

BLUE HILLS QUARRY

STORMWATER MANAGEMENT PLAN

Prepared for: Mawsons Concrete and Quarries

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FIGURES

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Figure 3	Surface Water Layout Plan (Final Pit)	(Drawing No. 5016.DRG.023C R1)

ATTACHMENTS

Attachment 1 Water Balance Assessment

1 Introduction

1.1 Overview

Groundwork Plus have been engaged by Mawsons Concrete and Quarries (**Mawsons**) to prepare a Stormwater Management Plan (**SMP**) for a proposed quarry, to be located near Maldon, Victoria (the **site**). Refer to the attached Figures for site location details.

1.2 Objectives of the SMP

The scope of this SMP includes the following items:

- Demonstrate non-worsening of peak discharge from the site in all AEP events;
- Details of stormwater quality management system to adequately manage runoff quality for the quarry;
- Water Budget to demonstrate adequate supply of operations and captured water treatment strategies;
- Implementation and maintenance strategy for stormwater management measures and systems.

This SMP outlines the engineering design details and operational management procedures that are to be maintained and/or adopted in order to integrate stormwater management into the daily operations.

2 Stormwater Quantity Management

2.1 Stormwater Hydrology

Refer to **Table 1 – Site Catchment Areas** and **Drawing No. 5016.DRG.023A, 5016.DRG.023B & 5016.DRG.023C** for details of the proposed developed catchments and associated surface grading for the existing scenario, Stage 1 and Final Pit layouts.

Table 1 – Site Catchment Areas

Scenario	Catchment ID	Catchment Area (Ha)	Discharge Location
Existing Scenario	C1	69.4	Designated Waterway (C1 Discharge Point)
	C2	56.2	Undesignated Waterway (C2 Discharge Point)
Stage 1	C1	45.8	Designated Waterway (C1 Discharge Point)
	C2	55.6	Undesignated Waterway (C2 Discharge Point)
	Q1	24.6	Quarry Sump QS1
Final Pit	C1	45.2	Designated Waterway (C1 Discharge Point)
	C2	45.8	Undesignated Waterway (C2 Discharge Point)
	Q1	35.4	Quarry Sump QS1

2.2 Designated Waterways

It is noted that a designated waterway (determined by NCCMA and licensed by the Goulburn-Murray Water authorities) exists to the north of the proposed quarry at the location depicted on the included figures (**Drawing No. 5016.DRG.023A, 5016.DRG.023B & 5016.DRG.023C**).

In accordance with the NCCMA Mining and Extraction Industries Setback Guidelines, a 30m setback is proposed for all tributaries not considered designated waterways (proposed to be considered from the 1% AEP critical storm event for catchments greater than 10Ha), and 100m setback is proposed from all designated waterways (commencing at coordinate E233785 N5910529 as shown on the drawings).

2.3 Lawful point of discharge

The lawful point of discharge for the site are the existing waterways to the north and south of the proposed quarry, denoted C1 Discharge Point and C2 Discharge Point respectively.

2.4 Hydrologic Modelling

In order to model the proposed site and simulate non-worsening peak discharge criteria, hydrologic modelling was undertaken using DRAINS (a computer simulation program by Watercom) as shown in **Diagram 1 – DRAINS Schematic**. Site-based rainfall polynomial coefficients were obtained using the Intensity-Frequency-Duration (IFD) generation tool, available on the Bureau of Meteorology's (BOM) website. The IFD data is shown below in **Table 2 – IFD Data**.

Table 2 – IFD Data

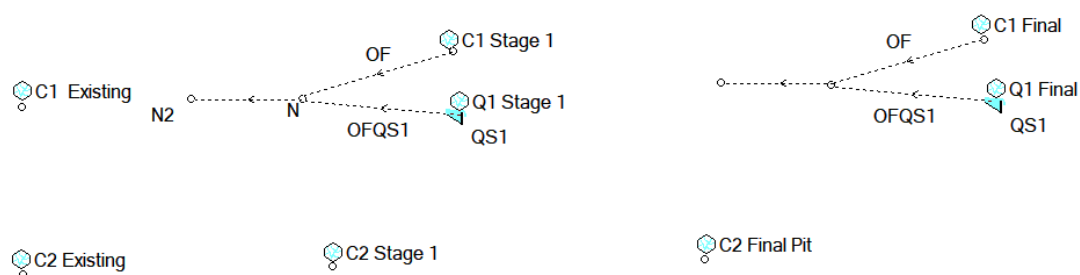
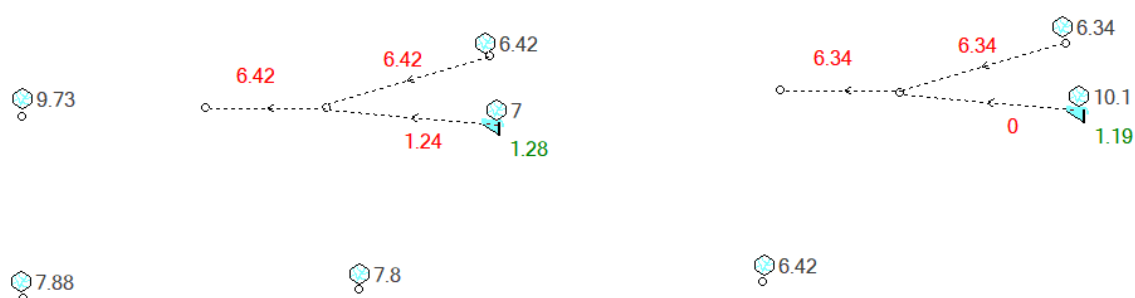
Duration of Rainfall	Annual Exceedance Probability (AEP)						
	63.20%	50%	20%	10%	5%	2%	1%
5 min	51.6	60.1	89.3	111.0	135.0	169.0	198.0
10 min	38.8	45.2	67.2	83.7	101.0	126.0	147.0
15 min	31.3	36.6	54.5	68.0	82.2	103.0	120.0
20 min	26.5	31.0	46.2	57.6	69.8	87.3	102.0
25 min	23.1	27.0	40.2	50.3	60.9	76.3	89.3
30 min	20.6	24.0	35.8	44.8	54.3	68.1	79.7
45 min	15.8	18.4	27.4	34.2	41.4	52.1	61.1
1 hour	13.1	15.2	22.5	28.0	33.9	42.7	50.1
1.5 hour	10.0	11.6	17.0	21.1	25.4	31.9	37.4
2 hour	8.3	9.6	13.9	17.2	20.7	25.8	30.2
3 hour	6.4	7.3	10.5	12.9	15.5	19.1	22.2
4.5 hour	5.0	5.7	8.0	9.8	11.6	14.2	16.3
6 hour	4.2	4.7	6.6	8.0	9.5	11.5	13.1

Note: All rainfall intensities measured in mm/hr.

Design storm durations of 5, 10, 15, 20, 25, 30, 45 and 60 minutes were modelled in DRAINS, with the critical storm duration and used to determine the peak discharge for each sub-catchment.

2.4.1 Peak Discharge Comparison

Peak discharge was modelled for the critical storm of each AEP event as shown in **Table 3 – Peak Discharge Comparison**. As demonstrated in the modelling, there is non-worsening of peak discharge at the site discharge locations for all AEP events.

Diagram 1 – DRAINS Schematic**Drains Site Layout****Model Simulation Results for 1% AEP Critical Storm****Table 3 – Peak Discharge Comparison**

Discharge Location	Scenario	Peak Discharge for AEP (m ³ /s)					
		1%	2%	5%	10%	20%	50%
Discharge C1	Existing Scenario	9.73	7.25	4.81	3.00	1.07	0
	Stage 1	6.42	4.78	3.18	1.98	0.71	0
	Final Pit	6.34	4.72	3.14	1.95	0.69	0
Discharge C2	Existing Scenario	7.88	5.87	3.90	2.43	0.87	0
	Stage 1	7.80	5.81	3.86	2.40	0.86	0
	Final Pit	6.42	4.78	3.18	1.98	0.71	0

3 Stormwater Quality Management

It is proposed to design a quarry sump for each stage of the quarry development, constructed and operated to retain all disturbed area runoff at the site in accordance with IECA (2008) as a minimum standard.

The total upper settling storage requirements for the proposed quarry sumps were calculated based on the following formula:

$V_s = 10 * R_{Y\%, 5\text{-day}} * C_v * A$, where:

A = Catchment Area (m²)

C_v = Coefficient of Discharge

R_{Y%, 5-day} = 5 day rainfall depth (m) not exceeded for Y percent of rainfall events

In addition to the upper settling volume, a sediment storage zone is proposed to be included which also contains surplus water storage for operational reuse.

Table 4 – Sediment Basin Storage Requirements details the upper settling, sediment storage and subsequent total sediment basin storage requirements for the site, for capture of a 55 mm rainfall event, deemed the 5-day 95th percentile as per IECA (2008).

Table 4 – Sediment Basin Storage Requirements

Sump	Catchment area (ha)	Upper Settling (ML)	Sediment Storage (ML)	Total Volume (ML)
QS1 (Stage 1)	24.6	8.51	4.26	12.77
QS1 (Final Pit)	35.4	12.25	6.12	18.37

Based on the above, the total required sediment basin volumes are considered appropriate for erosion and sediment control management at the proposed quarry with surplus storage being made possible by enlarging the sumps if needed for operational reuse. This is discussed further in **Section 5 – Water Balance Assessment**.

3.1 Water Quality Release Limits

It is noted that in order to restore freeboard in the quarry sump following a rainfall event, captured water may be required to be tested and/or treated prior to releasing back into the receiving environment. The site falls within the Central Foothills and Coastal Plains segment of the State Environment Reference Standard (ERS) Victoria, which requires the environmental quality indicators as listed in **Table 5 – Applicable Water Quality Indicators**.

Any surface water that is released from the quarry into the receiving waters must comply with the applicable water quality release limits in Table 5, including reference to any other site specific approval conditions that apply to the proposed operations.

Table 5 – Applicable Water Quality Indicators

Total phosphorus (µg/L)	Total nitrogen (µg/L)	Dissolved oxygen		Turbidity (NTU)	Electrical conductivity	pH	
75 th percentile	75 th percentile	25 th percentile	Maximum	75 th percentile	75 th percentile	25 th percentile	75 th percentile
≤ 55	≤1,050	≥70	130	≤15	≤2,000	≥6.8	≤8.0

4 Water Balance Assessment

4.1 Water Supply and Storage Infrastructure

The quarry will harvest surface water for reuse in operations through construction of the quarry sumps shown on the supplied plans. The quarry sumps are proposed to be used for the treatment of surface water and also for reuse into quarry operations. The total volume for the sediment basin is proposed to be 12.77ML (Stage 1) and 18.37ML (Final Pit).

4.2 Rainfall Data

Site specific rainfall data (grid Lat: -36.90; Long: 144.00) was sourced from the Bureau of Meteorology (BoM) (nearest station Bendigo Airport; 081123) and SILO collaborative project, hosted by the Queensland Department of Environment and Science (DES). To inform the calculations of the water balance daily rainfall records were downloaded and used for the for a higher degree of accuracy.

4.2.1 Scenario 1 – Below Average Rainfall

The year 1997 was selected for examining a 'below average' scenario, with an annual rainfall depth of 426mm (approximately representing the 25th percentile annual rainfall of 421mm).

4.2.2 Scenario 2 – Average Rainfall

The year 1991 was selected for examining an 'average' scenario, with an annual rainfall depth of 489mm (approximately representing the 50th percentile annual rainfall of 491mm).

4.2.3 Scenario 2 – Above Average Rainfall

The year 1981 was selected for examining an 'above average' scenario, with an annual rainfall depth of 577mm (approximately representing the 75th percentile annual rainfall of 573mm).

4.3 Groundwater Infiltration

Groundwater is excluded in the water balance assessment due to absence of detailed site investigation information being made available.

4.4 Water Budget Input Parameters

The water balance assessment was estimated based on the hydrological parameters shown in **Table 6 – Hydrological Parameters**. The surface water parameters were based on the available LiDAR survey.

Table 6 – Hydrological Parameters

Parameter	Existing case	Stage 1	Final Pit	Unit
Catchment Area (C1 + C2)	1,256,000	1,014,000	900,000	m ²
Catchment Area (Q1)	0	246,000	354,000	m ²
Quarry Sump capacity	0	12,770	18,370	m ³
Runoff Coefficient (quarry)*	0	0.4	0.4	n/a
Runoff Coefficient (waterways)*	0.2	0.1	0.1	n/a
Daily Usage in Quarry (5.5 operational days)*	n/a	125	155	kL

*The runoff coefficients and assumed operational daily usage values have been assumed based on available data

4.5 Water Budget Results

Refer to **Attachment 1 – Water Balance Assessment** for a comprehensive daily breakdown of the water balance assessment. A summary of the results is shown in **Table 7 – Water Balance Assessment Results**.

Table 7 – Water Balance Assessment Results

Stage	Rainfall Scenario	Adopted Annual Rainfall (mm)	Inflow into Quarry (ML)	Operational usage + Evaporation (ML)	Water treated and released (ML)	Nett Surplus / Shortfall (ML)
Stage 1	Below Average	426	41.9	-37.5	-11.1	-6.7 (short)
	Average	489	48.1	-37.5	-16.2	-5.6 (short)
	Above Average	577	56.8	-37.5	-19.6	-0.3 (short)
Final Pit	Below Average	426	60.4	-46.4	-10.3	3.7 (surplus)
	Average	489	69.2	-46.4	-18.8	4.0 (surplus)
	Above Average	577	81.7	-46.4	-21.8	13.5 (surplus)

5 Operational Procedures

An overview of the additional Operational Procedures for implementation at the site are summarised below.

Aspect	Details																								
Purpose	The Operational Procedures have been prepared to manage potential environmental impacts that may result from the operation in relation to stormwater management.																								
Risk Sources and Potential Impacts	Adverse impacts resulting from current and future operations may include the following: - Exposed and disturbed soil areas within the Site and extraction operations - Material stockpiles which contain material sourced from the Site or external sources - Vegetation clearing and topsoil stripping - Uncontrolled Sediment Basin releases - Construction and maintenance of carpark, roads and hardstands - Spillage during handling of materials - Use and storage of oils, greases, fuels and other chemicals.																								
Performance Targets	Adopted Water Quality Indicators are shown below. Refer Section 3.1 Water Quality Release Limits for details. <table><tr><th>Total phosphorus (µg/L)</th><th>Total nitrogen (µg/L)</th><th colspan="2">Dissolved oxygen</th><th>Turbidity (NTU)</th><th>Electrical conductivity</th><th colspan="2">pH</th></tr><tr><td>75th percentile</td><td>75th percentile</td><td>25th percentile</td><td>Maximum</td><td>75th percentile</td><td>75th percentile</td><td>25th percentile</td><td>75th percentile</td></tr><tr><td>≤ 55</td><td>≤1,050</td><td>≥70</td><td>130</td><td>≤15</td><td>≤2,000</td><td>≥6.8</td><td>≤8.0</td></tr></table>	Total phosphorus (µg/L)	Total nitrogen (µg/L)	Dissolved oxygen		Turbidity (NTU)	Electrical conductivity	pH		75 th percentile	75 th percentile	25 th percentile	Maximum	75 th percentile	75 th percentile	25 th percentile	75 th percentile	≤ 55	≤1,050	≥70	130	≤15	≤2,000	≥6.8	≤8.0
Total phosphorus (µg/L)	Total nitrogen (µg/L)	Dissolved oxygen		Turbidity (NTU)	Electrical conductivity	pH																			
75 th percentile	75 th percentile	25 th percentile	Maximum	75 th percentile	75 th percentile	25 th percentile	75 th percentile																		
≤ 55	≤1,050	≥70	130	≤15	≤2,000	≥6.8	≤8.0																		
Responsibilities	The Site Manager will be primarily responsible for the implementation of this SMP.																								
Strategies/mitigation measures	<u>Quarry Sumps / Sediment Basins</u> The infrastructure required to manage stormwater for the future operations at the Site are defined by the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control (BPESC) guidelines (2008).																								

The location and size of the sediment basins and associated infrastructure are outlined in the attached plans **Drawing No. 5016.DRG.023A, 5016.DRG.023B & 5016.DRG.023C.**

Each quarry sump / sediment basin are to be operated and maintained in accordance with the water quality indicators detailed in **Section 3.1 - Water Quality Release Limits** and the requirements below:

- Freeboard must be maintained in each quarry sump / sediment basin prior to rainfall events occurring to ensure adequate capture volume is available to meet the design criteria;
- Appropriate pumping infrastructure (or equivalent system) should be identified and maintained in order to manage freeboard
- Where water is required to be discharged offsite water quality shall be assessed against the water quality criteria performance targets. Where water quality criteria exceeds performance targets, an investigation shall be undertaken to determine the cause of the exceedance and identify any required corrective action.

Prevention of Incident Stormwater Runoff

- Prevent stormwater contacting any wastes or contaminants by ensuring drainage lines are cleared, and drain away from stockpiles and disturbed areas at all times including the downstream waterways.
- Stormwater which has not been in contact with contaminants resulting from the extractive industry activities must be diverted around the site as far as reasonable and practical.
- Prevent erosion resulting from rain, water flow and / or wind.
- Minimise adverse effects of sediment runoff, with respect to all safety requirements.
- Ensure that use of land / properties adjacent to the development are not diminished as a result of the adopted SMP measures.
- Manage Site entry / exit points to minimise the risk of sediment being tracked onto public roadways.

Diversion of Upstream Runoff

Clean water diversion bunds and drains are to divert cleanwater away from disturbed areas wherever practical. Drains and bunds should have vegetation coverage where applicable or stabilised using an alternative material (rock lined, geofabric, erosion matting etc.).

This coverage is required to be in-place at all times. Where vegetation cover is required to be enhanced, seeding of the exposed areas using approved grass species may be required. The grass species will be required to have the following characteristics (as per IECA 2008).

- Plants with a fibrous root system
- Plants that primarily grow horizontal rather than upright clumping plants
- Leguminous plants
- Non-invasive plants.

Minimisation and Cleaning of Disturbed Areas

Wherever possible, disturbed areas are to be minimised by:

- Progressive rehabilitation of disturbed areas
- Increased impervious hardstand areas and roof areas over and around workshop areas
- Prevention of vegetation clearing wherever practical and
- Diversion of stormwater around disturbed areas.

Cleaning of hard stand and disturbed areas should be carried out without using water as appropriate, and all spills shall be contained and cleaned in accordance with Mawsons spill management procedures.

Oil Separators, and Bunding of Fuels and Chemicals

Clearly designate storage areas and do not deviate from assigned bunded areas for storage of chemicals and fuels unless a suitable secondary bund is provided. Oil separators to be provided where necessary.

- All petroleum product storage tanks must be bunded according to Australian Standard (AS) 1940 *The storage and handling of flammable and combustible liquids*.
- All empty drums must be stored on a concrete hardstand area with their closures in place
- Drains or bunds must be provided to ensure stormwater runoff is excluded from the contaminated area.

Storing and handling of hazardous chemicals, corrosive substances, toxic substances, gases, dangerous goods, flammable and combustible liquids in accordance with the relevant legislative requirements and AS including but not limited to the provisions of:

- AS 1692:2006 – *Steel tanks for flammable and combustible liquids*
- AS 3780:2008 – *The storage and handling of corrosive substances*
- AS 1940:2004 – *The storage and handling of flammable and combustible liquid*
- AS 3833:2007 – *Storage and handling of mixed classes of dangerous goods, in packaged and intermediate bulk containers*

Erosion and Sediment Control (ESC)

- ESC structures must be maintained at all times during the period of quarry operation and regularly checked to inform repairs or replacement as required
- The sediment basins and ponds must be maintained on the Site throughout the quarry operation phase and until all remaining disturbed areas are rehabilitated
- Sediment collected in sedimentation basin(s) must be removed whenever the volume of the basin is reduced by 30 percent, or where a build-up of sediments has occurred or may occur around the outlet structure

	• Effective erosion and sediment controls must be provided and maintained during Site clearing and construction of works. Such measures must include diversion drainage works and temporary sedimentation traps • Diversion drains, appropriate earthworks grades or equivalent must be installed to ensure surface waters from disturbed areas, including operational or trafficable areas, are diverted to the sediment control system • All runoff from the stockpiles and the areas utilised for the operation of the stockpiles must be directed to the sedimentation pond(s) • Drainage through and from all trafficable areas and production activities must be designed to minimise surface flow velocities • There must be no disturbance to, filling or obstruction of any part of a watercourse channel unless authorised by the Mining Regulator. <u>Stockpiling of Materials</u> Staging of works should minimise disturbed areas for stockpiling as far as practical. Stockpiles must be: • Adequately protected from concentrated surface flow and excessive upslope stormwater surface flows • Placed to direct drainage water to sediment basin systems where possible in event of surface water runoff • Maintained with dust suppression techniques when possible. Diversion drains, appropriate hard stand grades or equivalent must be installed to ensure surface waters from operational or trafficable areas are diverted to the sediment control system and reused within the operation.
Auditing	Stormwater management reviews are required to be carried out on a periodic bases to assess the implementation of the management strategies.
Identification of Incident or Failure	Non-compliance with the performance criteria herein will be identified by: • Stormwater in treatment system exceeds capacity after rainfall event due to insufficient freeboard. • Release of contaminants from the site. • Poorly maintained, damaged or failed stormwater management devices
Corrective Action	The authorised representative shall be responsible for identification of incident or failure and completion of corrective actions. Following identification of incident or failure, the source/cause is to be immediately identified and rectified with records kept preventing future incidents occurring.
Internal Reporting	A copy of all incidents and complaints will be stored at the site within the incident and complaint register.
External Reporting	Reporting of non-compliance events including discharge of contaminants from the site are to be reported in accordance with regulatory requirements.

An inspection and maintenance program should be implemented as detailed in **Table 7 - Inspections and Maintenance of Stormwater Treatment Devices**. A summary schedule of the various inspections, performance criteria and responses that shall be performed on site is outlined below.

Table 7 - Inspections and Maintenance of Stormwater Treatment Devices

Device	Minimum Frequency	Performance Criteria	Required Actions
Quarry Sump / Sediment Basins	Prior to forecast rainfall event, following each rainfall event, and every 2 weeks	- Adequate freeboard volume available, - Spillway / batters in satisfactory condition, no leaking or damage	- Volume to be restored immediately (either reused in operations or removed from site following suitable monitoring / treatment) - Any identified damage to be repaired - Maintain pump system
Waste containers	Weekly	- waste is stored in appropriate containers - waste receptacles labelled	ensure waste material is stored and disposed of properly and in accordance with conditions of approval
Spill response stations	Weekly and following use	equipment is properly maintained	- maintain equipment - replace used equipment
Maintenance / refuelling area	Weekly	fuel, oil spills	clean up fuel spills and investigate source
		equipment maintenance	maintain equipment maintenance records
		fuel storage integrity maintained	investigate and repair potential leaks

6 Responsibilities

6.1 Monitoring Management Measures

The following management measures will be implemented during facility operations:

- The Site Manager or authorised representative is to regularly inspect the stormwater management system, particularly prior to forecasted wet weather and following major rainfall events to ensure that these devices are in good working order.
- A surface water quality monitoring program may be implemented to assess performance from time to time. Any sampling conducted shall be undertaken by a suitability qualified person.

6.2 Responsibility

The following details the responsibilities with regard to the ongoing management of stormwater at the site:

- The Site Manager will be responsible for the implementation of this SMP and for training of site personnel in their responsibilities in relation to this SMP.
- The Site Manager will be responsible for ensuring that all stormwater devices constructed on the Site have adequate free water storage capacity.
- All complaints pertaining to water quality received will be recorded in the complaints register/log maintained on-site.
- The Site Manager or a suitably qualified consultant will prepare water monitoring records if and when required by the regulatory authority.
- Records, including results of any monitoring program undertaken on-site, complaints or incidents will be kept on-site for a minimum of five (5) years.

6.3 Identification of Incident or Failure

An incident or failure may include, but not be limited to:

- Deterioration in surface water quality within waters discharged from site
- Receipt of a stormwater quality release complaint
- Not maintaining on-site stormwater controls or treatment devices.

Any identification of incident or failure will be recorded on site.

7 Environmental Incidents

The **Site Manager** will be responsible for ensuring that all employees at the site are familiar with the procedure for incidents recording. Any employee becoming aware of an incident with actual or potential environmental implications, shall be reported to the **Site Manager**, or delegate immediately.

The **Site Manager** will notify upper management regarding any environmental incident. An Environmental Incident Report must be completed for all incidents.

Should reporting of an **environmental incident** to the relevant regulatory authority be required, this will be undertaken in accordance with the following.

When an environmental incident occurs, the **Site Manager** will notify administering authority via telephone and in writing.

The contact details of the administering authority are as follows:

EPA Victoria

Phone: 1300 372 842

Email: contact@epa.vic.gov.au

Following notification against this condition, an investigation and further reporting will be required, as per the Sections below.

7.1 Investigation

All incidents should be investigated. The investigations should include:

- Determining what activities were being carried out at the time of the complaint/incident and any equipment involved.
- Identifying whether equipment or activities on-site were the cause of the incident or complaint.
- Determining what potential actions may be carried out to resolve the matter and/or minimize the likelihood of further impacts.

An assessment is to be conducted to determine what corrective actions are to be taken to remedy the matter and/or prevent a similar incident from occurring in the future. If monitoring is to be undertaken to investigate an incident or complaint these results should be supplied with the final report to the administering authority.

7.2 Responsibility

A written notice detailing the following information may need to be provided to the administering authority, following the initial notification. General information likely to be required for any further reporting to the administering authority may include the following:

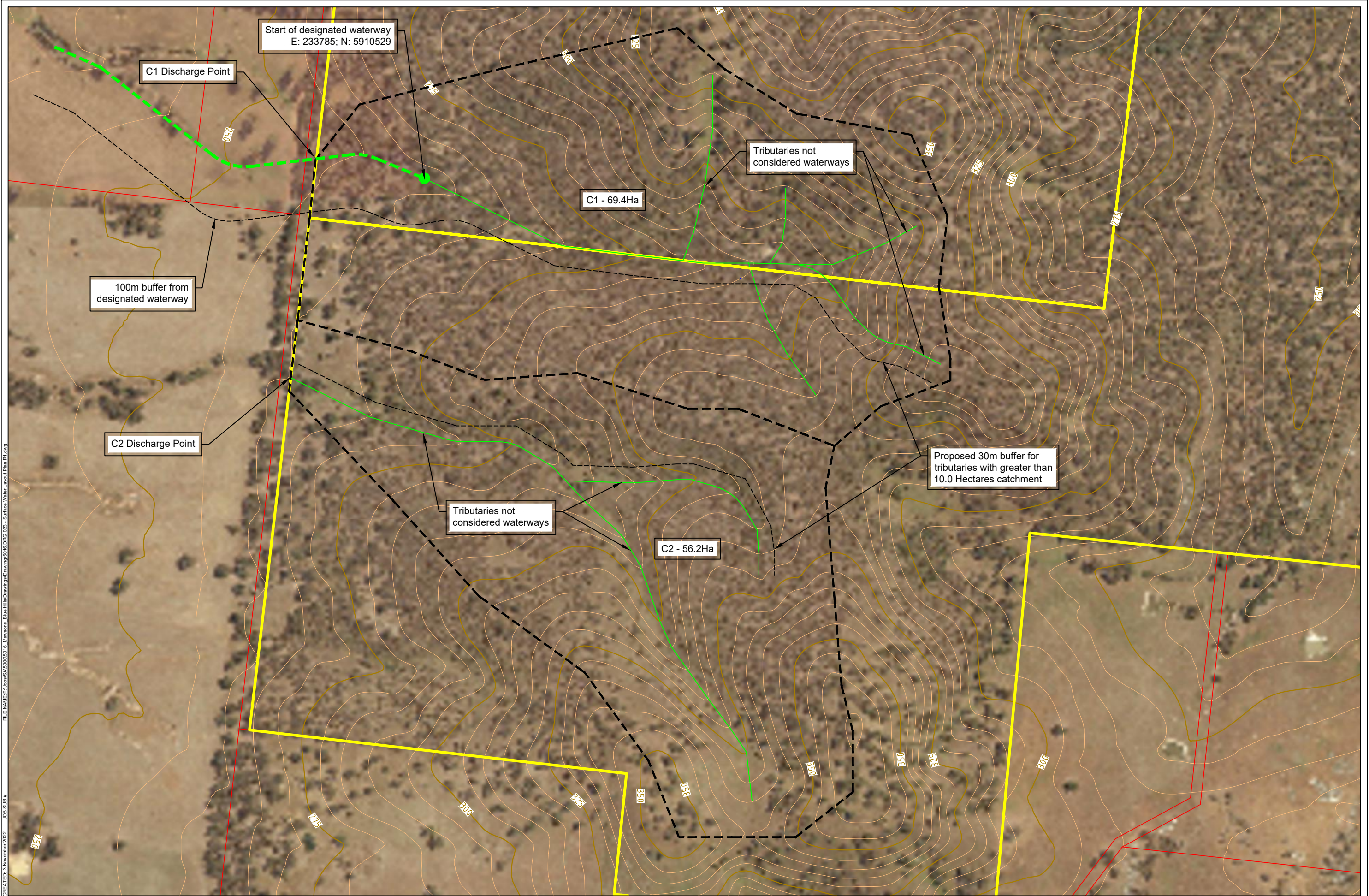
- The name of the operator.
- The name and telephone number of a designated contact person.
- A description of the event.
- The results of any monitoring performed in relation to the event.
- Actions taken to mitigate any environmental harm caused by the event.
- Proposed actions to prevent a recurrence of the event.

8 Conclusion

This SMP outlines the appropriate treatment measures and operational procedures to be adopted to integrate adequate stormwater management into daily operations and site activity. Specifically, this document has prepared to ensure that appropriate measures have been developed to meet the requirements of the site approval conditions and to support the proposed development.

Operational procedures outlined in this SMP will assist to ensure compliance as a minimum standard.

FIGURES



FILE NAME: F:\Jobs\SA00005016_Mawsons_Blue Hills\Drawings\Drawing\5016.DWG.023 - Surface Water Layout Plan R1.dwg
CREATED: 3 November 2022 JOB SUB #

REV	DESCRIPTION	DATE	BY

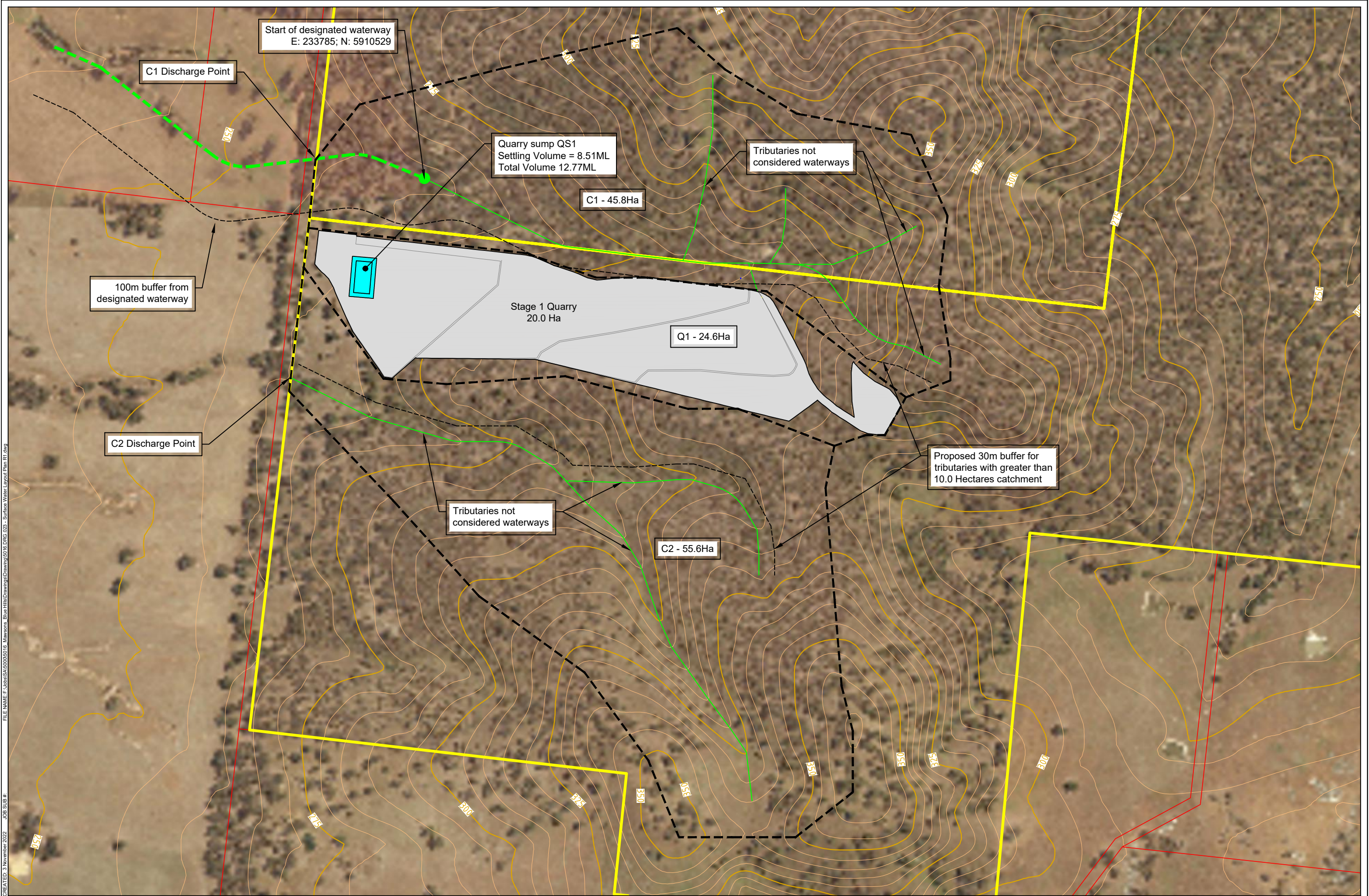
Data Sources:
Photography: © 2021 Microsoft Corporation; © 2021 Maxar; © CNES (2021) Distribution Airbus
Topography: © Commonwealth of Australia (Geoscience Australia) 2008, LIDAR 10m
Cadastral: © The State Government of Victoria (DELWP) 2020
Ecosystem: Other:
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- Legend:
- Mawsons Owned Land
 - Cadastral Boundary
 - - - Extraction Boundary
 - Start of designated waterway



PROJECT:	Blue Hills
CLIENT:	Mawsons

TITLE: Surface Water Layout Plan (Existing Scenario)	
GROUNDWORK plus	SCALE: 1:25,000 When Printed On A3 0 500m
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FILE NAME: F:\Jobs\SA00005016_Mawsons_Blue Hills\Drawings\Drawing\5016_DRG_023 - Surface Water Layout Plan R1.dwg
CREATED: 3 November 2022 JOB SUB #

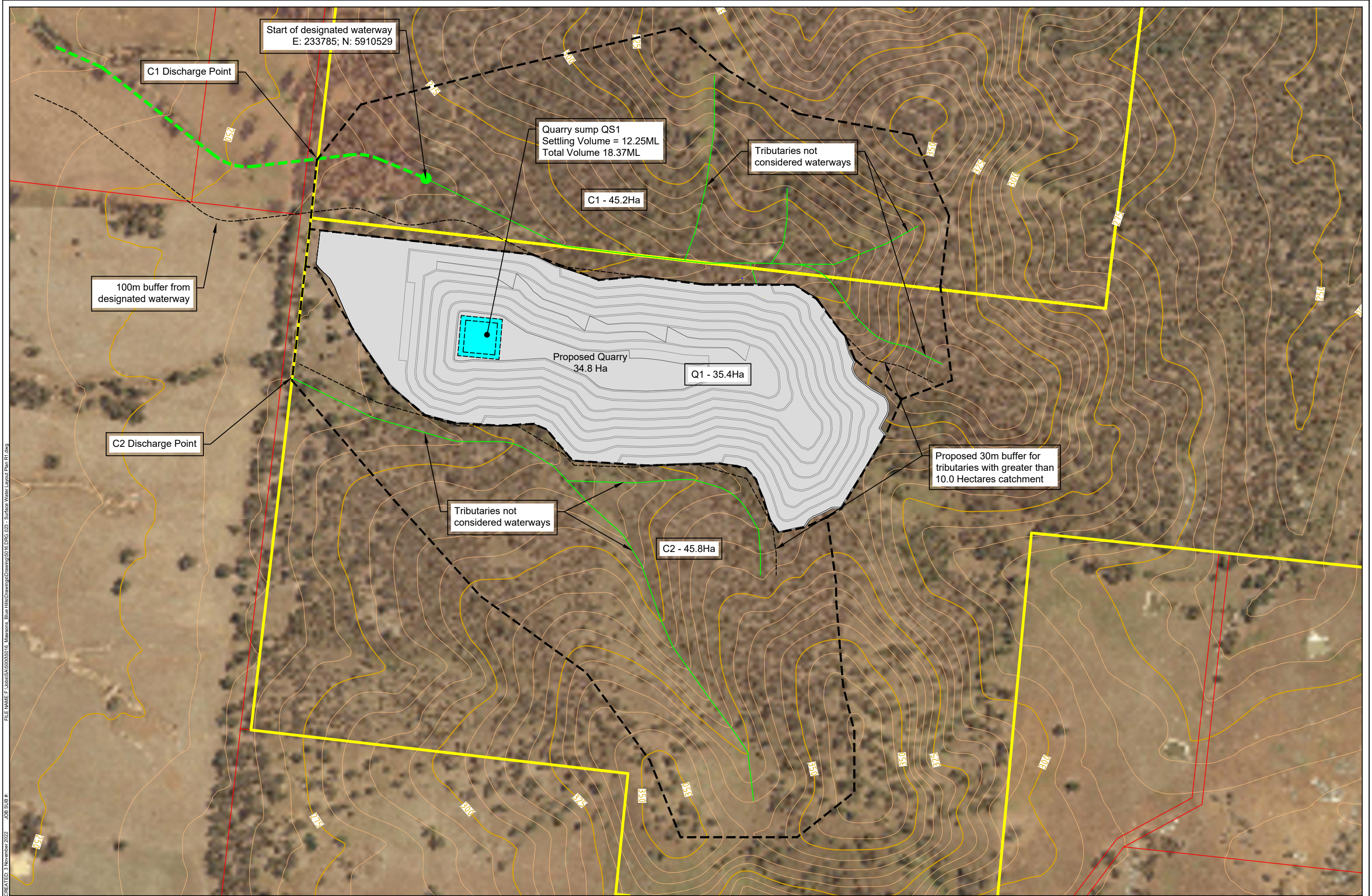
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- Legend:**
- Mawsons Owned Land
 - Cadastral Boundary
 - Extraction Boundary
 - Start of designated waterway



PROJECT:	Blue Hills
CLIENT:	Mawsons

TITLE: Surface Water Layout Plan (Stage 1)	
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REV	DESCRIPTION	DATE	BY

Legend:

- Mawsons Owned Land
- Cadastral Boundary
- Extraction Boundary
- Start of designated waterway

PROJECT: Blue Hills

CLIENT: Mawsons

TITLE: Surface Water Layout Plan (Final Pit)

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REVISION: 1

DATE: 3 November 2022 **DRAWN:** JHV **CHECKED:** RH

DATUM: HORIZONTAL / VERTICAL / ZONE
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Attachment 1

Water Balance Assessment

Year	Month	Day	Daily Recorded Rainfall (mm)	Runoff Coefficient		Catchment C1 (m²)	Catchment C2 (m²)	Overland Flow		Outputs		Adjusted Sediment Dam Available Capacity (m³)	Sump Excess (Flooding of Pit) (m³)	Treated release from Quarry Sump (m³)	Volume of Harvested Water Remaining (m³)	Days Sump is empty	Pit flooding events
				C1	Q1			Overland Flow External (m³)	Overland Flow Quarry (m³)	Evaporation (m³)	Water Used in Operations (m³)						
1997	1	1	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8403.882488	0	0	4260	0	
1997	1	2	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8510	0	0	4260	0	0
1997	1	3	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8616.117512	0	0	4153.882488	0	0
1997	1	4	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8722.235023	0	0	4047.764977	0	0
1997	1	5	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8828.352535	0	0	3941.647465	0	0
1997	1	6	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8934.470046	0	0	3835.529954	0	0
1997	1	7	0.4	0.1	0.4	1014000	246000	40.56	39.36	7.903225806	98.21428571	9001.227558	0	0	3768.772442	0	0
1997	1	8	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9107.345069	0	0	3662.654931	0	0
1997	1	9	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9213.462581	0	0	3556.537419	0	0
1997	1	10	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9319.580092	0	0	3450.419908	0	0
1997	1	11	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9425.697604	0	0	3344.302396	0	0
1997	1	12	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9531.815115	0	0	3238.184885	0	0
1997	1	13	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9637.932627	0	0	3132.067373	0	0
1997	1	14	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9744.050138	0	0	3025.949862	0	0
1997	1	15	0.4	0.1	0.4	1014000	246000	40.56	39.36	7.903225806	98.21428571	9810.80765	0	0	2959.19235	0	0
1997	1	16	0.6	0.1	0.4	1014000	246000	60.84	59.04	7.903225806	98.21428571	9857.885161	0	0	2912.114839	0	0
1997	1	17	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	9964.002673	0	0	2805.997327	0	0
1997	1	18	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	10070.12018	0	0	2699.879816	0	0
1997	1	19	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	10176.2377	0	0	2593.762304	0	0
1997	1	20	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	10282.35521	0	0	2487.644793	0	0
1997	1	21	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	10388.47272	0	0	2381.527281	0	0
1997	1	22	2.5	0.1	0.4	1014000	246000	253.5	246	7.903225806	98.21428571	10248.59023	0	0	2521.40977	0	0
1997	1	23	18.5	0.1	0.4	1014000	246000	1875.9	1820.4	7.903225806	98.21428571	8534.307742	0	0	4235.692258	0	0
1997	1	24	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8640.425253	0	0	4129.574747	0	0
1997	1	25	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8746.542765	0	0	4023.457235	0	0
1997	1	26	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	8852.660276	0	0	3917.339724	0	0
1997	1	27	0.4	0.1	0.4	1014000	246000	40.56	39.36	7.903225806	98.21428571	8919.417788	0	0	3850.582212	0	0
1997	1	28	19.7	0.1	0.4	1014000	246000	1997.58	1938.48	7.903225806	98.21428571	7087.0553	0	0	5682.9447	0	0
1997	1	29	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	7193.172811	0	0	5576.827189	0	0
1997	1	30	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	7299.290323	0	0	5470.709677	0	0
1997	1	31	0	0.1	0.4	1014000	246000	0	0	7.903225806	98.21428571	7405.407834	0	0	5364.592166	0	0
1997	2	1	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	7511.27837	998.7216302	0	5258.72163	0	0
1997	2	2	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	8615.870536	0	0	4154.129464	0	0
1997	2	3	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	8721.741071	0	0	4048.258929	0	0
1997	2	4	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	8827.611607	0	0	3942.388393	0	0
1997	2	5	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	8933.482143	0	0	3836.517857	0	0
1997	2	6	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9039.352679	0	0	3730.647321	0	0
1997	2	7	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9145.223214	0	0	3624.776786	0	0
1997	2	8	0.3	0.1	0.4	1014000	246000	30.42	29.52	7.65625	98.21428571	9221.57375	0	0	3548.42625	0	0
1997	2	9	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9327.444286	0	0	3442.555714	0	0
1997	2	10	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9433.314821	0	0	3336.685179	0	0
1997	2	11	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9539.185357	0	0	3230.814643	0	0
1997	2	12	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9645.055893	0	0	3124.944107	0	0
1997	2	13	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9750.926429	0	0	3019.073571	0	0
1997	2	14	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9856.796964	0	0	2913.203036	0	0
1997	2	15	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	9962.6675	0	0	2807.3325	0	0
1997	2	16	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10068.53804	0	0	2701.461964	0	0
1997	2	17	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10174.40857	0	0	2595.591429	0	0
1997	2	18	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10280.27911	0	0	2489.720893	0	0
1997	2	19	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10386.14964	0	0	2383.850357	0	0
1997	2	20	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10492.02018	0	0	2277.979821	0	0
1997	2	21	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10597.89071	0	0	2172.109286	0	0
1997	2	22	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10703.76125	0	0	2066.23875	0	0
1997	2	23	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10809.63179	0	0	1960.368214	0	0
1997	2	24	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	10915.50232	0	0	1854.497679	0	0
1997	2	25	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	11021.37286	0	0	1748.627143	0	0
1997	2	26	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	11127.24339	0	0	1642.756607	0	0
1997	2	27	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	11233.11393	0	0	1536.886071	0	0
1997	2	28	0	0.1	0.4	1014000	246000	0	0	7.65625	98.21428571	11338.98446	0	0	1431.015536	0	0
1997	3	1	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11443.12617	0	0	1326.873831	0	0
1997	3	2	4.2	0.1	0.4	1014000	246000	425.88	413.28	5.927419355	98.21428571	11133.98787	0	0	1636.012126	0	0
1997	3	3	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11238.12958	0	0	1531.870421	0	0
1997	3	4	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11342.27128	0	0	1427.728715	0	0
1997	3	5	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11446.41299	0	0	1323.58701	0	0
1997	3	6	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11550.55469	0	0	1219.445305	0	0
1997	3	7	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11654.6964	0	0	1115.3036	0	0
1997	3	8	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11758.8381	0	0	1011.161895	0	0
1997	3	9	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11862.97981	0	0	907.0201901	0	0
1997	3	10	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	11967.12151	0	0	802.879485	0	0
1997	3	11	0	0.1	0.4	1014000	246000	0	0	5.927419355	98.21428571	12071.26322	0	0			

1997	6	11	0.1	0.1	0.4	1014000	246000	10.14	9.84	1.225	98.21428571	8407.862465	0	0	4362.137535	0	0		
1997	6	12	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	8507.301751	0	0	4262.698249	0	0	
1997	6	13	8.1	0.1	0.1	0.4	1014000	246000	821.34	797.04	1.225	98.21428571	7809.701037	0	0	4960.298963	0	0	
1997	6	14	10.5	0.1	0.1	0.4	1014000	246000	1064.7	1033.2	1.225	98.21428571	6875.940323	0	0	5894.059677	0	0	
1997	6	15	1.1	0.1	0.1	0.4	1014000	246000	111.54	108.24	1.225	98.21428571	6867.139608	0	0	5902.860392	0	0	
1997	6	16	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	6966.578894	0	0	5803.421106	0	0	
1997	6	17	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	7066.01818	0	0	5703.98182	0	0	
1997	6	18	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	7165.457465	0	0	5604.542535	0	0	
1997	6	19	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	7264.896751	1245.103249	0	0	5505.103249	0	0
1997	6	20	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	8609.439286	0	0	4160.560714	0	0	
1997	6	21	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	8708.878571	0	0	4061.121429	0	0	
1997	6	22	1.8	0.1	0.1	0.4	1014000	246000	182.52	177.12	1.225	98.21428571	8631.197857	0	0	4138.802143	0	0	
1997	6	23	0.4	0.1	0.1	0.4	1014000	246000	40.56	39.36	1.225	98.21428571	8691.277143	0	0	4078.722857	0	0	
1997	6	24	0.1	0.1	0.1	0.4	1014000	246000	10.14	9.84	1.225	98.21428571	8780.876429	0	0	3989.123571	0	0	
1997	6	25	0.1	0.1	0.1	0.4	1014000	246000	10.14	9.84	1.225	98.21428571	8870.475714	0	0	3899.524286	0	0	
1997	6	26	0.1	0.1	0.1	0.4	1014000	246000	10.14	9.84	1.225	98.21428571	8960.075	0	0	3809.925	0	0	
1997	6	27	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	9059.514286	0	0	3710.485714	0	0	
1997	6	28	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	9158.953571	0	0	3611.046429	0	0	
1997	6	29	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	9258.392857	0	0	3511.607143	0	0	
1997	6	30	0	0	0.1	0.4	1014000	246000	0	0	1.225	98.21428571	9357.832143	0	0	3412.167857	0	0	
1997	7	1	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9457.429493	0	0	3312.570507	0	0	
1997	7	2	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9557.026843	0	0	3212.973157	0	0	
1997	7	3	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9656.624194	0	0	3113.375806	0	0	
1997	7	4	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9756.221544	0	0	3013.778456	0	0	
1997	7	5	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9855.818894	0	0	2914.181106	0	0	
1997	7	6	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9955.416244	0	0	2814.583756	0	0	
1997	7	7	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10055.01359	0	0	2714.986406	0	0	
1997	7	8	1.1	0.1	0.1	0.4	1014000	246000	111.54	108.24	1.383064516	98.21428571	10046.37094	0	0	2723.629055	0	0	
1997	7	9	2.6	0.1	0.1	0.4	1014000	246000	263.64	255.84	1.383064516	98.21428571	9890.128295	0	0	2879.871705	0	0	
1997	7	10	1.2	0.1	0.1	0.4	1014000	246000	121.68	118.08	1.383064516	98.21428571	9871.645645	0	0	2898.354355	0	0	
1997	7	11	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9971.242995	0	0	2798.757005	0	0	
1997	7	12	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10070.84035	0	0	2699.159654	0	0	
1997	7	13	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10170.4377	0	0	2599.562304	0	0	
1997	7	14	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10270.03505	0	0	2499.964954	0	0	
1997	7	15	2.5	0.1	0.1	0.4	1014000	246000	253.5	246	1.383064516	98.21428571	10123.6324	0	0	2646.367604	0	0	
1997	7	16	3.8	0.1	0.1	0.4	1014000	246000	385.32	373.92	1.383064516	98.21428571	9849.309747	0	0	2920.690253	0	0	
1997	7	17	2.5	0.1	0.1	0.4	1014000	246000	253.5	246	1.383064516	98.21428571	9702.907097	0	0	3067.092903	0	0	
1997	7	18	0.2	0.1	0.1	0.4	1014000	246000	20.28	19.68	1.383064516	98.21428571	9782.824447	0	0	2987.175553	0	0	
1997	7	19	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9882.421797	0	0	2887.578203	0	0	
1997	7	20	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	9982.019147	0	0	2787.980853	0	0	
1997	7	21	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10081.6165	0	0	2688.383502	0	0	
1997	7	22	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10181.21385	0	0	2588.786152	0	0	
1997	7	23	0.3	0.1	0.1	0.4	1014000	246000	30.42	29.52	1.383064516	98.21428571	10251.2912	0	0	2518.708802	0	0	
1997	7	24	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10350.88855	0	0	2419.111452	0	0	
1997	7	25	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10450.4859	0	0	2319.514101	0	0	
1997	7	26	0.6	0.1	0.1	0.4	1014000	246000	60.84	59.04	1.383064516	98.21428571	10491.04325	0	0	2278.956751	0	0	
1997	7	27	1.1	0.1	0.1	0.4	1014000	246000	111.54	108.24	1.383064516	98.21428571	10482.4006	0	0	2287.599401	0	0	
1997	7	28	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10581.99795	0	0	2188.002051	0	0	
1997	7	29	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10681.5953	0	0	2088.4047	0	0	
1997	7	30	0	0	0.1	0.4	1014000	246000	0	0	1.383064516	98.21428571	10781.19265	0	0	1988.80735	0	0	
1997	7	31	0.2	0.1	0.1	0.4	1014000	246000	20.28	19.68	1.383064516	98.21428571	10861.11	0	0	1908.89	0	0	
1997	8	1	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	10961.30009	0	0	1808.699908	0	0	
1997	8	2	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	11061.49018	0	0	1708.509816	0	0	
1997	8	3	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	11161.68028	0	0	1608.319724	0	0	
1997	8	4	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	11261.87037	0	0	1508.129631	0	0	
1997	8	5	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	11362.06046	0	0	1407.939539	0	0	
1997	8	6	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	11462.25055	0	0	1307.749447	0	0	
1997	8	7	12	0.1	0.1	0.4	1014000	246000	1216.8	1180.8	1.975806452	98.21428571	10381.64065	0	0	2388.359355	0	0	
1997	8	8	12.8	0.1	0.1	0.4	1014000	246000	1297.92	1259.52	1.975806452	98.21428571	9222.310737	0	0	3547.689263	0	0	
1997	8	9	1.9	0.1	0.1	0.4	1014000	246000	192.66	186.96	1.975806452	98.21428571	9135.540829	0	0	3634.459171	0	0	
1997	8	10	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	9235.730922	0	0	3534.269078	0	0	
1997	8	11	16	0.1	0.1	0.4	1014000	246000	1622.4	1574.4	1.975806452	98.21428571	7761.521014	0	0	5008.478986	0	0	
1997	8	12	14.2	0.1	0.1	0.4	1014000	246000	1439.88	1397.28	1.975806452	98.21428571	6464.431106	0	0	6305.568894	0	0	
1997	8	13	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	6564.621198	0	0	6205.378802	0	0	
1997	8	14	0.3	0.1	0.1	0.4	1014000	246000	30.42	29.52	1.975806452	98.21428571	6635.29129	0	0	6134.70871	0	0	
1997	8	15	0.4	0.1	0.1	0.4	1014000	246000	40.56	39.36	1.975806452	98.21428571	6696.121382	0	0	6073.878618	0	0	
1997	8	16	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	6796.311475	0	0	5973.688525	0	0	
1997	8	17	0	0	0.1	0.4	1014000	246000	0	0	1.975806452	98.21428571	6896.501567	0	0	5873.498433	0	0	
1997	8	18	1.1	0.1	0.1	0.4	1014000	246000	111.54	108.24	1.975806452	98.21428571							

1997	11	24	0	0.1	0.4	1014000	246000	0	0	7.145833333	98.21428571	8826.080357	0	0	3943.919643	0	0
1997	11	25	0	0.1	0.4	1014000	246000	0	0	7.145833333	98.21428571	8931.440476	0	0	3838.558524	0	0
1997	11	26	0	0.1	0.4	1014000	246000	0	0	7.145833333	98.21428571	9036.800595	0	0	3733.199405	0	0
1997	11	27	0.6	0.1	0.4	1014000	246000	60.84	59.04	7.145833333	98.21428571	9083.120714	0	0	3686.879286	0	0
1997	11	28	0	0.1	0.4	1014000	246000	0	0	7.145833333	98.21428571	9188.480833	0	0	3581.519167	0	0
1997	11	29	0	0.1	0.4	1014000	246000	0	0	7.145833333	98.21428571	9293.840952	0	0	3476.159048	0	0
1997	11	30	1.8	0.1	0.4	1014000	246000	182.52	177.12	7.145833333	98.21428571	9222.081071	0	0	3547.918929	0	0
1997	12	1	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	9328.001002	0	0	3441.998998	0	0
1997	12	2	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	9433.920933	0	0	3336.079067	0	0
1997	12	3	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	9539.840864	0	0	3230.159136	0	0
1997	12	4	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	9645.760795	0	0	3124.239205	0	0
1997	12	5	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	9751.680726	0	0	3018.319274	0	0
1997	12	6	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	9857.600657	0	0	2912.399343	0	0
1997	12	7	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	9963.520588	0	0	2806.479412	0	0
1997	12	8	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10069.44052	0	0	2700.559482	0	0
1997	12	9	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10175.36045	0	0	2594.639551	0	0
1997	12	10	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10281.28038	0	0	2488.71962	0	0
1997	12	11	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10387.20031	0	0	2382.799689	0	0
1997	12	12	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10493.12024	0	0	2276.879758	0	0
1997	12	13	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10599.04017	0	0	2170.959827	0	0
1997	12	14	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10704.9601	0	0	2065.039896	0	0
1997	12	15	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10810.88003	0	0	1959.119965	0	0
1997	12	16	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	10916.79997	0	0	1853.200035	0	0
1997	12	17	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11022.7199	0	0	1747.280104	0	0
1997	12	18	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11128.63983	0	0	1641.360173	0	0
1997	12	19	1.5	0.1	0.4	1014000	246000	152.1	147.6	7.705645161	98.21428571	11086.95976	0	0	1683.040242	0	0
1997	12	20	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11192.87969	0	0	1577.120311	0	0
1997	12	21	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11298.79962	0	0	1471.20038	0	0
1997	12	22	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11404.71955	0	0	1365.280449	0	0
1997	12	23	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11510.63948	0	0	1259.360518	0	0
1997	12	24	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11616.55941	0	0	1153.440588	0	0
1997	12	25	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11722.47934	0	0	1047.520657	0	0
1997	12	26	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11828.39927	0	0	941.6007258	0	0
1997	12	27	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	11934.31921	0	0	835.6807949	0	0
1997	12	28	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	12040.23914	0	0	729.7608641	0	0
1997	12	29	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	12146.15907	0	0	623.8409332	0	0
1997	12	30	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	12252.079	0	0	517.9210023	0	0
1997	12	31	0	0.1	0.4	1014000	246000	0	0	7.705645161	98.21428571	12357.99893	0	0	412.0010714	0	0
								43267.38	41987.28	1604.75	35848.21429			1083.944762	11084.11333	39	2

Year	Month	Day	Daily Recorded Rainfall (mm)	Runoff Coefficient		Catchment C1 (m²)	Catchment C2 (m²)	Overland Flow		Outputs		Adjusted Sediment Dam Available Capacity (m³)	Sump Excess (Flooding of Pit) (m³)	Treated release from Quarry Sump (m³)	Volume of Harvested Water Remaining (m³)	Days Sump is empty	Pit flooding events
				C1	Q1			Overland Flow External (m³)	Overland Flow Quarry (m³)	Evaporation (m³)	Water Used in Operations (m³)						
1997	1	1	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12119.32892	0	0	6120	0	
1997	1	2	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12250	0	0	6120	0	0
1997	1	3	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12380.67108	0	0	5989.328917	0	0
1997	1	4	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12511.34217	0	0	5858.657834	0	0
1997	1	5	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12642.01325	0	0	5727.986751	0	0
1997	1	6	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12772.68433	0	0	5597.315668	0	0
1997	1	7	0.4	0.1	0.4	910000	354000	36.4	56.64	7.903225806	122.7678571	12846.71541	0	0	5523.284585	0	0
1997	1	8	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12977.38665	0	0	5392.613502	0	0
1997	1	9	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	13108.06758	0	0	5261.942419	0	0
1997	1	10	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	13238.72866	0	0	5131.271336	0	0
1997	1	11	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	13369.39975	0	0	5000.600253	0	0
1997	1	12	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	13500.07083	0	0	4869.929171	0	0
1997	1	13	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	13630.74191	0	0	4739.258088	0	0
1997	1	14	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	13761.413	0	0	4608.587005	0	0
1997	1	15	0.4	0.1	0.4	910000	354000	36.4	56.64	7.903225806	122.7678571	13835.44408	0	0	4534.555922	0	0
1997	1	16	0.6	0.1	0.4	910000	354000	54.6	84.96	7.903225806	122.7678571	13881.15516	0	0	4488.844839	0	0
1997	1	17	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	14011.82624	0	0	4358.173756	0	0
1997	1	18	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	14142.49733	0	0	4227.502673	0	0
1997	1	19	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	14273.16841	0	0	4096.83159	0	0
1997	1	20	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	14403.83949	0	0	3966.160507	0	0
1997	1	21	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	14534.51058	0	0	3835.489424	0	0
1997	1	22	2.5	0.1	0.4	910000	354000	227.5	354	7.903225806	122.7678571	14311.18166	0	0	4058.818341	0	0
1997	1	23	18.5	0.1	0.4	910000	354000	1683.5	2619.6	7.903225806	122.7678571	11822.25274	0	0	6547.747258	0	0
1997	1	24	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	11952.92382	0	0	6417.076175	0	0
1997	1	25	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12083.59491	0	0	6286.405092	0	0
1997	1	26	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	12214.26599	0	0	6155.734009	0	0
1997	1	27	0.4	0.1	0.4	910000	354000	36.4	56.64	7.903225806	122.7678571	12288.29707	0	0	6081.702926	0	0
1997	1	28	19.7	0.1	0.4	910000	354000	1792.7	2789.52	7.903225806	122.7678571	9629.448157	0	0	8740.551843	0	0
1997	1	29	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	9760.11924	0	0	8609.880776	0	0
1997	1	30	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	9890.790323	0	0	8479.209677	0	0
1997	1	31	0	0.1	0.4	910000	354000	0	0	7.903225806	122.7678571	10021.46141	0	0	8348.538594	0	0
1997	2	1	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	10151.88551	0	0	8218.114487	0	0
1997	2	2	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	10282.30962	0	0	8087.69038	0	0
1997	2	3	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	10412.73373	0	0	7957.266273	0	0
1997	2	4	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	10543.15783	0	0	7826.842166	0	0
1997	2	5	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	10673.58194	0	0	7696.418059	0	0
1997	2	6	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	10804.00605	0	0	7565.993952	0	0
1997	2	7	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	10934.43016	0	0	7435.569844	0	0
1997	2	8	0.3	0.1	0.4	910000	354000	27.3	42.48	7.65625	122.7678571	11022.37426	0	0	7347.625737	0	0
1997	2	9	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	11152.79837	0	0	7217.20163	0	0
1997	2	10	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	11283.22248	0	0	7086.777523	0	0
1997	2	11	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	11413.64658	0	0	6956.353416	0	0
1997	2	12	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	11544.07069	0	0	6825.929309	0	0
1997	2	13	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	11674.4948	0	0	6695.505202	0	0
1997	2	14	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	11804.91891	0	0	6565.081094	0	0
1997	2	15	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	11935.34301	0	0	6434.656987	0	0
1997	2	16	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12065.76712	0	0	6304.23288	0	0
1997	2	17	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12196.19123	0	0	6173.808773	0	0
1997	2	18	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12326.61533	0	0	6043.384666	0	0
1997	2	19	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12457.03944	0	0	5912.960559	0	0
1997	2	20	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12587.46355	0	0	5782.536452	0	0
1997	2	21	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12717.88766	0	0	5652.112344	0	0
1997	2	22	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12848.31176	0	0	5521.688237	0	0
1997	2	23	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	12978.73587	0	0	5391.26413	0	0
1997	2	24	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	13109.15988	0	0	5260.840023	0	0
1997	2	25	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	13239.58408	0	0	5130.415916	0	0
1997	2	26	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	13370.00819	0	0	4999.991809	0	0
1997	2	27	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	13500.4323	0	0	4869.567702	0	0
1997	2	28	0	0.1	0.4	910000	354000	0	0	7.65625	122.7678571	13630.85641	0	0	4739.134594	0	0
1997	3	1	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	13759.55168	0	0	4610.448318	0	0
1997	3	2	4.2	0.1	0.4	910000	354000	382.2	594.72	5.927419355	122.7678571	13293.52696	0	0	5076.473041	0	0
1997	3	3	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	13422.22224	0	0	4947.777765	0	0
1997	3	4	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	13550.91751	0	0	4819.082488	0	0
1997	3	5	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	13679.61279	0	0	4690.387212	0	0
1997	3	6	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	13808.30806	0	0	4561.691935	0	0
1997	3	7	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	13937.00334	0	0	4432.996659	0	0
1997	3	8	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	14065.69862	0	0	4304.301382	0	0
1997	3	9	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	14194.39389	0	0	4175.606106	0	0
1997	3	10	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	14323.08917	0	0	4046.910829	0	0
1997	3	11	0	0.1	0.4	910000	354000	0	0	5.927419355	122.7678571	14451.78445	0	0	3918.215553	0	0
1997	3	12	0	0.1	0.4												

1997	6	11	0.1	0.1	0.4	910000	354000	9.1	14.16	1.225	122.7678571	11340.97175	0	0	7029.028249	0	0
1997	6	12	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	11464.96461	0	0	6905.035392	0	0
1997	6	13	8.1	0.1	0.4	910000	354000	737.1	1146.96	1.225	122.7678571	10441.99747	0	0	7928.002535	0	0
1997	6	14	10.5	0.1	0.4	910000	354000	955.5	1486.8	1.225	122.7678571	9079.190323	0	0	9290.809677	0	0
1997	6	15	1.1	0.1	0.4	910000	354000	100.1	155.76	1.225	122.7678571	9047.42318	0	0	9322.57682	0	0
1997	6	16	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	9171.416037	0	0	9198.583963	0	0
1997	6	17	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	9295.408894	0	0	9074.591106	0	0
1997	6	18	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	9419.401751	0	0	8950.598249	0	0
1997	6	19	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	9543.394608	0	0	8826.605392	0	0
1997	6	20	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	9667.387465	0	0	8702.612535	0	0
1997	6	21	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	9791.380323	0	0	8578.619677	0	0
1997	6	22	1.8	0.1	0.4	910000	354000	163.8	254.88	1.225	122.7678571	9660.49318	0	0	8709.50682	0	0
1997	6	23	0.4	0.1	0.4	910000	354000	36.4	56.64	1.225	122.7678571	9727.846037	0	0	8642.153963	0	0
1997	6	24	0.1	0.1	0.4	910000	354000	9.1	14.16	1.225	122.7678571	9837.678894	0	0	8532.321106	0	0
1997	6	25	0.1	0.1	0.4	910000	354000	9.1	14.16	1.225	122.7678571	9947.511751	0	0	8422.488249	0	0
1997	6	26	0.1	0.1	0.4	910000	354000	9.1	14.16	1.225	122.7678571	10057.34461	0	0	8312.655392	0	0
1997	6	27	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	10181.33747	0	0	8188.662535	0	0
1997	6	28	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	10305.33032	0	0	8064.669677	0	0
1997	6	29	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	10429.32318	0	0	7940.67682	0	0
1997	6	30	0	0.1	0.4	910000	354000	0	0	1.225	122.7678571	10553.31604	0	0	7816.683963	0	0
1997	7	1	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	10677.46696	0	0	7692.533041	0	0
1997	7	2	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	10801.61788	0	0	7568.38212	0	0
1997	7	3	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	10925.7688	0	0	7444.231198	0	0
1997	7	4	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11049.91972	0	0	7320.080276	0	0
1997	7	5	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11174.07065	0	0	7195.929355	0	0
1997	7	6	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11298.22157	0	0	7071.778433	0	0
1997	7	7	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11422.37249	0	0	6947.627512	0	0
1997	7	8	1.1	0.1	0.4	910000	354000	100.1	155.76	1.383064516	122.7678571	11390.76341	0	0	6979.23659	0	0
1997	7	9	2.6	0.1	0.4	910000	354000	236.6	368.16	1.383064516	122.7678571	11146.75433	0	0	7223.245668	0	0
1997	7	10	1.2	0.1	0.4	910000	354000	109.2	169.92	1.383064516	122.7678571	11100.98525	0	0	7269.014747	0	0
1997	7	11	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11225.13618	0	0	7144.863825	0	0
1997	7	12	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11349.2871	0	0	7020.712903	0	0
1997	7	13	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11473.43802	0	0	6896.561982	0	0
1997	7	14	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11597.58894	0	0	6772.41106	0	0
1997	7	15	2.5	0.1	0.4	910000	354000	227.5	354	1.383064516	122.7678571	11367.73986	0	0	7002.260138	0	0
1997	7	16	3.8	0.1	0.4	910000	354000	345.8	538.08	1.383064516	122.7678571	10953.81078	0	0	7416.189217	0	0
1997	7	17	2.5	0.1	0.4	910000	354000	227.5	354	1.383064516	122.7678571	10723.96171	0	0	7646.038295	0	0
1997	7	18	0.2	0.1	0.4	910000	354000	18.2	28.32	1.383064516	122.7678571	10819.79263	0	0	7550.207373	0	0
1997	7	19	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	10943.94355	0	0	7426.056452	0	0
1997	7	20	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11068.09447	0	0	7301.90553	0	0
1997	7	21	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11192.24539	0	0	7177.754608	0	0
1997	7	22	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11316.39631	0	0	7053.603687	0	0
1997	7	23	0.3	0.1	0.4	910000	354000	27.3	42.48	1.383064516	122.7678571	11398.06724	0	0	6971.932765	0	0
1997	7	24	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11522.21816	0	0	6847.781843	0	0
1997	7	25	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11646.36908	0	0	6723.630922	0	0
1997	7	26	0.6	0.1	0.4	910000	354000	54.6	84.96	1.383064516	122.7678571	11685.56	0	0	6684.44	0	0
1997	7	27	1.1	0.1	0.4	910000	354000	100.1	155.76	1.383064516	122.7678571	11653.95092	0	0	6716.049078	0	0
1997	7	28	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11778.10184	0	0	6591.898157	0	0
1997	7	29	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	11902.25276	0	0	6467.747235	0	0
1997	7	30	0	0.1	0.4	910000	354000	0	0	1.383064516	122.7678571	12026.40369	0	0	6343.596313	0	0
1997	7	31	0.2	0.1	0.4	910000	354000	18.2	28.32	1.383064516	122.7678571	12122.23461	0	0	6247.765392	0	0
1997	8	1	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	12246.97827	0	0	6123.021728	0	0
1997	8	2	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	12371.72194	0	0	5998.278065	0	0
1997	8	3	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	12496.4656	0	0	5873.534401	0	0
1997	8	4	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	12621.20926	0	0	5748.790737	0	0
1997	8	5	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	12745.95293	0	0	5624.047074	0	0
1997	8	6	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	12870.69659	0	0	5499.30341	0	0
1997	8	7	12	0.1	0.4	910000	354000	1092	1699.2	1.975806452	122.7678571	11296.24025	0	0	7073.759747	0	0
1997	8	8	12.8	0.1	0.4	910000	354000	1164.8	1812.48	1.975806452	122.7678571	9608.503917	0	0	8761.496083	0	0
1997	8	9	1.9	0.1	0.4	910000	354000	172.9	269.04	1.975806452	122.7678571	9464.207581	0	0	8905.792419	0	0
1997	8	10	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	9588.951244	0	0	8781.048756	0	0
1997	8	11	16	0.1	0.4	910000	354000	1456	2265.6	1.975806452	122.7678571	7448.094908	0	0	10921.90509	0	0
1997	8	12	14.2	0.1	0.4	910000	354000	1292.2	2010.72	1.975806452	122.7678571	5562.118571	0	0	12807.88143	0	0
1997	8	13	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	5686.862235	0	0	12683.13776	0	0
1997	8	14	0.3	0.1	0.4	910000	354000	27.3	42.48	1.975806452	122.7678571	5769.125899	0	0	12600.8741	0	0
1997	8	15	0.4	0.1	0.4	910000	354000	36.4	56.64	1.975806452	122.7678571	5837.229562	0	0	12532.77044	0	0
1997	8	16	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	5961.973226	0	0	12408.02677	0	0
1997	8	17	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	6086.716889	0	0	12283.28311	0	0
1997	8	18	1.1	0.1	0.4	910000	354000	100.1	155.76	1.975806452	122.7678571	6055.700553	0	0	12314.29945	0	0
1997	8	19	0.3	0.1	0.4	910000	354000	27.3	42.48	1.975806452	122.7678571	6137.964217	0	0	12232.03578	0	0
1997	8	20	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	6262.70788	0	0	12107.29212	0	0
1997	8	21	0	0.1	0.4	910000	354000	0	0	1.975806452	122.7678571	6387.451544	0	0	11982.54846	0	

1997	11	24	0	0.1	0.4	910000	354000	0	0	7.145833333	122.7678571	8899.741071	0	0	9470.258929	0	0
1997	11	25	0	0.1	0.4	910000	354000	0	0	7.145833333	122.7678571	9029.654762	0	0	9340.345238	0	0
1997	11	26	0	0.1	0.4	910000	354000	0	0	7.145833333	122.7678571	9159.568452	0	0	9210.431548	0	0
1997	11	27	0.6	0.1	0.4	910000	354000	54.6	84.96	7.145833333	122.7678571	9204.522143	0	0	9165.477857	0	0
1997	11	28	0	0.1	0.4	910000	354000	0	0	7.145833333	122.7678571	9334.435833	0	0	9035.564167	0	0
1997	11	29	0	0.1	0.4	910000	354000	0	0	7.145833333	122.7678571	9464.349524	0	0	8905.650476	0	0
1997	11	30	1.8	0.1	0.4	910000	354000	163.8	254.88	7.145833333	122.7678571	9339.383214	0	0	9030.616786	0	0
1997	12	1	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	9469.856717	0	0	8900.143283	0	0
1997	12	2	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	9600.330219	0	0	8769.669781	0	0
1997	12	3	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	9730.803721	0	0	8639.196279	0	0
1997	12	4	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	9861.277224	0	0	8508.722776	0	0
1997	12	5	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	9991.750726	0	0	8378.249274	0	0
1997	12	6	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	10122.22423	0	0	8247.775772	0	0
1997	12	7	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	10252.69773	0	0	8117.30227	0	0
1997	12	8	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	10383.17123	0	0	7986.828767	0	0
1997	12	9	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	10513.64474	0	0	7856.355265	0	0
1997	12	10	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	10644.11824	0	0	7725.881763	0	0
1997	12	11	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	10774.59174	0	0	7595.40826	0	0
1997	12	12	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	10905.06524	0	0	7464.934758	0	0
1997	12	13	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11035.53874	0	0	7334.461256	0	0
1997	12	14	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11166.01225	0	0	7203.987753	0	0
1997	12	15	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11296.48575	0	0	7073.514251	0	0
1997	12	16	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11426.95925	0	0	6943.040749	0	0
1997	12	17	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11557.43275	0	0	6812.567247	0	0
1997	12	18	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11687.90626	0	0	6682.093744	0	0
1997	12	19	1.5	0.1	0.4	910000	354000	136.5	212.4	7.705645161	122.7678571	11605.97976	0	0	6764.020242	0	0
1997	12	20	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11736.45326	0	0	6633.54674	0	0
1997	12	21	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11866.92676	0	0	6503.073237	0	0
1997	12	22	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	11997.40026	0	0	6372.599735	0	0
1997	12	23	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	12127.87377	0	0	6242.126233	0	0
1997	12	24	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	12258.34727	0	0	6111.65273	0	0
1997	12	25	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	12388.82077	0	0	5981.179228	0	0
1997	12	26	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	12519.29427	0	0	5850.705726	0	0
1997	12	27	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	12649.76778	0	0	5720.232224	0	0
1997	12	28	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	12780.24128	0	0	5589.758721	0	0
1997	12	29	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	12910.71478	0	0	5459.285219	0	0
1997	12	30	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	13041.18828	0	0	5328.811717	0	0
1997	12	31	0	0.1	0.4	910000	354000	0	0	7.705645161	122.7678571	13171.66179	0	0	5198.338214	0	0
								38829.7	60420.72	1604.75	44810.26786			6065.788011	10268.52702	11	4