

400MW Richards Bay Power Facility on Erven 17455, 17443 and 17442 within the Richards Bay Industrial Development Zone, KwaZulu-Natal Province

Motivation for amendment of the Environmental Authorisation

DEA Ref.: 14/12/16/3/3/2/867

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PROJECT DETAILS

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TABLE OF CONTENTS

	PAGE
PROJECT DETAILS	i
TABLE OF CONTENTS	ii
APPENDICES	iv
PURPOSE OF THE REPORT	v
1. OVERVIEW OF THE PROJECT	1
1.1. Location	1
1.2. Potential environmental impacts as determined through the EIA process	1
1.2.1. Summary of environmental findings	1
1.2.2. Results of the Ecological Study	1
1.2.3. Results of the Air Quality Study.....	2
1.2.4. Results from the Social study	3
2. Details of the amendments applied for	5
2.1. Extension of the validity of the EA	5
2.2. An update to the capacity and configuration of the Richards Bay Gas to Power Energy Plant in the EA Project Description	5
2.3. The removal of various infrastructure components now made redundant by the preceding amendment (No. 2.4 above – capacity update)	6
2.4. Amendment on the Mid-merit/Peaking terminology	7
2.5. Removal of diesel as a fuel source and specific inclusion of the use of Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG), Regasified Liquefied Natural Gas (RLNG) or pipeline natural gas as the fuel source for the project in addition to the specification of LNG (in various forms) for future fuel use (all as assessed in the approved EIA)	7
2.6. Update of the fuel storage capacity	8
2.7. Correction of the Listed Activity 1 Notice 2, to rather reflect as Listed Activity 2 of Listing Notice 2 (GNR 984)	8
2.8. Amendment of conditions in the EA relating to the EMPr and the submission of the final layout for the facility	8
3. MOTIVATION FOR THE PROPOSED AMENDMENTS	12
3.1. Extension of the validity of the Environmental Authorisation (EA)	12
3.2. An update to the capacity and configuration of the power plant in the EA project description	12
3.3. The removal of various infrastructure components now made redundant by the amendment to change the capacity of the power plant	12
3.4. Amendment of the Mid-merit/Peaking technology	12
3.5. The removal of diesel as a fuel source from the project description AND specific inclusion of the use of Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG), Regasified Liquefied Natural Gas (RLNG) or pipeline natural gas as the fuel source for the project in addition to the specification of LNG (in various forms) for future fuel use (all as assessed in the approved EIA)	13
3.6. Update of the fuel storage capacity	13
3.7. The correction of the Listed Activity 1 of Listing Notice 2 (GNR 984) to rather correctly reflect as Listed Activity 2 of Listing Notice 2	14
3.8. Amendment to the conditions requiring amendment of the EMPr and update of the layout within the EA	14
4. CONSIDERATIONS IN TERMS OF THE REQUIREMENTS OF THE EIA REGULATIONS	15

5.	POTENTIAL FOR CHANGE IN THE SIGNIFICANCE OF IMPACTS AS ASSESSED IN THE EIA AS A RESULT OF THE PROPOSED AMENDMENTS	16
5.1.	Impacts on air quality.....	16
5.1.1.	Comparative assessment.....	17
5.1.2.	Conclusion	18
5.1.3.	Mitigation measures as a result of the amendment	18
5.2.	Impacts on ecology	18
5.2.1.	Comparative assessment.....	19
5.2.2.	Conclusion	19
5.2.3.	Mitigation measures as a result of the amendment	19
5.3.	Impacts on the social environment.....	20
5.3.1.	Comparative assessment.....	21
5.3.2.	Conclusion	21
5.3.3.	Mitigation measures as a result of the amendment.....	22
6.	ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS	23
7.	REQUIREMENTS FOR ADDITIONAL MITIGATION AS A RESULT OF THE PROPOSED AMENDMENTS	25
8.	AMENDMENT CONSOLIDATION.....	26
9.	PUBLIC PARTICIPATION.....	27
10.	CONCLUSION.....	28

APPENDICES

Appendix A:	Air Quality Impact statement
Appendix B:	Ecological Impact statement
Appendix C:	Social Impact statement
Appendix D:	Public Participation Documentation
<i>Appendix D1:</i>	<i>I&AP Database</i>
<i>Appendix D2:</i>	<i>Correspondence with I&APs</i>
<i>Appendix D3:</i>	<i>Correspondence with Organs of State</i>
<i>Appendix D4:</i>	<i>Advertisements and Site Notices</i>
<i>Appendix D5:</i>	<i>Comments and Responses Report</i>
<i>Appendix D6:</i>	<i>Comments Received</i>
<i>Appendix D7:</i>	<i>Public Participation Plan</i>
Appendix E:	A3 Maps
Appendix F:	EMPr
Appendix G:	EAP Declaration and Affirmation
Appendix H:	Specialist Declaration

PURPOSE OF THE REPORT

An Environmental Authorisation (EA) for the 400MW Richards Bay Power Facility and associated infrastructure, on a site within the Richards Bay IDZ in the KwaZulu-Natal Province (DEA ref: 14/12/16/3/3/2/867) was obtained by Richards Bay Gas Power 2 (Pty) Ltd on 04 October 2016. The project is intended to be bid into future rounds of the Department of Mineral Resource and Energy's (DMRE) Gas to Power Independent Power Producer Procurement Programme, as well as the Risk Mitigation Power Procurement Programme of DMRE (in the short term). Since issuance of the EA, numerous technological and fuel supply advancements have been made in relation to the authorised development, and as such Richards Bay Gas Power 2 (Pty) Ltd (the 'proponent') is now considering numerous amendments to the authorised EA. The following amendments to the EA are being applied for:

1. A validity extension of the EA by five (5) years. Condition 7 of the EA dated 4 October 2016 (14/12/16/3/3/2/867) states that the proposed activity must commence within a period of five (5) years from the date of issue, which expires on 4 October 2021. The applicant requests an extension to the validity of the EA by an additional five (5) years until 4 October 2026.
2. An update to the capacity and configuration of the power plant in the EA project description from: '300MW (fuelled) and 100MW (steam) in a combined cycle' to: 'a 400MW (fuelled) simple cycle process'. While the total plant capacity will not change, the plant will now no longer comprise a steam turbine cycle and will be an entirely fuelled, simple cycle generation process only, utilising Open Cycle Gas Turbine (OCGT) technology.
3. The removal of various infrastructure components now made redundant by the preceding amendment (no. 2 above - change to 400MW simple cycle generation process). Should the amendment to allow for a 400MW fuel generated Gas Energy Facility be approved, various infrastructure components initially intended for the authorised Combined Cycle facility will be made redundant and therefore these components require removal from the EA.
4. The original EA dated 4 October 2016 (14/12/16/3/3/2/867) makes use of the terminology "Mid-merit" in one instance. The applicant, Richards Bay Gas Power 2 (Pty) Ltd, requests that this terminology be changed to "Mid-merit/Peaking" throughout the entire document (i.e to correct that one instance), as the operating hours assessed in the Environmental Impact Assessment (EIA) Report included operation under both Mid-Merit and Peaking regimes. Where references are found to "peaking" or "mid-merit" alone, this is requested to be updated to reflect "Mid-merit/Peaking".
5. The original EIA assessed two phases, one utilising LPG and diesel as fuel sources, and the second employing LNG at a future date where this source becomes available. LNG as fuel source has however not been specified within the EA where references are made to the fuel types. In addition, the plant will no longer make use of diesel as a fuel source, rather utilising LPG or LNG as initially assessed in the EIA. It is noted however that reference to diesel is contained in the EA, and that the use of LNG (in various forms) is not explicitly mentioned in the EA. This amendment therefore requests removal of diesel as a fuel source in the EA where it is mentioned, and the specification of LPG and LNG (various forms) for present and future use.
6. Amendment of the fuel storage capacity as per the updated layout, to a maximum of 10 000m³. The size of the tanks to be used will be confirmed in the final design of the facility.
7. The fuel sources and impacts assessed in the EIA were diesel, LPG and LNG (in various forms), all non-renewable resources. Therefore, the inclusion of Listed Activity 1 of Listing Notice 2 of the EIA Regulations, specifying electricity generation from a renewable resource, is incorrect. As such, this listed activity is

requested to be corrected to Listed Activity 2 of Listing Notice of the EIA Regulations to specify non-renewable resource use.

8. In accordance with Condition 14 and 15 of the EA, a Final Layout must be submitted for public participation and then submitted to the DEA for final approval, as it was not approved in the initial issuance of the EA. Furthermore, in accordance with conditions 15, 16, 17, 18, 19 and 20 of the EA, the EMPr submitted with the EIA Report was not approved and therefore similarly required update and subjected to a 30-day review and comment period, followed by a submission to the DEA for final approval. This process will be completed as part of this amendment process, and the EMPr and Layout updated as per the conditions 15,16,17, 18, 19 and 20 and 14, 15 (respectively). Therefore, these requirements are requested to be amended to reflect the now approved status of the EMPr and Layout.

The amendments specified above allow the project to be bid under the Risk Mitigation Power Procurement Programme of DMRE, or any future Gas to Power Independent Power Producer Procurement Programme bid rounds, by allowing for extended validity of the EA, ensuring the most efficient technology is being utilised, and that all aspects of the EA have been corrected where incorrect to ensure that authorisation reflects the correct details as per the latest project description and design.

The proposed amendments in themselves are not listed activities, and do not trigger any new listed activity. The proposed amendments are within the original authorised development footprint. This means that the zone of influence of the project will remain the same and the baseline conditions of the environment will also remain the same as that assessed originally.

In terms of Condition 5 of the Environmental Authorisation and Chapter 5 of the EIA Regulations of December 2014 (as amended on 07 April 2017 and 13 July 2018), it is possible for an applicant to apply, in writing, to the competent authority for a change or deviation from the project description to be approved.

Savannah Environmental has prepared this Draft Motivation Report in support of this amendment application on behalf of Richards Bay Gas Power 2 (Pty) Ltd. This report aims to provide details pertaining to the significance and environmental impacts of the proposed change to the project description in order for interested and affected parties (IAPs) to be informed of the proposed amendments and provide comment, and for the competent authority to be able to reach a decision in this regard. This report is supported by air quality, ecology and social specialist input, in the form of impact statement letters, in order to inform the final conclusion regarding the proposed amendments (refer to Appendix A - C of this report).

This main report must be read together with the specialist input in order to obtain a complete understanding of the proposed amendments and the implications thereof. In summary the following is concluded by the specialist inputs:

- » There will be no change in the ecological impacts associated with the development as the amendments proposed for the project are technical and would not result in a change to the footprint of the plant initially assessed in the environmental impact assessment.
- » Similar or lower air quality impacts on air quality are expected as a result of the proposed amendments.
- » No change in social impacts is expected due to the proposed changes.

This motivation report has been made available to registered interested and affected parties for a 30-day comment and review period from **17 September 2020 to 19 October 2020**. The availability of the report was advertised in The Zululand Observer newspaper on 17 September 2020 (refer to **Appendix B4**).

This document is available for download on Savannah Environmental's website at www.savannahsa.com. CD copies are available on request. To obtain CD copies, further information, register on the project database, or submit written comment, please contact:

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All comments received during the review 30-day comment and review period will be included within a Comments and Responses Report to be submitted to the DEA with the Final Motivation Report.

1. OVERVIEW OF THE PROJECT

1.1. Location

The authorised 400MW Richards Bay Power Facility is located within the Richards Bay Industrial Development Zone (RBIDZ): Phase 1F and falls within the jurisdiction of the uMhlathuze Local Municipality and the greater King Cetshwayo District Municipality in the Kwazulu-Natal Province. The site has been zoned for the RBIDZ's industrial development as part of the planning for this IDZ area. The three (3) properties assessed in the environmental impact assessment process and included in the EA for the development of the Power Facility include:

- » Erven 17455;
- » Erven 17443; and
- » Erven 17442.

1.2. Potential environmental impacts as determined through the EIA process

From the specialist investigations undertaken within the EIA process for the facility (Savannah Environmental, 2016), the following environmental impacts relevant to the amendment application were identified:

- » Impacts on air quality;
- » Impacts on ecology; and
- » Social impacts.

As no wetlands were found within the exact properties and footprint of the development, no impact in this regard is expected due to the proposed amendments. Therefore, no wetland assessment was undertaken as part of this amendment application process.

Key conclusions and recommendations of the original EIA pertinent to this application, as reported in the final EIR (Savannah Environmental, 2016) are detailed below:

1.2.1. Summary of environmental findings

The EIA assessment found that based on the nature and extent of the project, the local level of disturbance predicted as a result of the construction and operation of the facility and associated infrastructure, the findings of the IA, and the understanding of the significance level of potential environmental impacts that the impacts associated with the development of development could be managed and mitigated to an acceptable level, and that no fatal flaws were found.

1.2.2. Results of the Ecological Study

The development of the project will require the clearance of the entire development footprint (i.e. an area of 7.3ha). The significance of potential pre-construction and construction related ecological impacts are estimated to range from **Low to Medium** ecological significance with mitigation with the direct disturbance/degradation and loss of vegetation/habitat as a result of stripping and clearing of vegetation

being the most significant. The spread of Invasive Alien Plants (IAPs), weeds and other undesirable plants post-construction (due to disturbance created) is likely to be of a **Medium** ecological significance and will affect areas adjacent to the facility over the operational life-span of the project. During the decommissioning phase of the project, impacts are unlikely to be of much significance, with the potential of the project to have a net positive ecological impact on the habitat and biodiversity when the artificial infrastructure is removed and the grassland vegetation/habitat is properly reinstated at the site.

Cumulative impacts associated with the development were identified and assessed, in the context of past historic disturbance at the site and future industrial expansion within the broader Phase 1F site. Cumulative impacts on ecosystem conservation targets, loss of ecological functioning and ecosystem services supply, and impacts to species of conservation concern are expected to **range from Medium to High** significance in light of the threat status and irreplaceability value of the Maputaland Wooded Grassland vegetation type and the presence of protected/threatened plant species at the site. Cumulative impacts are likely to remain **Moderately-High to High** even when considering these impacts without the planned gas to power plant development (due to the extensive industrial development planned for the Phase 1 F area).

With adequate mitigation and impact management, most direct and indirect impacts can be effectively managed and reduced to estimated low significance levels. The cumulative loss of threatened/protected plant species can be effectively managed by rescuing and translocating species to suitable conservation sites outside of the developable area, reducing the impact on the local population of these species to a low significance level. Other on-site impacts can be relatively easily mitigated through appropriate practical on-site impact mitigation and best practice management measures which have been outlined in this report.

These include the implementation of an alien plant management programme and revegetation / rehabilitation plan for areas disturbed during construction. The cumulative, permanent and irreversible loss of vegetation and habitat will be difficult to mitigate, and the consequences in terms of meeting targets set for Maputaland Wooded Grassland (Endangered vegetation type) as well as the resultant loss of ecosystem functioning, goods and services will be unavoidable. The contribution of the project itself to this impact is expected to be limited as a result of the limited footprint (i.e. 7.3ha).

1.2.3. Results of the Air Quality Study

Results of the Air Quality Study showed Negative air quality impacts associated with the generation of dust and emissions have been identified. However, the assessment of the key issues indicated that there are no negative impacts that can be classified as fatal flaws and which are of such significance that they cannot be successfully mitigated. In the study conducted, direct impacts were found to result from exposure to dust generated from the construction and decommissioning phases of the proposed gas to power plant. Direct impacts will also result from the inhalation of SO₂, NO₂, PM₁₀, CO and benzene emitted during the operational phase of the proposed gas to power plant. Indirect impacts resulting from emissions of SO₂ and NO₂ from power plants include their contribution to acidification in both dry and wet (acid rain) deposition, during the operational phase. Further indirect effects during the operational phase are associated emissions of CO and CO₂. CO₂ is a GHG, adding to the global concentrations. CO is not considered a GHG, but is a strong precursor in the formation of ozone in the troposphere. Ambient air quality in Richards Bay is influenced by a number of sources of air pollution, including large and smaller industry, transportation, agricultural burning, mining and the long-range transport of pollutants from the interior. The proposed gas to power plant is located in an area where there are many notable sources of SO₂, NO₂, PM₁₀, CO and benzene (to a lesser extent) in the immediate vicinity of the site.

According to the model results, the 99th percentile of the predicted 1-hour and 24-hour and annual average SO₂, NO₂, PM₁₀, CO and benzene concentrations from the proposed gas to power plant are well below the respective National Ambient Air Quality Standards (NAAQS) and World Health Organisation (WHO) guidelines for Scenario 1 and Scenario 2. Predicted ambient concentrations are localised and very low for the modelled scenarios. The contribution to ambient concentrations beyond the immediate vicinity of the proposed gas to power plant is therefore small. The additive effect of these concentrations to the ambient environment is therefore highly unlikely to make a significant contribution to the cumulative impacts of SO₂, NO₂, PM₁₀, CO and benzene in the ambient environment. Impacts in terms of predicted concentrations of SO₂, NO₂, PM₁₀, CO and benzene from the operational scenarios will however last for the full period of the proposed gas to power plant. The duration of direct, indirect and cumulative impacts from the operational scenarios are therefore expected to be long-term. The significance of all impacts for the two operational scenarios is low.

Construction and decommissioning activities will result in the emission of low quantities of terrestrial and construction dust, not expected to pose a health risk. Furthermore, dust emissions will not travel over vast distances, but will most likely settle within 100m to 1km of the proposed development site. A temporary nuisance impact may be experienced in parts of the RBIDZ Zone 1F, the property on which the site is to be constructed. Construction and decommissioning impacts will last for a relatively short period as these activities occur for the duration of these activities only. It is predicted that the significance of all impacts during the construction and decommissioning phase is low. No mitigation is necessary, however, measures are suggested to minimise the nuisance impacts arising from these activities. In this assessment, two NO_x emission mitigation strategies have been tested for the proposed gas to power plant. These include the water-steam injection and lean premix mechanism. If NO_x mitigation strategies are implemented at the proposed gas to power plant, this will result in significantly lower NO₂ concentrations during the operational phase for all scenarios. Impact from SO₂ emissions can be further reduced by decreasing the sulphur content of the diesel and LNG.

However, it has been concluded that this is not necessary since the modelling results have demonstrated that the resultant ambient concentrations at the current SO₂ content levels are already low. Due to the low predicted impacts, no mitigation measures are suggested for operational activities, in other words, mitigation measures to control SO₂ and NO_x, or even PM₁₀, CO and benzene are not necessary for the normal operations of the proposed gas to power plant. **The significance rating will remain low during the operational phase for all scenarios, with or without mitigation.** The air quality study found that the project does trigger an Atmospheric Emissions Licence, which is to be obtained following issuance of the Environmental Authorisation (EA).

From an air quality perspective, it is concluded that the project is supported, provided that mitigation measures are implemented and adhered to.

1.2.4. Results from the Social study

Results of the Social Study show that both positive and negative social impacts have been identified with the construction and operation of the project. The assessment of the key issues indicated that there are **no negative impacts that can be classified as fatal flaws** and which are of such significance that they cannot be successfully mitigated. Positive impacts could be enhanced by implementing appropriate enhancement

measures and through careful planning. Based on the social assessment, the following general conclusions and findings have been made:

- » The potential negative social impacts are primarily associated with the traffic impacts on daily living and movement patterns during the construction phase and operation phase. These impacts can be reduced to acceptable levels with the implementation of the mitigation measures proposed.
- » Employment opportunities will be created in the construction and operation phases. The impact is rated as positive even if only a small number of individuals benefit in this regard as a result of high levels of unemployment in the region.
- » The proposed project could assist the local economy in creating entrepreneurial development, especially if local business could be involved in the provision of general material and services during the construction and operational phases.
- » Capacity building and skills raining among employees are critical and would be highly beneficial to those involved, especially if they receive portable kills to enable them to also find work elsewhere and in other sectors.
- » The proposed development also represents an investment in infrastructure for the generation energy, which represents a positive social benefit for society as a whole. From a social perspective it is concluded that the project is supported, but that mitigation measures should be implemented and adhered to.

2. DETAILS OF THE AMENDMENTS APPLIED FOR

The amendments being applied for relate to the various aspects of the project description as detailed in the EA dated 04 October 2016. These requested amendments will result in an optimisation of the facility assessed within the EIA, resulting in a feasible and efficient facility for implementation under the DMRE's relevant bidding programme.

This section of the report details the amendments considered within this report and by the specialist investigations (refer to **Appendix A – C**). Each amendment request is detailed below.

2.1. Extension of the validity of the EA

Condition 7 of the EA dated, 4 October 2016 (14/12/16/3/3/2/867) states that the proposed activity must commence within a period of five (5) years from the date of issue, which expires on 4 October 2021. The applicant requests an extension to the validity of the EA by an additional five (5) years. It is therefore requested that the following is amended in the EA to reflect this change (indicated in the last column in **bold**):

Condition number and EA Page Reference	Current wording	Proposed wording
Page 6, Scope of Authorisation	<i>This activity must commence within a period of five (05) years from the date of issue of the environmental authorisation. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.</i>	This activity must commence within a period of ten (10) years from the date of issue of this environmental authorisation (expiring on 4 October 2026)."

2.2. An update to the capacity and configuration of the Richards Bay Gas to Power Energy Plant in the EA Project Description

The applicant is requesting an update to the capacity and configuration of the power plant in the EA project description from: '300MW (fuelled) and 100MW (steam) in a combined cycle' to: 'a 400MW (fuelled) simple cycle process'. While the total plant capacity will not change, the plant will now no longer comprise a steam turbine cycle and will rather be wholly fuelled, simple cycle generation process only, utilising Open Cycle Gas Turbine (OCGT) technology. In order to do so, the following changes in the EA are requested:

Condition number and EA Page Reference	Current wording	Proposed wording
Page 4, Project Description	- <i>The 400MW Richards Bay Gas to Power Energy Facility, which will encompass 300MW fuel generated energy and 100MW heat/steam generated energy, will comprise the following:</i>	- The 400MW Richards Bay Gas to Power Energy Facility, which will encompass 400MW fuel generated energy and will comprise the following:
Page 5, under Power Output Capacity on	- 400MW - 300MW fuel generated	- 400MW fuel generated

Condition number and EA Page Reference	Current wording	Proposed wording
the table: Technical Details of the proposed facility	- 100MW Heat/Steam Generated	

2.3. The removal of various infrastructure components now made redundant by the preceding amendment (No. 2.4 above – capacity update)

Should the amendment to allow for a 400MW fuel generated gas energy facility be approved (amendment 2.4 above), various infrastructure components initially intended for the authorised Combined Cycle Energy Facility will be redundant and therefore these components require removal from the EA. As such, the following amendment is requested:

Condition number and EA Page Reference	Current wording	Proposed wording
Page 4	<p>The 400MW Richards Bay Gas to Power Energy Facility, which will encompass 300MW fuel generated energy and 100MW heat/steam generated energy, will comprise the following:</p> <ul style="list-style-type: none"> - Six (6) Gas turbines for Mid-merit/Peaking plant - Two (2) steam turbines utilising the heat from all the engines for power production in a steam cycle. - The power plant will comprise multiple engine halls, each of ~60MW. Each engine hall will typically comprise one engine. Stacks associated with engine halls will be up to 20m in height.' 	<p>The 400MW Richards Bay Gas to Power Energy Facility, which will encompass 400MW fuel generated energy, will comprise the following:</p> <ul style="list-style-type: none"> - Six (6) Gas turbines for Mid-merit/Peaking plant - The power plant will comprise multiple turbine units, each of ~70MW. Stacks associated with each turbine will be up to 20m in height."
Page 5, under Power Output Capacity on the table: Technical Details of the proposed facility	<ul style="list-style-type: none"> - 400MW - 300MW fuel generated - 100MW Heat/Steam Generated 	<ul style="list-style-type: none"> - 400MW fuel generated
Page 5, under Proposed Technology in the table: Technical Details of the proposed facility	<ul style="list-style-type: none"> - Six (6) Gas Turbines (GT) - Engines fuelled by diesel and LPG - 2 steam turbines utilising the heat from all the engines for power production in a steam cycle - Air cooler condensers - Dry cooling - Dry low emissions' 	<ul style="list-style-type: none"> - Six (6) Gas Turbines (GT) - Engines fuelled by LPG, or LNG (in various forms) where a suitable source becomes available - Closed Fin-fan coolers - Water Injection
Page 8, Condition 14.1 of the EA	<ul style="list-style-type: none"> - Positions of the power island, steam turbine and generator, fuel storage tanks, water storage reservoir and tanks. 	<ul style="list-style-type: none"> - Positions of the power island, generator, fuel storage tanks, water storage reservoir and tanks.

2.4. Amendment on the Mid-merit/Peaking terminology

The original EA dated 4 October 2016 (14/12/16/3/3/2/867) makes use of the terminology “Mid-merit” in one instance on page 6 of the original EA. The applicant, Richards Bay Gas Power 2 (Pty) Ltd, requests that this terminology be changed to “Mid-merit/**Peaking**” throughout the entire document (i.e. to correct that one instance), as the operating hours assessed in the Environmental Impact Assessment (EIA) Report included operation under both Mid-Merit and Peaking regimes. Therefore, the applicant requests the following amendments to the EA:

Condition number and EA Page Reference	Current wording	Proposed wording
Page 6, Scope of Authorisation, Condition 1	- <i>The construction of the Mid-merit Richards Bay Gas to Power Facility with a maximum output of 400MW as described above is hereby approved.'</i>	- The construction of the Mid-merit/Peaking Richards Bay Gas to Power Facility with a maximum output of 400MW as described above is hereby approved

2.5. Removal of diesel as a fuel source and specific inclusion of the use of Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG), Regasified Liquefied Natural Gas (RLNG) or pipeline natural gas as the fuel source for the project in addition to the specification of LNG (in various forms) for future fuel use (all as assessed in the approved EIA)

The original EIA assessed two phases, one utilising LPG and diesel as fuel sources, and the second employing LNG at a future date where this source becomes available. LNG as fuel source has however not been specified within the EA where references are made to the fuel types. In addition, the plant will no longer make use of diesel as a fuel source, rather utilising LPG or LNG as initially assessed in the EIA. It is noted however that reference to diesel is contained in the EA, and that use of LNG (in various forms) is not explicitly mentioned in the EA. This amendment therefore requests removal of diesel as a fuel source and the correct specification of LPG and LNG (various forms) for present and future use. Therefore, the applicant requests the following amendments to the EA:

Condition number and EA Page Reference	Current wording	Proposed wording
Page 5, Under Proposed Technology	- <i>'Six (6) Gas Turbines (GT)</i> - <i>Engines fuelled by diesel and LPG</i> - <i>2 steam turbines utilising the heat from all the engines for power production in a steam cycle</i> - <i>Air cooler condensers</i> - <i>Dry cooling</i> - <i>Dry low emissions'</i>	- Six (6) Gas Turbines (GT) - Engines fuelled by LPG, or LNG (in various forms) where a suitable source becomes available - Closed Fin-fan coolers - Water Injection
Page 20, Condition 119 of the EA	- <i>Only diesel and Liquefied Petroleum Gas (LPG) are to be used as a fuel source. No heavy fuel oil and light fuel oil are to be used as a fuel source for the plant.</i>	- Only Liquefied Petroleum Gas (LPG), Liquefied Natural Gas (LNG), Regasified Liquefied Natural Gas (RLNG) or pipeline natural gas are to be used as a fuel source. No Heavy Fuel Oil or Light Fuel Oil are to be used as a fuel source for the plant.

2.6. Update of the fuel storage capacity

The Request for Proposal for the Risk Mitigation IPP Procurement Programme issued by the Department of Mineral Resources and Energy (DMRE) requires 3 days of fuel storage. In this regard, up to 10 000m³ of fuel storage will be required for the power station. The size of the tanks to be used will be confirmed in the final design of the facility. As such, the volume of fuel storage is requested to be updated to reflect the required storage value. Therefore, the following amendment is requested:

Condition number and EA Page Reference	Current wording	Proposed wording
Page 3, Activity 4 of GNR 984	- <i>Fuel tanks (3x 2 000m³) will be used for fuel storage until the gas infrastructure is constructed by Transnet and as emergency storage thereafter.</i>	- “Fuel tanks with a combined capacity of up to 10 000m³ will be used for fuel storage until the gas infrastructure is constructed by Transnet and as emergency fuel storage thereafter.
Page 4	- <i>Three (3) fuel tanks with a capacity of 2 000m³ each will be used as a fuel storage facility. Two (2) fuel unloading stations will be associated with these tanks.</i>	- Fuel tanks with a combined capacity of 10 000m³ will be used as a fuel storage facility. Eight (8) fuel unloading stations will be associated with these tanks
Page 5 (technical details table of the facility)	- <i>Three (3) fuel tanks with a capacity of 2 000m³ each will be used as a fuel storage facility. These fuel tanks will be located within an appropriately bunded area on site.</i>	- Fuel tanks with a combined capacity of 1 000m³ will be used as a fuel storage facility. These fuel tanks will be located within an appropriately bunded area on the site.

2.7. Correction of the Listed Activity 1 Notice 2, to rather reflect as Listed Activity 2 of Listing Notice 2 (GNR 984)

The fuel sources and impacts assessed in the EIA were diesel, LPG and LNG (in various forms), all non-renewable resources. Therefore, the inclusion of Listed Activity 1 of Listing Notice 2 of the EIA Regulations, specifying electricity generation from a renewable resource, is incorrect. As such, this listed activity is requested to be corrected to Listed Activity 2 of Listing Notice of the EIA Regulations to specify non-renewable resource use. The following amendment is thus requested:

Condition number and EA Page Reference	Current wording	Proposed wording
Page 3 on the Listed Activity's Table	- <i>GNR 984: Activity 1: The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.</i>	- GNR 984: Activity 2: The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more.

2.8. Amendment of conditions in the EA relating to the EMPr and the submission of the final layout for the facility

No updates to the EMPr has been conducted since the issuance of the Environmental Authorisation, and therefore the EMPr submitted along with the final EIR is the most recent (Revision 0, June 2016). In addition,

no layout updates have been conducted since the issuance of the Environmental Authorisation, and therefore the layout map (Figure 2.1) submitted along with the final EIR is the most recent version.

In accordance with condition 14 and 15 of the EA however, a final layout must be submitted to public participation and then submitted to the DEA for final approval, as it was not approved in the initial issuance of the EA. Furthermore, in accordance with conditions 15,16,17,18,19 and 20 of the EA, the EMPr submitted with the EIA was not approved and therefore similarly required update and a 30 day public review, followed by submission to the DEA for final approval. This process will be completed as part of this amendment process, and the EMPr and Layout updated as per conditions 15,16,17,18,19, 20 and 14,15 (respectively). Therefore, these requirements are requested to be amended to reflect the approved status of the EMPr and Layout. The following changes are thus requested:

Condition number and EA Page Reference	Current wording / whole section for replacement	Proposed wording
Page 7, 8 & 9 of the EA, Condition 14 & 15	- <i>Requesting complete replacement of the entirety of the conditions 14 and 15 of the EA.</i>	- The updated layout (Version 1, dated September 2020) submitted to the Department for final approval in accordance with the EA, is hereby approved.
Page 9 & 10 of the EA, Condition 16 & 17	- <i>Requesting complete replacement of the entirety of the conditions 16 and 17 of the EA.</i>	- The updated EMPr (Revision 1, dated September 2020) submitted to the Department for final approval in accordance with the EA, is hereby approved.
Page 11 of the EA, Condition 18	- <i>The final amended EMPr (once approved) must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in all contract documentation for all phases of the development when approved.</i>	- The approved EMPr must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in all contract documentation for all phases of the development. Any updates to this EMPr must be undertaken in accordance with the relevant legislation.

The updated EMPr, Revision 1 dated September 2020 (refer Appendix F) and the updated layout, version 1 dated September 2020 (Figure 2.2) has now been included into the report for review and comment by the public, and consideration of the authority.

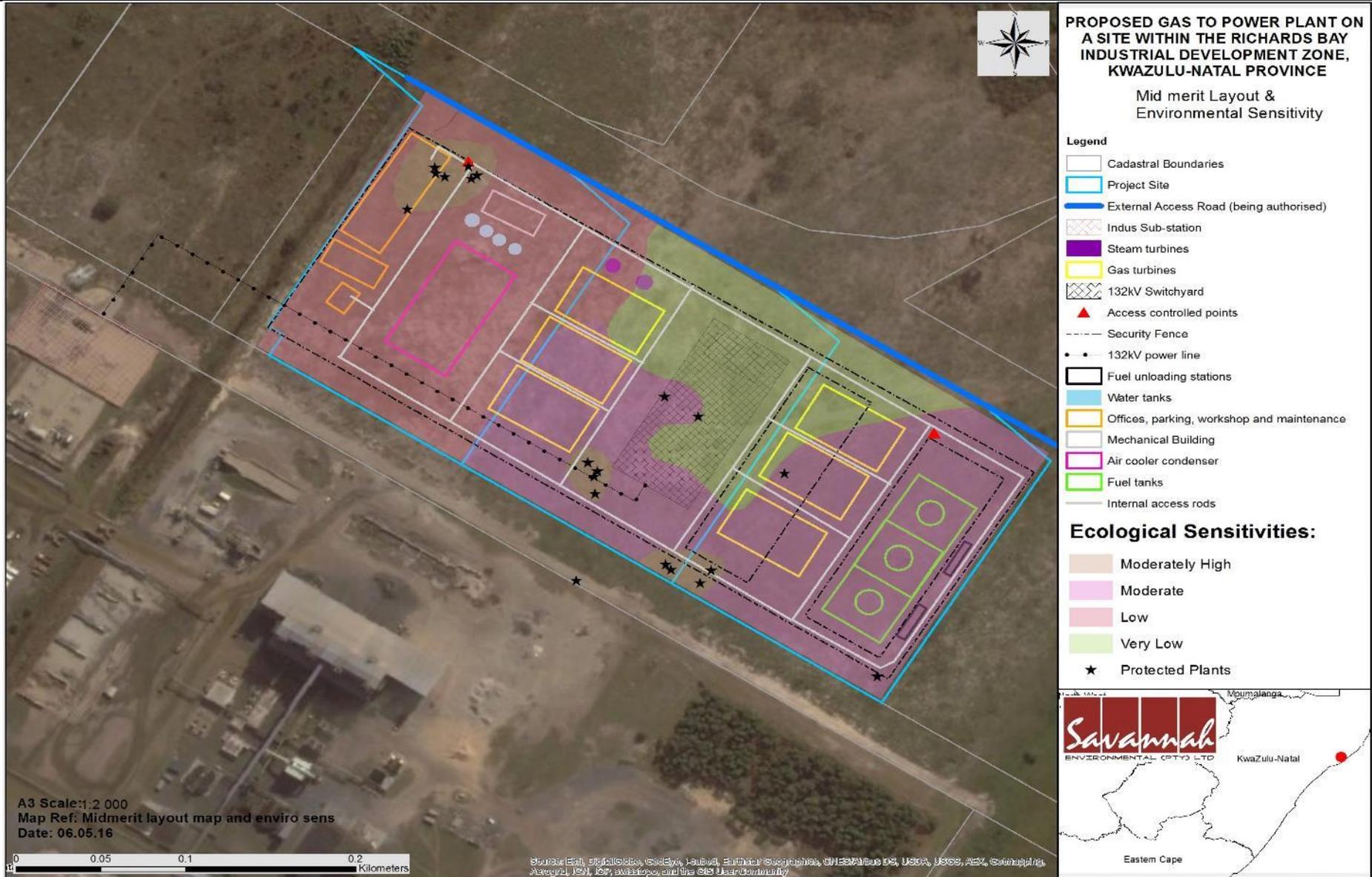


Figure 2.1. Layout map and environmental sensitivities from the final EIR submission (Savannah, 2016).

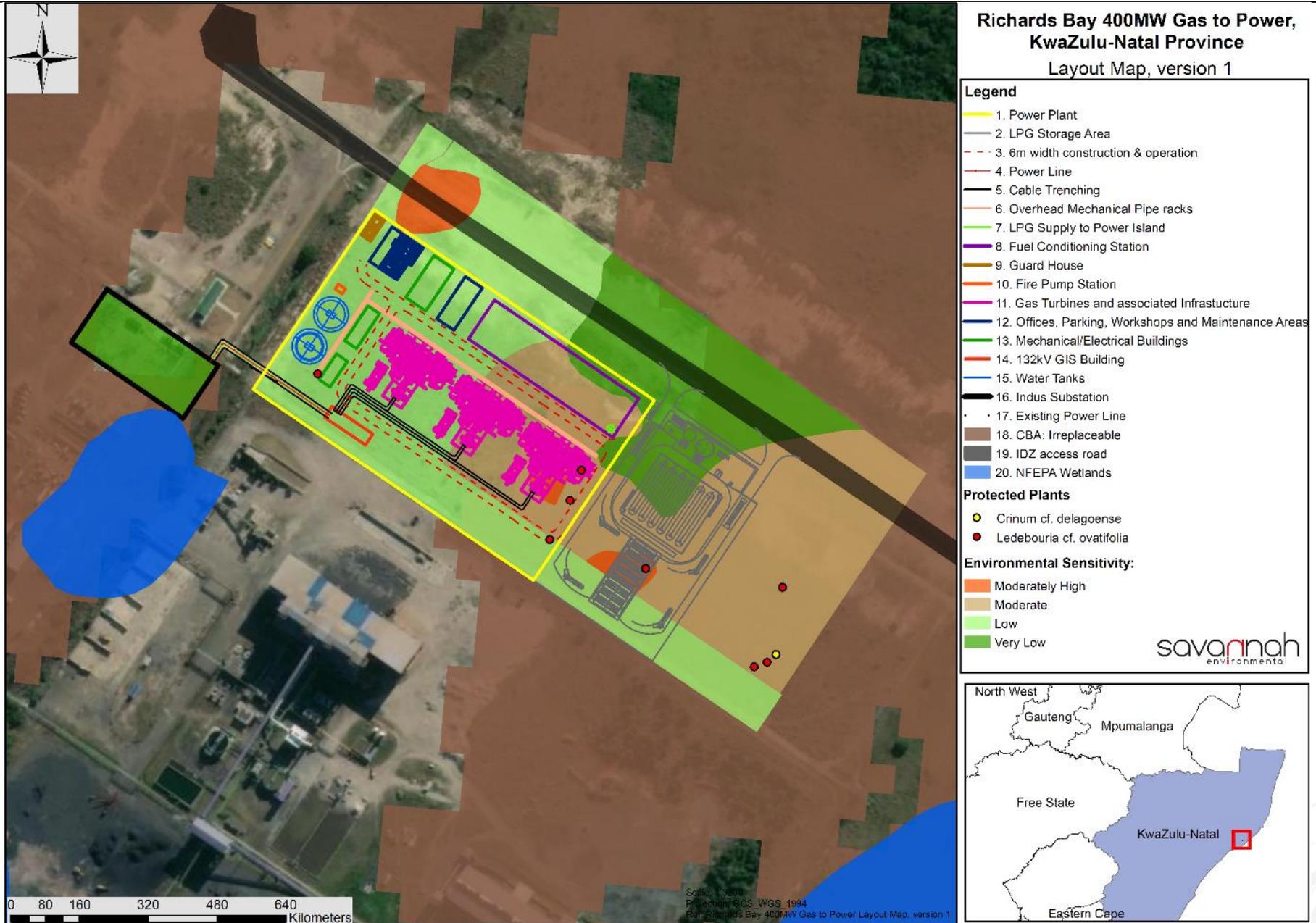


Figure 2.2. Updated layout map (version 1) with environmental sensitivities, as per condition 14 and 15 of the EA.

3. MOTIVATION FOR THE PROPOSED AMENDMENTS

The sections below describe the motivation for each of the requested amendments.

3.1. Extension of the validity of the Environmental Authorisation (EA)

The project is intended to be bid into future rounds of the Department of Mineral Resource and Energy's (DMRE) Gas to Power Independent Power Producer Procurement Programme, as well as the Risk Mitigation Power Procurement Programme of DMRE (in the short term). It is expected that should the project be selected as a preferred bidder the Risk Mitigation Power Procurement Programme of DMRE specifically, construction will only commence after the validity of the EA has expired. Therefore, an extension of the EA validity is requested.

3.2. An update to the capacity and configuration of the power plant in the EA project description

The applicant is requesting amendment of the EA to allow for 400MW simple cycle, fuelled power generation, as contrasted with that of the initially approved 300MW combined cycle fuelled, with 100MW steam generated from heat recovery. While the total plant capacity will not change, the plant will now no longer comprise a steam turbine cycle and will be a wholly fuelled, simple cycle generation process utilising OCGT technology.

This amendment is requested in light of suitable LPG facilities now having become available from the Richards Bay Port (and Natural Gas facilities may become available in the future), and the fact that the use of LPG and LNG in a simple cycle will moderately reduce the emissions levels resulting from the facility, in particular by the removal of diesel as fuel source. By utilising this fuel source, a cleaner energy production process is facilitated, and less diesel is consumed for energy production.

In addition, the Risk Mitigation Power Procurement Programme, to which the applicant intends to bid the project, is specifying a time from Notice to Proceed (NTP) to Commercial Operation Date (COD) of between 12 to 18 months. The complexity of the combined cycle technology does not allow a combined cycle plant to be completed in the period indicated in the Risk Mitigation PPP. Therefore, the change to 400MW simple cycle fuelled power plant is being proposed.

3.3. The removal of various infrastructure components now made redundant by the amendment to change the capacity of the power plant

Should amendment 3.2 above be approved, various infrastructure components initially intended for a combined cycle will have been made redundant. These components are therefore required to be removed from the EA. The amendment of items therefore ensures that all the infrastructure listed is in fact due to be constructed, and that no redundant details are contained within the EA.

3.4. Amendment of the Mid-merit/Peaking technology

The original EA dated 4 October 2016 (14/12/16/3/3/2/867) makes use of the terminology "Mid-merit" in one instance, on page 6 of the original EA. The applicant, Richards Bay Gas Power 2 (Pty) Ltd requests that this terminology be corrected to "Mid-merit/**Peaking**" throughout the entire document (i.e. to correct that one instance), in line with the operating hours assessed in the EIA including operation under both Mid-Merit and

Peaking regimes. Only one incorrect reference occurs in the EA, omitting the peaking aspect of the plant, and this is requested to be inserted to ensure consistency throughout the EA.

3.5. The removal of diesel as a fuel source from the project description AND specific inclusion of the use of Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG), Regasified Liquefied Natural Gas (RLNG) or pipeline natural gas as the fuel source for the project in addition to the specification of LNG (in various forms) for future fuel use (all as assessed in the approved EIA)

The original EIA assessed two phases, one utilising LPG and diesel as fuel sources, and the second employing LNG at a future date where this source becomes available. LNG as fuel source has however not been specified within the EA where references are made to the fuel types. In addition, the plant will no longer make use of diesel as a fuel source, rather utilising LPG or LNG as initially assessed in the EIA. It is noted however that reference to diesel is contained in the EA, and that use of LNG (in various forms) is not explicitly mentioned in the EA, and thus this amendment requests removal of diesel and the correct specification of LPG and LNG (various forms) for present and future use. The request does not introduce a novel fuel source which had not been assessed or approved in the EA (as all fuel options were assessed in the EIA), but rather ensures that diesel as a fuel option is no longer considered and that LNG is explicitly mentioned in the EA. These amendments are requested to ensure the EA correctly specifies the fuel types to be utilised and for consistency throughout the EA.

Removal of diesel as fuel source in favour of the use of LPG and LNG in a simple cycle facility will moderately reduce the emissions levels resulting from the facility. By utilising LPG and LNG as fuel source, a cleaner energy production process is therefore facilitated, and less diesel is consumed for energy production.

In addition, the Risk Mitigation Power Procurement Programme, to which the applicant intends to bid the project, is specifying a time from Notice to Proceed (NTP) to Commercial Operation Date (COD) of between 12 to 18 months. The complexity of the combined cycle technology does not allow a combined cycle plant to be completed in the period indicated in the Risk Mitigation PPP, therefore the change to 400MW simple cycle fuelled power plant, utilising LPG and LNG is deemed more desirable than a combined cycle, diesel fuelled scenario.

3.6. Update of the fuel storage capacity

The EA approved the use of 3 x 2000m³ tanks for fuel storage. Production of 2000m³ fuel storage tanks are costly in terms of both purchasing of the tanks (financial), but also time taken to produce and assemble the tanks. The Risk Mitigation Power Procurement Programme, to which the applicant intends to bid the project, is specifying a time from Notice to Proceed (NTP) to Commercial Operation Date (COD) of between 12 to 18 months. Given the technical difficulty in producing 2000m³ tanks, the scarcity of current capacity for production of these within South Africa, the long time frame required for production of these tanks, the comparatively higher costs associated with the 2000m³ tank sizes, as well as the improved reuse potential of smaller tanks, the use of a greater number of smaller tanks is preferred from a technical, cost and timeframe perspective. The size of the tanks to be used will be confirmed in the final design of the facility.

In addition, the Request for Proposal for the Risk Mitigation IPP Procurement Programme issued by the Department of Mineral Resources and Energy (DMRE) requires 3 days of fuel storage. In this regard, up to 10 000m³ of fuel storage will be required for the power station.

Should this amendment be approved the facility will be able to use the most appropriate tank size (as determined in the final design phase) and ensure that sufficient combined storage capacity has been approved to allow for bid compliance and successfully reaching the Commercial Operation Date (COD).

3.7. The correction of the Listed Activity 1 of Listing Notice 2 (GNR 984) to rather correctly reflect as Listed Activity 2 of Listing Notice 2

The fuel sources and impacts assessed in the EIA were diesel, LPG and LNG (in various forms), all non-renewable resources. Therefore, the inclusion of Listed Activity 1 of Listing Notice 2 of the EIA Regulations, specifying electricity generation from a renewable resource, is incorrect. As such, this listed activity is requested to be corrected to Listed Activity 2 of Listing Notice of the EIA Regulations to specify non-renewable resource use. The amendment does not introduce any novel fuel source, nor does it alter the assessment, impacts and severity ratings found, nor the mitigation measures required, but is requested to ensure complete accuracy throughout the EA and that all listed activities are correctly specified.

3.8. Amendment to the conditions requiring amendment of the EMPr and update of the layout within the EA

In accordance with condition 14 and 15 of the EA, a final layout must be submitted to public participation and then submitted to the DEA for final approval, as it was not approved in the initial issuance of the EA.

Furthermore, in accordance with conditions 15,16,17,18,19 and 20 of the EA, the EMPr submitted with the EIA was not approved and therefore similarly required a 30-day public review and update, followed by submission to the DEA for final approval.

The applicant has now updated the EMPr (refer Revision 1 dated September 2020 attached in Appendix F of this report) and the updated layout (refer version 1 dated September 2020 included as Figure 2.2 in this report), which is now, along with this Motivation Report, being released to the public and key stakeholders for a period of 30 days. Public comments received will be considered and will be submitted along with the final Motivation Report for authority decision making.

Should the EMPr and layout update submitted to the DEA for decision making be approved, it is requested that the associated conditions in the EA be amended to reflect the newly-approved status of these two documents, to ensure that it is clear from the EA that these have in fact been approved. This will enable a more succinct, clearer and more understandable EA document during bidding rounds in the future.

4. CONSIDERATIONS IN TERMS OF THE REQUIREMENTS OF THE EIA REGULATIONS

In terms of Regulation 31 of the EIA Regulations 2014, as amended, an environmental authorisation may be amended by following the process in this Part (i.e. a Part 2 amendment) if it is expected that the amendment may result in an increased level or change in the nature of impact where such level or change in nature of impact was not:

- a) Assessed and included in the initial application for environmental authorisation; or
- b) Taken into consideration in the initial authorisation.

The amendment requested to change the operation of the Power Facility from 300MW fuelled and 100MW heat recovery, to a 400MW fuelled simple cycle process, as well as the specific projects details requested to be amended were not specified as such in the initial authorisation. The amendments requested do not on their own, constitute a listed or specified activity. Therefore, the application is made in terms of Regulation 31(b).

5. POTENTIAL FOR CHANGE IN THE SIGNIFICANCE OF IMPACTS AS ASSESSED IN THE EIA AS A RESULT OF THE PROPOSED AMENDMENTS

In terms of Regulation 32(1)(a)(i), the following section provides an assessment of the impacts related to the proposed change. Understanding the nature of the proposed amendments and the impacts associated with the project (as assessed within the EIA), the following has been considered:

- » Impacts on air quality;
- » Impacts on ecology; and
- » Social impacts.

The potential for change in the significance and/or nature of impacts based on the proposed amendments as described within this motivation report is discussed below, and detailed in the specialists' assessment addendum letters and reports (as applicable) contained in Appendix A-C¹. Additional mitigation measures recommended as a result of the proposed amendments have been underlined for ease of reference, where applicable. This section of the main report must be read together with the specialist reports contained in Appendix A-C in order for the reader to obtain a complete understanding of the proposed amendments and the implications thereof.

5.1. Impacts on air quality

The authorised power plant design was based on a combined cycle generation process of 300 MW (fuelled by diesel and liquified petrol gas (LPG) during Phase I of operation with a conversion to liquified natural gas during Phase II of operation) with another 100 MW generated through heat recovery. The EA authorised six (6) gas turbines for mid-merit/peaking plant power provision, with two (2) steam turbines utilising the heat from the engines in a separate steam cycle. The EA details multiple engine halls, each of ~60 MW containing one engine. Stack heights associated with the engine halls may be up to 20 m tall. On-site fuel storage was provided for by three (3) diesel storage tanks of 2 000 m³ capacity each.

The assessment of impact of the original facility design was conducted by uMoya-NILU (2016) where the impact of operation of the gas to power plant was deemed to be low without and including mitigation (Table 5.1).

Table 5.1. uMoya-NILU operational phase air quality impact results (uMoya-NILU, 2016)

Nature: Air quality impacts are caused by the inhalation of SO ₂ , NO ₂ , PM ₁₀ , CO and benzene, which are contained in emissions from the proposed Gas to Power Plant. The inhalation of the SO ₂ , NO ₂ , PM ₁₀ , CO and benzene at concentrations exceeding health-based air quality standards; and which are greater than the permitted number of exceedances per year, will result in negative health impacts.		
	Without mitigation	With mitigation
Extent	Limited to site and immediate surroundings (1)	Limited to site and immediate surroundings (1)
Duration	Long term (4)	Long term (4)

¹ It must be noted that the original specialists who undertook the EIA studies have been used for these assessments as far as possible. However, where the original specialists were not available for whatever reason, suitably qualified and experienced specialists have been used to provide an assessment of the proposed amendments.

Magnitude	Low (4)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Low (27)	Low (27)
Status (positive or negative)	Negative	Negative
Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	N/A
Mitigation: NOX control mechanisms - water-steam injection/lean-premix mechanism		
Cumulative impacts: Yes		
Residual Risks: No		

Of the project amendments listed in this report, the power station configuration (simple cycle), fuel choice (LPG with option to later convert to natural gas), and LPG storage have relevance to air quality.

The gas to power plant developers (Richards Bay Gas Power 2 (Pty) Ltd) intend to change the fuel source and technology type used in the facility to deploy a 400 MW simple cycle generation process with no heat recovery. The initial fuel is LPG which can, in the future be replaced, by liquified natural gas (LNG), regasified LNG, or natural gas supplied via a pipeline.

With the intended fuel source change, up to 10 000m³ of LPG will be stored in LPG pressure vessels (individual capacity to be confirmed in the final designs), with 8 loading bays. Small quantities of diesel (<10 m³) will be stored on-site for black start generators. Small quantities of various oils, used for heating the LPG, will also be used and stored on site. The facility footprint will not change with this amendment. The facility will use six (6) gas turbines for mid-merit power provision with single stacks per turbine and emission release height of 18 m.

5.1.1. Comparative assessment

The proposed facility amendments will influence operational atmospheric emissions through the: choice of fuel (LPG instead of diesel) and the quantity of fuel used to generate 400 MW via a simple cycle gas turbine; as well as, the storage of fuel (LPG pressure vessels compared with fixed-roof diesel tanks).

For comparative purposes, atmospheric emissions from the various plant options considered were determined assuming the selected turbines ran on liquid fuel (diesel), LPG or natural gas. The emission rates for the of criteria atmospheric pollutants from the amended plant are likely to be lower for SO₂, NO_x, PM and VOCs than the original plant design even though the fuelled generative capacity will be higher than the originally authorised capacity. The impact of the amended plant on ambient air quality is therefore likely to be similar to or lower than originally assessed by uMoya-NILU. Please note this also applies to cumulative impacts assessed in the EIA.

On-site storage of LPG will be bullet-style pressure vessels that will be mounded in sand bed foundations. The pressure vessels are required to keep the LPG in a liquified state. If properly maintained, fugitive losses from the LPG loading and storage are only likely to take place during unloading events from the transport tankers, where losses are expected to be negligible if adequately controlled. Fugitive losses from diesel tanks include working loses (loading / unloading) as well as breathing losses from safety release vents. Although, the on-site storage capacity will be similar (6 000 m³ diesel vs a maximum of 10 000 m³ LPG), the fuel type and conditions of storage will result in emission rates that will be similar to or lower than the original plant design assessed.

5.1.2. Conclusion

The results of the air quality study indicate that the proposed changes are likely to have a zero or negligible effect on the significance of impacts identified in the EIA report. Therefore, impact ratings as identified within the EIA apply to the proposed amendment scenario.

It is concluded that the amended fuel source of the plant will present lower annual emissions of atmospheric pollutants such as SO₂, NO_x, PM and VOCs although there will be an increase in the generation capacity of the plant compared to the originally assessed layout. As a result, air quality impacts of the facility due to the change in the fuel source (diesel) are likely to be marginally lower than previously assessed in the uMoya-NILU specialist study, and this project is therefore supported from an air quality perspective, provided the recommended mitigation measures are implemented and adhered to.

5.1.3. Mitigation measures as a result of the amendment

While no increase in significance rating or nature of air quality impacts are due to the proposed amendments, additional mitigation measures have been requested by the specialist to ensure ongoing best practice. These are detailed below and have now been incorporated into the updated EMPr, Revision 1 dated September 2020 (refer Appendix F) (please note these are underlined to note their novel inclusion into the EMPr):

- » The monitoring of emissions from the gas engines (turbines) will be mandated within the Atmospheric Emissions License (AEL) when issued.
- » A minimum of one annual measurement campaign will be required where the measurement methodology will also be stipulated in the AEL.
- » The conditions of the AEL should be included in the Environmental Management Programme (EMPr).
- » To minimise losses from the LPG loading and storage facility during loading and via leaks, additional management measures should include regular maintenance and monitoring of all LPG loading and storage equipment.
- » A Leak Detection and Repair (LDAR) programme should be included in the EMPr. Should the fuel change to natural gas (in any form) the LDAR programme should continue.

5.2. Impacts on ecology

The development of the project will require the clearance of the entire development footprint (i.e. an area of 7.3ha). The significance of potential pre-construction and construction related ecological impacts were estimated to range from Low to Medium ecological significance with mitigation with the direct disturbance/degradation and loss of vegetation/habitat as a result of stripping and clearing of vegetation being the most significant. The spread of Invasive Alien Plants (IAPs), weeds and other undesirable plants post-construction (due to disturbance created) was also rated to be of a Medium ecological significance and will affect areas adjacent to the facility over the operational life-span of the project. During the decommissioning phase of the project, impacts are unlikely to be of much significance, with the potential of the project to have a net positive ecological impact on the habitat and biodiversity when the artificial infrastructure is removed and the grassland vegetation/habitat is properly reinstated at the site. Cumulative impacts on ecosystem conservation targets, loss of ecological functioning and ecosystem services supply, and impacts to species of conservation concern are expected to range from Medium to High significance

in light of the threat status and irreplaceability value of the Maputaland Wooded Grassland vegetation type and the presence of protected/threatened plant species at the site. Cumulative impacts were likely to remain Moderately-High to High even when considering these impacts without the planned gas to power plant development (due to the extensive industrial development planned for the Phase 1 F area).

5.2.1. Comparative assessment

The findings of the Ecology Specialist Letter (refer to **Appendix B**) indicates that although there will be a slight change to the operational process and/or design of the Richards Bay Gas to Power Energy Plant, this change will not have an effect on the significance or nature of the impacts assessed during the EIA process, primarily due to the following:

- » The principle amendment involves the correct specification of fuel sources, fuel storage at the site and the configuration of the power station (combined cycle to simple cycle process) and this has no measurable influence on the development footprint originally assessed in 2016, with no deviations from the development property boundary initially assessed.
- » Since the development footprint will remain unchanged, direct and indirect construction impacts described in terms of: loss of indigenous vegetation, habitat fragmentation, soil erosion/sedimentation, pollution of soils/habitat, faunal impacts, and noise/light disturbance impacts will not change as the impact assessment conservatively considered the 'worst-case' possible scenario – being that the entire property will be transformed in some way, shape or form.
- » Given that the baseline and impact assessment chapters of the ecological report will remain unchanged, impact mitigation and management recommendations (and inputs into the EMPr from an ecological perspective) still apply and remain unchanged under the amended process design scenario, as the recommendations address mainly the mitigation of impacts to flora and fauna associated with the physical footprint of the development and site transformation/disturbance.
- » With construction, operational and decommissioning impacts remaining unchanged under the amended design scenario, cumulative impacts will also remain unchanged as these are mainly associated with the direct loss of vegetation and habitat and the impact on conservation targets, ecosystem services and species of conservation importance, all which can be attributed to the physical footprint of the development.

5.2.2. Conclusion

Due to the footprint of the plant remaining the same, the impacts anticipated for the project from an ecological perspective will remain unchanged and ecology-related mitigation measures included in the EMPr remain enforceable for the project phases. As a result, the specialist concluded that the proposed amendments of the Richards Bay Gas to Power Energy Plant will not alter the findings of the Terrestrial Ecological Impact Assessment undertaken by Eco-Pulse in 2016.

5.2.3. Mitigation measures as a result of the amendment

No additional mitigation measures were provided for in the ecological impact statement considering no change to the nature or significance found for any of the ecological impacts associated with the development.

5.3. Impacts on the social environment

Social impacts determined during the EIA (Savannah Environmental, 2016) included the following:

Construction phase

Impact	Status	Original rating
Direct employment and skills development	Positive	Medium (36)
Economic multiplier effects	Positive	Low (24)
Influx of jobseekers	Negative	Low (24)
Impacts on daily living and movement patterns (Traffic Impacts)	Negative	Medium (30)
Safety and security risks	Negative	Low (14)

Operational phase:

Impact	Status	Original rating
Direct employment and skills development at Mid-merit	Positive	Medium (32)
Direct employment and skills development at Baseload	Positive	Medium (40)
Economic multiplier effects	Positive	Low (24)
Development of energy infrastructure	Positive	Medium (40)
Impacts on daily living and movement patterns (Traffic Impacts)- Mid-merit	Negative	Medium (36)
Impacts on daily living and movement patterns (Traffic Impacts)- Baseload	Negative	Medium (42)
Visual Impacts and sense of place impacts	Negative	Low (14)

Decommissioning Phase:

Impact	Status	Original rating
Social impacts associated with retrenchment including loss of jobs and source of income	Negative	Medium (36)
Creation of temporary employment	Positive	Not assessed
Economic multiplier effects	Positive	Not assessed

Cumulative impacts:

Impact	Status	Original rating
Cumulative impacts from employment, skills and business opportunities	Positive	Low (27)
Cumulative impacts on daily living and movement patterns (traffic impacts)	Negative	Low (24)
Cumulative impacts with large-scale in-migration of people	Negative	Low (18)
Cumulative impacts on the sense of place and landscape	Negative	Low (16)

No fatal flaws were determined from a social impact assessment perspective during the EIA, concluding that the development was acceptable in terms of social impacts provided that the specified mitigation measures are implemented.

5.3.1. Comparative assessment

A comparative assessment of the proposed amendments compared to the social impacts determined during the EIA was conducted and detailed in Appendix C of this report. The following table summarises the results. The blue shaded cells indicate the only two instances in which impacts were determined to have been slightly increased due to the proposed amendments, however in both instances the significance category remains identical. All other impacts were either no longer applicable (related to baseload duty operation) or remain identical in terms of their significance rating.

Impact	Status	Original rating	Rating based on proposed amendments
CONSTRUCTION PHASE			
Direct employment and skills development	Positive	Medium (36)	Medium (36)
Economic multiplier effects	Positive	Low (24)	Low (24)
Influx of jobseekers	Negative	Low (24)	Low (24)
Impacts on daily living and movement patterns (Traffic Impacts)	Negative	Medium (30)	Medium (30)
Safety and security risks	Negative	Low (14)	Low (14)
Nuisance impact (noise and dust)	Negative	Low (12)	Low (12)
OPERATIONAL PHASE			
Direct employment and skills development at Mid-merit	Positive	Medium (32)	Medium (32)
Direct employment and skills development at Baseload	Positive	Medium (40)	N/A - baseload duty impact only
Economic multiplier effects	Positive	Low (24)	Low (24)
Development of energy infrastructure	Positive	Medium (40)	Medium (40)
Impacts on daily living and movement patterns (Traffic Impacts)- Mid-merit	Negative	Medium (36)	Medium (42)
Impacts on daily living and movement patterns (Traffic Impacts)- Baseload	Negative	Medium (42)	N/A - baseload duty impact only
Visual Impacts and sense of place impacts	Negative	Low (14)	Low (24)
DECOMMISSIONING PHASE			
Social impacts associated with retrenchment including loss of jobs and source of income	Negative	Medium (36)	Medium (36)
Creation of temporary employment	Positive	Not assessed	Medium (36)
Economic multiplier effects	Positive	Not assessed	Low (16)
CUMULATIVE IMPACTS			
Cumulative impacts from employment, skills and business opportunities	Positive	Low (27)	Low (27)
Cumulative impacts on daily living and movement patterns (traffic impacts)	Negative	Low (24)	Low (24)
Cumulative impacts with large-scale in-migration of people	Negative	Low (18)	Low (18)
Cumulative impacts on the sense of place and landscape	Negative	Low (16)	Low (16)

5.3.2. Conclusion

Following a careful assessment of the impact of the proposed changes to the project infrastructure and scope, it can be concluded that no changes to the significance ratings of socio-economic impacts are expected during construction and operation phases. The same applies to the cumulative impacts predicted and assessed originally in the study of May 2016.

The impacts associated with the baseload option and impact on employment during the decommissioning phase, assessed in the original study, will no longer be applicable. Enhancement measures proposed in the original study for similar impacts during the construction phase will also be applicable to the same impacts during decommissioning.

Overall, considering the current knowledge, it can be reasonably concluded that from the socio-economic perspective the project in its revised scope should be approved for the development. No mitigation measures in addition to those proposed in the original study are recommended.

5.3.3. Mitigation measures as a result of the amendment.

The mitigation measures to enhance positive impacts and to mitigate negative effects that have been proposed in the study of May 2016 will remain applicable to the project.

6. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS

In terms of Regulation 32(1)(a)(ii), this section provides details of the advantages and disadvantages of the proposed amendment are described below.

Advantages of the amendments	Disadvantages of the amendments
General	
Confirmed availability of LPG or LNG fuel supplied by the Transnet Natural Gas Network pipeline	None
Technology configuration of the facility and an increase in capacity to 400MW allows for the latest machinery and technology to be applied to the generation process, thereby increasing efficiencies afforded in using the most up to date technology	Increase in traffic for mid-merit and peaking duty applications due to the increased volume of fuel required for a 400MW wholly fuelled generation process
Utilising a 400MW simple cycle process reduces the complexity of the energy facility and allows the proponent to bid the project within the Risk Mitigation Power Procurement Programme or any future Gas to Power IPP procurement bid rounds.	None
Reduced usage and reliance on Diesel for power generation, and rather use of a cleaner burning fuel in the form of LPG and LNG.	None
Amendments to the correct specification of infrastructure (related to a simple cycle process) and removal of combined cycle infrastructure, correct specification of the listed activity applicable, approval insertion of the EMPr and layout conditions into the EA, as well as peaking/mid-merit references ensure the EA reads correctly and up to date, with no erroneous or redundant references	None
Air Quality	
There will be lower emissions for SO ₂ , NO _x , PM and VOCs compounds including benzene, from the combustion of diesel in the generation process in favour of LPG and LNG use	None
From the outset, the Power Facility will combust LPG or LNG (in one of the different forms, LNG and RLNG), which is a cleaner fuel, and therefore generate lower emissions and result in lower impacts on ambient air quality.	None
The change in the conditions of storage (smaller tanks) will result in emission rates that will be similar to or lower than the original plant design assessed	None
Ecology	
None – the amendment does not present advantages in comparison to that assessed in the EIA	None – the amendment does not present disadvantages in comparison to that assessed in the EIA
Social	
None	Increase in traffic due to the increased volume of fuel required under the simple cycle scenario, will marginally increase the significance of social impacts on daily living

Advantages of the amendments	Disadvantages of the amendments
	and movement patterns (Traffic Impacts) and visual Impacts and sense of place impacts, although this does not alter the significance category of the impact.

Based on the above, it can be concluded that the advantages of the proposed amendments outweigh the disadvantages from an environmental and technical perspective provided that the recommended mitigation measures are implemented. The disadvantages identified were that of an increase in traffic and fuel volume related to the simple cycle process, impacts of which were determined by the specialists to be minor.

7. REQUIREMENTS FOR ADDITIONAL MITIGATION AS A RESULT OF THE PROPOSED AMENDMENTS

As required in terms of Regulation 32(1)(a)(iii), consideration was given to the requirement for additional measures to ensure avoidance, management and mitigation of impacts associated with the proposed change. From the specialist inputs provided into this amendment motivation, it is concluded that the mitigation measures proposed within the EIA would be sufficient to manage potential impacts within acceptable levels. Updated mitigation measures are however provided by the Air Quality specialists, these are outlined as the following:

- » The monitoring of emissions from the gas engines (turbines) will be mandated within the Atmospheric Emissions License (AEL) when issued.
- » A minimum of one annual measurement campaign will be required where the measurement methodology will also be stipulated in the AEL.
- » The conditions of the AEL should be included in the Environmental Management Programme (EMPr).
- » To minimise losses from the LPG loading and storage facility during loading and via leaks, additional management measures should include regular maintenance and monitoring of all LPG loading and storage equipment.
- » A Leak Detection and Repair (LDAR) programme should be included in the EMPr. Should the fuel change to natural gas (in any form) the LDAR programme should continue.

These additional mitigation measures are not directly related to the proposed amendments, but rather due to additional information now available by virtue of an Atmospheric Emissions Licence process ongoing for the project in accordance with the EA requirements. These updated mitigation measures have been included within the updated EMPr (refer Revision 1, dated September 2020 attached in Appendix F of this report) which is will be submitted to DEA for final approval, in accordance with condition 16 and 17 of the EA.

No other novel mitigation measures are introduced from the other specialists.

8. AMENDMENT CONSOLIDATION

During the pre-application meeting conducted with the DEA on 23 July 2020 for this amendment process, it was requested that the proponent confirm if an addendum amendment EA be issued (should the application be successful), or whether a replacement EA should rather be produced.

This section confirms that the proponent has indicated an entirely new EA is the preferred approach over an addendum EA as this will ensure no confusion regarding the correct project description for the project. As such, the EA with DEA ref: 14/12/16/3/3/2/867 issued to Richards Bay Gas Power 2 (Pty) Ltd on 04 October 2016 is requested to be wholly replaced with a revised EA taking into account the above requested amendments.

9. PUBLIC PARTICIPATION

A public participation process is being conducted in support of a Part 2 application for amendment of the Environmental Authorisation for the 400MW Richards Bay Power Facility, KwaZulu-Natal Province. This public participation has been undertaken in accordance with the approved Public Participation plan for the project and includes:

- » Site notices were placed at the site on **29 July 2020** (refer to **Appendix D4**).
- » Written notification to registered I&APs regarding the availability of the draft motivation report was distributed on **Wednesday 16 September 2020** (refer to **Appendix D2**).
- » The draft motivation report has been made available for a 30-day review and comment period on www.savannahsa.com from **17 September to 19 October 2020**.
- » Advertisements were placed in The Zululand Observer newspaper on **17 September** (refer to Appendix B4).

Proof of the above is included in **Appendix D**.

Comments received during the 30-day comment and review period will be included in the final submission to the DEA for their consideration in the decision-making process. Comments will be included and responded to in the Comments and Responses Report (to be included as **Appendix D5**). Proof of attempts made to obtain comments from relevant Organs of State and key stakeholders will also be included in **Appendix D3**.

10. CONCLUSION

Based on the results of the specialist findings and the consideration of advantages and disadvantages of the proposed amendments, it is concluded that the proposed amendments to the project specifications as detailed within this report are not expected to result in an increase to the significance ratings (i.e. low, medium or high) for the identified impacts, and would rather result in advantages from an air quality perspective during the operation phase of the project due to the removal of diesel as a fuel source.

In terms of air quality impact, it was concluded that the proposed changes are likely to have a zero or negligible effect on the significance of impacts identified in the EIA report. In addition, in terms of Ecological impact the specialist similarly found that the amendment will not change the key findings and recommendations of the assessment conducted for the EIA. Finally, in terms of social impacts, it was concluded that no changes to the significance ratings of socio-economic impacts are expected during construction and operation phases, as well as cumulative impacts. Only slight increases in impact rating (but not significance category) were found for traffic and visual impacts considering the increased fuel requirements of the simple cycle process. The social specialist concluded that from the socio-economic perspective the project in its revised scope should be approved for the development.

The amendment in itself does not constitute a listed activity. The mitigation measures described in the original EIA document are adequate to manage the expected impacts for the project. Additional mitigation measures have been recommended by the air quality specialist as a result of a separate, ongoing AEL process, which have been included within the updated EMPr submitted to DEA for final approval.

Given the above, Richards Bay Gas Power 2 (Pty) Ltd requests the following amendments, as detailed within Chapter 2 of this report and summarised below:

1. A validity extension of the EA by five (5) years.
2. An update to the capacity and configuration of the power plant in the EA project description from: '300MW (fuelled) and 100MW (steam) in a combined cycle' to: 'a 400MW (fuelled) simple cycle process'.
3. The removal of various infrastructure which would become redundant with the use of a simple cycle process mentioned in the project description of the EA, which relate to a combine cycle (no longer applicable if amendment 2 is approved).
4. To include in the project description of the EA the use of Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG), Regasified Liquefied Natural Gas (RLNG) or pipeline gas as the fuel source (as assessed for the approved EA) for the project in addition to the specification of LNG (in various forms) in future (also as approved in the EA).
5. The removal of diesel as a fuel source from the project description of the EA.
6. Amendment of the fuel storage capacity as per the updated layout, to a maximum of 10 000m³ ..
7. A replacement of the single reference to the wording, 'Mid-Merit' in the EA to correctly reflect 'Mid-Merit/Peaking, to ensure that both peaking and mid-merit options/scenarios have been considered for the development;
8. A correction on the EA to specify Activity 2 of Listing Notice 2 in the EA.
9. Amendment to conditions 14,15,16 and 17 of the approved EA to specify that the layout submitted and EMPr submitted have been approved.

These requested amendments hold numerous advantages, detailed in Chapter 6 of this report, including amongst others:

- » Utilising a 400MW simple cycle process reduces the complexity of the energy facility and allows the proponent to bid the project within the Risk Mitigation Power Procurement Programme or any future Gas to Power IPP procurement bid rounds.
- » Reduced usage and reliance on Diesel for power generation, and rather use of a cleaner burning fuel in the form of LPG and LNG.
- » The use of local manufacturers where 1000m³ tanks will be utilised in the design, whereas 2000m³ will likely require offshore assembly.
- » Improved reuse potential (resale, repurpose/retrofit) of 1000m³ tanks where used in the design, in comparison to that of 2000m³ fuel storage tanks.
- » Amendments to the correct specification of infrastructure (related to a simple cycle process) and removal of combined cycle infrastructure, correct specification of the listed activity applicable, approval insertion of the EMPr and layout conditions into the EA, as well as peaking/mid-merit references ensure the EA reads correctly and up to date, with no erroneous references
- » There will be lower emissions for SO₂, NO_x, PM and VOCs compounds including benzene, from the combustion of diesel in the generation process in favour of LPG and LNG use
- » The change in the conditions of storage (smaller tanks) will result in emission rates that will be similar to or lower than the original plant design assessed

In addition, as required in terms of conditions 14 and 15 of the EA, the updated layout is now included in Figure 2.2 of this report and is available for public review prior to being submitted to the DEA for review and approval as the final facility layout.

Furthermore, as required by conditions 16 and 17 of the EA, the updated EMPr, Revision 1, dated September 2020 (refer Appendix F) is now available for public review prior to being submitted to the DEA for review and approval as the final approved EMPr of the facility.

Taking into consideration the conclusions of the specialist input undertaken for the proposed amendments (as detailed in **Appendix A - C**), it is concluded that these amendments are considered acceptable from an environmental perspective, provided that the recommended mitigation measures stipulated within the EMPr and detailed within this report are implemented.