

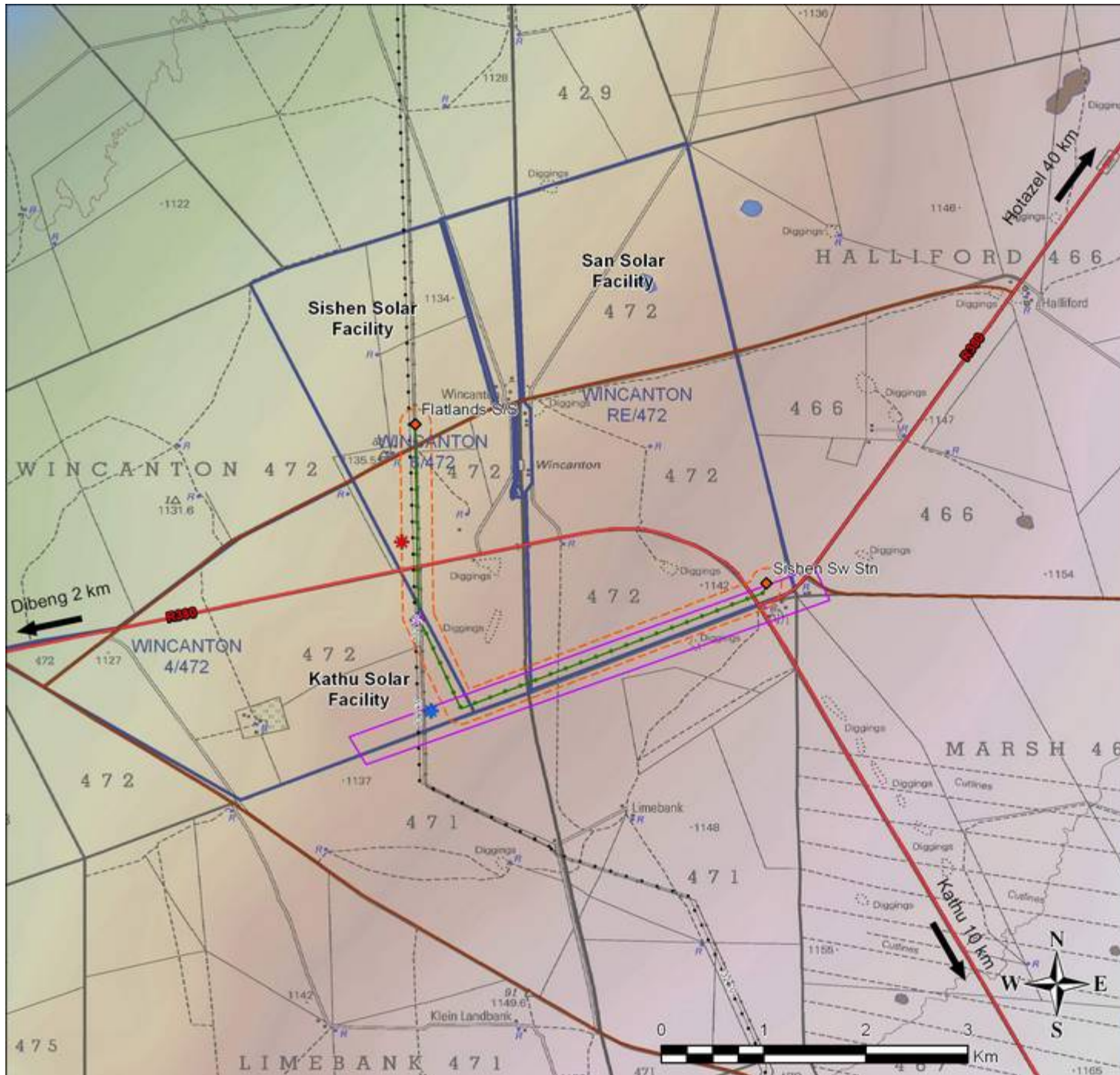
Appendix A: Site Plan

Sishen Power Line

Locality Map

Legend

- National Road
 - Regional Road
 - Secondary Road
 - Railway Line
 - Perennial River
 - Non-perennial River
 - Existing Power Line
 - Farm Boundaries
- ### Layouts
- Substations_proposed
 - Proposed 132kV power line
 - Study Area (150m radius buffer)
 - Proposed Kathu and San SEF power line corridor
 - Sishen substation
 - Kathu substation



**Appendix B:
Photo Record(s)**



Figure 3: View north



Figure 4: View north-east



Figure 5: View east



Figure 6: View south-east



Figure 7: View south



Figure 8: View south-west



Figure 9: View west



Figure 10: View north-west

**Appendix C:
Facility Illustration(s)**

TO BE INCLUDED IN THE FINAL BASIC ASSESSMENT REPORT

**Appendix D:
Motivation for Exemption from
undertaking an HIA**



McGregor Museum

5 Atlas Street
Herlear
Kimberley
8301

PO Box 316
Kimberley 8300
Tel. +27 (0) 53 839 2700
Fax. +27 (0) 53 842 1433

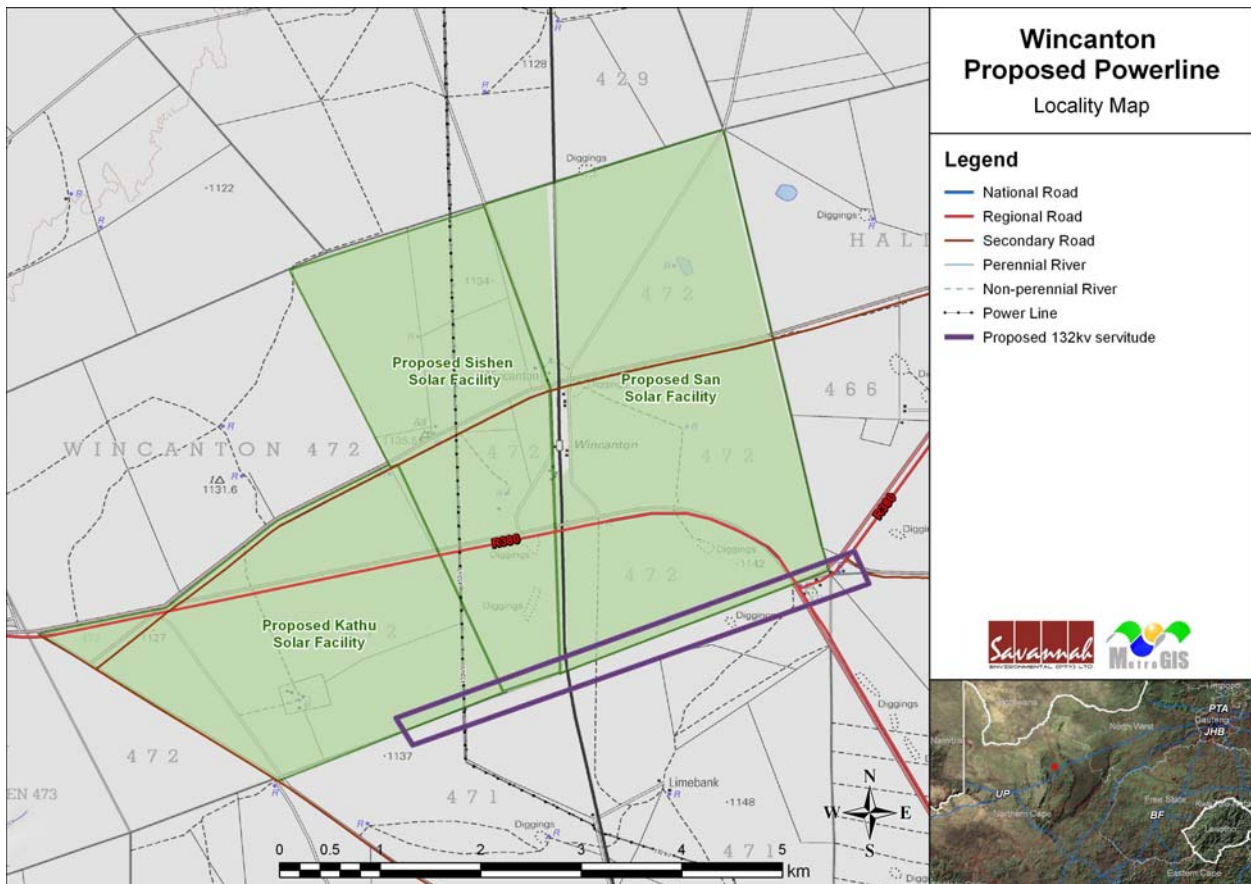
Archaeology Department

Your Ref:
Our Ref: MMK 14
Date: 15 December 2011

Tel +27-53 839 2706
Mobile +27-82 2224777
dmorris@museumsnc.co.za
www.museumsnc.co.za

Comment on Heritage Impacts of the proposed Wincanton Power Line

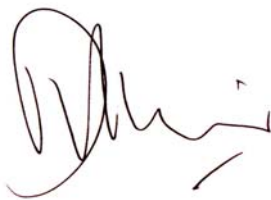
The map below indicates the intended route for the proposed Wincanton Power Line, which would run along the southern boundary of areas of proposed Solar Facilities. I have already surveyed a portion of the area (Morris 2010). I understand that an EIA process is about to be embarked upon for the proposed San Solar Facility and the southern boundary of that coincides with part of the route of the proposed power line. My experience of the area suggests that while stone artefacts are present over much of this area, the impact of the line is likely to be insignificant. The San Solar Facility EIA should include an assessment of this.



In light of the above it is my recommendation that a separate HIA is not needed specifically for the proposed Wincanton Power Line, provided that the EIA process for the proposed San Solar Facility does take this development into consideration.

Reference:

Morris, D. 2010. Proposed Kathu-Sishen Solar Energy Facilities: Specialist input (archaeology) for the Environmental Impact Assessment Phase and Environmental Management Plan for the proposed Kath-Sishen Solar Energy Facilities, Northern Cape.



David Morris
Head of Archaeology
McGregor Museum Kimberley



Appendix E: Public Participation

Appendix E1: Advert

Appendix E2: Site Notices

Appendix E3: Stakeholder Letters

Appendix E4: Project Database

Appendix E5: Correspondence with Authorities

**Appendix E1:
Media Notice**

OPENBARE DEELNAMEPROSES

VOORGESTELDE SISHEN FV AANLEG 132 kV KRAGLYN
NABY KATHU, NOORD-KAAP-PROVINSIE

14/12/16/3/3/1/574

Projeknaam: Voorgestelde 132 kV kraglyn benodig vir die roosterverbinding van die Sishen Sonkragaanleg naby Kathu, Noord-Kaap-provinsie.

Applikant: Windfall 59 Properties (Edms.) Bpk.

Voorgestelde aktiwiteit: Die oprigting van 'n 132 kV kraglyn, ~5.8 km lank, wat die nuwe aanleg se Flatlands Substasie met die Ferrum MTS – Umtu Klipkop 132 kV kraglyn verbind aan die hand van 'n inlus-uitluskonfigurasie. Die doel van die voorgestelde ontwikkeling is om die elektrisiteit van die Sishen Sonkragaanleg na Eskom se kragrooster te evakueer.

Ligging: Die voorgestelde serwituut vir die kraglyn is ~17 km noordwes van die dorp Kathu in die Noord-Kaap-provinsie. Die studiegebied is in die Gamagara Plaaslike Munisipaliteit geleë. Die serwituut wat geëvalueer sal word as deel van die Basiese Evalueringsproses sal gedeeltes van die volgende plaasgedeeltes insluit:

- Wincanton 472, Gedeelte 6;
- Limebank 471, Gedeelte 1, 2 en 3;
- Halliford 466, Gedeelte 1 en 3; en
- Marsh 467, oorblywende restant.

Wetgewing: Ingevolge Artikel 24 en 24D van die Nasionale Wet op Omgewingsbestuur (NEMA, Wet 107 van 1998), saamgelees met die Regulasies op Omgewingsimpakevaluering (OIE-regulasies) van Staatskennisgewing R543 – R546, word 'n Basiese Evalueringsproses vir die voorgestelde projek vereis.

Openbare betrokkenheid: Savannah Environmental onderneem die nodige omgewingsevaluering en openbare deelnameproses. Die konsep Basiese Evalueringsverslag is tans beskikbaar vir openbare oorsig en kan by die volgende plekke besigtig word:

- Kathu Openbare Biblioteek – h/v Frikkie Meyer- en Hendrik van Eckstraat, Kathu
- Dibeng Openbare Biblioteek – Gemsbokstraat 1, Dibeng
- www.savannahsa.com

Die 30 dae openbare besigtigingstydperk is vanaf 29 Mei 2012 tot 29 Junie 2012. Die finale datum om u kommentaar in te dien is Vrydag 29 Junie 2012.

Alle belangstellende en geaffekteerde partye is welkom om meer inligting te bekom en word uitgenooi om op die projek se databasis te registreer deur u naam, kontakbesonderhede en belang by die projek te verskaf aan:

Mev. Gabriele Wood
Openbare Deelname- en
Maatskaplike Konsultant
Savannah Environmental (Edms.) Bpk.
Posadres: Posbus 148, Sunninghill 2157
Telefoon: 011 234 6621
Faks: 086 684 0547
E-pos: gabriele@savannahsa.com
www.savannahsa.com



Appendix E2: Site Notices

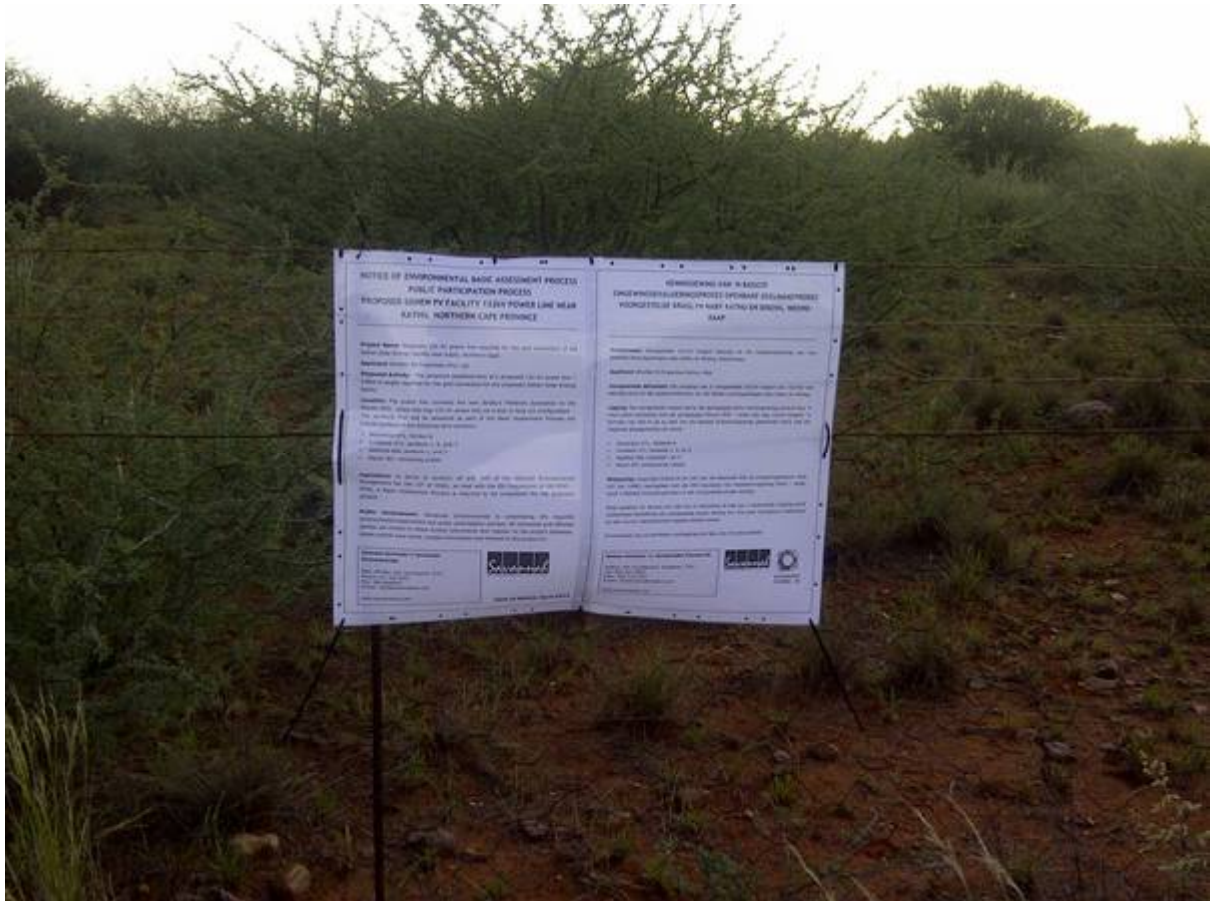


Plate 01: Site Notice placed on the site for the proposed Sishen Power line

Appendix E3: Stakeholder Letters

29 May 2012

NATIONAL DEPARTMENT OF ENERGY
Northern Cape Regional Office
29 – 31 Currey Street
Liberty Building, 1st Floor
Kimberley
8300

Dear Ms Enid Babuseng

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GN R543, GN R544 and GN 546, notice is hereby given that an **Environmental Basic Assessment Process** will be undertaken by Savannah Environmental (Pty) Ltd for this proposed project. The project has been registered with the National Department of Environmental Affairs (DEA) with the Reference No.: 14/12/16/3/3/1/564

The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

- Wincanton 472, portion 6;
- Limebank 471, portions 1, 2, and 3;
- Halliford 466, portions 1 and 3;
- Marsh 467, remaining extent.

A draft Basic Assessment Report has been prepared by Savannah Environmental and is available for public review. The **30-day** public review period for the draft Basic Assessment Reports is between **29 May 2012** and **29 June 2012**.

Please find herewith a copy of the Draft Basic Assessment Report for your perusal. The report can also be viewed on our website www.savannahSA.com.

In terms of the NEMA Amendment Act a **40-day review period** will be allowed for **commenting authorities / organs of state** to submit their comments on the draft Basic Assessment Report to the Department of Environmental Affairs.

Please can you provide the name and contact details of the relevant contact person at your department who we would liaise with regarding this project. By registering on the project database, you will receive all information relating to the project and will be provided with an opportunity to provide comment and input into the EIA process.

Please do not hesitate to contact me on the contact details below, should you require any further information regarding the proposed projects.

Kind Regards

MRS GABRIELE WOOD
PUBLIC PARTICIPATION AND SOCIAL CONSULTANT
SAVANNAH ENVIRONMENTAL

SAVANNAH ENVIRONMENTAL (PTY) LTD
MRS GABRIELE WOOD
PO Box 148, Sunninghill, 2157
Gauteng, South Africa
Tel: +27 (0)11 234 6621 Fax: 086 684 0547
Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

NATIONAL DEPARTMENT OF ENERGY
Northern Cape Regional Office
29 – 31 Currey Street
Liberty Building, 1st Floor
Kimberley
8300

ATTENTION: THE DIRECTOR

Dear Sir

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

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Kind Regards

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Gauteng, South Africa
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Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

NATIONAL DEPARTMENT OF WATER AFFAIRS
185 Schoeman Street
Pretoria
0001

Dear Mr Snyders

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

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The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

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Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

ESKOM
Megawatt Park
Maxwell Drive
Sunninghill
Sandton
2157

Dear Mr John Geeringh

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

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PO Box 148, Sunninghill, 2157
Gauteng, South Africa
Tel: +27 (0)11 234 6621 Fax: 086 684 0547
Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

GAMAGARA LOCAL MUNICIPALITY
Civic Centre
Cnr. Hendrick van Eck Road and Frikkie Meyer Road
Kathu
8446

Dear Mr Cornelias Joachim

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

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www.savannahSA.com

29 May 2012

GAMAGARA LOCAL MUNICIPALITY
Civic Centre
Cnr. Hendrick van Eck Road and Frikkie Meyer Road
Kathu
8446

Dear Mr S.J Burger

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

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Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

JOHN TAOLO GAETSEWE DISTRICT MUNICIPALITY
4 Federal Mynbou Street
Kuruman
8460

Dear Mr Siphon Sebusho

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

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SAVANNAH ENVIRONMENTAL

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Gauteng, South Africa
Tel: +27 (0)11 234 6621 Fax: 086 684 0547
Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

NORTHERN CAPE DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL
DEVELOPMENT
Kimberlite Building
162 George Street / 7 – 9 Elliot Street
Kimberley
8300

Dear Siphon Mbaqa

**RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR
KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564**

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MRS GABRIELE WOOD
PUBLIC PARTICIPATION AND SOCIAL CONSULTANT
SAVANNAH ENVIRONMENTAL

SAVANNAH ENVIRONMENTAL (PTY) LTD
MRS GABRIELE WOOD
PO Box 148, Sunninghill, 2157
Gauteng, South Africa
Tel: +27 (0)11 234 6621 Fax: 086 684 0547
Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

NORTHERN CAPE DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL
DEVELOPMENT – UPINGTON REGIONAL OFFICE

Umbra Building
Cnr. River Street and Mark Street
Upington
8800

Dear Jackie Mans

**RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR
KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564**

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GN R543, GN R544 and GN 546, notice is hereby given that an **Environmental Basic Assessment Process** will be undertaken by Savannah Environmental (Pty) Ltd for this proposed project. The project has been registered with the National Department of Environmental Affairs (DEA) with the Reference No.: 14/12/16/3/3/1/564

The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

- Wincanton 472, portion 6;
- Limebank 471, portions 1, 2, and 3;
- Halliford 466, portions 1 and 3;
- Marsh 467, remaining extent.

A draft Basic Assessment Report has been prepared by Savannah Environmental and is available for public review. The **30-day** public review period for the draft Basic Assessment Reports is between **29 May 2012** and **29 June 2012**.

Please find herewith a copy of the Draft Basic Assessment Report for your perusal. The report can also be viewed on our website www.savannahSA.com.

In terms of the NEMA Amendment Act a **40-day review period** will be allowed for **commenting authorities / organs of state** to submit their comments on the draft Basic Assessment Report to the Department of Environmental Affairs.

Please can you provide the name and contact details of the relevant contact person at your department who we would liaise with regarding this project. By registering on the project database, you will receive all information relating to the project and will be provided with an opportunity to provide comment and input into the EIA process.

Please do not hesitate to contact me on the contact details below, should you require any further information regarding the proposed projects.

Kind Regards

MRS GABRIELE WOOD
PUBLIC PARTICIPATION AND SOCIAL CONSULTANT
SAVANNAH ENVIRONMENTAL

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www.savannahSA.com

29 May 2012

NORTHERN CAPE DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL
DEVELOPMENT
Kimberlite Building
162 George Street / 7 – 9 Elliot Street
Kimberley
8300

Dear Mr W.D Viljoen Mothibi

**RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR
KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564**

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GN R543, GN R544 and GN 546, notice is hereby given that an **Environmental Basic Assessment Process** will be undertaken by Savannah Environmental (Pty) Ltd for this proposed project. The project has been registered with the National Department of Environmental Affairs (DEA) with the Reference No.: 14/12/16/3/3/1/564

The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

- Wincanton 472, portion 6;
- Limebank 471, portions 1, 2, and 3;
- Halliford 466, portions 1 and 3;
- Marsh 467, remaining extent.

A draft Basic Assessment Report has been prepared by Savannah Environmental and is available for public review. The **30-day** public review period for the draft Basic Assessment Reports is between **29 May 2012** and **29 June 2012**.

Please find herewith a copy of the Draft Basic Assessment Report for your perusal. The report can also be viewed on our website www.savannahSA.com.

In terms of the NEMA Amendment Act a **40-day review period** will be allowed for **commenting authorities / organs of state** to submit their comments on the draft Basic Assessment Report to the Department of Environmental Affairs.

Please can you provide the name and contact details of the relevant contact person at your department who we would liaise with regarding this project. By registering on the project database, you will receive all information relating to the project and will be provided with an opportunity to provide comment and input into the EIA process.

Please do not hesitate to contact me on the contact details below, should you require any further information regarding the proposed projects.

Kind Regards

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Email: gabriele@savannahSA.com
www.savannahSA.com

29 May 2012

NORTHERN CAPE DEPARTMENT OF ENVIRONMENT AND NATURE CONSERVATION
Metlife Towers, 4th Floor
Cnr. Market Square and Stead Streets
Kimberley
8300

Dear Mr Denver van Heerden

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GN R543, GN R544 and GN 546, notice is hereby given that an **Environmental Basic Assessment Process** will be undertaken by Savannah Environmental (Pty) Ltd for this proposed project. The project has been registered with the National Department of Environmental Affairs (DEA) with the Reference No.: 14/12/16/3/3/1/564

The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

- Wincanton 472, portion 6;
- Limebank 471, portions 1, 2, and 3;
- Halliford 466, portions 1 and 3;
- Marsh 467, remaining extent.

A draft Basic Assessment Report has been prepared by Savannah Environmental and is available for public review. The **30-day** public review period for the draft Basic Assessment Reports is between **29 May 2012** and **29 June 2012**.

Please find herewith a copy of the Draft Basic Assessment Report for your perusal. The report can also be viewed on our website www.savannahSA.com.

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Please can you provide the name and contact details of the relevant contact person at your department who we would liaise with regarding this project. By registering on the project database, you will receive all information relating to the project and will be provided with an opportunity to provide comment and input into the EIA process.

Please do not hesitate to contact me on the contact details below, should you require any further information regarding the proposed projects.

Kind Regards

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29 May 2012

NORTHERN CAPE DEPARTMENT OF ENVIRONMENT AND NATURE CONSERVATION
Metlife Towers, 4th Floor
Cnr. Market Square and Stead Streets
Kimberley
8300

Dear Ms Elsabe Swart

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GN R543, GN R544 and GN 546, notice is hereby given that an **Environmental Basic Assessment Process** will be undertaken by Savannah Environmental (Pty) Ltd for this proposed project. The project has been registered with the National Department of Environmental Affairs (DEA) with the Reference No.: 14/12/16/3/3/1/564

The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

- Wincanton 472, portion 6;
- Limebank 471, portions 1, 2, and 3;
- Halliford 466, portions 1 and 3;
- Marsh 467, remaining extent.

A draft Basic Assessment Report has been prepared by Savannah Environmental and is available for public review. The **30-day** public review period for the draft Basic Assessment Reports is between **29 May 2012** and **29 June 2012**.

Please find herewith a copy of the Draft Basic Assessment Report for your perusal. The report can also be viewed on our website www.savannahSA.com.

In terms of the NEMA Amendment Act a **40-day review period** will be allowed for **commenting authorities / organs of state** to submit their comments on the draft Basic Assessment Report to the Department of Environmental Affairs.

Please can you provide the name and contact details of the relevant contact person at your department who we would liaise with regarding this project. By registering on the project database, you will receive all information relating to the project and will be provided with an opportunity to provide comment and input into the EIA process.

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Kind Regards

MRS GABRIELE WOOD
PUBLIC PARTICIPATION AND SOCIAL CONSULTANT
SAVANNAH ENVIRONMENTAL

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www.savannahSA.com

29 May 2012

NORTHERN CAPE DEPARTMENT OF ENVIRONMENT AND NATURE CONSERVATION
Metlife Towers, 4th Floor
Cnr. Market Square and Stead Streets
Kimberley
8300

Dear Mr Wessel Jacobs

**RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR
KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564**

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GN R543, GN R544 and GN 546, notice is hereby given that an **Environmental Basic Assessment Process** will be undertaken by Savannah Environmental (Pty) Ltd for this proposed project. The project has been registered with the National Department of Environmental Affairs (DEA) with the Reference No.: 14/12/16/3/3/1/564

The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

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A draft Basic Assessment Report has been prepared by Savannah Environmental and is available for public review. The **30-day** public review period for the draft Basic Assessment Reports is between **29 May 2012** and **29 June 2012**.

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Please can you provide the name and contact details of the relevant contact person at your department who we would liaise with regarding this project. By registering on the project database, you will receive all information relating to the project and will be provided with an opportunity to provide comment and input into the EIA process.

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www.savannahSA.com

29 May 2012

DEPARTMENT OF RURAL DEVELOPMENT AND LAND REFORM: NORTHERN CAPE
New Public Building
Cnr. Knight Street and Stead Street
Kimberley
8300

Dear Lorato Sehularo

RE: PROPOSED SISHEN SOLAR ENERGY FACILITY 132kV POWER LINE NEAR KATHU, NORTHERN CAPE PROVINCE. DEA REF NO.: 14/12/16/3/3/1/564

Windfall 59 Properties (Pty) Ltd is proposing to establish a 132kV power line which will evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. The proposed power line will be approximately 5.8km in length and will connect the new facility's Flatlands Substation to the Ferrum MTS – Umtu Klip Kop 132kV power line in a loop in – loop out configuration.

In terms of sections 24 and 24D of the National Environmental Management Act (NEMA No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GN R543, GN R544 and GN 546, notice is hereby given that an **Environmental Basic Assessment Process** will be undertaken by Savannah Environmental (Pty) Ltd for this proposed project. The project has been registered with the National Department of Environmental Affairs (DEA) with the Reference No.: 14/12/16/3/3/1/564

The proposed servitude for the power line is located approximately 17km north-west of the town of Kathu in the Northern Cape Province. The servitude that will be assessed as part of the Basic Assessment Process will include sections of the following farm portions:

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A draft Basic Assessment Report has been prepared by Savannah Environmental and is available for public review. The **30-day** public review period for the draft Basic Assessment Reports is between **29 May 2012** and **29 June 2012**.

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Email: gabriele@savannahSA.com
www.savannahSA.com

**Appendix E4:
Project I&AP Database**

Company	Name	Surname	Department / Directorate	Position	I&AP Sector	I&AP Type
Eskom	John	Geering	Eskom Transmission		Organ of State	Government Body
Gamagara Local Municipality	Cornelias	Joachim		Municipal Manager	Organ of State	Local Municipality
Gamagara Local Municipality	S.J.	Burger		Town Planner	Organ of State	Local Municipality
John Taolo Gaetsewe District Municipality	Sipho	Sebusho		Municipal Manager	Organ of State	District Municipality
National Department of Agriculture, Forestry and Fisheries	Ms Mashudu	Marubini		Delegate of the Minister (Act 70 of 1970)	Organ of State	National Government
National Department of Agriculture, Forestry and Fisheries	Ms Thoko	Buthelezi	AgriLand Liaison Office		Organ of State	National Government
National Department of Energy	Brenda	Phahlaohlaka		Energy Officer	Organ of State	National Government
National Department of Energy	Enid	Babuseng	Northern Cape Regional Office		Organ of State	National Government
National Department of Energy: Northern Cape	The Director				Organ of State	National Government
National Department of Rural Development and Land Reform: Northern Cape	Lorato	Sehularo		Communication Officer	Organ of State	National Government
National Department of Water Affairs	Mr. LJ	Snyders	Northern Cape Regional Office	Chief Director	Organ of State	National Government
Northern Cape Department of Agriculture, Land Reform and Rural Development	Sipho	Mbaqa	Communication Services	Acting Senior Manager	Organ of State	Provincial Government
Northern Cape Department of Agriculture, Land Reform and Rural Development	Wonders Dimakatso	Viljoen Mothibi		Head of Department	Organ of State	Provincial Government
Northern Cape Department of Agriculture, Land Reform and Rural Development	Jackie	Mans	Upington Regional Office		Organ of State	Provincial Government
Northern Cape Department of Agriculture, Land Reform and Rural Development	Ali	Diteme			Organ of State	Provincial Government
Northern Cape Department of Environment and Nature Conservation	Denver	Van Heerden	Department of Environment and Nature Conservation	Head of Department	Organ of State	Provincial Government
Northern Cape Department of Environment and Nature Conservation	Wessel	Jacobs			Organ of State	Provincial Government
Northern Cape Department of Environment and Nature Conservation	Elsabe	Swart			Organ of State	Provincial Government
Northern Cape Department of Environment and Nature Conservation	C	Geldenhuis			Organ of State	Provincial Government
Northern Cape Department of Environment and Nature Conservation	A.L	Mabunda			Organ of State	Provincial Government

Company	Name	Surname	Department	Position
Wincanton	AJ	Bester		Farmer
Wincanton Flatlands and Bosaar	Martin H	Van der Walt		Farmer
Wincanton Flatlands and Bosaar	C.H	Van der Walt		Farmer
Tshiping Water User Association	Stephanie	Cornelissen	Kathu & Sishen Area	Chairperson
Tshiping Water User Association	Albertus	Viljoen		CEO
AUMA South Africa	Steve	Botha		
Electri City - Kathu	Hennie	Fourie		
Solar Northern Cape	Uwe	Westphaeling		
KV3 Engineers	Chrisna	Booyesen		
	Gawie	Liebenberg		
WESSA Northern Cape	Suzanne	Erasmus		Chairperson
Senior Geologist Council for Geoscience	Alexander L.D	Agenbacht		Senior Geologist
Birdlife South Africa	Pam	Barret		
	Hendrik	Henning		Hydrologist & Water Specialist - Kakamas
Northern Cape Rock Art Trust (NCRA) - McGregor Museum	David	Morris		
WESSA Northern Cape	Tania	Anderson		Conservation Officer

Appendix E5:
Correspondence with Authorities



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

APPLICATION FORM FOR ENVIRONMENTAL AUTHORISATION

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEAT/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

The proposed development of a 132 kV power line required to connect the proposed sishen energy facility to the Eskom electricity grid near Kathu and Dibeng, Northern Cape

Kindly note that:

1. This application form is current as of 2 August 2010. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
2. The application must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. Spaces are provided in tabular format and will extend automatically when each space is filled with typing.
3. Where applicable **black out** the boxes that are not applicable in the form.
4. Incomplete applications may be returned to the applicant for revision.
5. The use of the phrase "not applicable" in the form must be done with circumspection. Should it be done in respect of material information required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the Regulations.
6. This application must be handed in at the offices of the relevant competent authority as determined by the Act and regulations.
7. No faxed or e-mailed applications will be accepted.
8. Unless protected by law, all information filled in on this application will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this application on request, during any stage of the application process.

Queries must be addressed to the contact hereunder:

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Director: Environmental Impact Evaluation
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Fedsure Forum Building (corner of Pretorius and Van der Walt Streets)
2nd Floor North Tower
315 Pretorius Street
Pretoria
0002

Queries should be directed to the Directorate: Environmental Impact Evaluation at:

Tel: 012-310-3268
Fax: 012-320-7539

Please note that this form must be copied to the relevant provincial environmental department/s.

View the Department's website at <http://www.deat.gov.za/> for the latest version of the documents.

SITE IDENTIFICATION AND LINKAGE

Please indicate all the Surveyor-general 21 digit site (erf/farm/portion) reference numbers for all sites (including portions of sites) that are part of the application.

Not applicable to a linear development



(if there are more that 6, please attach a list with the rest of the numbers)

(These numbers will be used to link various different applications, authorisations, permits etc. that may be connected to a specific site)

PROJECT TITLE

The proposed development of a 132 kV power line required to connect the proposed sishen energy facility to the Eskom electricity grid near Kathu and Dibeng, Northern Cape

1. BACKGROUND INFORMATION

Project applicant:	Windfall 59 Properties (Pty) Ltd		
Trading name (if any):			
Contact person 1:	Pieter Marthinus Du Plessis		
Physical address:	Building 30, The woodlands, Woodlands Drive, Woodmead, Sandton		
Postal address:	Private Bag X159, Rivonia, South Africa		
Postal code:	2128	Cell:	n/a
Telephone:	+27 10 205 1000	Fax:	+27 87 807 0143
E-mail:	pieterd@aveng.co.za		

Contact person	Pieter Marthinus Du Plessis		
Physical address:	Block B, 204 Rivonia Road, Morningside, Johannesburg		
Postal address:	Block B, 204 Rivonia Road, Morningside, Johannesburg		
Postal code:	2057		n/a
Telephone:	+27 11 779 2970		+27 87 807 0143
E-mail:	peiterd@avenge.co.za		

Provincial Authority:	Northern Cape Department of Environmental & Nature Conservation (DENC)		
Contact person:	Marvin Mathews		
Postal address:	90 Long Street, Sasko Building, New Park, Kimberley		
Postal code:	8300	Cell:	
Telephone:	053 721 0108	Fax:	
E-mail:	Marmatza@gmail.com		

Landowner:	Maverick Trading 1073		
Contact person:	Thinus Mans		
Postal address:	Plaas Beth-EI 0, Dibeng		
Postal code:	8463	Cell:	-
Telephone:		Fax:	-
E-mail:	Thinusmans@yahoo.co.za		

In instances where there is more than one landowner, please attach a list of landowners with their contact details to this application.

Local authority in whose jurisdiction the proposed activity will fall:	Gamagara Local Municipality		
Nearest town or districts:	Kathu Town		
Contact person:	Mr C. Itumeleng		
Postal address:	P.O. Box 1001 Kathu		
Postal code:	8446	Cell:	n/a
Telephone:	053 723 2261	Fax:	053 723 2021
E-mail:	ingridd@gamagara.co.za		

In instances where there is more than one local authority involved, please attach a list of local authorities with their contact details to this application.

2. ACTIVITIES APPLIED FOR TO BE AUTHORISED

For an application for authorisation that involves more than one listed or specified activity that, together, make up one development proposal, all the listed activities pertaining to this application must be indicated.

Indicate the number and date of the relevant notice: Activity No (s) (in terms of the relevant notice): Describe each listed activity as per project description¹:

544, 18 June 2010	10	<p>The construction of facilities or infrastructure for the transmission and distribution of electricity:</p> <ul style="list-style-type: none"> i. Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; ii. Inside urban areas or industrial complexes with a capacity of 275 kilovolts or more. <p><i>The proposed project entails the development of a 132kV power line.</i></p>
544, 18 June 2010	11	<p>The construction of:</p> <ul style="list-style-type: none"> i. Canals; ii. Channels; iii. Bridges; iv. Dams; v. Weirs; vi. Bulk stormwater outlet structures; vii. Marinas; viii. Jetties exceeding 50 square metres in size ix. Slipways exceeding 50 square metres in size x. Buildings exceeding 50 square metres in size; or xi. Infrastructure or structures covering 50 square metres or more <p>Where such construction occurs within a watercourse or within 32 metres of a watercourse, measures from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> <p><i>The relevance of the abovementioned activities (excluding deleted items) will be determined in the Basic Assessment Process.</i></p>

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description

546, 18 June 2010	14(a)i	<p>The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <p>(3) The undertaking of a linear activity falling below the thresholds in Notice 544 of 2010.</p> <p><i>Vegetation clearing of an area of more than 5 ha for the proposed project is being undertaken for a power line (i.e. linear activity).</i></p>
GN 544, 18 June 2010	18	<p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from:</p> <ul style="list-style-type: none"> i. A watercourse; ii. The sea; iii. The seashore; iv. The littoral active zone, an estuary or a distance of 100 metres inland of the high water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving; <ul style="list-style-type: none"> a. Is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or b. Occurs behind the development setback line. <p><i>The relevance of the abovementioned activities (excluding deleted items) will be determined in the Basic Assessment Process.</i></p>

Please note that any authorisation that may result from this application will only cover activities specifically applied for.

2.2 A project schedule, indicating the different phases and timelines of the project, must be attached to this application form.

3. OTHER AUTHORISATIONS REQUIRED

3.1 DO YOU NEED ANY AUTHORISATIONS IN TERMS OF ANY OF THE FOLLOWING LAWS?

3.1.1 National Environmental Management: Waste Act	To be confirmed
3.1.2 National Environmental Management: Air Quality Act	No
3.1.3 National Environmental Management: Protected Areas Act	No
3.1.4 National Environmental Management: Biodiversity Act	To be confirmed
3.1.5 Mineral Petroleum Development Resources Act	To be confirmed
3.1.6 National Water Act	To be confirmed
3.1.7 National Heritage Resources Act	To be confirmed
3.1.8 Other (please specify)	To be confirmed
3.2 Have such applications been lodged already?	No

4. DECLARATIONS

4.1 The Applicant

I, Pieter Marthinus du Plessis, declare that I -

- am, or represent², the applicant in this application;
- have appointed an environmental assessment practitioner to act as the independent environmental assessment practitioner for this application;
- will provide the environmental assessment practitioner and the competent authority with access to all information at my disposal that is relevant to the application;
- will be responsible for the costs incurred in complying with the Environmental Impact Assessment Regulations, 2010, including but not limited to –
 - costs incurred in connection with the appointment of the environmental assessment practitioner or any person contracted by the environmental assessment practitioner;
 - costs incurred in respect of the undertaking of any process required in terms of the Regulations;
 - costs in respect of any fee prescribed by the Minister or MEC in respect of the Regulations;
 - costs in respect of specialist reviews, if the competent authority decides to recover costs; and
 - the provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by the competent authority;
- will ensure that the environmental assessment practitioner is competent to comply with the requirements of these Regulations and will take reasonable steps to verify whether the EAP complies with the Regulations;
- will inform all registered interested and affected parties of any suspension of the application as well as of any decisions taken by the competent authority in this regard;
- am responsible for complying with the conditions of any environmental authorisation issued by the competent authority;
- hereby indemnify the Government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action which the applicant or environmental assessment practitioner is responsible for in terms of these Regulations;
- will not hold the competent authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to obtaining an environmental authorisation or prior to an appeal being decided in terms of these Regulations;
- will perform all other obligations as expected from an applicant in terms of the Regulations;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the applicant³/ Signature on behalf of the applicant:

Windfall 59 Properties (Pty) Ltd

Name of company (if applicable):

23 April, 2012

Date:

² If this is signed on behalf of the applicant, proof of such authority from the applicant must be attached.

³ If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority. An EAP may not sign on behalf of an applicant.

GENERIC PROGRAMME - ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

ID	Task Name	Duration	Month -1	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13
1	Compile application for authorisation	3 days														
2	Submit application to DEA	0 days														
3	Receive authority acceptance of application	0 days														
4	Place advert regarding EIA process	5 days														
5	Undertake Scoping Study & public participation process	8 wks														
6	Public review of draft scoping report	4 wks														
7	Finalise & submit Scoping Report to DEA	5 days														
8	Authority review of scoping report	4 wks														
9	Receive acceptance of scoping report	0 days														
10	Undertake EIA (including specialist studies) and public participation process	12 wks														
11	Public review of draft EIA report	4 wks														
12	Finalise & submit EIA Report to DEA	8 days														
13	Authority review of EIA report	60 days														
14	Initial review period	8 wks														
15	Decision-making process	4 wks														
16	Receive environmental authorisation	0 days														
17	Notify registered I&APs of environmental authorisation	12 days														



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF EAP AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEAT/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

Proposed Rodicon Solar Energy Facility on a site near Middleburg, Northern Cape

Environmental Assessment Practitioner (EAP): ¹	Savannah Environmental (Pty) Ltd		
Contact person:	Karen Jodas		
Postal address:	PO Box 148, Sunninghill		
Postal code:	2157	Cell:	082 655 1935
Telephone:	011 234 6621	Fax:	086 684 0547
E-mail:	karen@savannahsa.com		
Professional affiliation(s) (if any)	South African Council for Natural Scientific Professions		

Project Consultant:	N/A		
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			

4.2 The Environmental Assessment Practitioner

I, Karen Jodas , declare that –

General declaration:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

Hoda

Signature of the environmental assessment practitioner:

Savannah Environmental (Pty) Ltd

Name of company:

24.4.2012.

Date:

Appendix F:
Draft Environmental Management Programme

PROPOSED CONSTRUCTION OF A POWER LINE CONNECTING THE AUTHORISED SISHEN SOLAR ENERGY FACILITY TO THE FERRUM MTS - UMTU KLIP KOP 132 KV POWER LINE, NORTHERN CAPE

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

Submitted as part of the Draft Basic Assessment Report
May 2012

Prepared for:

Windfall 59 Properties (Pty) Ltd
Private Bag X159
Rivonia,
South Africa

Prepared by

Savannah Environmental (Pty) Ltd
PO Box 148
Sunninghill
2175



PROJECT DETAILS

DEA Reference No.	:	14/12/16/3/3/1/574
Title	:	Environmental Impact Assessment Process Proposed Construction of a 132 KV Power Line Connecting the Authorised Sishen Solar Energy Facility to the Ferrum MTS - Umtu Klip Kop 132 K Power Line, Northern Cape
Authors	:	Savannah Environmental (Pty) Ltd Sanusha Govender Karen Jodas
Specialists	:	MetroGIS
Client	:	Windfall 59 Properties (Pty) Ltd
Report Status	:	Draft EMP submitted as part of the Draft Basic Assessment Report for submission to DEA
Review Period	:	May 2012

When used as a reference this report should be cited as: Savannah Environmental (2012)
Draft Basic Assessment Report: Proposed construction of a 132 kV power line connecting the
authorised Sishen Solar Energy Facility to the Ferrum MTS - Umtu Klip Kop 132 kv power line,
Northern Cape.

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DEFINITIONS AND TERMINOLOGY

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Cumulative impacts: Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (e.g. discharges of nutrients and heated water to a river that combine to cause algal bloom and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period and can include both direct and indirect impacts.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable

'Do nothing' alternative: The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Endemic: An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment: the surroundings within which humans exist and that are made up of:

- i. The land, water and atmosphere of the earth;
- ii. Micro-organisms, plant and animal life;

- iii. Any part or combination of (i) and (ii) and the interrelationships among and between them; and
- iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental impact: An action or series of actions that have an effect on the environment.

Environmental management: Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management programme: An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).

Indigenous: All biological organisms that occurred naturally within the study area prior to 1800

Indirect impacts: Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Interested and affected party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups, and the public.

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

Red data species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.

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PURPOSE & OBJECTIVES OF THE EMP

CHAPTER 1

An Environmental Management Programme (EMP) is defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced”¹. The objective of this EMP is to provide consistent information and guidance for implementing the management and monitoring measures established in the permitting process and help achieve environmental policy goals. The purpose of an EMP is to help ensure continuous improvement of environmental performance, reducing negative impacts and enhancing positive effects during the construction and operation of the facility. An effective EMP is concerned with both the immediate outcome as well as the long-term impacts of the project.

The EMP provides specific environmental guidance for the construction and operation phases of a project, and is intended to manage and mitigate construction and operation activities so that unnecessary or preventable environmental impacts do not result. These impacts range from those incurred during start up (site clearing and site establishment) through to those incurred during the construction activities themselves (erosion, noise, dust), to those incurred during site rehabilitation (soil stabilisation, revegetation) and operation.

This EMP is applicable to the proposed 132 kV power line required to connect the Sishen Solar Energy Facility to the Eskom grid near Kathu within the Northern Cape. It has been developed as a set of environmental specifications (i.e. principles of environmental management for the proposed power line project), which are appropriately contextualised to provide clear guidance in terms of the on-site implementation of these specifications (i.e. on-site contextualisation is provided through the inclusion of various monitoring and implementation). During its lifecycle, projects journey through four distinctive phases, i.e. construction, rehabilitation, operation, and decommissioning. The EMP is accordingly separated into measures dealing with the various project phases.

The EMP has the following objectives:

- » To outline mitigation measures and environmental specifications which are required to be implemented for the planning, construction, rehabilitation, and operation phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts associated with the power line.

¹ Provincial Government Western Cape, Department of Environmental Affairs and Development Planning: *Guideline for Environmental Management Plans*. 2005

- » To ensure that the construction and operation phases do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced.
- » To identify entities who will be responsible for the implementation of the measures and outline functions and responsibilities.
- » To propose mechanisms and frequency for monitoring compliance, and preventing long-term or permanent environmental degradation.
- » To facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that was not considered in the Basic Assessment process.

The mitigation measures identified within the Environmental Impact Assessment process are systematically addressed in the EMP, ensuring the minimisation of adverse environmental impacts to an acceptable level.

Windfall 59 Properties must ensure that the implementation of the project complies with the requirements of any environmental authorisations and permits issued for the project, as well as to obligations emanating from other relevant environmental legislation. This obligation is partly met through the development and the implementation of the EMP through its integration into contract documentation for the construction of the power line. Since this EMP is part of the Basic Assessment process undertaken for the proposed power line, it is important that this document be read in conjunction with the Basic Assessment Report as well as with the Environmental Authorisation (once issued). This will contextualise the EMP and enable a thorough understanding of its role and purpose in the integrated environmental management process. This EMP for construction and operation activities has been compiled in accordance with Section 34 of the Environmental Impact Assessment (EIA) Regulations and will be further developed in terms of specific requirements listed in any authorisations issued for the proposed project.

To achieve effective environmental management, it is important that contractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP. The contractor is responsible for informing employees and sub-contractors of their environmental obligations in terms of the environmental specifications, and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts. The contractor's obligations in this regard include the following:

- » Ensuring that employees have a basic understanding of the key environmental features of the construction site and the surrounding environment.
- » Ensuring that a copy of the EMP is readily available on-site, and that all site staff are aware of the location and have access to the document. Employees will be familiar with the requirements of the EMP and the environmental specifications as they apply to the construction of the power line.

- » Ensuring that, prior to commencing any site works, all employees and sub-contractors have attended an Environmental Awareness Training course. The course must provide the site staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
- » Providing basic training in the identification of archaeological sites/objects, and protected flora and fauna that may be encountered on/off the site.
- » Ensuring awareness of any other environmental matters, which are deemed necessary by the ECO.

The EMP is a dynamic document, which must be updated when required. It is considered critical that this draft EMP be updated to include site-specific information and specifications as required throughout the life-cycle of a facility. This will ensure that the project activities are planned and implemented taking sensitive environmental features into account.

PROJECT DETAILS

CHAPTER 2

Windfall 59 Properties (Pty) Ltd proposes to construct 132 kV power line of approximately 5.8 km in length east of Dibeng in the Northern Cape. This power line would connect the Flatlands Substation (a component of the authorised Sishen Solar Energy Facility) to the Ferrum MTS - Umtu Klip Kop 132 kV power line (via a loop in-loop out configuration). This proposed development is herein after referred to as the "The Sishen Power Line" (refer to Figure 1).

A 300 m wide corridor has been assessed as part of this Basic Assessment Process and includes portions of the following farms (as indicated in **Figure 1** by the orange rectangle):

- » Wincanton 472, Portion 6
- » Limebank 471, portions 1, 2, and 3
- » Halliford 466, portions 1, and 3
- » Marsh 467, remaining extent

The purpose of the sishen power line is to evacuate electricity from the Sishen Solar Energy Facility to the Eskom grid. Environmental authorisation has been issued by the Department of Environmental Affairs (DEA) for the Sishen Solar Energy Facility under the DEA Reference number **12/12/20/1860**, and 75MW of this project was awarded preferred bidder status in the Independent Power Producers by the Department of Energy (DOE) on 21 May 2012.

The Sishen Solar Energy Facility is located between two other solar energy facilities, namely the San Solar Energy Facility and the Kathu Solar Energy Facility (Round 1 preferred bidder). In addition, an application for authorisation has been submitted to DEA for a proposed power line to connect the San Solar and Kathu Solar Energy Facilities to the Eskom grid. The table below details all the projects in the area immediately surrounding the study area for the proposed Sishen Power Line Basic Assessment application.

Table 1: Summary of Projects proposed directly adjacent to the Sishen Power Line project

Project	DEA Reference Number	Status
San Solar Energy Facility	14/12/16/3/3/2/273	EIA process in currently in the scoping phase
Kathu Solar Energy Facility	12/12/20/1858	Received environmental authorisation from DEA on the 26/ 09 /2011. Awarded Preferred Bidder status in November 2011 (Round 1).
132 KV Power Line required for the San Solar energy	14/12/16/3/3/1/574	Final BAR has been submitted to DEA. Currently awaiting DEA decision.

facility and the Kathu Solar Energy Facility.		
Sishen Solar Energy Facility	12/12/20/1860	Received environmental authorisation from DEA on the 03/ 10 /2011. Awarded Preferred Bidder status in May 2012 (Round 2).

Both the Kathu Solar Energy Facility and the Sishen Solar Energy Facility have been awarded preferred bidder status. The development of the all three projects in this area will result in a solar energy hub for the Northern Cape and will concentrate solar projects in single vicinity. **Figure 1** below illustrates the adjacent projects in relation to this Sishen Power Line.

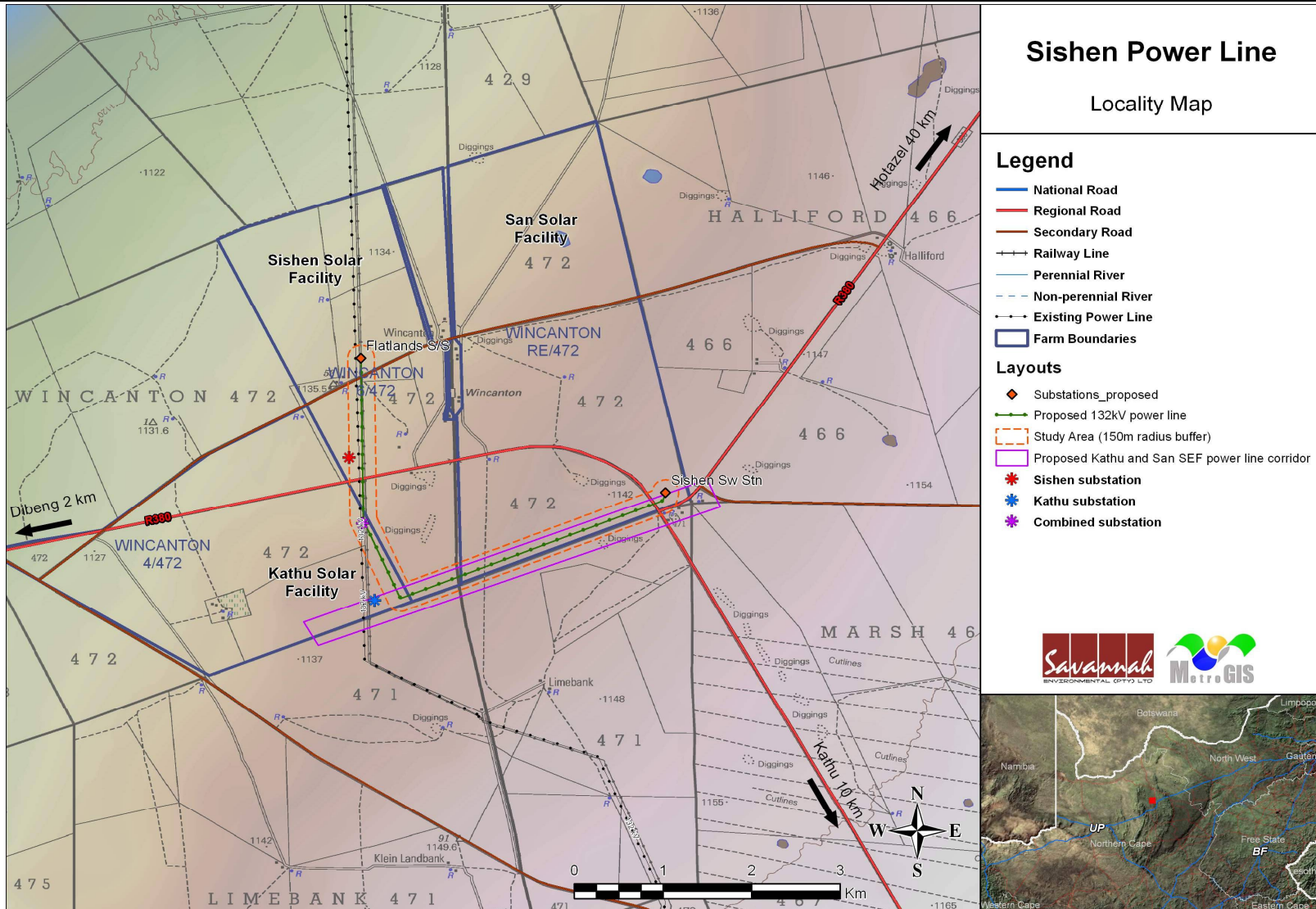


Figure 1: Locality map showing the location of the authorised Kathu and Sishen Solar Energy Facilities, the proposed San Solar Facility and the proposed corridor for the 132 kV power

Assessment of the Alternative Layouts

The 300 m wide corridor that was assessed as part of the Basic Assessment Process includes portions of the following farm portions:

- » Wincanton 472, portions 6
- » Limebank 471, portions 1, 2, and 3
- » Halliford 466, portions 1, and 3
- » Marsh 467, remaining extent.

The corridor has been divided into two route alternatives; north of the boundary fence and south of the boundary fence (refer to Figure 2). The northern route covers Wincanton 472, portions 4, 6, and the remaining extent, and Halliford 466, portions 1, and 3; while the southern route covers Limebank 471, portions 1, 2, and 3, and Marsh 467, remaining extent.

Both the northern and southern routes are environmental acceptable; no fatal flaws have been identified with either, and both routes are technically feasible for the construction of the power line. However, the northern route is preferred for the following reasons.

- » With three energy facilities being proposed on Wincanton 472, portions 4, 6, and the remaining extent (Kathu, Sishen and San Solar Facilities respectively), the northern route is preferred as it allows for the consolidation of impacts associated with power generation and transmission infrastructure.
- » From a technical perspective the northern route is preferred as agreements have already been signed for the proposed solar energy facility (i.e. Wincanton 472, portions 4, 6, and the remaining extent). As such new agreements will not be required for the power line servitude.

2.1 Activities and Components associated with the Power Line

Power lines are constructed in the following simplified sequence:

- Step 1:** Determination of technically feasible alternative corridors
- Step 2:** EIA input into route selection
- Step 3:** Negotiation of final route with affected landowners
- Step 4:** Survey of the route
- Step 5:** Determination of the conductor type
- Step 6:** Selection of best-suited conductor, towers, insulators, foundations
- Step 7:** Final design of line and placement of towers
- Step 8:** Issuing of tenders, and award of contract to construction companies
- Step 9:** Vegetation clearance and construction of access roads (where required)
- Step 10:** Tower pegging

Step 11: Construction of foundations

Step 12: Assembly and erection of towers

Step 13: Stringing of conductors

Step 14: Rehabilitation of disturbed areas and protection of erosion sensitive areas

Step 15: Testing and commissioning

The main activities/components associated with the proposed power line project are detailed in Table 2.1.

Table 2.1: Activities Associated with planning, construction, operation and decommissioning of the power line

Main Activity/Project Component	Components of Activity	Details
Planning		
Conduct technical surveys	<ul style="list-style-type: none"> » Geotechnical survey by geotechnical engineer: » Site survey and confirmation of the tower micro-siting footprint 	<ul style="list-style-type: none"> » All surveys are to be undertaken prior to initiating construction.
Construction		
Undertake site preparation	<ul style="list-style-type: none"> » Clearance of vegetation at the within the servitude footprint (at tower footprints and access road sites only). » Shallow excavations for foundations for the power line towers. 	<ul style="list-style-type: none"> » A loop-in/loop out double circuit is likely to be used which will require a servitude of approximately 35 m. » These activities will require the stripping of topsoil, which will need to be appropriately stockpiled for use in rehabilitation.
Construct infrastructure foundations	<ul style="list-style-type: none"> » Concrete foundations will be constructed for the 'feet' of the power line towers. 	<ul style="list-style-type: none"> » Foundation holes for the power line towers will be mechanically excavated to a depth of approximately 2 m. The concrete foundation will be poured and will then be left for up to a week to cure. » Aggregate and cement to be transported from the closest centre to the development, with the establishment of small designated concrete batching areas close to the activities (i.e. potentially at the development site for the solar energy facilities).
Transport components and equipment to site	<ul style="list-style-type: none"> » Trucks will be used to transport all components to site: » The normal civil engineering construction equipment for the civil works (e.g. 	<ul style="list-style-type: none"> » The individual components are unlikely to be classified as abnormal loads in terms of the Road Traffic Act (Act No. 29 of 1989) by virtue of their limited dimensions.

Main Activity/Project Component	Components of Activity	Details
	excavators, trucks, graders, compaction equipment, cement mixers, etc.). * Ready-mix concrete trucks.	» The equipment will be transported to the site using appropriate National and Provincial routes, and the dedicated access/haul road to the site itself.
Erection of the towers and stringing of the power line.	» The steel tower structures will be assembled on site. » The cabling for the power line will be laid on the ground and subsequently strung.	» The stringing will take place within the confines of the servitude.
Connect the power line to the grid	» The electricity will be evacuated into the Ferrum MTS - Umtu Klipkop 132 kV power line.	» A loop-in / loop-out connection and a double circuit tower structure will be used.
Undertake site rehabilitation	» Remove all construction equipment from the site. » Rehabilitation of temporarily disturbed areas where practical and reasonable.	» On commissioning of the power line, any access points to the site not required for operation and maintenance will be closed and prepared for rehabilitation.
Operation		
Operation	» Power line	» The operational phase is proposed to run for a period of approximately 25 + years depending on the requirements of the Sishen Energy Facility. » During this time no security, maintenance, supervision, or monitoring teams will be required on site. » Maintenance teams will be required from time to time to ensure on-going operation of the power line.
Decommissioning		
Site preparation	» Preparation of the site » Mobilisation of decommissioning	» The Kathu Solar Energy Facility will either be decommissioned or the operational phase will be

Main Activity/Project Component	Components of Activity	Details
	equipment	extended. If it is deemed financially viable to continue, existing components would be disassembled and replaced with more appropriate technology/ infrastructure available at that time.

STRUCTURE OF THIS EMP

CHAPTER 3

The first two chapters provide background to the EMP and the proposed project. The chapters which follow consider the:

- » Planning and design activities
- » Construction activities
- » Operation activities
- » Decommissioning activities

These chapters set out the procedures necessary for Windfall 59 Properties to achieve environmental compliance. For each of the phases of implementation for the power line project, an over-arching environmental **goal** is stated. In order to meet this goal, a number of **objectives** are listed. The management programme has been structured in table format in order to show the links between the goals for each phase and their associated objectives, activities/risk sources, mitigation actions monitoring requirements and performance indicators. A specific environmental management programme table has been established for each environmental objective. The information provided within the EMP table for each objective is illustrated below:

OBJECTIVE: Description of the objective, which is necessary in order to meet the overall goals; these take into account the findings of the environmental impact assessment specialist studies

Project component/s	» List of project components affecting the objective.
Potential Impact	» Brief description of potential environmental impact if objective is not met
Activity/risk source	» Description of activities which could impact on achieving objective
Mitigation: Target/Objective	» Description of the target; include quantitative measures and/or dates of completion

Mitigation: Action/control	Responsibility	Timeframe
List specific action(s) required to meet the mitigation target/objective described above.	Who is responsible for the measures	Time periods for implementation of measures

Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the management programme.
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting.

The objectives and EMP tables are required to be reviewed and possibly modified whenever changes, such as the following, occur:

- » Planned activities change (i.e. in terms of the components and/or layout of the power line).
- » Modification to or addition to environmental objectives and targets.
- » Relevant legal or other requirements are changed or introduced.
- » Significant progress has been made on achieving an objective or target such that it should be re-examined to determine if it is still relevant, should be modified, etc.

3.1. Project Team

This draft EMP was compiled by:

	Name	Company
EMP Compilers:	Sanusha Govender	Savannah Environmental
	Karen Jodas	Savannah Environmental

The Savannah Environmental team have extensive knowledge and experience in environmental impact assessment and environmental management, having been involved in EIAs and Basic Assessment processes over the past ten (14) years. They have managed and drafted Environmental Management Programmes for other power generation projects throughout South Africa, including numerous renewable energy facilities and power line projects.

MANAGEMENT PROGRAMME: PLANNING & DESIGN

CHAPTER 4

4.1. Planning and Design

Overall goal for planning and design: Undertake the planning and design phase of the power line in a way that:

- » Ensures that the design of the power line responds to the identified environmental constraints and opportunities.
- » Ensures that adequate regard has been taken of any landowner concerns and that these are appropriately addressed through design and planning (where appropriate).
- » Ensures that the best environmental options are selected for the power line alignment.
- » Enables the construction activities to be undertaken without significant disruption to other land uses in the area.

In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

4.2. Objectives

OBJECTIVE: Ensure that the design of the power line responds to the identified environmental constraints and opportunities

From the investigations undertaken for the proposed power line, no absolute 'no go' areas were identified.

The 300 m wide corridor that has been assessed as part of the Basic Assessment Process includes portions of the following farm portions:

- » Wincanton 472, portions 4, 6, and the remaining extent
- » Limebank 471, portions 1, 2, and 3
- » Halliford 466, portions 1, and 3
- » Marsh 467, remaining extent

The corridor has been divided into two route alternatives, north of the boundary fence and south of the boundary fence. The northern route covers Wincanton 472, portions 4, 6, and the remaining extent, and Halliford 466, portions 1, and 3; while the southern route covers Limebank 471, portions 1, 2, and 3, and Marsh 467, remaining extent.

As part of the northern route Wincanton 472, portions 4 and 6 have both been assessed as part of the EIAs for the Kathu and Sishen Solar Energy Facilities respectively (i.e. both have received a positive environmental authorisation). The remaining extent of Wincanton 472 will be assessed as part of the proposed EIA for the San Solar Energy Facility. No farms that form part of the southern route have been assessed as part of an EIA process. Therefore the northern route is preferred as the majority of it has been assessed and no environmental fatal flaws have been identified.

With three energy facilities being proposed on Wincanton 472, portions 4, 6, and the remaining extent (Kathu, Sishen and San Solar Facilities respectively), the northern route is preferred as it allows for the consolidation of impacts.

Project component/s	» Power line. » Access roads.
Potential Impact	» Design fails to respond optimally to the identified environmental considerations.
Activities/risk sources	» Power line layout. » Access road alignment.
Mitigation: Target/Objective	» Ensure that the design responds to the identified environmental constraints and opportunities.

Mitigation: Action/control	Responsibility	Timeframe
Align power line to the northern portion of the corridor that was assessed in order to consolidate power generation and distribution infrastructure and thereby minimise the impact on the surrounding environment	Engineering Design Consultant, and Windfall 59 Properties	Design phase
Make use of bird-friendly power line designs in order to minimise impacts on avifauna.	Engineering Design Consultant, and Windfall 59 Properties	Tender design, and design review stage
Consider design level mitigation measures, especially with respect to visual aesthetics. These recommendations are to be supplemented by information collected during the pre-construction surveys.	Engineering Design Consultant, and Windfall 59 Properties	Tender design, and design review stage
A detailed geotechnical investigation is required for the design phase.	Windfall 59 Properties	Design phase
Compile a comprehensive stormwater management plan for hard surfaces as part of the final design of the project.	Windfall 59 Properties	Design phase
Make use of existing access roads as far as possible.	Engineering Design Consultant, and Windfall 59 Properties	Design phase

Mitigation: Action/control	Responsibility	Timeframe
Where new access roads are required, these are to be carefully planned and constructed to minimise the impacted area and prevent unnecessary excavation, placement, and compaction of soil.	Engineering Design Consultant, and Windfall 59 Properties , Contractor	Pre-construction, and construction
Balance technical and financial considerations against environmental constraints and opportunities in finalising the design of key elements.	Windfall 59 Properties	Tender design, and design review stage

Performance Indicator	<ul style="list-style-type: none"> » Design meets objectives and does not degrade the environment. » Design and layouts respond to the mitigation measures and recommendations in the Basic Assessment Report.
Monitoring	<ul style="list-style-type: none"> » Ensure that the design implemented meets the objectives and mitigation measures in the Basic Assessment Report through review of the design by the project manager, and ECO prior to the commencement of construction.

MANAGEMENT PROGRAMME: CONSTRUCTION

CHAPTER 5

5.1. Construction

Overall goal for construction: Undertake the construction phase in a way that:

- » Construction activities are properly managed in respect of environmental aspects and impacts.
- » Construction activities are undertaken without significant disruption to other land uses in the area, in particular concerning farming practices, traffic and road use, and effects on local residents.

5.2. Institutional Arrangements: Roles and Responsibilities for the Construction Phase

As the proponent, Windfall 59 Properties must ensure that the development of the power line complies with the requirements of all environmental authorisations and permits, and obligations emanating from other relevant environmental legislation. This obligation is partly met through the development of the EMP, and the implementation of the EMP through its integration into the contract documentation. Windfall 59 Properties will retain various key roles and responsibilities during the construction of the power line; these are outlined below.

OBJECTIVE: Establish clear reporting, communication and responsibilities in relation to environmental incident

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the project manager; site manager; environmental control officer and contractor for the construction phase of this project are as detailed below.

The **Project Manager** will:

- » Ensure of all specifications and legal constraints specifically concerning the environment are highlighted to the Contractor(s) so that they are aware of these.
- » Ensure that Windfall 59 Properties and its Contractor(s) are made aware of all stipulations within the EMP.
- » Ensure that the EMP is correctly implemented throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes.

- » Be fully conversant with the Environmental Impact Assessment for the project, the EMP, the conditions of the Environmental Authorisation (once issued), and all relevant environmental legislation.

The **Site Manager** (Windfall 59 Properties 's on-site representative) will:

- » Be fully knowledgeable with the contents of the Basic Assessment Report.
- » Be fully knowledgeable with the contents and conditions of the Environmental Authorisation (once issued).
- » Be fully knowledgeable with the contents of the Environmental Management Programme.
- » Be fully knowledgeable with the contents of all relevant environmental legislation, and ensure compliance with these.
- » Have overall responsibility of the EMP and its implementation.
- » Conduct audits to ensure compliance to the EMP.
- » Ensure there is communication with the project manager, the ECO, and relevant discipline Engineers on matters concerning the environment.
- » Ensure that no actions are taken which will harm or may indirectly cause harm to the environment, and take steps to prevent pollution on the site.
- » Confine activities to the demarcated construction site.

The **ECO** will be responsible for monitoring, reviewing, and verifying compliance by the Contractor with the environmental specification. Accordingly, the ECO will:

- » Be fully knowledgeable with the contents with the Basic Assessment Report.
- » Be fully knowledgeable with the contents with the conditions of the Environmental Authorisation (once issued).
- » Be fully knowledgeable with the contents with the EMP.
- » Be fully knowledgeable with the contents with all relevant environmental legislation, and ensure compliance with them.
- » Ensure that the contents of this document are communicated to the Contractor site staff and that the site manager and contractor are constantly made aware of the contents through discussion.
- » Ensure that the compliance of the EMP is monitored through regular and comprehensive inspection of the site and surrounding areas.
- » Ensure that if the EMP conditions or specifications are not followed then appropriate measures are undertaken to address this.
- » Monitoring and verification must be implemented to ensure that environmental impacts are kept to a minimum, as far as possible.
- » Ensure that the site manager has input into the review and acceptance of construction methods and method statements.
- » Ensure that activities on site comply with all relevant environmental legislation.
- » Ensure that a removal is ordered of any person(s) and/or equipment responsible for any contravention of the specifications of the EMP.

- » Ensure that the compilation of progress reports for submission to the project manager, with input from the site manager, takes place on a regular basis, including a final post-construction audit.
- » Ensure that there is communication with the site manager regarding the monitoring of the site.
- » Ensure that any non-compliance or remedial measures that need to be applied are reported.

Contractors and Service Providers: All contractors (including sub-contractors and staff) and service providers are ultimately responsible for:

- » Ensuring adherence to the environmental management specifications.
- » Ensuring that Method Statements are submitted to the site manager, and ECO, for approval before any work is undertaken. Any lack of adherence to this will be considered as non-compliance to the specifications of the EMP.
- » Ensuring that any instructions issued by the site manager on the advice of the ECO are adhered to.
- » Ensuring that a report is tabled at each site meeting, which will document all incidents that have occurred during the period before the site meeting.
- » Ensuring that a register is kept in the site office, which lists all transgressions issued by the ECO.
- » Ensuring that a register of all public complaints is maintained.
- » Ensuring that all employees, including those of sub-contractors receive training before the commencement of construction in order that they can constructively contribute towards the successful implementation of the EMP (i.e. ensure their staff are appropriately trained as to the environmental obligations).

5.3. Objectives

In order to meet the goal detailed in Section 5.1 above, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE: Site establishment

Site establishment is the first activity which is to be undertaken within the construction phase. The contractor must take all reasonable measures to ensure the safety of the public in the surrounding area. Where the public could be exposed to danger by any of the works or site activities, the contractor must, as appropriate, provide suitable flagmen, barriers and/or warning signs in English, Afrikaans and any other relevant local languages, all to the approval of the site manager.

Project component/s	<ul style="list-style-type: none"> » Existing and new gravel access roads. » Construction site. » Power line servitude and tower locations. » Site equipment camp.
Potential Impact	<ul style="list-style-type: none"> » Hazards to landowners and public. » Security of materials. » Damage to indigenous natural vegetation, due largely to ignorance of where such areas are located. » Loss of threatened plant species and protected tree species.
Activities/risk sources	<ul style="list-style-type: none"> » Open excavations/diggings (foundations and cable trenches). » Movement of construction vehicles in the area and on-site.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » To secure the site against unauthorised entry. » To protect members of the public/landowners/residents. » No loss of or damage to sensitive vegetation in areas outside the immediate development footprint.

Mitigation: Action/control	Responsibility	Timeframe
Secure site, working areas and excavations in an appropriate manner, as agreed with the Site Manager and ECO.	Contractor	Erection: during site establishment Maintenance: duration of contract
Where necessary to control access, fence and secure area.	Contractor	Erection: during site establishment Maintenance: for duration of contract
Fence and secure contractor's equipment camp, preferably at the same place as the solar facility construction camp.	Contractor	Erection: during site establishment Maintenance: duration of contract
Identify disturbance areas and restrict construction activity to these areas.	ECO / Contractor	Pre-construction, and construction
Establish the necessary ablution facilities with chemical toilets. Provide adequate sanitary facilities and ablutions for construction workers (1 toilet per every 15 workers) at appropriate locations along the power line servitude.	Contractor	Erection: during site establishment Maintenance: duration of contract
Ablution or sanitary facilities should not be located within 100 m from a 1:100 year flood line including water courses, wetlands or within a horizontal distance	Contractor	During site establishment, construction and

Mitigation: Action/control	Responsibility	Timeframe
of less than 100 m, whichever is applicable.		maintenance
Supply adequate numbers of appropriate waste collection bins in appropriate locations along the servitude where construction is being undertaken.	Contractor	Erection: during site establishment Maintenance: for duration of contract within a particular area
All unattended open excavations shall be adequately demarcated and/or fenced. Adequate protective measures must be implemented to prevent unauthorised access to the working area.	Contractor	Erection: during site establishment Maintenance: for duration of contract

Performance Indicator	<ul style="list-style-type: none"> » No unnecessary environmental impacts associated with site established. » Site is secure and there is no unauthorised entry. » Construction equipment camp established in an appropriate position. » No members of the public/ landowners injured.
Monitoring	<ul style="list-style-type: none"> » An incident reporting system must be used to record non-conformances to the EMP. » ECO to monitor all construction areas on a continuous basis until all construction and rehabilitation is completed; immediate report backs to site manager in terms of non-conformances recorded.

OBJECTIVE: Minimise traffic related impacts

The construction phase will be the most significant in terms of generating traffic impacts, resulting from the transport of equipment, materials, ready-mix concrete, and construction crews to the site and the return of the vehicles after delivery of materials. Employees would be transported from their residences to the site and back on a daily basis. Transportation of workers would result in an additional daily increase in heavy vehicles (e.g. buses) on the local roads. Concerns in this regard relate to the safety of other road users, pedestrians, and animals (especially in the area between Dibeng and the proposed site where animals graze in the unfenced municipal area).

In addition, impacts on traffic could materialise when construction activities across the R380 are undertaken (i.e. where the power line crosses this road).

Even though the traffic related impacts are of a low significance it warrants mitigation to limit any possible negative impacts on the local roads and intrusion on the movements of the property owners and communities making use of the R380 on a daily basis.

Project component/s	<ul style="list-style-type: none"> » Access roads. » Transportation of equipment and project components to site. » Construction of the power line across the R380.
Potential Impact	<ul style="list-style-type: none"> » Impact of heavy construction vehicles on road surfaces. » Risk of accidents involving people and animals. » Deterioration of road conditions (both surfaced and gravel road) due to the load frequency and the current condition of the gravel roads. » Impacts on traffic movement patterns during construction.
Activities/risk sources	<ul style="list-style-type: none"> » Construction vehicle movement. » Speeding on local roads. » Transportation of project components to site. » Site preparation and earthworks. » Mobile construction equipment movement on-site. » Construction of power line across the R380.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Minimise impact of traffic associated with the construction of the power line on local traffic. » Minimise potential for negative interaction between pedestrians or sensitive users and traffic associated with the power line construction. » Minimise impacts on traffic movement patterns during construction activities across the R380. Minimise impacts on road surfaces. » Ensure all vehicles are roadworthy and all materials/equipment are carried appropriately and within any imposed permit/licence conditions.

Mitigation: Action/control	Responsibility	Timeframe
The contractor's plans, procedures and schedules regarding the transportation of equipment to site, as well as the anticipated intrusion impacts should be clarified with affected parties prior to the construction phase.	Windfall 59 Properties , and ECO	Pre-construction
Residents of the farms in close proximity to the construction site who access their farms from the R380 should be allowed access to their properties at all times.	Contractor	Construction
The movement of construction vehicles through the local area should be limited to off-peak periods (if possible) to minimise adverse impacts	Contractor	Construction
Signs should preferably be erected near the construction site, warning residents, and visitors about the hazards around the construction site and the presence of heavy vehicles.	Contractor	Construction

Mitigation: Action/control	Responsibility	Timeframe
Strict vehicle safety standards should be implemented and monitored.	Contractor, and ECO	Construction
Construction vehicles should keep to the speed limits.	Contractor, and ECO	Construction
A designated access (or accesses) to the proposed site must be created to ensure safe entry and exit.	Contractor	Pre-construction
No deviation from approved access routes within the site must be allowed.	Contractor	Duration of contract
Appropriate road management strategies must be implemented on external and internal roads with all employees and contractors required to abide by standard road and safety procedures.	Contractor	Pre-construction
Any traffic delays as a result of construction traffic or construction activities across the R380 must be co-ordinated with the appropriate authorities.	Contractor	Duration of contract
Keep any new hard road surfaces as narrow as possible.	Contractor	Duration of contract
Improve road drainage, grade roads to remove corrugation, add gravel wearing course. Implement a maintenance programme for period of construction.	Local roads authorities, and Contractor	Pre-Construction and construction

Performance Indicator	<ul style="list-style-type: none"> » Vehicles keeping to the speed limits. » Vehicles are in good working order and safety standards are implemented. » Local residents and road users are aware of planned vehicle movements and schedules. » Access to private property not impacted by construction activities. » No traffic related accidents are experienced as a result of the construction activities. » Complaints of residents are not received (e.g. concerning the speeding of heavy vehicles).
Monitoring	<ul style="list-style-type: none"> » Project proponent and or appointed ECO must monitor indicators listed above to ensure that they have been implemented. » A complaints register must be maintained, in which any complaints from residents/the community will be logged. Complaints must be investigated and, where appropriate, acted upon.

OBJECTIVE: Minimise the potential impact on safety

Construction related accidents are also always a concern when construction activities are undertaken. Safety at and around the construction site should be ensured by limiting any fire risks, fencing off the construction area to avoid unauthorised access and by

employing security personnel. Local doctors and ambulance facilities for accidents would be used and it is anticipated that there would be sufficient capacity for minor emergencies. Major emergencies would have to be routed to the hospital in Kathu or the hospital in Kuruman.

Project component/s	<ul style="list-style-type: none"> » Power line. » Associated infrastructure.
Potential Impact	<ul style="list-style-type: none"> » Outside workers are involved in criminal activities and/or fires occur.
Activities/risk sources	<ul style="list-style-type: none"> » Safety of individuals and animals are at risk. » Theft of livestock. » Theft of construction material. » On-site accidents.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Employment of local labour should be maximised and strict security measures should be implemented at the construction site. » Implement a fire response programme.

Mitigation: Action/control	Responsibility	Timeframe
The construction site should be fenced and access to the area controlled.	Windfall Properties , and contractor 59	All phases of project
Procedures and measures to prevent, and in worst cases, attend to fires should be developed in consultation with the surrounding property owners and Gamagara Local Municipality.	Windfall Properties Gamagara Local Municipality Local communities 59	Pre-construction and when required
Fire fighting equipment must be available on site and personnel should be aware of where this equipment is stored and how to operate it.	Windfall Properties , and contractor 59	All phases of project
Establish and maintain fire breaks.	Windfall Properties , and contractor 59	All phases of project
Develop and implement an emergency response procedure for on-site accidents and incidents.	Windfall Properties , and contractor 59	All phases of project

Performance Indicator	<ul style="list-style-type: none"> » No fires occur as a result of construction activities. » Appropriate safety procedures are in place to minimise the risk of on-site accidents.
Monitoring	<ul style="list-style-type: none"> » Project proponent, and appointed ECO must monitor indicators listed above to ensure that they have been implemented. » A complaints register must be maintained, in which any complaints from residents/the community will be logged. Complaints must be investigated and, where appropriate, acted upon.

OBJECTIVE: Noise control

Various construction activities would be taking place during the development of the power line and there exists a risk that some of these activities could have a noise impact on surrounding residents.

Project component/s	<ul style="list-style-type: none"> » Construction of infrastructure. » Movement of vehicles. » Activities of construction crews.
Potential Impact	<ul style="list-style-type: none"> » Increased noise levels at potentially sensitive receptors.
Activity/risk source	<ul style="list-style-type: none"> » Any noisy construction activities.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Minimise the generation of a disturbing or nuisance noises, where possible. » Ensure acceptable noise levels at surrounding stakeholders and potentially sensitive receptors. » Ensuring compliance with Noise Control Regulations.

Mitigation: Action/control	Responsibility	Timeframe
Establish a line of communication and notify all stakeholders and potentially sensitive receptors of the means of registering any issues, complaints, or comments.	ECO	All phases of project
Notify surrounding landowners about noisy work to take place at least 2 days before the activity is to start. The following information to be presented in writing: <ul style="list-style-type: none"> » Description of activity to take place » Estimated duration of activity » Working hours » Contact details of responsible party 	ECO	Duration of construction. At least 2 days, but not more than 5 days before activity is to commence
Ensure that all construction equipment is maintained and fitted with the required noise abatement equipment.	ECO	Weekly inspection
Where possible, construction work should be undertaken during normal working hours (06h00 – 18h00), from Monday to Saturday. If agreements can be reached (in writing) with the surrounding (within a 1,000m distance) potentially sensitive receptors, these working hours can be extended.	Contractor	As required

Performance Indicator	<ul style="list-style-type: none"> » No noise complaints are registered.
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Monitoring	<ul style="list-style-type: none"> » Project proponent, and appointed ECO must monitor indicators listed above to ensure that they have been implemented. » A complaints register must be maintained, in which any complaints from residents/the community will be logged. Complaints must be investigated and, where appropriate, acted upon.
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OBJECTIVE: Management of dust and emissions to air

During the construction phase, limited gaseous or particulate emissions are anticipated from exhaust emissions, as well as vehicle entrained dust from the movement of vehicles on the main and internal access roads.

Project component/s	<ul style="list-style-type: none"> » Construction vehicles and equipment on-site. » Gravel access roads » Open excavations
Potential Impact	<ul style="list-style-type: none"> » Dust and particulates from vehicle movement to and on-site, foundation excavation, road construction activities, road maintenance activities, temporary stockpiles, and vegetation clearing affecting the surrounding residents and visibility. » Release of minor amounts of air pollutants (for example NO₂, CO and SO₂) from vehicles and construction equipment.
Activities/risk sources	<ul style="list-style-type: none"> » Clearing of vegetation and stripping of topsoil. » Excavation, grading, scraping. » Transport of materials, equipment, and components on gravel access roads. » Re-entrainment of deposited dust by vehicle movements. » Wind erosion from topsoil and spoil stockpiles and unsealed roads and surfaces. » Fuel burning vehicle engines.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » To ensure emissions from all vehicles are minimised, where possible, for the duration of the construction phase. » To minimise nuisance to the community from dust emissions and to comply with workplace health and safety requirements for the duration of the construction phase.

Mitigation: Action/control	Responsibility	Timeframe
Roads must be maintained to a manner that will ensure that dust from road or vehicle sources is not visibly excessive. Ensure that any damage to roads which can be attributed to the construction activities is repaired on completion of the construction phase.	Contractor	Site establishment, and construction
An appropriate dust suppressant must be applied on all exposed areas and stockpiles as required to	Contractor	Duration of contract

Mitigation: Action/control	Responsibility	Timeframe
minimise/control airborne dust.		
Haul vehicles moving outside the construction site carrying material that can be wind-blown must be covered with tarpaulins.	Contractor	Duration of contract
Speed of construction vehicles must be restricted, as defined by the ECO.	Contractor, and ECO	Duration of contract
Disturbed areas must be re-vegetated as soon as practicable once construction is completed in an area.	Contractor	Completion of construction
Construction vehicles and equipment must be maintained in a road-worthy condition at all times.	Contractor	Duration of contract
If monitoring results or complaints indicate inadequate performance against the criteria indicated, then the source of the problem must be identified, and existing procedures or equipment modified to ensure the problem is rectified.	Contractor	Duration of contract

Performance Indicator	<ul style="list-style-type: none"> » No complaints from affected residents or community regarding dust or vehicle emissions from construction activities. » Dust suppression measures implemented for all roads that require such measures during the construction phase. » Drivers made aware of the potential safety issues and enforcement of strict speed limits when they are employed. » Road worthy certificates in place for all heavy vehicles at outset of construction phase and up-dated on a monthly basis.
Monitoring	<ul style="list-style-type: none"> » Monitoring must be undertaken to ensure emissions are not exceeding the prescribed levels via the following methods: <ul style="list-style-type: none"> ▪ Visual daily inspections of dust generation by construction activities throughout the construction phase. ▪ Immediate reporting by personnel of any potential or actual issues with nuisance dust or emissions to the site manager. » A complaints register must be maintained, in which any complaints from residents/the community will be logged. Complaints must be investigated and, where appropriate, acted upon. » An incident reporting system must be used to record non-conformances to the EMP.

OBJECTIVE: Control the establishment and spread of alien invasive plants

Alien invasive plants should be controlled on site throughout the life-cycle of the project. It is important to maintain this situation and not allow alien species to become established on site.

Project Component/s	» Any activity that will result in disturbance.
Potential Impact	» Invasion of natural vegetation surrounding the site by declared weeds or invasive alien species.
Activities/Risk Sources	» Construction, environmental management.
Mitigation: Target/Objective	» No establishment of spread of alien plants within the project development site.

Mitigation: Action/Control	Responsibility	Timeframe
Avoid creating conditions in which alien plants may become established: » Rehabilitate disturbed areas as quickly as possible. » Do not import soil from areas with alien plants.	Contractor	Construction Phase, and operational phase
Establish and implement an ongoing monitoring programme to detect and quantify any alien species that may become established on site and identify the problem species (as per Conservation of Agricultural Resources Act).	Contractor	Construction Phase, and operational phase
Immediately control any alien plants that become established using registered control methods.	Contractor	Construction Phase, and operational phase

Performance Indicator	» For each alien species: number of plants and aerial cover of plants within project area and immediate surroundings
Monitoring	<ul style="list-style-type: none"> » Ongoing monitoring of area by ECO during construction. » Ongoing monitoring of area by environmental manager during operation. » Annual audit of project area and immediate surroundings by qualified botanist. » If any alien invasive species are detected then the distribution of these should be mapped (GPS co-ordinates of plants or concentrations of plants), number of individuals (whole site or per unit area), age and/or size classes of plants and aerial cover of plants. The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project area. The environmental manager should be responsible for driving this process. » Reporting frequency depends on legal compliance framework.

OBJECTIVE: To avoid and or minimise the potential risk of increased veld fires during the construction phase

The vegetation in the study area may be at risk of fire. The increased presence of people on the site during construction, albeit limited, could increase the risk of veld fires, particularly in the dry season.

Project component/s	» Construction the power line towers and cable stringing. » Construction camps.
Potential Impact	» Veld fires can pose a personal safety risk to local farmers and communities, and their homes, crops, livestock and farm infrastructure, such as gates and fences.
Activities/risk sources	» The presence of construction workers and their activities on the site can increase the risk of veld fires.
Mitigation: Target/Objective	» To avoid and or minimise the potential risk of veld fires on local communities and their livelihoods.

Mitigation: Action/control	Responsibility	Timeframe
Ensure that open fires on the site for cooking or heating are not allowed except in designated areas.	Windfall Properties , and contractor	59 Duration of construction
Fire breaks should be established and maintained, where appropriate.	Windfall Properties	59 Duration of contract
Provide adequate fire fighting equipment on-site.	Windfall Properties , and contractor	59 Duration of construction
Provide fire-fighting training to selected construction staff.	Contractor	Duration of construction

Performance Indicator	Designated areas for fires identified on site at the outset of the construction phase. Fire fighting equipment and training provided before the construction phase commences. Fire breaks established and maintained.
Monitoring	Appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.

OBJECTIVE: Control runoff and soil erosion & degradation

The soil resource on the site needs to be conserved as far as possible to minimise the cumulative impact on the local environment. A set of strictly adhered to mitigation measures are required to effectively limit the impact on the environment. The disturbance areas where human impact is likely are the focus of the mitigation measures laid out below.

Project component/s	<ul style="list-style-type: none"> » Site clearance. » Excavation for power line towers.
Potential Impact	<ul style="list-style-type: none"> » Degradation of soil. » Degradation of local geology. » Soil erosion.
Activities/risk sources	<ul style="list-style-type: none"> » Water and wind erosion of cleared and excavated areas. » Excavation, mixing, dumping, stockpiling, and compaction of soil. » Concentrated discharge of water from construction activity. » Site preparation and earthworks. » Power line towers foundations installation. » Mobile construction equipment movement on site.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Minimise degradation of rock and soil by construction activity. » Conserve topsoil by stockpiling and re-using in disturbance areas. » Minimise erosion of soil from site during construction.

Mitigation: Action/control	Responsibility	Timeframe
Identify disturbance areas and restrict construction activities to these areas.	ECO, contractor	Pre-construction, and construction
Additional access roads to be carefully planned and constructed to minimise the impacted area and prevent unnecessary excavation, placement, and compaction of soil.	Engineer/ ECO	Pre-construction, and construction
Erosion features must be immediately stabilised with appropriate erosion control measures, if they develop.	Contractor	Construction
Stockpile topsoil for re-use in the rehabilitation phase. Maintain stockpile shape and protect from erosion. Limit the height of stockpiles as far as possible to reduce compaction.	Contractor	During site establishment, and any activity related to earthworks as well as the duration of construction
Rehabilitate any disturbed areas immediately after construction in that area is complete in order to stabilise landscapes.	Contractor	Post-construction
Any stockpiles must be protected against wind and water erosion (e.g. surrounded by shade cloth fences or damped down on a regular basis).	Contractor	Duration of contract
Erosion control measures: Run-off attenuation on	Contractor/ ECO	Erection: before

Mitigation: Action/control	Responsibility	Timeframe
slopes (sand bags, logs), silt fences, stormwater catch-pits, shade nets, or temporary mulching over denuded areas.		construction Maintenance: duration of contract
Vehicular traffic must be controlled during construction, confining access and roadways, where possible, to proposed or existing road alignments.	Contractor	Duration of contract
As far as possible, access to the construction site should be restricted to a single access point.	Contractor	Duration of contract
Internal access roads should be kept to a minimum. Use existing roads wherever possible.	Contractor	During site establishment
Movement of vehicles on-site is to be on approved and formalised access roads only, which shall be adequately maintained throughout construction. Where temporary tracks are required these are to be ripped and rehabilitated as soon use of the track in an area is no longer required.	Contractor	Duration of contract

Performance Indicator	<ul style="list-style-type: none"> » Acceptable level of soil erosion around site, as approved by ECO. » Acceptable level of increased siltation in drainage lines, as approved by ECO. » Acceptable level of soil degradation, as approved by ECO. » Acceptable state of excavations, as approved by ECO. » No activity in restricted areas.
Monitoring	<ul style="list-style-type: none"> » Ongoing monitoring of area by ECO during construction. » Weekly inspections of the site by ECO. » An incident reporting system will record non-conformances.

OBJECTIVE: Protection of sites of heritage value

Although unlikely, it is possible that sites will be uncovered during excavation activities associated with the power line towers or access road establishment (if required). If at any stage during the construction phase any archaeological artefact is observed, it would be vital to stop the work immediately and report this occurrence to the South African Heritage Resources Association and/or a professional archaeologist as soon as possible so that appropriate mitigation measures can be implemented.

Project component/s	<ul style="list-style-type: none"> » Power line towers. » Access roads.
Potential Impact	<ul style="list-style-type: none"> » Heritage objects or artefacts found on site are inappropriately managed or destroyed.

Activity/risk source	<ul style="list-style-type: none"> » Site preparation and earthworks. » Foundations or plant equipment installation. » Mobile construction equipment movement on site.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » To ensure that any heritage objects found on site are treated appropriately and in accordance with the relevant legislation.

Mitigation: Action/control	Responsibility	Timeframe
If a heritage object is found, work in that area must be stopped immediately, and appropriate specialists brought in to assess to site, notify the administering authority of the item/site, and undertake due/required processes.	Windfall Properties contractor, and heritage specialist	59 , Duration of contract

Performance Indicator	<ul style="list-style-type: none"> » Zero disturbance outside of designated work areas. » All heritage items located are dealt with as per the legislative guidelines. » A record is kept of all instances of accidental disturbance of heritage material, as well as post construction review of impacts on landscape context.
Monitoring	<ul style="list-style-type: none"> » Supervision of all clearing and earthworks by the ECO throughout construction phase.

OBJECTIVE: Minimisation of visual impacts associated with construction

During this time there will be a noticeable increase in heavy vehicles utilising the roads to the development site that may cause, at the very least, a visual nuisance to other road users and landowners in the area.

Project component/s	<ul style="list-style-type: none"> » Servitude clearance (at tower footprints and along access roads). » Power line towers and cabling.
Potential Impact	<ul style="list-style-type: none"> » Temporary visual intrusion.
Activity/risk source	<ul style="list-style-type: none"> » Transportation of components to the site. » Construction activities on-site. » The potential scarring of the landscape due to the creation of new access roads/tracks or the unnecessary removal of vegetation.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Minimise contrast with surrounding environment and visibility of the construction activities to people in the area.

Mitigation: Action/control	Responsibility	Timeframe
Adopt responsible construction practices aimed at containing the construction activities to specifically demarcated areas thereby limiting the removal of	Contractor	Duration of contract

Mitigation: Action/control	Responsibility	Timeframe
natural vegetation to the minimum.		
The activities and movement of construction workers and construction site vehicles must be restricted to the immediate construction site.	Contractor	Construction
Limit access to the construction site along existing access roads.	Contractor	Construction
The general appearance of construction activities, and construction equipment camps must be maintained by means of the timely removal of rubble and disused construction materials.	Contractor	Construction
Clearance of vegetation within the development footprint must be minimised in order to minimise long-term visual disturbance, and rehabilitation efforts undertaken.	Contractor	Duration of contract
Implement an environmentally responsive planning approach to roads to limit cut and fill requirements.	Windfall Properties , and contractor	59 Pre-construction, and construction
Rehabilitate all disturbed areas, including cut and fill slopes to acceptable visual standards.	Contractor	Post-construction

Performance Indicator	» No complaints regarding visual intrusion associated with construction activities.
Monitoring	<ul style="list-style-type: none"> » Ensure that mitigation measures are implemented during construction to minimise visual impacts on surrounding communities. » A complaints register must be maintained, in which any complaints from residents/the community will be logged. Complaints must be investigated and, where appropriate, acted upon. » An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE: Appropriate handling and storage of chemicals, hazardous substances and waste

The construction phase may involve the storage and handling of a variety of chemicals including adhesives, abrasives, oils and lubricants, paints and solvents. The main wastes expected to be generated by the construction of the power line and will include general solid waste, hazardous waste and liquid waste. A guideline for integrated management of construction waste is included as an appendix to this EMP.

Project component/s	» Storage and handling of chemicals, hazardous substances, and waste.
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Potential Impact	<ul style="list-style-type: none"> » Release of contaminated water from contact with spilled chemicals. » Generation of contaminated wastes from used chemical containers. » Inefficient use of resources resulting in excessive waste generation. » Pollution of the surrounding environment through inappropriate waste management practices. » Litter or contamination of the site or water through poor waste management practices. » Pollution of water and soil resources.
Activity/risk source	<ul style="list-style-type: none"> » Power line construction activities. » Packaging and other construction wastes. » Hydrocarbon use and storage. » Spoil material from excavation, earthworks, and site preparation.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons. » Ensure that the storage and maintenance of machinery on-site does not cause pollution of the environment or harm to persons. » Comply with waste management guidelines. » Minimise production of waste. » Ensure appropriate waste handling, storage and disposal. » Avoid environmental harm from waste disposal.

Mitigation: Action/control	Responsibility	Timeframe
Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants.	Contractor	Duration of contract
Corrective action must be undertaken immediately if a complaint is made, or potential/actual leak or spill of polluting substance identified. This includes stopping the contaminant from further escaping, cleaning up the affected environment as much as practically possible and implementing preventive measures.	Contractor	Duration of contract
In the event of a major spill or leak of contaminants, the relevant administering authority must be immediately notified as per the notification of emergencies/incidents.	Contractor	Duration of contract
Soil contaminated/ polluted as a result of a major spill must be removed from the site and disposed of at a licensed hazardous waste disposal facility. Soils contaminated/ polluted through minor spills can be treated on site provided they are contained and have not penetrated the soil surface.	Contractor	Duration of contract
Routine servicing and maintenance of vehicles must not take place on-site outside of designated areas (except for emergencies). If repairs of vehicles must take place on site, an appropriate drip tray must be used to contain any fuel or oils.	Contractor	Duration of contract

Mitigation: Action/control	Responsibility	Timeframe
All stored fuels must be maintained within a bunded area and on a sealed surface.	Contractor	Duration of contract
Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.	Contractor, and ECO	Duration of contract
Construction machinery must be stored in an appropriately sealed area.	Contractor	Duration of contract
The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded, and stored in compliance with MSDS files.	Contractor	Duration of contract
Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be complied with.	Contractor	Duration of contract
Transport of all hazardous substances must be in accordance with the relevant legislation and regulations.	Contractor	Duration of contract
Construction contractors must provide specific detailed waste management method statements to deal with all waste streams.	Contractor	Pre-construction
Specific areas must be designated on-site for the temporary management of various waste streams, i.e. general refuse, construction waste (wood and metal scrap), and contaminated waste. Location of such areas must seek to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control.	Contractor	Duration of contract
Where possible, construction and general wastes on-site must be reused or recycled. Bins and skips must be available on-site for collection, separation, and storage of waste streams (such as wood, metals, general refuse etc).	Contractor	Duration of contract
Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	Contractor	Duration of contract
No waste may be buried or burnt on site.	Contractor	Duration of contract
Hydrocarbon waste must be contained and stored in sealed containers within an appropriately bunded area.	Contractor	Duration of contract
Waste and surplus dangerous goods must be kept to a minimum and must be transported by approved waste transporters to sites designated for their disposal.	Contractor	Duration of contract
Documentation (waste manifest) must be maintained detailing the quantity, nature, and fate of any regulated waste. Waste disposal records must be available for	Contractor	Duration of contract

Mitigation: Action/control	Responsibility	Timeframe
review at any time.		
Upon the completion of construction, the area must be cleared of potentially polluting materials.	Contractor	Completion of construction

Performance Indicator	<ul style="list-style-type: none"> » No chemical spills outside of designated storage areas. » No water or soil contamination by spills. » No complaints received regarding waste on site or indiscriminate dumping. » Internal site audits ensuring that waste segregation, recycling and reuse is occurring appropriately. » Provision of all appropriate waste manifests for all waste streams.
Monitoring	<ul style="list-style-type: none"> » Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase. » A complaints register must be maintained, in which any complaints from residents/the community will be logged. Complaints must be investigated and, where appropriate, acted upon. » Observation and supervision of waste management practices throughout construction phase. » Waste collection to be monitored on a regular basis. » Waste documentation completed. » A complaints register will be maintained, in which any complaints from the community will be logged. » An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE: Ensure disciplined conduct of on-site contractors and workers

In order to minimise impacts on the surrounding environment, Contractors must be required to adopt a certain Code of Conduct and commit to restricting construction activities to areas within the development footprint. Contractors and their sub-contractors must be familiar with the conditions of the Environmental Authorisation (once issued), the Basic Assessment Report, and this EMP, as well as the requirements of all relevant environmental legislation.

Project component/s	» All components and activities occurring during the construction phase.
Potential Impact	<ul style="list-style-type: none"> » Pollution/contamination of the environment. » Disturbance to the environment.
Activity/risk source	» Contractors are not aware of the requirements of the EMP, leading to unnecessary impacts on the surrounding environment.
Mitigation: Target/Objective	» To ensure appropriate management of actions by on-site personnel in order to minimise impacts to the surrounding environment.

Mitigation: Action/control	Responsibility	Timeframe
The terms of this EMP and the Environmental Authorisation (once issued) will be included in all tender documentation and Contractors contracts.	Windfall 59 Properties	Tender process
An Environmental Control Officer (ECO) must be on site throughout any road construction, cable laying and at other times should visit the site at least once a week.	Windfall 59 Properties	Duration of construction
Contractors must use chemical toilets/ablution facilities situated at designated areas of the site; no abluting will be permitted outside the designated area. These facilities must be regularly serviced by appropriate contractors.	Contractor, and sub-contractors	Duration of contract
Cooking/meals must take place in a designated area; no firewood or kindling may be gathered from the site or surrounds.	Contractor, and sub-contractors	Duration of contract
All litter must be deposited in a clearly marked, closed, animal-proof disposal bin in the construction area; particular attention needs to be paid to food waste.	Contractor, and sub-contractors	Duration of contract
No one other than the ECO or personnel authorised by said individual may disturb flora or fauna outside of the demarcated construction area/s.	Contractor, and sub-contractors	Duration of contract
Contractors must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.	Contractor, and sub-contractors	Construction
On completion of the construction phase all construction workers must be transported back to their place of origin within two days of their contract ending. The costs of transportation must be borne by the contractor	Contractor, and sub-contractors	Construction

Performance Indicator	<ul style="list-style-type: none"> » Compliance with specified conditions of Environmental Authorisation, (once issued), Basic Assessment Report, and EMP. » No complaints regarding contractor behaviour or habits. » Code of Conduct drafted before commencement of construction phase. » Briefing session with construction workers held at outset of construction phase.
Monitoring	<ul style="list-style-type: none"> » Observation and supervision of Contractor practices throughout construction phase. » A complaints register must be maintained, in which any complaints from the community will be logged. Complaints must be investigated and, if appropriate, acted upon.

- » An incident reporting system must be used to record non-conformances to the EMP.

5.4. Detailing Method Statements

OBJECTIVE: Ensure all construction activities/practices/procedures are undertaken with the appropriate level of environmental awareness to minimise environmental risk, in line with the specifications of the EMP

The environmental specifications are required to be underpinned by a series of Method Statements, within which the contractors and service providers are required to outline how any identified environmental risks will practically be mitigated and managed for the duration of the contract, and how specifications within this EMP will be met. That is, the contractor will be required to describe how specified requirements will be achieved through the submission of written Method Statements to the site manager and ECO.

A Method Statement is defined as "a written submission by the contractor in response to the environmental specification or a request by the site manager, setting out the plant, materials, labour and method the contractor proposes using to conduct an activity, in such detail that the site manager is able to assess whether the contractor's proposal is in accordance with the specifications and/or will produce results in accordance with the specifications". The Method Statement must cover applicable details with regard to:

- » Construction procedures;
- » Materials and equipment to be used;
- » Getting the equipment to and from site;
- » How the equipment/material will be moved while on-site;
- » How and where material will be stored;
- » The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- » Timing and location of activities;
- » Compliance/non-compliance with the specifications, and
- » Any other information deemed necessary by the site manager.

The contractor may not commence the activity covered by the Method Statement until it has been approved, except in the case of emergency activities and then only with the consent of the site manager. Approval of the Method Statement will not absolve the Contractor from their obligations or responsibilities in terms of their contract.

5.5. Awareness and Competence: Construction Phase

OBJECTIVE: Ensure all construction personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm

To achieve effective environmental management, it is important that contractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP. The contractor is responsible for informing employees and sub-contractors of their environmental obligations in terms of the environmental specifications, and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts. The contractor's obligations in this regard include the following:

- » Employees must have a basic understanding of the key environmental features of the construction site and the surrounding environment.
- » Ensuring that a copy of the EMP is readily available on-site, and that all site staff are aware of the location and have access to the document. Employees will be familiar with the requirements of the EMP and the environmental specifications as they apply to the construction of the power line.
- » Ensuring that, prior to commencing any site works, all employees and sub-contractors have attended an Environmental Awareness training course. The course must provide the site staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
- » Basic training in the identification of archaeological sites/objects, paleontological sites, and protected flora and fauna that may be encountered on the site.
- » Awareness of any other environmental matters, which are deemed necessary by the ECO.
- » Ensuring that appropriate communication tools are used to outline the environmental "do's" and "don'ts" (as per the environmental awareness training course) to employees.
- » Records must be kept of those that have completed the relevant training.
- » Refresher sessions must be held to ensure the contractor's staff are aware of their environmental obligations.

5.6. Monitoring Programme: Construction Phase

OBJECTIVE: Monitor the performance of the control strategies employed against environmental objectives and standards

A monitoring programme must be in place not only to ensure conformance with the EMP, but also to monitor any environmental issues and impacts which have not been accounted for in the EMP that are, or could result in significant environmental impacts for which corrective action is required. The period and frequency of monitoring will be stipulated by the Environmental Authorisation (once issued). Where this is not clearly dictated, Windfall 59 Properties will determine and stipulate the period and frequency of monitoring required in consultation with relevant stakeholders and authorities. The project manager will ensure that the monitoring is conducted and reported.

The aim of the monitoring and auditing process would be to routinely monitor the implementation of the specified environmental specifications, in order to:

- » Monitor and audit compliance with the prescriptive and procedural terms of the environmental specifications.
- » Ensure adequate and appropriate interventions to address non-compliance.
- » Ensure adequate and appropriate interventions to address environmental degradation.
- » Provide a mechanism for the lodging and resolution of public complaints.
- » Ensure appropriate and adequate record keeping related to environmental compliance.
- » Determine the effectiveness of the environmental specifications and recommend the requisite changes and updates based on audit outcomes, in order to enhance the efficacy of environmental management on site.
- » Aid communication and feedback to authorities and stakeholders.

The ECO will ensure compliance with the EMP, and will conduct monitoring activities. The ECO must have the appropriate experience and qualifications to undertake the necessary tasks. The ECO will report non-compliances to the site manager and/or any other monitoring body stipulated by the regulating authorities.

MANAGEMENT PROGRAMME: REHABILITATION

CHAPTER 6

6.1. Rehabilitation of Disturbed Areas

Overall goal for the rehabilitation of disturbed areas: Undertake the rehabilitation measures in a way that:

- » Ensures rehabilitation of disturbed areas following the execution of the works, such that residual environmental impacts are remediated or curtailed

6.2. Objectives

In order to meet this goal, the following objective, actions and monitoring requirements are relevant:

OBJECTIVE: Ensure appropriate rehabilitation of disturbed areas following any executions such that residual environmental impacts are remediated or curtailed

Areas requiring rehabilitation will include all areas disturbed during the construction phase and that are not required for regular maintenance operations. Rehabilitation should be undertaken in an area as soon as possible after the completion of construction activities within that area.

Project component/s	<ul style="list-style-type: none"> » Power line. » Access roads not required for maintenance activities.
Potential Impact	<ul style="list-style-type: none"> » Environmental integrity of site undermined resulting in reduced visual aesthetics, erosion, compromised land capability and the requirement for on-going management intervention.
Activity/risk source	<ul style="list-style-type: none"> » Temporary access roads/tracks. » Power line tower footprints. » Other disturbed areas/footprints.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Ensure and encourage site rehabilitation of disturbed areas. » Ensure that the site is appropriately rehabilitated following the execution of the works, such that residual environmental impacts (including erosion) are remediated or curtailed.

Mitigation: Action/control	Responsibility	Timeframe
All temporary facilities, equipment, and waste materials must be removed from site as soon as practically possible after construction is complete.	Contractor	Following execution of the works

Mitigation: Action/control	Responsibility	Timeframe
All temporary fencing and danger tape must be removed once the construction phase has been completed.	Contractor	Following completion of construction activities in an area
Necessary drainage works and anti-erosion measures must be installed, where required, to minimise loss of topsoil and control erosion.	Contractor	Following completion of construction activities in an area
Disturbed areas must be rehabilitated/re-vegetated with appropriate natural vegetation and/or local seed mix. Re-use of native/indigenous plant species removed from disturbance areas in the rehabilitation phase.	Contractor, and rehabilitation specialist	Following completion of construction activities in an area
Compacted areas that are no longer needed post-construction (e.g. laydown areas, contractors camps) shall be ripped and scarified.	Contractor	Following completion of construction activities
Stockpiled topsoil shall be replaced in disturbed areas where rehabilitation is to be undertaken as a layer of an appropriate thickness (to be dictated by local conditions).	Contractor	Following completion of construction activities
Re-vegetated areas may have to be protected from wind erosion and maintained until an acceptable plant cover has been achieved.	Windfall 59 Properties , and rehabilitation specialist	Post-rehabilitation
Ongoing alien plant monitoring and removal must be undertaken on all areas of natural vegetation on an annual basis.	Windfall 59 Properties , and rehabilitation specialist	Post-rehabilitation

Performance Indicator	<ul style="list-style-type: none"> » All portions of site, including the construction equipment camp and working areas, cleared of equipment and temporary facilities. » Topsoil replaced on all areas and stabilised. » Disturbed areas rehabilitated and acceptable plant cover achieved on rehabilitated sites. » Completed site free of erosion and alien invasive plants.
Monitoring	<ul style="list-style-type: none"> » On-going inspection of rehabilitated areas in order to determine effectiveness of rehabilitation measures implemented. » On-going alien plant monitoring and removal should be undertaken on an annual basis.

MANAGEMENT PROGRAMME: OPERATION

CHAPTER 7

7.1. Operation

Overall goal for operation: To ensure that the operation of the power line does not have unforeseen impacts on the environment and to ensure that all impacts are monitored and the necessary corrective action taken in all cases. In order to address this goal, it is necessary to operate the power line in a way that:

- » Ensures that operation activities are properly managed in respect of environmental aspects and impacts.
- » Ensures the operation activities are undertaken without significant disruption to other land uses in the area, in particular with regard to farming practices, traffic and road use, and effects on local residents and other receptors in terms of visual impacts.

7.2. Objectives

In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE: Maintenance of rehabilitated areas and minimisation of disturbance during maintenance activities

In order to ensure the long-term environmental integrity of the site following construction, maintenance the areas rehabilitated post-construction must be undertaken until these areas have successfully re-established. Fire breaks should be established, where appropriate, to limit both incoming and outgoing veld fires.

Project component/s	<ul style="list-style-type: none"> » Power line. » Access roads.
Potential Impact	<ul style="list-style-type: none"> » Environmental integrity of site undermined resulting in reduced visual aesthetics, erosion, compromised land capability and the requirement for on-going management intervention.
Activity/risk source	<ul style="list-style-type: none"> » Foundations. » Access roads. » Other disturbed areas.
Mitigation: Target/Objective	<ul style="list-style-type: none"> » Ensure and encourage site rehabilitation of disturbed areas.

Mitigation: Action/control	Responsibility	Timeframe
Fire breaks should be established and maintained, where appropriate.	Windfall 59 Properties	Duration of contract
Appoint an environmental manager during operation whose duty it will be to monitor rehabilitated areas and minimise impacts on surrounding sensitive habitats.	Windfall 59 Properties	Operation

Performance Indicator	» Successful rehabilitation of disturbed areas. » No disturbance of sensitive areas outside of servitude area.
Monitoring	» On-going alien plant monitoring and removal should be undertaken on an annual basis.

OBJECTIVE: Minimisation of visual impacts

The placement of the power line and its associated structures will have a visual impact on residents and user of provincial roads (i.e. R380). Furthermore the views in this region will be cumulatively impacted on by other proposed infrastructure in the area (i.e. including the Kathu and Sishen Solar Energy facilities which are both authorised, as well the authorised Ferrum MTS - Umtu Klipkop 132 kV power line.)

Project component/s	» Power line. » Access roads.
Potential Impact	» Potential scarring and erosion due to the unnecessary removal of vegetation during construction.
Activity/risk source	» The viewing of the above-mentioned by observers on or near the site.
Mitigation: Target/Objective	» Minimal disturbance to vegetation cover.

Mitigation: Action/control	Responsibility	Timeframe
» Limit access to the development site to existing access roads, where possible.	Windfall 59 Properties , and contractors	Operation
» Rehabilitate all disturbed areas to acceptable visual standards.	Windfall 59 Properties , and contractors	Operation, and maintenance

Performance Indicator	» Vegetation cover that remains intact with no erosion.
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Monitoring » Not required.

OBJECTIVE: To ensure adequate regard is taken of landowner / stakeholder concerns and that these are appropriately addressed

Maintenance of the power line and inspection of the servitude would be undertaken for the life of the line. It is not anticipated that this would have severe negative intrusions on the landowners, particularly if the power line is situated to the north of the property boundaries as recommended. Misconduct of workers could however result in long-term secondary negative impacts and damage to the environment

Project component/s	» Power lines.
Potential Impact	» Stakeholder concerns not addressed with regard to maintenance
Activity/risk source	» Maintenance of power line
Mitigation: Target/Objective	» To ensure adequate regard is taken of landowner / stakeholder concerns and that these are appropriately addressed

Mitigation: Action/control	Responsibility	Timeframe
Maintenance personnel should be in possession of the required identification documents when undertaking maintenance work	Contractor	Duration of contract
Sound servitude management measures should be implemented. The implementation of the servitude management measures should be monitored on an on-going basis.	Contractor	Duration of contract
Maintenance personnel should not access private properties without prior notification of the property owners.	Contractor	Duration of contract

Performance Indicator	» Landowners should be afforded reasonable and appropriate rights/access.
Monitoring	» Not applicable.

6.3 Monitoring Programme: Operational Phase

OBJECTIVE: Monitor the performance of the control strategies employed against environmental objectives and standards

A monitoring programme must be in place not only to ensure conformance with the EMP, but also to monitor any environmental issues and impacts which have not been accounted for in the EMP that are, or could result in significant environmental impacts for which corrective action is required. The period and frequency of monitoring will be stipulated by the Environmental Authorisation (once issued). Where this is not clearly dictated, Windfall 59 Properties will determine and stipulate the period and frequency of monitoring required in consultation with relevant stakeholders and authorities. The project manager will ensure that the monitoring is conducted and reported.

The aim of the monitoring and auditing process would be to routinely monitor the implementation of the specified environmental specifications, in order to:

- » Monitor and audit compliance with the prescriptive and procedural terms of the environmental specifications.
- » Ensure adequate and appropriate interventions to address non-compliance.
- » Ensure adequate and appropriate interventions to address environmental degradation.
- » Provide a mechanism for the lodging and resolution of public complaints.
- » Ensure appropriate and adequate record keeping related to environmental compliance.
- » Determine the effectiveness of the environmental specifications and recommend the requisite changes and updates based on audit outcomes, in order to enhance the efficacy of environmental management on site.
- » Aid communication and feedback to authorities and stakeholders.

The ECO will ensure compliance with the EMP, and will conduct monitoring activities. The ECO must have the appropriate experience and qualifications to undertake the necessary tasks. The ECO will report non-compliances to the site manager and/or any other monitoring body stipulated by the regulating authorities.

MANAGEMENT PROGRAMME: DECOMMISSIONING:

CHAPTER 8

The power line which will be utilised for the grid connection of the proposed Kathu Solar Energy Facility is expected to have a lifespan of 25 + years. The facility may be refurbished at the end of its initially proposed operational lifespan with new technology. However, once the solar energy facility is decommissioned the line is unlikely to be removed.

8.1. Site preparation

Site preparation activities will include confirming the integrity of the access to the site, preparation of the site (e.g. lay down areas, construction platform) and the mobilisation of construction equipment.

8.2 Disassemble and replace existing infrastructure

All components will be reused, recycled, or disposed of in accordance with regulatory requirements.

OBJECTIVE: Avoid and or minimise the potential impacts associated with the decommissioning phase

Project Component/S	» Decommissioning of the solar park and associated infrastructure.
Potential Impact	» Decommissioning is similar to the construction phase in that it may create temporary employment opportunities. » Decommissioning may lead to limited site disturbance.
Activity/Risk Source	» Decommissioning of the power line.
Mitigation: Target/Objective	» To avoid and or minimise the potential impacts associated with decommissioning phase of the power line.

Mitigation: Action/Control	Responsibility	Timeframe
Decommissioning activities should follow similar protocols as the construction phase to limit the potential for disturbance.	Eskom, and contractor	Decommissioning phase

Performance Indicator	» Limited disturbance to the site
Monitoring	» The ECO should be available on site to monitor the decommissioning activities.