



Timor
Resources

**Operating Management System
Environmental Management Plan - Drilling Activity
PSC TL-OT-17-09
Appendix J - Air Quality Plan
Doc No: TR-HSE-PLN-014**

**Revision: Rev1
Issue date: 04/06/21
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**ENVIRONMENTAL MANAGEMENT PLAN (EMP)
DRILLING ACTIVITY
PSC TL-OT-17-09**

APPENDIX J - AIR QUALITY PLAN

TR-HSE-PLN-014



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REVISION HISTORY

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MANAGEMENT APPROVAL

POSITION TITLE	NAME	SIGNATURE	DATE
Chief Executive Officer	Suellen Osborne		04/06/21
GM Exploration	Jan Hulse		04/06/21

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AUTHORITY/COMPANY'S NAME	DATE	REVISION
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ACRONYMS

EIS	Environmental Impact Statement
EMP	Environmental Management Plan
HSE	Health Safety Environment
IFC	International Finance Corporation
TR	Timor Resources
WHO	World Health Organisation



1 INTRODUCTION

1.1 CONTEXT

The project is the construction of a wellsite and access roads for the Timor Resources Rusa #1 exploration well in PSC TL-OT-17-09 on the South Coast of Timor Leste located at Suco Foho Ai-LiCo, Ainaro, Ainaro District.

1.2 PURPOSE

This project was determined to require a Category A Licence under Decree Law No. 5/2011.

The TR Air Quality Plan fulfils a requirement under the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). The EIA identified potential impacts from the project and various plans have been developed to supplement the EIA and EMP. The Plan presented here details monitoring activities and actions aimed to measure and mitigate potential air quality impacts from operational activities, as well as assigning responsibilities to ensure the Plan is implemented.

This document is an appendix to the EMP – Appendix J.

1.3 SCOPE

This document will address air quality monitoring for the PSC: TL-OT-17-09 drilling programme.

1.4 LEGAL REQUIREMENTS

Timor Leste does not have relevant national laws for air quality management, therefore the International Finance Corporation (IFC) Environmental Health and Safety General Guidelines (2007) - Air Emission and Ambient Air Quality are used to assist in the development of this plan.

Air emissions are not to result in pollutant concentration that reach or exceed ambient quality guidelines and standards, such as those determined by the World Health Organisation (WHO) refer to Table 1-1 .



Table 1-1: WHO Ambient Air Quality Guidelines 2005

	AVERAGING PERIOD	GUIDELINE VALUE µg/m³
Sulphur dioxide (SO₂)	24-hour mean 10-minute mean	20 (guideline) 500 (guideline)
Nitrogen dioxide (NO₂)	Annual mean 1-hour mean	40 (guideline) 200 (guideline)
Particulate Matter PM₁₀	Annual mean 24-hour mean	20 (guideline) 50 (guideline)
Particulate Matter PM_{2.5}	Annual mean 24-hour	10 (guideline) 25 (guideline)
Ozone	8-hour mean	100 (guideline)

2 POTENTIAL IMPACTS

Construction and decommissioning activities may generate dust caused by a combination of on-site excavation and movement of earth materials, contact of construction machinery with bare soil, and exposure of bare soil and soil piles to wind. Vehicle movements along gravel access roads, where present, may raise dust during the operations phase. These activities are likely to generate air quality impacts related to dust and can be monitored as Particulate Matter (PM), see Section 5.

Engine emissions arise from construction equipment, transport trucks, personal vehicles, power saws, and generators.

There will be limited source of dust during operations arising from vehicle traffic on gravel access roads. The main air quality emission source during operations is the burning of diesel in the rig generators and service vehicles.

Emissions generated by activities during the decommissioning phase include vehicular engine combustion emissions; diesel emissions from equipment and generators; and dust from source such as land clearing, structure demolition, cement removal, backfilling, dumping, and tuck movements. Similarly, reclamation of disturbed areas through grading, seeding, and planting may also emit limited dust levels.



The following table (Table 2-1) is taken from the EIA and presents the sensitive receptors in the Rusa-1 area:

Table 2-1: Sensitive Receptors in the Rusa-1 Area

Sample Site	Location	Sensitive Receptor	Distance (km)	Centroid Coordinates	
				Latitude	Longitude
01 - b	Aldeia Fatukabelak	Resident Settlement	0.93	09° 07' 05" S	125° 41' 33.8 "E
02 - a	Aldeia Sessurai	School area	1.06	09° 06'31.1" S	125° 41'44.8" E
03 - c	Aldeia Raimerlau	Resident Settlement	0.47	09° 06 '52.5" S	125° 41" 00" E

3 MANAGEMENT OF IMPACT

Air quality impacts will be mitigated throughout the project phases by implementing the following mitigation strategies:

Construction

- Sprinkling water on soil before excavation and periodically when operations are under way to prevent raising of dust.
- Use of low sulphur fossil fuel.
- Controlling the speed and operation of construction vehicles; drivers should adhere to the speed limit of 20 km/hr on access roads and 40 km/hr on blacktop roads.
- Regular maintenance and services of machines and engines.
- In order to control exhaust, educate and raise awareness of construction workers on emission reduction and on emissions that are likely to occur during the construction of the well pad and access road leading to the site, the following measures shall be implemented during construction:
 - Vehicle idling time shall be minimised
 - Equipment shall be properly tuned and maintained.
- To minimise air pollution due to dust emission or transport of waste materials during construction, the waste materials must be transported in covered vehicles especially if the route is through frequently used roads.
- Workers in dusty areas on the site need to be issued with PPE such as, dust masks and safety goggles during dry and windy conditions.
- Sensitise truck drivers to avoid unnecessary racing of machinery engines at loading, offloading sites, and parking areas and encourage them to keep the vehicle engines off at these points.



Operations

- Sprinkling water on access roads to reduce dust.
- Use of low sulphur fossil fuel.
- Speed limit on access road 20 km/hr, 40 km/hr blacktop.
- Regular maintenance and services of machines and engines.
- In order to control exhaust, educate and raise awareness of drivers on emission reduction and on emissions that are likely to occur during the operations, the following measures shall be implemented during construction:
 - Vehicle idling time shall be minimised
 - Equipment shall be properly tuned and maintained
- Sensitise truck drivers to avoid unnecessary racing of machinery engines at loading, offloading sites, and parking areas and encourage them to keep the vehicle engines off at these points.

Decommissioning

- Covering of all haulage vehicles carrying debris for dumping at approved sites.
- Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions.
- Workers in dusty areas on the site should be issued with dust masks and safety goggles.
- Using well maintained equipment and machines with efficient engines meaning low emissions.
- Using dust screens.



4 MONITORING

Air quality monitoring will be conducted as shown in Table 4-1 .

Table 4-1 - Air Quality Monitoring Regime

Monitoring	Monitoring/ Performance Indicator	Responsible Person / Function	Timing and Frequency	Performance Standard
Air Quality Construction	Dust management	Civils contractor for construction	Daily	TR Air Quality Management Plan
	Particulates Monitoring	Civils Contractor for construction	Monthly	World Health Organisation (2005). WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulphur dioxide. Global update 2005 - Summary of Risk Assessment.
	Fuel Consumption	Transport Contractor for service vehicles	Daily	World Health Organisation (2018). WHO Fact Sheet Ambient (outdoor) air pollution. 2 May 2018.
	Engine and generator service records	Transport Contractor	Monthly	International Best Practice: - Environmental Health and Safety (EHS) Guidelines for Onshore Oil and Gas Development (IFC 2007a) - EHS General Guidelines (IFC 2007b) - IFC Performance Standard 1 (PS 1) - Assessment and Management of Environmental and Social Risks (IFC 2012).
Air Quality Operations	Dust management	Drilling contractor	Daily	TR Air Quality Management Plan
	Generator fuel consumption	Drilling	Daily	World Health Organisation (2005). WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulphur dioxide. Global update 2005 - Summary of Risk Assessment.
	Particulates Monitoring	Contractor for rig emissions/ Transport contractor for service vehicles	Monthly	World Health Organisation (2018). WHO Fact Sheet Ambient (outdoor) air pollution
	Fuel Consumption	Transport Contractor	Daily	International Best Practice: - Environmental Health and Safety (EHS) Guidelines for Onshore Oil and Gas Development (IFC 2007a) - EHS General Guidelines (IFC 2007b) - IFC Performance Standard 1 (PS 1) - Assessment and Management of Environmental and Social Risks (IFC 2012).
	Engine and generator service records	Drilling contractor	Monthly	



Monitoring	Monitoring/ Performance Indicator	Responsible Person / Function	Timing and Frequency	Performance Standard
Air Quality Decommissioning	Dust management Particulates Monitoring Engine and generator service records	Civils contractor Civils contractor Transport contractor for service vehicles	Daily Monthly Monthly	TR Air Quality Management Plan World Health Organisation (2005). WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulphur dioxide. Global update 2005 - Summary of Risk Assessment. World Health Organisation (2018). WHO Fact Sheet Ambient (outdoor) air pollution International Best Practice: - Environmental Health and Safety (EHS) Guidelines for Onshore Oil and Gas Development (IFC 2007a) - EHS General Guidelines (IFC 2007b) - IFC Performance Standard 1 (PS 1) - Assessment and Management of Environmental and Social Risks (IFC 2012).



5 RESPONSIBILITIES

5.1 TIMOR RESOURCES

Timor Resources is to guarantee the availability of the economic, human and technical resources needed to manage the mitigation measures as described in this document. It is Timor Resources' responsibility to:

- Operations Manager to ensure that the requirements of this Air Quality Management Plan are satisfied.
- Operations Manager to ensure that all contractors and sub-contractors are aware of their responsibilities to undertake their activities in accordance with this Plan.
- Operations Manager to supervise contractors monitoring in accordance with the Inspection and Monitoring Plan (see TR-HSE-PLN-011)
- Operations Manager shall cease operations if there is any non-compliance regarding air quality monitoring (see Table 4-1) against WHO standards (see Table 1-1).

5.2 CONTRACTORS

- Understand their responsibilities as per this Plan, and ensure they have the capacity to carry out those responsibilities and that all personnel under their care are made aware of responsibilities and requirements.
- Contractors to conduct monthly Air Quality monitoring as per Table 4-1 under the supervision of the TR Operations Manager.
- Recommend changes to this Plan if appropriate and in discussion with TR personnel.
- Ensure appropriate records are kept and maintained on-site.
- Verifying any specific training/awareness sessions to employees involved in operations that may impact on the noise environment.