

REPUBLIC OF LEBANON

Council for Development and Reconstruction

Completion of Construction and Operation of Ghadir Marine Landfill

Tender Documents

Volume 3
Bill of Quantities

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General Summary

Preamble

Item	Description
1	<u>INTRODUCTION</u>
1.01	The rules contained in this Preamble apply equally to both proposed and executed works.
1.02	The Bills of Quantities are to be read and construed in association with the Drawings, the Specification and this Preamble. Information which is given on the Drawings and/or in the Specification is identified by cross references included in the descriptions of work in the Bill of Quantities.
1.03	Where work cannot be fully described or where the quantity of work required cannot be accurately determined, it is given as an item or a Provisional Sum.
1.04	Unless the term meter, used in this Preamble, is proceeded by the words square or cubic it is deemed to be linear.
1.05	The rates inserted by the Tenderer in the Bill of Quantities shall be in words and figures. In the case of discrepancy between the two, the rates written in words shall govern.
2	<u>QUANTITIES</u>
2.01	Quantities set out in the Bills of Quantities are the estimated quantities and they shall not be taken as the actual and correct quantities for ordering and purchasing of materials
2.02	Works shall be measured net as fixed in position in accordance with the rules contained in this preamble or except where otherwise stated in a measurement rule applicable to the work.
2.03	Dimensions used in calculating quantities are taken to the nearest integer (0.5 and over is regarded as 1 and less than 0.5 is disregarded).
2.04	Quantities measured in tonnes are given to two places of decimals. Quantities measured in other units of mass are given to the nearest whole unit except that any quantity less than one unit is given as one unit.
2.05	Unless otherwise stated, where minimum deductions for voids are dealt with in this Preamble they refer only to openings which are within the boundaries of measured areas. Openings which are at the boundaries of measured areas are always deducted irrespective of size.

Item	Description
3	<u>DESCRIPTIONS</u>
3.01	Headings to groups of items in the Bill of Quantities are to be read as part of the descriptions of the items to which the headings apply.
3.02	Dimensions are stated in descriptions generally in the sequence, length, width, height. Where ambiguity could arise, the dimensions are identified.
3.03	Dimensions given in descriptions are in millimeters unless otherwise indicated.
3.04	Unless otherwise specifically stated in the Bill of Quantities or herein, the following are deemed to be included in all work: <ul style="list-style-type: none">- labor and all costs in construction therewith,- materials, products, goods and all costs in connection therewith,- Contractor's equipment, including but not limited to construction plant, scaffolding, tools, vehicles and the like and all costs in connection therewith,- assembling, fitting and fixing materials, products and goods in position,- any method of fixing, fixing to any nature of base or background including preparation and providing fixing materials,- breaking down for transport and installation and subsequent reassembly of composite items manufactured off site,- waste of materials,- square, raking and curved cutting,- work at any location or height,- work in small, isolated quantities,- protection of all work,

Item	Description
	<ul style="list-style-type: none">- protection of all existing structures, utilities, site improvements, trees and vegetation, features, pavements and other facilities on and adjacent to the site, which are to remain upon completion of the work,- all other enabling tasks associated and subsidiary components and items of work which are indicated or reasonably inferred from the Drawings and/ or Specification and necessary to perform and complete the work described,- establishment and overhead charges and profit.
3.05	<p>Except where items are included in the Bill of Quantities and are priced separately by the Contractor therein, provision of the following are deemed to be included with all work:</p> <ul style="list-style-type: none">- site administration and security,- insurances,- bonds and guarantees,- water for the Works,- lighting and power for the Works,- temporary accommodation for the use of the Contractor and the Engineer,- temporary telephones and the cost of calls for the use of the Contractor and the Engineer,- temporary roads, hardstandings, crossings and the like,- temporary fencing, hoardings, screens, fans, footways, guardrails, gantries and the like,- giving notices and making applications, including the payment of fees and charges in connection therewith,- safety, health and welfare of workpeople,- compliance with traffic regulations- maintenance of public and private roads, services and adjoining property,

Item	Description
	<ul style="list-style-type: none">- control of noise and pollution, prevention of fire and compliance with all other statutory and general obligations,- removing rubbish, protective casings and coverings, and cleaning the Works on completion,- drying the Works,- testing and commissioning of service installations including the provision of fuel,- samples of materials and testing of materials including providing equipment for testing,- design, co- ordination, installation and as- built record drawings and the like,- preparation and submittal of reports, records, certificates, notices, proposals, designs, details, calculations and other information and data required by the Specification,- allow in unit rates for all other requirements, services, provisions, liabilities and obligations contained in the General Requirements and Conditions of Contract.- Maintaining, adapting, clearing away and making good are deemed to be included with the items for temporary works.- Payment of any customs and other import duties, harbour and port dues, wharf age, landing, pilotage and any other charges or dues including demurrage charges on any Goods or other things required for or in connection with the Works entering or leaving the country.

Item	Description
4	<u>SYMBOLS, ABBREVIATIONS & DEFINITIONS</u>
4.01	<p>The following symbols and abbreviations are used in this Preamble and in the Bills of Quantities:</p> <p>LS = Lump Sum</p> <p>m = linear meter</p> <p>m² = square meter</p> <p>m³ = cubic meter</p> <p>cm = centimeter</p> <p>mm = millimeter</p> <p>Nr = number</p> <p>kg = kilogramme</p> <p>T = tonne</p> <p>% = percentage</p> <p>Ø = nominal diameter</p> <p>Qty = quantity</p> <p>Drg = drawing</p> <p>MPa = Mega Pascal</p>
4.02	<p>The following definitions apply to all work:</p> <ul style="list-style-type: none"> - 'horizontal' means level or sloping work not exceeding 15° from the horizontal - 'sloping' means sloping work exceeding 15° but not exceeding 80° to the horizontal, - 'vertical' means work exceeding 80° from the horizontal, - 'curved' means curved in any direction or in more than one direction and to any radius or radii and includes curved work to domes, vaults and the like.
4.03	<p>The term 'extra over' means that work so described involves extra cost over the basic work in which it occurs. No deduction of the quantity of basic work is made for the extra over work.</p>

Item	Description
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5 PRICE ADJUSTMENT FORMULAE: APPLICABLE ITEMS

5.01 The below listed BOQ items are subjected to adjustment (s) in unit rates and prices in accordance with the requirements of "Clause 18 - Increase or Decrease of Cost (Price Adjustment)" included in the "Conditions of Particular Applications (Part II)", of "Volume 1 - Bid Conditions and Procedures, and Conditions of Contract".

5.02 In case item is composed of multiple materials, price adjustment formula shall be applied to the corresponding portion of concerned material only and not to total price of item.

Item	Item Description	Applicable Formula
1.1	General Requirements / Provisional Sum	100 % Not Applicable
2.1	Topographic and Bathymetric Surveys	100 % Not Applicable
2.2	Geotechnical Investigation	100 % Not Applicable
2.3	Protection of Existing Outfall Pipes	
2.3.1	Precast concrete surround	100 % Not Applicable
3.1	Seabed Cleaning	100 % Not Applicable
3.2	Dredging and Backfilling	100 % Not Applicable
3.3	Breakwaters and Mound Construction	
3.3.relevant	Quarry run and stones	100 % Not Applicable
3.3.1.2.5	Concrete accropode armoring units	100 % Not Applicable
3.3.10	Cyclopean Concrete Capping to Main Breakwater	40 % Not Applicable 60 % Not Applicable
3.3.11	Fill Materials for Top Layer Rocks (inner side slopes)	100 % Not Applicable
3.3.12	Geomembrane HDPE	100 % Not Applicable
4.1	Soil for Waste-Soil Mix below +0.5m level	100 % Not Applicable
4.2	Basal Liner	
4.2.1	Compacted Clay Layer (CCL)	Formula B is applicable 100 % to the Unit Rates
4.2.2	Geomembrane HDPE	Formula K is applicable 100 % to the Unit Rates
4.3	Drainage Layer	
4.3.1	Sand Layer	Formula B is applicable 100 % to the Unit Rates
4.3.2	Geotextile Layer (sheets)	100 % Not Applicable
4.4	Protective Soil	Formula B is applicable 100 % to the Unit Rates
4.5	Intermediate (Daily) soil Covers	Formula B is applicable 100 % to the Unit Rates
4.6	Final Cap	
4.6.1	Protective Soil (Final Cap)	Formula B is applicable 100 % to the Unit Rates
4.6.2	Compacted Clay Layer (CCL)	Formula B is applicable 100 % to the Unit Rates
4.6.3	HDPE Geomembrane	Formula K is applicable 100 % to the Unit Rates
4.6.4	Landfill Cap Drainage Sand layer (or Filter Gravel)	Formula B is applicable 100 % to the Unit Rates
4.6.5	Agricultural Soil	Formula B is applicable 100 % to the Unit Rates
4.6.6	Plantations - Green Cover	100 % Not Applicable

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Preamble

Item	Description	
4.7	Leachate Collection and Treatment Systems	100 % Not Applicable
4.7.1	Leachate Collection System	Formula K is applicable 60 % to the Unit Rates Formula I is applicable 20 % to the Unit Rates Formula B is applicable 10 % to the Unit Rates 10 % Not Applicable
4.7.2	Leachate Treatment System	100 % Not Applicable
4.8	Gas Collection and Flaring Systems	
4.8.1	Gas Collection (Extraction) System	Formula K is applicable 60 % to the Unit Rates Formula I is applicable 20 % to the Unit Rates Formula B is applicable 10 % to the Unit Rates 10 % Not Applicable
4.8.2	Gas Flaring System	100 % Not Applicable
5.1	Fully Furnished & Equipped Prefabricated Office Bldgs	Formula B is applicable 5 % to the Unit Rates Formula C is applicable 15 % to the Unit Rates Formula A is applicable 10 % to the Unit Rates Formula D is applicable 40 % to the Unit Rates Formula M is applicable 10 % to the Unit Rates Formula N is applicable 10 % to the Unit Rates 10 % Not Applicable
5.2	Hangar (Steel Structure with Metal Panels Cladding)	Formula B is applicable 10 % to the Unit Rates Formula C is applicable 30 % to the Unit Rates Formula A is applicable 20 % to the Unit Rates Formula D is applicable 40 % to the Unit Rates
5.3	Fully Electronic Weighbridges	Formula B is applicable 10 % to the Unit Rates Formula C is applicable 30 % to the Unit Rates Formula A is applicable 20 % to the Unit Rates Formula D is applicable 30 % to the Unit Rates 10 % Not Applicable
5.4	Fences and Gates	Formula B is applicable 5 % to the Unit Rates Formula C is applicable 25 % to the Unit Rates Formula A is applicable 20 % to the Unit Rates Formula D is applicable 35 % to the Unit Rates 15 % Not Applicable
5.5	Asphalt Paving	Formula B is applicable 40 % to the Unit Rates Formula L is applicable 60 % to the Unit Rates
5.6	Concrete Channels	Formula C is applicable 60 % to the Unit Rates Formula A is applicable 40 % to the Unit Rates
6.1	Sanitary Landfill Operation	100 % Not Applicable

End of Preamble

Bill № 1: General Requirements / Provisional Sum

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 1: General Requirements / Provisional Sum

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
1.1	General Requirements				
1.1.1	Contractor's mobilisation & demobilisation (all labor, plant, equipment, and material to undertake all the works), and temporary works ¹ <i>Lump Sum in Words:</i>	LS	1		
1.1.2	Bonds and insurances <i>Lump Sum in Words:</i>	LS	1		
<u>Compilation Notes</u>					
1)	<i>Cost of RE's facilities to be provided under the Contract are deemed to be inclusive in the Contract Price</i>				
2)	<i>¹ Payment to be spread over the Contract Period, in proportion to the percentage of the value of work completed</i>				

Carried to Collection _____

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 1: General Requirements / Provisional Sum

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
1.2	Provisional Sum				
1.2.1	<p>Include a Provisional Sum to cover for any unforeseen works necessary for the proper O&M of the whole project including previous maintenance and construction works. To be spent only upon instruction of CDR any sum not spent to be returned to Contract Budget</p> <p style="text-align: right;">PS 500,000.00</p> <p><i>Provisional Sum in Words:</i> FIVE HUNDRED THUSAND US DOLLARS ONLY</p>				
1.2.2	<p><u>Percentage Addition</u> Add ten percent (10%) as a percentage addition to the provosional sum in item 1.2.1</p> <p style="text-align: right;">USD 500,000 _____ %</p> <p><i>Percentage in Words:</i> TEN PERCENT ONLY</p>				

Carried to Collection _____

Collection

<u>Page №</u>	<u>Amount (US \$)</u>
1.1
1.2
Total Carried to General Summary	

Bill № 2: Preparatory Works

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 2: Preparatory Works

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
2.1	<u>Topographic Surveys</u> Carrying out topographic survey works, preparatory works, establishment and installation of control points and benchmarks, complete all as specified, shown on the drawings, and to the satisfaction of the Engineer.				
2.1.1	Topographic survey of the project area. <i>Lump Sum in Words:</i>	LS	1		

Carried to Collection _____

Collection

<u>Page №</u>	<u>Amount (US \$)</u>
2.1
Total Carried to General Summary

Bill № 3: Basic Construction Works (Not Applicable)

Bill No 4: Construction Works Related to Landfilling Operation

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 4: Construction Works Related to Landfilling Operation

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
4.1	<u>Soil for Backfill below +2 m level</u>				
4.1.1	Supply and place soil for Backfill in Ghadir W.W.T.P. reserved Area up to +2m level. <i>Unit Rate in Words:</i>	m ³	370,000.00		
4.2	<u>Basal Liner</u>				
4.2.1	Compacted Clay Layer (CCL): Supply and place clay over each of the base platforms of landfill between Cells 1 and phase 1. Compact the clay layer to at least 2 layers of 15 cm each. Min Thickness of CCL (2 layers) = 30 cm. <i>Unit Rate in Words:</i>	m ³	8,500		
4.2.2	Geomembrane HDPE: Supply and place over the compacted clay layer (CCL) placed over the side slopes, HDPE geomembrane (textured on both sides Min. Thickness = 2.5 mm). The geomembrane sheets shall be impermeably weld over the complete length of joints between 2 adjacent HDPE geomembrane sheets . <i>Unit Rate in Words:</i>	m ²	28,500		
4.2.3	Geotextile protection Layer : Supply and install geotextile sheets (nonwoven heavy duty type ; 500 g/m2 over each the base platform and side slopes. <i>Unit Rate in Words:</i>	m ²	56,500		
4.3	<u>Intermediate (Daily) soil Covers</u>				
4.3.1	Supply and continuously add intermediate (daily) soil cover on each layer of waste bales and / or waste bulk of 1 m height. Thickness of the daily soil cover shall not be less than 15 cm. Number of intermediate soil covers / layers over the landfill life time is 7 (excluding last year). <i>Unit Rate in Words:</i>	m ³	104,500		

Carried to Collection _____

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 4: Construction Works Related to Landfilling Operation

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
4.4	<u>Final Cap</u>				
4.4.1	Protective Soil (Final Cap): Supply and add protective soil on top of the waste in each of the Landfill Cells 1, 2a, and 2b . Thickness of the protective soil shall not be less than 25 cm.	m ³	82,000		
	<i>Unit Rate in Words:</i>				
4.4.2	Grading Layer (Final Cap): Supply and place grading layer on top of the protective soil in each of the landfill cells 1 .2a and 2b at closures.thickness of the grading layer not less than 15 cm	m ³	49,000		
	<i>Unit Rate in Words:</i>				
4.4.3	Compacted Clay Layer (CCL): Supply and place Clay layer over each of the landfill cells 1 .2a and 2b for closures purposes.thickness of the clay layer not less than 50 cm	m ³	169,000		
	<i>Unit Rate in Words:</i>				
4.4.4	Geomembrane HDPE: Supply and place over the compacted clay layer (CCL) placed on top of the landfill cells at closure, HDPE geomembrane (textured on both sides Min. Thickness = 2.5 mm). The geomembrane sheets shall be impermeably weld over the complete length of joints between 2 adjacent HDPE geomembrane sheets .	m ²	343,000		
	<i>Unit Rate in Words:</i>				
4.4.5	Landfill Cap Drainage Sand layer (or Filter Gravel): Supply and add a sand layer or gravel layer for drainage purposes above the HDPE Geomembrane installed on top of the Landfill Cells 1, 2, and 3 at closure. Thickness of sand or gravel shall not be less than 30cm. Gravel shall be composed of crushed natural rock or crushed river gravel with a k-value of $< 1 \times 10^{-2}$ m/s and a maximum content of CaCO ₃ of 30%.	m ³	98,000		
	<i>Unit Rate in Words:</i>				
Carried to Collection					

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 4: Construction Works Related to Landfilling Operation

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
4.4.6	<p>Agricultural Soil: Supply and add Agricultural soil for Green Cover and Plantations on top of the Landfill Cells 1, 2, and 3 at closure. Thickness of the Agricultural Soil shall not be less than 60 cm.</p> <p><i>Unit Rate in Words:</i></p> <p>.....</p> <p>.....</p>	m ³	196,000		
4.4.7	<p>Plantations - Green Cover</p> <p><i>Unit Rate in Words:</i></p> <p>.....</p> <p>.....</p>	m ²	327,000		

Carried to Collection _____

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 4: Construction Works Related to Landfilling Operation

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
4.5	<p><u>Leachate Collection and Treatment Systems</u></p> <p>Tenderer to visit the site and inspect and evaluate what work has been carried out and completed for Leachate Collection and Leachate Treatment (R.O & Aeration). He is to evaluate what requires repair or modification and what is required to complete the installation for delivery in good working order.</p> <p>He is therefore to carry out the design and submit to the Engineer for approval all necessary calculations and shop drawings, then construct as per approved detailed design and shop drawings the following leachate collection system and treatment unit, complete all as specified, shown on approved shop drawings and to the satisfaction of the Engineer.</p> <p>The design shall be integrated with other elements and components of the Landfill.</p>				
4.5.1	<p>Repair or modification of existing leachate installation as required and to complete the installation for delivery in good working order. He is to take upon his sole responsibility the workings of all the leachate collection system and leachate treatment.</p> <p style="text-align: right;">LS</p> <p style="text-align: right;">1</p> <p><i>Lump Sum in Words:</i></p> <p>.....</p> <p>.....</p>				
4.5.2	<p>Leachate Collection System:</p> <p>Rate shall also include for all necessary leachate collection pipes(100mm), collection sumps or tanks and pumping sets, and all other related works.</p> <p style="text-align: right;">l.m</p> <p style="text-align: right;">3,000</p> <p><i>Lump Sum in Words:</i></p> <p>.....</p> <p>.....</p>				
4.5.3	<p>Leachate Treatment System:</p> <p>Rate shall also include for all necessary controls and monitoring devices, accessories, connections, testing, commissioning, and all other related works.(R.O. treatment plant and leachate tanks already installed). Connection of additional leachate system to be executed.</p> <p style="text-align: right;">LS</p> <p style="text-align: right;">1</p> <p><i>Lump Sum in Words:</i></p> <p>.....</p> <p>.....</p>				

Carried to Collection _____

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 4: Construction Works Related to Landfilling Operation

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
4.6	<u>Gas Collection and Flaring Systems</u> Tenderer to visit the site and inspect and evaluate what work has been carried out and completed for Gaz Collection and Gaz Flaring Systems. He is to evaluate what requires repair or modification and what is required to complete the installation for delivery in good working order. He is therefore to carry out the design and submit to the Engineer for approval all necessary calculations and shop drawings, then construct as per approved detailed design and shop drawings the following gas collection system and gas flaring system, complete all as specified, shown on approved shop drawings and to the satisfaction of the Engineer. The design shall be integrated with other elements and components of the Landfill.				
4.6.1	Repair or modification of existing gaz installation as required to complete the installation for delivery in good working order. He is to take upon his sole responsibility for the workings of all the gaz collection system and flaring <i>Lump Sum in Words:</i>	LS	1		
4.6.2	Gas Collection (Extraction) System: Rate shall also include for all necessary vertical wells, pumping units, and all other related works (70% not executed).(61 gas wells drilled in cell 2) (wells may be constructed as waste filling proceeds or they can be drilled retrospectively) <i>Lump Sum in Words:</i>	LS	1		
4.6.3	Gas Flaring System: Rate shall also include for all necessary controls and monitoring devices, accessories, connections, testing, commissioning, and all other related works. (Gas flair installed) <i>Lump Sum in Words:</i>	LS	1		

Carried to Collection _____

Collection

<u>Page №</u>	<u>Amount (US \$)</u>
4.1
4.2
4.3
4.4
4.5
Total Carried to General Summary	

Bill № 5: Ancillary Buildings and Siteworks

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
5.1	<u>Fully Furnished & Equipped Prefabricated Office Buildings</u> Design and submit all necessary calculations and shop drawings to the Engineer for approval, then supply all required materials and construct as per approved final detailed design the following fully furnished and fully equipped prefabricated office buildings, complete including, but not limited to: <ul style="list-style-type: none"> - All necessary earthworks including site clearing; - Cast-in-place concrete works using moderate sulphate resistant cement to ASTM C150, Type II, 14 MPa on cylinder (18 MPa on cube) for blinding, and 30 MPa on cylinder (38 MPa on cube) for foundations and pedestals, including all necessary formwork, reinforcement and accessories; - Application of two coats of bituminous paint to concrete surfaces in contact with soil; - Supply and installation of prefabricated office building with 50 mm thick insulated enclosure construction for walls and ceiling; - Flooring in approved insulated wooden panels; - Galvanized steel gutters and down spouts; - All necessary glazed aluminum windows and doors; - All necessary kitchen appliances and equipment (refrigerator, cooking range and oven with hood, microwave, cold and hot water dispenser, etc.); - All necessary furniture, equipment and accessories; - All necessary mechanical works (water piping, drainage piping, sanitary fixtures with mixers, toilet accessories, water tanks, electric water heaters, split unit system, drain piping, fire extinguishers, etc.) - All necessary electrical installations & connections including control panel, conduits, cables, switches, outlet boxes, wiring devices, lighting fixtures, etc.; - And all other related works, all as specified, shown on approved shop drawings, and to the satisfaction of the Engineer. 				
5.1.1	Prefabricated office building, fully furnished and fully equipped, for Employer and Engineer (~100m²) <i>Unit Rate in Words:</i> NOT APPLICABLE	Item	1		
5.1.2	Prefabricated office building, fully furnished and fully equipped, for Contractor / Landfill Operator. <i>Unit Rate in Words:</i> NOT APPLICABLE	Item	1		

Carried to Collection

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
5.2	<p><u>Hangar (Steel Structure with Metal Panels Cladding)</u></p> <p>Design and submit all necessary calculations and shop drawings to the Engineer for approval, then supply all required materials and construct as per approved final detailed design the following Hangar, complete including, but not limited to:</p> <ul style="list-style-type: none"> - All necessary earthworks including excavation, backfilling and compaction, and disposing of resulting materials to approved dumping area; - Cast-in-place concrete works using moderate sulphate resistant cement to ASTM C150, Type II, 14 MPa on cylinder (18 MPa on cube) for blinding, and 30 MPa on cylinder (38 MPa on cube) for foundations, pedestals and slab on grade, including all necessary formwork, reinforcement, joints in slab on grade with mastic sealant, and accessories; - Application of two coats of bituminous paint to concrete surfaces in contact with soil; - Steel structures with all required structural steel members, beams, pipes, angles, bearing plates, ZED purlins, sag rods, anchors, bolts, nuts and washers; - Bracing, welding and grouting; - Cladding to roof and sides in painted galvanized roof and side panels, 0.5mm thick; - Approved transparent roof panels for skylight; - Flashings, fasteners, sealants; - Devices, fittings and accessories; - Steel gutters, 1.5mm thick; - Steel down spouts, 100mm diameter, 3.6mm wall thickness; - Painted galvanized steel hoods; - Painting to steel structure with approved three coat protective paint system after grit blasting and shop priming, and provision of ten year maintenance free guarantee for the paint system; - And all other related works, all as specified, shown on approved shop drawings and fabrication drawings, and to the satisfaction of the Engineer. 				
5.2.1	<p>Workshop Hangar for the maintenance of machinery, equipment, fleet of trucks, etc.</p> <p><i>Unit Rate in Words:</i></p> <p>NOT APPLICABLE</p>	Item	1		
5.2.2	<p>Technical Zone Hangar for leachate treatment, pumping units, gas blowers, flare units, etc.</p> <p><i>Unit Rate in Words:</i></p>	Item	1		

Carried to Collection

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
5.3	<p><u>Fully Electronic Weighbridges</u></p> <p>Design and submit all necessary calculations and shop drawings to the Engineer for approval, then supply all required materials and construct as per approved final detailed design and shop drawings the following fully electronic weighbridges complete including, but not limited to, the following:</p> <ul style="list-style-type: none"> - All necessary earthworks including excavation, backfilling and compaction, and disposing of resulting materials to approved dumping area; - Cast-in-place concrete using moderate sulphate resistant cement to ASTM C150, Type II, 14 MPa on cylinder (18 MPa on cube) for blinding, and 30 MPa on cylinder (38 MPa on cube) for foundations, including formwork, reinforcement and accessories; - Application of two coats of bituminous paint to concrete surfaces in contact with soil; - Erection of weighbridge deck comprising structural steel and reinforced concrete works, including reservation for fixing loadcell baseplate and others; - Painting to steel structures with approved three-coat protective paint system after grit blasting and shop priming, and provision of ten year maintenance free guarantee for the paint system; - All necessary adjustable movement limiters; - Weight Detection System: Comprising fully sealed strain gauge double ended shear beam stainless steel load cells with the required supports and lightning protection system, junction box, microprocessor based weighbridge intelligent terminal, LED display, accessories, etc.; - All necessary electrical installations & connections, and data connections to control room; - All necessary calibration, testing and commissioning; - and all other related works, all as specified, shown on approved shop drawings and to the satisfaction of the Engineer. 				
5.3.1	Fully electronic weighbridge, 70 T capacity, 5m wide right of way, 18x3m wide platform size with access ramps and concrete protection side walls, and 20 kg display increment with very high accuracy.				
		Item	1		
	<p><i>Unit Rate in Words:</i></p> <p>NOT APPLICABLE</p>				

Carried to Collection

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
5.4	<p><u>Fences and Gates</u></p> <p>Supply all required materials and construct the following fence walls and gates complete including, but not limited to the following:</p> <ul style="list-style-type: none"> - All necessary excavation in any type of soil; - Cast-in-place concrete works using moderate sulphate resistant cement to ASTM C150, Type II, 14 MPa on cylinder (18 MPa on cube) for blinding, and 30 MPa on cylinder (38 MPa on cube) for reinforced concrete parapets and foundations with formwork, reinforcement and accessories; - All necessary expansion joint assemblies every 10 m, including filling materials and joint cover; - Application of two coats of bituminous paint to concrete surfaces in contact with soil; - Preparing surfaces and applying two coats of decorative cement sand plaster; - Backfilling and compaction in layers to required density; - Removing and disposing of surplus materials to approved dumping area; - Supply and installation of painted steel bars on top of walls including necessary supports, anchors, fittings, fixing devices and accessories; - Supply and installation of electrically operated painted steel gate, including all necessary supports, hardware, ironmongery, accessories, electrical installations and connections, automation system, electrical operating components, control station, motor, controls, exit motion sensor, remote controls, two-pair photocell, external signal ... - Painting to steel surfaces with approved three-coat protective paint system after grit blasting and shop priming, and provision of ten year maintenance free guarantee for the paint system; - And all other related works, all as specified, shown on drawings and to the satisfaction of the Engineer. 				
5.4.1	<p>Fence wall, overall height 2500 mm, consisting of 1500 mm high decorative painted steel bars fixed on top of 200 x 1000 mm high plastered and painted reinforced concrete parapets.</p> <p><i>Unit Rate in Words:</i></p> <p>.....</p>	lm	250		
5.4.2	<p>Electrically operated painted steel gate for entrance, double leaf, sliding, opening size 6000x2500mm high</p> <p><i>Unit Rate in Words:</i></p> <p>.....</p>	No	1		

Carried to Collection

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 5: Ancillary Buildings and Siteworks

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
5.5	<u>Asphalt Paving</u> Construct the following roads and shoulders in asphalt pavement, complete including all necessary earthworks, sub-grade preparation and compaction (4-day soaked CBR>20), aggregate sub-base course (4-day soaked CBR>30), aggregate base course (4-day soaked CBR>80), prime coat (1000g/m ²), tack coat (600g/m ²), asphalt concrete binder and/or wearing courses, and all other related works, all as specified, shown on approved shop drawings and to the satisfaction of the Engineer.				
5.5.1	Roads with two layers of asphalt, 2 x 50 mm thick. <i>Unit Rate in Words:</i>	m ²	11,200		
5.5.2	Shoulders with one layer of asphalt, 1 x 50 mm thick. <i>Unit Rate in Words:</i>	m ²	4,800		
5.6	<u>Concrete Channels</u> Supply all required materials and equipment, and construct the following reinforced concrete channels, complete including, but not limited to: - All necessary excavation in any type of soil; - Keeping excavation free from all water sources; - Cast-in-place concrete using moderate sulphate resistant cement to ASTM C150, Type II, 14 MPa on cylinder (18 MPa on cube) for plain concrete, and 30 MPa on cylinder (38 MPa on cube) for reinforced concrete works, including all necessary formwork, steel bar reinforcement and - Protective coating of external surfaces in contact with soil; - Backfilling with selected excavated or borrow fill materials; - Compacting in layers to required density; - Removing and disposing off resulting and surplus materials to approved dumping area; - And all other related works, all as specified, shown on drawings and to the satisfaction of the Engineer.				
5.6.1	Concrete open channels, clear internal size 400 x 400 mm. <i>Unit Rate in Words:</i>	lm	1,000		
5.6.2	Concrete closed channels for road crossing, clear internal size 400 x 400 mm. <i>Unit Rate in Words:</i>	lm	200		

Carried to Collection

Collection

<u>Page №</u>	<u>Amount (US \$)</u>
5.1
5.2
5.3
5.4
5.5
Total Carried to General Summary	

Bill № 6: Landfilling Operation

Construction and Operation of
Ghadir Sanitary Landfill

Bill of Quantities
Bill № 6: Landfilling Operation

Item	Description	Unit	Estimated Quantity	Unit Rate (US \$)	Amount (US \$)
6.1	<u>Sanitary Landfill Operation</u> Perform sanitary landfill operation complete as specified in the Conditions of Contract (General and Particular) related to Landfill Operation. The construction works related to landfilling operation are itemized separately under Bill № 4. Rates for sanitary landfill operation shall include, but not limited to, the following: - Waste landfilling activities (stacking of bales and/or placement of the waste bulk in layers) in the landfill cells and placement of soil daily covers; - Operating the gas collection and flaring systems (including the spare parts and laboratory tests); - Operating the leachate collection and treatment systems; (including the spare parts and laboratory tests) - Management of landfill operations.				
6.1.1	Waste landfilling activities. <i>Unit Rate in Words:</i>	Ton	370,000		
6.1.2	Operating the gas collection and flaring systems and operating the leachate collection and treatment Systems and management of phase 2 (capacity 2.200.000 cu.m) during landfilling and after landfilling has been completed for a period One year <i>Lump Sum in Words:</i>	LS	1		
6.1.3	Operating the gas collection and flaring systems and operating the leachate collection and treatment Systems and management of phase 1 from the start of the present contract till May 2025 <i>Lump Sum in Words:</i>	LS	1		

Carried to Collection _____

Collection

<u>Page №</u>	<u>Amount (US \$)</u>
6.1
Total Carried to General Summary

General Summary

<u>Description</u>	<u>Amount (US \$)</u>
Bill № 1: General Requirements / Provisional Sum	
Excluding Provisional Sums
Bill № 2: Preparatory Works
Bill № 4: Construction Works Related to Landfilling Operation
Bill № 5: Ancillary Buildings and Siteworks
Bill № 6: Landfilling Operation
* Total Amount of Bill of Quantities excluding the PS.....
* Discount by Tenderer (_____ %)
* Total Amount of BOQ after Discount and excluding the PS.....
* Add 11 % VAT
* Add the PS and the Percentage Addition (From Bill No. 1)
* Total Amount of BOQ after Discount & including the PS & 11%VAT..
* Total Amount of BOQ after Discount & including the PS & 11%VAT in Words	
<i>ONLY</i>
.....
.....
.....

United States Dollars