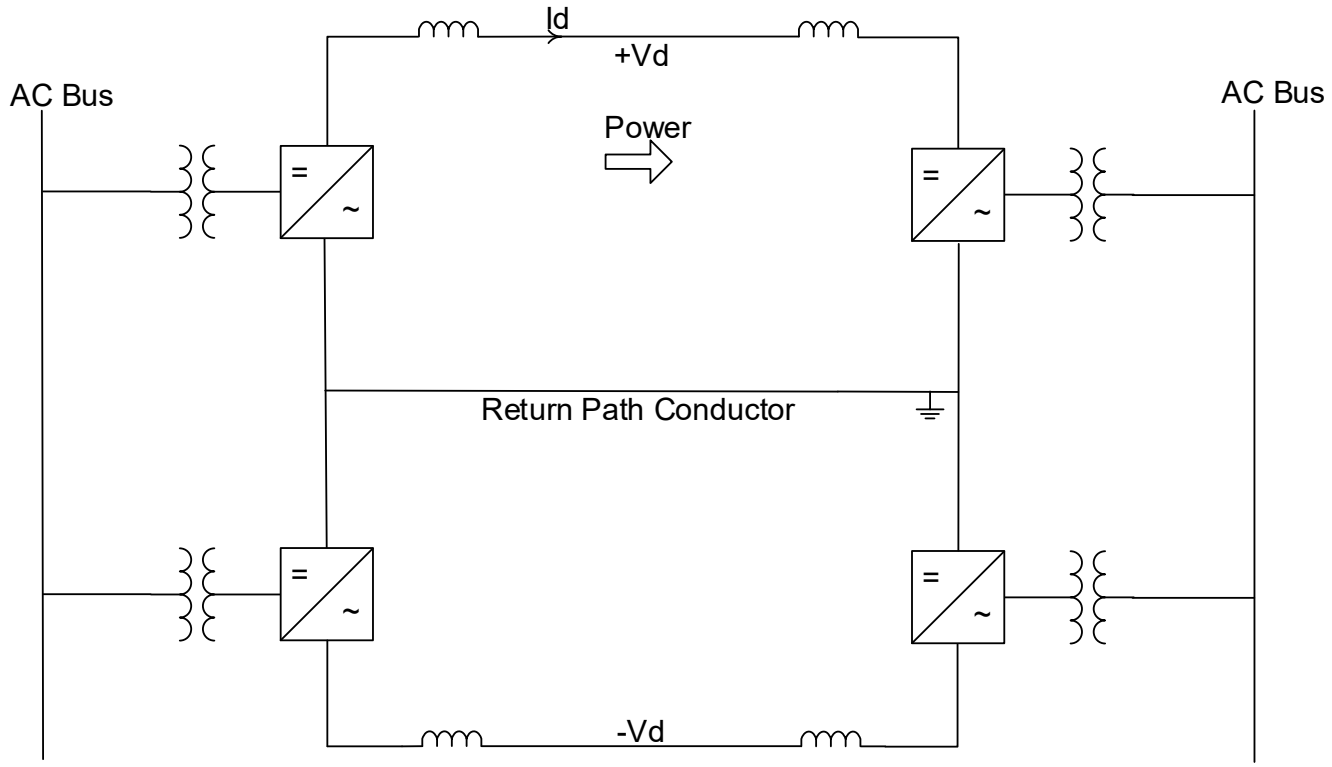
Appendix D

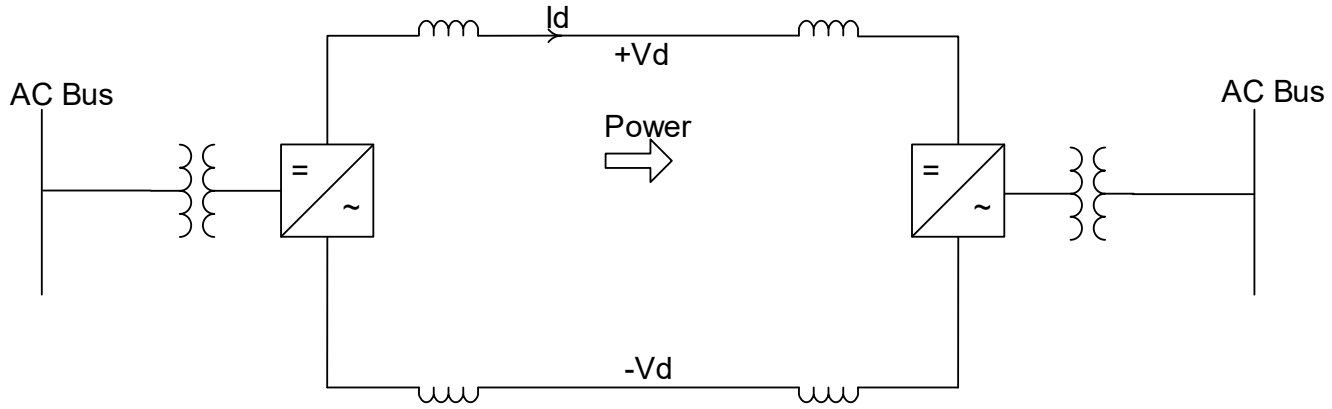
Concept design drawings for Options 2, 3 and 4

Conceptual design drawings for Options 2, 3, and 4

HVDC bipole configuration consists of two high voltage poles, one negative and one positive, and a low voltage return path. If one converter or one high voltage pole conductor is lost, then the system can still operate at half the power transfer capability.

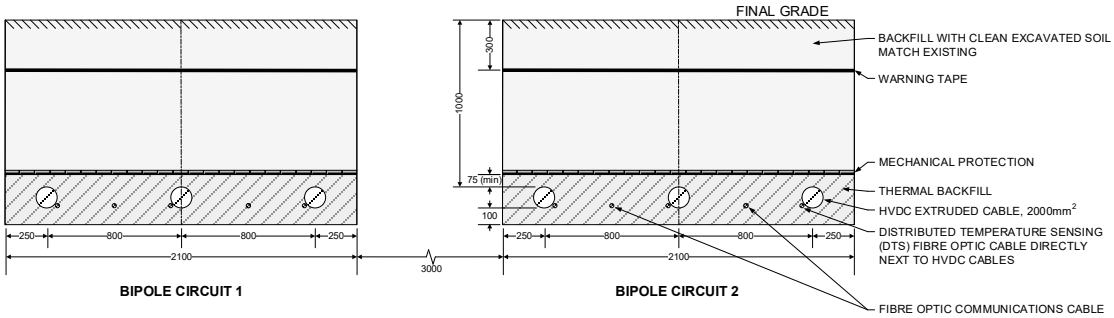


A symmetrical monopole configuration also has two high voltage pole conductors, but only one converter group between the positive and negative voltages. Loss of any element within the system will result in the loss of the complete system.



Notes:

1. Drawing is not to scale.
2. All dimensions are in millimeters.
3. Final dimensions and design to be determined during detailed design by the Civil Contractor with collaboration with HVDC Cable Contractor and Transgrid.
4. Two (2) 525kV 1713MW bipole circuits with one (1) cable per pole and dedicated metallic return.
5. For total easement width, an additional 5m is to be added to either side of the trenches. Therefore the total easement width is ~17.2m.



Transgrid

HUMELINK PROJECT

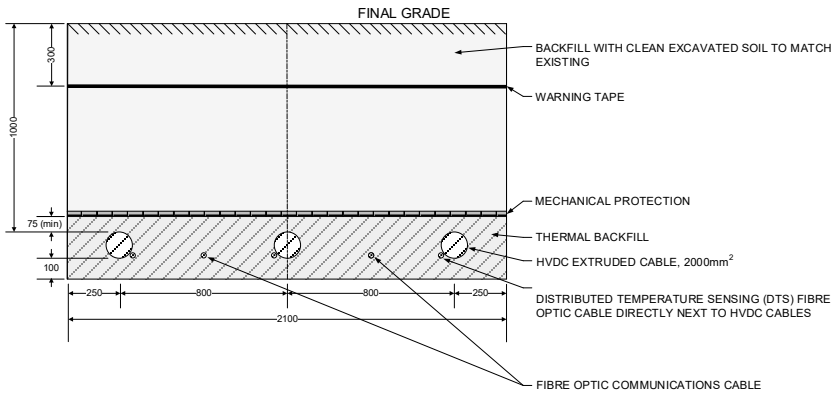
Teshmont now Stantec | April-2022

HVDC CABLE SYSTEM
OPTION 2a CONCEPTUAL DESIGN
DIRECT BURIAL BY OPEN CUT TRENCH
CROSS SECTION

SKETCH 1 | Rev. 00

Notes:

1. Drawing is not to scale.
2. All dimensions are in millimeters.
3. Final dimensions and design to be determined during detailed design by the Civil Contractor with collaboration with HVDC Cable Contractor and Transgrid.
4. 525kV 1713MW bipole circuits with one (1) cable per pole and dedicated metallic return.



Transgrid

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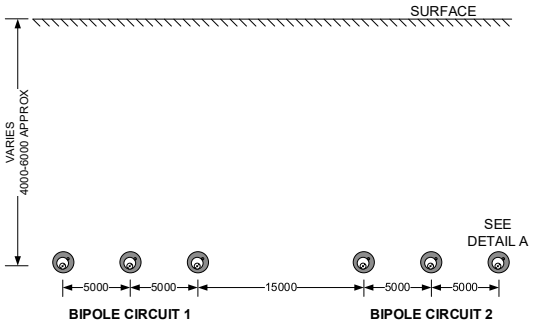
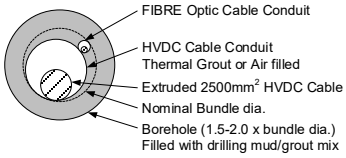
HVDC CABLE SYSTEM
OPTION 2A-1 CONCEPTUAL DESIGN
DIRECT BURIAL BY OPEN CUT TRENCH
CROSS SECTION

SKETCH 2 | Rev. 00

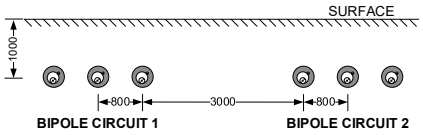
Notes:
1. Drawing is not to scale
2. All dimensions are in millimeters
3. Final dimensions and design to be determined by the Civil Contractor with collaboration with HVDC Cable Contractor and Transgrid.
4. Assumed two (2) 525kV 1713MW bipole circuits with one (1) 2500mm^2 extruded cable per pole and dedicated metallic return.



MID-POINT CROSS-SECTION



DETAIL A



ENTRANCE & EXIT CROSS-SECTION

Transgrid

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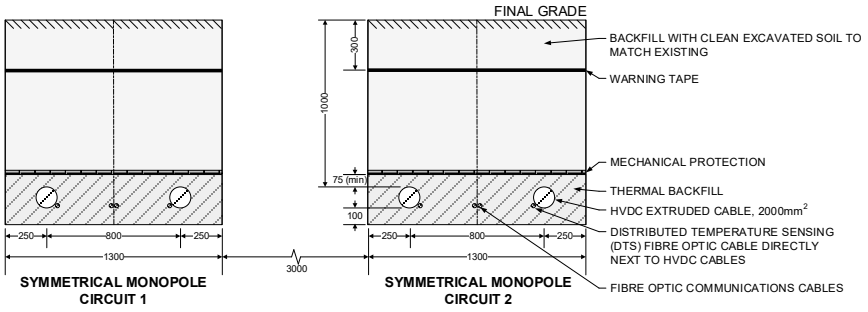
HVDC CABLE SYSTEM
OPTION 2a CONCEPTUAL DESIGN
HORIZONTAL DIRECTIONAL DRILLING (HDD)
CROSS SECTION

SKETCH 3 | Rev. 00

Notes:
1. Drawing is not to scale.
2. All dimensions are in millimeters.
3. Final dimensions and design to be determined during detailed design by the Civil Contractor with collaboration with HVDC Cable Contractor and Transgrid.
4. Two (2) 400kV 1285MW symmetric monopole circuits with one (1) cable per pole.
5. For total easement width, an additional 5m is to be added to either side of the trenches. Therefore the total easement width is ~15.6m.



Transgrid

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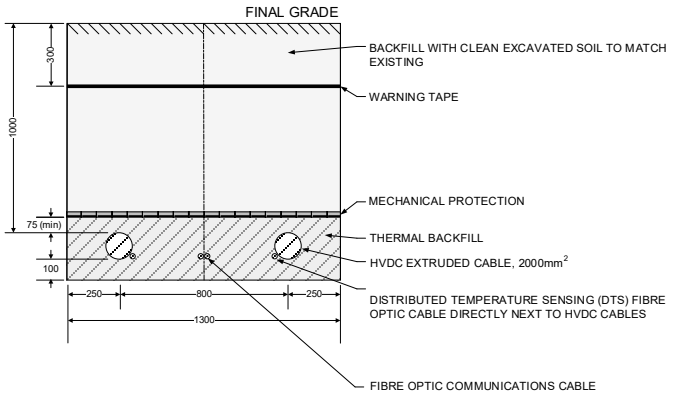
HVDC CABLE SYSTEM
OPTION 2b CONCEPTUAL DESIGN
DIRECT BURIAL BY OPEN CUT TRENCH
CROSS SECTION

SKETCH 4 | Rev. 00

Notes:
1. Drawing is not to scale.
2. All dimensions are in millimeters.
3. Final dimensions and design to be determined during detailed design by the Civil Contractor with collaboration with HVDC Cable Contractor and Transgrid.
4. 400kV 1285MW symmetric monopole circuits with one (1) cable per pole.



Transgrid

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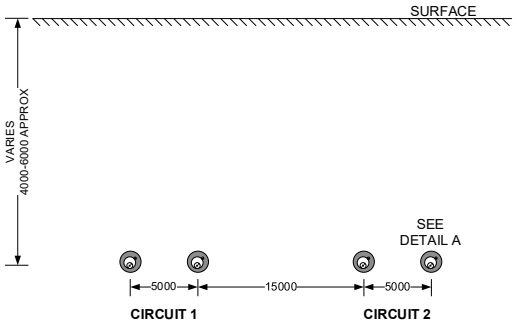
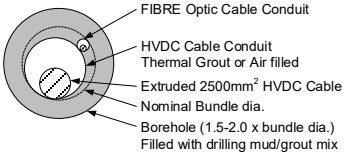
HVDC CABLE SYSTEM
OPTION 2B-1 CONCEPTUAL DESIGN
DIRECT BURIAL BY OPEN CUT TRENCH
CROSS SECTION

SKETCH 5	Rev. 00

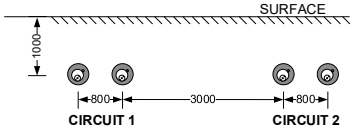
Notes:
1. Drawing is not to scale
2. All dimensions are in millimeters
3. Final dimensions and design to be determined by the Civil Contractor with collaboration with HVDC Cable Contractor and Transgrid.
4. Assumed two (2) 400kV 1285MW symmetric monopole circuits with one (1) 2500mm² extruded cable per pole.



MID-POINT CROSS-SECTION



DETAIL A



ENTRANCE & EXIT CROSS-SECTION

Transgrid

HUMELINK PROJECT

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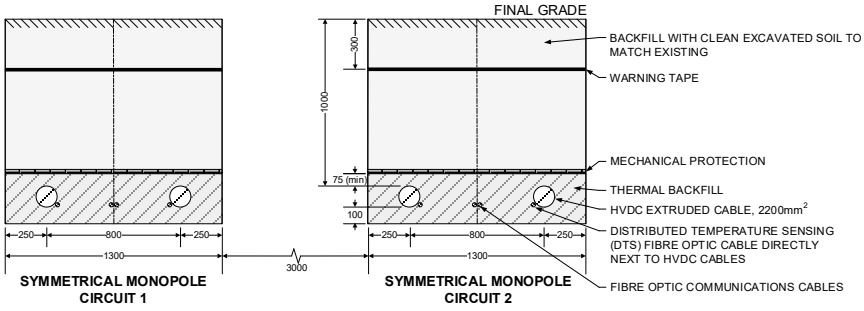
HVDC CABLE SYSTEM
OPTION 2B-1 CONCEPTUAL DESIGN
HORIZONTAL DIRECTIONAL DRILLING (HDD)
CROSS SECTION

SKETCH 6	Rev. 00

Notes:

1. Drawing is not to scale.
2. All dimensions are in millimeters.
3. Final dimensions and design to be determined during detailed design by the Civil Contractor with collaboration with HVDC Cable Contractor and Transgrid.
4. Two (2) 525kV 1870MW symmetric monopole circuits with one (1) cable per pole.
5. For total easement width, an additional 5m is to be added to either side of the trenches. Therefore the total easement width is ~15.6m.



Transgrid

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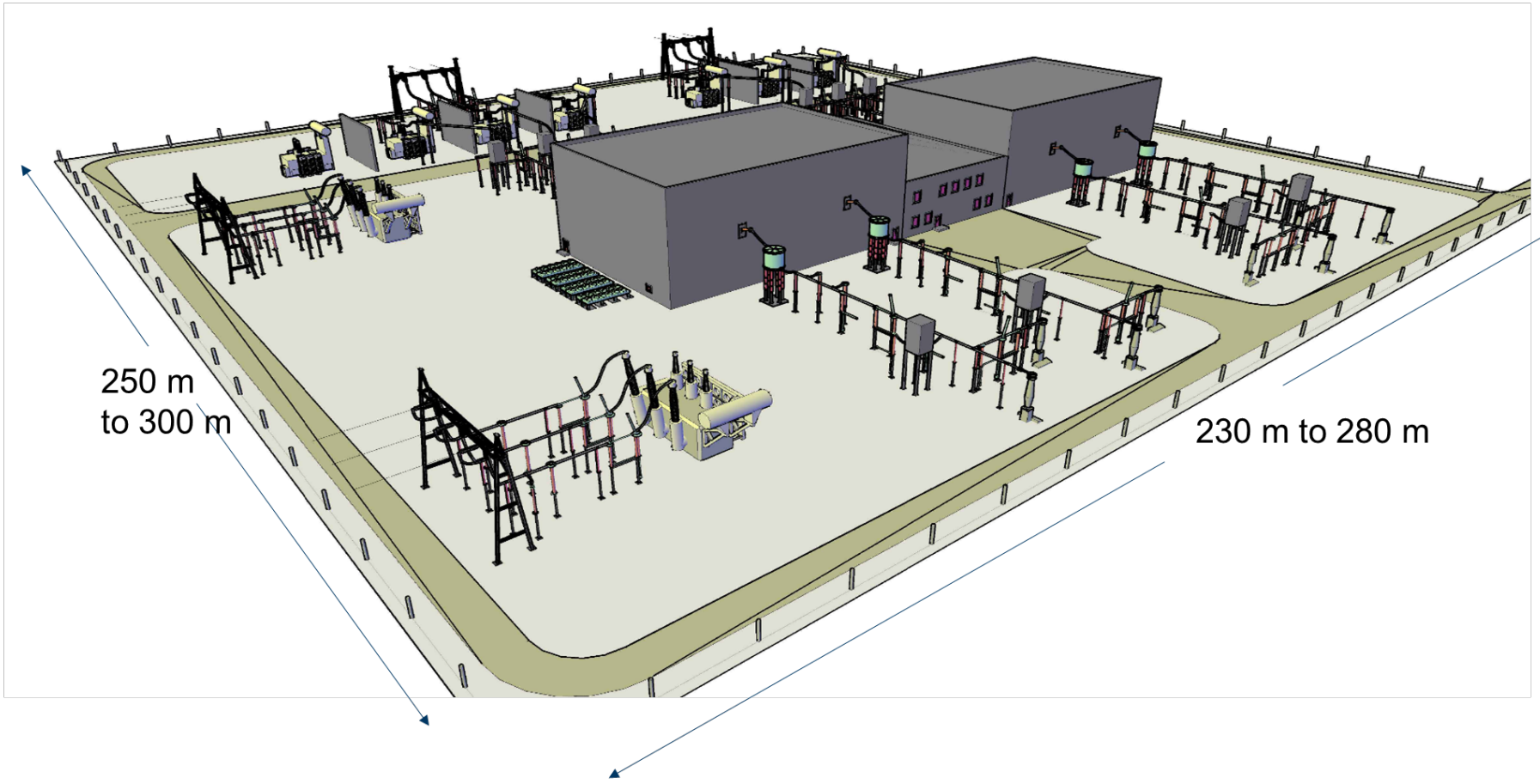
HVDC CABLE SYSTEM
OPTION 4C-2 CONCEPTUAL DESIGN
DIRECT BURIAL BY OPEN CUT TRENCH
CROSS SECTION

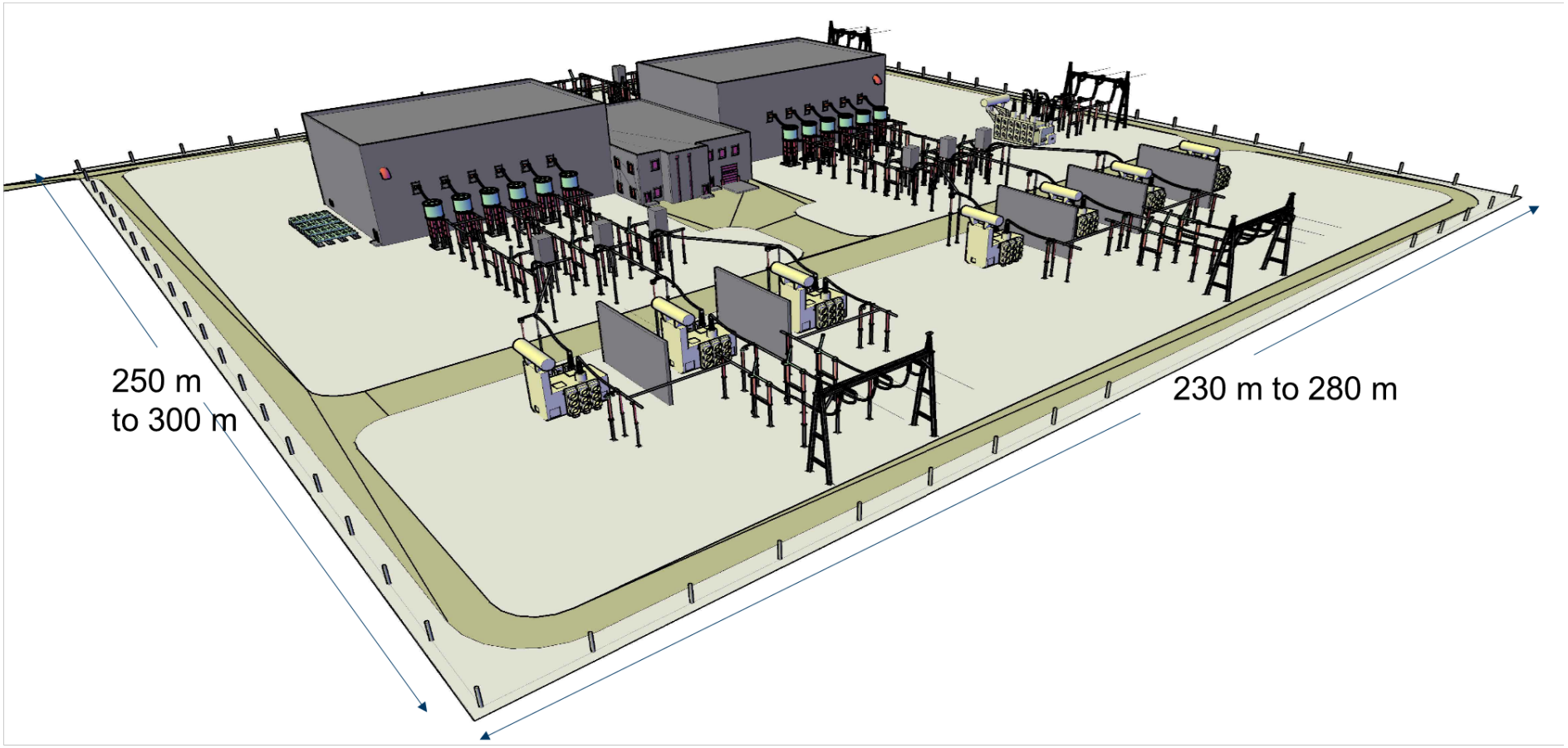
SKETCH 7	Rev. 00

Layouts for the converter stations are as follows.

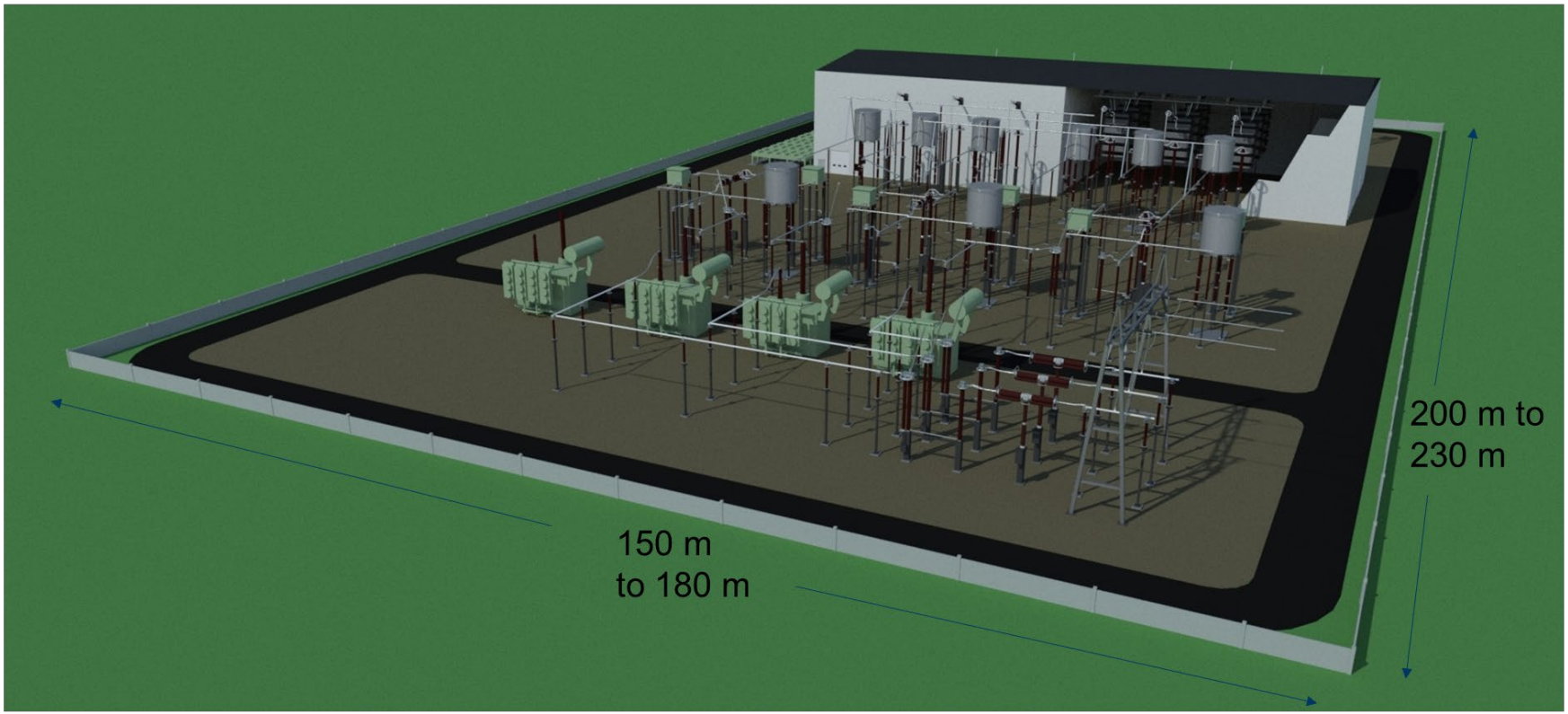
1713 MW Bipole Converter Station



1713 MW Bipole Converter Station



1285 MW Symmetrical Monopole Converter Station



1285 MW Symmetrical Monopole Converter Station