FINAL AMENDMENT ASSESSMENT REPORT

for

AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION FOR THE POSTMASBURG SOLAR PV ENERGY FACILITY 2 TO INCLUDE BATTERY ENERGY STORAGE SYSTEM

On

Remainder of Farm Kapstewel 436, Postmasburg, Northern Cape

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations

Prepared for Applicant: Postmasburg Solar PV Energy Facility 2 (Pty) Ltd.

Date: 09 November 2020

Author of Report: Dale Holder

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Report Reference: TSA309b/04

Department Reference: 14/12/16/3/3/2/698/AM2

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Final Revised Environmental Management Programme	09 November 2020	Dale Holder

APPROVAL FOR RELEASE

NAME	TITLE	SIGNATURE
Dale Holder	Senior Environmental Practitioner	

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SUBMISSION AND CORRESPONDENCE

SUBMISSION / CORRESPONDENCE	DATE
Application for amendment of EA submitted	22 September 2020
Application for amendment of EMPr submitted	Not applicable[1]
Application for EA amendment acknowledged	30 September 2020
Application for EMPr amendment acknowledged	Not applicable
Draft Amendment Assessment Report submitted	22 September 2020
Draft Amendment Assessment Report acknowledged	30 September 2020
Comment on Draft Amendment Assessment Report from competent authority	26 October 2020
Final Amendment Asssment t Report submitted for decision making	09 November 2020

[1] The EMPr for Postmasburg Solar PV Energy Facility 2 is not authorised and will still require approval in terms of condition 14 of the original EA.

APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:
Cape EAPrac Environmental Assessment Practitioners PO Box 2070 George 6530 Tel: 044-874 0365 Fax: 044-874 0432 **Report written & compiled by:** Dale Holder (Ndip Nature Conservation), who has over 15 years' experience as an environmental practitioner. **Registrations:** Director, Louise-Mari van Zyl (MA Geography & Environmental Science [US]; Registered Environmental Assessment Practitioner with the Interim Certification Board for Environmental Assessment Practitioners of South Africa, EAPSA). Ms van Zyl has over fifteen years' experience as an environmental practitioner.

PURPOSE OF THIS REPORT:
I&AP Review and Comment.

APPLICANT:
Postmasburg Solar PV Energy Facility 2 (Pty) Ltd

CAPE EAPRAC REFERENCE NO:
TSA309b/04

DEPARTMENT REFERENCE:
14/12/16/3/3/2/698/AM2

SUBMISSION DATE:
09 November 2020

Final Amendment Assessment Report

in terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended) & Environmental Impact Regulations2014 (as amended)

Postmasburg Solar PV Energy Facility 2

Remainder of Farm Kapstewel 436, Postmasburg, Northern Cape

Submitted for:

Stakeholder Review & Comment

Report Issued by:

Cape Environmental Assessment Practitioners

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REPORT DETAILS

Title:	Final Amendment Assessment Report for Postmasburg Solar PV Energy Facility 2
Purpose of this report:	The purpose of this amendment assessment report is to provide details on the proposed amendments to the EA and to assess the impacts associated with these amendments on the receiving environment. The Draft Amendment Assessment Report was available to all registered and potential interested and affected parties for a 30 day review and comment period extending from 22 September 2020 – 23 October 2020 All comments received during this comment period have been incorporated into a Final Amendment Assessment report that is herewith submitted to the DEFF for decision making.
Prepared for:	Postmasburg Solar PV Energy Facility 2 (Pty) Ltd
Published by:	Cape Environmental Assessment Practitioners (Pty) Ltd. (Cape EAPrac)
Authors:	Mr Dale Holder
Cape EAPrac Ref:	KAI309b/04
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TECHNICAL SUMMARY OF PROPOSED AMENDMENT

This section provided summary of the technical details of the proposed amendments[2].

Size of BESS	Up to 3.9 hectares
Height of BESS	±3 metres
Technology	Lithium Battery Technologies

The BESS will be located within the following coordinates:

	Latitude	**Longitude**
North West	28° 07' 41.2"	23° 06' 21.3"
North East	28° 07' 41.2"	23° 06' 28.6"
South West	28° 07' 47.5"	23° 06' 21.3"
South East	28° 07' 47.3"	23° 06' 28.6"

DEFF COMMENT ON AMENDMENT ASSESSMENT REPORT

The Competent Authority provided comment on the Draft Amendment Assessment Report on 26 October 2020. A copy of this comment is included in appendix E5. This comment and the responses thereto are detailed below.

Comment	**Response**
(a) **Specific Comments** (i) The EAP is required to provide a detailed list of all potential amendments to the EA, which should *inter alia* recommend additional conditions that must be incorporated into the EA, provide amendments to the existing conditions of the EA by way of either removal and/or amendments as informed by the specialist's recommendations.	Most of the amendments required to affect the proposed changes constitute the update of certain descriptions in the title and summary of the EA, as well as to the descriptions of the listed activities

[2] These only include the details where the amendments will result in physical changes to the Authorisation, namely the addition of a BESS within the authorised footprint.

Comment	Response
	authorised. A full list of these proposed amendments is included in table 1 in section 1.1 of the report. The reccomended additional conditions associated with the proposed amendments are included in section 1.3.
(ii) The draft EMPr to be submitted with the final amendment motivation report must be updated to include and incorporate all mitigation measures recommended by the specialists.	The mitigation measures identified by both the EAP and specialists has been included in section 9 of the EMPr. These are also summarised in section 1.3 of this Final Amendment Assessment Report.
(iii) The EAP is to ensure that all the amendments applied for do not trigger any listed or specified activity as outlined in Regulation 31 of the EIA Regulations, 2014 as amended.	Please refer to the legislative context in appendix 4 of the Amendment assessment report. This section confirms that the proposed amendments do not on their own trigger a new listed or specified activity that was not previously assessed and authorised.
(iv) The final motivation report must include specialist input, a risk assessment for the battery, public participation and updates to the EMPr to address the additional risks.	The specialist input is included in annexures D1 to D7, the Risk Assessment is included in annexure F, Public participation information included in annexures E1 to E7 and updates to the EMPr are included in Appendix G.
(v) The applicant is required to comply with Regulation 39 (1) of EIA Regulations 2014, as amended and submit a written consent of the landowners for the amendment application.	The landowner consent was attached in appendix 4 of the application form. It has also been included as appendix J of this final amendment assessment report
(i) Please ensure that comments from all relevant stakeholders are submitted to the Department with the final report. This includes but is not limited to the Northern Cape Department of Environment and Nature Conservation, the Department of Agriculture, Land Reform and Rural Development, the South African Civil Aviation Authority (SACAA), the Department of Transport, the Tsantsabane Local Municipality, the ZF Mgcawu District Municipality, the Department of Water and Sanitation (DWS), the South African National Roads Agency Limited (SANRAL), the South African Heritage Resources Agency (SAHRA), the Department of Mineral Resources, the Department of Rural Development and Land Reform, the Department of Environment, Forestry and Fisheries: Directorate Biodiversity and Conservation, and the Forestry Branch.	All parties listed here were notified of the application and draft assessment report (copies of these notifications are included in appendix E4), however, these stakeholders did not submit any comments.
(ii) A Comments and Response trail report (C&R) must be submitted with the final report. The C&R report must incorporate all comments for this application. The C&R report must be a separate document from the main report and the format must be in the table format as indicated in Appendix 1 of this comments letter. Please refrain from summarising comments made by I&APs. All comments from I&APs must be copied verbatim and responded to clearly. Please note that a response such as "noted" is not regarded as an adequate response to I&AP's comments.	A comments and responses report in the relevant format is provided in appendix E2. All comments received have been copied verbatim into this report and all comments have been individually responded to.
(iii) Please ensure that all issues raised and comments received during the circulation of the draft report from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the final report. Proof of correspondence with the various stakeholders must be included in the final report. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The Public Participation Process must be conducted in terms of Regulation 39, 40, 41, 42, 43 & 44 of the EIA Regulations 2014 as amended.	Proof of all comments received are included appendix E5. The attempts to obtain comments from all state departments that have jurisdiction in respect of the activity is included in

Comment	Response
	appendix E4. Demonstration of compliance with the approved public participation plan is summarised in section 9 of this report.
(iv) The final report must also indicate that this draft report has been subjected to a public participation process.	Detailes of the public participation on the Draft Report are included in section 9 of this report and in Appendices E1 to E7.
(i) The final report must include an environmental sensitivity map indicating environmental sensitive areas, no-go areas, buffer areas and features identified during the assessment process.	Neither the EAP, nor the participating specialists identified any additional sensitive features applicable to the proposed scope of the amendments. The sensitive features, no go areas and buffers identified during the original environmental process are shown in the site development plan in Appendix C.
(ii) The final report must provide the technical details of the proposed facility in a table format as well as their description and/or dimensions.	The technical summary of the proposed BESS is included in the table on pg ii of this report.
(iii) A copy of the final layout map must be submitted with the final report. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g. roads. The layout map must indicate the following: (a) The proposed facility and its associated infrastructure (including battery storage facilities and grid infrastructure), overlain by the sensitivity map; (b) All supporting onsite infrastructure e.g. roads (existing and proposed); (c) The location of sensitive environmental features on site e.g. CBAs, heritage sites, wetlands, drainage lines etc. that will be affected; (d) Buffer areas; and (e) All "no-go" areas. (f) The above map must be overlain with a sensitivity map and a cumulative map which shows neighbouring renewable energy developments and existing grid infrastructure.	The final Site development plan in compliance with this condition is attached in Appendix C. Please note that condition 12 of the EA requires that the Final Site Layout plan be submitted to Registered I&AP's for review and comment prior to submission to the department for final approval. This condition will remain applicable, regardless of this proposed amendment.
(iv) Google maps will not be accepted.	None of the maps appended to this report are Google Maps. All plans were produced using Arc GIS and CAD.
(i) The EAP must provide confirmation that all specialists were provided with the same request of proposed amendments as well as ensure that the terms of reference for all the identified specialist studies include the following: (a) A detailed description of the study's methodology; indication of the locations and descriptions of the development footprint, and all other associated infrastructures that they have assessed and are recommending for authorisations. (b) Provide a detailed description of all limitations to the studies. All specialist studies must be conducted in the right season and providing that as a limitation will not be allowed.	A copy of the terms of reference provided to the specialists is attached in Appendix K. Kindly note that the terms of reference provided to the specialists was to assess the impacts associated with the proposed amendments only and not to re-assess the entire development, which is already authorised (and already assessed in the original EIA process). Furthermore, only the proposed amendments that constitute a physical change have been assessed by participating specialists. As agreed to with the competent authority, the specialists were requested to provide a statement on the potential impacts associated with the BESS amendment only. The purpose of this statement was to

Comment	Response
(c) Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas. (d) Should the specialist definition of 'no-go' area differ from the Department's definition; this must be clearly indicated. The specialist must also indicate the 'no-go' area's buffer if applicable. (e) All specialist studies must be final, and provide detailed/practical mitigation measures and recommendations, and must not recommend further studies to be completed post EA. (f) Should specialists recommend specific mitigation measures, these must be clearly indicated. (g) Clearly defined cumulative impacts and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land. (h) A detailed process flow to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project. (i) Identified cumulative impacts associated with the proposed development must be rated with the significance rating methodology used in the process. (j) The significance rating must also inform the need and desirability of the proposed development. (k) A cumulative impact environmental statement on whether the proposed development must proceed.	confirm whether, the BESS would result in any additional impacts not previously assessed, change the level or nature of the impacts that they have already assessed or require any additional mitigation measures in terms of their specific discipline.
(ii) Should the appointed specialists specify contradicting recommendations, the EAP must clearly indicate the most reasonable recommendation and substantiate this with defendable reasons; and were necessary, include further expertise advice.	No contradicting recommendations were provided by specialists who provided input into this environmental Amendment process.
(i) Please be informed that the following content must be incorporated within the EMPr as indicated in Appendix 4 of the EIA Regulations 2014, as amended: (a) Details of the EAP who prepared the EMPr; and the expertise of that EAP to prepare an EMPr, including a curriculum vitae. (b) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers. (c) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including — ➢ Planning and design; ➢ Pre-construction activities; ➢ Construction activities; ➢ Rehabilitation of the environment after construction and where applicable post closure; and ➢ Where relevant, operation activities. (d) A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) of Appendix 4 of the EIA Regulations 2014, as amended, will be achieved, and must, where applicable, include actions to — (e) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (f) Comply with any prescribed environmental management standards or practices;	A checklist detailing compliance with Appendix 4 of the 2014 EIA regulations is included on page 2 of the Revised EMPr attached in Appendix G.
You are further reminded to comply with Regulation 32(1)(a) of the NEMA EIA Regulations, 2014, as amended, which states that: *"The applicant must within 90 days of receipt by the competent authority of the application made in terms of regulation 31, submit to the competent authority -* *(a) a report, reflecting—* *(i) an assessment of all impacts related to the proposed change;* *(ii) advantages and disadvantages associated with the proposed change; and* *(iii) measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and* *(iv) any changes to the EMPr;* *which report-* *(aa) had been subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and* *(bb) reflects the incorporation of comments received, including any comments of the competent authority."*	This Final Amendment Assessment Report constitutes the report contemplated in terms of regulation 32(1)a of the 2014 EIA regulations. In terms of the content requirements, please note: (i) The assessment of impacts relating to the proposed change are included in Section 6 of the report. (ii) The advantages and disadvantages of the proposed changes are detailed in section 7.

Comment	Response
	(iii) A revised EMPr is included in appendix G. The draft amendment assessment report was subjected to a public participation process in terms of an approved Public Participation Plan. Details of this public participation process are included in section 9 and appendices E1 to E7.

ORDER OF REPORT

Final Amendment Assessment Report – Main Report

Appendix A	:	Location, Topographical Plans (Cape EAPrac, 2020)
Appendix B	:	Biodiversity Overlays (Cape EAPrac, 2020)
Appendix C	:	Proposed Solar Facility Layout Plans incorporating the BESS (Postmasburg Solar PV Energy Facility 2, 2020)
Appendix D	:	Specialist Statements and Technical Reports
Annexure D1	:	Ecological Impact Statement (Todd, 2020)
Annexure D2	:	Agricultural Impact Statement (Lubbe, 2020)
Annexure D3	:	Archaeology Impact Statement (Webley, 2020)
Annexure D4	:	Palaeontology Impact Statement (Almond, 2020)
Annexure D5	:	Visual Impact Statement (Stead, 2020)
Annexure D6	:	Traffic and Transportation Statement (Aurecon, 2020)
Annexure D7	:	Battery Energy Storage Technical Report (Postmasburg Solar PV Energy Facility 2, 2020)
Appendix E	:	Public Participation Process
Annexure E1	:	I&AP Register
Annexure E2	:	Comments and Response Report
Annexure E3	:	Copy of Advert
Annexure E4	:	Draft Amendment Assessment Report Notifications
Annexure E5	:	Draft Amendment Assessment Report Comments and Responses
Annexure E6	:	Approved Public Participation Plan
Annexure E7	:	Approval of Public Participation Plan
Annexure F	:	BESS Risk Assessment
Appendix G	:	Amended EMPr for BESS
Appendix H	:	Revised Application for the amendment of the EA
Appendix I	:	Screening Tool Report
Appendix J	:	Landowner consent
Appendix K	:	Specialist Terms of Reference

TABLE OF CONTENTS

1 INTRODUCTION 1

1.1 Proposed Amendments 1

1.2 Reasons / Motivation for Proposed Amendments 4
1.2.1 Inclusion of BESS of up to 3.9ha within the authorised footprint 4
1.2.2 Updating contact details of the applicant 6
1.2.3 Extension of EA validity period 7

1.3 Recommendation of this Assessment Report 7

2. OVERVIEW OF THE ACTIVITIES PROPOSED AS PART OF THE AMENDMENT TO THE EA. 7

2.1 Technology 7

2.2 Location And Size Of The Battery Storage Area 8

2.3 General Components 9

3. PROJECT NEED AND DESIRABILITY 10

3.1 Site Selection Process 11

3.2 Project Programme And Timelines 11

4. LEGISLATIVE AND POLICY FRAMEWORK 11

5. SITE DESCRIPTION AND ATTRIBUTES 13

6. ASSESSMENT OF IMPACTS ASSOCIATED WITH THE PROPOSED AMENDMENTS 16

6.1 Ecological Impacts 17

6.2 Agricultural Impacts 18

6.3 Heritage Impacts 19

6.4 Palaeontological Impacts 20

6.5 Visual Impacts 21

6.6 Traffic Impacts 22

6.7 Cumulative Impact Assessment 23

6.8 Impact Summary 23

6.9 Impact Statement 23

7. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS. 24

8. MANAGEMENT AND MITIGATION MEASURES 24

9. PUBLIC PARTICIPATION PROCESS 28

10. CONCLUSION AND RECOMMENDATIONS 32

11. ABBREVIATIONS 34

12. REFERENCES 35

FIGURES

Figure 1: Showing the proposed location of the BESS within the authorised footprint of the facility. 6
Figure 2: Tesla's Megapack Li-ion Battery (Modular System). 8
Figure 3: Excerpt of Site Layout plan, showing the proposed position of the BESS (blue polygon) within the authorised footprint. 9
Figure 4: Typical Battery System Components. 9
Figure 5: Typical flow diagram of PV plant with battery storage 10
Figure 6: Example of a typical Battery Energy Storage System - Pivot Power's proposed lithium-ion battery in Kemsley, Kent. 10
Figure 7: Location of the proposed BESS Amendment within tha authorised footprint. 14
Figure 8: Broad vegetation type associated with the proposed amendments. 15
Figure 9: Showing the position of the proposed BESS in relation to CBA's and ESA's 15
Figure 10: Location of the proposed BESS in relation to proposed FEPA's 16
Figure 11: Proposed BESS in relation to authorised project footprint 17
Figure 12: Location of BESS (red) with respect the survey paths and recorded sites (Google Earth 2014). 20

TABLES

Table 1: Proposed amendments to the Environmental Authorisation for Postmasburg Solar PV Energy Facility 2. 1
Table 2: Preliminary implementation schedule. 11
Table 3: Legislation applicable to Postmasburg Solar PV Energy Facility 2 including any additional considerations applicable to the amendment of the EA to include the BESS. 12
Table 4: The pre- and post-mitigation ecological impacts associated with the Postmasburg Solar PV Energy Facility 2 as originally assessed which remain applicable. 18
Table 5: Visual impacts associated with the addition of a BESS within the project footprint. 21
Table 6: Comparative summary of the post mitigation significance of impacts associated with Postmasburg Solar PV Energy Facility 2 as authorised and those associated with the addition of the BESS. 23
Table 7: Advantages and Disadvantages of the proposed amendments. 24
Table 8: BESS risk assessment detailing additional mitigation measures required prior to commencement of construction. 25

FINAL AMENDMENT ASSESSENT REPORT

1 INTRODUCTION

Cape EAPrac has been appointed by Postmasburg Solar PV Energy Facility 2 (Pty) Ltd, hereafter referred to as the Applicant, as the independent Environmental Assessment Practitioner (EAP), to facilitate an application for an amendment of the project's Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA, Act 107 of 1998), for the authorised 'Postmasburg Solar PV Energy Facility 2' development near Postmasburg in the Northern Cape Province of South Africa.

Postmasburg Solar PV Energy Facility 2 received an environmental authorisation on 25 May 2015. The total authorised generation capacity of Postmasburg Solar PV Energy Facility 2 is 75 Megawatts (MW_{AC}). The applicant intends amending the EA to provide for a Battery Energy Storage Systemm (BESS) of up to 3.9ha within the authorised footprint of the facility.

The purpose of this **Amendment Assessment Report** is to describe the environment to be affected by the proposed BESS and to identify and assess any resulting impacts that may result from the addition of BESS on 3.9ha within the authorised footprint. In compliance with regulatory requirements, this report includes:

1. An assessment relating to the impacts of the proposed amendments;
2. The advantages and disadvantages associated with the proposed amendments;
3. Measures to ensure avoidance, management and mitigation of impacts associated with the proposed amendment; and
4. Revised EMPr

The Draft Amendment Assessment Report along with all the the supplementary appendices was available to all registered and potential Interested and Affected Parties (I&APs) for a 30 day comment period extending from 22 September 2020 – 23 October 2020

All comments received on the Draft Amendment Assessment Report have been considered, addressed and incorporated into a Final Amendment Assessment Report that is herewith submitted to the DEFF for consideration and decision making.

1.1 PROPOSED AMENDMENTS

The applicant wishes to amend the EA to include a BESS of up to 3.9 ha within the authorised footprint of the Facility. Other aspects included in this application for amendment are:

1. Extending the validity period of the EA; and
2. Update the contact details of the applicant.

In order to affect these, the following amendments to the Environmental Authorisation will be required.

Table 1: Proposed amendments to the Environmental Authorisation for Postmasburg Solar PV Energy Facility 2.

The amendments applied for are for the following purposes: 1. To change the contact details of the Applicant (Amendment 1); 2. To extend the validity period of the EA to accommodate the changes that have been applied for as well as to accommodate bidding periods (Amendment 2); and 3. To include Battery Energy Storage System (BESS) in the form of Lithium-ion Battery Technologies to the descriptions of the solar facility (Amendments 3, 4 & 5). The proposed amendments requested below are in chronological order as they appear in the original EA of 25 May 2015 and Amended EA od 08 May 2018.

Amendment 1 – Change Applicant Contact

The contact details on the title page of the Amended EA, 08 May 2018:

Mr Jan Fourie
Postmasburg Solar PV Energy Facility 2 (Pty) Ltd
101, Block A, West Quay Building
7 West Quay Road,
Waterfront
CAPE TOWN
8000

Telephone Number: (021) 418 2596
Email Address: jan.fourie@scatecsolar.com

This should be amended to:

Mr Emil Unger
Postmasburg Solar Energy Facility 2 (Pty) Ltd
25 The Oval,
Umhlali Country Club,
Ballito,
Kwa-Zulu Natal,
4390

Telephone Number: 082 465 9825
Email Address: emil@megatrade.co.za

Amendment 2 – Extension of Validity Period

Title page of Amended EA, dated 08 May 2018, stated:

Amendment 1: To extend the validity period of the EA

The activity must commence within a period of five (05) years from the date of expiry of the EA iss
May 2015 (i.e. the EA lapses on 25 May 2023). If commencement of the activity does not occur
period, the authorisation lapses and a new application for environmental authorisation must be mac
for the activity to be undertaken.

This should be amended to read:

The activity must commence within a period of two (02) years from the date of expiry of the Amended EA of 08 May 2018 (i.e. the EA lapses on 25 May 2025). 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.

Amendment 3 – Inclusion of BESS

Page 4 of the EA authorises GN R. 546: Activity 14(3)(a)(i) as follows:

Listed activities	Activity/Project description
GN R. 546: Activity 14(3)(a)(i): *The clearance of an area of 5ha or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation; (3) for a linear activity. (a) In the Northern Cape. (i) All areas outside urban areas.*	Vegetation clearing for the Solar P associated infrastructure: access ro trenches and onsite substation buildings etc. outside of the Postmasl edge. Solar Energy Plant to be constr an area approximately 225ha on pr Low-growing intact vegetation will reta as possible.

The Activity/Project description should be amended to read:

Vegetation clearing for the Solar Panels and associated infrastructure: access roads, cable trenches, onsite substation, auxillary buildings & Battery Energy Storage System (BESS) etc. outside of the Postmasburg urban edge. Solar Energy Plant to be constructed over an area of approximately 225ha on private land. Low-growing intact vegetation will be retained as far as possible.

Amendment 4 – Inclusion of BESS

Page 5 & 6 of the EA described the associated infrastructure as:

The infrastructure associated with this facility includes:

- Solar field of PV modules/panel arrays (fixed / tracking technology) with a maximum height of ± 3.5 metres;
- Mounting structures foundations to comprise of driven / rammed piles, earth-screw anchors.
- Up to a maximum of ± 60 inverter / transformer stations, including medium volt distribution transformers, at a height of ± 3m;
- On-site Substation of ± 120m x 70m in size (including a power transformer/s to allow the
- generated power to be connected to Eskom's electricity grid via the Manganore Substatio
- Overhead 132kV monopole transmission power line to distribute the generated electricity on-site substation to the existing Eskom Manganore Distribution Substation (locate adjacent to & south east of the site). The transmission line will be a single circuit line, 1km in length, with a maximum height of ± 32m, within a servitude width of between 31m
- Auxiliary buildings, including:
  - Control building (±31m x 8m);
  - Office (±22m x 11m);
  - Two warehouses (±50m x 20m);
  - Canteen and visitors centre (±30m x 10m);
  - Staff lockers and ablution (±22m x 11m); and
  - Gate house/security offices (±6m x 6m).
- Internal electrical reticulation network (to be lain ±2-4m underground as far as practical);
- Access road (±6m) and internal road/track (±5m wide) network;
- Laydown areas required for material and equipment (±200m x 150m);
- Rainwater tanks; and
- Parameter fencing and lighting around the solar facility.

This should be amended by the addition of:

- Battery Energy Storage System (BESS) with an area of up to 3.9 hectares, within the approved facility footprint.

Amendment 5 – Inclusion of BESS

Condition 12 on Page 7 & 8 of the EA describes the Management of the activity as follows:

Management of the activity

12. A copy of the final development layout map must be made available for comments by
Interested and Affected Parties and the holder of authorisation must consider such c
Once amended, the final development layout map must be submitted to the Depa
written approval prior to commencement of the activity. All available biodiversity informa
be used in the finalisation of the layout map. Existing infrastructure must be used
possible e.g. roads. The layout map must indicate the following:

12.1 Compliance with the conditions of this Environmental Authorisation.

12.2 Position of solar facilities and its associated infrastructure;

12.3 Internal roads indicating width;

12.4 Wetlands, drainage lines, rivers, stream and water crossing of roads and cables;

12.5 All sensitive features e.g. heritage sites, wetlands, pans and drainage channels th
affected by the facility and associated infrastructure;

12.6 Substation(s) inverters and/or transformer(s) sites including their entire footprint;

12.7 Connection routes (including pylon positions) to the distribution/transmission netw

12.8 All existing infrastructure on the site, especially roads;

12.9 Buildings, including accommodation; and,

12.10 All "no-go" and buffer areas.

This should be amended by the addition of:

12.11 Battery Energy Storage System (BESS).

1.2 REASONS / MOTIVATION FOR PROPOSED AMENDMENTS

The proposed amendments include 3 main changes; namely:

1. Inclusion of BESS of up to 3.9ha within the authorised footprint;
2. Updating contact details of the applicant; and
3. Extension of validity period of the EA

The reasons for applying for these amendments are discussed separately below.

1.2.1 Inclusion of BESS of up to 3.9ha within the authorised footprint

Please refer to the BESS Technical motivation report attached in Appendix D7 for the full details regarding the BESS within the authorised project footprint from which the following is summarised.

South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA).

In recent years, recurring large-scale power cuts (i.e. load shedding) have highlighted the need to improve reliability and resilience of electricity supply.

One of the main challenges faced by Eskom is managing and balancing electricity demand and supply. While renewable sources can now achieve lower costs than fossil fuels, photovoltaic (PV) arrays and wind turbines both have variable electricity production, since they rely on energy inputs that cannot be controlled (i.e. sunshine and wind). For this reason, fossil fuels currently still have a key role in the energy sector as they can provide electricity on demand and when consumption reaches its peak.

However, cost reductions of energy storage technologies and the wider deployment of battery (particularly lithium-ion) installations globally, now provides an opportunity to combine renewable energy generation with energy storage to provide dispatchable energy (i.e. energy on demand) and reliable capacity..

Figure 1: Showing the proposed location of the BESS within the authorised footprint of the facility.

1.2.2 Updating contact details of the applicant

A change in company directors of the Applicant entity was affected in June 2020. See CIPC certificate indicating Amendment of Company Information, attached as Appendix 11 in the application form

(Appendix H). Please note that this is an administrative decision and will not result in any changes to the overall impacts of the authorised facility.

1.2.3 Extension of EA validity period

Due to various delays in the DOE's Renewable Energy Independent Power Producers Procurement Programme (REIPPPP), the applicant has not had an opportunity to bid this project under the programme. The extension of the validity period of the EA is needed in order to bid this project in future bidding rounds.

1.3 RECOMMENDATION OF THIS ASSESSMENT REPORT

Based on the outcomes of this assessment (which includes input from the participating specialists), as well as the outcome of the risk assessment, it is Cape EAPrac's reasoned opinion that the application for amendment of the Environmental Authorisation be granted, subject to the following conditions:

1. The applicant must compile and implement a Lifecycle Battery Recycling Programme. This programme should be submitted to the competent authority for approval prior to the commencement of construction of the BESS.
2. The applicant must compile and implement a thermal management and monitoring programme. This programme should be completed prior to the operation of the BESS.
3. During the construction phase of the project, first responders from Postmasburg (such as fire fighters and paramedics) must be given appropriate training on dealing with any emergency situation that may occur as a result of the BESS; such training must be provided by the technology suppliers or an appointed service provider.
4. The applicant must compile and implement a comprehensive BESS operations and maintenance programme to ensure all monitoring and protective devices remain in good working order; this comprehensive operations and maintenance programme must amongst others ensure thermal management safety protocols are in place.
5. In the unlikely event of a thermal runaway, any contamination of land (including any nearby watercourse) that occurs as a result of this event needs to be contained and cleaned up by a specialist contractor and the area rehabilitated to its former state.
6. That the BESS Revision to the EMPr be adopted and implemented for the life cycle of the project; and
7. That the mitigation measures identified in the Risk Assessment be implemented.

2. OVERVIEW OF THE ACTIVITIES PROPOSED AS PART OF THE AMENDMENT TO THE EA.

As noted above, amendment proposed relates to the Inclusion of BESS of up to 3.9ha within the authorised footprint, the update of the applicants contact details and the the extension of the EA validity period.

The updating of contact details and the extension of the EA validity period do not result in any physical changes to the proposed development. This section therefore focusses on the proposed inclusion of the BESS.

A BESS technical document is included in Appendix D7, from which the following overview of the project is summarised.

2.1 TECHNOLOGY

Unlike conventional energy storage facilities, such as pumped hydro, a BESS has the advantage of being flexible in terms of site location and sizing. Therefore, they can be incorporated into, and placed

in close proximity, to a wind or solar facility. They also have the advantage of being easily scaled and designed to meet specific demands.

Different BESS technologies, such as lithium-ion (Li-ion), zinc hybrid cathode, sodium ion, flow (e.g. zinc iron or zinc bromine), sodium sulphur (NaS), zinc air and lead acid batteries, can be used for grid applications. Compared to other battery options, Li-ion batteries are highly efficient, have a high energy density and are lightweight. As a result of the declining costs, Li-ion technology now accounts for more than 90% of battery storage additions globally (IRENA, 2019).

Therefore, in line with the above, it is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate (LFP) or Lithium Nickel Manganese Cobalt oxides (NCM), be considered as the preferred technology in this amendment process.

Figure 2: Tesla's Megapack Li-ion Battery (Modular System).

2.2 LOCATION AND SIZE OF THE BATTERY STORAGE AREA

The battery storage facility will be constructed within the authorised footprint, adjacent to the on-site substation, as per the figure below (please also refer to the full scale layout plans attached in Appendix Appendix C).

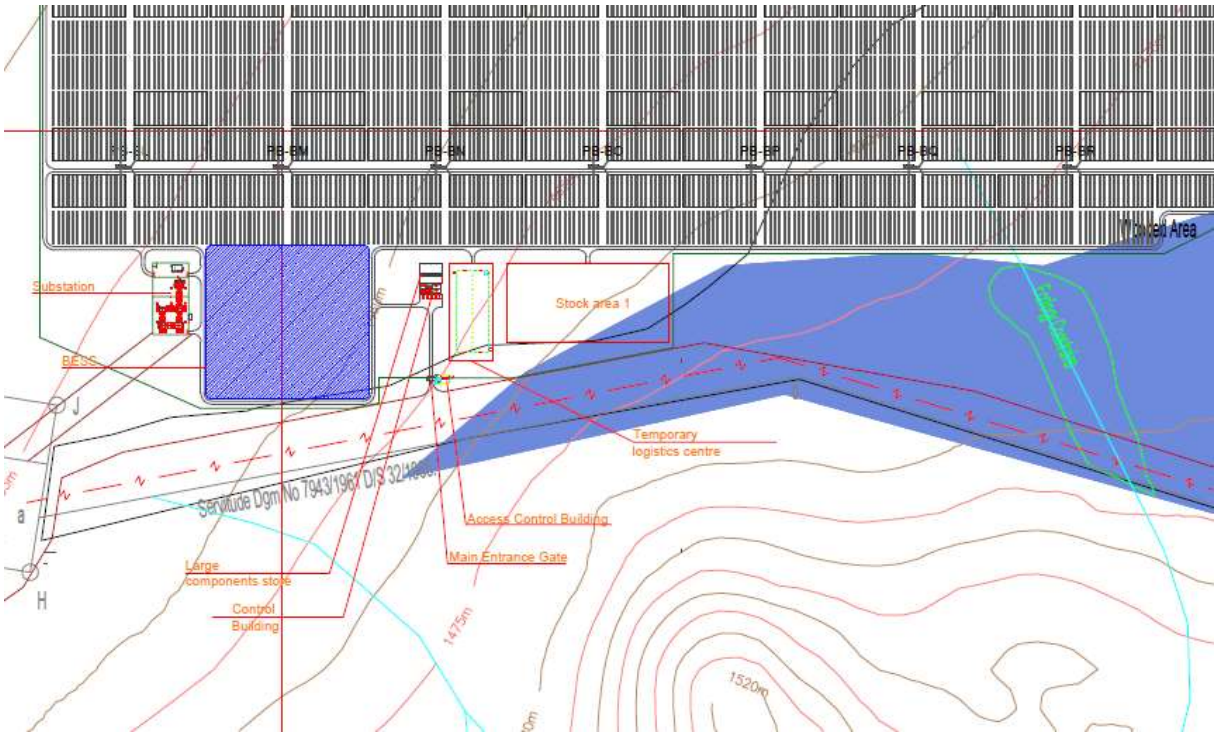


Figure 3: Excerpt of Site Layout plan, showing the proposed position of the BESS (blue polygon) within the authorised footprint.

2.3 GENERAL COMPONENTS

The exact design will depend on the manufacturer, however traditional utility-scale Li-ion battery storage facilities include the following main components:

1. Battery cells → modules → packs → racking system (DC).
2. Storage container (HVAC system, thermal management, monitors and controls, fire suppression, switchgear, and energy management system).
3. Power conversion system (bidirectional inverter to convert AC to DC for battery charging and DC to AC for discharging).
4. Transformer (to step up 480-V inverter output to 12–66 kV).

The figures below illustrates the components that generally make up the primary battery system,

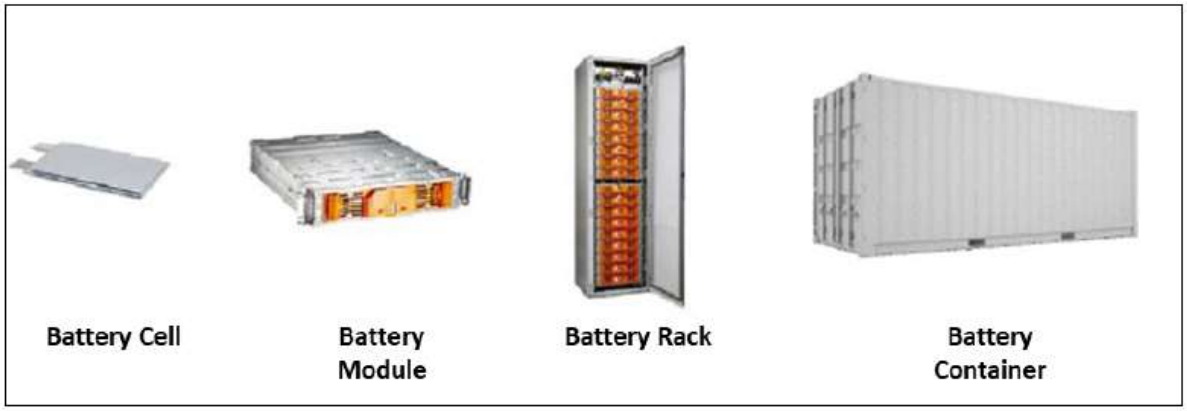


Figure 4: Typical Battery System Components.

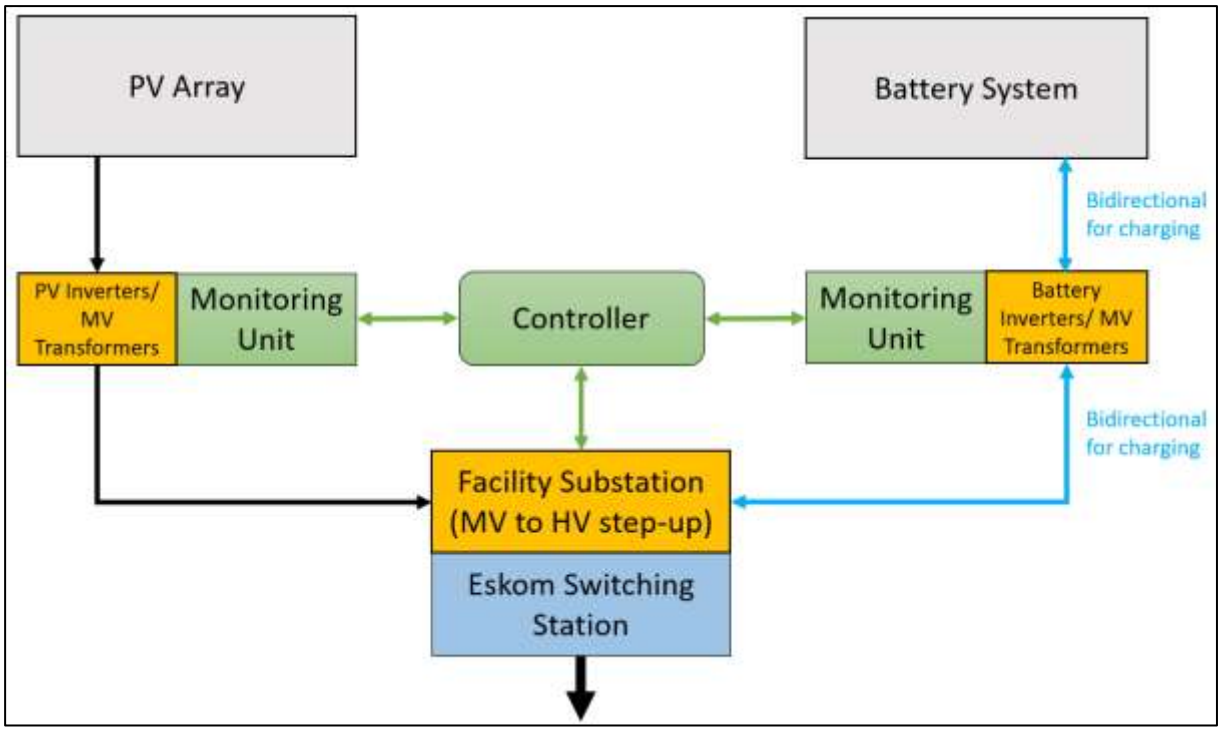


Figure 5: Typical flow diagram of PV plant with battery storage

Figure 6: Example of a typical Battery Energy Storage System - Pivot Power's proposed lithium-ion battery in Kemsley, Kent.

3. PROJECT NEED AND DESIRABILITY

The need and desirability of the total project considered in the previous environmental process will remain and is not reiterated as part of this amendment application. The section below, therefore provides a summary of the Need and desirability associated with the proposed BESS amendments only.

Please refer to the BESS Technical motivation report in Appendix D7 for further information regarding the need to include Battery Energy Storage Systems within the Authorised footprint.

South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA).

In recent years, recurring large-scale power cuts (i.e. load shedding) have highlighted the need to improve reliability and resilience of electricity supply.

One of the main challenges faced by Eskom is managing and balancing electricity demand and supply. While renewable sources can now achieve lower costs than fossil fuels, photovoltaic (PV) arrays and wind turbines both have variable electricity production, since they rely on energy inputs that cannot be controlled (i.e. sunshine and wind). For this reason, fossil fuels currently still have a key role in the energy sector as they can provide electricity on demand and when consumption reaches its peak.

However, cost reductions of energy storage technologies and the wider deployment of battery (particularly lithium-ion) installations globally, now provides an opportunity to combine renewable energy generation with energy storage to provide dispatchable energy (i.e. energy on demand) and reliable capacity.

3.1 SITE SELECTION PROCESS

The site and footprint selection process was considered in detail during the previous environmental Assessment Process. The site and footprint position have been authorised and therefore the scope of the amendments are restricted to utilise the same spatial scale as the authorised project.

3.2 PROJECT PROGRAMME AND TIMELINES

The intention of the applicant is to bid the amended project under the Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) or otherwise the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

Table 2: Preliminary implementation schedule.

	Description	Timeline
1	RFP Release	24 August 2020
2	BID Submission	24 November 2020
3	Preferred Bidder Announcement	15 December 2020
4	Financial Close	30 April 2021
5	Construction	May 2021 – June 2022
6	Commissioning	June 2022

The table above clearly depicts the dependence of the project on the RMIPPPP's timelines. Any delay or acceleration within the RMIPPPP will have a corresponding effect on the timelines of the projects.

4. LEGISLATIVE AND POLICY FRAMEWORK

The applicable legislation remains the same as what was considered in the Final Environmental Impact Report for Postmasburg Solar PV Energy Facility 2 and as such, it is not re-described in this amendment assessment report. What is important to note is that the proposed amendments[3] do not on their own constitute a new listed or specified activity (most notably activity 14 in GNR983 relating to the storage

[3] Reference to the proposed amendments that will result in a physical change and specifically to Lithium Battery Energy Terchnology

or storage and handling of dangerous goods) and as such can be considered as part of an amendment in terms of Regulation 31.

The table below lists the applicable legislation and describes whether any additional considerations are applicable to the amendment (i.e. that were not considered in the final EIR).

Table 3: Legislation applicable to Postmasburg Solar PV Energy Facility 2 including any additional considerations applicable to the amendment of the EA to include the BESS.

Legislation	Additional considerations for the proposed amendment Amendment.
NATIONAL LEGISLATION	
The Constitution of the Republic of South Africa	No additional considerations applicable to the amendment
National Environmental Management Act (NEMA)	This application is being undertaken in terms of this legeslation. No additional activities listed in terms of this legislation are applicable to the Amendment.
National Environmental Management: Biodiversity (Act 10 of 2004)	The proposed positioning of the BESS within the authorised footprint remains on vegetation type classified as least threatened in terms of this legislation. No additional impact or permitting requirements (TOPS permits) are applicable to this amendment.
Conservation of Agricultural Resources Act – CARA (Act 43 of 1983):	No additional considerations applicable to the amendment.
The Subdivision of Agricultural Land, Act 70 Of 1970	No additional considerations applicable to the amendment
National Water Act, No 36 of 1998	No additional considerations applicable to the amendment
National Forests Act (No. 84 of 1998):	No additional considerations applicable to the amendment
National Heritage Resources Act, 25 of 1998	SAHRA have approved the development footprint in terms of Section 38 of the National Heritage Resources Act. This authorised footprint remains unchanged and it is thus unlikely that further approval in terms of the NHRA will be applicable.. SAHRA will however be given an opportuity to comment on this amendment assessment report.
National Energy Act (No. 34 of 2008)	No additional considerations applicable to the amendment.
PROVINCIAL LEGISLATION	
Northern Cape Nature Conservation Act, No. 9 of 2009	No additional considerations applicable to the amendment
Nature and Environmental Conservation Ordinance, No 19 of 1974	No additional considerations applicable to the amendment
Astronomy Geographic Advantage Act, 2007 (Act No 21 Of 2007)	The Tsansabane local municipality is outside of the AGAA and remains so with this amendment..
Northern Cape Provincial Spatial Development Framework (PSDF) 2012	No additional considerations applicable to the amendment
GUIDELINES, POLICIES AND AUTHORITATIVE REPORTS	
National Protected Area Expansion Strategy (NPAES) for S.A. 2008 (2010)	No additional considerations applicable to the amendment. The project footprint remains unchanged and thus outside of any protected area expansion focus areas.
Critical Biodiversity Areas	No additional considerations applicable to this amendment. The project footprint remains unchanged and thus still outsite of any critical biodiversity areas.
White Paper on the Renewable Energy Policy of the Republic of South Africa (2003)	No additional considerations applicable to the amendment
White Paper on the Energy Policy of the Republic of South Africa (1998)	No additional considerations applicable to the amendment
Integrated Energy Plan (IEP), 2015	No additional considerations applicable to the amendment.
Integrated Resource Plan for Electricity (2010-2030)	No additional considerations applicable to the amendment
National Development Plan 2030 (2012)	No additional considerations applicable to the amendment.
Strategic Infrastructure Projects (SIPs)	No additional considerations applicable to the amendment.
The Convention on the Conservation of Migratory Species of Wild Animals	No additional considerations applicable to the amendment.

Legislation	Additional considerations for the proposed amendment Amendment.
Guidelines to minimise the impacts on birds of Solar Facilities and Associated Infrastructure in South Africa	No additional considerations applicable to the amendment The monitoring regime remains the same as was assessed.
Environmental Impact Assessment Guideline for Renewable Energy Projects	No additional considerations applicable to the amendment.
Sustainability Imperative	No additional considerations applicable to the amendment.

5. SITE DESCRIPTION AND ATTRIBUTES

As the proposed BESS falls entirely within the previously assessed and authorised footprint, the site description and attributes associated with this amendment remain unchanged from what was presented in the original environmental assessment.

The target property, the **Remaining Extent of Farm 436 Kapstewel (RE/436)**, is located within the ZF Mcgawu District (old 'Hay' District) of the Northern Cape Province, within the jurisdiction area of the Tsantsabane Local Municipality. The property is approximately 1070ha is size and is located approximately 21km north of the nearest town of Postmasburg, and south of Kathu. RE/436 is located approx. 2.5km inland and east of the R325 provincial highway.

The existing Eskom 132/11kV Manganore Substation is located at the mid-way point of, and within, the western property boundary. A number of 132kV overhead powerlines connect to this Substation. Three applicable lines and associated services roads / tracks, include:

- The Manganore–Silverstreams 132kV line - A wooden lattice line which crosses the property from the east (and forms the southern boundary of the development site);
- The Manganore-Palingpan 132kV line - A steel lattice line which crosses the R325 highway and the neighbouring property (4/436) from the west; and
- A small wooden lattice line which extends from the old open-cast mine, south of the property, along the property western boundary to the Manganore Substation.

Besides the Manganore substation, the only other buildings on proposed study-site are located in the north-eastern corner of property among low hills. These structures include an unoccupied house and outbuilding, as well as handling and watering facilities for cattle. Internal fencing for cattle only occurs close to the house, while old fences have been removed. Water reservoirs and troughs connected to a borehole and solar pump are located in close proximity to the abovementioned vacant buildings, for use by the cattle.

A location plan is shown below and attached in Appendix A.

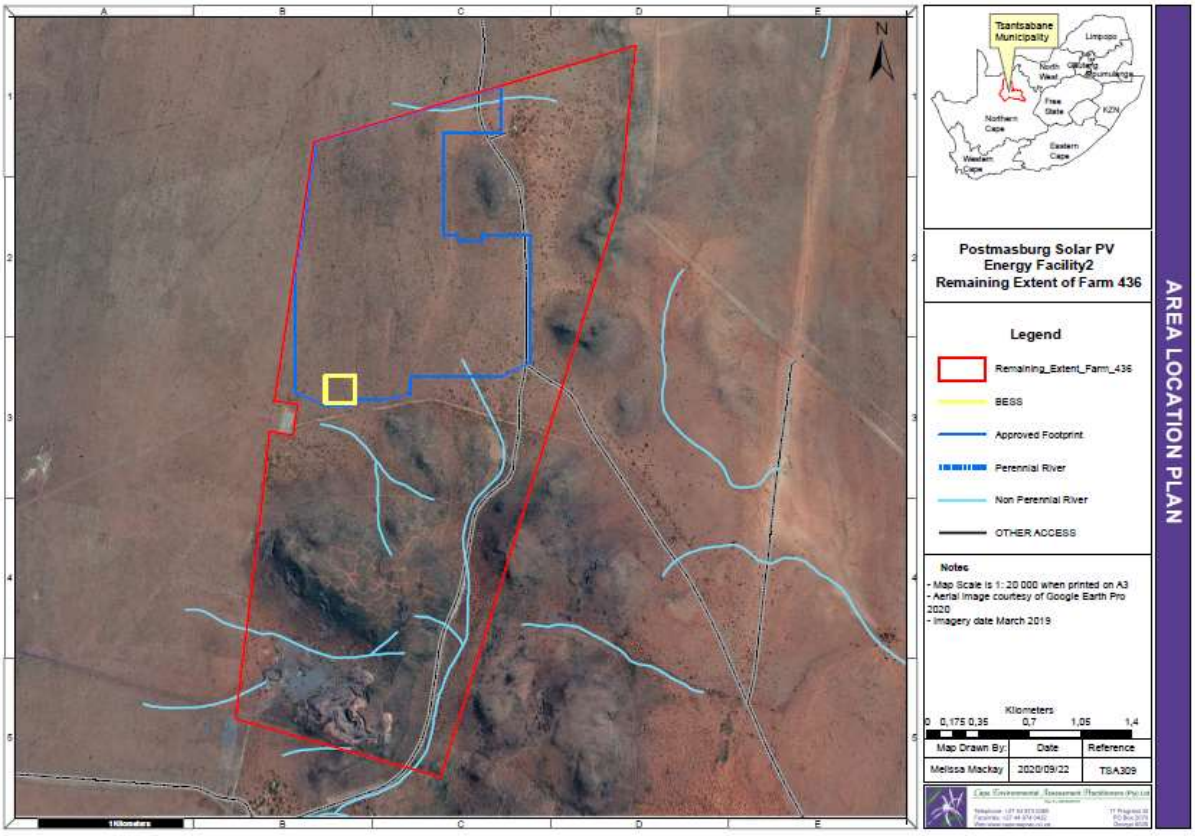


Figure 7: Location of the proposed BESS Amendment within the authorised footprint.

The proposed project area does not fall within any threatened ecosystems, National Protected Areas, National Protected Area Expansion Strategy (NPAES) Focus Areas or areas of conservation planning.

A range of north-south striking hills extend from and onto the south of the property towards the north-east. The majority of these hills are located on the southern portion of the property towards the south (south of the solar development site). One small hill / koppie is located in the north-eastern sector of the proposed solar development site, while a further three are location across or just outside of the property eastern border

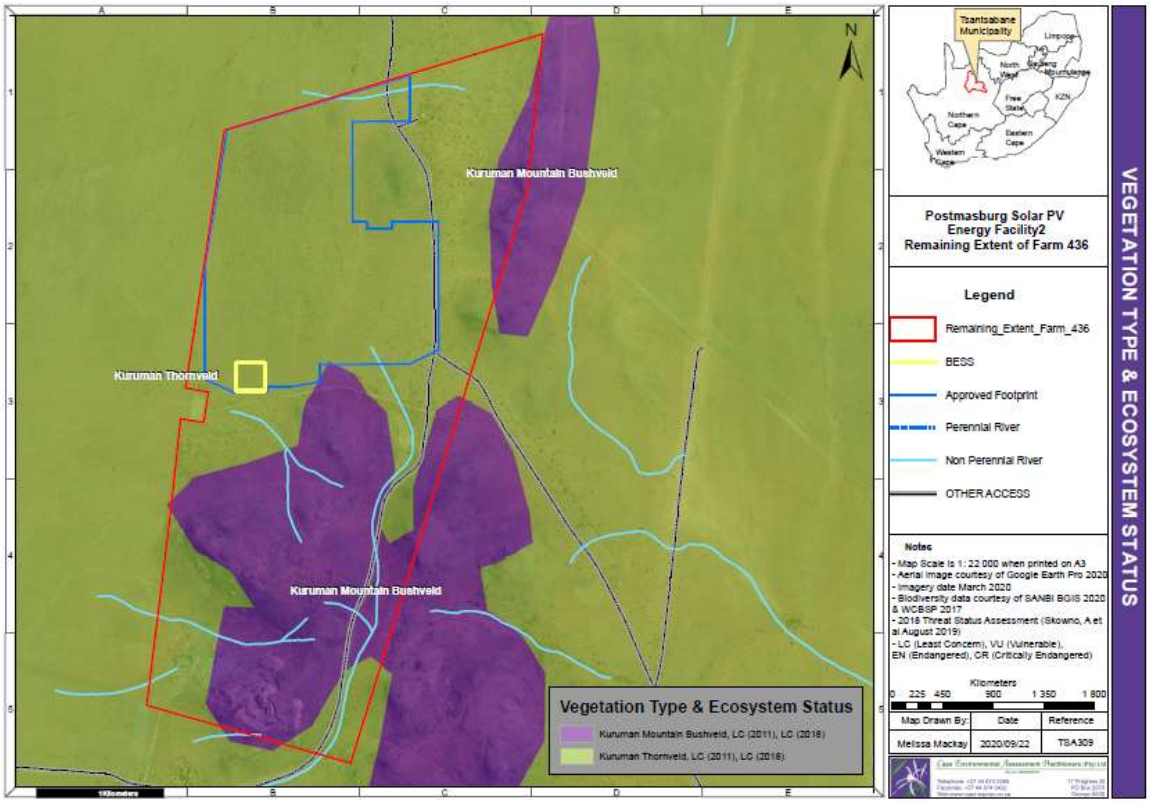


Figure 8: Broad vegetation type associated with the proposed amendments.

The proposed position of the BESS is not situated within a Critical Biodiversity Area, nor an Ecological Support Area.

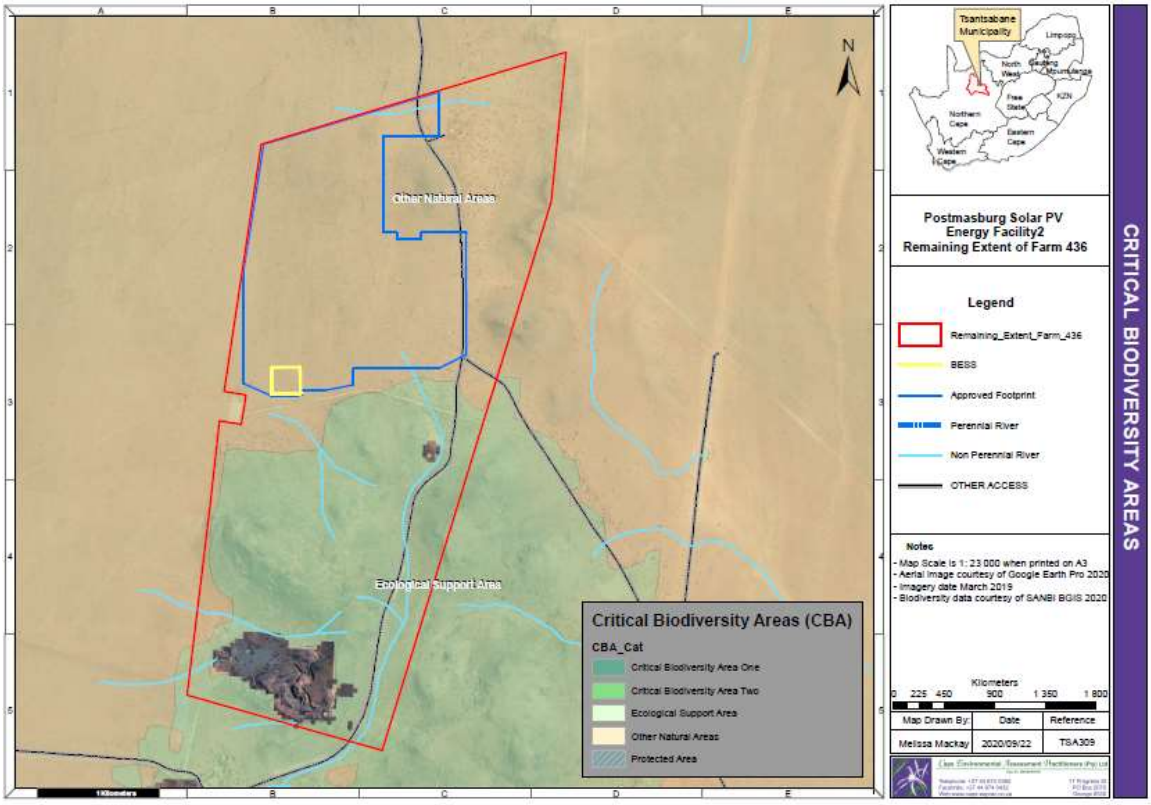


Figure 9: Showing the position of the proposed BESS in relation to CBA's and ESA's

The proposed positioning of the BESS is not within any Freshwater Ecosystem Priority Areas.

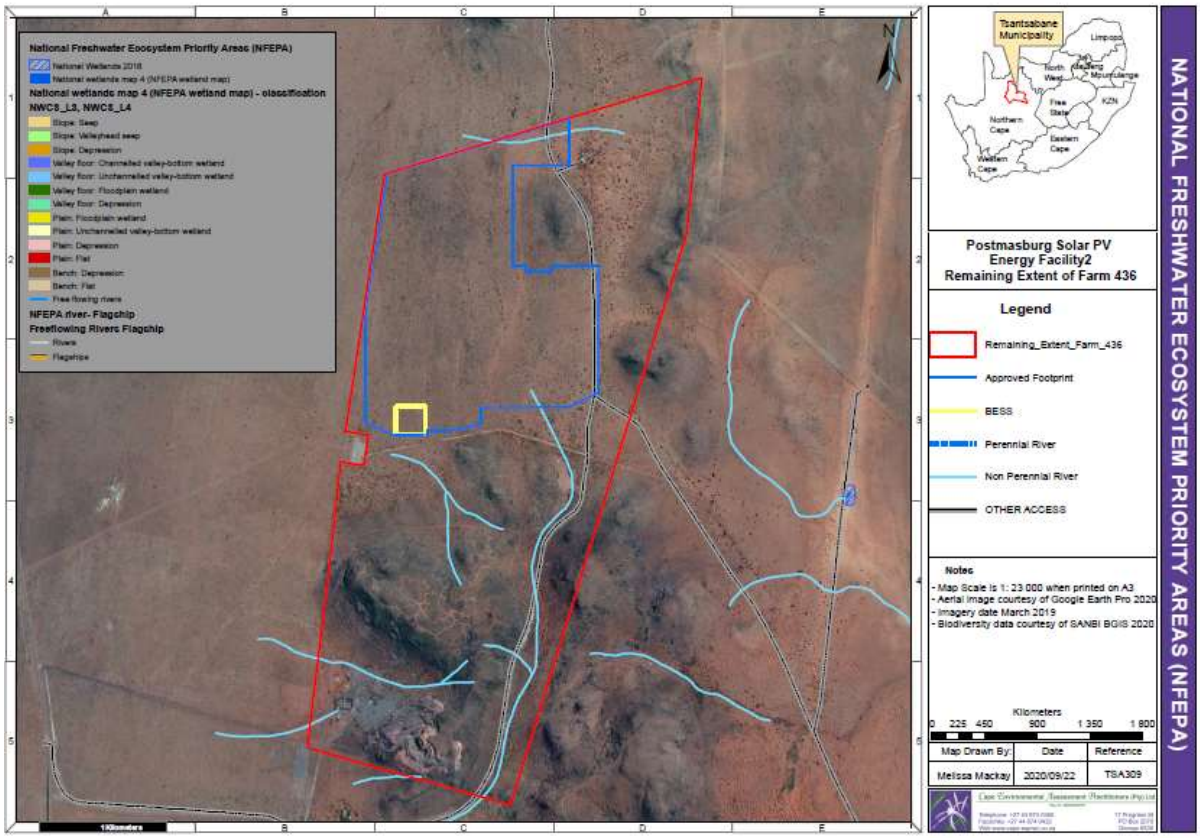


Figure 10: Location of the proposed BESS in relation to proposed FEPA's

6. ASSESSMENT OF IMPACTS ASSOCIATED WITH THE PROPOSED AMENDMENTS

In terms of Regulation 32(1)(a)(i), an assessment of the impacts of the proposed amendments must be provided. This section focusses on the amendments that constitute physical changes to the environment (i.e the addition of a BESS to the authorised footprint). The remaining amendments are not envisioned to to result in any additional physical environmental impacts for the following reasons:

1. Change in applicants contace details. This amendment is of an administrative nature only.
2. Extension of EA validity period. This amendment is of an administrative nature only.

As agreed to with the competent authority, this amendment assessment is supplemented with statements from the following specialists (i.e. the original specialists from the EIA process):

- Ecology (Todd, 2020)
- Agricultural (Lubbe, 2020)
- Palaeontology (Almond, 2020)
- Archaeology and Heritage (Webley, 2020)
- Visual (Stead, 2020)
- Traffic (Aurecon, 2020)

The abovementioned specialists were requested to provide a statement in terms of their specific disciplines to confirm the following:

1. Whether the inclusion of a BESS adjacent to the on-site substation will change the nature or significance any of the impacts assessed in the original study.

2. Whether the BESS is likely to result in any additional impacts that where not previously assessed in the original study.
3. Whether any additional management outcomes or mitigation measures in terms of each specialist discipline would be applicable to the BESS.

The specialist statements referred to above are attanched in Appendix D1 – D6 and the findings of each of these specialists relating to the potential impacts of the BESS are summarised in the following sections.

6.1 ECOLOGICAL IMPACTS

An Ecological Statement was undertaken by Simon Todd of 3 Foxes Biodiversity Solutions. A copy of this assessment is attached in **Annexure D1**, from which the following is summarised.

The location of the BESS within the previously assessed footprint area of the project as shown in the image below.The BESS is located adjacent to the facility substation and is within a medium - low sensitivity area with no features of concern in close proximity to the BESS.

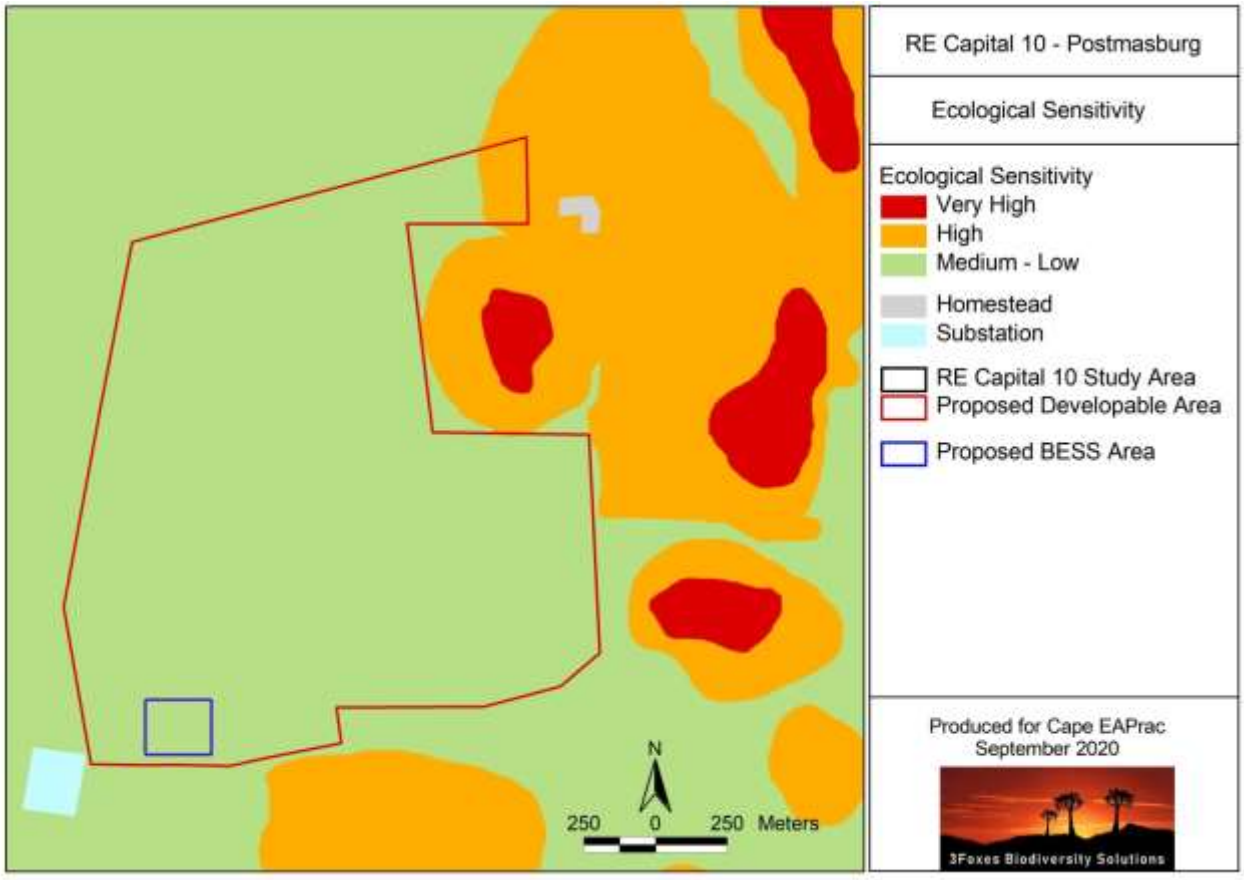


Figure 11: Proposed BESS in relation to authorised project footprint

In the original ecological assessment, it was assumed that the habitat within the facility would be largely lost in its entirety to the development. As such, the addition of the BESS within the assessed footprint would not increase direct habitat loss. In terms of additional risks, there do not appear to be any significant additional risks to ecology associated with the BESS. The original impacts associated with the Postmasburg Solar PV Energy Facility 2 are illustrated in the Table below.

Based on the footprint and technical specifications of the BESS as provided for this statement, there are no changes to the assessed impacts that are warranted based on the inclusion of the BESS into the Postmasburg Solar PV Energy Facility 2.

Table 4: The pre- and post-mitigation ecological impacts associated with the Postmasburg Solar PV Energy Facility 2 as originally assessed which remain applicable.

Phase & Impact	Without Mitigation	With Mitigation
Planning & Construction		
Impacts on vegetation and listed or protected plant species resulting from construction activities	Medium Negative	Medium-Low Negative
Direct Faunal Impacts During Construction	Medium Negative	Medium-Low Negative
Avifaunal impacts due to habitat loss and construction activities	Medium Negative	Medium-Low Negative
Soil Erosion Risk During Construction	Medium Negative	Low Negative
Operation		
Alien Plant Invasion Risk During Operation	Medium Negative	Low Negative
Soil Erosion Risk During Operation	Medium Negative	Low Negative
Faunal impacts during operation:	Medium-Low Negative	Low-Negative
Avifaunal impacts due to operational activities	Medium-Low Negative	Low Negative
Cumulative Impacts		
Impact on broad-scale ecological processes due to cumulative loss and fragmentation of habitat	Medium-Low Negative	Low Negative

The BESS consists of battery storage units in containers and would not change the nature of impacts associated with the solar facility. However, the BESS would include cooling systems which presumably would include fans that would generate some noise above that which would have occurred at the substation alone. As such, the BESS may increase noise associated with the facility to a small degree. However, since this is likely to be of a low intensity, this is not seen as adding significant impact to the existing development. Overall, there are no additional or novel impacts associated with the BESS that were not already assessed for the existing solar facility.

No additional mitigation measures or changes to the EMPr mitigation measures would be required in terms of this amendment, as no significant change to impacts or new impacts will occur. All the original avoidance and mitigation measures as indicated in the original botanical and faunal study are still relevant and applicable to the amended layout and must be implemented.

6.2 AGRICULTURAL IMPACTS

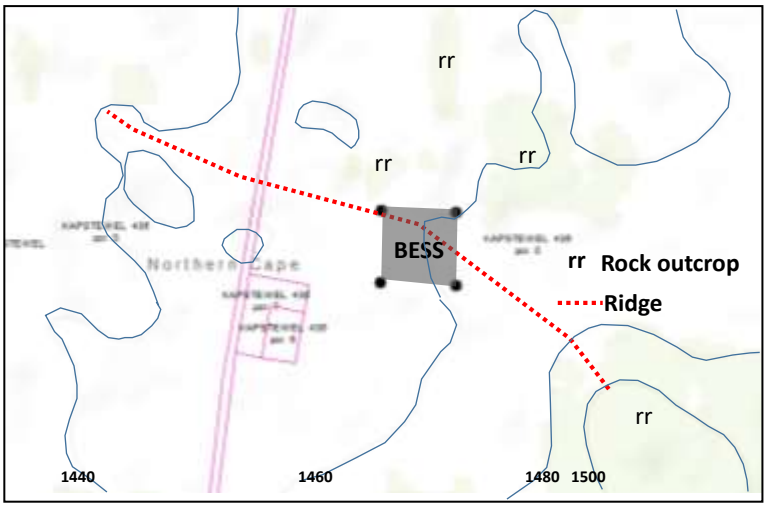
An Agricultural Impact Statement was undertaken by Mr Christo Lubbe. A copy of this assessment is attached in **Annexure 2**.

The agricultural specialist reviewed the documentation and confirmed that:

1. The BESS will indeed be placed within the authorised footprint and that no additional agricultural land will be involved or lost;

2. The construction of the BESS will have no additional influence on erosion or drainage patterns on site. The slope is flat (2-3%) and the BESS will be located on higher local elevation with no defined drainage lines. The placement in relation to the drainage pattern and rock outcrops is shown in the figure on the right.

3. During construction, spillage of fuel or concrete is possible, as with the construction of all other components of the facility. Mitigation measures prescribed will be the same in this case.



4. It is likely that the batteries will require solid foundations like concrete pads or steel decks, which is not different from the foundations for the auxiliary buildings and the substation. Mitigation measures and management practices were included in the original study.

The agricultural specialist concluded that that the BESS

- will not change or increase the nature or severity of any of the agricultural impacts originally identified and reported in 2014;
- Will have no additional impacts to those identified previously in the agricultural impact assessment; and
- Will not require any additional management outcomes or mitigation measures for the agricultural environment.

From an agricultural view point, the specialist recommend that the EA is amended to include the BESS.

6.3 HERITAGE IMPACTS

A Heritage Impact Statement was undertaken by Dr Lita Webley of ACO associates. A copy of this assessment is attached in **Annexure D3**. This statement provided the following regarding the potential impact of the BESS on Heritage resources.

The 2014 layout has avoided impacts to the majority of heritage sites (including archaeological sites) identified in the HIA (November 2014). No new impacts to heritage are anticipated with the proposed 2020 amendments. No archaeological sites were identified within the footprint of the proposed BESS. The proposed BESS will be some distance to the south-west from a rectangular stone kraal (corners D006-D009), which is considered to be a recent structure and of low heritage significance. The corners of the kraal are indicated as yellow icons in the figure below. Therefore, no impacts are expected from the construction of the BESS.

Figure 12: Location of BESS (red) with respect the survey paths and recorded sites (Google Earth 2014).

No archaeological sites were recorded in the lower south-west corner of the property. The tracks recorded during the October 2014 archaeological survey are shown in the figure above. The heritage impacts therefore remain unchanged.

The only mitigation measures in the HIA report which was submitted the South African Heritage Resources Agency in 2014 are concerned with a grave near the Kapstewel farmhouse. This was endorsed in the Final Comment issued by SAHRA dated 10 March 2015. Since the grave is a considerable distance from the proposed BESS, no impact is expected and no mitigation measures are required.

The specialist concluded that her impact ratings for the proposed development have not been changed with the proposed amendments.

6.4 PALAEONTOLOGICAL IMPACTS

A Palaeontological Impact Statement was undertaken by Dr John Almond. A copy of this assessment is attached in **Annexure D4**. As part of this statement, the palaeontology specialist confirmed the following:

Given the generally low palaeontological sensitivity of the Postmasburg Solar PV Energy Facility 2 project area, it is concluded that:

- the inclusion of a BESS adjacent to the on-site substation will not change the nature or significance of any of the impacts assessed in the original PIA study;
- the proposed BESS is unlikely to result in any additional impacts that were not previously assessed; and
- there are no additional management outcomes or mitigation measures in terms of palaeontological heritage that would be applicable to the proposed BESS.

There are no objections on palaeontological heritage grounds to the proposed amendment of the EA for this solar PV energy facility.

6.5 VISUAL IMPACTS

A Visual Impact Statement was undertaken by Mr Stephen Stead of VRMA. A copy of this assessment is attached in **Annexure D5**.

The following impacts were identified as having a likelihood of occurring during the construction and operation of the proposed BESS.

- Construction Phase
  - Loss of site landscape character from the removal of vegetation and the construction of the BESS structures and associated infrastructure;
  - Wind-blown dust due to the removal of large areas of vegetation;
  - Windblown litter from the laydown and construction sites.
- Operation Phase
  - Light spillage making a glow effect that would be clearly noticeable to the surrounding dark sky night landscapes to the north of the proposed site;
- Decommissioning Phase
  - Movement of vehicles and associated dust;
  - Windblown dust from the disturbance of cover vegetation / gravel.
- Cumulative Impacts
  - A long-term change in land use setting a precedent for other similar types of solar and wind energy projects.

The visual impact of the construction and operation of the proposed 3m high structures was reviewed in the Table below.

Table 5: Visual impacts associated with the addition of a BESS within the project footprint.

Nature: Change of local and surrounds visual resources due to the construction and operation of the proposed **(**3m high) structures, and buildings.		
	Without mitigation	**With mitigation**
Extent	Local	Local
Duration	Long-term	Long-term
Magnitude	Medium	Low
Probability	Probable	Probable
Significance	**Medium to Low**	**Low**
Status (positive or negative)	Negative	Negative
Reversibility	Possible	Possible
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	Yes
Impact Motivation The proposed BESS development footprint area does not contain any significant visual resources or topographic prominence. The area is remote with limited receptors and is located adjacent to the already authorized PV projects that clearly define the area as a renewable energy zone.		
Mitigation: To reduce colour contrast, if permitted by the Original Equipment Manufacturer, the container structure should preferably be painted a grey-brown colour so as to blend with the surrounding arid region landscapes. Light spillage reduction management should be implemented (refer to Annexure E).		
Cumulative impacts: Excessive lights at night could reduce the current dark sky sense of place that could detract from tourism opportunities in the area. From a cumulative perspective, the area is already well established as a renewable energy zone. Therefore, it is unlikely that the addition of the BESS will degrade the regional landscape character.		
Residual Risks:		

Residual risks post mitigation are rated Low. On decommissioning, the limited earthworks required for the construction of the BESS plant would allow for effective rehabilitation of the impacted area back to the current agricultural land use and associated rural sense of place.

The original environmental mitigations submitted for the initial PV EIA need to be adhered to. The only addendum regarding the BESS mitigation is:

- To reduce colour contrast, if permitted by the Original Equipment Manufacturer, the container structure should preferably be painted a grey-brown colour so as to blend with the surrounding arid region landscapes.

Due to the relative remoteness of the locality and some topographic screening, no sensitive receptors were identified for the site. As such, the Visual Exposure and Sensitivity of the landscape to the proposed BESS is defined as ***Low***. Based on the VRM methodology, the Scenic Quality of the area is defined as ***Low***.

There is a good policy fit for the Postmasburg Solar PV Energy Facility 2 BESS as two PV projects have already be authorised adjacent to the site, and the area is well recognised as a mining region with mining landscapes in the surrounding area.

Thus, the findings of the visual statement are that ***the BESS development is unlikely to result in the loss of significant visual and scenic resources, and as such should be allowed to proceed***

6.6 TRAFFIC IMPACTS

A Traffic Impact Statement was undertaken by Aurecon. A copy of this assessment is attached in **Annexure D6**. The following is summarised from that the traffic statement

One of the potential environmental issues identified during the former EIA process was the potential traffic and transportation impacts caused by the construction and operation activities. A Traffic and Transportation Assessment, conducted by Aurecon in 2014.

The original assessment estimated that the total trips would be between 3 000 and 4 000 heavy vehicle trips, which will be made over an estimated period of 9 to 12 months. Choosing the worst case scenario of 4 000 heavy vehicles over this period travelling on an average of 22 working days per month, the resulting daily number of vehicle trips will be in the order of 15-20. The impact of this on the general traffic would therefore be negligible as the additional peak hour traffic would be at most 2 trips.

The exact design of the BESS will depend on the specific manufacturer. A BESS typically includes batteries that have been assembled in containerised/modular enclosures. While each manufacturer has slightly different individual battery container/module dimensions, they all typically fall within the following ranges:

- Length: 6m – 12m
- Width: 1.5m – 2.5m
- Height: maximum of 3m

Based on research it is estimated that for BESS, approximately 160-240 pre-assembled containers/modules would be required. Each one of these pre-assembled containers/modules would be transported to site on a flatbed trailer.

240 heavy vehicles over a 9-12 month construction period travelling on an average of 22 working days per month, results in daily number of vehicle trips in the order of 0.9 -1.2. Based on the above a BESS system, could be expected to add up to 500 additional trips or up to 2.5 additional trips per day over the construction period. The additional impact on general traffic of a BESS system is deemed negligible.

The specialist concluded that the proposed amendments would not cause a significant change in the number of trips required and thus will not introduce any new traffic impacts, nor significantly alter the

impacts considered in the former 2014 Report, for which the original project received Environmental Authorisation.

6.7 CUMULATIVE IMPACT ASSESSMENT

The cumulative impact of the facility as a whole was considered and assessed in detail in the previous Basic Assessment Process. The main cumulative impact assessed in the original EIA process was the potential fragmentation of the landscape and the ability to attain conservation targets in the affected vegetation type. The proposed amendment includes the construction and operation of a BESS that falls within the authorised footprint and as such will not have any additional cumulative impact in terms of landscape fragmentation and the ability to achieve conservation targets.

6.8 IMPACT SUMMARY

The table below provides a comparative summary of the nature and significance of overall impacts originally assessed versus those associated with the addition of the BESS. As can be seen in this summary table, the proposed amendment does not change the nature, nor the significance of the impacts already assessed.

Table 6: Comparative summary of the post mitigation significance of impacts associated with Postmasburg Solar PV Energy Facility 2 as authorised and those associated with the addition of the BESS.

Impact	Facility as Authorised	Facility with BESS
Impacts on vegetation and listed or protected plant species resulting from construction activities	Medium-Low Negative	Medium-Low Negative
Direct Faunal Impacts During Construction	Medium-Low Negative	Medium-Low Negative
Avifaunal impacts due to habitat loss and construction activities	Medium-Low Negative	Medium-Low Negative
Soil Erosion Risk During Construction	Low Negative	Low Negative
Alien Plant Invasion Risk During Operation	Low Negative	Low Negative
Soil Erosion Risk During Operation	Low Negative	Low Negative
Faunal impacts during operation:	Low-Negative	Low-Negative
Avifaunal impacts due to power lines and operational activities	Low Negative	Low Negative
Impact on broad-scale ecological processes due to cumulative loss and fragmentation of habitat	Low Negative	Low Negative
Potential impact on Pre-colonial Archaeology	Very-Low Negative	Very-Low Negative
Potential impacts on Graves	Low Negative	Low Negative
Visual Impact of Solar Facility on Landscape Character / Environment	Low Negative	Low Negative
Visual Impact of Road Access Option 1 on Landscape Character / Environment	Low Negative	Low Negative
Visual Impact of Road Access Option 2 on Landscape Character / Environment	Low Negative	Low Negative
Visual Impact of Grid Connection Powerline on Landscape Character / Environment	Low Negative	Low Negative
Visual Impact of On-site Substation on Landscape Character / Environment	Low Negative	Low Negative
Cumulative Visual Impact of on Landscape Character / Environment	Regional Positive	Regional Positive

As can be seen in in the table above, the proposed amendment does not change the nature, nor the significance of the impacts already assessed.

6.9 IMPACT STATEMENT

None of the participating specialists identified any new impacts that were not previously assessed, nor did they identify any major changes in the significance of the impacts that were previously assessed. The BESS will marginally increase the level of transformation of available habitat, but not to such a degree that it would increase the significance thereof.

It can therefore be stated with a relatively high level of confidence that the addition of the BESS to the authorised facility will not result in any unacceptable environmental impacts.

7. ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENTS.

In terms of Regulation 32(1)(a)(ii), the amendment assessment report must include the details of the advantages and disadvantages of the proposed amendment. These are summarised in the table below for each for each of the proposed amendments.

Table 7: Advantages and Disadvantages of the proposed amendments.

Advantages of Proposed Amendment	Disadvantages of Proposed Amendment
Inclusion of BESS of up to 3.9ha within the authorised footprint	
The construction and operation of the BESS will allow for the PV facility to provide energy into the National Grid outside of sunlight hours and as such be able to provide stored energy during peak times when traditional PV is not available. This will eliminate the need to construct additional non-renewable energy generation facilities to provide energy to the national grid during these peak times.	None. All of the participating specialists confirmed that the addition of the BESS within the authorised project footprint would not increase the level or nature of the impacts previously assessed.
Updating applicant contact details	
None	None
Extension of validity period.	
This would allow the applicant to bid the project in future bidding rounds of the REIPPPP.	None

It is concluded that the advantages of the proposed amendments outweigh the disadvantages from an environmental perspective.

As a result, the implementation of the proposed amendments is considered acceptable from an environmental and social perspective and will not result in additional environmental impacts which were not considered in the original environmental process for the proposed development.

8. MANAGEMENT AND MITIGATION MEASURES

As required in terms of Regulation 32(1)(a)(iii), this assessment report must provide any additional measures to ensure avoidance, management and mitigation of impacts associated with the proposed amendment.

Based on the outcome of this environmental assessment, it is reccomended that the following additional mitigation measures be included as conditions of authorisation of the amendment decision:

- The applicant must compile and implement a Lifecycle Battery Recycling Programme. This programme should be submitted to the competent authority for approval prior to the commencement of construction of the BESS.
- The applicant must compile and implement a thermal management and monitoring programme. This programme should be completed prior to the operation of the BESS.
- During the construction phase of the project, first responders from Postmasburg (such as fire fighters and paramedics) must be given appropriate training on dealing with any emergency situation that may occur as a result of the BESS; such training must be provided by the technology suppliers or an appointed service provider.
- The applicant must compile and implement a comprehensive BESS operations and maintenance programme to ensure all monitoring and protective devices remain in good

working order; this comprehensive operations and maintenance programme must amongst others ensure thermal management safety protocols are in place.

- In the unlikely event of a thermal runaway, any contamination of land that occurs as a result of this event needs to be contained and cleaned up by a specialist contractor and the area rehabilitated to its former state.

A BESS risk assessment is attached in Annexure F. This risk assessment identified additional mitigations that would need to be implemented prior to the construction of the BESS facility.

Table 8: BESS risk assessment detailing additional mitigation measures required prior to commencement of construction.

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
BESS component / equipment risks				
Mishandling	Considering that a battery is a source of energy, there is a danger that should it be punctured, incinerated, crushed, immersed, have a forced discharge or exposed to temperatures above the declared operating temperature range of the product, there is a risk that an internal or external short circuit may occur. An internal or external short circuit can cause significant overheating which in some cases could result in fire, that could affect surrounding materials or materials within the cell or battery.	Low	Electrocution. On site fires. Electrical failure. Potential spillage of electrolytes (very low likelihood with lithium batteries).	Training and well managed operations and maintenance. Under normal conditions of use, the electrode materials and electrolyte they contain are not exposed, provided the battery integrity is maintained and seals remain intact. Risk of exposure may occur only in cases of abuse (mechanical, thermal, electrical).
Mechanical Damage	If batteries are not properly stored when not in use prior to installation, there is a possibility that mechanical damage may occur leading to: • Leaked battery pack coolant • Leaked refrigerant • Leaked cell electrolyte • Rapid heating of individual cells due to exothermic reaction of constituent materials (cell thermal runaway), venting of cells, and propagation of self-heating and thermal runaway reactions to neighbouring cells. • Fire	Low	On site fires. Electrical failure. Potential spillage of electrolytes or refrigerant.	Adequate on-site management during the construction and operations and maintenance periods.
Leaked Coolant or Refrigerant	Thermal management of some Li-ion battery packs is achieved via liquid cooling using coolant or refrigerant products. Mechanical damage of a battery pack that has been installed could result in leakage of the coolant. The fluid is generally blue in colour and does not emit a strong odour. This coolant if released has toxicological hazards and ecological effects as well as additional impacts relating to the disposal of leaked fluids. Additionally, extended exposure of the battery system to leaked coolant could cause additional damage to the product such as corrosion and compromising of protection electronics.	Low	Potential spillage of electrolytes. Ecological damage. Electrical failure.	Maintenance. Source from reputable manufacturers. Safe and appropriate storage. Safe handling which must include battery inspection prior to installation.

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
Vented Electrolyte	Li-ion cells are sealed units, and thus under normal usage conditions, venting of electrolyte should not occur. If subjected to abnormal heating or other abuse conditions, electrolyte and electrolyte decomposition products can vaporize and be vented from cells. Accumulation of liquid electrolyte is unlikely in the case of abnormal heating. Vented gases are a common early indicator of a thermal runaway reaction – an abnormal and hazardous condition.	Low	On site fires. Electrical failure. Vent gases.	Maintenance. Source from reputable manufacturers. Safe and appropriate storage. Safe handling which must include battery inspection prior to installation.
Thermal Runaway (TR)	Li-ion battery thermal runaway occurs when a cell, or area within the cell, achieves elevated temperatures due to thermal failure, mechanical failure, internal/external short circuiting and electrochemical abuse. At elevated temperatures, exothermic decomposition of the cell materials begins. Eventually, the self-heating rate of the cell is greater than the rate at which heat can be dissipated to the surroundings, the cell temperature rises exponentially, and stability is ultimately lost. The loss in stability results in all remaining thermal and electrochemical energy being released to the surroundings. It's widely accepted that most TRs are caused by mechanical, electrical or thermal abuses.	Low	On site fires. Electrical failure. Potential spillage of electrolytes.	Maintenance. Despite various factors that may lead to TR, materials including electrode materials as well as electrolytes, and battery design such as negative/positive capacity ratio and venting control, to name but a few, are the intrinsic approaches to enhance the battery safety. Source from reputable manufacturers. Safe and appropriate storage. Safe handling which must include battery inspection prior to installation. Development and implementation of Thermal Management Plan.
Limited knowledge and experience of First Responders to deal with emergency incidents.	As this technology is relatively new in a South African context, the first responders in an unlikely event of an incident may not have the necessary knowledge or experience to deal with an emergency situation such as fire or leakage.	Low	Fire. Electrocution. Injury. Inability to contain spillage.	During the construction phase of the project, first responders from the nearest major centre (such as fire fighters and paramedics) must be given appropriate training on dealing with any emergency situation that may occur as a result of the BESS. Such training must be provided by the technology suppliers or an appointed service provider. Appropriate warnings and Standard Operating Procedure for emergency events must be developed and must be provided to the local emergency services and the O&M staff on site.
Disposal at end of life	Disposal of Li-ion batteries to landfill is problematic and recycling should be prioritised. Research in Australia found that just 2% of the country's 3,300	High	Potential scenario of fluids from the batteries leaking into environment.	Recovery of metals at end of life can significantly reduce these life cycle impacts. This is because the extraction and processing of

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
	tonnes of Li-ion waste is recycled. South Africa fares far worse (as of November 2019, there was no Li-ion battery recycling facility in South Africa (eWASA)) and Li-ion batteries along with significant amounts of e-waste are not properly disposed of or sent for recycling. In addition to the lithium, manufacturers are secretive about what actually goes into their batteries, which makes it harder to recycle them properly. And while lithium itself isn't of great concern from a pollution angle, these batteries do contain metals like cobalt, nickel, and manganese. The potentially toxic materials contained in batteries means that they are classified as hazardous materials in terms of NEM:WA. There are only a few licensed hazardous waste sites in South Africa and recycling of batteries and e-waste has been identified as a sure way of improving the lifespans of such sites.		The release of such chemicals through leaching, spills or air emissions can harm communities, ecosystems and food production.	virgin materials are key contributors to impacts for all battery chemistries. Prior to commencement of the activity, a dedicated Battery Recycling Programme must be compiled and adopted.
General Environmental Risks				
Hydrocarbon Spillage	The BESS area will contain transformers which contain oil for cooling (unless air-cooled). Temporary fuel storage will take place during the construction phase.	Low	Contamination of land and adjacent water resources.	Implementation of the Management actions already included in the EMPr.
Physical damage to surrounding natural areas	Construction activities if not properly managed could impact on areas outside of the construction footprint.	Medium	Physical damage to habitat.	Implementation of the Management actions already included in the EMPr particularly in relation to the demarcation of no-go areas.
Impact on species of conservation concern	The transformation of habitat associated with the BESS, may have a direct impact on species of conservation concern.	Medium	Loss of individual plants within the footprint of the BESS.	Implementation of the Management actions already included in the EMPr. Compliance with the conditions of the Threatened or protected species (TOPS) permits. Undertaking plant rescue in compliance with the plant rescue and protection plan.
Concrete contamination	Run off from concrete civil works could contaminate surrounding areas.	Low	Contamination of land and surrounding water resources.	Implementation of the Management actions already included in the EMPr. Use of ready-mix concrete and the limitation of on-site batching.
Dust	Dust fall out from construction activities.	Medium	Health and safety impacts. Impacts on surrounding vegetation.	Implementation of the Management actions already included in the EMPr. Implementation of a dust fall out monitoring programme.

Risk / Impact	Discussion	Likelihood of Risk	Impact of risk	Management / Mitigation
Protection of Archaeological Resources	Subterranean resources could be exposed during excavations.	Low	Loss of archaeological resources.	Implementation of the Management actions already included in the EMPr. ECO Inspection of all excavations. Compliance with requirements of SAHRA authorisation.
Loss of topsoil resources	All construction activities will have the possibility to impact on topsoil resources.	Low	Loss of Topsoil Contamination of Topsoil.	Implementation of the Management actions already included in the EMPr particularly with regard to topsoil handling and the stripping and stockpiling of topsoil from the BESS footprint prior to construction.
Noise Impact	Although the proposed development is located outside of an urban area, construction noise could have an impact on sensitive receptors.	Low	Impact on health and safety of construction staff. Impact on displacement of fauna.	Implementation of the Management actions already included in the EMPr and compliance with the relevant legislation with respect to noise inter alia Section 25 of ECA (73 of 1989) and standards applicable to noise nuisances in the Occupational Health and Safety Act (No. 85 of 1993).
Siltation and erosion	Stormwater and wash water have the potential to cause erosion or pollution of the receiving environment.	Low	Contamination of surrounding land. Impact on water Quality.	Implementation of the Management actions already included in the EMPr. Implementation of the Stormwater Management Plan.
Theft and other crime.	An increase in crime during the construction phase is often a concern during the development of the overall facility, including the BESS. This is likely to be negligible due to the extremely remote nature of the site.	Low	On site theft. Theft at surrounding properties.	Implementation of the Management actions already included in the EMPr. Implementation of a site security plan.
Wildfires	The solar development site including the BESS is arid, with sparse vegetation cover and fires are not a natural phenomenon in the area. However, under exceptional circumstances, such as following years of very high rainfall, sufficient biomass may build up to carry fires.	Low	Damage to infrastructure.	Implementation of the Management actions already included in the EMPr. Maintaining a firebreak around the total project footprint in the form of a perimeter road.

9. PUBLIC PARTICIPATION PROCESS

A public participation plan has been compiled and approved by the competent authority. Please refer to Appendix E6 for a copy of the Public Participation Plan and Annexure E7 for the DEFF approval of the PPP Plan.

The public participation process for this ammentment process was undertaken in terms of of regulation 32(1)(aa) which requires that the public participation in respect of a part 2 amendment must be undertaken to a level as agreed upon with the competent authority, in this instance the approval of the public participation plan.

9.1 PUBLIC PARTICIPATION PLAN

A public participation plan has been compiled and approved by the competent authority.

This plan was submitted in compliance with regulation GNR660 published on 05 June 2020 in terms of the Disaster Management Act (57/2002) and titled: Directions Regarding Measures to Address, Prevent and Combat the Spread of COVID-19 Relating to National Environmental Management Permits and Licences. In compliance with section 5.1 and annexure 2 of these regulations, a public participation plan must be presented to the competent authority for approval prior to implementation.

This application is for a part 2 amendment of an existing EA and is submitted in terms of regulation 31. The public participation requirements for a part 2 amendment are contained in regulation 32(1)(aa), which requires that the report (i.e. amendment assessment report) be subjected to a public participation process, which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential interested and registered interested and affected parties, including organs of state, which have jurisdiction in respect of the relevant activity and the competent authority.

Cape EAPrac's proposal to comply with regulation 32(11)aa of the NEMA EIA regulations and Regulation 660 in terms of the disaster management act is as follows:

An amendment assessment report will be compiled to assess the impact of the addition of a Battery Energy Storage System (BESS) within the footprint authorised for the project. This Amendment Assessment Report will include:

1. Statements from all participating specialists confirming whether or not the addition of the BESS will change the nature or impact of any of the impacts that were assessed as part of specialist studies.
2. Statements from all participating specialists to confirm whether or not the addition of a BESS within the assessed footprint will result in any additional impacts in respect of their particular specialist discipline.
3. Statements from participating specialists to confirm whether any additional management actions or mitigations are applicable to the addition of a BESS.
4. A BESS technical study.
5. A high-level BESS risk assessment.
6. An addendum to the existing EMPr (incorporating an application to amend the existing EMPr) to incorporate additional management outcomes and actions associated with the BESS.

Notification of the availability of the amendment assessment report (incorporating points 1-6 above) will be sent to the following parties:

(a) the competent authority;

(b) every State department that administers a law relating to a matter affecting the environment relevant to an application for the amendment of an environmental authorisation;

(c) all organs of state which have jurisdiction in respect of the activity to which the application for amendment relates;

(d) all I&APs that were registered as part of the original EIA process; and

(e) (f) all neighbouring property owners.

The amendment assessment report will be accessible to the abovementioned parties via the following mechanisms:

1. The competent authority will be provided copies of the applications and assessment report via their file upload portal.
2. All State Departments and Organs of State who have online submission platforms (e.g. SAHRA via their SAHRIS system) will receive copies of the reports via these platforms.
3. The digital copy of the documentation that will be available on the Cape EAPrac website.
4. A download link (via dropbox or sharepoint) will be provided to all I&APs.
5. All notification letters will include a copy of the executive summary of the Amendment Assessment Report.
6. The ward councillor will be approached for assistance to distribute notification letters along with the executive summaries via their communication channels (community WhatsApp groups, social media and physical communiques).
7. I&APs that do not have access to digital platforms will be provided with printed hardcopies of the executive summary and any specialist reports that they may have interest in. Such copies will be provided by courier or postal service.
8. Potential and registered I&APs will be informed that copies of the documentation can be provided via postal or courier services.
9. An advert will be placed in the local press. This advert will combine the call for interested and affected parties and request for comment on the Draft Amendment Assessment Report.

9.2 NOTIFICATION OF AVAILABILITY OF THE DRAFT REPORT

Notification of the availability of the Draft Report was submitted via email, and post to the following parties.

- The competent authority;
- State department that administers a law relating to a matter affecting the environment;
- All organs of state which have jurisdiction in respect of the activity (d) all I&APs that were registered as part of the original EIA process; and
- All neighbouring property owners.

Copies of these notifications are attached in appendix F4.

In addition to the written notifications and in compliance with the approved public participation plan, an advert was also placed in the local press (Kathu Gazette Newspaper) notifying potential I&APs of the proposed amendment and the availability of the Draft Amendment Assessment Report. A copy of the newspaper advert is attached in appendix F3.

Cape EAPrac

PUBLIC PARTICIPATION PROCESS
AMENDMENT OF ENVIRONMENTAL AUTHORISATIONS – POSTMASBURG SOLAR ENERGY FACILITY 2 ON RE OF FARM KAPSTEWEL 436, POSTMASBURG

Boomplantdag

Treetags Arbor Week

Figure 13: Excerpt of Advert placed in the Kathu Gazette

9.3 AVAILABILITY OF DRAFT AMENDMENT ASSESSMENT REPORT

In compliance with the approved public participation plan, the Draft Amendment Assessment Report was available at the following locations.

- Cape EAPrac Website; and
- Via a dedicated download link.

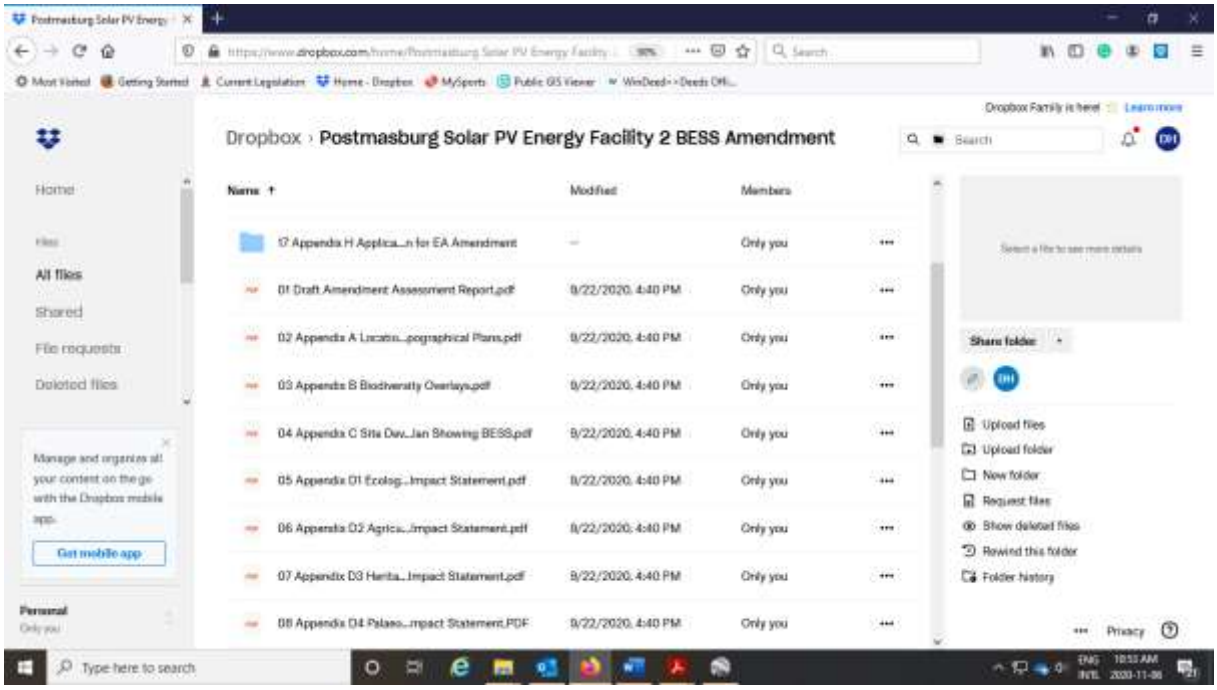


Figure 14: Draft amendment assessment report as available via the dedicated download link.

The documentation will remain on the dedicated download link at: https://www.dropbox.com/sh/ll7oirdu4dmq9dl/AAAVInwz2_T0Ct4RdgHL6kJAa?dl=0 until such time as the appeal period on this application for amendment is complete.

All the notifications included alternative mechanisms to access reports for those parties unable to access the digital platforms provided.

9.4 COMMENTS ON DRAFT AMENDMENT ASSESSMENT REPORT.

During the comment period on the Draft amendment Report, comments were received from the following parties:

- The competent authority (Department of Environment Forestry and Fisheries)
- Eskom (Mr John Geeringh)
- Mr SP Duplessis - Private
- Mr George Lovastsha – Private
- Mr George Sanchez - Private

Copies of these comments are all included in appendix F5. The comments as well as the responses thereto are also included in the comments and responses report in Appendix E2.

10. CONCLUSION AND RECOMMENDATIONS

This environmental process is currently being undertaken to present the details of the proposed amendment to potential and registered I&APs and to identify and assess environmental impacts, issues and concerns that may result from the proposed amendment to the Environmental Authorisation.

Cape EAPrac is of the opinion that the information contained in this Amendment Assessment Report and the documentation attached hereto is sufficient to allow the registered and potential I&APs to apply their minds to the potential negative and/or positive impacts associated with the development, in respect of the amendments applied for.

This environmental process has not identified any fatal flaws nor major irreversible impacts with the proposed amendments. As such, it is the EAP's view that the proposed amendments can be considered for authorisation.

All participating specialists have confirmed that the inclusion of the BESS is unlikely to result in any additional impacts nor increase any of the respective impacts previously assessed.

All stakeholders were requested to review this Draft Amendment Assessment Report and the associated appendices, and provide comment, or raise issues of concern, directly to *Cape EAPrac* within the specified 30-day comment period. All comments received during this comment period have been considered and incorporated into the Final Amendment Assessment Report that is herewith submitted to DEFF for decision making.

Based on the outcomes of this assessment (which includes input from the participating specialists), as well as the outcome of the risk assessment, it is Cape EAPrac's reasoned opinion that the application for amendment of the Environmental Authorisation be granted, subject to the following conditions:

1. The applicant must compile and implement a Lifecycle Battery Recycling Programme. This programme should be submitted to the competent authority for approval prior to the commencement of construction of the BESS.
2. The applicant must compile and implement a thermal management and monitoring programme. This programme should be completed prior to the operation of the BESS.

3. During the construction phase of the project, first responders from Postmasburg (such as fire fighters and paramedics) must be given appropriate training on dealing with any emergency situation that may occur as a result of the BESS; such training must be provided by the technology suppliers or an appointed service provider.
4. The applicant must compile and implement a comprehensive BESS operations and maintenance programme to ensure all monitoring and protective devices remain in good working order; this comprehensive operations and maintenance programme must amongst others ensure thermal management safety protocols are in place.
5. In the unlikely event of a thermal runaway, any contamination of land (including any nearby watercourse) that occurs as a result of this event needs to be contained and cleaned up by a specialist contractor and the area rehabilitated to its former state.
6. That the BESS Revision to the EMPr be adopted and implemented for the life cycle of the project; and
7. That the mitigation measures identified in the Risk Assessment be implemented.

11. ABBREVIATIONS

AIA	Archaeological Impact Assessment
CBA	Critical Biodiversity Area
DEA	Department of Environmental Affairs
DEA&NC	Department of Environmental Affairs and Nature Conservation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMC	Electromagnetic Compliance
EMPr	Environmental Management Programme
ESA	Ecological Support Area
I&APs	Interested and Affected Parties
IPP	Independent Power Producer
kV	Kilo Volt
MW	Mega Watt
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NPAES	National Protected Area Expansion Strategy
NWA	National Water Act
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RMIPPPP	Risk Mitigation Independent Power Producer Procurement Programme
S.A.	South Africa
SAHRA	South African National Heritage Resources Agency
TOPS	Threatened and Protected Species

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[4] This reference list excludes specialist studies that form part of this environmental amendment process and which are contained in Annexure E1 – E6

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