MATAKANUI

GOLD LIMITED

Erosion and Sediment Control Management Plan

Date: 9 October 2025

DOCUMENT CONTROL

Revision	Authors	Organisation	Date	Approved
0	E. Torvelainen	Engineering Geology Ltd	22 July 2025	
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2	E. Torvelainen	Engineering Geology Ltd	9 October 2025	M. Mitchell
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1. INTRODUCTION

1.1. Purpose

This Erosion and Sediment Control Management Plan (ESCMP) sets out the following for the Bendigo-Ophir Gold Project (BOGP) site:

- Required site erosion sediment control management structure, practices and procedures.
- Required weather monitoring.
- Required erosion and sediment controls design standards.
- Required site-specific ESCPs.
- Required erosion and sediment control monitoring and review.
- Required reporting.
- Required record keeping.

1.2. Key Environmental Factor/s

Protection of the environment from erosion and sediment generating activities on the BOGP site.

1.3. Condition Requirements

- Erosion and Sediment Controls shall be sized, constructed, operated, maintained, monitored, reviewed, and reported on in accordance with the requirements of the conditions and this approved BOGP Erosion and Sediment Control Management Plan.
- Updates to the approved BOGP Erosion and Sediment Control Management Plan are to be per any consent conditions.
- Site-specific Erosion and Sediment Control Plans (ESCP) are required for each main operational area of the site. The ESCPs shall be certified in writing by a suitably qualified experienced practitioner (SQEP).
- The SQEP shall be approved by the Otago Regional Council.
- The ESCPs shall not be of a standard less than that required by the latest approved version of the ESCMP.
- Records of certified ESCP's shall be held by Matakanui Gold Limited (MGL) and be available for the Otago Regional Council to inspect and audit that controls specified are in place onsite and are adequate.

- ESC monitoring results and compliance with the resource consent conditions shall be reported on in the site environmental reports to the Otago Regional Council annually.

1.4. Responsibilities

The responsibility for Erosion and Sediment Control (ESC) to mitigate the effects on watercourses is the responsibility of MGL.

Key roles and responsibilities required of individuals for the management of erosion and sediment control effects on the BOGP are summarised in Table 1.

Table 1. Key roles and responsibilities

Role	Responsibilities
General Manager	• Protection of the environment from erosion and sediment effects • Site compliance with resource consent conditions
Environmental Manager	• Site compliance with resource consent conditions • Obtaining new resource consents • ESCMP updates • ESCMP compliance • Approval of site specific ESCP • ESC visual inspections and monitoring • ESC reporting
Manager responsible for site specific ESCP	• Preparation of site specific ESCPs • Construction of diversion channels, culverts, sediment retention structures, and other measures in accordance with the approved Site Specific ESCPs
Suitably Qualified and Experienced Practitioner (SQEP)	• Certification of the site-specific ESCPs • Annual audit of ESCMP performance
Otago Regional Council	• SQEP approval • Audit of compliance with resource consent conditions

1.5. Suitably Qualified and Experienced Practitioner

A SQEP is someone who:

1. Is a senior or principal practitioner with a relevant tertiary qualification and at least three years of experience in preparing, implementing or managing Environmental Management Plans and site specific ESCPs on construction sites. Typically, this includes experience of onsite management and/or oversight of construction environmental management including erosion and sediment control.

2. Belonging to a recognised professional body that assesses and certifies environmental professionals in competency criteria of training, experience, professional conduct and ethical behaviour, such as:

   - Certified Practitioner in Erosion and Sediment Control (CPESC); or

   - Chartered Professional Engineer (CPEng) in Environmental or Civil Engineering; or,

   - Certified Environmental Practitioner (CEnvP); or,

   - If not belonging to a professional body, is approved by Otago Regional Council.

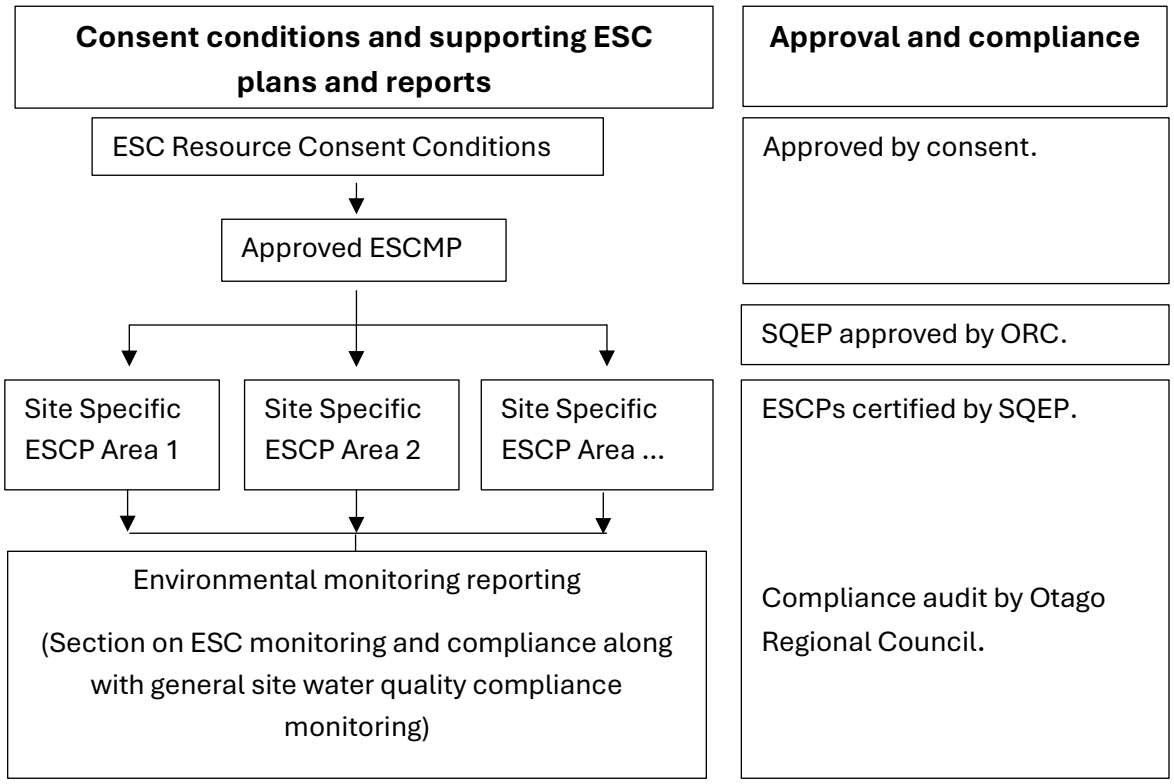
2. SITE EROSION SEDIMENT CONTROL MANAGEMENT

2.1. Conditions, Plans and Reporting Overview

Site-specific ESCP's are to be prepared for each main area by MGL and certified by a SQEP. Those plans shall be held by MGL and be available for the Otago Regional Council to inspect and audit that controls specified are in place onsite and are adequate.

ESC monitoring results and compliance with the resource consent conditions shall be reported on in the site environmental reports to the Otago Regional Council annually.

The flow chart below summarises the consent condition, plans, reporting and approval and compliance management structure.



2.2. Site Specific ESCPs

The design and certification of all Erosion and Sediment Control Plans (ESCPs) will be managed as follows:

- Site specific ESCP should be developed for each specific area by MGL and certified by a SQEP in accordance with the design methodologies set out in Section 2.
- Implementation, monitoring, review and reporting of the ESCPs is the responsibility of MGL.
- All ESCP's will be held onsite and available for audit by the Otago Regional Council.

2.3. ESCP Construction Supervision

The construction and supervision of all erosion and sediment controls will be managed as follows:

- The relevant manager of the construction activity prepares and submits an application for "Land Disturbance Permit" to BOGP Environmental Manager. Application to include: physical limits of disturbance, description of activity, location of known watercourses, proposed ESC control measures and locations in an ESCP. No construction activity to take place until "Land Disturbance Permit" is approved.
- BOGP Environmental Manager reviews "Land Disturbance Permit" Application. Review process to include: physical inspection of area, review of proposed ESC measures and locations in the ESCP.
- BOGP Environmental Manager approves / declines "Land Disturbance Permit" Application and notifies relevant manager of construction activity. If declined, the Environmental Manager provides reasoning and meets with the relevant manager of construction activity to establish the required amendments.

3. ESC DEVICE DESIGN METHODOLOGY

The design of all ESC devices shall be in accordance with the guidance below using the specific design criteria set out in Section 6 and Table 4 of this ESCMP:

- International Erosion Control Association (IECA) "Best Practice Erosion and Sediment Control" dated November 2008 (Ref. 1).

or

- "Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region", referenced GD06, dated June 2016 (Ref. 2).

Where there is not an applicable or appropriate ESC design methodology set out in the referenced documentation above, an appropriate methodology shall be submitted to the SQEP and once approved, the methodology details shall be detailed in the ESCMP (this document).

See Sections 4, 5, and 6 for sizing of diversion channels and bunds and sizing of ponds and decanting earth bunds.

4. CLEAN AND DIRTY WATER DIVERSION SIZING

Clean and dirty water can be diverted using channels, bunds and culverts. The Auckland guidance (Ref. 2) and ICEA guidance (Ref. 1) shall be referenced for suitable details or specific engineering design. Open channel and culvert calculations are required to size individual elements. See Table 4 for sizing generic design criteria. ~~See Table 3 for runoff coefficients.~~ See Table 5 for specific design criteria for specific elements.

5. RUNOFF COEFFICIENTS

See Table 3 for generic runoff coefficients. These are based on the Rational Method. More detailed runoff coefficients using the CN method (which make allowance for the rainfall depth).

~~5.~~6. SEDIMENT RETENTION POND AND DECANTING EARTH BUND SIZING

In a significant rain event, dirty water from earthwork areas will flow to a sediment retention bund or pond prior to discharge to a watercourse.

Sediment retention ponds shall be sized using the ICEA guidance (Ref. 1) or Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region.~~.~~

Using the ICEA ~~this~~ guidance, a "Type C sediment basin" is suitable based on nature of the soils in Table 1. The requirement for Type C sediment basin is the soils are:

Type C Sediment Basin Soil Criteria	Less than 33% of soil finer than 0.02mm and no more than 10% of soil is dispersive.

The calculation approach allows sufficient settling time for the sediment to drop out of suspension. The settling zone is required to be limited to 0.6m to 2.0m depth to achieve laminar flow across the pond.

The performance on Type C sediment basins will be reviewed as part of the monitoring and review process. If water quality on discharge is found to not be suitable then alternative sediment retention ponds using either the ICEA guidance (Ref. 1) or Auckland guidance (Ref. 2) are available.

Shepherds Silt Pond will require specific engineering design. See the Shepherds Silt Pond Technical Report for more information (Ref. 3).

See Section 6 and Table 4 for sizing design criteria. See Table 3 for runoff coefficients.

Conventional chemical treatments coagulate the suspended solids greatly increasing the settlement velocity. Chemical treatments are unlikely to be required at the BOGP site due to the low proportion of material with a particle size below 0.02 mm.

~~6.~~7. DESIGN CRITERIA

The selected design criteria are informed by the ICEA (Ref. 3) guidance. Table 4 summarises the design criteria for the BOGP site~~.~~, unless otherwise conditioned or specifically noted in Table 5.

Where erosion and sediment controls are only required for less than 12 months, the clean and dirty water diversions and sediment retention ponds or bunds shall be designed for a 1 in 2-year rainfall event.

Where erosion and sediment controls are only required for 12 to 24 months, the clean and dirty water diversions and sediment retention ponds or bunds shall be designed for a 1 in 5-year rainfall event.

Where erosion and sediment controls are required for a period greater than 24 months, the clean and dirty water diversions and sediment retention ponds or bunds shall be designed for a 1 in 10-year rainfall event.

Culverts and ford crossings shall be designed for 1 in 2-year rainfall event.

The critical duration of a rain event will depend on the size of the area.

Rainfall depths and intensities shall be determined using the New Zealand High Intensity Rainfall Design (“HIRD”) System (Ref. 4).

~~7.~~8. WEATHER MONITORING

~~7.1.~~8.1. Rain Forecast

Central Otago has an arid climate. Estimates of rainfall depths and intensities for high intensity rainfall events are included in Table 1 and 2.

Rain forecasts relevant to the site shall be checked daily along with weather warnings as issued by the Met service.

During working days, daily weather forecast and weather warnings relevant to the site will be forwarded to all the environmental and construction teams and recorded in the daily prestart job sheets.

If the forecasts or records show more than 20 mm of rainfall over a 24-hour period, then this will trigger the pre-rain event inspections, refer to Section 8.1 for further details. The purpose of these inspections is to check that the ESC devices and controls are set-up and ready for the rain event.

~~7.2.~~8.2. Rain Gauges

Rainfall shall be recorded at a weather station to be located on site. The Environmental Manager and team will monitor rainfall recorded at that site. Rainfall trigger responses will be based on recorded events at that location, which is sufficiently close to the various earthworks packages to be undertaken during the Project.

~~8.~~9. EROSION AND SEDIMENT CONTROL MONITORING

The Environmental Manager and team will conduct inspections of the sites. Members of the project construction team, including the relevant BOGP Managers of the construction activity, may accompany the Environmental Manager and team on these inspections so the environmental team can understand the work occurring at that time and that is programmed to take place.

Communication is critical to the successful implementation of an ESCP. Inspections will cover all areas of the Project, even those that may have been dormant for some time, to ensure that the erosion and sediment controls are still operating properly. These internal inspections will be captured in writing and will include actions and timeframes for close out.

~~8.1.~~9.1. Site Inspections

Inspections will be undertaken during instalment of ESC devices to check the devices are being installed correctly.

Post construction monitoring will be undertaken once a sediment retention pond (SRP) or decanting earth bund (DEB) is operational to confirm the site is controlled and to the ESCP. Monitoring will take place as soon as practicable following the first rainfall event that

generates runoff to the ESC device. This is to assess the performance of the device and the resulting quality of water being discharged from the site.

The site will then be inspected pre-event if forecast is greater than 20 mm in 24 hours or post-event if record is greater than 15 mm in 24 hours. Inspections shall be by the Environmental Team. These inspections will ensure that all ESC devices are installed correctly and operate effectively throughout the duration of the works.

To summarise, the inspection programme shall consist of:

- Inspection during construction of ESC devices to ensure correct installation.
- Post construction inspection confirming that the devices are in accordance with the ESCP.
- Pre-rain event inspection, where forecast depth is >20 mm in 24hours, will be carried out confirming that the devices are still to the ESCP and if any additional mitigations should be undertaken.
- Post-rain event inspection, undertaken during or immediately after a rainfall trigger event of >15 mm over any 24-hour period. This will include an inspection of all SRPs and DEBs, with the following actions:
    - Identify any maintenance or corrective actions required and assign timeframes for completion. Maintenance actions are to be completed the same day where possible;
    - Identify any devices that are not performing as anticipated in the ESCP's;
    - Issue a record of all actions required and closeout timeframes;
    - General inspection of sediment control devices;
    - Manual turbidity and pH testing of inlet and outlet flows and within the device adjacent to the decant outlet;

Rainfall trigger alerts will be monitored by the Environmental Manager and Team (as required from measuring onsite rainfall).

Any issues identified are to be remedied as soon as possible. Remedial works will be documented and addressed as soon as practical.

~~8.1.1.~~9.1.1. External (~~Otago Regional Counci~~ORC~~l~~) Site Inspections

Inspection may be undertaken by ORC to confirm the ESCPs are in place and adequate. The Environmental Manager or Team shall accompany the ORC inspector in all programmed ORC inspections. All ESC maintenance actions identified by the Council

inspector will be recorded and issued to the Environmental Manager for actioning, based on ORC instruction. The SQEP shall also be provided with the actions. The BOGP Project Manager will report back the completion of those actions to the ORC. The Environmental Manager will inspect the works and confirm that those actions have been completed. Confirmation will be emailed to the ORC inspector and the SQEP.

~~8.2.~~9.2. ESC Sediment Retention Water Quality Monitoring

Requirements for water quality in receiving watercourses are set by environmental specialists and are monitored at compliance points. Compliance monitoring points for watercourses will be downstream of the sediment retention ponds and not be at the location of discharge at the sediment retention ponds. The performance of sediment retention ponds will be monitored to check that they are effective at dropping sediment, such that the majority of sediment is dropped out of suspension. A practical approach of reviewing turbidity of inflows verses the turbidity of outflow at sediment retention ponds will be undertaken to see that the ponds are effective in reducing sediment loads.

ESC sediment retention water quality monitoring will be undertaken during rainfall trigger event (>15 mm of rain within a 24-hour period) during site walkovers to review ESC performance is adequate. See Section 9.1~~8.1~~.

The SRP efficiency and discharge turbidity will be monitored by manual turbidity monitoring, undertaken using a handheld device / water quality field instrument. Turbidity will be measured at both the inflow and outflow of discharging SRPs.

Silt ponds associated with engineered landforms (ELFs) have been identified within the Water Management Plan (WMP) as sites for surface water performance monitoring when actively discharging to watercourses, and measurement of contained water clarity (NTU) on a monthly basis.

~~8.3.~~9.3. Erosion and Sediment Control Plan Auditing

The suitability of the ESCMP and all ESCPs will be confirmed on an annual basis by way of an audit by the SQEP. The records of such audits will be held onsite.

~~9.~~10. MANAGEMENT RESPONSES

~~9.1.~~10.1. Regular Monitoring Responses

The key to successful implementation of ESC measures and minimising sediment yield will be through the regular visual monitoring of the site and maintenance of controls. This monitoring will be undertaken by the Environment Team. The responses to that monitoring will be as follows:

- A checklist record will be made of each ESC device inspected and its conditions, noting any maintenance requirements and timeframes of that to be undertaken. Maintenance will be based on ensuring compliance with consent requirements.
- All sediment retention devices are to be cleaned out before they reach 20% sediment capacity.
- Maintenance actions are to be completed as soon as possible, and typically within two weeks or before the next notable rain event.
- There is to be an emphasis on maintenance necessary prior to significant forecast rain events.
- All completed maintenance and reporting is to be signed off by the Environmental Manager.

~~9.2.~~10.2. Incident Responses

If one of the following occurs:

i. A failure of an erosion and/or sediment control (e.g. perimeter control, SRP or DEB) that results in visible discharge of sediment to an off-site stream.
ii. Slumping / mass movement or erosion associated with the works, but which is outside the catchment of a sediment control device or has resulted in a device being over-topped by sediment, where that sediment has discharged to an off-site stream.

The incident responses will be:

- Report the incident. Document and notify the Environmental Manager immediately after becoming aware of the incident.
- Inform Otago Regional Council as soon as practical (at least within 24 hours).
- Remedy the failure or event to prevent further uncontrolled discharges.
- Determine if the discharge is an isolated case or is likely to be repeated; and
- Investigate and implement modifications. Modifications could include:
    - Modification to erosion and sediment control measures and methodologies;

- Placement/construction of additional ESC structure;
- Progressive stabilisation in sub catchments;
- Increase maintenance of controls; and
  Amendments to methodologies and sequencing of works

~~9.3.~~10.3. Chemical Management Plan

Chemical treatment of sediment ponds ~~is not proposed for the site~~may be required. If ~~this changes,~~required, a Chemical Treatment Management Plan must be prepared for the site materials ~~and added to this Erosion and Sediment Control Management Plan~~.

~~10.~~11. REPORTING AND RECORD KEEPING

~~10.1.~~11.1. Rainfall Trigger Event Report

Following a rainfall trigger event (>15 mm in a 24hr period), a brief summary report of the performance of SRPs, DEBs and overall ESC system observed during the rainfall event report will be provided to SQEP. The report will include:

- A summary of the rainfall (total and intensity)
- A summary of the manual monitoring undertaken and comparison of manual monitoring results to previously recorded results
- A summary of the site performance against the performance targets
- A record of any other matters which may have compromised the overall ESC performance during the rain event and the identified mitigation, maintenance, and management response
- A summary of the water sample analysis.

The Rainfall Trigger Event Report will be provided to SQEP within 10 working days of the rainfall trigger event.

~~10.2.~~11.2. Annual Report

Each year after commencement of work (development and/or operations) on site, a summary report of the ESC devices and overall system must be prepared and provided to the SQEP and Otago Regional Council as part of annual compliance reporting. This report will include:

- A summary of the ESC devices on site and their status (i.e. under construction, in use, decommissioned, etc);
- A summary of the rainfall for the previous year;
- A summary of the monitoring undertaken;
- A summary of maintenance of the ESC devices;
- A summary of water sample analyses for the previous year;
- A record of any exceedances and the mitigation measures resulting from these
- A summary of the annual ESCP audit by a SQEP; and
- Any recommended or planned improvements to the ESC system.

~~11.~~12. CHANGE MANAGEMENT

A formal change management process is required to evaluate and document any modifications to the design, operation, or monitoring systems of Large Dams. This ensures that changes do not compromise the integrity and safety of the facility.

Changes shall be assessed against the resource consent granted by the Regional Authority and the approved building consent. Changes may require recertification. If the proposed changes extend beyond the scope of the original resource consent or building consent, amendments to those consents may need to be sought.

Changes within this PRMP shall be recorded in Table 2.

Table 2: PRMP Change Management Record

Item	Section	Summary of change	Reason for change	Complexity of change	Date
1.				☐ Minor ☐ Moderate ☐ Major	
2.				☐ Minor ☐ Moderate ☐ Major	
3.				☐ Minor ☐ Moderate ☐ Major	
4.				☐ Minor ☐ Moderate ☐ Major	

~~12.~~13. REFERENCES

1. International Erosion Control Association (IECA). (2020). *Best Practice Erosion and Sediment Control Guidelines*. IECA Australasia.
2. Auckland Council. (2016). *Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region* (GD05, June 2016). Auckland Council.
3. Engineering Geology Ltd. (2025). *Shepherds Silt Pond Technical Report*.
4. NIWA. (2023). *New Zealand High Intensity Rainfall Design System V4 (HIRDS V4)*. National Institute of Water and Atmospheric Research. Retrieved from https://hirds.niwa.co.nz
5. Otago Regional Council. (2011). *Otago Land and Water Regional Plan – Surface Water Quality and Land Disturbance Guidance*. ORC.
6. Ministry for the Environment. (2020). *Resource Management (National Environmental Standards for Freshwater) Regulations 2020*. New Zealand Government.
7. Landcom. (2004). *Managing Urban Stormwater: Soils and Construction* (Vol. 1, 4th ed.). New South Wales Department of Housing.

TABLES

TABLE 1: HIGH INTENSITY RAINFALL DEPTHS

Rainfall depths (mm)		Rainfall Event Duration									
ARI	**AEP**	**10min**	**20min**	**30min**	**1h**	**2h**	**6h**	**12h**	**24h**	**48h**	**72h**
1.58	**0.633**	3.1mm	4.6	5.8	8.4	12.3	21.9	30.7	42.1	55.8	64.8
2	**0.5**	3.6	5.2	6.5	9.5	13.7	24.2	33.8	46.1	60.8	70.4
5	**0.2**	5.2	7.5	9.2	13.3	19.0	32.6	44.8	60.0	78.0	89.4
10	**0.1**	6.7	9.4	11.5	16.4	23.2	39.2	53.3	70.7	90.9	104.0
20	**0.05**	8.3	11.6	14.2	20.0	27.9	46.5	62.5	82.1	104.0	118.0
30	**0.033**	9.4	13.1	15.9	22.3	31.0	51.0	68.3	89.1	113.0	127.0
40	**0.025**	10.2	14.2	17.2	24.0	33.2	54.4	72.5	94.2	119.0	134.0
50	**0.02**	10.9	15.1	18.3	25.4	35.1	57.1	75.9	98.3	123.0	139.0
60	**0.017**	11.5	15.9	19.2	26.6	36.6	59.4	78.7	102.0	127.0	143.0
80	**0.013**	12.5	17.2	20.7	28.6	39.2	63.1	83.3	107.0	134.0	150.0
100	**0.01**	13.3	18.2	21.9	30.2	41.2	66.1	87.0	111.0	139.0	155.0
250	**0.004**	17.1	23.0	27.5	37.4	50.4	79.2	103.0	130.0	160.0	177.0

TABLE 2: HIGH INTENSITY RAINFALL INTENSITIES

Rainfall intensities (mm/hr)		Rainfall Event Duration									
ARI	**AEP**	**10min**	**20min**	**30min**	**1h**	**2h**	**6h**	**12h**	**24h**	**48h**	**72h**
1.58	**0.633**	18.8mm/hr	13.8	11.5	8.4	6.2	3.7	2.6	1.8	1.2	0.9
2	**0.5**	21.4	15.6	13.0	9.5	6.9	4.0	2.8	1.9	1.3	1.0
5	**0.2**	31.4	22.4	18.5	13.3	9.5	5.4	3.7	2.5	1.6	1.2
10	**0.1**	39.9	28.2	23.0	16.4	11.6	6.5	4.4	2.9	1.9	1.4
20	**0.05**	49.8	34.8	28.4	20.0	14.0	7.8	5.2	3.4	2.2	1.6
30	**0.033**	56.4	39.3	31.8	22.3	15.5	8.5	5.7	3.7	2.4	1.8
40	**0.025**	61.2	42.6	34.4	24.0	16.6	9.1	6.0	3.9	2.5	1.9
50	**0.02**	65.4	45.3	36.6	25.4	17.6	9.5	6.3	4.1	2.6	1.9
60	**0.017**	69.0	47.7	38.4	26.6	18.3	9.9	6.6	4.3	2.6	2.0
80	**0.013**	75.0	51.6	41.4	28.6	19.6	10.5	6.9	4.5	2.8	2.1
100	**0.01**	79.8	54.6	43.8	30.2	20.6	11.0	7.3	4.6	2.9	2.2
250	**0.004**	102.6	69.0	55.0	37.4	25.2	13.2	8.6	5.4	3.3	2.5

TABLE 3: RATIONAL METHOD RUNOFF COEFFICIENTS

Surface	**Event – Average Recurrence Interval (ARI)**	
	10 year ARI*	**100 year ARI**
Grassed or exposed earth surfaces	0.56	0.69
Rockfill surfaces	0.45	0.56

*For a 2 year ARI use the 10 year coefficients.

Coefficients based on the Hydraulic Design Manual Ref. 9

TABLE 4: EROSION AND SEDIMENT CONTROL DESIGN CRITERIA OF TEMPORARY EROSION AND SEDIMENT CONTROLS

Controls requiring sizing	**Disturbed Areas < 12 months** (i.e. generally during site establishment until stabilised)	**Disturbed Areas 12 to 24 months** (i.e. generally during site establishment until stabilised)	**Disturbed Areas > 24 months** (i.e. semi-permanent measures during operation)
Clean and dirty water diversion bunds and channels	Size for 1 in 2 year rainfall event. Passing peak flows for critical duration with freeboard allowance.	Size for 1 in 5 year rainfall event. Passing peak flows for critical duration with freeboard allowance.	Size for 1 in 10 year rainfall event. Passing peak flows for critical duration with freeboard allowance.
Culvert and ford crossings	Size for 1 in 2 year rainfall event. Passing peak flows.		
Sediment retention ponds and bunds.	Size for 1 in 2 year rainfall event using ICEA (Australasia) Type C Sediment Basin for peak flows. Size emergency spillway for 10 year ARI flow as a minimum.	Size for 1 in 5 year rainfall event using ICEA (Australasia) Type C Sediment Basin for peak flows. Size emergency spillway for 50 year ARI flow as a minimum.	Size for 10 year ARI event using ICEA (Australasia) Type C Sediment Basin for maximum peak flow. Size emergency spillway for 100 year ARI flow as a minimum.

***Notes:**

1. Estimation of run-off flow and specific sizing of diversions and culverts required.

2. Freeboard allowance shall be 150mm when flows are less than 20 l/s and otherwise 300 mm unless specific calculation for energy head undertaken.

3. Refer to ICEA (Ref. X) Type C Sediment Basin using "Appendix B – Sediment Basin Design and Operation" Ref. X

4. Under design flow conditions sediment retention ponds or decanting earth bunds shall be capable of capturing and holding at least 90% of material larger than 0.045mm in equivalent diameter.

5. Sediment retention ponds and decanting earth bunds shall have a minimum 1 month sediments storage from runoff under average annual conditions.

6. Table is not for the design of permanent stormwater controls. Permanent stormwater controls may require higher design standards. See Table 5.

TABLE 5: SPECIFIC DESIGN CRITERIA FOR PERMANENT DIVERSIONS AND SILT PONDS (SEE FIGURE 1 FOR LOCATION)

Feature	Design AEP and Duration - Operation	Design AEP and Duration - Closure
North TSF CWDC	1 in 10-year, 24 to 72-hour storm	N/A decommissioned in closure
North ELF SD	1 in 20-year, all durations	1 in 100-year storm, all durations
Shepherds ELF CWDC	1 in 20-year, all durations	1 in 100-year storm, all durations
South TSF CWDC	Nominal based on site water balance requirements	N/A decommissioned in closure
Pipe across TSF Crest	1 in 10-year, 24 to 72-hour storm	N/A decommissioned in closure
Shepherds Creek SD	1 in 100-year storm, all durations	1 in 100-year storm, all durations
Process Plant CWDC	1 in 100-year storm, all durations	1 in 100-year storm, all durations
RAS SD	1 in 100-year storm, all durations	1 in 100-year storm, all durations
SRX CWDC	1 in 10-year, 24 to 72-hour storm	N/A decommissioned in closure
SRX ELF CWDC	1 in 10-year, 24 to 72-hour storm	1 in 100-year storm, all durations
Dirty water diversions – Shepherds ELF DWD Becomes South ELF SD in closure	Nominal, to be managed on site.	1 in 100-year storm, all durations
Dirty water diversions –SRX ELF DWD	1 in 50-year storm, all durations	N/A decommissioned in closure
Shepherds Silt Pond	1 in 20-year storm, all durations	N/A decommissioned in closure

FIGURE 1: OPERATIONAL STAGE SITE PLAN