

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

SUBMITTED IN TERMS OF THE NEMA ACT 107 OF 1998


EXXARO BELFAST PROJECT

REFERENCE: 17/2/3 N-131

DATE: FEBRUARY 2012

ENVIRONMENTAL MANAGEMENT PROGRAMME

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Reference:	17/2/3 N-131
Environmental Assessment Practitioner:	<p>Marsh Environmental Services, a division of Marsh (Pty) Ltd</p> <p>4 Sandown Valley Crescent Sandton, 2196 Johannesburg</p> <p>Private Bag X14 Benmore 2010</p> <p>Contact Person(s): Lizelle Prosch Tel: (011) 506-5319 Mobile: 082 804 4024 Fax: 086 509 6235 E-mail: lizelle.prosch@marsh.com</p>
Applicant:	<p>Exxaro Resources Limited</p> <p></p> <p>Exxaro Corporate Centre Roger Dyason Road Pretoria West 0183</p> <p>PO Box 9229 Pretoria 0001</p> <p>Contact Person(s): Charles Linstrom Tel: (012) 307 4100 Fax: (012) 307 5220</p>
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Acknowledgements

Information contained in figures and tables have been extracted from the relevant specialist investigations, all of which are provided as appendices to the EIA Report. Marsh and Exxaro acknowledge the source of all figures and tables as originating from these reports.

Document Limitations

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- v. Where data supplied by the client or other external sources, including previous site investigation data and specialist reports, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Marsh for incomplete or inaccurate data supplied by others.

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Introduction

Marsh Environmental Services [referred to as Marsh] has been appointed as an independent Environmental Assessment Practitioner (EAP) by Exxaro Coal Mpumalanga (Pty) Ltd [referred to as Exxaro] to undertake an Environmental Impact Assessment (EIA) process, for the proposed development of an opencast coal mine various portions of the farms Zoekop 426 JS, Leeuwbank 427 JS and Blyvooruitzicht 383 JT in the magisterial district of Belfast, Mpumalanga.

This Environmental Management Programme (EMPr) includes measures for mitigation of impacts as identified as part of the Environmental Impact Assessment Report dated February 2012.

1.1 Project Background

Exxaro Coal Mpumalanga (Pty) Ltd is a subsidiary of Exxaro Coal (Pty) Ltd and is owned by Exxaro Resources Limited. Exxaro operates a coal mining complex in the province of Mpumalanga which is situated between the towns of Carolina and Belfast. This complex is referred to as the North Block Complex (NBC) and consists of the Glisa and Strathrae coal mines as well as the Eerstelingsfontein and Belfast coal projects. The complex uses both underground and opencast mining methods and employs 250 people to produce 3 million tons per annum (Mtpa) of thermal coal for both the domestic and export markets. The complex has a reserve base of 43.8 million tons (Mt) and a resource of 52.6Mt (excluding the Belfast project).

As part of the NBC, Exxaro has assessed the feasibility of the Belfast Project, situated some 10 km southwest of Belfast in Mpumalanga. The Belfast Project entails the development of an opencast mine to produce 2.0 Mtpa of coal for Eskom and 1.5 Mtpa of A-grade thermal coal for export markets.

As part of the project process, Exxaro submitted a mining right application for the mining of coal near Belfast in Mpumalanga to the Department of Minerals and Energy (DME)¹, Mpumalanga Province which was accepted on 10 July 2009 [MP 30/5/1/2/2/431 MR]. A Scoping Report, as per Regulation 49(1) of the Mineral and Petroleum Resources Development Act [MPRDA] (Act No. 28 of 2002), was submitted to the DME on 07 August 2009. This was followed by the submission of an EIA and Environmental Management Programme (EMP) Report, as per Regulations 50 and 51 on 10 January 2010.

As per the Environmental Impact Assessment Regulations (June, 2010) (hereafter referred to as EIA Regulations) promulgated in terms of Chapter 5 of the National Environmental Management Act [NEMA] (Act No. 107 of 1998), an EIA has to be undertaken in application for approval for the listed activities associated with the Belfast Project. An application and a Scoping Report were submitted to the Mpumalanga Department of Agriculture and Land Administration (MDALA) on 09 September 2009.

In accordance with the NEMA, a public consultation process in respect of the Scoping and EIA Phases is required in order to enable the landowners, lawful occupiers of land, and any directly affected Interested and Affected Parties (I&APs) to raise any issues, concerns or comment regarding the proposed operation to the environmental consultant, Marsh, who will facilitate feedback to Exxaro. The objective of the consultation process is to inform, consult, involve and empower I&APs, to ensure a joint effort by stakeholders, the project proponent and relevant authorities, to identify issues and concerns regarding the activities.

¹ Now referred to as the Department of Mineral Resources (DMR).

Exxaro aim to undertake the opencast mining of coal on selected farms listed in **Table 1** below. The mining operation will be divided into 3 phases, described below.

1.1.1 Phase 1: Construction Phase

This phase will take place over 2 years. The construction phase will include, but may not be limited to the following activities:

Site Establishment

- Construction of surfaced access roads and internal roads, as well as un-surfaced haul roads and surfaced parking areas;
- Construction of crushing and screening plant;
- Product / materials handling;
- Construction of buildings including:
 - A guard house;
 - Office blocks;
 - Weighbridge and weighbridge office;
 - Change-houses;
 - Plant and mine workshops; and
 - Laboratory.
- Explosives magazine;
- Railway siding and load-out facility;
- Diesel storage area;
- Process water pipeline;
- Co-disposal facility;
- Boreholes;
- Fire water reticulation, process water reticulation and internal potable water reticulation, internal sewer reticulation, and electrical reticulation;
- Sewage purification plant;
- Storm water channels and pollution control dams;
- Silt traps;
- Washing bays;
- Water treatment and purification plants;
- Process water dam and return water dam;
- Fencing; and
- River diversions / crossings.

Mine Development

- Pre-stripping of topsoil and overburden for the initial box-cut;
- Establishment of initial box-cut;
- Stocking of overburden and topsoil at the final void positions; and
- Establishment of coal handling stockpiles.

1.1.2 Phase 2: Mining Phase

This phase will take place over a period of thirty (30) years, and will include, but may not be limited to the following activities:

- Mining (which includes drilling and blasting);
- Processing (crushing, screening and washing); and
- Environmental monitoring in respect of surface water, groundwater and air quality.

1.1.3 Phase 3: Decommissioning Phase

The decommissioning phase will take place over four (4) years, and will be undertaken in three (3) phases, namely:

- Decommissioning;
- Maintenance, and
- Monitoring.

1.2 Location

Exxaro has applied to the Department of Mineral Resources (DMR) for a mining right for an area in extent of approximately 5819.18 hectares (ha) on various portions of the farms Zoekop 426JS, Leeuwbank 427 JS and Blyvooruitzicht 383 JT in the magisterial district of Belfast in Mpumalanga (**Figure 1 and Table 1**). Continuous rehabilitation will take place and the active mining area will in all likelihood not exceed 200ha at any time.

Table 1: Description of the Mining Area

Farm name	Portion	Deed Number	Owner
Zoekop 426 JS	Remaining Extent (RE)	T 108970 / 1997	HJW Pretorius
	Portion 1	T 38438 / 1990	WP Pretorius
Zoekop 426 JS	RE Portion 2	T 108970 / 1997	HJW Pretorius
	RE Portion 3	T 17060 / 1997	Soekop Trust
	RE Portion 4	T 3358 / 1990	A Viljoen
	Portion 5	T 10909 / 1985	EC Botha
	Portion 6	T 53815 / 1986	GL Roos
	RE Portion 7	T 79636 / 189	WP Pretorius
	Portion 8	T 16689 / 1982	JH Gerrits
	Portion 9	T 53815 / 1986	GL Roos
	RE Portion 11	T 14481 / 2008	Zoekop Farmers Trust
	Portion 12	T 38438 / 1990	WP Pretorius
	RE Portion 13	T 77921 / 2003	Eyesizwe Coal (Pty) Ltd
	RE Portion 14	T 17438 / 1995	Victory Fellowship World Outreach Centre Church
	Portion 15	T 10909 / 1985	CJ Botha
	Portion 16	T 142225 / 2004	Soekop Trust
	Portion 21	T 16398 / 1992	Transnet Ltd
Leeuwbank 427 JS	Portion of the RE	T 44235 / 1980	LG Roos
	Portion of RE of Portion 2	T 23347 / 2003	PV van Wyk
	Portion 3	T 13090 / 1968	BCE Viljoen

Farm name	Portion	Deed Number	Owner
	Portion of RE of Portion 4	T 5 188 / 1988	LG Roos
	Portion of Portion 5	T 40298 / 1975	LG Roos
	Portion of Portion 6	T 40298 / 1975	LG Roos
	Portion 7	T 31222 / 1991	CJ Burger
	Portion 8	T 31222 / 1991	CJ Burger
	RE Portion 9	T 46510 / 2001	Hooggenoeg Boerdery cc
	Portion 10	T 84645 / 1989	CJ Burger
	Portion 11	T 10909 / 1985	JC Botha
	Portion 15	T 46510 / 2001	Hooggenoeg Boerdery cc
	Portion 16	T 113513 / 2000	Beestepan Boerdery (Pty) Ltd
Blyvooruitzicht 383 JT	RE Portion 2	T 101146 / 1993	WP & JP Pretorius Trust
	RE Portion 6	T 15402 / 1987	CJ Burger
	RE Portion 7	T 101146 / 1993	WP & JP Pretorius Trust
	RE Portion 8	T 101146 / 1993	WP & JP Pretorius Trust
Blyvooruitzicht 383 JT	Portion 9	T 8150 / 1996	WP Pretorius
	RE Portion 10	T 62917 / 1987	WP Pretorius

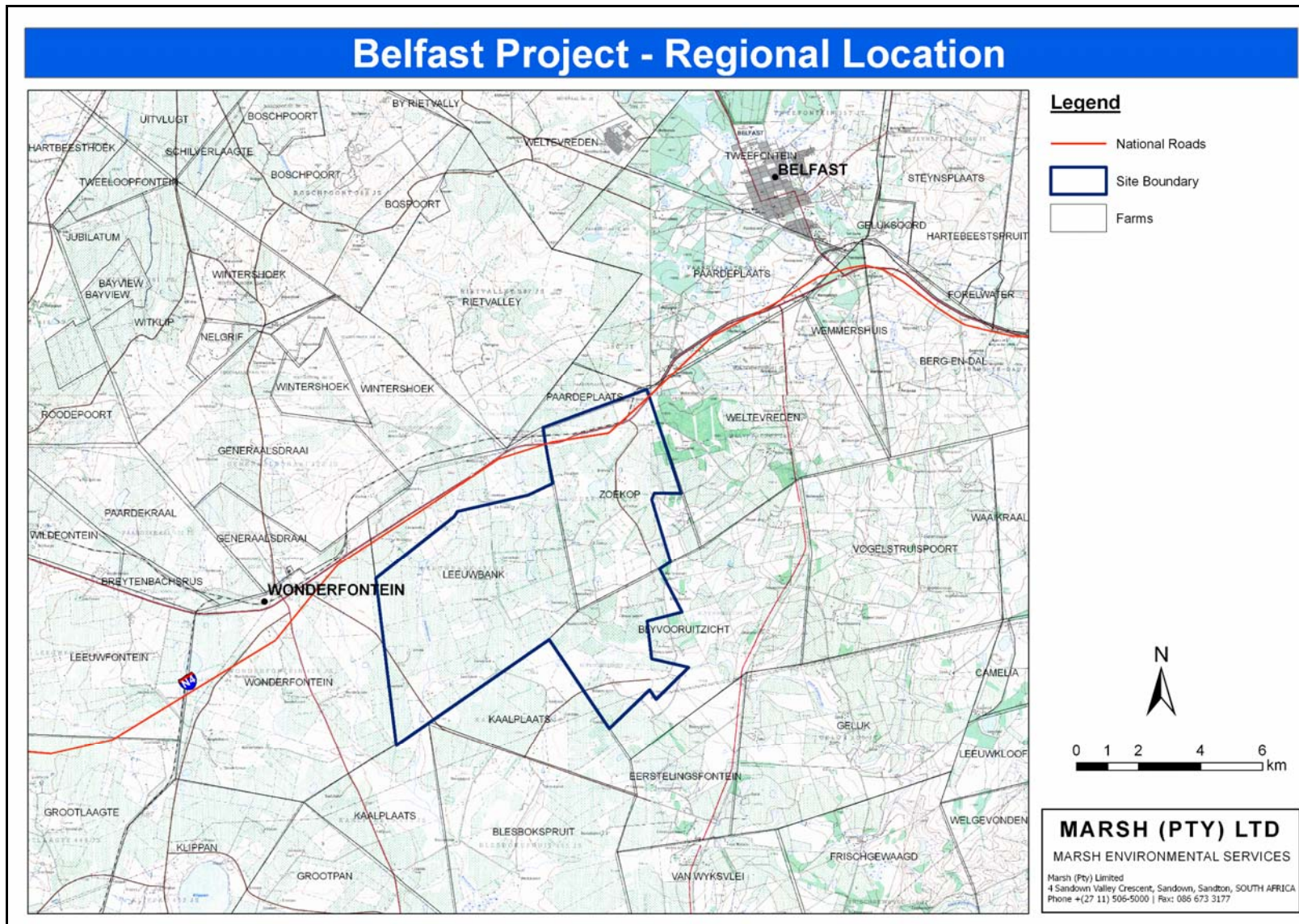


Figure 2: NBC – Belfast Project Regional Location

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EMPr purpose & responsibilities

2.1 Purpose of this Document

The purpose of the EMPr is to mitigate the negative impacts and maximize positive impacts during the construction, operational, and decommissioning and closure phases of the proposed activity as identified by the Environmental Impact Assessment Report, prepared in accordance with GN R543 promulgated in terms of the National Environmental Management Act (Act 107 of 1998).

This EMPr is a standalone document, which must be used as an on-site environmental management document during each phase of the development (i.e. construction, operational and closure and decommissioning). This document should be flexible so as to allow the Contractor and Exxaro to conform to the management commitments without being prescriptive. If implemented consistently, the management commitments will ensure that the anticipated environmental risks are minimized. It is the responsibility of Exxaro and associated Contractors and Sub-contractors to comply with the requirements of this EMPr. Any parties responsible for transgression of the underlying management measures outlined in this document will be held liable for non-compliances.

It is intended that the EMPr be included with the tender documentation, such that the owner and contractor are aware of any additional costs that may be imposed as a result of the EMPr, from the outset of the project.

It must be noted that this EMPr will be amended according to any conditions and specific requirements contained in the Record of Decision (RoD) issued by the decision making authority, namely the Mpumalanga Department of Economic Development, Environment and Tourism (DEDET).

2.2 EMPr – Guiding Framework

This EMPr is compiled in accordance with the provisions of the Environmental Impact Assessment Regulations (June, 2010) (hereafter referred to as EIA Regulations) promulgated in terms of Chapter 5 of the NEMA. The content of this EMPr is dictated by Regulation 33 of GN R 543 of the EIA Regulations.

The EMPr has also been developed based on the principles of sustainability contained in the NEMA:

- To avoid, minimise, or correct the disturbance of ecosystems and loss of biodiversity;
- To avoid, minimise, or correct pollution and degradation of the environment;
- To avoid or minimise waste and to re-use or re-cycle waste where possible;
- To dispose of waste in an acceptable manner;
- To apply a risk averse and cautious approach; and
- To anticipate and prevent negative impacts on the environment (physical, biological, social, economic, and cultural). Where these impacts cannot be prevented, such impacts must be minimised or remedied.

2.3 Responsibilities

2.3.1 Environmental Authority

Environmental Authorisation is required from DEDET before the proposed mining operations may commence. This EMPR will reflect conditions and specific requirements contained in the EIA Report and the RoD as appropriate upon receipt of the RoD. The duties of DEDET may extend to site visits during construction, operational, closure and decommissioning phases as deemed appropriate by the Environmental Management Inspectorate (EMI), and may oversee compliance with the Environmental Authorisation and EMPr.

2.3.2 Applicant

Exxaro remains responsible for ensuring that the mining operation is undertaken according to the requirements of the EMPr. Although the applicant appoints specific contractors to perform functions on his behalf, this responsibility is delegated.

The applicant must ensure that the EMPr is included in the tender documentation so that the contractor who is appointed is bound to the conditions of the EMPr. Exxaro is required to:

- Attain all necessary approvals in terms of the relevant legislation as appropriate.
- Liaise with the ECO regarding environmental management and provide the ECO.
- Support and comply with the EMPr.

2.3.3 Engineer

The Engineer is required to:

- Be familiar with the contents of the EMPr.
- Monitor the Contractor's compliance with the EMPr and enforce compliance.
- Issue site instructions giving effect to the ECO's requirements where applicable.
- Communicate to the ECO any proposed actions, which may have negative impacts on the environment.
- Designate all working areas and no-go areas.
- Communicate to the ECO any infringements of the provisions of the EMPr.
- Consider with the ECO the application of any penalties and other possible enforcement measures as necessary.
- Monitor the compliance of the Contractor through the ECO reports.

2.3.4 Contractor

The contractor, and his / her appointed sub-contractors, is bound to the EMPr conditions through his / her contract with the applicant, and is responsible for ensuring that he adheres to all the conditions of the EMPr. The contractor must thoroughly familiarise him / herself with the requirements of the EMPr before construction and request clarification where unclear. The contractor must ensure that he / she has provided sufficient budget for complying with all EMPr conditions at the tender stage. The contractor must comply with all orders (whether verbal or written) given by the ECO, project manager or site engineer in terms of the EMPr.

The Contractor has the responsibility to:

- Comply with the requirements of the EMPr.

- Be familiar with the EMPr.
- Notify the ECO and Engineer immediately in the event of any accidental infringements of the EMPr to enable appropriate remedial action to be taken.
- Ensure environmental awareness among employees and sub-contractors so that they are fully aware of, and understand the EMPr and the need thereof.
- Undertake rehabilitation of all areas affected by construction activities to restore them to their original state, as determined by ECO.
- Undertake the required works within the designated working areas.

2.3.5 Environmental Officer (EO)

During the construction phase of the proposed development Exxaro shall appoint an environmental officer who will be responsible for overseeing compliance with the EMPr.

Any issues raised by the EO will be routed to the ECO for the contractors' attention. The EO shall be permanently on site to ensure daily environmental compliance with the EMPr and would ideally also be a senior and respected member of the team. Past experience has revealed that EOs that can relate to the work force and are the most effective for information transfer and ensuring compliance with the EMPr.

Construction Phase

- Oversee day-to-day compliance with the EMPr by the contractor's staff and sub-contractors and their staff;
- Conduct weekly audits of all construction activities for compliance with the EMPr, and make these audit reports available for viewing by the Environmental Control Officer (ECO) on request;
- Issue instructions to remediate non-compliance;
- Conduct regular inspection meetings with the ECO to report on compliance, and
- Report non-compliance to the ECO.

Operational Phase

- Oversee compliance with the EMPr by the mine staff and visitors;
- Conduct regular audits of all activities conducted on site for compliance with the EMPr, and make these audit reports available for viewing by members of the public, local council or DEDET, on request;
- Issue instructions to remediate non-compliance, and
- Report non-compliance to local authorities.

Closure and Decommissioning Phase

- Oversee day-to-day compliance with the EMPr by the contractor's staff and sub-contractors and their staff;
- Conduct weekly audits of all closure and decommissioning activities for compliance with the EMPr and make these audit reports available for viewing by the ECO on request;
- Issue instructions to remediate non-compliance;
- Conduct regular inspection meetings with the ECO to report on compliance, and
- Report non-compliance to the ECO.

2.3.6 The Environmental Control Officer (ECO)

An independent Environmental Control Officer (ECO) must be appointed by Exxaro to oversee all the environmental aspects relating to this development. The ECO should be appointed during the planning phase and form part of the project team.

Construction Phase

- Conduct inspections of the development site as follows:
 - On a monthly basis
 - At the completion of construction
- Issue instructions to the EO to remediate non-compliance; and
- Prepare and issue reports following each audit to the client and to the MDALA regarding compliance against the EMPr (if required).

Closure and Decommissioning Phase

- Conduct inspections of the development site as follows:
 - On a monthly basis
 - At the completion of decommissioning and closure
- Issue instructions to the EO to remediate non-compliance; and
- Prepare and issue reports following each audit to the client and to the MDALA regarding compliance against the EMPr (if required).

Liaison with Environmental Authority

The ECO would be responsible for liaising with the environmental authorities. During the construction and closure and decommissioning phases, the ECO would be responsible for submitting monthly Environmental Audit Reports on the development to DEDET. These audit reports will be based on the mitigating measures recommended and will include a description of the general state of the site, with specific reference to sensitive areas and areas of non-compliance. In order to keep a record of any impacts, an updated environmental log should be kept on site.

Liaison with Contractors

The ECO will be responsible for informing Exxaro of any decisions that are taken concerning the natural and social environment during the construction phase of the development. This would also include informing the contractors of the necessary corrective actions, with approval from the developer, to be taken against employees transgressing the management activities stipulated in this EMPr.

2.3.7 Community Liaison Officer (CLO)

Exxaro may nominate a Community Liaison Officer (CLO) to act as a point of contact between the mining project and the community. This will lead to increased community awareness and create an avenue for complaints relating to construction directly associated with the proposed mine. Any complaints from the community about the works must be channelled through the CLO, and the CLO should relay feedback from Exxaro to the groups of I&APs. It is permissible that the EO and CLO is the same person.

2.4 Details of the Environmental Consultant

As stipulated in the environmental regulations, the details of the EAP are included below.

Marsh Environmental Services
A division of Marsh (Pty) Ltd

4 Sandown Valley Crescent
Sandton, 2196
Johannesburg

Tel: (27-11) 506-5318
Fax (27-11) 506-5269
Web: www.marsh-africa.com

Private Bag X14,
Benmore, 2010

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Marsh Environmental Services, a division of Marsh (Pty) Ltd, an environmental, health and safety service provider to South African government, business and industry, is committed to enhancing profitability through pro-active risk management. We utilise a wide network of specialist services allowing us to offer

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a comprehensive solution to any environmental problem. Marsh Environmental Services has a particularly strong focus on project management, technical solution generation and review, and strategic environmental management. Marsh (Pty) Ltd is a Level 4 BEE registered company.

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Summary of Environmental Impacts

The receiving physical, biophysical and social environments have been used to establish a baseline against which the potential impact of the proposed mining operation was measured. The identified impacts from the proposed mining operation are listed in Table 2 below. Detailed baseline information including the environmental impacts associated with the project should be obtained from the EIA Report and the following specialist studies:

- Concept Design Report - Storm Water Management & Dams
- Surface Water Assessment
- Air Quality Impact Assessment
- Soil, Land Use Capability Assessment
- Ecological Baseline & Impact Assessment including Wetland Delineation
- Identification of Potential Wetland Offsets
- Geohydrological Investigation
- Environmental Noise Report
- Heritage Impact Assessment
- Visual Impact Assessment
- Traffic Impact Assessment
- Social Impact Assessment
- Ground, Vibration & Air Blast Study
- Sustainable Development Investigation

Table 2: Identified Impacts from the Belfast Operation

ASPECT	IMPACT	CAUSE OF IMPACT	CUMULATIVE
STATUS AND AESTHETICS	VISUAL POLLUTION	ERECTION OF BUILDINGS AND INFRASTRUCTURE OPENCAST PITS MINING INFRASTRUCTURE COAL STOCKPILES AND DISCARD DUMPS OVERBURDEN DUMPS	
	LIGHT POLLUTION	NIGHT TIME ACTIVITIES	
TOPOGRAPHY	CHANGE IN DRAINAGE PATTERNS	BUILDING OF INFRASTRUCTURE OPENCAST PIT	
	FLOODING	INCREASED IMPERMEABLE SURFACES DESTRUCTION OF WETLANDS	
GEOLOGY	MINERAL DEPLETION	MINING ACTIVITIES	
SOIL	POLLUTION	POTENTIAL POLLUTION CAUSED BY CONTAMINATION	✓

ASPECT	IMPACT	CAUSE OF IMPACT	CUMULATIVE
	TOPSOIL LOSS	TOPSOIL EROSION FROM EXPOSED SOILS	✓
	LOSS OF AGRICULTURAL POTENTIAL	CHANGE OF TOPSOIL STRUCTURE DUE TO STOCKPILING.	
SURFACE WATER	POLLUTION	SILTATION FROM EXPOSED SOIL COAL SEDIMENT RUNOFF FROM STOCKPILES AND SPOIL HEAPS SEEPAGE FROM COAL FACILITIES POST CLOSURE DECANT	✓
	FLOODING	INCREASED IMPERMEABLE SURFACES	✓
	WETLAND IMPACTS	DESTRUCTION OF WETLANDS AND PANS	✓
GROUNDWATER	POLLUTION	ACID DRAINAGE FROM COAL STOCKPILES, DISCARD DUMPS AND SPOIL HEAPS HYDROCARBON SPILLS POST-CLOSURE CONTAMINATION	✓
	DEPLETION	USE OF GROUNDWATER FOR PROCESSING ACTIVITIES AQUIFERS DECANTING INTO OPEN PITS DUE TO HIGH WATER TABLE	✓
FLORA	BIODIVERSITY LOSS	HABITAT DESTRUCTION FROM CONSTRUCTION AND MINING ACTIVITIES	
FAUNA	BIODIVERSITY LOSS	BIODIVERSITY LOSS THROUGH DESTRUCTION OF FLORA	
AIR QUALITY	POLLUTION	VEHICLE ENTRAINMENT ON DUST ROADS TAILPIPE EMISSIONS DUST FROM BLASTING, MINING AND HAULING DUST FROM CRUSHING ACTIVITIES SO ₂ AND SMOKE EMISSIONS FROM IGNITED WASTE DUMPS	✓
NOISE	POLLUTION	VEHICLES BUILDING ACTIVITIES MINING ACTIVITIES BLASTING PROCESSING	
SOCIO-ECONOMIC	JOB CREATION	OPENING OF MINING OPERATION	
	TRAFFIC DISRUPTION	INCREASED TRAFFIC FLOW	
	ROAD DAMAGE	INCREASED FLOW OF HAUL TRUCKS	✓
		ROADS DAMAGED BY HAUL VEHICLES	✓

ASPECT	IMPACT	CAUSE OF IMPACT	CUMULATIVE
	HEALTH AND SAFETY	COAL INHALATION	✓
		MINING ACTIVITIES	
	JOB LOSS	CLOSING OF MINE AT END OF OPERATION	

4

Environmental Management Plan

4.1 Mitigation and Management Measures

This section of the report provides a description on the management measure to be implemented to prevent / minimise / mitigate / manage the identified impacts (in terms of the objectives of the NEMA). The proposed mitigation and management measures for the Belfast Project are provided in Table 3.

Table 3: Proposed Mitigation and Management Measures for the Proposed Belfast Project

Aspect and Impact	Item	Management and Mitigation Measures	Phase	Schedule of Actions	Responsible person	Monitoring Requirements
General	1.1	– All tendering and successful contractors will be made aware of the contents of the latest EMPr and any penalties arising from non-compliance to stipulated management and monitoring measures.	All Phase	Annually	SHE Manager	Checklist sign-off
	1.2	– The Environmental Compliance Officer (ECO) and SHE Manager will induct all contractors, sub-contractors and personnel working on the project on the contents of the EMPr and any penalties arising from non-compliance to stipulated management and monitoring measures.	All Phases	Annually	SHE Manager ECO	Induction register
	1.3	– The contractor shall ensure that drivers of delivery vehicles are informed of all procedures and restrictions required to comply with the EMPr. Such drivers shall be supervised during off-loading, by a person knowledgeable of the requirements.	All Phases	Ongoing	Contractor Security	Checklist sign-off
	1.4	– The ECO shall clearly identify the areas that must be protected from disturbance by the contractor's activities at the commencement of the contractor's contract.	All Phases	Ongoing	ECO	Weekly inspection by ECO
	1.5	– The contractor shall restrict all his activities, materials, equipment and personnel to within the area/s specified.	All Phases	Ongoing	Contractor	Weekly inspection by ECO
Community Relations	2.1	– An "Issues and Complaints Register" shall be kept on site, containing contact details of any complainant, as well as details pertaining to the complaint itself.	All Phases	Ongoing	ECO	Monthly review and action
	2.2	– The EMPr shall be made available to I&APs upon request for their perusal.	All Phases	Ongoing	ECO	-
Access	3.1	– The site layout shall include access points for deliveries and services, and future works. Minimising disturbance to neighbours shall be considered at all times.	All Phases	Ongoing	Security ECO	Random inspections
	3.2	– Exxaro shall ensure that access to the site, including associated infrastructure and equipment, is off-limits to the public at all times during all phases.	All phases	Ongoing	Security ECO	Security check-in register Weekly inspections
	3.3	– Additional areas restricted to the public shall be clearly marked using appropriate signage.	All Phases	Ongoing	Contractor Security ECO	Perimeter inspections of signage
	3.4	– Access to the site and works area shall use existing roads as far as practically possible.	All Phases	Ongoing	All personnel	Random inspections
	3.5	– Damage to the existing access roads as a result of malicious damage by Exxaro and not as a consequence of bad maintenance shall be repaired to the satisfaction of the Site Manager and the Local Council.	Construction Phase	Ongoing	Contractor Mine Manager	Monthly road inspections
	3.6	– Whilst on site the Contractor shall control the movement of all vehicles (including suppliers), such that they remain on designated routes,	All Phases	Ongoing	Contractor Site Manager	Random inspections
	3.7	– The vehicles of the Contractor and his suppliers as well as of the mine shall not exceed a speed of 60 km/hr, unless demarcated otherwise.	All phases	Ongoing	Contractor Security	Random traffic monitoring
	3.8	– Markers and pegs shall be erected and maintained along the boundaries of the working areas, access roads, haul roads or paths before commencing any work. If proved insufficient for control, these shall be replaced by fencing.	All Phases	Ongoing	Site Manager Contractor	Monthly inspections
	3.9	– The movement of any vehicles and / or personnel outside of designated working areas shall not be permitted without the written authorisation of the Site Manager.	All Phases	Ongoing	Site Manager	Daily inspections
	3.10	– Traffic safety measures (e.g. traffic warning signs), to the satisfaction of the Site Manager, shall be considered in controlling entry / exit onto public roads.	All Phases	Ongoing	Site Manager	Monthly inspections
Document Control	4.1	– Obtain and maintain validity of all legally required permits / registrations / licences.	All phases	Annually	SHE Manager Environmental Officer	Monthly inspections
	4.2	– Confirm the validity of all permits / registrations / licences which include, but are not limited to: <ul style="list-style-type: none"> o Mining Right. o All health and safety certificates required for mining operations. 	All phases	Annually	SHE Manager Environmental Officer	Monthly inspections Annual applications / renewals

		<ul style="list-style-type: none"> o Explosive magazine license. o Integrated Water Use License. <p>– Any permits / registrations / licences which are due to expire will be renewed prior to the expiry date.</p>				
	4.3	<p>– Develop a spreadsheet which documents all the waste generated by the mine. The spreadsheet must list the waste, the nature of the waste, the quantities produced and indicate how the waste is legally disposed of. Legally acceptable disposal must be justified by the appropriate valid waste disposal permits.</p> <p>– Confirm validity of, and keep a copy of all valid waste disposal permits / registrations / licences of all sub-contractors (where applicable). Such permits / registrations / licences include, but are not limited to:</p> <ul style="list-style-type: none"> o Used oil. o Oil contaminated waste / oil filters. o Scrap metal. o Old tyres. o Batteries. o Hydrocarbons. o Medical waste. <p>– If a sub-contractors' disposal permit / registration / licence has expired, the Mine must request a copy of the new permit. If the sub-contractor cannot produce a valid permit / registration / licence contracts with this company must be terminated.</p>	All phases	Ongoing	SHE Manager Environmental Officer	Completion of spreadsheet monthly 3-monthly inspection of licenses
	4.4	<p>– Update the documentation listed below:</p> <ul style="list-style-type: none"> o Water Balance Diagram. o Financial Provision. o Mining Work Programme. o Closure Plan. o Environmental Performance Auditing. o Environmental Management Programme. o Social and Labour Plan. o Results from all monitoring campaigns. 	All phases	Annually Annually Annually When required Every 2 years As required As required Monthly	Mine Manager SHE Manager Environmental Officer	Review as required
	4.5	– Ensure the mine has access to all environmental legislation applicable to the mining operation. These must be updated as legislation changes.	All phases	Ongoing	Environmental Officer	Bi-annual legislation survey and updating of legal register
	4.6	– Maintain a record of the groundwater quality and quantity.	Monthly	Ongoing	Environmental Officer	Complete spreadsheet and obtain laboratory results
	4.7	– Maintain a record of the surface water quality and quantities.	Monthly	Ongoing	Environmental Officer	Complete spreadsheet and obtain laboratory results
Document Control	4.8	– Maintain a spreadsheet containing complaints received and actions taken.	Monthly	Ongoing	Environmental Officer	Complete spreadsheet monthly
CLIMATE						
Carbon and greenhouse gas emissions.	5.1	– Visually monitor all haul trucks for tailpipe emissions.	All Phases	Daily	Security	Capture observations in a log book
	5.2	– Vehicles with excessive emissions will be noted in a book and reported to the contractor. The same vehicle will not be allowed back onto the property until the vehicle has been serviced and tailpipe emissions are controlled effectively.	All Phases	Daily	Environmental Officer	-
GEOLOGY						
Removal of overburden	6.1	– Ensure that only overburden is removed and not the minable resource.	Construction Phase Operational Phase	Daily	Site manager Mine Manager Environmental Officer	Inspections of overburden dumps
Mining of coal reserve	6.2	– Ensure coal mining is done in accordance with the MWP and the EMPr.	Operational Phase	Ongoing	Mine Manager Environmental Officer Contractor	Daily inspections
SOILS						

Soil disturbance, loss of nutrients, loss of topsoil cover, loss of in situ structure and physical / chemical properties	7.1	<ul style="list-style-type: none"> Strip and stockpile top- and subsoils The top 50cm of topsoil will be removed from the area where surface infrastructure is to be developed. The topsoil will be stored in a berm along the perimeter of the site. Care will be taken to ensure that the berm is not located within any surface water channel. The berm will not exceed 6m in height. 	Construction Phase Operation Phase	Ongoing	Mine Manager Environmental Officer	Weekly inspections and measurements of berms / dumps
	7.2	<ul style="list-style-type: none"> Commence rehabilitation of mined areas and other affected areas in a timeous manner. 	All Phases	Ongoing	Environmental Officer	Monthly monitoring of rehabilitation activities Conduct alien invasive species audits on rehabilitated areas when required (i.e. twice a year)
	7.3	<ul style="list-style-type: none"> Vegetate berms by seeding. 	All Phases	Ongoing	Environmental Officer	Monitor re-vegetation progress Conduct alien invasive species audits on berms
	7.4	<ul style="list-style-type: none"> Re-use topsoil and subsoils during rehabilitation. 	All Phases	Ongoing	Environmental Officer	Weekly inspections
	7.5	<ul style="list-style-type: none"> Implement erosion control and prevention methods. 	All Phases	Bi-monthly	Environmental Officer	Visual inspections
	7.6	<ul style="list-style-type: none"> Ensure that spills are addressed in a timeous manner (refer to Item 18.1). 	All Phases	Ongoing	Environmental Officer	Supervision of spill clean-up
LAND CAPABILITY AND LAND USE						
Land capability will be reduced to mining land status	8.1	<ul style="list-style-type: none"> Ensure effective soil handling and removal practices. Ensure effective soil placement and storage practices. Monitor fertiliser requirements (rehabilitation). Monitor fertiliser applications (rehabilitation). 	All Phases	Annually Monthly	Environmental Officer Contractor	Monitor soil placement and storage Soil testing as required to determine fertiliser requirements
Loss of natural habitat	8.2	<ul style="list-style-type: none"> Limiting the footprint of the mining operation to the approved mining right area. Prevention of dust liberation and spillage of rock material. Ensure appropriate maintenance of the road ways. 	All Phases	Monthly Daily Weekly	Environmental Officer Contractor Security	Random inspections of mining footprint Utilise dust suppression mechanisms Scheduled inspections of roadways
NATURAL VEGETATION AND PLANT LIFE						
Potential loss / degradation of local vegetation	9.1	<ul style="list-style-type: none"> Minimise vegetation disturbance by removing only necessary vegetation. 	Construction Phase Operational Phase	Ongoing	Environmental Officer	Weekly inspections
	9.2	<ul style="list-style-type: none"> Maximise vegetation retention areas. 	All Phases	Ongoing	Environmental Officer Mine Planner	Mine schedule review
	9.3	<ul style="list-style-type: none"> Remove vegetation in areas of infrastructure development only. 	Construction Phase	Ongoing	Environmental Officer	Weekly inspections
Alteration of natural ecological processes / ecosystem functioning	9.4	<ul style="list-style-type: none"> Rehabilitate mined areas and other affected areas in a timeous manner. 	All Phases	Ongoing	Environmental Officer Contractor	
	9.5	<ul style="list-style-type: none"> Pre-strip box-cuts only when required to ensure vegetation cover is maintained as long as possible. 	Construction Phase Operational Phase	Ongoing	Environmental Officer Contractor	Monthly inspections
Impacts on sensitive environments (receiving water body / wetlands)	9.6	<ul style="list-style-type: none"> Use existing roads where possible. 	All Phases	Ongoing	Environmental Officer Contractor	Random inspections
	9.7	<ul style="list-style-type: none"> Erection of fencing around no-go vegetation areas. 	All Phases	Ongoing	Environmental Officer Contractor	Random inspections
	9.8	<ul style="list-style-type: none"> Prevent uncontrolled fires and burning within the project area. 	All Phases	Ongoing	Environmental Officer Contractor Security	Undertake controlled burns as necessary Ensure combustible material is removed from the site in a timeous manner
Changes in vegetation dynamics	9.9	<ul style="list-style-type: none"> The perimeter of the mining and plant areas will be monitored for signs of spread of alien and invasive vegetation. All alien and invasive vegetation observed will be removed as per the Alien and Invasive Vegetation Eradication Plan. 	All Phases	Ongoing	Environmental Officer Contractor	Undertake annual audit of site to identify areas of alien / invasive vegetation growth
ANIMAL LIFE						
Alteration of natural ecological processes / ecosystem functioning	10.1	<ul style="list-style-type: none"> Ensure pockets of vegetation remain in order to ensure a measure of ecological connectivity. 	All Phases	Ongoing	Environmental Officer Contractor	Inspections of vegetated areas Undertake faunal audit every 2 years
	10.2	<ul style="list-style-type: none"> Pre-strip box-cuts only when required to ensure ecological connectivity is maintained as long as possible. 	All Phases	Ongoing	Environmental Officer Contractor	Monthly inspections
Loss of animal life	10.3	<ul style="list-style-type: none"> Vehicles are to yield to animals, where possible. 	All Phases	Ongoing	Environmental Officer	Personnel to report all animal deaths to

		<ul style="list-style-type: none"> - Vehicles are to operate within the applicable speed limits. - Limit night driving where possible. 			Contractor Vehicle operators	the Environmental Officer
SURFACE WATER						
Erosion activities (wind and water)	11.1	- Limit areas to be stripped for construction and operational purposes to minimise erosion potential.	Construction Phase Operational Phase	Ongoing	Environmental Officer Mine Planner	Inspect stripped areas for signs of erosion
	11.2	- Minimise erosion by water by constructing a stormwater management system.	All Phases	Ongoing	Environmental Officer Mine Planner	Inspect stripped areas for signs of erosion Monitor stormwater management system for potential problem areas
	11.3	- Stabilise berms and pit slopes and vegetate to minimise erosion.	All Phases	Ongoing	Environmental Officer Contractor	Weekly inspections
	11.4	- Investigate the integrity of berm and pit slopes.	All Phases	Monthly	Environmental Officer Contractor	Monthly inspections
	11.5	- Inspect stormwater management system during heavy rainfall periods to ensure integrity of the system is maintained.	All Phases	Ad hoc	Environmental Officer	Ad hoc inspections as required in the rainy season (i.e. October to April)
Decrease in water Quality (i.e. increased TDS, SS, etc)	11.6	- Monitor surface water within the mine site and at selected points outside the mining right area.	All Phases	Monthly	Environmental Officer	Monthly sampling of surface water Obtain laboratory results Maintain database on site Undertake annual microbiological testing for surface water points
	11.7	- Maintain water quality database on site	All Phases	Ongoing	Environmental Officer	Update monthly
	11.8	- Implement water management systems and ensure that dirty water is diverted from clean water systems.	All Phases	Ongoing	Environmental Officer	Weekly inspections
Wetlands	11.9	- Where possible, ensure that all wetlands are fenced off from the mining area.	Operational Phase	Ongoing	Environmental Officer	Monthly fence inspections
GROUNDWATER						
Lowering of groundwater levels	11.1	- Monitor groundwater boreholes within the mine site and at selected points outside the mining right area.	All Phases	Monthly	Environmental Officer	Monitor water levels
Groundwater quality deterioration	11.2	- Monitor groundwater quality at boreholes within the mine site and at selected points outside the mining right area.	All Phases	Ongoing	Environmental Officer	Monitor water quality (i.e. every 6 months) Obtain laboratory results
	11.3	- Maintain water quality database on site	All Phases	Ongoing	Environmental Officer	Update monthly
	11.4	- Monitor acid mine drainage and decant points.	Operational Phase Decommissioning / Closure Phase	Monthly	Environmental Officer	Monthly sampling of groundwater and decant Obtain laboratory results Maintain database on site
	11.5	- No construction of any water management measures, such as the storm water management berms or the haul roads will be undertaken with carbonaceous material.	Construction Phase	Ongoing	Environmental Officer	
	11.6	- All dams will be lined in an effort to minimize the seepage of poor quality leachate.	Construction Phase	Ongoing	Environmental Officer	
Acid Mine Drainage	11.7	- Backfill will be compacted when placed back into the pits.	Operational Phase Decommissioning / Closure Phase	Ongoing	Environmental Officer Contractor	Inspection of the rehabilitated areas
	11.8	- When rehabilitating the mined out void, ensure that the final surface is free-draining to minimize recharge.	Operational Phase Decommissioning / Closure Phase	Ongoing	Environmental Officer	Inspection of the rehabilitated areas
	11.9	- Decant in the southern section must be pumped out to prevent spilling into the streams.	Operational Phase Decommissioning / Closure Phase	Ongoing	Environmental Officer	Monitor water levels in the backfills.
	11.10	- Pumped out water must be sent to the treatment plant prior to release into the streams.	Operational Phase Decommissioning /	Ongoing	Environmental Officer	

			Closure Phase Post Closure Phase			
	11.11	– Construct a water treatment plant to treat Acid Mine Drainage.	Operational Phase Decommissioning / Closure Phase Post Closure Phase	Ongoing	Environmental Officer	Monthly sampling of groundwater and decant Obtain laboratory results Maintain database on site
	11.12	– Rehabilitate the co-disposal facility with a cover to ensure clean surface water runoff.	Decommissioning / Closure Phase Post Closure Phase	Once-off	Environmental Officer Mine Manager	Monthly inspections to ensure that the rehabilitation is successful
AIR QUALITY						
Reduction in ambient air quality from fugitive dust emissions	13.1	– Make use of windbreaks to minimise impact of dust movement.	All Phases	Ongoing	Environmental Officer Mine Planner	Monitor effectiveness of wind breaks
	13.2	– Utilise dust suppression mechanisms (i.e. water or chemicals) on haul roads.	All Phases	Ongoing	Environmental Officer	Monitor effectiveness of suppression mechanisms on a random basis
	13.3	– Re-vegetate stripped areas as soon as possible.	All Phases	Ongoing	Environmental Officer	Monitor effectiveness of vegetation re-establishment
	13.4	– Reduce drop height as far as is practicable.	All Phases	Ongoing	Environmental Officer	Random inspections
	13.5	– Limit the dust when ore is been loaded from the feed bin to the haul trucks by enclosing the transfer point between conveyor from feed bin and haul trucks with a rubber chute. Replace rubber chute as and when required.	All Phases	Ongoing	Environmental Officer	Random inspections
	13.6	– Ensure all vehicles travel within the applicable speed limit for haul roads (on and off site)	All Phases	Ongoing	Environmental Officer Security	Random inspections
	13.7	– Monitor dust fallout within mine site and at selected points outside the mining right area.	All Phases	Monthly	Environmental Officer	Monthly sampling of dust fallout Obtain laboratory results Maintain database on site
NOISE AND VIBRATION						
Increased ambient noise levels	14.1	– All machinery used will be maintained in sound mechanical condition. If noise levels from any vehicle or machinery are considered to be increasing, the contractor will be instructed to service the vehicle before it is allowed back on to site.	All Phases	Ongoing	Environmental Officer Security	Random inspections
	14.2	– On-site generators should be clad in suitable material or housed in structures that would reduce their noise impacts. Generators will be fitted with appropriate silencers.	All Phases	Ongoing	Environmental Officer Contractors	Random inspections and noise monitoring
	14.3	– All vehicles will be fitted with appropriate sound suppression devices or silencers.	All Phases	Ongoing	Environmental Officer Contractors	Random inspections
	14.4	– Monitor noise levels within mine site and at selected points outside the mining right area where vehicles travel.	All Phases	Monthly	Environmental Officer	Monthly sampling of noise levels Obtain testing results Maintain database on site
	14.5	– PPE will be worn at all times.	All Phases	Ongoing	Environmental Officer Contractors	Daily inspections of personnel in high noise areas
Impact on building	14.6	– Blasts will be designed and executed by a suitably qualified engineer.	Construction Phase Operational Phase	Ongoing	Environmental Officer Mine Planner Contractor	Ad hoc blast monitoring of all blast events Obtain testing results Maintain database on site
	14.7	– Monitor buildings within the mine site for evidence of structural damage due to blasting. Complaints received from the public must be assessed on an ad hoc basis.	Construction Phase Operational Phase	Ongoing	Environmental Officer Mine Planner Contractor	Random inspections of buildings after blast events
Adverse weather conditions	14.8	– Blasting will not be undertaken during adverse weather conditions (i.e. fog / mist, low cloud cover, rain, high winds, etc)	Construction Phase Operational Phase	Ongoing	Environmental Officer Mine Planner Contractor	Review weather conditions with Environmental Officer and blasting engineer prior to blast events
ARCHAEOLOGY AND HERITAGE						

Possible alteration and demolition of identified sites by open pits and proposed plant position	15.1	– Where farmsteads cannot be preserved, those with buildings older than 60 years should be documented in terms of Section 34 of the National heritage Resources Act [NHRA] (Act No25 of 1999).	All Phases	Ongoing	Environmental Officer	Map farmsteads including the development of plans showing elevations and maintain a photographic record of sites
	15.2	– Applications for demolition permits (Section 34 of NHRA) must be made to the Mpumalanga Provincial Heritage Resources Authority for obtaining demolition permits. A photographic record should be maintained.	All Phases	Ad Hoc	Environmental Officer	Compile and submit application as required Maintain photographic record of all demolished sites
	15.3	– Site clearance activities are to be documented photographically.	All Phases	Ad Hoc	Environmental Officer	Maintain photographic record on site
	15.4	– Preserved farmsteads and homesteads, whether under the control of Exxaro or whether in private ownership, should be monitored for damage (e.g. cracking of walls) caused by blasting work at the operating mine.	Construction Phase Operational Phase	Bi-Annually	Environmental Officer	Visual inspections
Unearthing of human remains and / or archaeological material	15.5	– Should any unknown human remains be disturbed, exposed or uncovered during the construction and / or operational phase of the project, these should immediately be reported to a registered archaeologist. Burial remains should not be disturbed or removed until inspected by an archaeologist.	Construction Phase Operational Phase	Ad Hoc	Environmental Officer Mine Manager Contractor	Visual inspection
	15.6	– Site clearing and preparation activities must be monitored for the occurrence of any other archaeological material (i.e. Stone Age tools, Iron Age artefacts, historic waste disposal sites etc) and similar chance finds and an archaeologist should be asked to inspect the area when this has reached an advanced stage in order to verify the presence or absence of any such material.	Construction Phase Operational Phase	Ad Hoc	Environmental Officer Mine Manager Contractor	Visual inspection
VISUAL						
Visual pollution	16.1	– Remove vegetation only as required for construction or mining purposes when required. Retain natural vegetation in all other areas for as long as possible.	Construction Phase Operational Phase	Ongoing	Environmental Officer Mine Planner	Visual inspections
	16.2	– Where possible, keep bigger tree groups and plantations. Ensure, wherever possible, all existing natural vegetation is retained and incorporated into the site rehabilitation.	All Phases	Ongoing	Environmental Officer Mine Planner	-
	16.3	– Implement dust suppression methods as previously detailed in Air Quality section.	All Phases	Ongoing	Environmental Officer	-
	16.4	– Utilise topsoil, subsoil and overburden along mining boundaries to act as visual screens.	Construction Phase Operational Phase	Ongoing	Environmental Officer Mine Planner	Visual inspections
	16.5	– Landscape the boundaries of the mining area around and on the berms to create a visual buffer as far as possible.	Construction Phase Operational Phase	Ongoing	Environmental Officer Mine Planner	Visual inspections
Light Pollution	16.6	– Install light fixtures that provide precisely directed illumination to reduce light “spillage” beyond the immediate surrounds of the complex.	All Phases	Ongoing	Environmental Officer Mine Planner	Visual inspections
	16.7	– Install lights that are activated on movement at entry to the site.	All Phases	Ongoing	Environmental Officer Mine Planner	Visual inspections
	16.8	– Use security lighting at the periphery of the site that is activated by movement and are not permanently kept on.	All Phases	Ongoing	Environmental Officer Mine Planner	Visual inspections
SOCIAL						
Social and Labour Plan	17.1	– Implement the approved Social and Labour Plan.	All Phases	Ongoing	Mine Manager Human Resources	Annual review of SLP and audit of implementation
Increase in SMME opportunities	17.2	– Establish a local SMME recruitment preference policy.	All Phases	Ongoing	Mine Manager Environmental Officer Human Resources	Annual review
	17.3	– Work in close cooperation with provincial and district authorities as well as NGOs to ensure that small business operators receive appropriate training such as technical skills and financial and business management training, particularly during the operational phase of the project, where possible.	All Phases	Ongoing	Mine Manager Human Resources	Ad hoc meetings and training
Job creation and income potential	17.4	– Establish a labour policy to facilitate the employment of locals where feasible. This should be done in conjunction with provincial and district authorities.	All Phases	Ongoing	Mine Manager Human Resources	Annual review

	17.5	– Create opportunities for the employment of women and the disabled.	All Phases	Ongoing	Mine Manager Human Resources	Annual review
	17.6	– Where possible use labour-intensive methods of construction.	Construction Phase	Ongoing	Mine Manager Human Resources	Annual review-
Job creation and income potential	17.7	– Develop a community labour agreement with targets for employment and for career progression.	All Phases	Ongoing	Mine Manager Human Resources	Annual review
	17.8	– Remunerate beyond the minimum wage rate for the Belfast area and invest in local staff.	All Phases	Ongoing	Mine Manager Human Resources	Annual review
HYDROCARBON SPILLS						
Hydrocarbon Spills	18.1	<ul style="list-style-type: none"> – All personnel are to report any size hydrocarbon spill observed to the Environmental Officer or SHE Manager as soon as it is observed. – Large spills (e.g. a ruptured tank where the quantity hydrocarbon fluid spilled covers an area larger than 1m²). <ul style="list-style-type: none"> o Contain the spill by constructing earth walls (from loose soils on-site) or using “barriers” provided in the spill kits (if enough are available). o Spread an environmentally acceptable absorbent over the spill. o Remove the soil from the site and collect in drums (that do not leak). If these are stored outside prior to removal, they must be covered with a lid to prevent the contents of the drum from being spilled if knocked over and prevent the containers being filled with rain water. o This drum must be disposed of as hazardous waste at a licensed hazardous waste disposal facility in a timely manner. – Small spills or leaks (e.g. spills of leaks from storage containers, vehicles, or machinery where the quantity hydrocarbon fluid spilled covers an area less than 1m²). <ul style="list-style-type: none"> o Contain the spill by constructing earth walls (from loose soils on-site) or using “barriers” provided in the spill kits (if enough are available). o Spread an environmentally acceptable absorbent over the spill. o Remove the soil from the site and collect in drums (that do not leak). If these are stored outside prior to removal, they must be covered with a lid to prevent the contents of the drum from being spilled if knocked over and prevent the containers being filled with rain water. o This drum must be disposed of as hazardous waste when it is filled or other hazardous waste is being removed from the site. 	All Phases	Ad hoc	Environmental Officer Contractor	Random inspections Maintain a detailed photographic record of all spills reported / observed

4.2 Monitoring and Environmental Management Programme Performance Assessment

Upon granting of the mining right, there are a number of once-off commitments required to be implemented by Exxaro. These once of commitments have been summarized in Table 4.

Table 4: Summary of Once-off Commitments to be Implemented Upon Granting of the Belfast Project Mining Right

Once-off Activities to be Implemented upon Granting of the Belfast Project Mining Right	Estimated Implementation Timeframe
Establish and ensure the integrity of perimeter fencing around the entire project area.	Within 3 months of granting of the Mining Right, provided the Integrated Water Use License and NEMA approvals have been granted.
Obtain all legally required permits and permission from all contractors.	
Establish security at access points to the project area and provide security guards with a note book to record entry / exit of vehicles as well as to document defective vehicles.	
Implement a waste management strategy by providing different waste receptacles for the different waste. The waste receptacles are to be stored in demarcated place.	
Develop a waste itinerary spread sheet.	
Establish a stormwater management system around the perimeter of the plant area.	Within 2 years of granting of the Mining Right, provided the Integrated Water Use License and NEMA approvals have been granted.
Implement a dust suppression system on haul roads to and from site, as well as within site and from the pits to the plant area.	
Enclose the transfer point between the conveyor and the haul trucks	

During the daily operations at the Belfast Project a number of aspects will be monitored or inspected as part of implementing the commitments documented within the EMP. These will be undertaken as routine day-to-day activities. Where possible these inspections will be recorded to show compliance with the EMP and to maintain a record against which long-term trends can be established. Incidents and the remediation action taken will also recorded, whether operational or environmental. The purpose for keeping these records is dependant on the type of monitoring being undertaken, but can be attributed to one or more of the following reasons:

- Monitoring the success or efficiency of proposed mitigation measures, by comparing results before and after implementation;
- Determining the environmental performance of the operation over the long-term;
- Determining any changes in the significance of environmental impacts associated with the operation;
- Determining priority areas where alternatives must be investigated; and
- Increasing environmental awareness amongst Belfast Project personnel.

A list of some of the inspections, observations, and monitoring activities required during specific timeframes at the Belfast Project is provided in the monitoring schedule in Table 5. This schedule also includes an indication of what information should be recorded. This list may not be inclusive of all

inspections, observations and monitoring activities required, but it provides a starting point to the development of a detailed all inclusive schedule upon granting of the mining right.

Table 5: Proposed Monitoring Schedule for the Belfast Project

Responsibility	Monitoring Actions
Daily Inspections, Observations and Monitoring Activities	
Mining personnel	General house keeping. All waste to be deposited in demarcated bins. Daily inspection of surface area. All maintenance / fitting activities to be conducted on concreted areas. Activate dust suppression system on non rainy days immediately prior to the use of the roads by the haul truck.
Security guards	Monitor perimeter fencing and signage. Monitor condition of haul trucks. Report, to their supervisor and subcontractor, any vehicles that are considered to be emitting excessive noise, tailpipe emissions or leaking diesel. These vehicles must be stopped from operating and not allowed to return until they have been serviced. Enforce speed limit of 60 km/h ² on site, unless otherwise specified.
Grade C and higher	Undertake workplace observations in all areas of the operation and document findings accordingly.
Selected representative	Any water leaks identified must be reported and leaks fixed immediately.
All personnel	Notify environmental department of any hydrocarbon spills immediately (regardless of size). All hydrocarbon spills must be cleaned up immediately.
Weekly Inspections, Observations and Monitoring Activities	
Selected representative	Designated person to monitor amount of waste in waste receptacles. Should the receptacles be approaching full, measures must be implemented to empty receptacle and remove the waste from site.
Monthly Inspections, Observations and Monitoring Activities	
Environmental Officer	Review and update water balance diagram.
Environmental Officer	Update waste itinerary spreadsheet.
Environmental Officer	Compare monthly water consumption rates with previous months. Investigate reasons for variations, if necessary, and take the appropriate action.
Environmental Officer	Compare monthly power consumption rates with previous months. Investigate reasons for variations, if necessary, and take the appropriate action.
Environmental Officer	Monitor the storm water control measures (trench and berm) along the perimeter of the plant area. If they are becoming eroded or not functioning correctly, the necessary maintenance work must be conducted.
Environmental Officer	Monitor quality and quantity of the surface water within the site and at selected points outside the site.
Environmental Officer	Monitor the quality and quantity of the groundwater within the site and at selected points outside the site.
Mine Manager.	Meet with labour representative to discuss all aspects of the mine
Environmental Officer	Randomly follow a haul truck to the processing plant to ensure compliance to rules.
Annual Inspections, Observations and Monitoring Activities	
Mine Manager	Review and update Mining Work Programme (MWP). The MWP must be submitted to the DME.
Financial Manager	Review and update financial provision. The financial provisions provided by the mine for mine closure will be re-evaluated and submitted to the DME for approval and issuing

² The speed within the mining area should not exceed 60 km/h, whilst a maximum speed of 20 km/h will be imposed around the plant site.

	of a certification.
Mine Manager and Environmental Manager	Review relevance of the social and labour plan and upgrade if necessary.
Mine Manager and Environmental Manager	<p>Confirm the validity of all permits / registrations / licences which include, but are not limited to the:</p> <ul style="list-style-type: none"> – Mining Right; – Water use and / or storage licence; – Explosive magazine; and – Transportation of coal. <p>Renew all permits / registrations / licences that will expire within the coming year.</p>
Mine Manager	<p>Confirm the validity of all permits / registrations / licences of all sub-contractors. These may include, but are not limited to:</p> <ul style="list-style-type: none"> – Certificate of vehicle fitness; – Valid drivers license; and – Valid Public Drivers Permit (PDP). <p>Obtain copies of all contractors' valid permits / registrations / licences that will expire within the coming year.</p>
Environmental Manager	<p>Confirm validity of, and keep a copy of all valid waste disposal permits / registrations / licences of all sub-contractors (where applicable), which include, but are not limited to:</p> <ul style="list-style-type: none"> – Used oil; – Oil contaminated waste; – Oil filters; – Scrap metal; – Old tyres; and – Batteries. <p>Obtain copies of all waste disposal permits / registrations / licences that will expire within the coming year.</p>
Mine Manager	Hold meeting with all major sub-contractors and review contract.
Environmental Officer	Check sewage system.
Environmental Officer	Check waste management system and wear and tear on waste receptacles.
Environmental Officer	Keep explosive magazine area free from vegetation.
Environmental Officer	Monitor site to ensure that there has been no spread of alien vegetation. Any saplings identified must be removed as per an alien vegetation removal plan.
Environmental Officer	Check fire extinguishers.
Environmental Consultants	Undertake occupational noise monitoring.
Environmental Consultants	Undertake gravimetric dust sampling.
Inspections, Observations and Monitoring Activities to be Undertaken Every 2 Years	
Environmental Consultants	<p>Conduct an environmental performance assessment (audit), in order to ensure compliance with the EMPR and to ensure that the EMPR reflects current practices undertaken by the Mine.</p> <ul style="list-style-type: none"> – The report of the assessment shall be in the format provided in the guidelines that will from time to time be published by the DME. – The assessment will be conducted by an independent competent person. – The report of the assessment will be submitted to the DME.
Environmental Officer	Conduct an environmental performance audit of all major sub-contractors.
Inspections, Observations and Monitoring Activities to be Undertaken Every 5 Years	
Environmental Consultants	Review and update the EMPR. Any amendments must be submitted to the DME for approval.
Environmental Consultants	Review and update the social and labour plan. Any amendments must be submitted to the DME for approval.
Mine Manager and Environmental Consultants	Review and update the Closure Plan, in accordance with the latest MWP.

Other Records	
Environmental Officer	Maintain an issues and complaints register containing: <ul style="list-style-type: none">- Date of complaint;- Name of person complaining;- Contact details of person complaining;- Complaint; and- Corrective action taken and the date of completion.
Environmental Officer	Maintain a record of emergency incidents containing: <ul style="list-style-type: none">- Emergency incident;- Cause of incident;- Action taken;- Photographic record;- Any monitoring undertaken to determine success of action taken; and- Mitigation measure to reduce potential for re-occurrence.

5

Conclusions & Recommendations

Provided that mitigation measures are implemented according to this EMPR, the project will result in limited negative environmental impacts. Furthermore, this EMPR should be seen as a dynamic management tool, subject to review and modification during the project life cycle.

5.1 Recommendations

This Environmental Management Programme (EMPRr) should be used as an on-site reference document during all phases of this development, and auditing should take place in order to determine compliance with this EMPRr. Parties transgressing from this EMPRr should be held responsible for any rehabilitation.



Marsh (Pty) Limited
4 Sandown Valley Crescent
Sandown, Sandton
Private Bag X14, Benmore, 2010
South Africa
+27 11 506 5000