

NELSON MANDELA PRISON HOUSE

BILL OF QUANTITIES

PART 1:	INTERNAL HOUSE GARDEN- SOFT AND HARD LANDSCAPING
<u>SUMMARY</u> 1. MISCELLANEOUS - PART 1 2. EARTHWORKS AND SOIL IMPROVEMENTS - PART 1 3. PLANTING - PART 1 4. HARD LANDSCAPING - PART 1 5. HAND-WATERING & EQUIPMENT - PART 1 6. MAINTENANCE - PART 1 SUB-TOTAL FOR PART 1	
Excl. VAT	

<u>SUMMARY</u>			
Total soft landscaping	m ²	649	
Total hard landscaping	m ²	83	
Total Area	m²	732	

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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1. MISCELLANEOUS - PART 1

1.1 SITE CLEARANCE

a.	Loading and removal to an approved dumping site off site, all unusable material, debris and stone, unused plant materials, placed in measurable storage heaps, resulting from the initial soil preparation to the final finishing process (other than specified).				
b.	Collect unwanted materials and place in measurable heaps, and certified by Landscape Architect on site prior to removal.				
c.	The contractor should at all times ensure to keep the site in a neat and tidy condition.				
d.	Provision for removal of unwanted material or material not suitable for fill - to spoil material off site (15mm layer over area for manicured planting areas)		732	m ²	
				m ³	11
ei.	Provision for hard rock excavation and subsoil conditions.			PC SUM	1
eii.	Contractor to specify own % mark-up				50 000,00
					50 000,00

1.2 TREE FELLING - Allowance by Specialist

a.	Provision for tree felling for 2 x existing trees (including: tree removal, stem removal, clearing of site & cut back of roots)				
b.	Contractor to specify own % mark-up			PC SUM	1
					10 500,00
					BY OTHERS
					BY OTHERS

TOTAL FOR MISCELLANEOUS:

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
2. EARTHWORKS AND SOIL IMPROVEMENTS - PART 1					
2.1 TOPSOIL					
2.1.1 Topsoil (import and spread)					
a. The contractor to provide all necessary equipment, labour and machinery for the import and spread of topsoil. b. Provide a sample of topsoil for approval by the Client or Client Representative/Landscape Architects. c. The topsoil to be free of any building rubble, rocks or plant materials. d. Spread topsoil for groundcovers to a minimum thickness of 75mm average over de-compacted areas and 100mm over planting areas e. Spread topsoil for tree holes where required to a minimum of 0.34m³ per tree hole f. Rate is to be inclusive of all intensive hand labour, where required. g. Compact soils where required and specified and prevent soil erosion at all times. h. IMPORTANT NOTE FOR IMPORT OF TOPSOIL: PAYMENT FOR TOPSOIL WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES. RECEIPTS ARE TO BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. TOPSOIL WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES					
i.	Provision for 100mm layer for lawn areas	611	m²	m³	61
j.	TOTAL Topsoil import and spread			m³	61
					RATE ONLY
2.2 SCARIFYING					
a. Supply all the necessary equipment, tools and labour for scarifying of all areas. b. Rip soil in all areas. c. Depth -- 150mm. d. Rip in two directions. e. Use hand labour to scarify under trees to ensure that tree roots do not get damaged. f. Contractor is to ensure that no services, existing paving or concrete haunching behind existing kerbs, are damaged. g. Remove all unwanted debris and medium to large sized rocks from the scarified soils. h. Rate is to be all inclusive per square meter. i. All inclusive rate per square meter.					
j.	Provision for all open ground areas		m²	649	
2.3 FINEGRADING					
a. Supply all necessary labour, machinery and equipment for the fine trimming of the planting soils of all areas. b. The contractor must ensure that all areas to be planted are compacted sufficiently to avoid any subsidence later on. Soil surface to be planted should not exceed a tolerance of 30mm in height when measured from the basic topographical line. c. Cultivate fertilizers and compost as supplied elsewhere. d. Provision must be made for proper and effective storm water drainage. e. Soil erosion should be avoided at all times. f. Stones larger than 40mm in diameter and all foreign material must be removed and used for fill. g. Final surface must be shaped to desired profiles as to flow into levels of roadways and structures. h. No irrigation or storm water should be allowed to puddle anywhere behind the retaining walls or in any of the allocated plant bed areas. i. Allow for shaping by hand.					
j.	Provision for finegrading of all planting only. Allow for shaping by hand		m²	649	
2.4 COMPOST (Import and spread) & SOIL PREPARATION					
a. The contractor to provide all necessary equipment, labour and machinery for import and spread of compost. b. Sample of compost must comply with specification and be approved by the Landscape Architect prior to delivery on site. c. All compost shall consist of well-decomposed organic material, free of detrimental salts, glass, debris, weeds and other toxic impurities. d. The pH shall not exceed 7.0. e. Compost shall be protected against excessive rain, wind and dissipation. f. Payment after planting. g. Application rate h. IMPORTANT NOTE: PAYMENT FOR COMPOST WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. COMPOST WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES.					
i.	Provision for 80mm layer over rose bed area	38	m²	m³	3
j.	Provision for 80mm layer over lawn area	611	m²	m³	49
k.	TOTAL Compost import and spread			m³	52
l.	TOTAL Vitasoil for lawn [150ml/m²]: rate must include cultivation into soil	611	m²	l	92
2.5 FERTILISERS					
a. Application rate: 100 gm per m² b. Spread prior to fine trimming. c. Working in 200 mm deep. d. Payment per m³ after fine trimming e. Rate to be all inclusive					
f.	Provision for 2:3:2 for roses & lawn [100g/m²]:	38	m²	kg	4
g.	Provision for superphosphate for roses & lawn [50g/m²]:	38	m²	kg	2
h.	Provision for Milorganite 6-4-0 or Talborne Organics Vita Green 5:1:5 (or similar approved) for lawn [60g/m²]:	611	m²	kg	37
2.6 MULCH					
a. Mulch may be bark chip, wood chip or fruit pip mulch only					
b.	Provision for import and spread of 60mm layer of suitable mulch over rose bed area			m³	3

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
2.7 BULK EARTHWORKS					
	a. Compaction to be in layers of 150mm to 92% Mod AASHTO b. The contractor to provide all necessary equipment, labour and machinery for the carting and spread of topsoil for bulk earthworks c. Contractor to provide G5 or better material to achieve compaction. d. Layer works design is provisional e. Layer works design is subject to change f. Verification by qualified and registered civil engineer				
gi.	Provision for 100mm G5 layer, compacted to 95% MOD AASHTO (To Engineer's specification)	90	m ²	m ³	33
gii.	Provision for sandy conditions: rip and re-compact in-situ layer minimum 200mm below the G5 to 93% MOD AASHTO (To Engineer's specification)	90	m ²	m ³	33
2.8 TEST AND TEST RESULTS					
ai.	Provision for DCP tests to be done, and other tests to be done with a certified laboratory test (x3 each)			no.	3
aii.	Compaction tests 3 per layer (In-situ and imported or G5 layer) - total 6 tests and result for paved areas.			no.	3

TOTAL FOR EARTHWORKS AND SOIL IMPROVEMENTS:

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
3. PLANTING - PART 1					
Refer to drawing: IS-3758-601					
Plants: Purchase all plants at registered nurseries and transport to site. All plants must be transported to the site in trucks with closed canopies. Plants in transit may not be exposed to wind or any other harmful elements. All plants are to be viewed and approved by the Landscape Architect before planting. No plants covered with pests or other damages will be accepted. All shrubs and groundcovers to be planted in grids, equally spaced. The Landscape Architect retains the right to adjust specific species and plant sizes if plants are not available or of poor quality. Payment after planting.					
3.1 EVENT FRUIT TREES (Supply & Deliver, no planting)					
a. Trees provided by Contractor to meet the specifications. b. Trees from 40-50 ltr containers: Min. 1800- mm height after planting with stem diameter of 25-30 mm measured 300mm above soil level - sample to be approved. c. Contractor to water and guarantee each tree for max. 3 months after event or delivery to site					
d.	<i>Olea Manzanela (Manzanilla)</i> <i>Includes delivery</i> <i>Excludes planting and tree staking fertilizer.</i>	no.	50		
3.2 SHRUBS AND GROUNDCOVERS					
a. <u>Soil preparation for roses</u> b. For very sandy soil liberal water retaining organic material such as peat moss, coir (coconut) fibre or peanus shells and 80mm compost be cultivated into existing soil. c. Rates to be all inclusive.					
d.	<i>Provision for Rose bed: Asparagus 'Mazeppa' (Emerald Fern) 4L @ 6/m²</i>	38	m ²	no.	228
ei.	<i>Rosa Iceberg</i>			no.	5
eii.	<i>Rosa Queen Elizabeth STD</i>			no.	8
eiii.	<i>Rosa Nelson Mandela STD</i>			no.	7
eiv.	<i>Tulbaghia violacea (Society Garlic) 2L @ 12/m² to be placed by L. Architect on site.</i>	30	m ²	no.	270
Proposed Rose supplier or similar approved: LUDWIG'S ROSES CPT: 081 501 7070 (David)					
3.3 Lawn		m ²		611	
a. <u>Soil preparation for lawn</u> b. The Contractor shall allow for the supply and installation of approved <i>Cynodon dactylon</i> sods. c. The sods must consist of healthy green grass with dense root systems, free from weeds and diseases, and with no dead patches. The grass must be mowed just before the sods are cut. Sod must be approved by the Landscape Architect before packing may commence. d. The surface area shall be lightly watered before the packing of sods commence.Ensure that all openings in grass blocks receive grass cutting from sods. e. Grass delivered to site must be laid within 24 hours of delivery. No grass shall be packed on a Friday or the day prior to a public holiday, to prevent drying out. All laid lawn shall be watered twice daily until final handover of the site. f. The Rate per m ² shall allow for all costs of purchasing, transport, equipment, labour, material and supervision to execute the lawn planting to the satisfaction of the Landscape Architect. gi. For new lawns in sandy conditions, apply Vitasoil at a rate of 500ml/m ² . Cultivate and worked into the soil, combined with compost for maximum moisture retention. For new turf installations, a common recommendation is a 20% Vitasoil to 80% sandy soil mix for the top layer. gii. Recommendations for sandy soil: Initial setup - amend the top 150mm of soil with Vitasoil and 80mm organic compost before laying turf. Application method - work into the root zone by hand during planting. Sandy conditions note - sandy soil lacks nutrient-holding capacity. Vitasoil aids by restoring biological balance and holding moisture. Follow-up maintenance - Additional applications every 2-3 weeks to be used until the soil structure improves. h. Rates to be all inclusive.					
i.	<i>Provision for Cynodon dactylon (Bermuda Grass) Instant Lawn (including 10%)</i>	m ²	611		
Application or similar approved: VITASOIL: sales@vitasoil.co.za					
TOTAL FOR PLANTING:					

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
4. HARD LANDSCAPING - PART 1					

Refer to drawing: IS-3758-601

GENERAL LANDSCAPE SPECIFICATION

- a. The contractor to provide all necessary machinery, labour, transport and
- b. All paving must be installed to meet the manufacturers specification, with special reference to details as provided by the Landscape Architect.
- c. Test sample: The contractor is to provide a 2m² test panel of all the different paving types as specified in the schedule of quantities. This needs to be approved by the Landscape Architect prior to the installation of any final surface. All aspects as specified need to be included into the test panel sample.
- d. Paving setting out: All hard surface setting out lines are as per the construction drawing and need to be approved by the landscape architect prior to the site shaping and sub base preparation.
- e. All levels need to accommodate a minimum fall to allow for sufficient water run off as per instruction and approval by the Landscape Architect.
- f. Soil preparation: Final site levels need to be shaped and sloped for approval before any compaction can commence. Failure in doing so will lead to the re compaction of the relevant areas.
- g. On approval of the general site levels and slopes, loosen sub soils to a depth of 200mm and remove all unwanted materials including organic matter and rocks larger than 40mm diameter.
- h. Moisten excavated soils and compact soil in layers not exceeding 100mm (compacted) to 93% MOD AASHTO to form the sub base to the desired levels and slopes.
- i. Excavate to allow for the final finishing height to be 35mm above the general shaped landscape soil levels. The surrounding landscape should be final shaped to tie into the pathways, not effecting the storm water run off pattern as approved.
- j. All final soil paving base layers to be approved by the Landscape Architect prior to installation of the final paving.
- k. Excavate for hard surface edge footing on completion of the sub base compaction.
- l. Edge footing to respond to the specific paving layout.
- m. Concrete footing is restricted to under the outer hard surface edge only. No concrete side haunching will be allowed.
- n. Unit paving final finish: No cracked, chipped, paving with unwanted markings, or paving other than specified will be accepted.
- o. All areas showing subsidence on the final product will mean that the larger area will be redone, re-compacted and repaired to meet the specifications.
- p. All paving to slope at 1-2% fall. Direction to be determined on site by the landscape architect.
- q. Install all paving units as specified and per manufacturers minimum specifications.
- r. All cutting to be mechanical cut only. Cut paver details to be approved prior to installation by the landscape architect.
- s. **Topo surveyor - on site for setting out of works (to be included in rates).**
- t. Rate to be all inclusive.

4.1 EXPOSED AGGREGATE PATH

a.	Supply, deliver & install 100mm thick Exposed Aggregate Path; including Mesh Ref 311 (according to Manufacturer's Specifications); 25MPa; Artevia Spec Sheet; Chryso Spec Sheet & General Specification for Exposed Aggregate Concrete Paving (including 20% for re-measure on site). Rate to include: excavation, shaping & leveling - as per General Specifications document	73	m ²	m ²	90		
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Refer to: General Specification for Exposed Aggregate Concrete Paving

4.2 JOINTS

ai.	Supply, deliver & install 6mm saw-cut joints; Spectrem 800 (minimum 2m apart) - as per General Specifications document (or similar approved)			Lm	38		
aii.	Supply, deliver & install 8mm expansion joints; TAMMSFLEX 75 (minimum 8m apart) - as per General Specifications document (or similar approved)			Lm	21		

Refer to: General Specification for Exposed Aggregate Concrete Paving

4.3 STEPPING STONES

a.	Supply, deliver & install 600 x 300 x 40mm grey pavers on on 20mm washed riversand			no.	34		
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Proposed supplier or similar approved:
LOVRIC DITTBENDER TERRAZZO TILES:
021-531 8570 / 084 547 1410
enviromi@mweb.co.za

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
4.4 GARDEN EDGE					
a.	Supply, deliver & install (according to Manufacturer's specifications): BERA Eco Edge or similar approved. UV stable and 100% recyclable	Lm	30		RATE ONLY
b.	BERA B-Edge Smart - or similar approved Standard lengths of 6 m or 12 m 4mm Mild Steel edge 150mm wide to be secured with pegs 300mm deep; primer treated, final colour to be matt black epoxy coats x2. Matt Black Epoxy Powder Coat: coating is impact and abrasion and corrosion resistant.	Lm	30		

Proposed supplier or similar approved:

BERA:

083 449 3954 (Franko)

4.5 REPAIR OF EXISTING TILES - PC SUM					
a.	Provision for repair of existing floor tiles (exterior) and building apron as per Architect / Landscape Architect instruction	PC SUM	1	5 000,00	5 000,00
b.	Contractor to specify own % mark-up				

4.6 ATTICK STOCK TILES - NO INSTALLATION REQUIRED					
ai.	Provision for 300 x 300 x 22mm Bello White Plain	no.	5		
aii.	Provision for 228 x 228 x 17mm Bello White Plain	no.	5		
aiii.	Provision for 228 x 228 x 17mm Bello White Mosaic Pattern Tile	no.	2		

Proposed supplier or similar approved:

LOVRIC DITTBENDER TERRAZZO TILES:

021-531 8570 / 084 547 1410

enviromi@mweb.co.za

4.7 RAMPS - PC SUM Refer to drawing:					
<i>Refer to drawings: IS-3758-605; IS-3758-606; IS-3758-607</i>					
a.	Provision for 3 x universal access ramps to Architect's detail and specification- BY SPECIALIST	PC SUM	1	144 000,00	144 000,00
b.	Provision for Profit and Attendance (% to be confirmed by Contractor)				

Proposed supplier or similar approved: Troy Thomson

<troythomson7@gmail.com>

Cell. 079 993 2321

4.8 GRAVEL					
a.	The contractor to provide all necessary machinery, labour, transport and materials for the installation of gravel at the base of trees				
b.	Provision for 6-12mm diam ornamental gravel: colour: sandstone and 100mm deep in courtyard areas	m ²	10	m ³	1
c.	Provision for Bidum			m ²	10

TOTAL FOR HARD LANDSCAPING:

5. HAND-WATERING & EQUIPMENT - PART 1

5.1 UNDERGROUND SERVICES - PROVISION FOR PVC SLEEVES					
a.	All sleeves to include draw wires and caps.				
b.	The Contractor shall allow for the supply and installation of approved 1.5mm galvanised draw wires and PVC end Caps.				
c.	Supply, deliver & install Ribbed 110mm diam. sleeves - to depth of 450mm	Lm	22		
d.	Supply, deliver & install 60mm diam. sleeves - to depth of 450mm	Lm	22		

5.2 ADDITIONAL HOSES (Main House)					
a.	20MM X 100M DRAGLINE M-DUTY BLACK	no.	1		
b.	3/4in SNAP ON HOSE CONNECTOR	no.	1		
c.	SNAP ON SPRAY NOZZLE	no.	1		
d.	20MM X 600MM DRAGLINE STAND	no.	1		
e.	AQUA PLASTIC SPRINKLER FC3/4"-3.57 X2.38 BLUE/YELL	no.	1		

TOTAL FOR HAND-WATERING & EQUIPMENT:

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
6. MAINTENANCE - PART 1					

a. Allow for the complete maintenance and establishment of all planted areas, inclusive of : b. Maintenance of all trees and shrubs&groundcovers (including all planting in pots). c. Application of fertilisers. d. Replacement of plants. e. Topping up of potting or planter media where settling occurs. f. The maintenance period will commence upon issue of the Certificate of Practical Completion. 9: For Cynodon lawn on sandy, nutrient-poor soil organic approach is a combination of high-nitrogen fertilizers (like Milogranite 6-4-0 or Talborne Organics Vita Green 5:1:5) or similarly approved, and monitor growth and reaction to treatment. Additional supply smaller amounts more frequently every 4 weeks during maintenance utilise same organic product range. h. Rate to be all inclusive.					
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6.1 MAINTENANCE for new areas

a.	Provision for additional maintenance for new lawn area	611	m ²	mnth	6		
b.	Provision for additional maintenance for new roses area	38	m ²	mnth	6		
c.	TOTAL Top-up Vitasoil for lawn [75ml/m²]: rate must include cultivation into soil	611	m ²	I	46		

6.2 MAINTENANCE for existing lawn

a.	Provision for additional maintenance for existing lawn area	916	m ²	mnth	6		
b.	TOTAL Top-up Vitasoil for lawn [75ml/m²]: rate must include cultivation into soil	916	m ²	I	138		RATE ONLY
c.	ADDITIONAL HOSES (Guard House)						
ci.	20MM X 100M DRAGLINE M-DUTY BLACK			no.	1		
cii.	3/4in SNAP ON HOSE CONNECTOR			no.	1		
ciii.	SNAP ON SPRAY NOZZLE			no.	1		
civ.	20MM X 600MM DRAGLINE STAND			no.	1		
cv.	AQUA PLASTIC SPRINKLER FC3/4"-3.57 X2.38 BLUE/YELL			no.	1		

TOTAL FOR MAINTENANCE:

TOTAL FOR PART 1 (To be carried forward to Summary Page)