

PROPOSED ELECTRICITY NETWORK MODIFICATIONS FOR INTEGRATING RENEWABLE ENERGY DESIGN DIAGRAMS

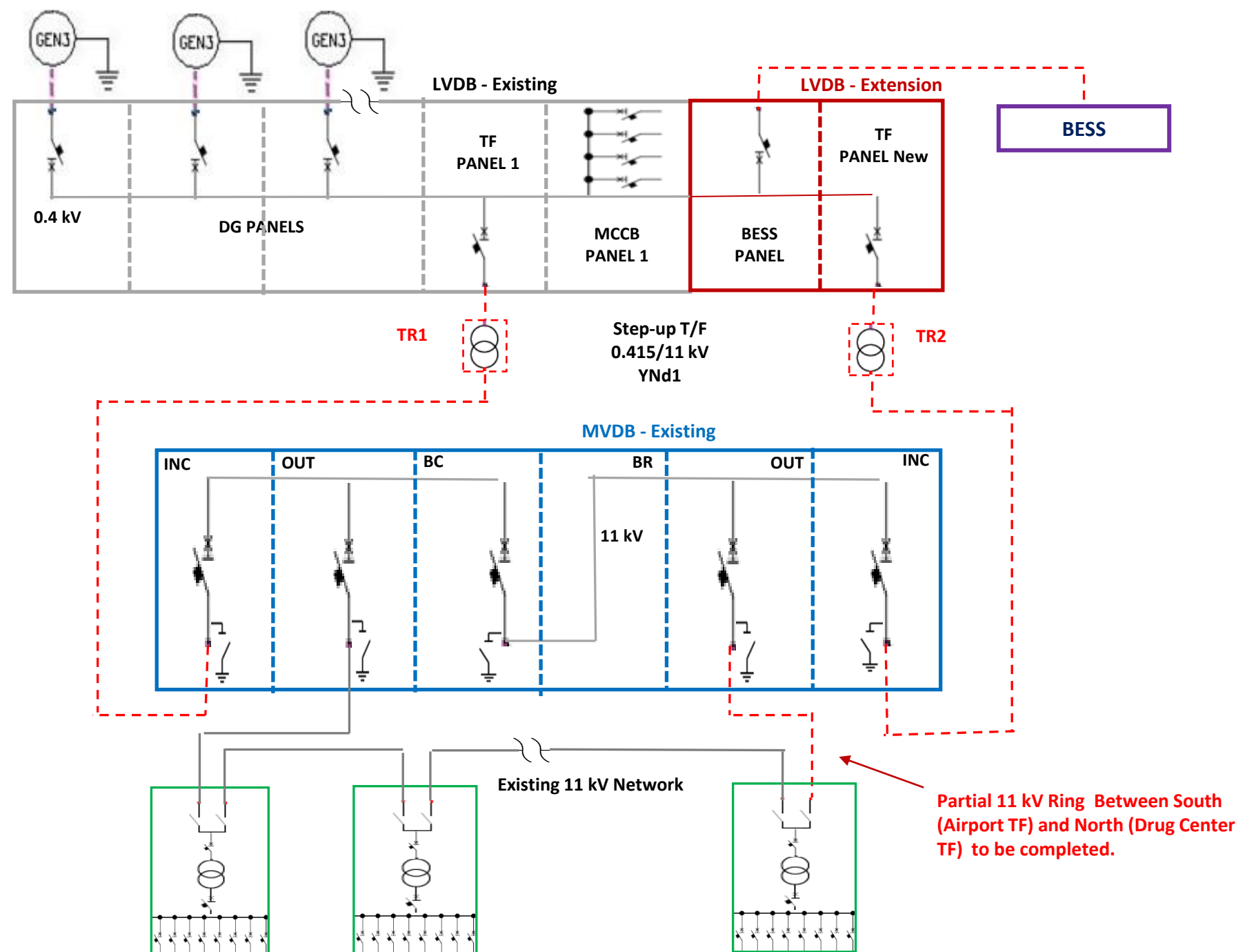
ASSURE PROJECT

**Accelerating Sustainable
System Development using
Renewable Energy**

The design diagrams provided herein are indicative. Detailed designs shall be prepared and finalized by the successful Bidder upon survey.

Note : Design diagrams provided herein are applicable for all 3 Lots of the bid document for Design Supply and Installation of Microgrid Modifications. Bidders shall refer to diagrams for relevant Islands in Each Lot.

A04	DHIDHDHOO ISLAND
B01	HANIMAADHOO ISLAND
C02	MILANDHOO ISLAND
D02	MANADHOO ISLAND
D03	VELIDHOO ISLAND
D04	HOLHUDHOO ISLAND
E01	ALIFUSHI ISLAND (FPV)
E02	HULHUDHUFFARU ISLAND (PV)
F01	THULHAADHOO ISLAND
F03	DHARAVANDHOO ISLAND
K01	RAIYMANDHOO ISLAND (FPV)
K02	MULAH ISLAND (FPV)
K03	VEYVAH ISLAND (FPV)
K05	MULI ISLAND (FPV)
L02	NILANDHOO ISLAND (FPV)
N02	THIMARAFUSHI ISLAND
N04	GUR AidHOO ISLAND
P02	MAAMENDHOO ISLAND (FPV)
Q04	FARESMAATHODA ISLAND (FPV)
Q05	GADHDHOO ISLAND (FPV)



Proposed 2x4CX300 sq.mm
Cu/XLPE/SWA/PVC
Cable (25 m)



Proposed 2x4CX300 sq.mm
Cu/XLPE/SWA/PVC
Cable (25 m)



Proposed 2x4CX240 sq.mm
Cu/XLPE/SWA/PVC
Cable (200 m)



ASSURE Accelerating Sustainable System Development using Renewable Energy

Proposed Electricity Network Modifications for Integrating Renewable Energy

B01 HANIMAADHOO ISLAND

DRAWING NO : B01 – AS – GR1
REVISION NO : 02
DATE : MAY 2023
DESIGN : PMU
DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
TF PANEL 1 & 2 : ACB – 5000 A
BESS PANEL : ACB – 4000 A
MCCB PANELS : as per Schedules

MVDB – EXISTING

Busbar : 630 A, 25 kA
Incomer / Outgoing : VCB - 630 A
Bus Coupler VCB - 1000 A

BESS : 2000kWh / 2000 kW

STEP-UP T/F

0.415/11 kV - 2 x 2500 KVA
Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:

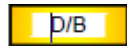
As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New

— UG Cables - Existing

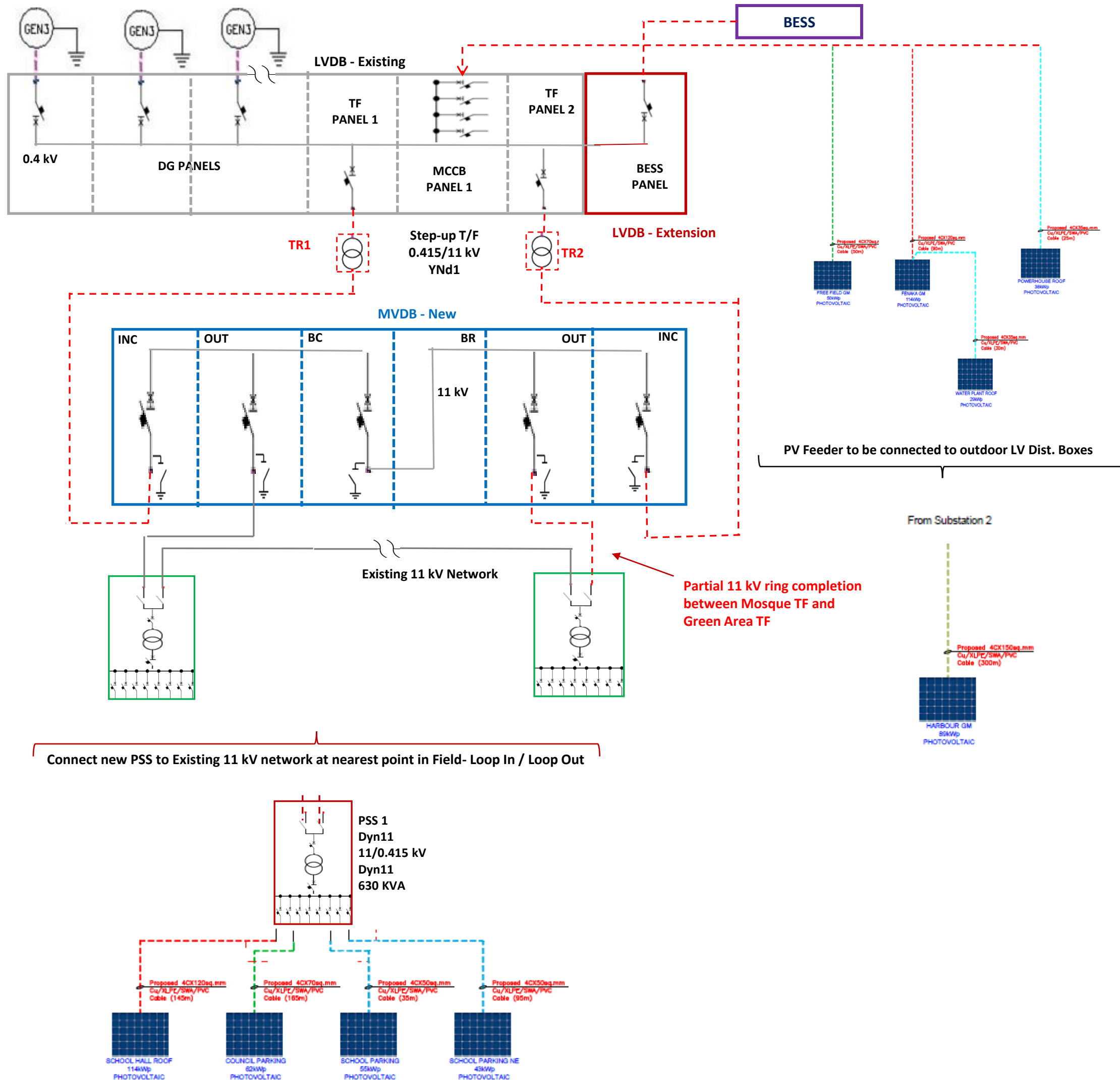
 Existing LV Distribution Box
(To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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ASSURE Accelerating Sustainable System Development using Renewable Energy

Proposed Electricity Network Modifications for Integrating Renewable Energy

C02 MILANDHOO ISLAND

DRAWING NO : C02 – AS – GR1
 REVISION NO : 03
 DATE : MAY 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 TF PANEL 1 & 2 : ACB – 5000 A
 BESS PANEL : ACB – 5000 A
 MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
 Incomer / Outgoing : VCB - 630 A
 Bus Coupler : VCB - 630 A

BESS : 2500 kWh / 2500 kW

STEP-UP T/F

0.415/11 kV - 2 x 2500 KVA
 Vector gr : YNd1

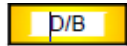
PSS, LV Dist. Boxes AND CABLES:
 As per Schedules

LEGEND

Electrical Symbols : IEC 60417

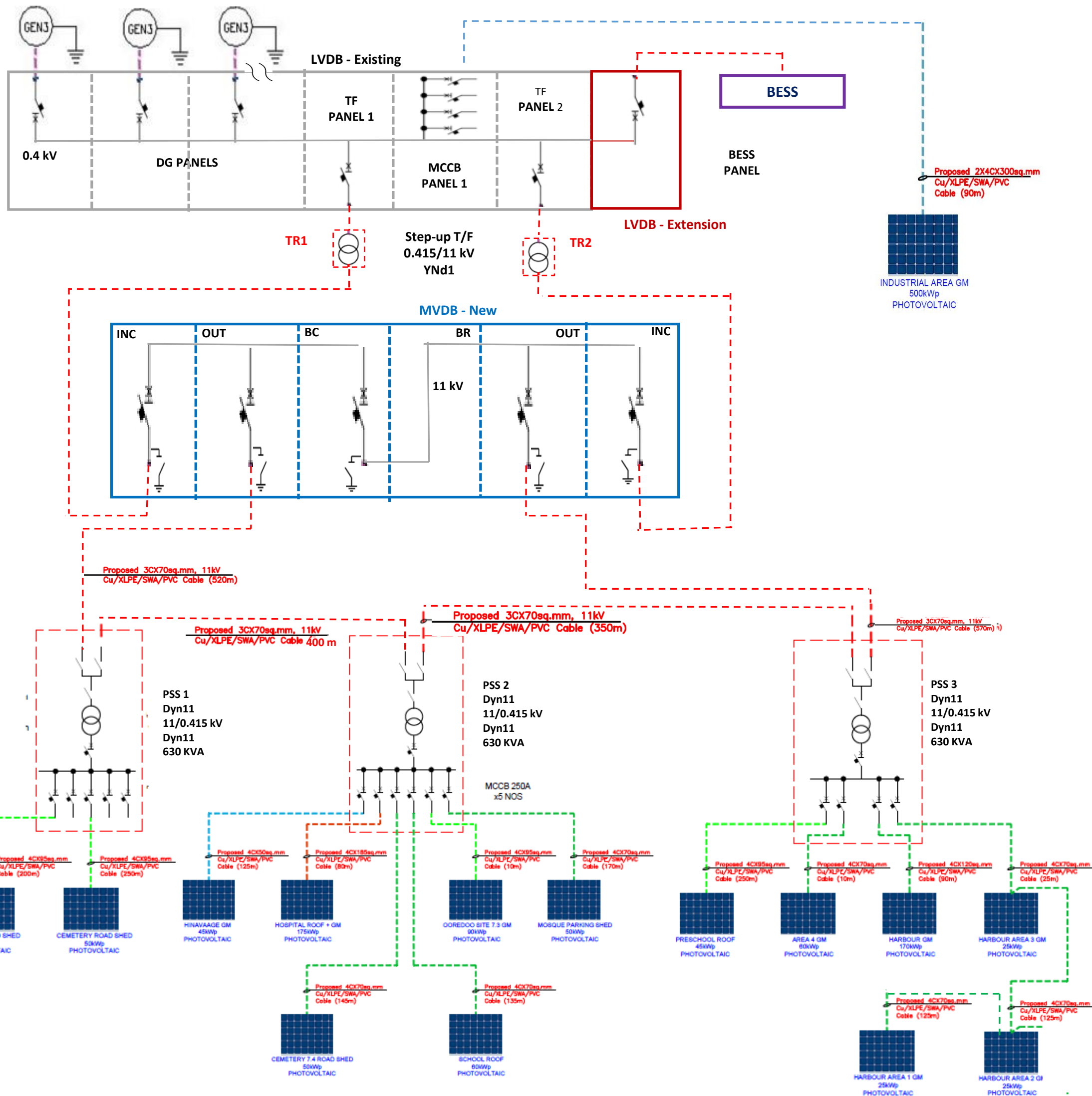
--- UG Cables – New

— UG Cables - Existing

 Existing LV Distribution Box (To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



ASSURE Accelerating Sustainable System Development using Renewable Energy

Proposed Electricity Network Modifications for Integrating Renewable Energy

D02 MANADHOO ISLAND

DRAWING NO : D02 – AS – GR1
 REVISION NO : 02
 DATE : MAY 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 TF PANEL 1 & 2 : ACB – 5000 A
 BESS PANEL : ACB – 6300 A
 MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
 Incomer / Outgoing : VCB - 630 A
 Bus Coupler VCB - 630 A

BESS : 3000 kWh / 3000 kW

STEP-UP T/F

0.415/11 kV - 2 x 2500 KVA
 Vector gr : YNd1

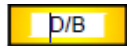
PSS, LV Dist. Boxes AND CABLES:
 As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New

— UG Cables - Existing

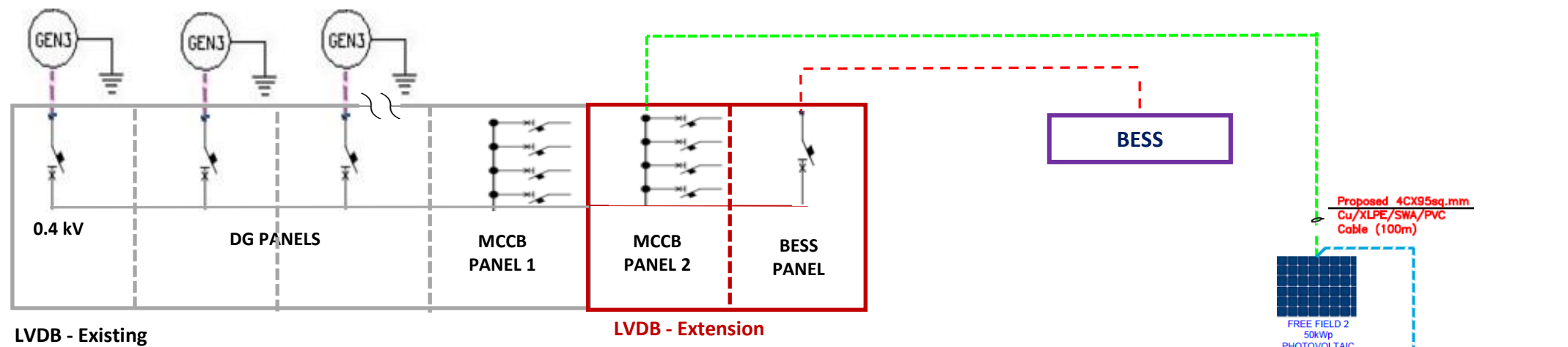
 Existing LV Distribution Box (To be replaced)

NOTES

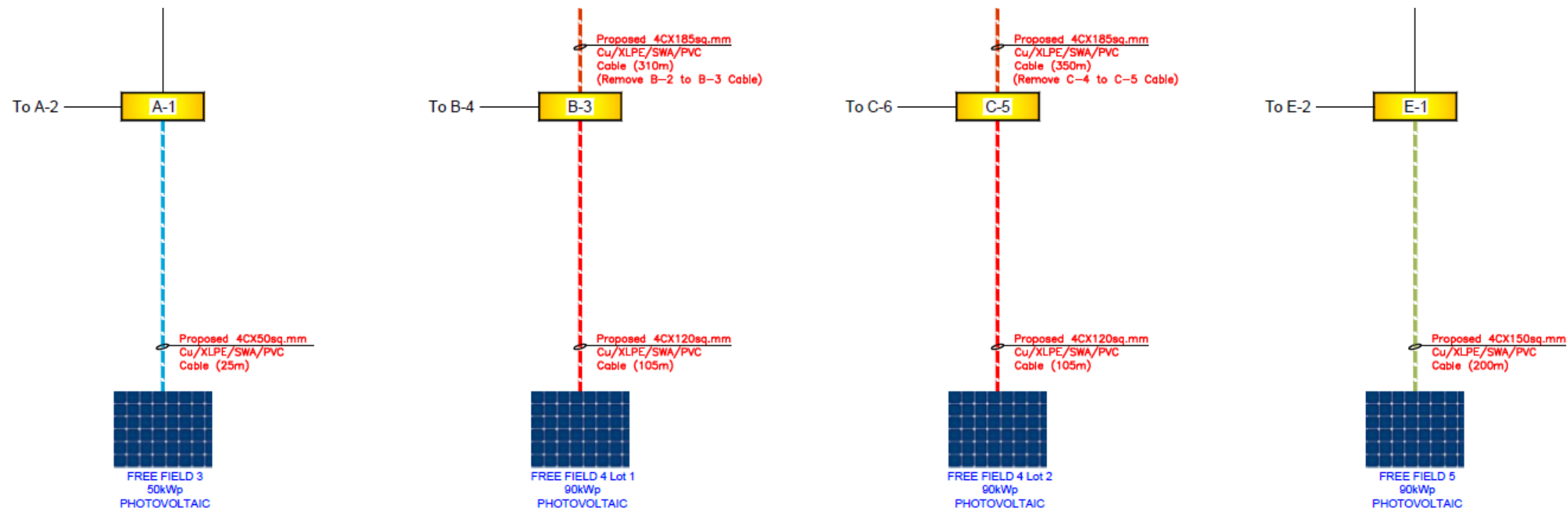
- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
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PV Feeder to be directly connected to outdoor LV Dist. Boxes and cable connections



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Proposed Electricity Network Modifications for Integrating Renewable Energy

D04 HOLHUDHOO ISLAND

DRAWING NO : D04 – AS – GR1
REVISION NO : 02
DATE : MAY 2023
DESIGN : PMU
DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
BESS PANEL : ACB – 3200 A
MCCB PANELS : as per Schedules

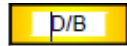
BESS : 1500 kWh / 1500 kW

STEP-UP T/F – N/A

PSS, LV Dist. Boxes AND CABLES:
As per Schedules

LEGEND

Electrical Symbols : IEC 60417

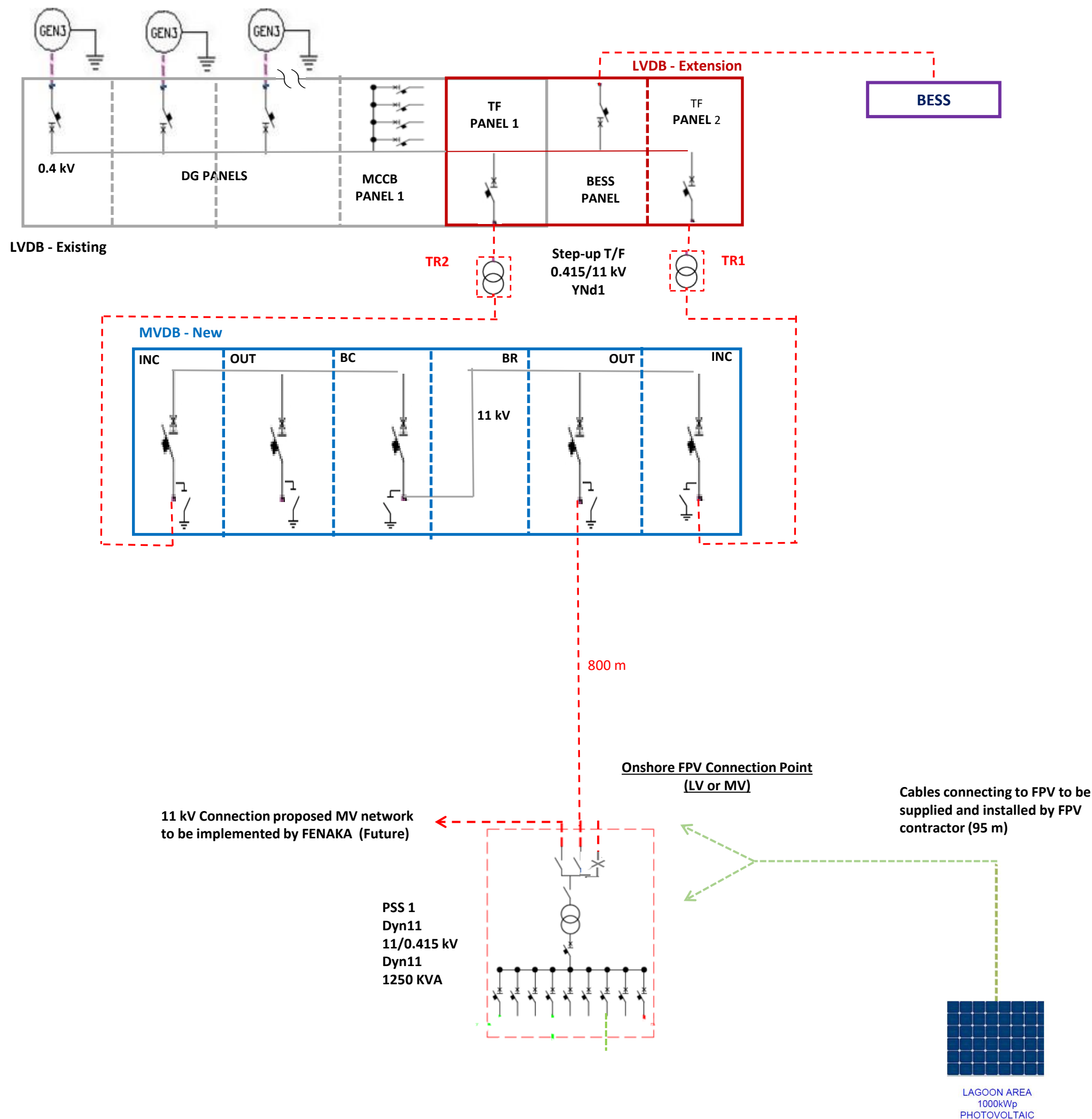
- UG Cables – New
- UG Cables - Existing
-  Existing LV Distribution Box (To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
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E01 ALIFUSHI ISLAND

DRAWING NO : E01 – AS – GR1
REVISION NO : 02
DATE : JUNE 2023
DESIGN : PMU
DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
TF PANEL 1 & 2 : ACB – 5000 A
BESS PANEL : ACB – 4000 A
MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
Incomer / Outgoing : VCB - 630 A
Bus Coupler VCB - 630 A

BESS : 2000 kWh / 2000 kW

STEP-UP T/F

0.415/11 kV - 2 x 2000 KVA
Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:
As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New

— UG Cables - Existing

Existing LV Distribution Box
(To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown.
Detailed design to be done by Contractor
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DRAWING NO : E02 – AS – GR1
REVISION NO : 03
DATE : JUNE 2023
DESIGN : PMU
DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
BESS PANEL : ACB – 3200 A
MCCB PANELS : as per Schedules

MVDB: - Nil

BESS : 1500 kWh / 1500 kW

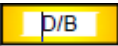
STEP-UP T/F – Nil

PSS, LV Dist. Boxes AND CABLES:
As per Schedules

LEGEND

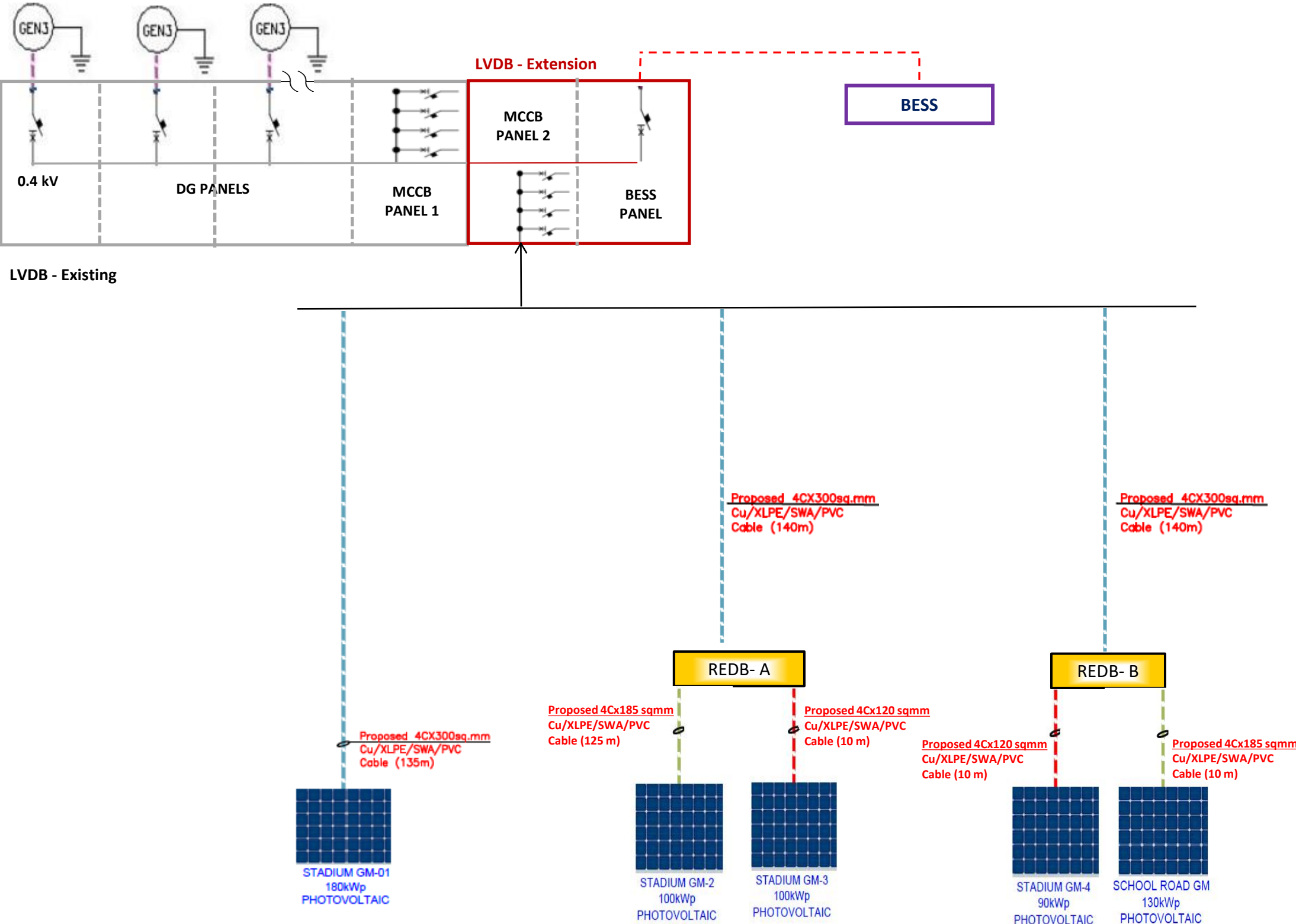
Electrical Symbols : IEC 60417

--- UG Cables – New
— UG Cables - Existing

 Existing LV Distribution Box
(To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown.
Detailed design to be done by Contractor
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K02 MULAH ISLAND

DRAWING NO : K02 – AS – GR1
REVISION NO : 02
DATE : JUNE 2023
DESIGN : PMU
DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
BESS PANEL : ACB – 4000 A
TR PANEL : ACB - 3200 A
MCCB PANELS : as per Schedules

RMU - NEW

12 kV 2-WAY RMU
LBS 630 A, VCB 200 A, with ES

BESS : 2000 kWh / 1000 kW

STEP-UP T/F –

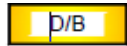
0.415/11 kV - 1 x 1500 KVA
Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:
As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New
— UG Cables - Existing

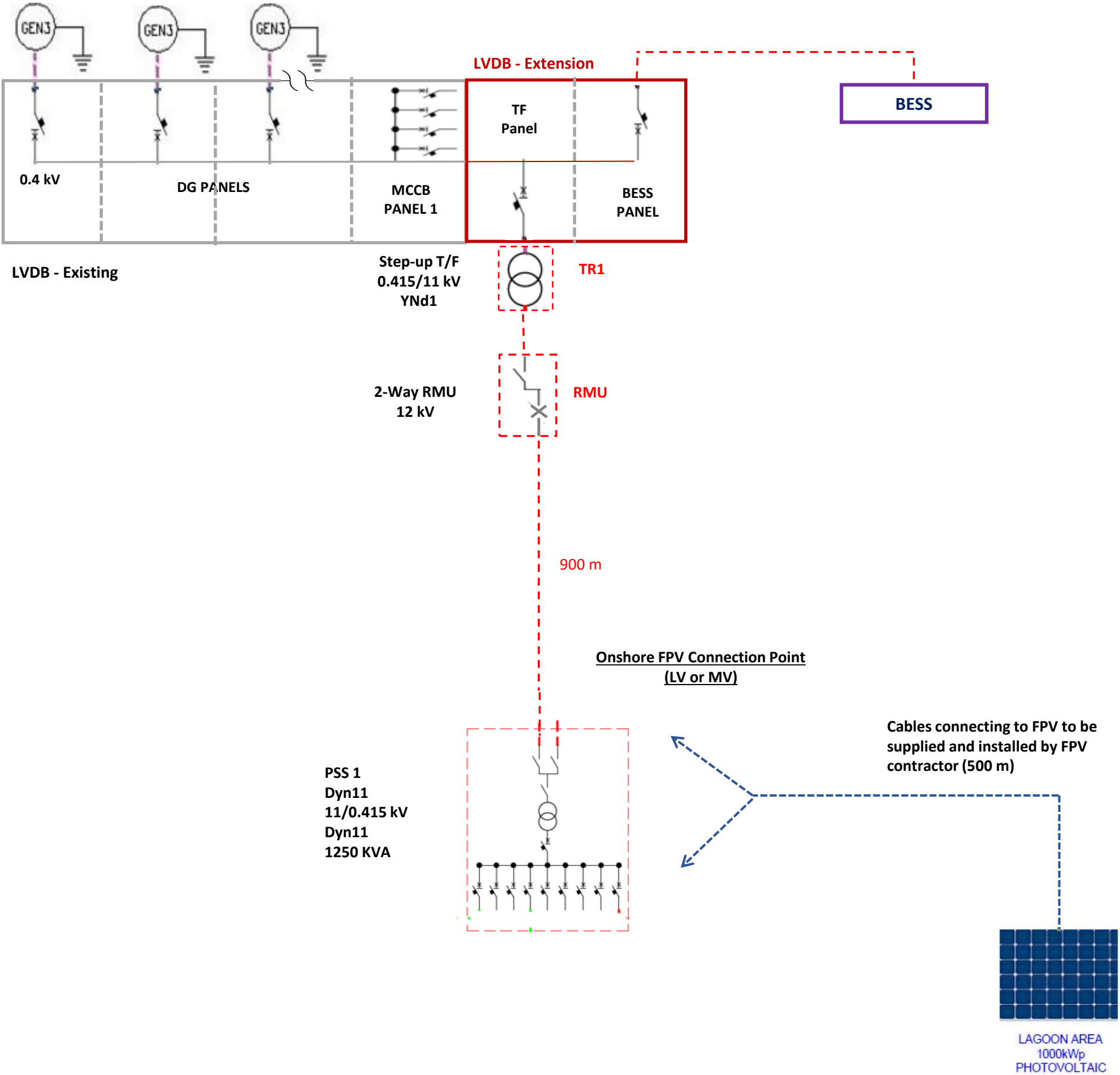
 Existing LV Distribution Box
(To be replaced)

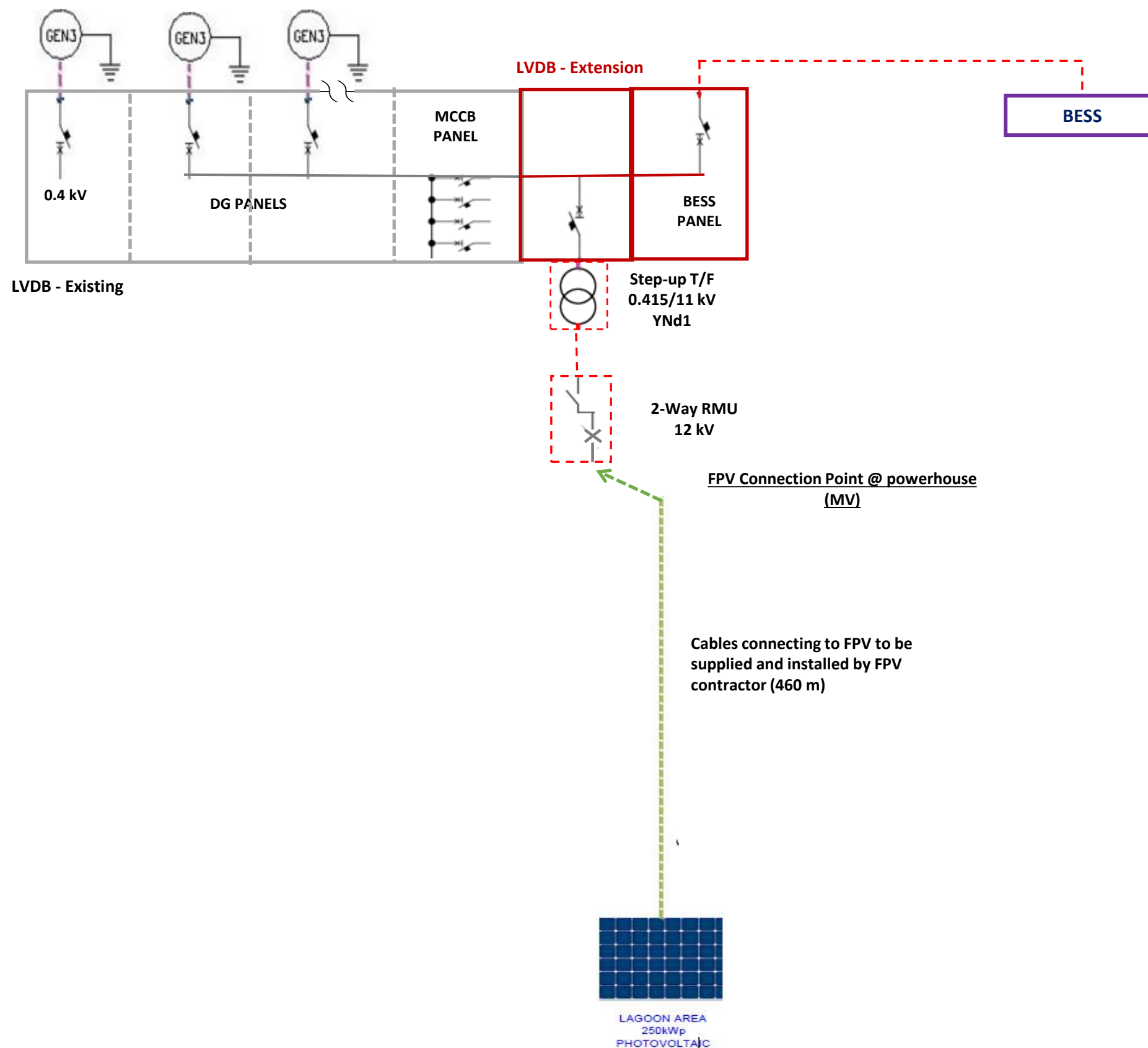
NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown.
Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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Proposed Electricity Network Modifications for Integrating Renewable Energy

K03 VEYVAH ISLAND

DRAWING NO : K03 – AS – GR1
 REVISION NO : 02
 DATE : JUNE 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 TF PANEL 1 : MCCB – 800 A (Motorized)
 BESS PANEL : ACB – 1000 A
 MCCB PANELS : as per Schedules

BESS : 500 kWh / 500 kW

RMU - NEW

12 kV 2-WAY RMU
 LBS 630 A, VCB 200 A, with ES

STEP-UP T/F

0.415/11 kV - 1 x 400 KVA
 Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:

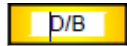
As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New

— UG Cables - Existing

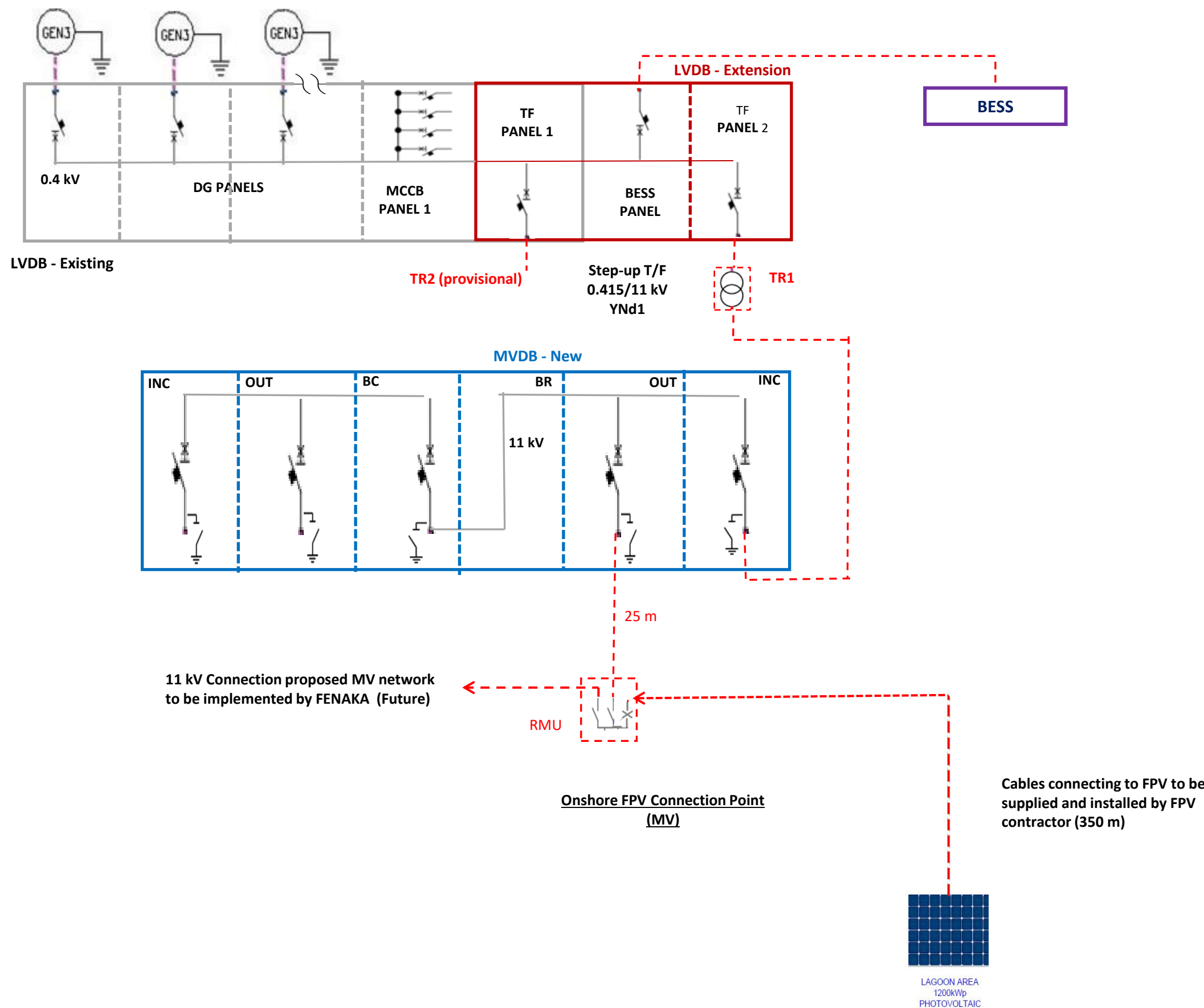
 Existing LV Distribution Box (To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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Proposed Electricity Network Modifications for Integrating Renewable Energy

K05 MULI ISLAND

DRAWING NO : K05 – AS – GR1
 REVISION NO : 02
 DATE : JUNE 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 TF PANEL 1 & 2 : ACB – 4000 A
 BESS PANEL : ACB – 4000 A
 MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
 Incomer / Outgoing : VCB - 630 A
 Bus Coupler VCB - 630 A
 +
 RMU 2 x 630 A LBS, 1 X 200 A VCB

BESS : 2000 kWh / 2000 kW

STEP-UP T/F

0.415/11 kV - 1 x 2000 KVA
 Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:
 As per Schedules

LEGEND

Electrical Symbols : IEC 60417

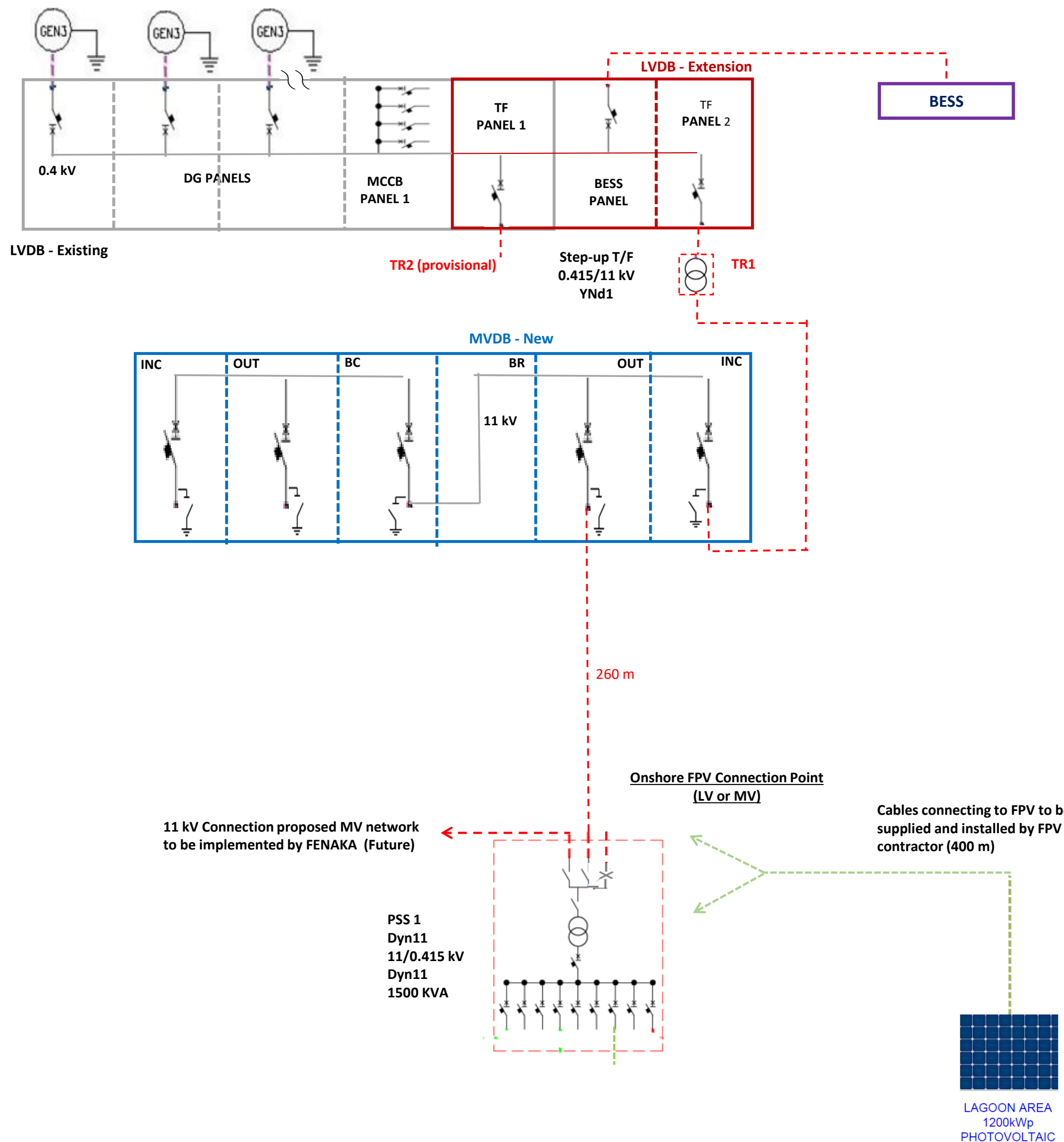
- UG Cables – New (indicated by dashed red lines)
- Existing LV Distribution Box (To be replaced) (indicated by a yellow box with 'p/B')

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
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L02 NILANDHOO ISLAND

DRAWING NO : L02 – AS – GR1
REVISION NO : 02
DATE : JUNE 2023
DESIGN : PMU
DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
TF PANEL 1 & 2 : ACB – 5000 A
BESS PANEL : ACB – 2000 A
MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
Incomer / Outgoing : VCB - 630 A
Bus Coupler VCB - 630 A

BESS : 3000 kWh / 3000 kW

STEP-UP T/F

0.415/11 kV - 1 x 2500 KVA
Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:
As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New

— UG Cables - Existing

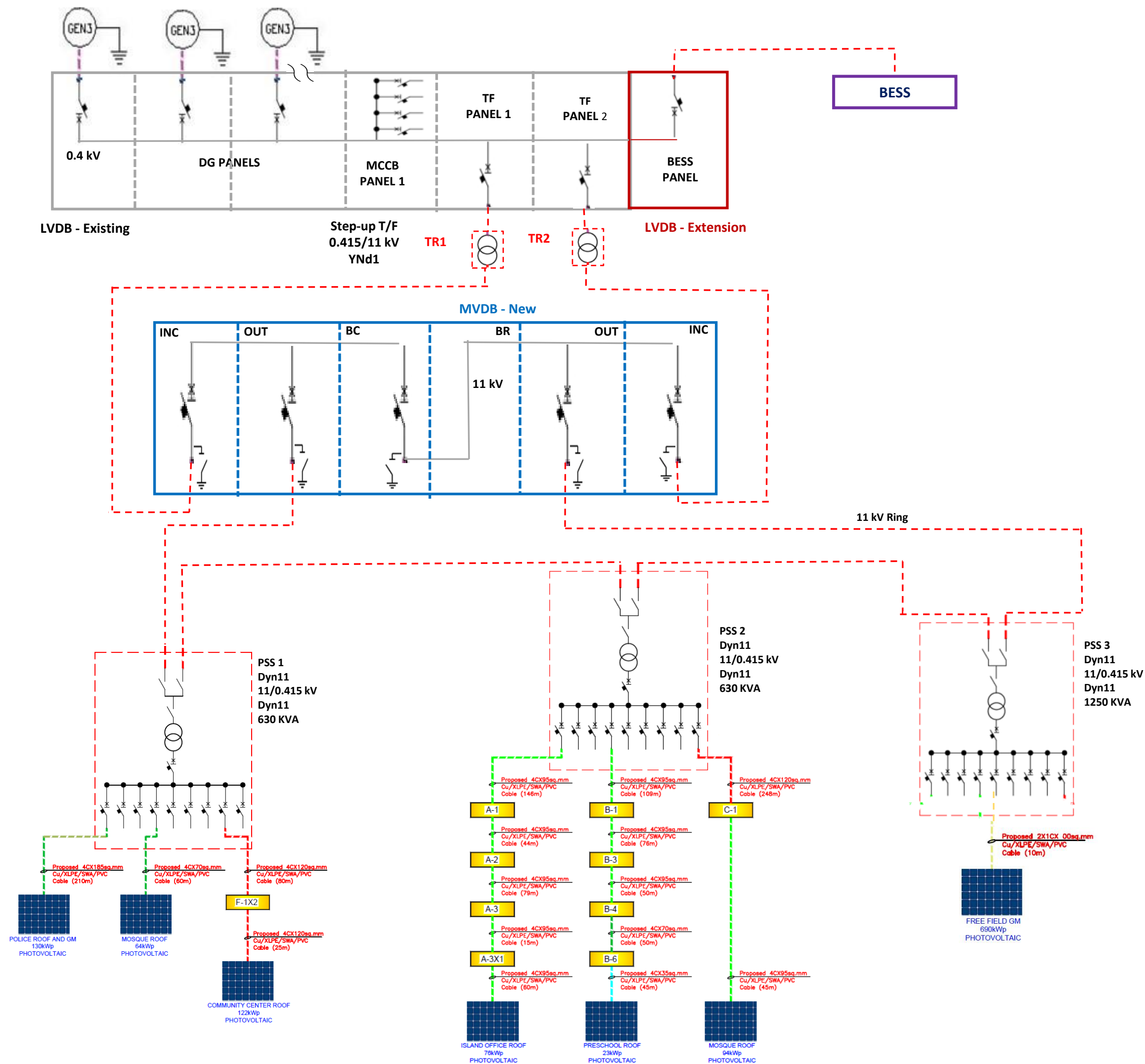
Existing LV Distribution Box
(To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown.
Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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Proposed Electricity Network Modifications for Integrating Renewable Energy

N02 THIMARAFUSHI ISLAND

DRAWING NO : N02 – AS – GR1
 REVISION NO : 02
 DATE : JUNE 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 TF PANEL 1 & 2 : ACB – 4000 A (Existing)
 BESS PANEL : ACB – 6300 A
 MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
 Incomer / Outgoing : VCB - 630 A
 Bus Coupler VCB - 630 A

BESS : 3000 kWh / 3000 kW

STEP-UP T/F

0.415/11 kV - 2 x 2000 KVA
 Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:

As per Schedules

LEGEND

Electrical Symbols : IEC 60417

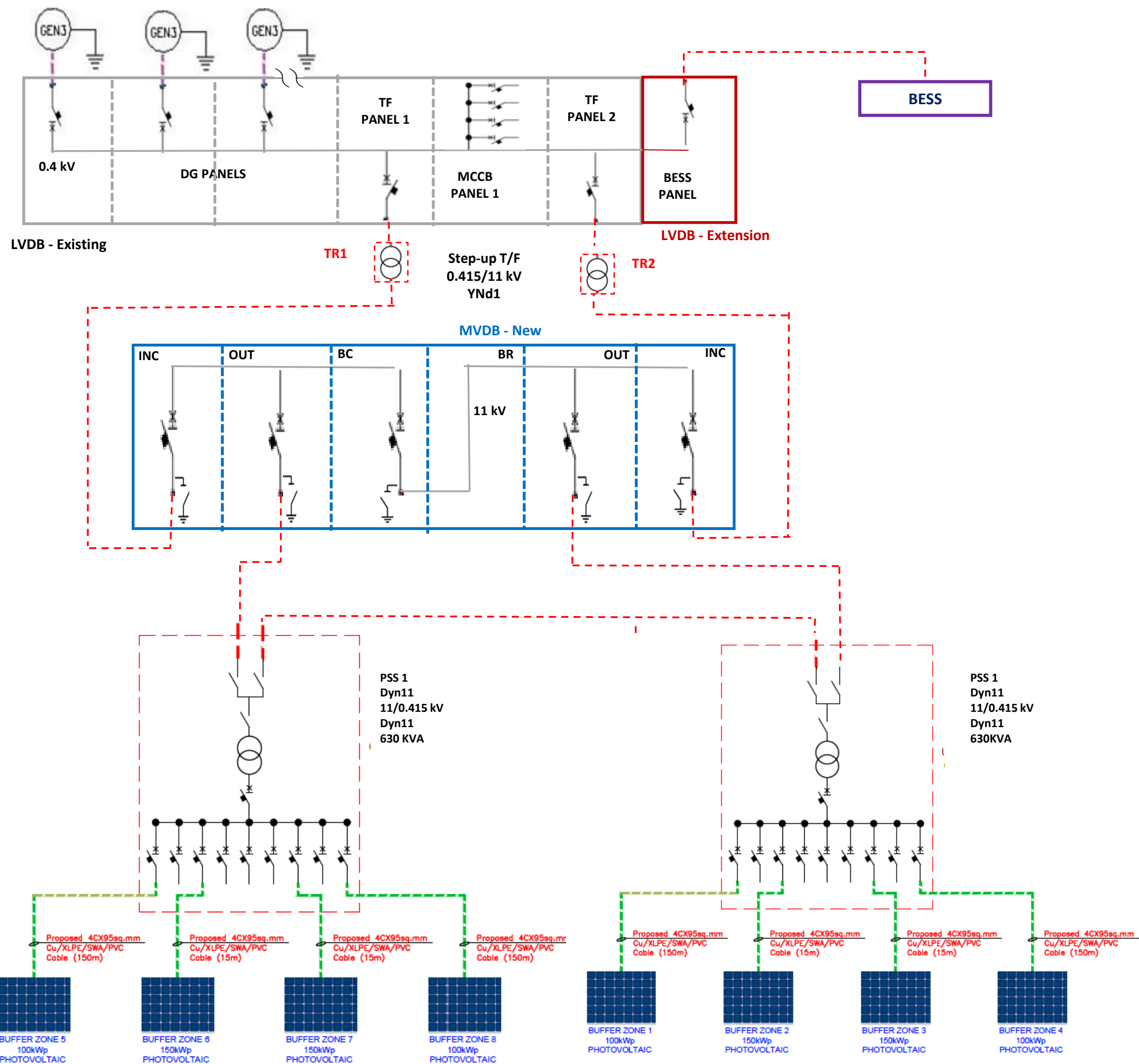
--- UG Cables – New

— UG Cables - Existing

[Symbol] Existing LV Distribution Box (To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



ASSURE Accelerating Sustainable System Development using Renewable Energy

Proposed Electricity Network Modifications for Integrating Renewable Energy

N04 GURAI DHOO ISLAND

DRAWING NO : N04 – AS – GR1
 REVISION NO : 02
 DATE : MAY 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 BESS PANEL : ACB – 5000 A
 MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
 Incomer / Outgoing : VCB - 630 A
 Bus Coupler VCB - 630 A

BESS : 2500 kWh / 2500 kW

STEP-UP T/F

0.415/11 kV - 2 x 2000 KVA
 Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:
 As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New

--- UG Cables - Existing

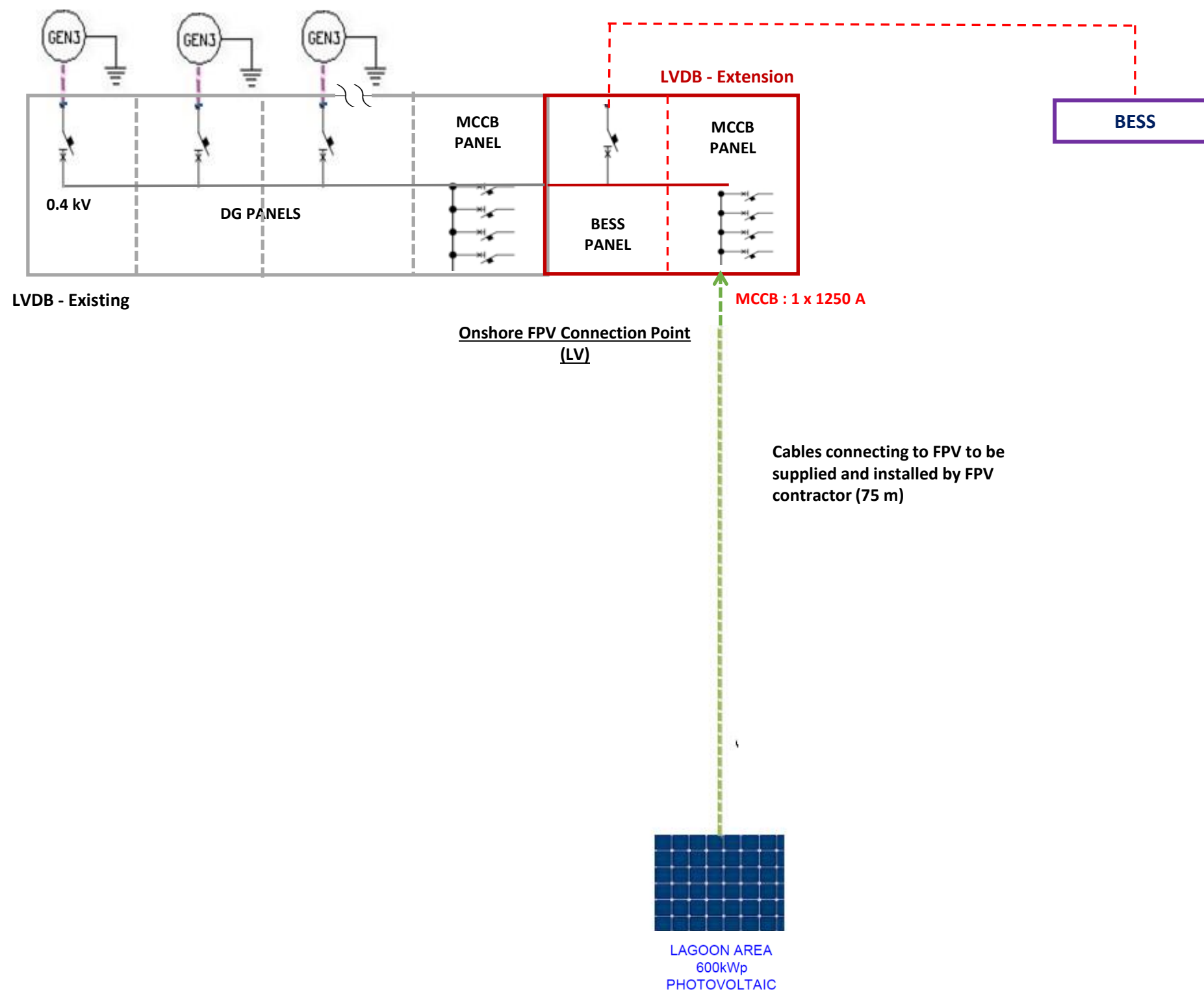
p/B Existing LV Distribution Box (To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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ASSURE Accelerating Sustainable System Development using Renewable Energy

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P02 MAAMENDHOO ISLAND

DRAWING NO : P02 – AS – GR1
 REVISION NO : 02
 DATE : JUNE 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 BESS PANEL : ACB – 2000 A
 MCCB PANELS : as per Schedules

BESS : 1000 kWh / 1000 kW

PSS, LV Dist. Boxes AND CABLES:
 As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New

— UG Cables - Existing

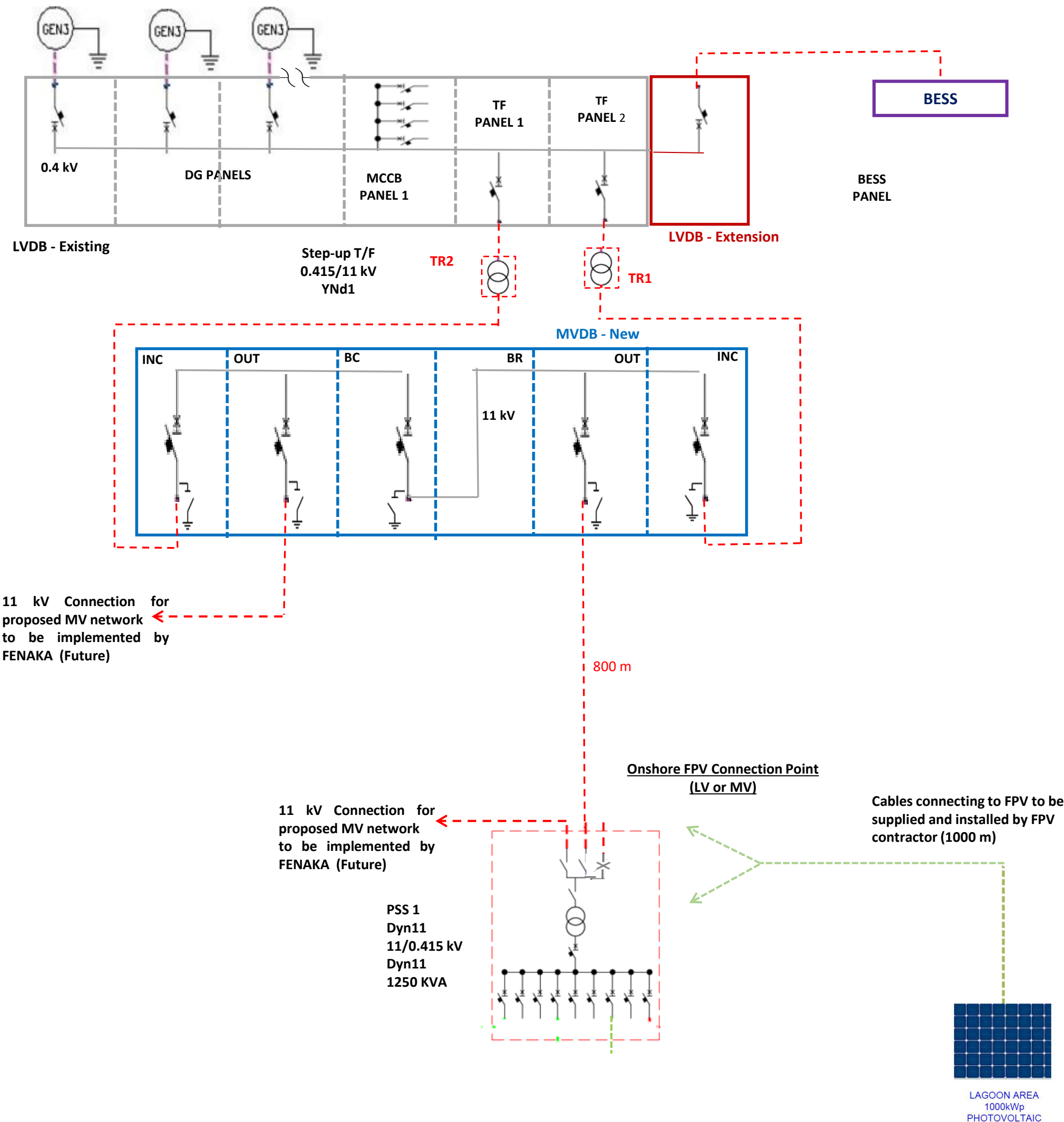
Existing LV Distribution Box (To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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ASSURE Accelerating Sustainable System Development using Renewable Energy

Proposed Electricity Network Modifications for Integrating Renewable Energy

Q04 FARESMAATHODA ISLAND

DRAWING NO : Q04 – AS – GR1
 REVISION NO : 02
 DATE : JUNE 2023
 DESIGN : PMU
 DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
 BESS PANEL : ACB – 6300 A
 MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
 Incomer / Outgoing : VCB - 630 A
 Bus Coupler VCB - 630 A

BESS : 3000 kWh / 3000 kW

STEP-UP T/F

0.415/11 kV - 1 x 2500 KVA
 Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:
 As per Schedules

LEGEND

Electrical Symbols : IEC 60417

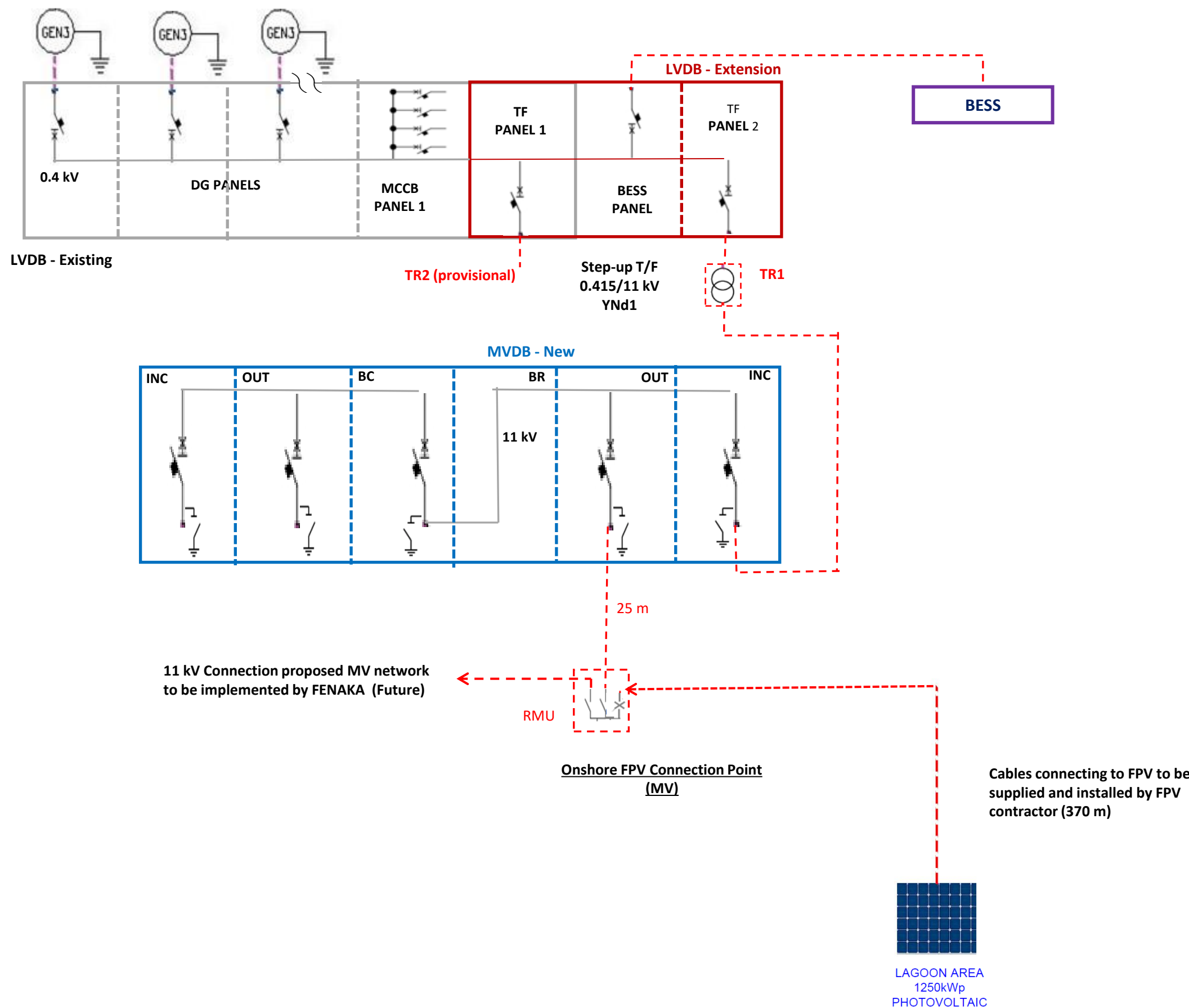
--- UG Cables – New

— UG Cables - Existing

Existing LV Distribution Box (To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown. Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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Q05 GADHDHOO ISLAND

DRAWING NO : Q05 – AS – GR1
REVISION NO : 02
DATE : JUNE 2023
DESIGN : PMU
DRAWING : PMU

KEY RATINGS

LVDB - EXTENSION

Busbar : 50 Hz, 415 V, 8000 A, 65 kA
TF PANEL 1 & 2 : ACB – 4000 A
BESS PANEL : ACB – 5000 A
MCCB PANELS : as per Schedules

MVDB – NEW

Busbar : 630 A, 25 kA
Incomer / Outgoing : VCB - 630 A
Bus Coupler VCB - 630 A
+
RMU 2 x 630 A LBS, 1 X 200 A VCB

BESS : 2500 kWh / 2500 kW

STEP-UP T/F

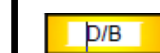
0.415/11 kV - 1 x 2500 KVA
Vector gr : YNd1

PSS, LV Dist. Boxes AND CABLES:
As per Schedules

LEGEND

Electrical Symbols : IEC 60417

--- UG Cables – New



Existing LV Distribution Box
(To be replaced)

NOTES

- * Single Line Diagram Representation
- * LVDB & MVDB – Secondary Circuits not shown.
Detailed design to be done by Contractor
- * Design shall comply with Technical Specifications



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