Aggeneys 1, Northern Cape Province

Motivation for Amendment of the Environmental Authorisation

DEA Ref.: 14/12/16/3/3/1/2019

October 2020

savannah environmental

t +27 (0)11 656 3237
f +27 (0)86 684 0547
e info@savannahsa.com
w www.savannahsa.com

Prepared for:

ABO Wind Aggeneys 1 PV (Pty) Ltd
Unit B1
Mayfair Square
Century City
7441

savannah environmental

t +27 (0)11 656 3237 f +27 (0)86 684 0547 e info@savannahsa.com w www.savannahsa.com
First Floor, Block 2, 5 Woodlands Drive Office Park, Cnr Woodlands Drive & Western Service Road, Woodmead, 2191

PROJECT DETAILS

Title	:	Aggeneys 1, Northern Cape Province: Motivation for Amendment to the Environmental Authorisation
Authors	:	Savannah Environmental (Pty) Ltd Ethanne Soar Lisa Opperman Jo-Anne Thomas
Specialist Consultants	:	Lisa Opperman of Savannah Environmental Dr Neville Bews of Neville Bews and Associates Gideon Raath of Savannah Environmental Dr Garry Paterson of ARC-Soil, Climate and Water Jayson Orton of AHSA Consulting Simon Todd of 3Foxes Biodiversity Solutions
Client	:	ABO Wind Aggeneys 1 PV (Pty) Ltd
Report Status	:	Motivation report for 30-day review and comment period

When used as a reference this report should be cited as: Savannah Environmental, (2020), Motivation Report for the Amendment to the Environmental Authorisation of Aggeneys 1, Northern Cape Province.

TABLE OF CONTENTS

APPENDICES

PURPOSE OF THE REPORT

Environmental Authorisation (EA) for Aggeneys 1 solar energy facility in the Northern Cape Province (DEA Ref: 14/12/16/3/3/1/2019) was obtained by ABO Wind Aggeneys 1 PV (Pty) Ltd on 25 July 2019. The project was authorised by the Department of Environment, Forestry and Fisheries (DEFF)[1] for the development of a solar PV facility with a contracted capacity of up to 100MW and associated infrastructure on the Remaining Extent of Farm Bloemhoek 61.

Due to the demand in the utilisation of battery energy storage systems for renewable energy projects, as well as to ensure an adequate supply of electricity to the national grid, ABO Wind Aggeneys 1 PV (Pty) Ltd is proposing the construction and operation of a Battery Energy Storage (BESS) with a capacity of up to 500MW/500MWh within the authorised development footprint of the solar energy facility. The BESS will be developed within the authorised laydown area of the solar energy facility and with an extent of no more than 5ha. It is understood that the BESS may require the storage of dangerous goods for the operation and maintenance of the system, however, this will be limited and will fall within the capacity of what was authorised for the solar energy facility[2].

It is the Developer's intention to bid the solar PV facility, including the battery energy storage system, under the Risk Mitigation Independent Power Producer (IPP) Procurement Programme and/or Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) of the Department of Mineral Resources and Energy (DMRE) and/or any future relevant procurement programme. Ultimately, the development of the solar PV facility as well as the battery energy storage is intended to be part of the renewable energy projects portfolio for South Africa, as contemplated in the Integrated Resources Plan (IRP). For solar energy to be dispatchable it will require the additional battery energy storage applied for in this amendment.

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. The proposed amendment for the construction and operation of the BESS does not trigger any new listed activities. The BESS will be located within the originally authorised footprint of the solar energy facility, within the already authorised laydown area as assessed during the Basic Assessment (BA) process.

Savannah Environmental has prepared this Motivation Report in support of the application for the proposed amendment on behalf ABO Wind Aggeneys 1 PV (Pty) Ltd. This report aims to provide detail pertaining to the environmental impacts as a result of the proposed amendment in order for interested and affected parties to be informed and submit comments for the competent authority to be able to reach a decision in this regard. This report is supported by specialist input letters to inform the conclusion and recommendations regarding the proposed amendment (refer to **Appendix A to G** of this report). This Motivation Report must be read together with these specialist input letters in order to obtain a complete understanding of the proposed amendment and the implications thereof from an environmental perspective.

[1] Then known as the Department of Environmental Affairs (DEA).

[2] Based on the limited storage required for the BESS, no new listed activities will be triggered.

This Motivation Report has been made available for a 30-day review and comment period in accordance with Regulation 32(1)(aa) of the EIA Regulations, 2014 (as amended) from **Friday, 16 October 2020** to **Monday, 16 November 2020**. The availability of the Motivation Report for the 30-day comment and review period was advertised in the Gemsbok Newspaper on **Friday, 16 October 2020** (refer to **Appendix H4** of the Motivation Report).

The Motivation Report is available for download from Savannah Environmental's website: https://www.savannahsa.com/public-documents/energy-generation/aggeneys-1-and-2-pv-facilities/. To register on the project database as an interested and affected party, as well as obtain further information about the project, or submit written comments, please contact:

Nicolene Venter of Savannah Environmental
Post: PO Box 148, Sunninghill, 2157 Johannesburg
Tel: 011 656 3237
Mobile: 060 978 8396
Fax: 086 684 0547
Email: publicprocess@savannahsa.com
www.savannahsa.com

All comments received during the 30-day review and comment period will be included within a Comments and Responses Report (C&RR) to be submitted to the DEFF with the Final Motivation Report for consideration and decision-making.

1. OVERVIEW OF THE PROJECT

1.1. Location

The authorised Aggeneys 1 solar energy facility is located 11km south-east of Aggeneys in the Northern Cape Province (refer to **Figure 1.1**). The project is located within the Springbok Renewable Energy Development Zone (REDZ 4), within ward 4 of the Khai-Ma Local Municipality and within the greater Namakwa District Municipality.

The development footprint of the solar PV facility is located on the Remaining Extent of the Farm Bloemhoek 61. It is within this property that Aggeneys 1 (including the proposed BESS) will be constructed and operated.

The following infrastructure components were authorised by the Department during the BA process:

- Arrays of PV panels with a contracted capacity of up to 100MW.
- Mounting structures to support the PV panels.
- Cabling between the project components, to be laid underground where practical.
- On-site inverters to convert the power from a direct current (DC) to an alternating current (AC).
- An on-site substation to facilitate the connection between the solar PV facility and the Eskom electricity grid.
- Site offices and maintenance buildings, including workshop areas for maintenance and storage.
- Temporary laydown areas.
- Internal access roads and fencing around the project site.
- Other infrastructure including but not limited to workshop areas for maintenance, storage, and offices.

1.2. Potential Environmental Impacts as determined through the BA Process

From the specialist investigations undertaken within the BA process for Aggeneys 1 (Savannah Environmental, 2019), the following environmental impacts relevant to the amendment application were identified:

- Impacts on Ecology (including fauna and flora)
- Impacts on Avifauna
- Soil and Agricultural Potential Impacts
- Impacts on Freshwater Resources
- Heritage Impacts (including palaeontology)
- Visual Impacts
- Impacts on the Social Environment
- Impacts on traffic

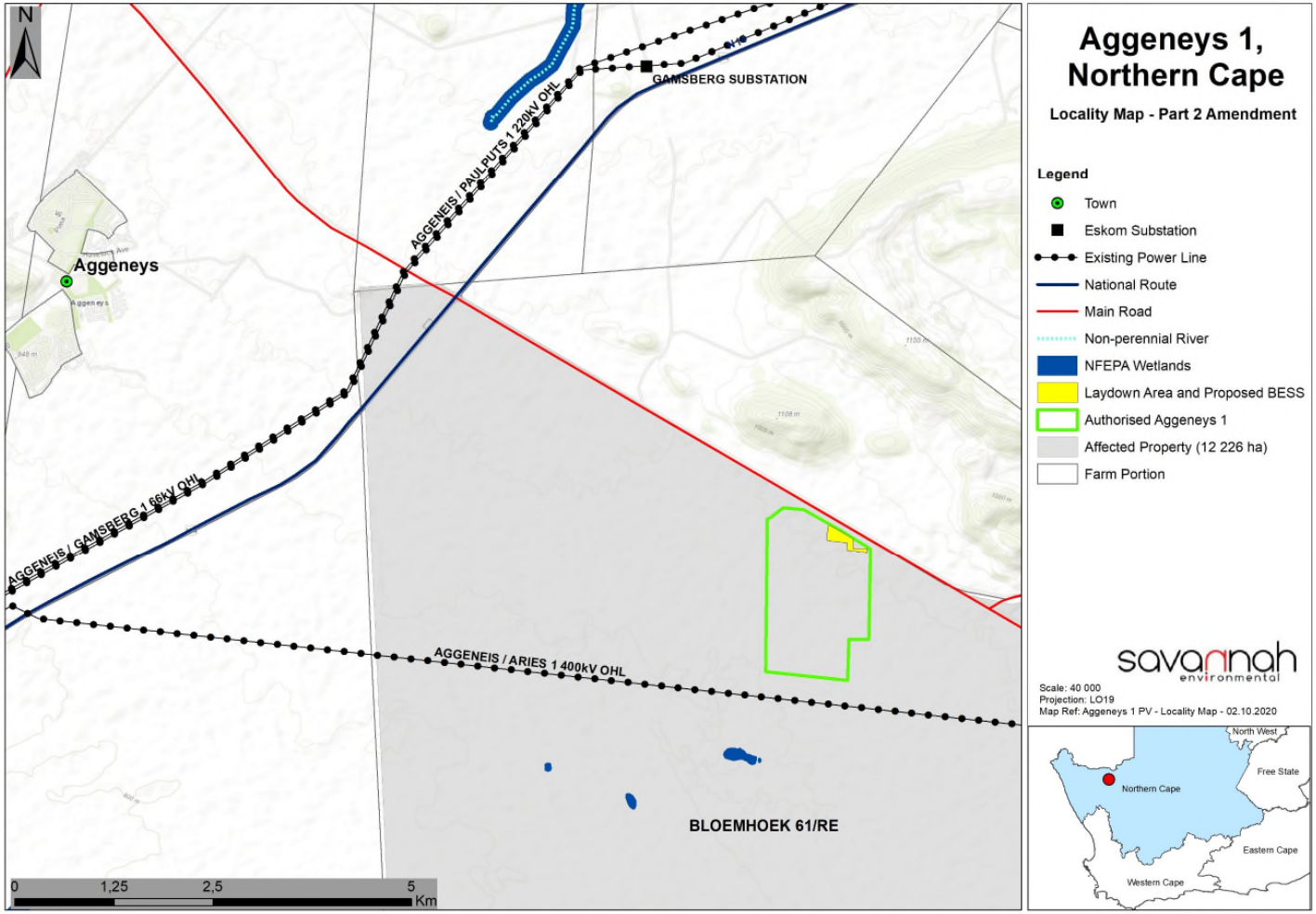

Figure 1.1: A map showing the location of the affected property and the location of the BESS development area within the authorised development footprint of the Aggeneys 1. A3 maps have been included in **Appendix I** of the Motivation Report.

Key conclusions and recommendations of the original BAR pertinent to this application, as reported in the Final BAR Report (Savannah Environmental, 2019):

1.2.1. Summary of environmental findings

The BA Report found that based on the nature and extent of the project, the level of disturbance predicted as a result of the construction and operation of the solar energy facility and the associated infrastructure was assessed as low to medium and that the impacts associated with the proposed development could be managed and mitigated to an acceptable levels. No fatal flaws were identified to be associated with Aggeneys 1.

1.2.2. Impacts on Ecology

The Ecological Impact Assessment assessed the impact of Aggeneys 1 on the sensitive ecological features present within the project site for the life-cycle of the project. The assessment identified impacts within the construction, operation and decommissioning phases of the project.

During the construction phase (and the decommissioning phase), the impacts include impacts on vegetation and listed or protected plant species and direct faunal impacts. The significance of the construction phase impacts range from medium to low, following the implementation of the mitigation measures recommended by the specialist. No impacts of high significance were identified prior to the implementation of mitigation.

During the operation phase, the anticipated impacts include faunal impacts and habitat degradation due to erosion and alien plant invasion. The significance of the impacts for the operation phase will be low, following the implementation of the mitigation measures recommended by the specialist. No impacts of a high significance were identified.

From the findings of the Ecological Impact Assessment it can be concluded that no impacts of high ecological significance were identified which would hinder the development of Aggeneys 1 and its associated infrastructure. The proposed development is considered to be appropriate and acceptable from an ecological perspective and will not result in detrimental impacts to ecosystems and habitat features present within the project site and within the surrounding properties. The specialist has, therefore, indicated that the development may be authorised, constructed and operated, subject to the implementation of the recommended mitigation measures.

1.2.3. Impacts on Avifauna

The Avifauna Impact Assessment is based on the findings of two site visits undertaken in mid-winter (26 to 28 June 2018) and again in late summer (20 to 22 March 2019). The avifauna impacts identified to be associated with Aggeneys 1 will be negative and local in extent. The duration of the impacts will be long-term, for the lifetime of the PV facility.

During the construction phase (and decommissioning phase) of Aggeneys 1 direct avifauna impacts include habitat loss and disturbance related to vegetation clearance, the operation of heavy machinery (noise) and increased human presence. The significance of the construction phase impacts will be medium, with

the implementation of the mitigation measures recommended by the specialist. No impacts of high significance are expected to occur during the construction phase.

Impacts on avifauna during the operation phase include collisions with PV panels, entrapment along perimeter fencing, and disturbance due to traffic and night lighting. The significance of the impacts will be low, with the implementation of the recommended mitigation measures. No impacts of a high significance are expected to occur during operation.

From the results of the avifauna assessment, it can be concluded that the project site for Aggeneys 1 is considered to represent a broadly suitable environment for the location of a solar PV facility. Considering that the study area supports a typical bioregional avifaunal assemblage within an extensive vegetation type, and that there are no known breeding or roosting sites of red-listed priority species within close proximity (<3 km), there are no impacts associated with the development that are considered to be of high residual significance and which cannot be mitigated to a low acceptable level. Therefore, the development of Aggeneys 1 is considered to be acceptable from an avifaunal perspective.

From the results of the avifauna impacts assessment, it can be concluded that no fatal-flaws will be associated with the development of Aggeneys 1.

1.2.4. Impacts on Freshwater Features

The assessment of freshwater features assessed the impact of Aggeneys 1 on the freshwater features present within the project site for the life-cycle of the project.

During the construction phase, impacts include vegetation clearance in watercourses, impacts to water quality in the watercourses and impacts associated with the movement of vehicles through watercourses. The significance of the construction phase impacts will be low, following the implementation of the recommended mitigation measures by the specialist. No impacts of a high significance were identified prior to the implementation of mitigation.

During the operation phase, the impact relates to the movement of vehicles through watercourses located within the development footprint. The significance of the impact will be low following the implementation of the mitigation measures by the recommended specialist. No impacts of a high significance were identified for the project.

From the findings it can be concluded that the development of Aggeneys 1 will have an overall negative impact of low significance with the implementation of the recommended mitigation measures. The construction of the solar PV facility and the associated infrastructure is therefore supported from a freshwater features perspective and considered acceptable subject to obtaining of the necessary water use license from the Department of Human Settlement, Water and Sanitation.

1.2.5. Impacts on Soil and Agricultural Potential

Two impacts have been identified to be associated with the development of Aggeneys 1 from a soils perspective. These impacts include the loss of potentially productive agricultural land through the undertaking of construction activities and panel installation; and increased wind erosion due to disturbance of the soil. Both impacts are expected to occur during the construction and operation phases. No fatal

flaws have been identified from a soils and agricultural potential perspective and all impacts can be mitigated to be within low and acceptable levels of impact. Therefore, the development of Aggeneys 1 is considered to be acceptable from a soils and agricultural perspective.

1.2.6. Impacts on Heritage Resources

The heritage impacts expected during the construction phase include impacts to palaeontological resources, archaeological resources and graves and impacts to the cultural landscape. There are no heritage resources present within the development footprint, although several isolated stone artefacts attributable to background scatter were noted. Impacts to heritage resources were identified to be associated with Aggeneys 1 for the construction phase. No impacts are expected to occur during the operation phase of the solar PV facility.

The significance of the impacts ranges from medium to low, with the implementation of the recommended mitigation measures. No impacts of high significance are expected, and the development of Aggeneys 1 is considered to be acceptable from a heritage perspective.

1.2.7. Visual Impacts

The Visual Impact Assessment identified negative impacts on visual receptors during the construction and the operation phases of Aggeneys 1. The impacts includes a change in the character of a relatively natural area, a change in the character of the landscape as seen from the N14, the Loop 10 road and local homesteads, a change in the landscape as seen from local settlement areas, glare impacts which could affect travellers on the Loop 10 road and the northern flight path of the Aggeneys Aerodrome and visual impacts related to the operational, safety and security lighting of the solar PV facility on observers. The significance of the impacts ranges between medium and low, with the implementation of the recommended mitigation measures. No impacts of a high significance are expected to occur.

The Visual Impact Assessment concluded that the development of Aggeneys 1 will largely impact visually on an area where there currently is strong influence of urban and urban fringe development and therefore changes to the landscape quality are unlikely to be problematic. In conclusion, the development of Aggeneys 1 is considered to be acceptable from a landscape and visual impact perspective.

1.2.8. Social Impacts

The Social Impact Assessment identified that most social impacts associated with the development of Aggeneys 1 will have a short-term duration associated with the construction phase and long-term duration during the operation phase of the project. Both positive and negative impacts have been identified for both the construction and operation phases of the development.

During the construction phase, negative impacts include nuisance, dust and noise impacts, an increase in crime, an increased risk of HIV and AIDS, an influx of construction workers and job seekers to the area, exposure to hazards, disruption of daily living patterns and disruption of services supplied and impacts on infrastructure. The significance of the negative construction phase impacts ranges between low, medium and medium to high, with the implementation of recommended mitigation measures. The positive social impacts associated with the construction of Aggeneys 1 includes positive economic impacts and the

stimulation of the area's economy. The significance of the positive impacts will be medium with the implementation of the recommended enhancement measures.

Impacts associated with the operation of the solar PV facility will be both positive and negative. The negative impacts are related to a transformation in the sense of place which has a significance of medium to high, with the implementation of the recommended mitigation measures. The positive impacts associated with the operation of Aggeneys 1 relates to positive economic impacts, including the creation of jobs, business opportunities and a source of revenue for local authorities. The significance of the positive impacts will be medium to high with the implementation of the recommended enhancement measures.

1.2.9. Impacts on Traffic

During the construction phase, traffic will be generated through the transportation of project components and employees to the site. The significance of the construction phase impacts will be low, with the implementation of the mitigation measures recommended by the specialist.

During the operation phase, traffic will be generated and will relate to the presence of the operation and maintenance staff at the solar energy facility. The significance of the construction phase impacts will be low, with the implementation of the mitigation measures recommended by the specialist.

No fatal flaws and no impacts of high significance are expected, and the development of Aggeneys 1 is therefore considered to be acceptable from a traffic perspective.

2. OVERVIEW OF THE PROPOSED AMENDMENT

The amendments being applied for relates to the project description, as well as a change in the contact details of the contact person of the EA holder, as detailed in the EA dated 25 July 2019. The requested amendment will result in the construction and operation of a BESS with a capacity of up to 500MW/500MWh within the authorised development footprint of Aggeneys 1.

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

2.1. A change to the details of the contact person of the EA holder

The details of the contact details of the EA Holder have changed. Therefore, the applicant is lodging a request to amend the details to ensure that the EA lists the contact details of the EA Holder correctly.

EA Page Reference	Current Authorised Details	Amended / Corrected details
EA Cover Page (page 1)	Tel: 021 418 2596 E-mail: Robert.wagener@abo-wind.com	**Tel: 021 276 3620** **E-mail: capetown@abo-wind.com**
Page 3 of the EA (Activities authorised)	Tel: (021) 418 2596 Cell: (064) 030 3633 E-mail: Robert.wagener@abo-wind.com	**Tel: 021 276 3620** **Cell: 076 104 1372** **E-mail: capetown@abo-wind.com**

2.2. An update to the project description of the EA to include the construction and operation of a Battery Energy Storage System (BESS)

The applicant is requesting an update to the project description of the EA to include the construction and operation of a Battery Energy Storage System (BESS) with a capacity of up to 500MW/500Wh within the authorised development footprint of the solar energy facility (refer to **Figure 2.1**). The BESS will be developed within the authorised development footprint of Aggeneys 1, within the authorised laydown area and with an extent of no more than 5ha. It is understood that the BESS may require the storage of dangerous goods for the operation and maintenance of the systems, however this will be limited and will fall within the capacity of what was authorised for the solar energy facility[3]. The BESS will connect to the authorised on-site facility substation of Aggeneys 1 via multi-core 22kV or 33kV underground cables (to follow the internal access roads of the authorised PV facility).

EA Page Reference	Proposed wording
Page 6, Infrastructure associated with this facility include	» **Battery Energy Storage System**
Page 7, Other Infrastructure Battery Energy Storage System (BESS)	» **Electrochecmical battery storage systems with a maximum height of 3.5m; and** » **Multi-core 22kV or 33kV underground cables, to follow internal access roads of the PV facility, to connect the battery storage area to the on-site facility substation.**

[3] No new listed activity will be triggered.

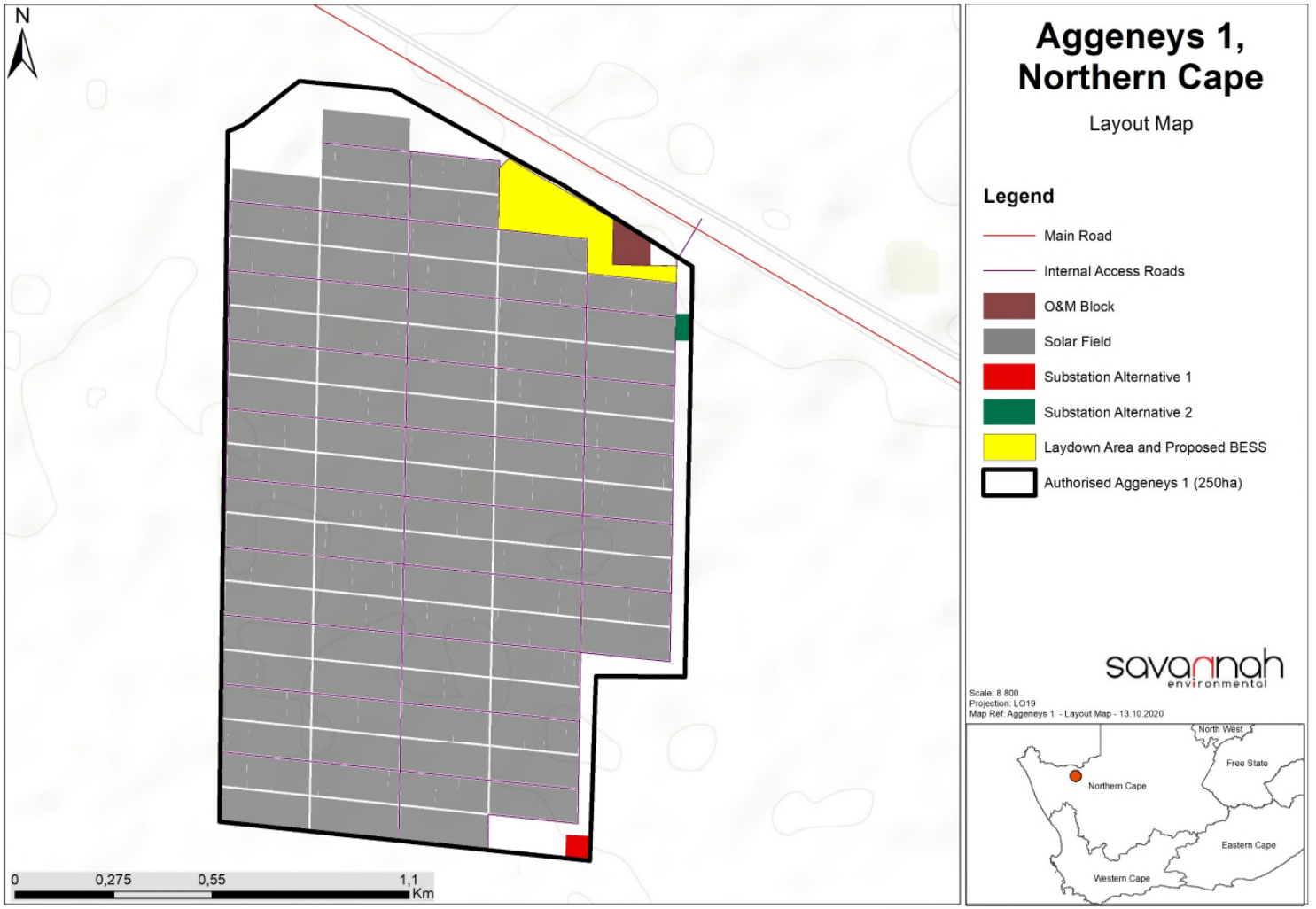

Figure 2.1: A map showing the layout of the BESS within the authorised development footprint of Aggeneys 1. A3 maps have been included in **Appendix I** of the Motivation Report.

3. MOTIVATION FOR THE PROPOSED AMENDMENT

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

3.1. A change in the details of the contact person of the EA Holder

The contact details of the EA Holder have changed. Therefore, the applicant is lodging a request to amend the details to ensure that the EA lists the contact details of the EA Holder correctly.

3.2. An update to the project description of the EA to include the construction and operation of Battery Energy Storage System (BESS)

The applicant is requesting an update to the project description of the EA to include the construction and operation of a BESS with a contracted capacity of up to 500MW/500MWh within the authorised development footprint of the solar energy facility. The BESS will be developed within the authorised laydown area, and with an extent of no more than 5ha. It is understood that the BESS may require the storage of dangerous goods for the operation and maintenance of the system, however this will be limited and will fall within the capacity of what was authorised for the solar energy facility.

The general purpose and utilisation of the BESS will be to save and store excess electrical output from the solar energy facility as it is generated, allowing for a timed release to the national grid when the capacity is required. The BESS will therefore provide flexibility in the efficient operation of the electricity grid through decoupling of the energy supply and demand and will allow for longer generating periods of the solar PV facility. Furthermore, the development of the BESS for the project is of importance as the system will ensure that electricity is fed into the national grid when required and excess amounts stored. This will allow for extended hours of generation from the 100MW solar energy facility.

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 to develop a BESS with a capacity of up to 500MW/500MWh was not specified or considered in the initial environmental authorisation. The requested amendments do not on their own, constitute a listed or specified activity. Therefore, the application is made in terms of Regulation 31(b) of the EIA Regulations, 2014.

5. POTENTIAL FOR CHANGE IN THE SIGNIFICANCE OF IMPACTS AS ASSESSED IN THE BA REPORT AS A RESULT OF THE PROPOSED AMENDMENT

In terms of Regulation 32(1)(a)(i), the following section provides an assessment of the impacts related to the proposed amendment. Understanding the nature of the proposed amendment and the impacts associated with the project (as assessed within the BA Report), the following has been considered[4]:

- Impacts on Ecology (including fauna and flora)
- Impacts on Avifauna
- Soil and Agricultural Potential Impacts
- Impacts on Freshwater Resources
- Heritage Impacts (including palaeontology)
- Visual Impacts
- Impacts on the Social Environment

The potential for change in the significance and/or nature of impacts based on the proposed amendment as described within this Motivation Report is discussed below and detailed in the specialists' assessment addendum letters included in **Appendix A - G**[5]. This section of the Motivation Report must be read together with the specialist addendum letters contained in Appendix **A - G** in order for the reader to obtain a complete understanding of the proposed amendment and the implications thereof.

5.1. Impacts on Ecology (including flora and fauna)

The Ecological Specialist Addendum Letter (**Appendix A**) included a review and assessment of the original Ecological Impact Assessment and data, as well as the update of any previously assessed impacts and additional mitigation measures, where required.

The location of the BESS is located within the typical open plains of the area, within an area of Bushmanland Arid Grassland. The affected area is considered to be of low ecological sensitivity (**Figure 5.1**) with few species or features of concern present. As it was assumed in the BA report that the laydown area would be totally transformed and would represent a 100% loss to the affected habitat. As such, the accommodation of the BESS within the laydown area would not increase habitat loss or direct impact associated with the project. As the BESS is contained within insulated containers, the risk to the environment from potential spills is considered to be low. As such, there are no additional impacts or changes to the significance of impacts identified and assessed within the Ecological Impact Assessment that would be associated with the addition of the BESS to the development.

5.1.1. Cumulative Assessment

[4] Impacts from a traffic perspective have not been considered as no change in impact will occur and therefore the results and recommendations of the Traffic Impact Assessment undertaken within the BA Report is consider to be relevant to the proposed amendment.

[5] It must be noted that the original specialists who undertook the BAR studies have been used for this assessment 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 amendment.

As the BESS would be located within the project area as assessed in the original specialist study and within the authorised laydown area, which would have been completely transformed during construction, there would not be an increase in the development footprint, with the result that the amendment would not add to the cumulative impacts associated with the project.

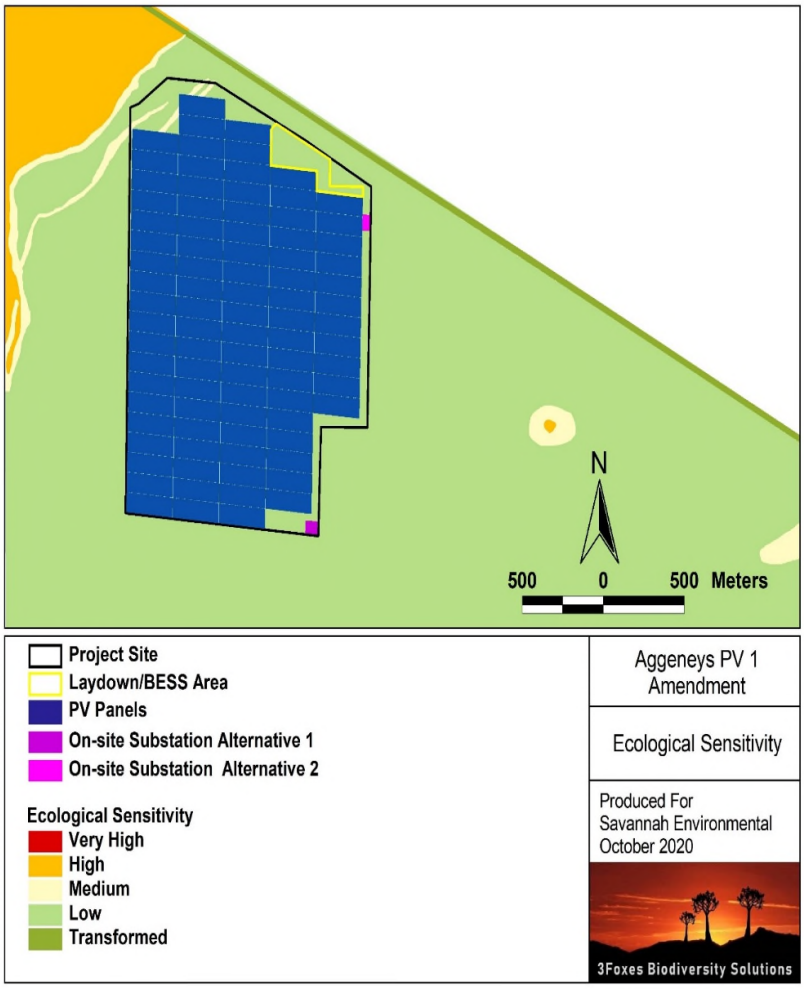

Figure 5.1: The ecological sensitivities within the authorised development footprint of Aggeneys 1 as well as within the development area of the BESS (outlined in yellow).

5.1.2. Conclusion

The footprint of the BESS will be located with the project area as assessed within the original fauna and flora ecological specialist study. As such the amendment would not result in an increase in habitat loss associated with the project. It is unlikely that the presence of the BESS would generate any other significant ecological impacts or change the significance of the impacts as previously identified and assessed. As such the BESS can be supported from an ecological point of view and there are no reasons to oppose the inclusion of the BESS within the Aggeneys 1 project.

5.2. Impacts on Avifauna

The location of the BESS would be within the typical open plains of the area, within an area of Bushmanland Arid Grassland. The affected area is considered to be low avifaunal sensitivity (**Figure 5.2**) and is well outside of the red dune habitat of the Vulnerable Red Lark *Calendulauda burra* which is the key species of concern associated with the area. As it was assumed in the BA Report that the laydown area would be totally transformed and would represent a 100% loss to the affected habitat. As such, the accommodation of the BESS within the laydown area would not increase habitat loss or direct impact on avifauna associated with the project. As the BESS is contained within insulated containers, the risk to the environment from potential spills is considered to be low. As such, there are no additional impacts or changes to the significance of impacts identified and assessed within the Avifaunal Impact Assessment that would be associated with the addition of the BESS to the development.

5.2.1. Cumulative Assessment

As the BESS would be located within the project area as assessed in the original specialist study and within the authorised laydown area, which would have been completely transformed during construction, there would not be an increase in the development footprint, with the result that the amendment would not add to the cumulative impacts associated with the project.

5.2.2. Conclusion

The footprint of the BESS will be located with the project area as assessed within the original avifaunal specialist study. As such, the amendment would not result in an increase in avifaunal habitat loss associated with the project. It is unlikely that the presence of the BESS would generate any additional significant avifaunal impacts or change the significance of the impacts as previously identified and assessed. As such, the BESS can be supported from an avifaunal point of view and there are no reasons to oppose the inclusion of the BESS within the Aggeneys 1 project.

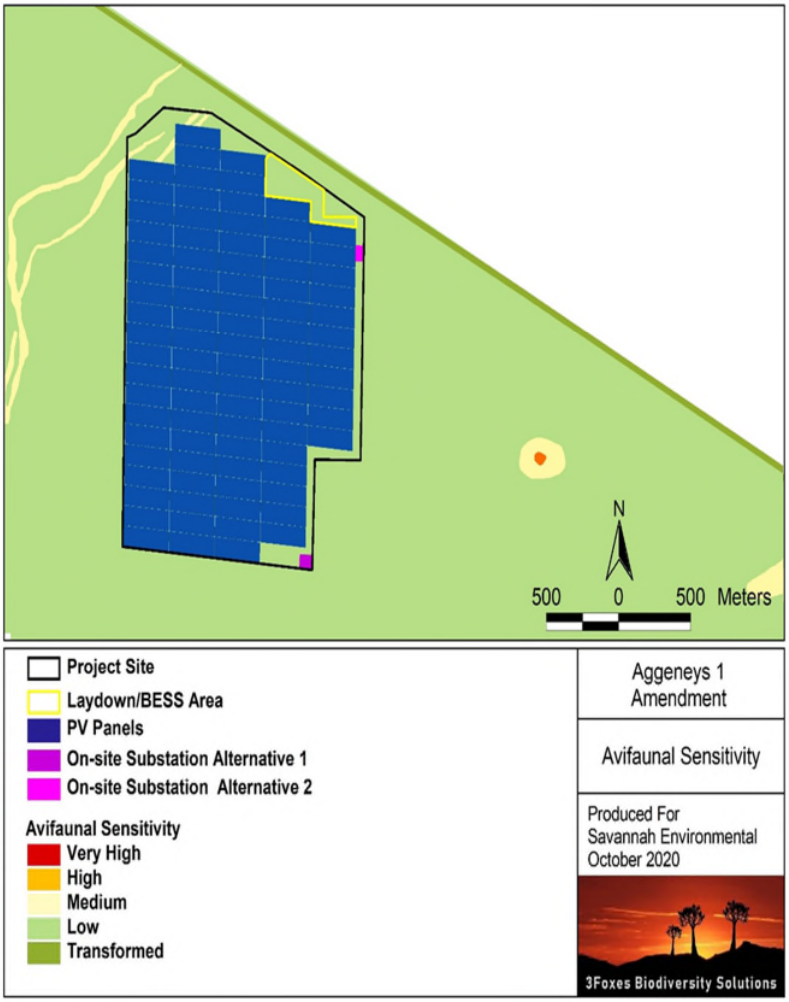

Figure 5.2: Location of the BESS within the Aggeneys 1 footprint, showing that it is located firstly within the project boundary and within an area classified as low sensitivity from an avifaunal perspective

5.3. Impacts of Freshwater Resources

The Freshwater Specialist Addendum Letter (**Appendix D**) included a review and assessment of the original freshwater delineation and impact assessment report, as well as the update of any previously assessed impacts and updated mitigation measures, where required.

The specialist indicated that consideration of the proposed amendment and the results of the impact assessment undertaken for the solar energy facility indicated that the inclusion of the BESS will have a zero or negligible effect on the significance of impacts identified in the Basic Assessment report, due to the following:

- The design of the Aggeneys 1 solar PV facility layout considered the delineated freshwater features as determined in the Freshwater Impact Assessment (2019), and specifically ensured that the laydown area is not located within delineated freshwater features on site, or within the 15m buffer zone determined necessary for these features.

- The proposed BESS infrastructure will be wholly contained within the laydown area as authorised for the facility and will therefore also be wholly located outside of the footprint and 15m buffer of any of the freshwater features delineated on site.
- The findings of the 2019 Freshwater Impact Assessment indicated that all impacts are of Low significance following implementation of mitigation measures, with only cumulative impacts remaining medium after mitigation.
- No additional freshwater related impacts are anticipated due to the proposed BESS infrastructure within the laydown area. No construction activities related to the proposed BESS will occur within the buffer zones or delineated footprint of any of the watercourses on site. The findings confirm that there will be no increase in the significance of impacts originally identified in the BA Report, and that all impacts may be mitigated to Low significance levels.
- The specific conditions and mitigation measures included in the Freshwater Impact Assessment regarding management of erosion, clearing of vegetation, siltation of watercourses, accidental leaks of fuel or oils into watercourses and movement of vehicles in or near the watercourses remain applicable. These are deemed effective for the management of impacts due to the BESS given the nature and location of the proposed BESS within the Aggeneys 1 facility layout.

5.3.1. Cumulative Assessment

No additional freshwater cumulative impacts were identified by the specialist as a result of the proposed amendment. Therefore, the cumulative impacts identified by the Freshwater Impact Assessment report remain unchanged and would be applicable to the proposed amendment.

5.3.2. Conclusion

The findings confirm that no impacts other than those already identified in the Freshwater Impact Assessment are introduced by the inclusion of the BESS infrastructure on the approved laydown area. In addition, the nature and significance of the impacts remain identical with consideration of the BESS, due to the laydown area being utilised for the BESS infrastructure. Existing mitigation measures included in the Freshwater Impact Assessment are therefore deemed sufficient for the management of the freshwater impacts, and no additional mitigation measures are therefore suggested. The findings of the Freshwater Impact Assessment (2019) therefore remain valid and will not change with the inclusion of a BESS within the authorised laydown area.

It is therefore recommended that the proposed amendment for inclusion of the BESS be authorised from a freshwater perspective, provide that the mitigation measures provide in the Freshwater Impact Assessment (2019) are implemented.

5.4. Soil and Agricultural Potential Impacts

The Soils and Agricultural Potential Addendum Letter is included as **Appendix C** The Soils and Agricultural Impact Assessment undertaken as part of the BA indicated that:

- The soils in the area are predominantly red, structureless and very sandy. The soils are generally deep, but in places, there is a shallower underlying layer.
- Combined with the hot, dry climate, the sandy nature of the soils makes this an area of very low agricultural potential.

» There is a potential wind erosion hazard, and various mitigation measures, as specified in the report, should be implemented..

For the proposed amendment, the specialist Soils and Agricultural Potential Addendum Letter (**Appendix C**) provided the following conclusions regarding the proposed amendment:

» The area affected is located within the project footprint as assessed in the impact assessment specialist report.
» The proposed BESS infrastructure will not have a significant effect on either the soils in the area or the prevailing agricultural potential. Therefore no new impacts are identified with the development of the BESS. The significance of the impacts identified within the specialist study undertaken as part of the BA process will also remain unchanged.
» The mitigation measures against possible wind erosion, as specified in the impact assessment specialist report, will apply. No new/additional mitigation measures are required.

5.4.1. Cumulative Assessment

No additional soils and agricultural potential cumulative impacts were identified by the specialist as a result of the proposed amendment. Therefore, the cumulative impacts identified by the Soils and Agricultural Potential Impact Assessment report remain unchanged and would be applicable to the proposed amendment.

5.4.2. Conclusion

It is the opinion of the specialist that the amendment will not significantly affect the project or the potential impacts identified and assessed within the BA Report. The proposed amendment can therefore be authorised for the project, subject to the implementation of the recommended mitigation measures included in the impact assessment (Paterson & Oosthuizen, 2018).

5.5. Heritage Impacts (Including Palaeontology)

A Heritage Impact Assessment, including an archaeological specialist study and a separate palaeontological specialist study were undertaken for Aggeneys 1 as part of the BA process.

The impact assessment indicated that although isolated stone artefacts attributable to background scatter were noted in a number of locations, significant archaeological materials were only seen in one place. This location contained two likely graves, some stone walling and a light scatter of quartz flaked stone artefacts. Only the graves are of high significance. The grave site is located far from the authorised Aggeneys 1 solar energy facility and proposed BESS area (located within the authorised development footprint). The cultural landscape was found to be a largely natural landscape but with electrical and mining infrastructure being the dominant anthropogenic traces. There are unconfirmed historical reports that a massacre of Bushmen may have occurred in a kloof of the Gamsberg but surveys have failed to yield any evidence of this. Orton (2018) did not recommend that any further archaeological work be carried out for the project. From desktop research, Almond (2018) found the study area to be of very low palaeontological sensitivity. Almond (2018) did not consider that any further palaeontological work was necessary but that a Chance Finds Procedure should be implemented in case of accidental finds.

Figure 5.3 indicates the location of the laydown area within the authorised development footprint proposed for the development of the BESS, as well as the heritage survey tracks and an important heritage site (avoided by the development).

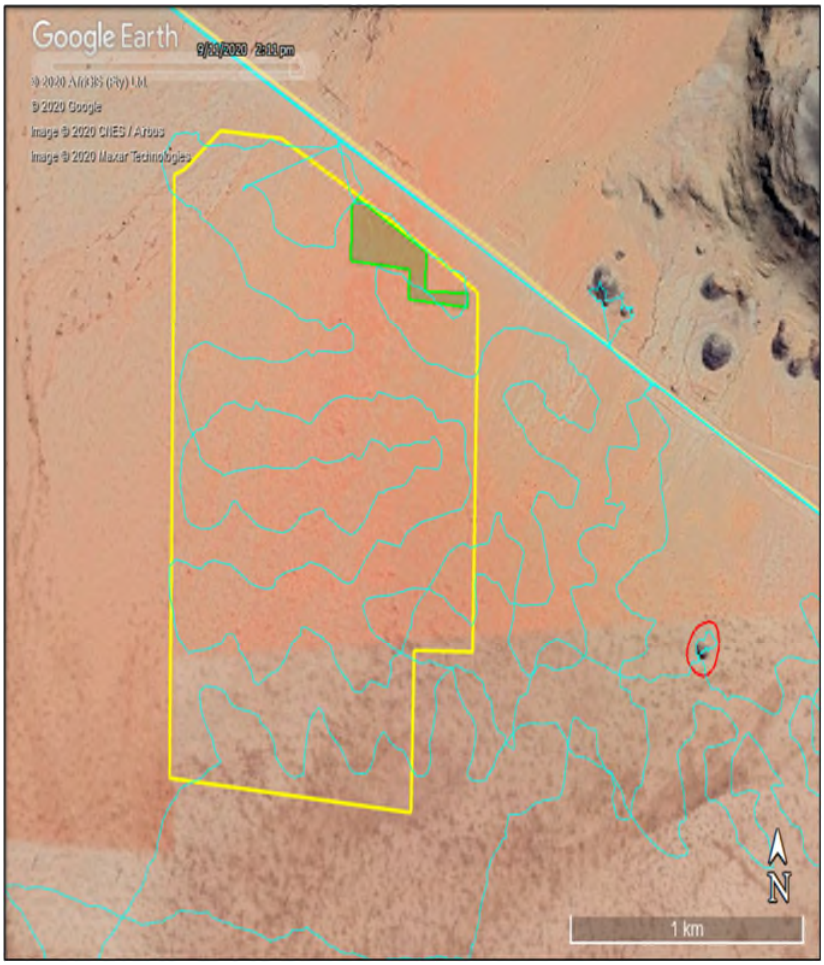

Figure 5.3: Aerial view of the Aggeneys 1 PV study area (yellow polygon) showing the laydown area proposed for the construction of the BESS (green polygon), the heritage survey tracks (turquoise lines) and the single important heritage site found in the area (red circle)

As the BESS would be located approximately 1.5km away from the significant grave site and within the already authorised Aggeneys 1 development footprint and within the authorised laydown area, its addition to the project will not result in any new or unanticipated physical impacts to archaeology. Similarly, no new or unanticipated palaeontological impacts would occur. Its addition would also not affect the visual appearance of the solar energy facility and no new cultural landscape impacts are therefore expected.

5.5.1. Cumulative Impacts

No additional heritage cumulative impacts were identified by the specialist as a result of the proposed amendment. Therefore, the cumulative impacts identified by the Heritage Impact Assessment report remain unchanged and would be applicable to the proposed amendment.

5.5.2. Conclusion

As no new or unanticipated heritage impacts are expected to occur, it is recommended that the BESS be authorised, subject to the existing requirements in the Heritage Impact Assessment Report being implemented, including the measures previously recommended for the discovery of any heritage materials.

5.6. Visual Impacts

The Visual Specialist Addendum Letter (**Appendix G**) addresses potential changes or impacts as a result of the proposed amendment by comparison with the original impact assessment undertaken in March 2019 as part of the BA process.

As the proposed battery storage is located within the original development footprint assessed within the Landscape and Visual Impact Assessment and because the proposed battery storage elements are the same height as the adjacent PV array (3.5m) and lower than the on-site substation (up to 10m), the proposed amendment will not change the findings and recommendations included the Landscape and Visual Impact Assessment report.

5.6.1. Cumulative Impacts

No additional visual cumulative impacts were identified by the specialist as a result of the proposed amendment. Therefore, the cumulative impacts identified by the Landscape and Visual Impact Assessment report remain unchanged and would be applicable to the proposed amendment.

5.6.2. Conclusion

Because the proposed BESS will not result in additional visual implications, the proposed amendment is acceptable from a landscape and visual impact perspective, subject to the implementation of the recommended mitigation measures included in the impact assessment.

5.7. Impacts on the Social Environment

The Social Specialist Addendum Letter (**Appendix F**) addresses potential changes or impacts as a result of the proposed amendment by comparison with the original Social Impact Assessment (SIA) undertaken in April 2019 by Dr Neville Bews of Dr Neville Bews & Associates as part of the BAR process.

The Social Specialist Addendum Letter, supported by the peer reviewed letter (**Appendix F(a)**) indicated that the proposed amendment for Aggeneys 1 would not result in additional impacts from a social perspective and the impacts and mitigation measures included in the SIA would remain unchanged and applicable for the proposed amendment.

Understanding the nature of the proposed amendment and the fact that the addition of the BESS does not change the assessed and authorised development footprint, which was fully assessed as part of the SIA, it is concluded that the proposed amendment will not introduce any new social impacts, nor significantly alter the social impacts as previously assessed in the SIA. It is understood that the BESS may result in additional employment opportunities during the construction and operation phases, however these are limited and do not affect the significance ratings of the related impacts. The general purpose and utilisation of a BESS is to

save and store excess electrical output as it is generated, allowing for a timed release when the capacity is required. BESS systems therefore provide flexibility in the efficient operation of the electricity grid through decoupling of the energy supply and demand. This is seen as a benefit from a social perspective but does not change the significance of the positive impact related to the project as previously assessed.

Considering that there will be no change in impacts, no additional mitigation or enhancement measures are required for the addition of the BESS to the layout from a social perspective. The recommendations, mitigation and enhancement measures provided in the SIA are considered sufficient for the enhancement of the positive impacts and the management and mitigation of the negative impacts to acceptable levels. Therefore, all enhancement and mitigation measures, as proposed in the SIA are still required to be implemented for the amended Aggeneys 1 development.

5.7.1. Cumulative Impacts

No additional social cumulative impacts were identified by the specialist as a result of the proposed amendment. Therefore, the cumulative impacts identified by the Social Impact Assessment report remain unchanged and would be applicable to the proposed amendment.

5.7.2. Conclusion

Based on the nature of the proposed amendment for Aggeneys 1, and the fact that the proposed BESS falls within the properties and development footprint which was fully assessed as part of the SIA (April 2019), it can be concluded that the amendment will not lead to any additional impacts other than those identified and assessed within the SIA (undertaken in 2019). No change in the significance of the impacts is expected to occur and there is no need for any additional recommendations or mitigation measures other than those already specified in the SIA (2019).

The proposed amendment is considered to be acceptable from a social perspective and can be approved, subject to the implementation of the mitigation and enhancement measures as specified in the SIA (April 2019).

5.8. Assumption and Limitations

It is assumed that all the information provided by the Applicant, Organs of State and Key Stakeholders is accurate and valid for the project. The authorised development footprint of Aggeneys 1 was assessed in its entirety during the undertaking of the BA and therefore there are no uncertainties with the regards to the assessment of the proposed amendment for the construction and operation of the BESS within the authorised development footprint of the solar energy facility.

6. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENT

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

Advantages of the amendment	Disadvantages of the amendment
General	
The construction and operation of the BESS will allow for extended generation hours for the solar PV facility, as stored energy from the solar PV facility can be released into the grid during hours when the solar PV facility would not usually be operational. This will negate the need to construct additional power facilities to provide 100MW of electricity to the grid when the solar energy facility will be operating.	None.
Ecology (flora, fauna and avifauna), Freshwater, Soils, Heritage and Visual	
The construction and operation of the BESS will allow for extended generation hours for the solar PV facility, as stored energy from the solar PV facility can be released into the grid during hours when the solar PV facility would not usually be operational. This will negate the need to construct additional power facilities to provide 100MW of electricity to the grid when the solar PV facility will be operating. Therefore, the utilisation of the BESS within the authorised footprint of the solar energy facility reduces environmental impacts from an ecological, freshwater, soils and agricultural potential, heritage and visual perspective.	None.
Social	
The construction and operation of the BESS will allow for extended generation hours for the solar PV facility, as stored energy from the solar PV facility can be released into the grid during hours when the solar PV facility would not usually be operational.	None

Based on the above, it can be concluded that the advantages of the proposed amendment outweigh the disadvantages from an environmental and technical perspective.

7. RISKS ASSOCIATED WITH THE PROPOSED AMENDMENT

Possible risks associated with the construction and operation of the BESS from a technical perspective within the authorised development footprint of Aggeneys 1 are limited to health and safety aspects during the project life cycle of the BESS as well as the solar energy facility. The risks identified for the construction and operation of the BESS are detailed below. Mitigation measures have been included within the project EMPr (**Appendix L**).

Nature of Risk	*Likelihood*	*Impact*	*Mitigation / Management of Risk*
1. Mechanical breakdown / Exposure to high temperatures » Incidents where the batteries are broken or exposed to temperatures above room temperature could lead to overheating as well as fires which can affect infrastructure components of the BESS. » Leakages of substances contained within the battery cells (should they not be assessmbled off-site).	Low	» Fires, electrocutions and spillage of toxic substances into the surrounding environment. » Spillage of hazardous substances into the surrounding environment. » Soil contamination – leachate from spillages which could lead to an impact of the productivity of soil forms in affected areas. » Water Pollution – spillages into surrounding watercourses as well as groundwater. » Health impacts – on the surrounding communities, particularly those relying on watercourses (i.e. rivers, streams, etc) as a primary source of water.	» Operators are trained and competent to operate the BESS. Training can include the undertaking of an appropriate fire fighting course for the operators prior to the commencement of the operation phase of the BESS. From each team, a fire marshall should be selected to manage the risk should there be a fire within the BESS. » Undertake daily risk assessment prior to the commencement of daily tasks at the BESS. This should consider any aspects which could result in fire or spillage, and appropriate actions should be taken to prevent these. » Standard Operating Procedures (SOPs) should be made available by the Supplier to ensure that the batteries are handled in accordance with required best practices. » Spill kits must be made available to address any incidents associated with the flow of chemicals from the batteries into the surrounding environment. » The assembly of the batteries on-site should be avoided as far as possible. Activities on-site for the BESS should only be limited to the placement of the container wherein the batteries are placed. » Undertake periodic inspections on the BESS to ensure issues are identified timeously and addressed with the supplier where relevant. » The applicant in consultation with the supplier must compile and implement a Leak and Detection Monitoring Programme during the project life cycle of the BESS.

Nature of Risk	Likelihood	Impact	Mitigation / Management of Risk
			» Batteries must be strictly maintained by the supplier or suitably qualified persons for the duration of the project life cycle. No unauthorised personnel should be allowed to maintain the BESS.
2. Generation of hazardous waste » The incorrect disposal of the batteries and the associated components could have an adverse impact on the environment.	Medium	» Spillage of hazardous substances into the surrounding environment. » Soil contamination – leachate from the disposed batteries into the soil, which could lead to an impact of the productivity of soil forms in affected areas. » Water Pollution – leachate from the disposed batteries spilling into surrounding watercourses as well as groundwater. » Health impacts – on the surrounding communities, particularly those relying on watercourses (i.e. rivers, streams, etc) as a primary source of water.	» Damaged and used batteries must be removed from site by the supplier or any other suitably qualified professional for recycling or appropriate disposal. » The applicant should obtain a cradle to grave battery management plan from the supplier during the planning and design phase of the system. The plan must be kept on site and adhered to. »

Based on the above it can be concluded that the construction and operation of the BESS within the authorised development footprint of Aggeneys 1 will result in negligible risks from an environmental perspective and can be appropriately managed.

8. REQUIREMENTS FOR ADDITIONAL MITIGATION AS A RESULT OF THE PROPOSED AMENDMENT

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 Motivation Report, it is concluded that the impacts identified as a result of the proposed amendment are acceptable from an environmental perspective.

In general, the recommended mitigation measures included in the BA Report as well as the EMPr (refer to **Appendix L** of the Motivation Report) would manage the anticipated impacts to acceptable levels. The EMPr of the solar energy facility has been updated to include management measures for the operation of the BESS from a technical perspective.

9. PUBLIC PARTICIPATION

A public participation process is being conducted in support of the Amendment Application to amend the Environmental Authorisation (DEA Ref: 14/12/16/3/3/1/2019) issued for Aggeneys 1. The Public Participation has been undertaken in accordance with the Public Participation Plan which has been submitted to the Department of Environment, Forestry and Fisheries (DEFF) and subsequently approved, which is in-line with Regulations 41- 44 of the EIA Regulations, 2014, and includes:

- Placement of site notices at the site on **16 October 2020** (refer to **Appendix H4**). Proof of placement will be included in the final Motivation Report to be submitted to DEFF for decision-making.
- The Motivation Report has been made available for the 30-day review and comment period from **16 October 2020** to **16 November 2020** on the Savannah Environmental website: https://www.savannahsa.com/public-documents/energy-generation/aggeneys-1-and-2-pv-facilities/. CD copies are available on request from the project team.
- Written notifications to registered I&APs as well as Organs of State regarding the availability of the Motivation Report were distributed on **15th October 2020** (refer to **Appendix H2** and **Appendix H3**).
- Placement of an advertisement in the Gemsbok Newspaper on **16 October 2020** announcing the availability of the Motivation Report for a 30-day review and comment period. The tear sheet of the newspaper advert is included in **Appendix H4**.

No comments have been received to date. Comments received during the 30-day review and comment period will be included as **Appendix H5** in the final submission of the Motivation Report to the DEFF for consideration in the decision-making process. Comments will be included and responded to in the Comments and Responses Report (to be included as **Appendix H6**). Proof of attempts made to obtain comments from relevant Organs of State and key stakeholders will also be included in **Appendix H3**.

10. CONCLUSION

Based on the nature of the proposed amendment for Aggeneys 1, the specialist findings, the fact that the proposed BESS development area avoids areas of high environmental sensitivity (refer to **Figure 10.1**), and that the proposed BESS falls within the property and development footprint which was fully assessed and authorised for the development of the solar PV facility as part of the BA Report in 2019, it can be concluded that the proposed amendment will not lead to any additional impacts other than those identified and assessed within the BA Report.

In terms of the impacts identified in the BA relating to ecology, avifauna, freshwater resources, soil and agricultural potential, heritage (including palaeontology), visual and social aspects, it was concluded that the proposed amendment will not increase the significance of these impacts originally identified and assessed in the BA Report or lead to any additional impacts that cannot be mitigated to a low significance following the implementation of the recommended mitigation measures. Furthermore, the proposed amendment does not constitute a listed activity and the mitigation measures recommended in the BA Report and in this Motivation Report are adequate to manage the expected impacts as a result of the proposed amendment.

Therefore, taking into consideration the conclusions from the specialist addendum letters (**Appendix A – G**), and the findings of this report, it is concluded that the proposed amendment is acceptable from an environmental perspective, subject to the implementation of the recommended mitigation measures included in the BA Report as well as the Environmental Management Programme (EMPr) (**Appendix L**) for Aggeneys 1.

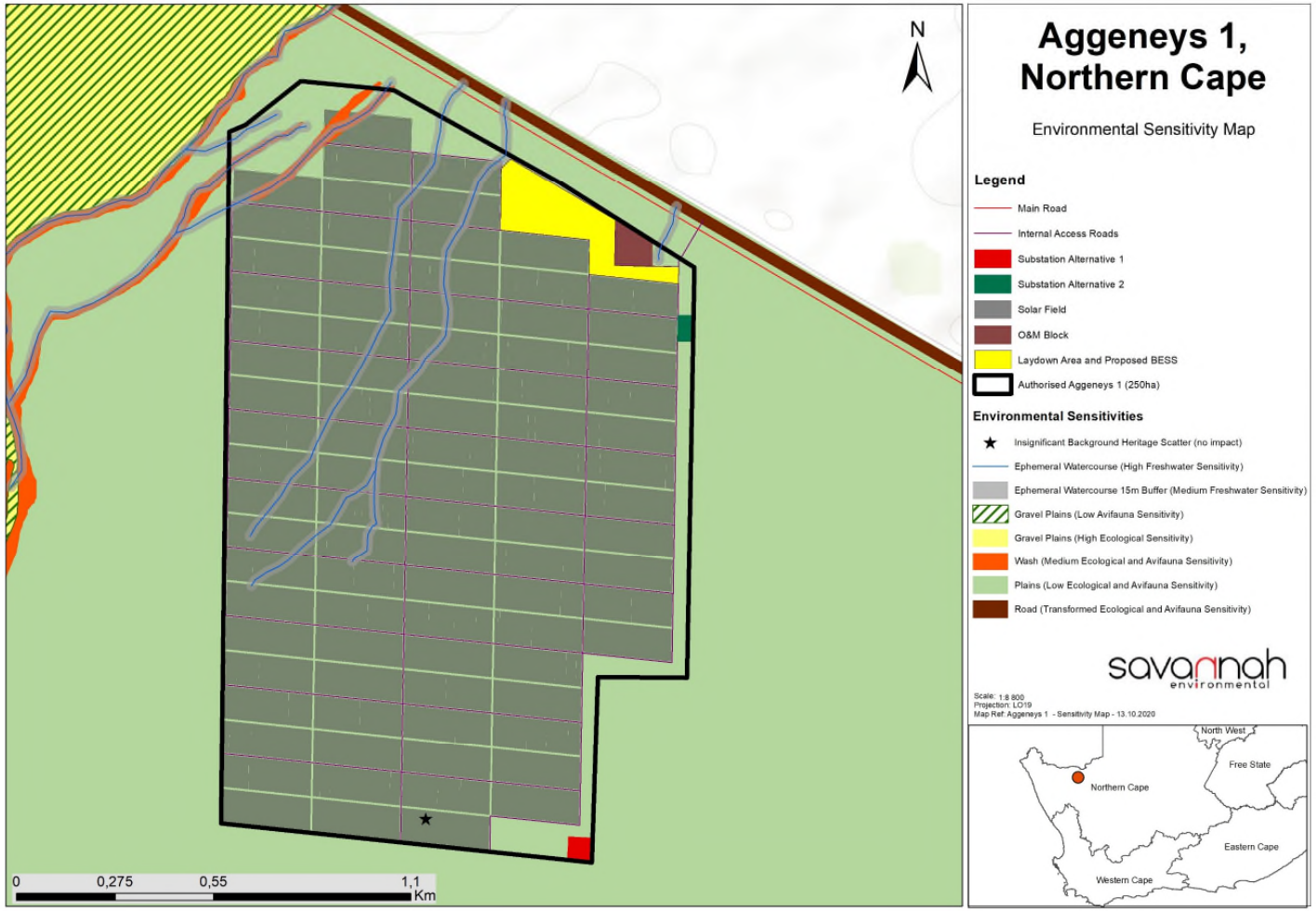

Figure 9.1 Environmental sensitivity map showing the location of the BESS development area located outside of areas of high environmental sensitivity. A3 Maps are included in **Appendix I** of the Motivation Report.

APPENDIX A

(Ecological Specialist Letter)

APPENDIX B

(Avifaunal Specialist Letter)

APPENDIX C

(Soils and Agricultural Potential Specialist Letter)

APPENDIX D

(Freshwater Specialist Letter)

APPENDIX E

(Heritage Specialist Letter)

APPENDIX F

(Social Specialist Letter)

APPENDIX F1

(Social Specialist Letter Peer Review)

APPENDIX G

(Visual Specialist Letter)

APPENDIX H

(Public Participation Documentation)

APPENDIX I

(A3 Maps)

APPENDIX J

(Environmental Team CVs)

APPENDIX K

(EAP Affirmation)

APPENDIX L

(Environmental Management Programme)