

TOPO.

EROSION AND SEDIMENT CONTROL PLAN

OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1 & 2 (FILL)



CLIENT: SHADFORTH

DOCUMENT NUMBER: 20-0061/R1551

VERSION: E

DATE: 08/06/21

1 SCOPE

Topo were engaged by Shadforth to develop a CPESC certified Erosion and Sediment Control Plan (ESCP) for works associated with the Oxley Secondary College Redevelopment Works – Stage 1, as well as the bulk earthworks for Stage 2.

1.1. GUIDELINES

This ESCP has been prepared in accordance with the following documents:

- + Best Practice Erosion and Sediment Control (IECA, 2008), and
- + State Planning Policy (DILGP, 2017)
- + Appendix B (IECA, 2018)
- + Brisbane City Plan (BCC, 2014).
- + Complying with the SPP – Technical Note for Government Development Assessment & Compliance Officers (Healthy Land and Water, 2018)

1.2. CERTIFICATION

I Kyle Robson certify that this Erosion and Sediment Control Plan (ref: R1551) has been prepared to satisfy the following requirements:

- + The intent and minimum standards nominated within the IECA (2008) Best Practice Erosion and Sediment Control Guideline

If followed, it will assist Shadforth in meeting environmental obligations defined in the Environmental Protection Act (1994) – s440zg, and the Environmental Protection (Water) Policy (2009).

Kyle Robson



CPESC 5395, RPEQ 15954

1.3. REVISION

VERSION	DATE	AUTHOR	REVIEWER	APPROVED
A	16/05/20	K. Robson	-	K. Robson
B	03/03/21	K. Robson	-	K. Robson
C	09/03/21	K. Robson	-	K. Robson
D	21/03/21	K. Robson	-	K. Robson
E	08/06/21	K. Robson	-	K. Robson

2 PROJECT DESCRIPTION

2.1. LOCATION

The project works are located at 53 Seventeen Mile Rocks Road and 113 Cliveden Avenue, Oxley. This ESCP has been prepared for works associated with Stage 1 and Stage 2 of the development. Portions of the site have been previously cleared and remediated.

The site location is presented in Figure 1.

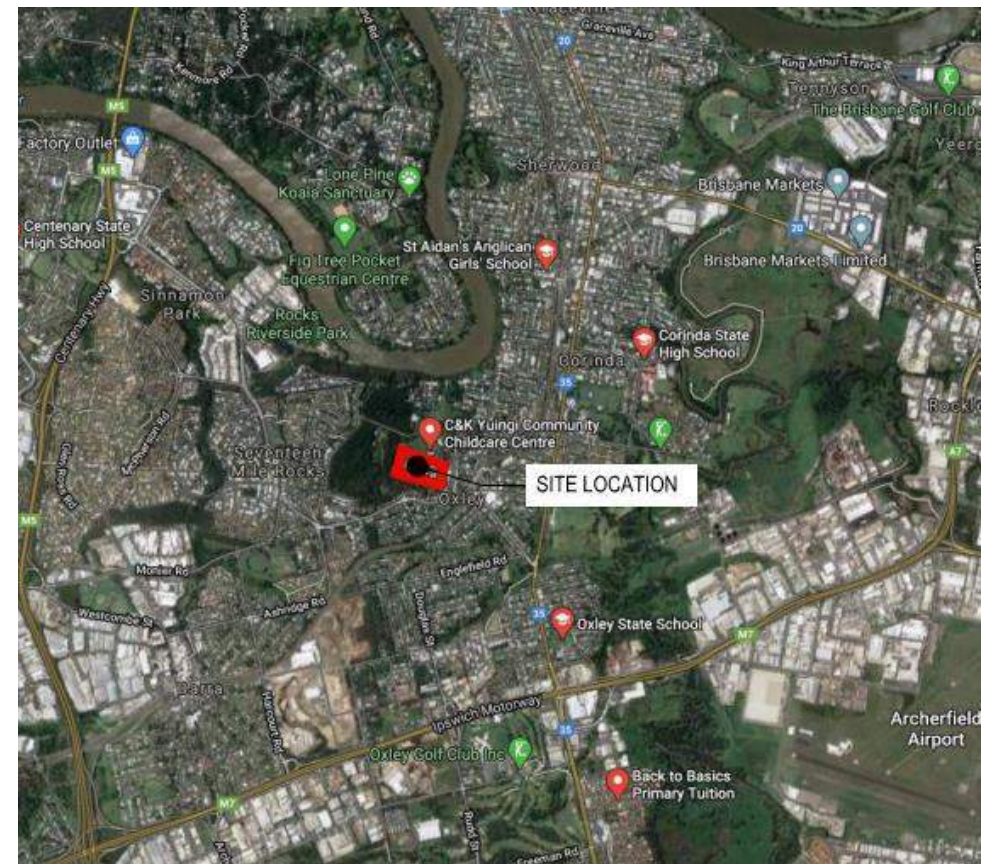


Figure 1 – Site Location

2.2. PROJECT WORKS

The work to be undertaken as part of the current works program includes:

- + Bulk earthworks for Stage 1
- + Roadworks and drainage
- + Construction of bio-retention basin
- + Installation of services including stormwater, sewer and water
- + Bulk earthworks for Stage 2

The location of the proposed works is illustrated in Figure 2.

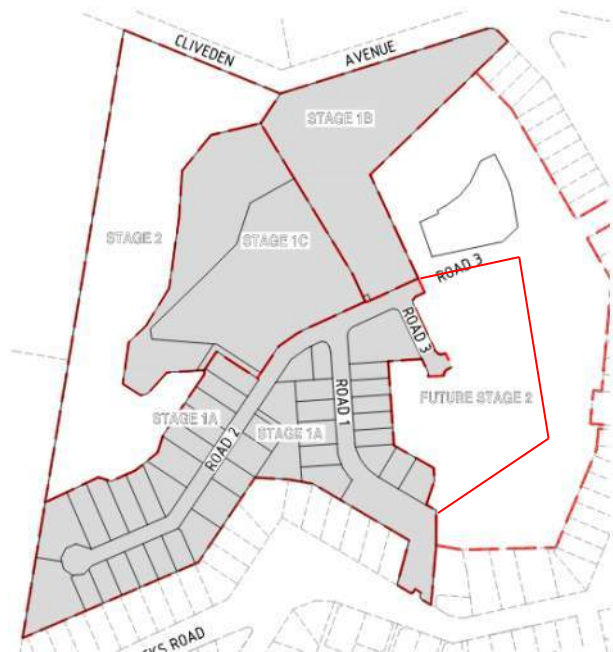


Figure 2 – Extent of proposed works (source: KN Group)

2.3. CLIMATE

The historic rainfall for the region is presented below in Figure 3. The seasonal outlook, included as Figure 4, indicates median rainfall of 143 mm between April and June with the forecast indicating the area will receive between 100-200mm during this period.

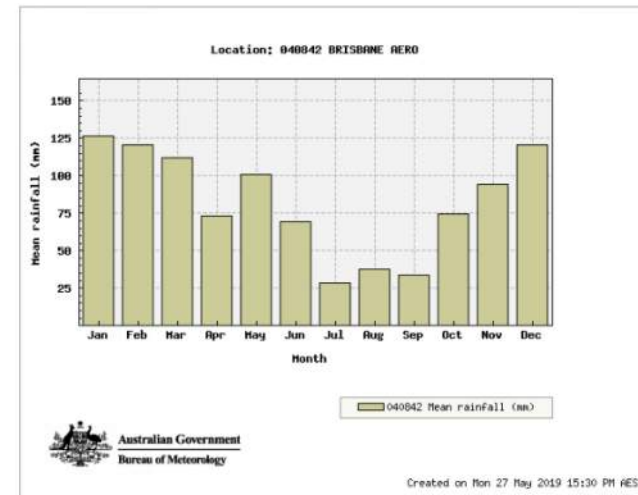


Figure 3 – Historic rainfall (Source: BoM)

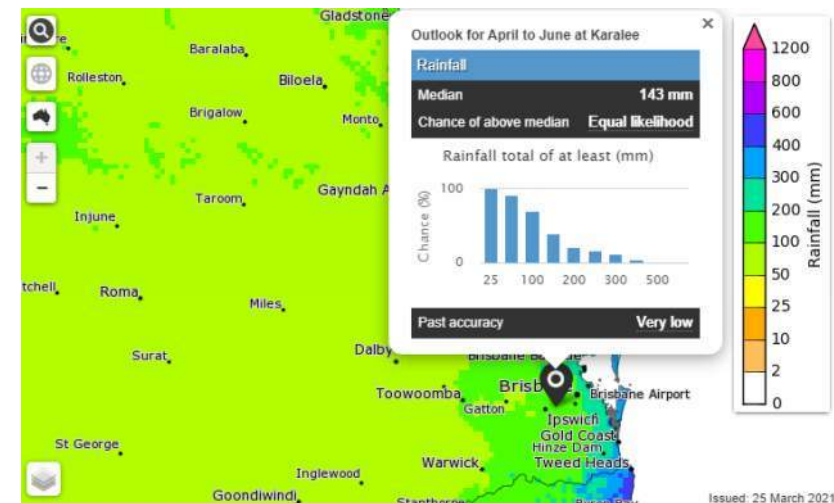


Figure 4 – Seasonal outlook – April to June (Source: BoM)

2.4. TOPOGRAPHY AND DRAINAGE

The site drains in a north-easterly direction through a previous sports oval. The site consists of level pads and batters at grades in excess of 1 in 4. Runoff from the east, west and south will enter the works area if not diverted. A large external catchment is located to the west of the work. Based on the earthworks plans, works will be undertaken in this active drainage path. Such works must be staged and undertaken progressively and stabilised immediately. A low flow channel is to be installed to direct the external catchment past active works.

The majority of catchment 5 was previously diverted around the works as clean water runoff. This is no longer practical and the external runoff will be direct through the site instead, requiring an additional basin to be constructed.

Local topography and catchments are presented in Figure 5 with additional details provided in Appendix A.



Figure 5 – Catchment plan

2.5. SOILS

Soil testing undertaken in conjunction with the contamination investigation indicated that subsoils typically consist of silty and sandy clays. It is noted that contaminated soils have been removed at the time of writing this report.

Due to the high level of importation of clean fill (following previous removal of contaminated material), conservative soil properties have been assumed in the erosion risk assessment.

3 EROSION RISK ASSESSMENT

An erosion risk assessment has been conducted using the Revised Universal Soil Loss Equation (RUSLE). The calculated soil loss is then used to determine the level of sediment control required, as well as stabilisation and staging requirements.

$$A = K \times R \times LS \times P \times C \quad \text{Equation 1 (IECA 2008)}$$

Where:

- A is the predicted soil loss per hectare per year
- K is the soil erodibility factor
- R is the rainfall erosivity factor
- LS is the slope length/gradient factor
- P is the erosion control practice factor
- C is the ground cover and management factor

3.1. K-FACTOR – SOILS

A K factor of 0.053 has been adopted based on soil descriptions provided in Section 2.5 and Table E4 of IECA (2008). An additional 20% has been allowed for potential dispersive soils.

3.2. R- FACTOR – RAINFALL

An annual erosivity factor of 3705 has been adopted for Brisbane based on Table E1 of IECA (2008).

3.3. LS - SLOPE-LENGTH

Ls factors vary on each works area, however are high due to grades exceeding 20% in the majority of locations. Ls factors for each works area are provided in Table 1.

3.4. COVER (C) AND PRACTICE (P) FACTORS

Default factors of 1 and 1.3 have been adopted for across the site, in accordance with IECA 2008.

3.5. ESTIMATED SOIL LOSS

A summary of the RUSLE calculations is included as Table 1.

Due to the estimated soil loss and requirements of the BCC City plan (refer to Section 4), the use of Type 1 sediment controls have been specified for Catchment 1, with the smaller catchments to focus on rapid works and stabilisation.

Table 1 – Summary of RUSLE Assessment

CATCH ID	AREA (HA)	R	K	SLOPE LENGTH (m)	SLOPE (%)	LS	P	C	A (t/ha/yr)	CONTROL
1	6.15	3705	0.053	50	21	6.59	1.3	1.00	1,682	TYPE 1
2	2.47	3705	0.053	23	23	7.6	1.3	1.00	1,940	TYPE 1
3	1.66	3705	0.053	55	20	5.88	1.3	1.00	1,501	TYPE 1
4	0.54	3705	0.053	80	20	0.41	1.3	1.00	105	TYPE 2
5	6.28	3705	0.053	50	20	5.12	1.3	1.00	1,307	TYPE 1

4 SEDIMENT CONTROL

In accordance with IECA (2018) the calculated soil loss and associated erosion risk determine the minimum sediment control required during the project. Catchments 1 requires Type 1 sediment controls (sediment basin). The sediment basin has been sized to include Catchment 2, which does not form part of the works but cannot be practically diverted around the site. Due to the small nature of works with Catchment 4, it is recommended that works occur rapidly and erosion control (stabilisation) be the focus due to impracticalities with constructing an additional sediment basin. It is also not possible to construct a sediment basin in Catchment 3, which contains an active drainage path that cannot be diverted.

It should be noted that the BCC City Plan indicates that the sediment control practices are to be in accordance with Table 4.5.2 of IECA (2008). For Brisbane this represents the following:

- + Low – August & September
- + Medium – March to May & October
- + High – November to April

For areas greater than 2,500m², where practical Type 1 controls will be required during all months except August & September.

Due to IECA and BCC requirements, Type 1 controls have been nominated for Catchment 1. Type 1 sediment controls have been designed to achieve 80% hydrologic efficiency (HE) in accordance with the State Planning Policy (DILGP, 2017). A range of approaches are considered acceptable to achieve compliance with the 80% HE objective:

- + High Efficiency Sediment (HES) Basins in accordance with IECA (2018)
- + Large Traditional Sediment Basins (in accordance with Table 2 of HLW,2018)
 - + These basins are much larger than traditional Type D basins required under the previous State Planning Policy and IECA (2008)
- + Total Capture – hold all water on site
- + Alternative Innovative Measures
- + Erosion Control

Due to the nature of works, the majority of runoff will directed to the already constructed Type B sediment basin (SB1). An additional sediment basin will be installed for treatment of catchment 5 runoff (SB2). Additional details are provided in Appendix A.

4.1. SEDIMENT BASIN OPERATION

4.1.1. AUTOMATED DOSING SYSTEM

The majority of site runoff will be treated with Type B basins, through the use of automated coagulant/flocculant dosing. Due to the size of the site, it is recommended a flow-activated doser be installed.

4.1.2. COAGULANT/FLOCCULENT

Due to time constraints no jar tests have been undertaken to determine the optimum coagulant or flocculant for site soils. The sediment basin sizing has been undertaken based on a settlement rate of 150mm in 15 minutes for the Type B sizing. Assessment on the ability to achieve this settlement rate through jar tests is required to ensure the basins do not need to increase in size as this is a fast settlement rate to reduce basin volume requirements. Jar tests are to be undertaken with the Floc Report provided in Appendix B and are to be completed prior to basin construction.

4.1.3. DEWATERING

A Type B basin is to be dewatered prior to rainfall, however can remain full during periods of dry weather. On longer duration projects it is acceptable to not dewater Type B basins as confidence is gained in performance with the displacement of the clean standing water by inflow during events. Due to the relatively short timeframe of the project, it is recommended that the Type B basin be dewatered to 0.2m from the floor of the basin prior to rainfall, in particular in the wet season.

4.1.4. PERFORMANCE ASSESSMENT

A Performance review of the sediment is to be undertaken following rainfall in accordance with Figure 6 and Appendix C. Water quality discharge criteria for sediment basins is as follows:

- + Suspended solids - <50 mg/L for rainfall events up to the sediment basin design rainfall event
- + Turbidity – project specific correlation between turbidity and TSS to be established (use 50 NTU at start of project if no correlation)
- + pH – 6.5 to 8.5

5 DRAINAGE CONTROL

Drainage control considers three main principles; diverting external flow before it enters site, directing site runoff to an appropriate sediment control, and ensuring runoff is conveyed in a non-erosive manner.

Drainage details are provided in Appendix A on the Erosion and Sediment Control Drawings. All drains are to be sized to cater for a 1 in 2 year ARI due to the proposed construction timeframe.

6 EROSION CONTROL

Erosion management techniques for various erosion risk ratings in accordance with IECA (2008) guidelines are presented in Table 2.

It should be noted that the BCC City Plan indicates that the erosion control practices are to be in accordance with Table 4.4.1 & 4.4.4 of IECA (2008). For Brisbane this represents the following:

- + Low – August & September
- + Medium – March to May & October
- + High – November to April

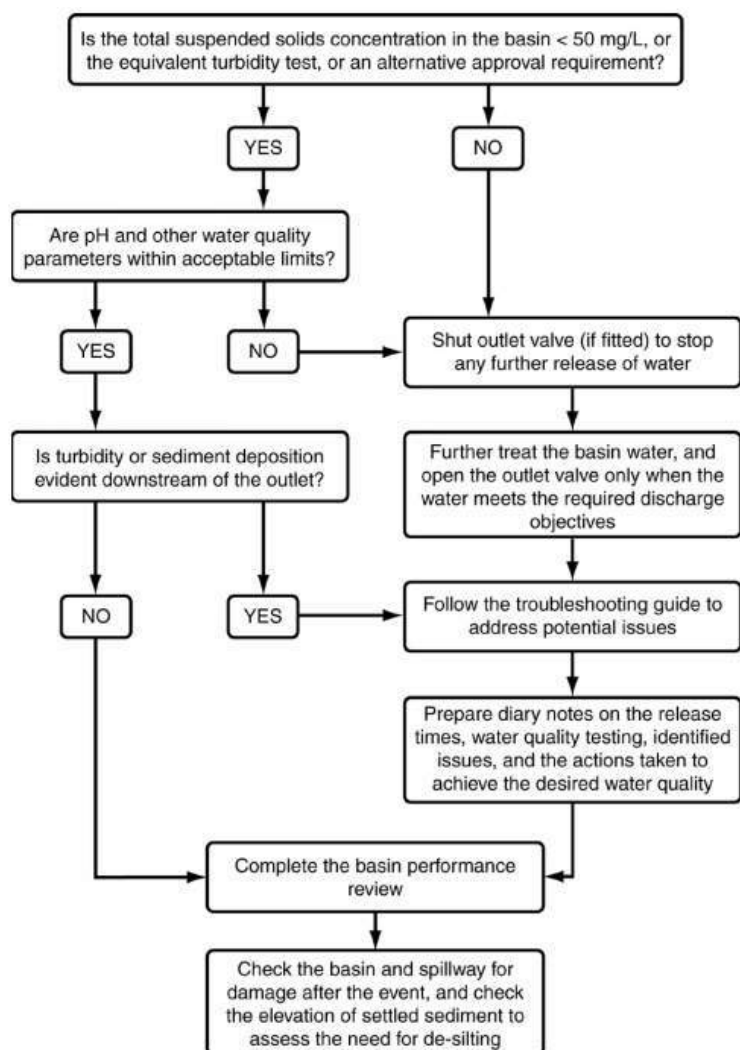


Figure 6 – Basin performance assessment process (Source: IECA 2016)

Table 2 - Erosion Risk Rating Based on Soil Loss and Required Management (adapted from Table 4.4.7 of IECA, 2008)

EROSION RISK RATING	SOIL LOSS RATE (T/HA/YEAR)	ADVANCE LAND CLEARING ALLOWED (WKS WORK)	MAX DAYS TO STABILISATION	STAGED CONSTRUCTION AND STABILISATION OF EARTH BATTERS >6H:1V	STOCKPILES STABILISED
Very Low	0 to 150	8	30 (60%)		
Low	150 to 225	8	30 (70%)		
Moderate	225 to 500	6	20 (70%)	✓	
High	500 to 1500	4	10 (75%)	✓	✓
Extreme	> 1500	2	5 (80%)	✓	✓

The following erosion control measures should be implemented progressively or as a minimum prior to decommissioning of sediment basins:

For the larger works area, in accordance with the Job Specification, works are to be mulched or hydromulched where 80% grass strike can be achieved with 2 weeks.

7 STOCKPILE MANAGEMENT

Stockpiles of clean fill on site are to be managed in accordance with IECA (2008). Management will include diversion of any upslope runoff and a sediment fence or bund placed on the downslope side. Where stockpiles are to remain untouched for greater than 30 days, they should also be stabilised.

8 ROLES AND RESPONSIBILITIES

Responsibilities of project personnel in respect to ESC are outlined below:

ROLE	RESPONSIBILITY
Project Manager	+ Overall responsibility of ESC implementation + Notify the Administrator of any non-compliance with ESCP + Ensure the prompt implementation of measures to mitigate erosion and sediment generation + Notify ESC Consultant when controls implemented per plan to inspect site and provide inspection certificate + Notify ESC Consultant prior to decommissioning of basins (conversion to bio basins) to confirm adequate upslope catchment stabilisation achieved
Site Supervisor/Foremen	+ Undertake inspection of all control measures, discharge points and boundary of works per inspection requirements + Monitor daily rainfall + Notify Environmental Advisor/Consultant when runoff generating rainfall occurs in the previous 24 hours + Maintain current records of rainfall, storage volumes, water quality, treatment practices, discharge volumes (as appropriate) + Installation and maintenance of ESC
Project Team	+ Provide design information as required + Conduct in-situ monitoring (as required) + Collect and submit samples to laboratory (as required) + Collate results and prepare reports (as required) + Conduct site inspections and audits (as required) + Inspect ESC installation and maintenance + Inspect offsite impacts and management + Provide advice regarding ESC site improvement (as required)
All Personnel	+ Report any damage to ESC devices and any potential or actual environmental harm in line with Duty to Notify under the requirements of the Environmental Protection Act 1994

9 SITE INSPECTION AND MONITORING

Site inspections and monitoring is to be undertaken in accordance with Sections 6.17 and 7.4 of the Best Practice Erosion and Sediment Control Document (IECA, 2008) as detailed below.

ESCPs should be considered live documents that in some instances will require review and updating as site conditions change, or if the adopted measures fail to achieve the required treatment standard.

When a site inspection detects a notable failure in the adopted ESC measures, the source of this failure must be reported, investigated and appropriate amendments made to the site and the ESCP.

Best practice site management requires all ESC measures to be inspected at the following frequencies and include the following checks as a minimum:

Daily site inspections (during rainfall)

- + All drainage, erosion and sediment control measures
- + Occurrences of excessive sediment deposition (whether on-site or off-site)
- + All site discharge points (including dewatering activities as appropriate)

Weekly site inspections (even if work is not occurring on-site)

- + All drainage, erosion and sediment control measures
- + Occurrences of excessive sediment deposition (whether on-site or off-site)
- + Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements
- + Litter and waste receptors
- + Oil, fuel and chemical storage facilities

Prior to anticipated runoff producing rainfall (within 24 hours of expected rainfall)

- + All drainage, erosion and sediment control measures
- + All temporary flow diversion and drainage works

Following runoff producing rainfall (within 18 hours of rainfall event)

- + All drainage, erosion and sediment control measures
- + Occurrences of excessive sediment deposition (whether on-site or off-site)
- + Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements



APPENDIX A

EROSION AND SEDIMENT CONTROL DRAWINGS





EROSION AND SEDIMENT CONTROL DRAWINGS

OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1



- SITE LOCATION

DRAWING LIST:

D00 - COVER SHEET
D01 - CATCHMENT PLAN - EXISTING LEVELS
D02 - CATCHMENT PLAN - PROPOSED LEVELS
D03 - CLEARING CONTROLS
D04 - EARTHWORKS CONTROLS
D04-3 - STAGE 2 FILL DRAINAGE AND STABILISATION
D05 - FINAL LEVELS AND STABILISATION
D06 - CALCULATIONS
D07 - SEDIMENT BASIN DETAIL
D08 - STANDARD DRAWINGS
D09 - ADDITIONAL SEDIMENT BASIN

REFER TO REPORT (REFERENCE: R1551) FOR ADDITIONAL DETAILS RELATING TO GUIDELINES USED, PROJECT AND SITE DESCRIPTION, CLIMATE, TOPOGRAPHY, SOILS, EROSION RISK ASSESSMENT, EROSION, SEDIMENT AND DRAINAGE CONTROL SPECIFICATIONS, SEDIMENT BASIN OPERATION, ROLES AND RESPONSIBILITIES AND SITE INSPECTION AND MONITORING.



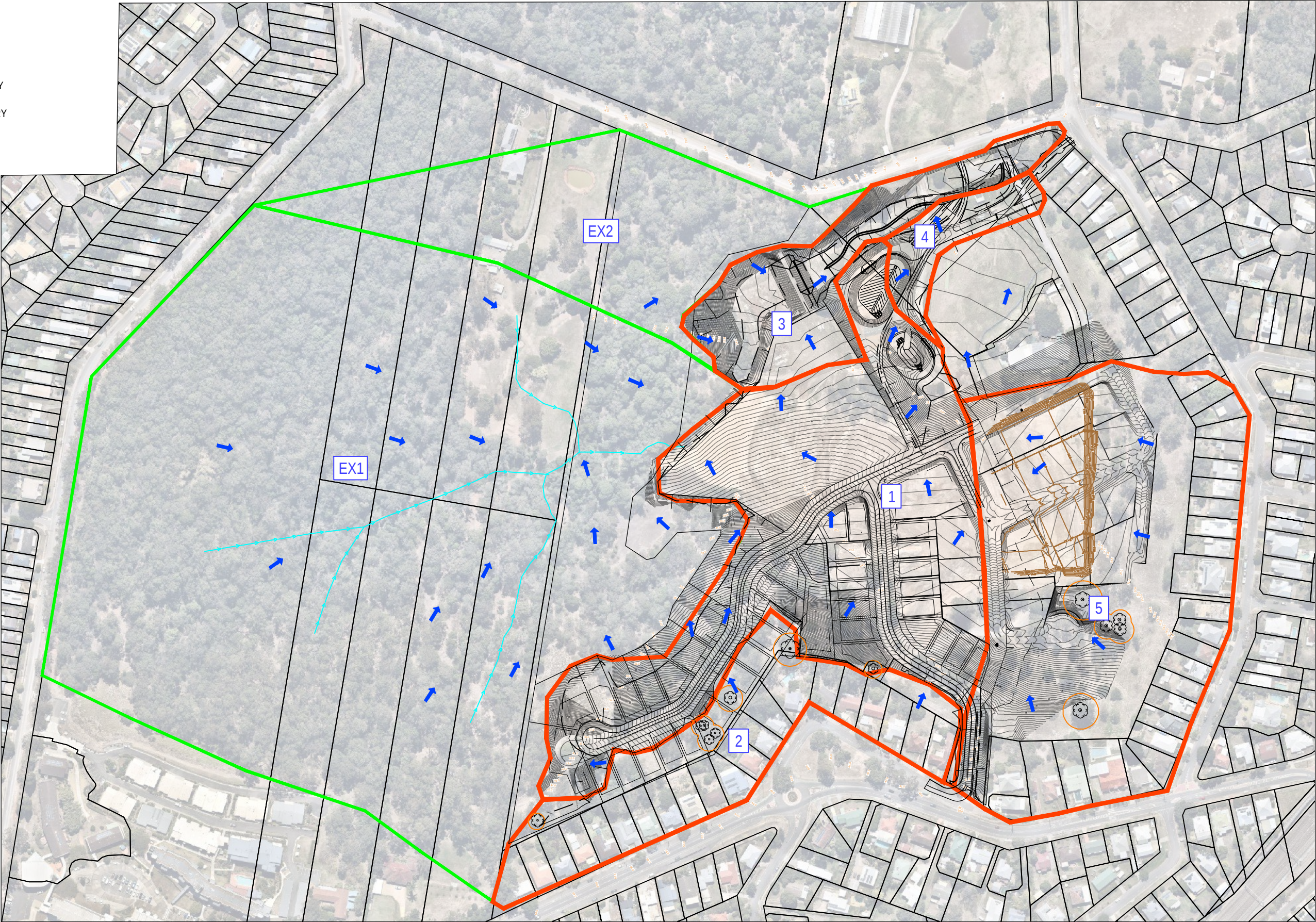
D	STAGE 2 FILL REVISION	KR	09/06/21		A3		COPYRIGHT © TOPO GROUP PTY LTD THIS DOCUMENT MAY NOT BE COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS IN PART OR IN WHOLE WITHOUT THE WRITTEN CONSENT OF TOPO GROUP PTY LTD.	CLIENT SHADFORTH			PROJECT OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1					
C	ADDITIONAL SEDIMENT BASIN	KR	30/03/21					DRAWN RK DESIGNED KR DATE 02/12/20			DRAWING TITLE EROSION AND SEDIMENT CONTROL PLANS COVER SHEET					
B	STAGE 2 FILL INCLUDED	KR	03/03/21					RPEQ / SIGNATURE (IF REQUIRED) CPESC - 5395, RPEQ 15954			PROJECT No 20-0061-1			DRAWING No D00		REVISION D
A	ORIGINAL ISSUE	KR	02/12/20								PROJECT No 20-0061-1			DRAWING No D00		REVISION D
REVISION	DESCRIPTION	APPROVED BY	DATE													

LEGEND

- EXISTING CONTOURS (1.0 m)
- PROPOSED CONTOURS (0.2m)
- INTERNAL CATCHMENT BOUNDARY
- EXTERNAL CATCGMENT BOUNDARY
- 1 CATCHMENT LABEL
- INDICATIVE FLOW DIRECTION
- CADASTRAL BOUNDARY
- DRAINAGE PATH

CATCHMENT SUMMARY
EXISTING LEVELS

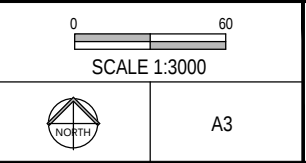
Catchment	Area (Ha)
1	6.15
2	2.47
3	1.66
4	0.54
EX1	18.1
EX2	3.31
5	6.28



CATCHMENT PLAN - REINSTATED LEVELS



C	STAGE 2 FILL REVISION	KR	09/06/21
B	ADDITIONAL SEDIMENT BASIN	KR	30/03/21
A	ORIGINAL ISSUE	KR	02/12/20
REVISION	DESCRIPTION	APPROVED BY	DATE



COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR
TRANSMITTED IN ANY FORM OR BY ANY
MEANS IN PART OR IN WHOLE WITHOUT
THE WRITTEN CONSENT OF TOPO GROUP
PTY LTD.

CLIENT	SHADFORTH
DRAWN	RK
DESIGNED	KR
DATE	02/12/20
RPEQ / SIGNATURE (IF REQUIRED)	
CPESC - 5395, RPEQ 15954	

PROJECT	OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1
DRAWING TITLE	EROSION AND SEDIMENT CONTROL PLANS CATCHMENT PLAN - PROPOSED LEVELS
PROJECT No	20-0061-1
DRAWING No	D02
REVISION	C

- LEGEND**
- EXISTING CONTOURS (1.0 m)
 - FUTURE BASIN
 - PROPOSED CONTOURS (0.2m)
 - CLEAN WATER DIVERSION
 - DIRTY WATER DIVERSION
 - INDICATIVE FLOW DIRECTION
 - CONTOUR BERM
 - STABILISED ENTRY /EXIT
 - LARGE BUND
 - STABILISED AREA
 - DRAINAGE PATH
 - SEDIMENT BASIN ADDITIONAL
 - SEDIMENT BASIN EXISTING

WORKS IN DRAINAGE PATH MAY EXPERIENCE LARGE INFLOWS DUE TO UPSTREAM CATCHMENT. WORKS MUST BE UNDERTAKEN PROGRESSIVELY AND STAGED. UNDERTAKE WORKS ON ONE SIDE AT A TIME AND INSTALL STABILISED LOW FLOW CHANNEL TO DIRECT EXTERNAL CATCHMENT PAST ACTIVE WORKS. ENSURE EROSION CONTROL RESOURCES ARE AVAILABLE ON SITE.

INSTALL STABILISED ENTRY/EXIT IN ACCORDANCE WITH IECA (2008). LOCATION TO BE CONFIRMED ON SITE.

EXISTING TYPE B SEDIMENT BASIN TO BE MAINTAINED.

EXISTING TYPE B (HES) BASIN. APPROXIMATE VOLUME 1,500m.

INSTALL ADDITIONAL TYPE B SEDIMENT BASIN. BASIN TO ACHIEVE 2,500m AT SPILLWAY. REFER D09 FOR BASIN DETAIL.

WHERE PRACTICAL USE EXISTING VEGETATED DRAINAGE PATHS FOR CLEAN WATER DIVERSION. REFER D06 FOR LINING REQUIREMENTS.

FORM BUND ALONG EDGE OF WORKS TO ENSURE NO EXTERNAL RUNOFF CAN ENTER WORKS AND TO DIRECT SITE RUNOFF TO SEDIMENT BASIN.

INSTALL BUND ON DOWNSLOPE SIDE OF WORKS TO DIRECT ALL RUNOFF TO SEDIMENT BASIN.

DIRECT RUNOFF AROUND CHILDCARE CENTRE TO SB2.

REFER TO D04-3 FOR DRAINAGE DETAIL.

DURING CLEAR AND GRUB, USE EXISTING DRAINAGE PATH TO DIRECT RUNOFF TO SEDIMENT BASIN. STABILISE SWALE WITH GEOTEXTILE OR SOIL BINDER.

PRIOR TO RAINFALL, INSTALL CONTOUR BERMS EVERY 15m.

NOT PRACTICAL TO DIVERT EXTERNAL CATCHMENT AROUND DISTURBED AREAS. ADDITIONAL SEDIMENT BASIN REQUIRED.

DUE TO EXTENT AND HEIGHT OF FILL REQUIRED TO FORM ROAD, IT IS NOT ENVISAGED THAT A CLEAN WATER DIVERSION UNDER PROPOSED ROAD IS PRACTICAL. EXTERNAL RUNOFF (CATCHMENT 2) HAS BEEN INCLUDED IN BASIN SIZING.

KEEP ROAD CLEAN AT ALL TIMES.

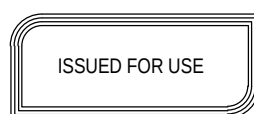
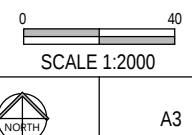
CLEAN WATER NOTE:
SHOWN CLEAN WATER DIVERSIONS ARE TO BE INSTALLED AS A PRIORITY.

USE OF DIVERSION DRAINS VS DIVERSION BERMS TO BE DETERMINED ON SITE BASED ON SITE LEVELS/SOILS IN ACCORDANCE WITH TYPICAL DETAILS PROVIDED IN D06.

DRAWING D03 REPRESENTS THE INITIAL STAGING OF WORKS AFTER REINSTATEMENT. SITE RUNOFF IS NOW TO BE DIRECTED TO THE SEDIMENT BASIN.



C	STAGE 2 FILL REVISION	KR	09/06/21
B	ADDITIONAL SEDIMENT BASIN	KR	30/03/21
A	ORIGINAL ISSUE	KR	02/12/20
REVISION	DESCRIPTION	APPROVED BY	DATE

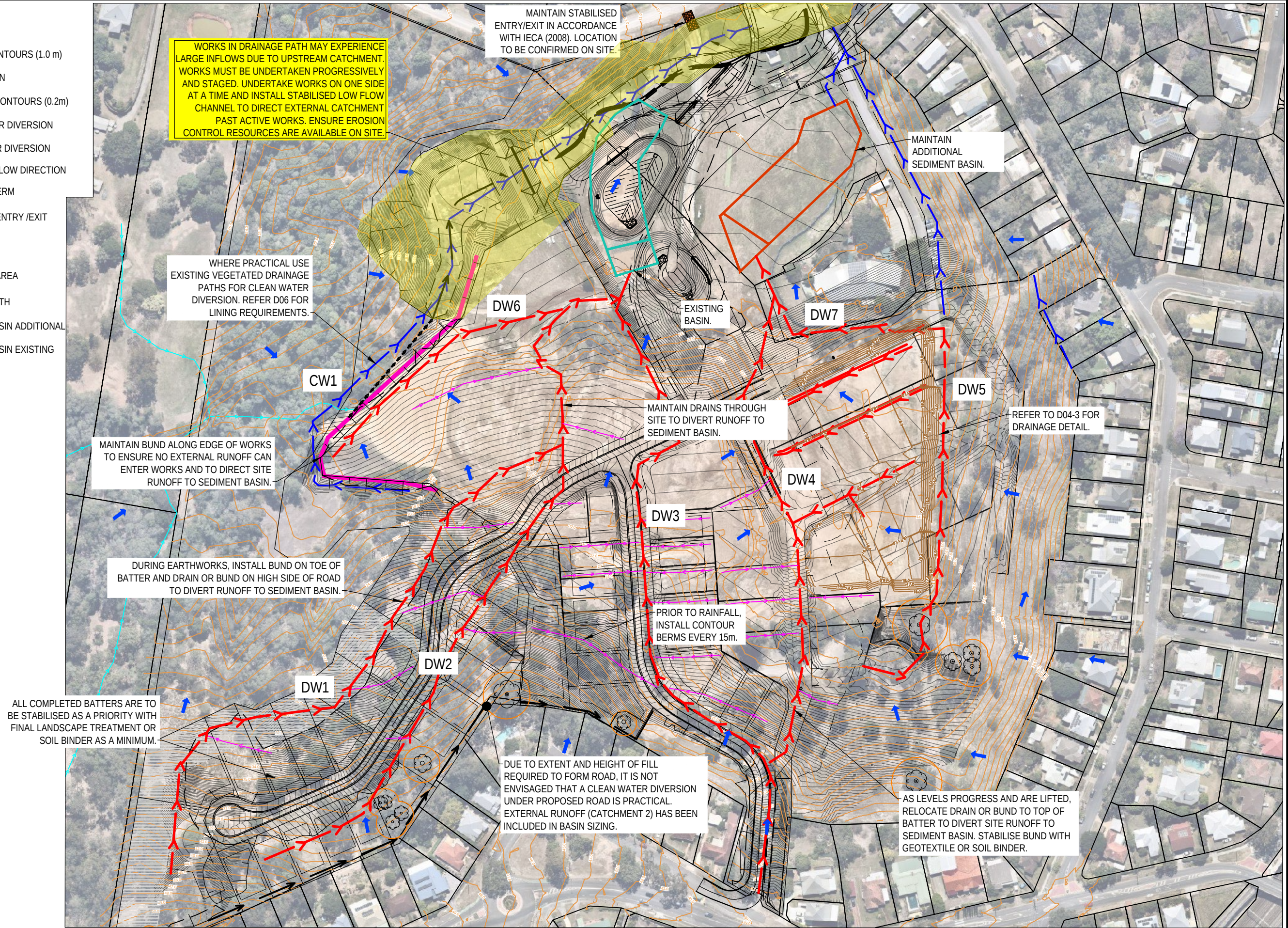


COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS IN PART OR IN WHOLE WITHOUT THE WRITTEN CONSENT OF TOPO GROUP PTY LTD.

CLIENT	SHADFORTH
DRAWN	RK
DESIGNED	KR
DATE	02/12/20
RPEQ / SIGNATURE (IF REQUIRED)	
CPESC - 5395, RPEQ 15954	

PROJECT	OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1
DRAWING TITLE	EROSION AND SEDIMENT CONTROL PLANS CLEARING CONTROLS
PROJECT No	20-0061-1
DRAWING No	D03
REVISION	C

- LEGEND**
- EXISTING CONTOURS (1.0 m)
 - FUTURE BASIN
 - PROPOSED CONTOURS (0.2m)
 - CLEAN WATER DIVERSION
 - DIRTY WATER DIVERSION
 - INDICATIVE FLOW DIRECTION
 - CONTOUR BERM
 - STABILISED ENTRY /EXIT
 - LARGE BUND
 - STABILISED AREA
 - DRAINAGE PATH
 - SEDIMENT BASIN ADDITIONAL
 - SEDIMENT BASIN EXISTING



C	STAGE 2 FILL REVISION	KR	09/06/21
B	ADDITIONAL SEDIMENT BASIN	KR	30/03/21
A	ORIGINAL ISSUE	KR	15/05/20
REVISION	DESCRIPTION	APPROVED BY	DATE

0 40
SCALE 1:2000



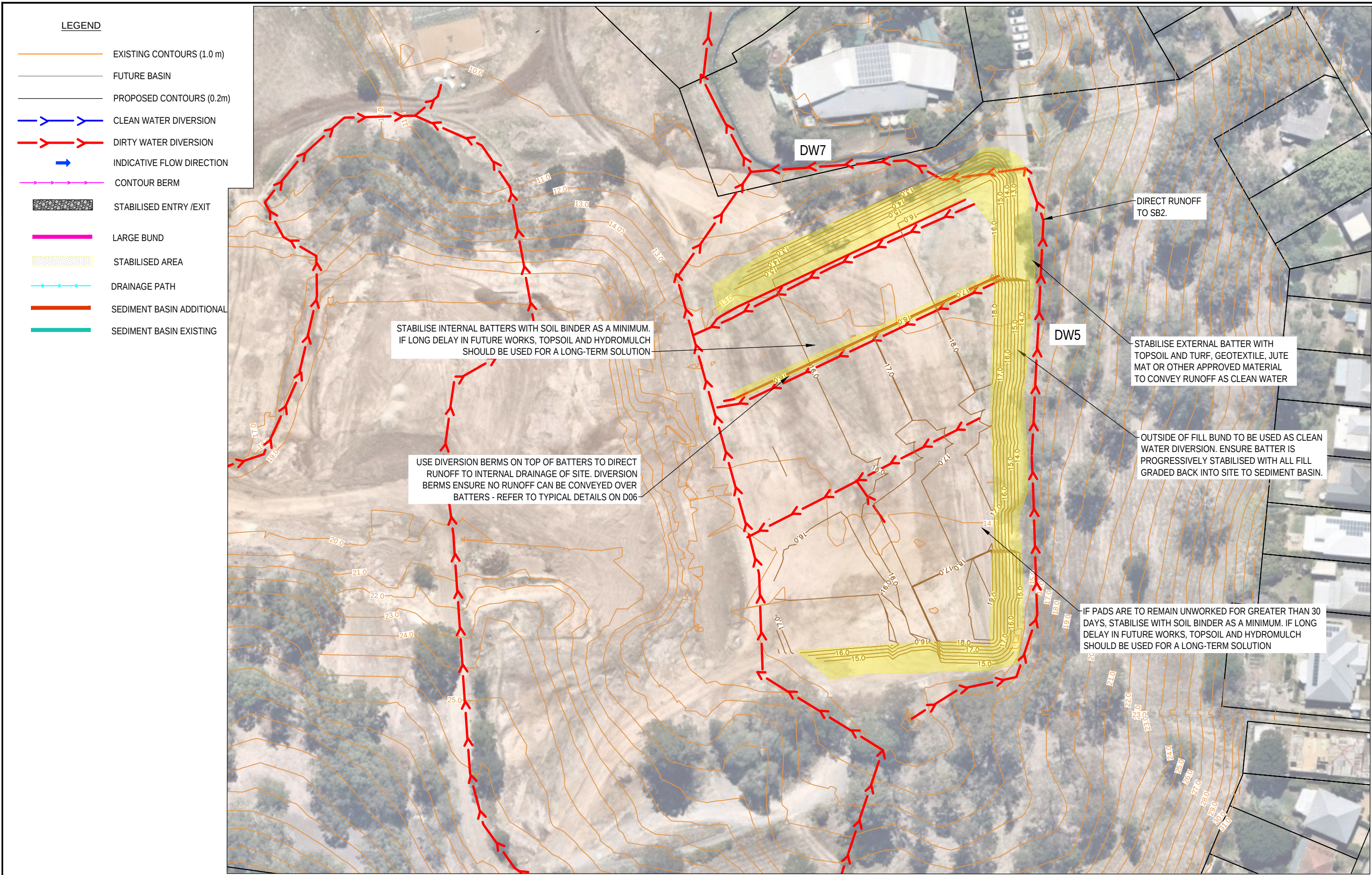
A3

ISSUED FOR USE

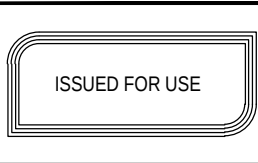
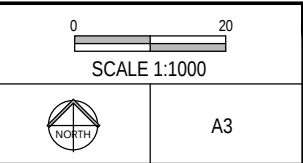
COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR
TRANSMITTED IN ANY FORM OR BY ANY
MEANS IN PART OR IN WHOLE WITHOUT
THE WRITTEN CONSENT OF TOPO GROUP
PTY LTD.

CLIENT SHADFORTH		
DRAWN RK	DESIGNED KR	DATE 02/12/20
RPEQ / SIGNATURE (IF REQUIRED)		
CPESC - 5395, RPEQ 15954		

PROJECT OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1		
DRAWING TITLE EROSION AND SEDIMENT CONTROL PLANS BULK EARTHWORKS		
PROJECT No 20-0061-1	DRAWING No D04	REVISION C



D	STAGE LAYOUT REVISED	KR	08/06/21
C	ADDITIONAL SEDIMENT BASIN	KR	30/03/21
B	REVISED FILL DESIGN	KR	09/03/21
A	ORIGINAL ISSUE	KR	03/03/21
REVISION	DESCRIPTION	APPROVED BY	DATE



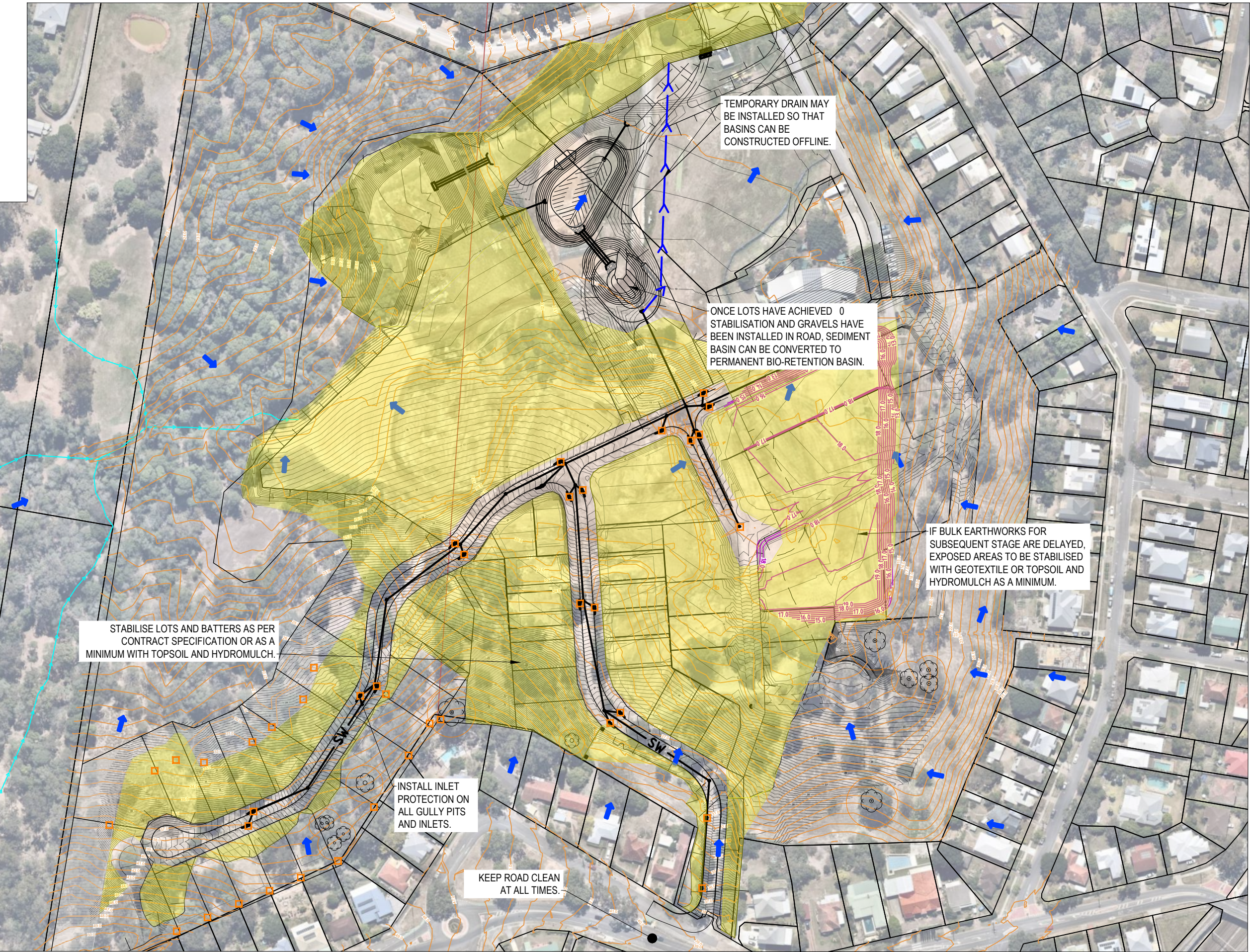
COPYRIGHT ©
TOPO GROUP PTY LTD

THIS DOCUMENT MAY NOT BE COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS IN PART OR IN WHOLE WITHOUT THE WRITTEN CONSENT OF TOPO GROUP PTY LTD.

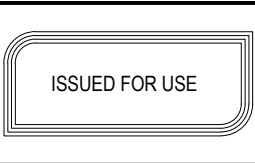
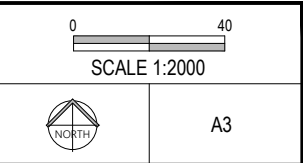
SHADFORTH		
DRAWN KR	DESIGNED KR	DATE 03/03/21
RPEQ / SIGNATURE (IF REQUIRED)		
CPESC - 5395, RPEQ 15954		

PROJECT OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 2		
DRAWING TITLE EROSION AND SEDIMENT CONTROL PLANS STAGE 2 FILL DRAINAGE AND STABILISATION		
PROJECT No 20-0061-1	DRAWING No D04 - 3	REVISION D

- LEGEND
- EXISTING CONTOURS (1.0 m)
 - FUTURE BASIN
 - PROPOSED CONTOURS (0.2m)
 - CLEAN WATER DIVERSION
 - DIRTY WATER DIVERSION
 - INDICATIVE FLOW DIRECTION
 - CONTOUR BERM
 - STABILISED ENTRY /EXIT
 - LARGE BUND
 - STABILISED AREA
 - DRAINAGE PATH
 - SEDIMENT BASIN
 - INLET PROTECTION



B	ADDITIONAL SEDIMENT BASIN	KR	30/03/21
A	ORIGINAL ISSUE	KR	02/12/20
REVISION	DESCRIPTION	APPROVED BY	DATE



COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR
TRANSMITTED IN ANY FORM OR BY ANY
MEANS IN PART OR IN WHOLE WITHOUT
THE WRITTEN CONSENT OF TOPO GROUP
PTY LTD.

CLIENT	SHADFORTH
DRAWN	RK
DESIGNED	KR
DATE	02/12/20
RPEQ / SIGNATURE (IF REQUIRED)	
CPESC - 5395, RPEQ 15954	

PROJECT	OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1
DRAWING TITLE	EROSION AND SEDIMENT CONTROL PLANS FINAL LEVELS AND STABILISATION
PROJECT No	20-0061-1
DRAWING No	D05
REVISION	B

SEDIMENT BASIN CALCULATIONS

														SEDIMENT STORAGE					APPROX. DIMENSIONS				
BASIN ID	CATCH AREA (HA)	BATTERS (1 IN X)	L:W RATIO	SETTLING DEPTH D _s (m)	C _t	TIME OF CONC (MINS)	I ₁ (mm/hr)	0.5Q ₁ (m ³ /s)	JAR TEST SETTLE AFTER 15 MINUTES (mm)	FLOC SETTLE DEPTH D _f (m)	MINIMUM A _s (m ²)	ACTUAL V _s (m ³)	SCOUR CHECK	SED STORAGE OPTION?	RUSLE SOIL LOSS (t/ha/yr)	CLEAN OUT FREQUENCY (MONTHS)	MIN SED. STORAGE VOLUME (m ³)	APPROX. REQ SED STORAGE DEPTH (m)	APPROX. LENGTH AT SPILLWAY (m)	APPROX. WIDTH AT SPILLWAY (m)	APPROX. DEPTH AT SPILLWAY (m)	SETTLING VOLUME (m ³)	TOTAL VOLUME AT SPILLWAY (m ³)
SB1	8.62	2	3	0.80	0.64	15	76	0.584	150	0.60	3503	2803	NOT OK	RUSLE	500	2	575	0.2	107.3	35.8	1.0	2803	3377
SB1 without catch 2	6.15	2	3	0.80	0.64	15	76	0.415	150	0.60	2493	1994	NOT OK	RUSLE	500	2	410	0.2	91.3	30.4	1.0	1994	2404
SB2	6.28	2	3	0.80	0.64	15	76	0.424	150	0.60	2545	2036	NOT OK	RUSLE	500	2	419	0.2	92.2	30.7	1.0	2036	2455

- NOTES:
- SEDIMENT BASIN IS SIZED BASED ON A SETTLEMENT RATE OF 150mm IN 15MINS. SITE EXPERIENCE WITH EXISTING BASIN SB1 HAS CONFIRMED THIS IS APPROPRIATE
 - DUE TO VELOCITY AT OUTLET EXCEEDING DESIGN SCOUR VELOCITY OF 1.5cm/s IT IS RECOMMENDED THAT MONITORING OCCUR AND A PERMEABLE BAFFLE BE INSTALLED A THIRD OF THE WAY DOWN THE BASIN

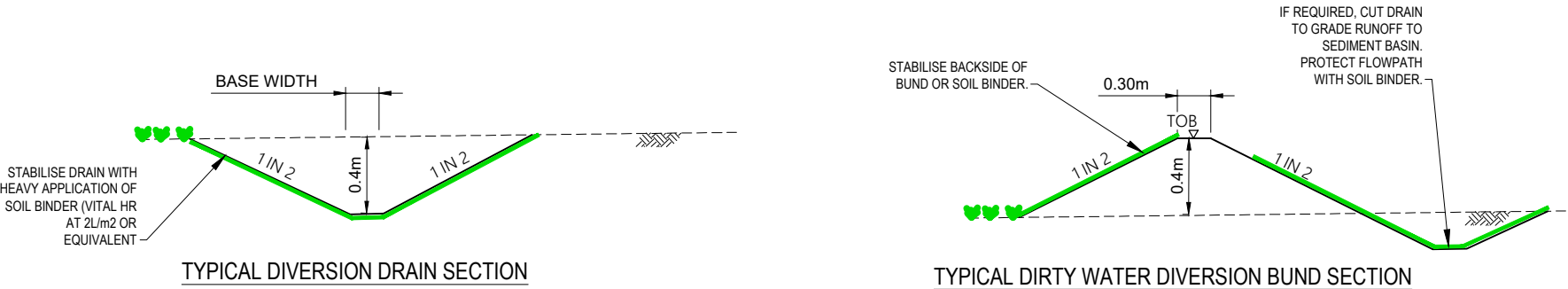
SEDIMENT BASIN SPILLWAY CALCULATIONS

						WEIR							CHUTE						DISSIPATER			
BASIN ID	CATCH AREA (HA)	ARI	C _{ARI}	TIME OF CONC (MINS)	I _{ARI}	FLOW - Q (m ³ /s)	BASE WIDTH	SIDE SLOPE 1 (1 in x)	U/S WATER LEVEL (m)	FREEBOAR D (m)	MIN. HEIGHT SPILLWAY TO TOB (m)	TOP WIDTH (m)	LONG. SLOPE (m/m)	ROCK SIZE - D ₅₀ (mm)	MANNING ROUGH COEFF	DESIGN VEL (m/s)	DEPTH OF FLOW (m)	DEPTH WITH F/BOARD (m)	MEAN ROCK SIZE D ₅₀ (mm)	WIDTH 1 (m)	WIDTH 2 (m)	LENGTH (m)
SB1	8.62	20	0.735	10	184	3.24	25	2	0.18	0.3	0.48	26.91	0.5	132	0.115	1.31	0.10	0.40	100	27.2	27.2	1.3
SB2	6.28	20	0.735	10	184	2.36	15	2	0.20	0.3	0.50	17.01	0.5	150	0.117	1.38	0.11	0.41	100	17.2	17.5	2.1

DRAIN AND BERM CALCULATIONS

DRAIN ID	CATCH AREA (HA)	ARI	C _{ARI}	TIME OF CONC (MINS)	I _{ARI}	FLOW - Q (m ³ /s)	LONG. SLOPE (m/m)	BASE WIDTH	SIDE SLOPE 1 (1 in x)	SIDE SLOPE 2 (1 in x)	LINING	MANNING ROUGH COEFF	MAX PERM VEL (m/s)	DESIGN VEL (m/s)	DEPTH OF FLOW (m)	DEPTH WITH F/BOARD (m)	DRAIN TOP WIDTH (m)	OK / NOT OK
DW1	1.4	2	0.565	25	73	0.16	0.03	0.6	4	4	Vital HR - 2L/m2	0.02	2.5	1.51	0.10	0.25	2.63	OK
DW2	1.6	2	0.565	10	112	0.28	0.05	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	2.38	0.14	0.29	1.74	OK
DW3	2.2	2	0.565	10	112	0.39	0.05	1	2	2	Vital HR - 2L/m2	0.02	2.5	2.43	0.13	0.28	2.11	OK
DW4	1.9	2	0.565	10	112	0.33	0.05	0.6	2	2	Vital HR - 2L/m2	0.02	2.5	2.50	0.15	0.30	1.80	OK
DW5	4	2	0.565	10	112	0.70	0.01	0.5	2	2	Vital HR - 2L/m2	0.02	2.5	1.71	0.34	0.49	2.48	OK
DW6	4	2	0.565	10	112	0.70	0.02	0.5	2	2	Vital HR - 2L/m2	0.02	2.5	2.22	0.29	0.44	2.27	OK
BERM MAXIMUM	1.5	2	0.565	10	112	0.26	0.01	0	2	5	Vital HR - 2L/m2	0.02	2.5	1.21	0.25	0.40	2.80	OK
BERM MAXIMUM	3.5	2	0.565	10	112	0.62	0.01	0	2	5	Vital HR - 2L/m2	0.02	2.5	1.50	0.34	0.49	3.45	OK
CW1	18	2	0.565	10	112	3.16	0.01	3	2	2	Vital HR - 2L/m2	0.02	2.5	2.25	0.38	0.53	5.10	OK
DW7	5	2	0.565	10	112	0.88	0.01	1	2	2	Vital HR - 2L/m2	0.02	2.5	1.76	0.31	0.46	2.83	OK

- NOTES:
- DRAIN CW1 WILL BE MOSTLY COMPRISED OF AN EXISTING VEGETATED DRAINAGE PATH. WHERE VEGETATION REMOVAL IS REQUIRED FOR WORK ON UPSLOPE SECTION OF DRAIN, LINE BATTER WITH BLACK PLASTIC TO PREVENT SCOUR.



B	ADDITIONAL SEDIMENT BASIN	KR	30/03/21
A	ORIGINAL ISSUE	KR	02/12/20
REVISION	DESCRIPTION	APPROVED BY	DATE

A3



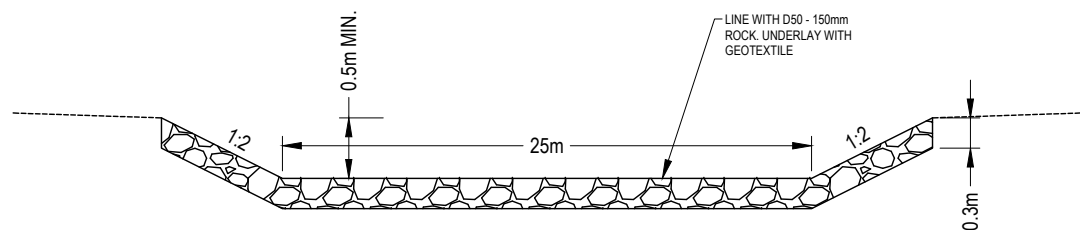
COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS IN PART OR IN WHOLE WITHOUT THE WRITTEN CONSENT OF TOPO GROUP PTY LTD.

CLIENT SHADFORTH		
DRAWN RK	DESIGNED KR	DATE 02/12/20
RPEQ / SIGNATURE (IF REQUIRED) CPESC - 5395, RPEQ 15954		

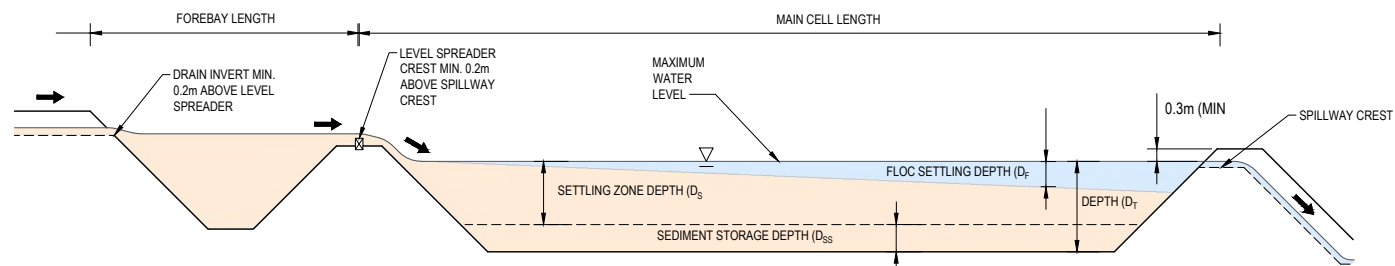
PROJECT OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1		
DRAWING TITLE EROSION AND SEDIMENT CONTROL PLANS CALCULATIONS		
PROJECT No 20-0061-1	DRAWING No D06	REVISION B



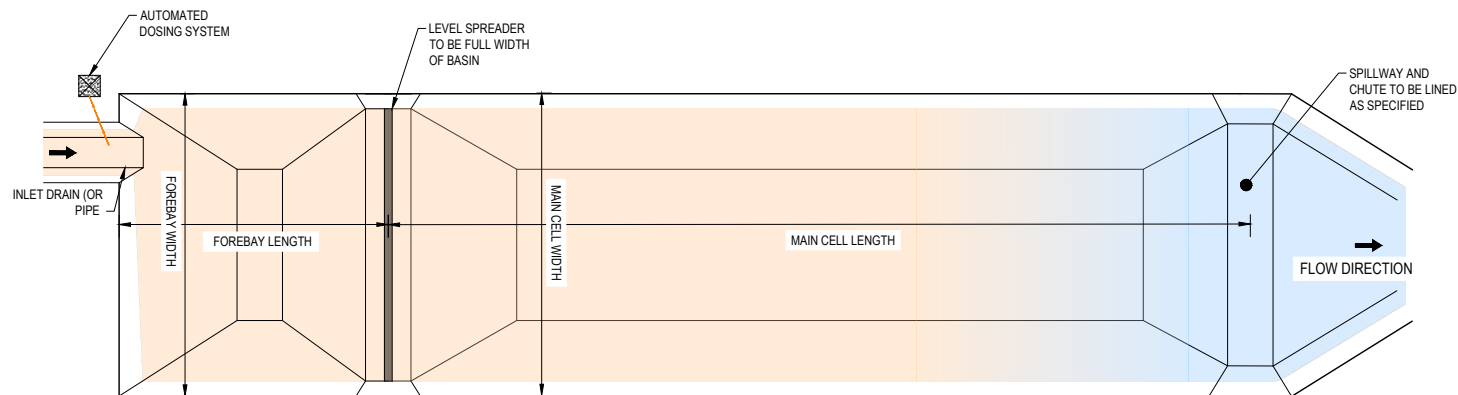
RAINFALL ACTIVATED DOSING SYSTEM DETAIL



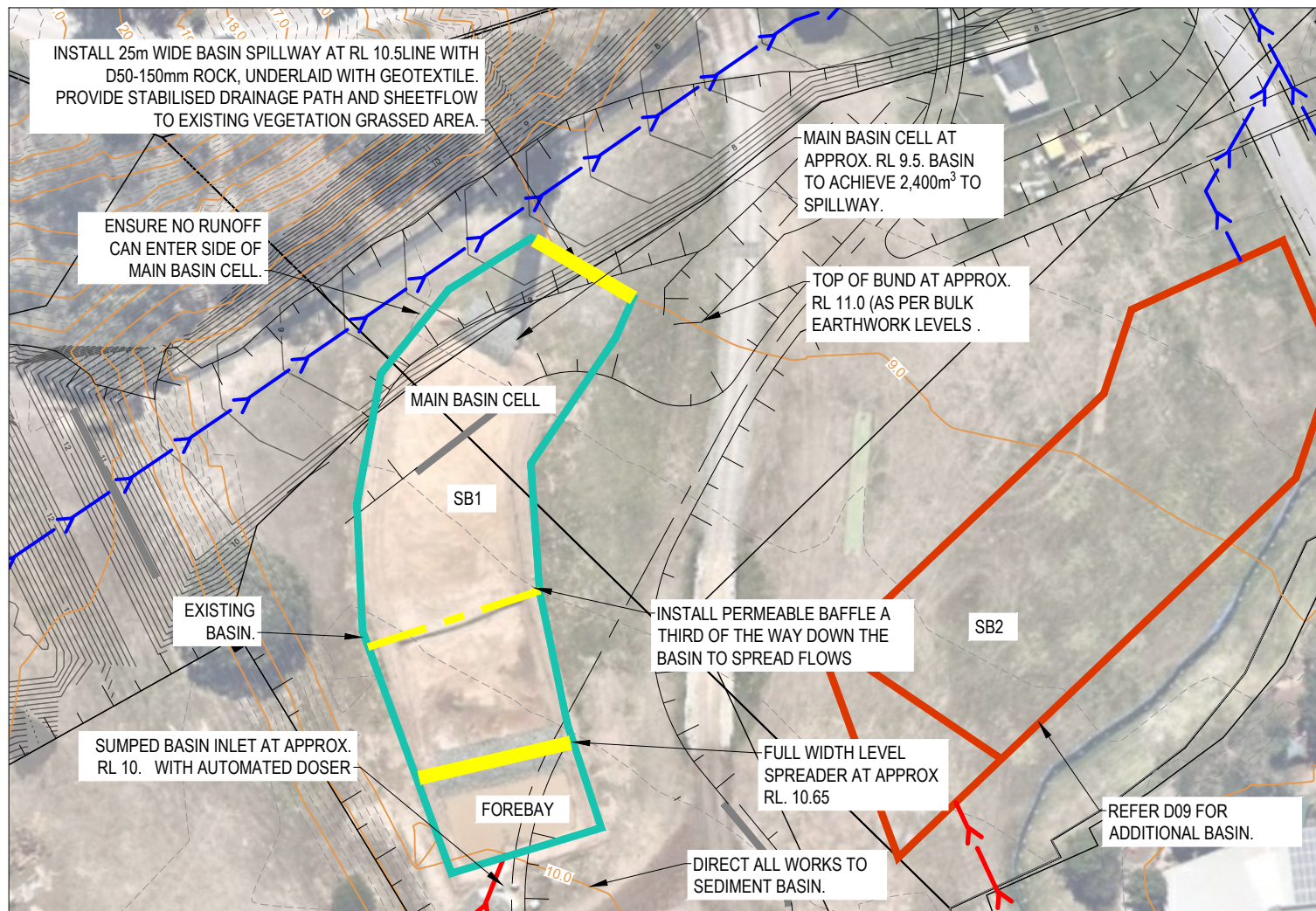
SPILLWAY TYPICAL SECTION



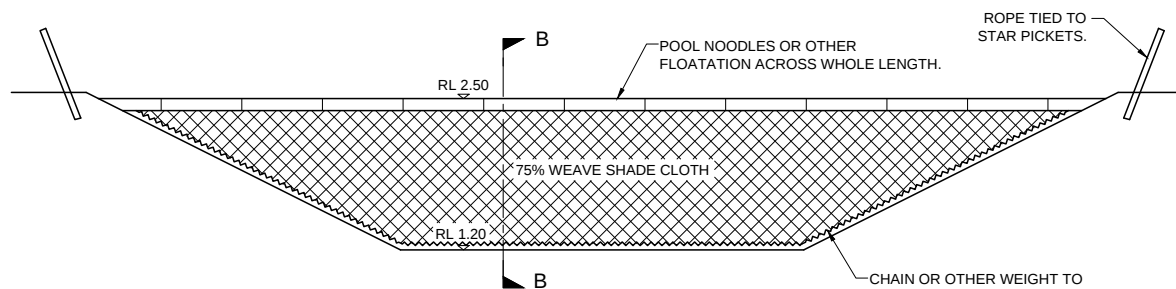
TYPE B SEDIMENT BASIN TYPICAL SECTION (s



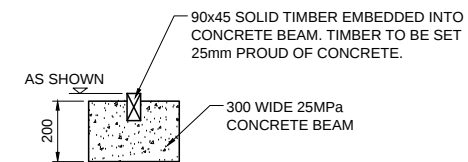
TYPE B SEDIMENT BASIN PLAN VIEW (s



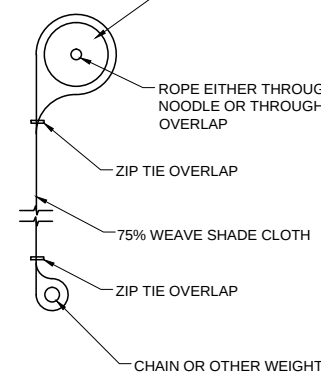
BASIN LAYOUT AND DETAILS - SB1



PERMEABLE BAFFLE SECTION



LEVEL SPREADER DETAIL SECTION



PERMEABLE BAFFLE SECTION B



REVISION	DESCRIPTION	APPROVED BY	DATE
B	ADDITIONAL SEDIMENT BASIN	KR	30/03/21
A	ORIGINAL ISSUE	KR	02/12/20

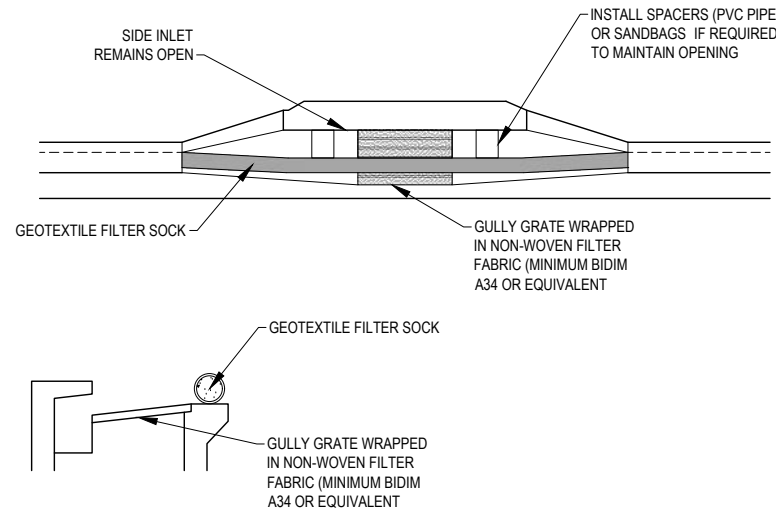
A3

ISSUED FOR USE

COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS IN PART OR IN WHOLE WITHOUT THE WRITTEN CONSENT OF TOPO GROUP PTY LTD.

CLIENT	SHADFORTH
DRAWN	RK
DESIGNED	KR
DATE	02/12/20
RPEQ / SIGNATURE (IF REQUIRED)	
CPESC - 5395, RPEQ 15954	

PROJECT	OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1
DRAWING TITLE	EROSION AND SEDIMENT CONTROL PLANS SEDIMENT BASIN DETAILS
PROJECT No	20-0061-1
DRAWING No	D0
REVISION	B



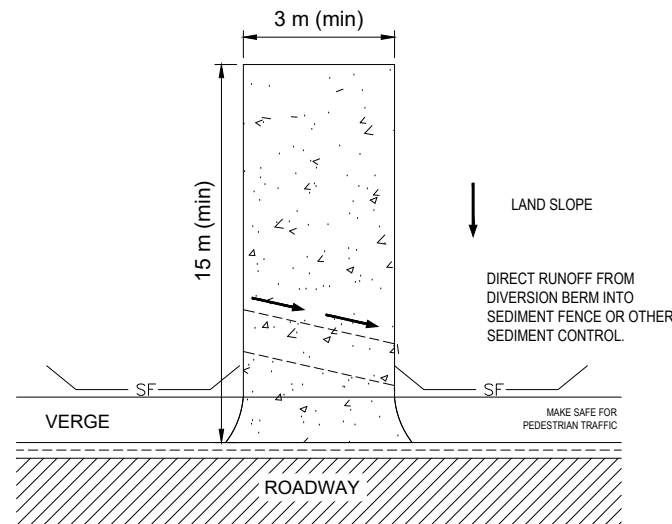
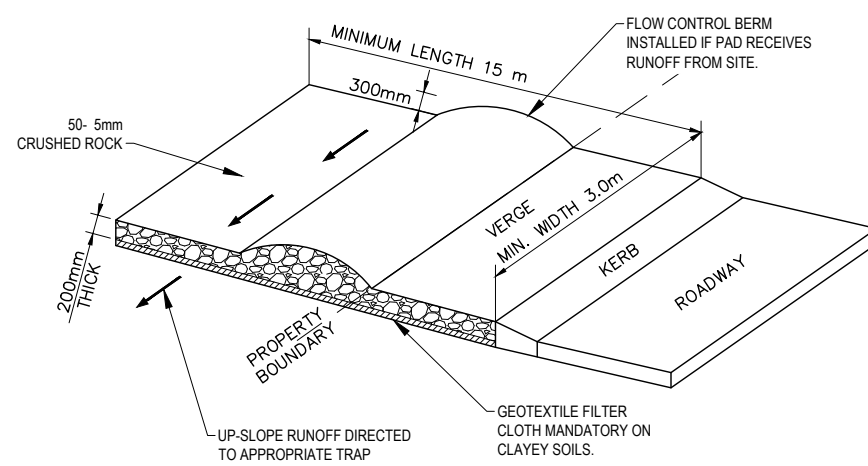
SAG INLET SEDIMENT TRAP

MAINTENANCE:

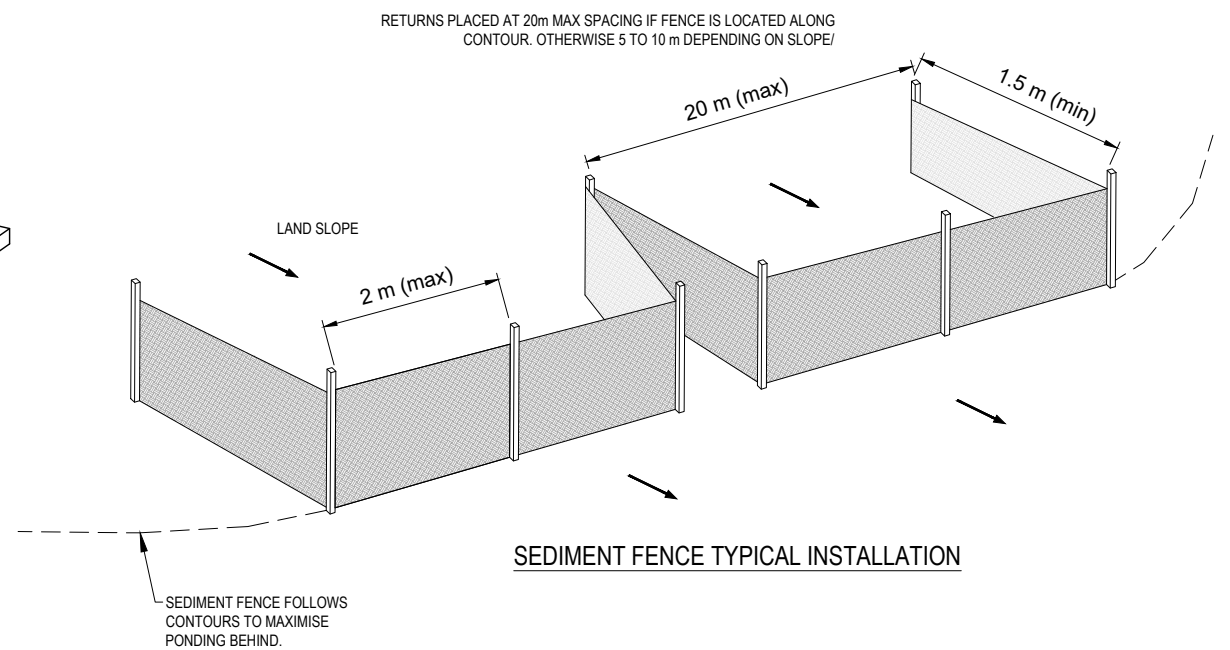
- INSPECT ALL SEDIMENT TRAPS DAILY AND IMMEDIATELY AFTER RUNOFF-PRODUCING RAINFALL. MAKE REPAIRS AS NEEDED.
- REMOVE COLLECTED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER THAT WILL NOT CAUSE AN EROSION OR POLLUTION HAZARD.
- ENSURE SEDIMENT DOES NOT ENTER STORMWATER DRAIN DURING DE-SILTING OPERATIONS AND MAINTENANCE OF THE TRAP.
- SEDIMENT ON THE ROAD SHALL BE REMOVED IMMEDIATELY IF IT REPRESENTS A SAFETY HAZARD.

REMOVAL:

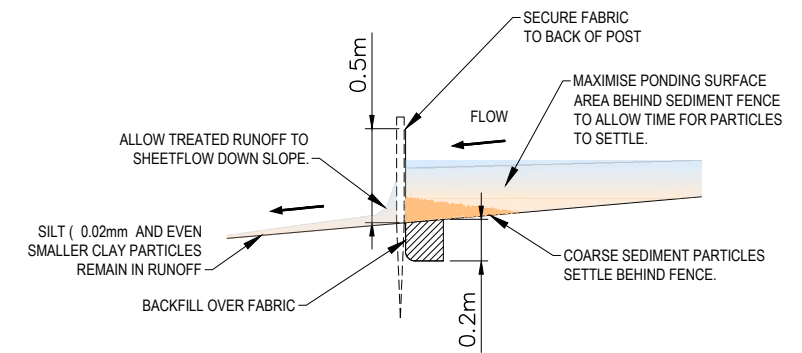
- WHEN THE UP-SLOPE DRAINAGE AREA HAS BEEN STABILISED, REMOVE ALL MATERIALS INCLUDING DEPOSITED SEDIMENT AND DISPOSE OF IN A SUITABLE MANNER.



STABILISED ENTRY / EXIT



SEDIMENT FENCE TYPICAL INSTALLATION



ANCHORING OF SEDIMENT FENCE

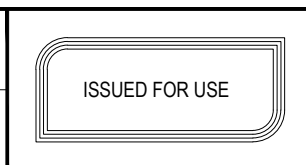
NOTES:

- ONLY SUITABLE FOR SHEET FLOW. SEDIMENT FENCE TO BE INSTALLED ALONG A LINE OF CONSTANT GROUND EXCAVATION WHERE PRACTICAL.
- IF CONCENTRATED FLOW EXISTS, INSTALL U-SHAPED SEDIMENT TRAP INSTEAD.
- BOTH ENDS OF THE SEDIMENT FENCE TO EXTEND UP THE SLOPE AT LEAST 1.5 m.
- MINIMUM 4 STAPES OR TIE WIRES PER STAKE



A	ORIGINAL ISSUE	KR	02/12/20
REVISION	DESCRIPTION	APPROVED BY	DATE

	A3



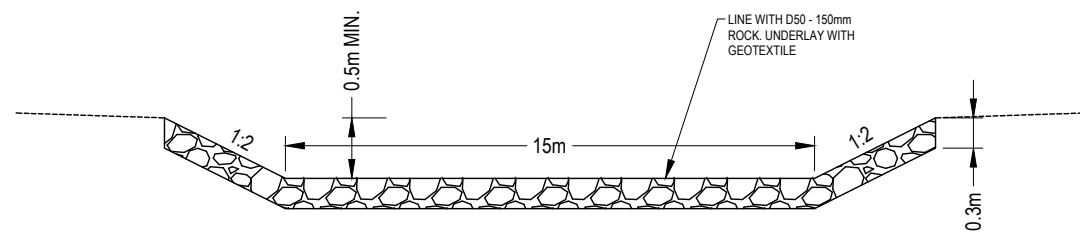
COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS IN PART OR IN WHOLE WITHOUT THE WRITTEN CONSENT OF TOPO GROUP PTY LTD.

CLIENT	SHADFORTH
DRAWN	RK
DESIGNED	KR
DATE	02/12/20
RPEQ / SIGNATURE (IF REQUIRED)	
CPESC - 5395, RPEQ 15954	

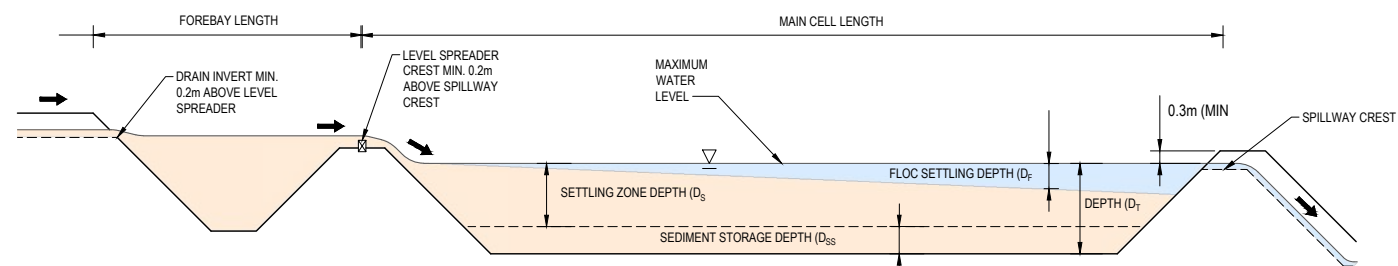
PROJECT	OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1
DRAWING TITLE	EROSION AND SEDIMENT CONTROL PLANS STANDARD DRAWINGS
PROJECT No	20-0061-1
DRAWING No	D0
REVISION	A



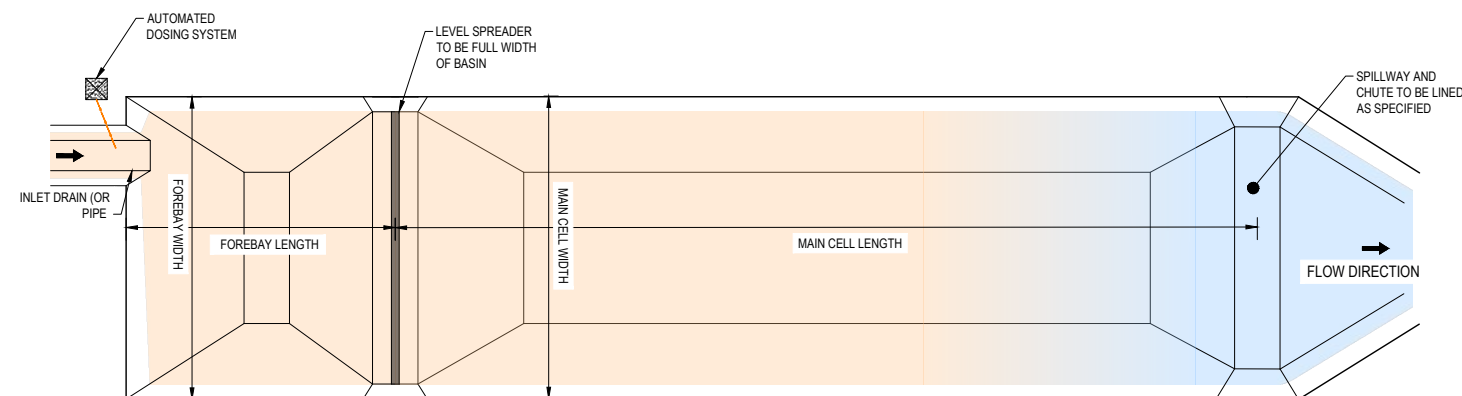
RAINFALL ACTIVATED DOSING SYSTEM DETAIL



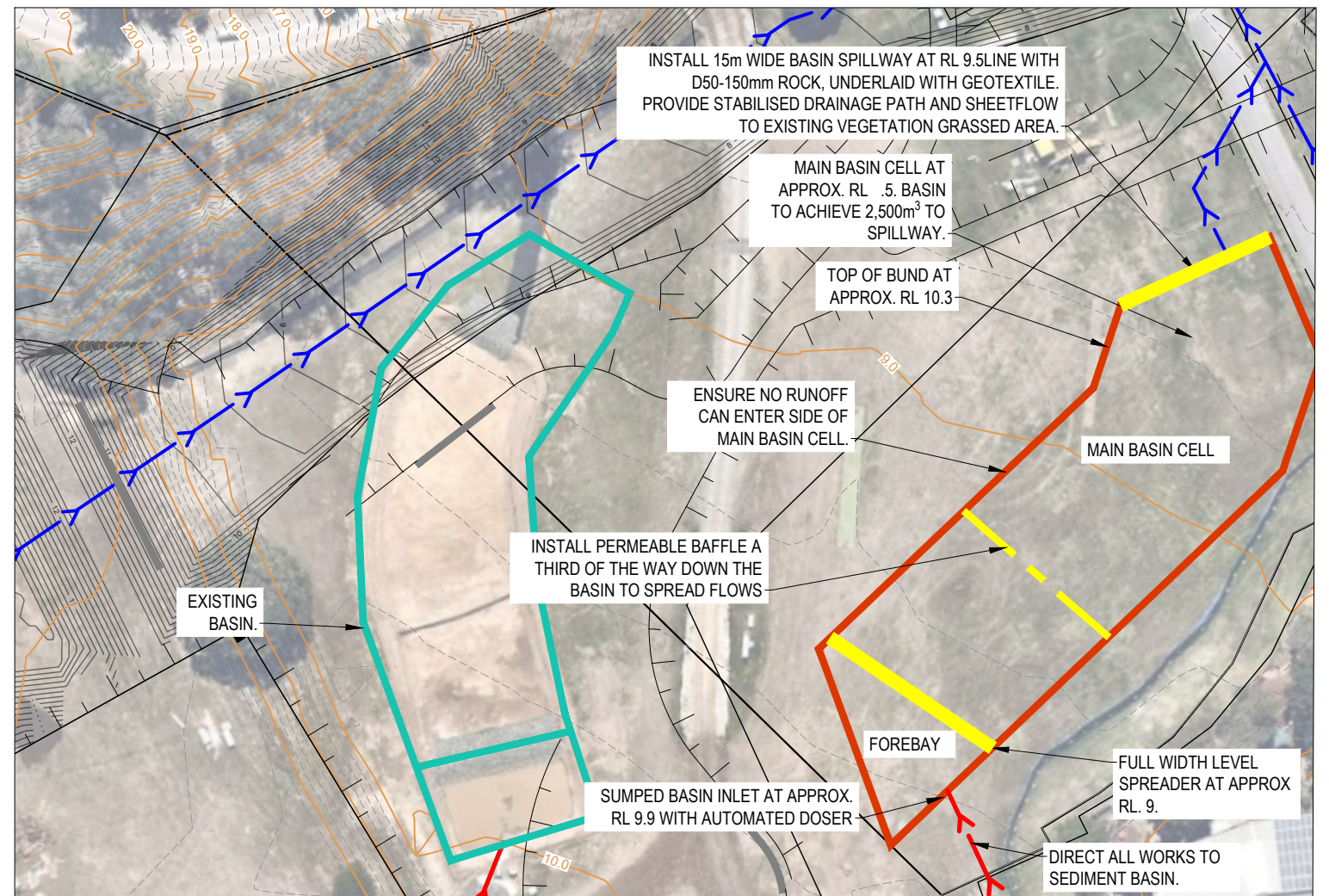
SPILLWAY TYPICAL SECTION



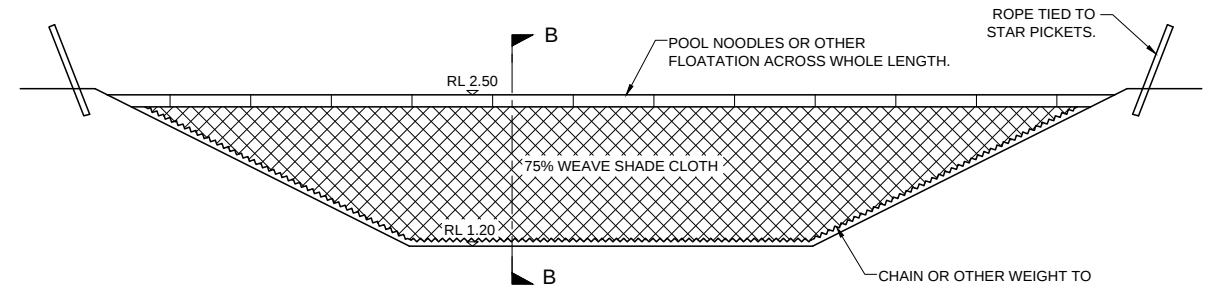
TYPE B SEDIMENT BASIN TYPICAL SECTION (s



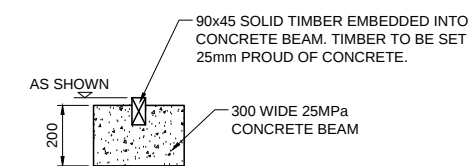
TYPE B SEDIMENT BASIN PLAN VIEW (s



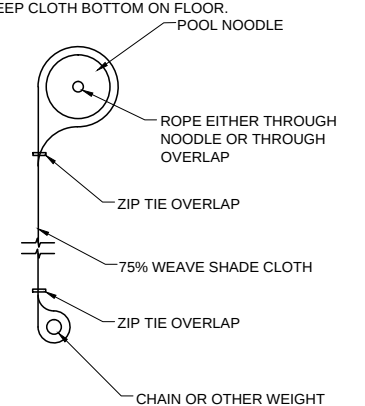
BASIN LAYOUT AND DETAILS - SB2



PERMEABLE BAFFLE SECTION



LEVEL SPREADER DETAIL SECTION

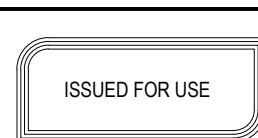


PERMEABLE BAFFLE SECTION B



A	ORIGINAL ISSUE	KR	30/03/21
REVISION	DESCRIPTION	APPROVED BY	DATE

	A3



COPYRIGHT ©
TOPO GROUP PTY LTD
THIS DOCUMENT MAY NOT BE COPIED OR
TRANSMITTED IN ANY FORM OR BY ANY
MEANS IN PART OR IN WHOLE WITHOUT
THE WRITTEN CONSENT OF TOPO GROUP
PTY LTD.

CLIENT	SHADFORTH
DRAWN	RK
DESIGNED	KR
DATE	02/12/20
RPEQ / SIGNATURE (IF REQUIRED)	
CPESC - 5395, RPEQ 15954	

PROJECT	OXLEY SECONDARY COLLEGE REDEVELOPMENT STAGE 1
DRAWING TITLE	EROSION AND SEDIMENT CONTROL PLANS ADDITIONAL SEDIMENT BASIN DETAILS
PROJECT No	20-0061-1
DRAWING No	D09
REVISION	A



APPENDIX B

FLOC REPORT (TO BE PREPARED)



Floc Performance Report

BASIN IDENTIFICATION CODE/NUMBER:

SITE / PROJECT:

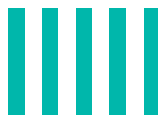
PREPARED BY: DATE:

Chemical name:		Soil description:				
Dose rate:	0.00 Control					
Starting pH						
Starting turbidity						
Clarity ^[1] after 5 mins (mm)						
Clarity ^[1] after 15 mins (mm)						
Clarity ^[1] after 30 mins (mm)						
Clarity ^[1] after 60 mins (mm)						
Final pH						
Final turbidity						

Chemical name:		Soil description:				
Dose rate:	0.00 Control					
Starting pH						
Starting turbidity						
Clarity ^[1] after 5 mins (mm)						
Clarity ^[1] after 15 mins (mm)						
Clarity ^[1] after 30 mins (mm)						
Clarity ^[1] after 60 mins (mm)						
Final pH						
Final turbidity						

Note:

[1] For the purposes of a floc report, 'clarity' is defined as a level of turbidity that is likely to meet discharge requirements at a depth from the water level surface in the beaker. Clarity can be estimated visually or with the use of a turbidity meter.





APPENDIX C

BASIN PERFORMANCE REPORT



BASIN PERFORMANCE REPORT

Site / basin identification: _____

Inspector: _____

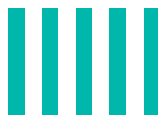
Date / time: _____

Recent rainfall: _____

Water quality in basin: NTU: _____ pH: _____

Water level in basin: _____

Issue Item		Potential Issue / Action Required (Y/N)	Comments/Action Undertaken
Inflow channel	Channel/pipe overtopped		
	Scour in channel		
	Chemical not mixing with inflow runoff		
	Catchment bypassing channel		
	Lateral inflow to main basin cell		
	Other		
Chemical & dosing	Chemical not working		
	No dosing		
	Incorrect dose rate		
	Other		
Fore bay	Sediment re-suspension		
	Other		
Level spreader	Concentrated flow over level spreader		
	Scour on backside of level spreader		
	Other		



Issue Item		Potential Issue / Action Required (Y/N)	Comments/Action Undertaken
Settling pond	Flow short circuiting in main basin		
	Erosion on side of basin batters		
	Other		
In-line baffles	Flow concentrating to one side of baffle		
	Flow conveyed over the top of the baffle		
	Flow restricted through baffle too much		
	Flow passes through baffle too quickly		
	Other		
Decant system	Decant sinks below surface		
	Decant raised above water level		
	Decant dropped on one side		
	Decant blocked		
	Decants concentrating flow in basin		
	Other		
Emergency spillway	Concentrated flow on spillway		
	Spillway too low		
	Spillway too high		
	Other		
Other General Comments			





APPENDIX D

BCC DESIGN CERTIFICATE





Erosion & Sediment Control Design Certification: March 2015

What is an erosion and sediment control (ESC) design certificate?

An erosion and sediment control design certificate is required as evidence that a suitably qualified professional has reviewed the erosion and sediment control program and plans for a project and can verify that the plans meet current industry best practice techniques and will effectively mitigate sediment migration from the project site.

When is an ESC design certificate required?

For any project assessed as having a 'medium' or 'high' risk according to the Erosion Hazard Assessment form, an ESC design certificate is required to be completed and lodged with Brisbane City Council (BCC) at least 10 days prior to the prestart meeting or commencement of site works.

Privacy Statement

The personal information collected on this form will be used by Brisbane City Council for the purposes of fulfilling your request and undertaking associated Council functions and services. Your personal information will not be disclosed to any third party without your consent, unless this is required or permitted by law.

Design Certification Details

1 Site Information

Application number (if known)

Site address

OXLEY SCHOOL - STAGE 1 & 2 fill

Postcode 4075

2 Erosion Hazard Assessment Risk

'Medium'

☐

Ensure that the certification in Section 3 is made by either a CPESC **OR** a RPEQ

'High'

☒

- Ensure that the certification in Section 3 is made by both a CPESC **AND** a RPEQ, and;
- Complete the ESC inspection certificate (CC11073)

3 Certification

CPESC RPEQ

I/We certify that (Tick)

☒☒

I am a person with suitable qualifications (RPEQ/CPESC) and have experience in erosion and sediment control and I assume responsibility for the detail of this plan.

☒☒

This Erosion and Sediment Control plan and program meets current industry best practice requirements and effectively mitigates the potential for soil erosion and sediment pollution to the environment.

☒☒

I acknowledge and accept that the BCC, as assessment manager, relies, in good faith, on this certification as part of its development assessment process and the provision of false or misleading information to the BCC constitutes an offence for which BCC may take punitive steps / action / enforcement action against me.

4 Certifier's Details

CPESC details:

Certified by Print name

KYLE ROBSON

RPEQ / CPESC number

5395

Phone number

0416785023

Email

kyle@topo.com.au

Address

7/16 INNOVATION PARKWAY

BIRTINYA

Postcode

Certifier's signature

Date

08 / 06 / 2021

RPEQ details:

Certified by Print name

KYLE ROBSON

RPEQ / CPESC number

15954

Phone number

0416785023

Email

kyle@topo.com.au

Address

7/16 INNOVATION PARKWAY

BIRTINYA

Postcode 4575

Certifier's signature

Date

08 / 06 / 2021