



**CONTRACT: SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI
& UBUGCISA GARDENS**

**CLIENT/
CONTRACT
NUMBER:**

SANBI

PROVISIONAL BILL OF QUANTITIES - COVER PAGE

PART A: BILL OF QUANTITIES**SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape PRELIMINARIES AND GENERAL****Contract No: SANBI**

ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
1.1.1	Site establishment				
	An area will be allocated to the contractor to establish the site camp. Allow for the fencing of the site camp with 2,1 m high 50% plastic shade netting supported with standards and wires. Maintain the fence for the duration of the contract and demolish afterwards. Remove all remaining rubble and rehabilitate the site with appropriate grass seeding	item	1		
1.1.2	Construction site				
	Note that the PNBG site is currently used by visitors and their safety must at all times be considered. Fence off the construction area as indicated with 2.1m high 50% shade netting supported on standards and wires. Maintenance the fence for the duration of the contract and demolish at the end thereof. Repair any damages caused to paving, services and lawn.	item	1		
1.1.3	Access to the site				
	An access route to the construction site will be indicated by the Employer. Use this route only. Speed limit for all construction vehicles is 15km/h. At all times consider visitors' safety at the PNBG	item	1		
1.1.4	Construction site ablutions and meeting place				
	Supply and maintain temporary ablution facilities for contractor's staff. At no stage may existing ablution facilities at the PNBG be used by contractor's staff. Supply and maintain a site office large enough with furniture to seat 10 people at a table.	item	1		
1.1.5	Damage to existing site facilities, services and vegetation				
	Any damages caused by the contractor to existing site facilities, services and vegetation must be repaired to the satisfaction of the Principal Agent	item	1		
1.1.6	Form of Contract and contractual clauses				
	The JBCC Principal Building Agreement/Minor Works Agreement will used for this project. The following Contract Data will apply:				
1.1.6.1	Start date and completion dates: TBC and Practical Completion to be reached on TBC. All days referred to in the Contract will mean calendar day and include weekends, public holidays and builder's holidays	item	1		
1.1.6.2	Contractor's program: A Program that indicates work flow and critical milestones to be submitted for approval within 7 days of site handover and subsequently updated and reported on at progress meetings	item	1		
1.1.6.3	Construction guarantee required. Yes/No rather retention?	item	1		
1.1.6.4	Payment guarantee will not be applicable	item	1		
1.1.6.5	Penalties for late completion	item	1		
1.1.6.6	Public liability insurance required	item	1		
1.1.6.7	Provisional sum for play equipment: allow for the sum of RXXXX as a provisional amount in the contract for the delivered and installed children's play equipment. Add subcontract management and support if required	item	sum		
1.1.6.8	Provisional sum for signage: allow for the sum of RXXXX as a provisional amount in the contract for the delivered and installed signage. Add subcontract management and support if required	item	sum		
1.1.6.9	Payment by the Employer: payment certificates will be paid by the Employer 30 days from the date of the certificates	item	1		
1.1.6.10	Maintenance during the 90-days defects liability period: The Contractor to allow for the horticultural maintenance of plant material during the 90-days defects liability period. Payment hereof will be certified at the end of the 90-days by the PA	item	1		
1.1.7	Contract management				
	The contract will be administered and the works inspected by the SANBI Representative. The SANBI Representative will value progress and issue monthly payment certificates for payment by the Employer. Bi-weekly site inspections and progress meetings will be held on site. The contractor to attend the inspections and meetings and be represented by an authorised Site Manager who can receive instructions from PA.	item	1		
1.1.8	Existing potable and irrigation water				
	Available on site, Contractor to allow for connections into such water supplies. Connection positions are indicated on the drawings	item	1		
1.1.9	Existing electrical supply				
	Available on site, Contractor to allow for connections into such electrical supply. Connection positions are indicated on the drawings	item	1		
1.1.10	Samples and workmanship				
	Samples of materials and workmanship must be provided at no cost for approval by the PA where requested	item	1		
1.1.11	Plants supplied by employer				
	Note that some plants will be supplied by the Employer, allow for the receiving and storage on site The installation of such plants are covered under Part 3 of the BoQ	item	1		
SUMMARY OF CATEGORIES					
Category : Fixed R.....					
Category : Value R.....					
Category : Time R.....					
TOTAL PRELIMINARIES & GENERAL (EXCL VAT)		ST			-

To be entered into the Bill of Quantities Summary PART A.

PART B: BILL OF QUANTITIES

**SANBI - KWELERA NATIONAL BOTANICAL GARDEN,
Eastern Cape ENKUNDLENI GARDEN - BIOME GARDEN
(Soft Landscaping)**

REFER TO DRAWING NO: IS-3676-203

SUMMARY:**SUB-TOTAL**

1	MISCELLANEOUS				R	-
2	EARTHWORKS AND SOIL IMPROVEMENTS				R	-
3	PLANTING				R	-
4	IRRIGATION				R	-
SUB-TOTAL: SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN-BIOME GARDEN (Soft Landscaping)					R	-
5	HORTICULTURAL MAINTENANCE AS PER GENERAL LANDSCAPE SPECIFICATIONS DOCUMENT. ALLOW FOR HAND WATERING AS PER EXISTING TAPS ON SITE * REVIEW ITEM	months	3		R	-
TOTAL: KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN-BIOME (Soft Landscaping)					R	-

Carried to Summary (PART B)

NOTE: REFER TO SECTION D FOR HARD LANDSCAPING

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN					
ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
1. MISCELLANEOUS					
1.1 SITE CLEARANCE					
a.	Loading and removal of all unusable material; debris; stone; and surplus plant materials, to be moved to the contractors' own dumping site. Material to be 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. Heaps to be 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.	Removal of rubble (first 25mm of cultivated areas) & dumping of all rubble & plant material not suitable for fill to an off site facility (approx. 10km from site)(Paving removal captured under Hard Landscape)	m³	0		
TOTAL FOR MISCELLANEOUS:					

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN					
ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL

2. EARTHWORKS AND SOIL IMPROVEMENTS

2.1 TOPSOIL (Spreading from stockpile on site)

a. The contractor to provide all necessary equipment, labour and machinery for spread of topsoil. b. The topsoil to be free of any building rubble, rocks or plant materials. c. Rate is to be inclusive of all intensive hand labour, where required. d. Compact soils where required and specified and prevent soil erosion at all times. e. IMPORTANT NOTE: PAYMENT FOR TOPSOIL WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. TOPSOIL WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES.					
f.	Provision for 0,67m ³ topsoil per tree	47	no.	m ³	31
g.	150mm spread over all lawn and bed areas	1049	m ²	m ³	157
h.	TOTAL topsoil spreading from stockpile on site			m ³	189

2.2 SCARIFYING OF EXISTING SOIL

a. Supply all the necessary equipment, tools and labour for scarifying of all areas. b. Rip soil in all areas. c. Depth -- 200mm . 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.	Provision for scarifying of planting and lawn areas. Rate to include levelling out of scarified material TO ALL LANDSCAPED AREAS			m ²	1049

2.3 FINE GRADING by hand

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.	Provision for finegrading by hand to bed areas ONLY			m ²	1 049

2.4 COMPOST (Import and spread)

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. IMPORTANT NOTE: PAYMENT FOR COMPOST WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES. RECEIPTS ARE TO BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. COMPOST WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES.					
h.	Allowance for 50mm compost medium in planting beds	1049	m ²	m ³	52
i.	Allowance for 0,17m ³ per tree	47	m ²	m ³	8
j.	TOTAL compost import and spread			m ³	60

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN						
ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL	

2.5 ORGANIC MULCH LAYER

a. Spreading of 50mm layer.						
b. Payment per m³ after fine trimming						
c. Rate is to be all inclusive per cubic meter.						
d.	Organic mulch layer of 50mm	m³	60			

2.6 INORGANIC FERTILIZER

a. Spread prior to fine trimming.						
b. Working in 200 mm deep.						
c. Payment per kg after fine trimming						
d. Rate is to be all inclusive per square meter.						
Shrubs, groundcovers & perennials						
e.	50g/m² 2:3:2 to be worked into soil (stream excluded)	1049 m²	kg	52		
f.	50g/m² Super phosphate to be worked into soil (stream excluded)	1049 m²	kg	52		
Trees						
g.	100g/tree 3:1:5 to be mixed in planting holes	47 no	kg	5		
h.	150g/tree Super phosphate to be mixed in planting holes	47 no	kg	7		

TOTAL FOR EARTHWORKS AND SOIL IMPROVEMENTS:**3. PLANTING****REFER TO DRAWING NO: IS-3676-201 (SANBI - KWELERA BOTANICAL GARDENS - SOFT LANDSCAPE PLAN)****REFER TO DRAWING NO: IS-3676-202 (SANBI - KWELERA BOTANICAL GARDENS - SOFT LANDSCAPE PLAN-TREES AND DETAILS)****REFER TO DRAWING NO: IS-3676-203 (SANBI - KWELERA BOTANICAL GARDENS - SOFT LANDSCAPE PLAN-ENKUNDLENI GARDEN)****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.

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.

Planting:

Supply all equipment and labour for planting of trees, shrubs, groundcovers, lawn and seeding.

Backfill with planting media to specification and tramp down firmly.

Remove all surplus soil.

Form a pond around each tree and shrub/s and water well after planting.

Keep all plants moist.

Plant sizes and plant densities will be strictly enforced.

Trees:Trees from **50 ltr** containers: 1800 - 2200 mm height after planting with stem diameter of 20-30 mm measured 300mm above soil level.Trees from **100 ltr** containers: 2800 - 3000 mm height after planting with stem diameter of 30-50 mm measured 300mm above soil level.Trees from **200 ltr** containers: 3000 - 3500 mm height after planting with stem diameter of 50-80 mm measured 300mm above soil level.Trees from **400 ltr** containers: 4000 - 4500 mm height after planting with stem diameter of 180-120 mm measured 300mm above soil level.**NOTE:** Contractor to meet the Landscape Architect to select all trees to be used. Colour photo's of the proposed trees can also be supplied to the Landscape Architect.

Contractor to guarantee each tree for 3 months after practical completion.

Supply, plant, stake and maintain.

Staking:**TREES:** Provide all necessary stakes for trees and secure each tree firmly.

Use 100mm round CCR treated timber tree stakes, no.4 per tree (2m length: 1,5m above ground and 0.5m below ground). Place opposite sides of the trees and secure with specialised rubber horticultural tree ties, no.4 per tree.

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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REFER TO DRAWING NO: IS-3676-202

3.1 TREES - PLANTING AND 2 x DOUBLE TREE STAKING RATE

- NOTE: ALL TREES AND PLANTS SUPPLY BY CLIENT

- DELIVERY, STAKING & PLANTING RATE TO BE PRICED

- SANBI NURSERY IS 3km ONE-WAY FROM THE SITE

***3.1.1 NAMA KAROO**

a.	<i>Acacia erioloba</i> (Camel Thorn) 100L		no.	4	
b.	<i>Boscia albitrunca</i> (The Shepherd Tree) 100L		no.	3	
c.	<i>Faidherbia albida</i> (Apple-ring Acacia) 100L		no.	4	

***3.1.2 COASTAL BELT**

a.	<i>Syzygium cordatum</i> (Apple-ring Acacia) 400L		no.	2	
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***3.1.3 NAMA KAROO**

a.	<i>Podocarpus henkelii</i> (Falcate Yellow-wood) 200L		no.	3	
b.	<i>Podocarpus latifolius</i> (Real Yellow-wood) 200L		no.	2	
c.	<i>Podocarpus falcatus</i> (Outeniqua Yellow-wood) 200L		no.	1	
d.	<i>Combretum kraussii</i> (Forest Bushwillow) 200L		no.	3	
e.	<i>Cussonia spicata</i> (Spiked Cabbage Tree) 100L		no.	2	
f.	<i>Dais cotinifolia</i> (Pompon Tree) 100L		no.	3	
g.	<i>Nuxia floribunda</i> (Forest Elder) 100L		no.	3	
h.	<i>Searsia chirindensis</i> (Red Current) 100L		no.	3	
i.	<i>Vepris lanceolata</i> (White Ironwood) 100L		no.	2	
j.	<i>Cyathea dregei</i> (Common Tree Fern) 100L		no.	3	

***3.1.4 THICKET**

a.	<i>Cussonia spicata</i> (Spiked Cabbage Tree) 50L		no.	2	
b.	<i>Cussonia thyrsiflora</i> (Cape Coast Cabbage Tree) 50L		no.	2	
c.	<i>Euphorbia triangularis</i> (African Milk Tree) 50L		no.	2	
d.	<i>Apodytes dimidiata</i> (White Pear) 50L		no.	2	
e.	<i>Sideroxylon inerme</i> (White Milkwood) 50L		no.	1	

total no. 47

3.2 SHRUBS & FEATURE PLANTS

- NOTE: ALL TREES AND PLANTS SUPPLY BY CLIENT

- DELIVERY, STAKING & PLANTING RATE TO BE PRICED

- SANBI NURSERY IS 3km ONE-WAY FROM THE SITE

3.2.1 Plant Mix A: Nama karoo Planting (115m²) on a 44.5m³ berm

i.	<i>Boscia albitrunca</i> (3/m ²), 20L	34	m ²	no.	102	
	<i>Faidherbia albida</i> (4/m ²), 20L	34	m ²	no.	136	
	<i>Turnera oculata</i> var. <i>oculata</i> (6/m ²) 4L	34	m ²	no.	204	
ii.	<i>Cyphostemma juttea</i> (1/m ²), 10L	22	m ²	no.	22	
	<i>Sesamothamnus benguellensis</i> (1/m ²), 10L	22	m ²	no.	22	
	<i>Pelargonium carnosum</i> (2/m ²), 4L	22	m ²	no.	44	
	<i>Pelargonium paniculatum</i> (2/m ²), 4L	22	m ²	no.	44	
	<i>Pelargonium crithmifolium</i> (2/m ²), 4L	22	m ²	no.	44	
iii.	<i>Diospyros lycioides</i> subsp. <i>lycioides</i> (0.5/m ²), 10L	22	m ²	no.	11	
	<i>Portulacaria armiana</i> (2/m ²), 4L	22	m ²	no.	44	
iv.	<i>Grewia robusta</i> (1/m ²), 10L	18	m ²	no.	18	
	<i>Melanthus pectinatus</i> (3/m ²), 10L	18	m ²	no.	54	
v.	<i>Felicia filifolia</i> (2/m ²), 4L	19	m ²	no.	38	
	<i>Hermannia grandiflora</i> (1/m ²), 4L	19	m ²	no.	19	
	<i>Osteospermum sinuatum</i> (2/m ²), 4L	19	m ²	no.	38	
	<i>Othonna furcata</i> (3/m ²), 4L	19	m ²	no.	57	

115 m²

3.2.2 PLANT MIX B: Fynbos Planting (59m²)

i.	<i>Metalsia muricata</i> (3/m ²), 10L	5	m ²	no.	15	
	<i>Polygala myrtifolia</i> (2/m ²), 10L	5	m ²	no.	10	
ii.	<i>Dodonea viscosa</i> var. <i>angustifolia</i> (2/m ²), 10L	11	m ²	no.	22	
	<i>Schotia afra</i> var. <i>afra</i> (0.5/m ²), 10L	11	m ²	no.	6	
iii.	<i>Protea cynaroides</i> (0.5/m ²), 20L	11	m ²	no.	6	
	<i>Protea sulphurea</i> (0.5/m ²), 20L	11	m ²	no.	6	
	<i>Protea repens</i> (0.5/m ²), 20L	11	m ²	no.	6	
iv.	<i>Serruria florida</i> (1/m ²), 10L	7	m ²	no.	7	
	<i>Leucadendron daphnoides</i> (1/m ²), 20L	7	m ²	no.	7	
	<i>Leucadendron tinctum</i> (1/m ²), 20L	7	m ²	no.	7	
v.	<i>Leucospermum cordifolium</i> (1/m ²), 20L	6	m ²	no.	6	
	<i>Leucospermum oleifolium</i> (1/m ²), 20L	6	m ²	no.	6	
	<i>Mimetes hottentoticus</i> (1/m ²), 20L	6	m ²	no.	6	
vi.	<i>Colenema pulchellum</i> (5/m ²), 10L	3	m ²	no.	15	
vii.	<i>Agapanthus africanus</i> (6/m ²), 4L	2	m ²	no.	12	
viii.	<i>Chasmanthe aethiopica</i> (8/m ²), 4L	4	m ²	no.	32	
viii.	<i>Bunia laevis</i> (4/m ²), 4L	2	m ²	no.	8	
x.	<i>Euryops virgineus</i> (2/m ²), 4L	2	m ²	no.	4	
	<i>Erioccephalus africanus</i> (2/m ²), 4L	2	m ²	no.	4	
xi.	<i>Pelargonium peltatum</i> (3/m ²), 4L	1	m ²	no.	3	
	<i>Pelargonium reniforme</i> (2/m ²), 4L	1	m ²	no.	2	
xii.	<i>Erica cerinthoides</i> (5/m ²), 4L	3	m ²	no.	15	
xiii.	<i>Helichrysum splendendum</i> (6/m ²), 4L	2	m ²	no.	12	

59 m²

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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3.2.3	PLANT MIX C: Coastal belt Planting (57m²)				
i.	<i>Syzygium cordatum</i> (2/m ²), 400L		no.	2	
	<i>Barleria repens</i> (5/m ²), 2L	3	m ²	no.	15
ii.	<i>Maytenus procumbens</i> (1/m ²), 4L	8	m ²	no.	8
	<i>Asystasia gangetica</i> (4/m ²), 2L	8	m ²	no.	32
iii.	<i>Acokanthera oblongifolia</i> (1/m ²), 10L	12	m ²	no.	12
	<i>Brachyleana discolor</i> (1/m ²), 20L	12	m ²	no.	12
	<i>Tarchonanthus littoralis</i> (1/m ²), 20L	12	m ²	no.	12
iv.	<i>Bulbine natalensis</i> (4/m ²), 2L	7	m ²	no.	28
	<i>Crassula multicava</i> (6/m ²), 2L	7	m ²	no.	42
v.	<i>Aloe thraskii</i> (1/m ²), 20L	6	m ²	no.	6
	<i>Searsia crenata</i> (3/m ²), 20L	6	m ²	no.	18
vi.	<i>Carissa edulis</i> (3/m ²), 4L	8	m ²	no.	24
	<i>Aloe vanbalenii</i> (4/m ²), 4L	8	m ²	no.	32
vii.	<i>Crassula obovata</i> var. <i>drageana</i> (3/m ²), 4L	13	m ²	no.	39
	<i>Crassula obovata</i> var. <i>obovata</i> (3/m ²), 4L	13	m ²	no.	39
	<i>Strelitzia reginae</i> (1/m ²), 10L	13	m ²	no.	13
	57 m²				

3.2.4	PLANT MIX D: Forest Planting (190m²) on a 54m³ berm				
i.	<i>Plectranthus ecklonii</i> (3/m ²), 2L	28	m ²	no.	84
	<i>Plectranthus fruticosus</i> (3/m ²), 2L	28	m ²	no.	84
ii.	<i>Dias cotinifolia</i> , 100L			no.	3
	<i>Nuxia floribunda</i> , 100L			no.	3
iii.	<i>Asystasia gangetica</i> (5/m ²), 2L	22	m ²	no.	66
iv.	<i>Agapanthus preacox</i> sp. <i>minimus</i> (4/m ²), 2L	22	m ²	no.	88
	<i>Aristea ecklonii</i> (3/m ²), 4L	22	m ²	no.	84
v.	<i>Combretum kraussii</i> , 200L			no.	3
	<i>Cussonia spicata</i> , 100L			no.	2
vi.	<i>Podocarpus henkelii</i> , 200L			no.	3
	<i>Podocarpus latifolia</i> , 200L			no.	2
	<i>Podocarpus falcatus</i> , 200L			no.	1
vii.	<i>Searsia chirindensis</i> (3/m ²), 100L			no.	3
	<i>Vepris lanceolata</i> (2/m ²), 100L			no.	2
viii.	<i>Dietes grandifolia</i> (3/m ²), 2L	10	m ²	no.	30
	<i>Plectranthus ciliatus</i> (3/m ²), 2L	10	m ²	no.	30
viii.	<i>Cyanthea dregei</i> (2/m ²), 10L	10	m ²	no.	20
	<i>Rhumora adiantiformis</i> (2/m ²), 4L	10	m ²	no.	20
	<i>Clivia nobilis</i> (2/m ²), 4L	10	m ²	no.	20
x.	<i>Carissa bispinosa</i> (3/m ²), 4L	9	m ²	no.	27
	<i>Carissa macrocarpa</i> (3/m ²), 4L	9	m ²	no.	27
xi.	<i>Cotyledon orbiculata</i> (4/m ²), 2L	12	m ²	no.	48
	<i>Crassula multicava</i> (6/m ²), 2L	12	m ²	no.	72
	190 m²				

3.2.5	PLANT MIX E: Grassland Planting (123m²) on a 39.5m³ berm				
i.	<i>Arctotis</i> sp (5/m ²), 2L	14	m ²	no.	70
	<i>Bulbine abyssinica</i> (5/m ²), 2L	14	m ²	no.	70
ii.	<i>Fingerhuthia africana</i> (6/m ²), 2L	6	m ²	no.	36
iii.	<i>Scabiosa columbaria</i> (5/m ²), 2L	11	m ²	no.	55
	<i>Aristida junciformis</i> (2/m ²), 2L	11	m ²	no.	22
iv.	<i>Gazania krebsiana</i> (5/m ²), 2L	7	m ²	no.	70
	<i>Haplocarpha scaposa</i> (4/m ²), 2L	7	m ²	no.	28
v.	<i>Harporchloa flax</i> (6/m ²), 2L	10	m ²	no.	60
vi.	<i>Gloriosa superba</i> (4/m ²), 4L	5	m ²	no.	20
vii.	<i>Watsonia pilansii</i> (3/m ²), 4L	16	m ²	no.	48
	<i>Eragrostis curvula</i> (3/m ²), 2L	16	m ²	no.	48
	<i>Agapanthus campanulatus</i> (3/m ²), 2L	16	m ²	no.	48
viii.	<i>Crinum moorei</i> (3/m ²), 4L	9	m ²	no.	27
	<i>Sporobolus africanus</i> (5/m ²), 2L	9	m ²	no.	45
viii.	<i>Ghompostigma virgatum</i> (2/m ²), 2L	13	m ²	no.	26
	<i>Helichrysum odoratissimum</i> (2/m ²), 2L	13	m ²	no.	26
	<i>Polygala fruticosa</i> (2/m ²), 4L	13	m ²	no.	26
x.	<i>Aloe ferox</i> (3/m ²), 10L	12	m ²	no.	36
xi.	<i>Andropogon appendiculatus</i> (6/m ²), 2L	7	m ²	no.	42
xii.	<i>Bulbine frutescens</i> (2/m ²), 2L	13	m ²	no.	26
	<i>Crassula expansa</i> (3/m ²), 2L	13	m ²	no.	39
	<i>Eucumis autumnalis</i> (2/m ²), 4L	13	m ²	no.	26
	123 m²				

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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3.2.6	PLANT MIX F: Savannah Planting (102m²) on a 38m³ berm				
i.	<i>Euphorbia muricata</i> L.(8/m²), 2L	22	m²	no.	176
ii.	<i>Aloe ferox</i> (1/m²), 10L	18	m²	no.	18
	<i>Aristida junciformis</i> (4/m²), 2L	18	m²	no.	72
	<i>Cussonia spicata</i> (0.5/m²), 2L	18	m²	no.	9
iii.	<i>Euphorbia triangularis</i> (1/m²), 10L	14	m²	no.	14
	<i>Themeda triandra</i> (5/m²), 2L	14	m²	no.	70
iv.	<i>Erythrina humeana</i> (4/m²), 10L	6	m²	no.	24
v.	<i>Aloe arborescens</i> (1/m²), 4L	15	m²	no.	15
	<i>Crassula ovata</i> (3/m²), 2L	15	m²	no.	45
vi.	<i>Eragrostis curvula</i> (5/m²), 2L	7	m²	no.	35
	<i>Crinum macowanii</i> (2/m²), 4L	7	m²	no.	14
vii.	<i>Diospyros lycoides</i> (3/m²), 10L	6	m²	no.	18
		102	m²		

3.2.7	PLANT MIX G: Thicket (125m²)				
i.	<i>Gazania krebsiana</i> (4/m²), 2L	33	m²	no.	132
	<i>Portulacaria afra</i> (2/m²), 2L	33	m²	no.	66
ii.	<i>Sanseveria hyacinthoides</i> (4/m²), 4L	10	m²	no.	40
	<i>Bulbine frutescens</i> (5/m²), 2L	10	m²	no.	50
iii.	<i>Agathosma capensis</i> (3/m²), 2L	19	m²	no.	57
	<i>Pelargonium peltatum</i> (4/m²), 2L	19	m²	no.	76
iv.	<i>Bauhinia natalensi</i> (0.5/m²), 10L	32	m²	no.	17
	<i>Carissa bispinosa</i> (2/m²), 4L	32	m²	no.	64
	<i>Plumbago auriculata</i> (2/m²), 4L	32	m²	no.	64
v.	<i>Cussonia spicata</i> , 50L	2	m²	no.	20
	<i>Cussonia thyrsiflora</i> , 50L	2	m²	no.	4
	<i>Euphorbia triangularis</i> , 50L	2	m²	no.	4
vi.	<i>Apodytes dimidiata</i> , 50L	2	m²	no.	64
	<i>Sideroxylon inerme</i> , 50L	1	m²	no.	1
	<i>Aloe arborescens</i> (2/m²), 4L	12	m²	no.	24
		125	m²		

3.2.8	PLANT MIX H: Succulent Karoo Planting (278m²) on a 52m³ berm				
i.	<i>Drosanthemum bicolor</i> (3/m²), 2L	22	m²	no.	66
	<i>Lampranthus haworthii</i> (3/m²), 2L	22	m²	no.	66
	<i>Lampranthus watermeyeri</i> (3/m²), 2L	22	m²	no.	66
ii.	<i>Aloe pearsonii</i> (2/m²), 4L	49	m²	no.	98
	<i>Aloe striata</i> (1/m²), 10L	49	m²	no.	49
	<i>Aloe gariepensis</i> (2/m²), 4L	49	m²	no.	44
iii.	<i>Rhigozum obovatum</i> (1/m²), 4L	78	m²	no.	78
	<i>Nymania capensis</i> (1/m²), 4L	78	m²	no.	78
	<i>Diospyros austro-africana</i> (0.5/m²), 10L	78	m²	no.	39
	<i>Zanthedescia aethiopica</i> (2/m²), 2L	78	m²	no.	156
	<i>Haemanthus coccineus</i> (1/m²), 4L	78	m²	no.	78
iv.	<i>Euclea undulata</i> (1/m²), 10L	26	m²	no.	26
	<i>Euryops speciosissimus</i> (1/m²), 4L	26	m²	no.	26
	<i>Euphorbia mauritanica</i> (1/m²), 4L	26	m²	no.	26
v.	<i>Salvia disermas</i> (2/m²), 4L	51	m²	no.	102
	<i>Stachys rugosa</i> (6/m²), 2L	51	m²	no.	306
vi.	<i>Arctotis fastuosa</i> (3/m²), 2L	23	m²	no.	69
	<i>Dianthus namaensis</i> (3/m²), 2L	23	m²	no.	69
	<i>Drosanthemum speciosum</i> (3/m²), 2L	23	m²	no.	69
vii.	<i>Osteopermum fruticosum</i> (3/m²), 2L	29	m²	no.	87
	<i>Albuca maxima</i> (3/m²), 2L	29	m²	no.	87
	<i>Babiana stricta</i> (3/m²), 2L	29	m²	no.	87
		278	m²		

total m² 1049

3.3 BOULDERS FROM SITE

To include machine, labour and supervision in the unit rate per no.

a.	Large(Ø900mm) boulders to be positioned by L. Architect on site		no.	12	
b.	Medium(Ø750mm) boulders to be positioned by L. Architect on site		no.	15	
c.	Small(Ø450mm) boulders to be positioned by L. Architect on site		no.	6	

3.4 WIND BARRIERS - refer to detail IS-3676-202

To include machine, labour and supervision in the unit rate per Lm.

a.	High(900mm)	no.	12	Lm	42.5
b.	Medium(600mm)	no.	15	Lm	178.6
c.	Low(450mm)	no.	6	Lm	152.7

TOTAL FOR PLANTING:

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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4. IRRIGATION

REFER TO DRAWING NO; IS-3676-6404 (SANBI - KWELERA BOTANICAL GARDENS - IRRIGATION MAINLINE LAYOUT PLAN) - by others

Item Code	Item Description	Unit	Quantity		
ISOLATING POINTS					
HPS63X11/2	SAB 63MM X 1.1/2" HP SADDLE PN16	no.	3		
HPS50X11/4	50MM X 1 1/4 HIGH PRESSURE SADDLE	no.	1		
MBP512	EMJAY PP NIPPLE 1.1/2" (40MM) BSP	no.	3		
MBP511	EMJAY PP NIPPLE 1.1/4" (32MM) BSP	no.	1		
H-V202150	COMPACT BALL VALVE FEM/THR 1.1/2"	no.	3		
H-V202125	COMPACT BALL VALVE FEM/THR 1.1/4"	no.	1		
VB250	250MM ROUND VALVE BOX WITH LID	no.	4		
MAINLINE MATERIALS					
CMA50X11/2	SAB MALE ADAPTER 50MM x 1.1/2"	no.	3		
CMA50X11/4	SAB MALE ADAPTER 50MM x 1.1/4"	no.	1		
HD050PN08	50MM PN08 X P/M HDPE PIPE SANS PE100	Lm	800		
CE50	SAB ELBOW 50MM	no.	3		
CT50	SAB 50MM COMPRESSION TEE	no.	1		
CC50	SAB COUPLING 50MM	no.	5		
CP50	SAB END CAP 50MM	no.	1		
AIR VALVES					
HPS50X1	SAB 50MM X 1" HP SADDLE PN16	no.	3		
PR25X0.30	25MM X 0.30M GREEN PVC RISER	no.	3		
H-V202100	COMPACT BALL VALVE FEM/THR 1"	no.	3		
AQ88CPM	AQUA DOUBLE ACTING AIR RELEASE VALVE 25MM	no.	3		
VB150	150MM ROUND VALVE BOX WITH LID	no.	1		
TURF VALVE MATERIALS					
HPS63X1	SAB 63MM X 1" HP SADDLE PN16	no.	26		
HPS50X1	SAB 50MM X 1" HP SADDLE PN16	no.	23		
MBP756	EMJAY PP MALE/FEMALE ELBOW 1" (25MM) BSP	no.	147		
PR25X0.30	25MM X 0.30M GREEN PVC RISER	no.	49		
H-V202100	COMPACT BALL VALVE FEM/THR 1"	no.	49		
AQ71PM	AQUA 25 PLASTIC TURF VALVE	no.	49		
VB150	150MM ROUND VALVE BOX WITH LID	no.	49		
AQ70PMK	AQUA PLASTIC TURF VALVE KEY	no.	10		
MB734	EMJAY COMB. FEMALE ELBOW 20MM X 3/4"	no.	10		
THC8	TORK 19-26MM HOSE CLAMP PERFORATED (20MM PIPE)	no.	40		
DL20X30	20MM X 30M DRAGLINE M-DUTY BLACK	no.	10		
SB225	3/4in SNAP ON HOSE CONNECTOR	no.	10		
SB500	SNAP ON SPRAY NOZZLE	no.	10		
DS20X.6	20MM X .6M DRAGLINE STAND	no.	10		
AQ46-3.57X2.38	AQUA PLASTIC SPRINKLER FC3/4"-3.57 X2.38 BLUE/YELL	no.	10		
CONTINGENCIES					
MISC WCP FITT	CONN. TO EXIST. MAINS,PTFE,HEMP,ADD. FITTINGS ETC.	no.	1		
MISC PIPE FITT	DANGERTAPE,IT,ADD PIPE FITTING-COUPLING,ELBOWS ETC	no.	2		
MISC TV FITT	PTFE, STABALISING RODS, HOSE REP COUPLINGS ETC	no.	49		
LABOUR					
LABMAINSTD	M-LINE LAB,TRENCH, INST.&BACKFILL UP TO 500MM DEEP	Lm	800		
LAB	INSTALLATION OF TURF VALVES ON EXISTING MAINLINE	no.	26		

TOTAL FOR IRRIGATION:

PART C: BILL OF QUANTITIES

**SANBI - KWELERA NATIONAL BOTANICAL GARDEN,
Eastern Cape UBUGCISA GARDEN - CYCAD GARDEN
(Soft Landscaping)**

SUMMARY:**SUB-TOTAL**

1	MISCELLANEOUS					R	-
2	EARTHWORKS AND SOIL IMPROVEMENTS					R	-
3	PLANTING					R	-
SUB-TOTAL: SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN - CYCAD GARDEN (Soft Landscaping)						R	-
4	HORTICULTURAL MAINTENANCE AS PER GENERAL LANDSCAPE SPECIFICATIONS DOCUMENT. ALLOW FOR HAND WATERING AS PER EXISTING TAPS ON SITE * REVIEW ITEM	months	3	R	19 500.00	R	58 500.00
TOTAL: KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN - CYCAD GARDEN (Soft Landscaping)						R	58 500.00

Carried to Summary (PART C)

NOTE: REFER TO SECTION D FOR HARD LANDSCAPING

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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1. MISCELLANEOUS

1.1 SITE CLEARANCE

a.	Loading and removal of all unusable material; debris; stone; and surplus plant materials, to be moved to the contractors' own dumping site. Material to be 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. Heaps to be 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.	Removal of rubble (first 25mm of cultivated areas) & dumping of all rubble & plant material not suitable for fill to an off site facility (approx. 10km from site)(Paving removal captured under Hard Landscape)	m ³	0		

TOTAL FOR MISCELLANEOUS:

2. EARTHWORKS AND SOIL IMPROVEMENTS

2.1 TOPSOIL (Spreading from stockpile on site)

a.	The contractor to provide all necessary equipment, labour and machinery for spread of topsoil.				
b.	The topsoil to be free of any building rubble, rocks or plant materials.				
c.	Rate is to be inclusive of all intensive hand labour, where required.				
d.	Compact soils where required and specified and prevent soil erosion at all times.				
e.	IMPORTANT NOTE: PAYMENT FOR TOPSOIL WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. TOPSOIL WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES.				
f.	Provision for 0,67m ³ topsoil per tree	10	no.	m ³	7
g.	150mm spread over all lawn and bed areas	764	m ²	m ³	115
h.	TOTAL topsoil spreading from stockpile on site			m ³	121

2.2 SCARIFYING OF EXISTING SOIL

a.	Supply all the necessary equipment, tools and labour for scarifying of all areas.				
b.	Rip soil in all areas.				
c.	Depth -- 200mm .				
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.	Provision for scarifying of planting and lawn areas. Rate to include levelling out of scarified material TO ALL LANDSCAPED AREAS			m ²	764

2.3 FINE GRADING by hand

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.	Provision for finegrading by hand to bed areas ONLY			m ²	764

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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2.4 COMPOST (Import and spread)

- 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. **IMPORTANT NOTE: PAYMENT FOR COMPOST WILL ONLY TAKE PLACE ON RECEIPT OF SIGNED DELIVERY NOTES. RECIEPTS ARE TO BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO EACH PAYMENT CERTIFICATE. COMPOST WILL NOT BE CERTIFIED WITHOUT THE DELIVERY NOTES.**

h.	Allowance for 50mm compost medium in planting beds	764	m ²	m ³	38		
i.	Allowance for 0,17m ³ per tree	10	m ²	m ³	2		
j.	TOTAL compost import and spread			m ³	40		

2.5 ORGANIC MULCH LAYER

- a. Spreading of 50mm layer.
- b. Payment per m³ after fine trimming
- c. Rate is to be all inclusive per cubic meter.

d.	Organic mulch layer of 50mm			m ³	40		
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2.6 INORGANIC FERTILIZER

- a. Spread prior to fine trimming.
- b. Working in 200 mm deep.
- c. Payment per kg after fine trimming
- d. Rate is to be all inclusive per square meter.

Shrubs, groundcovers & perennials

e.	50g/m ² 2:3:2 to be worked into soil (stream excluded)	764	m ²	kg	38		
f.	50g/m ² Super phosphate to be worked into soil (stream excluded)	764	m ²	kg	38		

Trees

g.	100g/tree 3:1:5 to be mixed in planting holes	10	no	kg	1		
h.	150g/tree Super phosphate to be mixed in planting holes	10	no	kg	2		

TOTAL FOR EARTHWORKS AND SOIL IMPROVEMENTS:

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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3. PLANTING

REFER TO DRAWING NO: IS-3676-201 (SANBI - KWELERA BOTANICAL GARDENS - SOFT LANDSCAPE PLAN)

REFER TO DRAWING NO: IS-3676-202 (SANBI - KWELERA BOTANICAL GARDENS - SOFT LANDSCAPE PLAN-TREES AND DETAILS)

REFER TO DRAWING NO: IS-3676-204 (SANBI - KWELERA BOTANICAL GARDENS - SOFT LANDSCAPE PLAN-UBUGCISA GARDEN)

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.

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.

Planting:

Supply all equipment and labour for planting of trees, shrubs, groundcovers, lawn and seeding.

Backfill with planting media to specification and tramp down firmly.

Remove all surplus soil.

Form a pond around each tree and shrub/s and water well after planting.

Keep all plants moist.

Plant sizes and plant densities will be strictly enforced.

Trees:

Trees from **50 ltr** containers: 1800 - 2200 mm height after planting with stem diameter of 20-30 mm measured 300mm above soil level.

Trees from **100 ltr** containers: 2800 - 3000 mm height after planting with stem diameter of 30-50 mm measured 300mm above soil level.

Trees from **200 ltr** containers: 3000 - 3500 mm height after planting with stem diameter of 50-80 mm measured 300mm above soil level.

Trees from **400 ltr** containers: 4000 - 4500 mm height after planting with stem diameter of 180-120 mm measured 300mm above soil level.

NOTE: Contractor to meet the Landscape Architect to select all trees to be used. Colour photo's of the proposed trees can also be supplied to the Landscape Architect.

Contractor to guarantee each tree for 3 months after practical completion.

Supply, plant, stake and maintain.

Staking:

TREES: Provide all necessary stakes for trees and secure each tree firmly.

Use 100mm round CCR treated timber tree stakes, no.4 per tree (2m length:

1,5m above ground and 0.5m below ground). Place opposite sides of the

trees and secure with specialised rubber horticultural tree ties, no.4 per tree.

REFER TO DRAWING NO: IS-3676-202

3.1 TREES - PLANTING AND 2 x DOUBLE TREE STAKING RATE

- NOTE: ALL CYCADS SUPPLIED BY CLIENT VIA VARIOUS LOCATIONS

- Special transport rates apply. Contractor to supply the transport truck(s), labour, shade net and wind protection.

- DELIVERY, STAKING & PLANTING RATE TO BE PRICED

Delivery to site from Thomas Baines Nature Reserve and others in Amalinda Nature reserve .

3.1.1 Various Sized Cycads TO BE SUPPLIED BY CLIENT

a.	Client Cycads Small to Medium 5 no. 300mm diam stem		no.	5		
b.	Client Cycads Medium 5 no. 600mm diam stem		no.	5		
c.	Transport from two sites - total Km estimated. (To include wind protection on small truck)		Km	500		

total no. 10

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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3.2 SHRUBS & FEATURE PLANTS

- NOTE: ALL TREES AND PLANTS SUPPLY BY CLIENT
- DELIVERY, STAKING & PLANTING RATE TO BE PRICED
- SANBI NURSERY IS 3km ONE-WAY FROM THE SITE

3.2.1	PLANT MIX S: Succulents (451m²) on a berm				
i.	Cotyledon orbiculata(4/m²), 2L	105	m²	no.	420
	Cotyledon woodii(4/m²), 2L	105	m²	no.	420
	Portulacaria fruticulosa(1/m²), 2L	105	m²	no.	105
ii.	Aloe dichotoma(0.5/m²), 2L	100	m²	no.	50
	Aloe ferox(1/m²), 10L	100	m²	no.	100
	Crassula arborescens(2/m²), 2L	100	m²	no.	200
	Crassula ovata(2/m²), 2L	100	m²	no.	200
	Pachypodium succulentum(1/m²), 4L	100	m²	no.	100
iii.	Senecio podiensis (3/m²), 2L	52	m²	no.	156
	Kalanchoe sexangularis(2/m²),2L	52	m²	no.	104
	Aloe greathesdii(1/m²),4L	52	m²	no.	52
	Aloe pretoriensis(1/m²), 4L	52	m²	no.	52
iv.	Aloe barbarae(1/m²), 20L	61	m²	no.	61
	Aloe cooperi(2/m²),4L	61	m²	no.	122
	Delosperma lydenburgensis(3/m²), 2L	61	m²	no.	183
	Tylecodon spp. (1/m²), 10L	61	m²	no.	61
v.	Aloe swynnertonii(2/m²), 2L	25	m²	no.	50
	Delosperma cooperi(3/m²), 2L	25	m²	no.	75
	Kalanchoe thyrsiflora(4/m²), 2L	25	m²	no.	100
	Aloe angelicae(1/m²) , 10L	25	m²	no.	25
vi.	Aloe marlothii(0.5/m²), 10L	36	m²	no.	18
	Aloe vogtsii(2/m²), 4L	36	m²	no.	72
	Aloe ecklonis(2/m²), 4L	36	m²	no.	72
	Drosanthemum hispidum(3/m²), 2L	36	m²	no.	108
	Hoodia gordonii.(3/m²), 4L	36	m²	no.	108
vii.	Euphorbia triangularis(0.5/m²), 10L	72	m²	no.	36
	Aloe rupestris(0.5/m²),10L	72	m²	no.	36
	Crassula expansa(3/m²), 2L	72	m²	no.	216
	Kleinia galpinii(2/m²),4L	72	m²	no.	144
	Sanseveria aethiopica(2/m²), 4L	72	m²	no.	144
	Stapelia gigantea (2/m²), 4L	72	m²	no.	144
	451 m²				

3.2.2	PLANT MIX CY: Cycads (313m²) on a berm				
i.	Encephalartos altensteinii (6 each planted as features), 50L			no.	6
	Encephalartos transvenosus (6 each planted as features), 50L			no.	6
	Encephalartos arenarius (6 each planted as features), 50L			no.	6
	Encephalartos latifrons (6 each planted as features), 50L			no.	6
	Asystasia gangetica(4/m²), 2L	133	m²	no.	532
	Streptocarpus gardenii (5/m²), 2L	133	m²	no.	665
ii.	Encephalartos frederici-guiliemi (5 each planted as features), 50L			no.	5
	Encephalartos lehnannii (5 each planted as features), 50L			no.	5
	Helichrysum petiolare(1/m²), 4L	65	m²	no.	65
	Falkia oblonga(4/m²), 2L	65	m²	no.	260
iii.	Encephalartos ghellinckii, (5 each planted as features), 50L			no.	5
	Helichrysum cymosum (3/m²), 4L	30	m²	no.	90
	Aptenia cordifolia (5/m²), 2L	30	m²	no.	150
iv.	Encephalartos natalesis, (3 each planted as features), 50L			no.	3
	Scadoxus multiflorus(1/m²), 4L	18	m²	no.	18
	Scilla nervosa(2/m²), 4L	18	m²	no.	36
	Hypoxis hemerocallidiae(2/m²), 4L	18	m²	no.	36
	Geranium incanum (4/m²), 2L	18	m²	no.	72
v.	Encephalartos princeps (3 each planted as features), 50L			no.	3
	Helichrysum argyrophyllum(6/m²), 4L	17	m²	no.	102
vi.	Encephalartos villosus (6 each planted as features), 50L			no.	6
	Plectranthus neochilus(3/m²), 2L	50	m²	no.	150
	Delosperma cooperi(5/m²), 2L	50	m²	no.	250
	313 m²				

total m² 764

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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3.3 LAWN

a. Soil preparation for roll on lawn/sprigs

* The landscaping area shall be roughly graded to the required shape with all stones and rubble and vegetation removed. Compost to specification shall be evenly spread over these planting areas to thickness of 100 mm.

Compost to specification shall be evenly spread over these planting areas to thickness of 150 mm. The compost and fertiliser shall then be cultivated to a depth of 300mm or one spade blade length by hand or suitable machine. Following cultivation the entire area shall be fine graded to create an even surface, and any rocks that may have surfaced during the soil cultivation have to be removed. Then roll soil and regrade to the correct level. Use planks for the wheelbarrow with the lawn sods. Work from the planks to lay the sods.

* Potassium sulphate to be applied at a rate of 20 gram per m².

* Magnesium sulphate to be applied at a rate of 100 gram per m².

* Dolomitic Lime at a rate of 100 gram per m².

* Vita-green 5:1:5(16) to be applied at a rate of 50 gram per m².

* Bonemeal to be applied at a rate of 100 gram per m².

*

The compost and fertiliser shall then be cultivated to a depth of 300mm or one spade blade length by hand or suitable machine. Following cultivation the entire area shall be fine graded to create an even surface, and any rocks that may have surfaced during the soil cultivation have to be removed.

*

Then roll soil and regrade to the correct level. Use planks for the wheelbarrow with the lawn sods. Work from the planks to lay the sods.

b. The contractor to provide all necessary machinery, labour, transport and material to plant the new lawn.

c. Plant lawn according to specifications.

d. Top of lawn levels are to be 35mm lower than the top of the paving levels, and must tie into levels supporting the storm

e. All new lawn to be free of all weeds and other species than specified.

f. Place temporary wooden pegs to support lawn on embankments.

g. Contractor to include top-dressing of lawn to achieve perfect levels

h. Rates to be all inclusive.

a. *Instant lawn - Cynodon dactylon (Fynkweekgras)*

m²

759

3.4 BOULDERS FROM SITE

To include machine, labour and supervision in the unit rate per no.

a.	Large(Ø900mm) boulders final position to be indicated by L. Architect on site		no.	12		
b.	Medium(Ø750mm) boulders final position to be indicated by L. Architect on site		no.	15		
c.	Small(Ø450mm) boulders final position to be indicated by L. Architect on site		no.	6		

TOTAL FOR PLANTING:

PART D: BILL OF QUANTITIES

SANBI - KWELERA NATIONAL BOTANICAL GARDEN,
Eastern Cape ENKUNDLENI & UBUGCISA GARDENS
(External Work and Hard Landscaping Finishes)

SUMMARY:

SUB-TOTAL

1	EARTHWORKS AND SOIL IMPROVEMENTS	R -
2	EXTERNAL WORK AND HARD LANDSCAPING FINISHES	R -
SUB-TOTAL: SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI & UBUGCISA GARDENS (External Work and Hard Landscaping Finishes)		R -
TOTAL: KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI & UBUGCISA GARDENS (External Work and Hard Landscaping Finishes)		R -

Carried to Summary (PART D)

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI & UBUGCISA GARDENS

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
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1. EARTHWORKS AND SOIL IMPROVEMENTS

The contractor to provide all necessary equipment, labour and machinery for bulk and final shaping.

1.1 ENKUNDLENI (BIOME) GARDENS

a.	Bulk shaping of berms - Cycad berm 1 (Nama Karoo)	m ³	45		
b.	Bulk shaping of berms - Cycad berm 2 (Fynbos)	m ³	59		
c.	Bulk shaping of berms - Cycad berm 3 (Coastal Belt)	m ³	58		
d.	Bulk shaping of berms - Cycad berm 4 (Forest)	m ³	54		
e.	Bulk shaping of berms - Cycad berm 5 (Grassland Glade)	m ³	40		
f.	Bulk shaping of berms - Cycad berm 6 (Savanna)	m ³	38		
g.	Bulk shaping of berms - Cycad berm 7 (Thicket)	m ³	62		
h.	Bulk shaping of berms - Cycad berm 8 (Succulent Karoo)	m ³	52		

1.2 UBUGCISA (BIOME) GARDENS

a.	Bulk shaping of berms - Cycad berm 9.1-9.4	m ³	539		
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1.4	Final shaping all berms	m ²	0		
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TOTAL FOR EARTHWORKS AND SOIL IMPROVEMENTS:

2. EXTERNAL WORK AND HARD LANDSCAPING FINISHES

REFER TO DRAWING NO: IS-3676-301 (SANBI - KWELERA BOTANICAL GARDENS - HARD LANDSCAPE SETTING-OUT PLAN - MAIN WALKWAY)

REFER TO DRAWING NO: IS-3676-302 (SANBI - KWELERA BOTANICAL GARDENS - HARD LANDSCAPE SETTING-OUT PLAN - MOUNDS & SECONDARY PAVING)

REFER TO DRAWING NO: IS-3676-303 (SANBI - KWELERA BOTANICAL GARDENS - HARD LANDSCAPE - TYPICAL DETAIL SHEET)

REFER TO DRAWING NO: IS-3676-305 (SANBI - KWELERA BOTANICAL GARDENS - HARD LANDSCAPE PLAN)

2.1 PAVING

- a. Supply, deliver and install
- b. SABS approved concrete block paving to be installed to SANS 1200 MJ and to SANS 1200 MJ-1984 SEGMENTED PAVING SPECIFICATION AND
- c. SABS approved Clay paving to be installed to SANS 1200 MJ and to Clay Brick Association INSTALLATION SPECIFICATIONS
- d. All paving must be installed to meet the manufacturers specification, with special reference to details as provided by the Landscape Architect (to SANS 1200 MJ-1984 SEGMENTED PAVING).
- e. All paving to Include 150 mm G5/ G7 imported layer compacted to 93% MOD AASHTO
- f. Paving to be re-sanded after 3 months
- g. **NOTE:** An additional 5% mark up on total paving quantities has been added to the total m² of paving as allowance for cutting.

2.1.1 PAVING

a.	203x102x70mm CEL Coarse exposed aggregate Paver; Colour: Kirstenbosch (600m ²) 660m ² including 10% for cutting	m ²	660		BY OTHERS/ rate only
b.	220x108.5x50mm PA Corobrik Clay Paver; Color: Nougat (22m ²) 24m ² including 10% for cutting	m ²	24		BY OTHERS/ rate only

**total m²
paving 684**

SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI & UBUGCISA GARDENS

ITEM	DESCRIPTION OF WORK	UNIT	QTY	RATE	TOTAL
2.2 GRAVEL					
a.	80mm thick 9 -12mm Ø Gravel / similar approved; Colour: Sandstone / Brown local stone	112 m ²	m ³	8.96	BY OTHERS/ rate only
b.	Gravel fix or similar approved - to include bidum geotextile system.		m ²	128.8	BY OTHERS/ rate only

2.3 GENERAL BUILDING WORKS TO SOCIAL GARDEN REFER TO DRAWING NO (TYPICAL DETAIL): IS-3676-

a.	All rates to be fully inclusive (Sourcing; Delivery & Installation to be included)				
b.	Precast elements to be in accordance with the drawings and specifications in the tender. Pre-cast concrete to have a compressive strength that ranges from between 30 MPa to 32 MPa after 28 days of curing. Integrated GRC (Glass Reinforced Concrete) to be Water resistant and Fire retardant; noted Perspex materials to be minimum 5-year guarantee UV-STABLE technology. Precast Concrete Construction to have great dimensional accuracy on all finishes.				
c.	Planter / Seating walls clad with Corobrik Platinum Satin FBX or equivalent clay facebrick, size mm x mm		Lm	165	BY OTHERS/ rate only
d.	Planter wall		Lm	86	BY OTHERS/ rate only

2.4 RETAINING WALLS FOR BERMS INCL. STEEL WORKS - CYCAD GARDEN.

REFER TO DRAWING NO (TYPICAL DETAIL): IS-3676-303

a.	Rate to be inclusive(Sourcing, Delivery & Installation to be included)				
b.	Retaining wall - TO INCLUDE strip foundation, masonry brickworks and plaster finish with Sika 1 admixture (waterproofing agent)		Lm	96	BY OTHERS/ rate only
c.	Trim finish - GRAVEL WALKWAY 6MM MILD STEEL- RUST FINISH AS PER DETAIL		Lm	96	BY OTHERS/ rate only
d.i	4mm Mild steel (rust finish) plates for cycad garden berms - Plate 1		m ²	8.739	BY OTHERS/ rate only
d.ii	4mm Mild steel (rust finish) plates for cycad garden berms - Plate 2		m ²	7.89	BY OTHERS/ rate only
d.iii	4mm Mild steel (rust finish) plates for cycad garden berms - Plate 3		m ²	3.167	BY OTHERS/ rate only
d.iv	4mm Mild steel (rust finish) plates for cycad garden berms - Plate 4		m ²	2.821	BY OTHERS/ rate only
d.v	4mm Mild steel (rust finish) plates for cycad garden berms - Plate 5		m ²	2.09	BY OTHERS/ rate only
d.vi	4mm Mild steel (rust finish) plates for cycad garden berms - Plate 6		m ²	2.243	BY OTHERS/ rate only
e.	Signage layer - to later detail and design development.		PC SUM	1	BY OTHERS/ rate only

TOTAL FOR EXTERNAL WORK AND HARD LANDSCAPING FINISHES:



Contract No: SANBI :

**CLIENT/
CONTRACT
NUMBER:**

SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE

**REQUEST FOR BIDS FOR THE APPOINTMENT OF A CONTRACTOR FOR THE
CONSTRUCTION OF TWO THEMED GARDENS AT KWELERA NATIONAL
BOTANICAL GARDEN, EAST LONDON
PROCUREMENT DOCUMENT**

PROVISIONAL BILL OF QUANTITIES

PROVISIONAL BILL OF QUANTITIES SUMMARY PAGE

NOTE: Contractor to forward all total amounts into the summary below.

SECTION 1

TENDER TOTAL

PART A:	SUBTOTAL FOR: PRELIMINARIES	BOQ	
PART B	SUB-TOTAL: SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI GARDEN - BIOME GARDEN (Soft Landscaping)	BOQ	
PART C	SUB-TOTAL: SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape UBUGCISA GARDEN - CYCAD GARDEN (Soft Landscaping)	BOQ	
PART D :	SUB-TOTAL: SANBI - KWELERA NATIONAL BOTANICAL GARDEN, Eastern Cape ENKUNDLENI & UBUGCISA GARDENS SITE SHAPING (External Work and Hard Landscaping Finishes by others)	BOQ	
		<u>Sub - Total</u>	R -

Excluding VAT

Contingency

5.0%

Sub - Total (ex. Vat)

	R
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15%

VAT @ 15%

R

Grand Total

TR

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VAT Inclusive

TO BE FILLED INTO FORM OF TENDER