



Eni Australia

BLACKTIP PROJECT

FLARING MANAGEMENT PLAN

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Flaring Management Plan

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TABLE OF CONTENTS

ACRONYMS	5
REFERENCE DOCUMENTS	6
1. INTRODUCTION.....	7
1.1 PURPOSE	7
1.2 PROJECT DESCRIPTION.....	7
1.3 DESCRIPTION OF PLANT	7
2. SYSTEM DESCRIPTION.....	12
2.1 OVERVIEW	12
2.2 OPERATIONAL REGIME	13
2.2.1 Overview	13
2.2.2 Normal operational flaring.....	13
2.2.3 Pressure relief for individual items of equipment.....	13
2.2.4 Emergency depressurisation	14
2.2.5 Manual blowdown	14
2.3 PREDICTED NOISE EMISSIONS.....	14
2.4 SENSITIVE RECEPTORS.....	14
3. NOISE MONITORING PROGRAM.....	16
4. COMMUNITY CONSULTATION	16

TABLES

FIGURES

Figure 1.1: Development location	9
Figure 1.2: Blacktip onshore infrastructure	10
Figure 1.3: Blacktip Onshore Gas Plan Layout.....	11
Figure 2.1: Flare location	12
Figure 2.2: Schematic of flare configuration	13
Figure 2.3: Predicted noise levels on the OGP during emergency flaring	15

ACRONYMS

dBa	Decibels (Acoustic)
EIS	Environmental Impact Assessment
EPA	Environmental Protection Agency
HP	High Pressure
Km	Kilometres
LP	Low Pressure
M	Metres
OGP	Onshore Gas Plant
NT	Northern Territory
PW	Produced Water
WA	Western Australia
WEL	Woodside Energy Ltd

REFERENCE DOCUMENTS

- [1] Woodside, 2004a. Blacktip Project Draft Environmental Impact Statement. Volume 1 Main Report. October 2004.
- [2] Woodside 2004b. Blacktip Project Draft Environmental Impact Statement. Volume 2 Technical Appendices. October 2004.
- [3] Woodside 2005. Blacktip Project. Supplement to the Environmental Impact Statement. March 2005.
- [4] Office of Environment and Heritage, Northern Territory Government, 2005. Blacktip Gas Project Environmental Assessment Report And Recommendations Assessment Report No 50. October 2005.
- [5] Eni, 2008. Blacktip Project – H.P. & L.P. Flare System Operating Procedure. Eni Document No.: 000036_DV_EX.OPS.0527.000_A01.
- [6] ERM 2008. Eni Blacktip Onshore Gas Plant Noise Study. September 2008. Reference 0080267. Eni Document Number 00710100DFRV01507_A01

1. INTRODUCTION

1.1 PURPOSE

This Flaring Management Plan has been prepared by Eni Australia BV (Eni) for the Blacktip Project. Its main purpose is to describe the flaring system and the method of operation. It also provides an assessment of the likely noise levels and presents the proposed monitoring program and contingency plan should monitoring show that noise levels are greater than expected.

The preparation of this management plan fulfils commitments made in the Environmental Impact Statement (EIS) (Refs [1], [2] and [3]) and also recommendations made by the Environmental Protection Agency (EPA) Program (formerly the Office of Environment and Heritage) in its Assessment Report to the Minister for the approval of the project (Ref [4]).

1.2 PROJECT DESCRIPTION

The Blacktip gas field is located in permit WA-279-P in the Joseph Bonaparte Gulf, approximately 110km offshore from Wadeye, Northern Territory (NT) (Figure 1.1), in about 52m of water. The field will be developed with a small unmanned offshore wellhead platform, a subsea pipeline bringing whole well stream fluid, (i.e. gas, condensate and produced water) to Yelcherr Beach and an onshore gas plant (OGP) near Wadeye (Figure 1.2). The processed gas will be exported via an onshore export pipeline, by others, to the customer and the condensate will be exported via a subsea pipeline to a single point mooring for shipping via tanker vessel. PW will be treated and discharged through a long sea outfall.

Prior to Eni becoming the sole owner of the Blacktip development in November 2005, Eni was a participant with Woodside Energy Ltd (WEL). WEL was the nominated operator and progressed the design through the Front End Engineering Design (FEED) stage. Eni is now progressing the project through detailed design and construction.

The Blacktip development transects two principal jurisdictions, namely the offshore Commonwealth waters administered by Western Australia (WA) and NT, and onshore NT. The majority of the approvals and ongoing monitoring lie within NT jurisdiction. An EIS was prepared to fulfil the requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the NT *Environmental Assessment Act 1984*. The EIS provides a full assessment of all potential environmental issues related to the development and presents procedures that will be put in place to ensure that environmental impacts are minimised to acceptable levels. . The Assessment Report No. 50 from the EPA Program was finalised in October 2005. Approval to develop the Blacktip Gas Field was received from the Commonwealth Government on 29th November, 2005

1.3 DESCRIPTION OF PLANT

The overall site occupies an area of 750m x 750m. The main OGP located to the south of the site (occupying an area of approximately 250m x 380m) and the accommodation and other specific work areas to the north (Figure 1.3).

The layout of the OGP comprises the following areas:

- compression;
- power generation and switchgear;
- utilities;
- water treatment;
- separation;
- condensate handling;
- flare and knock-out drum area; and
- gas treatment

The accommodation and other specific work areas include the:

- switch Room;
- workshop;
- control room;
- recreation room;
- kitchen/diner; and
- 24 accommodation units.

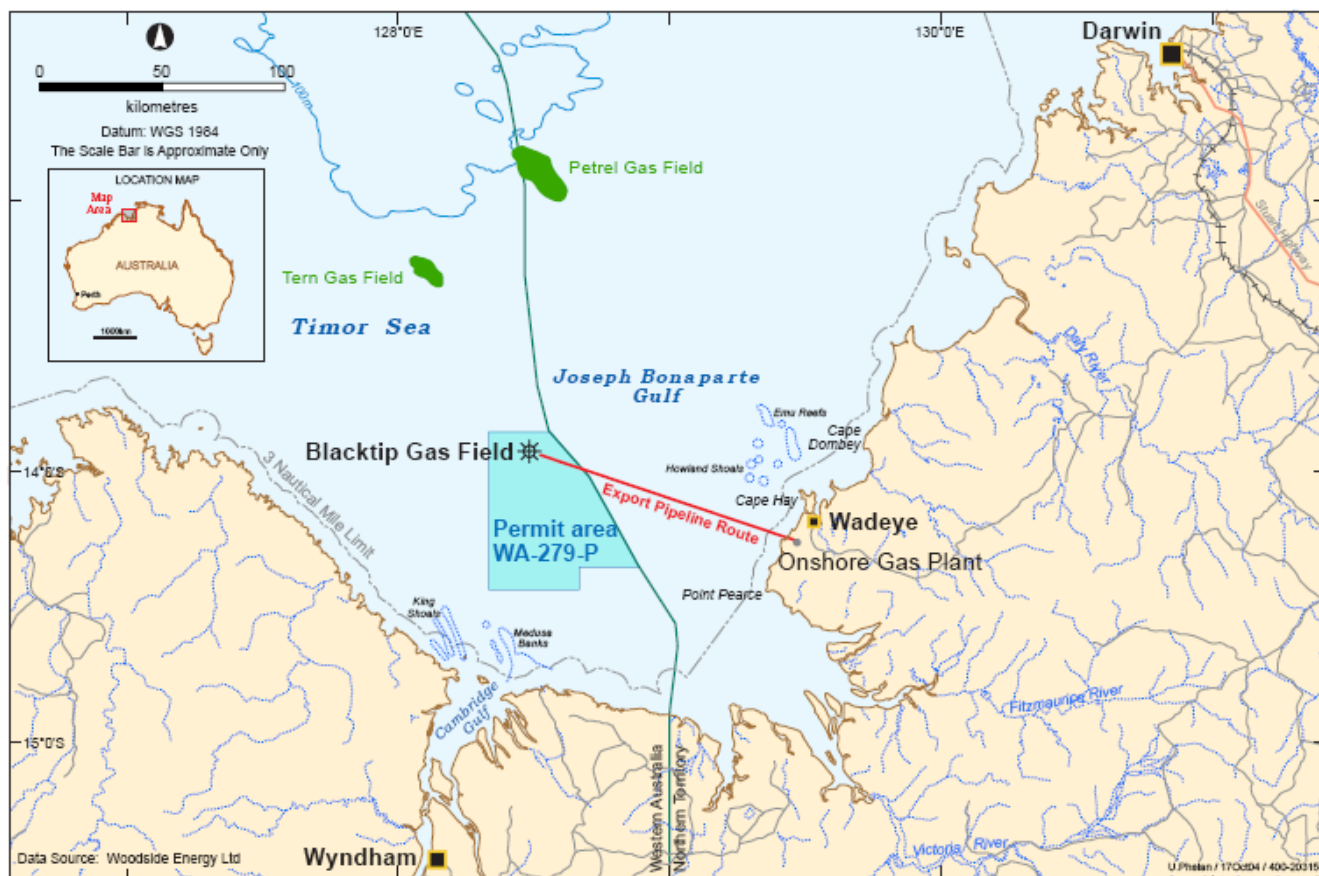


Figure 1.1: Development location

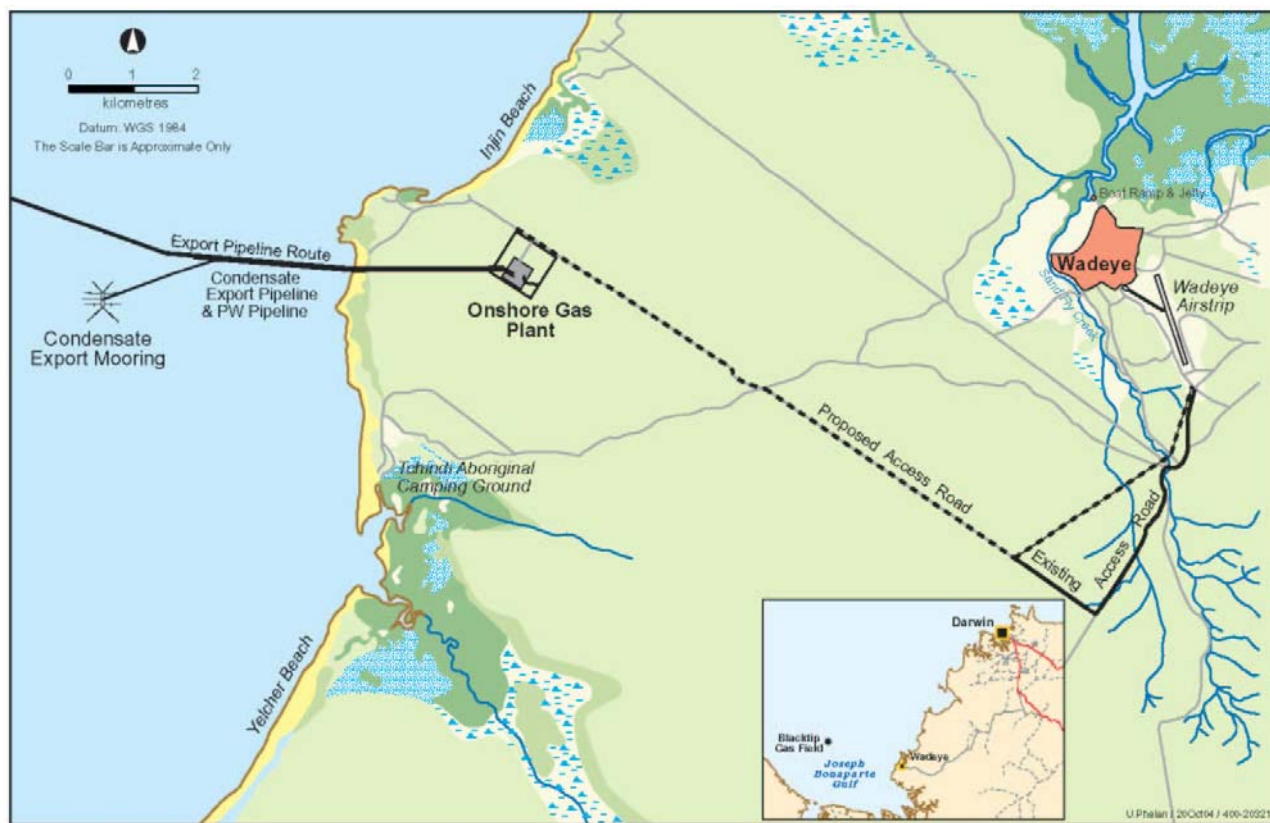


Figure 1.2: Blacktip onshore infrastructure

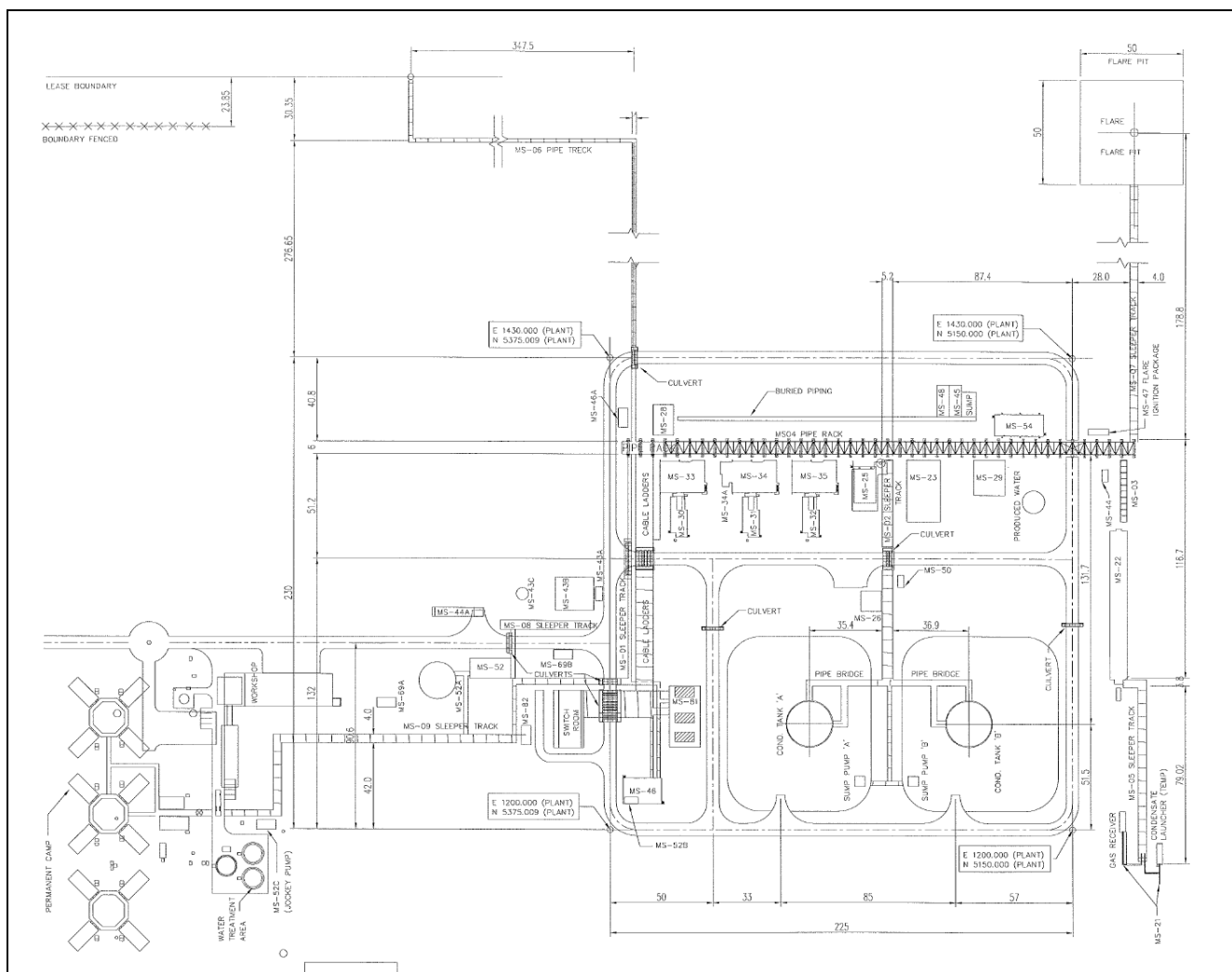


Figure 1.3: Blacktip Onshore Gas Plan Layout

2. SYSTEM DESCRIPTION

2.1 OVERVIEW

The OGP operates two flare systems; an HP Flare and an LP flare. These systems are an integral part of the gas plant, providing a safe means of rapidly disposing of pressurised gas in the event of an emergency. To reduce visual and acoustic impacts, a ground flare system has been selected, with the flare tips located in a 'pit' at the south east corner of the plant (Figure 2.1 and Figure 2.2).

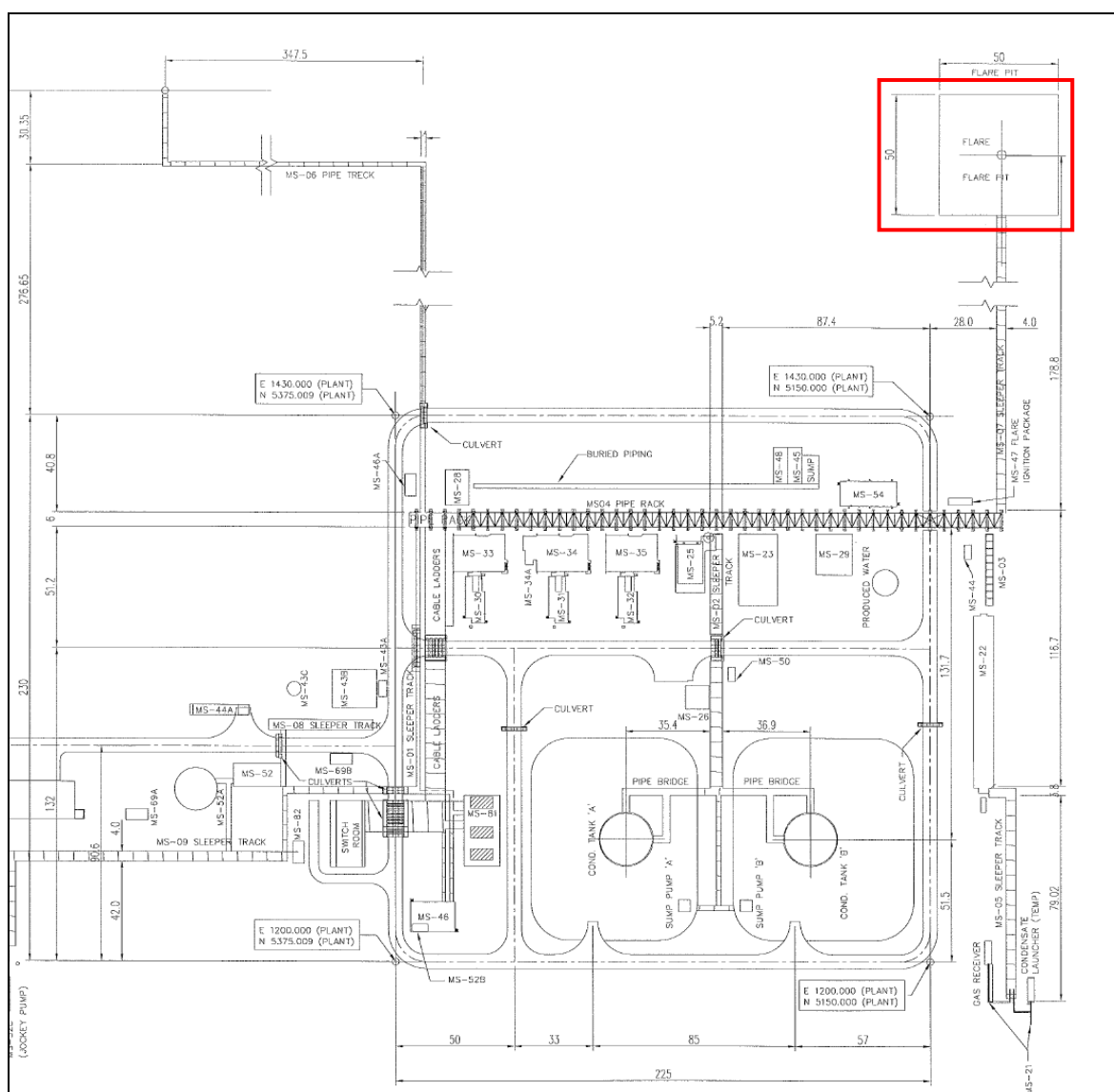


Figure 2.1: Flare location

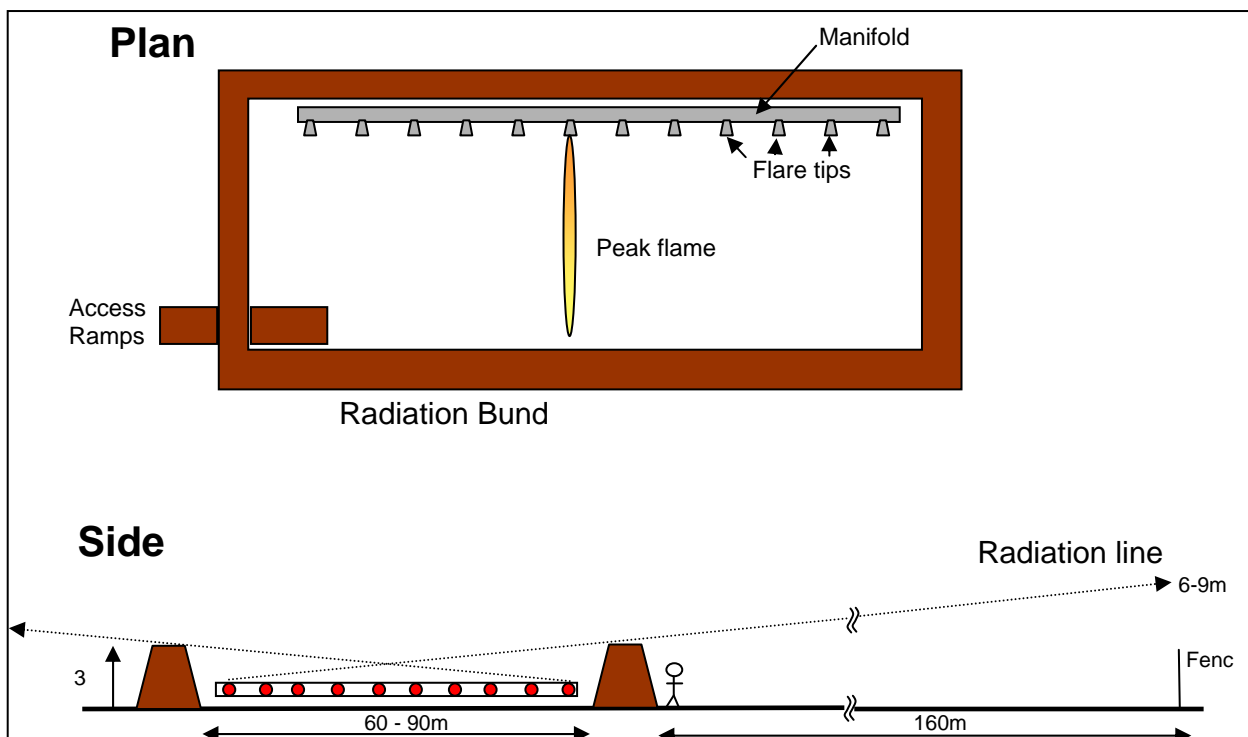


Figure 2.2: Schematic of flare configuration

2.2 OPERATIONAL REGIME

2.2.1 Overview

The flare system is designed to cater for the following types of releases (Ref [5]):

- normal operational flaring;
- pressure relief for individual items of equipment;
- emergency depressurisation; and
- manual blowdown.

2.2.2 Normal operational flaring

During normal operation, excess gas under low pressure will be directed to the flare to operate a small pilot. The pilot is required to ensure that gas directed to flare will be burnt safely. Burning gas rather than venting also converts methane to carbon dioxide and water, which have reduced global warming potential.

Under this scenario, small flames will flicker from the flare tips. There will be negligible sound and light emissions. The flames will not be visible from ground level due to the surrounding radiation bunds.

2.2.3 Pressure relief for individual items of equipment

Each item of equipment has a pressure relief valve. Relieved gas is directed to the flare. This will result in a surge of gas to the flare and a short term increase in noise and light levels.

2.2.4 Emergency depressurisation

In the event of an emergency (fire or gas leak) the plant will need to be depressurised within a short period of time (15 to 30 minutes). The highest level of trip shuts down the whole process and most utility systems. Pressurised gas will be directed to the flare, resulting in high gas flows and the highest noise emissions. Noise levels will decrease with time, reducing from a predicted maximum of 105dBA (Decibels (Acoustic)) to normal operational conditions within the 15 to 30 minutes.

Depressurisation can occur at any time of the day or night, however, these events will be very infrequent and of short duration. Predictions indicate that noise levels will be insignificant at Wadeye township but may be detectable at Tchindi Camping Ground (see Section 2.3).

There may be occasions particularly during commissioning and initial start-up when the emergency flare will be triggered due to process upsets. This is a normal occurrence and results in flaring of a short duration. On completion of commissioning the frequency will reduce significantly as the plant reaches steady state production and as the operational crew become more familiar with the plant. It is estimated that this type of flaring could occur once every quarter to once every five years.

2.2.5 Manual blowdown

Manual blowdown will be required to depressure equipment prior to inspection and maintenance. As these activities are planned, the rate and time of day at which flaring occurs can be controlled. As such, it is envisaged that noise levels should not exceed normal operational levels and the impact on the local community is expected to be minimal.

2.3 PREDICTED NOISE EMISSIONS

Figure 2.3 presents the predicted noise levels in and around the OGP during emergency flaring (Ref. [6]). Predictions take into account:

- noise source strength;
- spherical spreading;
- ground absorption;
- atmospheric absorption; and
- barrier/screening effects from any intervening objects.

Details of intervening terrain and buildings between the OGP and the receptors have not been included. Predictions are therefore conservative.

The noise level at 50m from the flare is 105dBA (Decibels (Acoustic)). This reduces to 72dBA at the site boundary. It is noted that this is below the boundary level assumed in the Blacktip OGP EIS (Reference [1]).

2.4 SENSITIVE RECEPTORS

Two potentially sensitive noise receptor locations have been identified in the vicinity of Blacktip OGP. These are Tchindi Aboriginal Camping Ground, slightly over 2 km away, and Wadeye township, approximately 8 km away.

Predictions indicate that noise levels at the two receptors from the Blacktip OGP during normal operations will be <35dBA at Tchindi Camping Ground, and <30dBA at Wadeye. During emergency high pressure flaring noise levels may exceed 50dBA at Tchindi; this may be cause for complaints from residents of the area, especially as the noise may have an intrusive character. However, as emergency flaring will be infrequent, no issues are expected.

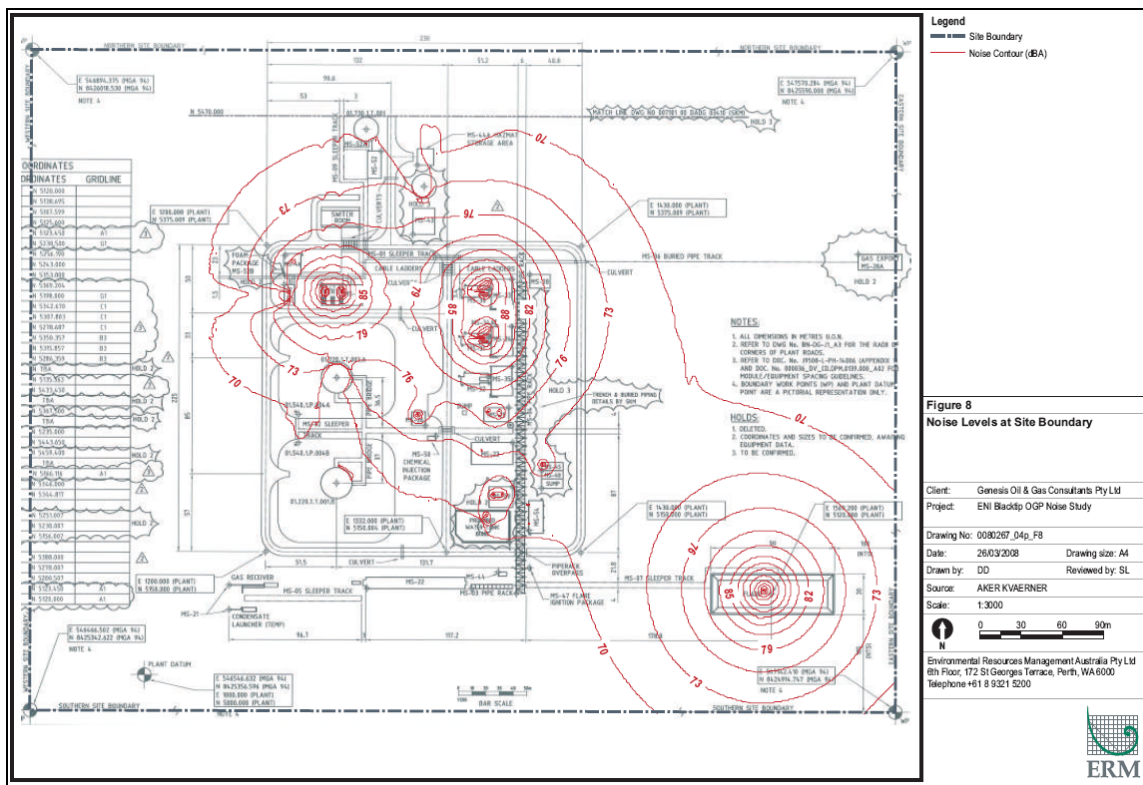


Figure 2.3: Predicted noise levels on the OGP during emergency flaring

3. NOISE MONITORING PROGRAM

A full plant noise survey is planned to be carried out in all general and specific work areas on the Blacktip OGP once the plant is in normal operation to verify compliance with ENI's noise requirements. If noise levels due to the flare or equipment are found to be excessive, the survey will identify mitigation measures.

4. COMMUNITY CONSULTATION

As part of the ongoing consultation with the community, Eni will provide further information on the flaring operations to provide a better understanding of the role of the flare and its visible and audible characteristics.

The community will be notified in advance of routine maintenance flaring (manual blowdown), however, it will not be possible to notify the community in advance of emergency flaring. Notification requirements will be developed in consultation with the community.