

Ok Birim Tailings Storage Facility Project

Environmental and Social Impact Assessment

Attachment 2

Construction Environmental and Social Management Plan



OK BIRIM TAILINGS STORAGE FACILITY PROJECT

Construction Environmental and Social Management Plan

Report reference number: 754-POMEN374244C_R14_CESMP

22 June 2026

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QUALITY INFORMATION

Revision history

Revision	Description	Date	Author	Reviewer	Approver
Rev0	Final	22/06/2026	LP	TG	DM

Distribution

Report Status	No. of copies	Format	Distributed to	Date
Rev0	1	PDF	OTML	22/06/2026

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TABLE OF CONTENTS

1.	INTRODUCTION	1-1
1.1	Project purpose	1-1
1.2	Purpose of this document	1-3
1.3	Structure of this CESMP	1-4
2.	PROJECT DESCRIPTION	2-1
3.	REGULATORY FRAMEWORK	3-1
3.1	National legislation	3-1
3.1.1	Mining (Ok Tedi Agreement) Act 1976	3-1
3.1.2	Ok Tedi Environment Management Act 2019.....	3-1
3.1.3	Other national legislation and regulations	3-2
3.2	International guidelines, standards and agreements	3-3
3.2.1	Equator Principles IV	3-3
3.2.2	IFC Performance Standards	3-3
3.2.3	Other international guidelines and standards	3-4
4.	ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK	4-1
4.1	Integrated Management System	4-1
4.2	Management plans.....	4-1
4.2.1	Social plans.....	4-3
4.3	Monitoring and evaluation	4-3
4.3.1	Existing operational monitoring.....	4-3
4.3.2	Construction monitoring programs	4-4
4.3.3	Evaluation of compliance	4-4
4.3.4	Inspections and internal audits	4-4
4.4	Management review	4-5
5.	REPORTING	5-1
5.1	Existing reporting requirements	5-1
5.1.1	Incident and non-compliance reporting and investigation	5-1
5.1.2	Quarterly reporting.....	5-1
5.1.3	Annual Environmental Report.....	5-1
5.1.4	Annual review	5-2
5.1.5	Annual Sustainability Report.....	5-2
5.2	CESMP reporting	5-2
6.	RESPONSIBILITY	6-1

7.	TRAINING, COMPETENCY AND AWARENESS	7-1
8.	EROSION AND SEDIMENT CONTROL SUB-PLAN.....	8-1
8.1	Purpose	8-1
8.2	Background	8-1
8.3	Legislation and other obligations	8-2
8.4	Management measures	8-2
8.5	Performance monitoring and reporting	8-4
8.5.1	Performance indicators	8-4
8.5.2	Monitoring	8-4
8.5.3	Reporting	8-5
9.	SURFACE WATER SUB-PLAN	9-1
9.1	Purpose	9-1
9.2	Background	9-1
9.3	Legislation and other obligations	9-2
9.4	Management measures	9-2
9.5	Performance monitoring and reporting	9-4
9.5.1	Performance indicators	9-4
9.5.2	Monitoring	9-4
9.5.3	Reporting	9-5
10.	GROUNDWATER SUB-PLAN.....	10-1
10.1	Purpose	10-1
10.2	Background	10-1
10.3	Legislation and other obligations	10-2
10.4	Management measures	10-2
10.5	Performance monitoring and reporting	10-3
10.5.1	Performance indicators	10-3
10.5.2	Monitoring	10-3
10.5.3	Reporting	10-3
11.	BIODIVERSITY SUB-PLAN	11-1
11.1	Purpose	11-1
11.2	Background	11-1
11.3	Legislation and other obligations	11-2
11.4	Management measures	11-2
11.5	Performance monitoring and reporting	11-4
11.5.1	Performance indicators	11-4

11.5.2	Monitoring	11-5
11.5.3	Reporting	11-5
12.	AIR QUALITY AND GREENHOUSE GAS EMISSIONS SUB-PLAN	12-1
12.1	Purpose	12-1
12.2	Background	12-1
12.3	LEGISLATION AND OTHER OBLIGATIONS.....	12-1
12.4	Management measures	12-2
12.5	Performance monitoring and reporting	12-3
12.5.1	Performance indicators.....	12-3
12.5.2	Monitoring	12-3
12.5.3	Reporting	12-4
13.	NOISE AND VIBRATION SUB-PLAN.....	13-1
13.1	Purpose	13-1
13.2	Background	13-1
13.3	Legislation and other obligations	13-1
13.4	Management measures	13-2
13.5	Performance monitoring and reporting	13-3
13.5.1	Monitoring	13-3
13.5.2	Reporting	13-3
14.	ARCHAEOLOGY AND CULTURAL HERITAGE SUB-PLAN	14-1
14.1	Purpose	14-1
14.2	Background	14-1
14.3	Legislation and obligations.....	14-1
14.4	Management measures	14-2
14.5	Performance monitoring and reporting	14-3
14.5.1	Performance indicators.....	14-3
14.5.2	Monitoring	14-3
14.5.3	Reporting	14-3
14.6	Chance finds procedure.....	14-4
15.	TRAFFIC AND TRANSPORT SUB-PLAN	15-1
15.1	Purpose	15-1
15.2	Background	15-1
15.3	Legislation and obligations.....	15-1
15.4	Management measures	15-1
15.5	Performance monitoring and reporting	15-2

15.5.1 Performance indicators	15-2
15.5.2 Monitoring	15-3
15.5.3 Reporting	15-3
16. WEED, PEST AND QUARANTINE SUB-PLAN.....	16-1
16.1 Purpose	16-1
16.2 Background	16-1
16.3 Legislation and other obligations	16-1
16.4 Management measures	16-2
16.5 Performance monitoring and reporting	16-2
16.5.1 Performance indicators	16-2
16.5.2 Monitoring	16-3
16.5.3 Reporting	16-3
17. GENERAL WASTE MANAGEMENT SUB-PLAN.....	17-1
18. EMERGENCY MANAGEMENT SUB PLAN	18-1
19. REFERENCES.....	19-1

LIST OF TABLES

Table 1.1 Structure of the CESMP.....	1-4
Table 2.1 Overview of the project	2-2
Table 3.1 Other national environmental legislation and regulations	3-2
Table 3.2 Relevant international standards and guidelines	3-4
Table 8.1 Erosion and sediment control management measures	8-2
Table 8.2 Performance indicators for erosion and sediment control management	8-4
Table 8.3 Summary of project monitoring requirements for erosion and sediment control	8-4
Table 9.1 Surface water management measures	9-2
Table 9.2 Performance indicators for surface water	9-4
Table 9.3 Summary of project monitoring requirements for surface water	9-4
Table 10.1 Groundwater management measures	10-2
Table 10.2 Performance indicators for groundwater management.....	10-3
Table 10.3 Summary of project monitoring requirements for groundwater	10-3
Table 11.1 Biodiversity management measures.....	11-2
Table 11.2 Performance indicators for biodiversity management.....	11-4
Table 11.3 Summary of project monitoring requirements for biodiversity.....	11-5
Table 12.1 Air quality and greenhouse gas emissions management measures	12-2
Table 12.2 Performance indicators for air quality and GHG emissions management.....	12-3
Table 12.3 Summary of project monitoring requirements for air quality and GHG emissions.....	12-3
Table 13.1 Noise and vibration management measures	13-2
Table 13.2 Performance indicators for noise and vibration management	13-3
Table 13.3 Summary of project monitoring requirements for noise	13-3
Table 14.1 Archaeology and cultural heritage management measures	14-2
Table 14.2 Performance indicators for archaeology and cultural heritage management	14-3

Table 15.1	Traffic and transport management measures	15-2
Table 15.2	Performance indicators for traffic and transport.....	15-2
Table 16.1	Weed, pest and quarantine management measures.....	16-2
Table 16.2	Performance indicators for weed, pest and quarantine management.....	16-3

LIST OF FIGURES

Figure 1.1	Project location.....	1-2
Figure 2.1	Tailings storage facility – proposed location and indicative layout	2-3
Figure 2.2	Infrastructure corridor – proposed route and indicative layout overview	2-4
Figure 4.1	Environmental components of the Integrated Management System.....	4-2
Figure 9.1	Surface water monitoring locations.....	9-6
Figure 10.1	Groundwater monitoring locations	10-4
Figure 12.1	Air quality monitoring locations	12-5
Figure 13.1	Noise monitoring locations.....	13-4

ACRONYMS/ABBREVIATIONS

Acronym/abbreviation	Definition
DEC	Department of Environment and Conservation (PNG)
CEPA	Conservation and Environment Protection Authority (PNG)
CESMP	Construction environmental and social management plan
ESIA	environmental and social impact assessment
ITCS	Infrastructure Tax Credit Scheme
KCB	KCB Australia Pty Ltd
OTML	Ok Tedi Mining Ltd (project proponent)
PNG	Papua New Guinea
RL	reduced level
the project	Ok Birim Tailings Storage Facility Project to construct a tailings storage facility and associated infrastructure corridor
TPP	tailings processing plant
TSF	tailings storage facility

1. INTRODUCTION

Ok Tedi Mining Ltd (OTML) has engaged Tetra Tech Coffey Pty Ltd (Tetra Tech Coffey) to prepare an Environmental and Social Impact Statement (ESIA), including this Construction Environmental and Social Management Plan (CESMP), for the Ok Birim Tailings Storage Facility Project (the project) for the Ok Tedi Mine.

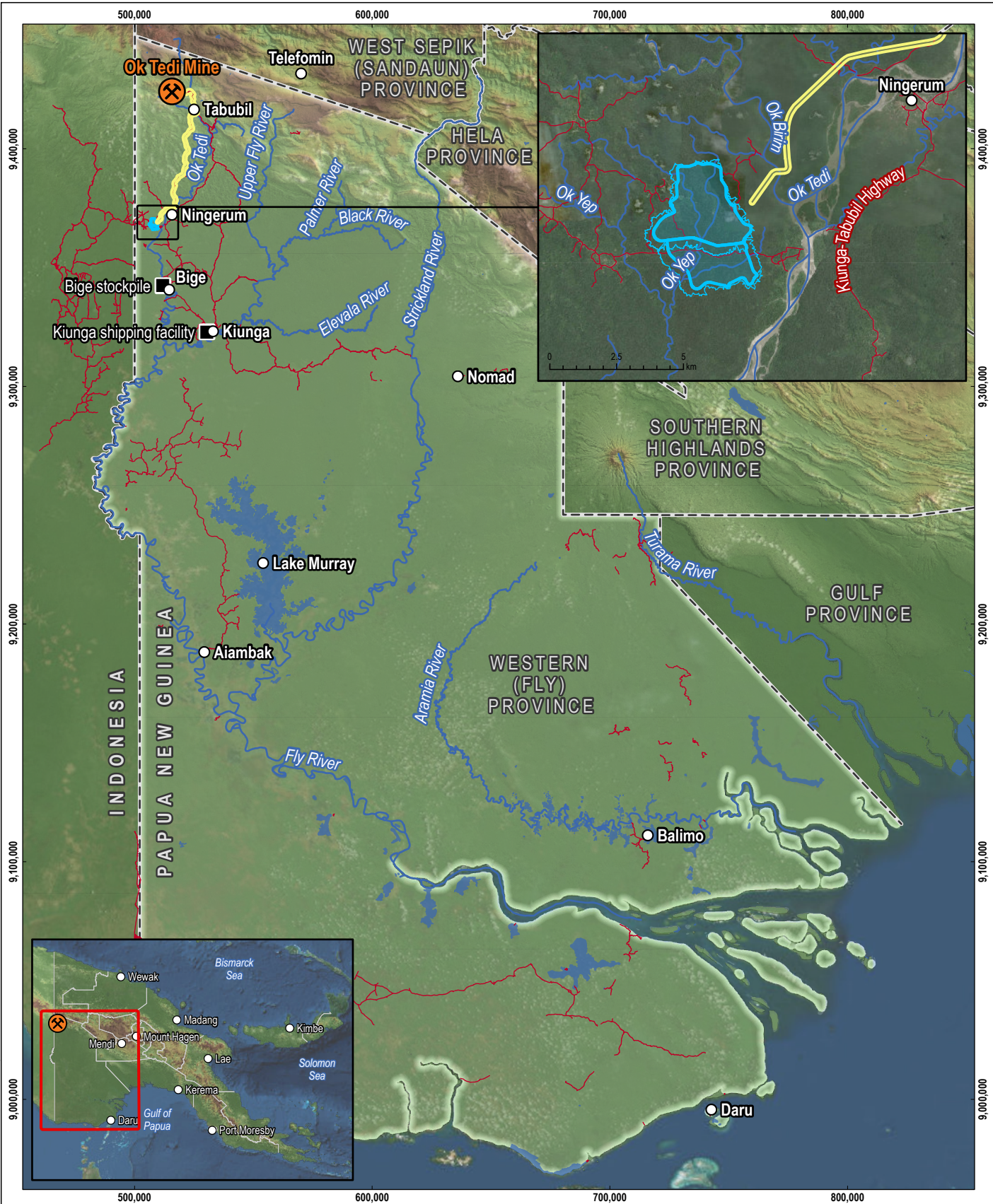
This document presents the environmental and social management plan (ESMP) for the project's construction phase only. The environmental and social management and monitoring program for the operations phase will be prepared prior to the commencement of commissioning of the project.

1.1 PROJECT PURPOSE

The project is located in the northwestern corner of Western Province, south of the Central Cordillera Mountain range which runs east-west along the length of Papua New Guinea (PNG) (Figure 1.1). The proposed tailings storage facility (TSF) is approximately 1 km west of the confluence of the Ok Birim and Ok Tedi, and about 55 km south of the existing Ok Tedi Mine (90 km by road via the Kiunga-Tabubil Highway). The mine lies approximately 5 km west of the Ok Tedi, a major tributary of the larger Fly River.

OTML is currently progressing several planned developments aimed at improving long-term environmental performance and supporting potential life extension of the Ok Tedi Mine as part of its Growth 2050 strategy. Projected mine production to 2050 will generate additional tailings and waste rock, placing additional pressure on the downstream river system. OTML has therefore committed to largely eliminate the currently approved practice of riverine tailings disposal. The project involves storing tailings on land in an engineered TSF from 2030 to limit further additions of mine-derived sediment to the Ok Tedi and Fly River system, reduce downstream environmental and social impacts and support continued mine operations to 2050. It is intended to provide a technically proven, environmentally sound and economically viable alternative to the current riverine tailings disposal practice, aligned with contemporary standards and PNG's sustainability development goals.

An environmental and social impact assessment (ESIA) has been prepared for the project to meet the requirements of *Ok Tedi Environment Management Act 2019* (OTEMA) as well as align with the Department of Environment and Conservation Guideline for Conduct of Environmental Impact Assessment and Preparation of Environmental Impact Statement (DEC 2004). The ESIA also adopt good international industry practice including the International Finance Corporation Performance Standards (2012) and Equator Principles IV (2020).



LEGEND

- Ok Tedi Mine
- Key infrastructure
- Town
- Road/track
- Watercourse
- Waterbody
- Province boundary
- Proposed TSF footprint
- Proposed infrastructure corridor



SCALE 1:2,250,000
PAGE SIZE: A4
PROJECTION: PNG94 PNGMG94 Zone 54

SOURCE
Proposed infrastructure from KCB and OTML.
Topographic features from OSM.
Provinces from NSO.
DEM from SRTM. Imagery from ESRI.

OK TEDI MINING LIMITED
OK BIRIM TAILINGS STORAGE FACILITY PROJECT

FIGURE 1.1
Project location



DATE: 21.06.26 PROJECT: 754-MELN374244 FILE: 374244C_R14_F01.01_GIS

1.2 PURPOSE OF THIS DOCUMENT

The purpose of this CESMP is to outline the environmental and social management and monitoring programs that will be implemented for the construction of the project to minimise its impacts.

The CESMP has been informed by the ESIA prepared for the project and existing OTML systems, procedures and management plans. The sub-plans contain management measures identified in the ESIA that are relevant to the project's construction.

The objectives of this CESMP are to:

- Describe how the project's environmental and social issues will be managed by applying an approach that seeks to prioritise avoidance of impacts, and mitigation when avoidance is not possible.
- Outline the legislation and environmental obligations that apply to the project.
- Outline OTML's environmental and social management framework to achieve the project's environmental and social objectives.
- Describe how the project's environmental and social performance will be measured through monitoring, audits and inspections.
- Outline the monitoring requirements to verify implementation and assess the effectiveness of proposed management measures.
- Provide guidance for OTML employees and contractors to carry out works in accordance with an environmental and social management framework that will minimise the potential for environmental and social impacts.
- Establish and document responsibilities for monitoring, reporting and auditing.
- Outline the relevant existing OTML procedures to be followed by personnel and contractors in response to environmental incidents.

This CESMP focuses on construction activities for the project only. It is separate to the existing OTML Environment Management Plan (EMP) for the operation of the Ok Tedi Mine required under Environment Permit EP-L3(636). Subject to receipt of an amended environment permit for the project and once construction is complete, the Ok Tedi EMP will be updated to include operation of the project. It is also expected that this CESMP will be updated to reflect the relevant permit conditions for the project.

1.3 STRUCTURE OF THIS CESMP

Table 1.1 describes the structure of the CESMP and specific sub-plans.

Table 1.1 Structure of the CESMP

Front end		
No.	Chapter	Description
1	Introduction	Provides an overview of the project purpose, purpose of the CESMP and describes the structure of the document.
2	Project description	Provides an overview of the key components relevant to the construction of the TSF and infrastructure corridor.
3	Regulatory framework	Outlines the legislation, guidelines and standards for environmental and social management of the project.
4	Environmental and social management framework	Describes the environmental and social management framework for the project.
5	Reporting	Describes the routine reporting obligations that OTML must fulfill for the Ok Tedi mine operation and that compliance with the CESMP for the project will be integrated into these reports.
6	Responsibility	Describes the roles and responsibilities for implementing this CESMP.
7	Training, competency and awareness	Outlines the training, competency and awareness requirements for personnel and contractors responsible for implementing the tasks and requirements outlined in CESMP and its sub plans.
Project sub-plans		
No.	Name	
8	Erosion and sediment control sub-plan	
9	Surface water sub-plan	
10	Groundwater sub-plan	
11	Biodiversity sub-plan	
12	Air quality and greenhouse gas emissions sub-plan	
13	Noise and Vibration sub-plan	
14	Archaeology and cultural heritage sub-plan	
15	Traffic and transport sub-plan	
16	Weeds, pests and quarantine sub-plan	
17	General waste management sub-plan (OTML existing plan - Document number: OTML-IMS-PLAN-3.06)	
18	Ok Tedi emergency management sub-plan (OTML existing plan - Document number: OHS Plan 1.15)	
References		
19	References	

2. PROJECT DESCRIPTION

The Ok Tedi Mine at Mt Fubilan is an open-cut copper, gold and silver mine owned and operated by OTML since 1984. Ore is mined and processed at an on-site processing plant capable of treating up to 24 million tonnes per annum of ore. Copper concentrate is transported via a 156-km-long pipeline to port facilities at Kiunga, where it is dried then shipped along the Fly River to Port Moresby for export. Pyrite concentrate produced at the tailings processing plant (TPP) near the mine is transported via a 125-km-long pipeline to subaqueous storage pits on the west bank at Bige, where it is kept permanently submerged to prevent oxidation and acid generation. Residue sand tailings from the TPP are discharged via a 1.5-km-long tailings river disposal pipeline to Ok Kumiup, which flows into the Ok Tedi via Harvey Creek. Waste rock is also disposed to the creek system at the mine. This material is then transported downstream and the coarser material settles in a dredged slot near Bige, where dredged material is hydraulically placed into engineered stockpiles on the east and west banks of the Ok Tedi, which joins the Fly River approximately 25 km downstream. For more than 40 years, the Ok Tedi Mine has practiced riverine disposal of tailings and waste rock to the Ok Tedi. Up until 2025, over 2 billion tonnes of mine-derived sediment had been added to the Ok Tedi and Fly River system.

The project involves constructing a TSF to store tailings produced by the Ok Tedi Mine until 2025. The total disturbance footprint is estimated to be approximately 1,980 ha. Project activities will primarily occur in the following two areas:

- **TSF development area** (approximately 1,500 ha) – This includes the TSF footprint, hydro-cyclone house and ancillary infrastructure, surface water management facilities and internal roads and tracks. The area is within a lowland setting with regional topography gently sloping to the south. The TSF site is in a sub-catchment of the Ok Yep, to the west and south of Ok Birim and Ok Tedi confluence. The northern part of the TSF site is approximately 1 km west of this confluence. The TSF site is generally flat with undulated shallow valleys ranging in elevation from approximately 40 m to 80 m above mean sea level (AMSL).
- **Infrastructure corridor development area** (approximately 480 ha) – This includes the proposed pipeline access road, bridges and water/ravine crossings, tailings pipeline and supporting facilities outside the TSF development area. The corridor area varies from the rugged, steep-sided valleys near the mine to the more gently undulating terrain and floodplains towards the TSF site.

Key components of the project are:

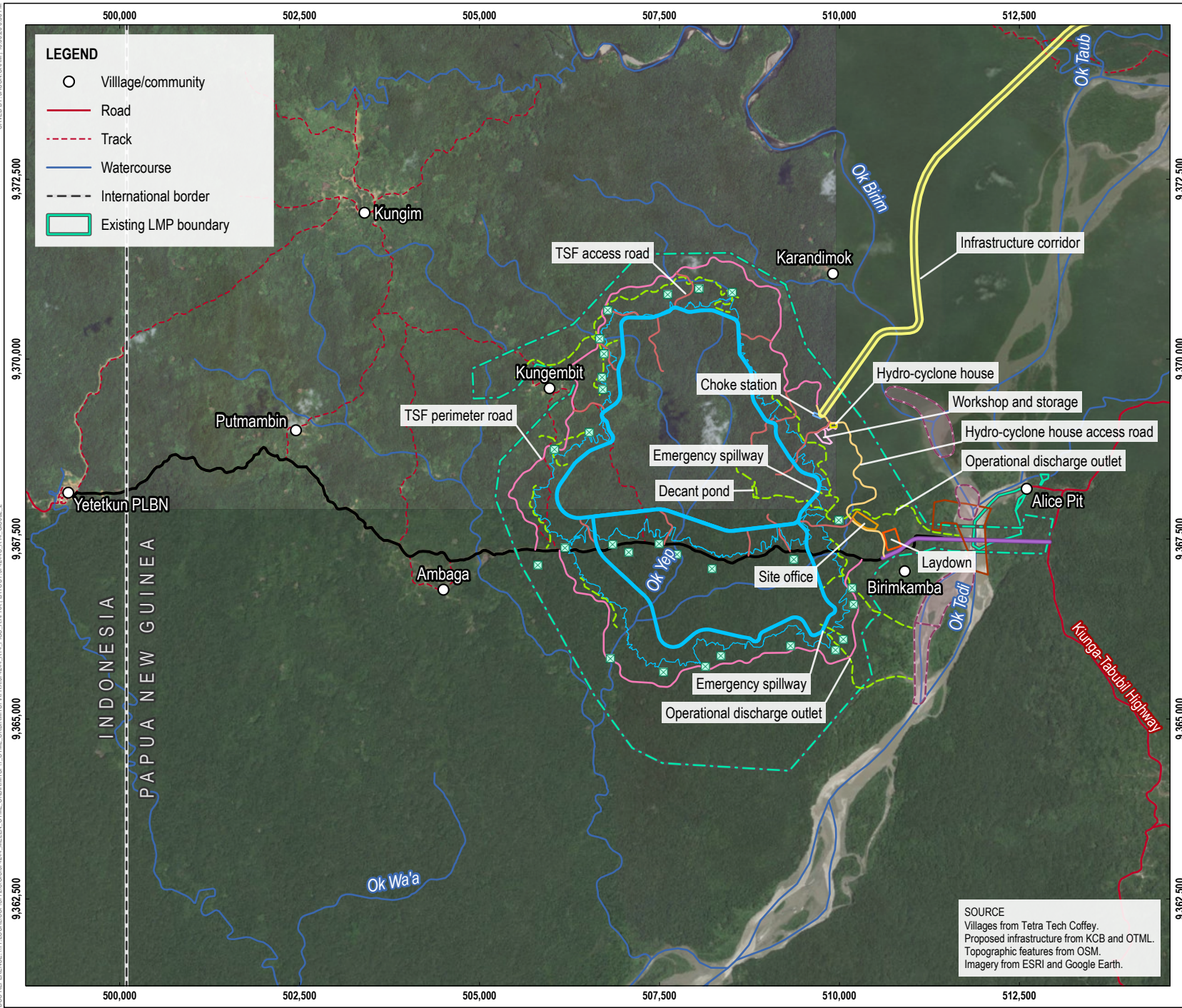
- A hydro-cyclone house for separating coarse and fine tailings, with coarse (sand) underflow used for embankment construction and fine (slimes) overflow directed to the TSF impoundment.
- A ring-dyke TSF comprising internal storage cells developed progressively, with embankments primarily constructed using cyclone underflow sand.
- An 87-km-long tailings delivery pipeline from the existing TPP at Ok Tedi Mine to the proposed TSF site, including associated pumping and piping distribution systems (i.e., one pump station at the mine site and two intermediate choke/valve stations).
- A pipeline access road corridor including three bridges and several minor water/ravine crossings.
- Ancillary infrastructure including site offices, laydown areas, workshops, maintenance stations, waste and sewage management facilities, fuel storage, borrow and gravel pits and accommodation camps (as required).
- Power supply primarily from on-site diesel generators, with an installed capacity of up to 11 MW during operations.

- Water supply sourced primarily from existing mine site supply, TSF decant water during operations, supplemented by rainfall and potential abstraction from nearby watercourses or groundwater for construction and potable water (if required).

Table 2.1 provides a high-level summary of key project components. Figure 2.1 and Figure 2.2 present the proposed location and layout of the TSF and infrastructure corridor route.

Table 2.1 Overview of the project

Aspect	Description
TSF	
Tailings volume	Current TSF design provides storage for approximately 368 Mt of tailings material, with a maximum design storage capacity allowance of 263 million cubic meters (Mm ³).
Hydro-cyclone and TSF design and staging	<ul style="list-style-type: none"> • Construction of the hydro-cyclone house is planned to separate the underflow (to be used for embankment construction) and overflow (to be deposited into the TSF impoundment). Decant water from the TSF will be re-used as process water via dedicated pumping and piping distribution infrastructure. • TSF to be developed in stages, with two conceptually defined storage cells to be constructed, operated and closed consecutively. • TSF starter embankment to use suitable borrow fill material sourced from bulk earthworks and local borrow and gravel pits along the Ok Tedi (subject to suitability testing). Embankments will then be primarily constructed using suitable cyclone underflow sand. • Centerline-raised embankments of cyclone underflow primarily via hydraulic cell construction, compacted to the density specified in the design to retain cyclone overflow and uncycloned tailings. • No permanent water cover is expected to be required for tailings in the TSF impoundment area as the tailings are non-acid forming based on current geochemical characterisation results. • TSF ultimate embankments will reach a maximum height of 36 m with a final crest elevation of 80 m RL.
TSF water management	<ul style="list-style-type: none"> • TSF lies entirely within the Ok Tedi catchment to minimise introducing new impacts to other catchments such as the Ok Birim, which remains unaffected by current mining activities. • TSF has been positioned above the high banks of the Ok Birim and Ok Tedi to minimise flood interaction. • Surface water diversions will be established to divert existing streams and clean surface water flows away from the TSF during all phases of the project. Sedimentation ponds will be constructed strategically to limit fugitive sediment. • During operations, the TSF will operate as a flow-through system with excess decant water reporting to the Ok Tedi in a controlled manner via a siphon system. Each TSF cell will incorporate a siphon discharge system, associated pipelines and outlet, and emergency spillway to enable planned and emergency release of excess TSF decant water. • Planned discharge of excess TSF decant water will flow to the Ok Tedi after reduction of suspended solids. • Seepage collection at the south (downstream) of the TSF will be transferred to a sedimentation pond, while un-intercepted seepage is expected to report to the Ok Tedi.
Infrastructure corridor	
Access roads	Construction and upgrade of access roads/tracks, including an 87-km-long pipeline access road from the Ok Tedi Mine to the proposed TSF (comprising 22 km along the existing highway from the mine to Tabubil and 65 km of new road), three permanent bridges over the Ok Tedi, Ok Taub and Ok Birim, and several minor water/ravine crossings. Generally two-lane, unsealed roads with an all-weather road base, with single lane sections and passing bay areas where required. Gravel will be applied as needed for dust suppression, such as near villages. Single or two-lane bridges will be provided with dedicated pedestrian footpaths. A speed limit of 40 km/hr for internal roads/tracks and 65 km/hr for roads shared with the community with appropriate road safety signage where needed.
Tailings pipeline	Construction of 87-km-long pipeline to transport final tailings from the TPP at the Ok Tedi Mine to the proposed TSF. Approximately 80% buried and 20% above ground. Pipeline is expected to be constructed along the pipeline access road for the entire route with minor deviations as required.



SOURCE
Villages from Tetra Tech Coffey.
Proposed infrastructure from KCB and OTML.
Topographic features from OSM.
Imagery from ESRI and Google Earth.



LEGEND

Proposed layout

- Sediment pond
- TSF access road
- TSF perimeter road
- Hydro-cyclone house access road
- Hydro-cyclone house
- Site office
- Laydown
- Choke station
- Workshop and storage
- Workshop and storage
- Riverine extraction support
- Diversion drain
- Borrow source
- TSF footprint
- Infrastructure corridor
- LMP boundary

ITCS road project (separately approved)

- Alice Pit bridge
- Road



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OK TEDI MINING LIMITED

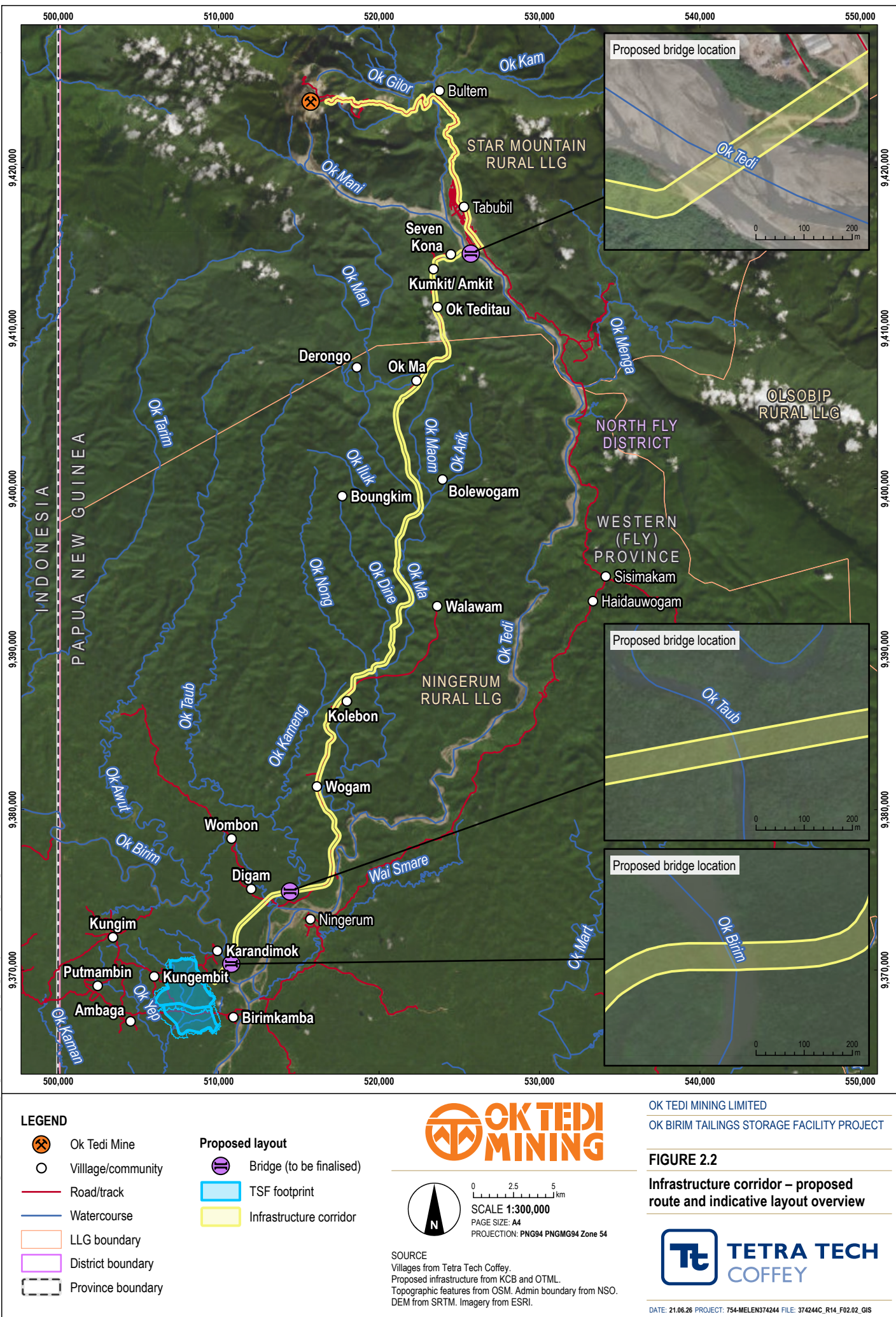
OK BIRIM TAILINGS STORAGE FACILITY PROJECT

FIGURE 2.1

Tailings storage facility –
proposed location and indicative layout



TETRA TECH
COFFEY



3. REGULATORY FRAMEWORK

This section outlines the legislative and policy framework relevant to the project. It provides an overview of the national laws, international standards, and environmental agreements that are relevant for the approval process for the project and this CESMP.

3.1 NATIONAL LEGISLATION

Unlike other mining operations in Papua New Guinea (PNG), the Ok Tedi Mine operates under a project-specific legal regime. The *Mining (Ok Tedi Agreement) Act 1976* (Ok Tedi Agreement) and supplemental agreements under this act set the legal foundation for Ok Tedi Mining Limited (OTML) operations, while the *Ok Tedi Environment Management Act 2019* (OTEMA) establishes a standalone environmental management framework tailored to the Ok Tedi Mine.

Under OTEMA, the project will require a major amendment to OTML's existing Environment Permit EP-L3(636). This CESMP has been prepared alongside the ESIA in accordance with OTEMA requirements for assessing environmental and social impacts, as well as to align with the Department of Environment and Conservation (DEC, now CEPA) Guideline for Conduct of Environmental Impact Assessment and Preparation of Environmental Impact Statemen (DEC 2004).

3.1.1 Mining (Ok Tedi Agreement) Act 1976

The Ok Tedi Agreement was established to provide the legal framework to facilitate the development exploration and extraction of resources at the Ok Tedi Mine. The act reflects the specific historical and socio-economic context of the Ok Tedi Mine when PNG was transitioning towards independence, and has since regulated the mining operations, along with each of the eleven successive supplemental agreements. The Ok Tedi Agreement governs OTML's tenure, rights and obligations through a binding contractual framework with the State.

The *Mining Act 1992* was later developed to create a unified and modern regulatory framework for PNG's mining sector, reflecting broader national develop goals and environmental concerns, including licensing procedures, environmental assessments, and compliance requirements. The act's aim is to standardise regulations across all mining operations in PNG, promoting consistency and clarity in the mining sector.

While the Ok Tedi Agreement is the principal agreement through which OTML operations was established, some aspects of OTML operations are governed by the Mining Act. For example, the Mining Act is the current legal framework under which special mining leases, leases for mining purposes and mining easements are acquired.

The Ok Tedi Agreement has been supplemented by eleven agreements that address evolving operational, environmental, and social issues related to the mine. Social responsibility, compensation and benefit-sharing have been a focus of the supplemental agreements.

3.1.2 Ok Tedi Environment Management Act 2019

OTEMA is the principal legislation for regulating the environmental effects of the Ok Tedi Mine and is administered by the PNG Conservation Environment Protection Authority (CEPA). OTEMA established a comprehensive environmental management framework governing the Ok Tedi Mine. Environment Permit EP-L3(636) is granted under OTEMA.

OTML's obligations regarding environment permit conditions and requirements related to environmental management, monitoring, and compliance as mandated by the OTEMA are enforced and regulated by CEPA.

OTEMA and the environment permit include details about environmental management plans, monitoring programs, waste management practices, and obligations to minimise environmental impacts.

The Draft Ok Tedi Environment Permits Regulation 2026 is currently under consideration by CEPA and the associated technical standards to support its enforcement are yet to be developed.

The project constitutes major changes to the Ok Tedi Mine that will trigger the first permit amendment under OTEMA.

3.1.3 Other national legislation and regulations

A wide range of Papua New Guinean legislation and regulations is relevant to the project. Table 3.1 summarises other acts and regulations relevant to the CESMP and project implementation.

Table 3.1 Other national environmental legislation and regulations

Legislation and regulations	Description and applicability
Legislation	
<i>Climate Change (Management) Act 2015; subsequently amended in 2021 and 2023.</i>	This Act provides the legal framework for climate adaptation and mitigation in PNG, including implementing international obligations and establishing a national authority. It is applicable to the greenhouse gas assessment and climate change risk assessment, including evaluation of the TSF's resilience to climate hazards.
<i>Conservation and Environment Protection Authority Act 2014</i>	This Act establishes CEPA as PNG's national environmental regulator. CEPA plays a central role in reviewing the ESIA, issuing the amended Environment Permit, and overseeing compliance under the OTEMA.
<i>Fauna (Protection and Control) Act 1966</i>	This Act provides for the protection of native wildlife. It is relevant to the terrestrial biodiversity and aquatic ecology studies, which assess potential impacts to fauna species and their habitats.
<i>Forestry Act 1991</i>	This Act governs forest resource management, including clearing of forested land. Given the TSF construction involves removal of forest cover or vegetation in areas outside the existing mine lease, forestry permits or coordination may be required.
<i>Industrial Safety, Health and Welfare Act 1961</i>	This Act governs occupational safety and health standards in industrial settings. It informs the air quality, noise, and workplace safety components of the ESIA, particularly during TSF construction and operation.
<i>Land Act 1996</i>	The Land Act regulates land tenure, leasing, and compulsory acquisition, particularly for State and customary land. It is relevant for assessing land access, community relocation, and compensation obligations associated with the TSF and supporting infrastructure (e.g., roads, pipelines).
<i>Local-level Governments Administration Act 1997</i>	This Act supports participatory governance through ward and district development planning. It is relevant to the stakeholder engagement process, particularly where project-affected communities fall under local-level jurisdiction.
<i>Mining (Safety) Act 1977 and Regulation.</i>	This Act governs the occupational health and safety requirements for mining operations in PNG. It is relevant to the assessment of health, safety, dam design standards, and risk management associated with TSF operations.
<i>Mining Act 1992</i>	OTML will require tenements issued under the <i>Mining Act 1992</i> for the project. Additionally, OTEMA does not provide for resettlement. The <i>Mining Act 1992</i> provides national benchmarks for land access, compensation, and resettlement. It is referenced for good practice in developing the approach to resettlement, high-level work program for resettlement planning, and managing displacement impacts.
<i>National Cultural Property (Preservation) Act 1965</i>	This Act protects archaeological and cultural heritage sites of national significance. It is applicable to the archaeology and cultural heritage technical study, which identifies and assesses the potential for disturbance to heritage sites within the TSF footprint.
<i>Road Maintenance Act 1971</i>	This Act provides for the classification and maintenance of public roads. It is applicable where the project involves upgrades to existing gazetted roads, requiring coordination with public works authorities.

Legislation and regulations	Description and applicability
<i>Road Traffic Act 2014</i>	This Act regulates vehicle operations, traffic safety, and load limits on public roads. It applies to the transport of materials, equipment, and workforce during construction, particularly where roads pass through or near communities.
<i>Protected Areas Act 2024</i>	This Act guides the management and conservation of protected areas and includes provisions for biodiversity offsets.
Regulations	
<i>Environment (Water Quality Criteria) Regulation 2002</i>	This regulation sets enforceable water quality standards for effluent discharges into PNG's freshwater and marine environments. It informs the geochemistry, surface water quality, aquatic ecology, and ecosystem services assessments for the TSF, noting Environment Permit criteria take precedence over these regulations.
<i>Public Health Act & Public Health (Drinking Water) Regulation 1984</i>	These instruments define standards for safe drinking water and sanitation. They support the water quality, human health, and community impact assessments, especially regarding potential effects on water sources relied upon by nearby communities.

3.2 INTERNATIONAL GUIDELINES, STANDARDS AND AGREEMENTS

This section outlines the international guidelines, standards and agreements such as the International Finance Corporation (IFC) and Equator Principles and other international standards that are relevant to the project's approval process and CESMP.

3.2.1 Equator Principles IV

The Equator Principles (Equator Principles Association 2020) are a risk management framework adopted by financial institutions for determining, assessing, and managing environmental and social risks from projects. Equator Principles IV requires application of IFC Performance Standards, and introduces specific requirements for human rights due diligence, cumulative impacts, and ecosystem services.

3.2.2 IFC Performance Standards

The IFC Performance Standards on Environmental and Social Sustainability (IFC 2012) comprise eight performance standards that detail commitments, roles and responsibilities relating to environmental and social sustainability. The CESMP generally aligns with the following standards:

- Performance Standard 1 – Assessment and Management of Environmental and Social Risks and Impacts. Provides a framework for the ESIA structure and process.
- Performance Standard 3 – Resource Efficiency and Pollution Prevention. Ensures environmental and social impacts are mitigated and where not possible minimised.
- Performance Standard 5 – Land Acquisition and Involuntary Resettlement. Informs development of resettlement framework if/as it may apply to the project.
- Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources. Applicable to biodiversity, aquatic ecology, and ecosystem services assessments.
- Performance Standard 7 – Indigenous Peoples. Applies to the social impact assessment and human rights impact assessment, as the project-affected communities meet the criteria for Indigenous Peoples under Performance Standard 7, requiring consideration of free, prior and informed consent.
- Performance Standard 8 – Cultural heritage. Supports the archaeological and cultural heritage assessment.

Performance Standard 2 (Labour and Working Conditions) and Performance Standard 4 (Community Health, Safety and Security) will be addressed separate and subsequent to this CESMP.

3.2.3 Other international guidelines and standards

Table 3.2 summarises the other international standards and guidelines that are relevant to this CESMP and the sub-plans.

Table 3.2 Relevant international standards and guidelines

Standards and guidelines	Description and applicability
The Copper Mark	The Copper Mark is a voluntary assurance framework that promotes responsible production and sourcing of copper. Copper Mark assists copper producers to demonstrate their commitment to environmental, social, and governance (ESG) standards. OTML may seek to align with this framework and is updating its IMS to align with this standard.
Global Industry Standard for Tailings Management (GISTM) (ICMM et al. 2020)	The GISTM establishes global best practices for tailings facility safety, governance, and social responsibility. The standard informs the TSF's design and management planning, and supports this ESIA's focus on meaningful engagement with potentially affected communities, integrated risk assessment, and emergency preparedness.
Voluntary Principles on Security and Human Rights (Voluntary Principles Association 2000)	The Voluntary Principles on Security and Human Rights provide guidance for extractive companies on maintaining the safety and security of operations in a way that respects human rights. The project's stakeholder and community interface, particularly during construction, considers these principles as part of broader human rights and community safety assessments.
International Council on Mining and Metals (ICMM) Tailings Management Good Practice Guide (ICMM 2021)	This guide provides practical strategies for the safe and responsible management of tailings storage facilities throughout their lifecycle. The guide complements the GISTM and informs the ESIA's approach to TSF risk management, governance, and closure planning, with reference to ICMM's commitments to transparency and community engagement.
IFC Environmental, Health and Safety (EHS) Guidelines (2007)	The EHS Guidelines provide sector-specific and general performance benchmarks for environmental protection, occupational health and safety, and community safety. The ESIA applies the Mining Sector Guidelines and General EHS Guidelines to assess and manage impacts related to dust, noise, effluent discharge, hazardous materials, and worker and public health.
Guiding Principles on Business and Human Rights (UN 2011)	The UN Guiding Principles on Business and Human Rights outline the corporate responsibility to respect human rights and provide access to remedy for affected people. These principles inform the Human Rights Impact Assessment included in this ESIA, particularly in relation to land access, Indigenous rights, and community consultation.

4. ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

This section presents the environmental and social management framework for all processes and activities under OTML's control for the project. OTML will construct the project and the operate it as an extension of its current operations. OTML will implement the existing Environment Management Plan and Integrated Management System, and relevant management, mitigation, monitoring, and reporting requirements developed for the current operations.

4.1 INTEGRATED MANAGEMENT SYSTEM

OTML manages its environmental commitments through its Integrated Management System (IMS) that is in general conformance with risk-based systems for Occupational Health, and Safety (OHSAS18001) and Environmental (ISO14001:2015) management. The ISO14001 and OHSAS18001 standards specify the minimum requirements for an organisation with respect to policies, the identification and management of environmental, safety and health aspects/risks, compliance with legal and other requirements, and continuous improvement of environmental, safety and health performance.

OTML is in the process of updating the IMS to incorporate social performance aspects. This is being done to align the IMS with international standards such as the Equator Principles and International Finance Corporation Performance Standards as well as The Copper Mark.

The main types of documents in the IMS are:

- **Policy statements.** High level documents which state the rules and values of the organisation.
- **Standards.** Each component of the IMS is described by a 'Standard' document that describes the standard to which OTML will operate in order to achieve its targets and objectives.
- **Manuals, plans, and guidelines.** Created for significant aspects where required to provide further details as to how that aspect is managed.
- **Procedures, safe work plans, job safety and environmental analyses, and work instructions.** Lower-level documents that describe the specific actions or requirements for subtasks that will need to be undertaken to achieve the outcomes required by a standard or a plan.

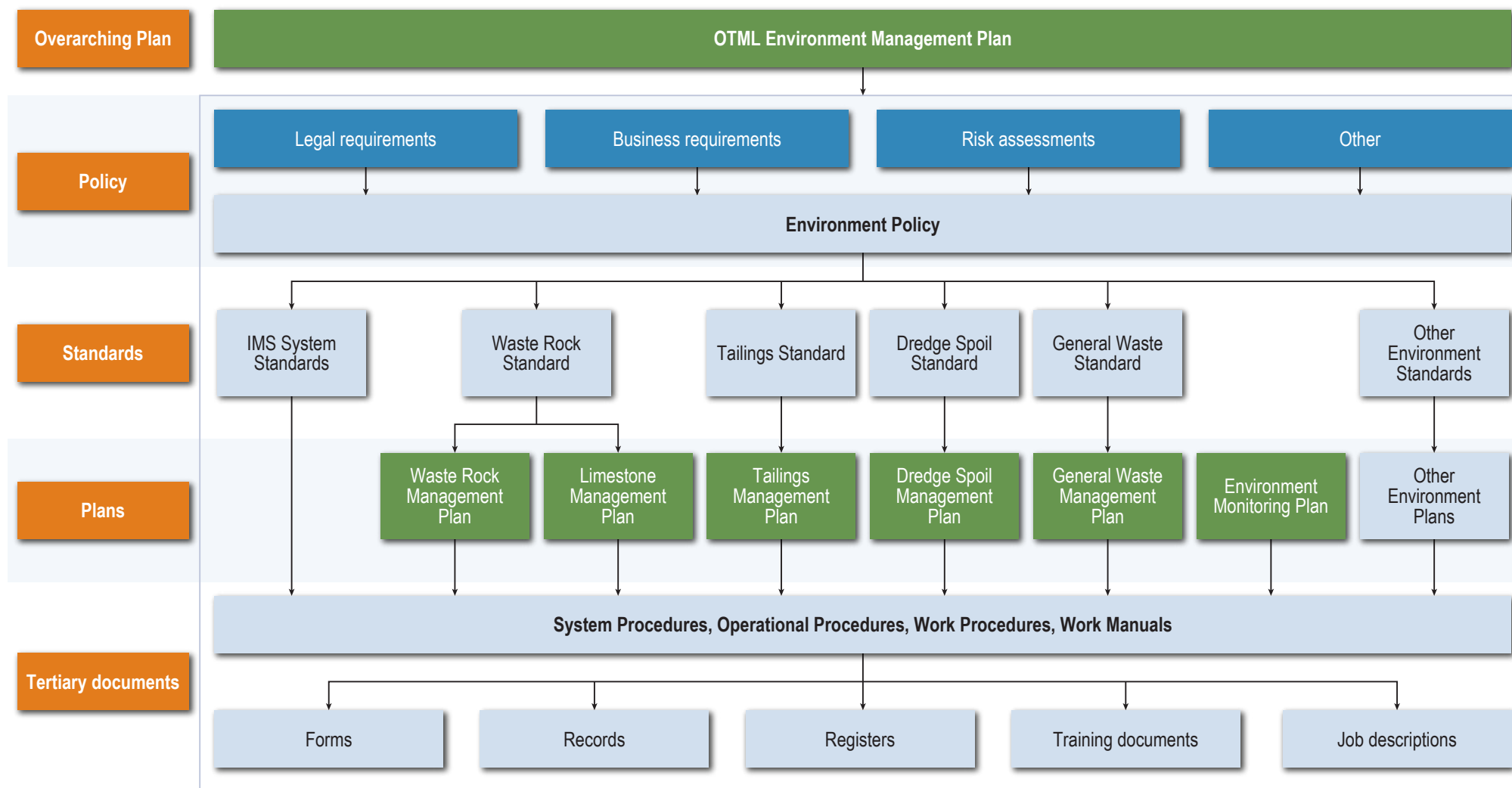
Figure 4.1 presents a simplified structure of the environmental components of the IMS.

4.2 MANAGEMENT PLANS

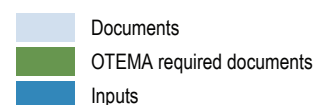
This CESMP contains sub-plans as appendices that outline the management approach for the following topics:

- Erosion and sediment control
- Surface water
- Groundwater
- Biodiversity
- Air quality and greenhouse gas emissions
- Noise and vibration
- Archaeology and cultural heritage
- Traffic and transport
- Weeds, pests and quarantine
- General waste management
- Emergency management

Document Hierarchy



LEGEND



OK TEDI MINING LIMITED

OK BIRIM TAILINGS STORAGE FACILITY PROJECT

FIGURE 4.1

Environmental components of the Integrated Management System



DATE: 21.06.26 PROJECT: 754-MELEN374244 FILE: 374244_R14_F04.01_GRA

The sub-plans contain the management measures identified through the preparation of the ESIA and that will be implemented to avoid, reduce, mitigate or manage potential adverse environmental and social impacts from the project's activities. The sub-plans also include legal requirements and obligations, performance indicators, monitoring requirements, and internal and external reporting requirements.

The sub-plans for general waste management and emergency management are existing OTML management plans, which will be applied to the project.

Subject to receipt of project approvals, this CESMP and all sub plans will be updated to reflect permit conditions where relevant.

4.2.1 Social plans

A number of social plans will be prepared by OTML prior to the commencement of construction of the project, particularly those with application under the *Mining Act 1992*. The social plans will be aimed at limiting adverse social impacts of the project's construction and operation and seek to maximise benefits to stakeholders. Plans will be developed to address the following:

- Community development.
- Community health and safety.
- Land access and resettlement.
- Project induced in-migration into local and regional communities.
- Social monitoring.

While outside the scope of a typical ESIA in PNG and not regulated under OTEMA, these have been identified as plans that OTML will prepare because of their importance in managing the social risks and impacts of the project.

4.3 MONITORING AND EVALUATION

A monitoring program will be implemented during the project's construction in accordance with *IMS standard 1.17 monitoring and measurement*. The monitoring program will assess the effectiveness of environmental and social management measures. The project will align with OTML's monitoring standards and procedures for existing operations at the Ok Tedi Mine where applicable. The monitoring requirements outlined in this CESMP and the sub-plans will enable OTML to confirm that the project has complied with relevant legal requirements and permit conditions.

This section describes OTML's existing monitoring standards for operations at the mine, as well as the additional monitoring requirements to be implemented for the project.

4.3.1 Existing operational monitoring

OTML has established, implemented and is maintaining procedures to monitor and measure, on a regular basis, characteristics of its operation that can have a significant impact. The procedures include monitoring performance, applicable operational controls and conformity with OTML's Objectives and Targets. Specifics of how OTML is addressing this component of the IMS are detailed in the following Standards:

- *Monitoring & Measurement Standard OTML-IMS-STD-1.18*
- *Behaviour & Observation Standard OTML-IMS-STD-1.09*

4.3.2 Construction monitoring programs

Construction monitoring requirements for the project include:

- **Baseline monitoring.** Where OTML's existing monitoring does not provide sufficient data to establish a baseline, further monitoring will be implemented prior to construction. This data will be used to establish a baseline to compare post-construction monitoring with.
- **Construction monitoring.** Verifies effective implementation of management measures and compliance with the environment permit and management plans in relation to construction activities.
- **Post-construction monitoring.** Conducted to validate and monitor predicted impacts from construction activities.

Monitoring requirements specific to each aspect assessed in the ESIA are outlined in each of the sub-plans attached to this CESMP.

4.3.3 Evaluation of compliance

OTML has implemented a procedure for periodically evaluating compliance with applicable legal and other requirements. The details of how OTML is addressing this component of the IMS are outlined in the *Inspections Standard* (OTML-IMS-STD-1.16) and *Audit & Assessment Standard* (OTML-IMS-STD-1.20).

Records of periodic legal and other compliance evaluations are kept by the Environment Department, and the Legal section of OTML.

4.3.4 Inspections and internal audits

Audits and inspections will be undertaken to review the implementation of the CESMP during and post-construction works. The frequency of audits and inspections nominally will be:

- Daily inspections of construction sites by the relevant contractor and OTML area lead.
- Weekly inspections of any installed management devices or systems (such as sediment traps) by the relevant contractor and a member of the OTML environment team (in tandem)
- Monthly audits by the Environment Department to assess project construction works against the CESMP.
- Ad-hoc inspections following a significant event including:
 - An environmental or social incident.
 - Receipt of an environment-related community complaint.

When direct or indirect impacts from the works have been identified to have impacted environmental or social values, such as cultural heritage sites or faunal assemblages, outside of the TSF development area or infrastructure corridor.

An internal audit must be undertaken upon completion of project construction works. This audit will include a review of all environmental records and incidents to determine any outstanding management measures yet to be completed.

The frequency and number of inspections will be proportionate to the level of risk associated with the construction activities and be informed by the results of monitoring and meeting performance indicators.

4.4 MANAGEMENT REVIEW

Management reviews will be undertaken to evaluate if the environmental and social management framework remains effective, implemented and communicated. Management reviews will be undertaken to determine:

Any system deficiencies or changes required to enable achievement of ongoing suitability, adequacy and effectiveness of the system.

Whether objectives and targets are still appropriate.

Whether the environmental and social impacts of the project's construction activities are consistent with those described in the ESIA.

The management team will review the environmental and social management framework outlined in this CESMP annually, or when a significant change occurs to the project, to assess its suitability, adequacy and effectiveness. Management reviews will include assessing opportunities for improvement and the need for changes, including review of environmental and social objectives, targets and project personnel. Records of management reviews will be retained in IMS.

The management reviews will typically include consideration of the:

- Progress of the implementation of this CESMP.
- Adequacy of resources.
- Effectiveness of management plans and the results of inspections, audits and monitoring data.
- Summary of complaints and incidents.
- Environmental incidents or repeated non-compliances.
- Actions taken to correct or remedy non-compliances and their status.
- Performance against performance indicators.
- Follow-up actions from previous management reviews.
- Changing circumstances, including organisation changes and legislative changes.
- Recommendations for improvement.

5. REPORTING

This section outlines the existing OTML reporting requirements under OTEMA and additional reporting for construction of the project.

5.1 EXISTING REPORTING REQUIREMENTS

OTML is required to prepare the following reports for external environmental review in accordance with the Environment Permit EP-L3(636).

5.1.1 Incident and non-compliance reporting and investigation

Under Condition 53 of Environment Permit EP-L3(636), OTML must provide an annual summary of environmental incidents recorded in the company's environmental management system in the Annual Environmental Report. Incidents shall be reported based on the severity rating of the incident as defined within the environmental management system.

Under Condition 54 of Environment Permit EP-L3(636), OTML must notify the Director within 24 hours of any significant environmental incident (as defined in the EMP) that occurs in relation to the carrying out of works or discharge of wastes into the environment from the premises.

For the purposes of the EMP and Environment Permit EP-L3(636), an incident is classified as significant if it is assessed actual level 3 consequence for Environmental, Reputational or Compliance impact as described in OTML IMS Consequence Table (refer OTML-IMS-STD-1.03 Risk and Opportunity Management Guideline).

Non-compliances with permit conditions will also be treated as 'environmental incidents' and managed under the OTML IMS Standard OTML-IMS-STD-1.19 Incident Reporting and Investigation.

5.1.2 Quarterly reporting

Quarterly reporting is required under conditions 19, 22, 36 and 51 of Environment Permit EP-L3(636). The following plans detail how OTML complies with these requirements:

- OTML-IMS-PLAN-3.02 Limestone Management Plan.
- OTML-IMS-PLAN-3.03 Waste Rock Management Plan.
- OTML-IMS-PLAN-3.04 Tailings Management Plan.
- OTML-IMS-PLAN-3.05 Dredge Spoil Management Plan.

5.1.3 Annual Environmental Report

OTML remits an Annual Environmental Report to CEPA and the Mineral Resources Authority presenting:

- The results of monitoring requirements under the Dredge Spoil Management Plan (condition 48).
- The results of the monitoring program in Table 1 of the permit (condition 50).
- A summary of environmental incidents recorded in the company's environmental management system (condition 53).
- A report on environmental incident statistics, audit performance and action close-outs (condition 58) for the reporting period (calendar year).

5.1.4 Annual review

OTML prepares an annual review each year to publicly communicate its progress on economic, safety and occupational health, environmental and social aspects of the operation. This report is made available on the OTML website (<https://www.oktedi.com/reports/>).

The Global Reporting Initiative's G4 reporting guidelines (GRI 2013) are used to guide the disclosure of non-financial material information.

5.1.5 Annual Sustainability Report

OTML has historically integrated sustainability reporting with the site annual report, however from 2025 OTML has committed to developing standalone sustainability reports in-line with GRI reporting guidelines. This report will be made available on the OTML website once prepared.

5.2 CESMP REPORTING

OTML will develop a quarterly stand-alone report against requirements of this CESMP and sub plans, including results of monitoring. Upon grant of project approval and obtaining an updated environment permit, OTML will integrate the project reporting into the existing reports described in the previous sections, including:

- Quarterly reporting of compliance with CESMP and sub plans
- Annual environmental reporting on the performance of the project, results of monitoring and compliance with permit conditions
- Annual incident reporting covering incidents and non-compliances with legal requirements will be reported in accordance with statutory requirements.

Further details about reporting will be included in this CESMP to address relevant permit conditions.

6. RESPONSIBILITY

The OTML General Manager for Social Performance and Sustainability is ultimately responsible for the implementation of, and compliance with, the CESMP. They are accountable for the overall performance of the project's environmental and social performance, and providing adequate resourcing for implementing the CESMP and sub-plans.

The key roles and responsibilities for implementation of the CESMP include:

- The OTML General Manager (Projects) and OTML General Manager (Engineering and Infrastructure) are responsible for the delivery of the project and implementing the CESMP and sub-plans.
- The OTML Environment team is responsible for the monitoring and reporting of the environmental components of the CESMP and sub-plans.
- The OTML Community Relations and Sustainability team is responsible for the monitoring and reporting of the social components of the CESMP and sub-plans.

The OTML Environment team works with the OTML Community Relations and Sustainability team to provide environmental information for stakeholder awareness, consultation and feedback. The Community Relations and Sustainability team also maintains a formal grievance mechanism process, where all stakeholder concerns are recorded and actioned.

7. TRAINING, COMPETENCY AND AWARENESS

In addition to the establishment of responsibility, the effectiveness of the site environmental and social management is dependent on appropriate and risk-based awareness and training for all personnel and contractors responsible for environmental and social performance.

In accordance with OTML's *Training, Competency and Awareness Standard* (OTML-IMS-STD-1.08), procedures at OTML check that any person performing a task that has the potential to cause a significant impact is competent on the basis of appropriate education, training or experience. Training and awareness for personnel and contractors will include the following:

Competency-based training: OTML will maintain a competency-based training system, supported by training needs analyses and competency profiles for relevant roles. Training will be developed and delivered in line with the hazards, risks and responsibilities associated with the project's construction activities.

Induction: All personnel and contractors will receive site induction prior to commencing work. Where required, role-specific inductions shall be developed, documented and delivered to personnel for the project.

Role-specific training: Where required, personnel will receive training relevant to their role within an appropriate timeframe after mobilisation, including IMS requirements, key environmental and social risks and controls, operational procedures, and emergency response requirements.

Awareness training: Awareness training will be maintained on an ongoing basis and updated where new materials, processes, equipment or systems are introduced.

Competency assessment: Competency will be verified through appropriate assessment methods, including written or verbal assessments and on-the-job observation.

8. EROSION AND SEDIMENT CONTROL SUB-PLAN

This Erosion and Sediment Control sub-plan (ESCP) outlines the requirements for managing and mitigating potential impacts arising from erosion and sedimentation due to construction of the project.

The OTML General Manager (Engineering and Infrastructure) is responsible for the implementation of this sub-plan. The OTML Environment team is responsible for the monitoring and reporting on the environmental performance of the sub-plan's implementation, including verification of compliance with environment permit conditions and other applicable legislation.

8.1 PURPOSE

The purpose of the ESCP is to:

- Limit soil erosion from areas disturbed by construction activities within the TSF development area and the infrastructure corridor.
- Limit the transport of fugitive sediment in runoff from construction activities within the TSF development area and the infrastructure corridor.
- Manage soil and spoil stockpiles to limit erosion and downstream sedimentation.
- Minimise impacts to downstream beneficial uses of surface water and water resources.

8.2 BACKGROUND

Construction of the project will involve the excavation and movement of large volumes of material within the project's disturbance footprint. Project-related activities that may result in impacts to the soil and landform values are:

- Physical disturbance of soils and landforms caused by land clearance and bulk earthworks, such as for the construction of the TSF development area (TSF impoundment footprint, hydro-cyclone house, laydown area and associated ancillary infrastructure) and infrastructure corridor development area (proposed access roads, bridge and water crossings, tailings pipeline and supporting facilities outside the TSF development area).
- Erosion, compaction, land contamination from accidental spills or leaks, and exposure of acid sulphate soils (ASS) and/or potential acid sulfate soils (PASS). This may result in changes to the physical and chemical properties of soil.

Without the implementation of management measures, construction activities may result in the following impacts to soil, landforms and stability:

- Reduced landform stability.
- Degradation of soil capacity (including loss of soil) due to erosion or compaction.
- Degradation of soil capacity due to soil contamination.

8.3 LEGISLATION AND OTHER OBLIGATIONS

The *Ok Tedi Environment Management Act 2019* (OTEMA) is the main legislation governing environmental aspects at OTML.

The legislation and other requirements that are relevant during construction for managing impacts to soil, landform and stability include:

- Australian Standards AS1940:2017 – The storage and handling of flammable and combustible liquids
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Hazardous materials management (IFC 2007)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Contaminated land (IFC 2007)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Construction and decommissioning (IFC 2007).

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

8.4 MANAGEMENT MEASURES

This section outlines the management measures for erosion and sediment control to address impacts to soil, landforms and stability. At all construction sites managed under this CESMP, the measures outlined in are to be implemented by OTML staff and contractors. See Table 8.1 for the management measures.

Further measures to minimise erosion are provided in the Surface Water sub-plan.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 8.1 Erosion and sediment control management measures

No.	Management measure
ESC001	Manage incidents throughout all stages of the project in accordance with OTML's incident reporting standard, including recording details on the location, extent and nature of spills or site contamination. This will be used to monitor existing contamination and will be reassessed at closure to determine appropriate decontamination and remediation actions.
ESC002	Conduct routine inspections and maintenance of all potential sources of contamination, including fuel and chemical storage facilities, heavy machinery, transport fleet, diesel generators, bund, and pipes, completed during all stage of the project for early detection and control of leaks and spills.
ESC003	Design and construct sediment ponds to accommodate a 1 in 50 annual exceedance probability event.
ESC004	Design and construct sediment ponds downstream of major sediment sources (such as disturbed areas and stockpiles) to settle suspended solids prior to discharge into the receiving environment.
ESC005	Design and construct surface water management structures, such as structures including drains to convey contact drains and non-contact drains clean and dirty water, for 1 in 20 year annual exceedance probability. Design other surface water structures, such as berm drainage, to 1 in 50 annual exceedance probability.
ESC006	Implement appropriate erosion and sediment controls and structures prior to disturbance works commencing. Key controls may include retaining riparian vegetation buffer zones, rip-rap aprons, sediment control ponds and sediment fences.
ESC007	Implement the following measures to manage erosion and sediment transport during construction of access roads, bridges and water crossings: <ul style="list-style-type: none"> • Install temporary erosion and sediment controls during construction and permanent drainage structures such as road ditches and culverts.

No.	Management measure
	<ul style="list-style-type: none"> • Design and construct bridges and minor crossings with adequate protection to resist scour, erosion and failure due to flooding. • Refine alignments of project roads to follow natural ridges and hill slopes to minimise cut/fill and avoid crossing watercourses, off-river water bodies (ORWBs) and wetlands to the extent possible. • Restrict watercourse crossings to designated crossing points where riparian vegetation clearing widths will be limited. Maintain riparian vegetation buffer zones elsewhere.
ESC008	Clean up contaminated soils as soon as possible after the contamination event occurs or contamination is identified. This may include excavation of soils, decontamination, or neutralisation methods or dispose of in accordance with relevant legislation and the OTML General Waste Management Plan (OTML-IMS-PLA-3.06).
ESC009	Minimise extent of vegetation cleared at any one time to reduce exposed areas susceptible to erosion.
ESC010	Undertake progressive rehabilitation of disturbed areas as soon as practicable to reduce wind erosion.
ESC011	<p>Conduct acid sulfate soils surveys within areas known or predicted to occur to determine the extent of ASS treatment that may be required, and determine whether the development of a specific management plan is required. The plan may include the following management controls:</p> <ul style="list-style-type: none"> • Mixing of high and very high ASS or PASS materials with a neutralising agent such as fine-ground lime that inhibits oxidation to increase pH. • Short term stockpiling ASS material in a bunded area with an acid-resistant liner.
ESC012	Rehabilitate soil compacted during construction (where progressive rehabilitation allows) including ripping, spreading with topsoil and revegetating with native species to reduce the effects of compaction.
ESC013	Restrict or limit vehicles to dedicated access tracks and roads.
ESC014	Locate and stockpile all topsoil and spoil in approved designated locations away from watercourses, waterbodies or low-lying flood prone areas.
ESC015	Stockpile and reuse topsoil where practicable for use in progressive rehabilitation activities.
ESC016	Prioritise use of spoil (excess excavated material), where suitable, as borrow fill for project activities.
ESC017	<p>Adopt the following principles to manage erosion and sediment transport for construction of benches and batters:</p> <ul style="list-style-type: none"> • Construct embankment slopes in a manner that facilitates controlled runoff and promotes drainage based on experience at Ok Tedi • Grade benches to shed water and reduce the risk of erosion or batter slumping. • Retain vegetation at crest of cut batters and at toe of fill batters where practicable to minimise erosion. • Establish vegetation (e.g., shrubs/grasses/legumes) as soon as possible on benches. Consider using hydroseeding or direct planting where suitable. • Install dykes and swales at top of batters (where practicable) and divert runoff to slope drains and into stabilised areas. • Stabilise batters, such as by using brush layers or geotextile/fibrous matting, where required. • Construct slope drainage such as cut-off trenches or horizontal drains at crest of batters/slopes and install adequate drainage at the toe to maintain slope stability.
ESC018	Install and maintain sediment control measures where required such as drainage diversion into surrounding vegetation, rip-rap aprons, sediment control ponds and sediment fences.
ESC019	Clear accumulated material from behind sediment fences and barriers, cut-off drains and diversion drains associated with temporary erosion control berms. Dispose of sediment into the TSF.
ESC020	Clear accumulated material from sediment ponds where required (to maintain minimum capacity required to allow sediment ponds to function properly and limit the potential for a large rain event to result in significant release of coarse sediment downstream). Dispose of sediment into the TSF.
ESC021	Install sedimentation ponds downstream of key project infrastructure prior to construction to capture sediment-laden water and reduce sedimentation downstream.
ESC022	Install and maintain sediment basins downstream of main drainage systems in the TSF to capture outflowing sediment

8.5 PERFORMANCE MONITORING AND REPORTING

8.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 8.2 outlines the performance indicators for the management of impacts associated with erosion and sediment control.

Table 8.2 Performance indicators for erosion and sediment control management

Issue	Performance indicator	Target
Erosion and sediment control devices	Installed and maintained directly.	100% compliance with approved site clearance plans and this CESMP.
	Failures of control devices.	All incidences reported as an environmental incident.
Stockpiles	Located in accordance with site clearance plans.	100% compliance.
	Batter gradients.	Not exceeding 15 degrees (unless otherwise agreed with the OTML Environment Department).
	Sediment concentrations in watercourses downstream of project activities.	Monitoring results to comply with project Environment Permit conditions.
Sedimentation	Number of unanticipated project-related sedimentation impacts.	Any unanticipated sedimentation impacts are recorded and investigated in compliance with project procedures.

8.5.2 Monitoring

Erosion and sediment control monitoring will incorporate the following:

- Conduct routine inspections of erosion and sediment control structures to confirm they have been installed, are functionally effective and are maintained as required to retain their functional effectiveness.
- Conduct routine inspections of disturbed areas, exposed batters, stockpiles, spoil areas and discharge points to identify evidence of erosion, scour, sediment accumulation or failure of control measures.
- Undertake inspections of erosion and sediment control structures prior to and following prolonged heavy rainfall or storm events, and remove sediment build-up and blockages from drains, culverts and other flow paths as required to maintain the efficacy of the structures.
- Undertake routine monitoring of turbidity in watercourses downstream of construction activities in accordance with the OTEMA (refer to the Surface Water sub-plan).
- Report significant erosion-related damage to sedimentation ponds or other erosion and sediment control structures as an environmental incident, and implement corrective actions promptly.

Table 8.3 provides a summary of the monitoring requirements.

Table 8.3 Summary of project monitoring requirements for erosion and sediment control

Parameter	Location	Indicative frequency
Condition and functionality of erosion and sediment control structures	All structures	Weekly during disturbance activities
Evidence of erosion, scour, sediment accumulation	Disturbed areas, exposed batters, stockpiles, spoil areas and drainage discharge points	Weekly until area has stabilised, every 3 months thereafter until rehabilitated
Bank stability, sedimentation and erosion within watercourses and drainage paths	Watercourses, crossings and drainage paths in proximity to project activities	Weekly until area has stabilised, every 3 months thereafter until rehabilitated

8.5.3 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the Environment Department on the compliance with this sub-plan and will include:

- Results of environmental monitoring (sampling and analysis).
- Regular (monthly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.

9. SURFACE WATER SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts to surface water from the construction of the project.

The OTML General Manager (Engineering and Infrastructure) is responsible for the implementation of this plan. The OTML Environment team is responsible for the monitoring and reporting on the environmental performance of the plan's implementation, including verification of compliance with environment permit conditions and other applicable legislation.

9.1 PURPOSE

The purpose of the Surface Water sub-plan is to:

- Limit the increase in the loads and/or concentrations of pollutants (including sediment) entering watercourses downstream of construction activity.
- Maintain existing water flow regimes, where possible.
- Reduce erosion of project-disturbed areas and sedimentation of watercourses.
- Minimise impacts to downstream beneficial values of surface water resources.

9.2 BACKGROUND

Construction of the project has the potential to impact water quality and surface water flow regimes. Project-related activities that may result in impacts to the surface water are:

- Diversion and modification of drainage lines and watercourses such as in-stream works (e.g., for crossings, culverts).
- Land clearing, earthworks and construction of project infrastructure.
- Local riverine extraction and stockpiling of borrow fill and gravel.
- Project-related traffic and transportation on unsealed roads.
- Transportation, storage, use and disposal of hydrocarbons and hazardous substances.
- Accommodation camps and site facilities (e.g., kitchen and ablutions, workshops, vehicle maintenance and washdown areas, waste storage facilities) generating wastewater, effluent, leachate and raw sewage.

Without the implementation of management measures, construction activities may result in the following impacts to surface water:

- Altered drainage and hydrology.
- Erosion and changes in sediment transport (total suspended solids, turbidity, sediment loads, metals).
- Surface water contamination from leaks and spills of hydrocarbons, chemicals or tailings.
- Surface water contamination from wastewater and effluent (nutrients, pathogens, total suspended solids, metals and hydrocarbons).
- Long-term surface water changes during closure and post-closure.

9.3 LEGISLATION AND OTHER OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

The legislation and other requirements are relevant during construction for managing impacts to surface water quality include:

- Environment (Water Quality Criteria) Regulation 2002, as it applies under OTEMA.
- Public Health (Drinking Water) Regulations 1984.
- Australian and New Zealand guidelines for fresh and marine water quality (ANZG 2018), in accordance with the existing permit conditions.
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Wastewater and Ambient Water Quality (IFC 2007)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Construction and decommissioning (IFC 2007)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Community Health and Safety – Section 3.1: Water Quality and Availability (IFC 2007)

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

9.4 MANAGEMENT MEASURES

This section outlines the management measures for surface water to address impacts to water quality and surface water flow regimes. At all construction sites managed under this CESMP, the measures outlined in Table 9.1 are to be implemented by OTML staff and contractors.

This plan should be read in conjunction with the Erosion and Sediment Control sub-plan, which contains further measures to minimise erosion and sedimentation.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than predicted in the ESIA, evidence of new impacts or if other unexpected outcomes occur.

Table 9.1 Surface water management measures

No.	Management measure
SW001	Use energy dissipaters or erosion control structures on drains, discharge outlets and steep slopes where appropriate.
SW002	Design TSF and emergency spillways to accommodate the probable maximum flood (PMF) of 1:100,000 AEP storm event with minimum 3 m operational freeboard.
SW003	Design surface water management structures including sedimentation ponds, ditches and channel diversions to accommodate at minimum the greater of a 2-hour and 24-hour 1:100 AEP flood event; erosion protection designed to protect from damage or flooding for the 1:100 AEP peak streamflow; side slopes no steeper than 2H:1V overall.
SW004	Design planned discharge of excess TSF water to report to the Ok Tedi, without requiring treatment except for sediment settling.
SW005	Integrate key design measures to avoid, minimise and mitigate hydrology and surface water impacts to the receiving riverine environment, including: <ul style="list-style-type: none"> • Confine the TSF and associated infrastructure within the Ok Tedi catchment to minimise introducing new impacts to other catchments such as the Ok Birim, which remains unaffected by mining activities. • Locate the TSF and key infrastructure above the high banks of the Ok Birim and Ok Tedi to minimise potential flood interaction. • Design infrastructure to minimise disruption of natural surface water flow paths.

No.	Management measure
	<ul style="list-style-type: none"> • Maintain hydraulic connectivity along access road infrastructure, such as via culverts and drains where required. • Design and construct bridges, culverts and crossings to allow for high flow events following heavy rainfall, and to mimic natural flow characteristics where possible during and after construction. • Where feasible, consider using trenchless methods such as horizontal directional drilling (HDD) for installation of the tailings pipeline at major, large, deep or fast flowing watercourses, including the Ok Tedi crossing near Tabubil.
SW006	Evaluate suitability of local borrow fill and gravel, and limit extraction from watercourses to the Ok Tedi to minimise impacts on other watercourses.
SW007	Avoid sidecasting to the extent practicable, particularly in steep terrain. Where sidecasting cannot be avoided, conduct a site-specific risk assessment to evaluate potential downslope erosion and sediment transport impacts, including on downstream communities (if any) and identify appropriate controls.
SW008	Where practicable, locate valley-bottom access alignments to retain a buffer of natural vegetation between access ways and watercourses.
SW009	Separate 'clean' water (unaffected by project activities) from 'dirty' water that contains elevated total suspended solids (TSS) requiring settling in sedimentation ponds, before either being reused or released into the receiving environment (if suitable).
SW010	Establish surface water diversions and channels as needed to divert existing streams and clean surface water flows away from the TSF and ground-disturbance activities during all phases of the project.
SW011	Prioritise use of suitable clean water temporarily stored in sedimentation ponds for construction water, dust suppression, vehicle washdown and progressive rehabilitation works (if deemed adequate).
SW012	Restore disturbed primary drainage paths if they are not required for the life of the project, where practicable.
SW013	Restore and rehabilitate disturbed areas no longer required for use as early as possible and progressively throughout project construction.
SW014	In areas that will be rehabilitated, use land-clearing techniques that preserve the rootstock of removed vegetation in the ground, where practicable.
SW015	Preserve riparian vegetation to the greatest extent practicable, avoid disturbance of terrain alongside watercourses and create a buffer of natural vegetation between watercourses and project areas where practicable. Trim, rather than remove riparian trees where practicable.
SW016	Mark the extent of vegetation to be cleared on all technical drawings and clearly mark approved clearing limits in the field prior to works. Do not clear beyond design limits.
SW017	Minimise vegetation clearance and ground disturbance as far as practicable, including locating project infrastructure, including vehicle parks, laydown areas, storage sites, fuel storage, non-mining waste dumps in cleared areas, in secondary and/or degraded forest areas.
SW018	Dispose of domestic and industrial waste, including wastewater and raw sewage, in accordance with OTML's currently approved waste management practices.
SW019	Manage sewage in an appropriate manner to prevent environmental contamination.
SW020	Capture and treat all project wastewater where necessary prior to discharge, to meet the receiving environment water quality criteria (<i>Environment (Water Quality Criteria) Regulation 2002</i>).
SW021	Where potentially acid forming (PAF) materials are encountered such as within road and infrastructure cuts and during riverine extraction of borrow fill/gravel, conduct a risk-based assessment to determine appropriate controls to manage potential geochemical risks such as addition of limestone and treatment of potentially contaminated runoff and leachate prior to discharge to the receiving environment. Implement these controls during construction.
SW022	Regularly inspect and maintain all water management and wastewater treatment facilities for adequacy.
SW023	Incorporate as required rip-rap, gabions and check dams to reduce velocity flow of water in constructed drainage channels.
SW024	Implement relevant groundwater management measures to manage risk of potentially contaminated TSF seepage water entering surface water discharged to the receiving environment.

9.5 PERFORMANCE MONITORING AND REPORTING

9.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 9.2 outlines the performance indicators for the management of impacts associated with surface water management.

Table 9.2 Performance indicators for surface water

Issue	Performance indicator	Target
Surface water quality	Water quality	Water quality monitoring results comply with relevant Environment Permit conditions.
		No evidence of rubbish or oil spills reporting to watercourses.

9.5.2 Monitoring

OTML has existing monitoring obligations under the OTEMA permit conditions. Surface water monitoring for the project will continue in accordance with existing permit conditions and will include an additional four sites upstream (one site on the Ok Yep near Kungim which will be a control site) and downstream of the TSF (the remaining three as potentially impacted sites) (Figure 9.1). The project's surface water monitoring is to be in-line with the permit's existing monitoring frequency and parameters, with a summary as follows:

- Monthly water quality monitoring (surface water chemistry and aquatic ecosystem protection).
 - Parameters: temperature, pH, TSS, Na, K, Mg, SO₄, Ca, dissolved alkalinity, electrical conductance (EC), as well as dissolved metals and metalloids (Al, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se and Zn) and particulate metals (Cd, Cu, Pb and Zn)
 - Note that Hg (dissolved) will be analysed twice yearly
 - Assess results against ANZG (2018) 90th percentile protection criteria for metals for impacts to aquatic ecology.
- Quarterly bioavailable copper monitoring.
 - Assess results against ANZG (2018) 90th percentile protection criteria for metals
- Monthly potable water quality sampling at primary and secondary drinking water sources for villages around the TSF, i.e., Ambaga, Putmambin, Kungim, Karandimok and Birimkamba
 - Parameters: pH, EC, turbidity, TDS and TSS and metalloids (Cd, Cu, Cr, Ni, Pb, Zn, Se and As), pH, alkalinity and bacteria including coliforms.
 - Assess results against PNG's drinking water standards in Schedule 1, Public Health (Drinking Water) Regulation 1984 and WHO guidelines for drinking water quality (2022).

Table 9.3 provides a summary of the monitoring requirements. Figure 9.1 presents the proposed monitoring locations.

Table 9.3 Summary of project monitoring requirements for surface water

Parameter	Location	Indicative frequency
Surface water quality for ecosystem protection	Ok Yep and Ok Tedi (Figure 9.1)	Monthly
Bioavailable copper monitoring	Ok Yep and Ok Tedi (Figure 9.1)	Quarterly
Drinking water monitoring	Six villages around the TSF: Ambaga, Putmambin, Kungembit, Kungim, Karandimok and Birimkamba (Figure 9.1)	Monthly

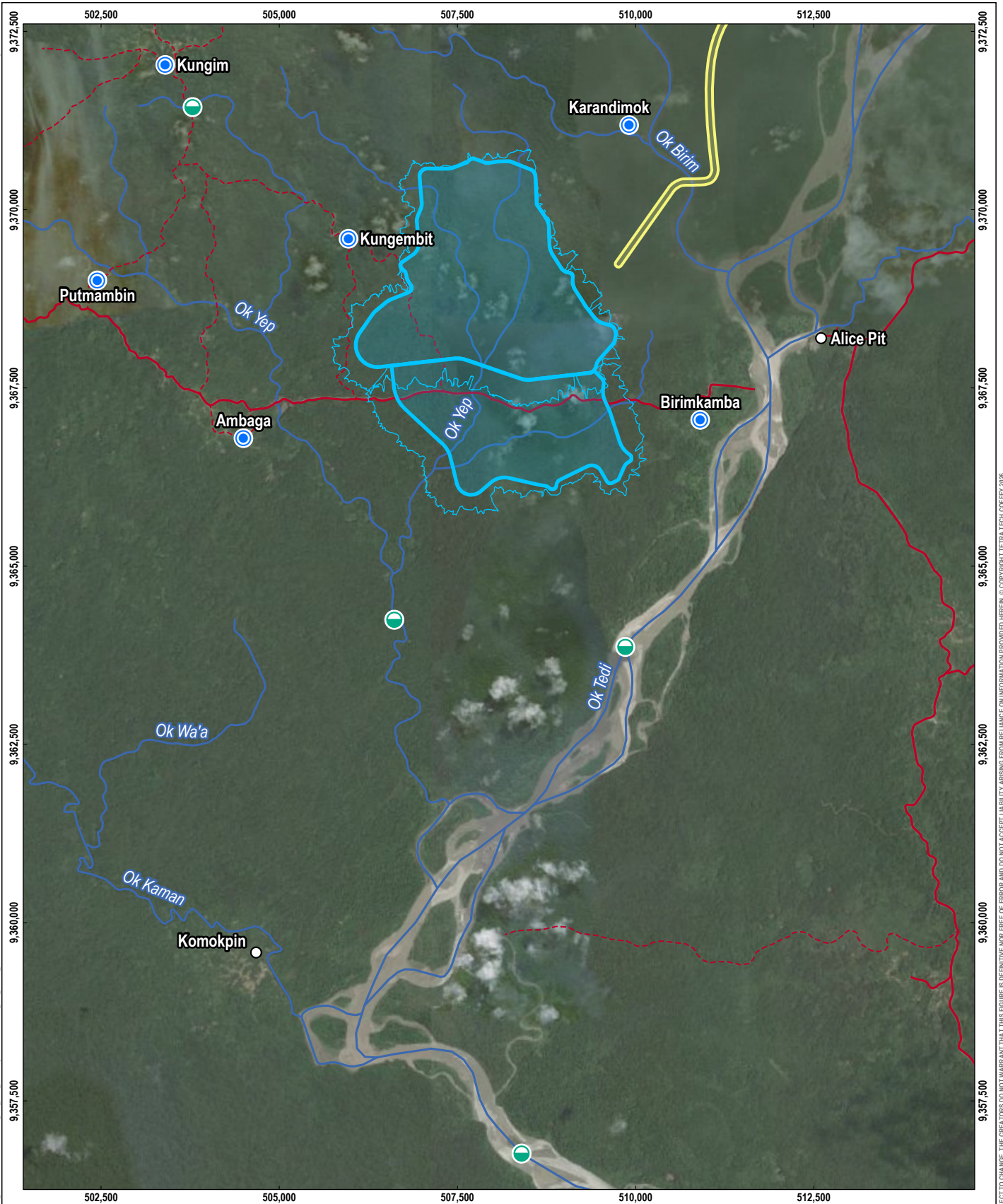
9.5.3 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the Environment Department on the compliance with this sub-plan and will include:

- Results of environmental monitoring (sampling and analysis).
- Regular (monthly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.



LEGEND

- Drinking water monitoring location
- Surface water monitoring location
- Community
- Road
- - - Track
- Watercourse
- Proposed TSF footprint
- Proposed infrastructure corridor



0 1 2 km
SCALE 1:75,000
PAGE SIZE: A4
PROJECTION: PNG94 PNGMG94 Zone 54

SOURCE
Monitoring locations and villages from Tetra Tech Coffey.
Proposed infrastructure from from KCB and OTML.
Topographic features from OSM. Admin boundary from NSO.
DEM from SRTM. Imagery from ESRI.

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FIGURE 9.1

Surface water monitoring locations



TETRA TECH
COFFEY

DATE: 21.06.26 PROJECT: 754-MELN374244 FILE: 374244C_R14_F09.01_GIS

10. GROUNDWATER SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts associated with contamination and altering the flow of the groundwater as a result of construction of the project.

The OTML General Manager (Engineering and Infrastructure) is responsible for the implementation of this plan. The OTML Environment team is responsible for the monitoring and reporting on the environmental performance of the plan's implementation, including verification of compliance with environment permit conditions and other applicable legislation.

10.1 PURPOSE

The purpose of the Groundwater sub-plan is to:

- Limit the contamination of groundwater resources.
- Maintain existing water flow regimes, where possible.

10.2 BACKGROUND

Construction of the project will involve earthworks, excavation, trenching, drainage modification and usage, storage and handling of fuels, chemicals and hazardous materials within the project area. Project-related activities may result in impacts to groundwater flow behaviour, recharge processes and groundwater quality within underlying aquifers and hydraulically connected surface water systems.

Project-related activities that may result in impacts to groundwater values include:

- Development of the TSF resulting in changes to groundwater flow behaviour, increased hydraulic loading and potential seepage to underlying groundwater systems.
- Excavation and earthworks for TSF embankments, starter dams, roads and infrastructure corridor works, which may alter groundwater flow paths, intercept shallow groundwater systems and reduce groundwater storage.
- Trenching and pipeline installation along the infrastructure corridor, which may intercept shallow groundwater flow and alter groundwater discharge to surface water features.
- Land clearance and vegetation removal, which may alter infiltration rates, surface runoff patterns and groundwater recharge.
- Accidental spills and leaks of fuels, chemicals and hazardous materials, which may reduce groundwater quality.
- Ground disturbance and excavation activities, which may mobilise existing contaminants or naturally occurring metals into groundwater systems.

Without the implementation of management measures, construction activities may result in the following impacts to groundwater:

- Changes to surface expression of groundwater due to altered groundwater levels and flow.
- Altered groundwater flow paths, behaviour or availability.
- Reduced quality of groundwater.
- Reduced availability of groundwater.

10.3 LEGISLATION AND OTHER OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

The legislation and other requirements that are relevant during construction for managing impacts to groundwater include:

- Public Health (Drinking Water) Regulations 1984
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Community Health and Safety – Section 3.1: Water Quality and Availability (IFC 2007)

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

10.4 MANAGEMENT MEASURES

This section outlines the management measures for groundwater to address impacts to groundwater quality and quantity. At all construction sites managed under this CESMP, the measures outlined in

Table 10.1 are to be implemented by OTML staff and contractors.

Further measures to minimise impacts to groundwater are provided in the Erosion and Sediment Control sub-plan.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 10.1 Groundwater management measures

No.	Management measure
GW001	Design and construct engineering controls (such as bunding and impermeable barriers) where practicable to minimise the risk of groundwater and surface water contamination from infrastructure.
GW002	Design and construct the TSF in a location that reduces the potential for impact on sensitive receptors, e.g., village drinking sources.
GW003	Design and construct effective interception and drainage of groundwater expression as part of the surface water diversion proposed along the north-eastern embankment of the TSF.
GW004	Store, handle and transport hazardous substances in accordance with the PNG Environmental Code of Practice for Vehicle/Machinery Workshops and Petroleum Storage/Resale/Usage Sites, and Australian Standards AS1940:2017 relevant to bunding.
GW005	Conduct a contaminated soil and groundwater investigation (such as validation sampling) to determine what further assessment or remediation may be required to prevent ongoing impacts to groundwater as part of closure and rehabilitation planning.
GW006	Divert clean water around disturbed areas using suitable designs and construction materials to minimise the volume of contact water.
GW007	Prohibit disposal of domestic and industrial waste into streams or sinkholes.
GW008	Make an alternative, equally suitable source of drinking water available to communities in the event that drinking water sources used by local villages become contaminated by the project.
GW009	Confirm water quality and level impacts are as predicted as part of the ongoing groundwater monitoring program. Implement additional management measures if required to address unexpected impacts.
GW010	Install and maintain efficient oil and grease traps or sumps at refuelling facilities, workshops, fuel storage depots, and containment areas.
GW011	Minimise generation of hazardous waste as far as practicable. Dispose of hazardous waste, including waste oils and chemicals, spent packaging materials and containers in accordance with current OTML practices.

10.5 PERFORMANCE MONITORING AND REPORTING

10.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 10.2 outlines the performance indicators for the management of impacts associated with groundwater.

Table 10.2 Performance indicators for groundwater management

Issue	Performance indicator	Target
Groundwater quality	Water quality (monitoring bores).	Water quality monitoring results comply with environment permit conditions.

10.5.2 Monitoring

Groundwater quality, levels and pressures will be monitored at representative water bores around the TSF. Existing groundwater sources used by local communities for drinking water purposes near the TSF, i.e., Kungembit, Ambaga and Birimkamba, will have their source water quality tested. Table 10.3 provides a summary of the monitoring requirements. Figure 10.1 presents the proposed monitoring locations.

Table 10.3 Summary of project monitoring requirements for groundwater

Parameter	Location	Indicative frequency
Groundwater levels	At groundwater monitoring bores near TSF (Figure 10.1)	Quarterly
Physico-chemical parameters	At groundwater monitoring bores near TSF (Figure 10.1)	Quarterly
Sampling for laboratory analysis – comprehensive suite of analytes	At groundwater monitoring bores near TSF (Figure 10.1)	Annually
Sampling for laboratory analysis – restricted suite of analytes	At groundwater monitoring bores near TSF (Figure 10.1)	Quarterly

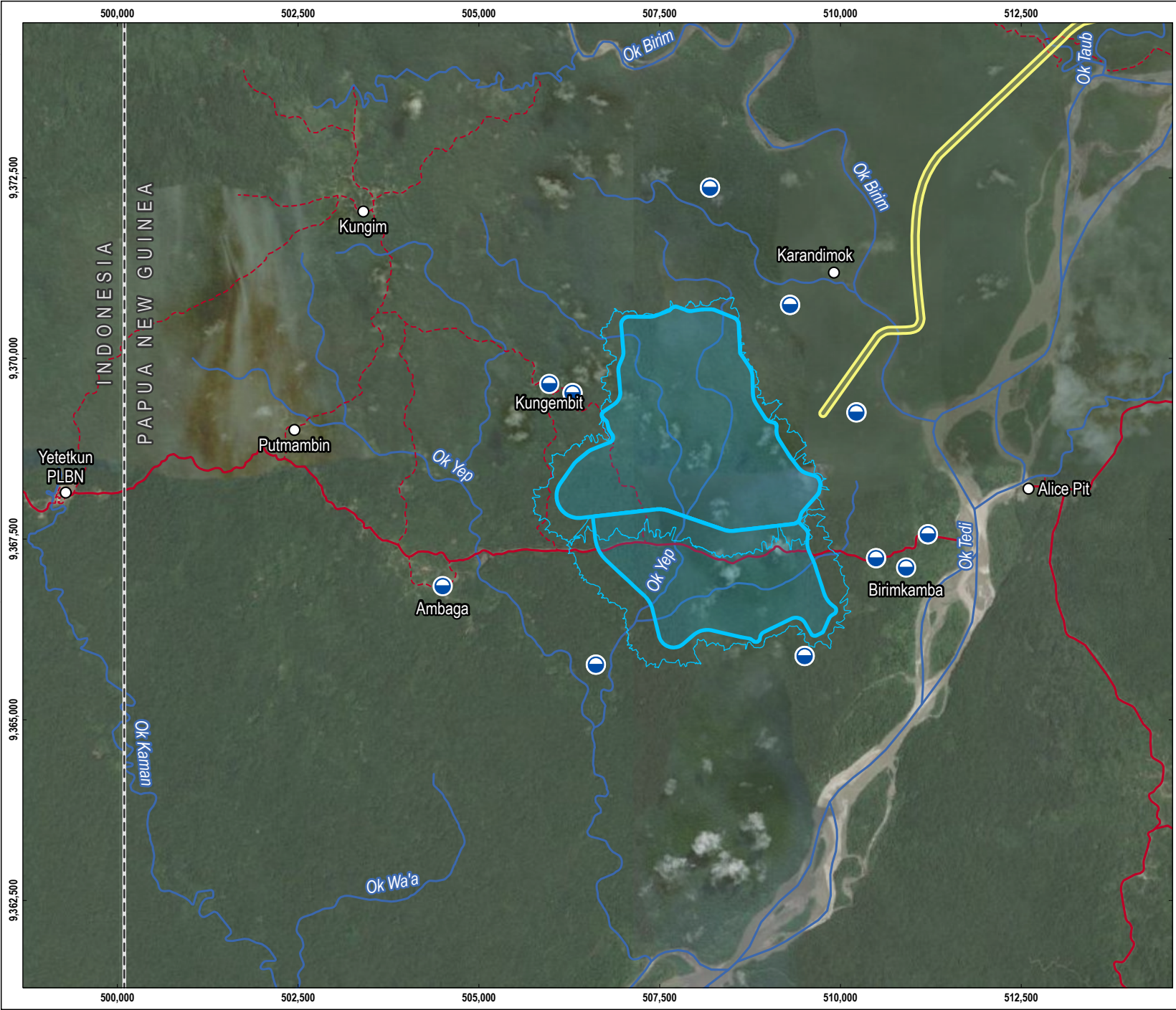
10.5.3 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the Environment Department on the compliance with this sub-plan and will include:

- Results of environmental monitoring (sampling and analysis).
- Regular (monthly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

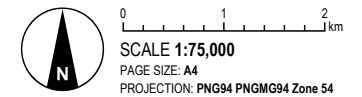
Internal reports will be provided to senior management.



LEGEND

- Groundwater monitoring location
- Community
- Road
- Track
- Watercourse
- Proposed TSF footprint
- Proposed infrastructure corridor

SOURCE
Monitoring locations and villages from Tetra Tech Coffey.
Proposed infrastructure from KCB and OTML.
Topographic features from OSM. Admin boundary from NSO.
Imagery from ESRI and Google Earth.



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FIGURE 10.1
Groundwater monitoring locations



DATE: 21.06.26 PROJECT: 754-MELN374244 FILE: 374244C_R14_F10.01_GIS

11. BIODIVERSITY SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts to terrestrial and aquatic biodiversity due to the construction of the project.

The OTML General Manager (Engineering and Infrastructure) is responsible for the implementation of this plan. The OTML Environment team is responsible for the monitoring and reporting on the environmental performance of the plan's implementation, including verification of compliance with environment permit conditions and other applicable legislation.

11.1 PURPOSE

The purpose of the Biodiversity sub-plan is to

- Reduce the impacts of the project's construction activities on terrestrial and aquatic habitats, including critical habitat.
- Reduce habitat fragmentation and degradation.
- Reduce disturbance to terrestrial and aquatic fauna from construction activities.

11.2 BACKGROUND

Construction of the project may have direct and indirect impacts to terrestrial and aquatic ecological values. Project-related activities that may result in impacts to biodiversity values are:

- Land and vegetation clearance.
- Bulk earthworks.
- Blasting, quarrying and increased activity near cave systems.
- Project-related traffic and transportation.
- Increased waste associated with people, activities and vehicles.
- Transportation, storage, use and disposal of hydrocarbons and hazardous substances.

Without the implementation of management measures, construction activities may result in the following impacts to biodiversity:

- Permanent loss of aquatic fauna habitat, including critical habitat.
- Reduced ecosystem condition and fauna health due to reduced surface water quality.
- Reduced ecosystem condition and fauna health due increased total suspended solids and sedimentation.
- Reduced aquatic ecosystem connectivity due to disruption of hydrological connectivity and flow regime.
- Reduced ecosystem condition and loss/disturbance of fauna.
- Permanent loss and fragmentation of terrestrial habitat, including critical habitat.
- Disturbance and damage to caves and cave fauna.
- Disturbance and mortality of fauna from human activity.
- Fauna entrapment in open trenches.

11.3 LEGISLATION AND OTHER OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

The legislation and other requirements that are relevant during construction for managing impacts to biodiversity include:

- Environment (Water Quality Criteria) Regulation 2002
- *Fauna (Protection and Control) Act 1966 and Fauna (Protection and Control) (Amendment) Act 2014*
- *International Trade (Fauna and Flora) Act 1979*
- *Forestry Act 1991*
- IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

11.4 MANAGEMENT MEASURES

This section outlines the management measures to address impacts to terrestrial and aquatic biodiversity. At all construction sites managed under this CESMP, the measures outlined in Table 11.1 are to be implemented by OTML staff and contractors.

Further measures to limit impacts to biodiversity are outlined in the following sub-plans:

- Erosion and Sediment Control sub-plan.
- Surface Water sub-plan.
- Air Quality and Greenhouse Gas Emissions sub-plan.
- Noise and Vibration sub-plan.
- Weeds, Pest and Quarantine sub-plan.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 11.1 Biodiversity management measures

No.	Management measure
General	
BD001	Design bridges and road culverts to allow for high flow events following heavy rainfall, and to mimic natural flow characteristics where possible.
BD002	Design and construct mine infrastructure to minimise deviation of natural surface water flow paths.
BD003	Minimise the creation and extent of new access corridors in undisturbed catchments.
BD004	Optimise project layout and construction footprint to minimise vegetation clearing, and minimise disturbance to significant aquatic habitats, including sensitive creek lines.
BD005	Minimise impacts to critical habitat in accordance with IFC PS6.
Terrestrial biodiversity	
BD006	Conduct pre-construction surveys of areas proposed to be disturbed to identify sensitive species, including: <ul style="list-style-type: none"> • <i>Eurya ryoana</i> • <i>Cyrtostachys bakeri</i> • <i>Cryptocarya dipterocarpifolia</i>

No.	Management measure
	Avoid disturbing these species, as far as practicable. Where the species cannot be avoided, identify and implement site-specific management measures to minimise impacts and update management plans accordingly.
BD007	Maintain records of all contacts with or injuries to fauna including nature and severity of injury.
BD008	Shield external lights and direct lights onto work areas, wherever practicable to reduce light directed toward fauna habitat.
BD009	Where practicable and safe to do so, leave very large trees (>130 cm dbh), fig trees (>100cm dbh) and other roosting sites for fauna at sites for temporary facilities such as vehicle parks, laydown areas, storage sites and bulk fuel storage areas.
BD010	As far as practicable, locate borrow/gravel pits and quarries in cleared areas, secondary and/or degraded forest, and use suitable competent rock that is excavated at construction sites to limit the need for quarries.
BD011	Allow forest edges to naturally regenerate or create conditions to facilitate natural regeneration.
BD012	If safe and practicable, fell trees into planned footprints or into natural spaces in the surrounding habitat.
BD013	Prevent machinery from injuring or scarring trees on the work site edges.
BD014	Where feasible in the infrastructure corridor keep clearing to less than the designed 50 m.
BD015	Prohibit limestone quarrying in the Lukwi cave area.
BD016	Prohibit unauthorised entry of worker and contractors into caves.
BD017	Conduct fine-scale routing of access ways to place crossings in disturbed riparian vegetation as far as practicable and keep road alignment approaches to watercourses as close to right angles as practicable to limit disturbances to the banks of watercourses.
BD018	Prohibit procuring or consuming bush meat at any project site.
BD019	Prohibit keeping or temporary housing of pets or wild fauna at project facilities other than trained guard dogs under the control of a handler.
BD020	Prohibit keeping of cats at project facilities.
BD021	Develop a fauna rescue system in a Biodiversity Action Plan.
BD022	Avoid burning cleared vegetation, wherever practicable. Cleared vegetation should be left to rot rather than be burnt.
BD023	Prohibit project workers/contractors engaged in project activities from lighting and using fire except for specific work requirements controlled under a 'Hot Works' permit procedure and in designated smoking areas.
BD024	As far as practicable avoid using grasses for revegetation/rehabilitation as they can carry fire into the surrounding forest.
BD025	Prioritise IUCN endangered and new to science species when planting to regenerate disturbed areas.
BD026	Where practical and appropriate, revegetate with local species, prioritising species of plants that provide nectar and fruit for fauna. They attract dispersers, which generate a seed rain that speeds up regeneration and reduces costs.
BD027	Manage construction activities, including storage and stockpiling, within the defined development footprint to minimise the spatial extent and intensity of vegetation clearing.
BD028	Restrict disturbance footprint/duration.
BD029	Pre-clearance fauna salvage and relocation where feasible and/or minimise impacts to IUCN-listed species/habitats.
Aquatic biodiversity	
BD030	Implement good industry-practice management of in-stream activities to limit the downstream extent of turbid water created by fords, trenching or bridge building as far as practicable.
BD031	Prohibit the washing, servicing or refuelling of equipment, vehicles or machinery near or within watercourses.
BD032	Wherever practicable, do not fell vegetation into waterways.
BD033	Where watercourse crossings are to be revegetated use local species wherever practicable.

No.	Management measure
BD034	Protect adjacent catchments as refugia by limiting the number of catchments impacted by the project.
BD035	Support recovery of aquatic habitats through protection of refugia and appropriate management of impacted areas.
BD036	Maintain refuge habitats at nearby tributaries not impacted by project activities.
BD037	Maintain flow regimes and downstream connectivity along the infrastructure development corridor to support aquatic ecosystem function and/or design crossings to maintain fish passage.
BD038	Restore watercourses (e.g., creeks, drainage lines, channels) that are disturbed during construction back to their original or stable functional condition where the impact is limited to the construction phase (i.e., not impacted during operations).
BD039	Conduct inspection to confirm aquatic connectivity of disturbed watercourses; remove barriers to flow regimes including fauna movement where required.
BD040	Conduct routine inspection and monitoring of dissolved metals in water and aquatic biota and implement adaptive management to address exceedances to maintain conditions that minimise metal mobilisation and ecological risk.

11.5 PERFORMANCE MONITORING AND REPORTING

11.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 11.2 outlines the performance indicators for the management of impacts associated with biodiversity management.

Table 11.2 Performance indicators for biodiversity management

Issue	Performance indicator	Target
Ground disturbance and vegetation clearance	Area of disturbance.	Does not exceed areas approved in vegetation clearing permits (any clearance beyond permitted areas must be reported as an incident).
	Cleared vegetation recovered, reused, recycled or stockpiled appropriately.	No burning of vegetation or windrowing/stockpiling of cleared vegetation against standing vegetation.
Fauna protection	Fauna injury and mortality.	Records kept of all animal deaths, injuries or entrapments as a result of project construction activities. No hunting of wildlife by workers.
Aquatic biota	Diversity and abundance of macroinvertebrate and fish taxa	No departure from predicted changes in aquatic biota.
Metal bioaccumulation in aquatic biota	Metal bioaccumulation in comparison to the ESIA baseline study.	No significant change from the baseline.
Biomass of key fish species	Departure of biomass of key fish in comparison to the baseline.	No departure from predicted changes in biomass of key species.
Listed/protected species	Number of fauna species observed.	Records kept of all sightings of significant species.
Listed/protected species	Number of protected trees removed.	Zero unapproved. Any removal must be approved first. Any unauthorised removal of protected trees must be reported as an incident.
Pest animals	Number of pests trapped or killed. Pest management controls implemented.	Records kept of all sightings of pest animals and pest animal related impacts. No new introduced pest species.

Issue	Performance indicator	Target
Timber harvesting	Timber stockpiled in previously cleared areas or lay down areas.	Timber available for local community use, as practicable. No stockpiling of harvested timber on retained/standing vegetation. OTML engages with landowners and other stakeholders to maximise commercial opportunities to communities from approved felled timber.

11.5.2 Monitoring

The monitoring requirements for terrestrial and aquatic biodiversity include the following:

- Monitor forest condition adjacent to the TSF and infrastructure, including targeted counts for endemic species at selected sites.
- Continue aquatic ecology monitoring in accordance with the OTEMA conditions, with additional sites to the existing program included to incorporate the TSF area. This includes:
 - Biannual monitoring of aquatic fauna diversity, biomass and abundance.
 - Monthly water quality monitoring (refer to the Surface Water sub-plan).
 - Annual ecotoxicological monitoring (algal and bacterial bioassays)
- Report wildlife deaths resulting from project activities and implement corrective actions if required.
- Record and investigate any unauthorised or accidental clearing beyond demarcated boundaries. Implement corrective actions where required.

Table 11.3 provides a summary of the monitoring requirements.

Table 11.3 Summary of project monitoring requirements for biodiversity

Parameter	Location	Indicative frequency
Forest condition	Adjacent to TSF and infrastructure	Annually
Biodiversity – imagery analysis of the project site	Adjacent to TSF and infrastructure	Every two years
Aquatic fauna diversity, biomass and abundance	Selected sites near the TSF and infrastructure	Quarterly
Ecotoxicology (algal and bacterial assays)	Selected sites near the TSF and infrastructure	Quarterly

11.5.3 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the Environment Department on the compliance with this sub-plan and will include:

- Results of environmental monitoring (sampling and analysis).
- Regular (monthly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.

12. AIR QUALITY AND GREENHOUSE GAS EMISSIONS SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts associated to air quality and greenhouse gas (GHG) emissions arising from construction of the project.

The OTML General Manager (Projects) is responsible for the implementation of this sub-plan. The OTML Environment team is responsible for the monitoring and reporting on the environmental performance of the plan's implementation, including verification of compliance with environment permit conditions and other applicable legislation.

12.1 PURPOSE

The purpose of the Air Quality and Greenhouse Gas Emissions sub-plan is to:

- Reduce dust emissions and nuisance to sensitive receptors.
- Reduce combustion emissions.
- Provide the basis for statutory reporting of GHG emissions from the project.

12.2 BACKGROUND

Construction of the project will have the potential to reduce air quality and increase GHG emissions. Project-related activities that may result in impacts to air quality and greenhouse gas emissions are:

- Land and vegetation clearance.
- Bulk earthworks.
- Fuel combustion associated with operating heavy vehicles, mobile equipment and machinery.
- Project-related traffic and transportation on unsealed roads.
- Wind erosion of exposed soils including the TSF batters, benches and tops.
- Use of diesel-powered generators and equipment.
- On-site fuel storage and handling.

Without the implementation of management measures, construction activities may result in the following potential impacts:

- Impacts to human health due to increased particulate matter (PM_{2.5} and PM₁₀).
- Impacts to human and ecosystem health due to increased combustion emissions (NO₂).
- Reduced amenity of sensitive receptors due to dust deposition.

12.3 LEGISLATION AND OTHER OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

The legislation and other requirements during construction relevant for managing air quality and greenhouse gas emissions include:

- Australian Government National Environment Protection Council (NEPC) ambient air quality standards under the National Environment Protection Measure for Ambient Air Quality (the 'Air NEPM')
- Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (Approved Methods) (NSW EPA 2022)

- WHO Global Air Quality Guidelines (WHO 2021)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Air Emissions and Ambient Air Quality (IFC 2007)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Construction and decommissioning (IFC 2007)
- US EPA National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (US EPA n.d.)

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

12.4 MANAGEMENT MEASURES

Table 12.1 outlines the management measures for air quality and GHG emissions. At all construction sites managed under this CESMP, the measures outlined in Table 12.1 are to be implemented by OTML staff and contractors.

Further measures to minimise impacts to air quality are provided in the Erosion and Sediment Control sub-plan.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 12.1 Air quality and greenhouse gas emissions management measures

No.	Mitigation and management measure
AQ001	When required (i.e., during extended dry periods), suppress dust on unsealed roads (particularly those heavily trafficked), exposed stockpiles and work areas using water applied by water trucks.
AQ002	Maintain vehicles and machinery on a regular basis and operate in accordance with manufacturers' specifications to limit greenhouse gas emissions.
AQ003	Restrict vehicle movements and heavy works near sensitive receptors during high-wind or extremely dry conditions, where feasible.
AQ004	Minimise fugitive emissions from dusty material transported by trucks by covering it or making sure material is not above the level of the vehicle sidewalls.
AQ005	Prohibit unauthorised lighting of fires by project personnel and contractors.
AQ006	Maintain project inventory of GHG emissions in accordance with applicable reporting guidelines.
AQ007	Optimise haul distances and haulage scheduling to reduce idling times to minimise diesel usage in vehicles.
AQ008	Use efficient lighting and energy-saving devices in project accommodation, administrative buildings, site offices and other project-related buildings.
AQ009	Implement speed limits via posted speed limit signs on project unsealed roads and tracks.
AQ010	Undertake progressive rehabilitation of disturbed areas as soon as practicable to reduce wind erosion of stockpiled material.
AQ011	Comply with the use of ozone depleting substances in accordance with the IFC General Environmental Health and Safety Guidelines.
AQ012	Control material track-out to limit the transfer of fine materials and mud from active construction areas onto tracks and roads.
AQ013	Optimise pumping systems to minimise energy use for water management.
AQ024	Investigate fuel-switching opportunities to cleaner alternatives (e.g. from diesel to natural gas) as part of broader OTML investigations regarding this.

12.5 PERFORMANCE MONITORING AND REPORTING

12.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 12.2 outlines the performance indicators for the management of impacts to air quality and GHG emissions.

Table 12.2 Performance indicators for air quality and GHG emissions management

Issue	Performance indicator	Target
Dust generation	Number of complaints about air quality	Zero complaints
Dust deposition	Dust deposition monitoring results	Results consistently within the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (Approved Methods) (NSW EPA 2022): <ul style="list-style-type: none"> • 2g/m²/month (Incremental) • 4g/m²/month (Total)
Particulate matter	Particulate matter monitoring results	Results consistently within WHO Air Quality Guidelines (2021): <ul style="list-style-type: none"> • PM₁₀: 15µg/m³ (annual) and 45µg/m³ (24-hour) • PM_{2.5}: 5µg/m³ (annual) and 15µg/m³ (24-hour)
Combustion emissions	Nitrogen oxide monitoring results Fuel use (as documented in yearly reporting)	<ul style="list-style-type: none"> • Maximise efficiency • Minimise emissions • Air quality results consistently within US EPA NAAQS (n.d): <ul style="list-style-type: none"> ◦ NO₂: 100µg/m³ (annual) and 188µg/m³ (1 hour)
Fires	Number of unauthorised fires resulting from project-related activities	Zero

12.5.2 Monitoring

Air quality and GHG emissions monitoring will incorporate the following:

- Monthly monitoring of total dust deposition, particulate matter (PM_{2.5} and PM₁₀) and nitrous oxides NO_x
- Environmental inspections of works and worksites, including:
 - A visual inspection of dust generation during extended dry periods.
 - Inspection of the erosion and sediment controls.
 - Inspection of rehabilitated areas.
- Monitoring energy use and (estimated) greenhouse gas emissions.
- Annual reporting of GHG emissions from the on-site diesel generators.

Table 12.3 provides a summary of the monitoring requirements.

Figure 12.1 presents the proposed air quality monitoring locations.

Table 12.3 Summary of project monitoring requirements for air quality and GHG emissions

Parameter	Location	Indicative frequency
Dust deposition, PM _{2.5} and PM ₁₀ and NO _x	At selected sensitive receptors within a 5 km radius of the TSF (Figure 12.1).	Monthly

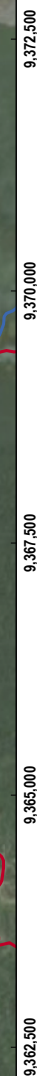
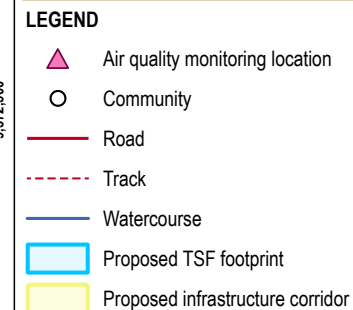
12.5.3 Reporting

External reporting will be as per Section 5.2.

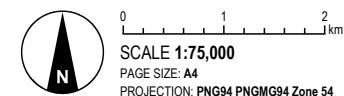
Internal reporting will be undertaken by the Environment Department on the compliance with this sub-plan and will include:

- Results of environmental monitoring (sampling and analysis).
- Regular (monthly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.



SOURCE
Monitoring locations and villages from Tetra Tech Coffey.
Proposed infrastructure from from KCB and OTML.
Topographic features from OSM. Admin boundary from NSO.
Imagery from ESRI and Google Earth.



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OK BIRIM TAILINGS STORAGE FACILITY PROJECT

FIGURE 12.1
Air quality monitoring locations



DATE: 21.06.26 PROJECT: 754-MELEN374244 FILE: 374244C_R14_F12.01_GIS

13. NOISE AND VIBRATION SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts to noise and vibration arising from construction of the project.

The OTML General Manager (Projects) is responsible for the implementation of this sub-plan. The OTML Environment team is responsible for the monitoring and reporting on the environmental performance of the plan's implementation, including verification of compliance with environment permit conditions and other applicable legislation.

13.1 PURPOSE

The purpose of this Noise and Vibration sub-plan is to:

- Manage potential impacts on human and wellbeing from construction noise and vibration.
- Manage potential impacts to fauna behaviour from construction noise and vibration.

13.2 BACKGROUND

Construction of the project will involve using heavy machinery for major earthworks with the project's disturbance footprint. Project-related activities that may result in impacts to noise and vibration are:

- Initial construction of the starter bund for the Cell 1 of the TSF.
- Extraction of gravel and borrow fill from the west bank of the Ok Tedi near the TSF (within 5 km one-way).
- Project-related traffic and transportation.
- Construction of access roads and permanent infrastructure (including the hydro-cyclone house) in the vicinity of the TSF.
- Use of diesel-powered generators and temporary on-site power plants.
- Vegetation clearance, topsoil stripping and grading.
- Subgrade preparation and road surfacing along new roads.
- Use of heavy equipment (e.g., haul trucks, loaders, graders, vibratory rollers).

Without the implementation of management measures, construction activities may result in the following impacts related to noise and vibration:

- Impacts to community health, wellbeing and amenity due to increased noise and vibration levels from project activities.
- Elevated noise levels with the potential to impact fauna behaviour and habitat use, reducing habitat suitability close to project activities.

13.3 LEGISLATION AND OTHER OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

The legislation and other requirements that are relevant during construction for managing noise and vibration include:

- IFC General Environmental, Health, and Safety (EHS) Guidelines: Noise (IFC 2007)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Construction and decommissioning (IFC 2007)

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

13.4 MANAGEMENT MEASURES

Table 13.1 outlines the management measures for noise and vibration control to address impacts to human health and wellbeing, and fauna behaviour. At all construction sites managed under this CESMP, the measures outlined in Table 13.1 are to be implemented by OTML staff and contractors.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 13.1 Noise and vibration management measures

No.	Mitigation and management measure
NV001	Maintain vehicles and machinery on a regular basis and operate in accordance with manufacturers' specifications to limit noise emissions.
NV002	Where project activities must take place outside of daytime hours, implement noise mitigation measures to achieve night-time goal of 45 dB(A) when construction activities are within 1,500 m of Kungembit.
NV003	Maximise distance between noisy equipment and processes and noise sensitive receptors, where practicable.
NV004	Install and use naturally occurring acoustic barriers when using loud equipment near noise sensitive receptors.
NV005	Turn equipment off or reduce throttle when not in use.
NV006	Site the most significant fixed plant noise sources at the greatest practicable distance from noise sensitive receptors, using inherent screening provided by bunds, stockpiles or other noise-attenuating buffers (e.g., vegetation) if available.
NV007	Install major plant and equipment inside acoustically lined enclosures or buildings, limiting the size of any openings to the smallest practical size and orientating openings away from noise sensitive locations where practicable.
NV008	Where practicable, schedule noisy works to avoid working in proximity of communities on religious and cultural holidays.
NV009	Avoid blasting where practicable. If blasting is required, restrict blasting activities to daylight hours and inform potentially affected communities of planned surface blasting events.
NV010	Train personnel via site inductions on potential community noise impacts and the appropriate management procedures, including techniques to reduce noise emissions.
NV011	Where applicable for blasting, minimise air blast overpressure and ground vibration by implementing the following controls: <ul style="list-style-type: none"> • Reduce bench height • Reduce blast hole depths • Reduce blast hole diameter • 'Deck loading' of blast holes (i.e. placing two separate charges in the same blast hole separated by a column of inert material and firing with a separate delay) • Increase stemming height • Maximise the blast distance from vibration sensitive locations. • Increase confinement (i.e. increasing standard front row burden and stemming height) • Reduce the charge mass per delay • Direct blasts away from sensitive sites where possible/practicable • Conduct blasting in locations where topography eliminates 'line of sight' to noise sensitive locations • Conduct blasting near sensitive areas during weather periods unfavourable to noise propagation

13.5 PERFORMANCE MONITORING AND REPORTING

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 13.2 outlines the performance indicators for noise and vibration management.

Table 13.2 Performance indicators for noise and vibration management

Issue	Performance indicator	Target
Noise and vibration generation	Number of complaints regarding noise levels and blasting. Noise monitoring results	Zero complaints. Meet noise and vibration goals: <ul style="list-style-type: none"> Construction noise (TSF starter dam): 55 dB(A) (L_{Aeq}, 1 hour) at nearby noise sensitive receptor locations during the daytime (i.e. 7:00 am to 10:00 pm) Construction noise (other aspects): <ul style="list-style-type: none"> 85 dB(A) (L_{Aeq}, 8 hour) and 140 dB(C) (L_{Cpeak}) when occurring in close proximity to noise sensitive receptors during the day-time, otherwise no criteria 45 dB(A) (L_{Aeq}, 1 hour) when occurring at night Road traffic noise: <ul style="list-style-type: none"> 55 dB(A) (L_{Aeq}, 15 hour) at nearby noise sensitive receptor locations during the daytime (i.e. 7:00 am to 10:00 pm) 50 dB(A) (L_{Aeq}, 9 hour) at nearby noise sensitive receptor locations during the nighttime (i.e. 10:00 am to 7:00 pm)

13.5.1 Monitoring

Minimum, maximum and average noise (L_{eq}) levels will be monitored at the most proximal villages to the TSF (i.e., within a 5 km radius). Table 13.3 provides a summary of the monitoring requirements. Figure 13.1 presents the monitoring locations.

Monitoring of blast overpressure and ground vibration may be done in response to complaints.

Table 13.3 Summary of project monitoring requirements for noise

Parameter	Location		Indicative frequency
Noise levels	<ul style="list-style-type: none"> Kungim Putmambin Ambaga Kungembit 	<ul style="list-style-type: none"> Karandimok Alice Pit Birimkamba 	Monthly

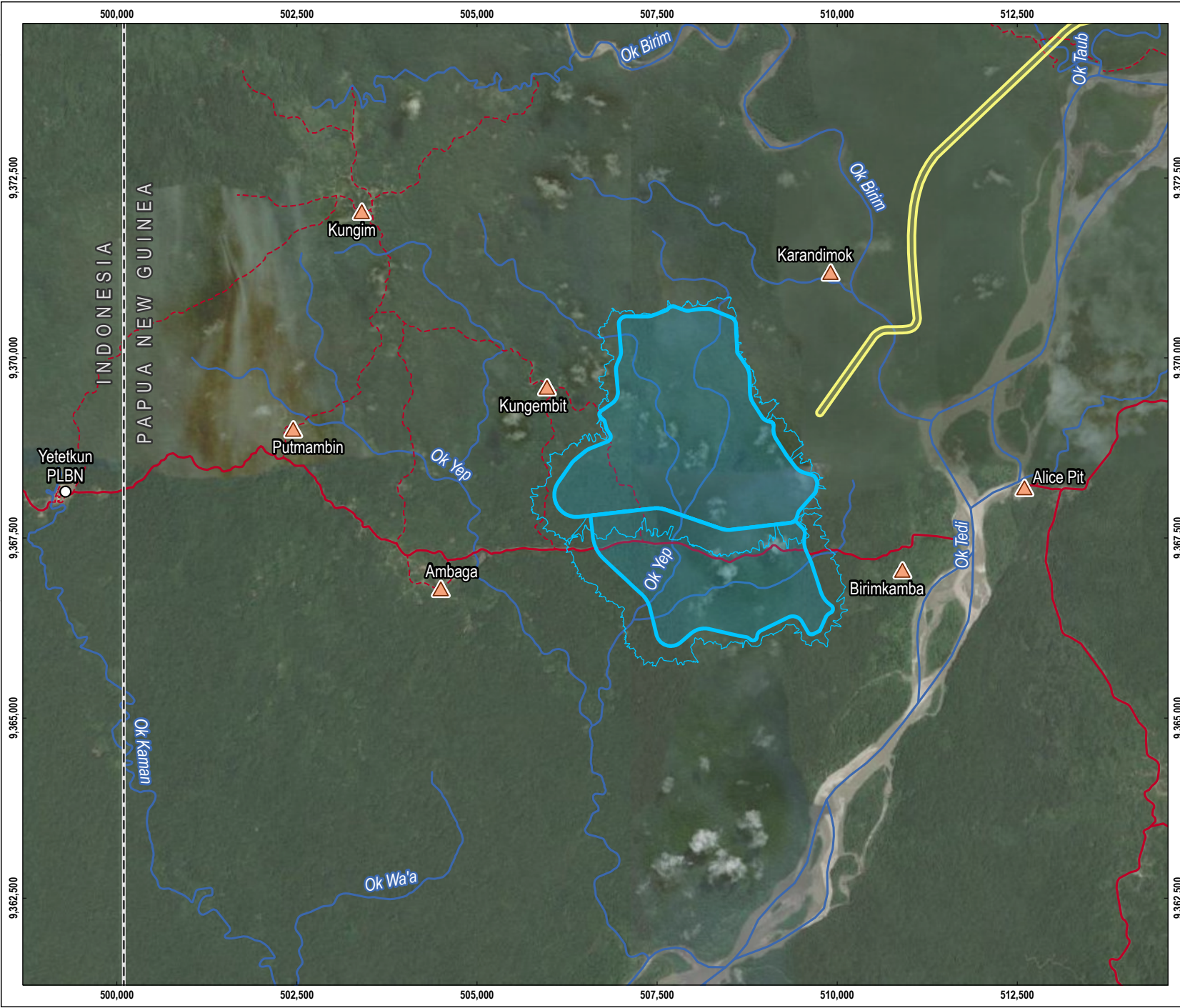
13.5.2 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the Environment Department on the compliance with this sub-plan and will include:

- Results of environmental monitoring (sampling and analysis).
- Regular (monthly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.



LEGEND

- Noise monitoring location
- Community
- Road
- Track
- Watercourse
- Proposed TSF footprint
- Proposed infrastructure corridor

SOURCE

Monitoring locations and villages from Tetra Tech Coffey.
Proposed infrastructure from KCB and OTML.
Topographic features from OSM. Admin boundary from NSO.
Imagery from ESRI and Google Earth.



0 1 2 km
SCALE 1:75,000
PAGE SIZE: A4
PROJECTION: PNG94 PNGMG94 Zone 54

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FIGURE 13.1

Noise monitoring locations



TETRA TECH
COFFEY

DATE: 21.06.26 PROJECT: 754-MELN374244 FILE: 374244C_R14_F13.01_GIS

14. ARCHAEOLOGY AND CULTURAL HERITAGE SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts to archaeology and cultural heritage arising from construction of the project. This sub-plan is also referred to as the Cultural Heritage Management Plan.

The OTML General Manager (Projects) is responsible for the implementation of this sub-plan. The OTML Community Relations and Sustainability team is responsible for community engagement aspects of this plan's implementation and performance monitoring.

14.1 PURPOSE

The purpose of the archaeology and cultural heritage sub-plan is to:

- Identify sites and artefacts of historical, cultural and archaeological significance (registered and non-registered) that may be disturbed by construction of the project.
- Avoid or limit disturbance to registered and unregistered sites of historical, cultural and archaeological significance.
- Manage all found historical, cultural and archaeological artefacts and sites in accordance with relevant legislation.

14.2 BACKGROUND

Construction of the project will involve major earthworks and vegetation clearance within the project's disturbance footprint that may impact on cultural heritage. Project activities that may result in impacts to archaeology and cultural heritage values:

- Vegetation clearing.
- Earthworks and excavation.
- Embankment construction.
- Road and bridge works.
- Pipeline trenching.
- Workforce movement.

Without the implementation of management measures, construction activities may result in the following impacts:

- Loss of visible site features; reduces access.
- Disturbance of archaeological deposits or burials.
- Permanent site loss.
- Linear disturbance across multiple site types.
- Inadvertent damage to sensitive places.
- Restriction of community access.

14.3 LEGISLATION AND OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

The legislation and other requirements that are relevant during construction for managing impacts to archaeology and cultural heritage include:

- *Cemeteries Act 1955*
- *National Museum and Art Gallery Act 1992.*
- *National Cultural Property (Preservation) Act 1965 and National Cultural Property (Preservation) Regulation 1965.*
- *War Surplus Materials Act 1952*
- IFC Performance Standard 8: Cultural Heritage and Guidance Note (IFC 2012)
- IFC Performance Standard 7: Indigenous Peoples

This section will be updated to reflect relevant permit conditions for the project.

14.4 MANAGEMENT MEASURES

Table 14.1 outlines the management specific measures to address impacts to archaeology and cultural heritage values. At all construction sites managed under this CESMP, the measures outlined are to be implemented by OTML staff and contractors.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 14.1 Archaeology and cultural heritage management measures

No.	Management measure
CH001	Site project infrastructure, including the hydro-cyclone house, tailings pipeline, laydown areas, access roads and surface water diversions, to avoid cultural sites of high significance, where possible.
CH002	Undertake pre-clearance verification surveys of final disturbance areas and complete community confirmation meetings to identify any new cultural heritage sites requiring management or impact mitigation.
CH003	Confirm cultural heritage constraints against final project layouts.
CH004	Develop an archaeological and cultural heritage sites register.
CH005	Establish exclusion zones around identified cultural heritage sites to be protected.
CH006	Incorporate cultural heritage training and awareness in workforce inductions, including briefing on individual obligations to protect cultural heritage.
CH007	Develop and implement a Chance Finds Procedure that outlines the processes for reporting, investigating and managing cultural heritage chance finds discovered during the project activities. [See Section 14.6 for this procedure.]
CH008	Conduct consultation with affected landowners and communities around methods for managing impacts on cultural heritage values, including getting Free, Prior and Informed Consent (FPIC) where triggered.
CH009	Work with communities and relevant NGOs or CSOs to implement programs to preserve cultural traditions and practices of high value, including documentation of cultural traditions and practices.
CH010	Restrict unauthorised access to cultural heritage sites and prohibit the disturbance of heritage sites by project workers.
CH011	In the event of the discovery of suspected human remains, cease work immediately, secure the site from interference and notify the OTML Community Relations and Sustainability team.
CH012	In the event of the discovery of a potential cultural or archaeological site or artefact, cease activity immediately and implement the procedures outlined in the Chance Finds Procedure.

No.	Management measure
CH013	Report all incidents and accidents relating to cultural heritage disturbance to the OTML Community Relations and Sustainability team.
CH014	Complete a Cultural Heritage Site Card for all newly discovered sites and artefacts that have been confirmed to be of cultural or archaeological significance. Submit all site cards to the PNG National Museum and Art Gallery at conclusion of works.
CH015	Disseminate information derived from chance finds acquired during the project to the custodians or cultural heritage and/or the PNG National Museum and Art Gallery, where relevant.

14.5 PERFORMANCE MONITORING AND REPORTING

14.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 14.2 outlines the performance indicators archaeology and cultural heritage

Table 14.2 Performance indicators for archaeology and cultural heritage management

Issue	Performance indicator	Target
Known archaeological and cultural heritage sites and artefacts	Number of sites disturbed without a permit.	Zero.
	Cultural heritage database.	Database is current and comprehensive.
	Number of complaints received.	Zero.
Chance finds	Compliance with Chance Finds Procedure outlined in Section 7.6	100% compliance with requirements of the Chance Finds Procedure.

14.5.2 Monitoring

Monitoring of disturbance to archaeological and cultural heritage sites will involve:

- Inspections of known archaeological and cultural heritage sites that are avoided to assess the preservation and integrity of the structures and effectiveness of the management techniques.
- Inspections of all newly discovered archaeological and cultural heritage items and sites in accordance with the Chance Finds Procedure.

Pre-clearance surveys will be undertaken to verify the cultural heritage sites in the final disturbance areas and record them on a cultural heritage database. The archaeology and cultural heritage monitoring program will be updated after completion of the pre-clearance surveys.

14.5.3 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the Community Relations and Sustainability Department on the compliance with this sub-plan and will include:

- Regular (monthly) reporting of pre-clearance survey results, verification of compliance to the Chance Finds Procedure and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.

14.6 CHANCE FINDS PROCEDURE

During construction works for ground disturbing or land clearing activity, any ‘chance find’ of an archaeological or cultural site or artefact must be reported immediately by staff members and contractors to their supervisor who must inform a representative of the OTML Community Relations and Sustainability team. If any personnel or contractor suspects they may have found an archaeological or cultural site or artefact, the following procedure is to be followed:

1. Cease all project activity in the vicinity of the area immediately.
2. Protect the area from potential disturbance through flagging of the site and making other personnel aware of the area. Establish an exclusion zone of 25 m radius around the discovery using temporary fencing and/or markers. Exclude all activities from the area, and do not remove any material from the area.
3. Once the area is secured, notify a representative of the OTML Community Relations and Sustainability team.
4. Complete a Chance Find Report Form to provide a written record of the circumstance of the find, including:
 - Details of the find (name of observer, date, time, GPS/map coordinates, type (if known)).
 - Why they were in the area.
 - How they recognised the site.
 - If any damage was incurred prior to or during the find (and details of the extent of any damage that occurred).
 - Measures taken to protect the site, if required.
5. Hand a signed copy of the Chance Find Report Form to a representative of the OTML Community Relations and Sustainability team for follow-up with an archaeological specialist.
6. The Community Relations and Sustainability Manager should inspect the ‘find’ to ensure it is sufficiently protected and that details of the site are recorded accurately. The OTML representative should collect further evidence such as photographs, GIS coordinates and detailed ‘mudmaps’ of the site, if these can be obtained without disturbing the site.
7. An archaeological specialist is to be engaged by the OTML Community Relations and Sustainability team to obtain further advice on management of the site.
8. The Community Relations and Sustainability Manager is to notify the PNG National Museum and Art Gallery of the discovery once information has been obtained from the archaeological specialist.
9. No entry is permitted into the area until appropriate advice has been sought from the archaeological specialist and all required actions have been completed. Material is not to be removed from the site without prior approval.
10. If the site is confirmed to be of cultural or archaeological significance, record all details in the Cultural Heritage Database

15. TRAFFIC AND TRANSPORT SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts arising from increased traffic and transport associated with construction of the project.

The OTML General Manager (Projects) is responsible for the implementation of this sub-plan. The OTML Community Relations and Sustainability team is responsible for community engagement aspects of this plan's implementation and performance monitoring.

15.1 PURPOSE

The purpose of the traffic and transport sub-plan is to limit the potential for traffic accidents and vehicle incidents.

15.2 BACKGROUND

Construction of the project will involve an increase in traffic and transport to, from and around the project site. The transport of personnel, equipment and materials via vessels and vehicles gives rise to the potential for an incident to occur, such as a collision or crash. Without the implementation of management measures, increased traffic and transport may result in the following impacts:

- Loss of life or severe injury.
- Lost time injuries.
- Damage to infrastructure or property.
- Social tension, particularly if local villagers are involved.
- Environmental contamination via the release of hazardous materials and potential fire, depending on the vehicles and cargo involved in the incident.

15.3 LEGISLATION AND OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

- The legislation and other requirements that must be complied with during construction for managing traffic and transport include:
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Construction and decommissioning (IFC 2007)
- IFC General Environmental, Health, and Safety (EHS) Guidelines: Community Health and Safety – Section 3.4: Traffic Safety (IFC 2007)

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

15.4 MANAGEMENT MEASURES

Table 15.1 outlines the management measures for traffic and transport control to address impacts to people and the environment. At all construction sites managed under this CESMP, the measures outlined in Table 15.1 are to be implemented by OTML staff and contractors.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 15.1 Traffic and transport management measures

No.	Management measure
TR001	Implement traffic management measures, including: <ul style="list-style-type: none"> • Use of traffic controllers (e.g., near work areas, at entries/exits to construction sites). • Installing road signage near villages and settlements. • Speed limit of 40 km/hr to be enforced on internal roads/tracks and 65 km/hr for roads shared with the community. • Driver training, education and awareness about potential road safety risks. • Notification of communities about periods of high traffic movements.
TR002	Train and licence vehicle operators appropriately for the vehicles, vessels and machinery they are operating. This includes: <ul style="list-style-type: none"> • Site traffic procedures. • Emergency and incident response. • Fatigue management.
TR003	Train personnel and contractors on site traffic road rules and procedures.
TR004	Provide inductions for passengers travelling in vehicles and vessels, detailing response procedures to emergency situations and potential incidents.
TR005	Conduct early consultation, education and awareness with local and regional communities about the following topics: <ul style="list-style-type: none"> • Timing and duration of potential disturbance, including exclusion zones and changes to local access. • Changes or restrictions on boat travel near to construction activities within rivers and creeks. • Road safety education and awareness, particularly with children.
TR006	Maintain access between TSF communities by progressively developing local access roads around the TSF site prior to the closure of existing bush tracks.
TR007	Provide public use of the TSF access road as it is progressively developed, when safe to do so.
TR008	Where possible, maintain access for canoes and dinghies near to construction activities in creeks and rivers used for transport (e.g., Ok Birim, Ok Tedi, Ok Ma).

15.5 PERFORMANCE MONITORING AND REPORTING

15.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML OH&S and Safety Department. Table 15.2 outlines the performance indicators for traffic and transport.

Table 15.2 Performance indicators for traffic and transport

Issue	Performance indicator	Target
Training and licensing	Records of training and licensing.	All operators are trained and hold necessary licences to operate vehicles or vessels.
Speed limits on access roads	Number of traffic related incidents and/or complaints.	All project vehicles are driving within the enforced speed limits: <ul style="list-style-type: none"> • 40 km/hr on internal access roads/tracks. • 65 km/hr on roads shared with communities.
Monitoring vehicle and vessel movements	Completed vehicle and vessel travel logs.	No unauthorised travel in OTML vehicles or vessels.

Issue	Performance indicator	Target
Monitoring of traffic accidents, including vessel collisions, aircraft and vehicle incidents.	Number of traffic related incidents and/or complaints.	No unresolved incidents and complaints.

15.5.2 Monitoring

Monitoring of project traffic and transport will include the following:

- Maintenance of induction and training records.
- Maintenance of travel logs, recording all vessel movements.
- Vehicle and vessel incidents will be documented in incident reports.

15.5.3 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the OTML OH&S and Safety Department on the compliance with this sub-plan and will include:

- Regular (monthly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.

16. WEED, PEST AND QUARANTINE SUB-PLAN

This sub-plan outlines the requirements for managing and mitigating potential impacts associated with the spread of weeds, pests and pathogens as a result of construction of the project.

The OTML Environment team for the project is responsible for the implementation of this plan. The OTML Environment Team is also responsible for monitoring and reporting on the environmental performance of the plan's implementation, including verification of compliance with environment permit conditions and other applicable legislation.

16.1 PURPOSE

The purpose of the Weed, Pest and Quarantine sub-plan is to:

- Inform project personnel of the prohibited activities relating to the import or movement of exotic plants and animals during construction of the project.
- Prevent exotic weeds, pests and diseases from entering, spreading or becoming established in the project area during construction works.
- Identify and contain, suppress or manage significant weeds, pests and diseases already in the project area to limit spread by project construction activities.

16.2 BACKGROUND

Construction of the project may introduce or spread exotic weeds, pests and diseases. Project-related activities that may result in the introduction of weeds, pests and pathogens are:

- Exotic weed or pest species entering the project area via personnel or cargo associated with the project.
- Physical disturbance and spread of existing weeds caused by bulk earthworks for the construction of the TSF development area and infrastructure corridor development area.
- Introduction of new weed and pest species that may be present on machinery from overseas, logging areas or agricultural areas elsewhere in PNG, prior to reaching the site.

Without the implementation of management measures, construction activities may result in the following potential impacts:

- Cause a significant reduction in the abundance of native species.
- Degrade the composition or condition of vegetation communities.
- Increase in the density and distribution of existing pest infestations.

16.3 LEGISLATION AND OTHER OBLIGATIONS

OTEMA is the main legislation governing environmental aspects at OTML.

The legislation and other requirements that are relevant during construction for managing weeds, pests and pathogens include:

- *Quarantine Regulation 1956*
- *Animal Disease and Control Act 1952*
- *Plant Disease and Control Act 1953*
- IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

This section will be updated to reflect relevant permit conditions for the project prior to the commencement of construction.

16.4 MANAGEMENT MEASURES

Table 16.1 outlines the management measures to minimise the introduction and spread of weeds, pests and pathogens. At all construction sites managed under this CESMP, the measures outlined in Table 16.1 are to be implemented by OTML staff and contractors.

Through the implementation of this plan, the need for additional management measures may be triggered by review of monitoring data, additional surveys, identifying higher levels of impact than expected, evidence of new impacts or if other unexpected outcomes occur.

Table 16.1 Weed, pest and quarantine management measures

No.	Management measure
WP001	Induct contractors and employees in the identification of invasive exotic species.
WP002	Provide relevant contractors and OTML departments with materials to assist with the identification of weeds occurring within the project area.
WP003	Train and induct relevant personnel and contractors in procedures for weed control and eradication.
WP004	Where appropriate, establish permanent chemical wash down point(s) to prevent weeds and pathogens being transported to work sites.
WP005	Locate wash-down facilities so that run-off does not transfer weed seeds, spores or infected soils containing pathogens to adjacent non-weed infested areas, natural drainage lines or watercourses.
WP006	Conduct a pre-construction survey of access tracks, drill pad sites and fly camps to assess the presence of, and appropriately treat, any infestations of weeds prior to establishing a new work site.
WP007	Establish and implement a Quarantine Program and focus on sites where equipment and supplies will be brought into the project area.
WP008	Wash down vehicles, plant and equipment before arrival at site.
WP009	Prohibit mine personnel and those of its contractors bringing any plants or animals into the project development area.
WP010	Obtain approval from the OTML Environment Department before undertaking vegetation clearing activities.
WP011	Visually inspect all new vehicles, plant and equipment entering or leaving the project area to check they are free of soil and plant material.
WP012	Develop and maintain a Weeds Identification Register and Management Procedure to demonstrate the identification, inspection, treatment and management of weeds in areas adjacent to the disturbed areas:.
WP013	Check topsoil for weeds prior to transferring it from one area to another. Topsoil must not be transferred from known weed-infested areas to non-weed infested areas. Obtain approval from the OTML Environment Department prior to transferring any topsoil.
WP014	Minimise use of chemical herbicides and pesticides. If required, select herbicides and pesticides with consideration of WHO recommendations and train personnel in their use. Handle, store, apply and dispose of herbicides and pesticides appropriately.

16.5 PERFORMANCE MONITORING AND REPORTING

16.5.1 Performance indicators

Performance will be measured through audits and inspections conducted by the OTML Environment Department. Table 16.2 outlines the performance indicators for the management of impacts associated with weed and pest control.

Table 16.2 Performance indicators for weed, pest and quarantine management

Issue	Performance indicator	Target
Weeds	Weed density and distribution.	No new weed species introduced. No increase in the density and distribution of existing weed species in project areas following construction activities.
Pests	Pest abundance and distribution	No new pests introduced. No increase in the abundance of existing exotic species in the project area following construction activities.
Pathogens	Presence/absence of pathogen-related dieback.	No new incidences of dieback resulting from the spread of <i>Phytophthora cinnamomi</i> .

16.5.2 Monitoring

Monitoring ecological health is addressed in the Biodiversity Sub Plan. Specific monitoring for weeds and pests will incorporate the following:

- Monitoring areas with recently cleared land, roadsides and newly rehabilitated areas for weed invasion.
- Visual inspections on the existing weeds, pests and pathogens already present in the project area.

16.5.3 Reporting

External reporting will be as per Section 5.2.

Internal reporting will be undertaken by the Environment Department on the compliance with this sub-plan will include:

- Results of monitoring (surveys and inspections).
- Regular (quarterly) reporting of verification inspections and performance indicators applicable during the reporting period.
- Incident notifications.
- Non-conformances and field observations documented as part of monitoring and evaluation.
- Evaluation reports.

Internal reports will be provided to senior management.

17. GENERAL WASTE MANAGEMENT SUB-PLAN

Waste management during construction of the TSF will comply with the OTML General Waste Management Plan (OTML-IMS-PLA-3.06). This plan is included in this section for transparency of management measures.

General Waste Management Plan

Contents

1	Introduction	5
1.1	Purpose	5
1.2	Background	5
1.3	Legal Requirements	5
1.4	Related Documents	6
1.5	Limits of Plan	7
2	Risks and Mitigation	8
2.1	Identification of activities and risks	8
2.2	Health and Safety	9
3	Waste Management Planning	10
3.1	Waste Reduction Strategy	10
3.1.1	Prevention and minimisation	10
3.1.2	Reuse	11
3.1.3	Recycling	11
3.2	Waste Stream Audits	11
3.3	OTML Waste Flow	12
4	Hazardous Waste Streams	13
4.1	POPs and PCBs	14
4.2	Ozone Depleting Chemicals	14
4.3	Radioactive waste	14
4.4	Asbestos waste	14
4.5	Hospital waste	15
5	Facilities	15
5.1	Tabubil Waste Facility	15
5.2	Landfill	15
5.2.1	Tabubil Landfill	15
5.2.2	Kiunga Landfill	16
5.2.3	Bige Landfill	16
5.3	Incinerators	16
5.3.1	Tabubil High Temperature Incinerator	16
5.3.2	Turbo Burn Incinerator	17
5.4	Waste Oil System	17
5.4.1	Oil Water Separators	17

5.4.2	Collection and Storage	17
5.4.3	The Tabubil Waste Oil Treatment Plant.....	18
5.4.4	Mill Lime Kiln and Orica Explosives Plant	18
5.4.5	Excess waste oil	18
5.4.6	Waste Oil Disposal for the Community	18
5.5	Chipper	18
5.6	Tub Grinder	19
5.7	Sewage Treatment	19
6	Waste Collection and Transport	20
6.1	Waste Collection	20
6.1.1	Skips.....	20
6.1.2	Bins	20
6.2	Waste Transport	22
7	Other Considerations	22
7.1	Exploration	22
7.2	Shipping	22
7.3	New Chemicals	23
8	Monitoring	23
8.1	Environmental Sampling	23
8.2	Inspections and Audits	23
8.3	Incidents and Non-compliance Reporting and Investigation.....	23
8.4	Contaminated Sites Register and Mine Closure Plan.....	24
9	Contract Management	24
9.1	Waste Management Contracts.....	24
9.2	Contractors Waste.....	24
10	Implementation, Awareness and Training	24
11	Reporting and Review	25
11.1	Reporting	25
11.2	Management Review	25
12	References.....	25
13	Glossary of Terms.....	26
14	Document Control History	26

Table of Tables

Table 1	Waste Management Documents	7
Table 2	Environmental Risks - Waste Management	8
Table 3	Health and Safety Risks - Waste Management	9

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilmbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	3 of 26

Table of Figures

Figure 1 Documents Related to the General Waste Management Plan	6
Figure 2 Waste Hierarchy	10
Figure 3 Waste Audit for Waste Management Plan Study.....	11
Figure 4 Audit results - Landfilled waste sources at OTML	12
Figure 5 Waste Flows - Between Sites at OTML	13
Figure 6 Tabubil Landfill Facility	16
Figure 7 Turbo Burn Incinerator.....	17
Figure 8 Waste Oil Storage.....	18
Figure 9 Vermeer Tub Grinder Commissioning at Bige	19
Figure 10 Standard Waste Container Colours at OTML.....	20
Figure 11 Examples of Correctly Coloured and Labelled Skips	21
Figure 12 Examples of Correctly Coloured and Labelled Bins	21
Figure 13 Skip Lifting Truck Tabubil	22

1 Introduction

1.1 Purpose

Ok Tedi Mining Limited (OTML) has developed this General Waste Management Plan to:

- Satisfy the requirement of the Ok Tedi Permit (OTP), issued under the Ok Tedi Environment Management Act 2019 (OTEMA), that a General Waste Management Plan be developed; and
- Detail the methods and procedures that will be carried out at OTML to ensure that wastes are managed in a manner that minimises the environmental and human health impact.

1.2 Background

OTML has developed this General Waste Management Plan as part of its commitment to improve processes to protect the natural environment.

The objectives for this document are to:

- Detail the legal requirements in regard to general waste management at OTML.
- Summarise measures to facilitate general waste management at OTML.
- Describe types of waste materials produced at the OTML operations.
- Describe programs in place aimed at minimising production of waste.
- Describe the reuse and recycling avenues for waste materials.
- Describe appropriate disposal routes for waste.
- Provide links to more detailed procedures for disposal of each waste stream.
- Provide information on awareness and training for employees and contractors.
- Provide information relating to contractor management with regard to waste issues.

1.3 Legal Requirements

The relevant legal requirements for waste management are detailed in:

- The *Public Health Act 1973* and the *Public Health (Sanitation & General) Regulation 1973*, and
- The OTP, issued under OTEMA
- The Environmental Code of Practice for Sanitary Landfill Sites Papua New Guinea 2001.

The OTP has the following conditions relating to General Waste Management:

73. The Permit Holder must ensure that spills of fuels, lubricants and/or hazardous materials are cleaned up as quickly as practicable. Such spillage must not be cleaned up by hosing, sweeping or otherwise releasing such contaminant into waterways. Equipment and soil contaminated by fuels, lubricants, hazardous materials and clean-up substances that cannot be salvaged must be disposed of in an approved waste facility.
77. The Permit Holder shall ensure that the empty containers and wastes from the use of hazardous/toxic materials are kept in safe and secure storage until they are disposed of in an appropriate manner.
83. The Permit Holder shall ensure that waste oil and other potentially hazardous materials from the fuel storage or machinery workshop activities are adequately treated and disposed of in accordance with the General Waste Management Plan for the works.

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	5 of 26

94. The EMP shall incorporate a Waste Management Plan that includes the waste minimisation strategy (reduce, reuse, recycle, treatment, disposal).
96. The EMP referred to in Condition 91 shall include but, is not limited to:
- (b) How waste will be identified, captured and managed.

1.4 Related Documents

The General Waste Management Plan and sub-plans and procedures are structured as per the figure below:

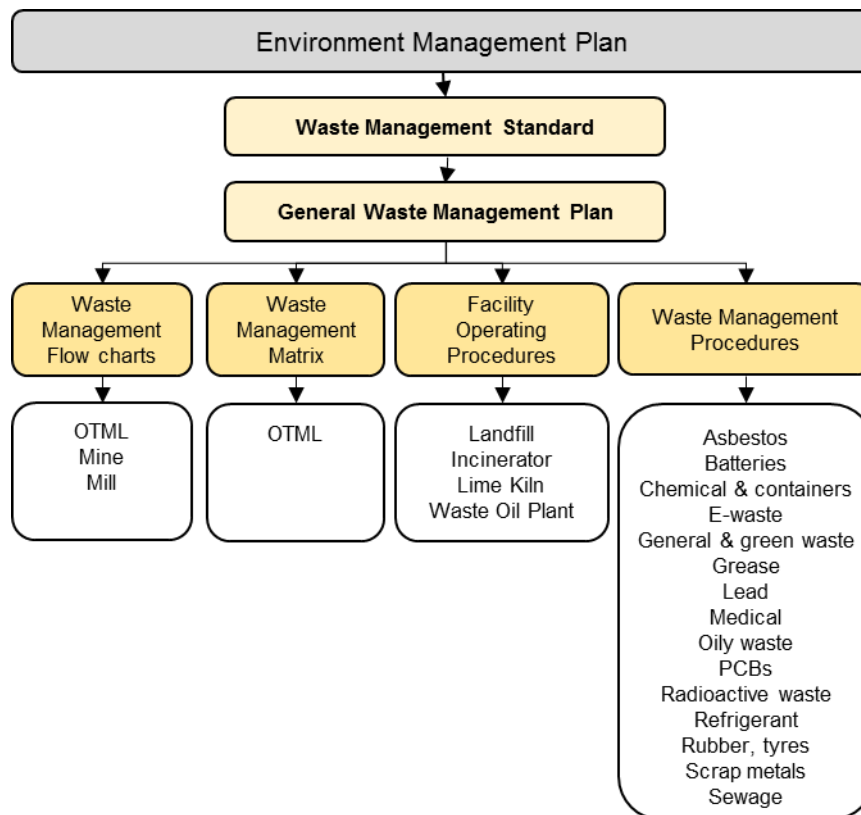


Figure 1 Documents Related to the General Waste Management Plan

The following table lists the waste management procedures at OTML.

Table 1 Waste Management Documents

Specific Waste Stream Procedures	Document Number
Aluminium Can Disposal	OTML-ENV-ISM-OP221
Asbestos Disposal	OTML-ENV-ISM-OP222
Battery (Lead Acid) Disposal	OTML-ENV-ISM-OP223
Blackjack Grease Disposal	OTML-ENV-ISM-OP224
Chemical and Chemical Container Disposal	OTML-ENV-ISM-OP225
E-waste Disposal	OTML-ENV-ISM-OP226
General Waste Disposal	OTML-ENV-ISM-OP227
Grease Waste (Industrial) Disposal	OTML-ENV-ISM-OP228
Grease Waste (Kitchen) Disposal	OTML-ENV-ISM-OP229
Green Waste Disposal	OTML-ENV-ISM-OP230
Lead Waste (Laboratory) Disposal	OTML-ENV-ISM-OP231
Medical Waste Disposal	OTML-ENV-ISM-OP232
Oil Filter and Oily Waste Disposal	OTML-ENV-ISM-OP233
Oil Waste Disposal	OTML-ENV-ISM-OP234
Oily Soil Disposal	OTML-ENV-ISM-OP235
Oily Sludge (WS1) Disposal	OTML-ENV-ISM-OP236
PCB Disposal	OTML-ENV-ISM-OP237
Radioactive Waste Disposal	OTML-ENV-ISM-OP238
Refrigerant Waste Disposal	OTML-ENV-ISM-OP239
Rubber Disposal	OTML-ENV-ISM-OP240
Scrap Metal Disposal	OTML-ENV-ISM-OP241
Sewage Disposal	OTML-ENV-ISM-OP242
Tyre Disposal	OTML-ENV-ISM-OP243
Other Waste Management Documents	Document Number
Waste Management Standard	OTML-ENV-STD-3.09
Chemical Procurement and Disposal Procedure	OTML-ENV-ISM-OP107
Chemical Procurement and Disposal Form	OTML-ENV-FM-005
ISM Water Monitoring Procedure	OTML-ENV-ISM-OP002
Environmental Inspections Procedure	OTML-ENV-ISM-OP001
Clearing Permit Procedure	OTML-ENV-ISM-OP004
Oil Water Separator Guideline	OTML-ENV-ISM-OP106
Oil Contaminated Soil	OTML-ENV-ISM-OP260

1.5 Limits of Plan

The plan applies to:

- Mining and quarrying areas
- Folomian Mill/Concentrator
- Tabubil town site, workshops, catering facilities, accommodation and waste management areas
- Kiunga processing plant, port and OTML catering, accommodation and workshop facilities
- Bige operations, dredge, stockpiles and infrastructure
- Km59 pump station and pipelines
- Roads from the mine to Kiunga and Bige
- Contractors operations and workshop facilities within the OTML lease areas
- Consultants and their activities within the OTML lease areas
- Shipping waste at Kiunga

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	7 of 26

Outside the scope of this plan are:

- Port Moresby office
- Brisbane office
- Western Province community and villages.
- Kiunga township
- Shipping outside of Kiunga

The plan applies to:

- General waste from households, accommodations and kitchens
- Industrial waste from workshops and processing plants
- Sewage

2 Risks and Mitigation

2.1 Identification of activities and risks

Risk Assessments have been carried out as part of the OTML Risk Assessment program. Risk assessments are carried out using the procedure detailed in the OTML Guideline *OTML-IMS-STD-1.03 Risk and Opportunity Management Guideline*

Table 2 summarises the highest environmental inherent risks identified as being relevant to General Waste Management from the OTML Environmental Risk Register (updated 2019):

Table 2 Environmental Risks - Waste Management

Inherent Risk Ranking	Risk description
17	Bige - Contamination of temporary waste storage area
17	Site wide - Environmentally hazardous chemicals management from procurement to disposal.
16	Exploration - Management of drill pad waste
13	Kiunga - Impacts from OTML wastes sent to third party landfills
13	Tabubil Landfill - Fire in tyre storage
13	Tabubil Landfill - Release from waste pre-incineration
12	Bige Dredge - Management of onboard dredge waste (hydrocarbon contaminated, general waste).
12	Kiunga Plant - Management of general waste.
12	Mill - Management of general waste.
12	Mine - Management of liquid hydrocarbon waste.
12	Mine - Management of solid hydrocarbon waste (filters, rags).
12	Tabubil Landfill – Management of grease pit.
12	Tabubil Landfill –Leachate entering environment causing damage.

These higher risk areas have been prioritised in developing this plan and site-specific procedures. Controls have been identified and put into place to reduce the overall risk profile of the operation in all areas including waste management.

2.2 Health and Safety

Risk Assessments have been carried out in the OTML Risk Assessment processes, and in the Total Waste Management Plan study. The four highest health and safety risks identified in the Total Waste Management Plan study (KMH 2012) were:

Table 3 Health and Safety Risks - Waste Management

Risk Ranking	Waste Type	Risk description
High	Hazardous waste	Risk of congenital abnormalities, burns to skin and eyes, illness or death if swallowed or in contact with skin. Asbestos can cause asbestosis, benign pleural disease, lung cancer and malignant mesothelioma.
High	Clinical waste	Infectious disease transmission risk - in particular blood borne diseases such as malaria and HIV.
High	General waste	As per hazardous waste, as due to mixed nature of waste some hazardous material such as aerosols and household chemicals may end up in general waste.
High	Tyres	Tyres provide a breeding ground for mosquitoes in wet climates, increasing the spread of diseases such as malaria and dengue fever.

As per the environmental risks in Table 2, these higher Health and Safety risk areas have been prioritised in developing this plan and site-specific procedures.

To mitigate these risks Safe Work Procedures must be developed in consultation with Occupational Health and Safety (OHS) and Environment representatives. Any new hazards identified in the field must be fed back into the procedure updates.

3 Waste Management Planning

3.1 Waste Reduction Strategy

Standard approaches to waste management planning encourage the emphasis on more beneficial uses of waste as per the diagram below, with disposal into landfill being the least favoured option.

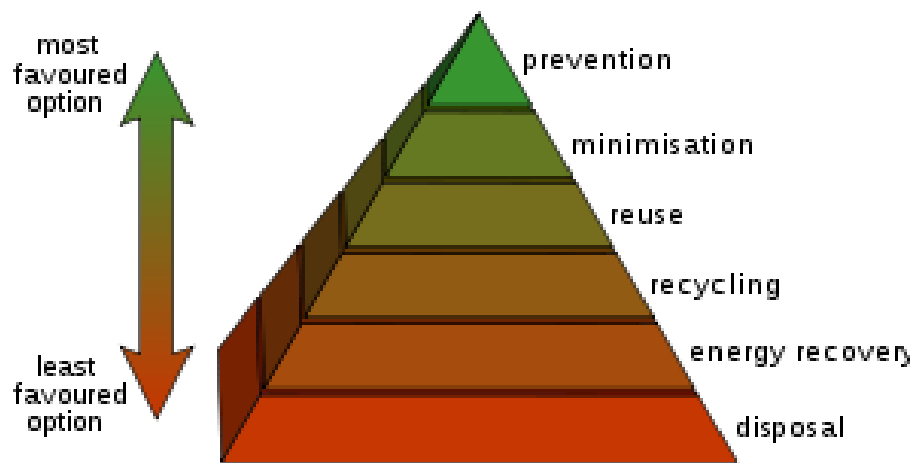


Figure 2 Waste Hierarchy

Benefits of this approach include:

- Economic - Improving efficiency of resource use, and creating markets for recyclables can lead to reduction in the consumption of new materials, valuable materials being recovered for reuse and the potential for new business opportunities.
- Social - By implementing proper waste management practices, the resulting consequences are more visually appealing and healthy settlements. Increased recycling and reused can benefit communities through the creation of more job opportunities.
- Environmental - Reducing or eliminating adverse impacts on the environment through reducing, reusing, recycling, and minimising resource extraction can provide reduced pollution, improved air and water quality and help in the reduction of greenhouse gas emissions.

3.1.1 Prevention and minimisation

Prevention and minimisation (also referred to as 'reduction') strategies at OTML include;

- purchasing products with less packaging,
- careful planning of supply so products do not become superseded or out of date and require disposal,
- designing products to be refillable or reusable,
- encouraging consumers to avoid using disposable products.

3.1.2 Reuse

Examples of the 'reuse' strategy for waste streams at OTML are

- reuse of second-hand products, repairing broken items instead of buying new,
- donating reusable items to the community rather than disposing of them,
- energy recovery such as reusing waste oil in the Lime Kiln and
- reuse of tyres for backfilling operations on roads and wharfs.

3.1.3 Recycling

Recycling is a resource recovery practice that refers to waste being reprocessed into new products.

At OTML common products recycled off site include

- copper such as wire,
- steel,
- waste oil,
- batteries
- rubber belts and
- tyres.

On site, paper products such as

- paperboard cartons,
- newspapers,
- magazines and light paper,
- corrugated fiberboard boxes

can be recycled into compost or mulch at the Bige revegetation project.

3.2 Waste Stream Audits

An important step in any waste management strategy is the development of an accurate waste inventory or database on the different types of waste that are generated at all sectors. Waste audits carried out at OTML have found that the majority of the waste was going to landfill and there existed an opportunity to increase more beneficial uses of waste streams.

Figure 4 below shows the volume of different types of waste going to the Tabubil landfill during a waste audit, with the majority of the waste (Domestic + Mess = 73%) from sources that will be mostly organic/food waste/green waste. A comprehensive waste audit carried out in 2012 determined that an approximate annual load of 3,500 tonnes per year are delivered to the Tabubil Landfill.



Figure 3 Waste Audit for Waste Management Plan Study

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	11 of 26

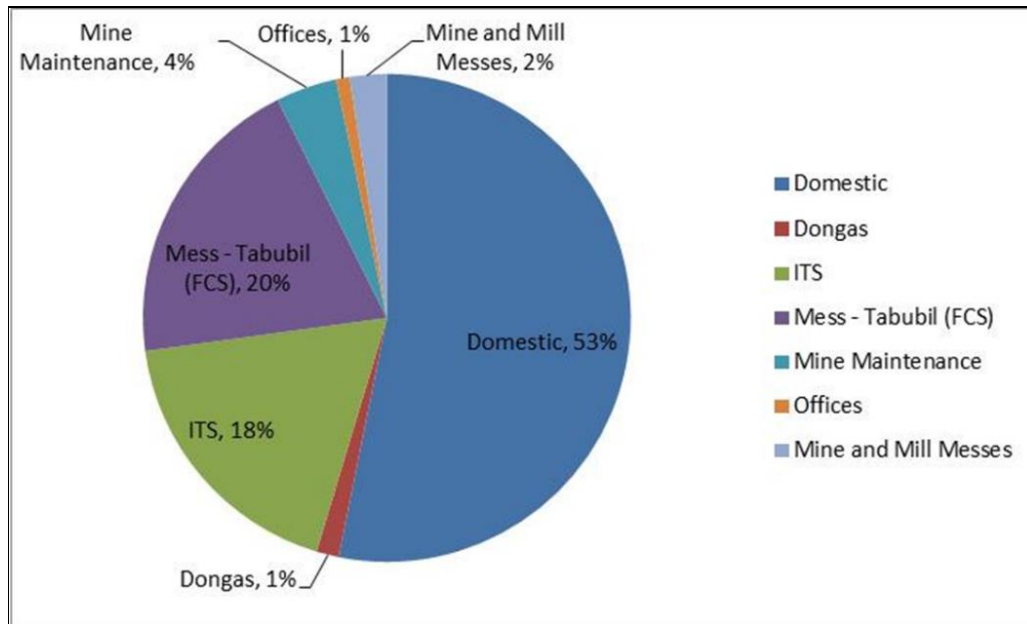


Figure 4 Audit results - Landfilled waste sources at OTML

3.3 OTML Waste Flow

Figure 5 below gives a simplified overview of the waste flows around the OTML operation, including Kiunga, Bige, Tabubil, Mine and Mill. Waste oil streams are primarily directly to the Lime Kiln at the Mill and the Orica Explosives Facility. Scrap metal and batteries are delivered to the Recycling Yard, and most other waste to the Tabubil Waste Facility or Kiunga and Bige Landfills

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	12 of 26

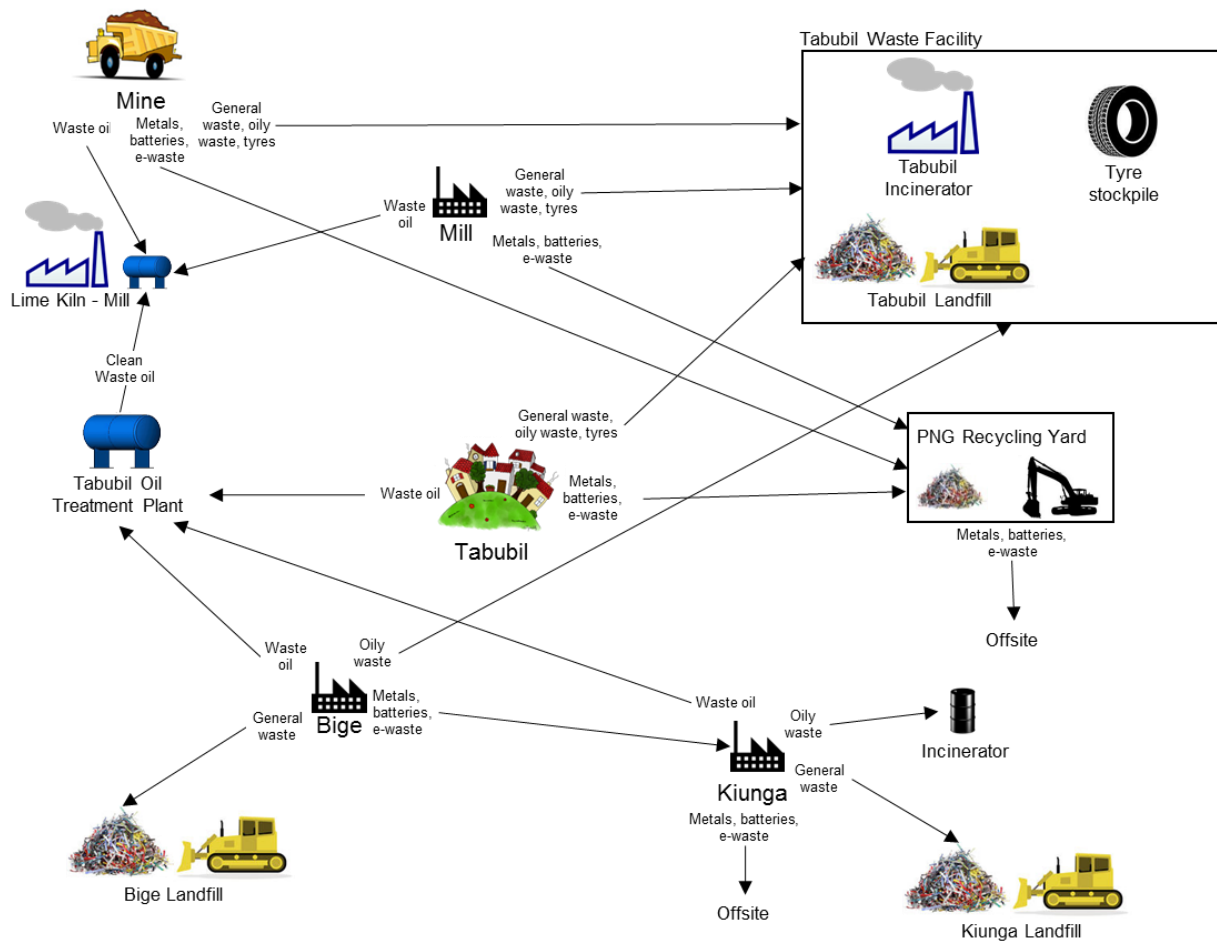


Figure 5 Waste Flows - Between Sites at OTML

4 Hazardous Waste Streams

Hazardous waste is defined as a by-product of manufacturing processes that is toxic and presents a potential threat to people and the environment. Characteristic hazardous wastes are materials that are known or tested to exhibit one or more of the following four hazardous traits: ignitability, reactivity, corrosivity and toxicity.

At OTML our major hazardous waste streams are:

- Chemicals – process and cleaning chemicals
- Hydrocarbons – petrol, diesel, oils, and greases
- Blackjack – bituminous grease
- Radiation sources
- Paints

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	13 of 26

- Some batteries (lithium, nickel cadmium, button cell)
- Refrigerant gases
- Mercury containing wastes (High Intensity Discharge Globes)
- Pesticides
- Electronics

Hazardous waste that are potentially at OTML:

- Asbestos containing materials
- PCBs

4.1 POPs and PCBs

Persistent organic pollutants (POPs) are organic compounds that are resistant to environmental degradation through chemical, biological, and photolytic processes. Because of their persistence, POPs bioaccumulate with potential significant impacts on human health and the environment. Many POPs are currently or were in the past used as pesticides, solvents, pharmaceuticals, and industrial chemicals.

Polychlorinated biphenyls (PCBs) are POPs, and have been used as heat exchange fluids, in electrical transformers, and capacitors, and as additives in paint, carbonless copy paper, and plastics. Persistence varies with degree of halogenation but on average POPs have an estimated half-life of 10 years. PCBs are toxic to fish at high doses, and associated with spawning failure at low doses.

OTML implemented a PCB removal program in 2008 with almost all significant sources of PCB on site being identified and shipped to Australia for destruction. The current procedure is for all transformer oil to be tested for PCBs prior to disposal.

See procedure ISM-OP237 PCB Disposal for more details

4.2 Ozone Depleting Chemicals

Refrigerant gas is an ozone depleting substance. OTML is committed to gradually phasing out earlier refrigerants and replacing them with the newer refrigerants which are less ozone depleting. OTML has commenced disposal of refrigerants by exporting them to CEPA approved chemical destruction facilities in Australia.

4.3 Radioactive waste

OTML has trained and competent Radiation Officers in the Mill. Radiation Officers are responsible for all issues regarding radioactive sources, especially disposal.

See procedure ISM-OP238 Radioactive Waste Disposal for more details

4.4 Asbestos waste

OTML has undertaken asbestos surveys as required and determined there was low risk of Asbestos materials in company housing and offices. OTML maintains an Asbestos Register. If any suspected asbestiform material is encountered, the Asbestos Disposal procedure is followed.

See procedure ISM-OP222 Asbestos Disposal for more details

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	14 of 26

4.5 Hospital waste

Hospital waste poses a risk of health impacts if workers or the general public come into contact with sharps or contaminated waste materials.

The Tabubil General Hospital contractors are responsible for waste management issues in relation to waste (medical and general) from the Hospital.

There are also clinics at Mill, Tabubil Laydown, Bige and Kiunga. Medical waste from these clinics are to be incinerated either in the Tabubil High Temperature Incinerator or small incinerators installed next to the clinics especially for this purpose.

See procedure ISM-OP232 Medical Waste Disposal for more details

5 Facilities

5.1 Tabubil Waste Facility

The Tabubil Waste Facility is managed by the Waste Management Department and is situated in the lower end of the southern part of the Tabubil Plateau in an area referred to as the 'Laydown'.

The Tabubil Waste Facility includes the following:

- Tabubil Landfill
- Kitchen Grease pit
- Limestone quarry
- Tyre stockpile
- Chemical container pit
- Tabubil Oil Treatment Plant
- Tabubil High Temperature Incinerator and associated storage sheds

The Tabubil Waste Facility is on the Contaminated Sites Register and its closure and remediation is addressed in the OTML Mine Closure Plan.

5.2 Landfill

A landfill site is a site for the disposal of waste materials by burial. OTML operates its landfills by applying techniques to:

- confine waste to as small an area as possible
- compact waste to reduce volume
- cover waste (usually daily) with layers of inert material (i.e. soil, rock, limestone)

Landfills have the potential to cause a number of issues. The most significant is pollution of the local environment, such as contamination of groundwater, aquifers or soil.

5.2.1 Tabubil Landfill

The Tabubil Landfill facility is situated in the Tabubil Waste Facility at the Laydown. The Waste Management Department manage the Landfill. Access is managed through use of the General Waste Disposal Form and the Chemical Procurement and Disposal Form. The front entrance has a boom gate and an officer to control entry and dumping. The yard has a full-time bulldozer, excavator and

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	15 of 26

dump truck to place and cover waste.

A local company is contracted by OTML to operate the Tabubil Landfill and oversee the day-to-day operation of the landfill area.



Figure 6 Tabubil Landfill Facility

5.2.2 Kiunga Landfill

The Kiunga Landfill is situated 6 km out of Kiunga town and is managed by the Kiunga Urban Local Level Government who has responsibility for the site. The OTML Kiunga general waste is taken to the Kiunga Landfill by a contractor.

5.2.3 Bige Landfill

The OTML dredging operation at Bige has two small landfill sites, one on East Bank and one on West Bank. These are the responsibility of the OTML Bige Operations.

5.3 Incinerators

5.3.1 Tabubil High Temperature Incinerator

Incineration is a waste treatment process that involves the combustion of organic substances contained in waste materials. Incineration and other high-temperature waste treatment systems are described as "thermal treatment". Incineration of waste materials converts the waste into ash, flue gas, and heat. The ash is mostly formed by the inorganic constituents of the waste.

Incineration has particularly strong benefits for the treatment of certain waste types in niche areas such as clinical wastes and certain hazardous wastes where pathogens and toxins can be destroyed by high temperatures.

OTML has installed a Pennram Model E-180 incinerator. The Waste Management team manages and maintains the waste incinerator.

The Incinerator is used to burn all oily waste such as rags, filters, grease, contaminated absorbent material, Blackjack, PAX boxes, medical waste, and contaminated organic waste. The fly ash is

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	16 of 26

disposed of by burial in the landfill adjacent to the incinerator.

5.3.2 Turbo Burn Incinerator

The Turbo-Burn Portable Electric Incinerator is a light weight portable industrial burner that is ideal for remote locations. The burner fan assembly fits over a standard 200L open top steel drum. It is capable of burning 18-45kg/hr of waste depending on the nature of the waste.

It can burn a wide variety of combustible material, but it is most useful for oil contaminated waste as that type cannot go into the general waste stream. This reduces the need to transport oil contaminated waste from remote sites to larger incinerators.

They are not suitable for larger operations due to low throughput and high labour requirements, and the emissions are likely to be higher than the Tabubil High Temperature Incinerator. They are not suitable for medical waste or sharps as the temperature may not be high enough or distributed well enough to guarantee a complete burn.

Although not ideal, the Turbo burners are used during periods when the High Temperature Incinerator is not operational.

OTML has Turbo-Burn incinerators at the following locations:

- Tabubil Waste Facility
- Bige
- Kiunga Power House (used at Kiunga Laydown)



Figure 7 Turbo Burn Incinerator

5.4 Waste Oil System

“Waste Oil” means any petroleum-based oil which, through use or handling, has become unsuitable for its original purpose due to the presence of impurities or loss of original properties. It must have sufficient liquid content to be free flowing.

See procedure ISM-OP234 Oil Waste Disposal for more details

5.4.1 Oil Water Separators

Oil water separators are installed at all facilities, including contractor's, that have a potential to produce oil contaminated water. They work by skimming any oils off the top of the water as it flows through and directing the oils to a waste oil container from where it can be directed to the OTML waste oil process.

5.4.2 Collection and Storage

At most workshops and facilities at OTML, waste oil is collected and stored before being transported to the Tabubil Waste Oil Treatment Plant. At the new mine workshop waste oil is sent directly from holding tanks to the Mill Lime Kiln or Orica explosive Facility.

Contractor and OTML work areas in Tabubil, Bige and Kiunga collect and store their waste oil using existing systems in their respective areas. When storage areas are near full, OTML Logistics is contacted to arrange a mobile tanker to collect the waste oil and take it to the nearest Waste Oil Treatment Plant.

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	17 of 26



Figure 8 Waste Oil Storage

Waste oil produced at the Mine is pumped directly to the Lime Kiln waste oil storage tank. The Mill waste oil is cleaned at the Mill Waste Oil Treatment Plant prior to being sent to the Lime Kiln waste oil storage tank.

5.4.3 The Tabubil Waste Oil Treatment Plant

The Tabubil Waste Oil Treatment Plant provides a depot for waste oil collection and also processes the waste oil (removing water and rubbish) prior to sending it via OTML's fleet of waste oil tankers to the mill Lime Kiln or to the Orica explosive facility.

5.4.4 Mill Lime Kiln and Orica Explosives Plant

The Mill Lime Kiln uses waste oil to replace diesel for heating lime to produce slaked lime for the process plant. Similarly, the Orica Explosives Facility uses waste oil to replace diesel to manufacture explosive product.

5.4.5 Excess waste oil

In the event of excess waste oil being produced, surplus to the requirements of the Mill Lime Kiln and the Orica Explosives Facility, waste oil may be disposed offsite through third parties as and when required.

5.4.6 Waste Oil Disposal for the Community

To prevent waste oil being discharged into the environment by people servicing their vehicles at home or along the highway, Ela Motors and Tabubil Automotive in Tabubil takes waste oil brought in by the general public. This waste oil then gets added to the OTML waste oil system.

5.5 Chipper

There is a wood chipper at Bige that is used to chip wood and green waste from trees felled around Bige. This chipper may be transported to Tabubil for similar activities as required.

[See procedure ISM-OP230 Green Waste Disposal for more details](#)

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	18 of 26

5.6 Tub Grinder

OTML has a Vermeer Tub Grinder at Bige for turning green and wood waste into wood chips and mulch. The Tub Grinder is a large wood chipper that can chip tree stumps and bulk timber. OTML Bige Operations is responsible for the management and use of the Tub Grinder.



Figure 9 Vermeer Tub Grinder Commissioning at Bige

See the Bige Revegetation Team for more details

5.7 Sewage Treatment

Sewage is liquid and solid waste carried off in sewers or drains and it is treated in the various sewage treatment plants to produce clean water and sewage sludge. The OTML sewage systems and sewage treatment plant management is the responsibility of the OTML Infrastructure Support Services Teams. Sewage systems at OTML exist at: Mill, Tabubil (x2), Bige, Kiunga. The mine also has portable crib huts that require sewage to be pumped out. The outflows from the sewage facilities are required to meet water quality criteria set in the OTP.

See procedure ISM-OP242 Sewage Disposal for more details

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	19 of 26

6 Waste Collection and Transport

6.1 Waste Collection

Bins are provided for waste collection. Provision and maintenance of compliant bins are the responsibility of Waste Management Department in public areas, and relevant Departments and Contractors within the workplace.

6.1.1 Skips

Each workplace, department, process unit and contractor that produces bulk waste is responsible for ensuring bulk waste is disposed of in the correct skips. The skips are designed so that they are able to be safely and easily picked up by waste transport vehicles. Skips are colour coded as per the following diagram:

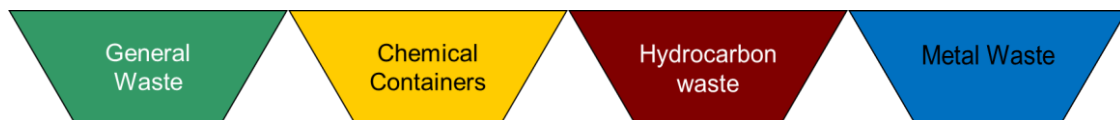


Figure 10 Standard Waste Container Colours at OTML

The number and type of skips a workplace should have depends on the waste being produced at that workplace. Figure 11 below shows some examples of skips around the operation that are painted the correct colours:

Where practical, skips have covers on them or are kept under a roof to prevent rainwater ingress into the bins.

6.1.2 Bins

Each workplace is responsible for managing their waste including bins. Colour coding is recommended as above. In the absence of colour coding clear labelling of the bins is required. Figure 12 shows some examples of skips around the operation that are painted the correct colours.



Figure 11 Examples of Correctly Coloured and Labelled Skips



Figure 12 Examples of Correctly Coloured and Labelled Bins

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilmbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	21 of 26

6.2 Waste Transport

The OTML Waste Management Department manages various contractors who provide waste transport for different waste streams. (Contractor Management is covered in Section 9 below)

The Waste Management Department in Tabubil has a skip lifting truck (Figure 13) for lifting skips. Larger skips, such as for scrap steel, are transported by OTML Logistics Department.



Figure 13 Skip Lifting Truck Tabubil

7 Other Considerations

7.1 Exploration

Exploration camps have been identified as higher risk as they are set up semi-temporarily in remote locations in difficult terrain and there is a potential that waste management practices may not be ideal. The Exploration Department maintains its own waste management plans which detail how waste is managed, and responsibilities of supervisors and staff. Inspections are carried out regularly by both the Exploration HSE staff and the OTML Environment Officers.

See procedure [OTML Exploration Waste Management Procedures and Policies for more details](#)

7.2 Shipping

Ship owners and operators are responsible for managing their waste, but OTML has a duty of care to ensure that shipping operations are able to comply with legal requirements. Responsibility for all shipping related issues falls under the OTML Logistics Department. The OTML Logistics Department undertake regular shipping audits to ensure operators are complying with legal requirements.

Kiunga Operations receives waste oil from some vessels. General waste is delivered to waste contractors in Port Moresby for appropriate disposal. Dumping of sewage, ballast and other waste at sea must comply with international maritime regulations.

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	22 of 26

7.3 New Chemicals

OTML has a procedure for all new chemicals that are proposed to be brought to site. This enables the best disposal options to be determined and put in place prior to the chemical coming to site, and give the opportunity for other less toxic chemicals to be sourced.

Associated with this is a form which provides a streamline process that covers the chemical from 'cradle-to-grave', i.e. from approval, through to purchasing, storage, use and disposal.

See procedure ISM-OP107 Chemical Procurement and Disposal for more details

8 Monitoring

8.1 Environmental Sampling

The OTML Environment Department undertakes quarterly sampling of groundwater and surface water points as per the *ISM-OP002 ISM Water Monitoring Procedure*. The sample point locations are designed to be downstream of potential pollution points in order to be able to detect any issues with those points. With regards to waste management the points monitored are:

- Tabubil Landfill Facility
- Downstream of the Tabubil Powerhouse oil/water separator
- The Tabubil Fuel Farm oil/water separator
- Kiunga Fuel Farm oil/water separator

In compliance with the OTP, OTML undertakes monitoring downstream of the two Tabubil Sewage Facilities.

If non-compliances are detected an incident report is raised so the incident can be investigated and actions tracked through to closure in accordance with the *OTML-IMS-STD-1.19 Incident Reporting and Investigation*.

8.2 Inspections and Audits

Site managers and supervisors carry out regular site inspections depending on the risk profile of the site. OHS and Environment Officers also carry out regular inspections of all sites in accordance with the requirements of the *OTML-IMS-STD-1.17 Inspection standard*. Audits are carried out by internal and external auditors in accordance with the requirements of the *OTML-IMS-STD-1.20 Audit & Assessments standard*.

8.3 Incidents and Non-compliance Reporting and Investigation

Non-compliances with General Waste Management Procedures should be reported as Environmental Incidents (whether or not any environmental impact is perceived) so that the incident can be investigated and actions tracked through to closure. This will prevent the cumulative effect of many incidents and may also prevent larger incidents occurring as actions implemented from previous minor incidents can prevent the same type of incident occurring again.

The OTML Integrated Management System Standard *OTML-IMS-STD-1.19 Incident Reporting and Investigation* shall be followed for incident and non-compliance reporting.

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	23 of 26

8.4 Contaminated Sites Register and Mine Closure Plan

The OTML Environment Department maintains a register of all contaminated and potentially contaminated sites. All waste management areas are classified as potentially contaminated and are maintained on the Contaminated Site Register.

Associated with the register is a Mine Closure Plan which details how each site is to be made safe at mine closure.

9 Contract Management

9.1 Waste Management Contracts

Waste management contracts for Tabubil/Mine/Mill are administered by the OTML Waste Management Department. Contracts are also in place for waste management services at Kiunga and Bige which are administered by OTML site management at each respective site.

When developing and managing contracts for waste management the *OTML-IMS-STD-1.14 Contractor Management Standard* is followed.

The Contracts section of the Contracts and Legal Department provide support, advice and standard conditions for the development of Contracts. The OTML Environment Department is responsible for regularly auditing and inspecting contractor's waste facilities to ensure they comply with OTML standards. OTML Contract Owners are responsible for ensuring that contractors comply with their contract conditions.

9.2 Contractors Waste

All other contracts for supply of goods or services at OTML are to have contract conditions regarding waste management. In general, all contractors are to comply with OTML Standards and Procedures, including those regarding Waste Management, but also specific clauses will be put into contracts where contractors have specific waste streams that require special handling. There is also opportunity to put incentives and penalties into the contracts to encourage the required behaviours.

10 Implementation, Awareness and Training

The implementation of the General Waste Management Plan is undertaken by production of the Plan and sub Procedures, making them available in workplaces and on the intranet, advertising the contents of them in newsletters, noticeboards, workplace meetings and community awareness sessions.

At OTML, awareness about the waste management activities starts with the General Site Induction, and is followed up by site specific inductions. Waste management issues are also addressed in job descriptions, procedures, environmental tool box talks, and incidents procedures and investigations.

Several awareness programs are in operation around OTML and the Western Province, such as the World Environment Day activities, Bank South Pacific (BSP) Go Green programs, and individual clean-up efforts.

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years		
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023	Page No:	24 of 26

Training is developed on site in accordance with the *OTML-IMS-STD-1.08 Training Competency and Awareness Standard*, including but not limited to:

- Hazardous Chemical Awareness
- Waste management.
- Environmental Awareness

11 Reporting and Review

11.1 Reporting

Waste management parameters are reported in:

- Waste Management Department monthly reports.
- Environment Department monthly reports.
- OTML Annual Environmental Report.
- OTML Annual Reviews

11.2 Management Review

The waste management system is reviewed by senior management in accordance with the *OTML-IMS-STD-1.22 Management Review Standard*, and;

- as required in the SHEs reviews, and
- in regular Waste Management and Environment Department waste management meetings.

12 References

Description	Author
<i>OTML-IMS-STD-1.03 Risk and Opportunity Management Guideline (2013)</i>	OTML
<i>OTML-IMS-STD-1.08 Training Competency and Awareness Standard</i>	OTML
<i>OTML-IMS-STD-1.19 Incident Reporting and Investigation Standard</i>	OTML
<i>OTML-IMS-STD-1.14 Contractor Management Standard</i>	OTML
<i>OTML-IMS-STD-1.17 Inspection Standard</i>	OTML
<i>OTML-IMS-STD-1.20 Audit & Assessments Standard</i>	OTML
<i>OTML-IMS-STD-1.22 Management Review Standard</i>	OTML
<i>OTML-IMS-STD-3.09 Waste Management Standard</i>	OTML
<i>Total Waste Management Plan, A reform of current waste management practices, Final Report, Ok Tedi Mining Limited (OTML) October 2012</i>	KMH Environmental

Document No & Title:	OTML-IMS-PLAN-3.06 – General Waste Management Plan	Issue Date:	14/6/2020	Version No:	v01
Document Custodian:	Kedi Ilimbit – GM Community and Operations Support	Review Frequency:	3 Years	Page No:	25 of 26
Approved By:	Musje Werror – MD & CEO	Valid Until Date:	14/6/2023		

13 Glossary of Terms

Term	Definition
IMS	<i>Integrated Management System (Includes Occupational Health and safety, Environment, Community Relations, etc.)</i>
OHS	<i>Occupational Health and Safety Department</i>
PCBs	<i>Polychlorinated biphenyls, classed as POPs, that were once widely deployed as dielectric and coolant fluids in electrical apparatus, carcinogenic to humans</i>
POPs	<i>Persistent Organic Pollutants - organic compounds resistant to environmental degradation, leading to bioaccumulation.</i>
Radioactive	<i>giving off rays which can be dangerous, but which can also have beneficial uses (e.g. uranium)</i>
Sewage	<i>Liquid and solid waste carried off in sewers or drains.</i>

14 Document Control History

Version	Date	Description	By	Approved
v01	14/6/2020	First release. Reviewed by senior management (M. Werror, D. Kelly, M. Thompson, J. Pile, D. Wagambie)	J. Raynes	M. Werror

18. EMERGENCY MANAGEMENT SUB PLAN

Major incidents during construction of the TSF will comply with the existing OTML Ok Tedi Emergency Management Plan. This plan is included in this section for transparency of management measures.

OTML

MAJOR INCIDENT MANAGEMENT TEAM (MIMT) PLAN

The MIMT plan scope includes all OTML operations, exploration, projects and controlled facilities and activities associated and subsidiaries.

INITIAL ACTIONS

1 NOTIFY

In the event of an IMT being activated as a result of any of the following incident assessment criteria being triggered, the MIMT Leader will be notified by the responsible IMT Leader.

MIMT Leader - XXX

2 ASSESS

Safety, Health, Environment & Community

- ☐ Single or multiple fatality event
- ☐ Significant or life threatening injury(s)
- ☐ Missing employee - initial enquiries / search have failed to locate
- ☐ Uncontrolled fire, gas release or potential for explosion
- ☐ Significant environmental incident
- ☐ Hydrocarbon spill too large for site / ship booms or spill equipment or too far from OTML resources / response capability
- ☐ Significant hydrocarbon amount washed downstream or in sea
 - diesel > 100,000 L
 - heavy oil > 10,000 L
- ☐ Natural disaster with potential to impact employees, site or assets
- ☐ Local unrest endangering employees
- ☐ Vehicle accident (land & water) involving OTML and community resulting in personal injury and / or property damage
- ☐ Infectious disease or illness out-break eg. more than 2 people diagnosed with similar symptoms
- ☐ Hostage, bomb and / or terrorist threat
- ☐ Arrest, Illegal Detention, Kidnap, Ransom or Extortion
- ☐ Incident has the potential to attract significant adverse media attention

Operational

- ☐ Unplanned operational interruption with potential to significant impact including dry weather
- ☐ Unplanned utility outage (power / water) with potential significant impact to the community
- ☐ Landslip/Instability resulting in operational interruption and / or injury to personnel
- ☐ Significant damage to, or loss of, major plant or equipment
- ☐ Aviation incident resulting in operational interruption and / or injury to personnel

YES to any of the above = responsibility of the MIMT Leader, in conjunction with the responsible IMT Leader, to determine if the MIMT should be activated

NO to all of the above criteria = monitor situation, IMT Leader to maintain contact with the MIMT Leader.

3. ACTIVATE

Upon activation by the MIMT Leader, the key responsibilities of the MIMT include:

- ☐ Assembly assigned MIMT personnel in the nominated response room (being either the **Whitehouse Board Conference Room** or **Contracts Office Conference Room**);
- ☐ Review and implementation of the mandatory initial and ongoing response items and actions as outlined in the **Blue Duty Cards**;
- ☐ Review and implementation of relevant checklists as provided in the **Green Attachments**;
- ☐ Development and implementation of an appropriate communications plan using the checklists and templates provided in the **Purple Attachments**;
- ☐ Regular updating of the information /display boards and preparation of Situation Reports (SitReps) using the templates provided in the **Yellow Attachments**; and
- ☐ Determine if the Personnel Assistance Team activation is required, and implement accordingly

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	1 of 119

TABLE OF CONTENTS

1.	INTRODUCTION.....	3
2.	MIMT STRUCTURE.....	3
3.	MIMT COMPOSITION AND ROLES	4
4.	MIMT RESPONSE ROOM LOCATION & EQUIPMENT.....	4
5.	NOTIFICATION AND ACTIVATION.....	5
6.	MIMT RESPONSIBILITIES.....	5
7.	COMMUNICATIONS AND EXTERNAL RELATIONS	5
8.	PERSONNEL ASSISTANCE TEAM (PAT).....	6
9.	RESUMPTION OF OPERATIONS	6
10.	DEBRIEFING	6
	BLUE ATTACHMENTS - DUTY CARDS	7
	GREEN ATTACHMENTS - CHECKLISTS.....	23
	YELLOW ATTACHMENTS - FORMS & TEMPLATES	19
	PURPLE ATTACHMENTS - COMMUNICATIONS	28
	BROWN ATTACHMENTS – OIL SPILL RESPONSE REFERENCE TOOLS / CHECKLISTS	52
	ORANGE ATTACHMENTS – DRY WEATHER DUTY CARDS	73
	RED ATTACHMENTS - CONTACT DETAILS.....	80

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	2 of 119

1. INTRODUCTION

This document provides details of the OTML Major Incident Management Team (MIMT) plan to effectively respond and manage situations that could adversely impact our people, host communities, the environment or business objectives in accordance with the requirements of the OTML IMS-ST-1.11 – Emergency Preparedness and Incident Management standard.

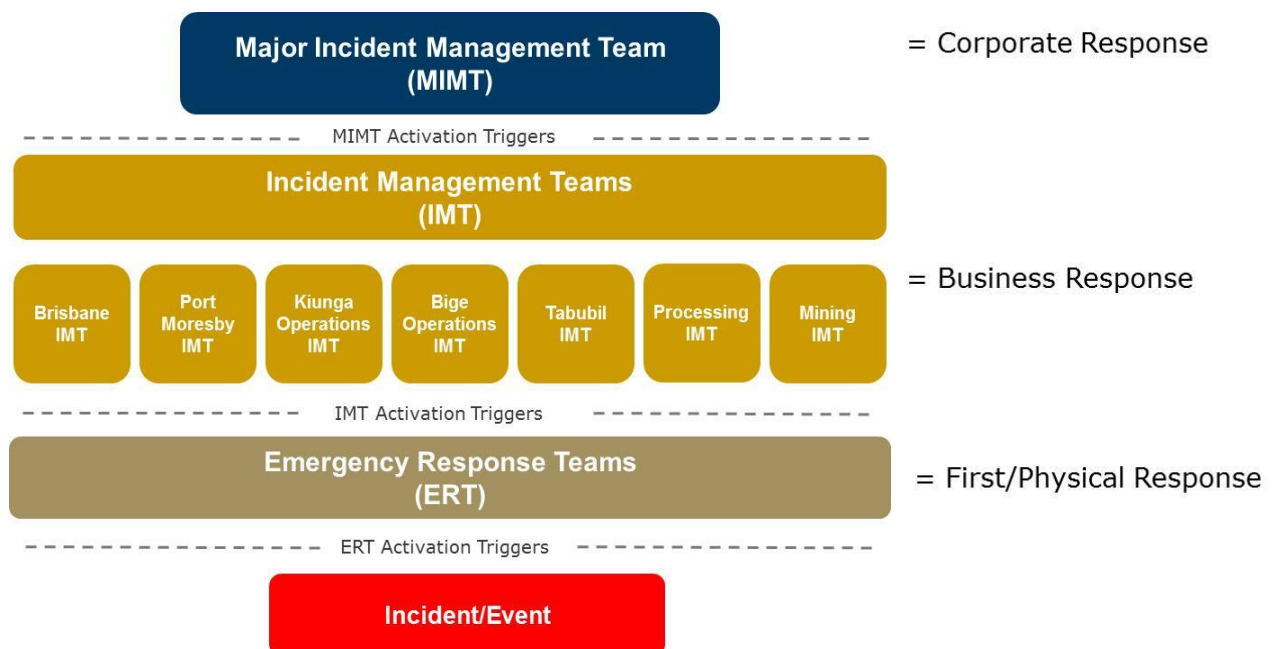
The MIMT plan outlines details of the following:

- MIMT Roles and Responsibilities (**Duty Cards Blue Attachments**);
- Notification and Escalation Process;
- Required Forms and Templates (**Yellow Attachments**);
- Incident Specific Checklists (**Green Attachments**);
- Communications Plan Checklists and Templates (**Purple Attachments**); and
- Contact and Notification Numbers (**Red Attachment**).

The MIMT plan scope includes all OTML operations, exploration, projects and controlled facilities and activities associated and subsidiaries.

2. MIMT STRUCTURE

The OTML Emergency Preparedness and Incident Management standard employs a three tier approach as shown below, with the ERT, IMT and MIMT activated by a defined set of notification triggers. There are seven IMT's reporting to a central MIMT, reflective of the main operational and geographic distribution of OTML's activities.



Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	3 of 119

3. MIMT COMPOSITION AND ROLES

The number, composition and roles required in the MIMT will be determined by the nature of the event. However, the initial response must include, at a minimum, a MIMT Leader, Coordinator, and Administrator. It is the responsibility of the MIMT Coordinator, in consultation with the MIMT Leader, to ensure all relevant MIMT members are notified and assembled. Duty Cards for each MIMT role can be provided in **Blue Attachments** of this plan.

MIMT Leader (Duty Card No. 1)

The MIMT Leader is ultimately responsible for all actions and decisions made during the major incident management.

MIMT Coordinator (Duty Card No. 2)

The MIMT Coordinator will ensure the MIMT response is run as effectively as possible with a coordinated and collaborative approach.

Administrator (Duty Card No. 3)

The Administrator is responsible for drafting and documenting the MIMT Situation Report (**Yellow Attachment No. 1**) and for collating all relevant documentation relating to the incident and response.

Board Writer (Duty Card No. 4)

The Board Writers are responsible for maintaining the information / display boards (**Yellow Attachments**) in the response room. All information captured on the display boards must be relevant and legible.

Technical Experts (Duty Cards No. 5 to 13)

Technical expertise as required by the nature and scale of the incident for an effective response.

- Human Resources
- Occupational Health & Safety,
- Environment
- Communication & External Relations
- Commercial
- Legal
- APD
- Community Relations
- Technical Experts – Mining, Processing, Maintenance, Logistics, Supply, Engineering, Roads & Towns, Power / High Voltage

4. MIMT RESPONSE ROOM LOCATION & EQUIPMENT

The primary response room for the MIMT is **Whitehouse Board Conference Room**. The alternate response location is the **Contract Conference Room**.

If it is unsafe for the IMT to respond from the above locations it is the responsibility of the IMT Leader to determine an appropriate and safe response location.

Details of the equipment required to be stored and maintained in the IMT response room in readiness is provided in the **Green Attachment Checklist 11**. The IMT Administrator is responsible for storing and maintaining this equipment.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	4 of 119

5. NOTIFICATION AND ACTIVATION

In the event of an IMT being activated as a result of any incident assessment criteria being triggered, the responsible IMT Leader will notify the MIMT Leader. It is the responsibility of the MIMT Leader to determine if the MIMT is required to be activated.

Whenever the MIMT is activated, the MIMT Leader should notify the Chairman of the Board of Directors as soon as practicable. It is the responsibility of the MIMT Leader to ensure the Board Chairman is regularly updated on the current status of the major incident.

It is recommended to over-notify internally during an emergency, even when the full facts are not known or confirmed. The nature of the major incident will direct the appropriate authorities to be notified. Where possible the notification should be pro-active and not re-active.

6. MIMT RESPONSIBILITIES

Upon activation by the MIMT Leader, the key responsibilities of the MIMT include:

- Assembly of assigned MIMT personnel in the nominated response room, every effort should be made to ensure all **Duty Cards** are assigned to appropriate personnel;
- Review and implementation of the **mandatory, initial and ongoing response items** and actions as listed on the **Duty Cards**;
- Review and implementation of relevant checklists provided in the **Green Attachments**;
- Development and implementation of the appropriate Communications Plan using the templates and checklists provided in **Purple Attachments**. Refer also following section; and
- Regular updating of information / display boards and preparation of SitReps using the templates provided in **Yellow Attachments**.
- Determine if the Personnel Assistance Team activation is required, and implement accordingly (refer following section).

7. COMMUNICATIONS AND EXTERNAL RELATIONS

OTML's objectives in a major incident response are:

- Be the most authoritative source of information
- Tell the truth – the facts as known
- Be pro-active not just re-active
- Provide a consistent flow of information
- Speak with one voice
- Meet the information needs of employees and relatives
- Keep the media and other stakeholders updated and informed of the facts

The MIMT in consultation with the Communications Representative is responsible for determining who the appropriate OTML spokesperson should be, dependent upon the situation. All requests from media must be referred to the MIMT.

The communication planning checklist and templates are provided in the **Purple Attachments**. A comprehensive list of stakeholder contact details is provided in the **Red Attachments**.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	5 of 119

8. PERSONNEL ASSISTANCE TEAM (PAT)

The safety and care of personnel during a major incident are of the highest priority and actions taken by the MIMT are to reflect this.

The PAT is a team of trained HR personnel dedicated to assisting with the needs of affected personal and their families during a major incident.

Further details are provided in the PAT Plan (separate document to the IMT Plan).

9. RESUMPTION OF OPERATIONS

Prior to the resumption of normal activities, the following checks should be made.

- The affected area and / or site is safe to return to normal operations;
- Resumption and recovery actions are complete or will not impede the return to normal operations with consideration to any regulatory requirements;
- All employees involved in the response are well rested and not suffering from any fatigue and / or related stress, prior to returning to normal activities; and
- Relevant Government / regulatory agencies acknowledge that normal activities can re-commence.

10. DEBRIEFING

A full debriefing will be coordinated and facilitated by the MIMT Coordinator at the stand down of the team or at such a time decided by the MIMT Coordinator. If necessary, this plan will be revised and updated where opportunities for improvement are identified in the debrief.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	6 of 119

BLUE ATTACHMENTS - DUTY CARDS

Duty Card 1 -	MIMT Leader
Duty Card 2 -	Coordinator
Duty Card 3 -	Administrator
Duty Card 4 -	Board Writer
Duty Card 5 -	Human Resources
Duty Card 6 -	Occupational Health & Safety
Duty Card 7 -	Environment
Duty Card 8 -	Corporate Communications
Duty Card 9 -	Commercial
Duty Card 10 -	Legal
Duty Card 11 -	APD
Duty Card 12 -	Community Relations
Duty Card 13 -	Technical Experts, as required

Specific Duty Cards for a Dry Weather Event can be found in the **ORANGE** attachments.

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Approved By:	P Graham			Page No:	7 of 119

MIMT DUTY CARD NO. 1 LEADER

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Determines the need for activation of the MIMT.
	If MIMT is activated -
	Initiate activation of the MIMT.
	Confirm the nature, impacts and scale of the incident. Ensure the worse case scenario is identified and potential for escalation considered and periodically reviewed / re-assessed.
	If activating to respond to a hydrocarbon spill the MIMT must be mobilised to respond to any oil spill assessed to be either a Tier II (National Impact) or Tier III (International Impact). Reference BROWN attachments for oil spill response tools and references.
	If a Medivac is required refer to GREEN ATTACHMENT NO 8
	Ensure adequate resources are available to the IMT and that any necessary support services are notified (ie hospital, other external ERT resources via mutual aid agreements etc.)
	Ensure the makeup and composition of the MIMT is appropriate for this particular event. Those MIMT members not initially required could be stood down. However they must remain available for recall or as relief if / when needed.
	Ensure authority is given to activate resources to satisfy the direction agreed to by the MIMT and / or IMT.
	Confirm if legal assistance is required and whether legal privilege necessary.
	Consider what communications need to be agreed and distributed by the MIMT eg. internal communications, external communications
	Ensure all required regulatory and key stakeholder notifications are made as necessary.
	If personnel are impacted by the incident discuss the requirement to activate the Personnel Assistance Team with the Human Resources representative.
	Notify the Board Chairman of the MIMT activation and keep advised of the situation.
	Ensure regular communication with the IMT Team Leader and obtains situation report updates.
	Ensure the Administrator, on a regular basis, is documenting Situation Reports.
	Ensure the MIMT is tracking all expenses associated with the response, including IMT expenses.
	In consultation with the Corporate Communications Representative determine a media strategy and appoint a spokesperson, if required.
	Participate in debrief.

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 8 of 119

MIMT DUTY CARD NO. 2 COORDINATOR

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Oversee set up of the response room.
	Conduct role-call and identify absent team members and delegate tasks / duty cards if necessary.
	Coordinate and facilitate regular updates of the MIMT, including updates from the IMT, if activated.
	In consultation with the IMT Coordinator establish a schedule for communications and updates between the MIMT and IMT.
	Support the Board Writers in capturing all relevant factual information on the display boards.
	Ensure relevant maps and charts are available.
	Restrict access to the MIMT response area.
	Ensure log sheets are available for all MIMT members and remind all MIMT members to log their actions on a MIMT log sheet.
	Assist the Administrator in drafting Situation Reports if required.
	Ensure an auditable trail of information is maintained.
	Facilitate review of and adjustment to MIMT rostering, administrative and facility support resources as required.
	Facilitate the development of worst-case scenarios and the identification of escalation triggers.
	Monitor morale and effectiveness of MIMT – look for signs of stress within the MIMT.
	Ensure debrief is scheduled and held at the conclusion of the MIMT activation.
UPDATE CHECKLIST	
	Are all MIMT members in room?
	Limit interruptions – are telephones “off the hook”, on silent, monitored by someone outside of the IMT response room
	Ensure details / information is being logged by the Board Writers
	Statements from each MIMT member
	Group discussion of issues requiring team input
	Review of any outstanding action items from previous update
	Determine next update time
	Update complete
	Organise for distribution of the approved Situation Report
<p>Updates should be as short and sharp as practically possible. This will enable MIMT member's time to delegate, action and close out assigned tasks and actions.</p>	

MIMT DUTY CARD NO. 3 ADMINISTRATOR

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Ensure the MIMT response room has a well stocked 'response kit'. The response kit requirements can be found in the GREEN SECTION of this plan.
	Ensure appropriate access to phones, email, photocopying.
	Coordinate food, travel and accommodation as appropriate.
	Arrange for MIMT member mobiles to be monitored/answered/transferred to a single point of contact during update sessions to assist in the facilitation of an efficient update session.
	Draft Situation Report in readiness for MIMT Leader approval at conclusion of every MIMT briefing. Situation Report template available in YELLOW SECTION of this plan.
	Distribute Situation Report to nominated recipients as determined by MIMT Leader.
	Monitor accuracy of visual displays.
	Establish a filing system for all incoming and outgoing information, i.e. internal communications, press releases, log sheets, situation reports etc.
	Preserve all documentation that may be required for future insurance and legal claims.
	Receive incoming calls and intercept low priority calls.
	Participate in debrief.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	10 of 119

MIMT DUTY CARD NO. 4

BOARD WRITER



MANDATORY ACTIONS (Tick Box as Completed)

Liaise with the Coordinator / Administrator regarding incoming information.

Where possible utilise large A0 Post It Notes for information boards.

Maintain an "Issues and Actions" Board (YELLOW SECTION)

Status	No.	Issue	Action / Commentary	By Who	Completed Signoff Time /Date
<ul style="list-style-type: none"> • Yet to Start • Started • Completed 					

Maintain an "Incident Details" Board (YELLOW SECTION)

Example: -

Incident Time: - _____

Incident Date: - _____

Incident Details: -

Brief Description of what happened.

Current Status:

Description of the current situation.

Utilise available boards and wall space to display information clearly.
It may be useful to categorise ('chunk') information for ease of display.
Examples of useful headings/topics are: Issues – Immediate/Short-Term/Long-Term,
Site, Off-Site, Media, Useful Telephone Numbers, etc.

Assist the Administrator as required.

If using whiteboards (not preferred) as information boards ensure copies are made of information before it is erased from boards.

Prior to update/briefing sessions, ensures boards reflect latest information.

Participate in update / briefing sessions and ensure boards are updated and issues and actions are logged.

Participate in debrief.

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

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Print Date: 16/05/25

Version No: Final

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 11 of 119

MIMT DUTY CARD NO. 5

HUMAN RESOURCES

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Provide information to the MIMT regarding the personnel impact.
	Assess and determine if the Personnel Assistance Team should be activated to assist in managing a response to affected employees and their families.
	If a Medivac is required refer to GREEN ATTACHMENT NO 8
	Contribute to MIMT strategic and general deliberations.
	Advise the MIMT on the effects and implications of the event, relating to employees, contractors, emergency contacts, other relatives, third parties and the public.
	Ensure the IMT has adequate resources for managing local human resource issues.
	Assess and consider if there are any human resources issues the MIMT can relieve the IMT of.
	If the PAT is activated, ensure you provide them with clear direction and up to date information.
	Maintain regular contact with the PAT Leader.
	Monitor the needs of the PAT.
	Monitor the welfare and stress levels of the PAT. Consider rostering needs of the PAT if they are required to be activated for a long period of time.
	In the event of serious injury / fatality consider the needs of the employee and their immediate family members.
	In the event of serious injury / fatality determine what regulators and / or agencies need to be advised eg. mines inspector, coroner etc.
	Consider if an internal communication needs to be distributed to advise all employees of the situation.
	Participate in debrief.

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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	12 of 119

MIMT DUTY CARD NO. 6

OCCUPATIONAL HEALTH & SAFETY

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Assist the MIMT as required.
	Have all relevant regulators been advised.
	Consider the OH&S needs and exposures of the IMT. Maintain communications with the OH& S representative on the IMT and assist in providing resources if and when requested.
	Contribute to the MIMT'S strategic and general deliberations.
	Advise the MIMT on the occupational health, safety and environmental strategic issues arising from the crisis.
	Ensure systems and resources are in place for managing strategic issues relating to health & safety.
	Take action, where appropriate, to implement decisions made by the MIMT on OH&S strategic issues.
	Provide input and advice to the MIMT on all aspects of the event regarding environmental impacts including remedial actions, natural resource recovery liabilities and obligations.
	Assist the MIMT in providing an appropriate response to the management of an environmental catastrophic event.
	Keep records of meetings with any regulators / government officials and / or other non-company representatives.
	Participate in debrief.

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

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Print Date: 16/05/25

Version No: Final

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 13 of 119

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MIMT DUTY CARD NO. 6

ENVIRONMENT

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Assist the MIMT as required.
	Have all relevant regulators been advised.
	Consider the environmental needs and exposures for OTML.
	Contribute to the MIMT'S strategic and general deliberations.
	Ensure systems and resources are in place for managing strategic issues relating to the environment.
	Take action, where appropriate, to implement decisions made by the MIMT on environmental issues.
	Provide input and advice to the MIMT on all aspects of the event regarding environmental impacts including remedial actions, natural resource recovery liabilities and obligations.
	Assist the MIMT in providing an appropriate response to the management of an environmental catastrophic event.
	Keep records of meetings with any regulators / government officials and / or other non-company representatives.
	Participate in debrief.
OIL SPILL SPECIFIC	
	<p>If the spill is assessed as either Tier II (National Impact) or III (International Impact) activate a Request for Assistance through the PNG National Maritime Safety Authority (NMSA).</p> <p>The NMSA will then commence actions in accordance with the PNG National Plan for Maritime Environmental Emergencies (NATPLAN) which may include seeking assistance from Secretariat of the Pacific Regional Environment Programme, in accordance with the procedures laid down in PACPLAN - the Pacific Islands Regional Marine Spill Contingency Plan.</p> <p>PNG can draw on the resources of AMOSC in Geelong though a Memoranda of Understanding with the Australian government to provide mutual assistance in the event of a major oil spill incident, which exceeds the response capability of either national government.</p> <p>The petroleum industry, through the Australian Marine Oil Spill Centre Pty Ltd (AMOSC), maintains strategically located stockpiles.</p> <p>When requesting assistance, include as much information as possible about the nature of the spill and be as specific as possible about the type of assistance required.</p>

	<p>PNG Spill Notification Point National Maritime Safety Authority (NMSA): - Maritime Rescue Coordination Centre (MRCC) Port Moresby 24 hr +675 321 3033 or (675) 3211 244 Fax: +675 321 0484 / Mobile: (+675) 71992347/48/49 Email: mrccpng@nmsa.gov.pg</p> <p>The NMSA will notify AMSA for Tier II and III spills.</p> <p>Australian Maritime Safety Authority (AMSA) Report marine pollution incidents 24-Hour emergency helpline Within Australia: 1800 641 792 Outside Australia: +61 2 6230 6811</p> <p>You can utilise the Pollution Report (POLREP) (BROWN attachment #3) to assist with making the notification.</p>																														
	<p>If NMSA have been engaged to assist OTML must forward them periodic updates, using the standard NMSA format BROWN attachment # 4 Complete the same on behalf of the MIMT have the MIMT Leader approve and then forward to NMSA.</p>																														
	<p>In consultation with the MIMT nominate an appropriate OTML representative to the liaison between OTML and NMSA.</p>																														
	<p>In consultation with the IMT carry out initial assessment of spill (size, cause, type of spill).</p>																														
	<p>Collect all necessary data to determine the likely fate of the slick and aid spill response and remediation such as:</p> <ul style="list-style-type: none">Oil/chemical typeSea/wind forecastsAerial surveillanceBeach report, if relevantCommunity reports <p>This data can be used for the purposes of calculating/predicting impact areas. The following table is used to estimate volumes spilt for reporting and response planning purposes.</p> <p>Slick Calculations</p> <table><tr><th></th><th></th><th>m³</th><th>tonnes</th><th>barrels</th></tr><tr><td>Barely Visible Except under some light conditions</td><td>0.05</td><td>0.05</td><td>0.04</td><td>0.3</td></tr><tr><td>Silvery sheen</td><td>0.1</td><td>0.1</td><td>0.09</td><td>0.6</td></tr><tr><td>Rainbow – Iridescence : Bright bands of colour</td><td>0.3</td><td>0.3</td><td>0.3</td><td>2</td></tr><tr><td>Dull Colours - Colours still visible but are dull</td><td>1</td><td>1</td><td>0.9</td><td>6</td></tr><tr><td>Dark Black or brown or very dark colour</td><td>2</td><td>2</td><td>2</td><td>13</td></tr></table>			m ³	tonnes	barrels	Barely Visible Except under some light conditions	0.05	0.05	0.04	0.3	Silvery sheen	0.1	0.1	0.09	0.6	Rainbow – Iridescence : Bright bands of colour	0.3	0.3	0.3	2	Dull Colours - Colours still visible but are dull	1	1	0.9	6	Dark Black or brown or very dark colour	2	2	2	13
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	<ul style="list-style-type: none"> Persistent oils include crude oils, fuel oils, lubricating oils and heavier grades of marine diesel oil. These oils pose a potential threat to natural resources when released, in terms of impacts to wildlife, smothering of habitats and oiling of amenity beaches. Non-persistent oils will dissipate rapidly through evaporation. As a result, spills of these oils rarely require an active response. Non-persistent oils include gasoline, light diesel oil and kerosene.
	Confirm the MIMT is keeping a detailed record of costs and expenses associated with the spill response.
	Assess and determine if there has been any impact to fauna. If so, initiate fauna rescue activities where practical. If the issues are significant, assistance from AMSA and/or AMOSC can be requested through NMSA for oiled fauna equipment and expertise.
	POST EVENT
	<p>Put in place arrangements to ensure post spill damage assessment including monitoring activities take place to scientifically and quantitatively assess ecological damage and impacts on commercial resources and activities such as fisheries, aquaculture and tourism. Such activities will also provide a baseline against which to measure recovery from the spill. The information gathered will assist with:</p> <ul style="list-style-type: none"> Determination of compensation claims. Better understanding of the effects of spills and the ability of the environment to recover from such effects. Better understanding of the effects and effectiveness of the various clean-up techniques used. Identification of any necessary ongoing restoration and rehabilitation requirements for damaged environments and resources.
	Ensure the effects and effectiveness of restoration and rehabilitation efforts are assessed through rigorous monitoring.
	<p>Post Incident Report to NMSA - Tier II and III pollution incidents In consultation with the MIMT and the OTML Spill Response Committee compile and document a brief incident report. Once approved by the MIMT Leader forward a copy to NMSA. Report should include:</p> <ul style="list-style-type: none"> Assessment of the response operation, including reference to equipment used, its effectiveness, additional equipment, and training needs. Details regarding clean-up costs. Assessment of environmental and economic damage. Details of problems encountered. Any recommendations regarding amendment or revision of this plan.
	<p>Determine and agree with the MIMT an appropriate clean up strategies to deal with response waste. Strategies must consider the final fate of oily wastes and endeavor to minimize volumes to be treated. General principles are:</p> <ul style="list-style-type: none"> Recovered oil and oily water are to be delivered to the waste oil recovery system at the Tabubil Landfill facility Oil contaminated soils and sands are to be bio-remediated at the nearest available facility to the spill site. If there is a large volume of contaminated material, or the site is remote, a new dedicated bioremediation site can be constructed at the nearest available site practical.

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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	16 of 119

MIMT DUTY CARD NO. 8

COMMUNICATIONS & EXTERNAL RELATIONS

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Utilise the information in the PURPLE SECTION of this plan.
	Agree on media strategy with the MIMT Leader.
	Advise the MIMT on the actual and potential effects of the incident in regards to OTML's image, reputation and/or the public and surrounding environment.
	Advise the MIMT on options to minimise media risk and damage to image and promote positive perceptions of the company.
	Advise the MIMT on when the following communications should commence – <ul style="list-style-type: none"> • Media engagement – statements, media releases, press conference, interviews • Employee communications – internal only • External communications – key stakeholders, suppliers, local community
	Coordinate the provision of external and internal issues management advice to the MIMT and appropriate corporate affairs actions.
	Engage media monitoring and brief the MIMT on current media tone and themes.
	Liaise and coordinate site based communication activities.
	Arrange media conferences where required.
	Prepare media statements and Question and Answers' or review site prepared communications as required.
	Consider utilising the Company website to keep employees, shareholders and public informed of the situation.
	Assist the MIMT Leader in press conference preparation.
	Participate in debrief.

MIMT DUTY CARD NO. 9 COMMERCIAL

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Contribute to the MIMT strategic and general deliberations.
	Ensure a dedicated process has been set-up to capture all costs related to the incident.
	Ensure appropriate systems and resources are in place for tracking financial liabilities associated with the crisis.
	Ensure Provisional Governments are notified as necessary.
	Provide information and strategic advice to the MIMT on the financial / investment aspects of the crisis as they affect OTML, including consideration of liabilities, business interruptions, compensation etc.
	Consider the impact on investor relations.
	Ensure all MIMT members are aware of and understand legal professional privilege.
	Coordinate the provision of external and internal legal advice to the IMT and the MIMT.
	Collate all documentation from the MIMT that could be required for future insurance / legal claims.
	Keep records of meetings with government / regulatory officials and / or other non-company representatives.
	Participate in debrief.

MIMT DUTY CARD NO. 10 LEGAL

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Assist the MIMT as required.
	Assess severity and potential of the incident.
	Determine if Legal Professional Privilege should be engaged.
	Provide ongoing legal advice to the MIMT.
	Ensure Provisional Governments are notified as necessary.
	Review all external advices.
	In consultation with the Communications representative ensure any company spokesperson is fully briefed and prepared.
	Counsel employees who need to be interviewed.
	Ensure information boards and other appropriate documentation is preserved.
	Participate in debrief.

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

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Print Date: 16/05/25

Version No: Final

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 19 of 119

MIMT DUTY CARD NO. 11

APD

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Assist the MIMT and IMT as required.
	Provide expert and technical advice regarding security, asset protection, policing etc.
	Ensure Provisional Governments are notified as necessary.
	Assess the severity and potential of incident.
	Monitor the APD response at the incident scene and offer support as required.
	Develop strategies to minimise impact on the operation/business.
	Ensure regulators and key stakeholder are properly informed as required. E.g. - <ul style="list-style-type: none"> • Law & justice • Magistrate • Coroner • Mobile RPNGC • Defence force
	Brief MIMT on IMT activities and actions.
	Facilitate the provision of necessary resources and support for the IMT if necessary.
	Participate in debrief.

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Version No: Final

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 20 of 119

MIMT DUTY CARD NO. 12 COMMUNITY RELATIONS

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Assist the MIMT and IMT as required.
	Provides technical information to the MIMT.
	Ensure Provisional Governments are notified as necessary.
	Act as liaison between IMT and MIMT and the community as required.
	Develop strategies to minimise impact on the community.
	Ensure regulators are properly informed.
	Brief MIMT on IMT your activities and actions.
	Facilitate the provision of necessary resources and support to fulfil your MIMT obligations as required.
	Participate in debrief.

MIMT DUTY CARD NO. 13

TECHNICAL EXPERTISE as required

✓	MANDATORY ACTIONS (Tick Box as Completed)
	Assist the MIMT and IMT as required.
	Provides technical information to the MIMT.
	Assess the severity and potential of incident.
	Act as liaison between IMT and MIMT (if your business IMT is activated).
	Develop strategies to minimise impact on the operation/business.
	Ensure regulators are properly informed.
	Brief MIMT on IMT activities and actions.
	Facilitate the provision of necessary resources and support for the IMT if necessary.
	Participate in debrief.

GREEN ATTACHMENTS - CHECKLISTS

1. Initial Briefing Checklists
2. First 30 Minutes Checklist
3. Kidnap / Extortion Checklist
4. Infectious Disease Outbreak Checklist
5. Fatality Checklist
6. Arrest / Detention Checklist
7. Dry Weather Checklist
8. Medivac Checklist
9. Stand Down Checklist
10. Board Writer Do's and Don'ts
11. Response Room Equipment Checklist
12. Duty Card Matrix

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Approved By:	P Graham			Page No:	23 of 119

No 1 – Initial Briefing Checklist

Incident Description	
Please Tick When Complete	Brief Notes
☐ What has happened?	
☐ Where has it happened?	
☐ When did it happen?	
☐ What is the current status?	

Actions	
Please Tick When Complete	Brief Notes
☐ Notifications – who has been notified (internal and external)?	
☐ Response of Regulatory Agencies?	
☐ What actions have the IMT taken so far?	

Casualties	
☐ How many injuries/fatalities – employees/contractors/public?	

Spill	
Please Tick	Brief Notes
☐ Has there been a spill? What type of spill?	
☐ Estimated size? Worst case scenario?	
☐ Toxicity/Movement?	

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 24 of 119

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Other Concerns

	Potential for further damage?	
	Additional facilities at risk?	
	Impact on operations?	
	Has the incident impacted outside the site?	

Incident Management Team Capability

Please Tick When Complete		Brief Notes
	How well is the IMT responding?	
	What cannot be done that should be done? Why?	
	What human/material resources are required?	

Media

Please Tick When Complete		Brief Notes
	What media coverage has there been so far?	
	What is the response of the media so far?	
	Has a press conference been called/is one necessary?	

What can the MIMT do to help the IMT?

Please Tick When Complete		Brief Notes
	Immediately?	
	Longer Term?	
	Agree on frequency of communications/situation reports (SitReps)	

Completed by : _____

No. 2 First 30 Minutes Checklist

	MIMT LEADER	COORDINATOR	ADMINISTRATOR (A) / BOARD WRITER (BW)	TEAM MEMBERS
10 minutes	<ul style="list-style-type: none"> Establish known facts <ul style="list-style-type: none"> Is the IMT activated? Is anyone hurt or injured? Exactly where has the event occurred? What is the impact on the business? Notify a MIMT Coordinator. 	<ul style="list-style-type: none"> Ensure room set up is adequate to commence MIMT response. Call and mobilise MIMT members Ensure all MIMT members present have their appropriate Duty Card. 	<ul style="list-style-type: none"> Set up incident details board with known facts (BW) Ensure teleconference / communications for liaising with the IMT is set up and operational (A) 	<ul style="list-style-type: none"> Read through relevant Duty Card. Consider what other staff / support you will need to mobilise to support you in your role on the MIMT.
30 minutes	<ul style="list-style-type: none"> Brief MIMT members on details of the event and outline your expectations. Receive update from the IMT. Have all mandatory regulatory notifications been made. Assess crisis from available information. Consider what, if any, initial communications / statements need to be made. 	<ul style="list-style-type: none"> Coordinate update from the IMT. Facilitate MIMT / IMT update. Review activities and processes occurring in the MIMT – consider priorities <ol style="list-style-type: none"> human factors regulatory notifications business continuity / impact to broader business 	<ul style="list-style-type: none"> Maintain information boards (BW) Receive IMT situation report and distribute to MIMT members (A) 	<ul style="list-style-type: none"> Participate in initial MIMT update / briefing Consider – the need for Legal Professional Privilege.
45 minutes + and ongoing	<ul style="list-style-type: none"> Begin action on any allocated items and delegate responsibility where necessary. Consider update to external / internal communications / statements. 	<ul style="list-style-type: none"> Maintain regular communications / briefings with the IMT. Support Board Writers and the Administrator. Ensure information boards are maintained. Ensure Situation Reports are regularly developed and distributed as appropriate. 	<ul style="list-style-type: none"> Maintain information boards (BW). Ensure all identified issues are actioned and closed out (BW). Document and distribute Situation Reports within an agreed timeframe and distribute as appropriate. 	<ul style="list-style-type: none"> Action allocated issues / items and participate in MIMT briefings.

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 1 of 119

No. 3 Kidnap/Extortion Checklist

General

- Safety of kidnapped personnel
- Corporate Communication
- Government Liaison
- Business Continuity
- Financial Impact
- Operating Licence
- Image/Reputation

Note: *Specialist advice should be sought at the earliest opportunity. Verify that the person has been kidnapped.*

AGENDA FOR THE FIRST MIMT BRIEFING

- Brief on developments to date.
- Check the hostage's physical and mental condition.
- Identify the options open to the MIMT.
- Based on specialist advice determine the appropriate negotiation option to be pursued.
- Appoint a dedicated MIMT member to act as point of contact with the hostage's family.
- Agree a policy for liaising with the hostage's family.
- Agree a policy for liaison with the authorities.
- Appoint a company spokesperson and prepare a statement and questions and answers document.
- Consider whether a media gag can be applied.
- Discuss financial issues.
- Review the security of the hostage's family and employees.
- Notifications to relevant embassies of government departments. Contact with high-ranking government officials or influential individuals known to the company for possible assistance.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	1 of 119

Initial information to gather, if at all possible:

Please Tick When Complete	Brief Notes
Date and time of abduction.	
Location of abduction.	
Circumstances of the abduction.	
Was the hostage(s) or companions injured during the abduction	
Identity of the kidnappers or information that might assist in identifying them.	
Law enforcement involvement to date or knowledge of the abduction.	
Did members of the public witness the abduction?	
Has there been media coverage or is there likely to be coverage?	
Has there been any contact/demand from the kidnappers and, if so, the method used?	
If there was a demand, is there a deadline for the reply?	
Have any actions been taken in the country of the incident?	
The location of the immediate family and contact details.	
Contact details of the person reporting the incident.	
Establish the state of health of the kidnapped person(s) and whether they have any serious medical conditions/allergies or are on any medication. (This will help to assess his ability to survive the rigours of the kidnapping.)	

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Issue Date: 26/08/16

Approved By: P Graham

Page No: 2 of 119

Family Wellbeing		
	Identify family (including extended family) and establish who is going to look after them. They may also be the first point of contact.	
	In extreme cases family may need to be protected from the media; this may require placing somebody to man the telephones and/or intercept telephone calls at the family residence.	
	Discussions with family members should be supportive and realistic.	
	Support the family of the kidnapped person as required.	
	Establish any medical condition suffered by the detained employee and whether he/she is under any medication.	
	Family may also know specific information about the kidnapped person that can assist with establishing proof of life.	

Completed by:

No. 4 – Infectious Disease Outbreak Checklist

- ☐ Activate the MIMT.
- ☐ Identify issues and develop policy and strategy and communications to minimise impacts.
- ☐ Determine “essential” staffing limits and nominations.
- ☐ Inform staff not to attend work if sick.
- ☐ Inform staff of the importance of basic personal hygiene.
- ☐ Ensure proper health and personal hygiene measures, with extra attention to toilets, handrails, telephone mouthpieces etc.
- ☐ Monitor levels of sickness / absence.
- ☐ Implement business contingency plans, eg shutdowns, reduced teams.
- ☐ Assess business risks and priorities.
- ☐ If sickness absence reaches levels that prevent normal business operations, cease all non-critical business activities.

“How can we continue to operate safely with 25-50% of the workforce absent over a 2-4 week, potentially longer, period?”

- ☐ Which facilities or assets are critical to business continuity?
- ☐ Given limited resources, what are the priorities?
- ☐ Are there other pressure points (daily/weekly/monthly)?
- ☐ What are the implications of shutdown; are shutdown procedures in place; and have they been communicated?
- ☐ Have businesses established minimum safe thresholds of staffing for each operation/process?
- ☐ How will the business cope with the reduced capacity of suppliers, contractors etc.
- ☐ Has the business identified and planned for delivery of essential non-health care services (eg power, drinking water, transport, communications)

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	4 of 119

No 4 – Infectious Disease Outbreak - Containment & Preventioncontinued

Reducing the Risk of Infected Persons Entering the Site

On notification of an outbreak, the IMT Leader should ensure that the following measures are in place:

- Set up prominent notices at all entry points to the facility, advising staff and visitors not to enter if they have symptoms of influenza.
- Set up Key General Infection Control notices around workplace (including noticeboards and toilets)
- Ensure that local health emergency response team have personal protective equipment (PPE)
- Ensure they have adequate supplies for cleanup requirements.

Social Distancing

Social distancing means reducing the frequency of contact between people. Generally it refers to mass gatherings but it can also be used in the workplace setting.

- Where possible, meetings should be held by telephone, even when participants are in the same building
- Avoid meeting in small rooms if face-to-face meetings are unavoidable. Choose large rooms and sit at least one metre from each other if possible.
- Don't have lunch in groups in the lunchroom or canteen – either stagger lunchtimes to reduce numbers in the lunch room or eat at your desk, workstation or another more isolated location.
- Do not congregate in tearooms. Make your tea/coffee and then leave the area.
- Cancel non-essential workshops, training sessions or presentations.
- Consider the possibility of people working from home/ separating work teams to prevent cross- infection.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	5 of 119

No. 5 - Fatality Checklist

- ☐ Has the family been informed?
- ☐ Has the coroner been notified?
- ☐ Has the scene been secured for investigation purposes?
- ☐ Does the body need to be repatriated? If so what does the company need to do to ensure all regulatory and custom requirements are met.
- ☐ What ongoing arrangements have been put in place for the family of the deceased? Has the Personnel Assistance Team been activated to assist in providing a response to the family of the deceased.
- ☐ Maintain communications with the IMT Leader, if activated, to ensure ongoing support to the IMT and emergency response personnel.
- ☐ Develop and issue an internal communication for employees to advise of the fatality.
PURPLE ATTACHMENTS
- ☐ Issue an external communication – media statement to advise of the fatality.
PURPLE ATTACHMENTS

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	6 of 119

No. 6 – Arrest / Detention Checklist

- ☐ In consultation with the IMT Leader confirm all appropriate notifications have been made eg. Police, Government Agency, etc.
- ☐ Communicate with the regulatory agency in control of the situation.
- ☐ Maintain communication with the control agency and provide support as required.
- ☐ Work closely with the IMT Leader to ensure the welfare of those involved and their families are being addressed.
- ☐ Between the IMT and MIMT determine who is the appropriate team to liaise with the affected family / families.
- ☐ Develop and distribute appropriate employee communications to keep employees briefed of the situation.
- ☐ Ensure legal representation is engaged as appropriate.
- ☐ Maintain an accurate and factual account of all communications and actions within the MIMT.
- ☐ It is imperative that all information remain CONFIDENTIAL and within the IMT / MIMT framework.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	7 of 119

No. 7 – Dry Weather Checklist

Refer **ORANGE** section of plan for specific Dry Weather Duty Cards

History

Extended dry periods were recorded in 1965, 1972, 1982, 1997, 2002 and 2004. Key lessons from previous events were:

- Crop harvests such as taro, kaukau and sago will be reduced or fail causing food shortages.
- Communities will move to areas where water or food is more plentiful.
- Community distress, theft and robbery will increase.
- Disease and malnutrition will increase.
- The PNG Government is unlikely to have sufficient resources to provide aid to distressed communities in Western Province.
- Increased security will be required in the event that OTML operations are suspended.

Risk Summary

Key risks from dry weather include:

Decreased -

- Movement of product to market
- Hydropower
- Critical supplies such as diesel and aviation fuel, re-agents for processing, availability of booster charges, food and medical supplies
- Revenue
- Royalty payments to communities.

Rising rates of:

- Acid river drainage and fish kills
- Crime and the possibility of widespread civil disorder
- Malaria, dysentery and malnutrition amongst local communities.

Approach and Strategy

- Ensure product outflows are efficiently maintained.
- Stockpile critical supplies to extend production and life support on initial warning of the likely approach of dry weather.
- Reduce production in accordance with reduction in riverine shipping days and commensurately reduce the life support dependency by reducing visitor, contractor and employee numbers.
- Temporarily cease production and further reduce personnel leaving only those required in the short term for essential management, security and maintenance tasks.
- In the event of prolonged dry weather, adjust personnel levels up or down in accordance with the developing situation.

Stakeholders such as local communities will be engaged early to encourage actions that build independence and resilience to alleviate the burden on OTML.

Successful management of dry weather periods will require foresight and co-operation between the various elements of OTML.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	8 of 119

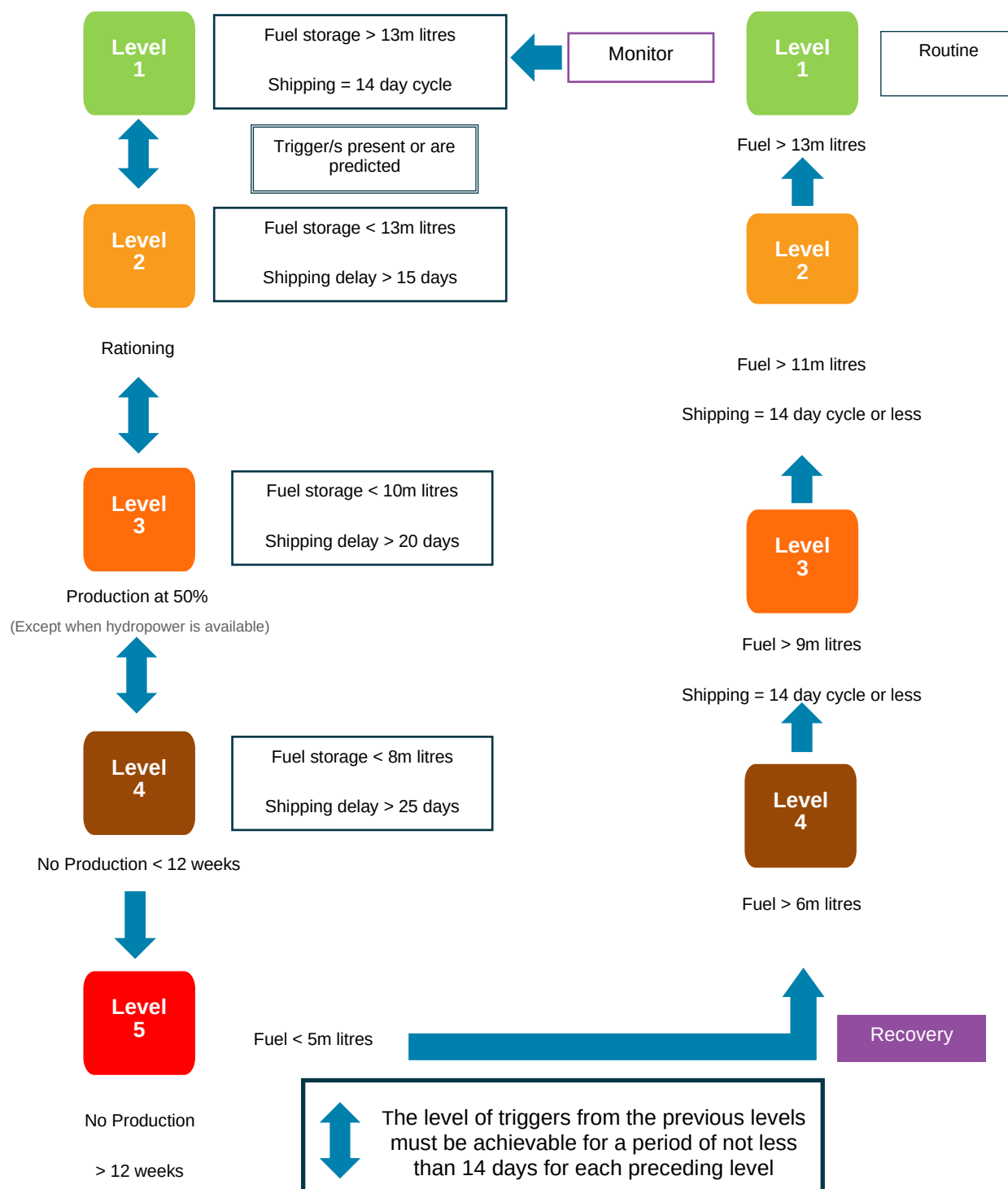
Dry Weather Classification System

In order to support the above strategy the following phased approach will be used.

Level	Description	General actions
Level 1	Conservation	<ul style="list-style-type: none"> Commence communication program. LL leaders to encourage settlers to leave General conservation practices to be communicated. Private vehicle fuel rationing to be implemented.
Level 2	Rationing	<ul style="list-style-type: none"> Activate IMTs to coordinate and manage local response. Mobilise MIMT to provide strategic support and direction to IMTs. Communicate the situation through media resources and community relations. Non-essential work to stop (projects, training, some infrastructure services). Non-essential OTML and contract workers to be repatriated. (trainees, casuals, consultants, etc) House guests to return home. Food, fuel, power rationing – low level. Restricted air services – maximise loads.
Level 3	Output restricted	<ul style="list-style-type: none"> Reduced mine and mill throughput. All non-critical projects stopped. Non-business critical work to be generally suspended and employees to take annual/long service leave. Ramped up security and policing. Food, fuel, power rationing – high level e.g. power shedding, strict food rationing, critical fuel use only, restricted air travel. Kiunga/Bige essential operations staffing. Implement force majeure on supply and sales contracts. External media communication program required. Engage national, FRPG and Australian Government.
Level 4	Mine operations suspended short term (less than 1 to 12 weeks).	<ul style="list-style-type: none"> No mine or mill production – care and maintenance. High 24/7 security and policing presence around. OTML and contractor assets. Non-business critical work to be generally suspended and employees to take annual/long service leave. Food, fuel, power rationing – high level e.g. power shedding, strict food rationing, critical fuel use only, restricted air travel. Kiunga/Bige staff returned to Tabubil or repatriated home on leave. Security coverage only. All spouses and families repatriated. Restricted trading and services. Major power shedding and water restrictions.
Level 5	Mine operations suspended short term but greater than 12 weeks.	<ul style="list-style-type: none"> No mine or mill production. Security, care and maintenance.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	9 of 119

Suggest OTML Dry Weather Plan from previous experiences



No. 8 – Medivac Checklist

Medical Evacuation

This checklist provides information to ensure the effective medical evacuation (medivac) of patients to identified destinations.

The decision to medically evacuate a patient is the decision of the Director of Medical Services (DMS) Tabubil General Hospital or his / her delegate. The DMS shall notify the OTML Major Incident Management Team Leader (MIMT) of the decision and request support.

OTML charter aircraft is the preferred choice of aircraft for all urgent medical evacuations, although third party evacuation companies can be utilised as deemed necessary by the MIMT Leader.

Mandatory considerations / tasks

Director Medical Services (Tabubil Hospital)

- ☐ Advise the MIMT Leader of the requirement for medevac including number of patients and nature/condition of the injured persons.
- ☐ Determine the most appropriate hospital to receive the patient.
- ☐ Contact the receiving hospital and make arrangements for patient acceptance (refer following contact list).
- ☐ Document a transfer letter outlining the medical condition and copies of all test result thus far, to accompany the patient.
- ☐ Confirm the receiving hospital is ready to receive the patient(s).
- ☐ Confirm with the receiving hospital that they have organised an ambulance to meet the aircraft and transport the patient(s) and escort(s) to the receiving hospital.
- ☐ Confirm patient details, and forward completed Medivac Request Form (following page).

MIMT Leader

- ☐ Liaise with the DMS Tabubil Hospital regarding the requirement and details of the requested medivac.
- ☐ Request the MIMT Human Resource representative mobilise the Personnel Assistance Team (PAT) to assist with the coordination & communication to relevant personnel of the medivac.
- ☐ Ensure the MIMT Human Resources representative guides and supports the PAT as required.

MIMT Human Resources Representative

- ☐ Complete the Medical Evacuation Checklist (following pages).

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	11 of 119

Medical Evacuation Request Form

Date Medivac Required			
Patients Name			
Does the patient have a passport? <i>Please circle</i>		Yes	No
			Not sure
Patients Condition –			
Aircraft Fit Out Requirements			
	Stretcher bed		Equipment for waste disposal
	Oxygen		Chest tube drainage
	Monitor		Defibrillator
	IV fluid drugs		Other -
Medical escort name(s)			
Additional information –			
Doctors Name -		Date -	
Doctors Signature -			

Medical Evacuation Checklist

Aircraft Fit Out		
Aircraft supplier to be used	Company –	Notes
	Contact Name –	
	Contact Number –	
Aircraft to be used	Type -	
Aircraft engineer advised of seating configuration	YES / NO	
Aircraft engineer confirmed seating configuration has been altered and is safe for take off.	YES / NO	
Notified PNG Customs and Quarantine staff aware of impending departures	YES / NO	
Hospital		
		Notes
Ensure DMS has prepared a transfer letter for the patient including copies of all medical test results.	Confirmed copy with escort personnel. YES / NO Confirmed copy with IMT YES / NO	
Receiving hospital is ready to receive the patient (s).	Confirmed with DMS YES / NO	
Ambulance arrangements are in place for when patient (s) arrive.	Confirmed with DMS YES / NO	

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 13 of 119

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Passports & Visa		
		Notes
Patient(s) and Escort (s) have current passport and visa for international travel where required.	YES / NO	
Australian High Commission has been contacted and arrangements put in place, where passports and visas are not available. Note – to obtain an emergency medical visa you must advise that the patient does not have a passport.	YES / NO	
International Customs & Quarantine		
		Notes
Contact has been made with Customs and Quarantine officers at the international airport of arrival and clearance given.	YES / NO	
Additional Support		
		Notes
Accommodation, meals, taxi vouchers and currency for any medical support / escorts and family.	YES / NO	
Confirmed all documentation including transfer letter and passports are on the plane.	YES / NO	
Doctor and Pilot are happy with aircraft configuration and all medical requirements are sufficient and working correctly.	YES / NO	
All costs have been captured to an approved cost centre and copies of all documentation have been kept for insurance purposes.	YES / NO	

No 9 - Stand Down Checklist

Prior to resuming normal operations, the following require to be considered:	
Please Tick When Complete	Brief Notes
Could employees be suffering from the effects of the incident?	
Check wellbeing of MIMT members?	
Inform all key representatives e.g.: IMT and PAT that the MIMT will be standing-down.	
Is regulatory approval or consultation been undertake or obtained prior to resumption	
Collate all response information / data.	
Debrief team at time of stand-down, or soon after.	
Capture lessons learned/actions.	
Are there opportunities to share learnings/information throughout the business?	

Completed by: _____

No. 10 - Board Writer Do's & Don'ts

What documents can the Administrator and Board Writer create in an emergency situation?

- Display boards - capturing information **known** at a given time
- Log of events – date and time of incidents and events and how managed
- Action lists – who should be doing what task and when
- Communications – advices sent to other team members or business leaders
- Situation reports – status report sent at the conclusion of each update
- Emails – requests or correspondence sent to relevant internal groups on behalf of the MIMT

The Administrator may also collate all communications made by other MIMT members to their respective teams.

What needs to be considered when creating these documents?

Documents are necessary to record and manage the incident. However third parties could also get access to these documents, whether:

- Subpoenaed by third parties who sustained injury or loss or damage as a result of the incident,
- Seized by regulatory bodies (Workplace Health & Safety, EPA & Police) to manage the incident or help them put a case together for breach of legislation,
- Whilst undesirable, leaked by internal users.

Given this, it's important to create documents that accurately capture the event at a given time without unsupported speculation or assumptions.

How should information be captured in documents?

Don't create more documents than are necessary – use the phone where possible to update parties or request further information.

Don't make something appear to be a fact if it is unsupported - just because someone says something happened or someone did something does not make it so.

Don't lay blame or responsibility on any party, or write down speculation or causes of the event. Rather note that the information has been received, is unsubstantiated and it is to be qualified in the investigation.

Don't write how things could have been done better, rather how things need to be attended to going forward.

Don't destroy anything if you anticipate that document may be used in litigation by OTML or any third party.

Do use words like '**may**', '**preliminary**', '**possible**' and '**subject to further investigation**' when information is unsupported, and identify where the information came from.

Do identify who has the responsibility to qualify the information or action the information.

Do prioritise action items – **High**, **Medium** or **TBD** (to be determined) (**not** Low)

Do get legal to review any document containing findings of any nature.

Do get legal advice before handing over documents to any third party, **including** contractors.

Do keep or get copies of documents, samples or other items handed over to any third parties, and file all documents created as part of the process.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	16 of 119

No. 11 - Response Room Equipment Checklist

Item	Suggested Quantity	Extra Information	Checked?
A1 Post It Note Pads (flip chart / butcher's sized paper)	50 sheets minimum	Lined paper is preferable	☐
Pens	2 boxes	1 box black and 1 box blue	☐
Torches	2		☐
Batteries	2	Suitable for the torches	☐
Duct / Cloth Tape	1 roll	Suitable for securing cords to reduce tripping hazards	☐
Clock	1		☐
Small post it tabs	3	1 x green, 1 x yellow, 1 x red for tracking issues on the issues and actions board	☐
Hand held radio & battery	1	Ensure the radio is in working order and the battery is charged.	☐
Speaker phone	1	Ensure operational	☐
Satellite phone	1	Ensure operational	☐
Documentation			
Controlled hard copies of the MIMT plan	3+ copies		☐
Situation Reports	10	Blank copies	☐
Individual MIMT Log Forms	12	Blank copies	☐
Maps / drawings that outline business location / geographic details	3+		☐

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Issue Date: 26/08/16

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Page No: 17 of 119

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No 12 - DUTY CARD MATRIX

MIMT Folder Breakdown	MIMT T Leader	Coordinator	Administrator	Board Writer	Human Resources	OHS	Environment	Corporate Communications	Commercial	Legal	APD	Comm. Relations	Technical Expertise
Relevant Blue Attachment for role	X	X	X	X	X	X	X	X	X	X	X	X	X
Green Attachment #1 – Initial Briefing Checklist	X	X								X	X	X	X
Green Attachment #2 – First 30 Minutes Checklist	X	X	X	X	X	X	X	X	X	X	X	X	X
Green Attachment #3 – Kidnap / Extortion Checklist	X	X								X	X		
Green Attachment #4 – Stand Down Checklist		X											
Green Attachment #5 – Board Writer Do's & Don'ts Checklist				X									
Green Attachment #6 – Epidemic Checklist		X				X	X						X
Green Attachment #7 – Fatality Checklist	X	X								X	X	X	
Green Attachment #8 – Arrest / Detention / Kidnap / Ransom / Extortion Checklist	X	X								X	X		
Green Attachment #9 – Dry Weather Checklist	X	X				X	X	X	X	X	X	X	X
Green Attachment #10 – Emergency Visa / Passport Checklist	X	X			X								
Green Attachment #11 – Response Room Equipment Checklist			X										
Yellow Attachment #1 – MIMT Situation Report (Sitrep)		X	X										
Yellow Attachment #2 – MIMT Log Sheet	X				X	X	X	X	X	X	X	X	X
Yellow Attachment #2 – Issues and Action Board				X									
Yellow Attachment #4 – Incident Details Board				X									
Yellow Attachment #5 – Current Status Board				X									
Yellow Attachment #6 – Worst Case Scenario Template		X		X									
Yellow Attachment #7 – Notification Table				X									
Yellow Attachment #8 – Useful/Important Telephone Numbers				X									
Purple Attachments – Corporate Communications	X							X					
Brown Attachments – Oil Spill Response Tools & Reference Material							X	X					
Orange Attachments – Dry Weather Event Duty Cards if required.							X	X					
Red Attachments – Key Contact Information	X	X	X	X	X	X	X	X	X	X	X	X	X

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	18 of 119

YELLOW ATTACHMENTS - FORMS & TEMPLATES

1. MIMT Situation Report (SitRep)
2. MIMT Log Sheet
3. Issues and Actions Board
4. Incident Details Board
5. Current Status Board
6. Worst Case Scenario Template
7. Notification Table
8. Useful / Important Telephone Numbers

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
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Approved By:	P Graham			Page No:	19 of 119

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No 1 - INCIDENT MANAGEMENT SITUATION REPORT

Incident:

Date:

Time:

Report No:

Report Prepared By:

Current MIMT Members:- *(reference key items listed on the Incident Details / Timeline Board)*

Current Situation:- *(reference key items listed on the Incident Details / Timeline Board)*

Action Planned: *(reference Issues & Actions Board)*

Next SitRep Due At:-

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Approved By:	P Graham			Page No:	20 of 119

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Every MIMT member should record his or her actions on a MIMT Log Sheet. These log sheets will be collated and retained by the MIMT Administrator.

No 2 - INCIDENT MANAGEMENT TEAM LOG SHEET

Name:-		MIMT Position:-		Page No.	
Date/Time	Subject and Comments		Action Agreed/Taken		

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	21 of 119

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No 3 - ISSUES AND ACTIONS BOARD

Status	No.	Issue	Action / Commentary	By Who	Completed Signoff Time /Date
<ul style="list-style-type: none"> • Yet to Start • Started • Completed 					
<i>Example</i> GREEN FLAG	1	Communications	Draft employee communication	JB	1/03/16 @ 11.30am

For MIMT purposes only – to be replicated on poster sized paper.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	22 of 119

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No 4 - INCIDENT DETAILS BOARD

Note for Board Writers: The Incident Details Board is only ever completed once (initially) all further updates are to be logged on a Timeline Board (Yellow #5) with date and times noted.

Incident Time:-

Incident Date:-

Incident Details:-

Brief Description of what happened.

Personnel Involved in incident:-

Be sure to include their condition.

Current Status:-

Brief Description of what is happening at the incident site now.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	23 of 119

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No 5 – TIMELINE BOARD

(time) _____ – (date) _____

(To be replicated on A1 Post It's / flip charts)

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	24 of 119

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No 6 – WORST CASE SCENARIO TEMPLATE

PEOPLE	ENVIRONMENT	ASSETS	REPUTATION

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan		
Prepared By:	L Puddy	Print Date:	16/05/25
Reviewed By:	M Thompson	Version No:	Final
Approved By:	P Graham	Issue Date:	26/08/16
		Review Frequency:	12-MONTHS
		Page No:	25 of 119

No 7 - NOTIFICATIONS TABLE

Company/Name	Contact No.:-	Name of person who made the contact	Date and Time Contacted

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan		
Prepared By:	L Puddy	Print Date:	16/05/25
Reviewed By:	M Thompson	Version No:	Final
Approved By:	P Graham	Issue Date:	26/08/16
		Review Frequency:	12-MONTHS
		Page No:	26 of 119

No 8 - USEFUL TELEPHONE NUMBERS / CONTACTS

use to display priority contact number for ready reference during the major incident
refer also **RED attachments** for comprehensive contact details

Stakeholder Name	Contact Number

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 27 of 119

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PURPLE ATTACHMENTS - COMMUNICATIONS

1. **Monitor & Provide Feedback**
2. **Gathering Data**
3. **Message Preparation**
4. **Media Statement Templates**
 - 4.1- Initial Release
 - 4.2- Staff Announcement
 - 4.3- Holding
 - 4.4- Empathy
 - 4.5- Missing Employee
 - 4.6 - Missing Employee found
 - 4.7 - Mine Rescue
 - 4.8 - Fatality
5. **Media Frequently Asked Questions**
6. **Response to Media Enquiries**
7. **Using the Web**
8. **Press Conference Preparation**
9. **Interview Tips**
10. **Body Language Tips**
11. **Spokesperson Guidelines**
12. **Enquiry Log Form**
13. **10 GOLDEN Rules**

No. 1 - Monitor and Provide Feedback

Review Media Coverage

- Review media outlets that have enquired about the situation.
- Review national and business media, and social media forums.
- Conduct regular searches through Internet search sites for key words, such as OTML, the incident, people involved, etc. This can be done by a reliable third party media monitor.
- In some cases we may want to monitor blogs, comment boards or chat sites to access community/employee concerns/comments. Keep in mind the following when reviewing these sites:

*NOTE: OTML should **NEVER** respond, even anonymously, through a blog or chat site. The only exception is if OTML establishes a comment board specifically to address concerns and clearly advertises the site for that purpose. Keep in mind, however, that all communication can be pulled for legal purposes, so all communication through this site, like all media communication, should go through official review/approval procedures before posting.*

Identify Story Trends

- What is the main focus for the media?
- Is the focus changing?
- Are there patterns that indicate messages OTML should be focusing on or responding to?

Identify Public and Key Stakeholder Issues

- What are the major issues being addressed through the media?
- What questions or concerns are being posed?
- Incorporate lessons learned into the response plan.
- During the event and afterward, lessons learned (e.g., what types of messages are needed, what approach the media takes to a certain type of story, what the media, public and shareholders are asking, etc.) should be noted to assist in planning and response for future situation.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	29 of 119

No 2 - Gathering Data

Audience and Questions Worksheet

Audience	Questions Concern

Sample List of General Concerns

Basic Informational – Who, What, Where, When, Why, How

Health	Safety
Ecological/Environmental	Economic
Quality of Life	Equity/Fairness
Cultural/Symbolic	Legal/Regulatory
Openness/Transparency/Access to information	Accountability
Options/Alternatives	Control
Effects on Children/Future Generals	Irreversibility
Ethics/Morality	Unfamiliarity
Changes in the Status Quo	Voluntariness
Benefits	Expertise
Honesty	Listening/Caring/Empathy
Trust	

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	30 of 119

No 2 - Gathering Data – continued

Audience List

	Potential Audiences
Internal	Board Members
	Employees – Business Site
	Employees – Corporate, country offices
	Employees families
	Senior Advisors/ Contractors
External	Clergy
	Elected Officials
	Industry and Trade Associations
	Local Government / Regulatory Bodies
	Media: Local, Regional and National
	Key Stakeholders – Police, Suppliers, etc.
	Public
	Shareholders (current and potential)

No 3 - Message Preparation

A message map provides an organised, prioritised repository of the information available to convey and support the messages the public needs to hear, understand and remember.

Message maps also structure information essential for responding to internal / external concerns.

Message Mapping

Quote should say what actions OTML is taking, telling people what actions they should be taking, or voicing compassion and concern.

**Name of
Spokesperson:**

**Spokesperson's
Title:**

Quote:

Key Message 1:

**Supporting Point
1.1:**

**Supporting Point
1.2:**

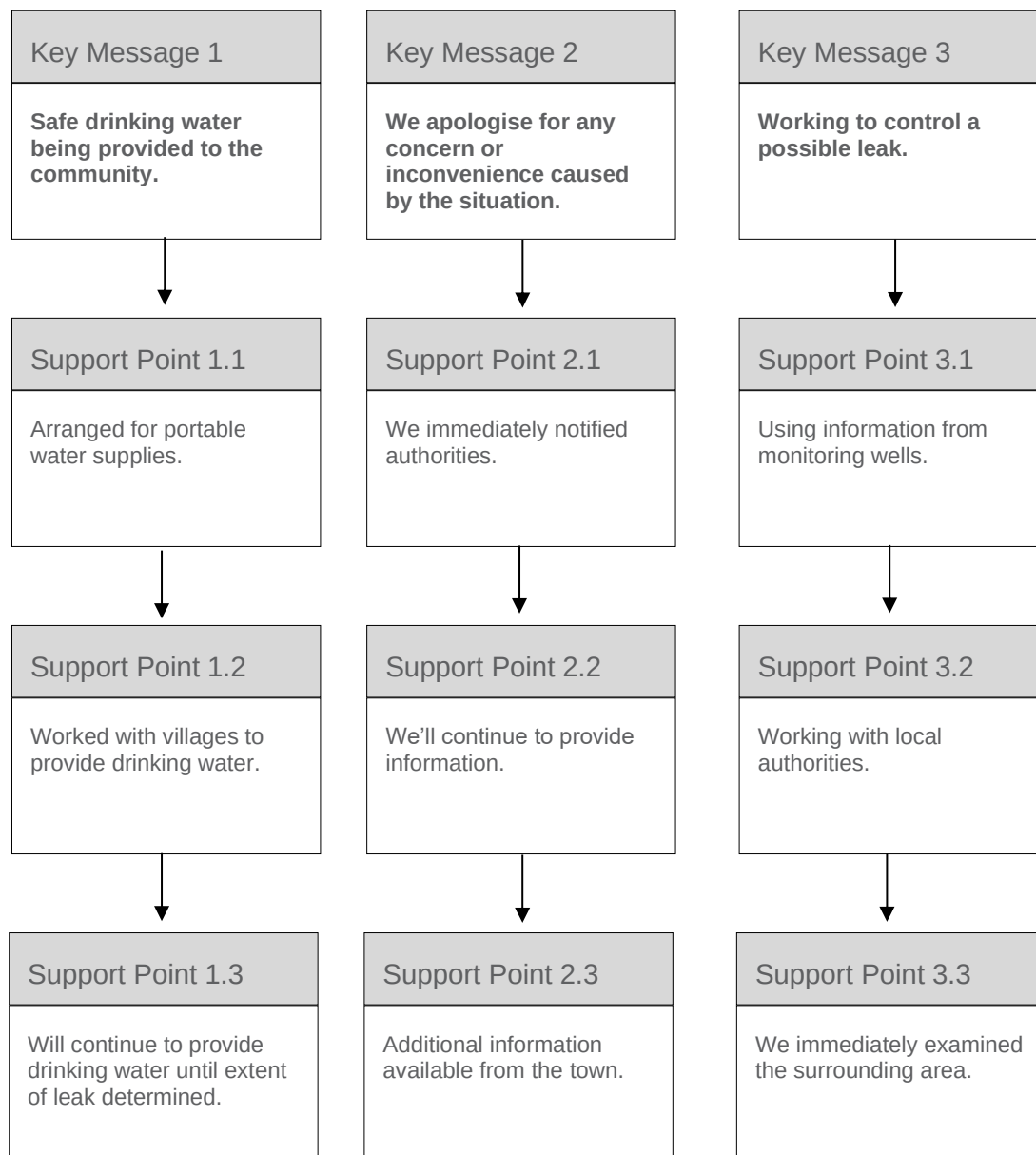
**Supporting Point
1.3:**

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	32 of 119

No 3 - Message Preparation - continued

Message Map Worksheet Example

Scenario: Water Contamination
Stakeholder: Members of the local community
Concern: Safety of drinking water



No 4.1 - Media Statement Template

MEDIA IMMEDIATE RELEASE

Headline

One sentence, 7-10 words, that describes the major point of the release:

Location: _____ Date: _____

Message of Empathy/Caring (if appropriate):

Main Paragraph

Quickly answer the Who, What, Where, When and Why of the story:

Who (which operation is affected):

What is going on?

Where is this taking place?

When did this occur?

Why is this important?

Quote (key points can be made within quotes)

Contact Name: _____

Contact Phone number: _____

Contact Email address: _____

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	34 of 119

No 4.2 - Staff Announcement Template

STAFF ANNOUNCEMENT

Date:

What, When and Where?

Who is involved?

How did it happen?

What is currently being done?

The Company is taking this very seriously and will be advising staff of additional measures.

Further information will be communicated as it becomes available.

For further information contact:

Name:

Title:

Tel:

Email:

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	35 of 119

No 4.3 - Media Holding Statement Template - Incident General

MEDIA IMMEDIATE RELEASE

[INCIDENT] AT OK TEDI MINING LIMITED

The following statement was issued today by the Ok Tedi Mining Limited

At approximately XXXX there was what is currently being investigated as a XXXX at XXXX.

We are working to determine XXXXX. At this time we have confirmed that XXXXXXXXXXXXXXXX.

Safety and well-being of our employees, contractors and the operation neighbours (mine villages, highway villages, CMCA communities) are our highest priority [expression of compassion/concern if appropriate].

As more information is available we will be providing updates through XXXX and regular media briefings.

Contact:

[NAME]

[TITLE]

[PHONE NUMBER]

[E-MAIL]

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	36 of 119

No 4.4 - Media Holding Statement Template - Empathy

MEDIA IMMEDIATE RELEASE

[INCIDENT] AT [Name of Operation]

The following statement was released today by [Name, title and name of operation] following the [short description of incident, e.g., explosion, flooding] at the name of operation.

“We understand the concerns, fears and questions you may have about the [incident – accident, etc.] that took place [timeframe – this morning, afternoon, today, yesterday, etc]. Our thoughts and prayers are with our employees and their families.

“At this time we are doing everything we can to [action: determine what happened, conduct a rescue operation, etc.].

“The safety and well-being of our [those effected: employees, employees’ families, community/neighbours] is our first priority.

“As more information is available, we will be providing updates through [Web site address] and regular media briefings.”

Contact:

[NAME]

[TITLE]

[PHONE NUMBER]

[E-MAIL]

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	37 of 119

No. 4.5 - Media Holding Statement Template – Missing Employee

MEDIA IMMEDIATE RELEASE

EMPLOYEE AT [NAME OF OPERATION] MINE IS MISSING; RESCUE EFFORTS UNDERWAY

The [Name of Operation] is missing, and the [Operation's] rescue teams are leading the search for the missing miner. [If appropriate consider including name of missing employee, age and job title].

At approximately [time, day and date], the [Name of Operation] notified appropriate officials at the XXXX. And Government representatives at XXXX that a possible mine emergency involving ground subsidence had occurred at XXXX. Immediately following the incident, it was determined that [If appropriate name of missing employee] was missing. All other employees working in the area were safely evacuated.

"We're committed to a safe rescue operation and to returning [Name of employee] to his family and friends," [Name of operation manager, title and name of operation] said today.

OTML will provide additional information as it becomes available.

Contact:

[NAME]

[TITLE]

[PHONE NUMBER]

[E-MAIL]

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	38 of 119

No 4.6 - Media Holding Statement Template - Missing Employee Located

MEDIA IMMEDIATE RELEASE

FOR IMMEDIATE RELEASE

LOCATION OF MISSING [NAME OF OPERATION] EMPLOYEE DETERMINED

[Name of Operation] employee missing since XXX, has been located approximately [location], the [Name of Operation], and rescue personnel, who are currently working to bring him to the town, report that [Name of employee] is [injured, stable] but responding to questions.

[Name of employee and brief description of event that led to missing status.] Rescue teams were gathered once it was determined that one member was missing from the [number] – person team that was working in the area. The remaining workers were uninjured.

Contact:

[NAME]

[TITLE]

[PHONE NUMBER]

[E-MAIL]

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	39 of 119

No. 4.7 - Media Holding Statement Template – Mine Rescue

MEDIA IMMEDIATE RELEASE

FOR IMMEDIATE RELEASE

MISSING [NAME OF OPERATION] EMPLOYEE [HOW DISPATCHED] TO [NAME] HOSPITAL

[Name], missing [Name of Operation] employee, was found at [Time and date], and [how dispatched, e.g., by ambulance, airlifted] to the [Name] Hospital at approximately [time], following his rescue by the emergency response team members from the [where rescue teams were from]. He is now receiving treatment at the hospital, and members of his immediate family are with him.

[Name of employee and length of tenure] at the XXX, was injured earlier today when [brief description of incident]. [Number] other members of the team working in the area safely left the mine...

Immediately following the incident, which occurred at approximately [time and day/date], rescue personnel and appropriate agencies were notified of a possible emergency at the mine. Management and rescue personnel determined at approximately [time] today that it was safe to enter the area in which the event had occurred, and [name] was found at approximately [time], successfully removed from area and subsequently transported to the hospital.

“Our thoughts and prayers are with [first name of employee] and his family as he is receiving medical treatment. He is a valued member of our team, and we’re all hopeful of a speedy recovery. We also appreciate the hard work and expertise of all those involved in today’s rescue effort,” [Name, title of manager] said today. “Safe operations is our number one priority at [Name of Operation], and today’s incident demonstrates our response to safety issues is first class.”

A complete investigation of the event is being conducted by [if appropriate].

Contact:

[NAME]

[TITLE]

[PHONE NUMBER]

[E-MAIL]

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	40 of 119

No 4.8 - Media Holding Statement Template - Fatal Incident

MEDIA IMMEDIATE RELEASE

FOR IMMEDIATE RELEASE

OK TEDI MINING LIMITED EXTENDS CONDOLENCES TO FAMILY OF FATALY INJURED EMPLOYEE XXX

“Our thoughts and prayers are with the family of [Name of employee], who was fatally injured today at the [Operation name]. [First name of employee] was a valuable member of our team, and we will be missed,” [Name and title of a senior person at company, e.g., operations manager] said today.

[Last name of employee] was fatally injured [approximate time of day, e.g., this morning] while [brief description of event, e.g., performing a routine preventative maintenance procedure in the mine’s maintenance shop. During the procedure, Jones was trapped between the truck cab and a wall in the maintenance shop]. [Description of assistance provided on site, e.g., CPR was started on site], and [Last name of employee] was transported by [how transported and to where], where he [any steps taken at hospital, e.g., underwent surgery and later] was pronounced dead.

[Name of Operation] will conduct a thorough investigation. “All of us hope to learn from this investigation and any other analysis of this tragic even so we can make necessary modifications to reach our goal or zero accidents and fatalities,” [Last name of company official] added.

[Last name], has served [a length of tenure] at the mine. He is survived by his [description of survivors].

Contact:

[NAME]

[TITLE]

[PHONE NUMBER]

[E-MAIL]

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	41 of 119

No 5 - Media Frequently Asked Questions

1. What happened?
2. What went wrong?
3. What caused this?
4. Did you have any prior indication that there was a problem?
5. How many casualties/injuries? What are their names?
6. Who is in charge of the rescue effort?
7. How serious are the injuries?
8. When did this happen?
9. How was the incident discovered, by whom and when?
10. What Government and local authorities have been notified and when?
11. Where are the injured/ dead?
12. How do you know the location of the injured/dead?
13. Who discovered them and when?
14. What is being done to rescue dead and injured?
15. Has anything like this happened at the mine before?
16. When was the last fatality/serious injury at the mine?
17. Where were the dead/injured taken?
18. Who is assisting the families?
19. What have the families been told?
20. How many others were working in the area/in the min at the time of the incident?
21. How many escaped and where are they?
22. What are the chances for survival of those trapped?
23. Have you been able to communicate with the trapped/injured?
24. How long will it take to reach them?
25. When was this area of the mine last inspected? What did the mine inspector find?
26. Who is involved in the rescue effort? How many people?
27. What equipment is being used to contact/rescue injured/trapped miners?
28. What is the safety record at the mine?
29. Has the mine been shut down? For how long?
30. What is happening to other miners while the mine is shut down?
31. How experienced were the miners that were injured/killed?
32. What have they been trained to do in a situation like this?

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	42 of 119

No 6 – Response to Media Enquiries

The standard response by all personnel (other than the MD/CEO or designate) to media enquiries is as follows:

“Thank you for your enquiry. I’m unable to respond on behalf of OTML, the company spokesperson is XXXX. You can contact XXXX on XXXX or alternatively I can take your name and number and ask them to return respond to your enquiry. THANK YOU”

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	43 of 119

No 7 - Using the Web

Developing a Ghost website

A ghost site is a Web site that is prepared in advance of an emergency, but is not viewable on a regular basis. The site can be made readily accessible once a major incident occurs.

A ghost site will look similar to the company Web site for brand consistency so that it can either replace the main page of the OTML site temporarily or be linked to the main site.

The following are a few examples of what type of information to be housed on a ghost site:

- Fact sheets specifically for major incident use
- Company information, history, statistics, safety record, etc.
- Mine maps
- Mine photos
- Mine diagrams
- Placeholder for crisis specific messages
- References to other Web sites that could provide additional information

Make sure all information is up-to-date before making the site live.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	44 of 119

No 8 - Press Conference Preparation

Logistics

- ☐ Establish a site for the media quickly – or they will establish a place. Location should be:
 - Away from the impacted operation
 - Away from the family
 - Easily accessible
 - As comfortable as possible
- ☐ Select a facility with:
 - Comfortable seating
 - Video conferencing facility
 - Security – have the media checked in when they arrive. Be sure they have appropriate media credentials.
 - Toilet facilities
- ☐ Select a facility capable of accommodating:
 - Podium with ability to attach several microphones
 - Chairs
 - Video conferencing
- ☐ Additional needs to consider:
 - Computers/ Internet access
 - Copy machine and paper
 - Electrical outlets
 - Electrical power strips
 - Masking tape
 - Notepaper/pens

Communication

- ☐ Appoint a media liaison to address logistics and media needs.
- ☐ Appoint a media liaison to ensure that family communication and response are in line with OTML statements.
- ☐ Communicate through media briefings so that all media receive the same information at the same time.
- ☐ If you set a time for a media briefing – keep it! Even if you don't have new information, it is important to provide the media with an up-to-date statement.

Communication Resources

- ☐ Current maps and country/area locality maps
- ☐ Graphics depicting the mine/mining operations
- ☐ Current photographs of the mine and site
- ☐ Fact sheets about the operation, mine production, history, safety record, etc
- ☐ Names, titles and job responsibilities or professional qualifications of individuals who will be briefing the media.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	45 of 119

No 9 - Interview Tips

To be at your best during an interview, it is important to anticipate questions, prepare messages, and practice your delivery.

Before the Interview:

- Do your homework on issues.
- Decide if the issue is causing high concern locally, state-wide or nationally, and tailor your messages accordingly.
- Develop a set of messages that provide the information you want/need to convey.
- Develop a list of questions the media are likely to ask.
- Develop and practice key messages and responses to anticipated questions.
- Practice speaking without jargon or acronyms.
- Be familiar with all related current events.
- Last-minute details:
 - Check dress and grooming.
 - Remember that *everything* you say can be reported.
 - There is no such thing as “off the record” replies or commentary.

During the interview:

- Direct the interview toward your three key messages.
- Stay “on message”
- Be confident, but not arrogant.
- Listen carefully and repeat questions if necessary to clarify.
- Avoid hypothetical questions.
- Avoid referring to the interviewer as “Sir” or “Ma’am”.
- Never lie or knowingly mislead.
- Correct any information errors upon discover. Do not delay!
- Never comment on issues outside your area of expertise.
- Never speculate on what has happened or could happen.
- Treat all questions seriously.
- Look at the interviewer rather than the camera or monitor.
- Keep your cool, even if the interviewer becomes hostile.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	46 of 119

Avoid Using “I”.

- Speak for the organisation using its name or the pronoun “we”.
- Avoid the impression that you, along, are the authority or the sole decision-maker.
- Never disagree with the organisation you represent by saying: “Personally, I don’t agree,” or “Speaking for myself,” or “If it were me...”

Avoid Speculating

- Stick to the facts of what has, is and will be done.
- Avoid speculating on worst-case scenarios, what *could* be done, on what *might* happen, or on *possible* outcomes.

Avoid Making Promises You Can’t Keep

- Promise only what you can deliver.
- State your willingness to explore other options.

Avoid Jargon, Technical Terms or Acronyms

- Limit their use and explain those you must use.

Avoid Negative Words or Phrases

- Use positive or neutral terms
- Avoid words like no, never and none.
- Avoid highly-charged analogies, like “This is not Bhopal.”

Don’t Blame Others

- Accept your fair share of responsibility
- Don’t point fingers at others.
- Focus your communications on how problems can be rectified.

Avoid Details on How Much the Response Effort is Costing

- Focus on how the response has supported the health/ well-being of those affected.

Avoid Humour

- *No exceptions!* Humour of any kind is not appropriate in an emergency situation.

Don’t Repeat Negative Allegations

- Refute critical allegations succinctly.
- Draw upon and reinforce your key messages.

Don’t Become Defensive

- Respond to issues, not personalities.
- End debates, rather than continue them.
- Stay calm.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	47 of 119

No 10 - Body Language Tips

Positives

- **Frequent eye contact:** honest, open, concerned about your audience.
- **Well-modulated, confident voice tone:** honest, knowledgeable, trustworthy.
- **Keep your hands in sight** (while keeping hand movements to a minimum): honest, open, caring, confident.
- **Posture** – If standing, stand tall and straight, but not rigid. If seated, sit forward in the chair and lean forward slightly toward the audience: honest, open, caring, confident.
- **Dress appropriately** (perhaps slightly more casual than your normal business attire): approachable, audience-appropriate, honest, credible.
- **Well-groomed** (but not elaborate): knowledgeable, credible.

Negatives

- **Poor eye contact:** dishonest, closed, unconcerned, nervous, lying.
- **Constant throat clearing:** nervous, lacking self-confidence.
- **Arms crossed on chest:** arrogant, not interested, uncaring, not listening, impatient, defensive, angry, stubborn, and not accepting.
- **Frequent hand gestures/body movements or fidgeting:** dishonest, deceitful, nervous, lacking self-confidence.
- **Hidden hands:** deceptive, guilty, and insincere.
- **Speaking from behind barriers** (podiums, lecterns, tables, desks) **or from an elevated position:** dishonest, deceitful, too formal, withdrawn, distant, unconcerned, superior.
- **Touching and/or rubbing nose or eyes:** in doubt, disagreeing, nervous, deceitful.
- **Jingling money/items in pockets:** nervous, lacking self-confidence, lacking self-control, deceitful. *A good tip: empty your pockets before an interview or presentation.*
- **Drumming on table, tapping feet, or twitching:** nervous, hostile, anxious, impatient, bored.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	48 of 119

No 11 - Spokesperson Guidelines

The messenger or spokesperson responsible for responding publicly can make or break the situation. No matter how important or well-developed the message, if the spokesperson that delivers the message is not a well-spoken, empathetic and credible source, the message will most likely be lost.

Spokespersons should:

- Be media-savvy and knowledgeable about the situation.
- Convey empathy and caring.
- Demonstrate competence and expertise.
- Communicate honestly and openly.
- Exhibit commitment and dedication.
- Be sensitive and responsive to public concerns.
- Express optimism.
- Stay calm under pressure.
- Exhibit positive body language.

The audience should:

- View you as being credible and competent.
- Believe you have their best interests at heart.
- Hear you addressing their key concerns.

To build trust and credibility as a spokesperson:

- **Stay “on message”.** Staying on message drives home the messages, keeps you focused on the issues, and reduces the chance of mistakes.
- **Recognise the public’s specific concerns.** People are dissatisfied when information does not address their needs; in addition, the messenger may lose credibility if specific needs are not addressed.
- **Be open and honest.** People are more accepting of information when spokespersons display truthfulness, honesty and a willingness to address tough issues.
- **Coordinate with other credible sources.** People are dissatisfied when different agencies deliver inconsistent messages.
- **Meet the media’s needs.** If the media are working on a story, they will report it with or without your help. Tell the media what you want the public to know about this situation.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	49 of 119

No 12 – Enquiry Log Form

Date: _____

Time: _____

Call taken by: _____

Media organisation: _____

Deadline: _____

Query

Contacts -

Phone _____

Mobile _____

Email _____

Response

No 13 - GOLDEN Rules

- Be prepared.
- Respond in a timely manner.
- Never lie, speculate or respond to hypothetical issues.
- Stick to the facts/key messages.
- Stay calm and cool.
- Always tell the truth. Don't say "No Comment".
- Only designated company spokespeople should discuss an emergency with a journalist.
- Remember you are always on record with the media.

BROWN ATTACHMENTS – OIL SPILL RESPONSE REFERENCE TOOLS / CHECKLISTS

- No. 1 Tiered response**
- No. 2 Oil spill response methods**
- No. 3 Summary of Risk Assessment for Marine & River Spills**
- No. 4 Types and volumes of oil likely to be spilled**
- No. 5 Probable fate of spilled oil**
- No. 6 Fate of diesel in the environment**
- No. 7 Shoreline sensitivity**
- No. 8 Shoreline resources, priorities for protection**
- No. 9 OTML Spill Response Equipment**
- No. 10 Scenario – Major spill of diesel at Bige dredging site**
- No. 11 Scenario – Major spill of diesel at Kiunga Port**
- No. 12 Scenario – Major spill of diesel at Basillisk Reef**
- No. 13. Scenario – Diesel refuelling operation at M.V. Kumul Arrow in Port
 Moresby Harbour**
- No. 14 Scenario – Refuelling accident/vessel collision at Kumul Arrow at
 Umuda Station**
- No. 15 Scenario – Refuelling accident at the Shell platform in Port Moresby**
- No. 16 Marine Pollution Report (POLREP)**
- No. 17 NMSA Situation Report**

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	52 of 119

Tiered Response

To comply with international requirements, OTML is adopting a tiered response as described by IPIECA 2000. When a spill occurs, its scale and impact is assessed to determine the level of response and notification required

Tier	Description	Responder
Tier I Small local spills: Operational Response	Spills that occur at or near OTML's own facilities or vessels, as a consequence of its own activities. This covers operations at OTML-owned, operated (or shared), or contractor's facilities where events are largely controlled by OTML's or contractors operating procedures, and personnel and equipment can be made available to respond immediately to an 'on-site' incident. Such an incident would generally be associated with ship transfer or bunkering operations at a jetty, pier or mooring and around waterside storage tanks. The contingency plan should recognize the need for the local operators to control events and to establish a rapid response capability aimed at quickly containing and, if possible, recovering the spill. If this is achieved there will be no need to involve other parties apart from meeting legal, reporting or alerting requirements.	OTML
Tier II Medium spills that may be local or at some distance from operational centres Regional Response	A larger spill in the vicinity of OTML's activities where resources from other companies and government response agencies can be called in on a mutual aid basis. This covers company operations at their own facilities and within public or multi-user facilities where a company has limited control of events and the physical area of the spill is larger than in the Tier I case. The risks here would typically be associated with shipping accidents in ports or harbours, in estuaries or coastal waters, but could also be from pipelines, tank failures or nearshore exploration and production operations. The contingency plan should carefully define the conceptual response capability, the roles and responsibilities of the various parties, the scope of the plan and procedures for escalating the response to the Tier III level.	NMSA (PNG Government) under the NATPLAN (incl. other industry bodies)
Tier III Large spills which may exceed national boundaries International Response	The large spill where substantial further resources will be required and support from an international cooperative stockpile may be necessary. Such operations are subject to government controls or even direction. Typically, Tier III plans cover larger oil spills at sea where the OTML may not have any capability to deploy resources immediately. It will likely be very remote from all company owned or operated resources. The likelihood of such incidents may be low but pollution damage can be considerable and coastlines over a wide area are potentially at risk. The contingency plan should aim to access and mobilize local, national and international resources (from regional stockpiles and elsewhere) quickly and efficiently. Because such incidents often become high profile and politically sensitive, the Tier III plan will most probably form part of a National Emergency Plan (NATPLAN) headed by an appropriate national agency (NMSA)	NMSA will call out regional resources: PACPLAN (South Pacific) AMSA, AMOSC (Australia)

Spills do not always fall into convenient categories and the boundaries between Tiers will inevitably be blurred. It is, therefore, important to be prepared to involve the next highest Tier from the earliest moments. It is easier to stand down an alerted system than to try to escalate a response by calling up unprepared reserves at a late stage.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	53 of 119

Oil Spill Response Methods

	Details	Use at OTML
Monitor and Evaluate	If a spill presents a low risk, clean-up is impractical or it is unsafe to access the spill, the decision may be made to not attempt to control or clean up the spill at the moment, but to monitor and evaluate any changes.	Used for some diesel spills, spills in Gulf of Papua
Chemical Dispersants	Dispersants are chemicals that are added to oil spills and are designed to emulsify the oil to enable it to mix into the water column and not remain on the surface of the water. Natural water movement then ensures that the oil is diluted in the sea, to levels, which cause no environmental concern. Oil spill dispersants are primarily designed for use in marine waters and show a significant reduction in effectiveness when applied to fresh water.	OTML does not intend to use dispersants in the riverine environment due to potential long-term environmental effects.
Containment and Recovery	<p>Contain any spillage that collects in low flow areas such as wharfs, small riverbank pockets using booms.</p> <p>Hydrocarbons spilt to a smaller creek or pond will be relatively easy to contain and collect if caught early. In a small and low flowing creek, set up booms across the flow and pin them down on the banks. Can use 2 to 3 lines of booms in succession a short distance apart (~ at least 10 metres) to ensure maximum capture.</p> <p>Where possible, the source of the spill should be isolated to prevent the spill becoming larger. For spills that are land based in origin, this may mean constructing windrows to contain spills and plugging drains.</p> <p>Once in the water, a primary boom consisting of a floating panel type boom should be deployed where possible to contain the oil spill close to the source and to facilitate its recovery using a skimmer. Transferred the oil/water mixture to a temporary storage, decant off the water and transfer the oil to a permanent storage/treatment facility.</p> <p>Encircling the spill source with booms may be employed in the early stage of spill control but only when the spill discharge rate is low and the effects of wind and current are not significant. The length of the boom in this application generally needs to be at least three times the length of the object, e.g. a ship, to be encircled.</p> <p>Multiple Setting - If river flows are high, oil may escape beneath the boom. If this occurs, multiple setting of booms may be necessary. Generally, a separation of between 5-10 metres between the booms is required for the escaping oil to be held by the secondary or tertiary barriers.</p>	<p>OTMLs preferred response for all spills at Kiunga and Bige, and for all heavy oil spills within the riverine environment.</p> <p>At OTML floating panel booms, skimmers and associated hardware are available at Kiunga and Bige.</p>
Shoreline cleanup	<p>Once on shore the principal means of cleaning up the oil becomes physical. If the bank is accessible and quantities of oil are large, mechanical clean up may be possible. Oil collected in pockets on the shore may be recovered by skimming, pumping or suction devices. In less accessible areas, or where machinery would cause unacceptable damage or where access is limited, manual labour should be used. It must be remembered that temporary storage has to be provided for recovered oil and oily beach material.</p> <p>In high energy environments, it is likely that natural remediation will occur quickly. For Off River Water Bodies and other delicate environments (such as mangroves) high volume low pressure water should be applied to the upstream section, thereby gently flushing the oil out into the main water body.</p>	OTML will use manual labour to clean up any affected shorelines in the Ok Tedi and Fly rivers. Community Relations Department personnel will source a labour force to undertake this clean up.
In-Situ Burning	<p>For the deliberate burning of oil to be considered a viable strategy it requires careful planning, as it causes highly visible atmospheric pollution and potential safety problems. For burning to be carried out successfully it must be done before the oil weathers too much, particularly through emulsification. High water content makes the oil very difficult to ignite and combustion difficult to sustain.</p> <p>The oil layer must be at least 3 mm thick for the burn to be successful. This calls for the use of specialised ceramic-type booms in open water (which are not carried by OTML); all of the practical and logistical problems associated with containment operations apply. It is theoretically possible to burn up to 98% of the floating oil but a viscous tarry residue invariably remains that are extremely difficult to recover.</p>	OTML does not plan to use this method due to environmental and safety risks.

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 54 of 119

Summary of Risk Assessment for Marine & River Spills

	Bigge	Kiunga	Sea Voyage	River Voyage	Port Moresby
Hazards / incidents / likelihood	Highest likelihood is accident during oil transfer/ bunkering followed by vessel collision.	Highest likelihood is accident during oil transfer/ bunkering followed by vessel collision.	<u>Redscar Head to Port Moresby</u> : Highest likelihood is grounding on reef followed by vessel collision. <u>Gulf offshore</u> : Highest likelihood is vessel collision esp. where route crosses Kumul oil tanker and LNG tanker routes	Highest likelihood is vessel collision.	Highest likelihood is accident during oil transfer/ bunkering followed by vessel collision.
Consequences (depends on variables on the day inc. actual spill volume, season, tide, winds and weather - may differ from what assessed here)	MINOR	MODERATE to MAJOR (due to very close proximity of villages)	MAJOR Redscar Head to Port Moresby. MINOR for Gulf Offshore.	MAJOR Umuda to Sturt Is. MODERATE Sturt Is. to Kiunga.	MAJOR (could be a major Tier III spill requiring an international response)
Overall Risk: (this is simply a relative ranking to assist management planning and prioritization – not an absolute measure of risk)	LOW	MEDIUM	HIGH Redscar Head to Port Moresby. LOW Gulf Offshore.	HIGH Umuda to Sturt Is. & D'Albertis Junction to Kiunga (narrow river) MEDIUM Sturt Is. to D'Albertis Junction.	HIGH to VERY HIGH

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 55 of 119

Brown Attachment No. 4

Types and volumes of oil likely to be spilled

All OTML transport, dredging and mine operations use a diesel fuel oil (API 39.4°) supplied from a Puma tank farm on the eastern side of Port Moresby. The diesel fuel oil characteristics are listed in below.

Diesel Fuel Oil Characteristics

API	39.4°
Density (kg/m ³)	838
Viscosity (cP)	1.5
Flash Point (°C)	66
Pour Point (°C)	9

Source: APASA 2004

'Realistic Worst Case Scenario' spill volumes have been calculated to give an indication of volumes that could potentially spill and are presented below.

Spill Volumes Estimate

	Realistic Worst Case Scenario (80% of two largest tanks)
M.V. Kumul Arrow	1,200 m ³
M.V. Obo Chief	750 m ³
M.V. Kiunga Chief	400 m ³
M.V. Bosset Chief	300 m ³
M.V. Lahara Chief	250 m ³
The Dredger Captain Martin	110 m ³
The P&O Maritime fleet feeder vessels x 4	93 to 100 m ³
	Shore based tanks (largest)
Kiunga DO storage tanks	3 x 2,200 m ³
Bige DO storage tanks	5 x 50 m ³

Source: Extracted from EcoStrategic 2014

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	56 of 119

Probable fate of spilled oil

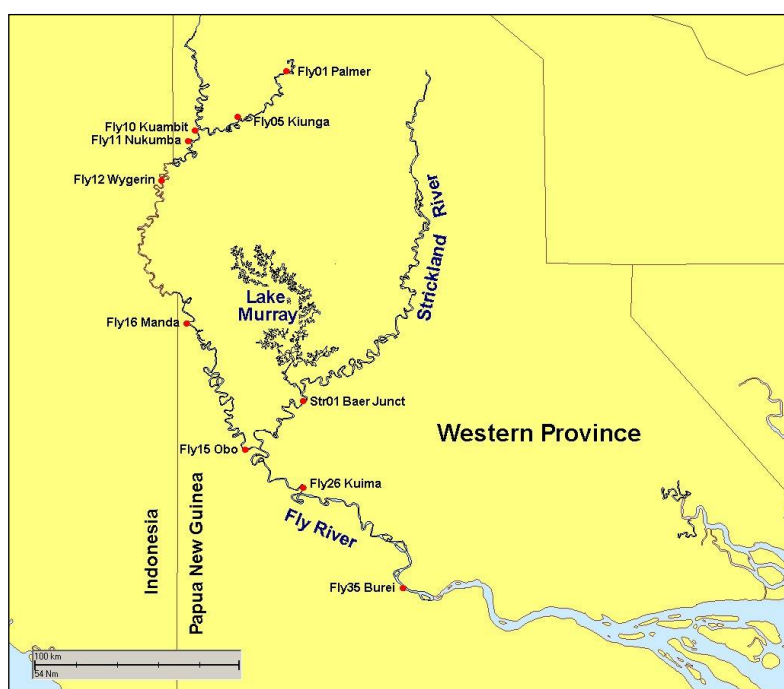
Calculation of flow rates

OTML measures flow and velocity at 10 monitoring sites along the Ok Tedi, Strickland and Fly River system. Using hydrological data for the years 1989 through 2002, average and max velocities have been calculated at each monitoring site.

Average and maximum velocities at OTML monitoring sites

Monitoring Site	Average Velocity (m/s)	Max Velocity (m/s)
Fly05 Kiunga	0.76	1.22
Fly10 Kuambit	0.89	1.15
Fly11 Nukumba	1.04	1.55
Fly12 Wygerin	1.05	1.25
Fly15 Obo	0.74	1.06
Fly16 Manda	0.73	0.98
Fly26 Kuima	1.14	1.59
Fly35 Burei Junction	0.92	1.31
Str01 Baer Junction	1.03	1.32

These velocities were used to model flow conditions within the Fly and Ok Tedi River systems for spill scenarios (APASA 2004).



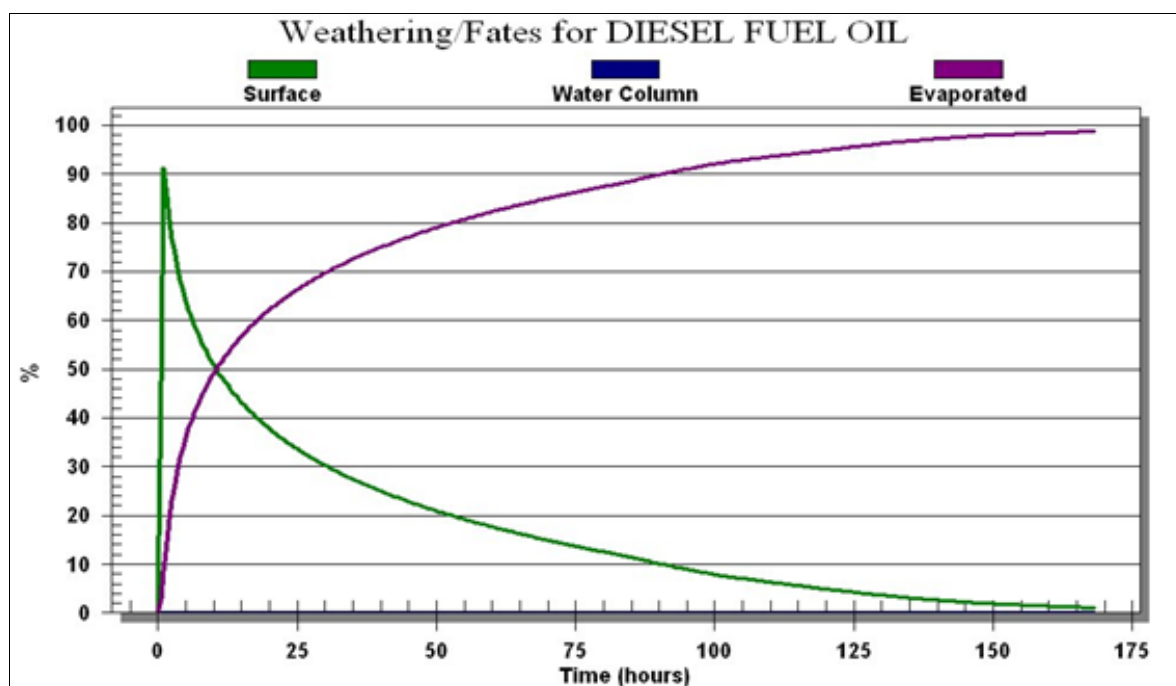
Location of OTML monitoring sites along the Ok Tedi, Strickland and Fly River Systems

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	57 of 119

Fate of diesel in the environment

Predictions for the mass-balance of the diesel were made for a seven day period under time and space-varying, wind and current conditions and the average surface temperatures throughout the year (APASA 2004).

Results indicated that if 2000 m³ of diesel was released at the surface about 98% of the surface diesel mass would be lost to evaporation and that it would take about seven days for this loss to occur. This evaporative loss of the diesel was predicted to be fast for the first day accounting for 65% of the initial mass. Subsequently evaporative loss rates decrease with a further 33% of the initial mass being lost over the next six days.



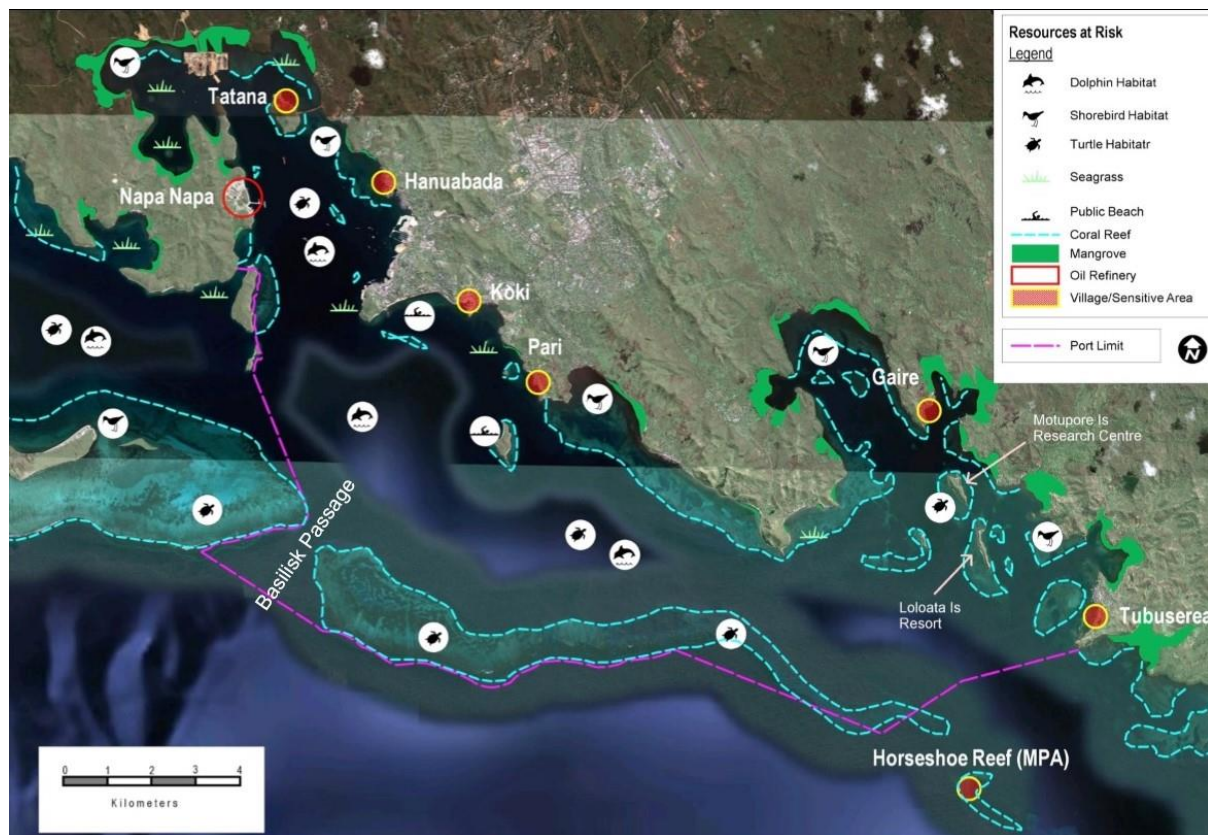
Weathering/Fates for Diesel Fuel Oil

Shoreline sensitivity

Environmental Sensitivity Index (ESI) maps provide a concise summary of coastal and riverine resources that are at risk if an oil spill occurs nearby. Examples of at-risk resources include biological resources (such as birds and shellfish beds), sensitive shorelines (such as marshes and tidal flats), and human-use resources (such as public beaches and parks). The diagram below shows an example of a shoreline sensitivity map.

When an oil spill occurs, ESI maps can help responders meet one of the main response objectives: reducing the environmental consequences of the spill and the clean-up efforts.

Shoreline sensitivity maps should be available through the NMSA NATPLAN.



Shoreline Sensitivity Map Port Moresby area (EcoStrategic 2014)

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	59 of 119

Shoreline resources, priorities for protection

Below is a risk based list of protection priorities adapted from EcoStrategic (2014). This list is used to prioritise planning for prevention of and response to spill incidents.

Consequence level	Area	Environmental Sensitivities and resources at risk in approximate order of significance.
Major	Port Moresby Harbour	<ul style="list-style-type: none"> • Major coastal villages • Mangroves • Inter-tidal seagrasses • Birds & other wildlife • Subsistence fisheries • Coral reefs • Tourism and recreation • CBD
Major	Umuda to Sturt Island – river voyage	<ul style="list-style-type: none"> • Mangroves • Inter-tidal seagrasses • Birds and other wildlife • Riverbank villages • River fisheries
Major	Redscar Head to Port Moresby – sea voyage	<ul style="list-style-type: none"> • Coastal villages x 7 • Mangroves • Inter-tidal seagrasses • Birds and other wildlife • Subsistence fisheries • Coral reefs • Tourism and recreation
Major	Gulf Coast – sea voyage	<ul style="list-style-type: none"> • Mangroves • Inter-tidal seagrasses • Birds and other wildlife • Subsistence fisheries
Moderate to Major	Kiunga	<ul style="list-style-type: none"> • Birds and other wildlife • Riverbank villages • River fisheries • Riverbank grasses and other vegetation • Riverbank sediment flats
Moderate	Sturt Island to Kiunga – river voyage	<ul style="list-style-type: none"> • Birds and other wildlife • Riverbank villages • River fisheries • Riverbank grasses & other vegetation • Riverbank sediment flats
Minor	Gulf Offshore – sea voyage	<ul style="list-style-type: none"> • Prawn and lobster fisheries • Marine mammals and reptiles • Seabirds
Minor	Bige	<ul style="list-style-type: none"> • Birds and other wildlife • Riverbank villages • River fisheries • Riverbank grasses and other vegetation • Riverbank sediment flats

OTML Spill Response Equipment

OTML will maintain sufficient response equipment inventory to provides the equipment necessary to respond to Tier I spills from its own facilities

Location	Item	Responsible*	Notes
Kiunga	Spill Response Container	APD	List of contents in: ISM-OP506 Spill response containers.
	Fast response boat	Kiunga Operations	
	Banana boats	Community Relations	
Bige	Spill Response Container	Bige Operations Technical Services	List of contents in: ISM-OP506 Spill response containers
	Tenders/boats	OTML/Dredecoco	
River	Ship board spill equipment	Logistics/Shipping	
Tabubil	Spill response container	Logistics	List of contents available from Logistics:
	Spare decant tanker & pump.	Transport	
Mine/Mill	Spill response container	APD	TBA

Note: * Inspection, maintenance and testing of response equipment is the responsibility of the agency listed under 'Responsible' in the above table.

Scenario – Major spill of diesel at Bige dredging site

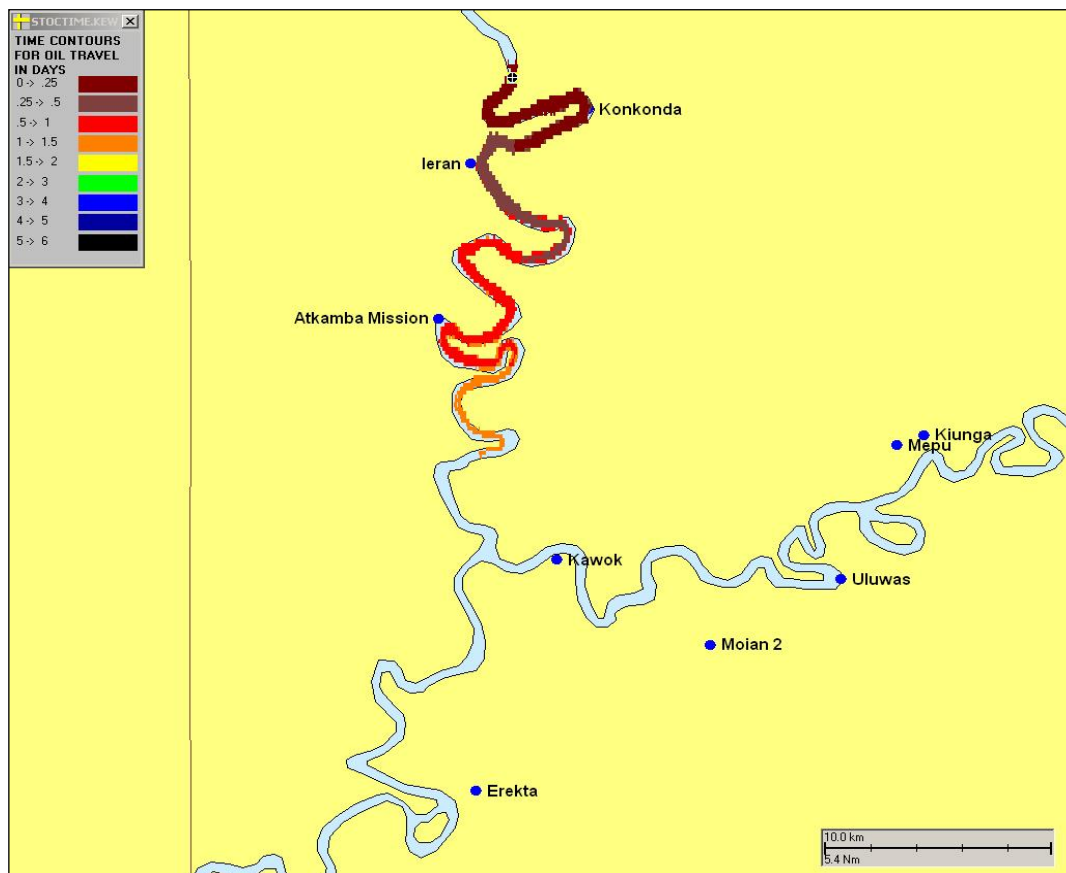
This scenario investigates the potential outcomes of a major diesel fuel spill at Bige, which is located on the lower Ok Tedi River and is the site of OTML's dredging operations.

Dredging is carried out using a diesel-fuelled trailing-suction dredge, which is routinely refuelled by a support barge. Diesel is stored in five 20,000 L tanks* located on the river bank and enclosed by a low bund. Fuel is conducted from the tanks to a manual control valve located over the maintenance wharf via fixed piping. Refuelling of the support barge or dredger is carried out by use of an 80 mm wire-reinforced hose leading from this valve to the wharf. The dredge holds approximately 300,000 L and uses approximately 20,000 L of diesel each day. Refuelling procedures are in place to reduce the risk of spills, and their potential size. (* note: current tanks 50,000L, potentially an error in APASA report)

A 20,000 L spill of diesel fuel oil into the Ok Tedi River was selected to represent the accidental loss of the contents of one of the river-bank storage tanks (due, for example to a valve failure, separator failure, or operator error), or the sinking of the support barge that leads to the loss of its fuel load.

Dredging operations occur year-round and thus spills might occur under either low or high flow conditions. Under low flow conditions the river is restricted to the main water course, while under high flow conditions, the river boundaries extend into the surrounding floodplain.

The diagram below shows the predicted minimum time before exposure from a surface spill involving a 20,000 litre release of Diesel Fuel Oil over 1 hour (tracked for five days) from Bige under average flow conditions.



BIGE - Predicted exposure map.

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	62 of 119

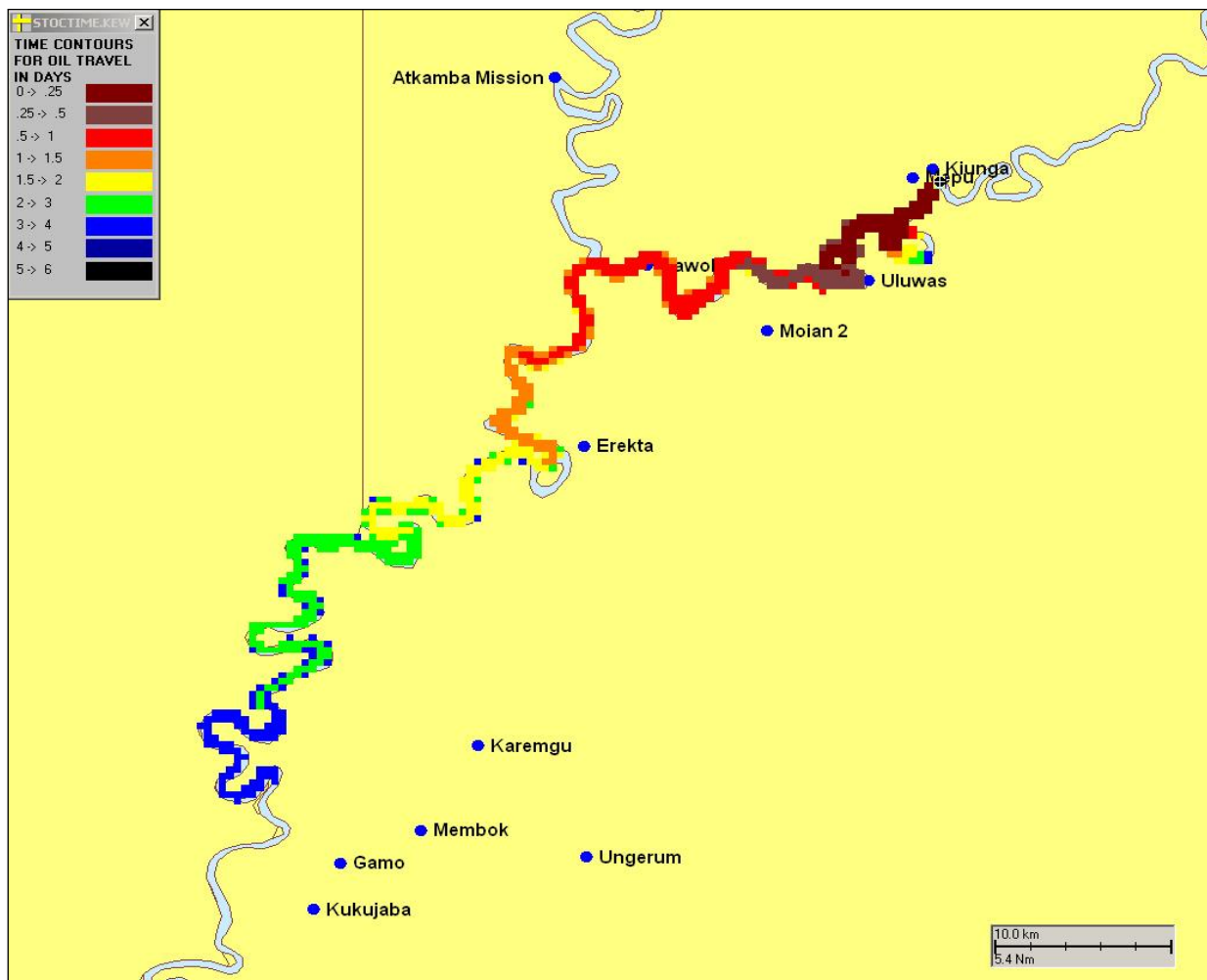
Scenario – Major spill of diesel at Kiunga Port

The port of Kiunga is located in the upper reaches of the Fly River and is the offload point for shuttle barges carrying supplies and diesel fuel oil for the port and mining operations. Diesel is offloaded via flexible and fixed piping and manually-operated valves to storage tanks that are located within a bunded area. Diesel is subsequently distributed to road tankers (40 m³ each truck), and varying quantities are used to refuel vessels and fixed plant at the port. This scenario explores the potential for a major diesel fuel spill to occur at the Port of Kiunga in the event of a significant rupture of a tank or failure of plumbing to the dock, or in the event of an operator error (e.g. a valve is left open).

For this case, a release of 2,000 m³ of diesel fuel oil into the Fly River at Kiunga Port was selected to represent a spill from the flexible/fixed piping or valves used to conduct fuel, or an operator error at the port.

OTML operations at the Port of Kiunga are carried out all year round and, thus, spills might occur under a range of flow speeds and river levels. Separate scenarios were tested for spills under high and low river levels.

The diagram below shows the predicted minimum time before exposure from a surface spill involving a 2,000,000 litre release of Diesel Fuel Oil over 1 hour from Kiunga under average flow conditions.



KIUNGA - Predicted exposure map

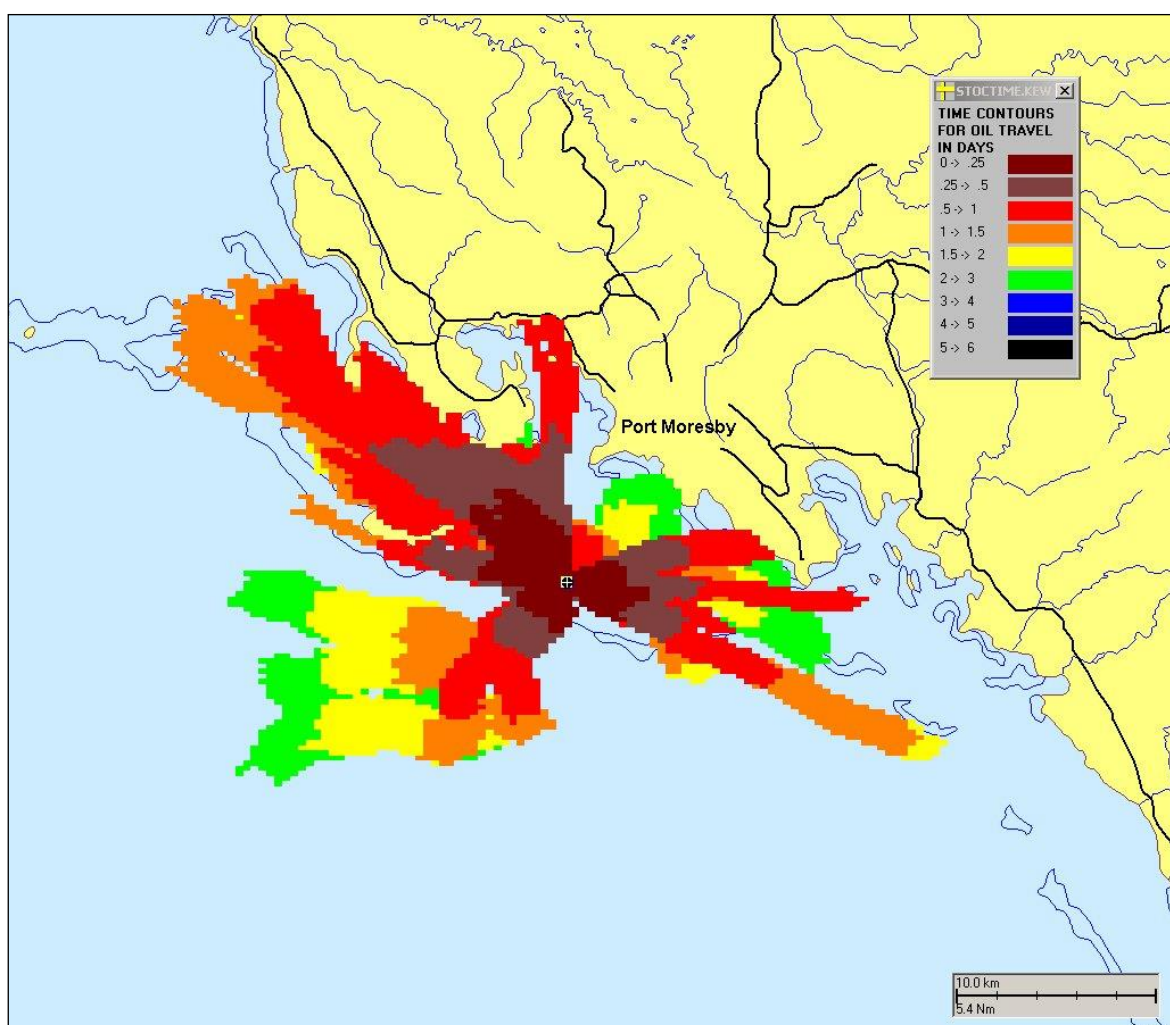
Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	63 of 119

Scenario – Major spill of diesel at Basilisk Reef

When transiting across the Gulf of Papua between Port Moresby and Umuda in the Fly River delta, the cargo and ore barges and the M.V. Kumul Arrow must manoeuvre through Basilisk Passage. Basilisk Passage is a hazardous, 800 m wide passage between two coral reefs (Sinvavi and Nateara Reef) with a side drift onto the reefs set up by strong currents and winds. Vessels must pass through at full speed to avoid drifting onto the reef. Feeder vessels travelling across the Gulf of Papua make this passage all year round. Thus, any spills that occur here could be subject to currents and weather conditions from any time of year.

A spill of 2,500 m³ of diesel fuel oil was selected to represent a spill from a vessel grounding onto one of the reefs, which results in the splitting of the vessels hull and fuel tank(s).

The diagram below shows the predicted probability of exposure from a surface spill involving a 2,500 m³ release of Diesel Fuel Oil over 1 hour within Basilisk Passage.



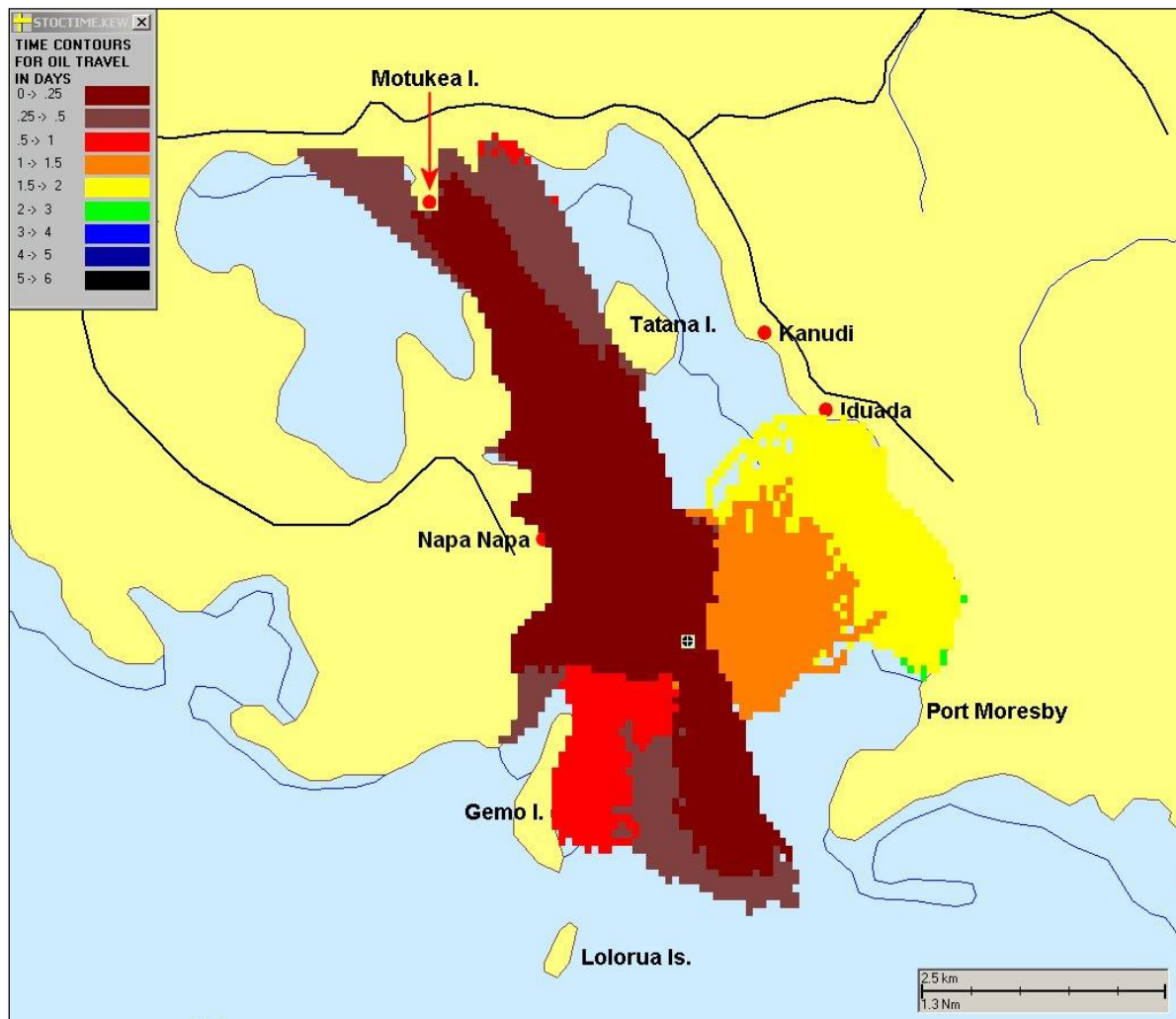
BASILISK PASSAGE - Predicted exposure map

Scenario – Diesel refuelling operation at M.V. Kumul Arrow in Port Moresby Harbour

When the Southeast Trade-winds are blowing (usually May to November), the Kumul Arrow is moored in the central basin of Port Moresby Harbour. The Kumul Arrow is provided with fuel shuttled by feeder vessels. Diesel is taken onboard and delivered to other vessels via hand-operated valves located on the deck of the Kumul Arrow. While the Kumul Arrow's decks are bunded and would retain moderate spills, the feeder vessels have open scuppers and would release to the sea any fuel spilled onto their decks.

This scenario investigates the potential for a major diesel fuel oil spill to occur within Port Moresby in the event of a refueling accident or a vessel collision between a feeder vessel and the Kumul Arrow. A spill volume of 2,500 m³ of diesel fuel oil was selected to represent this scenario and because the silo vessel was originally in this location only during the trade-wind period, modelling was carried out using weather conditions from this season. (Note: Worst case spill (WCS) for Kumul Arrow is 2,164m³)

The diagram below shows the predicted minimum time before exposure from a surface spill involving a 2,500 m³ release of Diesel Fuel Oil over 1 hour at the silo ship within Port Moresby.



KUMUL ARROW - Predicted exposure map

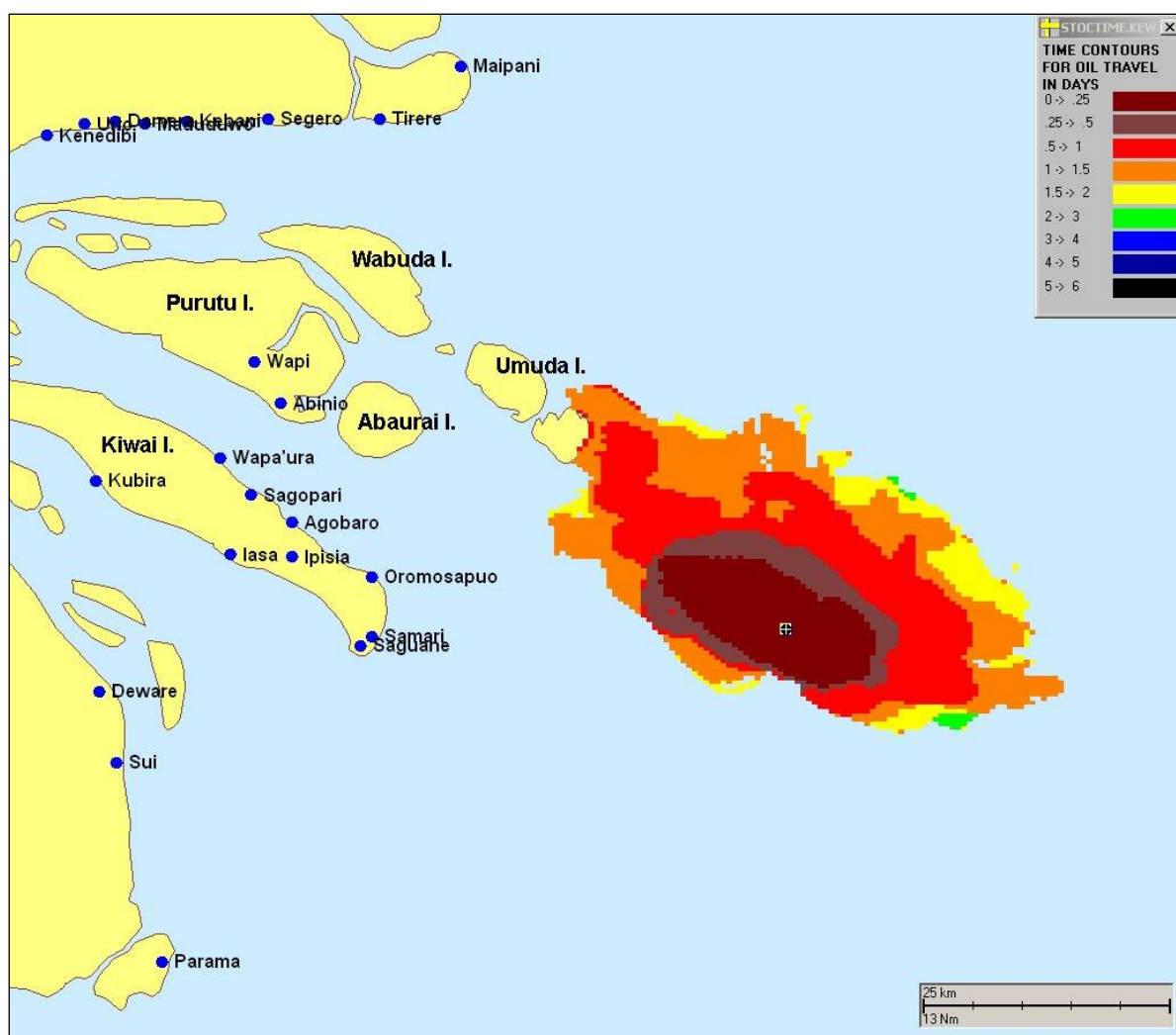
Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
Prepared By:	L Puddy	Print Date:	16/05/25	Version No:	Final
Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	65 of 119

Scenario – Refuelling accident/vessel collision at Kumul Arrow at Umuda Station

Outside the Southeast Trade wind period (usually December to April), it was intended that the Kumul Arrow would be moored off Umuda in the Fly River delta. If the Kumul Arrow is moored here, fuel would be shuttled across the Gulf of Papua by feeder vessels and the Kumul Arrow would be used as a fuel storage vessel. This scenario investigates the potential for contamination of surrounding resources from a major diesel fuel spill off Umuda.

A spill volume of 2,500 m³ of diesel fuel oil was selected for this scenario using weather conditions from December to April.

The diagram below shows the predicted minimum time before exposure from a surface spill involving a 2,500 m³ release of Diesel Fuel Oil over 1 hour at the Kumul Arrow within the Fly Delta



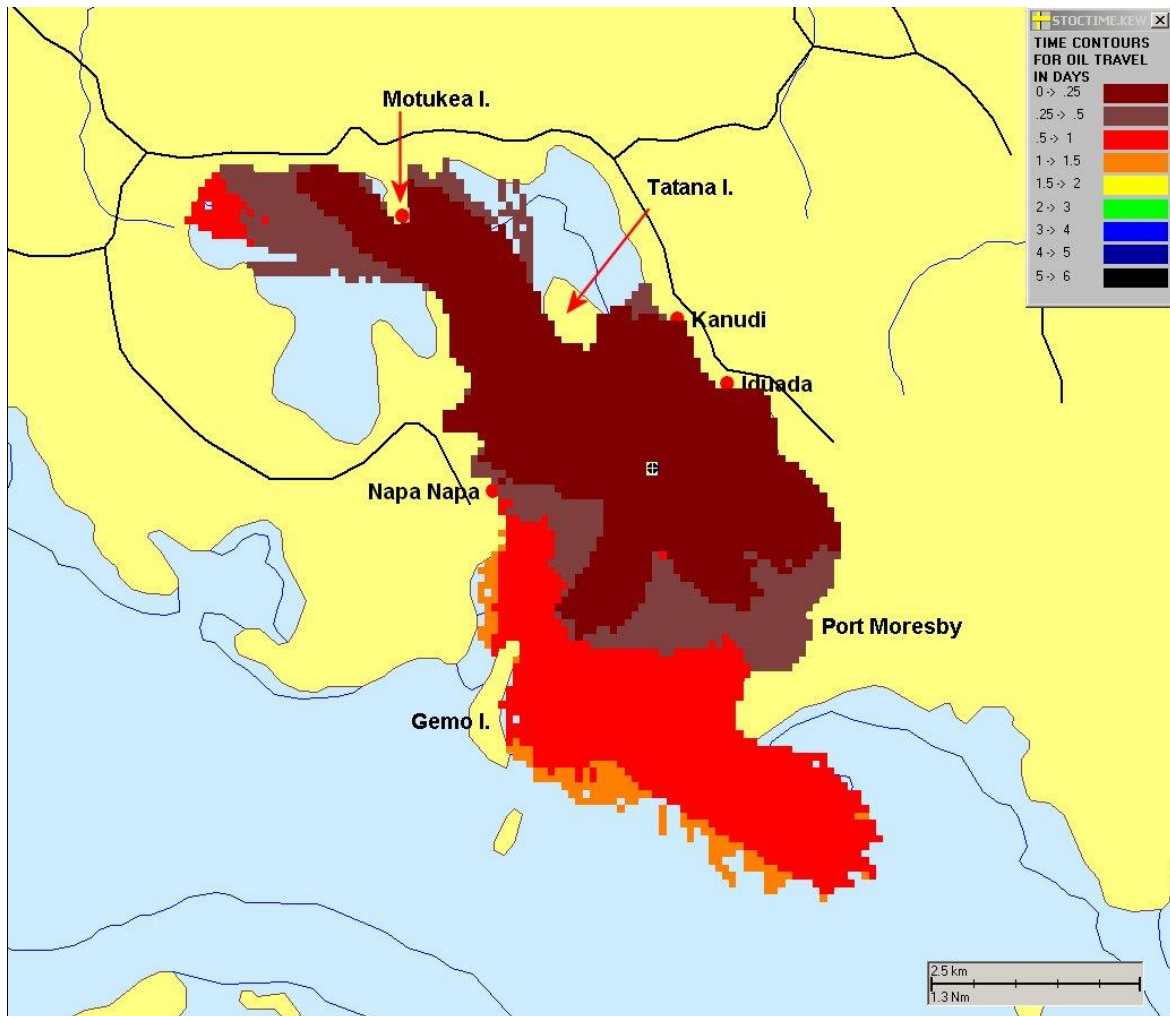
UMUDA - Predicted exposure map

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	66 of 119

Scenario – Refuelling accident at the Shell platform in Port Moresby

This scenario investigates the potential for contamination of surrounding resources from an accident during refueling of an OTML-operated vessel at the Shell platform at the Puma tank farm on the of Port Moresby Harbour. A spill volume of 80 m³ of diesel fuel oil was selected for this scenario and risks were separately quantified for the trade-wind and non-trade-wind seasons.

The diagram below shows the predicted minimum time before exposure from 80 m³ spills of Diesel Fuel Oil over 1 hour (tracked for five days) at the Puma within Port Moresby.



SHELL PLATFORM - Predicted exposure map

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 67 of 119

Marine Pollution Report (POLREP)

	VICPLAN	POLREP Page 1
	OIL SPILL RESPONSE INCIDENT CONTROL SYSTEM	

MARINE POLLUTION REPORTPOLREP

Date:	Time:
Notified By:	Location of spill:
Contact No	Co-ordinates (If known): Lat Long

Details of report/incident (Date & Time of Incident)			
Location		Type/Description Oil/Chemical	
Cause (if known)		Volume	
Area Covered (include % coverage)		Direction & Movement of Slick	
Spill Confirmed Y/N	Wildlife Effected		
Organisations notified: (DOT, CEPA, NMSA, FIRE, POLICE, Others:			
Other details of report/incident			
Initial response actions (including resources required or deployed):			
SAMPLES taken Y/N			
If yes by ?			
Weather and Sea State			
Weather			
Wind	direction	Speed	
Sea Condition			
Tides			

If vessel is identified, see reverse.

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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	68 of 119

Marine Pollution Report (POLREP)

	VICPLAN	POLREP
	OIL SPILL RESPONSE INCIDENT CONTROL SYSTEM	Page 2

MARINE POLLUTION REPORT POLREP

Vessel Details	
Name:	Fax
Type:	Type & Qty Cargo
Dwt:	Dangerous Goods
Phone:	Speed & Course
Radio	Flag
Masters Name	
Details of Vessel Owner	Name Address Phone Fax Email
Details of Charterer	Name Address Phone Fax Email
Details of Agent	Name Address Phone Fax Email
Details of P&I	Name Address Phone Fax Email
Salvage Requirements	
Details of Salvors	Name Address Phone Fax

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	69 of 119

Marine Pollution Report (POLREP)

	VICPLAN	POLREP
	OIL SPILL RESPONSE INCIDENT CONTROL SYSTEM	Page 2

	Email
Position of vessel Berth: or Lat Long	Has discharge ceased Y/N
Condition of vessel	Ability to transfer (cargo/ballast/fuel)

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	70 of 119

NMSA Situation Report

	VICPLAN	
	OIL SPILL RESPONSE INCIDENT CONTROL SYSTEM	

MARINE POLLUTION SITUATION REPORT SITREP

			SITREP. No.		
Priority ☐	Urgent	Immediate	Standard		
Final SITREP? ☐	Yes	No	Next SITREP on:		
Date/Time					
POLREP Reference					
Incident	Name				
	Latitude		Longitude		
Brief Description of Incident and Impact					
Overall Weather conditions					
Summary of Response Actions to Date					
Current Strategies					

CONTINUES ON PAGE 2

NMSA Situation Report

	VICPLAN	
	OIL SPILL RESPONSE INCIDENT CONTROL SYSTEM	

SITREP PAGE 2

Summary of Resources Available/Deployed		
Agencies involved		
Expected Developments		
Other information		
SITREP Prepared By	Name	
	Agency	
	Role	
	Contact	Telephone
		Fax
		Mobile
Attachments ?	No of Pages Attached:	

ORANGE ATTACHMENTS – DRY WEATHER DUTY CARDS

- No. 1 Mine Operations**
- No. 2 Finance & Insurance**
- No. 3 Summary of Risk Assessment for Marine & River Spills**
- No. 4 Types and volumes of oil likely to be spilled**
- No. 5 Probable fate of spilled oil**

Mine Operations

Conservation - Action	Completed
No action required for Level 1	N/A
Conservation - Preparedness actions for next level	Completed
▪ Monitor	N/A
Rationing - Action	Completed
▪ Send consultants and trainees off site (15 people approx.)	Y / N
▪ Conduct audit of operational consumable stores	Y / N
▪ Place restrictions on vehicle use	Y / N
Rationing - Preparedness actions for next level	Completed
▪ Review list of emergency communications systems to use	Y / N
▪ Identify list of essential personnel required for Level 3 – operations, maintenance, Starwest, Orica, Hastings	Y / N
▪ Prepare maintenance schedule for Level 3	Y / N
Output Restricted - Action	Completed
▪ Reduce mine production to reflect mill power restrictions. One sag mill and TPP shut down. Mill to restrict ore feed to 40kt day shift only	Y / N
▪ Keep running mine operations at 50% reduced ore production 24/7	Y / N
▪ Reduce other waste mining by 50% but limestone mining continues at normal rate 24/7	Y / N
▪ Park all unused mobile equipment at the New York Pit	Y / N
▪ Rotate the parked mobile equipment every week	Y / N
▪ Keep the fuel farm at full capacity in preparation for Level 4	Y / N
▪ Maintain pit pumping operations and roads.	Y / N
▪ If production reduced by 30% (one sag mill), send idled workers including primary contractors off-site (or redeploy to alternate productive tasks) <ul style="list-style-type: none"> 20%.(80 OTML, 30 Contractors – Orica, Hastings, Starwest) 	Y / N
▪ If production reduced by 50% (one sag mill), send idled workers including primary contractors off-site. <ul style="list-style-type: none"> 40%.(170 OTML, 50 Contractors – Orica, Hastings, Starwest) 	
▪ Reduce mine production in line with mill – if power restrictions are imposed	Y / N
Output Restricted - Preparedness actions for next level	Completed
▪ Prepare west wall action plan	Y / N
Mine operations suspended < 12 weeks - Action	Completed
▪ Shut total production, park all mobile equipment at New York	Y / N
▪ Commence west wall operations	Y / N
▪ Park 80% of light vehicles beside the mine offices	Y / N
▪ Maintain pit pumping operations and roads.	Y / N
▪ Conduct care and maintenance for all equipment and infrastructure	Y / N
▪ If total production shut, park all equipment	Y / N
▪ Mine will provide its own security with the fire watch people	Y / N

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Print Date: 16/05/25

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 74 of 119

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<ul style="list-style-type: none"> ▪ Select equipment operators/fitters to guard and maintain fire watch including pit pumping operations <ul style="list-style-type: none"> ▫ Minimum 45 people required to remain on-site 24/7 	Y / N
<ul style="list-style-type: none"> ▪ Maintain the limestone mining/push back operations at Edinburgh with minimum crew 	Y / N
<ul style="list-style-type: none"> ▪ Ensure equipment available, one shovel, five trucks, two dozers, one grader, service and fuel truck, light plants, four light vehicles 	Y / N
<ul style="list-style-type: none"> ▪ Keep the mess open <ul style="list-style-type: none"> ▫ Minimum 50 people to maintain and operate equipment 	Y / N
Mine operations suspended < 12 weeks - Preparedness actions for next level	Completed
<ul style="list-style-type: none"> ▪ Forward Level 5 security requirements to asset protection manager 	Y / N
Mine operations suspended short term > 12 weeks - Action	Completed
<ul style="list-style-type: none"> ▪ If total shutdown, care and maintenance to be maintained by selected employees until operations resume <ul style="list-style-type: none"> ▫ Minimum 45 people required to remain on-site 24/7 to effectively manage these functions 	Y / N
<ul style="list-style-type: none"> ▪ Maintain pit pumping operations and roads 	Y / N
<ul style="list-style-type: none"> ▪ Develop start-up plan 	Y / N
<ul style="list-style-type: none"> ▪ Notify Logistics of mine start-up fuel and consumables requirements and prioritise deliveries 	Y / N
<ul style="list-style-type: none"> ▪ Conduct care and maintenance for all equipment and infrastructure 	Y / N
Mine operations suspended short term > 12 weeks - Preparedness actions for next level	Completed
<ul style="list-style-type: none"> ▪ Develop mine start-up plan taking into consideration: <ul style="list-style-type: none"> ▫ Staff return to site by priority ▫ Pit inspection and condition e.g. roadways berms, etc ▫ Employee competencies after layoff e.g. expired authorisations, permits, etc ▫ Plant and equipment return to service e.g. priority, service and inspection requirements ▫ Potential short-term labour shortages due to personnel not being contactable, taking up other positions. Especially key staff geo-techs, surveyors 	Y / N
<ul style="list-style-type: none"> ▪ Maintain pit pumping operations and roads 	Y / N
<ul style="list-style-type: none"> ▪ Identify key employees to return to site first and advise travel 	Y / N
<ul style="list-style-type: none"> ▪ Notify major contractors (Starwest, Orica, Hastings, FCS) of start-up intentions and issue start-up plan 	Y / N

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 75 of 119

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Finance & Insurance

Conservation - Action	Completed
Cash and liquidity <ul style="list-style-type: none"> Prepare Cash Forecast scenario assuming no ships/sales for three months <ul style="list-style-type: none"> To be provided to Board as a scenario when providing the normal cash flow forecast schedule part of monthly Board papers Defer any dividend payments 	Y / N
Maintain essential Finance/Payroll services to OTML operations <ul style="list-style-type: none"> Maintain appropriate staff and skill levels: <ul style="list-style-type: none"> Normal staff (39x) 	Y / N
Conservation - Preparedness actions for next level	Completed
<ul style="list-style-type: none"> Identify non-essential personnel and projects 	Y / N
Rationing - Action	Completed
Maintain appropriate staff and skill levels <ul style="list-style-type: none"> Normal staff (39x) Send home consultants, PAD staff, casuals and contractors working on non-essential projects (i.e. PWC, Deloitte, Accounts Payable) Carry out preparation/logistics of an offsite accounting office in Port Moresby Assess the status of business improvement projects, ensure proper closure/mothballing and notify stakeholders 	Y / N
Cash and liquidity <ul style="list-style-type: none"> Prepare Cash Forecast scenario assuming no ships/sales for six months Apply for temporary overdraft facility with ANZ bank 	Y / N
Royalties <ul style="list-style-type: none"> Write to mine villages to let them know there will be reduced or no royalties and communicate to community relations 	Y / N
Rationing - Preparedness actions for next level	Completed
No action required	N/A
Output Restricted - Action	Completed
Maintain appropriate staff and skill levels <ul style="list-style-type: none"> Reduce staff levels – Finance staff to take available annual and long service leave Prioritise employees with family on-site, to move off-site, to help with food shortages in Tabubil Send letter to suppliers of the changes in cheque run. Start up the accounting operations in Port Moresby with three staff Establish and maintain ongoing communications with Finance staff not on-site 	Y / N
Cash and liquidity <ul style="list-style-type: none"> Get Board agreement on whether to fund cash shortfall via bank loan and/or shareholder loan Suspend all Capex projects Suspend FAF contributions Close down OTFRDP spend 	Y / N
Banks <ul style="list-style-type: none"> Liaise with banks to ensure they are adequately staffed and cashed-up to assist with managing panic transactions with TBG customers 	Y / N
Management reporting <ul style="list-style-type: none"> Agree with management on what level of cut-down monthly and weekly reporting is required 	Y / N
Marketing liaison <ul style="list-style-type: none"> Liaise with marketing to ensure that adequate Marketing staff levels are maintained to assist with cash collection in the event of delays as a result of declaring 'force majeure' 	Y / N

Records security <ul style="list-style-type: none"> Liaise with APD to ensure adequate security in place to protect archived financial records. Liaise with Information Services to ensure that the Disaster Recovery Plan has been recently tested for functionality 	Y / N
Compliance reporting <ul style="list-style-type: none"> Maintain sufficient staff to ensure statutory reporting obligations can be maintained <ul style="list-style-type: none"> Tax office monthly returns (GST, WHT, S&W tax, etc) Central bank quarterly reporting Annual accounts and tax returns 	Y / N
Output Restricted - Preparedness actions for next level	Completed
<ul style="list-style-type: none"> Prepare draft suppliers letters 	Y / N
Mine operations suspended < 12 weeks - Action	Completed
Maintain appropriate staff and skill levels <ul style="list-style-type: none"> Retain the following staffing: <ul style="list-style-type: none"> All Team Leaders Treasury 3 out of 3 A/P 5 out of 8 A/R 1 out of 3 FncI/Mgmt half Payroll 3 out of 3 Taxation 1x Super 1x HOS 1x Operate an accounting off-site office in Port Moresby with three staff 	Y / N
<ul style="list-style-type: none"> Establish and maintain ongoing communications with Finance staff not on-site 	Y / N
Cash and liquidity <ul style="list-style-type: none"> Write to all suppliers reminding them to mail their invoices to the AP Help Desk as their contacts at line departments will not be on-site in TBG to approve any invoices 	Y / N
Mine operations suspended < 12 weeks - Preparedness actions for next level	Completed
<ul style="list-style-type: none"> Monitor 	Y / N
Mine operations suspended short term > 12 weeks - Action	Completed
Maintain appropriate staff and skill levels <ul style="list-style-type: none"> Retain the following staffing: <ul style="list-style-type: none"> Same as Level 4, except: <ul style="list-style-type: none"> Half TLs take leave Treasury 1 out of 3 A/P 2 out of 8 A/R 0 out of 3 Financial/Management 1x Payroll 3 out of 3 No super or HOS but keep 1x Tax 	Y / N
<ul style="list-style-type: none"> Operate an accounting off-site office in Port Moresby with five staff 	Y / N
<ul style="list-style-type: none"> Establish and maintain ongoing communications with Finance staff not on-site 	Y / N
Cash and liquidity <ul style="list-style-type: none"> Borrow cash 	Y / N
<ul style="list-style-type: none"> Collect debtors/delay creditors <p>NB: This could be done at one of the earlier levels but given the fact that many of OTML's debtors/creditors will be in similar cash flow difficulties, it may be prudent to not put them under added stress in case it bankrupts them, which will make it difficult for OTML at Level 6 (return to work).</p>	Y / N
Mine operations suspended short term > 12 weeks - Preparedness actions for next level	Completed
Reactivate normal services <ul style="list-style-type: none"> Evaluate financial and accounting activities as to required staffing 	Y / N
<ul style="list-style-type: none"> Liaise with suppliers of overdue accounts 	Y / N

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	77 of 119

- | | |
|--|-------|
| ▪ Establish and maintain ongoing communications with Finance staff not on-site | Y / N |
|--|-------|

Document No & Title:	IMS-1.11-P01 – Major Incident Management Team Plan				
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Reviewed By:	M Thompson	Review Frequency:	12-MONTHS	Issue Date:	26/08/16
Approved By:	P Graham			Page No:	78 of 119

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 79 of 119

RED ATTACHMENTS - CONTACT DETAILS

1. **MIMT**
2. **IMT Team Leaders**
3. **Hospital & Ambulance**
4. **Customs, Quarantine & High Commission**
5. **OTML Charter and Third Party Evacuation Options**
6. **Key Stakeholders**
7. **Media and Other Contacts**

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Reviewed By: M Thompson

Review Frequency:

12-MONTHS

Issue Date:

26/08/16

Approved By: P Graham

Page No:

80 of 119

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No 1 - MIMT CONTACTS		
Role	Nominations	Contact Number
MIMT Leader	Peter Graham	7190 1900
	Musje Werror	7190 1920
	Cameron Clark	7190 1903
	Mark Thompson	7190 1926
MIMT Coordinator	Musje Werror	7190 1920
	Cameron Clark	7190 1903
	Mark Thompson	7190 1926
Administrator/Board Writers	Tracey Hart	7190 0810
	Beverley Pasen	7190 1841
	Peter Lewis	70813528
	Anna Ila	7198 5001
	Robertson Anis	7190 1844
IMT Response Rooms	#1 Whitehouse Board Room	649 3809 Sat # 881 621 413 766
	#2 Contracts Confer Room	6493297 Sat # 881 621 413 766
Technical Expertise		
Mining Operations	Jorge Moraga	7031 9989
	Reuben Lapin	7087 3293
	Fergus Hart	7103 8002
	Christian Darby	7030 8405
Processing Operations	Greg Moore	7031 1407
	Geoff Atkinson	7030 8410
	Uppala Pattinige	7030 0901
Commercial	Karo Yama	7190 1837
	Beverley Pasen	7190 1841
Business Support – Engineering/Roads/Towns	Brendan Gowdie	7087 3070
	Andrew Musio	7190 1981
	Akolo Kotange	7030 8413
Occupational Health & Safety	Peter Lewis	70813528
	Anna Ila	7198 5001
	Brian Herlihy	7031 1404
Power and High Voltage	Billy Dei	7190 1958
	Paul McCoy	7248 1525
Exploration	Peter Olubas	71901985
	Oala Rarua	71069035
OTDF	Ian Middleton	7228 4105
EER - HR	Harold Duigu	7190 1839
	James Gissua	7190 1927
EER - Communications	Estella Cheung	7103 8009
	Leslie Omaro	649 3032
EER - CR	Kuam Sanewai	7030 0907
	Yon Buhuyana	7190 1986
EER - Environment	Jesse Pile	7190 1846
	Dexter Wagambie	7205 0852
Asset Protection	Peter Senat	7190 1907
	David Emoni	7103 8006
Legal Advice – Allens Linklater	Vincent Bull	7199 7100
	Alan Mana	7101 7707
	Port Moresby Office	305 6000

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 81 of 119

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No 2 - IMT Leader and Room Contact Details

Role	Nominations	Contact Number
Mining IMT		
IMT Leader	Jorge Moraga	7031 9989
	Reuben Lapin	7087 3293
	Fergus Hart	7103 8002
	Christian Darby	7030 8405
IMT Response Rooms	#1 Mine Conference Room	6493666 Sat # 881 631 430 833
	#2 Underground Office	6493666 Sat # 881 631 430 833
Mine/Mill ERT	Security Base 3	649 3555 71901822 Radio channel 1
Processing IMT		
IMT Leader	Greg Moore	7031 1407
	Geoff Atkinson	7030 8410
	Ivan Crnkovic	7030 8416
IMT Response Rooms	#1 PBU / Mill Conference Room	Tel number Sat # 881 63 1426 165
	#2 Flotation Meeting Room	No Phone Sat # 881 631 426 165
Mine/Mill ERT	Security Base 3	649 3555 71901943 Radio channel 1
Tabubil IMT		
IMT Leader	Andrew Musio	7190 1981
	Brendan Gowdie	7087 3070
	Karo Yama	7190 1837
IMT Response Rooms	#1 ISS Workshop Conference Room	649 5041r Sat +881 622 419 752
	#2 Old Engineering Ops Conference Room	Not in use Sat +881 622 419 752
ERT	Security Base 1	649 3333 7190 1975 Radio channel 3
Bige IMT		
IMT Leader	David Laulau	649 3653 7190 1925
	Steve Hoap	649 5026 7190 9115
	Rodney Ipape	649 5058 7081 5636
IMT Response Rooms	#1 Bige Administration Conference Room	649 5044 Sat # 881 631 430 921

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 82 of 119

No 2 - IMT Leader and Room Contact Details		
Role	Nominations	Contact Number
	#2 Dredeco Conference Room	No Phone Sat # 881 631 430 921
ERT	Security Base 6	649 3999 Mobile 70852959 Radio channel 4
Kiunga IMT		
IMT Leader	Hillary Turnamur	649 3412 7030 0152
	Joshua Lemeki	649 3785 7104 8005
	Mekio Warupo	649 3701 7267 3336
IMT Response Rooms	#1 BH1 Training Room	6493751 Sat # 881 621 424 152
	#2 Fire Rescue Training Room	6493737 Sat # 881 621 424 152
ERT	Security Base 2	649 3777 71901943 Radio channel 12
OTDF	Ian Middleton	7228 4105
Pom IMT		
IMT Leader	John Kalu	71901998
	Jennifer Maroroa	71069052
IMT Response Rooms	Pom office conference room	3091301
Bne IMT		
IMT Leader	Derrick Kelly	+61 420 387 232 +617 3363 9919
	Gary Martin	+61 419 128 318
IMT Response Rooms	OTML Nudgee Road office	+61 7 3363 9922

No 3 - Hospitals & Ambulance		
Hospital	Contact #	Fax #
Tabubil Hospital	649 3222 649 3275 7330 3433	
Port Moresby General Hospital	324 8239 324 8240 324 8200	
Pacific International Hospital (PIH) Port Moresby	323 4400 – Reception 7111 4400 - Mob 7111 4011 – Mob 323 4000 – A&E 7111 4000 – A&E	323 4600
Cairns Private Hospital	+61 7 4052 5200	+61 7 4051 6009
Cairns Base Hospital	+61 7 4226 0000 +61 7 4050 6333	+61 7 4031 1168
Townsville Base Hospital	+61 7 4433 1111	+61 7 4433 1021
Townsville Mater Misericordiae Private Hospital	+61 7 4727 4444	+61 7 4725 1035
Townsville Wesley Park Haven Private Hospital	+61 7 4722 8822	+61 7 4721 3365
Ambulance		
Tabubil (Security Base1)	649 3333 or 7190 1975	
Port Moresby	323 4000	
Cairns	+617 4051 1511	
Townsville	+61 13 74 68	

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Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 84 of 119

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No 4 - Customs, Quarantine & High Commission

Location	Name	Contact #	Office #
Tabubil Customs Officer	Mr Boi Tongia	7195 928	649 5045
Kiunga Customs Officer	Mrs Lina Wangar	7326 8014	649 7342
Port Moresby Director Border Management	Mr Miana Tau Mabone	7332 3296	322 6889
Port Moresby Border Response Officer (Intelligence Officer)	Mr Emil Asimi	7295 1047	321 2176

Australian High Commission

Location	Contact #
Pom	+675 7212 0284

Australia (Customs)

Location	Contact #
Cairns	+61 7 4052 3552
Townsville	+61 7 4722 3700

Australia (Quarantine)

Location	Contact #
Cairns	+61 7 4030 7886
Townsville	+61 4075 71347

No 5 - OTML Charter & Third Party Evacuation Options

Name	Contact #
Fubilan Air Transport	Mark Willcocks Chief Pilot Tabubil Hanger +675 649 9477 or 649 9211 Mobile +675 7270 7707
Medivac Pacific Services - PNG	24 Hour Emergency # +675 323 4357 +675 323 5626 Mobiles - +675 683 1818 +675 683 5227 Email – medevacpom@medevac.com.pg
Medivac Pacific Services - Australia	Medevac Int. Services (Aust) +61 438 555 433 Fax +61 7 3420 5433 Email – admin@medevac.com.au
Medic Air/Tropic Air	Mobile +675 7687 5047 Fax +675 3112 701 Email – ops@tropicair.com.pg
International SOS (Medical and Security Evacuation)	Australia 24 Hour Alarm Centre +61 2 9372 2468 Fax +61 2 9372 2455 Email sydopsmed@internationalsos.com PNG Alarm Centre +675 000861132
Customer Care Medical Evacuation Services	Office +61 2 8907 5667 Fax +61 2 9202 8220 Email help@cusomtercare.com.au
Royal Flying Doctor Service Australia	Australian 24 Hour Alarm Centre +61 7 4040 0500 - Cairns

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 86 of 119

No 6 KEY STAKEHOLDER CONTACTS

Stakeholder Name	Key Contact	Contact Details
Mineral Resources Authority	Philip Samar, MRA Managing Director	Phone: 321 3511 Fax: 320 0189 Email: psamar@mra.gov.pg
Australian High Commission in PNG	Elizabeth Miae, Public Diplomacy Coordinator, Australian High Commission	Phone: 7212 0284 Email: elizabeth.miae@dfat.gov.au
Royal PNG Constabulary (Police)	Dominic Kakas, Acting Executive Officer to Commissioner of Police	Phone: 322 6111 (Executive Officer) Phone: 322 6241 (Media Unit) Mobile: 7135 0979 / 7026 0831 / 7100 9589 - office
Ok Tedi Development Foundation	Ian Middleton, Chief Executive Officer	Phone: 649 5446 Mobile 7228 4105 Email: Ian.Middleton@otdfpng.org
PNG Chamber of Mines and Petroleum	Greg Anderson, Executive Director	Phone: 321 2988 Mob: 7685 3011
PM's Office (Media Unit)	Matrom John and Terry Mark	mjohn@pmnec.gov.pg and tmark@pm.gov.pg
Western Province Police	Provincial Police Commander (PPC) Western- Superintendent Joe Puri	Phone: 7201 0026 or 649 1029
Kiunga Police	Police Station Commander Kiunga, Inspector Willie Toroipo	Phone: 7110 7379 or 649 1029
Tabubil Police	Inspector Tom Tomutogweda	Phone: 7100 0697 or 7376 0621 or 649 9022
Correctional Services Western	Correctional Services Commander, Ningerum – Inspector Peter Warea	Phone: 71621 2559
PNGDF Western	PNGDF, Kiunga FOB – Captain Charles Waera	Phone: 7236 7077 or 649 1096
Mineral Resources Development Corporation (MRDC)	Augustine Mano, Managing Director MRDC	(Yet to confirm)

Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 87 of 119

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No 3 KEY STAKEHOLDER CONTACT - cont.

Mine Villages

No	Village	Name	Position	Contact
1	Atemkit	Jerry Musulok	Chairman	7216 5767
2		Caspar Sokim	V/Chairman	7356 5289
3	Bultem	John Wanim	MFROA Chairman	7942 7911
4		David Kaiangim	CA Chairman	70510802
5	Kavorabip	Joel Dangkim	SML Chairman	7934 1616
6		Mark Tunoim	VC Chairman	7318 1484
7	Migalsim	Amos Kiki	V/Chairman FCS	7266 4546
8		Simion Livin	VPC Chairman	7065 4853
9	Finalbin	Biul Kirokim	Village Elder	7315 3803
10		Tony Itulam	VPC Chairman	7162 9634
11	Wangbin	Thomas Uneng	Village Elder	
12		Joshua David	VPC Chairman	7076 2522

Star Mountain LLG

No	Village	Name	Position	Contact
1	Wangbin	Borok Pitalok	President	7020 0740
2	Ankit	Silo Kondomo	V/ President	

MRA WP REP

No	Organisation	Name	Position	Contact
1	MRA	Albert Lokalyo	Ok Tedi Project Coordinator	7106 8979
2	SMLLG	George Papin	LLG Manager	7943 3959

No 4 - MEDIA AND OTHER CONTACTS

Organisation	Contact Person	Contact Details
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Australian Broadcasting Corporation (ABC)	Eric Tlozek PNG Correspondent	Tlozek.Eric@abc.net.au Ph 321 2503 Mob 7200 2539
Bank South Pacific	Stephanie Waide Manager Public Relations & Communications	swaide@bsp.com.pg Phone: (675) 305 7618 Fax: 305 7832
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Business Melanesia Magazine	Stanley Simpson Managing Editor	ssimpson@businessmelanesia.com
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Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 89 of 119

No 4 - MEDIA AND OTHER CONTACTS

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FM100	Dulcie Amoniu Senior Reporter	damoniu@fm100.com.pg damoniu@gmail.com Ph: 325 0440 Mobile: (+675) 7645 5112
International Copper Study Group	Ana Rebelo Director of Market Research and Statistics International Copper Study Group Lisbon-Portugal	rebelo@icsg.org Ph: + 351 213 513 876
Investment Promotion Authority (IPA)	Geua Frank Assistant Public Relations Officer	gfrank@ipa.gov.pg Phone: 321 7311/308 4471 Fax: 3203327
Kundu 2 News	Kundu 2 News	Kundu2news@nbc.com.pg
Mineral Resources Authority	Kenneth Avira Public Relations & Media Unit	kavira@mra.gov.pg Phone: 321 3511 Fax: 320 0579 Email: kavira@mra.gov.pg Website: www.mra.gov.pg
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Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 90 of 119

No 4 - MEDIA AND OTHER CONTACTS

Organisation	Contact Person	Contact Details
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PNG Chamber of Mines and Petroleum	Mackhenly Kaiok Manager Public Relations and Communications	mkaiok@pngchamberminpet.com.pg mackhenly.kaiok@gmail.com Ph: 321 2988 Mob: 7632 8875 Fax: 321 7107
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Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 91 of 119

No 4 - MEDIA AND OTHER CONTACTS

Organisation	Contact Person	Contact Details
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Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date: 16/05/25

Version No: Final

Reviewed By: M Thompson

Review Frequency: 12-MONTHS

Issue Date: 26/08/16

Approved By: P Graham

Page No: 92 of 119

No 4 - MEDIA AND OTHER CONTACTS

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Document No & Title: IMS-1.11-P01 – Major Incident Management Team Plan

Prepared By: L Puddy

Print Date:

16/05/25

Version No:

Final

Reviewed By: M Thompson

Review Frequency:

12-MONTHS

Issue Date:

26/08/16

Approved By: P Graham

Page No:

93 of 119

UNCONTROLLED COPY. Printed document may not be current issue.

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