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MAGDALENA COLLIERY DISCARD DUMP EXTENSION

FINAL SCOPING REPORT

EIA Ref. No.: DC25/0018/2012

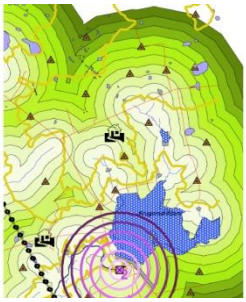
Version – 1

19 July 2013

Forbes Coal (Pty) Ltd

GCS Project Number: 12-094

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DOCUMENT ISSUE STATUS

Report Issue	Final		
Version No.	1		
GCS Reference Number	12-094		
EIA Reference Number	DC25/0018/2012		
Title	Magdalena Colliery Discard Dump Extension: Final Scoping Report		
	Name	**Signature**	**Date**
Author	Ryan Edwards		19.07.2013
Document Reviewer	Russell Stow		19.07.2013
Director	Pieter Labuschagne		19.07.2013

EXECUTIVE SUMMARY

The Magdalena Colliery is an existing coal mine located approximately 22km north of the town of Dundee and approximately 325km east-northeast of the City of Durban, in the province of KwaZulu-Natal. The Colliery is located in the magisterial district of Amajuba and the local municipality of Dannhauser. The mine has been operational since 2003. The existing mining area is operational under a number of Mining Rights, namely 227MR (Phase 1), 213MR (Phase 2) and 198MR (Phase 3) with corresponding approved Environmental Management Programmes (EMPR's) in accordance with the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA). In addition, an Integrated Water Use License Application (IWULA) process for all exiting water uses was completed in 2007.

Forbes Coal (Pty) Ltd intends to expand the size of the Magdalena Colliery discard dump from 33 295.05m^2 (3.33ha) to 389 703.04m^2 (38.97ha) (expansion of 356 407.98m^2/35.64ha) in order to accommodate the operational life of the company's mining operations at the Magdalena and Aviemore collieries.

The Magdalena and Aviemore Collieries require additional discard facilities to ensure that they continue to operate effectively. Currently the Magdalena discard dump receives coarse discard from the Magdalena underground and open cast mining operation and from the Aviemore underground mining operation located approximately 13 km south of the Magdalena Colliery, which is also operated by Forbes Coal.

Both the Magdalena and Aviemore mining operations hold significant economic incentives both to the mining company and to the local inhabitants surrounding the two sites. Without the discard dump extension both these mining operations would be significantly disrupted, if not halted permanently, which would in turn result in a loss of these economic benefits.

In terms of the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the clearing and transformation of approximately 36ha of undeveloped land/veld for the discard dump extension is listed as Activity 15 in Government Notice No. R. 545 of the EIA Regulations (2010) promulgated in terms of Section 24(5), 24M and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). Activity 15 is stated as the "Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more." Activities listed in Government Notice No. R. 545 require environmental authorisation subject to a full Scoping

and Environmental Impact Assessment. The assessing authority for this application will be the Department of Agriculture and Environmental Affairs (DAEA).

In terms of the requirements of the MPRDA, the current approved Environmental Management Programme (EMPR) for the Magdalena Colliery will need to be amended to reflect the proposed extended discard dump and associated infrastructure. The assessing authority for this application will be the Department of Mineral Resources (DMR).

These two application processes will be run concurrently to ensure a thorough consultation and approval process and one single public participation process will be conducted for both applications/processes.

The current Magdalena operations are located at the base of a small escarpment. The slopes below the escarpment and on the plateau are relatively gentle and undulating. The proposed extension is planned to be located south of the existing operations along the base and lower slopes of the escarpment.

In terms of geology, the site consists of a series of horizontally layered sedimentary units of the Vryheid formation located within the Ecca Group of the Karoo Supergroup. These sediments comprise successions of sandstones, shales, mudstones, carbonaceous shales and coal seams. The Ecca Group overlies rocks of the Dwyka Group.

The existing Colliery and extension falls within the upper catchments of the Poonaspruit and Bloubankspruit. These streams are non-perennial and tributaries of the Buffels River. The Buffels River forms part of the Tugela River catchment (Primary Catchment Region V) which flows into the Indian Ocean on the east coast of Southern Africa.

The Magdalena site and surrounds are characterised by heavily eroded slopes and channel beds. Most of the channels within the site can be considered erosion dongas/gullies and naturally occurring channels have been substantially widened and incised.

Existing groundwater studies that have been carried out for the Magdalena Colliery indicate that aquifers underlie the local area. The sedimentary rocks of the Ecca Group form the main water bearing strata. The groundwater table is structurally controlled by dykes and faulting. The Dwyka Formation, which underlies the Ecca, normally has a very low permeability and can be considered as an aquitard.

In terms of vegetation, the land occurring within the extension footprint comprises secondary grassland and secondary thicket and woodland. The original grasslands that once covered the site have long been transformed by grazing, agriculture and mining activities. Similarly, noteworthy faunal populations appear to be limited as a result of past disturbances and habitat degradation.

Local knowledge, professional experience and specialist knowledge of the area have all been used to identify the potential issues associated with this development and the resultant potential impacts. At this stage, limited public comment on the proposal has been provided by WESSA and local residents during the public meeting. The Draft Scoping Report was made available for a 40-day public comment period, however, no comments on the report were received by I&APs. There is no guarantee that all the potential impacts arising from the proposed development have been identified within the Scoping Phase, however the report provides an outline of the established measures that were taken to best identify all the potential impacts.

The Scoping Phase has revealed that there are a number of potentially significant impacts associated with the proposed discard dump extension. The potential impacts identified to date are listed as follows:

- Groundwater, aquifer and borehole contamination.
- Surface water and watercourse contamination.
- Increased surface water runoff volumes and resultant increased floodpeaks and rates of erosion and sedimentation.
- Clearing and loss of secondary vegetation/habitat.
- Loss of protected floral and faunal species.
- Alien vegetation proliferation and encroachment.
- Loss of soil resource and agricultural potential.
- Loss of grazing land.
- Degeneration in local air quality as a result of dust pollution and greenhouse gas emissions.
- Degeneration in local quality of life as a result of dust pollution, noise pollution, and visual impacts.
- Homestead relocation – for those homesteads in close proximity to the proposed discard dump.
- Possible impact to graves. No graves have been located onsite to date.
- Health and safety impacts i.e. Spontaneous combustion, uncontrolled fires and dust inhalation.

- Safety of children playing near/on proposed discard dump.

The potentially most significant impacts resulting from the construction, operation and closure of the discard dump extension are the potential water resources contamination impacts and potential social impacts to those living in close proximity to the proposed discard dump extension. In addition, important issues raised by the local residents during the public meeting included queries on whether the discard dump extension would negatively affect their grazing land and whether there are graves within the extension site. At this stage, early indications are that the impact on grazing will be minimal as the land is privately owned and not part of the tribal authority land. Regarding the impact of graves, a walkover of the extension site with local residents will be conducted by Forbes as described in the Plan of Study for EIA. On the other hand, the continued operation of the mine currently provides a number of social benefits to the surrounding local communities in the form of employment and agricultural projects. Thus, as the proposed discard dump extension is vitally important to the future viability of the Magdalena and Aviemore Collieries, the project is indirectly beneficial from a social perspective.

The Plan of Study for EIA outlines the strategy to identify and assess all these potential impacts and concerns in the EIA phase. Key specialist studies that need to be conducted in the EIA Phase include a preliminary ecological assessment, surface water hydrological assessment and a geo-hydrological assessment. Key management programmes that need to prepared and/or updated include the mine closure rehabilitation plan, stormwater management plan, Integrated Waste and Water Management Programme (IWWMP), mine water balance, alien plant eradication and control programme, and the groundwater and surface quality monitoring programmes.

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1 INTRODUCTION AND BACKGROUND

Forbes Coal (Pty) Ltd (hereafter referred to as Forbes Coal) intends to expand the size of the Magdalena Colliery discard dump from 33 295.05m^2 (3.33ha) to 389 703.04m^2 (38.97ha) (expansion of 356 407.98m^2/35.64ha) in order to accommodate the operational life of the company's mining operations at the Magdalena and Aviemore collieries.

The Magdalena Colliery is an existing coal mine that has been operational since 2003. The existing mining area is operational under a number of Mining Rights, namely 227MR (Phase 1), 213MR (Phase 2) and 198MR (Phase 3) with corresponding approved Environmental Management Programmes (EMPR's) (see **Table 2** in *Section 1.2.4* below) in accordance with the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA). In addition, an IWULA (Integrated Water Use License Application) process for all exiting water uses was completed in 2007.

In terms of the MRPDA, the approved EMPR (and mining right) under the MPRDA will need to be amended and updated to reflect the proposed changes to the existing operations and to accord with the requirements of the MPRDA. As part of this amendment, an impact assessment report will be prepared to identify any new potential impacts that may occur in addition to those identified in the original EIA Report and inform and guide the selection of appropriate mitigation and management measures. In addition, the public will be informed of proposal and provided with an opportunity to comment on the proposal as well as the impact assessment report and revised EMPR.

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the proposal requires environmental authorisation from the Department of Agriculture and Environmental Affairs (DAEA) subject to a full Scoping and Environmental Impact Assessment.

Forbes Coal, who operate Magdalena Colliery, has appointed GCS (Pty) Ltd to conduct the independent EIA process for the proposed discard dump extension in terms of the NEMA and update the approved EMPR in terms of the MRPDA.

In order to obtain complete environmental authorisation for the proposed discard dump extension, two applications to two different government departments need to be compiled and submitted for approval. These are:

- Environmental Authorisation Application – Department of Agriculture and Environmental Affairs (DAEA).
- EMPr Amendment approval - Department of Mineral Resources (DMR).

These two processes will be run together concurrently to ensure a thorough consultation and approval process. As such, this Scoping Report will be submitted to the DAEA and the resultant EIA/EMPR will be submitted to both government departments for approval.

2 DETAILS OF THE MINE

2.1 Locality

Magdalena Colliery is an existing coal mine located approximately 22km north of the town of Dundee and approximately 325km east-northeast of the City of Durban, in the province of KwaZulu-Natal (see **Figure 1**). The Colliery is located in the magisterial district of Amajuba and the local municipality of Dannhauser. The existing discard dump is located on the Farm Magdalena No 7574 and the proposed discard dump extension will extend into Portion 1 of the Farm Mooidoorn Hoek No. 3722 as shown in **Figure 2**.

Figure 1: Locality Map

2.2 Property Descriptions and Land Ownership

Slater Coal had a 70% interest in Zinoju. Forbes and Manhatten Coal Corporation (F&MCC) bought 100% ownership of Slater Coal in February 2012. F&MCC own a 100% interest in Forbes Coal (Pty) Ltd who have a 70% ownership of Zinoju Coal (Pty) Ltd.

Table 1 lists the current surface right holders of the properties that are included in Phases 1, 2 and 3 of the Magdalena Colliery operations that have all been approved in terms of the MPRDA. The fields shaded blue indicate the farm portions included in Phase 1, those shaded in green Phase 2, and those shaded in yellow Phase 3. The applicant has a mining right to mine all of the properties listed in **Table 1** and as displayed in **Figure 2**.

It is important to note that the title deeds reflect the names of the original owners. Most are now deceased and have left the properties to their beneficiaries. However, most of the properties have not been transferred into their names. The list given is what Zinoju has obtained from the people on the ground and there may be a few contentious issues amongst the beneficiaries as to whom the legal owners are. On Farm Magdalena No. 7574, none of the portions have been registered.

Table 1: Details of Land Owners

Farm	Share	Surface rights holder	Certificate/ deed	Area (ha)
Magdalena No. 7574	1/6	Phindukwenza Milisi Mchunu	T 16148 / 91	50,689
	1/6	Bangani Ben Mchunu	T 16148 / 91	50,689
	1/6	Phiwamehlo Griffiths Mchunu	T 16147 / 79	50,689
	1/6	Themba Patric Mchunu	T 16147 / 79	50,689
	1/3	Vincent Zamokwakke Mchunu	T 16148 / 91	101,378
Alleen No.1 No. 15592	Portion 1	R Ntanzi	T166/1958	72.3494
	Portion 23	D.T. Ntanzi	T6401/1956	55.4550
	Portion 24	M.J.J Mazibuko	T6475/1961	43.0453
	Portion 25	E. Dlamini	T16264/1973	44.7849
	Portion 26	M.S. Zwane	T9521/1957	47.4037
Mount Johanna No. 10987	Portion 1	N.J. Magubane	No registered sub-divisions	125.994
	Portion 2	S.S Mfusi		
	Portion 3	J.T. Msibi		
	Portion 4	C.S. Sithole		
	Portion 7	J.J. Tshanji		
	Portion 8	A.K. Ntombeni		
	Portion 9	S.P. Ntombeni		
	Portion 10	S.C. Ntombeni		
	Portion 21	M. Ntsibande		
	Portion 22	E.M. Zwane		

Farm	Share	Surface rights holder	Certificate/ deed	Area (ha)
Mooidoorn Hoek No. 3722	Portion 1	Slater Coal (Pty) Ltd (currently being transferred to Forbes Coal)	T 7878 / 1977	113.0963
Kemps Hoek No.4271		Robert ZenZele Mayisela	T 14470 / 1977	50.5858
Mourne No. 9148		Ingonyama Trust	T 1860 / 1941	406.3221
Slieve Donald No. 9229	Remainder of Lot 1	Johan Zwane	T 1721 / 91	17.9248
	Rem of Portion 2	E Thabane Zwane	T 9918 / 07	15.1205
	Lot No. 3	Elliot Mandlenkosi Ndlovu	T 1074 / 1926	13.0119
	Remainder of Lot 4	Ezra Hlomuka	T 11135 / 1978	5.1899
	Remainder of Lot 5	Obed Ngwenya	T 1681 / 1969	3.2448
	Lot No. 6	Melusi Samson Mlambo	T 1077 / 1926	21.5192
	Lot No. 7	Defence Khoza	T 24457 / 98	23.5603
	Lot No. 8	Ansera Vilakazi	T 3907 / 1930	19.8878
	Lot No. 9	Shokwake B.N. Mlambo	T 1080 / 1926	23.5603
	Lot No. 10	Thembi Joyce Khumalo	T 730 / 1929	23.9675
	Sub 11	Ndabakaaise E. Mtshali	T 15824 / 91	20.2975
	Lot No. 12	Mzomuhle . M.J.L. Khoza Andrina L. Khumalo	T 1083 / 1926	11.7460
	Remainder of Lot 13	Makhosazana C. Mjiyakho	T 6473 / 1953	6.390
	Lot No. 14	Welcome Sithebe Piet Ngubane	T 1085 / 1926	4.0467
	Lot 15 (of 13)	Ephraim Ngidi	T 834 / 1938	4.7071
	Lot No.16	John Zwane	T 4943 / 1925	193.7028
	Sub 17 (of 4)	Alfred Jele	T 21071 / 1979	4.0469
	Lot 18 (of 14)	Cynthia Mimi Nxumalo	T 4629 / 1927	4.8765
	Lot 19 (of 14)	Muzikayifani Shezi	T 4630 / 1927	4.0469
	Sub 20 (of 2)	Zwane Thabani	T 21350 / 1981	9.3078
	Sub 24 (of 3)	Margaret Xaba	T 21350 / 1981	9.7314
	Ptn 21 of 6	Obed Ngwenya	T 21350 / 1981	1.6187
	Lot 23 of 5	Gilbert Mahlaba	T 21453 / 03	3.5221
	Sub 25 (of 1)	Hezary S. Xaba	T 2351 / 1930	5.6656
	Sub 29 (of 1)	Hezary S. Xaba	T 24010 / 1980	4.0471
	Lot 26 (of 4)	Godfrey Mabaso	T 24010 / 1980	3.6422

Farm	Share	Surface rights holder	Certificate/ deed	Area (ha)
	Lot 27 (of 5)	Mbongeni	T 1304 / 1933	2.2661
	Lot 28 (of 5)	E.T. Mtshali	T 1524 / 1936	12.4861
	Lot 30 (of 2)	Nkosinatha Mtshali	T 339 / 1936	3.2092
	Lot 31 (of 13)	Sipo H. Ntshingila	T 737 / 1937	3.7109
	Sub 36 of Lot 13	Nomusa D. Ntuli	T 5017 / 1940	1.8423
	Sub 45 (of 4)	Ezra Hlomuka	T 12497 / 87	8.8451
Mount Johanna No.10987	Portion 1	Msuzwane Magubane		
	Portion 3	Silwane Tabete		
	Portion 4	Isaac Sitole		
	Portion 5	Portia Tstotesi / Mlamuli Ndaba	T 787 / 1938	246.9451
	Portion 6	F Mtshingila	T 6814 / 91	
	Portion 11	Amos Ntombeni	T 8639 / 95	
	Portion 12	Veli G. Buthelezi		
	Portion 13	Emily Mthombeni		
	Portion 14	Thembisile Mtimkhulu		
	Portion 15	Babongile Ndebele		
	Portion 16	Zandile Mbatha		
	Portion 17	Paulina Z. Ngaga		
	Portion 18	Paulina Z. Ngaga		
	Portion 19	Paulina Z. Ngaga		
	Portion 20	Zacheus Ngwenya		
	Portion 21	Henry Nsibande		
	Portion 23	Hleziphi Buthelezi/Mbata		
	Remainder 1	Commanage		
	Remainder 2	Andreus Msibi		

The existing discard dump is located on the Rem. of Farm Magdalena No. 7574 and will be extended into Portion 1 of the farm Mooidoorn Hoek No. 3722 as shown in **Figure 2**. Farm Magdalena No. 7574 is owned by the Mchunu family and Portion 1 of Farm Mooidoorn Hoek No. 3722 is owned by Forbes Coal (**Table 1**).

2.3 Mine Contact Details

2.3.1 Name and Address of Mine

Magdalena Colliery
P.O.Box 684
Dundee 3000
Tel: (034) 212 1455
Fax: (034) 212 1232

2.3.2 Mine owner and Applicant

Zinoju Coal (Pty) Ltd
Commercial Road
Dundee 3000
Reg No.: 2001/011130/07
Tel: (034) 212 1455
Fax: (034) 212 1232

2.3.3 Responsible Person- mine manager

Mr. R Govender
Magdalena Colliery
P.O.Box 684
Dundee 3000
Tel: (034) 212 1455
Fax: (034) 212 1232

2.3.4 Details of Mineral Rights Holder

Zinoju Coal (Pty) Ltd
Commercial Road
Dundee 3000
Reg No.: 2001/011130/07
Tel: (034) 212 1455
Fax: (034) 212 1232

2.4 Mining Rights

The Magdalena site encompasses a number of Mining Rights ("MRs") as granted by the Department of Mineral Resources (DMR). These are noted in **Table 2** below.

Table 2: Magdalena Mining Rights

Phase Reference / Farm Portion	Approval Status	Approval References	Associated Documents
Phase 1: • Portions 1, 2 and of Magdalena No. 7574 • Rem. of Magdalena No. 7574	Mining Right	227MR / ML378/03	• Approved EMP (dated August 2002) • Approved Water Use Licence

Phase Reference / Farm Portion	Approval Status	Approval References	Associated Documents
			(07N32D/AGJ/986)
Phase 2: • Portions 1, 23, 24, 25 and 26 of Alleen 1 No. 15592 • Portions 1, 2, 3, 4, 7, 8, 9, 10, 21 and 22 of Mount Johanna No. 10987 • Rem. of Mount Johanna No. 10987	Mining Right	213MR	• Approved EMP (dated April 2008) • Approved Water Use Licence (07N32D/AGJ/986)
Phase 3: • Portions 5, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 of Mount Johanna No. 10987 • Rem. of Mount Johanna No. 10987 • Portion 1 of Mooidoorn Hoek No. 3722 • Rem. of Kemps Hoek No. 4271 • Slieve Donald No. 9229 • Mourne No. 9168	Mining Right	198MR	• Approved EMP (dated May 2008) • Approved Water Use Licence (07N32D/AGJ/986)

Figure 2: Properties under Mining Rights

3 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

GCS (Pty) Ltd was appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the NEMA EIA process for the proposed project as well as update the MPRDA EMPR. GCS was established in 1987 as an independent consultancy, to provide expertise in groundwater related studies. Since then the company's profile has evolved to include earth, geotechnical, environmental, engineering, GIS, water use licensing and environmental legal services. The company details are provided in **Table 3** below.

Table 3: EIA Practitioner Details

GCS (Pty) Ltd	Reg.No. 2004/000765/07
Address	4a Old Main Road
	Judges Walk
	Kloof
	3610
Contacts	Telephone: 031 764 7130
	Fax: 031 764 7140

The details of the individual EAP's involved in this project are provided in **Table 4** below.

Table 4: Details of GCS EAP's Involved in the Project

Name	Role	Qualifications	Experience	Fields of Expertise
Russell Stow	Principal Consultant	BSc Honours in Environmental Management	10	Environmental Project Management, Environmental Planning, Environmental Impact Assessment
Ryan Edwards	Environmental Consultant	Master of Science in Environmental Science	5	Environmental Project Management, Environmental Impact Assessment Wetland Ecology
Futhi Vilakazi	Environmental Consultant	BSc Honours in Geography and Environmental Science	1	Environmental Impact Assessment

4 EIA PROCESS AND PURPOSE OF THE REPORT

An Environmental Impact Assessment (EIA) process refers to that process (dictated by the EIA Regulations, 2010) which involves the identification and assessment of direct, indirect, and cumulative environmental impacts associated with a proposed project/activity. The EIA process comprises two phases: i.e. Scoping Phase and EIA Phase. The EIA process culminates

in the submission of an EIA Report (including an environmental management programme (EMPr) to the competent authority for decision-making.

4.1.1 Scoping Phase

The objectives of the Scoping Phase are to:

- Identify all potential environmental (biophysical and social) issues and impacts, negative and positive, resulting from and/or associated with all phases of the proposed development (i.e. design, construction, operation and decommissioning) through consultation with key stakeholders, the public and existing baseline data.
- Compile a 'roadmap' (Plan of Study for EIA) to address each of the issues and impacts as identified in the Scoping Phase.
- Define the scope of the specialist studies to be undertaken to assess the significance of the impacts during the EIA phase.
- Conduct an open, participatory, and transparent public involvement process and facilitate the inclusion of stakeholders' concerns regarding the proposed project into the decision-making process.
- Clarify the reasonable and feasible project-specific alternatives to be considered through the EIA process, including the "no go" option.
- Provide the authorities with sufficient information in order to make a decision regarding the scope of issues to be addressed in the EIA process, as well as the scope and extent of specialist studies that will be undertaken as part of the EIA Phase of the process.
- Identify and flag potentially sensitive environmental features on the site to inform the preliminary design process of the facility.

The findings of the Scoping Phase are presented in the form of a Scoping Report to be reviewed by key stakeholders and the interested public and ultimately approved by the DAEA once the report is finalised.

This first draft of the Scoping Report includes the initial identification of key issues and/or concerns as highlighted by relevant authorities, Interested and/or Affected Parties (IA&Ps) and the professional judgment of the EAP following the first round of public notification.

The Scoping Report has been compiled to comply with the requirements of both the DAEA and the DMR with the proposed extension being a minerals related development.

Consultation is on-going with both these Government departments. The Scoping Phase is concluded when the Scoping Report is submitted to the DAEA and the DMR.

4.1.2 EIA Phase

The objectives of the EIA Phase are to:

- Formally assess the nature, intensity, magnitude, duration, probability and significance of all of the potential impacts identified in the Scoping Phase.
- Identify feasible and realistic mitigation measures required to avoid and/or minimise the negative environmental impacts resulting from the activity and combine and present all these measures in the form of a construction and operational EMPr in accordance with NEMA and the MRPDA.
- Provide the authorities (DAEA and DMR) with sufficient information in order to make a decision regarding the authorisation of the activity.

The above listed objectives will be achieved by commissioning of all the specialist studies required to evaluate and assess the relevant impacts as per the Plan of Study for EIA as well as addressing any outstanding issues and concerns that do not require a formal specialist assessment.

4.1.3 Environmental Management Programme (EMPr - NEMA)

The EMPr associated with the NEMA EIA process outlines the mitigation measures and plans that need to be implemented and adhered to by the applicant in order to ensure that the impacts resulting from the proposed development are minimised. The EMPr will include all the mitigation requirements recommended and required for each of the potential impacts indented and assessed in the EIA. Two programmes will be provided, one to guide the construction of the proposed development, and the other to guide the operation. Both EMPr's will be considered draft programmes. The EMPr will be legally binding document and the applicant will be required to meet the requirements specified in the document. The EMPr will be submitted to the DAEA for approval.

4.1.4 Environmental Management Programme (EMPR - MPDRA)

The MPRDA EMPR will indicate how the identified impacts will be avoided, mitigated and/or managed by assessing the environmental objectives and goals. The EMPR will further outline the implementation programme for the environmental objectives and goals.

The existing and approved EMPR for the colliery will be updated and amended to include the findings of the discard dump extension impact assessment. The updated EMPR will be submitted to the DMR as a consolidated EMP to include the amendment and once approved will be a single composite management tool for the Magdalena Colliery mining operation.

5 DESCRIPTION OF THE PROPOSED PROJECT

5.1 Existing Mining Operation

The existing Magdalena Colliery is operated by Forbes Coal (Pty) Ltd. The mineral deposit extracted at the Magdalena Colliery is coal from two seams. The sub outcrop of the top seam (Alfred) and the bottom seam (Gus). Mining occurs by opencast method using the sequential roll over method and underground bord and pillar method accessed by an Adit system from an old opencast high wall. The production rate of the mine is planned to increase to 152 000 Run of Mine (ROM) tons per month. The life of the mine is expected to be 17 years.

The ROM from the underground operation is washed and screened at the washing plant situated within the central section of the Magdalena site. The washed product is stockpiled alongside the processing plant ready for distribution. The coal is transported from here by road to the markets with a portion of the product being taken to the Coalfields site ready for distribution by rail. All ROM from the open cast operation is however taken straight to the Coalfields plant for washing and processing.

The site's existing discard dump is located to the south of the washing plants as shown in **Figure 2**. Deposition is by upstream mechanical tipping truck. The dump maintains five metre wide berms at every 5 metres vertical lift to enable access by tipper trucks. However, Forbes is planning on creating higher terraces of 13m. Slope stability is maintained by an overall slope of 1 in 3. Pollution control measures are installed to ensure clean and dirty water separation such as cut off trenches. An under drainage system is used to collect seepage.

The existing discard dump takes coal discard from both the Magdalena and Aviemore collieries. Presently, the discard dump is nearing capacity and needs to be extended to ensure disposal capacity requirements of the life of the mine for both these operations. The existing dump has a design life of 3 years and storage capacity of circa 2 million tonnes (53000 tonnes per month) and is therefore not sufficient to accommodate the life of mine

requirements. Therefore, it is proposed to extend the discard dump to achieve a design life of 22 years with a maximum storage capacity of 9.5 million cubic metres. Refer to **Figure 1** for the proposed discard dump extension layout.

5.2 Proposed Discard Dump Extension

The existing discard dump is 3.33ha in extent and is proposed to be extended (increased in size) by approximately 36ha as shown in **Figure 3** and in **Appendix C1**.

The details of the discard dump extension have been taken from the Draft Design Report prepared by AfriCan Innovative dated 19 June 2012, included in **Appendix C**. The proposed project will involve establishment of the following:

1. New tailings storage facility (extension to existing)
2. Return water dam
3. Decant system
4. Under drainage
5. Clean and dirty water separation canals
6. Solution trench
7. Access road

5.2.1 Tailings Storage Facility (Discard Dump Extension)

The proposed geometry was influenced by the existence of underground mine workings to the east of the discard dump extension stretching from the north to the south. The design criteria are as follows:

- Type of facility: Coal discard dump
- Design life of mine: Estimated at: 22 years
- Tonnage production per year: 640 000t
- Assumed in-situ density: 1.469tm-3.
- Total tonnage in life of mine: 14 080 000t
- Total volume of residue: 9 584 751.5m3

5.2.2 Return Water Dam

The return water dam design will be designed to adhere to the National Water Act (1998) and SANS 10286: 1998 regulations, and therefore the criteria for the design of the same are as follows:

- Design return period: I:100year
- Design flood: 146.2mm
- Required volume: 14 500m^3
- Freeboard: 0.8m
- Depth including freeboard: 4m

The return water dam will be designed with a clay / HDPE composite liner in line with statutory requirements for surface and ground water pollution control.

Due to the topography of the site, two return water dams will be designed: one with a capacity of 8000m^3 and the other for a capacity of 7500m^3. Under normal operations, the volume of water in the return water dam will be kept not more than 4 000m^3.

5.2.3 Decant System

The coal will be deposited in "dry" state and as such, no conventional decant system will be designed for this project. However, momentary rising of the water table can be expected from seepage especially after a prolonged low frequency storm. Thus, supernatant (surface) water will need to be drained off the top of the dump as soon as possible. To achieve this, an "emergency type" pump budge will be utilised. The system must be sized to decant a 24 hour 1:100 year storm in not more than 72 hours (three days).

5.2.4 Under Drainage

Previous site studies have indicated that the water table is high and that there is need for pollution control measures to ensure seepage does not come into contact with groundwater under the impoundment. The topography of the site is such that seepage flows downhill. Thus, an under-drainage system will be incorporated at the toe to capture all seepage and also help with consolidation necessary for strength gain and stability of the discard dump. The system will consist of perforated or slotted geo-pipes just behind the starter push-up walls connected to out-falling solid pipes discharging into the solution trench and then to the return water dam.

5.2.5 Clean and Dirty Water Separation Canals

To prevent the contamination of stormwater, cut off trenches will be excavated in phases on the upstream of the facility to divert "clean" storm water received on the upstream catchment to the stream without passing through the contaminated site. The positions of the storm diversion trenches will be clearly marked on the detailed layouts.

5.2.6 Solution Trench

The solution trench will be designed to contain flows resulting from the cumulative effects of the seepage from the under drains and discard dump supernatant water resulting from a 1:100 year 24 hour storm.

5.2.7 Access Road

Since the envisaged method of deposition is upstream mechanical tipping by truck, the impoundment has been designed with five metre wide berms at every five metre vertical lift to enable access by tipper trucks at any point around the dam. Maintenance shall follow procedures stipulated in the Operations Manual to ensure access under any weather conditions and at any time.

5.2.8 Method of Deposition

The method of deposition will be by upstream mechanical tipping truck which is the current method of deposition. In addition, 5 metre wide berms will be created at every 5 metres vertical lift to enable access by tipper trucks. Slope stability will be maintained by an overall slope of 1 in 3.

Pollution control measures such as cut off trenches will be installed to ensure clean and dirty water separation. In addition, an under drainage system will be used to collect seepage as process water which will initially be directed to a Return Water Dam.

Figure 3: Proposed Discard Dump Extension

6 LAND USE AND DEVELOPMENT CONTEXT

Prior to mining of coal in this area, the middle and upper mid-slopes were used for grazing, while the more productive land in the valley was used for the cultivation of maize and other market related products. Due to the topography, and the highly sensitive nature of the soils, intense farming has not taken place on large portions of the area in question. The physical and chemical nature of the soils and erratic climate render these areas agriculturally poor.

The pre-mining land use for the area is presented in **Table 5** and the historical land use is presented in **Table 6** below.

Table 5: Pre-mining land use

Land Capability	Percentage (%)
Wetland (lower stream areas)	2,76
Arable	31,63
Grazing to rocky semi-grassland	46,7
Wilderness	18,91
Total	**100**

Table 6: Historical land use of farm Magdalena

	LAND USE
Pre-mining land use	Subsistence-farming (maize), grazing & Mining
Hist. Agric. Production	Maize
Evidence of misuse	Erosion gullies Overgrazing Un-rehabilitated mining area
Existing structures	Semi demolished buildings

The mine is surrounded by moderate to low density rural settlements consisting of traditional homesteads (imzi) and more formalised houses. A handful of more traditional type homesteads are located to the west of the discard dump, the closest of which will occur approximately 200m from the western edge of proposed discard dump extension.

7 NEED AND DESIRABILITY

The Magdalena and Aviemore Collieries require additional discard facilities to ensure that they continue to operate effectively. Currently the Magdalena discard dump receives coarse discard from the Magdalena underground and open cast mining operation and from the Aviemore underground mining operation located approximately 6km south of the Magdalena Colliery, which is also operated by Forbes Coal.

Both the Magdalena and Aviemore mining operations hold significant economic incentives both to the mining company and to the local inhabitants surrounding the two sites. Without the discard dump extension both these mining operations would be significantly disrupted, if not halted permanently, which would in turn result in a loss of these economic benefits. Therefore, the decision has been taken by Forbes Coal to amend the currently approved EMP to incorporate the proposed discard dump extension in line the necessary legislative requirements.

8 PROJECT ALTERNATIVES

8.1 Site Alternatives

No site alternatives have been considered as the discard dump is an already an existing facility and the applicant has the right to mine the properties. The only alternative would be alternatives to the layout and design of the discard dump, which are discussed in more detail below.

8.2 Layout Alternatives

There are a number of site constraints that has limited the consideration of differing site layouts. These site constraints include:

- The property boundary: the discard dump has to be located wholly within the property boundary of the mine i.e. Portion 1 of Farm Mooidoorn Hoek No. 3722.
- Old underground mine workings: there exist underground workings traversing the proposed extension area ranging from as shallow as 25m below natural ground level to 50m. The MPRDA and provisions of SANS Code 10286:1998 prohibit the erection of a structure within 100m of underground workings.

- Return Water Dam: an old box cut area is used by the mine as a return water facility on the boundary of the existing discard dump.

Therefore, given the identified constraints, the only options for an alternative layout are to extend the discard dump in a southerly direction as proposed, or to increase the height of the discard dump. However, increasing the height of the discard dump is not a suitable alternative due to the safety risks. Thus, the preferred and only alternative is to extend the discard dump in a southerly direction as proposed.

The applicant has, however, committed to seize all opportunities to reduce the size of the discard dump wherever possible through the reworking of the discard materials. However, the market for the re-use/reworking of discard materials is still in its infancy and the sustainability of the coal discard market remains uncertain. For this reason, the applicant is currently unable to make any adjustments to the parameters of the disposal site.

8.3 The 'No Go' Alternative

The "no go" alternative would be that the status quo remains and no extension to the existing discard dump occurs. Such an option would negatively affect the future viability of the Magdalena and Aviemore Collieries and thus would have significant financial implications for Forbes Coal and significant social and financial implications for the surrounding community who depend on the mine(s) for their livelihoods.

9 LEGISLATIVE REQUIREMENTS AND APPLICABLE POLICIES AND GUIDELINES

9.1 National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), as amended

The following Sections of the Act are applicable to the proposed project:

- Section 2 – Environmental Management Principles (see *Section 6.1.1* below)
- Chapter 5 – Integrated Environmental Management (Sections 23 and 24)
- Section 28 – Duty of Care and Remediation of Environmental Damage
- Section 30 – Control of Emergency Incidents

9.1.1 Environmental Management Principles

The environmental management principles quoted within the Act are:

"2. (1) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and —

(a) shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination;
(b) serve as the general framework within which environmental management and implementation plans must be formulated;
(c) serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment;
(d) serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and
(e) guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection or management of the environment.

(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
(3) Development must be socially, environmentally and economically sustainable.
(4) (a) Sustainable development requires the consideration of all relevant factors including the following:

(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
(ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
(iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
(iv) that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;

(v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;

(vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;

(vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and

(viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.

(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.

(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.

(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.

(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.

(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.

(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.

(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.
(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.
(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.
(n) Global and international responsibilities relating to the environment must be discharged in the national interest.
(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.
(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.
(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

9.1.2 Required Processes and Approvals

The clearing and transformation of approximately **36ha** of undeveloped land/veld for the discard dump extension is listed as an activity in Government Notice No. R. 545 of the EIA Regulations (2010) promulgated in terms of Section 24(5), 24M and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). Activities listed in Government Notice No. R. 545 require environmental authorisation subject to a full Scoping and Environmental Impact Assessment. The relevant listed activity as described in the GN No. R. 545 are shown in **Table 7** below.

Table 7: The listed activities triggered by the proposed development as described in GN No. R. 545

Activity No.	Activity Description
15	Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the

Activity No.	Activity Description
	total area to be transformed is 20 hectares or more; Except where such physical alteration takes place for: • Linear development activities; or • Agriculture or afforestation where activity 16 in this Schedule will apply.

9.2 Minerals and Petroleum Resources Development Act, 2002 (Act No.28 of 2002) (MPRDA), as amended

The following Sections of the Act are applicable to the proposed project:

- Section 37 – Environmental Management Principles (Section 2 of NEMA)
- Section 38A and 38B – Integrated Environmental Management and Responsibility to Remedy
- Section 39 – Environmental Management Programme and Environmental Management Plan
- Section 41 – Financial Provision for Remediation of Environmental Damage
- Section 42 – Management of Residue Stockpiles and Residue Deposits
- Section 102- Amendment of Rights, Permits, Programmes and Plans
- Section 107 - Regulations

9.2.1 Required Processes and Approvals

The approved EMPR (under the MPRDA) for the Magdalena Colliery will need to be amended to reflect the proposed extended discard dump and associated infrastructure.

According to Section 102 of the Act, an EMPR and may not be amended or varied (including by extension of the area covered by it or by the addition of minerals or a share or shares or seams, mineralised bodies, or strata, which are not at the time the subject thereof) without the written consent of the Minister.

9.3 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA)

The following sections of the Act are applicable to the proposed project:

- Section 16 – General Duty in Respect of Waste Management
- Section 17 – Reduction, Reuse, Recycling and Recovery of Waste

- Section 21- General Requirements for Storage of Waste
- Section 25 – Duties of Persons Transporting Waste
- Section 26 – Prohibition of Unauthorised Disposal
- Section 27 – Littering
- Part 8 – Contaminated Land (Sections 35 – 41)

9.3.1 Required Processes and Approvals

The Magdalena discard dump extension is a mineral related development and due to the fact that no general waste will be deposited (only coal discard), no Waste Management Licence under the NEM:WA is required. As stated in Section 4(b) of the Waste Act, residue stockpiles or residue deposits (i.e. a mine discard dump) are regulated by the MPRDA (2002) and therefore the NEM:WA does not apply. The National Department of Environmental Affairs (DEA) have confirmed that the proposed activity is no considered a waste management activity. Thus, no formal waste management license is required.

9.4 National Water Act, 1998 (Act No. 36 of 1998) (NWA)

The following Sections of the NWA are applicable to the proposed project:

- Section 19 - Prevention and remedying effects of pollution
- Section 20 – Control of Emergency Incidents
- Section 21 – Water Use
- Section 27 – Considerations for Issue of General Authorisations and Licences
- Section 28 - Essential requirements of licences
- Section 29 - Conditions for issue of general authorisations and licences
- Section 39 - General authorisations to use water
- Part 7: Individual applications for licences (Sections 40 – 42)
- Part 10: Contravention of or failure to comply with authorisations (Sections 53 – 55)

9.4.1 Required Processes and Licenses

Forbes Coal was issued with an integrated water use license (IWUL) to operate the existing mine and discard dump in 2007. However, the proposed extension and associated activities are considered Section 21(b) and 21(g) water uses. Thus, the IWUL for the colliery will need to be amended and updated to incorporate the dump extension.

The following activities associated with the proposed development are considered water uses under Section 21 of the National Water Act:

- 21(b) Storing of water
- 21(g) Disposing of waste in a manner which may detrimentally impact on a water resource

To undertake these activities, a water use license is required from the Department of Water Affairs.

9.5 National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM:AQA)

The following Sections of the NEM:AQA are applicable to the proposed project:

- Section 19 - Prevention and remedying effects of pollution

9.5.1 Required Processes and Licenses

The proposed development activity is not considered a listed activity under Section 21 of the Act that requires an Atmospheric Emissions Licence. However, the applicant must take cognisance of Section 32 of the Act that describe measures in respect of dust control. At this stage, no regulations have been promulgated as yet.

9.6 National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA)

Due to the presence of coastal forest, dune thicket and grassland onsite, it is highly likely that a number of plants onsite are protected under the NEM:BA. Under the NEM:BA, the applicant is required to apply for a permit from Ezemvelo KZN Wildlife to remove and/or relocate any protected species.

9.7 National Forests Act, 1998 (Act No. 84 of 2008)

Under the Act, the applicant is required to apply for a permit from the Department of Water Affairs to remove and/or relocate any protected tree species.

9.8 KwaZulu-Natal Nature Conservation Management Amendment Act, 1999 (Act No. 5 of 1999)

Under the Act, the applicant is required to apply for a permit from Ezemvelo KZN Wildlife to remove and/or relocate any protected plant species.

9.9 KwaZulu-Natal Nature Conservation Ordinance 15 of 1974

Under the Ordinance, the applicant is required to apply for a permit from Ezemvelo KZN Wildlife to remove and/or relocate any protected plant species.

9.10 National Heritage Resources Act, 1999 (Act No. 25 of 1999)

The Act provides for the protection of all archaeological and paleontological sites, and meteorites (S35) and for the conservation and care of cemeteries and graves by SAHRA where this is not the responsibility of any other authority (S36). Under the Act, a destruction permit from Amafa will need to be acquired for the destruction of any heritage resources found onsite prior to undertaking construction activities.

9.11 Resources Act, 1983 (Act No. 43 of 1983)

The following sections of the Act are applicable to the proposed development:

- Classification of categories of weeds & invader plants (Regulation 15 of GN R1048) & restrictions in terms of where these species may occur.
- Requirement & methods to implement control measures for alien and invasive plant species (Regulation 15E of GN R1048).
- Soil protection and erosion control.

9.12 Constitution of the Republic of South Africa (Act No. 108 of 1996)

The following sections of the Constitution are applicable to the EIA process and proposed development:

- Bill of Rights (S2)
- Environmental Rights (S24) – i.e. the right to an environment which is not harmful to health and well-being

- Rights to freedom of movement and residence (S22)
- Property rights (S25)
- Access to information (S32)
- Right to just administrative action (S33)
- Recognition of international agreements (S231)

It is important that each of these constitutional rights are respected and not infringed in the development planning, construction and operational phases as well as within the EIA process.

9.13 Guidelines that have informed the preparation of this Scoping Report

The following legislation and guidelines have informed the scope and content of this Scoping Report:

- Guidelines published in terms of the NEMA EIA Regulations, in particular:
    - Companion to the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations of 2010 (Final Guideline; DEA, 2010).
    - Public Participation in the EIA Process (DEA, 2010).
    - Integrated Environmental Management Information Series (published by DEA).

10 DESCRIPTION OF THE LOCAL AND SITE ENVIRONMENT

10.1 Climate

The closest accredited meteorological station to the Magdalena Colliery which records hourly average wind speed, wind direction and temperature data is the South African Weather Services (SAWS) station at Rietvallei, located approximately 10.5km south-west of the site. Given the proximity and the nature of the terrain, the data is considered to be suitably representative of the conditions at the Magdalena Colliery.

Mean annual temperatures in the Endumeni Municipality range from 15^0 to 17^0C. Three temperature zones can be discerned:

- The warmest temperatures are experience along the southern and north eastern municipal boundaries. The mean annual temperature is about 17^0C.
- Areas which experience the lowest temperatures are limited to small patches within the central and western portions.
- The majority of the municipal area experiences temperatures of around 16^0 C.

10.1.1 Regional Climate

Magdalena Colliery is located within the summer rainfall region of South Africa, receiving more than 80% of the annual rainfall from October to March, the most of which occurs in January.

The rainfall generally occurs in the form of convectional thunderstorms and is usually accompanied by lightning, heavy rain, strong winds and sometimes hail. The rainfall events are highly localized and can vary markedly over short distances. The mean annual precipitation (MAP) for the area ranges from 630 – 1 000 mm. The gross annual A-pan evaporation for the region, measured at Carolina, is 1 831mm. Temperatures can vary between 32ºC (maximum) to 3.6ºC (minimum) in the summer and 21.6ºC (maximum) to -7.4ºC (minimum) in the winter. The annual prevailing wind direction, during the day, summer and winter months is north-westerly, while during the equinoctial period (March - May) and during night time the prevailing winds are from the east.

10.2 Wind

Wind related data is available for Newcastle only (1957 – 1969). The prevailing wind direction is North-westerly. The highest velocities occur during the months of August to October when Westerly winds of up to 5.7 m/s can occur. The average wind speed is 3.7 m/s. During spring and summer, strong South-easterly winds can also develop.

10.3 Geology

10.3.1 Overview

The site consists of a series of horizontally layered sedimentary units of the Vryheid formation located within the Ecca Group of the Karoo Supergroup. These sediments comprise successions of sandstones, shales, mudstones, carbonaceous shales and coal seams. The Ecca Group overlies rocks of the Dwyka Group.

10.3.2 Coal Characteristics

The Magdalena Colliery is situated within the Klip River coalfield. This coalfield comprises Carboniferous and Permian sediments, which include the Vryheid formation, deposited on an undulating glaciated surface with the Dwyka tillites at the base of the sequence. Above this are predominantly Ecca sediments. No pre-Karoo rocks are exposed.

The aerial extent of the Klip River coalfield is mainly controlled by structural features. Within this area the two principal coal seams developed are the Leader Seam and the Main Seam unit, which comprise the 'Top', and 'Bottom' seams.

Course grained and gritty sandstones occur more frequently within the coal bearing strata, with overlying sediments generally being more argillaceous. Drilling proved the presence of 3 coal seams, namely: the leader seam which occurs some 13m – 18.5m above the top seam, and the bottom seam occurring some 6 – 21m below the top seam. The parting between the top and bottom seam decreases in a northerly to north westerly direction.

Both the Top and Bottom seam are not uniform, but contain one or more partings of shale or sandstone. The Top seam has a seam thickness of 1.32m to 4.38m (average seam thickness on the farm Magdalena is 2.1m). This coal is ranked as a low volatile bituminous coal. The total inter-seam partings have an average thickness of 0.19m.

The bottom seam occurs at an average of 19m below the Top seam. The parting between the Top and Bottom seam consists of medium to coarse grained sandstone. The Bottom seam height ranges from 0.7m to 2.04m (average 1.00m on the farm Magdalena No. 7574).

10.3.3 Coal Floor Contours and Cross Sections

On Magdalena, the coal reserves are truncated by dolerite sills to the north and southeast. These sills have acted as resistant 'caps' in the process of erosion, forming topographical highs with moderate to steep sloping sides to the valleys.

Dolerite dykes within the area tend to follow pre-existing fault planes. These faults planes give rise to the vertical displacement of the coal seam.

In this region, the sediments of the Vryheid Formation are generally considered medium to poor potential fractured rock, with negligible primary porosity and low transmissivity.

Groundwater storage and movement is primarily confined to fractures, joints and bedding planes within the rock mass and aquifer recharge is largely dependent on rainfall.

The contact zones between the sediments and dolerite intrusions and/or faults are often highly indurated and these discrete highly fractured zones often enhance groundwater storage and permeability and usually offer preferential flow-paths for groundwater migration. Boreholes sited strategically to target these discrete fracture zones may offer exploitable quantities of groundwater.

10.4 Topography

The local topography is relatively gently sloping and undulating interspersed with small isolated hilltops and table-like mountains characterised by moderately-sloping to steep hillsides and mountain slopes. The current operations are located at the base of a small escarpment. The slopes below the escarpment and on the plateau are relatively gentle and undulating.

10.5 Surface Water Resources

The existing Magdalena Colliery falls within the upper catchments of the Poonaspruit and Bloubankspruit. These streams are non-perennial and tributaries of the Buffels River. The Buffels River forms part of the Tugela River catchment (Primary Catchment Region V) which flows into the Indian Ocean on the east coast of Southern Africa.

The Sub-catchment for the Bloubankspruit is V32D. A small portion of the Farm Mount Johanna 10987 falls within the Sub-catchment V32E, only a small portion of a sub-tributary of the non-perennial Sondagsriver flowing from the farm portion.

The area is characterised by heavily eroded slopes and channel beds. The current size of the channel bed of the Bloubankspruit, even close to its source, is far greater than would be expected for a river with a small catchment area and gullies are prominent.

10.5.1 Surface Water Quality

From a catchment perspective, the upper Buffalo River is the most severely polluted of all the Thukela River's tributaries (Thukela ISP). Water quality in the Buffalo River all the way down to its confluence with the Thukela has been described as very poor according to the Thukela ISP.

10.6 Groundwater Resources

Existing studies that were carried out for the Magdalena Colliery indicate that aquifers underlie the local area. The sedimentary rocks of the Ecca Group form the main water bearing strata. The groundwater table is structurally controlled by dykes and faulting. In the Ecca group, multi-layered aquifers are common. The Dwyka Formation, which underlies the Ecca, normally has a very low permeability and can be considered as an aquitard. The base of the impacted zone can therefore be taken as the base of the coal seams. Previous studies indicate that groundwater levels and flow directions follow the topographical setting of the area in general.

A number of local community potable water boreholes are present within the vicinity of the colliery and groundwater level information at these boreholes is limited. However, according to the local mine personnel the groundwater levels in the area vary with rainfall but was constant over the period of several years i.e. previous groundwater studies indicated that the water level fluctuates between 0-40 mbgl. The boreholes positioned within low lying areas indicate artesian or very shallow water levels.

The quality of groundwater in Magdalena is relatively fair, with high contents of Ca/Mg $(HCO_3)_2$, while the stagnant conditions are characterized by $NaHCO_3$ $Ca/MgCl_2$ and $Ca/MgSO_4$.

10.7 Flora and Conservation Status

Presently, the land occurring within the extension footprint comprises secondary grassland and secondary thicket and woodland. The original grasslands that once covered the site have long been transformed by grazing, agriculture and mining activities.

Under natural conditions, the site was covered with primary grassland that was part of two larger, broadly-defined vegetation units, namely the Northern KZN Moist Grassland (Gs 4) and Income Sandy Grassland (Gs 7) units as defined by Mucina and Rutherford (2006). Both grassland units are currently considered threatened in terms of conservation status and are classified as vulnerable (Mucina and Rutherford, 2006).

In terms of strategic conservation planning, the extension site is currently classified as 'Biodiversity Priority Area 3' within the 2010 Ezemvelo KZN Wildlife Conservation Plan. This indicates that the site may be of moderate conservation importance. Floral features of

potential conservation importance that may occur within the extension site include Income Sandy Grassland, Glencoe Moist Grassland and *Kniphofia galpinii*.

A recognisance vegetation survey was conducted by the Department of Agriculture – Newcastle Extension Office on the 29th August 2001, with the primary objective of determining the dominant plant species present on the farm Magdalena No. 7574.

The survey indicated the dominant grass species to be increaser II species, meaning that the abundance of these species will increase due to the disturbing effect of overgrazing. These grass species are as follows:

- *Aristida congesta* (Tassel three-awn)
- *Eragrostis curvula* (Weeping love grass)
- *Cynodon dactylon* (Couch grass)
- *Hyparrhenia hirta* (Common thatch grass)

The dominant tree species is *Acacia karroo* (Sweet thorn).

All the above-mentioned grass species occur in disturbed places, indicating that the vegetation composition on Magdalena Colliery is not natural for this region. The only grass species considered natural for this region is *Hyparrhenia hirta*.

10.8 Fauna and Conservation Status

10.8.1 Ezemvelo KZN Wildlife C-Plan

In terms of strategic conservation planning, the extension site is currently classified as 'Biodiversity Priority Area 3' within the 2010 Ezemvelo KZN Wildlife Conservation Plan. This indicates that the site may be of moderate conservation importance. Noteworthy, or threatened, faunal populations that may occur onsite as identified in the C-Plan include the millipede *Doratogonus minor* and the mollusc *Cochlitoma simplex*.

10.8.2 South African Bird Atlas Project 2 (SABAP2)

The South African Bird Atlas Project 2 (SABAP2) records over 37 species of birds from the relevant grid squares of the site (Pentad 2755_3010). According to the data, the following species are known to occur in the area:

Table 8: Bird Species that are Locally Common (SABAP2)

Common Name	Scientific Name
Canary, Black-throated (Bergkanarie)	Crithagra atrogularis
Chat, Anteating (Swartpiek)	Myrmecocichla formicivora
Cisticola, Cloud (Gevlekte Klopkloppie)	Cisticola textrix
Cisticola, Wing-snapping (Kleinste Klopkloppie)	Cisticola ayresii
Cisticola, Zitting (Landeryklopkloppie)	Cisticola juncidis
Coot, Red-knobbed (Bleshoender)	Fulica cristata
Cormorant, Reed (Rietduiker)	Phalacrocorax africanus
Cuckoo, Diderick (Diederikkie)	Chrysococcyx caprius
Dove, Laughing (Rooiborsduifie)	Streptopelia senegalensis
Duck, Yellow-billed (Geelbekeend)	Anas undulata
Egret, Cattle (Veereier)	Bubulcus ibis
Egret, Little (Kleinwitreier)	Egretta garzetta
Fiscal, Common (Fiskaallaksman)	Lanius collaris
Flycatcher, Spotted (Europese Vlieievanger)	Muscicapa striata
Grebe, Little (Kleindobbertjie)	Tachybaptus ruficollis
Heron, Grey (Bloureier)	Ardea cinerea
Lapwing, Blacksmith (Bontkiewiet)	Vanellus armatus
Lark, Rufous-naped (Rooineklewerik)	Mirafra africana
Longclaw, Cape (Oranjekeelkalkoentjie)	Macronyx capensis
Martin, Banded (Gebande Oewerswael)	Riparia cincta
Masked-Weaver, Southern (Swartkeelgeelvink)	Ploceus velatus
Myna, Common (Indiese Spreeu)	Acridotheres tristis
Neddicky, Neddicky (Neddikkie)	Cisticola fulvicapilla
Paradise-Flycatcher, African (Paradysvlieevanger)	Terpsiphone viridis
Pipit, African (Gewone Koester)	Anthus cinnamomeus
Plover, Kittlitz's (Geelborsstrandkiewiet)	Charadrius pecuarius
Plover, Three-banded (Driebandstrandkiewiet)	Charadrius tricollaris
Sandpiper, Marsh (Moerasruiter)	Tringa stagnatilis
Sandpiper, Wood (Bosruiter)	Tringa glareola

Shoveler, Cape (Kaapse Slopeend)	Anas smithii
Sparrow, Cape (Gewone Mossie)	Passer melanurus
Spoonbill, African (Lepelaar)	Platalea alba
Swift, Horus (Horuswindswael)	Apus horus
Teal, Red-billed (Rooibekeend)	Anas erythrorhyncha
Turtle-Dove, Cape (Gewone Tortelduif)	Streptopelia capicola
Wagtail, Cape (Gewone Kwikkie)	Motacilla capensis

According to the South African Bird Atlas Project 2 (SABAP2) birds of conservation concern in the area include:

Table 9: Threatened Bird Species that Occur in the Area (SABAP2)

Common Name	Scientific Name
Swift, Horus (Horuswindswael)	Apus horus
Paradise-Flycatcher, African (Paradysvlieevanger)	Terpsiphone viridis
Flycatcher, Spotted (Europese Vlieievanger)	Muscicapa striata
Canary, Black-throated (Bergkanarie)	Crithagra atrogularis

10.8.3 Onsite Observations

No wild animals (with the exception of birds) were encountered during the reconnaissance surveys. This may be due to the extensive habitation that occurs within the greater area, and the overgrazing of the grasslands. On the other hand, it is conceivable that rodents, lizards and snakes do occur sporadically within the area.

10.9 Agricultural Potential and Land Capability

According to the soils database from the Environmental Protection Atlas of South Africa (ENPAT), the soils of the majority of the proposed discard footprint comprise miscellaneous rocky soils derived from dolerite, sandstone and shale, with a small portion comprising prismacutanic and/or pedocutanic diagnostic horizons with one or more of: vertic, melanic, red structured diagnostic horizons. It is speculated that the soils are relatively shallow and highly erodible.

In terms of land use, the land underneath the proposed discard dump extension footprint comprises degraded veld that has undergone extensive bush encroachment. At present,

limited cattle grazing occurs on the site and erosion gillies are prominent. Grazing was the prominent land use during re-mining times.

Table 10 indicates the land capability of the different soil forms in the study area. Note that land capability classification is done in accordance to the Chamber of Mines Rehabilitation Guidelines (**Table 11**).

Table 10: Pre-mining land capability

Land Capability	Percentage (%)
Wetland (lower stream areas)	2,76
Arable	31,63
Grazing to rocky semi-grassland	46,7
Wilderness	18,91
Total	**100**

Table 11: Criteria used to identify each land capability category

WETLAND
• A diagnostic organic (O) soil horizon occurs at the surface; or • A soil horizon that is gleyed throughout more than 50% of its volume and is significantly thick occurs within 75 cm of the surface.
ARABLE
• Does not qualify as a wetland; • Has soil that is readily permeable to the roots of common cultivated plants throughout a depth of 75 cm from the surface; • Has a soil pH value between 4,0 and 8,4; • Has an electrical conductivity of the saturation extract less than 400 mS/m at 25°C and an exchangeable sodium percentage less than 15 throughout the upper 75 cm of the soil profile; • Has a permeability of at least 1,5 mm per hour in the upper 50 cm of the soil profile; • Has less than 10% by volume of rocks or pedocrete fragments larger than 100 mm diameter in the upper 75 cm of the soil profile; • Has a slope (in %) and erodibility factor (K) such that their product is less than 2,0; and • Occurs under climatic regime that permits, from soils of similar texture and adequate effective depth (75 cm), the economic attainment of yields of adapted agronomic or horticultural crops that are at least equal to the current national average for those crops or; • Is either currently being irrigated successfully or has been scheduled for irrigation by the Department of Water Affairs and Forestry.
GRAZING LAND

• Does not qualify as wetland or arable land; • Has soil or soil-like material, permeable to the roots of native plants, that is more than 25cm thick and contains less than 50% by volume of rocks or perorate fragments larger than 100mm diameter; or • Supports or is capable of supporting a stand of native or introduced grass species or other forage plants utilisable by livestock or game animals on a commercial basis.
WILDERNESS LAND
• Land which does not qualify as wetland, arable land or grazing land; or • Soil that are either too arid, saline, steep or too stony to support plants of economic value.

10.10 Air Quality

The air quality in the surrounding areas is relatively good with the main local pollutant sources of the area being the mine and smoke from cooking fires in the mornings and evenings. During the cold winter nights, the local people burn coal from the mine; this results in smog forming over the area. No major industrial activities, which may further impact on air quality, occur within a 5km radius of the Magdalena Colliery or the proposed open cast extension.

The air quality at the site is moderate depending on the time of year and the strength of the prevailing winds. The potential sources of dust pollution within and in the vicinity of the mine are the exposed, bare surfaces onsite, predominately the dirt roads, and haulage and earthmoving activities. Monthly dust monitoring is currently being conducted.

10.11 Noise

Local noise levels are minimal and no significant noise pollution is generated by the Magdalena Colliery area. The study area does not occur along any major route or within the vicinity of industrial activity. Monthly noise monitoring is currently being conducted.

10.12 Sites of Archaeological and Cultural Interest

There are no sites of archaeological or cultural interest on the Magdalena Colliery. At the public meeting, some local residents raised indicated that graves may be present onsite. Local residents and community leaders will be consulted to identify such graces if present.

10.13 Sensitive Landscapes

No sensitive landscapes under statutory protection occur on the Magdalena Colliery.

10.14 Visual Aspects

The existing Magdalena Colliery area occurs on the north-eastern side of a local topographical highpoint. The mine and all potential dust generation may therefore be visible from dwellings occurring in the vicinity of the property, especially those on the plateau to the west of the site and those dwellings on the flat low lying areas to the east.

The coal discard dump along with the mine processing plant is visible from the Secondary Provincial Road, P272.

10.15 Socio-Economic Characteristics

Dannhauser is one of three local municipalities within the Amajuba District Municipality and covers an area of approximately 1516 square kilometres. It is the smallest municipality within the District Municipality consisting of 10 wards of which 98% are located in rural areas and only 2% located in urban areas (T&IKZN, 2009 and Dannhauser Municipality, 2009). This town is located midway between Durban and Johannesburg, about eight kilometres off the national road between the two cities (KZNcogta, 2009). It is surrounded by some of the largest coal-producing mines in KwaZulu-Natal of which Magdalena Colliery is one.

The town of Dannhauser is situated 15 Kilometres south-west of Magdalena. Numerous rivers flow through the municipal area, the most important being the Ngagane and uMzinyathi Rivers (KZNcogta, 2009). The area between Dannhauser and Magdalena is densely populated, unemployment is rife and poverty is visible throughout the region.

10.15.1 Population Density

According to the estimates of T&IKZN (2009), the population of the Amajuba District is 486 846 with an estimated 104 065 people living in the Dannhauser area. Population densities are highest in the Traditional Authority Areas in the north-eastern portion of the municipal area and in the town of Dannhauser itself (T&IKZN, 2009). The population is made up of 90% indigenous African people and 10% European-African (white) and other heritages, with

males making up 54% and females 46% of the population. There is an annual estimated growth rate of 2.4%.

As most of the municipality is rural, it is characterized by high levels of poverty, unemployment and a lack of business development opportunities (Danhauser Municipality, 2010).

Approximately 74% of the total population is below the age of 34. Children (0-4years of age), that is, below the pre-school enrolment age constitute 13% of the population; while those who are at school constitute 28.1% of the population, 4% of the total population are over 65 years old. This however indicates a high dependency ratio within the municipal area which in turn has a negative impact on the overall socio-economic development of the area as it impedes the ability of individuals to save and invest (Dannhauser Municipality, 2010).

Dannhauser functions as a small rural service centre i.e. providing commercial service facilities and agricultural services and is not a large employment generator. As a result the residents of the municipal area rely on the larger urban centres of Dundee and Newcastle for employment opportunities and higher order goods and services (KZNcogta, 2011).

10.15.2 Major economic activities and sources of employment

The major economic sectors within Dannhauser use to be agriculture and mining. However, mining is undergoing a movement away from large scale operations to smaller operations and there has been a decline of the coal-mining sector. Farming remains a major source of formal employment (KZNcogta, 2011).

Notably, the closure of mines that occurred few years ago had a major negative influence on economic activity and growth in the area and this has in turn adversely affected industries and retailers downstream that benefited from the past mine population. At present, small scale agricultural, informal mining and trade (produce and general supplies) dominate the major economic activities within the immediate area. Two thirds of the Dannhauser Municipality residents are mostly dependent on Social Services Grants. This intervention provided by Social Development is the greatest relief to the residents who had no access to any other source of income (Dannhauser Municipality, 2010).

The area is characterized by very high levels of unemployment (78.6%) and this is attributed to the general economic situation in the area, as well as the fact that the area is largely rural. Closure of coal mines and the related industries within the greater area has

attributed to the increase in unemployment. Also, the retrenchments of migrants in the cities where they were employed and have now returned to Dannhauser have a huge influence on the low economic levels in this municipal area (Dannhauser Municipality, 2010).

The municipality gets its income from grants provided by the Provincial Government and a small fraction of its population and businesses that pay municipal rates. Mining, tourism and agriculture sectors offer growth opportunities for many; but this is hampered by lack of skilled people and proper infrastructure in the industrial area.

10.15.3 Housing

Housing delivery seems to be problematic for the municipality of Dannhauser as this was reflected in the Housing Plan compiled by the municipal's department of housing. The plan indicated that much attention must be given to the housing needs of the people of Dannhauser as it appears that a huge percentage of them are without adequate housing. The municipality of the area has placed housing needs at the top of the priority list and has established various measures to implement the housing plan of the area. The mine will however also assist in facilitating the implementation of the housing plan and with re-locations where needed.

10.15.4 Social infrastructure

Social infrastructure in the form of shops and informal businesses occur within a 5km radius of Magdalena colliery area. All other informal infrastructure occurs in the towns of Dundee and Newcastle.

10.15.5 Provision of water

The provision of water within the municipal area has not improved since 2001. The municipality has a backlog of 65% of households with no water connections. It is estimated that an amount of R 195 million was required to minimize the backlog in the District by 2009 (in line with government targets). In terms of this a large amount of this funding is required to deal with the backlog in Dannhauser. In addition, it is noted that 2 schools within Dannhauser area also have a backlog with regard the water provision.

11 PUBLIC PARTICIPATION PROCESS

Section 54 of the EIA Regulations (2010) stipulates that a Public Participation Process (PPP) must be conducted as part of the EIA. This Chapter outlines the procedures followed during the undertaking of the PPP for the proposed project. The processes undertaken adheres to the NEMA principle whereby the participation of all Interested and Affected Parties (I&APs) in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured [NEMA, Section 2(1)(f)].

The main objectives of the PPP are to:

- Inform I&APs about the proposed project and the Scoping and EIA Process.
- Establish lines of communication between the I&APs and the project team to deal with potentially contentious issues.
- Provide ample opportunity to all parties to exchange information and express their views and raise issues and concerns.
- Obtain contributions from I&APs and ensure that all issues, concerns and queries raised are fully documented and carried forward for addressing in the EIA process.
- Identify all the significant issues that need to be addressed in the EIA.

Input into the public participation process by members of the public and stakeholders can be given at various stages of the EIA process. Registration as an I&AP can take place at any time during the process up until the Final EIA Report is submitted to the authorities. There are, however, specific periods in which public comments are required in order to ensure that these are captured in time for the submission of the various reports. These periods are as follows:

- Initial comment period based on the Background Information Document (BID) distribution (14-21 days) – submitted to GCS.
- Comment period for the Draft Scoping Report (40 days) – submitted to GCS.
- Comment period for the Final Scoping Report (40 days) – submitted to the DAEA.
- Comment period for the Draft Environmental Impact Assessment Report (EIAR) (21 days) – submitted to GCS.
- Comment period for the Final Environmental Impact Assessment Report (EIAR) (21 days) – submitted to the DAEA.

11.1 Responsibilities of Stakeholders and I&APs

Members of the public who want to participate in the assessment process need to register as I&AP's. Registered I&AP's are entitled to comment, in writing, on all written submissions to the authority and to raise any issues or concerns that they believe may be relevant and significant, provided that:

- Comments are submitted within the timeframes set by the competent authority or extensions of timeframes agreed to by the applicant or Environmental Assessment Practitioner (EAP). See timeframes above.
- A copy of the comments submitted directly to the competent authority is served on the applicant or EAP.
- The I&AP discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

11.2 Register/Database of I&APs

As part of the requirements for NEMA EIA Regulation 57, GCS has developed, maintained and is constantly updating an electronic I&AP register for the project. Bearing in mind that I&APs are still welcome to register, refer to **Appendix C1** for a copy of the latest I&APs register.

11.3 Public Notification and Engagement to Date

11.3.1 Notification of Key Stakeholders

At the commencement of the Scoping and EIA Process, GCS identified key stakeholders such as municipal authorities, government departments and environmental groups/organisation that have jurisdiction over, and/or potential interest in, the activity. These key stakeholders were sent formal notification of the commencement of the EIA process and basic information about the project and the EIA process to be followed in the form of a Background Information Document (BID) attached as **Appendix C2.1**.

The Background Information Document (BID) was a small A5 colour pamphlet which introduced the proposed project and contained background information on the project, the proponent, consultants and the proposed Scoping and EIA process and associated PPP to be followed and a locality map. It also includes an invitation to I&APs to register and submit any comments to GCS in writing.

The key organisations and stakeholders identified as key stakeholders were:

- The Dannhauser Local Municipality
- The Amajuba District Municipality
- The Department of Water Affairs
- AMAFA – KwaZulu-Natal Heritage
- Ezemvelo KZN Wildlife (EKZNW)
- Wildlife and Environment Society of South Africa (WESSA)

11.3.2 Notification of Neighbouring Landowners and Residents

Notification letters and BIDs were translated into Zulu and hand delivered to all neighbouring landowners and occupiers/residents. The BIDs and delivery register are included in **Appendix C2.1**. The date and venue for the local community public meeting was also included in these documents.

11.3.3 Media Notices

A Newspaper advert was placed in the local (Natal Courier Newspaper on the 18th of February 2013) and the regional (Independent Newspaper: Mercury and Isolezwe on the 20th of February 2013) in Zulu and English. These advertisements are presented in **Appendix C2.2**. The date and venue for the local community public meeting was also included in these documents.

11.3.4 Site Notices

Site notices detailing information about the project and the Scoping and EIA Process, as well as invitation to register as I&APs, were strategically fixed at various conspicuous points around the mine and in the surrounding area. These site notices were designed to the specification of Section 54 (3) of the NEMA EIA Regulations. See **Appendix C2.3** for proof of Notice Boards displays.

11.3.5 Public Meetings

A public meeting was held at the Khalima School near the mine on the 2nd March 2013 from 10h30 to 12h30. The purpose of the meeting was to present the discard dump expansion proposal to the local residents, to gather issues and concerns from the local residents and

to respond to comments and/or concerns from the local residents where possible. The minutes of the public meeting included in **Appendix C3**.

11.3.6 Interested and Affected Parties and Stakeholder Comments

NEMA EIA Regulation 55 entitles registered I&APs to comment in writing, on all written submissions made to the competent authority as part of the environmental authorisation and to raise any issues or concerns which they believe may be of significance to the consideration of the application. Copies of all comments and issues raised during the PPP will be consolidated into a Comments and Response Report (CRR), (See **Appendix C4**), which summarises each comment/issue received and provides a response.

11.3.7 Distribution of Draft Scoping Report for Public Review

All registered I&APs were notified of the availability of the Draft Scoping Report for a 40-day public comments period on the 16th May 2013. The report was made available for review at the Magdalena Colliery Offices and GCS' offices in Kloof. In addition, I&APs were notified that copies of the report could be made available on request or alternatively downloaded from the GCS website. Hard and electronic copies of the report were hand delivered to key governmental and non-governmental organisations on the 17th May 2013. Zulu translations of the executive summary of the DSR were hand delivered by the mine staff to the surrounding local residents (see proof of delivery included in **Appendix C2.4)**.

The closing date for the public comments period was the 28th June 2013. To date, no formal comments on the Draft Scoping Report have been received. Only an email response from Ezemvelo KZN Wildlife was received indicating that they would provide formal comment on the Draft EIA Report (see **Appendix C5**).

11.3.8 Comments Register

All I&AP written comments received during the scoping phase have been recorded in the Comments and Response Report which is included in **Appendix C4**. Responses to each comment submitted are also provided. Original copies of the formal comments received as included in **Appendix C5**.

12 POTENTIAL ENVIRONMENTAL IMPACTS

12.1 Introduction

In terms of Regulation 28 of the EIA Regulations (2010) which describes the contents of a Scoping Report, sub-regulation (g) states that the Scoping Report must contain "a description of environmental issues and potential impacts, including cumulative impacts that have been identified."

The purpose of this chapter is, therefore, to provide a brief description of both the potential positive and negative environmental impacts which could occur as a result of the Magdalena discard dump extension. The chapter does not attempt to assess, rank in terms of significance or mitigate any of the identified impacts or issues, positive or negative.

Although not assessing impacts, this chapter will identify those consolidated issues which are known at this stage to be significant and require specialist input and investigations either to research and understand the impact/issues, and/or to determine their significance. The motivation and need to undertake the specialist studies for these impacts is described in the Plan of Study for EIA.

12.2 Summary of Potential Impacts and Issues

A summary of the potential issues and impacts identified during the public participation process to date and by the EAP is provided in **Table 12** below.

Table 12: Potential Impacts Identified to be taken forward in the EIA Phase

Environmental Aspect	Issue/Impact Raised/Identified	Issue/Impact Description	Raised by:
1. Water Resources	Groundwater/borehole water contamination	Runoff from, and seepage through, the discard dump will likely become contaminated over time. The runoff and seepage will likely be captured by pollution control dams. However, there is always the possibility that some runoff or seepage may pollute the local water resources.	Local resident
	Surface water and watercourse contamination	Same as above.	GCS
	Increased surface water runoff volumes and resultant increased floodpeaks and rates of erosion and sedimentation	The decrease in the roughness and infiltration rates of the discard dump footprint will result in the increase in the volume and rates of surface runoff and likely lead to increased floodpeaks along local watercourses if the runoff is not managed.	GCS
2. Biodiversity and Ecosystem Integrity	Clearing and loss of secondary vegetation/habitat	The secondary vegetation occurring within the extension footprint will be cleared and destroyed.	WESSA
	Loss of protected floral and faunal species	Although degraded, there is a possibility that protected and/or threatened flora may be present within the extension footprint.	WESSA
	Alien vegetation proliferation and encroachment	Without proper management, rehabilitation and monitoring, it is likely that the disturbed surfaces associated with the establishment, operation and closure of the discard dump will become preferential sites for the colonisation of exotic and alien invasive plant species.	GCS
3. Agricultural Potential & Land Capability	Loss of soil resources and agricultural potential	The grazing and agricultural value of the extension footprint will likely be reduced with the establishment of the dump. The extent of this reduction will be dependent on the success of the rehabilitation.	WESSA
	Loss of grazing land	Same as above.	Local residents
4. Air Quality	Dust pollution and greenhouse gas emissions	The extension of the discard dump will increase the area of land susceptible to the generation of dust pollution as well as increase the risk of spontaneous combustion and greenhouse gas emissions.	WESSA, Local residents
5. Social Aspects &	Dust pollution	Same as above.	WESSA, Local

Environmental Aspect	Issue/Impact Raised/Identified	Issue/Impact Description	Raised by:
Quality of Life			residents
	Noise pollution	A slight increase in noise can be expected from the dump once fully extended.	GCS
	Visual impact	During operation, the dump will pose a visual impact to those rural residents that look onto the dump site and road users that regularly use the main road. This impact will be reduced after rehabilitation.	GCS
	Homestead relocation – for those homesteads in close proximity to the proposed discard dump	A couple of homesteads are located in close proximity to the proposed dump extension. These homesteads are likely to experience increased noise and dust pollution levels which would contribute to decreased quality of life and a change in sense of place.	GCS
	Local residents have requested that Forbes assist them by constructing a new gravel/dirt access road to the homesteads immediately west of the proposed discard dump footprint.	The establishment of the proposed road will improve transportation convenience and quality of life.	Local residents
6. Cultural Heritage	Heritage impacts – graves	Graves may be present within the dump extension. Ignorance of graves may lead to grave destruction.	Local resident
7. Health and Safety	Dust inhalation	The discard dump extension will result in a slight increase in the local dust levels, which translates into increased dust inhalation, especially for those homesteads in the close proximity to the site.	GCS
	Spontaneous combustion and uncontrolled fires	If the dump is not adequately compacted, spontaneous combustion of the dump materials may occur which represents a safety and health risk to those working onsite and living in close proximity to the dump.	GCS
	Safety of children playing near/on proposed discard dump	If unfenced, poorly graded and/or characterised by steep slopes, the dump may pose a safety risk to people traversing and/or playing on the dump, particularly children.	Local resident
8. Alternatives	Footprint area and design alternatives	Are there opportunities to reduce the amount of area required for the discard dump extension?	WESSA

13 PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

The Plan of Study (POS) for the Environmental Impact Assessment (EIA) describes the approach to the Impact Assessment, as required in terms of Section 28(1) (n) of Regulation GNR 543 promulgated in terms of the NEMA. In accordance with Regulation 28(1) (n) of the NEMA, this POS includes:

- A description of the tasks that will be undertaken in the impact assessment phase to address the key issues identified in the scoping phase. These tasks are generally related to the specialist assessments that will form the basis of the environmental impact assessment. However, these tasks also include consultation with key stakeholders and/or the preparation of management plans and programmes.
- An assessment of the significance of each of the potential impacts identified by specialists and the EAP according to accepted methods.
- Details of the specialist investigations that need to be undertaken and the manner in which such tasks will be undertaken (Terms of Reference).
- An indication of the stages at which the competent Authority will be consulted.
- A description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity.
- A description of the public participation process that will be conducted during the environmental impact assessment.
- Any specific information required by the DAEA or DMR.

13.1 Impact Assessment Phase

The Impact Assessment Phase involves the compilation of an Environmental Impact Assessment (EIA) Report that provides a formal assessment of the significance of all of the potential impacts identified for assessment in the Scoping Phase. The impact assessment will be based on the findings and assessments of the various specialist reports listed and described in Section 14.2 below.

The following tasks are required to be undertaken during the EIA process:

- Appoint specialists to undertake the specialist investigations and confirm the scope of work required to fulfil the TOR.
- Review of the specialist reports and amendment where necessary.

- Discuss the specialist reports results and conclusions with the DAEA, DMR, EKZNW and the DWA.
- Incorporate the findings of the assessments into the Draft EIA Report.
- Distribute the Draft EIA Report to I&APs and key stakeholders for review.
- Convene a public open day and/or public meeting to present the results of the specialist and the impact assessment.
- Collate and address any comments/concerns documented by I&APs.
- Incorporate issues and responses into the Final EIA Report.
- Submit the Final EIA Report to the DAEA for consideration.
- Inform I&APs of the submission of the Final EIA Report to the DAEA and DMR and the availability of the report for review.

13.2 Competent Authority Consultation

The Competent Authority (DAEA and DMR) will be consulted at the following key stages:

- A meeting at the initiation of the Scoping Phase to discuss possible timeframes and to clarify any queries or concerns regarding the EIA process.
- A meeting at the initiation of the Impact Assessment Phase to discuss the way forward and to clarify any queries or concerns regarding the EIA process.
- A consultation meeting will be held with DAEA and DMR after the distribution of the DEIR to discuss any additional comments from I&APs as well as the outcome of the specialist studies. An indication of the DAEA's and DMR's satisfaction with the process undertaken to that stage should also be clear after the meeting.
- The Final EIA Report will be submitted to the DAEA and DMR once all outstanding issues have been resolved.
- The DAEA and DMR may convene a meeting post-submission of the Final EIA Report should it be deemed necessary.

13.3 Plan for Addressing Issues/Impacts Raised

All concerns and issues raised by I&AP's during the Scoping Phase will be addressed in the EIA Report, either through formal assessment in the form of specialist assessments and/or plans, or other means (written responses, formal agreements etc.) as summarised in Table 13 below.

The specialist assessments and plans that will be undertaken to assess the potential impacts identified during the scoping phase are highlighted in bold and underlined in **Table 13**. The rest of the actions relate to addressing the issue/impacts/concerns that do not require formal specialist assessments but which still require attention.

A Final Comments and Response Report (CRR) will be drafted to detail the response to each of the issues and concerns raised during the Scoping Phase as well as those new issues raised during the EIA Phase.

Table 13: Potential Impacts Identified to be taken forward in the EIA Phase

Issue/Impact Raised/Identified	Action Plan for EIA Phase
1. Water Resources	
Groundwater/borehole water contamination	• Conduct a **geo-hydrological assessment** of the extension site. • Update the **groundwater quality monitoring programme**.
Surface water and watercourse contamination	• Conduct a **surface water hydrological assessment** of the extension site. • Update the **mine water balance**. • Update the **Integrated Waste and Water Management Programme (IWWMP)**. • Compile a **stormwater management plan** for inclusion in the Operational EMP. • Update the **surface water quality monitoring programme**.
Increased surface water runoff volumes and resultant increased floodpeaks and rates of erosion and sedimentation	• Conduct a **surface water hydrological assessment** of the extension site. • Compile a **stormwater management plan** for inclusion in the operational EMP. • Mitigation measures to reduce/minimise erosion and sedimentation during construction will be included in the construction EMP.
2. Biodiversity & Ecosystem Integrity	
Clearing and loss of secondary vegetation/habitat	• Conduct a preliminary ecological assessment. A preliminary assessment is considered satisfactory as the veld to be impacted is currently highly disturbed and degraded.
Loss of protected floral and faunal species	• Conduct a preliminary ecological assessment.
Alien vegetation proliferation and encroachment	• Compile an alien plant eradication and control programme for inclusion in the Operational EMP and closure rehabilitation plan.
3. Agricultural Potential & Land Capability	
Loss of soil resource and agricultural potential	• Update the soil conservation section of the EMP. • Update the **mine closure rehabilitation plan** for the mine to include the discard dump extension. • Clarify the proposed feasible future use of the land once rehabilitated. • An agricultural potential assessment is not considered necessary.

Issue/Impact Raised/Identified	Action Plan for EIA Phase
Loss of grazing land	The proposed feasible future use of the land once rehabilitated will be clarified.
4. Air Quality	
Dust pollution and greenhouse gas emissions	• Measures to minimise dust generation onsite will be included in the construction and operational EMP's for the discard dump and will be audited regularly. • Measures to minimise the risk of spontaneous combustion of the discard dump will be included in the construction and operational EMP's for the discard dump and will be audited regularly.
5. Social Aspects & Quality of Life	
Dust pollution	• Measures to minimise dust generation onsite will be included in the construction and operational EMP's for the discard dump and will be audited regularly.
Noise pollution	• Measures to minimise noise generation onsite will be included in the construction and operational EMP's for the discard dump and will be audited regularly.
Visual impact	• Update the mine closure rehabilitation plan.
Homestead relocation – for those homesteads in close proximity to the proposed discard dump	• As part of Forbes' on-going public consultation, staff will visit the homesteads in close proximity to the site and explain the potential impacts of the proposed dump on their quality of life and discuss the social acceptability of their relocation.
Local residents have requested that Forbes assist them by constructing a new gravel/dirt access road to the homesteads immediately west of the proposed discard dump footprint.	• Forbes has verbally committed to assist the local community with the construction of an additional access road immediately west of the proposed discard dump.
6. Cultural Heritage Resources	
Heritage impacts - graves	• A site walkover will be undertaken by the site manager with local residents to identify the presence of graves onsite.
7. Health & Safety	
Dust inhalation	• Measures to minimise dust generation onsite will be included in the construction and operational EMP's for the discard dump and will be audited regularly.
Spontaneous combustion and uncontrolled fires	• Measures to minimise the risk of spontaneous combustion of the discard dump will be included in the construction and operational EMP's for the discard dump and will be audited regularly.
Safety of children playing near/on proposed discard dump	• Local residents will be prohibited from entering the discard dump and it will be fenced off. The site manager will monitor it from time to time.
8. Alternatives	
Footprint area and design alternatives	• Forbes has verbally committed to reworking and recycling the discard materials wherever possible as the market dictates. However, alternatives to the proposed dump extent, location and design are limited due to technical constraints summarised in Section 8.2.

13.4 Terms of Reference of the Specialist Assessments Required

The following specialist studies will be undertaken to assess and/or address the potential impacts identified during the Scoping Phase. A detailed Terms of Reference (ToR) for each study is provided.

13.4.1 External Specialist Assessments

13.4.1.1 Preliminary Ecological Assessment

A preliminary ecological assessment is considered sufficient to address the potential floral and faunal impacts. The preliminary ecological assessment of the project site will be undertaken according to the following terms of reference:

- Conduct a preliminary vegetation survey of the discard dump footprint that should involve the following:
    - Identification and mapping of the vegetation communities within the discard dump expansion footprint.
    - Determination of the conservation value of the vegetation communities identified and recommended 'no-go' areas where applicable.
    - Identification of floral species encountered which are protected, rare, Red Listed and/or are of conservation importance for other reasons.

- Conduct a desktop faunal survey with ground-truthing (no formal sampling) that should involve the following:
    - Identification of the potential faunal populations that likely inhabit and/or use the discard dump extension site.
    - Identification of the potential protected rare and/or Red Listed fauna that are likely to inhabit and/or use the discard dump extension site.
    - Identification and mapping of the location of any burrows, nests etc. that occur within the discard dump extension footprint (those observed during ground-truthing).

13.4.2 Internal Specialist Assessments

13.4.2.1 Surface Water Hydrological Assessment

The surface water hydrological assessment of the project site will be undertaken according to the following terms of reference:

- Assessment of the current surface water regime of the site and the proposed extension area.
- Modelling of the current and proposed surface water flow in terms of peak flows, dry weather flows and flood lines.
- Assessment of surface water quality.
- Conduct a pollution risk assessment of the proposed discard dump extension and identify the mitigation and management measures to reduce the risks.

13.4.2.2 Geo-hydrological Assessment

The surface water hydrological assessment of the project site will be undertaken according to the following terms of reference:

- Conduct a hydrocensus of the extension site and update the existing conceptual hydrogeological understanding of the area by including all newly available data.
- Update water quality and water level data.
- Apply all new data into the existing numerical groundwater model and update/calibrate the model accordingly.
- Supply water balance data for planning purposes.
- Conduct a pollution risk assessment of the proposed discard dump extension and identify the mitigation and management measures to reduce the risks.

13.4.2.3 Specialist Peer Reviews

If required by the DAEA, the surface water hydrological and geo-hydrological assessments undertaken by GCS will peer reviewed by an external company. This will only be undertaken if required by the DAEA.

13.5 Public Participation

In terms of the public participation process stipulated in the EIA regulations (GNR 543 of 18 June 2010), Section 56(5 and 6) requires that I&AP's are afforded the opportunity to comment on both the draft and final reports produced during the environmental assessment process. In terms of the application, the following methodology is proposed.

- A formal comment period of forty (40) days will be allocated for key stakeholders to comment on the Draft EIA report.
- A public meeting will be held onsite or close by to present the findings of the impact assessment to the local residents.
- Should correspondence be received after the allotted timeframes, this documentation will be received and forwarded to the DAEA.
- The EIA regulations do not stipulate the required timeframes for comment by I&AP's on the Final EIA reports and it is therefore assumed I&APs have until the DAEA issues a decision to submit comments. I&AP's will be notified of the reports availability and provided with electronic copies of the report which will also be made available on the GCS website.
- A copy of the documentation will be made available on compact disk (cd) should any stakeholders be unable to access the information from the internet. To prevent the unsustainable use of paper, hard copies of the final reports will only be made available in exceptional circumstances.
- I&AP's who wish to comment on the final reports will need to submit they correspondence directly to the DAEA.

13.6 Environmental Impact Assessment

The findings and recommendations of the specialist studies will be incorporated into the planning of the proposed development where feasible and will inform the impact assessment undertaken in the EIA Report. The impact assessment method that will be used to assess the significance of the impacts in the EIA Report is attached as **Appendix E** of this report.

13.6.1 Content of Environmental Impact Report

The content of the Environmental Impact Assessment Report will include the following:

- An assessment of the nature, intensity, extent, duration, probability and significance of the potential environmental, social and cultural impacts of the proposed operations, including the cumulative impacts.
- A comparative assessment of the feasible alternative and their potential environmental social and cultural impacts where applicable.
- Investigate and describe mitigation measures for each significant impact of the project and the preferred alternatives to keep the impacts to a minimum.
- Description of the stakeholder engagement process followed during the course of the assessment and an indication of how issues raised have been addressed.
- Reporting on knowledge gaps, the adequacy of predictive methods and the underlying assumptions and uncertainties encountered in compiling the required information.
- Description of the arrangements for the monitoring and management of impacts, and the assessment of the effectiveness of such arrangements after their implementation.
- Inclusion of technical supporting information as appendices.

13.6.2 Impact Significance Methodology

The detailed methodology used to rate all of the potential environmental impacts in terms of significance is included in **Appendix E** of this report. In this methodology, the significance of each impact will be calculated based on the following criteria:

- Intensity of the Impact (Degree of change/disturbance/alteration).
- Spatial Extent of the Impact
- Duration of the Impact
- Probability of the Impact

The predicted impacts will be described and assessed for the situation preceding mitigation as well as after the implementation of mitigation measures for those situations where impacts of significance are predicted. Regarding those cases where the mitigation requires time to establish, the consequential impact is based on the situation after establishment of the mitigation measures.

13.6.3 Impact Mitigation and Management

Each specialist will be required to identify means of avoiding, mitigating and/or managing the negative impacts in their particular aspect of investigation. The recommended management strategies will be synthesised by GCS to formulate the Environmental Management Programme for the proposed mining operation. Management strategies will be based on the BATNEEC principle (Best Available Technology Not Involving Excessive Cost). Wherever possible, management strategies will be incorporated into the mine systems to avoid, or appropriately manage impacts from the outset.

13.7 Environmental Management Programme (EMPr)

A Draft Construction and Operational Environmental Management Plan (EMPr) will be compiled by GCS for inclusion in the EIA Report.

An EMPr is a detailed plan for the implementation of the mitigation measures to minimise the negative environmental impacts highlighted in the Environmental Impact Assessment Report. The Construction EMPr will contribute to the preparation of the contract documentation by developing clauses to which the contractor must adhere for the protection of the environment. The EMPr for this project will include a construction environmental monitoring plan specifying how the construction of the project is to be carried out.

13.7.1 Construction EMPr

The construction EMPr will include all those measures identified in the EIA Report to mitigate the negative impacts associated with the construction of the relevant development activities. At this stage it is envisaged that no specialist management plans will need to be included in construction EMPr.

13.7.2 Operational EMPr

The operational EMPr will include all those measures identified in the EIA Report to mitigate the negative impacts associated with the operation of the relevant development activities for the duration of the project's life-cycle. In addition, plans and programmes that will be included in the Operational EMPr are:

- Update the Mine Closure Rehabilitation Plan to include the discard dump.

- Stormwater Management Plan.
- Update the Groundwater Quality Monitoring Programme.
- Update the Mine Water Balance.
- Update the Integrated Waste and Water Management Programme (IWWMP).
- Update the Surface Water Quality Monitoring Programme.
- Institute an Alien Plant Eradication And Control Programme.

As the specialist assessments for the project have not been completed, it is highly likely that further management plans and programmes not listed above will be recommended. These potential plans will also be included in the EMPr where necessary.

14 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) - MPRDA

The measures included in the EMPr as highlighted above will also be incorporated into the approved EMPR for the Magdalena Colliery. Activities which will be included in this amendment include the discard dump extension and any mitigation and management measures required. GCS will update the document with reference to current legislation and best practice guidance and will update the current monitoring programme, where required.

The updated/amended EMPR will be revised to adhere to the latest Department of Minerals and Resources (DMR) formatting requirements as well as incorporating revised management plans with associated management action plans. It will be reworked to create a document which can be used as a management tool by contractors and mining personnel in line with current legislative requirements and best practice guidelines. All the mining operations at Magdalena are interlinked and subsequently the EMP amendment will refer to operations within existing areas to ensure a single composite document that can be used to guide all operations occurring at Magdalena Colliery.

The Updated/Amended EMPRwill be prepared in draft for consultation and will outline the responsible authority and of the various parties involved in the project and will contain Environmental Specifications to which the Contractor and Operator are required to adhere, throughout the duration of the construction, operational and closure phases of the entire Magdalena Colliery.

The draft EMPR will be made available to the I&APs and the community for review. An electronic version of the document will also be made available. The process will be conducted in an open and transparent manner to ensure that all aspects and issues of

concern are taken into account. All impacts and remedial measures will be presented to the registered stakeholders on completion of the environmental investigations.

15 CONCLUSION

Local knowledge, professional experience and specialist knowledge of the area have all been used to identify the potential issues associated with this development and the resultant potential impacts. At this stage, limited public comment on the proposal has been provided by WESSA and local residents during the public meeting. The Draft Scoping Report was made available for a 40-day public comments period. However, no formal comments on this report were received. There is no guarantee that all the potential impacts arising from the proposed development have been identified within the scoping phase, however the report provides an outline of the established measures that were taken to best identify all the potential impacts.

The scoping phase has revealed that there are a number of potentially significant impacts associated with the proposed discard dump extension. The potential impacts identified to date are listed as follows:

- Groundwater, aquifer and borehole contamination.
- Surface water and watercourse contamination.
- Increased surface water runoff volumes and resultant increased floodpeaks and rates of erosion and sedimentation.
- Clearing and loss of secondary vegetation/habitat.
- Loss of protected floral and faunal species.
- Alien vegetation proliferation and encroachment.
- Loss of soil resource and agricultural potential.
- Loss of grazing land.
- Degeneration in local air quality as a result of dust pollution and greenhouse gas emissions.
- Degeneration in local quality of life as a result of dust pollution, noise pollution, and visual impacts.
- Homestead relocation – for those homesteads in close proximity to the proposed discard dump.
- Impact to graves.
- Health and safety impacts i.e. Spontaneous combustion, uncontrolled fires and dust inhalation.
- Safety of children playing near/on proposed discard dump.

The potentially most significant impacts resulting from the construction, operation and closure of the discard dump extension are the potential water resources contamination impacts and potential social impacts to those living in close proximity to the proposed discard dump extension. In addition, important issues raised by the local residents during the public meeting were whether the discard dump extension would negatively affect their grazing land and whether there are graves within the extension site. At this stage, early indications are that the impact on grazing will be minimal as the land is privately owned and not part of the tribal authority land. Regarding the impact of graves, a walkover of the extension site with local residents will be conducted by Forbes as described in the Plan of Study for EIA. On the other hand, the proposed discard dump extension is vitally important to the future viability of the Magdalena and Aviemore Collieries that both employ a substantial amount of local labour as well as assist the surrounding residents.

The Plan of Study for EIA outlines the strategy to identify and assess all these potential impacts and concerns in the EIA phase. Key specialist studies that need to be conducted in the EIA Phase include a preliminary ecological assessment, surface water hydrological assessment and a geo-hydrological assessment. Key management programmes that need to prepared and/or updated include the mine closure rehabilitation plan, stormwater management plan, Integrated Waste and Water Management Programme (IWWMP), mine water balance, alien plant eradication and control programme, and the groundwater and surface quality monitoring programmes.

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