Lang Lang Sand Resources Pty Ltd

SURFACE WATER MANAGEMENT PLAN

for

Extractive Industry Work Authority WA007541

Lang Lang Sand Pit

February 2023

WA007541 – Lang Lang Sand Pit
5575 South Gippsland Highway
LANG LANG

BCA Project No. A25_005

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WA007541 – Lang Lang Sand Pit
Surface Water Management Plan

Prepared by:

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14 February 2023

Document Control / Authorisation

The preparation of this Surface Water Management Plan has been a collaborative effort between BCA Consulting and Kelvin Sargent of Lang Lang Sand Resources, for implementation at WA007541, Lang Lang.

Revision history

Revision	Description	Date	Originator	Reviewer	Approver
1	1st submission to ERR with Work Plan	Sep 2022	MDS	KS	KS
2	2nd submission to ERR with Work Plan	Feb 2023	MDS	KS	KS

Distribution

Report Status	No. of copies	Format	Distributed to	Date
1st Draft for Comment	1	PDF	Lang Lang Sand Resource Pty Ltd	13 Sep 2022
2nd Draft for Comment	1	PDF	Lang Lang Sand Resource Pty Ltd	14 Feb 2023

Review

As a minimum, this Surface Water Management Plan will be reviewed within 2 years of being approved.

NEXT REVIEW DATE: February 2025

1. Introduction

The Surface Water Management Plan is an adaptive tool for managing both the risks posed by water flows and the potential risks posed by the operation to beneficial uses of water.

This document is to be used in conjunction with the Risk Management Plan component of the approved Work Plan for the quarry. It allows for the adaptive application of a range of control measures to manage the risks posed by differing hazards. This Surface Water Management Plan is included as a key control in the Risk Treatment Plans for the following hazards in the Risk Management Plan:

- Surface Water Flows
- Erosion and Sedimentation
- Ground Disturbance (managing impacts of any acidified runoff)
- Ground Instability
- Process Water and Storages
- Slimes Storage

The initial Surface Water Management Plan that is provided with a Work Plan application will typically demonstrate water management for the first two or three stages of extraction only, showing both internal water management and the onsite management of surface water flows to minimise offsite impacts. The key water management features for managing offsite impacts of surface water flows will also be shown on Figure 3, Site Layout Plan, and any of these features retained at closure will be shown on Figure 4, Rehabilitation Landform.

As quarry development progresses this Surface Water Management Plan will be adapted and continue to evolve to maintain effective risk management, in accordance with the objectives, compliance standards and acceptance criteria set out in the Risk Treatment Plans. Compliance with the approved Work Plan, including the overarching risk management and control measures, will be maintained throughout the life of the quarry.

The Surface Water Management Plan is designed to be easy-to-follow, non-technical, and can be used by anyone who needs to understand the management of water on the site at any point during the life of the quarry, in respect of both the risks posed by water flows and the potential risks posed by the operation to beneficial uses of water.

2. Components of the Surface Water Management Plan

The main components of the Surface Water Management Plan are:

- **Trigger Action Response Plans (TARPs)** – setting out the trigger events that will initiate adaptive management processes for adverse or unexpected conditions.
- **a Surface Water Management Plan drawing** – showing all the current water management features, for both internal water management and onsite water management to minimise offsite impacts

Trigger Action Response Plans are included for:

- Water Storages
- Rainfall / Storm Events

3. Monitoring and Reporting

The monitoring in relation to each hazard is set out in the individual Risk Treatment Plans and will provide the necessary alerts for the triggers identified in the TARPs.

Reporting on the effectiveness of the control measures in the Risk Management Plan, including this Surface Water Management Plan, and any adverse events will be as documented in the individual Risk Treatment Plans.

4. Review

The Surface Water Management Plan will be reviewed regularly against the control measures adopted at the site for water management. The minimum review frequency is listed inside the cover page, however other triggers to review the Surface Water Management Plan include:

- prior to progressing to a new quarry extraction stage that requires revised water management
- within two years of the last approval, and sooner if:
- an unexpected inrush of water or inundation occurs; or
- surface water diversion causes unintended impacts offsite; or
- excessive erosion due to flows of water; or
- turbid water is discharged offsite or could potentially be discharged offsite; or
- flow of water leading to unexpected ground instability; or
- an unexpected overflow or instability of water storage; or
- unexpected rise in pit lake level above designed freeboard level; or
- unexpected drop in pit lake level below required depth over deposited backfill materials; or
- water quality criteria for pit lake are exceeded or could potentially be exceeded; or
- acidified runoff is discharged offsite or could potentially be discharged offsite; or
- the approved Work Plan is to be varied; or
- if new risk management methods are implemented.

WA007541 – WATER STORAGES

Level 1	Trigger	Action	Response
NORMAL EVENT	• Minimum 1m of freeboard on above-ground (farm dam) water storage	• Regular monitoring	Continue with normal operation
Level 2	**Trigger**	**Action**	**Response**
MEDIUM RISK EVENT	• Between 1m and 0.5m of freeboard on above-ground (farm dam) water storage	• Daily review local weather conditions, BOM website • Increased monitoring of water inflows • Check start pumps • Review condition of downstream sediment control fences • if required, increase out flows to plant, in pit water storage / excavation, dust suppression or irrigation	• Increase monitoring levels till at least 1m freeboard in above-ground (farm dam) water storage • Remedial action to overflow drains / control structures as required
Level 3	**Trigger**	**Action**	**Response**
HIGH RISK EVENT	• Less than 0.5m of freeboard on above-ground (farm dam) water storage	• Start pump(s) and discharge to in pit water storage or excavation • Check downstream sediment control fences in place and operational in case of over topping • Increase monitoring frequency / site vigilance • As much as possible, divert incoming water directly to the excavation	• Hourly monitoring frequency until satisfied water level is dropping • Hourly check of pumps and diversion structures to ensure water level in above-ground water storage (farm dam) is not rising • If water level in water storage (farm dam) is still rising (ie above actions cannot reduce the water level) evaluate potential for the occurrence of site discharge. If necessary, initiate process of emergency discharge of water with EPA

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WA007541 – RAINFALL / STORM EVENTS

Level 1 NORMAL EVENT	**Trigger** As measured at the rain gauge at the site office • A) Less than 5mm in 24hr • B) More than 5mm but less than 10mm in 24h or Less than 10mm in 8hrs	**Action** A) • Increase awareness of local conditions • Review BOM web site for trends in local conditions / weather direction B) • Conduct a site inspection of waterway diversion, site drains and bunds to ensure integrity and water storage levels to ensure minimum freeboard is maintained • Inspect rehabilitated slopes for signs of erosion and instability.	**Response** • Continue with normal operation If required, remedial action on rehabilitated slopes, as per Rehabilitation Plan
Level 2 MEDIUM RISK EVENT	**Trigger** As measured at the rain gauge at the site office • More than 10mm but less than 30mm in 24hrs or • More than 10mm but less than 20mm in 8hrs	**Action** • Frequent visits to BOM web site / news outlets for trends in local conditions • Conduct a site inspection of waterway diversion, site drains and bunds, to ensure integrity • Conduct a site inspection of water storages and ensure minimum freeboard is maintained • Check of pumps to ensure they start • Inspect and report on rehabilitated slopes for signs of erosion and instability.	**Response** • Continue with normal operation • Record inspection of waterway diversion, all site drains, bunds and water storages • Initiate / undertake any remedial actions as necessary (ie clearing any obstructions in drains, test start/starting pumps to increase freeboard in water storages) • If required, remedial action on rehabilitated slopes, as per Rehabilitation Plan
Level 3 HIGH RISK EVENT	**Trigger** As measured at the rain gauge at the site office • More than 30mm in 24hrs or • More than 20mm in 8hrs	**Action** • Constant site presence monitoring effectiveness of actions and weather conditions • Immediate on-site inspection and vigilance • Monitoring of water storage freeboard, integrity of waterway diversion, site drains and bunds • Start pumps to reduce freeboard in water storages • Move any plant /equipment to higher ground. • Inspect and report on rehabilitated slopes for signs of erosion and instability.	**Response** • Continual monitoring until satisfied water levels are dropping • Conduct hourly or as needed site inspection of waterway diversion, all site drains, bunds and water storages • Initiate / undertake any remedial actions necessary • Contact management to initiate emergency discharge process with EPA. • If required, remedial action on rehabilitated slopes, as per Rehabilitation Plan

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ACM

For BCA CONSULTING EARTH RESOURCES

LANG LANG SAND RESOURCES P/L

Drawing: A3-2238 Revision: 0 Author: MS, IW

WaterManagementPlans_0323.WOR

Date:1/03/2023

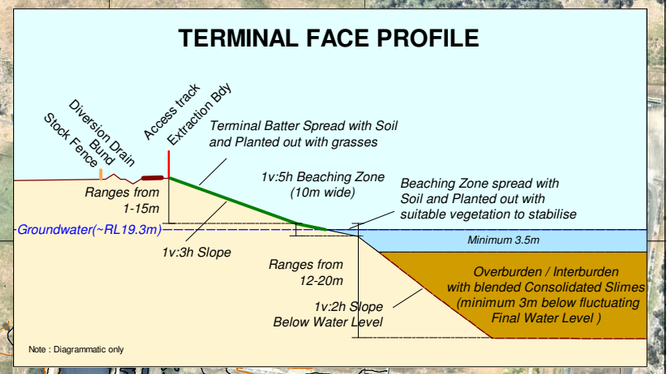
Project No: A25-005

STAGE 1

Extractive Industry Work Authority No: WA007541
Lang Lang Sand Pit, LANG LANG

STAGE 1
SURFACE WATER MANAGEMENT PLAN

TERMINAL FACE PROFILE



MW01
House
SOUTH
Staged construction of Screening Bund
Waterway Diversion
Pit Bund
Minimum 40m Buffer from Channel
Early Construction & Rehabilitation of Waterway Diversion
Establish initial pasture on disturbed ground as soon as practicable
STAGE 4A
WRK041821
Licensed Extraction Bores
WRK066223
Site Entrance
Weighbridge /Office
Access Road
Office / Amenities
Vehicle Parking
HAUL ROAD
(To be removed during later Stages)
Process Water Storage
(Above ground)
Pumped from Bores
Processing & Stockpiling Area
Sediment / Interceptor Trap
STAGE 4B
Workshop
Initial Extraction for In-pit Water Storage
STAGE 1A1
Retained Initially Material (Dam Wall)
(Dam walls removed during later Stages)
MW02
Beach Energy
Gas Refining Facility (Bass Gas)
Waterway Diversion
Pit Bund
MW05
Additional Bore; Exact location to be finalised
Minimum 40m Buffer from Channel
Existing Surface Drainage Line
STAGE 1B
STAGE 1A2
HAUL ROAD
(To be removed during later Stages)
Temporary Materials Storage & Handling Area
(Soil, Overburden, Plant Oversize/Waste & Consolidated Slimes)
Relocated as Quarry is developed
40m Buffer
20m Exclusion Zone for large tree
Note :
Excess water in Water Storage irrigated to rehabilitation areas or pastures
GIPPSLAND
House
Staged construction of Screening Bund
MW04
STAGE 3
House
Screening Bund
STAGE 2
Establish initial pasture on constructed bund as soon as practicable
Staged construction of Screening Bund
WA007541
Existing Site Drainage Line
HIGHWAY
MW03
House
Access Road
Barro Group
Nyora Quarry
GRID NORTH

Scale: 1:6000

0 40 80 120 160 200 300

metres

LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- EXTRACTION BOUNDARY
- STAGE AREAS & DIRECTION (STAGE 2)
- WATERWAY DIVERSION CHANNEL & DISTURBED MARGINS
- EXISTING DRAINAGE LINE
- SURFACE WATER DIVERSION BUND
- EXISTING POWER POLES & LINES
- GROUNDWATER MONITORING BORES
- RUNOFF INTERCEPTION DRAIN
- CONTOUR (1m Interval)

Aerial Photography Nearmap 22/12/19 & Topography Spiire 11/2018

ADVERTISED PLAN

ACM For BCA CONSULTING EARTH RESOURCES

LANG LANG SAND RESOURCES P/L

Drawing: A3-2239 Revision: 0 Author: MS, IW

WaterManagementPlans_0323.WOR

Date:1/03/2023

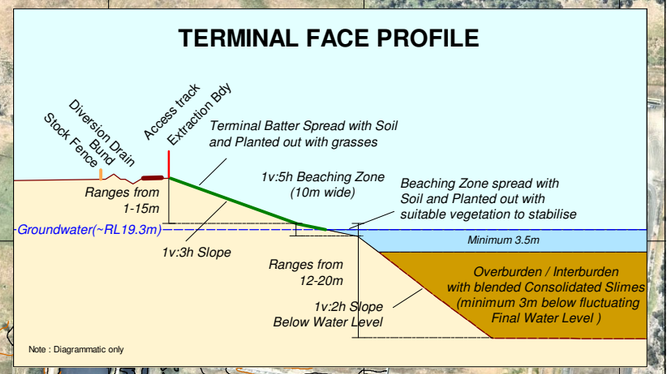
Project No: A25-005

STAGE 2

Extractive Industry Work Authority No: WA007541
Lang Lang Sand Pit, LANG LANG

STAGE 2 SURFACE WATER MANAGEMENT PLAN

TERMINAL FACE PROFILE



Note : Diagrammatic only

MW01
House
SOUTH
Waterway Diversion
Pit Bund
Minimum 40m Buffer from Channel
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WRK041821
WRK066223
Licensed Extraction Bores
Site Entrance
Waterway Diversion fully Rehabilitated
Minimum 40m Buffer from Channel
MW02
Weighbridge /Office
Access Road
Office / Amenities
Vehicle Parking
HAUL ROAD
(To be removed during later Stages)
Beach Energy
Gas Refining Facility (Bass Gas)
Process Water Storage
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HAUL ROAD
(To be removed during later Stages)
Temporary Materials Storage & Handling Area (Soil, Overburden, Plant Oversize/Waste & Consolidated Slimes) Relocated as Quarry is developed
STAGE 1A2
Establish initial pasture on terminal batters within 12 months
40m Buffer
20m Exclusion Zone for large tree
Existing Site Drainage Line
Note :
Excess water in Water Storage irrigated to rehabilitation areas or pastures
House
GIPPSLAND
MW04
House
STAGE 3
Screening Bund
STAGE 2
WA007541
Screening Bund
HIGHWAY
MW03
Powerline relocated prior to Stage 2
House
Barro Group Nyora Quarry
Access Road

GRID NORTH

Scale: 1:6000

0 40 80 120 160 200 300

metres

LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- EXTRACTION BOUNDARY
- STAGE AREAS & DIRECTION (STAGE 2)
- WATERWAY DIVERSION CHANNEL
- EXISTING DRAINAGE LINE
- SURFACE WATER DIVERSION BUND
- EXISTING POWER POLES & LINES
- RELOCATED POWER POLES & LINES
- GROUNDWATER MONITORING BORES
- RUNOFF INTERCEPTION DRAIN
- CONTOUR (1m Interval)

Aerial Photography Nearmap 22/12/19 & Topography Spiire 11/2018