



PLANNING REPORT

for the

BULK SUPPLY OF ELECTRICITY

to

AFRO FISHING (PTY) LTD - NEW FACTORY MOSSEL BAY



AFRO FISHING (PTY) LTD

CONTRACT NO. ME 1800

CONSULTING ENGINEERS:

Makukhane Consulting Engineers
P O Box 281
HARTENBOS
6520

Tel: 044 691 2074

Fax: 044 691 2075

E-Mail: jb.cvw@cvw-e.com

Web Site: www.cvw-e.com

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CLIENT:

Afro Fishing (PTY) LTD
P O Box 2752
MOSSEL BAY
6500

Tel: 044 690 5520

Fax: 044 690 5525

E-Mail: deon@afrofishing.co.za

Revision 0

CVW ELECTRICAL

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PLANNING REPORT FOR THE NEW 4.8 MVA SUPPLY REQUIRED BY AFRO FISHING, HARBOUR, MOSSEL BAY:

1. BACKGROUND:

AFRO FISHING is a cannery factory that is situated on the South Eastern coast of South-Africa, Mossel Bay. Afro Fishing can pilchards for various brands. In everything Afro Fishing do, they try and get the community involved and always make sure that we preserve the environment in order to leave a legacy for the next generation. The cannery itself was opened in 2007 and since then, has been successfully providing 320 jobs for the local community during annual season harvest time.

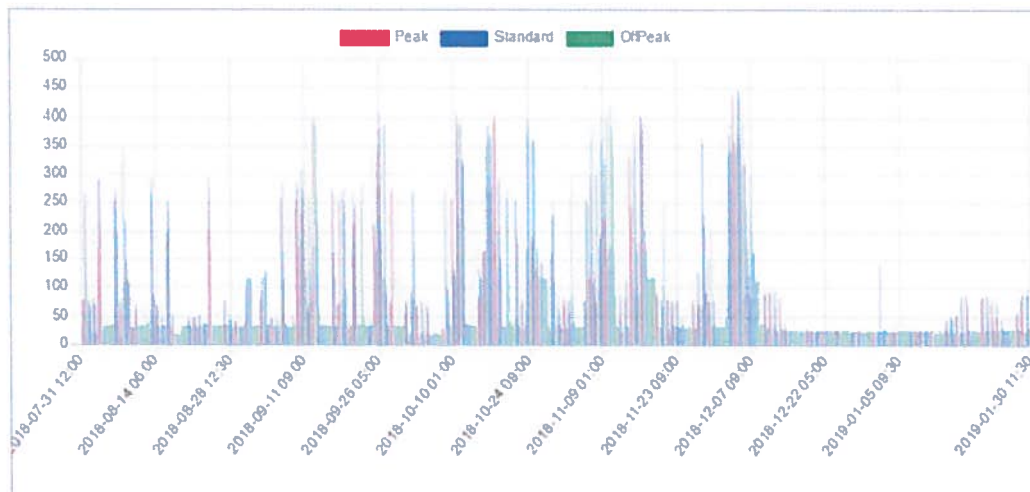
Electricity is currently supplied by the supply authority, Mossel Bay Municipality. The electrical department has confirmed that there is enough spare capacity available on the Eskom Contracted Notified Maximum Demand. The current bulk supply point called Afro Fishing has a Notified Maximum Demand of 1.6 MVA.

Afro Fishing has acquired the two neighboring premises from Viking called 1) I & J Cold Storage and 2) I & J Process plant. Total electrical capacity required for the new factory = 4 MVA

Existing Afro Fishing factory -Mossel Bay:



Demand Profile: ± 450 to 800 kVA

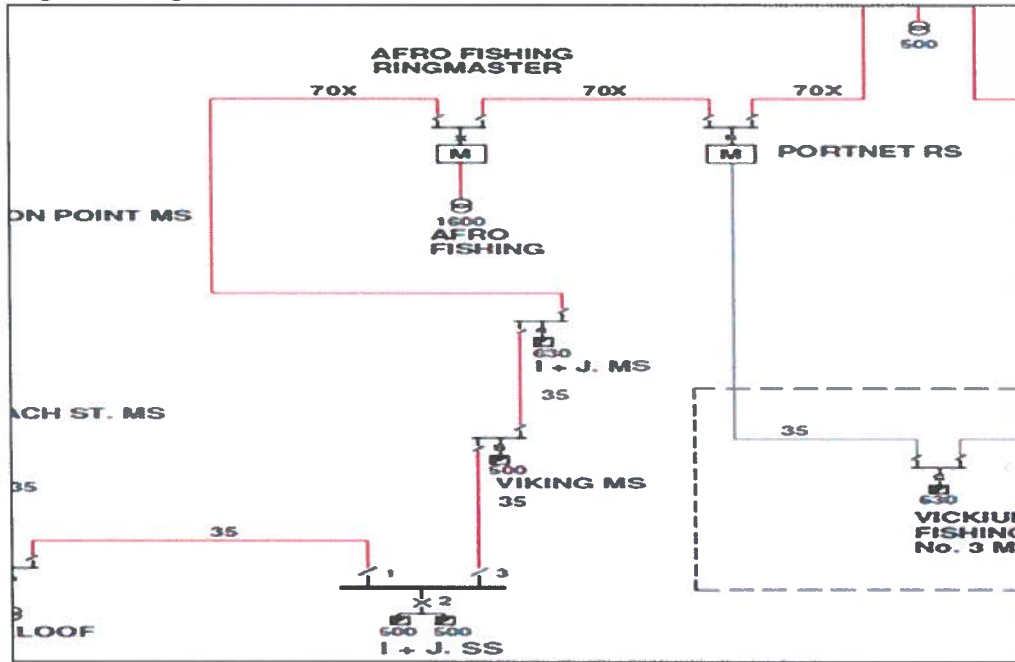


2. PLANNING ASSUMPTIONS AND GUIDELINES – MEDIUM VOLTAGE NETWORK:

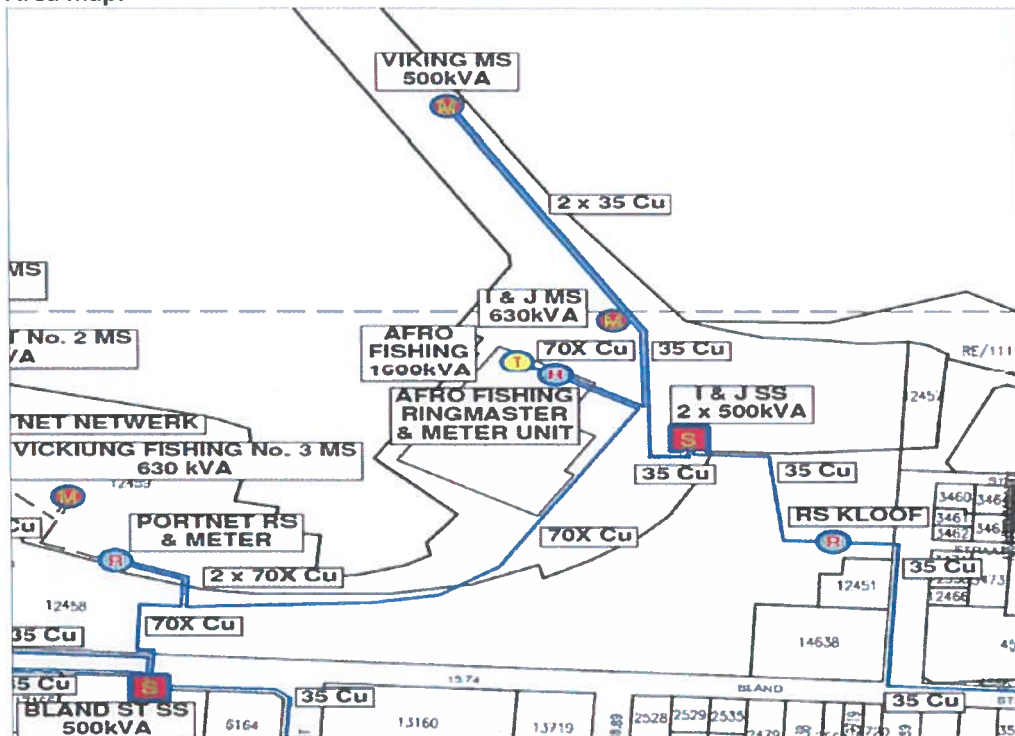
A) EXISTING 1.6 MVA BULK SUPPLY

The existing Bulk Meter called Afro Fishing Ringmaster is the point of supply, Afro Fishing is fed on a ring feed system from Point Substation and Bland Street Substation. Afro Fishing has a notified maximum demand of 1.6 MVA and the existing Cannery factory only utilize between 450 and 800 kVA of the available supply. Spare capacity available on contracted Notified Maximum Demand = 1600 – 800 = 0.8 MVA.

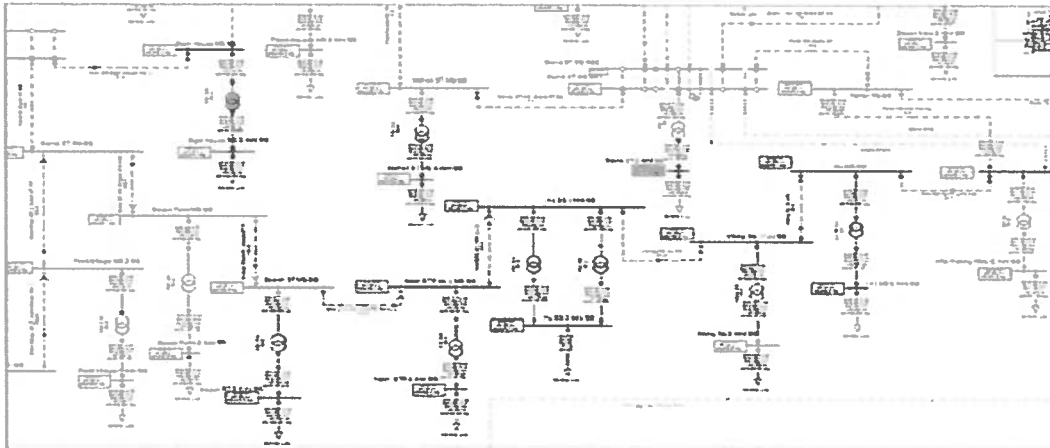
Single Line Diagram:



Area map:



Dig-SILENT Load Flow study of the current network:



The load study indicates that the existing ring feed network between Santos S/S and Bland Street S/S consisting of a 35 mm² PILC cable cannot supply the additional demand of ± 1.9 MVA required by Afro Fishing. The 2 x existing I & J supplies that will be taken over by Afro Fishing will provide an existing allocated capacity of 1.3 MVA – refer to table below.

EXISTING FACTORY SUPPLY POINTS	NOTIFIED MAXIMUM DEMAND AVAILABLE
I & J MS 630 kVA – Cold Storage – 80 %	500 kVA
I & J – 2 x 500 kVA Transformers – 80 %	800 kVA
TOTAL – ACQUIRED FROM I & J SUPPLIES	1.3 MVA

B) NEW/UPGRADING – 4.8 MVA BULK SUPPLY

Afro Fishing intend to introduce a new factory with an estimated demand of around 4 MVA. This will increase the existing demand from 1.6 MVA to 4.8 MVA. The existing buildings were allocated with around (I&J) 1.3 MVA + (Afro) 1.6 MVA = 2.9 MVA. The extra network capacity required amounts to 4.8 MVA – (1.3 + 1.6 MVA) = 1.9 MVA. A capital contribution amount will be levied for the additional network availability as well as Afro Fishing will need to upgrade electrical infrastructure to ensure a firm 4.8 MVA supply from South Substation.

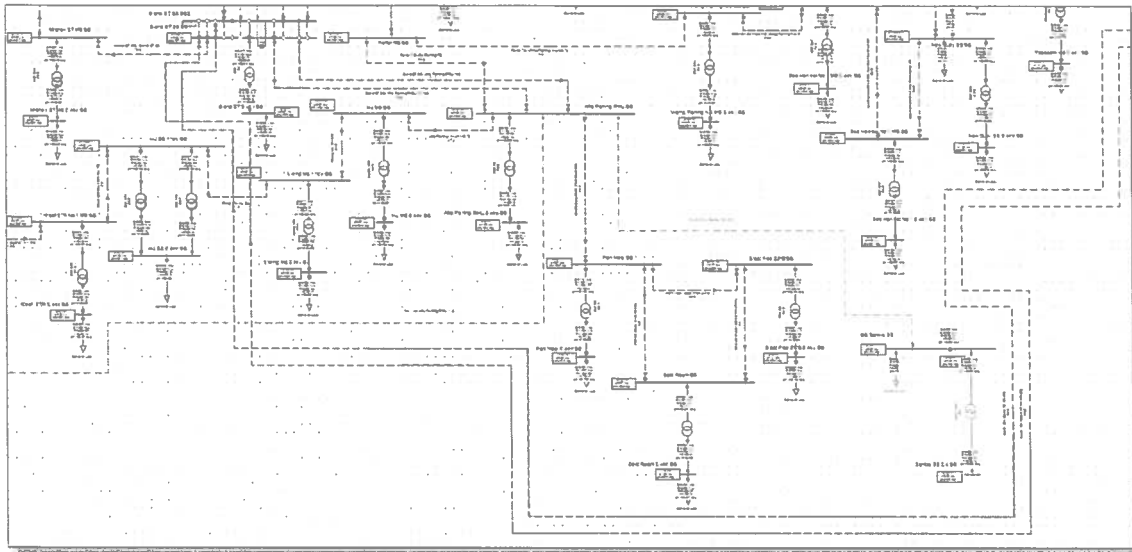
MV Supply upgrade:

Installation 2 x 185 mm² PILC 11 kV cables from South Substation to Bland Street Substation and 2 x 120 mm² cables from Bland Street Substation to Afro Fishing MV metering point.

The medium voltage distribution network will be an 11000 Volt underground cable system, which will have no visual impact on the environment. Medium Voltage cables will be installed at a minimum depth of 950 mm from ground level.

The new 2 x 185 mm Medium Voltage supply cables will increase the Central Business District’s 11 kV network capacity to a firm 6 MVA SUPPLY thus allowing demand increases for existing customers AND Afro Fishing.

Dig-SILENT Load Flow study of the new network:



Study Case: Study Case		Annex: / 1					
Name	Type	Loading [%]	voltage [p.u.]	Station/Branch	Apparent Power [MVA]	Current [kA]	Current [p.u.]
Overloaded Elements							
120 Matfield 11kv S/S-	Matfield RS26.91			Matfield 11kv S/S/B..	1.36	0.07	0.27
120 Matfield RS-	workshop	74.00		Matfield RS/BB	1.36	0.07	0.27
				Matfield RS/BB	3.75	0.20	0.74
				Workshop 11kv S/S/B..	3.77	0.20	0.74
300 OCHRE-PORT NET - QUAY S/S		48.69		OCHRE SS/BB2	3.96	0.21	0.49
				New Quay SS/BB	3.95	0.21	0.49
35 Montagus ST MS-	Matfield 11kvS1.90			Matfield 11kv S/S/B..	1.36	0.07	0.52
				Montagus ST.MS/BB	1.36	0.07	0.52
35 Woolworth SS-	Matfield SS	20.51		Wool worths S/S/BB	0.54	0.03	0.21
				Matfield 11kv S/S/B..	0.54	0.03	0.21
Afro Fishing RMU-	Fish Meal 185	52.69		Afro Fishing RMU/BB	3.35	0.18	0.53
				Fish Meal/BB	3.32	0.18	0.53
				Bland ST SS/BB1	2.27	0.12	0.45
Bland S/S-Afro Fishing 120-F1		44.85		Afro Fishing RMU/BB	2.26	0.12	0.45
Bland S/S-Afro Fishing 120-F2		44.85		Bland ST SS/BB2	2.27	0.12	0.45
Bland ST RM-	Beacon Point MS	22.79		Afro Fishing RMU/BB	2.26	0.12	0.45
				Beacon Point MS/BB	0.59	0.03	0.23
				Bland ST RM/BB	0.60	0.03	0.23
Donova SS-	Marsh SS Lne	35.50		Marsh ST S/S 11kv/B..	1.81	0.10	0.36
				Danova 11kv S/S/BB1	1.81	0.10	0.36
Fish Meal - Blast Free ZWG 70		29.46		Fish Meal/BB	1.09	0.06	0.29
				Blast Free ZWG/BB	1.09	0.06	0.29
George WEG MS-	Santos SS	40.92		George WEG MS/BB	2.07	0.11	0.41
				Santos SS/BB1	2.07	0.11	0.41
Marsh SS-	George WEG MSne	45.70		George WEG MS/BB	2.32	0.12	0.46
				Marsh ST S/S 11kv/B..	2.33	0.12	0.46
Matfield RS-	Point SS Lne	47.09		Matfield RS/BB	2.38	0.13	0.47
				Point SS/BB2	2.37	0.13	0.47
Matfield SS-	Montagus Place MS	28.02		Matfield 11kv S/S/B..	1.05	0.06	0.28
				Montagus Place MS/BB	1.06	0.06	0.28
Michell RM-	Montagus ST MS	33.55		Michell RM/BB	0.87	0.05	0.34
				Montagus ST.MS/BB	0.88	0.05	0.34

Study Case: Study Case			Annex: / 2			
Name	Type	Loading [%]	voltage [p.u.] [kv]	Station/Branch	Apparent Power [MVA] [ka]	current [p.u.]
Montagus Place MS- Wassung ST RM		34.50		Wassung ST RM/BB	1.30	0.35
OCHRE SS- Telkom MS	Lne	96.99		Montagus Place MS/BB	1.30	0.35
Ocean View MS- Bland ST SS		62.57		OCHRE SS/BB	3.58	0.97
Pick N Pay S- Ocean View MS		31.09		Telkom MS/BB	3.62	0.97
Plaza Aquada MS- Michelle RM		23.08		Bland ST SS/BB2	1.64	0.63
Point SS-Bland ST RM	Lne	33.84		Ocean View MS/BB	1.62	0.63
Point SS-Elgin House MS(1)		26.07		Ocean View MS/BB	1.13	0.31
Point SS-Point MS	Lne	21.77		Pick N pay SS/BB	1.15	0.31
Posboom MS- Ochree SS	Lne	32.49		Michelle RM/BB	0.60	0.23
Posboom MS- Santos SS	Lne	64.33		Plaza Aquada MS/BB	0.60	0.23
Sea Harvest No.1 MS- New Quay SS	45.12			Point SS/BB1	0.88	0.34
Sea Harvest No.1 MS-Sea Harvest No.2 MS				Bland ST RM/BB	0.88	0.34
South S/S- Bland ST SS 185		56.35		Point SS/BB1	0.68	0.26
South S/S- Bland ST SS 185 (2)		56.35		Elgin House MS/BB	0.68	0.26
South SS - Donova SS	Lne	45.51		Point SS/BB1	0.57	0.22
South SS - Linkside RM	Lne	43.15		Point MS/BB	0.57	0.22
South SS - Marsh SS	Lne	81.01		OCHRE SS/BB2	0.84	0.32
South SS - workshop-1	Lne	21.93		Posboom MS/BB	0.84	0.32
South SS - workshop-2	Lne	74.00		Posboom MS/BB	1.67	0.64
Telkom MS- Marsh ST	Lne	98.18		Santos SS/BB1	1.69	0.64
Viking MS- I+J MS	Lne	23.66		Sea Harvest No.1 MS..	1.16	0.45
Wassung ST RM- Marsh ST S/S		21.77		New Quay SS/BB	1.16	0.45
Wassung ST RM-Linkside RM		47.33		Sea Harvest No.1 MS..	0.70	0.27
				Sea Harvest No.2 MS..	0.69	0.27
				South S/S 11kv/BB2.1	3.63	0.56
				Bland ST SS/BB1	3.59	0.56
				South S/S 11kv/BB1.1	3.63	0.56
				Bland ST SS/BB1	3.59	0.56
				Danova 11kv S/S/BB2	2.32	0.46
				South S/S 11kv/BB2.1	2.33	0.46
				Linkside RM/BB	2.20	0.43
				South S/S 11kv/BB1.1	2.21	0.43
				Marsh ST S/S 11kv/B..	4.12	0.81
				South S/S 11kv/BB2.1	4.15	0.81
				South S/S 11kv/BB1.2	1.12	0.22
				Workshop 11kv S/S/B..	1.12	0.22
				Workshop 11kv S/S/B..	3.77	0.74
				South S/S 11kv/BB2.1	3.79	0.74
				Telkom MS/BB	3.84	0.98
				Marsh ST S/S 11kv/B..	3.89	0.98
				I+J MS/BB	0.62	0.24
				Viking MS 11kv/BB	0.62	0.24
				Wassung ST RM/BB	1.11	0.22
				Marsh ST S/S 11kv/B..	1.11	0.22
				Wassung ST RM/BB	2.41	0.47
				Linkside RM/BB	2.42	0.47

3. COST ESTIMATE –UPGRADING MEDIUM VOLTAGE NETWORK TO ENSURE A FRIM 4.8 MVA SUPPLY:

MUNICIPAL UPGRADE COST:

- 3.1 MV Network 185 mm² from South S/S to Bland S/S R 12 150 000.00
- 3.2 2 x ABB Uni- gear CB's R 1 000 000.00 at South Substation
- 3.3 4 x New CB's at Bland ST S/S R 500 000.00
- 3.4 MV Network 120 mm² from Bland S/S to Afro -fishing R 1 008 000.00
- 3.5 Alterations to Bland Street S/S R 2 000 000.00
- 3.6 Contingencies R 1 000 000.00
- 3.7 Professional Fees R 1 342 000.00

SUB TOTAL

R 19 000 000.00

AFRO FISHING UPGRADE COST:

- 3.7 MV Network CCC+M+VVV R 1 000 000.00
- 3.8 5 x 1 MVA Mini-substations R 3 500 000.00
- 3.9 MV 120 mm² Ring Network R 1 200 000.00
- 3.10 10 % Contingencies R 570 000.00
- 3.11 Professional Fees R 500 000.00

SUB TOTAL

R 6 770 000.00

Grand Total

R 25 770 000.00

Note: 1st order estimate based on info provided by engineer, client and Municipality.

4. RECOMMENDATION

Electricity will be supplied by the supply authority, Mossel Bay Municipality. The electrical department has confirmed that there is enough spare capacity available on the Eskom Contracted Notified Maximum Demand.

The supply will be provided from the existing 66/11 kV South substation \pm 3.5 km to the west of the Harbour/Afro Fishing. 3 x 10 MVA 66/11 kV Power Transformers supply the CBD area of Mossel Bay these will provide enough capacity for Afro Fishing.

The preliminary design was done according to the Mossel Bay Municipality standards. The above planning report with formal application must be submitted to the Mossel Bay Municipality for approval by council. Mr Naidoo requested that Afro Fishing investigate Green Energy initiatives – 600 kWp Photo Voltaic Solar system depending on the available north facing roofs up to a maximum of 1 MW.

Please contact me if you have any queries.

Yours faithfully

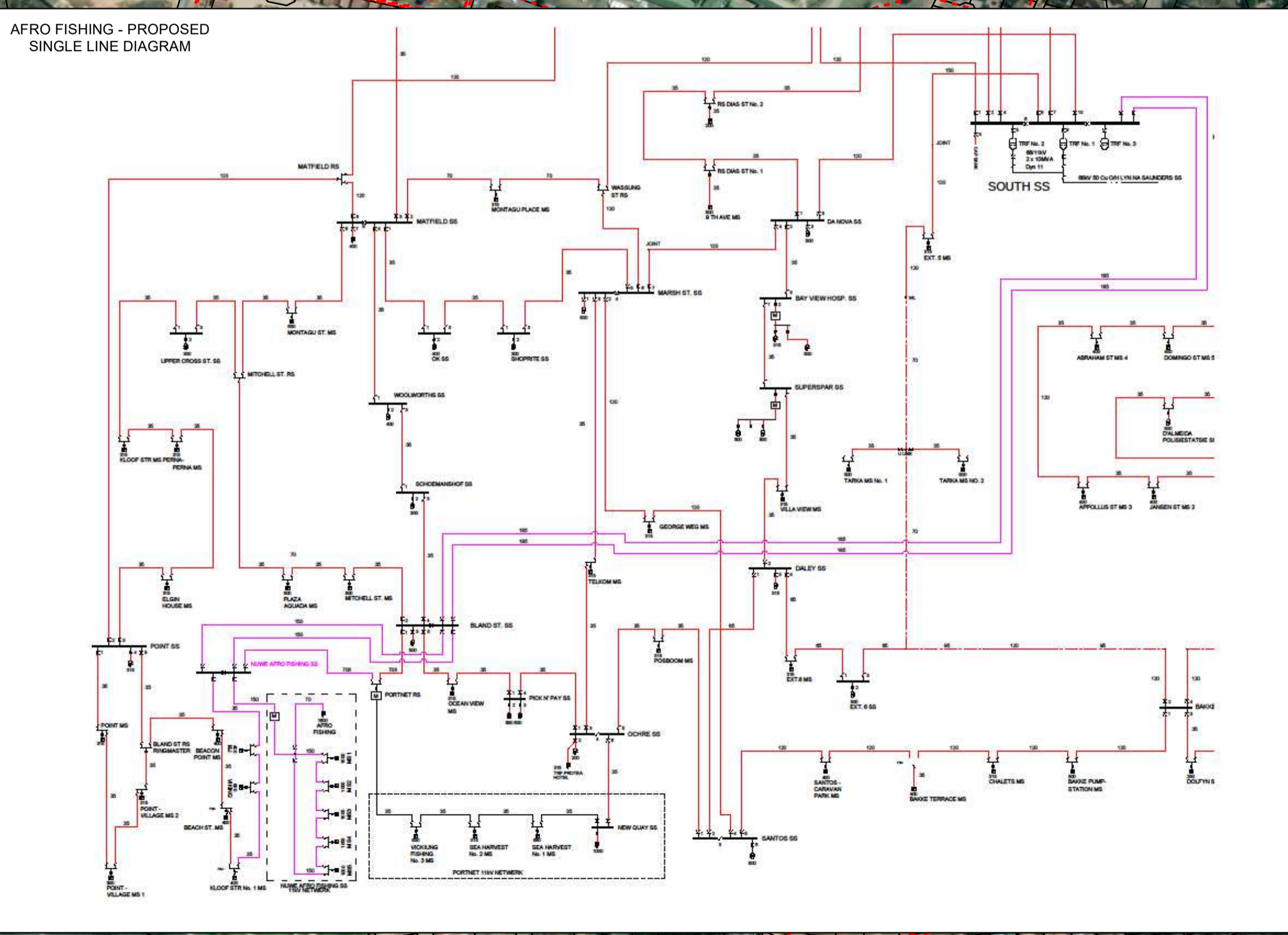
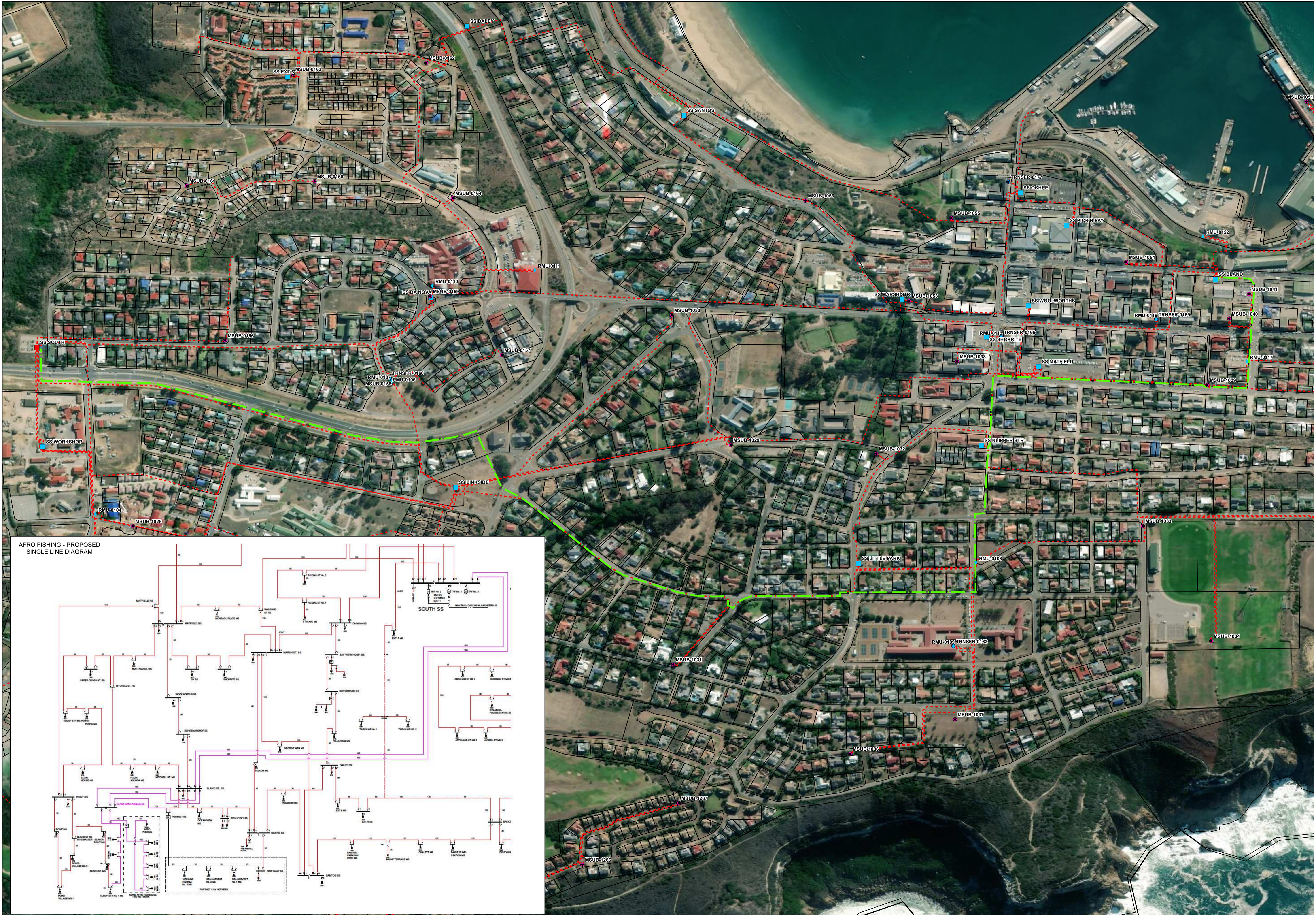
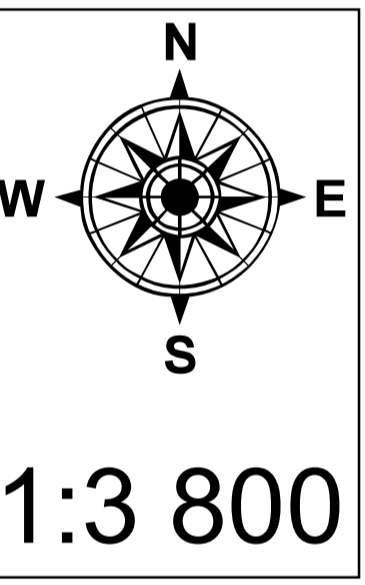
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AFRO FISHING - PROPOSED NEW 11KV UNDERGROUND CABLE

- Legend**
- MV - Ring Main Unit
 - MV - Transformer
 - MV - Mini Substations
 - HV Substations
 - Substation
 - - - Existing MV Underground Cable
 - - - Proposed 11KV UG Cable



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, AeroGRID, IGN, and the GIS User Community