

Dominica Geothermal Development Company Limited

CONCERNING TENDER DOCUMENTS

FOR

DESIGN, SUPPLY, AND INSTALLATION

PROCUREMENT OF

- (i) New 2.2kV/11kV/33kV/69kV Substations and**
- (ii) New 11kV/33kV/69kV OHL and UGC**
Transmission Lines
(Geothermal Power Plant to Fond Cole)

REFERENCE: DM-DGDC-384816-CW-RFB

Response to Bidders' Questions

Response No. 5

January 18, 2024

No.	RFB Ref.	Question or Comment	Owner's Response	Attachment	Supporting Clarification or Addendum
62	RFB Part 2 Section VII – 3.3 Clause 7 of the Instructions to Bidders,	<u>Substation: Fond Colé:</u> We are concerned about the buildability of the Fond Colé substation in the area proposed and considering the Employer’s layout and other requirements. The following are some of our concerns: A. The Spatial Arrangements and Proposed Elevations: The proposed spatial arrangement caters to start the structures practically at the northern property boundary, creating the requirement for about 9 m high retaining structure and excavating some 6 m to the lowest elevation. Any works in that area is likely to entail some level of encroachment on the use of the adjacent northern properties and will severely affect the comfort of the adjacent property users or owners. See Annexes A3-7a, A3-7d, A3-7e, A3-7f, A3-7g. B. Buildability of Northern Retaining Walls: Proposed requirements suggest the use of piling for the necessary retaining structure. It appears that the proposal is to construct this retaining structure by piling, then excavate the site from an elevation of 26.88 m on the top at the north to an elevation of about 18 m for the building foundation, a depth of about 9 m. This would include the demolition of a ca 5m retaining structure. (a) If piling is possible without significant refusal down to at least the 12 m elevation, then one has to contend with the (1) impact of piling up to 15 m on the adjacent land / property owners and users, and (2) the limitation of site and access to construct this wall by piling along or at the limit of the northern boundary given the topography and proximity of buildings /residences on adjacent properties. (b) The cut face of ground profile presents significant large cobbles and small boulders, an indication that very likely there may be significant	Point A: The piling works should be executed before commencing the excavation for the building. The contractor can create a platform at level 25 or 25.5 meters for piling machinery. Piling activities must be conducted within the boundaries of DOMLEC. After completing this piling phase, the contractor may commence the excavation activity. Point B: If the contractor begins by constructing a platform at level 25 or 25.5 meters, the piling works will be carried out using only DOMLEC’s land. The foundation level will be determined based on the soil investigation conducted by the contractor (approximately between 18.5 and 19.5 meters, meaning 8 to 8.5 meters depth from the top). Excavation will proceed after the piling process is completed.	None	None

No.	RFB Ref.	Question or Comment	Owner's Response	Attachment	Supporting Clarification or Addendum
		areas of piling refusal before the 18 m elevation, which would make a retaining structure constructed by piling useless. If a new reinforced concrete retaining wall 9 m high is to be constructed as an alternative, (i) the wall stem would likely be offset from the property boundary by at least 2m to cater for wall base space, plus another 3-5m, depending on the stability of the cut slope. This would have significant impact by either or both resulting situations: (1) the location of the substation structures would have to be moved about 6 m south, and therefore the space available at that location would be reduced by about 35%, (2) the adjacent users/property owners would have to be relocated until at least the retaining wall is constructed and the residential buildings demolished or rendered compromised and unusable in the process. We therefore request clarification on the following: <i>(i) Is the Contractor allowed to decide on the spatial arrangements and elevations, for each substation, within the limits of the relevant minimum dimensions and other requirements given – in this case if yes, can the Employer indicate what are the significant critical dimensions and other requirements to be guided by?</i> <i>(ii) If the answer to (i) above is no, is the risks associated with the retaining structure at the Fond Colé substation carried by the Employer?</i> <i>(iii) Are there alternative locations at the Fond Colé site that can be considered post-award?</i>	In case of significant refusal during piling execution at some depth, the contractor must submit a study to the Engineer for approval after performing a geotechnical soil investigation and before the execution phase. If there is a significant refusal for piling, the contractor is responsible for providing acceptable solutions to stabilize the piling wall or minimize the depth of the basement. This could include using cable trenches instead of a full basement and employing a raft foundation at an upper level instead of isolated footings at a lower level. The stability of the building with the retaining structure is the contractor's responsibility, and the dimensions of the building should meet the contract specifications and attached drawings. Construction of traditional retaining walls is not allowed, and shifting of the building is prohibited. <u>Pile</u>		

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			<u>technologies such as reinforced concrete piles, sheet piles with reinforcement, etc., are acceptable.</u> NB: Execution works in the substation should not impact adjacent users, property owners, residential buildings, or DOMLEC properties and equipment. For the Bidder's Clarification Request: • The contractor cannot change the arrangements and elevations for the substation. • All risks associated with the construction of the substation and the retaining structure at Fond Cole substation are under the contractor's responsibility. • No alternative locations at the Fond Cole site are		

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			available at this time.												
63	RFB Part 2 Section VII – 3.3 Clause 7 of the Instructions to Bidders,	<u>UGL: Disposal of excess excavated Material:</u> There are significant amounts of excess excavated material to be disposed of – for the 33kV and 11kV lines the amount is about 3500 m3. <i>Please indicate whether the Employer has designated disposal sites, and the location of these.</i>	The Employer will confirm suitable disposal sites prior to commencement of works. This requires coordination with several Government authorities. It can be assumed that these disposal sites will be within 6 km of the worksite. The price should include the transportation of any excess excavated material to the disposal site defined by the employer.	None	Addendum No. 3 Item 8										
64	RFB Part 2 - Section B – Annex A2-8 and Annex A2-5	<u>11kV and 33kV XLPE Cable Guaranteed Technical Data – Insulation Thickness</u> The thickness insulation point of 11kV cable is 3.4mm, and the thickness insulation point of 33kV cable is 8.0mm. <table><tr><td>17-1</td><td>Material</td><td></td><td>Super clean XLPE</td><td></td></tr><tr><td>17-2</td><td>Minimum thickness</td><td>mm</td><td>3.4</td><td></td></tr></table>	17-1	Material		Super clean XLPE		17-2	Minimum thickness	mm	3.4		The nominal thicknesses for 11kV and 33kV are 3.4mm and 8.0mm, respectively. The insulation thinnest point for both cables will be in accordance with the IEC standard (IEC 60502-2).	None	None
17-1	Material		Super clean XLPE												
17-2	Minimum thickness	mm	3.4												

No.	RFB Ref.	Question or Comment	Owner's Response	Attach- ment	Supporting Clarification or Addendum															
		<table><tr><td>17</td><td>Insulation</td><td></td><td></td><td></td></tr><tr><td>17-1</td><td>Material</td><td></td><td>Super clean XLPE</td><td></td></tr><tr><td>17-2</td><td>Minimum thickness</td><td>mm</td><td>8</td><td></td></tr></table> According to IEC 60502-2, the nominal thicknesses for 6.35/11kV and 19/33kV are 3.4mm and 8.0mm, respectively. The thinnest point is 90% of the nominal thickness -0.10mm. Please confirm whether the insulation thinnest point for 11kV and 33kV cables is in accordance with the standard.	17	Insulation				17-1	Material		Super clean XLPE		17-2	Minimum thickness	mm	8				
17	Insulation																			
17-1	Material		Super clean XLPE																	
17-2	Minimum thickness	mm	8																	
65	RFB Part 2 - Section B – Annex A2-8 and Annex A2-5	<u>11kV and 33kV XLPE Cable Guaranteed Technical Data – Insulation Cleanliness</u> The insulation description for 11kV and 33kV cables is Super clean XLPE Please confirm whether the insulation of 11kV and 33kV cables needs to be tested for cleanliness.	Bidders should provide evidence that the cleanliness of XLPE is tested during manufacture. A sample test should be done during FAT with a purity scanner. All tests for cable insulation should be in accordance with IEC standard listed in Section 8 and Section 10 of “ Part II Section B Employer’s Requirements - Underground Cables”	None	None															

No.	RFB Ref.	Question or Comment	Owner's Response	Attach-ment	Supporting Clarification or Addendum															
66	RFB Part 2 - Section B – Annex A2-8 and Annex A2-5	<u>11kV and 33kV XLPE Cable Guaranteed Technical Data – Conductor Resistance</u> The resistance of the 185 conductor in the parameter table is incorrect. Please confirm if the correct conductor resistance is being followed. According to IEC60502 , if the core is Aluminum, cross section area with 185mm2, the resistance at 20centi degree DC should be 0.164 , 90centi degree AC should be 0.211. The data in your documents was for 240mm2 not 185mm2. <table><tr><td>2</td><td>Conductor Resistance</td><td></td><td></td><td></td></tr><tr><td>2-2</td><td>DC @ 20°C</td><td>Ω/km</td><td>0.12</td><td></td></tr><tr><td>2-3</td><td>AC @ 90°C</td><td>Ω/km</td><td>0.16</td><td></td></tr></table>	2	Conductor Resistance				2-2	DC @ 20°C	Ω/km	0.12		2-3	AC @ 90°C	Ω/km	0.16		The correct values for 185mm² are as follows: DC @ 20°C: 0.164 AC @ 90°C: 0.211	None	Addendum No. 3 Item # 1
2	Conductor Resistance																			
2-2	DC @ 20°C	Ω/km	0.12																	
2-3	AC @ 90°C	Ω/km	0.16																	
67	RFB Part 2 - Section B – Annex A2-8 and Annex A2-5	<u>11kV and 33kV XLPE Cable Guaranteed Technical Data – Short Circuit Current</u> Regarding the 69kV and 33kV cables, we've found that in the document : 69kV Cross bondings and 33kV Fittings, the rated short circuit current is 25kA/1s, but in the document: ADD SPEC, the value is 25kA/3s. Please help confirm which value we should refer to? <table><tr><td>12</td><td>Rated short circuit current (1 s.)</td><td></td><td></td><td></td></tr><tr><td>12-1</td><td>Conductor</td><td>kA</td><td>25</td><td></td></tr><tr><td>12-2</td><td>Screen</td><td>kA</td><td>10</td><td></td></tr></table>	12	Rated short circuit current (1 s.)				12-1	Conductor	kA	25		12-2	Screen	kA	10		For all instances the short circuit current shall be per/1s.	None	Addendum No. 3 Item #2
12	Rated short circuit current (1 s.)																			
12-1	Conductor	kA	25																	
12-2	Screen	kA	10																	

No.	RFB Ref.	Question or Comment	Owner's Response	Attachment	Supporting Clarification or Addendum
		69kV Systems The power cables required are for use on 69kV, three phase, and 50Hz systems. The neutral points of the 69kV transformers system are directly earthed. The maximum system voltage (phase to phase) on the systems is 72 kV and the required impulse insulation level is 350 kVp. The specified cables shall be designed to meet a 25kA (3s) earth fault duties for 69kV level. 33kV Systems The power cables required are for use on 33kV, three phase, 50Hz systems. The neutral points of the 33kV transformers system are directly earthed. The maximum system voltage (phase to phase) on the systems is 36 kV and the required impulse insulation level is 170 kVp. The specified cables shall be designed to meet a 25kA (3s) earth fault duties for 33kV level. For the Corrugated Aluminium Sheath of 69kv cables, due to equipment limitations, the aluminum sheath can only be welded by argon arc welding, currently we are unable to meet the aluminum sheath extrusion. Could you please help confirm if this is acceptable? Corrugated Aluminium Sheath The Aluminium sheath comprising the moisture barrier shall provide an impervious barrier. Corrugated sheaths shall be extruded in a continuous process from rolls of sheet metal without joins in any one drum length.	Argon welding is allowable on condition that the manufacturer has a suitable test method in place to verify the integrity of the welding (Porosity, Cracking, Deformation and Oxidation) along with traction and water penetration tests on the welding junction of aluminum sheath. This particular test should be done during FAT with all sample tests as detailed in section 6.4. In addition contractor should provide necessary certifications and manufacturing process details with special focus on the corrugated welding phase along with type test for similar welded sheath cable.		Item #3

No.	RFB Ref.	Question or Comment	Owner's Response	Attachment	Supporting Clarification or Addendum
68	RFB Part 2 section B – OHL ANNEX 3 (Conductors)	the datasheet provided, there is some information that is different from the calculated value. Can we provide you with an offer based on actual calculated values ?	The unit weight of Guinea_ACSR/AW remains 587kg/km, based on the average parameter of three manufacturers. The mass of grease of Guinea_ACSR/AW is changed to 8.53kg/km based on the calculation defined in Annex B of BS EN 50182. The shield wire table has been corrected.	OHL Annex 3 – January 18 2024 Update	Addendum No. 3 Item #4

CONDUCTOR		Guinea ACSR/AW (Aluminium clad steel)		Offer
PLS Cadd Cable Name		guinea_acsr_aw.wir		
Description		159 kcmil 12/7 Strands GUINEA ACSR AW		
Cable Type		ACSR-AW		
Aluminium Stranding		12/2.92		
Steel Stranding (Aluminium clad)		7/2.92		
 12 Al/7 St				
		Unit	Value	Offer
Cross Section Area		mm ²	127.24	
Unit Weight (kg/kmm)		kg/km	587 534	
Outside Diameter (mm)		mm	14.6304	
Ultimate tensile strength (kN)		kN	68	
Initial Modulus of Elasticity		kN/mm ²	71	
Final Modulus of Elasticity		kN/mm ²	108	
Coefficient of Linear Expansion		x10 ⁻⁶ /°c	15.61	
Max DC Resistance at 20°C		ohms/km	0.3003	
Length of conductor per drum		m	2000	
Permanent elongation due to creep after 10 years		mm/km	266	
Length of conductor per drum		m	2438.4	
Drum type			NEMA Class 2 Wood NR 48.28	
Net Weight of Drum		kg	160	
Gross Weight of Drum		kg	1591.3408	
Flange Diameter		in	48	
Transverse Length		in	28	
Drum Diameter		in	24	
Type of grease			low friction ant-corrosion	
Mass of grease per km as per case 2 of IEC 61089		kg	14.89 8.19	
Termite protection			Termitex*	
Ampacity of Conductor (temperature of 75°C ambient temperature 25°C, emissivity 0.5, wind 0.6./sec., in sun)		A	372	
Will all tests in relevant standard specification will be carried out?			Yes	

No.	RFB Ref.	Question or Comment	Owner's Response	Attach- ment	Supporting Clarification or Addendum																																																		
		<table><tr><th>SHIELD WIRE</th><th>7 x 3.35 Galvanised HSS steel Wire</th><th>Offer</th></tr><tr><td>PLS Cadd Cable Name</td><td>St_7/3.35</td><td></td></tr><tr><td>Description</td><td>7 x 3.35mm Galvanised stranded 1100MPa</td><td></td></tr><tr><td>Cable Type</td><td>HSS Steel Galv</td><td></td></tr><tr><td>Steel Stranding</td><td>7/3.35</td><td></td></tr><tr><td colspan="3"></td></tr><tr><td></td><td>Unit</td><td>Value</td><td>Offer</td></tr><tr><td>Cross Section Area Aluminium</td><td>mm²</td><td>80.57</td><td></td></tr><tr><td>Cross section Area ACS</td><td>mm²</td><td>47.01</td><td>Not related to this product</td></tr><tr><td>Overall cross section</td><td>mm²</td><td>61.7</td><td></td></tr><tr><td>Unit Weight (kg/km)</td><td>kg/km</td><td>485.22</td><td></td></tr><tr><td>Outside Diameter (mm)</td><td>mm</td><td>10.5</td><td>10.05</td></tr><tr><td>Ultimate Tension (kN)</td><td>kN</td><td>67.5</td><td></td></tr><tr><td>Final Modulus of elasticity</td><td>Mpa</td><td>0.1152</td><td>190000MPa</td></tr></table>	SHIELD WIRE	7 x 3.35 Galvanised HSS steel Wire	Offer	PLS Cadd Cable Name	St_7/3.35		Description	7 x 3.35mm Galvanised stranded 1100MPa		Cable Type	HSS Steel Galv		Steel Stranding	7/3.35						Unit	Value	Offer	Cross Section Area Aluminium	mm²	80.57		Cross section Area ACS	mm²	47.01	Not related to this product	Overall cross section	mm²	61.7		Unit Weight (kg/km)	kg/km	485.22		Outside Diameter (mm)	mm	10.5	10.05	Ultimate Tension (kN)	kN	67.5		Final Modulus of elasticity	Mpa	0.1152	190000MPa			
SHIELD WIRE	7 x 3.35 Galvanised HSS steel Wire	Offer																																																					
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Cross section Area ACS	mm²	47.01	Not related to this product																																																				
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Final Modulus of elasticity	Mpa	0.1152	190000MPa																																																				
69	RFB Part 2 - Section B – Annex A2-8 11kV XLPE Cable Guarantee d Technical Data	Power cable : The 12-1: rated short circuit current 1s indicated in the 11 kV Fittings + cables datasheet is 25 kA/1s, and the conductor material is aluminium. According to the IEC 60949 standard, the calculated value for a 185 mm² cable is 17.5kA/1s, which does not meet the requirements of the datasheet. Can we provide you with an offer based on actual calculated	The calculated value of 17.5kA for 11kV is acceptable. The contractor should provide a detailed study of nominal and short-circuits calculated currents values (conductor and screen) to confirm the adequacy of the UGC specification for all voltage levels.	None	Addendum No. 3 Item #5																																																		

No.	RFB Ref.	Question or Comment	Owner's Response	Attach-ment	Supporting Clarification or Addendum																
		values? <table><tr><td>10</td><td>Conductor material</td><td>-</td><td>Stranded compacted Aluminium Class2</td></tr><tr><td>11</td><td>Cross section of wires</td><td>mm²</td><td>To be confirmed by design: 5MVA → 185 mm²</td></tr><tr><td>12</td><td>Rated short circuit current (1 s.)</td><td></td><td></td></tr><tr><td>12-1</td><td>Conductor</td><td>kA</td><td>25</td></tr></table>	10	Conductor material	-	Stranded compacted Aluminium Class2	11	Cross section of wires	mm ²	To be confirmed by design: 5MVA → 185 mm ²	12	Rated short circuit current (1 s.)			12-1	Conductor	kA	25			
10	Conductor material	-	Stranded compacted Aluminium Class2																		
11	Cross section of wires	mm ²	To be confirmed by design: 5MVA → 185 mm ²																		
12	Rated short circuit current (1 s.)																				
12-1	Conductor	kA	25																		
70	RFB Part 2 - Section B – Annex A2-8 11kV XLPE Cable Guarantee d Technical Data	The datasheet 11 kV Fittings + cables mentions that the minimum thickness of the galvanized steel strip armour layer is 0.5 mm. But according to the IEC60502-2 standard, the difference in galvanized steel strip thickness should not exceed 10% of the nominal value. Can we provide you with the offer follow the IEC standard? <table><tr><td>23</td><td>Armour</td><td></td><td></td><td></td></tr><tr><td></td><td>Material</td><td></td><td>Galvanized steel double layers</td><td></td></tr><tr><td></td><td>Minimum thickness</td><td>mm</td><td>0,5</td><td></td></tr></table>	23	Armour					Material		Galvanized steel double layers			Minimum thickness	mm	0,5		The nominal galvanized, steel strip armour is 0.5mm. The difference in thickness will be in accordance with the IEC standard (IEC 60502-2).	None	None	
23	Armour																				
	Material		Galvanized steel double layers																		
	Minimum thickness	mm	0,5																		
71	RFB Part 2 Section B - Annex A2-8 11kV XLPE Cable Guarantee d Technical Data	Both the 11 kV Fittings + cables and 33 kV Fittings datasheets mention the need for fire retardant. Please confirm the fire retarding level requested according to IEC 60332-1-2 (ZA, ZB or ZC) <table><tr><td>7</td><td>Net weight of the cable</td><td>kg</td><td></td><td></td></tr><tr><td></td><td>Fire retardant</td><td></td><td>yes</td><td></td></tr><tr><td></td><td>Moisture resistant</td><td></td><td>yes</td><td></td></tr></table>	7	Net weight of the cable	kg				Fire retardant		yes			Moisture resistant		yes		The fire retardant level is ZB	None	Addendum No. 3 Item #6	
7	Net weight of the cable	kg																			
	Fire retardant		yes																		
	Moisture resistant		yes																		

No.	RFB Ref.	Question or Comment	Owner's Response	Attachment	Supporting Clarification or Addendum												
72	RFB Part 2 - Section B – Annex A2-1 69kV XLPE Cable Guarantee d Technical Data	Please help confirm if Jacket material in datasheet 69kV Fittings is MDPE? <table><tr><td>21</td><td>Jacket</td><td></td><td></td></tr><tr><td>21-1</td><td>Material</td><td></td><td>LMDPE</td></tr><tr><td>21-2</td><td>Minimum thickness</td><td>mm</td><td>3</td></tr></table>	21	Jacket			21-1	Material		LMDPE	21-2	Minimum thickness	mm	3	LMDPE means Linear Medium Density Polyethylene. However MDPE is also acceptable.	None	Addendum No. 3 Item #7
21	Jacket																
21-1	Material		LMDPE														
21-2	Minimum thickness	mm	3														
73	Part 2 Section B	Regarding the monopoles for the OHL of the referred project, can you please provide PLS pole calculation backup file, if it's available? This will facilitate the cost calculation, given the short time to quote.	Not available	None	None												
74	ITB 23.1	After having gone through the tender documents of the project New 2.2kV/11kV/33kV/69kV Substations and (ii) New 11kV/33kV/69kV OHL and UGC Transmission Lines, we are asking for a new extension of the tender due date, now at Jan.26th 2023, for the following reason: - The examination of the tender documents raised several questions related to design and selection of equipment to provide for the project. We have sent you these questions but they have not been answered at this date and are essential for our bid completion. Therefore, we would be pleased if you could allow bidders for an ideal 1-month extension for answering.	The deadline for Bid Submission has been extended to February 15, 2024.	None	Addendum No. 2, Item #1												

No.	RFB Ref.	Question or Comment	Owner's Response	Attachment	Supporting Clarification or Addendum
75		This line intentionally left blank			
76		We understand that a site visit is being conducted today. Due to short notice for the same, we were unable to participate today, and hence we request if members of our team can visit the site again early next week.	We will consider bidders' requests for an additional visit date this month.	None	None