ANNEXURE B

ELECTRO-TECHNICAL SERVICES

APPLICATION FOR THE CONNECTION OF SMALL SCALE EMBEDDED GENERATION **Page 1**

This application form for the connection of small scale embedded generation is for small scale embedded generators to be installed by residential, commercial or industrial customers. It is applicable to all forms of embedded electricity generation, including renewable energy and cogeneration.

- A separate "Application for a new or modified electricity supply service" form must also be completed, except for installations where reverse power blocking is to be installed.
- If the embedded generator is to be configured as a standby supply after islanding from the municipal electrical grid, the generator will have to be connected to the existing internal wiring of the property. In such a case, the property owner must obtain a certificate of compliance from a qualified electrician.

Submit completed form to:	Offices of Electro-technical Services:		
or			
or			

Property name and location:	Project name:
	Erf number:
	Physical address:
	Township / Suburb / Farm:
	Postal code:

Name and account numbers of property owner:
(Only if small scale embedded generation is to be connected with the Municipality of George electrical grid)

First name:		Last name:		Title:	
Business ~~partner number as per~~ municipal account number:		Contract account number:			

ELECTRO-TECHNICAL SERVICES

Property owner contact details:

	Office	Mobile
Telephone number		
Facsimile number		
E-mail address		

Application type
(Tick appropriate boxes)

	✓
Residential	
Commercial/Industrial	
New	
Revised application	
Upgrade existing system	
Change of property owner	
Other (specify)	

Planned construction schedule:

Projected construction start date	
Projected in-service date of embedded generator	

Mode of small scale embedded generation :
(Tick appropriate box)

	✓
Energy from small scale embedded generation to be used within a customer's own electricity grid and no excess to be exported to municipal electrical grid.	
Energy from small scale embedded generation to be used within a customer's electricity grid and excess to be exported to municipal electrical grid.	
Energy from small scale embedded generation to be used solely for exporting to municipal electrical grid	

Type of prime mover and fuel source for small scale embedded generation : e.g. photo-voltaic, concentrated solar power, small hydro, landfill gas, biomass, biogas, wind, co-generation	

Battery storage
(Tick appropriate box)

			✓
Yes		No	

Amp hours/kWh	

ELECTRO-TECHNICAL SERVICES

Type of energy conversion:
E.g. Synchronous generator, induction generator, inverter, fuel-cell, dyno set. (Include operating characteristics).

Site location:

Latitude (dd mm sss)	S ° ‘ ‘’
Longitude (dd mm sss)	E ° ‘ ‘’
For commercial/industrial only (show location and dimensions of intended installation infrastructure in relation to the existing property point of connection and buildings.)	

Site land use zoning:

Preliminary design[1]:
(to be attached)

Circuit diagram and design showing major components, proposed point of common coupling, isolating and interfacing devices with municipal electrical grid, protection schemes, customer grid, operating characteristics, etc.	
Earthing arrangements i.e. TN-C-S	

Total capacity of small scale embedded generation (kVA and PF[2]): (Attach schedule for each unit if more than one generation unit and location)

Property distribution board main circuit breaker size:

Ampere (A)	Single- or three-phase

[1] For guidance here, it is recommended that an installer/supplier be consulted.
[2] This will mainly apply to systems that make use of rotating machines e.g. wind power, hydro or diesel generators. For static power converters (e.g. inverters with a solar PV system), the power factor is generally 1 and the kWp of the system will be the same as the kVA.

ELECTRO-TECHNICAL SERVICES

Proposed consumption and generation levels:
(Complete the table below)

Month	Estimated imported energy for the month (kWh) (Electricity bought from utility once SSEG is installed)	Estimated exported energy for the month (kWh) (Electricity generated by SSEG and not utilised for own use)	Estimated maximum instantaneous exported power (kVA)	Day of week that maximum power export occurs	Time of day that maximum power export occurs
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Total			N/A	N/A	N/A

Brief explanation of the reasons for the general load profile and electricity export profile as demonstrated above :

Make & model of key generating equipment:

(Tick appropriate box)

Manufacturer:				
Model:				
Serial Number:				✓
Phase:	Single		Three	

Electrical parameters of small scale embedded generation[3]:
(All units in parallel, to be used for fault-level studies. Not all of these parameters apply to all modes of SSEG. Insert N/A if not applicable)

Rated voltage	Maximum MVAR limit	Inertia constant

Maximum peak short-circuit current(A)	Single- or three-phase

Neutral to earth resistance in ohms	Xd – Synchronous reactance in p.u.	X'd – Direct axis transient reactance in p.u.

[3] Professional or reputable installer/supplier should provide. For static power converter-based systems (e.g. solar PV inverters) many of these electrical parameters do not apply.

X"d – Direct axis sub-transient reactance in p.u.	X2 – Negative sequence reactance in p.u.	X0 – Zero sequence reactance in p.u.

Electrical parameters of generator and unit transformers[4]:
(Not all of these parameters apply to all modes of SSEG. Insert N/A if not applicable)

Voltage and power ratings	Winding configuration

Neutral earth resistor or reactors (NER / NECR impedance)

Positive and zero sequence impedances in p.u.	
R1	X1
R0	X0

Grid connection point:
(In the case of applicant not being an existing customer only, attach a single line diagram showing arrangement)

Protection details[5]:

Method of synchronising: (Auto/Manual, make and type of relay, etc.)	

Method of anti-islanding: (Details of scheme, relays to be used, etc.)	

[4] Professional or reputable installer/supplier should provide. For static power converter-based systems (e.g. solar PV inverters) many of these electrical parameters do not apply.
[5] Professional or reputable installer/supplier should provide.

Method of generator control: (AVR, speed, power, PF, excitation system requirements etc. relays to be used)	

Other main protection to be applied: (O/C, E/F, over/under voltage, over/under frequency, reverse power, back-up impedance, generator transformer back-up earth fault, HV breaker fail, HV breaker pole disagreement, etc.)	

Recording of quality of supply devices	

List of regulatory approvals, requirements and normative references[6]:
(Tick appropriate box or mark not applicable N/A)

	✓
Electricity Regulation Act, Act 4 of 2006 and Electricity Regulation Amendment Act, Act 28 of 2007	
Occupational Health & Safety Act, No. 85 of 1993 as amended	
South African Distribution Code (all parts)	
South African Grid Code (all parts)	
South African Renewable Power Plants Grid Code	
Municipality of George Electricity Supply By-Law	
SANS 474 / NRS 057 : Code of Practice for Electricity Metering	
SANS 10142- Parts 1 to 4: The wiring of premises (as amended and published)	
NRS 048: Electricity Supply – Quality of Supply	
NRS 097-1 : Code of Practice for the interconnection of small scale embedded generation to electricity distribution networks : Part 1 MV and HV	
NRS 097-2 : Grid interconnection of small scale embedded generation : Part 2: Small scale small scale embedded generation	

[6] Note: It is the responsibility of the ECSA registered professional engineer/technologist to ensure compliance through their professional sign-off of the installed system in Appendix 1 – SSEG Installation Commissioning Report.

ELECTRO-TECHNICAL SERVICES

Clearance by other Municipal departments

FUNCTION	SECTION	COMMENTS	NAME	SIGNATURE	DATE
Zoning/subdivision/ building structure plans	Planning and Building Development Management				
Noise impact assessment and ventilation	Municipality Health Specialised Services				
Air pollution and quality (Fuel burning)	Municipality Health Specialised Services				

Note:

1. Electro-technical services will require **prior** approval from these departments. Applications to connect to the municipal electrical grid will not be considered until all relevant approvals have been obtained.
2. Photovoltaic (PV) SSEG applications will require approval from only Planning and Building Development Management if:
   a) Roof top installations: PV panel(s) in its installed position projects more than 1.5m, measured perpendicularly, above the roof and/or projects more than 600mm above the highest point of the roof;
   b) Installations on the ground: PV panel(s) in its installed position projects more than 2.1 metres above the natural/finished ground level.

Installer Details

Installer:				
Accreditation/qualification:				
Professional registration:		Reg. No.		
Address:		Postal code:		
Contact person:				
Telephone no:	Office:		Mobile:	
Facsimile:	E-mail address:			

Any other additional information:

I request the Municipality of George's Electro-technical Services Department to proceed with the review of this small scale embedded generation interconnection application. I understand that:

- I will have to pay for both in-house and outsourced engineering studies conducted as part of this review, should these be required; and
- A quotation for such work will be provided beforehand, giving me the opportunity to cancel or modify the application should I wish to do so.

I further consent to Municipality of George providing this information to the National Transmission Company and other Distributors as required.

ELECTRO-TECHNICAL SERVICES

Application completed by:	Name:	Title:

ECSA registered professional	Name:	Reg. no:	Registration category:

(Note: Sign-off by an ECSA registered professional is optional at application stage, however it is recommended that an ECSA registered professional engineer or professional technologist that is familiar with the technical details of the intended generation technology, complete this application form)

Signed (Applicant):	_____	Telephone number:	
Date:		Email address:	
Signed (property owner):	_____	Telephone number:	
Date:		Email address:	

FOR OFFICE USE

Date application received:		**Application notification No.**	
Further Information Required (e.g. Competent Person detail required in terms of Occupational Health and Safety Act, General Machinery Regulations: Supervision of Machinery, Section 2):	YES / NO	**Date received:**	
More detailed studies Required (fault level, voltage rise, unbalance, flicker, harmonics, protection, etc.):	YES / NO	**Date complete:**	
Approved in Principle:	YES / NO	**Date applicant advised:**	
Copy to Engineering Department of Electro-technical Services Department:	YES / NO	**Date completed:**	
Copy to Planning Department of Electro-technical Services Department:	YES / NO	**Date completed:**	
Copy to Finance Department	YES / NO	**Date completed:**	