



BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:

Application Number:

Date Received:

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.



5. The use of “not applicable” in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner (EAP).
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.



SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES	NO
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If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

The proposed development involves a double circuit 132 kV powerline from the existing Lorraine 132 kV substation to the existing 132 kV 17th Avenue substation.

The proposed infrastructure will provide for future load growth in this area. Many commercial and residential developments are envisaged by landowners requiring additional capacity to be installed.

The proposed route is approximately 2.8 km long and will cross private properties as well as NMBM owned land (Please refer to Ownership Map in Appendix A).. An overhead powerline is proposed up to point K on the plan from where an underground cable will be installed and under William Moffet Drive to the eastern side of the existing 17th Avenue substation. Note that an upgrade to this substation is underway within the existing footprint and falls outside the scope of this application and process.

The following infrastructure specifications are relevant:

- All overhead lines will be constructed with dual circuit 132 kV monopole self-supporting steel structures, with servitude width of 25 m;
- Maximum span lengths are limited by line alignment but could be between 140 m and 180 m;
- Should the 'Petechane' tower type be used the servitude may be reduced to 16 m. The use of the 'Petechane' tower circuit will depend on soil conditions prevalent along the proposed alignment. A geotechnical investigation will be conducted in the detailed design stage to establish the soil conditions along the proposed alignment;
- A servitude width of 1.5 m is required for the underground cables between points K and L on the map;
- The powerline will be positioned not closer than 12.5 m from the railway line; and
- Where relevant, tower footing foundations will be specially designed for towers



placed near or in a watercourse.

Detailed maps including locality, ownership, environmental sensitivities, landuse, vegetation and existing services can be found in Appendix A of this report. For more information regarding the proposed tower circuit designs please refer to Appendix C.

2. FEASIBLE AND REASONABLE ALTERNATIVES

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Paragraphs 3 – 13 below should be completed for each alternative.

The section below was added by SRK Consulting and is additional to the information in the original Basic Assessment Report form:

Description of Alternatives

Site Alternatives:

Two alternative route alignments were proposed by the project engineers (please refer to Appendix A). The route alignment from Lorraine to 17th Avenue Substation follows the railway line from the Lorraine substation, thereafter it crosses Circular Drive and follows the waterway up to 17th Avenue, where it crosses over William Moffet Drive and terminates at the existing 17th Avenue substation.

Due to availability of land only one route was considered between the Lorraine substation and Circular Drive (namely point A to point E). Two alternative routes were investigated from the Circular Drive



crossing onwards.

i. Option 1: Point A,B,C,D,E,F,H,I,J,K & L (red alignment on the layout plan)

A to E: From Lorraine substation the route follows the railway line up to the point where it swings north to cross erf 271 (this proposed section is overhead using “Petechane” structure type).

E to K From the overhead structure at point E the route connects to point K via an overhead structure (either two single monopole circuits or “Petechane” tower). The exact position of point K is dependent upon soil conditions and floodline restrictions

K to L From the overhead structure at point K, the alignment then goes via an underground cable, which will go under William Moffet Drive to the eastern side of the existing 132 kV substation. The underground cable will be one uninterrupted length of cable approximately 420 m long.

i. Option 2: Point A,B,C,D,E1,G,H,I,J,K & L (orange alignment on the layout plan)

A to E1: From Lorraine substation the route follows the railway line up to the point where it swings north to cross erf 271 (this proposed section will be overhead using “Petechane” structure type).

E1 to K From the overhead structure at point E1 the route connects to point K (on the Northern side of Circular Drive) via an overhead structure (either two single monopole circuits or “Petechane” tower). The exact position of point K is dependent upon soil conditions and floodline restrictions.

K to L From the overhead structure at point K, the alignment then goes via an underground cable, which will go under William Moffet Drive to the eastern side of the existing 132 kV substation. The underground cable will be one uninterrupted length of cable approximately 420 m long.

Both alignment alternatives have been included in the environmental assessment and specialists were requested to comment on the suitability and potential impacts of each alternative. A preferred alternative has not been identified by the applicant.

Activity Alternatives:

The proposed development has been planned to accommodate envisioned future load growth requirements in the area and surrounds. The development is aimed specifically at addressing this future growth demands and therefore no activity alternatives have been considered.

Design/ Layout Alternatives:

Distribution of electricity can be conducted via overhead powerline or underground cable. The proposed 132 kV powerline has mainly been designed as an overhead powerline due to the costs related to underground cables. Installation of underground cables is considerably more expensive than the



overhead alternatives (and therefore is regarded as unfeasible) and will only be used when no other options are available. A cost breakdown for the different alternatives is shown below as requested by IAPs. The following costs were calculated for the entire length of the alignment (using a per meter cost ratio):

Alternative	Estimated Cost
Overhead (Route Alignment 1)	R18,679,316.18
Overhead (Route Alignment 2)	R19,188,531.40
Underground Alternative (Route Alignment 1)	R43,123,167.44

In this proposal, an overhead powerline is proposed from point A to K and an underground cable is proposed from point K to L as per the Locality Plan. The cable needs to be installed between point K and L due to unsuitable soil conditions coupled with horizontal and vertical clearance issues (William Moffet Drive, existing buildings, etc).

Technological Alternatives:

Two types of overhead structures have been considered for the overhead sections of the route alignment, namely, two single parallel monopole structures or a “Petechane” tower circuit (see Appendix C for design examples). The single monopole structure circuit will require a servitude of 25 m in width with a maximum span length of between 140 m and 180 m. The “Petechane” tower circuit only requires a 16 m wide servitude, however tower footing foundations will have to be specifically designed for towers placed near or in the watercourse. The use of the ‘Petechane’ tower circuit is dependent on the soil conditions present along the proposed route alignment. A geotechnical investigation will be conducted during the detailed design stage to establish the soil conditions along the proposed alignment. Once the findings of the geotechnical investigation are available the appropriate tower circuit will be selected. Where possible, the “Petechane” tower circuit will be used. Impact rating has been done for the ‘worst case scenario’ option, i.e. single monopole structure circuit with a 25 m servitude.

No-go Alternative:

The No-go alternative will result in no augmentation of the current 132 kV grid.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites if applicable.



Alternative:

Alternative S1¹

Alternative S2 (if any)

Alternative S3 (if any)

Latitude (S):

Longitude (E):

o	'	o	'
o	'	o	'

In the case of linear activities:

Alternative:

Latitude (S):

Longitude (E):

Please refer to Appendix A for coordinates taken every 250 meters along the route for each alternative alignment.

Alternative S2 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

o	'	o	'
o	'	o	'
o	'	o	'

Alternative S3 (if any)

- Starting point of the activity
- Middle point of the activity
- End point of the activity

o	'	o	'
o	'	o	'
o	'	o	'

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:

Alternative A1² (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

m ²
m ²
m ²

Length of the activity:

2,915 m
2,925 m
m

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

Alternative A1 (preferred activity alternative)

Size of the site/servitude:

72,875 m ² (maximum servitude size)
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¹ "Alternative S.." refer to site alternatives.

² "Alternative A.." refer to activity, process, technology or other alternatives.



Alternative A2 (if any)

73,125 m ² (maximum servitude size)
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Alternative A3 (if any)

m ²

5. SITE ACCESS

Does ready access to the site exist?

YES

If NO, what is the distance over which a new access road will be built

m

Describe the type of access road planned:

Existing roads (William Moffet Drive, Circular Drive, Oak Road and Dijon Road) will be used for the construction and operational phases of the development. Access to the 17 th Avenue substation for the delivery of equipment and maintenance purposes will be via a purpose built off-ramp from William Moffet Drive. Minimal access roads may be required along the section east of Circular Drive.
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Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 metres;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;



6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):

- rivers;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.9 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and

6.10 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

What is the expected yearly income that will be generated by or as a result of the activity?

Will the activity contribute to service infrastructure?

Is the activity a public amenity?

How many new employment opportunities will be created in the development phase of the activity?

	R6,6m
	N/A
YES	
YES	
	10



What is the expected value of the employment opportunities during the development phase?	Not available at this stage
What percentage of this will accrue to previously disadvantaged individuals?	35 %
How many permanent new employment opportunities will be created during the operational phase of the activity?	0
What is the expected current value of the employment opportunities during the first 10 years?	N/A
What percentage of this will accrue to previously disadvantaged individuals?	N/A

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

In 2009 the substation at 17th Avenue Walmer was damaged. The load on the substation prior to the damage was 18 MVA. The Nelson Mandela Bay Municipality has predicted a long-term load forecast of about 50 MVA. The predicted load increase is due to residential developments in nearby Fairview, as well as commercial developments along William Moffet Drive and Circular Drive.

The proposed 132 kV powerline will connect the Walmer 17th Avenue substation to the 132 kV grid via the Lorraine substation. This will stabilise the electricity supply and provide for the predicted future load growth in the area.

Indicate any benefits that the activity will have for society in general:

The proposed powerline will enhance Nelson Mandela Bay’s energy supply. The NMBM IDP 2011-2016 identifies Ward 4 and Ward 6 as eligible for electricity upgrades and infrastructure restoration. The proposed alignment is situated within both, ward 4 and ward 6 (as well as a section of ward 8).

The proposed powerline will generate sustainable increase in production and GDP nationally and locally as well as sustainable employment positions.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The proposed powerline will supply electricity to future proposed residential and commercial developments along the route and greater area as well as supplement the current energy demands of existing residential and commercial properties along the route.

Strengthening of the electricity network in the surrounding area will benefit both residents and business owners, in that the reliability of the current supply will be increased and residences and businesses who do not currently have access to electricity may obtain access. In addition, the engineering team for the proposed 132 kV powerline suggest that it will help to unlock further development in the surrounding suburbs of Fairview, Lorraine and Overbaakens.



10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (NEMA) No. 107 of 1998	DEA	1998
Environmental Impact Assessment Regulations (Government Notice No. R. 983 & 985)	DEA	Dec 2014
Electricity Regulations Act (No 4 of 2006)	NERSA	2006
Nelson Mandela Bay Municipality Integrated Development Plan (IDP) 2015/2016	Nelson Mandela Bay Local Municipality	April 2015
Nelson Mandela Bay Municipality: Metropolitan Spatial Development Framework	Nelson Mandela Bay Local Municipality	2015
Eastern Cape Biodiversity Conservation Plan	DEA	2007
National Water Act (No 36 of 1998)	DWS	1998
Noise Control Regulations in terms of the Environmental Conservation Act (Act 73 of 1989)	DEA	10 January 1992
Government Gazette No. 38108: Guideline Series 9 Need and Desirability	DEA	October 2014
Government Gazette No. 35769: Guideline Series 7 Public Participation in the EIA process	DEA	October 2012

The section below was added by SRK Consulting and is additional to the information in the original Basic Assessment Report form:

Policy and Legislative Context

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

The National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and the Environmental Impact Assessment Regulations (GN R 983 – 985, 04 December 2014) published there under, set out a set of schedules of listed activities that may not be undertaken without Environmental Authorisation from a competent authority. The Basic Assessment process is prescribed by the EIA Regulations (2014) as a prerequisite to obtaining a decision from the Department of Environmental Affairs (DEA) in terms of the NEMA for the listed activities applied for. The relevant listed activities are



detailed below:

GNR. 983 Item 19: 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 of more than 5 cubic metres from –

i. a watercourse

GNR. 985 Item 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where the clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan

a. In Eastern Cape:

ii. Within critical biodiversity areas identified in bioregional plans;

iv. On land, where, at the time of coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.

GNR. 985 Item 14: The development of—

xii. Infrastructure or structures with a physical footprint of 10 square metres or more

c. In Eastern Cape:

iii. In urban areas:

aa. Areas zoned for use as public open space

bb. Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for conservation purpose.

Electricity Regulations Act (No 4 of 2006)

All generation, transmission or distribution of electricity is regulated by the Electricity Regulations Act (No 4 of 2006) and are therefore governed by the regulations set out in the Act.

Nelson Mandela Bay Municipality Integrated Development Plan (IDP) 2015/2016

All municipal planning and projects are required to occur in accordance with the latest IDP.

Nelson Mandela Bay Municipality: Metropolitan Spatial Development Framework

All municipal planning is required to be in accordance with the latest municipal spatial development framework.

Eastern Cape Biodiversity Conservation Plan

The proposed alignment (including both alternatives) falls within the boundaries of the Critical Biodiversity Areas (CBAs) as identified within the Eastern Cape Biodiversity Conservation Plan.



National Water Act (No 36 of 1998)

The proposed alignment follows a watercourse for a length and therefore will require a water use license, specifically a section 21 c (impeding or diverting the flow of water in a watercourse) & i (altering the bed, banks, course or characteristics of a watercourse) license.

Noise Control Regulations in terms of the Environmental Conservation Act (Act 73 of 1989)

Noise related to the construction related activities as well as operational noise resulting from the transmission of electricity along the proposed powerlines must be in accordance with the regulations specified within section 25 (Regulations regarding noise, vibration and shock) of this Act.

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	
Minor Quantities	

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

All solid waste generated during the construction process (including plastic, rubble, waste metals, etc.) will be placed in a bulk waste collection area in the contractor's site camp. The waste will be cleared regularly by the appointed contractor and disposed of at a registered landfill site. Litter collection bins will be provided and will be appropriately placed within the contractor's site camp and on site, and will be regularly cleared. Separation of waste and recycling of paper, glass, etc. will be encouraged. Burning or burying of waste will not be allowed. Unutilised construction materials will be removed once construction has been completed.

Where will the construction solid waste be disposed of (describe)?

Construction waste will be disposed of at the nearest municipal landfill site (Arlington landfill site).

Will the activity produce solid waste during its operational phase?

YES	NO
N/A	

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?



N/A

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

	NO
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If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

	NO
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If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
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If yes, what estimated quantity will be produced per month?

N/A

Will the activity produce any effluent that will be treated and/or disposed of on site?

Yes	NO
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N/A

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO
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If yes, provide the particulars of the facility:

Facility name:

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Contact person:

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Postal address:

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Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N/A

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

	NO
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

N/A

11(d) Generation of noise

Will the activity generate noise?

YES	NO
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

During the construction period, noise will be generated temporarily due to the use of construction plant and machinery. Construction activities involving use of the noisy vehicles, machinery, hammering, etc. must be limited to normal working hours (i.e. 6:00 to 18:00, Monday to Saturday).

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)



Municipal (during construction)	water board	groundwater	river, stream, dam or lake	other	the activity will not use water (during operation)
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:

Minimal quantities of water will be used during construction	
YES	NO

Does the activity require a water use permit from the Department of Water Affairs?

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

According to the latest General Authorisation (GA) regulations (as gazetted on the 26th of August 2016), the powerline will be exempted from application for a General Authorisation (GA) as per Appendix D(2) of the gazetted document. The relevant Section 21 *c* and *i* forms will however be required to be submitted to the Department of Water and Sanitation (DWS) and the conditions set out within the GA will need to be strictly adhered to.

It must be noted that under no circumstances may any water be extracted from the watercourse without the relevant permit from DWS.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The proposed activity involves supply/ distribution of energy and therefore does not have any energy requirements.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

N/A



SECTION B: SITE/ AREA/ PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g.
A):

- Paragraphs 1 - 6 below must be completed for each alternative.

- Has a specialist been consulted to assist with the completion of this section?

YES	NO
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If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1 (Option 1)

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2 (Option 2):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline



- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley

2.6 Plain

- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1: Option 1		Alternative S2: Option 2		Alternative S3:	
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).



The section below was added by SRK Consulting and is additional to the information in the original Basic Assessment Report form:

Aquatic Systems/ Surface Water:

An Aquatic Impact Assessment (included in Appendix D) was conducted by Dr Brian Colloty in February 2016. The details regarding the aquatic systems below are extracted from this report.

The proposed project is located along the banks of a tributary of the Baakens River, which over time has been modified through diversion, riverbed modification and the growth of alien trees such as *Acacia mearnsii*, *Datura spp* and *Eucalyptus spp*. All of the watercourse banks have also been further modified in terms of vegetation clearing / brush cutting or mowing.

The study area is located within the South Eastern Coastal Belt Ecoregion of the M20A (Baakens) quaternary catchment (refer to the Hydrology Map in Appendix A). The instream areas were naturally moderately steep to steep, incised with no major floodplain areas within the survey area. Wide riparian zones are thus not prevalent in these types of systems, and would have been between 2 and 15m wide. This has been altered over time, as previously mentioned either through:

- The inclusion of storm and flood water management structures such as the gabions walls that span the system in several areas and have created artificial reed bed wetlands;
- Land reclamation and infill of riverbanks to reduce the risk of flooding of adjacent properties; and
- Alien vegetation stands

The study area hydrology was characterised mostly ephemeral flows entrained by a series of detention gabions along the length of the water course from where it intersects with Circular Drive until Hanover Place in Overbaakens. These gabion walls thus entrap/ slow any flows which was then colonised by dense reedbeds. The natural riverine channel with instream vegetation and some aquatic habitat only reappears for a short section where it intersects with William Moffett/ 17th Ave. The upper regions of the study area (along Macon Rd) do not form part of any natural watercourse, and the observed watercourses are canals/ channels that have been dug to divert surface water runoff away from the Lorraine area, under the rail line and Circular Drive and into a large detention pond.

The National Freshwater Ecosystems Priority Atlas (NFEPA - Nel et al., 2011) and Eastern Cape Biodiversity Conservation Plan (ECBCP) spatial databases have however indicated that the study area forms part of a Fish Support Area and an Aquatic CBA 2, as this system forms part of a hydrological connection between the upper catchment (Lorraine) and the Baakens River itself. This is a similar case shown the Nelson Mandela Bay Municipality Bioregional Plan – Critical Biodiversity Area (CBA) (refer to Environmental Sensitivity Map in Appendix A). All of these projects, based largely on the same data have identified the study area subquaternary catchments (SQ 9104) as important freshwater conservation areas due to the possible presence of rare endemic fish, i.e. Eastern Cape Redfin (*Pseudobarbus afer*) and Eastern Cape Rocky (*Sandelia bainsii*).

With regard natural wetlands, none were observed, with those already described observed associated with the stormwater control features within the project area. This was supported by the National Wetland Inventory (ver 4) contained in the NFEPA database.



A Water Use License will be required for all pylons/towers which are to be constructed within 500 m of a wetland or within 100 m of a watercourse.

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

- 4.1 Natural veld – good condition ^E
- 4.2 Natural veld – scattered aliens ^E
- 4.3 Natural veld with heavy alien infestation ^E
- 4.4 Veld dominated by alien species ^E
- 4.5 Gardens
- 4.6 Sport field
- 4.7 Cultivated land
- 4.8 Paved surface (roads)
- 4.9 Building or other structure
- 4.10 Bare soil

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition ^E	Natural veld with scattered aliens^E	Natural veld with heavy alien infestation^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

The section below was added by SRK Consulting and is additional to the information in the original Basic Assessment Report form:

Vegetation:

The Nelson Mandela Bay’s Final Bioregional Plan (SRK Consulting, 2014) categorises the historical vegetation habitats that extend across the proposed development area as largely Lorraine Transitional Grassy Fynbos (Broad Habitat Unit is Grassy Fynbos) and small areas of Baakens Grassy Fynbos (Broad Habitat Unit is Grassy Fynbos) and Baakens Forest Thicket (Broad Habitat Unit is Indian Ocean Forest). Refer to Vegetation Map in Appendix A.



Lorraine Transitional Grassy Fynbos is present on aeolianite, calcareous sandstone or sand in moderate moisture conditions. and is dominated by *Agathosma ovata*, *Metalasia aurea*, *Passarina rigida*, *leucospermum cuneiforma*, *Phyllica axillaris*, *Perlagonium longifolium*, *Leucadendron salignum*, *Geissorhiza aspera*, and *Boskia oliodes*. *Walafrida geniculata*, *Montinia caryophyllacea*, *Aspalathus biflora*, *Lobelia tomentosa*, and *Erica chloroloma* are common.

Baakens Grassy Fynbos is present on quartzitic sandstone in moderate moisture conditions and is dominated by *Passarina rigida*, *Aspalathus teres*, *Metalasia aurea*, *Perlagonium longifolium*, *Helichrysum sp.*, various grasses and *Restio sp.* *Montinia caryophyllacea*, *Boskia oliodes*, *Hermania salvifolia*, *Berkheya angustifolia*, *Aspalathus biflora*, *Cyanella lutea* and *Senecio pinifolius* are common.

Baakens Forest Thicket is classified as forest, mostly short (< 6m tall) within a matrix of Sundays Valley Thicket. White Milkwood (*Sideroxylon inerme*), Gwarrie (*Eulcea undulata*), *Grewiaa occidentalis*, *Olea exasperate*, *Hypobroumus sp.*, *Azima tetraantha*, *Acokanthera sp.*, *Pteraselastris trituscgata*, *Brachylaena discolour*, *Colpoon compressum* and *Aloe pluridans* are dominant. Present on quartzitic sandstone.

The Bioregional Plan is a spatial plan that shows terrestrial and aquatic features that are critical for conserving biodiversity and maintaining ecosystem functioning within the Nelson Mandela Bay Municipality. These areas are referred to as Critical Biodiversity Areas (CBA's). These areas are required to meet the municipality's biodiversity conservation targets. Such areas should be maintained in their natural state in perpetuity. A map of CBA's was produced as part of the NMBM's Conservation Assessment Plan (SRK Consulting, 2010) and sites were assigned CBA categories based on their biodiversity characteristics and Ecosystem Threat Status. Vegetation types have been classified in the Metro based on the extent of remaining area (currently not transformed) in relation to each vegetation type's biodiversity target (namely Critically Endangered, Endangered, Vulnerable or Least Threatened). Lorraine Grassy Fynbos is listed as Critically Endangered (conservation target is set at 82.6%), Baakens Grassy Fynbos is listed as Critically Endangered (conservation target is set at 100%) and Baakens Forest Thicket is listed as Endangered (conservation target is set at 70.4%) in the NMB Bioregional Plan. However, none of these vegetation types are listed as threatened ecosystems under Section 52(1)(a) of the National Environmental Management: Biodiversity Act (No 10 of 2004).

Refer to the Environmental Sensitivity Map in Appendix A. The Nelson Mandela Bay Bioregional Plan mapped point E to point L of the powerline alignment as Critical Biodiversity Area (CBA). Although the NFEPA and Nelson Mandela Bay Bioregional Plan supersedes the Eastern Cape Biodiversity Conservation Plan (ECBCP) Critical Biodiversity Area (CBA) Map (Berliner and Desmet, 2007), the ECBCP mapped the M20A catchment area as an Aquatic Critical Biodiversity Area 2

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area



- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential
- 5.6 Retail commercial & warehousing
- 5.7 Light industrial
- 5.8 Medium industrial ^{AN}
- 5.9 Heavy industrial ^{AN}
- 5.10 Power station
- 5.11 Office/ consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard ^N
- 5.23 Railway line ^N
- 5.24 Major road (4 lanes or more) ^N (William Moffett Drive)
- 5.25 Airport ^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station ^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture
- 5.34 River, stream or wetland
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

If any of the boxes marked with an “^N” are ticked, how will this impact / be impacted upon by the proposed activity.



A section of the powerline is proposed in the railway line servitude along Macon Road in Lorraine. This railway line is not currently used. No impact on the railway line is anticipated as the powerline will not be positioned closer than 12.5 m from the railway line at any point.

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

There is a BP filling station along Circular Drive that is approximately 50 m north-east from Alternative 2 and 115 m north-east from Alternative 1. It is not anticipated that the filling station will have any impacts on the proposed powerline nor will the powerline affect the filling station

There is also a Caltex Filling Station approximately 250 m north-east of the K to L underground section of the proposed alignment. It is not anticipated that the filling station will have any impacts on the proposed powerline nor will the powerline affect the filling station.

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including

Archaeological or palaeontological sites, on or close (within 20m) to the site?

	NO
No	

If YES, explain: N/A

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

Archaeological Impact Assessment Phase 1 Letter of Exemption (refer to Appendix D)

There were no archaeological artefacts located during the phase 1 archaeological impact assessment carried out. If any archaeological or heritage material were to be discovered it is very unlikely that it would be in situ. However, there is always a possibility that human remains



or other archaeological and historical material may be uncovered during the development.

The specialist indicated no preference towards a specific alternative alignment as both areas are of a low archaeological significance and it is unlikely that sites would be uncovered in situ.

Palaeontological Impact Assessment Phase 1 Letter of Exemption (refer to Appendix D)

The proposed 132 kV powerline development between the existing Lorraine and 17th Avenue Substations, Walmer, Port Elizabeth is of low significance in terms of local palaeontological heritage since (1) the sedimentary rocks underlying the site are of low palaeontological sensitivity, and (2) the project footprint is very small, with little bedrock excavation envisaged.

The specialist therefore recommended that exemption from further specialist palaeontological studies and mitigation be granted for this 132 kV powerline development.

Will any building or structure older than 60 years be affected in any way?

~~NO~~

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

~~NO~~

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

The section below was added by SRK Consulting and is additional to the information in the original Basic Assessment Report form:

SOCIO-ECONOMIC CONTEXT OF THE SURROUNDING AREA

Poverty and other social challenges contribute to low education levels within the metropolitan, with 3 % of the population have no schooling, while 13 % have Grade 7 or less and 75 % have Grade 12 or less.

According to the latest NMBM IDP (2015/2016) 36.48 % of the working age population is employed, 21.02 % are unemployed, 5.26 % of the population are discouraged work-seekers while the remaining 36.46 % are not economically active. These statistics clearly show that the Nelson Mandela Metropolitan still faces high levels of unemployment, which may be attributed to a decline in economic growth.

71 239 of the total number of 276,850 households within the metropolitan are classified as indigent. This essentially means that approximately 30% of the population is dependent on the municipality, while roughly 44 % of the population access at least one social grant.





SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.



2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
 - (iii) the nature and location of the activity to which the application relates;
 - (iv) where further information on the application or activity can be obtained; and
 - (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response



report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

- Department of Economic Development, Environmental Affairs & Tourism;
- Department of Water & Sanitation;
- Eastern Cape Provincial Heritage Resources Agency;
- Department of Energy; and
- Nelson Mandela Bay Municipality.

List of authorities from whom comments have been received:

None to date

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

A summary of all issues raised by stakeholders is included below. However, a complete Comments and Responses Table is included in Appendix E attached.

Main issues raised by landowners:

- i. Inadequate public participation;
- ii. Vagueness of information contained in BID;
- iii. Absence of written consent of landowner to undertake activity;
- iv. Undesirability of overhead powerlines;



- v. Clarity regarding difference in cost between underground and overhead cabling;
- vi. Clarity regarding economic feasibility of underground cabling;
- vii. Effect of aboveground powerlines on local fauna;
- viii. Crossing over of alignment onto sensitive ecological areas;
- ix. Depreciation of property values;
- x. Impact on approved residential developments;
- xi. Negative visual impact of overhead powerlines;
- xii. Health risk due to electromagnetic radiation from masts;
- xiii. Impact of powerlines on functioning of hospital's equipment; and
- xiv. Cost of maintenance of aboveground powerlines.

Main issues raised by Ward 8 Councillor:

1. Lack of notice to ward office; and
2. Request for clarity regarding public participation process.



SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

A summary of all issues raised by IAPs is included below. However, a complete Comments and Responses Table is included in Appendix E3 attached.

1. Undesirability of overhead powerline; preference for underground cabling;
2. Concern regarding effect of bush clearing on local fauna;
3. Interference with recreational use of open spaces;
4. Depreciation of property values;
5. Negative impact on future growth and development in area;
6. Concern regarding electromagnetic radiation from masts; and
7. Opposition of local residents to proposed project.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

1. The option of installing an underground cable for the entire route has been eliminated during the design phase of the proposed development due to costs. Please see the discussion regarding alternatives in section A(2) above;
2. All potential impacts, including impacts on wildlife, avifauna, aquatic and terrestrial resources are discussed in section D(2) of this report, including proposed mitigation measures. An Aquatic Impact Assessment has also been conducted by a specialist and is included in Appendix D;
3. The proposed powerline will not impact on pedestrians visiting the nearby shops. Please refer to section D(2) of this report for a discussion on potential impacts as well as proposed mitigation measures;
4. Please refer to section D(2) of this report for a discussion on potential impacts, including impacts on property values.
5. A clear reason is not provided regarding how high level masts would limit future growth and development in the area. In terms of the electricity provision, the distribution network is critical to enhance development growth in the larger area;
6. All potential impacts, including the electromagnetic field (EMF), are discussed in section D(2) of this report; and
7. Noted.



2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

The section below was added by SRK Consulting and is additional to the information in the original Basic Assessment Report form:

The identification of potential impacts of the proposed activity is based on the following factors:

- The legal requirements;
- The nature of the proposed activity;
- The nature of the receiving environment; and
- Issues raised during the public participation process.

Considering the factors listed above, a number of potential environmental impacts which could potentially result from the proposed 132 kV powerline have been identified. These are discussed in this section.

Note that the impacts described below relate to both alignment alternatives (Option 1 and Option 2). The impacts for both alternatives have been rated exactly the same in all instances, even though a preference for Option 1 has been indicated by the aquatic specialist.

Alternative (Option 1 & Option 2)

Direct impacts: (Construction)

Potential negative impacts:

1. Impacts on Biodiversity:

❖ 1.1 Loss of Biodiversity/ Vegetation Clearance (-ve):

Vegetation clearance, vehicular access and excavation activities required during the construction phase may impact negatively on the biodiversity of the area, especially the section of alignment between Circular Drive and William Moffet Drive which is classified as a Critical Biodiversity Area (CBA) according to the Eastern Cape Biodiversity Conservation Plan (ECBCP). The vegetation types which the powerline alignment traverses are listed as critically endangered (Lorraine Grassy Fynbos & Baakens Grassy Fynbos) or endangered (Baakens Forest Thicket) according to the NMBM Bioregional Plan (2009). It must however be noted that the pylon footprints will be minimal in nature and little vegetation clearing will be required.



Two potential Yellowwood tree seedlings (*Podocarpus latifolius*) have been planted in the open space adjacent to AG Visser Avenue which may need to be replanted to ensure that they are not damaged during the construction phase.

The final significance rating for this impact is MEDIUM (-ve) with or without mitigation measures.

Mitigation measures:

- The site camp should be placed in an already disturbed area to minimise additional disturbance and clearing of vegetation;
- Minimise cleared and disturbed areas and use already transformed areas where possible;
- The site camp footprint must be minimised and accessible via existing access roads;
- Rehabilitation should involve revegetation with indigenous vegetation;
- Use existing access roads and where new routes are required use transformed areas wherever possible, most importantly in the CBA areas. New access roads within the CBA areas should be prevented; and
- Permits would be required for the relocation of any protected plants, e.g. Yellowwood trees.

❖ 1.2 Erosion (-ve):

Incorrect topsoil stripping may lead to accelerated erosion, resulting in soil loss, and possible sedimentation/ siltation of the watercourse which runs along the southern section of the proposed alignment.

The final significance rating for this impact is LOW (-ve) if no mitigation is implemented. However, should the important mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- The site camp should be placed in an already disturbed area to minimise additional disturbance and clearing of vegetation;
- Minimise cleared and disturbed areas and use already transformed areas where possible;
- The site camp footprint must be minimised and accessible via existing access roads; and
- Rehabilitation of cleared areas should be conducted as soon as possible after construction at the specific site.

❖ 1.3 Spread of Alien Invasive (-ve):

Vegetation clearance required during the construction phase may lead to the spread of alien invasive species. However, vegetation clearing should be minimal and only involve clearing at each tower and along the underground cable route.

The final significance rating for this impact is LOW (-ve) if no mitigation is implemented. However, should the important mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).



Mitigation measures:

- Minimise cleared and disturbed areas and use already transformed areas where possible;
- Rehabilitation of cleared areas should be conducted as soon as possible after construction at the specific site;
- Rehabilitation should involve revegetation with indigenous vegetation;
- Implementation of an alien invasive vegetation removal programme during rehabilitation of the site (optional); and
- Removal of all invasive alien plants from disturbed areas before they reach seed-bearing age.

No-Go Alternative: There will be no additional impact.

2. Impacts on Traffic (-ve):

Construction at the various road crossings (Bergues Street, Circular Drive and William Moffet Drive) for the proposed alignment may require detours and/ or traffic control measures. It is important to note that the powerline will cross the road, however no construction is required in the road. The underground crossing at William Moffet Drive will be constructed using directional drilling in order to avoid traffic disruption. Construction traffic may also pose a safety impact to residents living along the proposed alignment. Construction vehicles requiring access to the site may cause wear and tear of the existing roads.

The final significance rating for this impact is VERY LOW (-ve) with or without mitigation measures.

Mitigation measures:

- Implementation of strict traffic safety measures and speed limits for all construction related traffic;
- Appropriate traffic warning signage to be in place; and
- Appropriate road maintenance programme to be implemented.

3. Impacts on Wildlife (-ve):

Noise and habitat destruction resulting from construction activities may displace and disturb local wildlife mainly associated with the watercourse and wetland. However, since no activities are planned within any watercourse or wetland and considering the small proposed construction footprint, the potential impact to wildlife should not be significant.

The final significance rating for this impact is VERY LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- Minimise cleared and disturbed areas and use already transformed areas where possible; and
- Hunting and harm to fauna by construction workers will be prohibited.



4. Noise Impacts (-ve):

Construction activities will generate noise due to the operation of machinery and vehicles, causing a nuisance to residents along the proposed alignment.

The final significance rating for this impact is VERY LOW (-ve) with or without mitigation measures.

Mitigation measures:

- Construction activities should be kept to normal working hours (i.e. 6:00 to 18:00, Monday to Saturday) according to the Noise Control Regulations in terms of the Environmental Conservation Act (Act 73 of 1989) to reduce the noise impact to an acceptable level;
- Activities that may disrupt neighbours (e.g. delivery trucks, blasting and other excessively noisy activities) must be preceded by notice being given to the affected neighbours at least 24 hours in advance;
- No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is to be permitted on site; and
- Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers, etc.) must be used as per operating instructions and maintained properly during site operations.

5. Impacts on Existing Infrastructure and Private Property (-ve):

Existing infrastructure including the railway line (north of Macon Road, Lorraine), NMBM road infrastructure, fences and gates, Telkom cables, existing Eskom cables, NMBM water and sewer infrastructure as well as adjacent private property may be disturbed through construction activities.

The final significance rating for this impact is VERY LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- Locations of existing services to be determined and mapped prior to the commencement of construction;
- Consultation with the potentially affected parties (e.g. NMBM, Eskom, property owners, etc.) should be conducted if any services positions are unclear;
- Manual excavation in areas where services infrastructure is present;
- The appropriate safety precautions must be taken at all times; and
- Should any existing services be damaged as a result of the construction activities, the affected parties should be notified and the relevant actions taken to repair damages as soon as possible.

6. Impacts on Aquatic Resources (including wetlands)

The following impacts were identified and assessed by aquatic specialist Dr. Brian Colloty in the Aquatic Impact Assessment Report (included in Appendix D) conducted in February 2016:

❖ 6.1 Impact on hydrological regime and increased potential for erosion (-ve):



The soils within the study area are susceptible to erosion when subjected to high flows (high volumes and velocities), with head-cuts readily forming within the regional water courses. This creates bed and bank instability in the aquatic ecosystems and consequent sedimentation of downstream areas, which can negatively affect biodiversity and functioning of in stream habitats. Clearing of vegetation could destabilise the soils, resulting in downstream erosion and or sedimentation that could impact on aquatic habitats within the Baakens River, particularly if no post construction rehabilitation is done to allow revegetation of any disturbed sites.

Due to the nature of the study area hydrology, its present state and the surrounding impacts this would although a negative impact, the overall significance of the impact would be rated as LOW (-ve). However should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- Minimise the loss of aquatic habitats / vegetation by locating as many of the proposed towers outside of these areas thus maintaining a small footprint;
- No vehicles to refuel within watercourse / wetlands to prevent any compaction of soils;
- No flows within any of the water courses should be altered by the towers.

❖ 6.2 Impact on Water Quality (-ve)::

Presently little is known about the water quality of the water courses directly in the study area, but it is assumed due to the activities observed, the aquatic systems contain some form of pollutants, other than elevated sediment loads during floods.

During construction various materials, such as sediments, diesel, oils and cement, could pose a threat to the continued functioning downstream areas, if by chance it is dispersed via surface run-off, or are allowed to permeate into the groundwater. Changes to water quality can negatively impact on the functioning of plants and other instream biota.

The final significance rating for this impact is VERY LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- Chemicals used for construction must be stored safely on site and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early;
- Littering and contamination of water sources during construction must be prevented by effective construction camp management;
- Emergency plans must be in place in case of spillages onto road surfaces and water courses;
- No stockpiling should take place within a water course;
- All stockpiles must be protected from erosion, stored on flat areas where run-off will be



minimised, and be surrounded by bunds;

- Stockpiles must be located away from river channels;
- Erosion and sedimentation into channels must be minimised through the effective stabilisation (gabions and Reno mattresses) and the re-vegetation of any disturbed riverbanks; and
- The construction camp and necessary ablution facilities meant for construction workers must be beyond the 32m of any of the watercourses.

❖ 6.3 Loss of vegetation, and aquatic habitat and stream continuity (-ve)::

Wetland vegetation and aquatic corridors create longitudinal links between a variety of habitats and refugia. The refugia are particularly important in times when surface flows are low, i.e. fish populations are able to survive in deeper pools during droughts. These populations are then able to recolonise the remaining river reaches, when reconnected by increased river flows. This function of a catchment and its ability to act as a refugia is highlighted by the conservation plans that have earmarked the study area as such. The proposed transmission line, would see a number of towers located within these areas based on the current alignments, but it is assumed that these tower footprints are small and no access roads will be required within the aquatic habitats. The number of tower footprints directly within or adjacent to the watercourse would be lower if Alternative 1 is selected. However, the impact rating for both alignments is similar.

The final significance rating for this impact is LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- Tower footprints must be kept to a minimum and if possible outside of the demarcated water courses; and
- The number of towers that would need to be placed within or directly adjacent to the observed water courses / wetland areas would be lower if Option 1 is selected.

Additional mitigation measures recommended by the specialist:

- Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off;
- All construction materials including fuels and oil should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion. Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be more than 32m from any demarcated water courses;
- All cleared areas must be re-vegetated after construction has been completed;
- It is also advised that an Environmental Control Officer, with a good understanding of the local flora be appointed during the construction phase. The ECO should be able to make clear recommendations with regards to the re-vegetation of the newly completed /



disturbed areas, using selected species detailed in this report.;

- All alien plant re-growth must be monitored and should it occur these plants should be eradicated. The scale of the operation does however not warrant the use of a Landscape Architect and / or Landscape Contractor;
- The following conditions must be adhered to:
 - Access will be kept to a minimum and where possible steep areas will be provided with suitable stormwater management features to prevent soil erosion and completely prevent any sediment from entering the downstream areas;
 - Chemicals (e.g. poisons / hazardous substances) must be stored safely on site and surrounded by bunds. Chemical storage containers must be regularly inspected so that any leaks are detected early;
 - Littering and contamination of water sources during construction/operation must be prevented by effective solid waste management;
 - Emergency plans must be in place in case of spillages onto works areas and water courses;
 - All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds; and
 - Stockpiles must be located away from water courses.
- Lastly it is also recommended that a detailed walk down survey is conducted once the towers positions are known by an aquatic specialist due to the close proximity of either of the options to the wetlands and water courses. This must also include an opportunity to assess the final design provisions prior to construction to ensure that minimal impact will occur as in all likelihood the Department of Water and Sanitation will require a detailed rehabilitation and monitoring plan. Once the tower positions are known site specific recommendations could be provided by the specialist.

7. Impacts on Archaeological Resources (-ve):

Although the proposed alignment is located in an area of low archaeological cultural sensitivity, it is possible that archaeological heritage material exists below the surface and could be impacted during construction.

The final significance rating for this impact is VERY LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- The environmental control officer (ECO) as well as the construction managers/ foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites; and
- If concentrations of archaeological and/or historical heritage material, marine shells, and / or human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (Tel: (046) 622 2312) and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (Tel: (043) 745 0888) so that systematic and professional investigation/ excavation can be undertaken.



8. Impacts on Palaeontological Resources (-ve):

Although the proposed alignment is located in an area of low palaeontological cultural sensitivity, it is possible that palaeontological heritage material exists below the surface and could be impacted during construction.

The final significance rating for this impact is VERY LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).

Mitigation measures:

- The environmental control officer (ECO) as well as the construction managers /foremen should be informed before construction starts on the possible types of palaeontological sites/ material they may encounter and the procedures to follow when they find sites; and
- Should any substantial fossil remains (e.g. vertebrate bones and teeth, petrified wood, plant or trace fossil assemblages, fossil shells) be encountered during excavation, however, these should be safeguarded, preferably in situ, and reported by the ECO to ECPHRA (i.e. The Eastern Cape Provincial Heritage Resources Authority. Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za) and a suitably qualified palaeontologist so that specimens can be examined, recorded and, if necessary, professionally excavated at the developer's expense.

9. Impacts on Air Quality (Dust) (-ve):

Windblown dust from material stockpiles and cleared areas may affect surrounding residents, road users and pedestrians by creating a nuisance and safety impact to traffic. However, it is not anticipated that large areas will have to be cleared during the construction phase as the tower footprints are small and minimal new access routes will be required.

The final significance rating for this impact is VERY LOW (-ve) with or without mitigation.

Mitigation measures:

- Implementation of dust suppression techniques such as wetting of the soil;
- Minimise vegetation clearing and land disturbance; and
- Rehabilitate exposed areas as soon as possible after construction in the relevant area has been completed.

10. Waste Management (-ve):

Construction waste as well as small amounts of domestic waste will be generated. Lack of proper management of the waste on the site may lead to wind-blown litter and dumping creating a negative visual impact and potentially impacting on aquatic ecosystems.

The final significance rating for this impact is LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to INSIGNIFICANT (-ve).



Mitigation measures:

- Chemical toilets must be provided for workers and these must be regularly serviced (and proof of correct sewage disposal maintained for auditing purposes);
- All waste generated on site shall be collected and appropriately disposed of at a registered municipal landfill site on a regular basis;
- No waste is to be buried or burned on the site;
- Hazardous waste (if applicable) should be disposed of at a registered hazardous landfill facility and proof of correct disposal should be obtained;
- Sufficient weather and vermin proof portable bins (with lids) shall be provided. The contractor shall be responsible for the disposal of domestic waste generated as a result of work activities; and
- Littering is strictly prohibited. Litter shall be disposed of in the on-site bins;
- Where possible, waste shall be re-used or recycled;
- The contractor shall inform sub-contractors and delivery drivers (e.g. of concrete, sand etc.) of procedures and restrictions in terms of the EMP, and shall only use designated access roads and material storage areas;
- All loads shall be secured / enclosed to prevent spillage during transport;
- The Contractor shall be responsible for clean-up resulting from failure of sub-contractors to properly contain materials;
- All cement bags shall be disposed of at a licensed waste disposal facility;
- All staff shall be trained on correct waste management;
- The Contractor will be responsible for removing all litter, construction waste and contaminated material from the site and surrounding areas affected by the construction activities and recycling or disposing of it at a registered waste landfill facility; and
- All waste shall be secured / enclosed to prevent spillage during transportation; and
- Records of disposal of all waste generated on site shall be maintained for auditing purposes..

11. Socio-Economic Impacts

The following impacts were identified and assessed by socio-economic specialists Urban-Econ in the Socio-Economic Impact Assessment (included in Appendix D) conducted in September 2016.

❖ 11.1 Negative changes to the sense of place (-ve):

During the construction of the proposed powerline there are likely to be noise impacts caused by the movement of vehicles as well as construction activities on site. These impacts are anticipated to occur primarily during the day with some limited illumination from the site being experienced during the night. The presence of this noise is likely to alter the way the surrounding environment is experienced by households in the area. As construction activities progress and the footprint of the facility grows, the visual impact will also become more apparent and the sense of place experienced by households residing within the visually affected area will be altered further.

It is anticipated that households residing on properties within +/- 500 m from the construction of



the powerline will experience the greatest disruption in their sense of place during the construction period. These individuals will, over the course of the construction phase of the project, be subjected to either visual or noise disruptions that are currently not present in the area.

The sense of place at the properties located adjacent to or beyond the site of the proposed powerline will also be affected to some extent. The visual exposure on all these properties during the construction phase will not be continuous given the proximity of some of the properties from the proposed powerline. Nevertheless, the knowledge of the powerline near the properties and the fact that it could be seen from some parts will still have a negative connotation and will alter the sense of place experienced by the households residing on these properties.

As stated the sense of place of local residents is likely to begin to alter once the construction of the proposed powerline begins. Visual impacts will, however, remain for the entire operation of the development. This means that although the effect on the sense of place could be relatively small considering the population to be affected, the duration of the impact increases it significantly.

The effects on the community's sense of place will initially be felt during the construction period and will continue into the operational phase. The impact of the negative change in the sense of place has therefore been assessed for both the construction phase and operational phase.

The final significance rating for this impact is MEDIUM (-ve) with or without mitigation measures.

Mitigation measures:

- Natural areas that are not affected by the footprint should remain as such. Efforts should also be made to avoid disturbing such sites during construction;
- Construction activities should be kept to normal working hours according to the Noise Control Regulations in terms of the Environmental Conservation Act (Act 73 of 1989);
- Activities that may disrupt neighbours must be preceded by notice being given to the affected neighbours at least 24 hours in advance; and
- Equipment that is fitted with noise reduction facilities must be used as per operating instructions and maintained properly during site operations.

No-Go Alternative: There will be no additional impact.

❖ 11.2 Temporary increase in social conflicts associated with influx of people (-ve):

Despite the Nelson Mandela Bay Municipality being sufficiently diversified to supply the required workforce for the construction of the proposed powerline, it is highly unlikely that this workforce will be drawn from the surrounding area. Workers involved in the construction of the proposed powerline will therefore be traveling to the site on a daily basis.

The influx of construction workers into the area could result in social conflicts between the local population, existing construction workers currently operating in the area and this new workforce. Likewise, the influx of people into the area, could potentially lead to a temporary increase in the level of crime, illicit activity, waste and possibly a deterioration of the health of the local community



through the spread of infectious diseases.

The final significance rating for this impact is MEDIUM (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to LOW (-ve).

Mitigation measures:

- Establish a management forum comprising key stakeholders to monitor and identify potential problems that may arise due to the influx of workers to the area;
- Assign a dedicated person to deal with complaints and concerns of affected parties; and
- Litter collection bins should be provided and appropriately placed within the contractor's site camp and on site, and should be regularly cleared.

❖ 11.3 Impact on property and land value in the immediately affected area (-ve):

Based on existing research it is estimated that the construction of the proposed powerline could result in a reduction in property values of between R 0 (75% probability) and R 6.8 million (6.0% probability). This equates to a reduction in individual property values of between R 7,564 (Lorraine, Medium scenario) to R 47,726 (Lorraine Manor, High scenario).

In viewing these figures it is important to note that, should a reduction in property values occur, it is highly probable that this reduction would only persist for a limited period of time. Furthermore, any impact that does occur would likely diminish over time.

The final significance rating for this impact is MEDIUM (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to LOW (-ve).

Mitigation measures:

- Establish a management forum comprising key stakeholders to monitor and identify potential problems that may arise due to the influx of workers to the area;
- Assign a dedicated person to deal with complaints and concerns of affected parties; and
- Litter collection bins should be provided and appropriately placed within the contractor's site camp and on site, and should be regularly cleared.

❖ 11.4 Temporary stimulation of national and local economy (+ve):

The proposed powerline will cost between R 4.7 million and R 6.9 million (2016 prices) to establish depending on option selection. This expenditure on the project will stimulate the local and national economies albeit for a temporary period of up one year.

It is estimated that the project will increase the production in the country by between R 11.7 million and R 17.3 million in 2016 prices based on route selection, which will translate into an additional between R 4.0 million and R 5.9 million of Gross Domestic Product per Region (GDP-R) (see Table 4.1). These effects will take place for one year.



The greatest effects on production and GDP-R stimulated during construction activities will be created through the multiplier effects, specifically through a combination of production and consumption induced effects. The former refers to the impact generated along backwards linkages when the project creates demand for goods and services required for construction and subsequently stimulates the business sales of the suppliers of inputs that are required to produce these goods and services. The latter refers to the effects of household spending which is derived from an increase in salaries and wages directly and indirectly stimulated by the project's expenditure.

The final significance rating for this impact is HIGH (+ve) with or without enhancement measures.

Enhancement measures:

- The developer should encourage the contractor to increase the local procurement practices and promote the employment of people from local communities, as far as feasible, to maximise the benefits to the local economies and
- The developer should engage with local authorities and business organisations to investigate the possibility of procuring construction materials, goods and products from local suppliers where feasible.

❖ 11.5 Temporary increase in employment in the national and local economies (+ve):

The proposed powerline is anticipated to create 15 Full Time Equivalent (FTE) employment positions over the course of the development. Beyond the direct employment opportunities that will be created by the project during the construction phase the development will also have a positive spin-off effect on the employment situation in other sectors of the national and local economies. Through the procurement of local goods (i.e. consumption induced effects) the project will support an additional one FTE employment position.

The final significance rating for this impact is HIGH (+ve) with or without enhancement measures.

Enhancement measures:

- Recruit local labour as far as feasible;
- Employment labour-intensive methods in construction where feasible;
- Sub-contract to local construction companies particularly SMMEs and BBBEE compliant enterprises where possible; and
- Use local suppliers where feasible and arrange with the local SMMEs to provide transport and other services to construction crews.

❖ 11.6 Temporary increase in household earnings (+ve):

The proposed powerline will create a total of 16 FTE employment positions during construction generating between R 785 109 (Option 1) and R 1.1 million (Option2) of revenue for the affected households in the country through direct, indirect and induced effects depending on route selection. Of this figure between R 256 910 (Option 1) and R 379 534 (Option 2) will be paid out in



the form of salaries and wages to those individuals directly employed during the construction phase. The remaining values of between R 528 119 (Option 1) and R 780 313 (Option 2) in households' earnings will be generated through indirect and induced effects resulting from project expenditure. Given the average household size in the Nelson Mandela Bay Municipality and South Africa was 3.6 and 3.6 respectively, a total of 39 people are likely to benefit from the employment positions created and the income derived through these 11 FTE employment positions.

Although temporary, this increase in household earnings will have a positive effect on the standard of living within these households. The average annual salary that will be paid to people employed in the construction of the facility will be R 58,988.16, with this figure varying significantly based on the respective skill levels and job specifications of the employee.

The final significance rating for this impact is MEDIUM (+ve) with or without enhancement measures.

Enhancement measures:

- Recruit local labour as far as feasible to increase the benefits to the local households;
- Employ labour intensive methods in construction where feasible;
- Sub-contract to local construction companies where possible; and
- Use local suppliers where feasible and arrange with local SMME's and BBBEE compliant enterpris to provide transport, catering and other services to the construction crews.

❖ 11.7 Temporary increase in government revenue (+ve):

The construction of the proposed powerline will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies tax etc. Additional government revenue will also be earned through corporate income tax. Government earnings will be distributed by national government to cover public spending which includes amongst others the provision and maintenance of transport infrastructure, health and education services as well as other public goods.

The final significance rating for this impact is MEDIUM (+ve) with or without enhancement measures.

Enhancement measures: None suggested.

Indirect impacts:

None

Cumulative impacts:

As noted in the Aquatic Impact Assessment (Appendix D), potential cumulative impacts regarding the impact of changes to water quality of nearby watercourses is likely due to the construction of the Lorraine



bulk stormwater project. However, the impacts should be short-term and could be rated as Moderate – Low with mitigation. This rating is also based on the assumption that the first detention pond near Circular Drive will capture any pollutants/ sediments derived from the stormwater project, stormwater project, which would result in altered hydrological patterns that also then affect migration routes / patterns.

No other cumulative impacts are anticipated as the proposed alignment does not cross any other power lines or high structures, nor are there any powerlines or high structures within the immediate environment along the proposed alignment.

Operational Phase:

Direct impacts:

1. Socio-economic impacts

The following impacts were identified and assessed by socio-economic specialists Urban-Econ in the Socio-Economic Impact Assessment (included in Appendix D) conducted in September 2016.

❖ 1.1 Sustainable increase in production and GDP nationally and locally (+ve):

Proposed powerline will require annual operational expenditure of R 320,000 for the first five years after which an additional R 250,000 may be required in order to address routine maintenance and/or component replacements.

The total impact on production in the country as a result of the powerline's operations will equate to R 657,490 in 2016 prices per annum and R 1.1 million in the fifth year after completion. Aside from the utilities sector, industries that will experience the greatest stimulus from the project will include electrical machinery and apparatus, insurance, and transport service.

In addition, many commercial and residential developments are envisaged by landowners in and around the proposed powerline development. These new developments will require additional electrical capacity to be installed. The construction of the powerline will therefore help to contribute to the further economic development of the area.

The final significance rating for this impact is MEDIUM (+ve) with or without enhancement measures.

Enhancement measures:

- The operator responsible for the maintenance of the powerline and servitude should be encouraged to, as far as possible, procure materials, goods and products required for the operation of the facility from local suppliers to increase the positive impact in the local economy.

❖ 1.2 Creation of sustainable employment positions nationally and locally (+ve):

The ongoing maintenance and monitoring of the proposed powerline will create 16 permanent



employment positions irrespective of the route selection all of which will be retained for the lifespan of the powerline. Aside from the direct employment opportunities, the powerline will support one FTE employment positions created through the production and consumption induced effects. Due to the spatial allocation of procurement spending and direct employment created, most of the indirect and induced positions will also be created within the local area.

The final significance rating for this impact is MEDIUM (+ve) with or without enhancement measures.

Enhancement measures:

- Where possible, local labour should be considered for employment so as to increase the positive impact on the local economy; and
- As far as possible, local small and medium enterprises should be approached to investigate the opportunities to supply maintenance services.

❖ 1.3 Improved standards of living for benefiting household (+ve):

The creation of 17 Full Time Equivalent (FTE) employment positions throughout the country will generate R 83,495 of additional personal income (2016 prices), which will be sustained for the entire duration of the powerline's lifespan. Given the average household size in affected local municipalities and nationally, this increase in household earnings will support up to 61 people. The sustainable income generated as a result of the project's operation will positively affect the standard of living of all benefiting households.

The final significance rating for this impact is MEDIUM (+ve) with or without enhancement measures.

Enhancement measures:

- Where possible, local labour should be considered for employment so as to increase the positive impact on the local economy; and
- As far as possible, local small and medium enterprises should be approached to investigate the opportunities to supply maintenance services.

❖ 1.4 Sustainable increase in national and local government revenue (+ve):

The proposed powerline will, through salaries and wages payments, contribute towards both local and national government revenue. This will occur at a national level with the revenue derived from the payment of salaries and wages to permanent employees involved with the maintenance of the powerline will contribute to the national fiscus. Although it is impossible to trace exactly how such revenue is allocated, any additional revenue generated means that national governments can increase its spending on public goods and services.

The final significance rating for this impact is MEDIUM (+ve) with or without enhancement measures.



Enhancement measures: None suggested.

❖ 1.5 Provision of electricity for future development (+ve):

Strengthening of the electricity network in the surrounding area will benefit both residents and business owners, in that the reliability of the current supply will be increased and residences and businesses who do not currently have access to electricity may obtain access. In addition, the engineering team for the proposed 132 kV powerline suggest that it will help to unlock further development in the surrounding suburbs of Fairview, Lorraine and Overbaakens. Construction of the powerlines is therefore not anticipated to limit the expansion potential of the residential or commercial areas.

The final significance rating for this impact is MEDIUM (+ve) with or without enhancement measures.

Enhancement measures: None suggested.

2. Avifauna Impacts

❖ Bird collisions with infrastructure:

Avifauna impacts relating to collisions with the powerline infrastructure are a possibility especially near watercourses, however, due to the suburban nature of the proposed alignment, the species of avifauna likely to occur in the area should be adapted to suburban situations and should be able to continue to use the flyway without risk of collision.

❖ Electrocutation of avifauna:

Avifauna within the local area may be at risk of electrocution due to the installation of the powerline infrastructure. However, large bird species (i.e Blackheaded Heron) are most prone to electrocution, and it is not anticipated that many of these species will occur in the study area being a built-up suburban area.

❖ Perching, Roosting and Breeding on infrastructure:

Avifauna in the surrounding area may use the proposed infrastructure for perching and breeding, however the design of the towers should be designed in such a way that it discourages or is not conducive to provide suitable nesting sites for avifauna.

The final significance rating for this impact is LOW (-ve) if no mitigation is implemented. However, should the mitigation measures below be complied with, the significance of the impact could be reduced to VERY LOW (-ve).

Mitigation measures:



- Proposed monopole structure is preferred in terms of avifaunal impacts as opposed to 5-pole wooden towers;
- Pylons are to be fitted with perching brackets and the river crossing should be marked with suitable anti-collision marking devices to mitigate the impact of bird collision;
- Where there is a particular risk of collisions by birds (specifically along the portion of the alignment which runs parallel to the watercourse west of the Walmer 17th Avenue substation), install Static Bird Flight Diverters (recommended) or Bird Flappers (alternative) on the shield wires of the power lines in the servitude corridor to make the lines more visible; and
- Monitoring for avifaunal mortality along the powerline during maintenance activities and additional mitigation measures such as bird flight diverters should be fitted if there are places where regular mortality occurs.

3. Noise Impacts

Noise generated by the powerlines during the operational phase may have a nuisance effect on surrounding residents. Noise may result from older or dirty powerlines or during periods of high humidity or rainfall. However, these impacts will only affect people in very close proximity to the powerline and are generally considered insignificant in assessments as the standard establishment of appropriate servitude widths as well as proper maintenance of the lines will mitigate such impacts.

The final significance rating for this impact is VERY LOW (-ve) with or without mitigation mainly because the impact is permanent.

Mitigation measures:

- Regular check-ups and proper maintenance of the powerlines, sub-station and associated structures to prevent unnecessary high noise levels from these structures;
- The use of polymer insulators to minimize insulator noise; and
- Attachment of dampeners to the powerlines to minimize Aeolian noise.

4. EMF (Electro-Magnetic Field)

The proximity of residential and commercial properties to the proposed powerlines has the potential for EMF exposures. Scientific research on the effects of EMFs on public health has not demonstrated clearly the existence of a significant risk, nor has it proven the complete absence of risk. Despite the large number of studies published, several endpoints have not been rigorously examined in a sufficient number of studies. As the methodology of studies improved, the estimates of risk have become lower, making it unlikely that these studies are failing to identify a high risk. Nevertheless, a sufficient uncertainty remains as to the potential of EMF involvement in the causes of cancer. Therefore, even a small risk associated with EMF exposure could have important public health consequences.

EMF fields are known to interact with tissues by inducing electric fields and currents in them. The electric currents induced by EMF fields commonly found in the typical human environment,



however, are normally much lower than the strongest electric currents naturally occurring in the body such as those that control the beating of the heart.

In general, the width of the servitude proposed for the different capacity powerlines are specifically prescribed to ensure safety related to potential impacts such as EMF and noise. A maximum servitude width of 25 m is prescribed for the proposed overhead powerline which will prevent the exposure of the general public (including adjacent property owners) to EMF for long periods as no buildings may be constructed within the servitude.

The International Commission for Non-Ionizing Radiation Protection (ICNIRP) specified guidelines for EMF exposure in 1998 (subsequently updated in 2010). The guidelines recommend the maximum Electric and Magnetic Fields allowable for limiting EMF exposure that will provide protection against adverse health effects. According to the updated 2010 guidelines the recommended guideline for Electric Field is 5 kV/m for general public (10 kV/m for occupational) and for Magnetic Field 200 μ T (1 mT for occupational). An EMF study conducted by Eskom (please refer to Appendix G) specifies the maximum magnetic field at a 132 kV powerline servitude boundary of 15.5 m in width from the centreline as 1 μ T and the maximum electric field at a servitude boundary of 15.5 m in width from the centreline as 0.5 kV/m, therefore below the stated guidelines set out by the ICNIRP in 2010. According to data from www.emfs.info, the electric and magnetic fields experienced at 12.5 m from the centre line of the proposed alignment will still fall below the guidelines specified by the ICNIRP, therefore the potential for adverse health effects due to long-term exposure to EMF resulting from the proposed powerline is expected to be low.

The final significance rating for this impact is LOW (-ve) with or without mitigation. Since the proposal already includes the establishment of a servitude, the impact rating without and with mitigation was done for installing the powerline with a servitude.

Mitigation measures:

- No buildings shall be constructed within the powerline servitude; and
- During maintenance activities, NMBM personnel should ensure that no vagrants stay within the powerline servitude.

Indirect impacts:

1. Fire

Failure to maintain the powerline and powerline servitude may pose a potential fire risk to the immediate environment and nearby properties.

The final significance rating for this impact is INSIGNIFICANT (-ve) with or without mitigation.

Mitigation measures:

- Regular inspections of the powerline must take place to monitor its operational status;
- Regular maintenance must be undertaken to repair faults and broken infrastructure; and



- Keep the powerline servitude clear of very high and alien vegetation.

Cumulative impacts:

No cumulative impacts are anticipated as the proposed alignment does not cross any other powerlines or high structures, nor are there any powerlines or high structures within the immediate environment along the proposed alignment.



3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (preferred alternative) Summary Impact Rating Table

The summary impact rating table is included below. The full impact assessment rating table is included in Appendix H.

IMPACT	CONSTRUCTION				OPERATION			
	WITHOUT MITIGATION		WITH MITIGATION		WITHOUT MITIGATION		WITH MITIGATION	
Impacts on Biodiversity 1: Vegetation Clearance	Medium	- ve	Medium	- ve	N/A		N/A	
Impacts on Biodiversity 2: Erosion	Low	- ve	Insignificant	- ve	N/A		N/A	
Impacts on Biodiversity 3: Spread of Alien Invasive Species	Low	- ve	Insignificant	- ve	N/A		N/A	
Impacts on Traffic	Very Low	- ve	Very Low	- ve	N/A		N/A	
Impacts on Wildlife	Very Low	- ve	Insignificant	- ve	N/A		N/A	
Noise Impacts	Very Low	- ve	Very Low	- ve	Very Low	- ve	Very Low	- ve
Impacts on Existing Infrastructure and Private Property	Very Low	- ve	Insignificant	- ve	N/A		N/A	
Aquatic Impact 1: Changes to Hydrological Regime and increased potential for erosion	Low	- ve	Insignificant	- ve	N/A		N/A	
Aquatic Impact 2: Impact of Changes to Water Quality	Very Low	- ve	Insignificant	- ve	N/A		N/A	
Aquatic Impact 3: Loss of Wetland Vegetation / Aquatic Habitat	Low	- ve	Insignificant	- ve	N/A		N/A	
Impacts on Archaeological Resources	Very Low	- ve	Insignificant	- ve	N/A		N/A	
Impacts on Palaeontological Resources	Very Low	- ve	Insignificant	- ve	N/A		N/A	
Impacts on Air Quality	Very Low	- ve	Very Low	- ve	N/A		N/A	
Waste Management	Low	- ve	Insignificant	- ve	N/A		N/A	
Socio-economic Impact 1: Negative Changes to Sense of Place	Medium	- ve	Medium	- ve	Medium	- ve	Medium	- ve



Socio-economic Impact 2: Temporary increase in social conflicts associated with influx of people	Medium	- ve	Low	- ve	N/A		N/A	
Socio-economic Impact 3: Impact on property and land value in the immediately affected area	Medium	- ve	Low	- ve	N/A		N/A	
Socio-economic Impact 4: Temporary stimulation of national and local economy	High	+ ve	High	+ ve	N/A		N/A	
Socio-economic Impact 5: Temporary increase in employment in the national and local economies	High	+ ve	High	+ ve	N/A		N/A	
Socio-economic Impact 6: Temporary increase in household earnings	Medium	+ ve	Medium	+ ve	N/A		N/A	
Socio-economic Impact 7: Temporary increase in government revenue	Medium	+ ve	Medium	+ ve	N/A		N/A	
Socio-economic Impact 8: Sustainable increase in production and GDP nationally and locally	N/A		N/A		Medium	+ ve	Medium	+ ve
Socio-economic Impact 9: Creation of sustainable employment positions nationally and locally	N/A		N/A		Medium	+ ve	Medium	+ ve
Socio-economic Impact 10: Improved standards of living for benefiting household	N/A		N/A		Medium	+ ve	Medium	+ ve
Socio-economic Impact 11: Sustainable increase in national and local government revenue	N/A		N/A		Medium	+ ve	Medium	+ ve
Socio-economic Impact 12: Provision of electricity for future development	N/A		N/A		Medium	+ ve	Medium	+ ve
Impacts on Aquatic Resources (Cumulative)	Insignificant	- ve	Insignificant	- ve	N/A		N/A	
Impacts on Avifauna	N/A		N/A		Low	- ve	Very Low	- ve
EMF (Electro-Magnetic Field)	N/A		N/A		Low	- ve	Low	- ve
Fire (Indirect)	N/A		N/A		Insignificant	- ve	Insignificant	- ve

Assumptions and Limitations of the Study

For the purposes of the impact assessment it is assumed that all other legal requirements relating to the operation and design of the proposed 132 kV powerlines will be adhered to and that the project will be consistent with what is described in the relevant design report. An underlying assumption is that design standards, including buffers for powerlines, as applied by the NMBM, already incorporate health and safety considerations consistent with international standards.

Aquatic Study assumptions and limitations:

During the course of the specialist aquatic impact study it was assumed that the aquatic systems



already contain some form of pollutants (other than elevated sediment loads during floods). It was assumed that the tower footprints are small in nature and that no access roads will be required within the aquatic habitats. It is further assumed that any water required during the construction period will be sourced from the Nelson Mandela Bay municipal water supply and will not be extracted from any watercourses nearby.

The aquatic study was also subject to various limitations. In order to obtain a comprehensive understanding of the dynamics of both the flora and fauna of the aquatic communities within a study site, as well as the status of endemic, rare or threatened species in any area, assessments should always consider investigations at different time scales (across seasons/ years) and through replication. However, due to time constraints these long-term studies are not feasible and are mostly based on instantaneous sampling.

Socio-Economic Study assumptions and limitations:

The following assumptions regarding the construction phase of the proposed powerline are made:

- The construction of the powerline is planned to commence in mid-2017 contingent on the project receiving all necessary regulatory and environmental approval;
- The anticipated duration of the construction phase of the development is approximately 12 months;
- The total investment into the establishment of the powerline for each route (see Map 1.1) is as follows:
 - **Option 1:** R18,679,316.18 of construction spending.
 - **Option 2:** R19,188,531.40 of construction spending;
- All of the direct expenditure will be spent within the South African economy;
- Only local expenditure is considered in this analysis;
- All of the construction spend will be incurred in South Africa; and
- The construction of the powerline will create an estimated 15 project specific personnel jobs (plus an additional 2 FTE jobs) over the course of the project.

The assumptions regarding the operational phase of the project used in the modelling exercise are as follows:

- The facility is anticipated to begin operating immediately following completion of the construction phase. Based on this, the powerline is anticipated to be operating in the latter part of 2017;
- For the first five years following the construction of the powerline the following annual costs are anticipated:
 - R 60,000 for visual inspections every three months
 - R 80,000 for the regular maintenance of the servitude
- After five years of operating the following additional functions will need to be performed:
 - A climbing inspection which is intended to determine the level of deterioration and may include conductor, insulators or rusted steel costing about R 250,000; and
- Approximately 10 people will be employed on an annual basis for bush clearing along the powerline route. A further two artisans as well as four artisan assistants will be employed to undertake maintenance activities on the powerline. These individuals will be part of the NMBM existing staff compliment.



Key Findings:

Alternative A (preferred alternative)

The most significant negative impacts which are associated with the construction phase of the development include socio-economic impacts associated with the negative change in sense of place, impacts on property values and potential conflict with influx of people. The impact associated with negative change in sense of place has been given an impact rating of MEDIUM significance with or without mitigation measures. The other negative socio-economic impacts have been given a rating of MEDIUM without mitigation, which can be reduced to LOW if adequate mitigation measures are applied.

The most significant positive impacts associated with the construction phase of the development include socio-economic impacts associated with the temporary stimulation of the local and national economy as well as the temporary increase in employment opportunities. Both impacts have been rated as HIGH significance with or without enhancement measures.

The most significant negative impacts which are associated with the operational phase of the development include socio-economic impacts associated with the negative change in sense of place related to the 132 kV powerline. The socio-economic impacts have been given an impact rating of MEDIUM significance with or without mitigation measures. All other negative impacts have received significance ratings of LOW or lower ratings.

The most significant positive impacts associated with the operational phase of the development include socio-economic impacts associated with the sustainable increase in production and GDP of the local and national economy, the sustainable increase in employment opportunities, improved standards of living for benefiting households, the sustainable increase in national and government revenue as well as the provision of electricity for future developments. All of these described impacts have been rated as MEDIUM significance with or without enhancement measures.

Note that the impacts described above relate to both alignment alternatives. The impacts for both alternatives have been rated exactly the same in all instances, even though a preference for Option 1 has been indicated by the aquatic specialist. Option 1 is therefore indicated as the environmentally preferred option.

No-go alternative (compulsory)

The no-go alternative would not result in any additional positive or negative environmental impacts. However, pressure for additional electricity supply in the area may increase, especially due to the envisioned future growth in the area.



SECTION E. RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	
YES	

Is an EMPr attached?

The EMPr must be attached as Appendix F.

If “NO”, indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

N/A

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

A project specific Environmental Management Programme (EMPr) has been compiled and can be found under Appendix F of this document. It is recommended that an Environmental Control Officer be appointed to conduct independent construction audits to ensure compliance with the EMPr.



SECTION F: APPENDICES

The following appendices must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix H: Impact Rating Methodology & Rating Table

Appendix I: Curriculum Vitae of EAP

Appendix J: Declaration of EAP

Appendix K: DEDEAT Basic Assessment Application Form