FINAL SCOPING REPORT

THE PROPOSED SUNNY SOUTH HOUSING DEVELOPMENT

BUFFALO CITY METROPOLITAN MUNICIPALITY

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Leaders in Environmental Management

DOCUMENT CONTROL

Final Scoping Report

The Proposed Sunny South Housing Development

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REVISION AND AMENDMENTS

DATE	No.	DESCRIPTION OF REVISION OR AMENDMENT
14/03/2013	0	Final Scoping Report.

SUMMARY DATA

Project:	**Sunny South Housing Development**
Location:	Sunny South, Buffalo City Metropolitan Municipality, Eastern Cape Province
Client:	**Buffalo City Metropolitan Municipality**
Consultant:	**Environmental Impact Management Services (Pty) Ltd**
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EXECUTIVE SUMMARY

The Buffalo City Metropolitan Municipality (BCMM – the Applicant) requested Environmental Impact Management Services (Pty) Ltd (EIMS) to undertake the necessary steps to prepare and submit applications for environmental authorisation (EA) to the competent authority, the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (ECDEDEAT), for the proposed Sunny South Housing Development. in the BCMM in the Eastern Cape Province. A Scoping and Environmental Impact Assessment (EIA) Process is required as per the requirements of the 2010 EIA regulations.

The site is located outside the urban edge of the BCMM, in the Eastern Cape Province of South Africa and the BCMM is currently the landowner of the land to be used. The new infrastructure is proposed to provide formal housing for identified beneficiaries. The project is proposed to take place within an area currently zoned as a residential area, institutional, commercial and public open space. The project is proposed to involve the following components:

- Construction of housing units;
- Installation of electrical, water and sanitation services; and
- Construction of internal roads.

A key feature of the Scoping and EIA Process is the Public Participation Process (PPP) as outlined in the EIA regulations. Subsequent to submission of the application to the Competent Authorities, notifications were sent out to all the pre-identified key interested and affected parties (I&APs), including organs of state, community organisations, the local municipality, and local ward councillors. Advertisements were also placed in a local newspaper and site notices were placed at various locations in and around the development site. Notices were also distributed to occupiers of land within 100m of the properties applicable to the application. A public meeting was held at the Braeside Primary School on 14 February 2013 from 11:30 – 12:30 in order for I&APs to further raise their opinions and/or concerns regarding the project. I&APs were given an opportunity to comment on the Draft Scoping Report. Comments received from I&APs were included in the Issues and Responses Report (IRR) and submitted to the Competent Authorities for consideration together with the Final Scoping Report.

As part of the Scoping and EIA Process alternatives to the proposal have to be considered in an effort to further minimise the impact of the proposal on the environment and to ensure that the most suitable alternative is carried forward. Development alternatives were considered in the Scoping Phase and one alternative has been put forward for further consideration and assessment in the EIA Phase, namely, the layout alternative to avoid certain watercourses on the site.

The following impacts, applicable to the identified alternatives, were identified during the Scoping Phase:

Biophysical	Socio-Economic
Nuisance Due to Dust	Job Creation
Loss of Vegetation	Noise
Erosion	Visual Impact
Waste Generation	Traffic
Impact on Wetland and Riparian Habitats	
Fire Hazards	
Geotechnical Stability	
Impact on Surface and Ground Water	

Each potential impact will be assessed for significance in the EIA phase. In addition the likely significance for the identified alternatives will be provided where relevant. In order to identify the most suitable alternative, the impact significance ratings will be recorded and summed to obtain a final significance rating score per alternative. Additionally, each alternative will be assessed in terms of the likely advantages and disadvantages and a final recommendation will be made as to the most favourable alternative.

The Final Scoping Report has been submitted to the ECDEDEAT for review and decision making. The ECDEDEAT is then anticipated to instruct EIMS and the applicant to continue with the EIA phase in accordance with the plan of study outlined in this Scoping Report. The Plan of Study provides a description of the planned approach and steps to be undertaken in the EIA phase. The key tasks to be undertaken in the EIA phase include:

- Watercourse/wetland and riparian area delineation and assessment;
- Ecological Impact Assessment;
- On-going public consultations;
- Assessment of significance of the impacts identified in the Scoping Report;
- Identification of relevant management and mitigation measures that should be implemented should the project be approved; and
- Compilation of the Environmental Management Programme (EMPR).

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LIST OF ABBREVIATIONS

ACEP	African Coelacanth Ecosystem Programme
BCMM	Buffalo City Metropolitan Municipality
BID	Background Information Document
CA	Competent Authority
CBD	Central Business District
DSR	Draft Scoping Report
DWA	Department of Water Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECBCP	Eastern Cape Biodiversity Conservation Plan
ECDEDEAT	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism
ECPHRA	Eastern Cape Provincial Heritage Resources Authority
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIMS	Environmental Impact Management Services (Pty) Ltd
EMPR	Environmental Management Programme
ER	Environmental Risk
FSR	Final Scoping Report
GIS	Geographical Information System
GN	Government Notice
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
IAPP	International Association for Public Participation
IRR	Issues and Responses Report
LN	Listing Notice
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NWA	National Water Act (Act No. 36 of 1998)
PF	Prioritisation Factor
PoS	Plan of Study
PPP	Public participation process
SACNSP	South African Council for Natural Scientific Professions
SAEON	South African Environmental Observation Network
SAIAB	South African Institute for Aquatic Biodiversity
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SCCCA	Southern Cape Coastal Condensation Area
SR	Scoping Report
VIP	Ventilated Improved Pit (latrine)
WUL	Water Use Licence

1. INTRODUCTION

The Buffalo City Metropolitan Municipality (BCMM) (the Applicant) requested Environmental Impact Management Services (Pty) Ltd (EIMS) to undertake necessary steps to prepare and submit applications for environmental authorisation (EA) to the competent authority, the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (ECDEDEAT), for the proposed Sunny South Housing Development which falls within the BCMM in the Eastern Cape Province. The project aims to provide each suitable beneficiary with a formal housing unit from a planned 540 erven grid.

The aim of the environmental Scoping study is to:

- describe the proposed development;
- investigate and describe the biophysical, social and economic environment surrounding the proposed development;
- identify potential impacts that may occur as a result of the proposed development;
- identify potential feasible alternatives to the proposed development;
- communicate the above information to interested and affected parties in an accessible and transparent manner;
- describe the public consultation process followed and to record all comments and suggestions received and all issues raised during the scoping process; and
- outline the subsequent impact assessment process, define any specialist studies required and set their terms of reference.

The scoping study culminates in the compilation of a Scoping Report (SR) that summarises the findings and recommendations of the Scoping Phase, as well as a Plan of Study (PoS) for the Environmental Impact Assessment (EIA) that outlines the suggested way forward during the EIA phase. The SR and the PoS for EIA has been submitted to the ECDEDEAT for decision making and comment during and after public review of the documents.

An important component of an EIA process is the undertaking of a public participation process (PPP). The PPP was undertaken during the Scoping and Impact Assessment Phases, and is described in detail in Section 6 of this report.

1.1 DETAILS OF THE EAP

In terms of Regulation 17 of the 2010 EIA Regulations (Government Notice R. 543), an independent Environmental Assessment Practitioner (EAP), must be appointed by the applicant to manage the application. EIMS has been appointed by the applicant as the EAP and is compliant with the definition of an EAP as defined in Regulation 17 of the EIA Regulations. This includes, inter alia, the requirement that EIMS is:

1) Objective and Independent;

2) Has expertise in conducting EIAs;

3) Comply with the NEMA, the Regulations and all other applicable legislation;

4) Takes into account all relevant factors relating to the application; and

5) Provides full disclosure to the applicant and the relevant environmental authority.

EIMS is a private and independent environmental management consulting firm with in excess of 19 years' experience in conducting EIAs. The EAP's responsible for preparing this SR are Mr GP Kriel and Mr Luzuko Dali. Brief detail of Mr Kriel and Mr Dali's expertise and experience are presented in Table 1:

Table 1: Details of the EAP

Full Name:	**Gideon Petrus Kriel**	**Luzuko Dali**
Professional registrations	Registered Professional Natural Scientist (SACNSP- #400202/09)	None
Qualifications:	M.Env.Sci (Water Sciences)	M.Sc. (Marine Biology)
Key experience:	An environmental scientist with 5 years of experience. Key experience includes: • Environmental Impact Assessments • Basic Assessments • Geographic Information Systems (GIS) • Aquatic Ecological Assessments • Water Use Licences • Waste Management Licence Applications • Public and Authority Participations	A marine biologist with 5 years of experience in marine research and almost a year's worth of environmental management experience. Key experience includes: • Basic Assessments • Marine invertebrate taxonomy • Water Use Licences • Public and Authority Participations

Mr Kriel holds an M.Env.Sci (Water Sciences) from the North-West University (Potchefstroom Campus). He has delivered presentations locally and internationally concerning the use of bio-indicators for the determination of water quality, and has extensive experience in the identification and taxonomy of freshwater algae, Geographical Information System (GIS) software packages and a wide variety of EIAs.

Mr Dali is a qualified Marine Biologist and Research Scientist. Luzuko holds a Master's degree from Rhodes University. His expertise lies in taxonomy and community dynamics of coastal marine invertebrates, coastal processes, project management and report writing. During his time with SAEON and SAIAB, he has worked in small and large multi-disciplinary teams on various projects ranging from plankton research and monitoring in Algoa Bay; reserve determination studies in the Knysna Estuary; near-shore and continental shelf zooplankton studies in the Southern Cape coast of South Africa. He has participated in numerous science outreach projects including, among others, Sci-fest and, national marine week with SAIAB, SAEON and ACEP. Most recently he joined EIMS as

a consultant and has been involved in public and stakeholder participation and specialist consultations in relation to environmental impact. Luzuko has delivered presentations at a number of conferences, workshops, and meetings.

2. DESCRIPTION OF THE PROJECT

This section aims to provide an overview of the project, the individual components, the need and desirability and the ultimate objectives.

2.1 NEED FOR THE PROJECT

The project proposes to provide suitable beneficiaries with formal housing units (with basic services infrastructure such as adequate sanitation, water and electricity). The area has been rezoned from agricultural to residential land use due to the BCMM's need for providing formal housing infrastructure to growing communities which currently reside in informal dwellings.

2.2 SITE LOCATION & ACCESS

The Sunny South site is located within the BCMM in the Eastern Cape Province of South Africa (Refer to Figure 1 and Figure 2) and is approximately 32.2 km south west from the East London Central Business District (CBD) via the R346 and Woolwash Road, and 39.0 km via the R72 and R347 on the way to King Williams Town.

The project is proposed to take place on BCMM owned land win an area of approximately 92.8 ha. The property has recently been rezoned from agricultural to residential. The project is proposed to involve the following main components:

- Construction of housing units;
- Installation of electrical, water and sanitation services; and
- Construction of internal roads.

For the purposes of this EIA, one site has been investigated for the proposed housing development. The centre coordinates are provided in Table 2 below.

Table 2: Location and Size of Proposed Housing Development Site

Site	Latitude	Longitude	Size
Preferred	33°04'19.66"S	27°37'38.50"E	92.8397 ha

The site ranges in height from 190 - 230 m above sea level and general slopes at gradients of less than 1:10. The preferred site has several existing direct access points that provide adequate access to the development site, with the R347 providing the main access to the site.

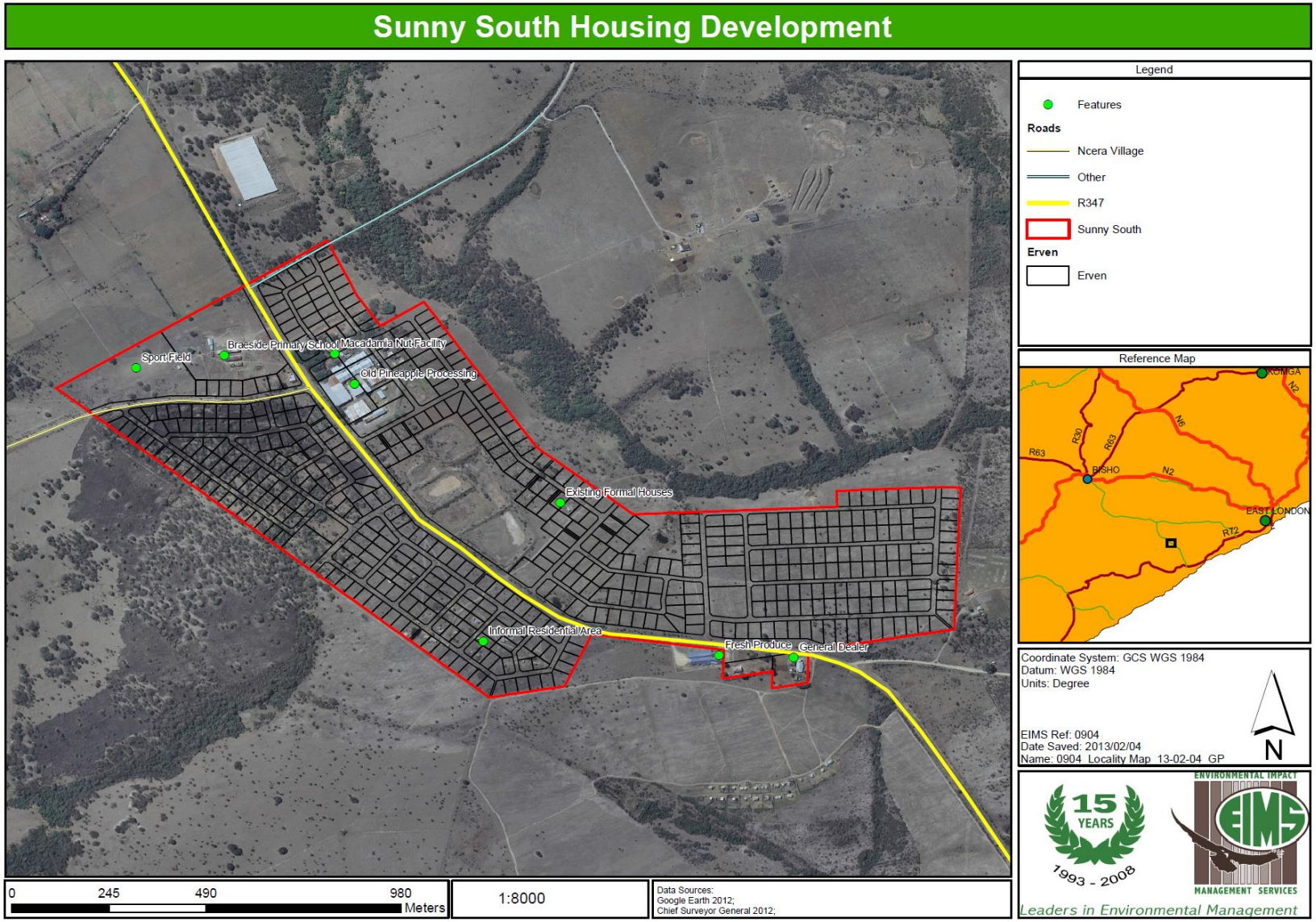

Figure 1: Locality map showing the Sunny South development site

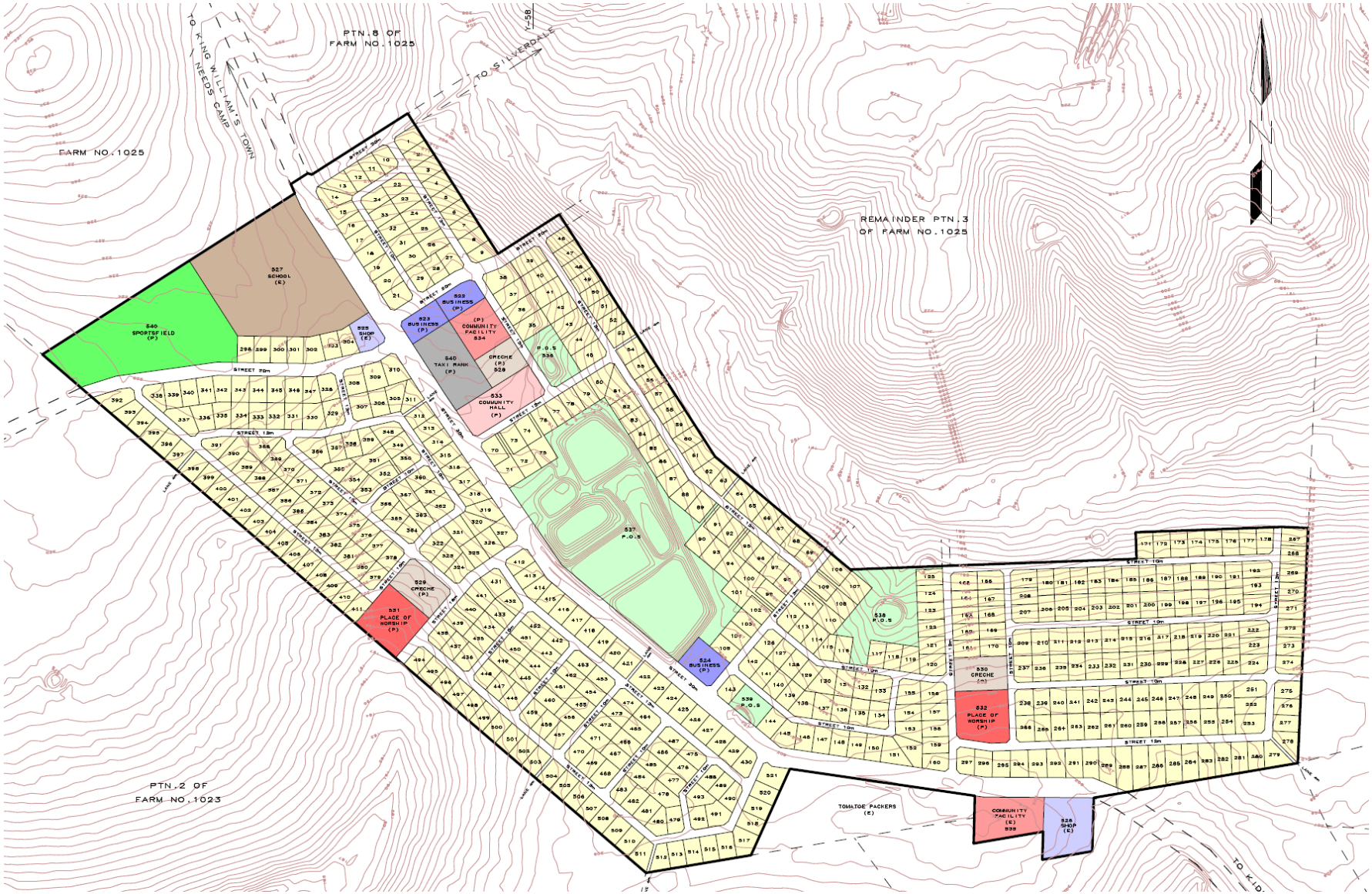

Figure 2: Map showing the proposed layout for the Sunny South housing development (Complan, 2004)

2.3 EXISTING SERVICES & STRUCTURES

This section provides an overview of the existing services and structures within the proposed development site as provided by Kantey and Templer (2012).

2.3.1 Electrical Services

There are existing power lines measuring approximately 4km traversing the Sunny South site (refer to Figure 3 below). These power lines belong to Eskom and reportedly transmit 22kV of electricity. Furthermore, these power lines, stretch across a number of the plots in the proposed Sunny South development scheme and it has been recommended that these power lines be re-routed in order to enable BCMM to build all the proposed residential units as planned.

Figure 3: Eskom power lines

2.3.2 Dams & Wetlands

A number of existing earth dams are present in the centre on the site (refer to Figure 4 below). From inspections on site, it appears that these earthen dams served as some sort of pond system, possibly for (partial) water treatment from the old pineapple processing operations on site.

These dams were incorporated into the original site development plan and their positions coincide with a Public Open Space. These dams will have no impact on the development as the layout has been designed to accommodate the dams.

The site also contained a number of other dams / wetland areas scattered throughout the site – two small dams immediately east of the earthen dams described above (zoned as Public Open Space – refer to Figure 5 below), as well as two dams towards the west of the earthen dams (zoned as Institutional – refer to Figure 6 and Figure 7 below), which are hidden from aerial view by dense vegetation. Other watercourses were also observed immediately north and south (refer to Figure 8 below) of the Braeside Primary School (wetlands). The wetland immediately south of the Braeside Primary School appears to be partially affected by two of the proposed residential erven. Another

wetland area is located on the southern corner of the site, which would affect four of the erven along the southern boundary of the proposed development (refer to Figure 9 below).

Figure 4: Existing earthen dams near the centre of the site

Figure 5: Dam located east of earthen dams

Figure 6: Westerly dam/wetland area

Figure 7: Westerly dam/wetland area

Figure 8: Wetland south of Braeside Primary School

Figure 9: Wetland along Southern Boundary

2.3.3 Residential Units

Up to 17 existing informal houses (mostly shacks) are present on the southern parts of the site and will have to be moved before project implementation can start. An agreement will have to be reached for the residents to be relocated to developed erven within the project site boundary.

Figure 10: Informal Houses

Six erven in the new township layout are occupied by 6 formal but dilapidated houses of no more than 30m^2 size in the northern parts of the site. There is one structure per plot. There is no need for these beneficiaries to be relocated as they can be allowed to remain in their respective erven and be provided with new top structures.

Figure 11: Existing formal houses

2.3.4 Commercial and Institutional Facilities

Commercial facilities currently in operation within the site comprise of a fresh produce retailer (refer to Figure 12 below), a general dealer and a macadamia nut facility (refer to Figure 13 below). The macadamia nut facility is located within the old pineapple processing facility (refer to Figure 14 below), which is derelict.

Figure 12: Fresh produce store

Figure 13: Macadamia nut facility

Figure 14: Derelict pineapple processing facility

The Braeside Primary School is located on the north western boundary of the site and consists of two class rooms (refer to Figure 15 below). A sport field is located to the west of the school (refer to Figure 16 below).

Figure 15: Braeside Primary School

Figure 16: Sports field

2.4 PROPOSED STRUCTURES AND INFRASTRUCTURE

An overview of the proposed project is given in this section, as provided by Kantey & Templer (2012).

2.4.1 Potable water

There is currently no formal supply of treated potable water to this area. Potable water supply to this area does form part of a project of the BCMM for the Bulk Water Supply to Coastal Areas which is currently in its implementation phase and of which a number of sub-phases of the overall project are already complete.

Current indications from Goba are that the bulk supply connection for Sunny South will be available no earlier than December 2013. Water standpipes will be provided in Sunny South at a maximum walking distance of 200m from each erf. Each residential unit will be provided with a 2 500 litre tank for roof rain water collection.

Water demands were estimated for three different service levels i.e. standpipes, yard connections or full waterborne sewage. The bulk service connection will have a summer peak flow capacity of 10.5 l/s. The available flow will be sufficient for standpipes or yard connections only.

The average daily demand for potable water for yard connections is expected to be in the order of 184.6 kl/d. This equates to an average flow rate of 2.1 l/s. When applying a peak factor of 1.35 for summer flow, the flow rate increases to 2.835 l/s. With the available bulk peak flow rate of 10.5 l/s an instantaneous peak factor of 5 is available in the system, which will be adequate for this proposed development.

In terms of Fire Protection Guidelines contained in the Red Book, no fire water provision is required in the trunk mains, water storage or reticulation mains for a development of this nature. Nonetheless, fire hydrants will be provided on all reticulation mains of 75 mm diameter and larger. Fire fighting in developments of this nature is generally carried out using trailer mounted water tanks or fire appliances that carry their own water tanks. These tanks can be replenished from the hydrants provided on the reticulation. The pressure in the bulk supply main under instantaneous peak demand will be at least 1.3 bar, which is sufficient for the development.

2.4.2 Sanitation

Dry sanitation in the form of ventilated improved pit (VIP) toilets will be implemented for this project. No waterborne sewage will be installed as there is no existing waterborne sewage system in the surrounding areas. Due to geological concerns pertaining to possible groundwater contamination from the VIP toilets, these toilets will be equipped with lined pits to mitigate this potential impact.

2.4.3 Stormwater

Storm water generated from the development is not considered to be a substantial increase to what is currently generated, due to the low density of the development (1 000 m^2 erven with 40 m^2 houses) and the fact that few surfaces will be hardened with road seals (gravel surfaced roads are provided), as well as the fact that few paved surfaces will be built (entry level houses). Attenuation of stormwater is therefore not deemed to be necessary.

All stormwater run-off will be managed with surface drainage (open channels) in the road reserves and through some erven that are located in the natural path of stormwater drainage through the site. Stormwater servitudes through some erven will be created, where necessary while a limited number of erven will have to be avoided and converted to open spaces in order to accommodate stormwater runoff. No buried pipelines will be required.

2.4.4 Roads

Sunny South is located on either side of the existing R347 trunk road, which is a tarred road. The layout of the internal roads is shown in Figure 2 above. Road widths will be designed to 5.5 m width for the collector and access roads. The different road classes and will be constructed with grades not flatter than 1:130. All internal roads will be provided with a gravel wearing course.

2.4.5 Top Structures

Top structures measuring 40 m^2 in size with VIP toilets and 2 500 litre water tanks will be built. The top structures will be built on stiffened raft foundations. Since the development falls within the Southern Cape Coastal Condensation Area (SCCCA) and therefore the houses shall be plastered and painted on the exterior and fitted with ceilings. The interior walls will also be plastered and painted, funds permitting, failing which they will be bag-washed.

2.4.6 Commercial & Institutional Facilities

The development will also cater for additional commercial and institutional facilities, including a crèche, taxi ranks, places of worship and a community hall (refer to Figure 2 above). A large sport field will be located at the north western corner of the site.

2.5 CONSTRUCTION PHASE ACTIVITIES

Kantey and Templer (2012) reports that the project will be constructed and completed in one phase over an estimated construction period of 10 months. It was further proposed that one contractor be appointed for the construction of infrastructure and top structures for the project. The tender document will call for progressive handover of completed houses to identified recipients instead of waiting for the entire project to be completed.

2.6 BENEFICIARY ADMINISTRATION

The beneficiary administration process for this project is underway and is handled by the BCMM. According to the BCMM, it was agreed with the community and affected stakeholders that the beneficiaries of the Sunny South project will come from three villages around the development site, namely: Shelford; Paratyana and Sunny South itself.

3. LEGAL REQUIREMENTS

This section of the report briefly describes the enviro-legal aspects of the proposed development according to the relevant legislation. The key enviro-legal aspects that are applicable to the proposed project are highlighted and discussed in this section.

It should be noted that applications for an environmental authorisation would be required under the requirements of the National Environmental Management Act (Act 107 of 1998 as amended- NEMA). Water Use Licences would be required in terms of requirements of the National Water Act (Act No. 36 of 1998 - NWA) for any activities that could be considered as water uses in terms of Section 21 of the NWA.

Other potentially applicable legislation has also been described in this section.

3.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

The NEMA, aims to protect the environment, and stipulates that development must be socially, environmentally and economically sustainable, and that disturbances and pollution of the environment must be avoided, minimised and remedied. The Act also provides for the equitable access to environmental resources, to meet basic human needs. Decisions on the environment must be taken in an open and transparent manner, and resources must be held in trust for the public and protected as such. NEMA also makes provision for the cost of remedying pollution, and all such costs shall be paid by the polluter.

Section 24 (2) in NEMA, provides for activities which may have a detrimental effect on the environment and may not commence without environmental authorisation (EA) from the competent authority. In Section 24 (4 & 5) provision is made for the Regulations which stipulate the minimum procedures for the issuing of, and monitoring compliance with, EAs. Section 24 (8), states that authorisations or permits obtained under any other law for an activity listed or specified in terms of this Act does not absolve the applicant from obtaining EA under this Act.

In accordance with Sections 24 (2) and (D) of the NEMA, the Minister has published (in GN R. 544, 545, and 546) a list of activities that require EA prior to commencement of these activities. In this regard Table 3 below provides a list of the specific activities extracted from that list which the proposed project may potentially trigger.

GN R. 543 serves to regulate the procedures and criteria as contemplated in Chapter 5 of the NEMA for the submission, processing, consideration and decision-making with regard to applications for environmental authorisation of activities and for matters pertaining thereto. As stated in Section Table 3 below. Refer to Figure 17 for a broad outline of the NEMA Scoping and EIA process as stipulated in GN R. 543. The current stage in the process is indicated in the figure as the bold red block.

Table 3: NEMA Listed Activities

Activity #	Listed Activity Description	Reason for Inclusion

Activity #	Listed Activity Description	Reason for Inclusion
NEMA listed activities - Government Notice R544 – Listing Notice 1		
11	The construction of (xi) infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	This activity will be applicable due to the fact that the site contains several wetland and riparian areas where structures and infrastructure associated with housing development is anticipated to be constructed within 32 meters of the wetland areas.
18	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil sand shells shell grit, pebbles or rock from (i) a watercourse; (ii) the sea; (iii) the seashore; (iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving (i) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or *(ii)* occurs behind the development setback line.	During construction of the housing development, certain features of the housing development may affect the wetland vegetation and soils.
NEMA listed activities - Government Notice R545 – Listing Notice 2		
15	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; except where such physical alteration takes place for: (i) for linear development activities; or (ii) agriculture or afforestation where activity 16 in this Schedule will apply.	This activity will be applicable due to the fact that the proposed development area is larger than 20 hectares (92.8397 hectares in total)
NEMA listed activities - Government Notice R546 – Listing Notice 3		

Activity #	Listed Activity Description	Reason for Inclusion
4(a)ii(ee)	The construction of a road wider than 4 metres with a reserve less than 13.5 metres. (a) In the Eastern Cape province ii Outside urban areas, in: (ee) Critical biodiversity areas as identified in systematic biodiversity plans.	This activity will be applicable due to the fact that a road wider than 4 metres will be constructed within Critical Biodiversity Area, outside of the Urban edge.
13(a)	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal is required for: (2) the undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No. 544 of 2010. (a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.	This activity will be applicable due to the fact that this activity will take place within a Critical Biodiversity Area (CBA) and more than 1 hectare of indigenous vegetation will be cleared.
16(iv)(a)ii(ff)	The construction of infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line. (a) In the Eastern Cape province ii Outside urban areas, in: (ff) Critical biodiversity areas as identified in systematic biodiversity plans.	This activity will be applicable due to the fact that infrastructure for this project exceeding 10 square metres will be constructed within 32 metres of a watercourse.

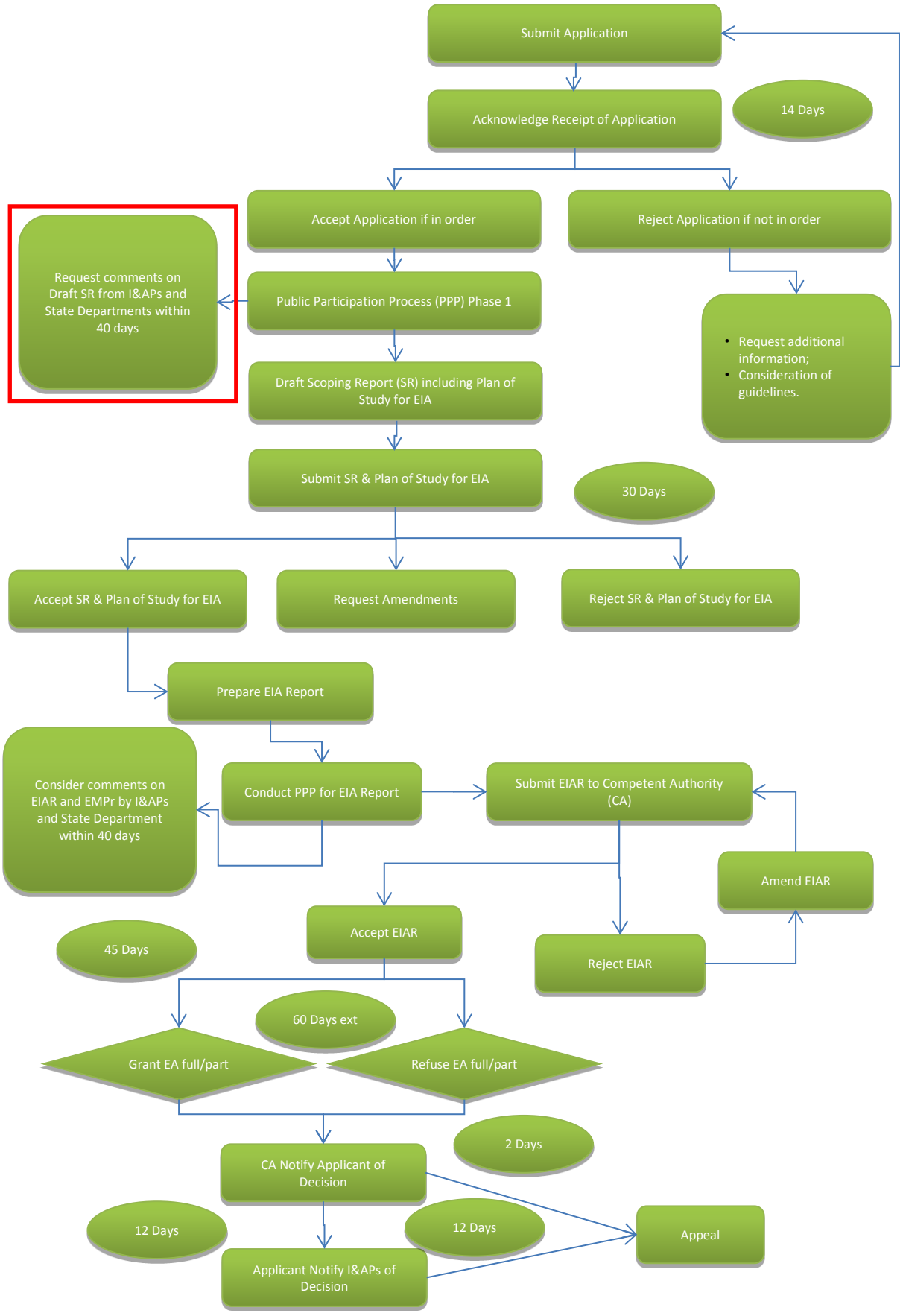

Figure 17: 2010 EIA Process (NEMA)

3.2 NATIONAL WATER ACT

The NWA provides the law relating to the water resources of South Africa. The purpose of the NWA is to manage and control the means by which all water resources are protected, used, developed, conserved and controlled.

Sections 21 of the NWA identify certain water uses which require approval from the Department of Water Affairs (DWA) in the form of a relevant water use licence. Water uses provided for in the Act, which may also applicable to the proposed activities, and which will be further investigated in the EIA Phase, are listed in Table 4 below.

Table 4: NWA Section 21 activities requiring water use licence

NWA Section 21 Water Use		Proposed Activity
21(c)	Impeding or diverting the flow of water in a watercourse.	Wetlands and riparian areas (watercourses) will be crossed by the housing development and associated infrastructure. During construction, there will be a need to temporarily impede and divert the flow of water where these watercourses[1] are crossed.
21(i)	Altering the bed, banks, course or characteristics of a watercourse.	Several wetlands and riparian areas will be affected by the proposed development. During construction, there will be a need to alter the bed and banks of the affected watercourses.

3.3 NATIONAL HERITAGE RESOURCES ACT

The National Heritage Resources Act (Act No. 25 of 1999 - NHRA) provides for the protection of heritage resources of South Africa, which are of cultural significance or other special value by introducing an integrated and interactive system for the management of national heritage resources. Section 38 of the NHRA states that:

> *"38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-*
>
> *(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
>
> *(b) the construction of a bridge or similar structure exceeding 50m in length;*
>
> *(c) any development or other activity which will change the character of a site-*

[1] "**watercourse**" means-
(a) a river or spring;
(b) a natural channel in which water flows regularly or intermittently;
(c) a wetland, lake or dam into which, or from which, water flows; and
(d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse,
and a reference to a watercourse includes, where relevant, its bed and banks.

(i) exceeding 5 000 m^2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development."

The Responsible Heritage Resource Authorities, the South African Heritage Resources Agency (SAHRA) and the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) were subsequently notified of the proposed development.

3.4 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004 - NEMBA),*"provides for: the management and conservation of South Africa's biodiversity within the framework of the NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters conducted therewith"*.

In terms of the NEMBA, the applicant has a responsibility for:

- The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations).
- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity.
- Limit further loss of biodiversity and conserve endangered ecosystems.

Regulations published under the National Environmental Management: Biodiversity Act (Act No 10 of 2004) provides a list of protected species (flora and fauna), according to the Act (GN R. 151 dated 23 February 2007, as amended in GN R. 1187 dated 14 December 2007). With reference to Section 5.4

below, the study area falls within a Critical Biodiversity Area (CBA) and the status of this CBA is listed as Vulnerable.

4. ALTERNATIVES

As required of the scoping process, feasible alternatives for the aspects of the development have been identified in order to ensure that the proposed activity has the least negative impact on the biophysical and socio-economic receiving environment. The alternatives were identified based on information provided by the client and the status of the receiving environment.

For any alternative to be considered feasible such an alternative must meet the need and purposes of the development proposal without presenting significantly high associated impacts. Alternatives are typically distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and or scoping phases of the EIA process (DEAT; 2004). Incremental alternatives typically arise during the EIA process and are usually suggested as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation measures and therefore are not specifically identified as distinct alternatives. The alternatives that were considered feasible are discussed below.

4.1 LOCATION ALTERNATIVES

Development of the preferred alternative was considered. The preferred site alternative was found to be feasible due to the following reasons:

- The development received a positive Record of Decision in terms of the Environmental Conservation Act (Act No 73 of 1989) by the ECDEDEAT during July 2004. However, the authorisation expired before development commenced;
- The development area was successfully rezoned from agricultural to residential and already has approved layouts in terms of the town planning processes and legislation;
- The preferred site is BCMM owned and there is sufficient space for the proposed layout;
- The topography of the area is conducive enough for the envisaged development;
- There is relatively adequate access to site off the main road.

In general, the criteria below were considered during the feasibility assessment for the development.

- Existing township approval and internal layout;
- Land Ownership;
- Favourable topography and availability of space for the development;
- Access to site; and

It should be noted that no other location alternatives were considered for this development, due to the reasons given above.

4.2 LAYOUT ALTERNATIVE: AVOIDING WATERCOURSES

The proposal calls for the construction of housing units and infrastructure over watercourses (including wetland and riparian areas). For this reason, a wetland and riparian area delineation and assessment has been recommended, in order to determine the extent and sensitivity of these watercourses. The results of the wetland and riparian assessment will provide a framework for the design team within which alternative development layouts will be identified.

It is anticipated that construction activities associated with the proposed layout plan would have a significant impact on the wetland and riparian areas, as the construction of these units would significantly alter these sensitive areas. Furthermore, the costs and practical implications of construction within wetland and riparian areas would need to be considered.

Consequently, the alternative of not constructing within wetland or riparian areas, will be further assessed in the EIA Phase as the main alternative to the proposal.

4.3 NO GO ALTERNATIVE

The “No Go” or “No Action” alternative refers to the alternative of not embarking on the proposed project at all. This alternative would imply that the current status quo without the proposed infrastructure would continue. More importantly, this would mean that there will be no service delivery for the beneficiaries currently residing in informal dwellings.

It is important to note that the No Go alternative is the baseline against which all other alternatives and the development proposal are assessed. When considering the No Go alternative the impacts (both positive and negative) associated with any specific alternative or the development proposal would not occur and in effect the impacts of the No Go alternative are therefore inadvertently assessed by assessing the other alternatives.

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section provides an overview of the physical, biological and socio-economic environment within which the development is proposed to be undertaken.

5.1 TOPOGRAPHY

The topography of the site is characterised by gently undulating terrain which is dissected by some minor natural drainage lines which drain into tributaries of the Tutura and Nunu Rivers. The landscape, within which the proposed housing units and associated infrastructure is proposed to be constructed, ranges in elevation from about 190 to 220 m above mean sea level.

Figure 18: Representative view of the landscape of Sunny South

5.2 CLIMATE

East London is generally located in a humid subtropical region with the typical warm and moderate temperatures of the South African coastline. East London normally experiences increased levels of rainfall during the wet season (during spring and summer), with the summer season reflecting the most rainfall levels on average. The area experiences significantly lower rainfall during the dry season (although perceived not a true dry season) between May and August. Average temperature maximum midday levels to range between 20°C during winter time and 26°C during spring time. The area is the coldest during July with an average of approximately 9.3°C during the night.

Table 5: Climate parameters (TuTiempo, 2012)

Year	T	TM	T_m	PP	V	RA
2000	18.9	24.8	14.3	1060.89	16.0	108
2001	19.2	25.0	14.6	962.38	16.8	112
2003	18.7	24.7	14.2	583.14	15.9	93
2004	18.7	24.9	14.5	853.41	-	107
2006	18.0	24.4	13.9	1229.86	15.0	141
2007	18.6	25.0	14.0	647.16	16.7	128
2009	18.6	24.6	14.0	-	17.1	224
2010	18.9	25.3	14.4	-	16.8	227
2011	18.8	24.0	14.1	-	17.6	141

Note: T=Annual average temperature (°C); **TM**=Annual average maximum temperature (°C); **T_m**=Annual average minimum temperature (°C); **PP**=Total annual precipitation of rain and / or snow (mm); **V**=Annual average wind speed (km/h); **RA**=Total days with rain during the year; **-**=no data available.

5.3 HYDROLOGY

The site is located on a catchment boundary which runs from the north west to the south east. The site drains to the north east to the Tutura River and to the south west to a tributary of the Nunu Rivers. The site is located within the quaternary catchment R40A.

Figure 19: Map showing hydrological features for the proposed Sunny South Development

A number of existing earth dams are present in the centre on the site (refer to Figure 4 above). From inspections on site, it appears that these earthen dams served as some sort of pond system, possibly for (partial) water treatment from the old pineapple processing operations on site.

These dams were incorporated into the original site development plan and their positions coincide with a Public Open Space. These dams will have no impact on the development as the layout has been designed to accommodate the dams.

The site also contained a number of other dams / wetland areas scattered throughout the site – two small dams immediately east of the earthen dams described above (zoned as Public Open Space – refer to Figure 5 above), as well as two dams towards the west of the earthen dams (zoned as Institutional – refer to Figure 6 and Figure 7 above), which are hidden from aerial view by dense vegetation. Other watercourses were also observed immediately north and south (refer to Figure 8 above) of the Braeside Primary School (wetlands). The wetland immediately south of the Braeside Primary School appears to be partially affected by two of the proposed residential erven. Another wetland area is located on the southern corner of the site, which would affect four of the erven along the southern boundary of the proposed development (refer to Figure 9 above).

5.4 FLORA

Muncina and Rutherford (2006) the proposed site is located within the Albany Costal Belt (Albany Thicket Biome), which has a conservation status of Least Threatened and a protection status of Poorly Protected. This vegetation unit is dominated by short grasslands punctuated by scattered bush clumps or solitary *Acacia natalitia* trees.

In terms of the Eastern Cape Biodiversity Conservation Plan (2007 – ECBCP), the site is classified as Type 2 (R2) protected area – state land. However, Section 2.5.1 (Eastern Cape Protected Areas Coverage of the ECBCP (2007)) states, *"The protected area coverage for the province is current and accurate for Type 1 protected areas; however, for Type 2 and 3 protected areas this data is dated and has not been verified. Also not all of these protected areas are managed as conservation areas (e.g. DWAF forests or state land). Type 2 and 3 protected areas are presented here as context information and cannot be regarded as contributing to achieving national biodiversity targets until their legislative status and management objectives have been verified."*

As such, it has been recommended that an Ecological Impact Assessment be conducted to verify the ecological status of the site.

Important taxa that occur in this vegetation unit is presented in Table 6 below.

Table 6: Important floral taxa within the Albany Coastal Belt sub-biome of the Albany Thicket Biome

Tall Tree	Woody Succulent Climbers	Herbs
Erythrina caffra	Crassula pellucida subsp. marginalis	Chamaecrista mimoscides
Succulent Tree	Sarcostemma viminale	Abutilon sonneratianum
Euphorbia triangularis	Woody Climbers	Acalypha ecklonii
Small Trees	Asparagus aethicpicus	Centella asiatica

Acacia natalitia	A. racemosus	Commelina africana
Brachylaena alliptica	Capparis sepiaria var. citrifolia	C. benghalensis
Canrhium spinosum	Clematis brachiata	Cynoglossum hispidum
Cussonia spicata	Rhoiacarpos capensis	Eriosema squarrosurn
Ficus sur	Rhoicissus digitata	Lactuca inermis
Ochna arbvrea	R. widentata	Lobella erinus
Sideroxylon inerme	Secamune alpini	Monsonia emarginata
Zanthoxylum capense	Tecoma capensis.	Phyllopodium cuneifolium
Tall Shrubs	Herbaceous Climbers	Senecio burchelli
Clausena anisara	Rhynchosia caribaea	Sonchus dregeanus
Clerodendrurn glabrum	R. totta	Geophytic Herbs
Coddia rudis	Thunbergia capensis	Cheilanthes hirta
Croron rivularis	Zehneria scabra	Moraea pallida
Diospyros villcsa var. parvifolia	Graminoids	Oxalis smithiana
Grewia occidentalis	Brachiaria serrata	Sansevieria hyacinthoides
Gymnospcria heteruphylla	Cynodon dactylon	Strelitzia reginae
Hippobromus pauciflorus	Dactyloctenium ausrrale	Semiparasitic Epiphytic Shrub
Mystroxylon aerhiopicum	Digitaria natalensis	Viscurn obscurum
Pavetta lancealata	Ehrharta cabrcina	Succulent Herb
Psydrax obcvata	Eragrosris capensis	Plectranthus verticillatus
Pterccelastrus tricuspidatus	E. curvula	
Rhus lucida	E. plana	
Scutia mynina	Heteropogon contortus	
Tarchonanthus camphoratus	Panicum deustum	
Turraea obtusifolia	P. maximum	
Low Shrubs	Setaria sphacelata	
Rhynchosia ciliata	Sporobolus africanus	
Carissa bispinosa subsp. bispinosa	Themeda triandra	
Chaetacanthus setiger	Tristachya leuccthrix	
Helichrysum asperum var. albidulum	Cymbopogon marginatus	
Pelargonium alchemillcides	Ehrharta erecta	
Phyllanthus maderaspatensis	Elionurus muticus	
Selago corymbosa	Melica racsmusa	
Senecio ptercphorus	Setaria megaphylla	
Tephrosia capansis var. acurifolia	Trachypogon spicatus	

Mucina and Rutherford (2006) further mention that the region that contains this vegetation unit is a mosaic of a wide variety of structural vegetation types, ranging from grassland to forest. This variation reflects post-disturbance succession gradients as well as natural variation in geology, soil patterns and distribution of water in the landscape. The current vegetation mosaic so typical of the Albany Coastal Belt is a creation of man and the original (pre-settlement) vegetation was dominated by non-seasonal,

dense thicket. The area of this unit was prime agricultural land which attracted early settlers who, presumably, cleared the dense thicket cloak for pastures.

Indeed the majority north eastern half of the Sunny South site was once old pineapple fields. Furthermore, the site is currently subjected to local cattle grazing and is home to a small rural community. These practices have left the site in a transformed state.

5.5 GEOLOGY AND SOILS

The geological map indicates that the site is underlain by Permian Balfour Formation mudstone and sandstone and localised Karoo dolerite which has intruded into the Balfour Formation during the Jurassic period. The sandstone and mudstone of the Balfour Formation occurs at a fairly shallow depth below a thin veneer of very fine grained colluvium (transported soil) and residual clay and/or gravel. The dolerite seems to be more deeply weathered and consequently a much thicker residual soil profile is associated with this rock type.

The soil types Glenrosa and/or Mispah forms (other soils may occur) with lime being rare or absent in the entire landscape. The underlying bedrock occurs at a shallow depth over most of the site with the exception of the area underlain by deeply weathered dolerite. There is a geological fault traversing the site, but this is believed to be inactive and will not affect the stability of the site.

5.6 AREAS OF HISTORICAL/CULTURAL SIGNIFICANCE

Kantey and Templer (2012) made mention of the existence of two grave sites within the development site. The positions of the grave sites are located within some of the proposed residential erven and/or road reserve boundaries.

It is proposed that ECPHRA and SAHRA be consulted to determine whether there is a need for a comprehensive Heritage Impact Assessment (HIA) in order to verify the existence of any heritage features on the site.

5.7 LAND COVER

With reference to Figure 1 above, it can be observed that the majority of the area consists mainly of rural areas with patches of natural areas (transformed) in between. The majority of the study area is located outside the urban edge and is characterised by a transformed landscape consisting of, amongst other things, disturbed vegetation, old farm lands and man-made dams near and within the proposed development area. The old farm lands are characterised by large open landscapes, mainly transformed grassland. The grassland appears to be degradation as a result of visible human activities (e.g. erection of power lines, waste dumping, etc.).

Figure 20: Trench with old waste cans

5.8 SOCIO-ECONOMIC ENVIRONMENT

The study area is located within the BCMM. The following social and economic information for the ward was obtained from the BCMM (2011). It is possible that the social structure of the area may have changed since this data was made available.

5.8.1 Population and Age Structure

Table 7 indicates general population distribution for BCMM based on the results from a survey conducted by Statistics South Africa in October 2007. In the 2007 survey, the BCMM had an estimated population 724 306, of which the Black African community forms the majority of the population followed by the White community.

Table 7: General population distribution for the BCMM

Population Group	Distribution
Black African	626 833
Coloured	52 212
Indian or Asian	1 950
White	53 311

The female gender contributed approximately 51% of the population in the BCMM. The age distribution for the BCMM shows that the age group with the largest population was 15 to 64 years of age.

Table 8: Population age structure

Population Group	Distribution
Females	370 200
Males	354 106
0 – 14 years	196 085
15 – 64 years	488 103
≥ 65 years	40 118

5.8.2 Employment Profile

In 2007, there were at least 84 000 people unemployed in the BCMM area compared to the 82 000 that were employed. These figures came from a total of 208 389 households including the East London, King Williams Town and Surroundings, Mdantsane, Rural South and the Rural North areas. Table 8 indicates the annual household income in the BCMM during the 2007 survey. From the table it can be observed that a significant portion of the population in the BCMM survives with just under R6 500.

Table 9: Annual household income distribution for the BCMM during 2007

Household Income	Population
R1 – R400	18 677
R401 - R800	26 181
R801 – R1 600	62 514
R1 601 – R3 200	29 461
R3 201 - R 6 400	25 179
R6 401 – R12 800	20 605
R12 801 – R25 600	7 520
R25 601 – R51 200	2 613
R51 201 – R102 400	1 054
R102 401 - R204 800	609
R2 457 601 +	283

6. PUBLIC PARTICIPATION

The public participation process as required by the NEMA was carried out according to Chapter 6 of GN R. 543 promulgated under Section 24 (5) the above mentioned Act. The detail of the public participation process is described in this section.

6.1 INTRODUCTION

South Africa, being one of the countries with the most progressive constitutions, enshrined the public's right to be involved in decisions that may affect them in the constitution. Section 57(1) of the new Constitution states the following:

> *"The National Assembly may (b) make rules and orders concerning its business, with due regard to representative and participatory democracy, accountability, transparency and public involvement."*

This provision, along with several others, gave rise to many new trends in South African legislation. In environmental legislation, the idea of public participation (or stakeholder engagement) features strongly and especially the NEMA and the recent regulations passed under the auspices of this Act, makes very strict provisions for public participation in environmental decision-making.

One of the questions that may arise at this point is what the definition of public participation is. One of the most comprehensive definitions of public participation was given by Greyling – it has also been adopted by the International Association for Public Participation (IAPP). Greyling defines public participation as... *"a process leading to a joint effort by stakeholders, technical specialists, the authorities and the proponent who work together to produce better decisions than if they had acted independently"* (Greyling, 1999, p. 20). From this definition, it can be seen that the input of the public is regarded as very important indeed.

An Issues and Responses Report (IRR) (Appendix A) lists all verbal and written issues raised by Interested and Affected Parties (I&APs) and stakeholders during the Scoping and EIA process thus far. These issues/queries/concerns/comments were submitted to EIMS in the following manner:

- Issues raised after the placing of the notification advertisements in the newspaper and as a response to the posters, site notices and flyer notifications; and
- Written queries submitted to EIMS via e-mail, post, telephone calls and fax.

Comments received have been processed by EIMS and responses will be compiled by EIMS. As such, comments contained in the IRR will include:

- Issues raised during the public meeting;
- Comments received by fax, email or post; and
- Transcribed telephonic conversations.

6.2 LANDOWNER NOTIFICATION

Regulation 15 the 2010 EIA Regulations (GN R. 543) requires that in cases where the applicant is not the owner or person in control of the land on which the activity is to be undertaken, that the applicant must give notice to the owner or person in control of the land on which the activity is to be undertaken.

Since this applicant is the owner of the development site there was no need for landowner notification.

6.3 OPPORTUNITIES FOR PUBLIC PARTICIPATION

This section provides an overview of the opportunities provided to I&APs for participation in the Scoping Process.

6.3.1 Placement of Site Notices

In line with the current legislation, site notices were placed prominently at several locations within and around the Sunny South housing development site. These included the following (please refer to Appendix A for the exact locations of these notices):

- 3 x A1 size notices, each containing an A2 size Xhosa notice and an A2 size English notice placed at key points in and around the development area;
- Distribution of A4 pamphlets to all local landowners and occupiers of land; and

- An advertisement placed on one local newspaper.

6.3.2 Formal Opportunities for Public Participation

Notification advertisements were placed in the local newspaper, the Daily Dispatch (5 February 2013). The following documentation was also made available on the EIMS website (www.eims.co.za):

- Xhosa and English version of the site notice; and
- Map showing the proposed development;

The IRR records the formal opportunities provided for public participation during the Scoping and EIA process thus far, which commenced with the advertising of the process during February 2013.

Table 10: Opportunities provided for Public Participation

Public Participation Phase			
Action	**Description**	**Publication/Place**	**Date**
Announcement of Project	Landowner Notification	Via email, post and physical delivery.	04 February 2013
Announcement of Project	Newspaper Advertisements.	Daily Dispatch	05 February 2013
Public Notification	Distribution of fliers and placement of site notices.	Refer to section 6.3.1 above.	04 February 2013
Public Information	Public Meeting	Braeside Primary School	14 February 2013
Public Notification	Availability of the DSR and Plan of Study (PoS) for EIA for Public review.	Site Notices and advertisements	08 February 2013 20 February 2013
Public Notification	Availability of the Final Scoping Report and Plan of Study (PoS) for EIA for Public review and Authority Decision.	Notification of availability will be sent to all registered I&APs via e-mail, fax and post	14 March 2013
Public Notification	Authority decision on the Final Scoping Report.	Notification of availability will be sent to all registered I&APs via e-mail, fax and post	To be confirmed
Public Notification	Availability of the Draft EIAR for Public review.	Notification of availability will be sent to all registered I&APs via e-mail, fax and post	To be confirmed
Public Notification	Availability of the Final Environmental Impact Assessment Report (EIAR).	Notification of availability will be sent to all registered I&APs via e-mail, fax and post	To be confirmed
Public Notification	Notification of Authority decision on EIAR.	Notification of availability will be sent to all registered I&APs via e-mail, fax and post	To be confirmed

In addition to the newspaper advertisements, many key I&APs were pre-identified and received invitations to participate at the inception of the project. I&APs in this category include organs of state (e.g. the DWA, ECPHRA, ECDEDEAT), officials at the BCMM, service providers, ward councillor of Ward 31 of the BCMM, as well as other relevant community representative associations.

A public meeting was also held on 14 February 2013 at the Braeside Primary School from 11:30 to 12:30. During this meeting, an overview of the Scoping and EIA processes was provided, as well as a detailed description of what the project entails. I&APs were given an opportunity to ask questions and to provide comment. The issues raised during this meeting were included in the IRR to be submitted with the Scoping Report.

The DSR was also made available for review by the public at the Braeside Primary School. Copies of the DSR were also made available to the ward committee members situated in Shelford and Paratyana farms. The DSR was also placed on the EIMS website (www.eims.co.za) and made available for download. The registered I&APs were advised of the availability of the Draft Scoping Report and requested to submit comments to EIMS. The Final Scoping Report has also been made available on the EIMS website.

6.4 ISSUES RAISED

The issues raised pertained mainly to the request for additional information and the consultation of certain key I&APs regarding the project.

6.5 I&AP DATABASE

All I&AP contact details were recorded, as was their relationship to the project. An I&AP database was created to capture all relevant information (See Appendix A).

7. IDENTIFICATION OF IMPACTS

During the Scoping phase, possible impacts have been identified through various site visits, consultation of published information and specialist knowledge of the site and surrounds. The impacts that have been identified have been listed and described in Table 11 below.

During the EIA phase, these and other impacts identified as a result of the specialist studies will be assessed in greater detail. Section 36 describes the methodology that will be used to rate the impacts identified.

7.1 IMPACT IDENTIFICATION

Impacts that are likely to occur as a result of the proposed project have been listed in Table 11 below. Table 11 provides a description of the likely impacts that may result from the activities during each phase of the project. This represents an overview of the anticipated impacts based on the information at hand. More detailed investigations in the EIA phase could identify more environmental impacts

Table 11: Impact Matrix

Phase	Bio-Physical			Socio-Economic		
	Impact	**Impact Status**	**Description**	**Impact**	**Impact Status**	**Description**
Planning and Design				Job Creation	Positive	During the Planning and Design phase, employment opportunities will arise for the design and assessment of the proposed project.
Construction	Nuisance Due to Dust	Negative	Construction activities on the site will lead to land clearing and disturbance of the soil. Although the development will occur in an area with very low human density, it is anticipated that dust may result from the construction activities of the housing units, as well as the construction of the access roads.	Job Creation	Positive	During the construction phase, employment opportunities will arise as a result of the actual construction that will take place within Sunny South. The construction activities will also result in a demand for equipment, building material and labour. The use of local labour would have a positive impact on the local economy and promote skills transfer.
	Loss of Vegetation	Negative	Construction activities will require that vegetation be cleared in order for construction to take place.	Noise	Negative	Construction activities will take place over phases which are anticipated to take place over one year. Due to the fact that construction will take place in close proximity of residential, commercial and institutional areas during this time it is anticipated that the noise resulting from construction vehicles, machinery and earthworks may impact on the local population.
	Erosion	Negative	The clearing of vegetation, as well as the exposing of soil during construction of housing units, associated infrastructure, as well as the construction of the access roads may lead to erosion of these surfaces due to rain and wind.	Visual Impact	Negative	The proposed Sunny South site is proposed to be located within scenic valleys and agricultural land. The construction of housing units in the middle of these valleys, will therefore impact visually on the general landscape.
	Geotechnical Stability	Negative	The construction activities will involve the digging of foundations and earthworks, which may impact on the geotechnical stability of the site. Geotechnical investigations will need to be conducted to determine the suitability of the proposed structures and VIP toilets to ensure that the sites will be suitable for construction.	Traffic	Negative	Although ready access to the construction sites exists through under developed internal road infrastructure, access occurs to the greater property through the R347. Heavy construction vehicles delivering materials and equipment to the site will lead to further deterioration in the condition of the R347.

Phase	Bio-Physical			Socio-Economic		
	Impact	**Impact Status**	**Description**	**Impact**	**Impact Status**	**Description**
	Surface and Groundwater Pollution	Negative	Construction activities will require the use of certain hazardous and harmful materials/substances, including but not limited to fuels, solvents and cement. These substances, if allowed to enter the surrounding water resources (both surface and groundwater), would result in deterioration of the water quality, which could have detrimental impacts on the aquatic fauna and flora in the water resources.			
	Waste Generation	Negative	Construction waste will be generated as a result of construction material packaging, rubble, and old infrastructure.			
	Fire Hazards	Negative	The area already experiences uncontrolled veld fires and therefore, the storage of fuel and other flammable solvents on site during construction may increase the risk of fire on the site. Fire on site may lead to damage to infrastructure and the biophysical environment and impact on the working environment.			
	Impact on Wetland and Riparian habitat	Negative	Several wetland and riparian zones will be disturbed during the construction of the housing units, other necessary infrastructure and the access roads to the Sunny South site, which could impact on the receiving water resource and the ability of this resource to provide its natural ecological functions.			

8. ASSUMPTIONS AND LIMITATIONS

It is assumed that all information provided by the applicant, the technical team and specialists that informed the environmental consultants and the information in this report is reliable, accurate and up to date.

It is also assumed that the applicant will comply with all legislation pertaining to the activities of this proposed project and that all permits and licences that may be required will be identified and applied for prior to commencement of construction activities.

9. CONCLUSION AND RECOMMENDATIONS

The proposed Sunny South Housing Development requires environmental authorisation from the ECDEDEAT and the DWA.

Two alternatives have been identified during the planning and design phase of this project and these will be investigated and comparatively assessed in greater detail during the EIA Phase.

Despite the fact that the proposed project will serve to improve the current state of living for the beneficiaries, the construction, operational (and decommissioning) phases are likely to pose significant risks to the local and surrounding environment due to the scale and complexity of the activities proposed to be undertaken.

Taking into consideration the receiving environment as described in Section 5 above, it is recommended that the following specialist studies be conducted to determine the impact that the proposed development will have on the environment:

- Geotechnical Investigation (already undertaken – to be reported on in the EIA Phase);
- Ecological Impact Assessment; and
- Wetland and Riparian Area Delineation and Assessment.

It is anticipated that the recommended specialist studies will contribute to the assessment of the significance of the identified potential impacts. Should any additional impacts be identified by the specialist, and/or I&APs during the public review of the Scoping Report, the significance of these impacts will be assessed and included within the EIR.

A plan of study for Environmental Impact Assessment (PoS for EIA) has been included in this report (refer to Section 10 below) and provides details on the way forward for the EIA process as well as the methodology that will be used to assess the potential impacts.

10. PLAN OF STUDY FOR EIA

In accordance with the requirements of Regulation 28(n) of the 2010 EIA Regulations (GN R. 543), a plan of study for EIA (PoS), must be included in the Scoping Report. The PoS must set out the proposed approach to the EIA Phase and must include:

- A description of tasks to be undertaken;
- An indication of the stages at which the relevant authorities will be consulted;
- A description of the proposed method of assessing the environmental issues and alternatives; and
- Particulars of the proposed public participation process to be undertaken during the EIA phase.

10.1 PLANNED METHODOLOGY

Once the competent authority accepts this PoS for EIA, EIMS will proceed with the EIA process. The primary purpose of the EIA process is to:

- Address issues that have been identified in the Scoping;
- Assess alternatives to the proposed activity in a comparative manner (identified during scoping);
- Assess all identified impacts and determine the significance of each impact; and
- Formulate mitigation measures.

Public participation is once again a key element of the EIA process. The following approach will be adopted in the EIA phase:

- Source specialist input to address the issues raised during scoping and investigate the relevant alternatives;
- Assess impacts and their significance (see method for assessing significance in Section 10.1.3 below);
- Suggest mitigation measures;
- Compile the Environmental Impact Assessment Report (EIAR); and
- Public / authority participation throughout.

10.1.1 Specialist Studies

In order to adequately and objectively inform the EIA, further detailed specialist studies will need to be undertaken during the EIA Phase. The following specialist studies are recommended:

- Geotechnical Investigation (already undertaken – to be reported on in the EIA Phase);
- Ecological Impact Assessment; and
- Wetland and Riparian Area Delineation and Assessment.

The following approach will be utilised by each specialist:

- Identified potential impacts (cumulative, direct and indirect) will be quantified (where possible) and fully described for each feasible alternative.

- Identified potential impacts will be evaluated in accordance with the agreed methodology to determine significance. Significance will be determined by considering and quantifying where possible, the nature, extent, duration, intensity and probability of each potential impact.
- Comparative assessment of the identified alternatives.
- Recommendations must be made regarding mitigation and / or management measures to address the unavoidable impacts identified.
- Residual impacts after mitigation will be evaluated (in accordance with the assessment methodology described above) such that actual implemented results can be measured against those predicted.
- Each specialist will be required to contribute to the preparation of a detailed site specific EMP relating to the specific field of expertise and impacts identified, based on the mitigation and management measures identified.

10.1.2 Environmental Issues And Potential Impacts Identified during the Scoping Process

The purpose of the Scoping phase was to identify issues that may require further investigation. This then initiates the EIA phase where specialist studies are commissioned in order to increase the information used in the evaluation of potential impacts and thereby provide for informed decision making, as to whether the proposed activity could have a significant detrimental effect on the environment.

The impacts identified during the Scoping phase, as well as other impacts that may be identified in the EIA phase, will be assessed further in the EIA phase, in accordance with the methodology presented in Section 10.1.3.

10.1.3 Impact Assessment Methodology

During the EIA phase, the impacts will be assessed according to the criteria outlined in the following paragraphs. Each impact will be ranked according to extent, duration, magnitude and probability. From these criteria, a significance rating will be obtained, of which the method and formula is described below in Section 10.1.3.1. Where possible, mitigatory measures will be recommended for impacts identified.

10.1.3.1 Determination of Environmental Risk

The Significance (S) of an impact is determined by applying a Prioritisation Factor (PF) to an Environmental Risk (ER).

The environmental risk is dependent on the Consequence (C) of the particular impact and the Probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and reversibility (R) applicable to the specific impact.

For the purpose of this methodology the Consequence of the impact is represented by:

$$C = \frac{(E + D + M + R) \times N}{4}$$

Each individual aspect in the determination of the Consequence is represented by a rating scale as defined in Table 12:

Table 12: Criteria for determination of impact consequence

Aspect	Score	Definition
Nature	- 1	Likely to result in a negative/ detrimental impact
	+1	Likely to result in a positive/ beneficial impact
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary),
	3	Local (i.e. the area within 5 km of the site),
	4	Regional (i.e. extends between 5 and 50 km from the site
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years),
	3	Medium term (6-15 years),
	4	Long term (the impact will cease after the operational life span of the project),
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or

Aspect	Score	Definition
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).
Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact

Once the Consequence has been determined, the Environmental Risk is determined in accordance with the standard risk assessment relationship by multiplying the Consequence and the Probability (refer to Figure 21). Probability is rated/scored as per Table 13

Table 13: Probability Scoring

Aspect	Score	Definition
Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

$$ER = C \times P$$

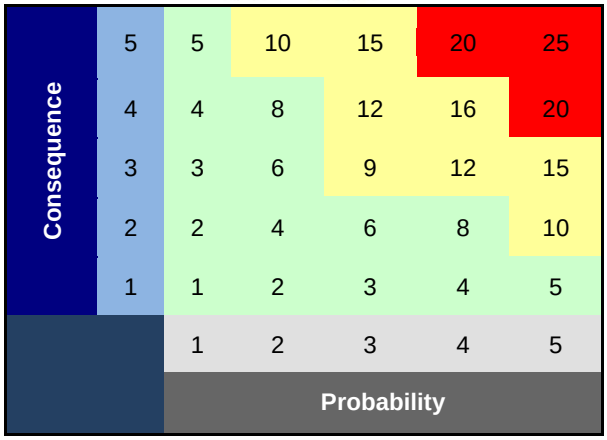

Figure 21: Determination of environmental risk.

The outcome of the environmental risk assessment results in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 14.

Table 14: Significance classes

Value	Description
< 9	Low (i.e. where this impact is unlikely to be a significant environmental risk),
≥9; <17	Medium (i.e. where the impact could have a significant environmental risk),
≥ 17	High (i.e. where the impact will have a significant environmental risk).

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/ mitigated.

10.1.3.2 Impact Prioritisation

In accordance with the requirements of Regulation 31 (2)(l) of the EIA Regulations (GN R. 543), it is necessary to assess each potentially significant impact in terms of:

- Cumulative impacts; and
- The degree to which the impact may cause irreplaceable loss of resources.

In addition it is important that the public opinion and sentiment regarding a prospective development and consequent potential impacts is considered in the decision making process.

In an effort to ensure that these factors are considered, an impact Prioritisation Factor (PF) will be applied to each impact ER (post-mitigation). This prioritisation factor does not aim to detract from the risk ratings, but rather to focus the attention of the decision-making authority on the higher priority / significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/ mitigation impacts are implemented.

Table 15: Criteria for the determination of prioritisation

Aspect	Score	Description
Public Response (PR)	Low (1)	Issue not raised in public responses.
	Medium (2)	Issue has received a meaningful and justifiable public response.
	High (3)	Issue has received an intense meaningful and justifiable public response.
Cumulative Impact (CI)	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and

Aspect	Score	Description
		temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable Loss of Resources (LR)	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 15. The impact priority is therefore determined as follows:

$$Priority = PR + CI + LR$$

The result is a priority score which ranges from 3 to 9 and a consequent Prioritisation Factor ranging from 1 to 2 (refer to Table 16).

Table 16: Determination of prioritisation factor

Priority	Ranking	Prioritisation Factor
3	Low	**1**
4	Medium	**1.17**
5	Medium	**1.33**
6	Medium	**1.50**
7	Medium	**1.67**
8	Medium	**1.83**
9	High	**2**

In order to determine the final impact Significance the Prioritisation Factor is multiplied by the Environmental Risk of the post mitigation scoring.

$$S = ER \times PF$$

The ultimate aim of the Prioritisation Factor is to be able to increase the post mitigation environmental risk rating by a full ranking class, if all the priority attributes are high (i.e. if an impact comes out with a medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential, significant public response, and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance).

Table 17: Environmental Significance Rating

Value	Description
< 9	Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
≥9; <17	Medium (i.e. where the impact could influence the decision to develop in the area),
≥ 17	High (i.e. where the impact must have an influence on the decision process to develop in the area).

The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists and the environmental consultants will be applied to provide a qualitative comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

10.1.4 Assessment of Feasible Alternatives

With reference to Section 4 the alternative to the proposal that will be considered further in the EIA Phase is the Layout Alternative: Avoiding Watercourses.

With reference to Section 4 each potential impact will be assessed for significance. In addition the likely significance for the identified alternatives where relevant will be provided. In order to identify the most suitable alternative the impact significance ratings will be recorded and summed to obtain a final significance rating score per alternative. In addition each alternative will be assessed in terms of the likely advantages and disadvantages and a final recommendation will be made as to the most favourable alternative.

10.1.5 Preparation of EIAR and EMPR

An EIAR will be compiled for the application in accordance with the requirements of Sections 31, 32, and 33 of GNR. 543. The EIAR typically contains the following:

- Details of the EAP;
- A description of the proposed activity;
- A description of the location of the project infrastructure and the identified alternatives;

- A detailed description of the need and desirability of the proposed activity including advantages and disadvantages that the activity will have on the environment and community;
- A description of the receiving environment;
- A description of all identified impacts and an assessment of the significance of each impact before and after implementation of proposed mitigation measures;
- A description of the methodology used in determining significance of identified impacts;
- A description and comparative assessment of all alternatives identified during scoping;
- A summary of the findings and recommendations of any Specialist Studies;
- A description of assumptions, uncertainties and gaps in knowledge;
- A final recommendation as to whether the activity should be authorised and under what conditions;
- An Environmental Impact Statement including key findings;
- A draft Environmental Management Programme (EMPR); and
- Copies of any and all specialist studies carried out.

A draft EIAR and EMPR will be provided to the public for comment and a copy of the Final EIAR and EMPR submitted to the competent authority will also be made available for review.

10.1.6 Public Participation Process

The public participation process undertaken during Scoping (refer to Section 6) will be the base for on-going consultation and involvement.

The I&AP database (including landowners, key I&APs as well as registered I&APs) will be utilised for notifications during the EIA public consultation process. The database will be added to, as and when, new I&APs are identified. Throughout the project, stakeholders will be encouraged to get into contact with the EAP to raise issues, ask questions or make suggestions. Comments received will be recorded in the IRR.

The following opportunities for further consultation and notification will be afforded during the EIA phase:

- I&APs will be notified of the decision made by the competent authorities regarding the Final Scoping Report and the PoS for EIA.
- The Draft EIAR will be made available during a comment period at the same locations as for the DSR (refer to Section 6); and
- The final EIAR will be made available on the EIMS website for public review.

At the end of the project, the relevant authority may issue an Environmental Authorisation (EA). It is a requirement that all registered I&APs are informed of the decision and the consequent opportunity to

appeal. The EA will be advertised in the same form as the other advertisements. Correspondence will be sent to all registered stakeholders.

10.2 AUTHORITY CONSULTATION

The following steps will be undertaken to ensure authority consultation:

- The ECDEDEAT will be provided with a copy of the Draft EIR for distribution to other relevant organs of state and authorities, prior to placement for public review; and
- The Final EIAR will be submitted to the ECDEDEAT for review and decision making.

11. REFERENCE LIST

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