosion and Sediment Control (ESC) strategy provided by Arcadis. Contractor to arrange ESC Management Plan by CPESC and implement controls prior to commencement of works on site	Controls in place will reduce likelihood of sediment borne runoff entering downstream waterway flood corridor. ESC Controls to be monitored and inspected by CPESC at regular intervals to ensure effectiveness	2	1	2	Treatment to be adopted by civil contractor	
4	Construction /Operation	Dispersive Soil	Contractor	Destruction of property/Infrastructure damage/ Environmental harm	3	4	12	Adequate measures are taken to either treat or protect dispersive soil in accordance with best industry practice and thereby reduce the likelihood or consequence of such soils when coming in contact in rainwater.	Destruction of property/Infrastructure damage/Environmental harm	1	4	4	Dispersive soil management plan (DSMP) to be prepared by qualified geotechnical engineer before commencement of construction works	Contractor to implement actions/recommendations from approved DSMP
5	Operation	Access to inlet structure/dangerous waters at upstream stormwater inlet structures	Arcadis/ Ipswich city council	Loss of life	4	5	20	Provide inlet screen to headwall in accordance with OUDM section 125.4	Physical Barrier	2	5	10	Hinged inlet bar screen adopted and included in civil design drawings as entry to the system could have fatal consequences. Blocking access to the system is a priority. Civil contractor to install onsite	
								Provide & maintain barrier fencing as a warning system to minimise the risk of a person accidentally falling into dangerous water.	Residual risk remains as barrier fencing is not primarily designed to exclude access by a person but barrier fence will act as a warning system to mitigate this risk	2	5	10	Design to provide barrier fencing, to be maintained by council in order to warn public of dangerous waters/fall risk	
								Provide appropriate warning signage	Visual OUE/Education	2	5	10	Treatment adopted and included within civil design drawings. Civil contractor to install onsite	
								Screen planting	Physical/Visual barrier	N/A	N/A	N/A	Treatment not adopted as it would obstruct visual surveillance and opportunity to identify persons in danger/at risk	
								Batter planting	Destruction of property/Infrastructure damage/Environmental harm	1	4	4	Treatment adopted to reduce ease of access to ponded water and inlet structure. Planting documented on landscape architect's plan and to be planted by civil contractor	

LIKELIHOOD

OCCURRENCE VIRTUALLY INEVITABLE, MAY OCCUR MANY TIMES	5
OCCURRENCE NOT SURPRISING, MAY OCCUR MORE THAN ONCE	4
LIKELY TO OCCUR SOMETIMES	3
UNLIKELY TO OCCUR, THOUGH CONCEIVABLE	2
SO UNLIKELY THAT PROBABILITY IS CLOSE TO ZERO	1

RISK RATING RESULTS

15-25	VERY HIGH	THIS ACTIVITY MUST NOT BE UNDERTAKEN, OR SHOULD BE STOPPED, UNTIL ADDITIONAL MEASURES HAVE BEEN PUT IN PLACE TO REDUCE THE RISK
8-12	HIGH	ALL REASONABLY PRACTICABLE CONTROL MEASURES MUST BE PUT IN PLACE BEFORE THIS TASK MAY PROCEED
3-6	MEDIUM	CONTROL MEASURES MUST BE PUT IN PLACE TO REDUCE THIS RISK UNLESS IT WOULD INVOLVE EXCESSIVE COST FOR LITTLE BENEFIT
1-2	LOW	NO FURTHER ACTION REQUIRED UNLESS BENEFICIAL ACTION CAN BE EASILY UNDERTAKEN

RISK RATING

5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
	1	2	3	4	5

SEVERITY

FATALITY	5
MAJOR INJURY	4
SIGNIFICANT INJURY	3
FIRST AID INJURY	2
MINOR INJURY	1

										Scales		Surveyor		Client		Status		Project		<div> <div>ARCADIS</div> <div> Arcadis Australia Pacific Pty Limited  Level 35, 111 Eagle Street  BRISBANE QLD 4000  ABN 76 104 485 289  Tel No: +61 7 3337 0000  www.arcadis.com/au </div> <div> <div>Project Number</div> <div>30139240</div> </div> <div> <div>Drawing No.</div> <div>CTW-AAP-OP-00-DRG-CV-0041</div> </div> <div> <div>Issue</div> <div>02</div> </div> </div>	
										NOT TO SCALE		Architect				<div>FOR APPROVAL</div> <div>NOT TO BE USED FOR CONSTRUCTION</div> <div>© Copyright reserved</div> <div> <div>Original Issue Signatures</div> <div> <div>Drawn</div> <div>S.GODITO</div> <div>Original Size</div> <div>A1</div> </div> <div> <div>Designed</div> <div>S.SEM</div> <div>Height Datum</div> <div>AHD</div> </div> <div> <div>Project Manager</div> <div>B.KITSON</div> <div>Grid</div> <div>MGA GDA94</div> </div> <div> <div>Verified</div> <div>B.KITSON</div> <div></div> </div> </div>		<div>CITISWICH STAGE 7</div> <div>SAFETY IN DESIGN SHEET 1</div>			

02 FOR APPROVAL

01 FOR APPROVAL

Issue Description

SG SS BK 02.08.23

SG SS BK 01.08.23

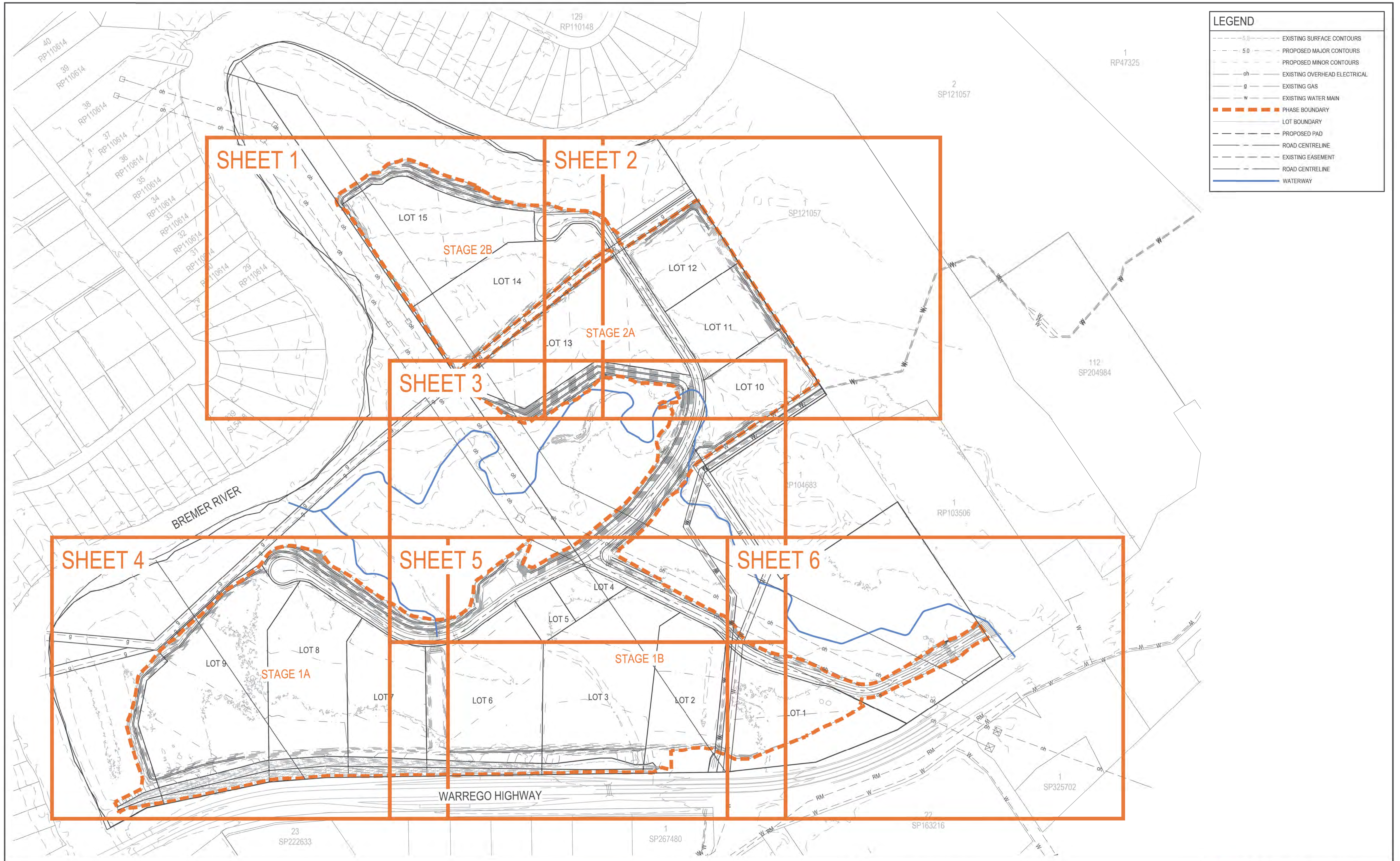
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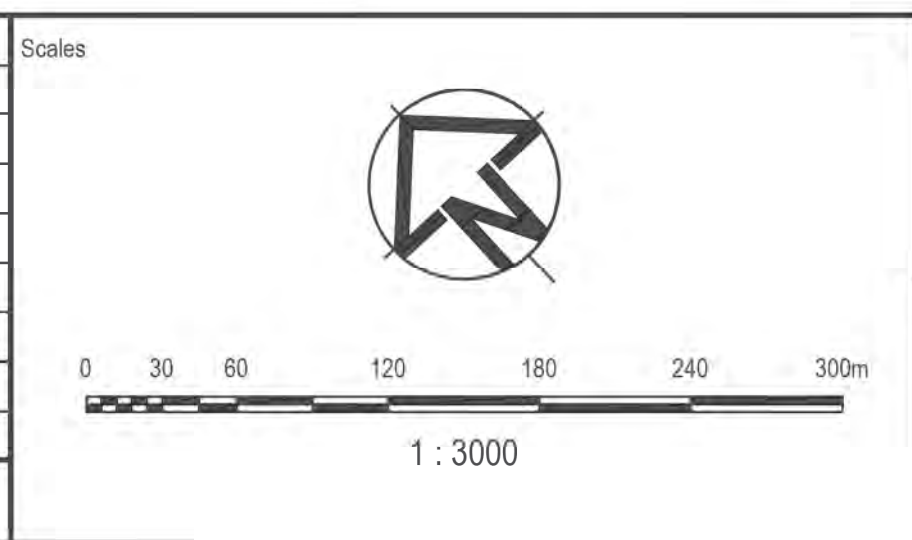
Date Plotted: 23 Aug 2023 - 05:52PM

File Name: C:\Users\opmn0651\Documents\Arcadis\AAU-0000000-Citiswich Stage 7\Project Files\01\_WIP\01\_Civil\_CV\STG\_00\Drawings\OPWC\CTW-AAP-OP-00-DRG-CV-0041-SafetyInDesign.dwg





Issue	Description	DR	CH	VE	Date
04	TMR BOUNDARY REMOVED	OP	SS	BK	25.08.23
03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
02	FOR APPROVAL	SG	SS	BK	02.08.23
01	FOR APPROVAL	SG	SS	BK	01.08.23



Surveyor

**BENNETT+  
BENNETT**

Architect

Client

**walker**

Status			
FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION			
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Original Issue Signatures			
Drawn	S.GODITO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	MGA GDA94
Verified	B.KITSON		

Project

CITISWICH STAGE 7

Title

GENERAL ARRANGEMENT  
PLAN

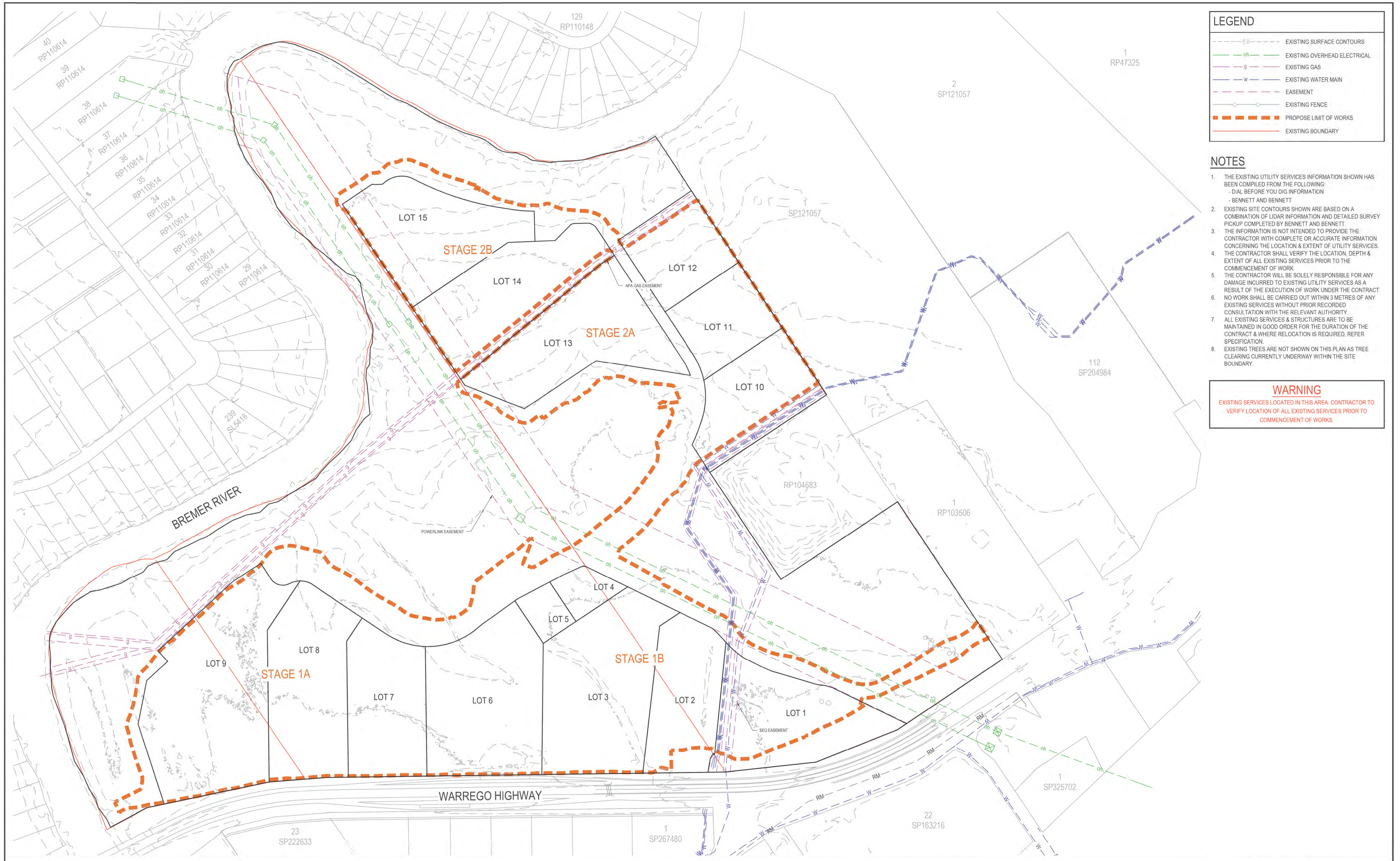
**ARCADIS**

Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com/au

Project Number	30139240
Issue	04

Drawing No: CTW-AAP-OP-00-DRG-CV-0061





LEGEND

EXISTING OVERHEAD ELECTRICAL

EXISTING GAS

EXISTING WATER MAIN

EASEMENT

EXISTING FENCE

PROPOSE LIMIT OF WORKS

EXISTING BOUNDARY

- NOTES
1. THE EXISTING UTILITY SERVICES INFORMATION SHOWN HAS BEEN COMPILED FROM THE FOLLOWING:  
- DIAL BEFORE YOU DIG INFORMATION  
- BENNETT AND BENNETT

2. EXISTING SITE CONTOURS SHOWN ARE BASED ON A COMBINATION OF LIDAR INFORMATION AND DETAILED SURVEY PICKUP COMPLETED BY BENNETT AND BENNETT.

3. THE INFORMATION IS NOT INTENDED TO PROVIDE THE CONTRACTOR WITH COMPLETE OR ACCURATE INFORMATION CONCERNING THE LOCATION & EXTENT OF UTILITY SERVICES.

4. THE CONTRACTOR SHALL VERIFY THE LOCATION, DEPTH & EXTENT OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

5. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ANY DAMAGE INCURRED TO EXISTING UTILITY SERVICES AS A RESULT OF THE EXECUTION OF WORK UNDER THE CONTRACT.

6. NO WORK SHALL BE CARRIED OUT WITHIN 3 METRES OF ANY EXISTING SERVICES WITHOUT PRIOR RECORDED CONSULTATION WITH THE RELEVANT AUTHORITY.

7. ALL EXISTING SERVICES & STRUCTURES ARE TO BE MAINTAINED IN GOOD ORDER FOR THE DURATION OF THE CONTRACT & WHERE RELOCATION IS REQUIRED, REFER SPECIFICATION.

8. EXISTING TREES ARE NOT SHOWN ON THIS PLAN AS TREE CLEARING CURRENTLY UNDERWAY WITHIN THE SITE BOUNDARY.

WARNING

EXISTING SERVICES LOCATED IN THIS AREA. CONTRACTOR TO VERIFY LOCATION OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF WORKS.

04	TMR BOUNDARY REMOVED	OP	SS	BK	25.08.23
03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
02	FOR APPROVAL	SG	SS	BK	02.08.23
01	FOR APPROVAL	SG	SS	BK	01.08.23
Issue	Description	DR	CH	VE	Date

Scales

0 30 60 120 180 240 300m

1 : 3000

Surveyor

BENNETT+  
BENNETT

Architect

Client

walker

Status

FOR APPROVAL  
NOT TO BE USED FOR CONSTRUCTION

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Original Issue Signatures

Drawn

S.GODITO

Original Size

A1

Designed

S.SEM

Height Datum

AHD

Project Manager

B.KITSON

Grid

MGA GDA94

Verified

B.KITSON

Project

CITISWICH STAGE 7

Title

EXISTING SURVEY PLAN

ARCADIS

Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com/au

Project Number

30139240

Issue

04

CTW-AAP-OP-00-DRG-CV-0071

04

Date Plotted: 25 Aug 2023 - 03:41PM

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NOTES:

- ALL TOPSOIL FROM EARTHWORKS AREA SHALL BE STRIPPED AND STOCKPILED PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OPERATIONS. TOPSOIL STRIP DEPTH OF 100mm HAS BEEN FACTORED INTO EARTHWORKS VOLUMES FOR ALL AREAS AS AN ALLOWANCE.
  - AN ASSESSMENT OF INSITU TOPSOIL DEPTHS ACROSS THE SITE SHALL BE UNDERTAKEN BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF TOPSOIL STRIPPING. THE FINDINGS OF THIS ASSESSMENT SHALL BE PROVIDED TO THE SUPERINTENDENT PRIOR TO THE COMMENCEMENT OF TOPSOIL STRIPPING.
  - NOTWITHSTANDING THE LIMITS OF FILLING SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE DETERMINED ON SITE BY THE ENGINEER DURING CONSTRUCTION. FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION.
  - FILL AREAS SHALL BE CONSTRUCTED IN LAYERS NOT EXCEEDING 300mm LOOSE DEPTH. THE FILL MATERIAL SHALL BE COMPACTED TO 98% (MINIMUM) OF THE MAXIMUM DRY DENSITY. TESTING SHALL BE IN ACCORDANCE WITH A.S. 1289 (MODIFIED COMPACTION). THE CONTRACTOR SHALL SUPPLY TO THE ENGINEER CERTIFICATION OF THE COMPACTION ACHIEVED.
  - ALL EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3798 UNDER LEVEL 1 SUPERVISION.
  - ALL FILL PLACED ON THE SITE IS TO COMPRISE OF ONLY NATURAL EARTH AND ROCK AND IS TO BE FREE OF ALL CONTAMINANTS (REFER TO THE ENVIRONMENTAL PROTECTION ACT 1994 SECTION 11). NO DEMOLITION MATERIAL IS TO BE USED.
  - UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT ALL FILL SHALL BE PLACED AT BETWEEN +2% AND -2% OF OPTIMUM MOISTURE CONTENT.
  - QA TESTING UNDERTAKEN ON THE FUTURE PUMP STATION SITE (PAD ADJACENT TO NORTH EAST BASIN) TO BE COMPLETED AS SEPARATE TESTING LOT AND IN ACCORDANCE WITH GOVERNING AUTHORITY.
  - DESIGN LEVELS SHOWN ARE BULK EARTHWORKS SURFACE LEVELS.
  - ALL NEW WORKS TO MATCH NEATLY WITH EXISTING. THE CONTRACTOR SHALL CONFIRM LOCATION OF ALL EXISTING SERVICES AND PROTECT THESE SERVICES DURING CONSTRUCTION. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
  - ALL ALLOTMENTS TO BE GRASS SEEDING WITH MINIMUM 80% COVERAGE SEEDING TO OCCUR WITHIN 7 DAYS OF COMPLETION OF EARTHWORKS.
  - TYNE, MOISTURE CONDITION AND RECOMPACT THE UPPER 0.3m OF SUBGRADE (TO 98% MINIMUM DDR WITHIN APPROXIMATELY 2% OF THE OMC).
  - THE UPPER 0.5m DEPTH BENEATH PAVEMENTS AND DRIVEWAYS SHALL BE COMPACTED TO 100% STANDARD COMPACTION.
  - STAGING THE EARTHWORKS IN A WAY WHICH ALLOWS THE UPPER 1m TO 2m OF THE CONTROL FILL TO BE PREDOMINANTLY CRUSHED SANDSTONE WOULD REDUCE SURFACE MOVEMENTS DUE TO SEASONAL SOIL SUCTION VARIATIONS AND PROVIDE AN IMPROVED FINAL CBR VALUE.
  - WORKS ARE NOT PERMITTED BEYOND THE CLEARING EXTENTS AS DEFINED BY APPROVED VMP AND EPBC APPROVAL. REFER TO ECOLOGIST FOR DETAILS.
  - INTERIM MAXIMUM 1 IN 2 BATTERS, IN ACCORDANCE WITH GEOTECHNICAL REPORT.
  - THE CONTRACTOR IS REQUIRED TO ENSURE COMPLIANCE WITH THE DISPERSIVE SOIL MANAGEMENT PLAN PREPARED BY PSM (REPORT REF: PSM4717-022R) DURING BULK EARTHWORKS OPERATIONS. INCLUDING ALL RECOMMENDED FIELD TESTING AND INSPECTIONS BY THE LEVEL 1 GITA, CAPPING WITH NON-DISPERSIVE MATERIAL OR CHEMICAL AMELIORATION AS REQUIRED.
- DISPERSION TESTING IS REQUIRED TO BE CARRIED OUT BY THE GEOTECHNICAL INSPECTION AND TESTING AUTHORITY (GITA), AS DEFINED BY CI. 8.4 OF AS3798 (2007), AS PART OF THE BULK EARTHWORKS LEVEL 1 INSPECTION AND TESTING AT A MINIMUM FREQUENCY OF:
- ONE TEST PER 5000 m<sup>3</sup> OF SOIL GENERATED FROM CUT AREAS THAT IS PROPOSED TO BE RE-USED AS ENGINEERED FILL. TEST SAMPLES SHOULD BE TAKEN ONLY IN SOIL (NOT ROCK) BELOW THE TOPSOIL LAYER. THE TESTS SHOULD BE SUFFICIENTLY DISTRIBUTED ACROSS SOIL UNITS.
  - ONE TEST PER 2500 m<sup>3</sup> IN CUT AREAS WHERE THE SUBGRADE COMPRISE SOIL. TEST SAMPLES SHOULD BE TAKEN FROM THE SURFACE MATERIAL AFTER THE TOPSOIL IS STRIPPED.
- SITE INSPECTIONS SHOULD BE UNDERTAKEN BY GITA (PARTICULARLY FOLLOWING RAINFALL EVENTS) DURING CONSTRUCTION TO IDENTIFY AREAS OF TUNNEL OR RILL EROSION. IF ANY AREAS ARE IDENTIFIED, A DISPERSION FIELD TEST SHOULD BE UNDERTAKEN USING THE SOIL WITHIN THE ERODED AREA.



**LEGEND**

- EXISTING SURFACE CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- EXISTING OVERHEAD ELECTRICAL
- EXISTING GAS
- EXISTING WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- PROPOSED STORMWATER HEADWALL
- PROPOSED EASEMENT
- PROPOSE LIMIT OF WORKS
- TOP OF BANK
- TOE OF BANK
- EXISTING WATERWAY
- EXISTING BOUNDARY

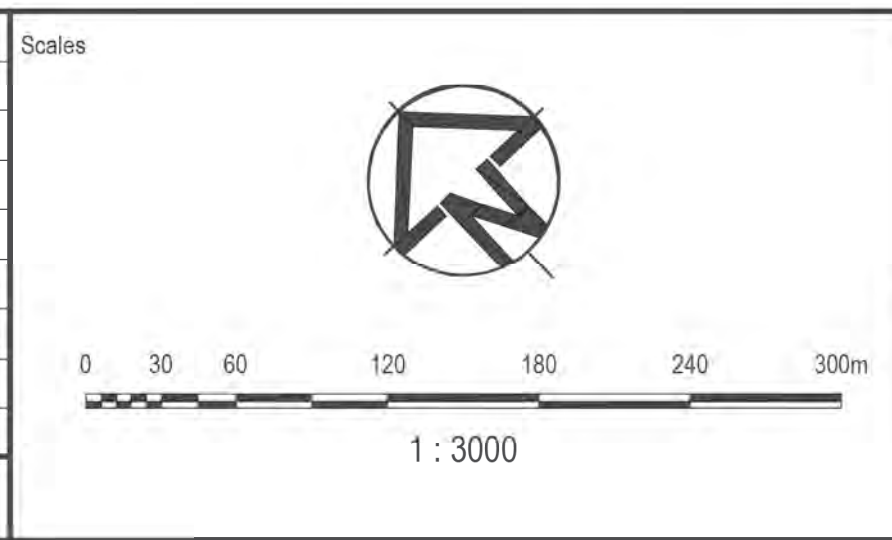
**EARTHWORKS CUT & FILL**

-14 to -12 m	
-12 to -10 m	
-10 to -8 m	
-8 to -6 m	
-6 to -4 m	
-4 to -2 m	
-2 to 0.00 m	
0.000 to 2 m	
2 to 4 m	
4 to 6 m	
6 to 8 m	
8 to 10 m	
10 to 12 m	
12 to 14 m	

CUT AND FILL VOLUME REPORT	
TOTAL CUT	-484,316m <sup>3</sup>
TOTAL FILL	2,370,469m <sup>3</sup>
TOTAL BALANCE	1,886,153m <sup>3</sup>
ASSUMED 300mm PAVEMENT DEPTH	
ASSUMED 100mm VERGE DEPTH	

**WARNING: FIRE ANT TREATMENT ZONES**  
THIS AREA IS WITHIN FIRE ANT BIOSECURITY ZONE 1. MOVEMENT OF MATERIAL SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF AGRICULTURE AND FISHERIES ACTS AND REGULATIONS. FOR FURTHER INFORMATION CALL BIOSECURITIES QUEENSLAND ON 13 25 23 OR VISIT WWW.DAF.QLD.GOV.AU FOR FURTHER INFORMATION

Issue	Description	DR	CH	VE	Date
04	TMR BOUNDARY REMOVED	OP	SS	BK	25.08.23
03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
02	FOR APPROVAL	SG	SS	BK	02.08.23
01	FOR APPROVAL	SG	SS	BK	01.08.23



Surveyor

**BENNETT+ BENNETT**

Architect

**walker**

Client

**walker**

Status

**FOR APPROVAL**  
NOT TO BE USED FOR CONSTRUCTION

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Original Issue Signatures	
Drawn	S.GODITO
Designed	S.SEM
Project Manager	B.KITSON
Verified	B.KITSON
Original Size	A1
Height Datum	AHD
Grid	MGA GDA94

Project

**CITISWICH STAGE 7**

Title

**BULK EARTHWORKS LAYOUT PLAN OVERALL**

**ARCADIS**

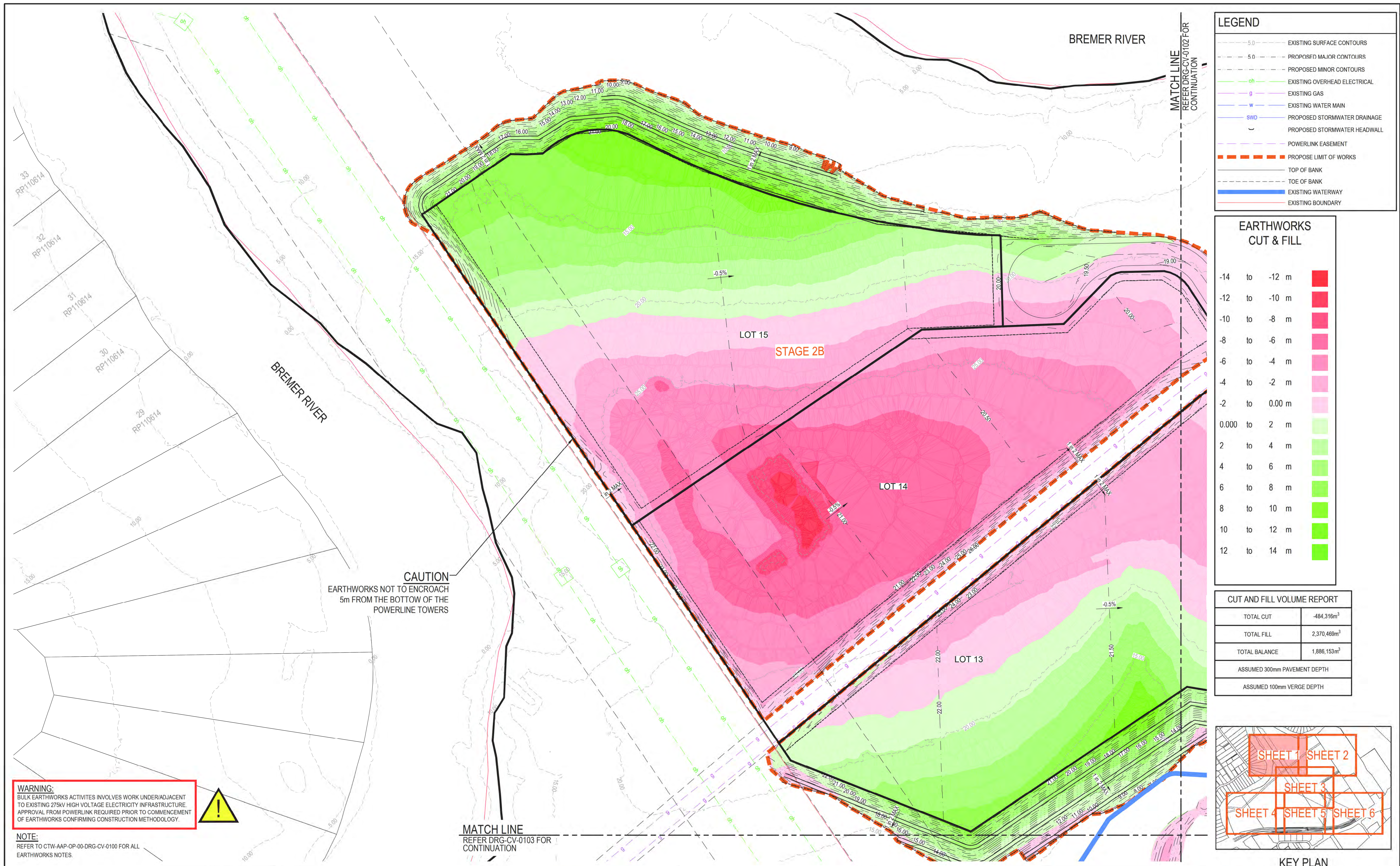
Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com.au

Project Number 30139240

Drawing No. **CTW-AAP-OP-00-DRG-CV-0100**

Issue **04**

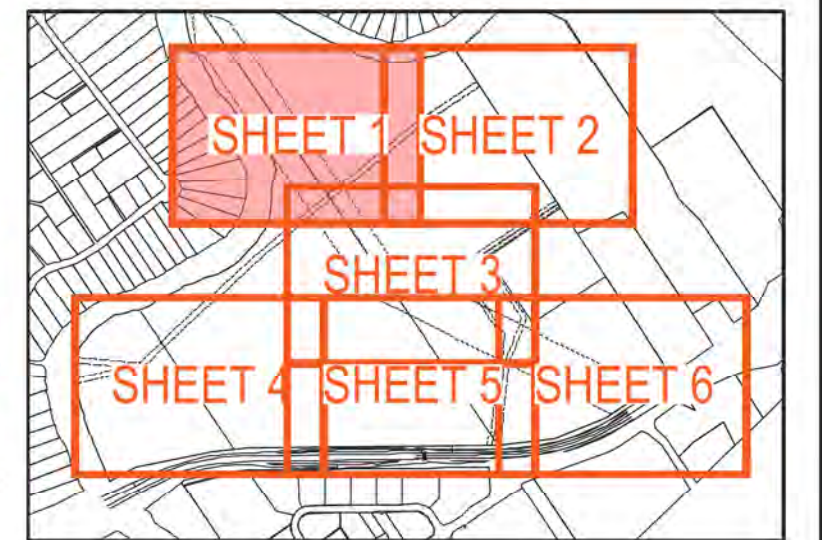




LEGEND	
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5.0	PROPOSED MAJOR CONTOURS
5.0	PROPOSED MINOR CONTOURS
oh	EXISTING OVERHEAD ELECTRICAL
g	EXISTING GAS
w	EXISTING WATER MAIN
SWD	PROPOSED STORMWATER DRAINAGE
	PROPOSED STORMWATER HEADWALL
	POWERLINK EASEMENT
	PROPOSE LIMIT OF WORKS
	TOP OF BANK
	TOE OF BANK
	EXISTING WATERWAY
	EXISTING BOUNDARY

EARTHWORKS CUT & FILL	
-14 to -12 m	
-12 to -10 m	
-10 to -8 m	
-8 to -6 m	
-6 to -4 m	
-4 to -2 m	
-2 to 0.00 m	
0.000 to 2 m	
2 to 4 m	
4 to 6 m	
6 to 8 m	
8 to 10 m	
10 to 12 m	
12 to 14 m	

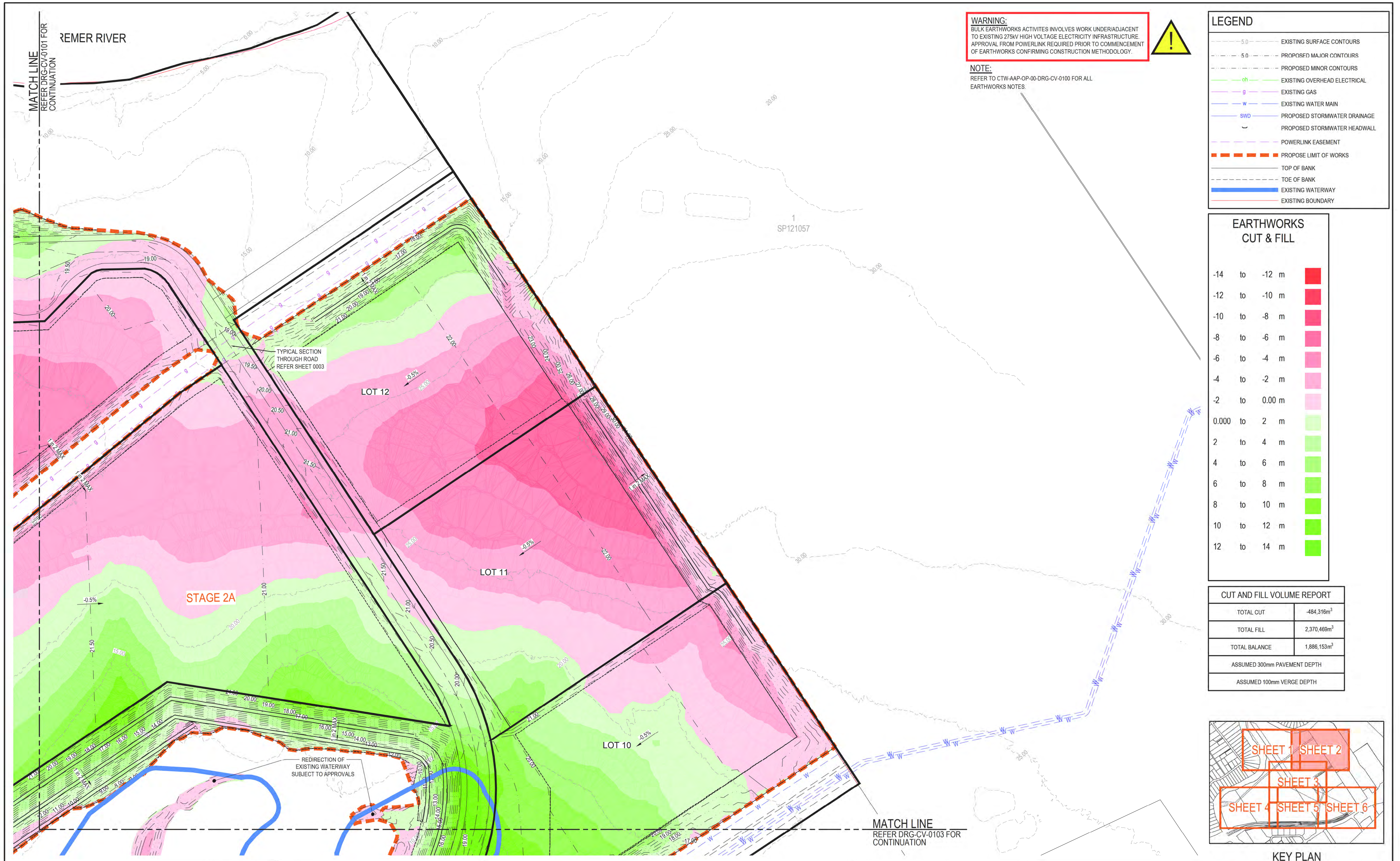
CUT AND FILL VOLUME REPORT	
TOTAL CUT	-484,316m³
TOTAL FILL	2,370,469m³
TOTAL BALANCE	1,886,153m³
ASSUMED 300mm PAVEMENT DEPTH	
ASSUMED 100mm VERGE DEPTH	






<table><tr><td>03</td><td>AMENDED LOT NUMBERS</td><td>OP</td><td>SS</td><td>BK</td><td>25.08.23</td></tr><tr><td>02</td><td>FOR APPROVAL</td><td>SG</td><td>SS</td><td>BK</td><td>02.08.23</td></tr><tr><td>01</td><td>FOR APPROVAL</td><td>SG</td><td>SS</td><td>BK</td><td>01.08.23</td></tr><tr><td>Issue</td><td>Description</td><td>DR</td><td>CH</td><td>VE</td><td>Date</td></tr></table>	03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23	02	FOR APPROVAL	SG	SS	BK	02.08.23	01	FOR APPROVAL	SG	SS	BK	01.08.23	Issue	Description	DR	CH	VE	Date	<p>Scales</p> <p>1 : 1000</p>	<p>Surveyor</p> <p>Architect</p>	<p>Client</p>	<p>Status</p> <p>FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION</p> <p>Original Issue Signatures</p> <table><tr><td>Drawn</td><td>S.GODITO</td><td>Original Size</td><td>A1</td></tr><tr><td>Designed</td><td>S.SEM</td><td>Height Datum</td><td>AHD</td></tr><tr><td>Project Manager</td><td>B.KITSON</td><td>Grid</td><td>MGA GDA94</td></tr><tr><td>Verified</td><td>B.KITSON</td><td></td><td></td></tr></table>	Drawn	S.GODITO	Original Size	A1	Designed	S.SEM	Height Datum	AHD	Project Manager	B.KITSON	Grid	MGA GDA94	Verified	B.KITSON			<p>Project</p> <p>CITISWICH STAGE 7</p> <p>BULK EARTHWORKS LAYOUT PLAN SHEET 1</p>	<p>Arcadis Australia Pacific Pty Limited Level 35, 111 Eagle Street BRISBANE QLD 4000 ABN 76 104 485 289 Tel No: +61 7 3337 0000 www.arcadis.com/au</p> <p>Project Number 30139240</p> <p>Issue 03</p>
03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23																																									
02	FOR APPROVAL	SG	SS	BK	02.08.23																																									
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Project Manager	B.KITSON	Grid	MGA GDA94																																											
Verified	B.KITSON																																													

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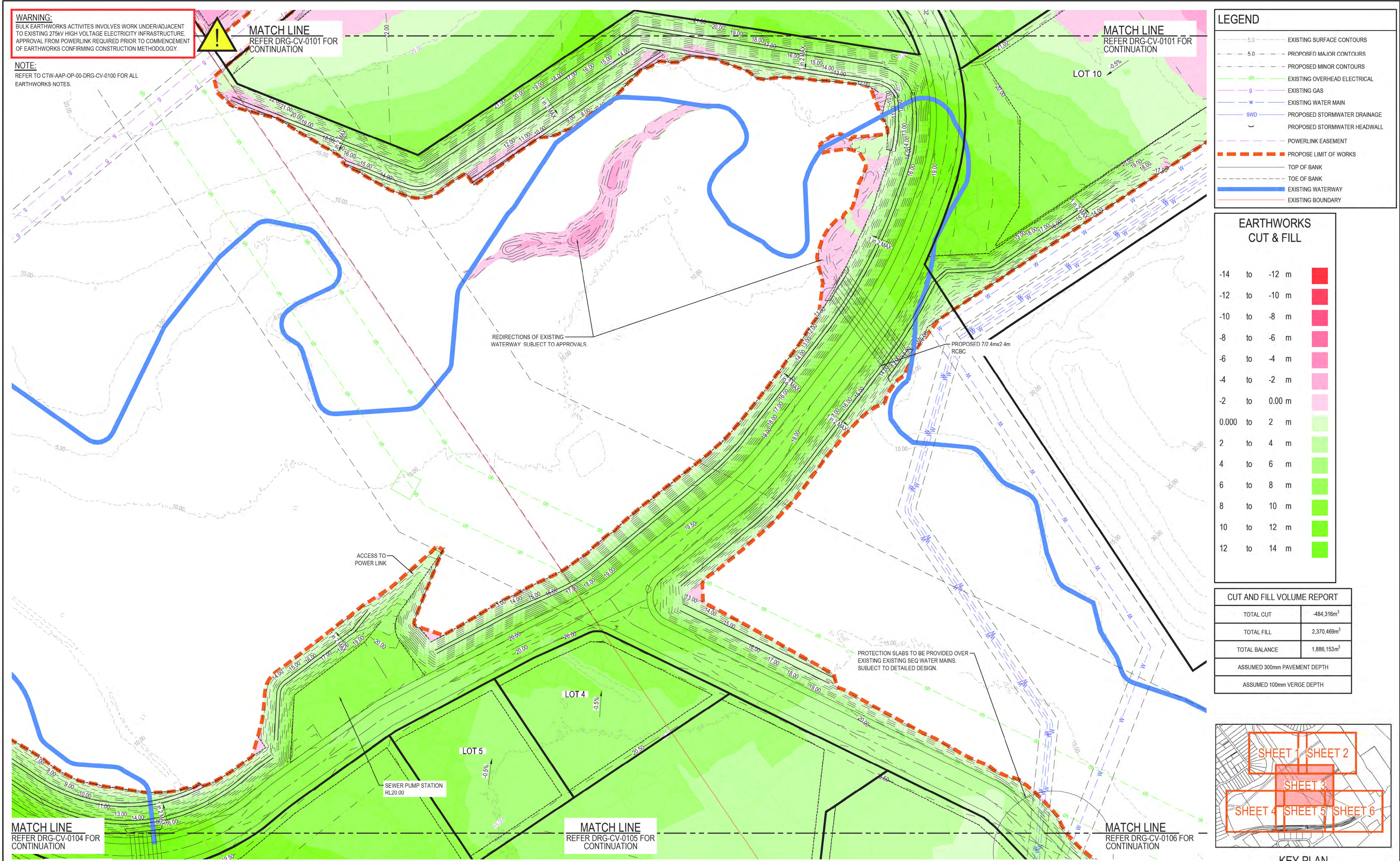











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						<div>02 FOR APPROVAL SG SS BK 02.08.23</div>			<div>Architect</div>			<div>© Copyright reserved</div>								
						<div>01 FOR APPROVAL SG SS BK 01.08.23</div>			<div>Original Issue Signatures</div>											
<div>Issue Description DR CH VE Date</div>											<div>Drawn S.GODITO Original Size A1</div>				<div>Title</div> <div>BULK EARTHWORKS LAYOUT PLAN SHEET 2</div>		<div>Drawing No.</div> <div>CTW-AAP-OP-00-DRG-CV-0102</div>		<div>Project Number</div> <div>30139240</div> <div>Issue</div> <div>03</div>	
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											<div>Verified B.KITSON</div>									

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						Scales				Surveyor				Client				Status FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION				Project CITISWICH STAGE 7		 Arcadis Australia Pacific Pty Limited Level 35, 111 Eagle Street BRISBANE QLD 4000 ABN 76 104 485 289 Tel No: +61 7 3337 0000 www.arcadis.com/au					
						 1 : 1000				Architect								Original Issue Signatures				Title		ARCADIS					
																		Drawn		S.GODITO		Original Size		A1		ARCADIS Australia Pacific Pty Limited Level 35, 111 Eagle Street BRISBANE QLD 4000 ABN 76 104 485 289 Tel No: +61 7 3337 0000 www.arcadis.com/au			
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																		Verified		B.KITSON				CTW-AAP-OP-00-DRG-CV-0103		03			
03 AMENDED LOT NUMBERS						OP		SS		BK		25.08.23																	
02 FOR APPROVAL						SG		SS		BK		02.08.23																	
01 FOR APPROVAL						SG		SS		BK		01.08.23																	
Issue Description						DR		CH		VE		Date																	
 100mm on Original																													

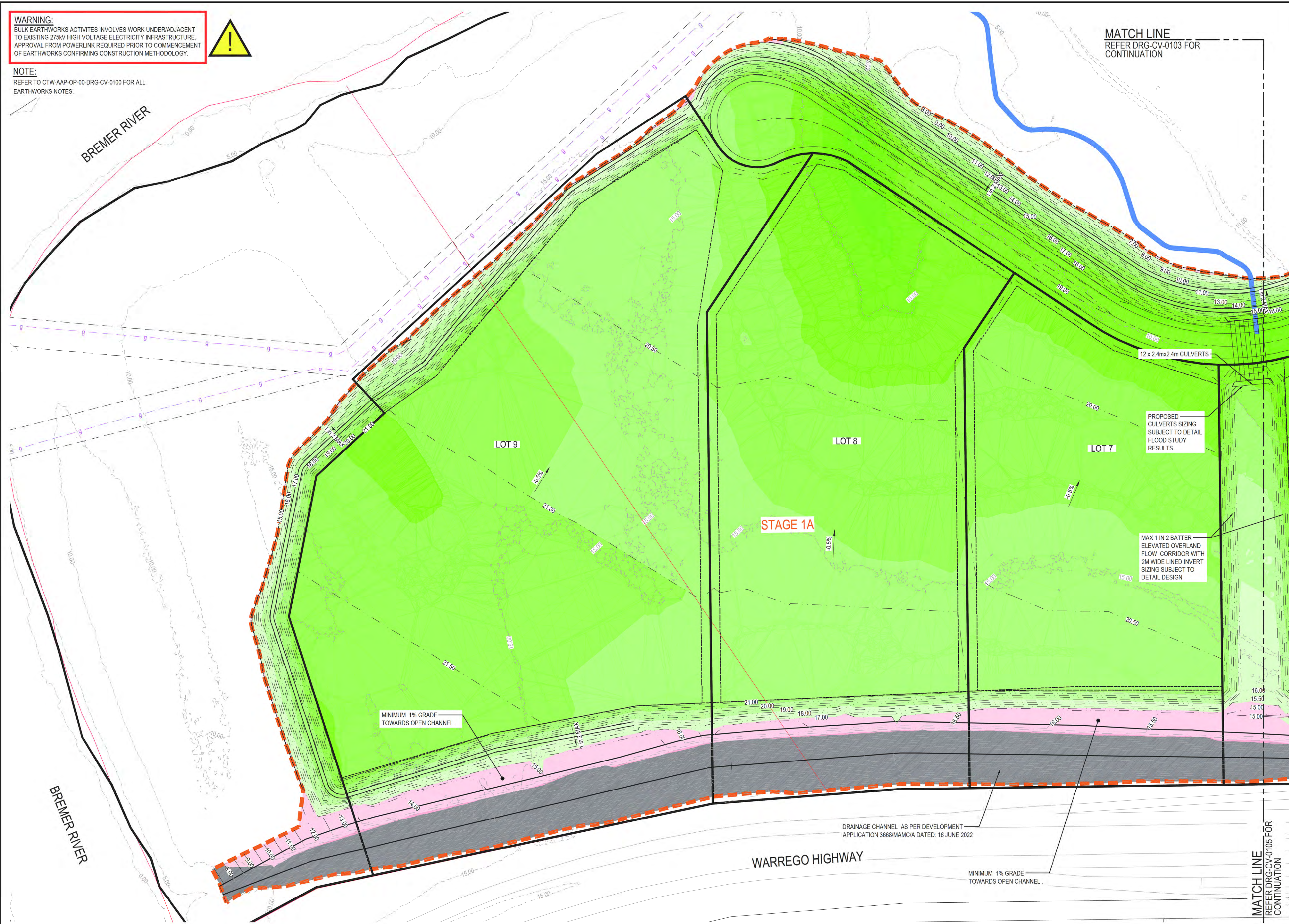
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**WARNING:**  
BULK EARTHWORKS ACTIVITIES INVOLVES WORK UNDER/ADJACENT TO EXISTING 275KV HIGH VOLTAGE ELECTRICITY INFRASTRUCTURE. APPROVAL FROM POWERLINK REQUIRED PRIOR TO COMMENCEMENT OF EARTHWORKS CONFIRMING CONSTRUCTION METHODOLOGY.



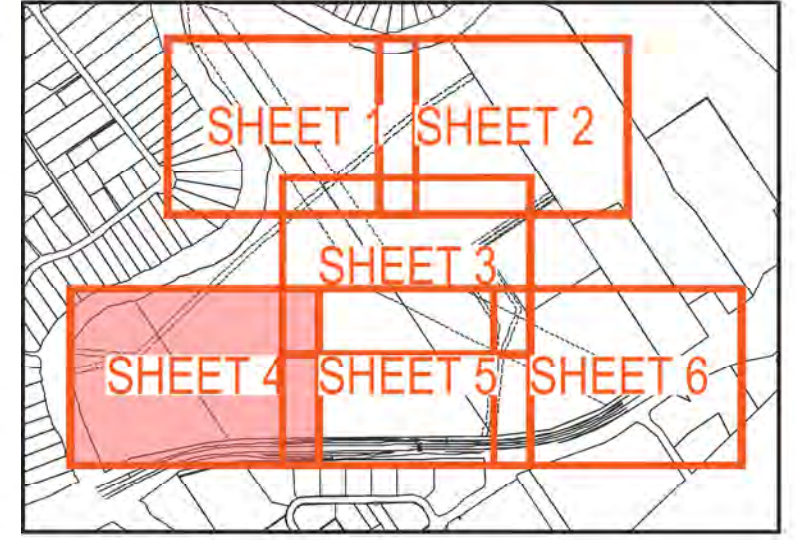
**NOTE:**  
REFER TO CTW-AAP-OP-00-DRG-CV-0100 FOR ALL EARTHWORKS NOTES.



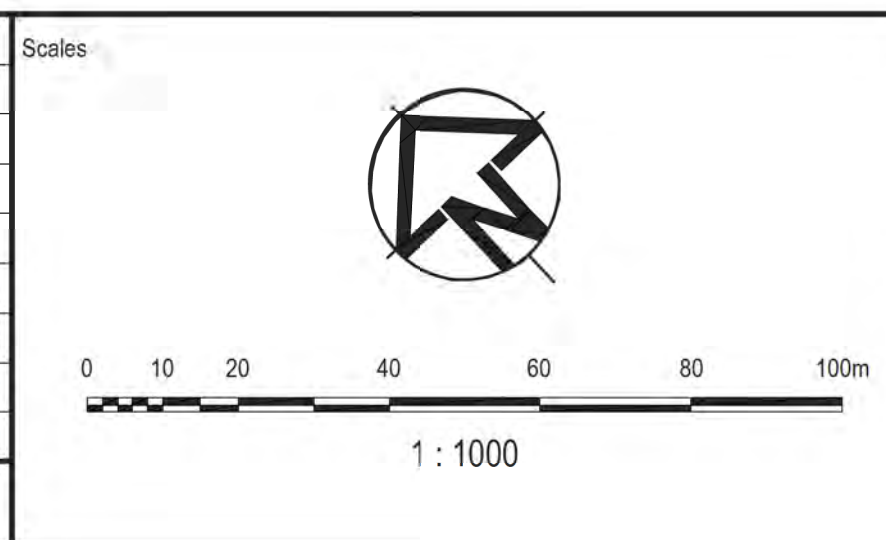
LEGEND	
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5.0	PROPOSED MAJOR CONTOURS
5.0	PROPOSED MINOR CONTOURS
oh	EXISTING OVERHEAD ELECTRICAL
g	EXISTING GAS
w	EXISTING WATER MAIN
SWD	PROPOSED STORMWATER DRAINAGE
	PROPOSED STORMWATER HEADWALL
	POWERLINK EASEMENT
	PROPOSE LIMIT OF WORKS
	TOP OF BANK
	TOE OF BANK
	EXISTING WATERWAY
	EXISTING BOUNDARY

EARTHWORKS CUT & FILL	
-14 to -12 m	
-12 to -10 m	
-10 to -8 m	
-8 to -6 m	
-6 to -4 m	
-4 to -2 m	
-2 to 0.00 m	
0.000 to 2 m	
2 to 4 m	
4 to 6 m	
6 to 8 m	
8 to 10 m	
10 to 12 m	
12 to 14 m	

CUT AND FILL VOLUME REPORT	
TOTAL CUT	-484,316m³
TOTAL FILL	2,370,489m³
TOTAL BALANCE	1,886,153m³
ASSUMED 300mm PAVEMENT DEPTH	
ASSUMED 100mm VERGE DEPTH	



Issue	Description	DR	CH	VE	Date
04	TMR BOUNDARY REMOVED	OP	SS	BK	25.08.23
03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
02	FOR APPROVAL	SG	SS	BK	02.08.23
01	FOR APPROVAL	SG	SS	BK	01.08.23



Surveyor  
**BENNETT+ BENNETT**

Architect  
**walker**

Client  
**walker**

FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION			
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Original Issue Signatures			
Drawn	S.GODITO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	MGA GDA94
Verified	B.KITSON		

Project  
CITISWICH STAGE 7

Title  
BULK EARTHWORKS LAYOUT  
PLAN SHEET 4

**ARCADIS**  
Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com/au

Project Number  
30139240

Issue  
04

Drawing No.  
CTW-AAP-OP-00-DRG-CV-0104



**WARNING:**  
BULK EARTHWORKS ACTIVITIES INVOLVES WORK UNDER/ADJACENT TO EXISTING 275KV HIGH VOLTAGE ELECTRICITY INFRASTRUCTURE. APPROVAL FROM POWERLINK REQUIRED PRIOR TO COMMENCEMENT OF EARTHWORKS CONFIRMING CONSTRUCTION METHODOLOGY.



**MATCH LINE**  
REFER DRG-CV-0103 FOR CONTINUATION

**NOTE:**  
REFER TO CTW-AAP-OP-00-DRG-CV-0100 FOR ALL EARTHWORKS NOTES.

ACCESS TO POWER LINK

PROTECTION SLABS TO BE PROVIDED OVER EXISTING EXISTING SEQ WATER MAINS. SUBJECT TO DETAILED DESIGN.

## LEGEND

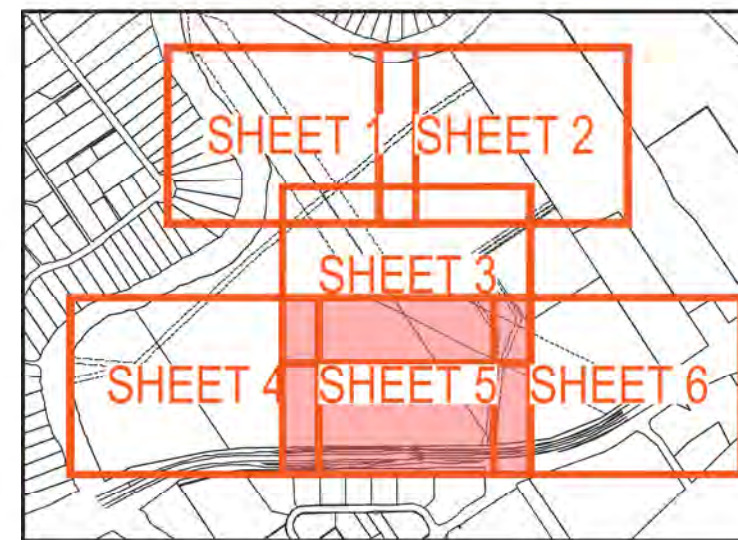
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- 5.0 PROPOSED MAJOR CONTOURS
- oh EXISTING OVERHEAD ELECTRICAL
- g EXISTING GAS
- w EXISTING WATER MAIN
- SWD PROPOSED STORMWATER DRAINAGE
- PROPOSED STORMWATER HEADWALL
- POWERLINK EASEMENT
- PROPOSE LIMIT OF WORKS
- TOP OF BANK
- TOE OF BANK
- EXISTING WATERWAY
- EXISTING BOUNDARY

## EARTHWORKS CUT & FILL

-14	to	-12 m	
-12	to	-10 m	
-10	to	-8 m	
-8	to	-6 m	
-6	to	-4 m	
-4	to	-2 m	
-2	to	0.00 m	
0.000	to	2 m	
2	to	4 m	
4	to	6 m	
6	to	8 m	
8	to	10 m	
10	to	12 m	
12	to	14 m	

## CUT AND FILL VOLUME REPORT

TOTAL CUT	-484,316m <sup>3</sup>
TOTAL FILL	2,370,489m <sup>3</sup>
TOTAL BALANCE	1,886,153m <sup>3</sup>
ASSUMED 300mm PAVEMENT DEPTH	
ASSUMED 100mm VERGE DEPTH	



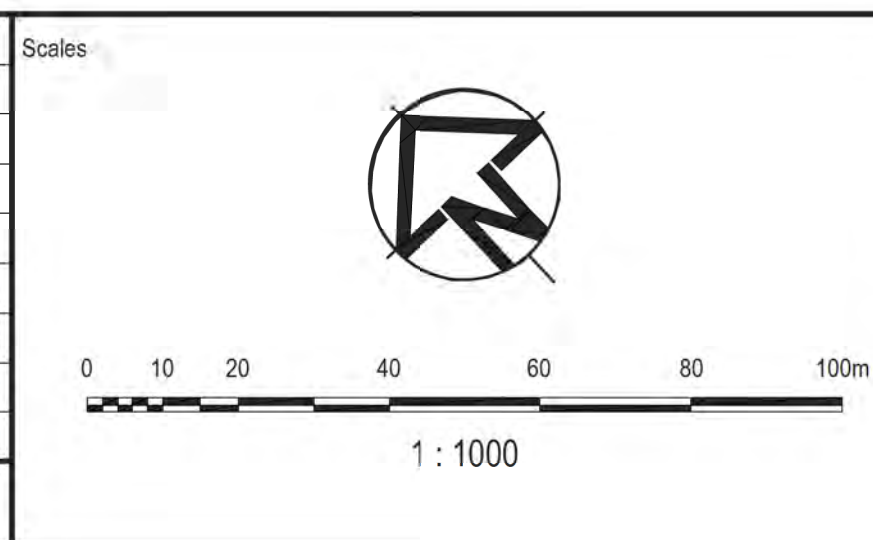
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MATCH LINE  
REFER DRG-CV-0104 FOR CONTINUATION

MATCH LINE  
REFER DRG-CV-0106 FOR CONTINUATION

Issue	Description	DR	CH	VE	Date
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03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
02	FOR APPROVAL	SG	SS	BK	02.08.23
01	FOR APPROVAL	SG	SS	BK	01.08.23



Surveyor

**BENNETT+ BENNETT**

Architect

Client

**walker**

Status

**FOR APPROVAL**  
NOT TO BE USED FOR CONSTRUCTION

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Drawn	S.GODITO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	MGA GDA94
Verified	B.KITSON		

Project

**CITISWICH STAGE 7**

Title

**BULK EARTHWORKS LAYOUT PLAN SHEET 5**

**ARCADIS**

Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com/au

Drawing No

**CTW-AAP-OP-00-DRG-CV-0105**

Project Number

**30139240**

Issue

**04**









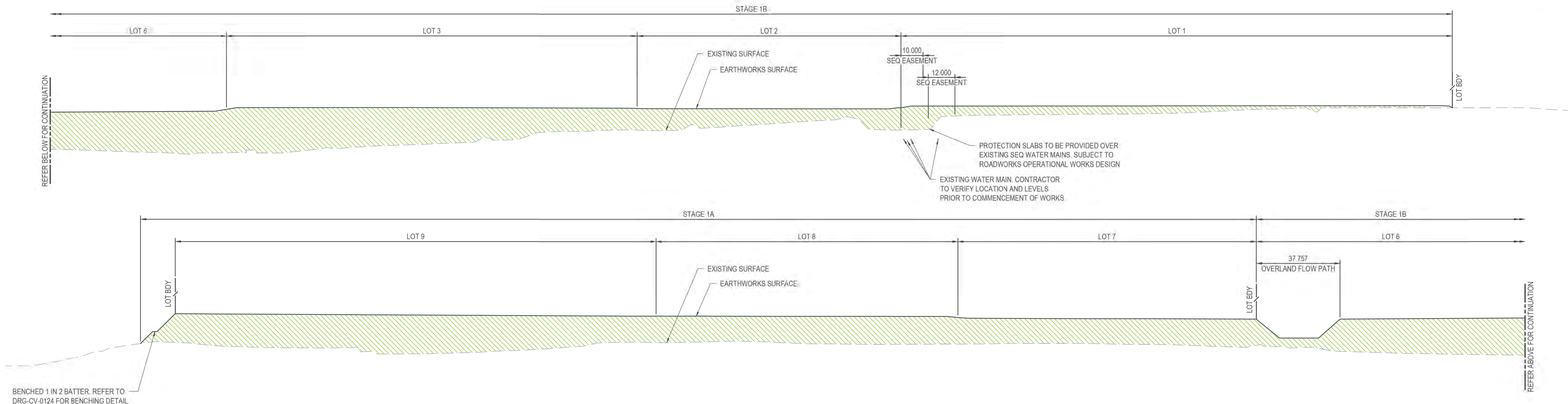




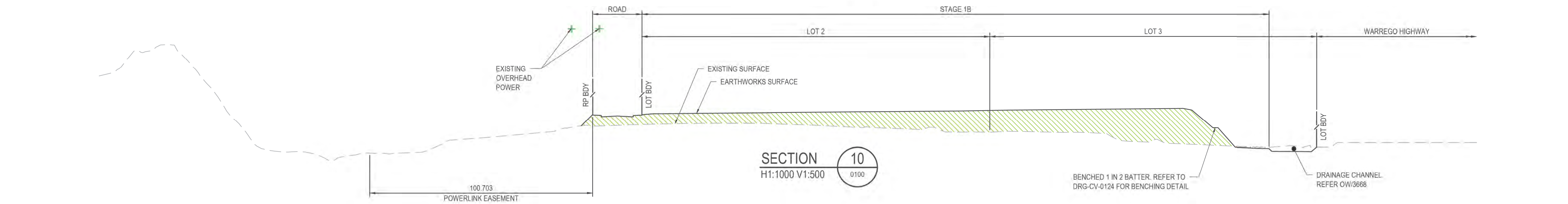


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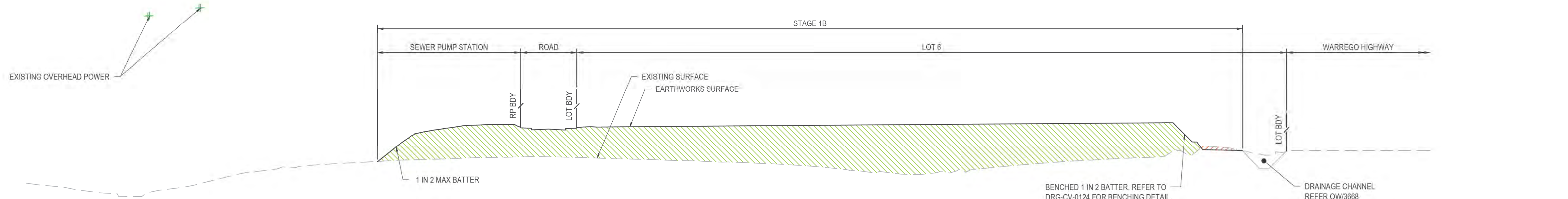
EARTHWORKS VOLUME FILL

EARTHWORKS VOLUME CUT

SECTION 11  
H1:1000 V1:500



SECTION 10  
H1:1000 V1:500



SECTION 9  
H1:1000 V1:500

03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
02	FOR APPROVAL	SG	SS	BK	02.08.23
01	FOR APPROVAL	SG	SS	BK	01.08.23
Issue	Description	DR	CH	VE	Date

Scales

0 10 20 40 60 80 100m

0 5 10 20 30 40 50m

1:1000

1:500

Surveyor

BENNETT+ BENNETT

Architect

Client

walker

Status

FOR APPROVAL  
NOT TO BE USED FOR CONSTRUCTION

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Original Issue Signatures

Drawn

S.GODITO

Original Size

A1

Designed

S.SEM

Height Datum

AHD

Project Manager

B.KITSON

Grid

MGA GDA94

Verified

B.KITSON

Project

CITISWICH STAGE 7

Title

BULK EARTHWORKS  
SITE SECTIONS SHEET 3

Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com/au

Project Number

30139240

Issue

03

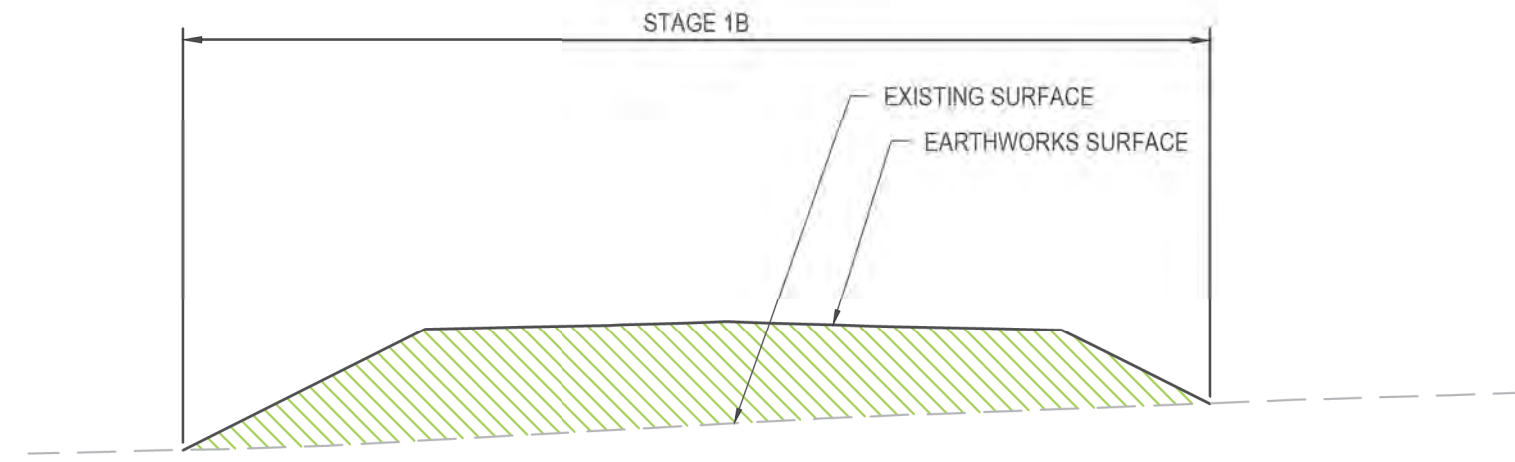
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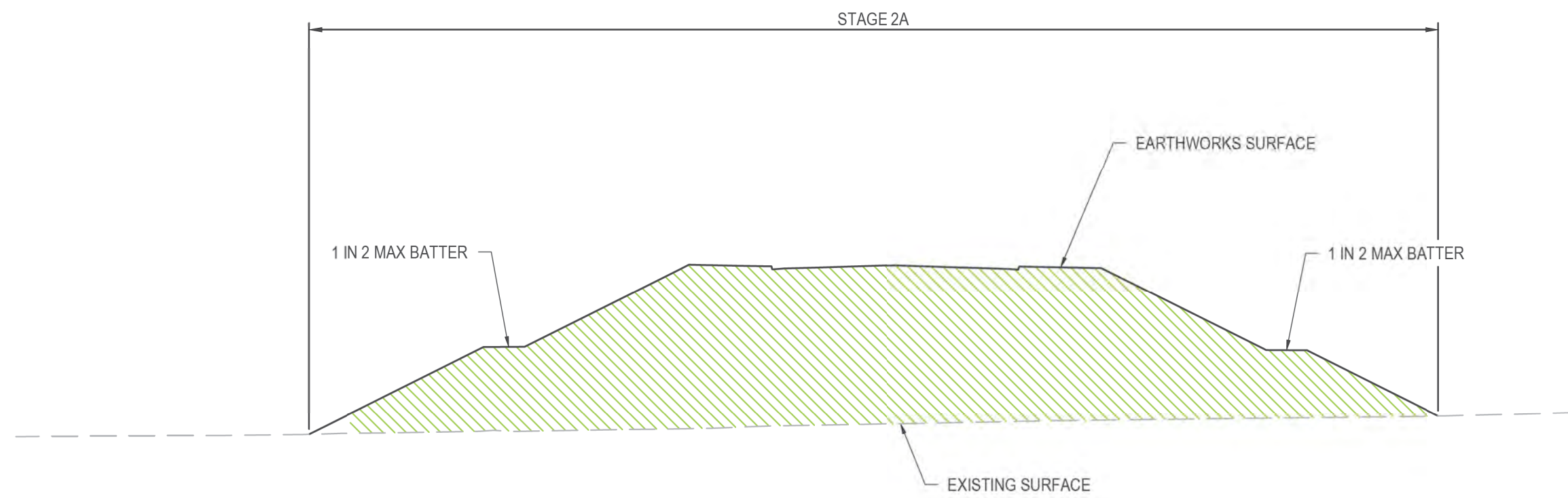
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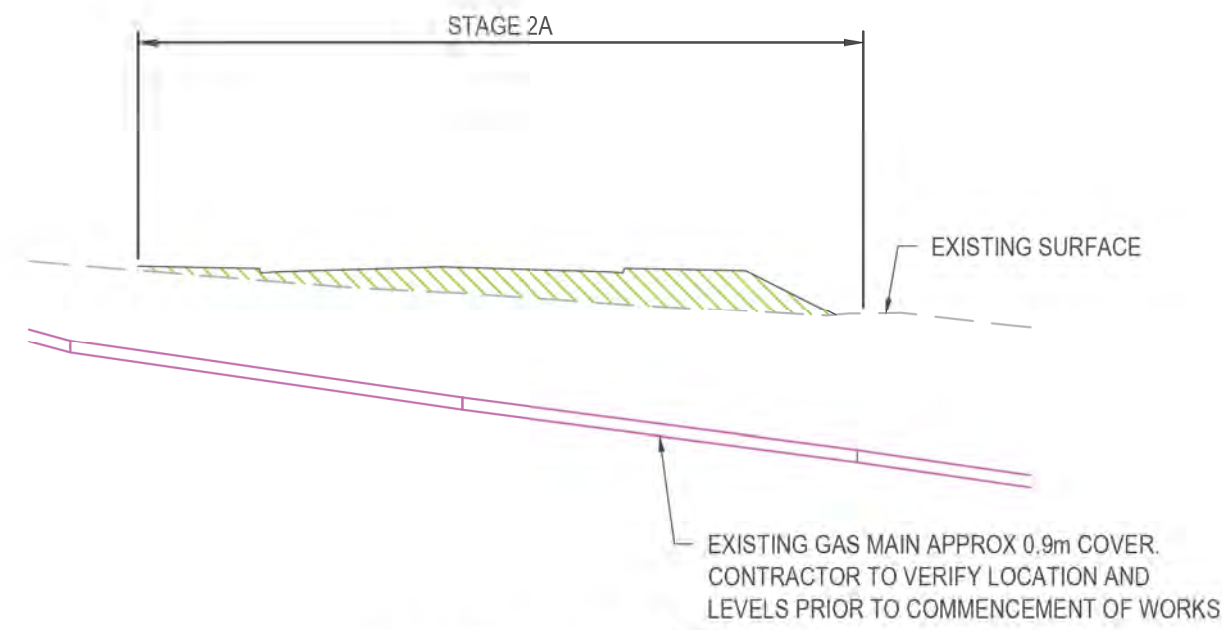




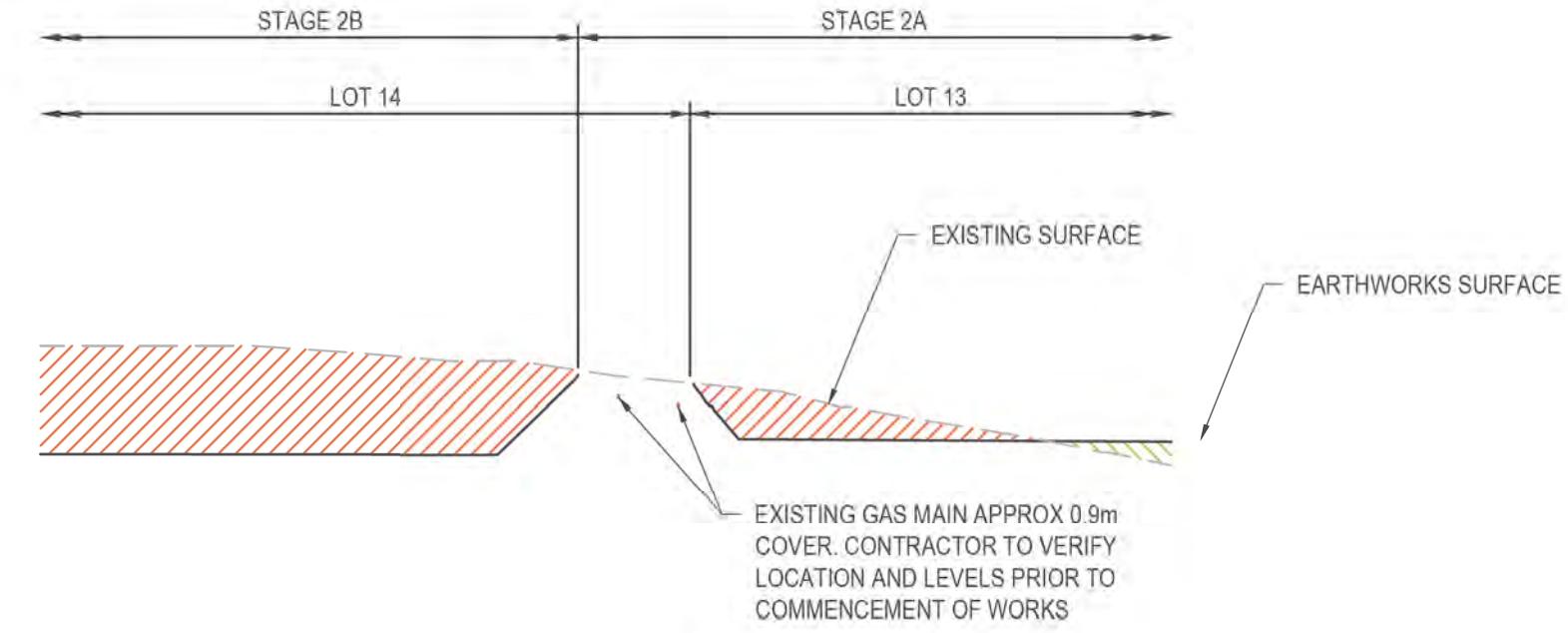
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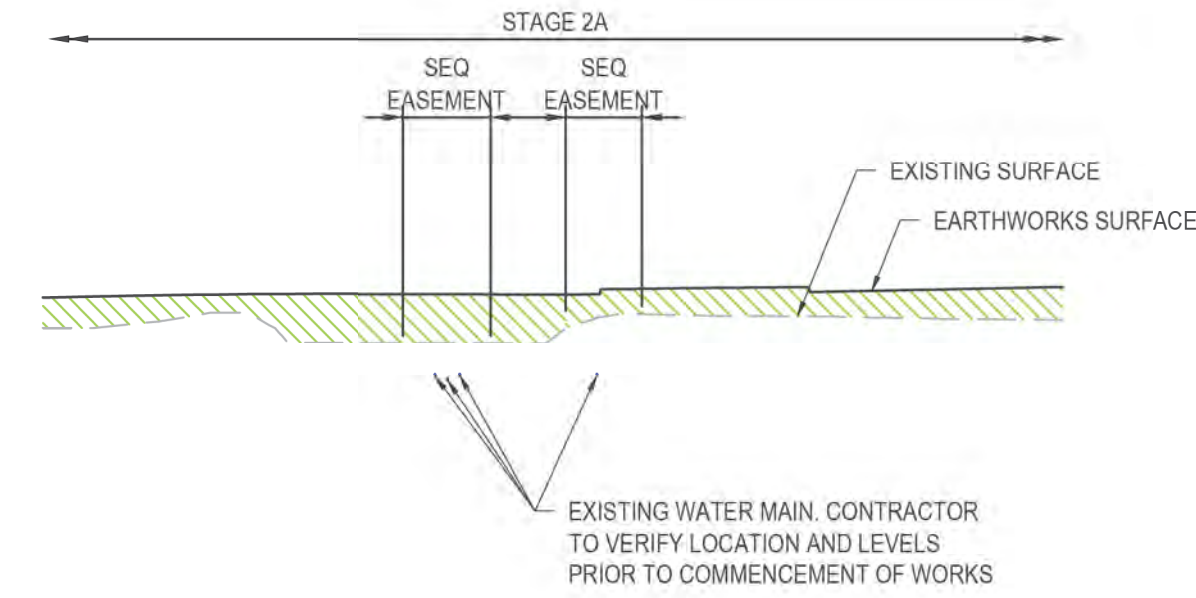
SECTION 13  
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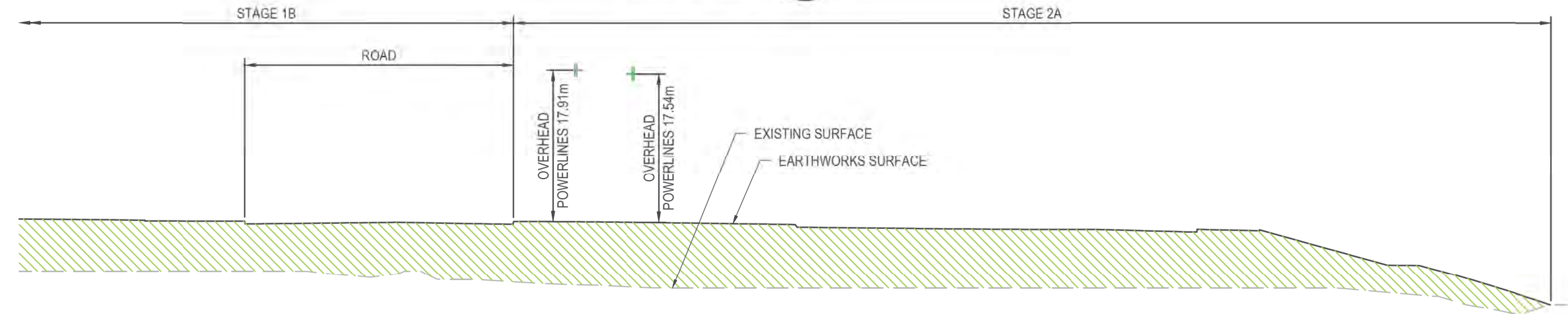
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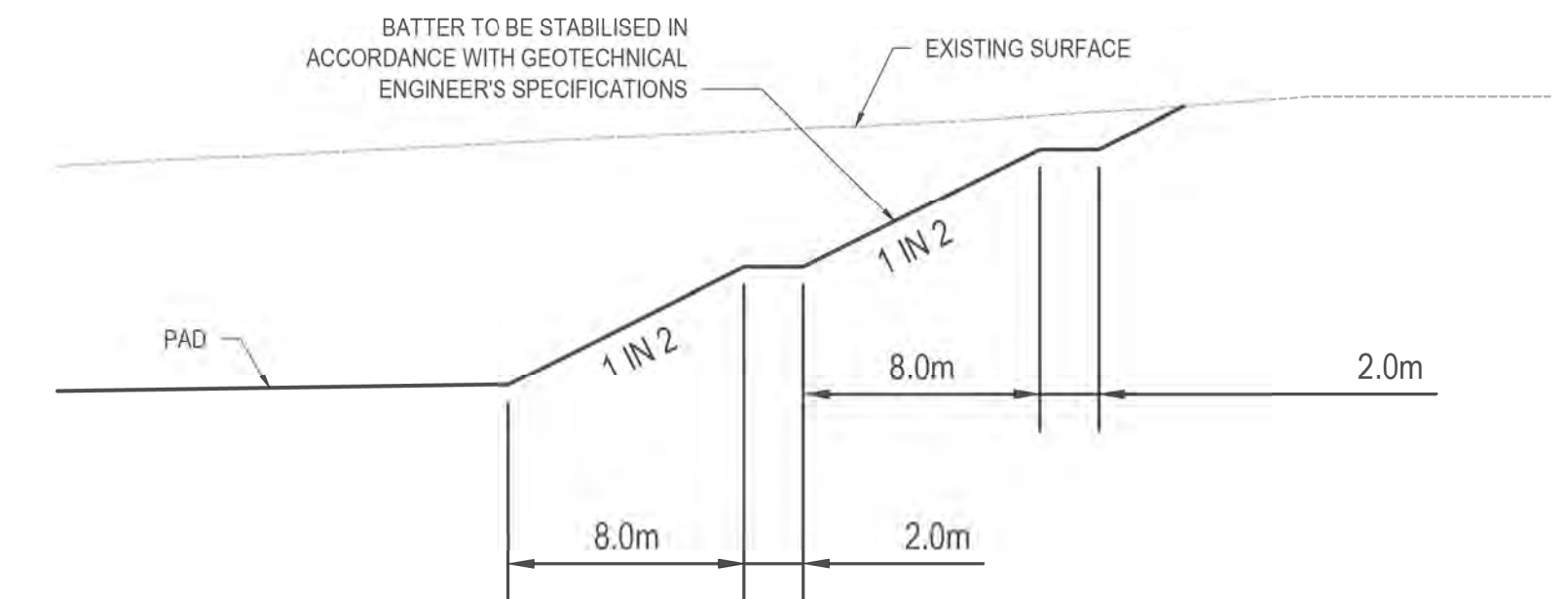
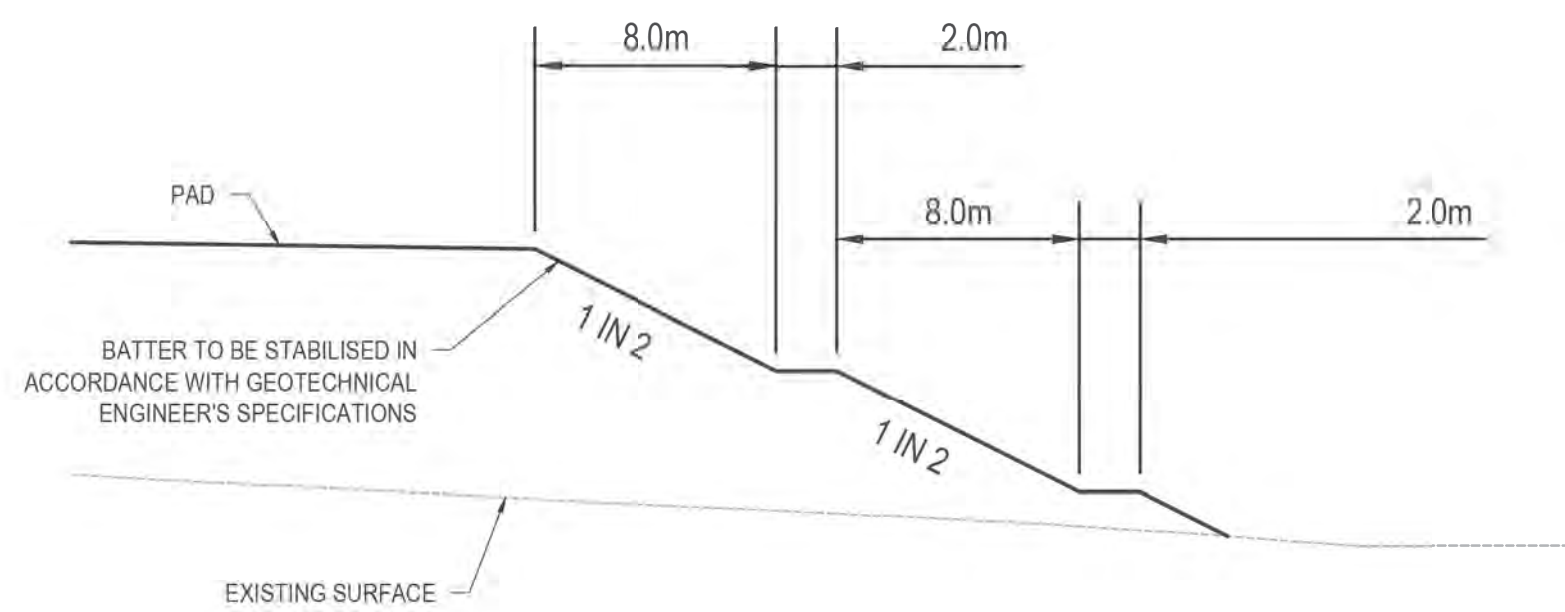
SECTION 17  
H1:1000 V1:500



SECTION 16  
H1:1000 V1:500

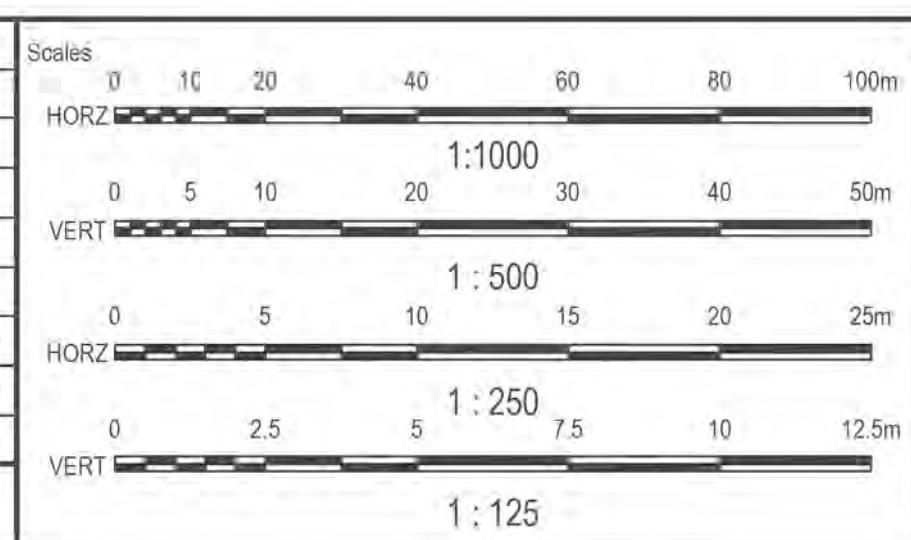


SECTION 15  
H1:1000 V1:500



BENCHING DETAIL 'A'  
1 : 250

Issue	Description	DR	CH	VE	Date
03	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
02	FOR APPROVAL	SG	SS	BK	02.08.23
01	FOR APPROVAL	SG	SS	BK	01.08.23



Surveyor: BENNETT+ BENNETT

Architect: walker

Client: walker

Status	FOR APPROVAL NOT TO BE USED FOR CONSTRUCTION
Original Issue Signatures	
Drawn	S.GODITO
Designed	S.SEM
Project Manager	B.KITSON
Verified	B.KITSON

Project	CITISWICH STAGE 7
Title	BULK EARTHWORKS SITE SECTIONS SHEET 4

ARCADIS

Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com/au

Project Number: 30139240

Issue: 03

Drawing No: CTW-AAP-OP-00-DRG-CV-0124





**LEGEND**

- EXISTING SURFACE CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- LOT BOUNDARY
- PROPOSED STORMWATER DRAINAGE
- PROPOSED STORMWATER HEADWALL
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER RETICULATION
- EXISTING COMMUNICATIONS
- EXISTING OVERHEAD ELECTRICAL
- EXISTING UNDERGROUND ELECTRICAL
- POWERLINK EASEMENT
- EXISTING FENCE
- PROPOSE LIMIT OF WORKS
- FUTURE LIMIT OF WORKS
- TOP OF BANK
- TOE OF BANK
- FAUNA EXCLUSION FENCE
- PROPOSED SLEEPER RETAINING WALL
- FUTURE SLEEPER RETAINING WALL
- PROPOSED BLOCKWORK RETAINING WALL
- PROPOSED A-GRADE SANDSTONE BOULDER RETAINING WALL
- FUTURE GABION WALL
- 3m ACCESS AND MAINTENANCE TRACK FOR PROPOSED SWALE AND BASIN
- 200MM DEEP TYPE 2.3 GRAVEL
- TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION
- ROCK LINED CHANNEL
- 50mm TOPSOIL AND GRASS SEEDING
- PROPOSED SILT FENCE
- PROPOSED CLEAN WATER DIVERSION DRAIN
- PROPOSED TEMPORARY DIVERSION CHANNEL
- VEHICULAR SHAKEDOWN
- DIRECTION OF OVERLAND FLOW
- CHECK DAM
- BATTER CHUTE

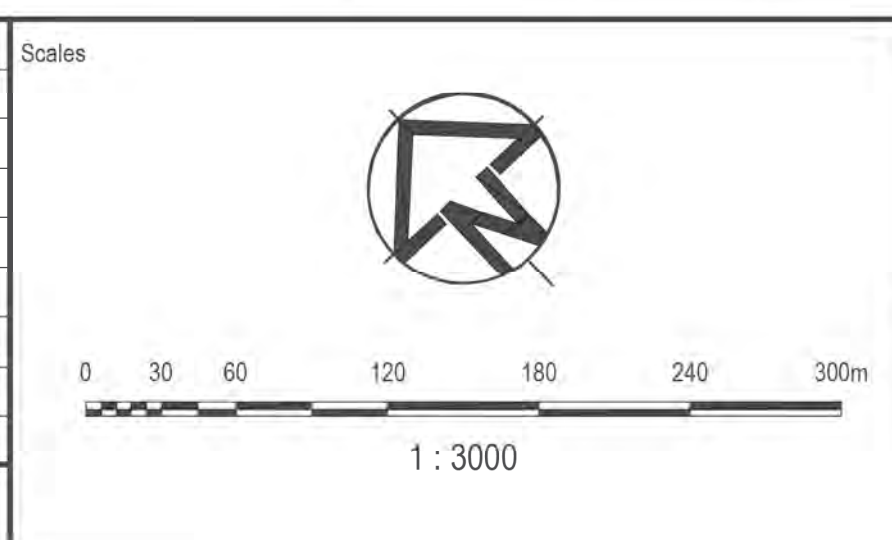
**WARNING**

BEWARE OF UNDERGROUND SERVICES THE LOCATION OF UNDERGROUND SERVICES HAVE BEEN INTERPOLATED FROM GIS DATA OR KNOWN POSITIONS OF VALVES, MANHOLES ETC. OR INFORMATION SUPPLIED BY SERVICE AUTHORITIES. NO RESPONSIBILITY IS TAKEN FOR THE ACCURACY OF THE INTERPOLATED INFORMATION SUPPLIED. ENSURE ALL SERVICES ARE ACCURATELY LOCATED PRIOR TO COMMENCEMENT OF WORK.

**NOTE:**

EROSION AND SEDIMENT CONTROL PLANS DEMONSTRATE A CONCEPT APPROACH TO EROSION AND SEDIMENTATION CONTROL FOR THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AN EROSION AND SEDIMENT CONTROL DESIGN, COMPLETE WITH DESIGN CERTIFICATION PRIOR TO COMMENCEMENT OF WORK. CERTIFICATION MUST BE UNDERTAKEN BY A CPESC QUALIFIED EXPERIENCED PROFESSIONAL.

3	TMR BOUNDARY REMOVED	OP	SS	BK	25.08.23
02	AMENDED LOT NUMBERS	OP	SS	BK	25.08.23
01	FOR APPROVAL	SG	SS	BK	02.08.23
Issue	Description	DR	CH	VE	Date



Surveyor

**BENNETT+ BENNETT**

Architect

Client

**walker**

Status

**FOR APPROVAL**  
NOT TO BE USED FOR CONSTRUCTION

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Original Issue Signatures	
Drawn	S. GODITO
Designed	S. SEM
Project Manager	B. KITSON
Verified	B. KITSON
Original Size	A1
Height Datum	AHD
Grid	MGA GDA94

Project

**CITISWICH STAGE 7**

Title

**EROSION AND SEDIMENT CONTROL LAYOUT PLAN OVERALL**

**ARCADIS**

Arcadis Australia Pacific Pty Limited  
Level 35, 111 Eagle Street  
BRISBANE QLD 4000  
ABN 76 104 485 289  
Tel No: +61 7 3337 0000  
www.arcadis.com.au

Project Number

30139240

Drawing No.

CTW-AAP-OP-00-DRG-CV-0170

3



1. EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE DRAWINGS ARE MINIMUM REQUIREMENTS BASED ON THE UNDERSTOOD CONSTRUCTION SCOPE AND METHODOLOGY. IT IS THE CONTRACTORS RESPONSIBILITY AT ALL TIMES TO EMPLOY APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES BASED ON THE CONSTRUCTION METHODOLOGY, SEQUENCING OF WORKS AND LOCAL SITE CONDITIONS TO THE APPROVAL OF THE AUTHORISING AUTHORITY
2. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE INSPECTION, MAINTENANCE & TESTING OF ALL DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES ARE UNDERTAKEN ON SITE.
3. ALL DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES MUST BE APPLIED & MAINTAINED IN ACCORDANCE WITH THE LATEST INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) AUSTRALASIA BEST PRACTICE EROSION & SEDIMENT CONTROL (BPESC) DOCUMENT.
4. REFER TO APPROVED PLANS FOR LOCATION, EXTENT, & CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, EXTENT, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
5. ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED & A REVISED EROSION & SEDIMENT CONTROL PLAN (ESCP) MUST BE SUBMITTED FOR APPROVAL IN THE EVENT THAT SITE CONDITIONS CHANGE SIGNIFICANTLY FROM THOSE CONSIDERED WITH THIS ESCP.
6. IN CIRCUMSTANCES WHERE IT IS CONSIDERED NECESSARY TO PREPARE AN AMENDED EROSION & SEDIMENT CONTROL PLAN (ESCP), & WHERE THE DELIVERY OF SUCH AN AMENDED ESCP IS NOT IMMINENT, THEN ALL NECESSARY NEW OR MODIFIED EROSION & SEDIMENT CONTROL WORKS MUST BE IN ACCORDANCE WITH THE LATEST VERSION OF THE IECA BPESC DOCUMENT. UPON APPROVAL OF THE AMENDED ESCP, ALL WORKS MUST BE IMPLEMENTED IN ACCORDANCE WITH THE AMENDED PLAN.
7. WHERE THERE IS A HIGH PROBABILITY THAT SERIOUS OR MATERIAL ENVIRONMENTAL HARM MAY OCCUR AS A RESULT OF SEDIMENT LEAVING THE SITE, APPROPRIATE ADDITIONAL EROSION & SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED SUCH THAT ALL REASONABLE & PRACTICABLE MEASURES ARE BEING TAKEN TO PREVENT OR MINIMISE SUCH HARM. ONLY THOSE WORKS NECESSARY TO MINIMISE OR PREVENT ENVIRONMENTAL HARM SHALL BE CONDUCTED ON-SITE PRIOR TO APPROVAL OF THE AMENDED EROSION & SEDIMENT CONTROL PLAN (ESCP).
8. AT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS & PROTECT ANY DOWNSTREAM CONSTRUCTION OR RECEIVING ENVIRONMENTS.
9. WORKS SHALL BE COMPLETED ON SITE GENERALLY IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
  - (i) PRE CONSTRUCTION - CONSTRUCT SILT FENCES PRIOR TO PRE-START MEETING, WHICH WILL PROTECT EXISTING DOWNSTREAM PROPERTIES, PARKS OR ROAD RESERVES FROM SEDIMENTATION & EROSION.
  - (ii) CLEARING & BULK EARTHWORKS - CONSTRUCT & MAINTAIN SILT FENCES WHICH CONTROL SEDIMENTATION & EROSION DURING CLEARING & BULK EARTHWORKS. ALL DISTURBED AREAS TO BE EITHER GRASS SEEDED OR TURFED, AS SPECIFIED, AS SOON AS POSSIBLE OR WITHIN 7 DAYS OF FINAL TRIMMING OF EARTHWORKS.
  - (iii) MAINTENANCE PERIOD - CONSTRUCT & MAINTAIN SILT MANAGEMENT CONTROLS WHICH CONTROL SEDIMENTATION & EROSION PRIOR TO THE ESTABLISHMENT OF GRASS COVER & REHABILITATION. PROVIDE GRASS FILTER STRIPS IN LOCATIONS AS SHOWN ON EROSION & SEDIMENT CONTROL PLANS.
10. EROSION & SEDIMENT CONTROL PROTECTION MEASURES SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE CONTRACT.

1. ALL EROSION & SEDIMENT CONTROL MEASURES SHALL BE INSTALLED & FUNCTIONAL PRIOR TO WORKS COMMENCING & IN THE FOLLOWING SEQUENCE
  - a. CONSTRUCT TEMPORARY STABILISED SITE ACCESS
  - b. PROVIDE INLET PROTECTION TO STORMWATER INLETS & GULLIES ON ALL ROADS ADJOIN THE SITE
  - c. CONSTRUCT BARRIER FENCING AROUND RESTRICTED 'NO-GO' ZONES OF THE RETAINED VEGETATION & AREAS NOT TO BE DISTURBED & AREAS WHICH REMAIN UN-WORKED
  - d. INSTALL ALL TEMPORARY SEDIMENT FENCES
  - e. CONSTRUCT DIVERSION BANKS AS NECESSARY (PARALLEL TO CONTOURS) TO DIVERT RUNOFF FROM DISTURBED AREAS INTO THE SEDIMENT BASINS
  - f. WORK AREAS TO BE DELINEATED BY BARRIER FENCING & DIVERSION CHANNEL UPSLOPE & SEDIMENT FENCING DOWNSLOPE.
  - g. MAINTAIN EXISTING SEDIMENT PONDS/BASINS AS LONG AS PRACTICALLY POSSIBLE
  - h. STABILISE ALL DISTURBED AREAS ASAP & PROGRESSIVELY AS WORKS ARE COMPLETED.
  - i. TEMPORARY STABILISATION TO BE DONE USING MULCHING, HYDROSEEDING OR DIRECT SEEDING TO GIVE A 70% COVERAGE OF GROUND SURFACE WITHIN 14 DAYS OF WORKS COMPLETING (EVEN IF WORKS MAY CONTINUE LATER)
2. EROSION & SEDIMENT CONTROL PROTECTION MEASURES MAY NEED TO BE REVISED & UPDATED TO REFLECT THE SITE CONDITIONS & PROGRESSION OF THE WORKS, I.E. MEASURES INCLUDING SEDIMENT FENCES SHOULD BE MOVED & REINSTATED AS WORKS PROGRESS.

1. ALL OFFICE FACILITIES & OPERATIONAL ACTIVITIES MUST BE LOCATED SUCH THAT ANY LIQUID EFFLUENT (E.G. PROCESS WATER, WASH-DOWN WATER, EFFLUENT FROM EQUIPMENT CLEANING, OR PLANT WATERING), CAN BE TOTALLY CONTAINED & TREATED WITHIN THE SITE.
2. THE CONSTRUCTION SCHEDULE MUST AIM TO MINIMISE THE DURATION THAT ANY & ALL AREAS OF SOIL ARE EXPOSED TO THE EROSION EFFECTS OF WIND, RAIN & SURFACE WATER.
3. LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN ACCORDANCE WITH THE ESCP & ASSOCIATED DEVELOPMENT CONDITIONS.
4. LAND-DISTURBING ACTIVITIES MUST BE UNDERTAKEN IN SUCH A MANNER THAT ALLOWS ALL REASONABLE & PRACTICABLE MEASURES TO BE UNDERTAKEN TO:
  - (i) ALLOW STORMWATER TO PASS THROUGH THE SITE IN A CONTROLLED MANNER & AT NON-EROSIVE FLOW VELOCITIES UP TO THE SPECIFIED DESIGN STORM DISCHARGE;
  - (ii) MINIMISE SOIL EROSION RESULTING FROM RAIN, WATER FLOW &/OR WIND;
  - (iii) MINIMISE ADVERSE EFFECTS OF SEDIMENT RUNOFF, INCLUDING SAFETY ISSUES;
  - (iv) PREVENT, OR AT LEAST MINIMISE, ENVIRONMENTAL HARM RESULTING FROM WORK-RELATED SOIL EROSION & SEDIMENT RUNOFF;
  - (v) ENSURE THAT THE VALUE & USE OF LAND/PROPERTIES ADJACENT TO THE DEVELOPMENT (INCLUDING ROADS) ARE NOT DIMINISHED AS A RESULT OF THE ADOPTED EROSION & SEDIMENT CONTROL MEASURES.
5. ALL EROSION & SEDIMENT CONTROL MEASURES MUST CONFORM TO THE STANDARDS & SPECIFICATIONS CONTAINED IN:
  - (i) THE DEVELOPMENT APPROVAL CONDITION ISSUED BY THE RELEVANT REGULATORY AUTHORITY; &
  - (ii) THE APPROVED ESCP & SUPPORTING DOCUMENTATION; OR
  - (iii) THE LATEST VERSION OF THE IECA BPSC DOCUMENT, IF THE STANDARDS & SPECIFICATIONS ARE NOT CONTAINED IN THE APPROVED ESCP.

- ANY WORKS THAT MAY CAUSE SIGNIFICANT SOIL DISTURBANCE & ARE ANCILLARY TO ANY ACTIVITY FOR WHICH REGULATORY BODY APPROVAL IS REQUIRED, MUST NOT COMMENCE BEFORE THE ISSUE OF THAT APPROVAL.
7. ADDITIONAL &/OR ALTERNATIVE EROSION & SEDIMENT CONTROL MEASURES MUST BE IMPLEMENTED IN THE EVENT THAT SITE INSPECTIONS, THE SITE'S MONITORING & MAINTENANCE PROGRAM, OR THE REGULATORY AUTHORITY, IDENTIFIES THAT UNACCEPTABLE OFF-SITE SEDIMENTATION IS OCCURRING AS A RESULT OF THE WORK ACTIVITIES.
8. LAND-DISTURBING ACTIVITIES MUST NOT CAUSE UNNECESSARY SOIL DISTURBANCE IF AN ALTERNATIVE CONSTRUCTION PROCESS IS AVAILABLE THAT ACHIEVES THE SAME OR EQUIVALENT OUTCOMES AT AN EQUIVALENT COST.
9. SEDIMENT (INCLUDING CLAY, SILT, SAND, GRAVEL, SOIL, MUD, CEMENT & CERAMIC WASTE) DEPOSITED OFF THE SITE AS A DIRECT RESULT OF AN ON-SITE ACTIVITY, MUST BE COLLECTED & THE AREA APPROPRIATELY CLEANED/REHABILITATED AS SOON AS REASONABLE & PRACTICABLE, & IN A MANNER THAT GIVES APPROPRIATE CONSIDERATION TO THE SAFETY & ENVIRONMENTAL RISKS ASSOCIATED WITH THE SEDIMENT DEPOSITION.
10. WHEREVER REASONABLE & PRACTICABLE, BRICK, TILE & MASONRY CUTTING MUST BE CARRIED OUT ON A PERVIOUS SURFACE, SUCH AS GRASS, OR OPEN SOIL, OR IN SUCH A MANNER THAT ALL SEDIMENT-LADEN RUNOFF IS PREVENTED FROM DISCHARGING INTO A GUTTER, DRAIN, OR WATER BODY.
11. ADEQUATE WASTE COLLECTION BINS MUST BE PROVIDED ON-SITE & MAINTAINED SUCH THAT POTENTIAL & ACTUAL ENVIRONMENTAL HARM RESULTING FROM SUCH MATERIAL WASTE IS MINIMISED.
12. CONCRETE WASTE & CHEMICAL PRODUCTS, INCLUDING PETROLEUM & OIL-BASED PRODUCTS, MUST BE PREVENTED FROM ENTERING AN INTERNAL WATER BODY, OR AN EXTERNAL DRAIN, STORMWATER SYSTEM, OR WATER BODY.
13. ALL FLAMMABLE & COMBUSTIBLE LIQUIDS, INCLUDING ALL LIQUID CHEMICALS IF SUCH CHEMICALS COULD POTENTIALLY BE WASHED OR DISCHARGED FROM THE SITE, ARE STORED & HANDLED ON-SITE IN ACCORDANCE WITH RELEVANT STANDARDS SUCH AS AS1940 THE STORAGE & HANDLING OF FLAMMABLE & COMBUSTIBLE LIQUIDS.
14. TRENCHES NOT LOCATED WITHIN ROADWAYS MUST BE BACKFILLED, CAPPED WITH TOPSOIL, & COMPACTED TO A LEVEL AT LEAST 75mm ABOVE ADJOINING GROUND LEVEL & APPROPRIATELY STABILISED.
15. ALL STORMWATER, SEWER LINE & OTHER SERVICE TRENCHES, NOT LOCATED WITHIN ROADWAYS, MUST BE MULCHED & SEEDED, OR OTHERWISE APPROPRIATELY STABILISED WITHIN 7 DAYS AFTER BACKFILL.
16. NO MORE THAN 150m OF A STORMWATER, SEWER LINE OR OTHER SERVICE TRENCH MUST TO BE OPEN AT ANY ONE TIME.
17. SITE SPOIL MUST BE LAWFULLY DISPOSED OF IN A MANNER THAT DOES NOT RESULT IN ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
18. ALL FILL MATERIAL, PLACED ON SITE MUST COMPRISE ONLY NATURAL EARTH & ROCK, & IS TO BE FREE OF CONTAMINANTS, BE FREE DRINKING, & BE COMPACTED IN LAYERS NOT EXCEEDING 300mm TO 95% STANDARD RELATIVE DRY DENSITY IN ACCORDANCE WITH AS1289.
19. FOOT & VEHICULAR TRAFFIC WILL BE RESTRICTED IN RECENTLY STABILISED AREAS INCLUDING THOSE HYDROSEEDDED, TURFED OR GRASS SEEDED.
20. TEMPORARY SITE STABILISATION PROCEDURES MUST COMMENCE AT LEAST 30 DAYS PRIOR TO THE NOMINATED SITE SHUTDOWN DATE. AT LEAST 70% STABLE COVER OF ALL UNSTABLE &/OR DISBURSED SOIL SURFACES MUST BE ACHIEVED PRIOR TO SHUTDOWN. THE STABILISATION WORKS MUST NOT RELY UPON THE LONGEVITY OF NON-VEGETATED EROSION CONTROL BLANKETS, OR TEMPORARY SOIL BINDERS.
21. IF BIO-RETENTION FILTER MEDIA IS INSTALLED PRIOR TO 80% OF THE UPSTREAM CATCHMENT BEING FULLY DEVELOPED, THE FILTER MEDIA SHALL BE PROTECTED WITH A LAYER OF GEOFABRIC WITH TURF ON TOP.

1. LAND CLEARING MUST BE DELAYED AS LONG AS PRACTICABLE & MUST BE UNDERTAKEN IN CONJUNCTION WITH DEVELOPMENT OF EACH STAGE OF WORKS, UNLESS OTHERWISE APPROVED BY SUPERINTENDENT.
2. ALL REASONABLE & PRACTICABLE EFFORTS MUST BE TAKEN TO DELAY THE REMOVAL OF, OR DISTURBANCE TO, EXISTING GROUND COVER (ORGANIC OR INORGANIC) PRIOR TO LAND-DISTURBING ACTIVITIES.
6. BULK TREE CLEARING MUST OCCUR IN A MANNER THAT MINIMISES DISTURBANCE TO EXISTING GROUND COVER (ORGANIC OR INORGANIC).
7. BULK TREE CLEARING & GRUBBING OF THE SITE MUST BE IMMEDIATELY FOLLOWED BY SPECIFIED TEMPORARY STABILISATION MEASURES (E.G. TEMPORARY GRASSING, OR MULCHING) PRIOR TO COMMENCEMENT OF EACH STAGE OF CONSTRUCTION WORKS.
8. DISTURBANCE TO NATURAL WATERCOURSES (INCLUDING BED & BANKS) & THEIR ASSOCIATED RIPARIAN ZONES MUST BE LIMITED TO THE MINIMUM PRACTICABLE.
9. NO LAND CLEARING SHALL BE UNDERTAKEN UNLESS PRECEDED BY THE INSTALLATION OF ADEQUATE DRAINAGE & SEDIMENT CONTROL MEASURES, UNLESS SUCH CLEARING IS REQUIRED FOR THE PURPOSE OF INSTALLING SUCH MEASURES, IN WHICH CASE, ONLY THE MINIMUM CLEARING REQUIRED TO INSTALL SUCH MEASURES SHALL OCCUR.
10. LAND CLEARING MUST BE LIMITED TO 5M FROM THE EDGE OF PROPOSED CONSTRUCTED WORKS, 2M OF ESSENTIAL CONSTRUCTION TRAFFIC ROUTES, & A TOTAL OF 10M WIDTH FOR CONSTRUCTION ACCESS, UNLESS OTHERWISE APPROVED BY SUPERINTENDENT.
11. PRIOR TO LAND CLEARING, AREAS OF PROTECTED VEGETATION, & SIGNIFICANT AREAS OF RETAINED VEGETATION MUST BE CLEARLY IDENTIFIED (E.G. WITH HIGH-VISIBILITY TAPE, OR LIGHT FENCING) FOR THE PURPOSES OF MINIMISING THE RISK OF UNNECESSARY LAND CLEARING.
12. ALL REASONABLE & PRACTICABLE MEASURES MUST BE TAKEN TO MINIMISE THE REMOVAL OF, OR DISTURBANCE TO, THOSE TREES, SHRUBS & GROUND COVERS (ORGANIC OR INORGANIC) THAT ARE INTENDED TO BE RETAINED.
13. ALL LAND CLEARING MUST BE IN ACCORDANCE WITH THE FEDERAL, STATE & LOCAL GOVERNMENT VEGETATION PROTECTION/PRESERVATION REQUIREMENTS & IOR POLICIES.
14. LAND CLEARING IS LIMITED TO THE MINIMUM PRACTICABLE DURING THOSE PERIODS WHEN SOIL EROSION DUE TO WIND, RAIN OR SURFACE WATER IS POSSIBLE.
15. LAND CLEARING MUST NOT EXTEND BEYOND THAT NECESSARY TO PROVIDE UP TO EIGHT (8) WEEKS OF SITE ACTIVITY DURING THOSE MONTHS WHEN THE ACTUAL OR AVERAGE RAINFALL IS LESS THAN 45mm, SIX (6) IF BETWEEN 45 & 100mm, FOUR (4) WEEKS IF BETWEEN 100 & 225mm, & TWO (2) WEEKS IF GREATER THAN 225mm.
16. NATIVE SITE VEGETATION REQUIRED & APPROVED FOR CL CLEARING SHOULD BE MULCHED & STOCKPILED FOR LATER USE IN LANDSCAPING, STABILISATION &/OR SITE REHABILITATION WORKS.

1. PRIOR TO THE COMMENCEMENT OF SITE WORKS, THE LOCATION OF THE SITE ACCESS POINT(S) MUST BE VERIFIED WITH THE RELEVANT REGULATORY AUTHORITY.
2. SITE ACCESS MUST BE RESTRICTED TO THE MINIMUM PRACTICAL NUMBER OF LOCATIONS.
3. SITE EXIT POINTS MUST BE APPROPRIATELY MANAGED TO MINIMISE THE RISK OF SEDIMENT BEING TRACKED ONTO SEALED, PUBLIC ROADWAYS.
4. INSTALL SEDIMENT FENCING &/OR BARRIER FENCING TO CONFINE INGRESS TO & EGRESS FROM THE SITE TO STABILISED ACCESS POINTS ONLY.
5. STORMWATER RUNOFF FROM ACCESS ROADS & STABILISED ENTRY/EXIT POINTS MUST DRAIN TO AN APPROPRIATE SEDIMENT CONTROL DEVICE.

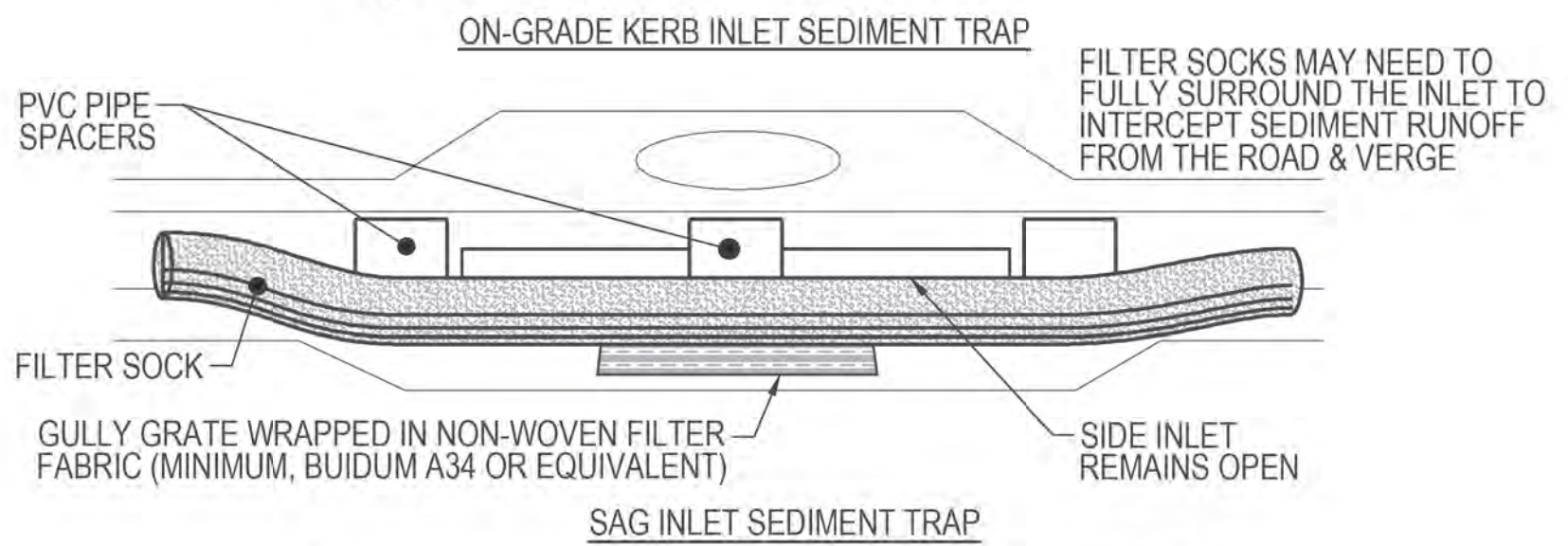
1. **ROCK:** WELL GRADED, HARD, ANGULAR, EROSION RESISTANT ROCK, NOMINAL DIAMETER OF 50 TO 75mm (SMALL DISTURANCES) OR 100 TO 150mm (LARGE DISTURANCES). ALL REASONABLE MEASURES MUST BE TAKEN TO OBTAIN ROCK OF NEAR UNIFORM SIZE.
2. **FOOTPATH STABILISING AGGREGATE:** 25 TO 50mm GRAVEL OR AGGREGATE.
3. **GEOTEXTILE FABRIC:** HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH ('BIDIM' A24 OR EQUIVALENT).

1. CLEAR THE LOCATION OF THE ROCK PAD, REMOVING STUMPS, ROOTS & OTHER VEGETATION TO PROVIDE A FIRM FOUNDATION SO THAT THE ROCK IS NOT PRESSED INTO SOFT GROUND. CLEAR SUFFICIENT WIDTH TO ALLOW PASSAGE OF LARGE VEHICLES, BUT CLEAR ONLY THAT NECESSARY FOR THE EXIT. DO NOT CLEAR ADJACENT AREAS UNTIL THE REQUIRED EROSION & SEDIMENT CONTROL DEVICES ARE IN PLACE.
2. IF THE EXPOSED SOIL IS SOFT, PLASTIC OR CLAYEY, PLACE A SUB-BASE OF CRUSHED ROCK OR A LAYER OF HEAVY-DUTY FILTER CLOTH TO PROVIDE A FIRM FOUNDATION.
3. PLACE THE ROCK PAD FORMING A MINIMUM 200mm THICK LAYER OF CLEAN, OPEN-VOID ROCK.
4. IF THE ASSOCIATED CONSTRUCTION SITE IS UP-SLOPE OF THE ROCKPAD, THUS CAUSING STORMWATER RUNOFF TO FLOW TOWARD THE ROCK PAD, THEN FORM A MINIMUM 300mm HIGH FLOW CONTROL BERM ACROSS THE ROCK PAD TO DIVERT SUCH RUNOFF TO A SUITABLE SEDIMENT TRAP.
5. THE LENGTH OF THE ROCK PAD SHOULD BE AT LEAST 15m WHERE PRACTICABLE, & AS WIDE AS THE FULL WIDTH OF THE ENTRY OR EXIT & AT LEAST 3m. THE ROCK PAD SHOULD COMMENCE AT THE EDGE OF THE OFF-SITE SEALED ROAD OR PAVEMENT.
6. FLARE THE END THE ROCK PAD WHERE IT MEETS THE PAVEMENT SO THAT THE WHEELS OF TURNING VEHICLES DO NOT TRAVEL OVER UNPROTECTED SOIL.
7. IF THE FOOTPATH IS OPEN TO PEDESTRIAN MOVEMENT, THEN COVER THE COARSE ROCK WITH FINE AGGREGATE OR GRAVEL, OR OTHERWISE TAKE WHATEVER MEASURES ARE NEEDED TO MAKE THE AREA SAFE.

1. TOPSOIL SHALL BE STRIPPED & STOCKPILED FOR LATER USE ONSITE.
2. ALL REASONABLE & PRACTICABLE MEASURES MUST BE TAKEN TO OBTAIN THE MAXIMUM BENEFIT FROM EXISTING TOPSOIL, INCLUDING:
  - (i) WHERE THE PROPOSED AREA OF SOIL DISTURBANCE DOES NOT EXCEED 2500m<sup>2</sup>, & THE TOPSOIL DOES NOT CONTAIN UNDESIRABLE WEED SEED, THE TOP 100mm OF SOIL LOCATED WITHIN AREAS OF PROPOSED SOIL DISTURBANCE (INCLUDING STOCKPILE AREAS) MUST BE STRIPPED & STOCKPILED SEPARATELY FROM THE REMAINING SOIL.
  - (ii) WHERE THE PROPOSED AREA OF SOIL DISTURBANCE EXCEEDS 2500m<sup>2</sup>, & THE TOPSOIL DOES NOT CONTAIN UNDESIRABLE WEED SEED, THE TOP 50mm OF SOIL MUST BE STRIPPED & STOCKPILED SEPARATELY FROM THE REMAINING TOPSOIL, & SPREAD AS A FINAL SURFACE SOIL.
  - (iii) IN AREAS WHERE THE TOPSOIL CONTAINS UNDESIRABLE WEED SEED, THE AFFECTED SOIL MUST BE SUITABLY BURIED OR REMOVED FROM THE SITE.
3. STOCKPILES OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, MUST BE:
  - (i) APPROPRIATELY PROTECTED FROM WIND, RAIN, CONCENTRATED SURFACE FLOW & EXCESSIVE UP-SLOPE STORMWATER SURFACE FLOWS.
  - (ii) LOCATED AT LEAST 2M (PREFERABLY 5M) FROM ANY HAZARDOUS AREA, RETAINED VEGETATION, ROADS & CONCENTRATED WATER FLOW.
  - (iii) LOCATED UP-SLOPE OF AN APPROPRIATE SEDIMENT CONTROL SYSTEM.
  - (iv) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 28 DAYS.
  - (v) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 10 DAYS DURING THOSE MONTHS THAT HAVE A HIGH EROSION RISK.
  - (vi) PROVIDED WITH AN APPROPRIATE PROTECTIVE COVER (SYNTHETIC, MULCH OR VEGETATIVE) IF THE MATERIALS ARE LIKELY TO BE STOCKPILED FOR MORE THAN 5 DAYS DURING THOSE MONTHS THAT HAVE AN EXTREME EROSION RISK.
4. A SUITABLE FLOW DIVERSION SYSTEM MUST BE ESTABLISHED IMMEDIATELY UP-SLOPE OF A STOCKPILE OF ERODIBLE MATERIAL THAT HAS THE POTENTIAL TO CAUSE ENVIRONMENTAL HARM IF DISPLACED, IF THE UP-SLOPE CATCHMENT AREA DRAINING TO THE STOCKPILE EXCEEDS 1500m<sup>2</sup>.

1. SOCKS: MINIMUM Ø200mm SYNTHETIC OR BIODEGRADABLE TUBES MANUFACTURED FROM NON-WOVEN OR COMPOSITE FABRIC SUITABLE FOR THE "FILTRATION" OF COARSE SEDIMENT
2. FILL MATERIALS: STRAW, CANE MULCH, COMPOSTED MATERIAL (AS4454), COARSE SAND, OR CLEAN AGGREGATE

- i) LEAKAGE AROUND OR UNDER THE SOCKS IS MINIMISED,
- ii) ADJOINING SOCKS ARE TIGHTLY BUTTED OR OVERLAPPED AT LEAST 450mm.
- iii) THE SURFACE AREA OF POTENTIAL WATER PONDING UP-SLOPE OF EACH SEDIMENT TRAP IS MAXIMISED.
- iv) TO THE MAXIMUM DEGREE PRACTICAL, ALL SEDIMENT-LADEN WATER WILL PASS THROUGH THE FORMED POND BEFORE FLOWING OVER THE DOWN-SLOPE END OF THE SEDIMENT TRAP.



50-75mm, OR 100mm TO 150mm CRUSHED ROCK

UP-SLOPE RUNOFF DIRECTED TO AN APPROPRIATE SEDIMENT TRAP

GEOTEXTILE FILTER CLOTH (MANDATORY WHEN WORKING ON CLAYEY SOILS)

MINIMUM 300mm HIGH FLOW CONTROL BERM INCORPORATED INTO THE ROCK PAD IF THE PAD RECEIVES RUNOFF FROM THE SOIL DISTURBANCE (LOCATION MAY VARY)

PROPERTY BOUNDARY

FOOTPATH

KERB

ROADWAY

WORKSITE

3.0m (MIN)

15m (MIN)

SEDIMENT FENCE

FOOTPATH

LAND SLOPE

SEDIMENT FENCE

MAKE PATH SAFE FOR PEDESTRIANS

KERB (TYPE VARIES)

ROADWAY

ROCK PAD SLOPING TOWARDS THE ROAD

WORKSITE

3.0m (MIN)

15m (MIN)

SEDIMENT FENCE

FOOTPATH

LAND SLOPE

MAKE PATH SAFE FOR PEDESTRIANS

KERB (TYPE VARIES)

ROADWAY

ROCK PAD SLOPING AWAY FROM ROAD

A cross-sectional diagram of a river channel. The channel bed is represented by a hatched pattern. A 'FLOW' arrow points from left to right. An 'EARTH BANK' is shown on the left side of the channel. The right bank is a 'STABILISE STOCKPILE SURFACE' with a '2:1 SLOPE (MAX)' indicated. A 'SEDIMENT FENCE' is located on the right side of the stockpile. A dimension line indicates a width of '2.0m (MAX)' for the stockpile area.

[illegible]



1. WHEREVER REASONABLE & PRACTICABLE, STORMWATER RUNOFF ENTERING THE SITE FROM EXTERNAL AREAS, & NON-SEDIMENT LADEN (CLEAN) STORMWATER RUNOFF ENTERING A WORK AREA OR AREA OF SOIL DISTURBANCE, MUST BE DIVERTED AROUND OR THROUGH THAT AREA IN A MANNER THAT MINIMISES SOIL EROSION & THE CONTAMINATION OF THAT WATER FOR ALL DISCHARGES UP TO THE SPECIFIED DESIGN STORM DISCHARGE.
2. DURING THE CONSTRUCTION PERIOD, ALL REASONABLE & PRACTICABLE MEASURES MUST BE IMPLEMENTED TO CONTROL FLOW VELOCITIES IN SUCH A MANNER THAT PREVENTS SOIL EROSION ALONG DRAINAGE PATHS & AT THE ENTRANCE & EXIT OF ALL DRAINS & DRAINAGE PIPES DURING ALL STORMS UP TO THE RELEVANT DESIGN STORM DISCHARGE.
3. TO THE MAXIMUM DEGREE REASONABLE & PRACTICABLE, ALL WATERS DISCHARGED DURING THE CONSTRUCTION PHASE MUST DISCHARGE ONTO STABLE LAND, IN A NON-EROSIVE MANNER, & AT A LEGAL POINT OF DISCHARGE.
4. DURING THE CONSTRUCTION PERIOD, ROOF WATER MUST BE MANAGED IN A MANNER THAT MINIMISES SOIL EROSION THROUGHOUT THE SITE, & SITE WETNESS WITHIN ACTIVE WORK AREAS.

1. CLEAR THE LOCATION FOR THE CHANNEL. CLEARING ONLY WHAT IS NEEDED TO PROVIDE ACCESS FOR PERSONNEL & CONSTRUCTION EQUIPMENT
2. REMOVE ROOTS, STUMPS, & OTHER DEBRIS & DISPOSE OF THEM PROPERLY. DO NOT USE DEBRIS TO BUILD ANY ASSOCIATED EMBANKMENTS.
3. EXCAVATE THE CHANNEL TO THE SPECIFIED SHAPE, ELEVATION & GRADIENT (1% MIN). THE SIDES OF THE CHANNEL SHOULD BE NO STEEPER THAN A 2:1 (H:V) IF CONSTRUCTED IN EARTH, UNLESS SPECIFICALLY DIRECTED WITHIN THE APPROVED PLANS.
4. STABILISE THE CHANNEL & BANKS IMMEDIATELY UNLESS IT WILL OPERATE FOR LESS THAN 30 DAYS. IN EITHER CASE, TEMPORARY EROSION PROTECTION (MATTING, ROCK, TURF, ETC.) WILL BE REQUIRED AS SPECIFIED WITHIN THE APPROVED PLANS OR AS DIRECTED.
5. IF THE CHANNEL IS CUT INTO A DISPERSIVE (SODIC) SOIL, THE EXPOSED DISPERSIVE SOIL MUST BE COVERED & MAINTAINED WITH A MINIMUM 200mm THICK LAYER OF NON-DISPERSIVE SOIL PRIOR TO PLACEMENT OF EROSION PROTECTION MEASURES.
6. ENSURE THE CHANNEL DISCHARGES TO A STABLE AREA SUCH THAT SOIL EROSION WILL BE PREVENTED. SPECIFICALLY, ENSURE THE DRAIN DOES NOT DISCHARGE TO AN UNSTABLE FILL SLOPE.

1. THE APPLICATION OF LID-BASED SOFT SUPPRESSION MEASURES MUST ENSURE THAT SEDIMENT-LADEN RUNOFF RESULTING FROM SUCH MEASURES DOES NOT CREATE A TRAFFIC OR ENVIRONMENTAL HAZARD.
2. ALL TEMPORARY EARTH BANKS, FLOW DIVERSION SYSTEMS, & EMBANKMENTS ASSOCIATED WITH CONSTRUCTED SEDIMENT BASINS MUST BE MACHINE-COMPACTED, SEEDED & MULCHED FOR THE PURPOSE OF ESTABLISHING A TEMPORARY VEGETATIVE COVER WITHIN 10 DAYS AFTER GRADING.
3. UNPROTECTED SLOPE LENGTHS MUST NOT EXCEED 80M, OR AN EQUIVALENT VERTICAL FALL OF 3M.
4. THE CONSTRUCTION & STABILISATION OF EARTH BATTERS STEEPER THAN 6:1 (H:V) MUST BE STAGED SUCH THAT NO MORE THAN 3 VERTICAL METRES OF ANY BATTER IS EXPOSED TO RAINFALL AT ANY INSTANT.
5. SYNTHETIC REINFORCED EROSION CONTROL MATS & BLANKETS MUST NOT BE PLACED WITHIN, OR ADJACENT TO, RIPARIAN ZONES & WATERCOURSES IF SUCH MATERIALS ARE LIKELY TO CAUSE ENVIRONMENTAL HARM TO WILDLIFE OR WILDLIFE HABITATS.
6. A MINIMUM 60% GROUND COVER MUST BE ACHIEVED ON ALL NON-COMPLETED EARTHWORKS EXPOSED TO ACCELERATED SOIL EROSION IF FURTHER CONSTRUCTION ACTIVITIES OR SOIL DISTURBANCES ARE LIKELY TO BE SUSPENDED FOR MORE THAN 30 DAYS DURING THOSE MONTHS WHEN THE EXPECTED RAINFALL IS LESS THAN 30mm; MINIMUM 70% COVER WITHIN 30 DAYS IF BETWEEN 30 & 45mm; MINIMUM 70% COVER WITHIN 20 DAYS IF BETWEEN 45 & 100mm; MINIMUM 75% COVER WITHIN 10 DAYS IF BETWEEN 100 & 225mm; & MINIMUM 80% COVER WITHIN 5 DAYS IF GREATER THAN 225mm. (ALTERNATIVE TO ABOVE)

1. EROSION CONTROL MATS MUST BE STORED AWAY FROM DIRECT SUNLIGHT OR COVERED WITH ULTRAVIOLET PROTECTIVE SHEETING UNTIL THE SITE IS READY FOR THEIR INSTALLATION
2. VEHICLES & CONSTRUCTION EQUIPMENT MUST NOT BE PERMITTED TO MANEUVER OVER THE MATTING UNLESS IT HAS BEEN COVERED WITH A LAYER OF SOIL OR GRAVEL AT LEAST 150mm THICK.
3. IF THE CHANNEL IS TO BE GRASSED, PREPARE A SMOOTH SEED BED OF APPROXIMATELY 75mm OF TOPSOIL, SEED, FERTILISE, WATER & RAKE TO REMOVE ANY REMAINING SURFACE IRREGULARITIES.
4. EXCAVATE A 300mm DEEP BY 150mm WIDE ANCHOR TRENCH ALONG THE FULL WIDTH OF THE UPSTREAM END OF THE AREA TO BE TREATED.
5. AT LEAST 300mm OF THE MAT MUST BE ANCHORED INTO THE TRENCH WITH THE ROLL OF MATTING RESTING ON THE GROUND UP-SLOPE OF THE TRENCH.
6. WHEN SPREADING THE MATS, AVOID STRETCHING THE FABRIC. THE MATS SHOULD REMAIN IN GOOD CONTACT WITH THE SOIL.
7. THE INSTALLATION PROCEDURE MUST ENSURE THAT THE MAT ACHIEVES & RETAINS GOOD CONTACT WITH THE SOIL.
8. DAMAGED MATTING MUST BE REPAIRED OR REPLACED.

1. TURF SHOULD BE USED WITHIN 12 HOURS OF DELIVERY, OTHERWISE ENSURE THE TURF IS STORED IN CONDITIONS APPROPRIATE FOR THE WEATHER CONDITIONS (e.g. A SHADED AREA).
2. MOISTENING THE TURF AFTER IT IS UNROLLED WILL HELP MAINTAIN ITS VIABILITY.
3. TURF SHOULD BE LAID ON A MINIMUM 75mm BED OF ADEQUATELY FERTILISED TOPSOIL. RAKE THE SOIL SURFACE TO BREAK THE CRUST JUST BEFORE LAYING THE TURF.
4. DURING THE WARMER MONTHS, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY BEFORE LAYING THE TURF.
5. ENSURE THE TURF IS NOT LAID ON GRAVEL, HEAVILY COMPACTED SOILS, OR SOILS THAT HAVE BEEN RECENTLY TREATED WITH HERBICIDES.
6. ENSURE THE TURF EXTENDS UP THE SIDES OF THE DRAIN AT LEAST 100mm ABOVE THE ELEVATION OF THE CHANNEL INVERT, OR AT LEAST TO A SUFFICIENT ELEVATION TO FULLY CONTAIN EXPECTED CHANNEL FLOW.
7. ON CHANNEL GRADIENTS OF 3:1(H:V) OR STEEPER, OR IN SITUATIONS WHERE HIGH FLOW VELOCITIES (a VELOCITY >1.5m/s) ARE LIKELY WITHIN THE FIRST TWO WEEK FOLLOWING PLACEMENT, SECURE THE INDIVIDUAL TURF STRIPS WITH WOODEN OR PLASTIC PEGS.
8. ENSURE THAT INTIMATE CONTACT IS ACHIEVED & MAINTAINED BETWEEN THE TURF & THE SOIL SUCH THAT SEEPAGE FLOW BENEATH THE TURF IS AVOIDED.
9. WATER UNTIL THE SOIL IS WET 100mm BELOW THE TURF. THEREAFTER, WATERING SHOULD BE SUFFICIENT TO MAINTAIN & PROMOTE HEALTHY GROWTH.

1. ALL ROCK MUST BE HARD, WEATHER RESISTANT, & DURABLE AGAINST DISINTEGRATION UNDER CONDITIONS TO BE MET IN HANDLING, PLACEMENT & OPERATION.
2. ALL ROCK MUST HAVE ITS GREATEST DIMENSION NOT GREATER THAN 3 TIMES ITS LEAST DIMENSIONS.
3. THE ROCK USED IN FORMATION OF THE DRAIN MUST BE EVENLY GRADED WITH 50% BY WEIGHT LARGER THAN THE SPECIFIED NOMINAL ROCK SIZE & HAVE SUFFICIENT SMALL ROCK TO FILL THE VOIDS BETWEEN THE LARGER ROCK, DIRT, FINES, & SMALLER ROCK MUST NOT EXCEED 5% BY WEIGHT.
4. THE DIAMETER OF THE LARGEST ROCK SIZE SHOULD BE NO LARGER THAN 1.5 TIMES THE NOMINAL ROCK SIZE SPECIFIC GRAVITY TO BE AT LEAST 2.5.
5. FILTER CLOTH GEOTEXTILE FABRIC: HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH, MINIMUM 'BIDIM' A24 OR EQUIVALENT.
6. PRIOR TO PLACEMENT, ALL ROCKS MUST BE VISUALLY CHECKED FOR SIZE, ELONGATION, CRACKS, DETEIORATION & OTHER VISIBLE DEFECTS. THE DEGREE & THOROUGHNESS OF SUCH CHECKING MUST BE APPROPRIATE FOR THE POTENTIAL CONSEQUENCES ASSOCIATED WITH FAILURE OF THE STRUCTURE OR PURPOSE FOR WHICH THE MATERIAL WILL BE USED.
7. IF A FILTER CLOTH UNDERLAY IS SPECIFIED, PLACE THE FILTER FABRIC DIRECTLY ON THE PREPARED FOUNDATION. IF MORE THAN ONE SHEET OF FILTER CLOTH IS REQUIRED OVER THE AREA, OVERLAP THE EDGE OF EACH SHEET AT LEAST 300mm, & SECURE ANCHOR PINS AT MINIMUM 1M SPACING ALONG THE OVERLAP.
8. ENSURE THE FILTER CLOTH IS PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION OF THE FABRIC & THE ROCK. REPAIR ANY DAMAGE BY REMOVING THE ROCK & REPLACING WITH ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA OVERLAPPING THE EXISTING FABRIC A MINIMUM OF 300mm.
9. PLACEMENT OF ROCK SHOULD FOLLOW IMMEDIATELY AFTER PLACEMENT OF THE FILTER LAYER. PLACE ROCK SO THAT IT FORMS A DENSE, WELL-GRADED MASS OF ROCK WITH A MINIMUM OF VOIDS.
10. PLACE ROCK LINING TO THE EXTENT & DEPTH INDICATED WITHIN THE APPROVED PLANS.
11. ENSURE THE ROCK IS PLACED IN AN APPROPRIATE MANNER TO AVOID DISPLACING UNDERLYING MATERIALS OR PLACING UNIDRIFT IMPACT FORCE ON THE BEDDING MATERIALS.
12. ENSURE THE ROCK IS PLACED WITH A MINIMUM THICKNESS OF 1.5 TIMES THE NOMINAL ROCK SIZE (D50).
13. ENSURE MATERIALS THAT ARE D50 & LARGER ARE POSITIONED FLUSH WITH THE TOP SURFACE WITH FACES & SHAPES MATCHED TO MINIMIZE VOIDS.
14. ENSURE PROJECTIONS ABOVE OR DEPRESSIONS UNDER THE SPECIFIED TOP SURFACE ARE LESS THAN 20% OF THE ROCK LAYER THICKNESS. THE AVERAGE SURFACE PLANE OF THE FINISHED ROCK IS DEFINED AS THE PLANE WHERE 50% OF THE TOPS OF ROCKS WOULD CONTACT.
15. ENSURE THE COMPLETED CHANNEL HAS SUFFICIENT DEPTH (AS SPECIFIED FOR THE TYPE OF CHANNEL) MEASURED FROM THE CHANNEL INVERT (AVERAGE SURFACE PLANE ALONG CHANNEL INVERT) TO THE TOP OF THE EMBANKMENT. THE AVERAGE SURFACE PLANE OF THE FINISHED ROCK IS DEFINED AS THE PLANE WHERE 50% OF THE TOPS OF ROCKS WOULD CONTACT.
16. TO THE MAXIMUM DEGREE PRACTICABLE, THE MATERIAL BETWEEN LARGER ROCK MUST NOT BE LOOSE OR EASILY DISPLACED BY THE EXPECTED FLOW.
17. AFTER PLACEMENT OF THE ROCK LINING, ENSURE THE DRAIN HAS A CONSTANT FALL IN THE DESIRED DIRECTION FREE OF OBSTRUCTIONS.

1. CHECK DAMS CAN BE BUILT WITH VARIOUS MATERIALS INCLUDING ROCKS & SANDBAGS

1. ROCK: 150 TO 300mm EQUIVALENT DIAMETER HARD EROSION RESISTANT ROCK.
2. RECYCLED CONCRETE: 150 TO 300mm EQUIVALENT DIAMETER FREE FROM FINES & CEMENT DUST.
3. SANDBAGS: GEOTEXTILE BAGS (WOVEN SYNTHETIC, OR NON-WOVEN BIODEGRADABLE) FILLED WITH CLEAN COARSE SAND, CLEAN AGGREGATE, OR COMPOST.

1. PRIOR TO PLACEMENT OF THE SEDIMENT TRAP, ENSURE THE DRAINAGE CHANNEL IS DEEP ENOUGH TO PREVENT WATER BEING UNSAFELY DIVERTED OUT OF THE DRAIN ONCE THE CHECK DAMS ARE INSTALLED.
2. LOCATE EACH CHECK DAM SEDIMENT TRAP AS DIRECTED WITHIN THE APPROVED PLANS, OR OTHERWISE AT SUCH A SPACING TO ACHIEVE THE REQUIRED SEDIMENT TRAPPING OUTCOMES. REFER DETAIL.
3. PLACE EACH CHECK DAM SEDIMENT TRAP TO THE LINES & PROFILE SHOWN IN THE APPROVED PLAN OR AS DIRECTED BY THE SITE SUPERVISOR.

1. THE OUTLET SILL OF THE SPREADER SHOULD BE PROTECTED WITH EROSION CONTROL MATTING TO PREVENT EROSION DURING THE ESTABLISHMENT OF VEGETATION. THE MATTING SHOULD BE A MINIMUM OF 1200mm WIDE EXTENDING AT LEAST 300mm UPSTREAM OF THE EDGE OF THE OUTLET CREST & BURIED AT LEAST 150mm IN A VERTICAL TRENCH. THE DOWNSTREAM EDGE SHOULD BE SECURELY HELD IN PLACE WITH CLOSELY SPACED HEAVY-DUTY WIRE STAPLES AT LEAST 150mm LONG.
2. ENSURE THAT THE OUTLET SILL (CREST) IS LEVEL FOR THE SPECIFIED LENGTH.
3. IMMEDIATELY AFTER CONSTRUCTION, TURF, OR SEED & MULCH WHERE APPROPRIATE, THE LEVEL SPREADER.



CONSTRUCTED DIMENSIONS OF TRIANGULAR V-DRAINS		
DRAIN TYPE	FORMED WIDTH WITH OR WITHOUT BANK	FORMED DEPTH WIDTH OR WITHOUT BANK
TYPE-AV	2.0m	0.30m
TYPE-BV	2.7m	0.45m
TYPE-CV	3.9m	0.65m



01	FOR APPROVAL	SG	SS	BK	02/08/23
Issue	Description	DR	CH	VE	Date

NOT TO SCALE



1



FOR APPROVAL  
BE USED FOR CONSTRUCTION

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Original Issue Signatures			
Drawn	S.GODITO	Original Size	A1
Designed	S.SEM	Height Datum	AHD
Project Manager	B.KITSON	Grid	MGA GDA94
Verified	B.KITSON		

## CITISWICH STAGE 7

EROSION AND SEDIMENT  
CONTROL NOTES AND DETAILS  
SHEET 2



Drawing No.

CTW-AAP-OP-00-DRG-CV-0183

Project Number	30139240
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1540



1. OPTIMUM BENEFIT MUST BE MADE OF EVERY OPPORTUNITY TO TRAP SEDIMENT WITHIN THE WORK SITE, & AS CLOSE AS PRACTICABLE TO ITS SOURCE.
2. SEDIMENT TRAPS MUST BE INSTALLED & OPERATED TO BOTH COLLECT & RETAIN SEDIMENT.
3. THE POTENTIAL SAFETY RISK OF A PROPOSED SEDIMENT TRAP TO SITE WORKERS & THE PUBLIC MUST BE GIVEN APPROPRIATE CONSIDERATION, ESPECIALLY THOSE DEVICES LOCATED WITHIN PUBLICLY ACCESSIBLE AREAS.
4. ALL REASONABLE & PRACTICABLE MEASURES MUST BE TAKEN TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT FROM THE SITE.
5. SUITABLE ALL-WEATHER MAINTENANCE ACCESS MUST BE PROVIDED TO ALL SEDIMENT CONTROL DEVICES.

1. SEDIMENT FENCE TO BE INSTALLED ALONG A LINE OF CONSTANT GROUND ELEVATION WHEREVER PRACTICAL.
2. BOTH ENDS OF THE SEDIMENT FENCE TO EXTEND UP THE SLOPE AT LEAST 1m.
3. SUPPORT POST TO BE SPACED A MAXIMUM 2m UNLESS THE FENCE IS SUPPORTED BY A TOP WIRE OR MESH BACKING, IN WHICH CASE 3m MAXIMUM SPACING.
4. FENCE RETURNS SHALL BE INSTALLED AT MAXIMUM 20m SPACING IF FENCE IS INSTALLED ALONG THE CONTOUR, OTHERWISE 5 TO 10m MAXIMUM SPACING DEPENDING ON SLOPE.
5. MINIMUM 4 STAPLES OR TIE WIRES PER STAKE.

1. FABRIC: POLYPROPYLENE, POLYAMIDE, NYLON, POLYESTER, OR POLYETHYLENE WOVEN OR NON-WOVEN  
FABRIC, AT LEAST 700mm IN WIDTH & A MINIMUM UNIT WEIGHT OF 140GSM. ALL FABRICS TO CONTAIN  
ULTRAVIOLET INHIBITORS & STABILISERS TO PROVIDE A MINIMUM OF 6 MONTHS OF USEABLE  
CONSTRUCTION LIFE (ULTRAVIOLET STABILITY EXCEEDING 70%).

2. FABRIC REINFORCEMENTS: WIRE OR STEEL MESH MINIMUM 14-GAUGE WITH A MAXIMUM MESH SPACING OF 200mm.
3. SUPPORT POSTS/STAKES: 1500mm<sup>2</sup> (MIN.) HARDWOOD, 2500mm<sup>2</sup> (MIN.) SOFTWOOD, OR 1.5kg/m (MIN) STEEL STAR PICKETS SUITABLE FOR ATTACHING FABRIC.

1. LOCATE THE SPILL-THROUGH WEIR SUCH THAT THE WEIR CREST WILL BE LOWER THAN THE GROUND LEVEL AT EACH END OF THE FENCE.
2. ENSURE THE CREST OF THE SPILL-THROUGH WEIR IS AT LEAST 300mm ABOVE THE GROUND ELEVATION.
3. SECURELY TIE A HORIZONTAL CROSS MEMBER (WEIR) TO THE SUPPORT POSTS/STAKES EACH SIDE OF THE WEIR. CUT THE FABRIC DOWN THE SIDE OF EACH POST & FOLD THE FABRIC OVER THE CROSS MEMBER & APPROPRIATELY SECURE THE FABRIC.
4. INSTALL A SUITABLE SPLASH PAD &/OR CHUTE IMMEDIATELY DOWN-SLOPE OF THE SPILL-THROUGH WEIR TO CONTROL SOIL EROSION & APPROPRIATELY DISCHARGE THE CONCENTRATED FLOW PASSING OVER THE WEIR.

1. ENSURE THAT THE INSTALLATION OF THE SEDIMENT TRAP WILL NOT CAUSE UNDESIRABLE SAFETY OR FLOODING ISSUES.
2. WHERE POSSIBLE, EXCAVATE A 200x200mm TRENCH AROUND THE INLET STRUCTURE.
3. SPACE STAKES EVENLY AROUND THE PERIMETER OF THE STORMWATER INLET AT A MAXIMUM 1m SPACING & SECURELY DRIVE THEM INTO THE GROUND.
4. WHERE NECESSARY, INSTALL A HORIZONTAL SPILL-THROUGH WEIR TO LIMIT THE MAXIMUM HEIGHT WATER PONDING AROUND THE STRUCTURE.
5. ENSURE THE MAXIMUM POND HEIGHT WILL NOT CAUSE A SAFETY HAZARD, INCLUDING UNDESIRABLE FLOODING OF AN ADJACENT PROPERTY OR ROADWAY. WHEREVER PRACTICAL, THE SPILL-THROUGH WEIR SHOULD BE AT LEAST 300mm ABOVE GROUND LEVEL.
6. IF A SPILL-THROUGH WEIR IS NOT INSTALLED, THEN FRAME THE TOP OF THE STAKES WITH HORIZONTAL CROSS MEMBERS.
7. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS.
8. PLACE THE BOTTOM 300mm OF FABRIC IN THE EXCAVATED TRENCH.
9. SECURELY FASTEN THE FABRIC TO THE STAKES & CROSS MEMBERS AT THE FABRIC JOINT, OVERLAP THE FABRIC TO THE NEXT STAKE.
10. BACKFILL THE TRENCH WITH AT LEAST 200mm OF AGGREGATE OR COMPACTED SOIL. IF A TRENCH CANNOT BE EXCAVATED, LAY THE BOTTOM 300mm OF FABRIC EVENLY ON THE GROUND SURFACE & COVER WITH A 300mm LAYER OF AGGREGATE, NOT EARTH OR SOIL.
11. WHERE REQUIRED, INSTALL A FLOW CONTROL BUND TO MAINTAIN THE SPECIFIED POOL DEPTH & CONTROL THE MOVEMENT OF WATER.
12. TAKE ALL NECESSARY MEASURES TO MINIMISE THE SAFETY RISK CAUSED BY THE STRUCTURE & TO PREVENT UNSAFE ENTRY INTO THE STORMWATER INLET.

1. REMOVE ALL VEGETATION & TOPSOIL FROM UNDER THE DAM WALL & FROM WITHIN THE STORAGE AREA
2. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE
3. FOR EARTH EMBANKMENT MATERIAL TYPE & COMPACTION REFER TO DTMR SPECIFICATION MRTS04 SECTION 14.2.6 - WATER RETAINING EMBANKMENTS.
4. CONSTRUCT EMERGENCY SPILLWAY.
5. INSTALL MARKER POST SHOWING MAXIMUM STORAGE & SETTLING ZONE VOLUMES.
6. AS-CONSTRUCTED PLANS MUST BE PREPARED FOR ALL CONSTRUCTED SEDIMENT BASINS & ASSOCIATED EMERGENCY SPILLWAYS. SUCH PLANS MUST APPROPRIATELY VERIFY THE BASIN DIMENSIONS, LEVELS & VOLUMES, & MUST BE SUBMITTED TO THE RELEVANT REGULATORY AUTHORITY WITHIN 14 CALENDAR DAYS OF THE CONSTRUCTION OF EACH BASIN.
7. BASINS SHOULD BE APPROPRIATELY FENCED & MARKED BY WARNING SIGNS IF UNSUPERVISED PUBLIC ACCESS IS LIKELY & PUBLIC SAFETY IS AT RISK.

1. ALL DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES MUST BE INSPECTED:
  - (i) AT LEAST DAILY (WHEN WORK IS OCCURRING ON-SITE);
  - (ii) AT LEAST WEEKLY (WHEN WORK IS NOT OCCURRING ON-SITE);
  - (iii) WITHIN 24 HOURS OF EXPECTED RAINFALL; &
  - (iv) WITHIN 18 HOURS OF A RAINFALL EVENT OF SUFFICIENT INTENSITY & DURATION TO CAUSE RUNOFF

2. INSPECTION SHALL BE CONDUCTED IN LINE WITH THE FOLLOWING AS A MINIMUM:
  - i) RECORD TYPE OF DEVICE/CONTROL MEASURE BEING INSPECTED & ITS LOCATION;
  - ii) RECORD THE CONDITION OF EACH DEVICE/CONTROL MEASURE BEING INSPECTED;
  - iii) RECORD MAINTENANCE REQUIREMENTS FOR DEVICE/CONTROL MEASURE BEING INSPECTED;
  - iv) RECORD SEDIMENT VOLUMES REMOVED FROM DEVICE/CONTROL MEASURE BEING INSPECTED;
  - v) RECORD DETAILS OF SEDIMENT BASIN TREATMENT, FLOCCULANT DOSAGE & CLEANOUTS;
  - vi) RECORD SEDIMENT DISPOSAL PROCEDURES & LOCATION;

2. ALL DRAINAGE, EROSION/SEDIMENT CONTROL MEASURES MUST BE MAINTAINED IN PROPER WORKING ORDER AT ALL TIMES DURING THEIR OPERATIONAL LIVES.
4. SEDIMENT CONTROL DEVICES MUST BE DE-SILTED & MADE FULLY OPERATIONAL AS SOON AS REASONABLE & PRACTICABLE AFTER A SEDIMENT-PRODUCING EVENT, WHETHER NATURAL OR ARTIFICIAL, IF THE DEVICE'S SEDIMENT RETENTION CAPACITY FALLS BELOW 75% OF ITS DESIGN RETENTION CAPACITY. DE-SILT SEDIMENT TRAP IF THE SEDIMENT LEVEL EXCEEDS 1/3 OF THE CREST HEIGHT.
5. MATERIALS, WHETHER LIQUID OR SOLID, REMOVED FROM SEDIMENT CONTROL DEVICES DURING MAINTENANCE OR DECOMMISSIONING, MUST BE DISPOSED OF IN A MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
7. ALL WATER QUALITY DATA, INCLUDING DATES OF RAINFALL, DATES OF TESTING, TESTING RESULTS & DATES OF WATER RELEASE, MUST BE KEPT IN AN ON-SITE REGISTER. THE REGISTER IS TO BE MAINTAINED UP TO DATE FOR THE DURATION OF THE APPROVED WORKS & BE AVAILABLE ON-SITE FOR INSPECTION BY THE RELEVANT REGULATORY AUTHORITY ON REQUEST.

8. AT NOMINATED INSTRE WATER MONITORING SITES, A MINIMUM OF 3 WATER SAMPLES MUST BE TAKEN & ANALYSED, & THE AVERAGE RESULT USED TO DETERMINE QUALITY.
9. ALL ENVIRONMENTALLY RELEVANT INCIDENTS MUST BE RECORDED IN A FIELD LOG THAT MUST REMAIN ACCESSIBLE TO ALL RELEVANT REGULATORY AUTHORITIES.
10. WASHING/FLUSHING OF SEALED ROADWAYS MUST ONLY OCCUR WHERE SWEEPING HAS FAILED TO REMOVE SUFFICIENT SEDIMENT & THERE IS A COMPELLING NEED TO REMOVE THE REMAINING SEDIMENT (E.G. FOR SAFETY REASONS). IN SUCH CIRCUMSTANCES, ALL REASONABLE & PRACTICABLE SEDIMENT CONTROL MEASURES MUST BE USED TO PREVENT, OR AT LEAST MINIMISE, THE RELEASE OF SEDIMENT INTO RECEIVING WATERS. ONLY THOSE MEASURES THAT WILL NOT CAUSE SAFETY & PROPERTY FLOODING ISSUES SHALL BE EMPLOYED. SEDIMENT REMOVED FROM ROADWAYS MUST BE DISPOSED OF IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.

11. ALL SEEDING, HYDROSEEDING & TURFING REQUIRES REGULAR WATERING UNTIL EFFECTIVE COVER IS ESTABLISHED & PLANTS ARE GROWING VIGOROUSLY. WATERING SHOULD DEPEND ON WEATHER & SOIL CONDITIONS. WATERING SHOULD START IMMEDIATELY AFTER PLANTING & SHOULD COMPLY WITH THE FOLLOWING AS A MINIMUM:

- |                |                      |
|----------------|----------------------|
| i) WEEK 1      | 3 WATERINGS PER WEEK |
| ii) WEEK 2-6   | 2 WATERINGS PER WEEK |
| iii) WEEK 7-12 | 1 WATERING PER WEEK  |

11. MAINTENANCE MOWING OF ALL ROAD SHOULDERS, TABLE DRAINS, BATTERS & OTHER SURFACES LIKELY TO EXPERIENCE ACCELERATED SOIL EROSION MUST AIM TO LEAVE THE GRASS LENGTH NO SHORTER THAN 50mm WHERE REASONABLE & PRACTICABLE.

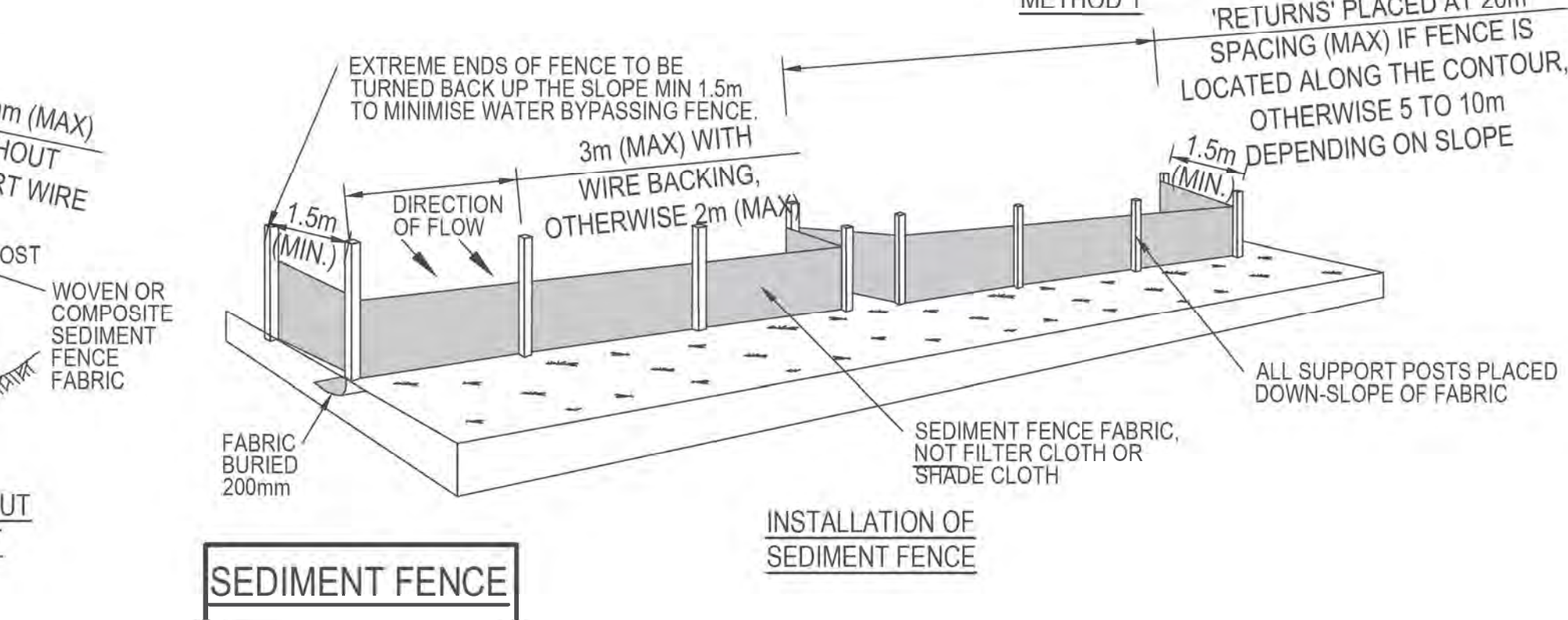
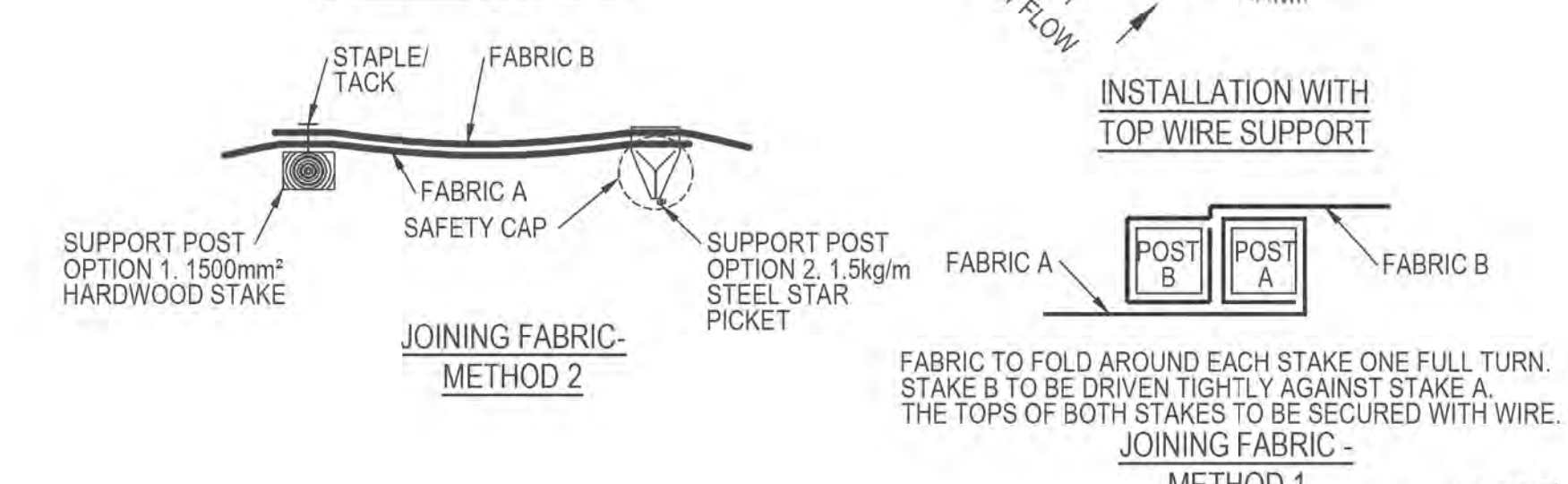
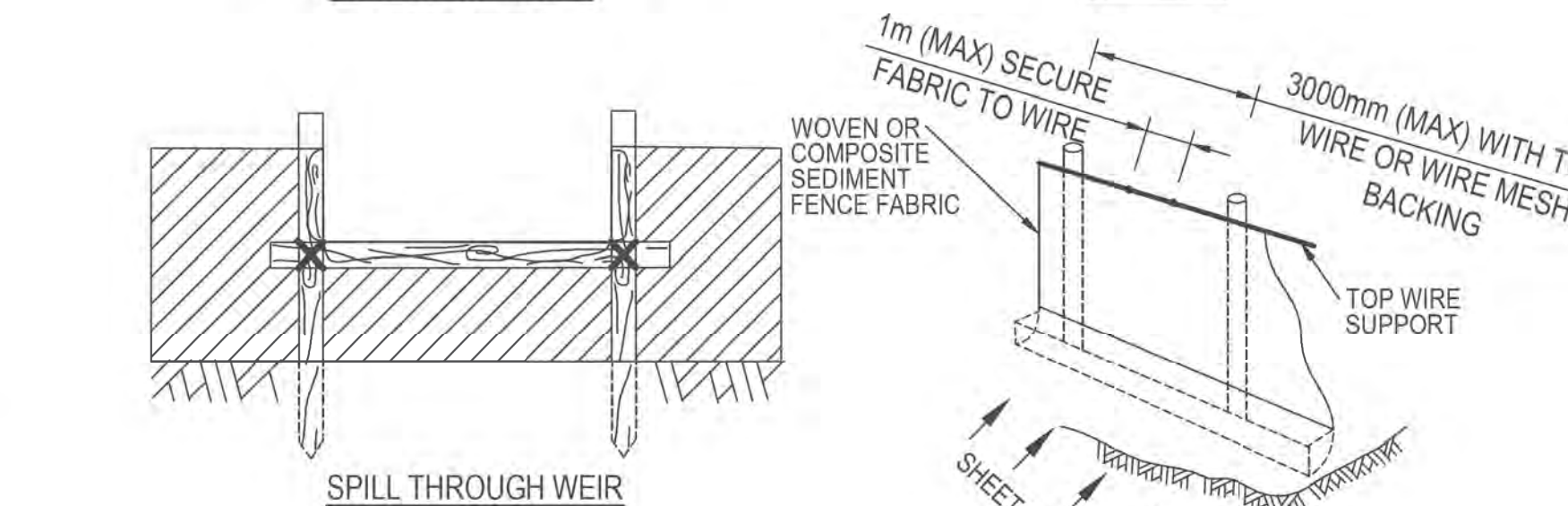
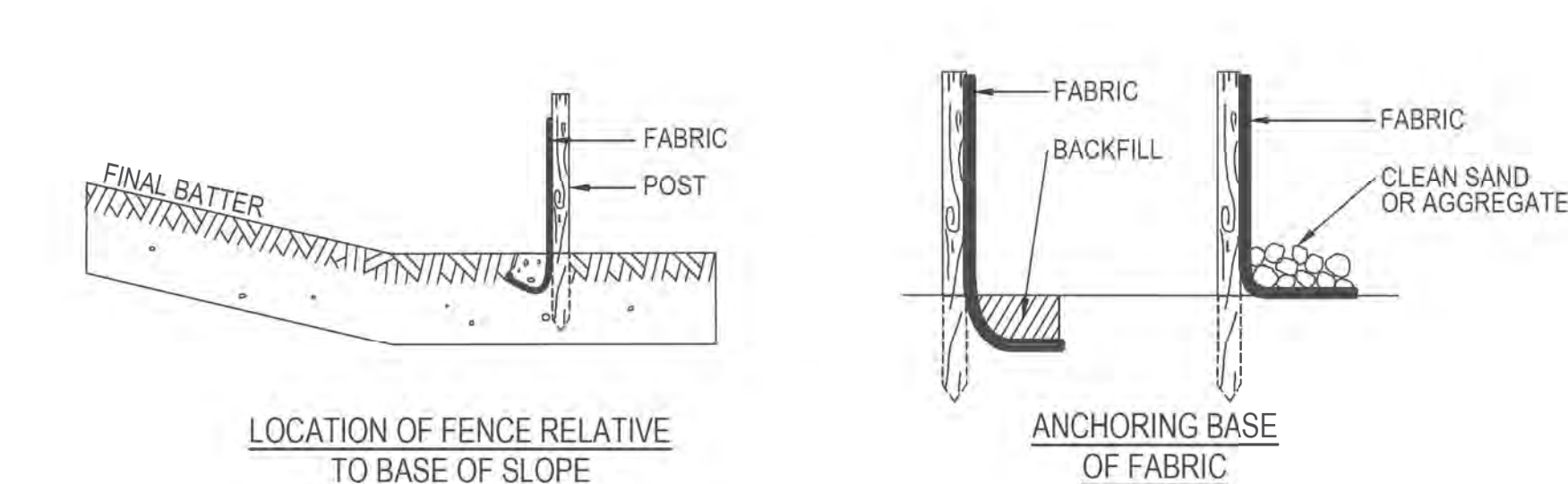
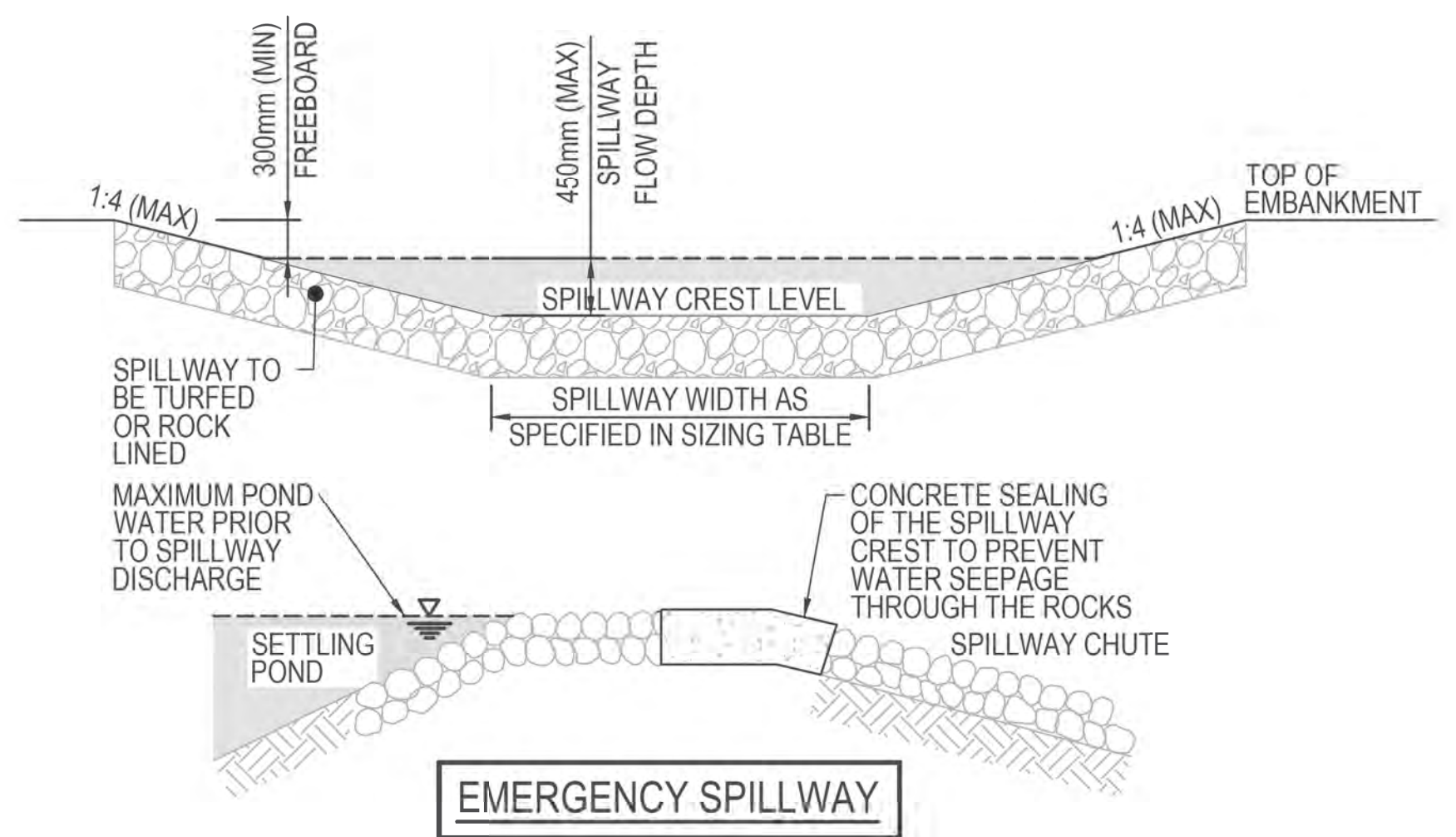
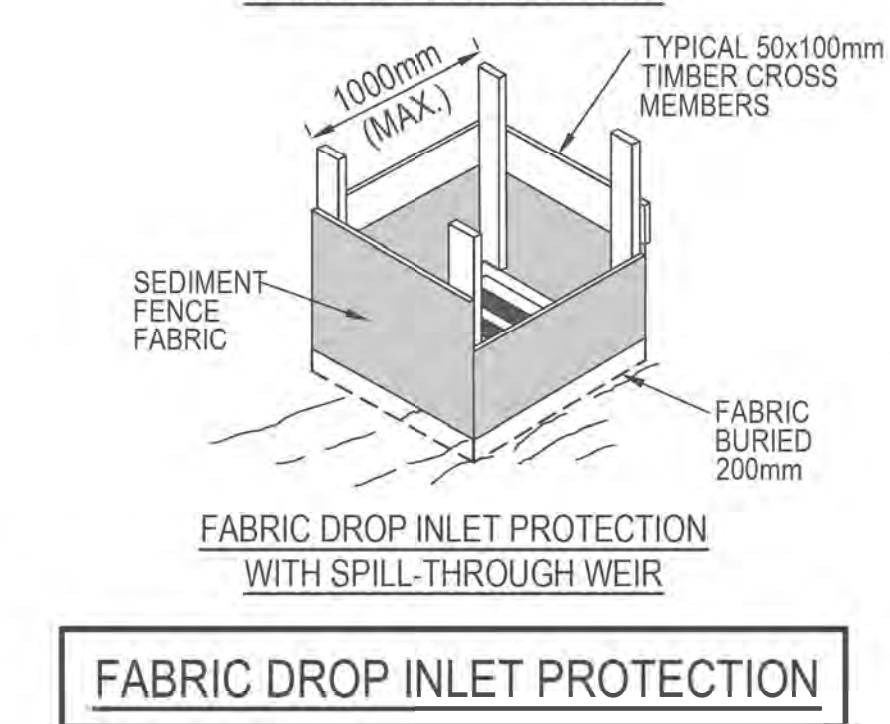
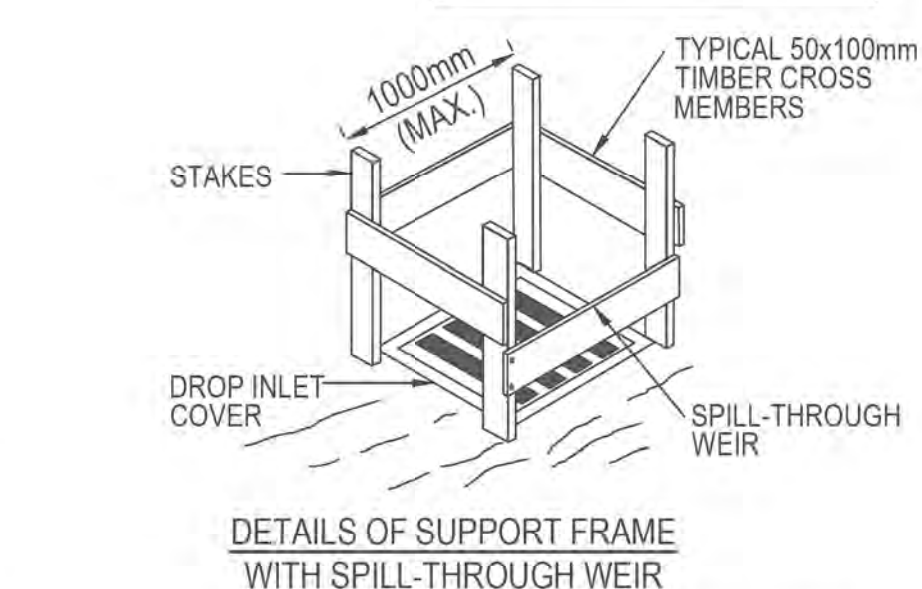
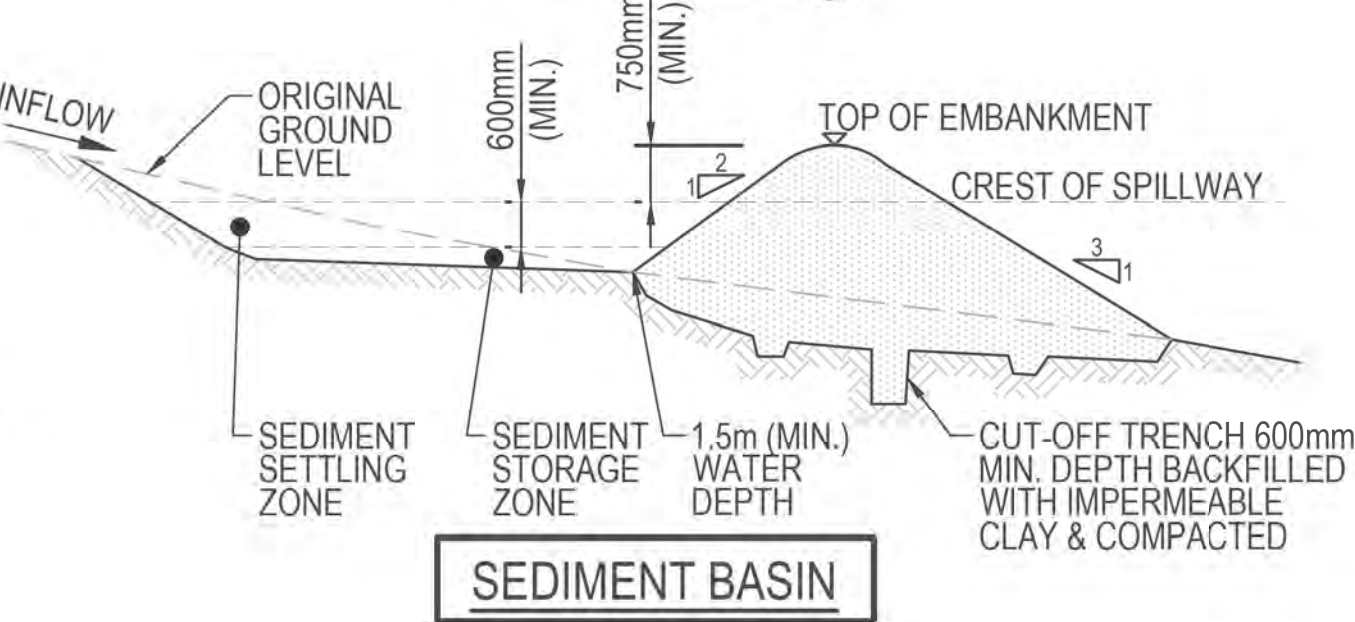
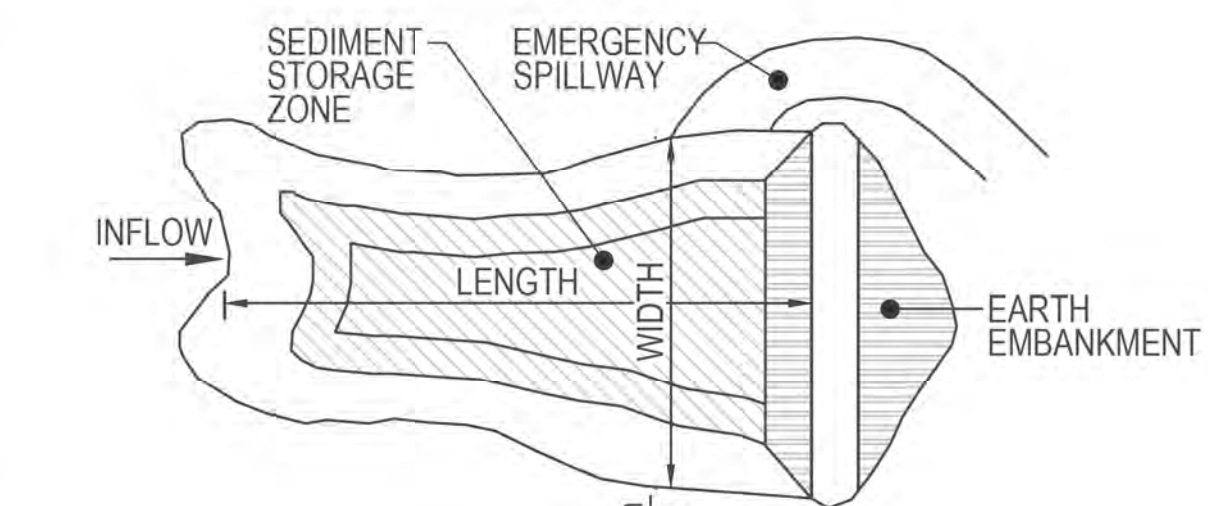
12. MAINTENANCE MOWING MUST BE DONE IN A MANNER THAT WILL MAINTAIN SOFT EDGES, SUCH AS THE CREST OF EARTH EMBANKMENTS.

1. CONSTRUCTED SEDIMENT BASINS MUST BE MAINTAINED & FULLY OPERATIONAL THROUGHOUT THE CONSTRUCTION PERIOD & UNTIL EACH BASIN'S CATCHMENT AREA ACHIEVES 80% GROUND COVER ON ALL SOIL SURFACES.

2. SETTLING SEDIMENT MUST BE REMOVED FROM SEDIMENT BASINS WHEN THE VOLUME OF THE SEDIMENT EXCEEDS THE DESIGNATED SEDIMENT STORAGE VOLUME, OR THE DESIGN MAXIMUM SEDIMENT STORAGE ELEVATION.
3. SEDIMENT BASIN WATER QUALITY SAMPLES MUST BE TAKEN AT A DEPTH NO GREATER THAN 200mm ABOVE THE LEVEL OF SETTLED SEDIMENT BY A SUITABLY QUALIFIED PERSON. WATER TESTING TO BE UNDERTAKEN USING EITHER A HANDHELD TURBIDITY METER OR SAMPLES COLLECTED FOR LABORATORY TESTING PRIOR TO BASIN DEWATERING. ALL LABORATORY TESTING TO BE UNDERTAKEN BY A NATA ACCREDITED LABORATORY.
4. ALL WATER PUMPED FROM THE SEDIMENT BASIN SHALL BE TESTED FOR ENVIRONMENTAL COMPLIANCE AGAINST THE RELEASE CRITERIA IN THE TABLE BELOW (AS A MINIMUM), UNLESS ALTERNATIVE (MORE STRINGENT) STANDARDS ARE SPECIFIED BY THE LOCAL AUTHORITY PRIOR TO RELEASE.

1. ALL DISTURBED AREAS IDENTIFIED AS VERY LOW, LOW, MEDIUM, HIGH, OR EXTREME EROSION RISK MUST BE SUITABLY STABILISED WITHIN 60, 30, 20, 10 OR 5 DAYS RESPECTIVELY, OR PRIOR TO ANTICIPATED RAINFALL, WHICHEVER IS THE GREATER, FROM THE DAY THAT SOIL DISTURBANCES ON THE AREA HAVE BEEN FINALISED.
2. THE TYPE OF GROUND COVER APPLIED TO COMPLETED EARTHWORKS SHOULD BE COMPATIBLE WITH THE ANTICIPATED LONG-TERM LAND USE, ENVIRONMENTAL RISK, & SITE REHABILITATION MEASURES.
3. UNLESS OTHERWISE DIRECTED BY SUPERINTENDENT OR WHERE DIRECTED BY THE APPROVED REVEGETATION PLAN, TOPSOIL MUST BE PLACED AT A MINIMUM DEPTH OF 75mm ON SLOPES 4:1 (H:V) OR FATTER, & 50mm ON SLOPES STEEPER THAN 4:1.
4. THE PH LEVEL (SOIL:WATER 1:5) OF TOPSOIL MUST BE ADEQUATE TO ENABLE ESTABLISHMENT & GROWTH OF THE SPECIFIED VEGETATION.
5. SOIL AMELIORANTS MUST BE ADDED TO THE SOIL IN ACCORDANCE WITH THE APPROVED LANDSCAPE/REVEGETATION PLANS &/OR SOIL ANALYSIS.
6. SOIL DENSITY/COMPACTION MUST BE ADJUSTED PRIOR TO SEEDING/PLANTING IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS. SOIL REPORT &/OR APPROPRIATE REFERENCE PLANS.

4. ALL UNSTABLE OR DISTURBED SOIL SURFACES MUST BE ADEQUATELY STABILISED AGAINST EROSION (MINIMUM 80%) PRIOR TO COMMENCEMENT OF USE, OR SURVEY PLAN ENDORSEMENT.
8. ALL TEMPORARY DRAINAGE, EROSION & SEDIMENT CONTROL MEASURES MUST BE REMOVED AFTER ACHIEVING A SATISFACTORY "OFF-MAINTENANCE INSPECTION" BY THE RELEVANT REGULATORY AUTHORITY.
9. DISPOSE OF ANY COLLECTED SEDIMENT OR FILL IN A LAWFUL MANNER THAT DOES NOT CAUSE ONGOING SOIL EROSION OR ENVIRONMENTAL HARM.
10. IMMEDIATELY PRIOR TO THE CONSTRUCTION OF THE PERMANENT STORMWATER TREATMENT DEVICE, APPROPRIATE FLOW BYPASS CONDITIONS MUST BE ESTABLISHED TO PREVENT SEDIMENT-LADEN WATER ENTERING THE DEVICE.
11. IMMEDIATELY FOLLOWING THE CONSTRUCTION OF THE FILTER MEDIA OF THE PERMANENT STORMWATER TREATMENT DEVICE, THE FILTER MEDIA MUST BE COVERED BY HEAVY-DUTY FILTER CLOTH (MINIMUM BIDIM A44 OR EQUIVALENT), A MINIMUM 200mm LAYER OF EARTH OR SUFFICIENT FILTER MEDIA. SUCH EARTH & FILTER CLOTH MUST NOT BE REMOVED FROM THE DEVICE UNTIL SUITABLE SURFACE CONDITIONS BEING ACHIEVED WITHIN THE BASIN'S CATCHMENT AREA.
12. IMMEDIATELY FOLLOWING THE CONSTRUCTION OF THE PERMANENT STORMWATER TREATMENT DEVICE AN APPROPRIATE TYPE 2 SEDIMENT TRAP MUST BE INSTALLED IN A MANNER TO PREVENT SEDIMENT INTRUSION INTO THE DEVICE.
13. THE MINIMUM SEDIMENT CONTROL STANDARD FOR THE PROTECTION OF THE PERMANENT STORMWATER TREATMENT DEVICE DURING THE CONSTRUCTION & MAINTENANCE PHASES IS A TYPE 2 SEDIMENT TRAP (ALTERNATIVE TO ABOVE)
14. PLANT ESTABLISHMENT WITHIN THE PERMANENT STORMWATER TREATMENT DEVICE MUST BE DELAYED UNTIL SEDIMENT INTRUSION INTO THE DEVICE IS SUITABLY UNDER CONTROL.
15. UPON SUITABLE CONDITIONS BEING ACHIEVED WITHIN THE BASIN'S CATCHMENT AREA, THE OPERATIONAL FEATURES OF THE PERMANENT STORMWATER TREATMENT SYSTEM MUST BE MADE FULLY OPERATIONAL (I.E. MAINTENANCE &/OR RECONSTRUCTION AS REQUIRED).
16. THE PERMANENT STORMWATER TREATMENT FEATURES OF THE REHABILITATED BASIN MUST NOT BE MADE OPERATIONAL UNTIL ALL UP-SLOPE SITE STABILISATION MEASURES HAVE BEEN IMPLEMENTED & ARE APPROPRIATELY WORKING TO CONTROL SOIL EROSION & SEDIMENT RUNOFF IN ACCORDANCE WITH THE SPECIFIED EROSION & SEDIMENT CONTROL STANDARD. (ALTERNATIVE TO ABOVE).



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