EASTERN CAPE PROVINCE

DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

RIPPLEMEAD PACK HOUSE

CONTRACT NO.: SCMU8 – 12/13-0008

PRELIMINARY DESIGN REPORT – REVISION 1

AUGUST 2015

PREPARED BY:

LUKHOZI CONSULTING ENGINEERS (PTY) LTD

KWA-LUKHOZI
QUARTZITE DRIVE
THE QUARRY
SELBORNE
EAST LONDON

TEL.: 043 – 721 1321
FAX: 043 – 721 1330
E-MAIL :el@lukhozi.co.za
www.lukhozi.co.za

LUKHOZI

LUKHOZI

EASTERN CAPE PROVINCE

DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

RIPPLEMEAD PACK HOUSE

PRELIMINARY DESIGN REPORT – REV1

TENDER NO.: SCMU8 – 12/13-0008

AUGUST 2015

CONTENTS

Page No.

1. **INTRODUCTION** 1

1.1 SCOPE AND PURPOSE OF THIS REPORT

2. **DESCRIPTION OF THE SITE** 2

2.1 LOCALITY
2.2 GENERAL DESCRIPTION
2.3 TOPOGRAPHY
2.4 EXISTING SERVICES
2.5 GEOLOGY
2.6 ENVIRONMENTAL IMPACT ASSESSMENT

3. **PROPOSAL** 4

3.1 GENERAL
3.2 SECURITY AREA
3.3 ROADS
3.4 WATER SUPPLY
3.5 GATE HOUSE
3.6 MAIN STRUCTURE
3.7 MECHANICAL EQUIPMENT
3.8 DE-GREENING ROOM
3.9 COLD ROOM
3.10 ELECTRICAL SUPPLY

4. **ESTIMATED COSTS AND PHASING OF THE PROJECT** 13

5. **PROGRAMMING OF THE WORKS** 18

6. **CONCLUSION** 19

EASTERN CAPE PROVINCE

DEPARTMENT OF RURAL DEVELOPMENT AND AGRARIAN REFORM

RIPPLEMEAD PACK HOUSE

PRELIMINARY DESIGN REPORT – REV1

TENDER NO.: SCMU8 – 12/13-0008

AUGUST 2015

1. INTRODUCTION

The proposed new Ripplemead pack house project, which is now at preliminary design stage, was first reported on in December 2012 in a report named *Situation Report*. That report described the existing development (which dates back to 1926 and has been identified as a site of historical significance) and provided various alternatives for improving the packing facility for the farmers. As a result of the recommendations of the *Situation Report* and the historical report, as well as interactions with the farmers, it was determined that alterations to, or demolition of, the existing development could not be considered. The development of a new pack house would therefore be required to address the needs of the farmers.

In June 2015 a *Concept Report* was produced which provided a basic concept of the proposed development.

The *Situation Report* and the *Concept Report* has to be studied to get a full understanding of the local conditions, the farmers' requirements and the proposals.

1.1 SCOPE AND PURPOSE OF THIS REPORT

The purpose of this preliminary design report is to describe the proposed project in detail as set out below :

1. Confirm the scope of work.
2. Provide details of the site and the status of existing services.
3. Record the principles and design criteria proposed for use in the design of all aspects of the works.

4. Present the proposed design solution deemed as most suitable to address the needs of the farmers.
5. Describe the strategy and programme for implementation of the project.
6. Provide estimates for the cost of the work.

2. DESCRIPTION OF THE SITE

2.1 LOCALITY

The site is positioned some 35 km from Peddie on the south western side of the main access road which leads to the R345, the route between Peddie and Alice. This road serves as a main access road to the farms and the larger community.

It is envisaged that the proposed development will be on the north eastern side of the main access road.

2.2 GENERAL DESCRIPTION

An area, which will be large enough to include any future developments and which encompasses the existing pack house as well as the site which has been set aside for the new development, is in the process of being surveyed with the intention to make it available to the local farmers.

The north, west and eastern boundaries are demarcated by fences whereas the southern boundary is defined by a dysfunctional irrigation furrow. The main access road which traverses the area, defines the south western section as the historical area, the southern area occupied by an old farmstead is the plant manager's home. The north western section will be set aside for the new development.

2.3 TOPOGRAPHY

The overall site has a gentle slope (between 1: 43 to 1:17) which increases slightly in grade on the north western edge with scattered small trees. There is no evidence of natural concentration of storm water runoff.

2.4 EXISTING SERVICES

The area designated for development is presently vacant land bounded by a service road and traversed by a 100 kVA electrical power line with a transformer and connection box which supplies the existing pack house.

There is a rising main which feeds the existing pack house via plastic tanks at ground level. This system draws water from the Keiskamma River by means of a river extraction pump some 1,5 km to the north which also supplies the orchards and farm house of one of the farmers. The system comprises a single removable pump which is subjected to flooding.

The Keiskamma River is perennial and reliable and has significant storage in the Sandile and Cata dams from where water is released on a regular basis.

A significant increase in rainfall (as can be expected from August onwards) results in an increase in water turbidity which requires more filtration. As the system is subjected to flood damage it is not operative when the river water levels are high.

This water is filtered and chlorinated at the extraction plant from where it is reticulated into the orchards and the pack house. The water is treated with chlorine on an ad-hoc basis which is unacceptable.

It is important to note that the pumping equipment and the pumping main is owned, run and maintained by one of the farmers. There was no evidence found of financial support by the other farmers in the area. The farmer could also not produce documentation defining his running costs and maintenance of the installation.

There is no visible evidence of other services.

2.5 GEOLOGY

A geological investigation is currently underway and the results will provide information in respect of the founding conditions. However a visual inspection on the existing structures in the area has not indicated that any severe founding problems can be anticipated.

2.6 ENVIRONMENTAL IMPACT ASSESSMENT

An environmental impact assessment has commenced and the application submitted to DEDEAT for acceptance. The outstanding letter from the Department of Land Affairs must be submitted within 14 days of the submission of the application, which was submitted on 31 July 2015.

The following process will have to be followed in terms of the NEMA regulations:

1. Acknowledgement of acceptance of the Application by DEDEAT.
2. Submission of the Basic Assessment Report (BAR) to DEDEAT and Interested and Affected Parties (IAP) for 30 day comment period.
3. Closure of Comments.
4. Assimilate comments, address issues and submit final BAR.
5. Issue of ROD by DEDEAT (107 days from submission of the Final BAR).

Please note that the timeframes for the Basic Assessment Report are mostly out of our control.

3. PROPOSAL

To ensure adherence to international standards and norms and that the proposed development answer to the needs of the local farmers various existing developments were visited. We have also been in close communication with the exporter who has been assisting the farmers in the management of the existing pack house.

3.1 GENERAL

It is proposed that the new development comprise a pack house, office block, canteen and ablution block, generator room, chemical store, de-greening room, cold room and wax store which will be enclosed in a secure area with controlled access. The development will be equipped with modern sorting equipment to international specifications.

To minimise costs and to encourage local industry, all building work, with the exception of the generator room, will be from concrete blocks, plastered and painted inside and out. The generator will housed in a purpose made container situated on a concrete slab. The de-greening and cold rooms will be constructed from insulated panels by specialists.

Access will be directly from the main access road which forms the south western boundary of the property.

Indications are that the proposed development will have to cater for the following:

1. A permanent staff complement of 10 people.
2. A temporary labour complement of 90 people.
3. 6500 tonnes of fruit of various cultivars annually.
4. A receiving area for fruit from the orchards capable of handling tractors and trailers.
5. A roadway which will be capable of handling interlink trucks.
6. An internal slab capable of carrying 2,5 tonne forklifts.
7. External hardstand areas capable of carrying 2,5 tonne forklifts as well as interlink trucks.
8. Storage area for empty crates.
9. Storage area for loaded cartons ready for despatch.
10. A carton assembly area.
11. A back-up generator room with sufficient space to store 200 litres of fuel.
12. A chemical store.
13. Wax store.
14. De-greening / cold storage room.
15. Sourcing and recommending the mechanical sorting equipment.

Due to the lack of existing services the following is included in the design:

1. A septic tank and soak away.
2. The water supply system has to be upgraded.
3. The existing power line will have to be upgraded and possibly rerouted.

For the purpose of this report each section of the development is discussed separately.

Due to the limited budget available the new development will allow for phasing (which is discussed separately) but will be adequate to service the immediate need of the current farmers.

Hardstands will assist in dust control and will reduce road maintenance in high traffic areas.

3.2 SECURITY AREA

The surveyed property is approximately 7 hectares and, to limit expenditure, it is proposed to only enclose the area occupied by the new development. The proposed security fence will comprise a 2,4 m high fence with timber posts at a maximum of 3 m centres, with weld mesh fence and flat wrap razor wire on the top. The single entrance which will be 5 m wide and secured by a sliding gate, will be controlled by security guards housed in a gate house. Security lighting will be erected around the perimeter of the facility.

3.3 ROADS

The original report indicated that a surfaced road is required around the structure. At the facilities visited only the areas where forklifts were being operated were surfaced therefore it is proposed that most of the road works be constructed from gravel and that only the areas identified below be surfaced. To limit dust access of interlinks should be limited to the front of the building at the entrance to the main road.

The areas at the entrance, loading area and the open receipt area are to be surfaced. These areas will receive 150 mm thick concrete hardstands which will be capable of carrying interlink vehicles. It is proposed that the entrance to the generator room be surfaced with 80 mm block pavers.

3.4 WATER SUPPLY

The current river extraction plant is unsatisfactory as it is owned and used by a single farmer and the running costs are not shared.

It is therefore our recommendation that an alternative water supply system be developed. A number of possibilities exist in this regard:

1. Continue the use of the existing river extraction.
2. Construct a new river extraction.
3. Bore hole development.
4. Rain Water Harvesting.
5. Any combination of the above.

3.4.1 Existing River Water Extraction

We are of the opinion that it is possible to utilise this system until such time as a new system has been fully developed.

In terms of this the following will have to be carried out:

2.6.1 The existing pump system should be tested for reliability and capacity.
2.6.2 A water meter should be installed on the take-off to the new development.
2.6.3 A cost management process should be established to spread the costs of the system.
2.6.4 Elevated tanks should be installed to ensure adequate water pressure.
2.6.5 Ultra-violet lights should be utilised in the treatment of the water.
2.6.6 The existing system should be phased out and replaced with a new system.

3.4.2 New River Water Extraction

A new river water extraction system can be installed approximately 800 m from the facility which is 700 m closer than the current system. There is already a weir which dams the water sufficiently to allow extraction.

This system will entail the following :

a. Construction of an 800 m pipeline.
b. Installation of new pumping equipment.
c. Installation of elevated tanks.
d. Installation of an ultra-violet light treatment plant.

The negatives are that the new system will be situated far from human activity rendering it vulnerable to vandalism and will require an electrical supply. This will also trigger an EIA which will result in a significant time loss. Accordingly we do not recommend that this option be considered at this stage.

3.4.3 Borehole Development

To our knowledge there has been no ground water investigation at this stage but the typography is typical of an area where ground water should be relatively close to the surface therefore we are of the opinion that borehole development is quite possible. The development of a borehole will trigger an EIA and approval of the Department of Water Affairs and Forestry thus there would be a time loss in this regard.

A borehole yeilding 0,2,4 l/s with a 12 hours pumping cycle would be required. As this is a very low yield we are of the opinion that it could be achieved relatively easily. This is specialist's field for which hydrogeological engineers will have to be appointed.

The location and yield of a borehole will determine costs therefore we can only put a rough estimate to this item at this stage.

3.4.4 Rain Water Harvesting

The potential of rain water harvesting was first raised by the farmers and we have therefore investigated this matter intensively.

As rain water supply is not as frequent and reliable as river water, significant storage capacity will be required. Such a system will require a dedicated reticulation system with a debris filter at each inlet, a small electric pump, rising main, elevated storage and an ultra violet installation for water purification at the outlet.

The anticipated roof area for the development is 3475 m^2 which will, based on an average rainfall of 837 mm pa, provide 2910 m^3 pa. Based on SANS, the estimated domestic demand is 90 litres per person per day, which equates to a total of 9900 litres per day. The volume of water utilised by the pack house is given as 1000 litres per day. Therefore, taking non-working days and off-season periods into account, the total combined demand equals to 1962 m^3 pa. Thus there is an oversupply of 948 m^3 pa.

In terms of the average rain fall figures as shown in the table below the Peddie district's driest months are from May to July which is a time of the year when activity at the pack house reaches its peak thus putting more emphasis on sufficient water storage capacity.

Based on a hard roof area of 3475 m^2 a total storage capacity of 550 m^3 will be required. The estimated domestic demand of 90 litres per person per day is the upper limit for the development therefore consideration could be given to an initial 200 m^3 storage. An increase to this could be considered at a later stage as the demand increases.

STORAGE REQUIREMENT

Demand calculated at 90 litres per person per day and 1000 litre for the pack house per day

Average monthly rainfall in mm		Captured water volume in m^3	Rain days	Demand		Accumulative captured	Supply minus demand	Balance in storage
				Monthly	Accum - mulative			
January	107	371.83	17	No pack house activity during this period		371.83	371.83	550.00
February	72	250.20	17			622.03	622.03	550.00
March	95	330.13	17	245.25	245.25	952.15	706.90	550.00
April	75	260.63	12	245.25	490.50	1,212.78	722.28	550.00
May	32	111.20	8	245.25	735.75	1,323.98	588.23	415.95
June	23	79.93	6	245.25	981.00	1,403.90	422.90	250.63
July	21	72.98	7	245.25	1,226.25	1,476.88	250.63	78.35
August	50	173.75	9	245.25	1,471.50	1,650.63	179.13	6.85
September	67	232.83	12	245.25	1,716.75	1,883.45	166.70	-5.58
October	93	323.18	18	245.25	1,962.00	2,206.63	244.63	72.35
November	121	420.48	19	No pack house activity during this period		1,871.10	2,627.10	492.83
December	81	281.48	17			2,071.58	2,908.58	550.00
Annual	837	2,908.58	159		1,962.00			
Average	69.75	242.38	13		163.50			

3.4.5 A Combination of the Above

A combined system could take cognisance of the short comings of any particular system, allow for seamless introduction of a new system and provide a back-up in the event of a break down.

3.4.6 Cost analysis of the Different Water Supply Systems

A cost analysis of the different water supply systems is indicated below. From this it is clear that the continuous use of the existing system would be the cheapest however, as discussed above this is not desirable. We are of the opinion that the installation of a rain water harvesting system, augmented by a metered supply from the current would be the most desirable and cost effective to run.

SYSTEM	DEVELOPMENT COST	MONTHLY RUNNING COST
Rain water harvesting	R270 000	R 200
Existing river water extraction	R 95 000	R1 500
New river water extraction	R240 000	R 750
Borehole development	R335 000	R 750

3.5 GATE HOUSE

The gate house will comprise a masonry structure constructed from concrete blocks. The foot print of the structure will be 4 m x 4 m and have a toilet, general purpose room with plug points and a verandah.

3.6 MAIN STRUCTURE

The main structure will comprise the following:

1. A pack house.
2. An office block.
3. Canteen and ablutions.
4. A generator room.
5. A chemical store.
6. A wax store.
7. De-greening room.
8. Cold storage room.

3.6.1 Pack House

The pack house, with a total floor area of 3100 m^2, will have a height of 6 m to the eaves with a 5° roof slope. The structure will have a foot print of 100 m x 30 m and will have the office block attached to the southern façade, the seasonal worker's ablution and canteen attached to the south eastern gable end and the transformer room attached onto the eastern façade.

The structure will comprise a conventional portal frame design with a span of 25 m and bays at 5 m centres. It will have a lean-to of 5 m on the north eastern façade and has been designed with two entrances. Entrance 1 will be for receipt and entrance 2 will be for despatch. There will be no thoroughfare from any of the ancillary buildings into the pack house.

Roof cladding will be of *Kliplok* roof sheeting with on sheet of polycarbonate translucent sheeting per bay. A roof vent will be fitted to the apex of the structure which will, together with the polycarbonate sheeting, assist with thermal control.

Side cladding will comprise *Kliplok* for up to 4,5 meters and thereafter polycarbonate sheeting up to the eaves. The introduction of the polycarbonate sheeting will assist in the reduction of lighting requirements. Dwarf walls will form the first 600 mm of the sides of the structure which will assist with vermin control and bird proofing will be installed to prevent access to birds.

Due to the polycarbonate translucent sheeting additional insulation will not be possible.

The structure will have areas dedicated to :

1. Receipt of the fruit.
2. Sorting and packing of the fruit into various categories. This will include an area dedicated for distribution to the local markets.
3. A despatch area for fruit dedicated to the export market.
4. Carton assembly and storage.
5. De-greening room.
6. Cold storage room.

3.6.2 **Offices**

The office block, with a total floor area of 74 m^2 will comprise a reception area with 25 m^2 of open plan office space, first aid room, kitchenette, unisex toilet suitable for disabled people and two offices.

The roof of this building will be clad with *Kliplok* on insulation on timber rafters all at a pitch of 5° and the floor will have a vinyl finish throughout.

The chemical store and the wax store will be located alongside the office block and will be constructed from concrete blocks. The chemical store will have an area capable of catering for spillages.

3.6.3 Canteen and Ablutions

The canteen and ablutions, with a total floor area of 174 m^2 will comprise a canteen with 66 m^2 of open plan, a toilet for disabled people and changing rooms with ablutions for male and female seasonal workers.

This building will be clad with *Kliplok* on insulation on timber rafters all at a pitch of 5° and the floor will have a vinyl finish throughout.

3.6.4 Generator Room

The generator will be housed in a purpose made container situated on a concrete slab with an bund area to cater for fuel spillages.

3.7 MECHANICAL EQUIPMENT

Due to the various fruit cultivars produced and to protect the fruit from damage during transport, sorting of the fruit as close to the source as possible is necessary. To address this need, automated sorting equipment is required.

We have visited a number of pack houses and had extensive discussions with the local farmers and the fruit exporters in this regard. There is a large variety of sorting equipment on the market which is being upgraded constantly. Most of this equipment is imported. The exporter has indicated that, in their experience, there are only two suppliers on the South African market who have adequate local support. These are Compac Sorting Equipment and Dormas. For the budgetary purposes of this report we have obtained budget prices from the suppliers and have used that of Compac Sorting Equipment and made an allowance of 16 % to cater for exchange fluctuations.

3.8 DE-GREENING ROOM

To allow for early and more controlled picking of the fruit a de-greening room is essential. Fruit is picked at the correct sugar content and then chemically and heat treated in the de-greening room before packing. To save costs, allow better product flow and later installation of the rooms, it is preferable to install de-greening rooms inside the ware house structure. De-greening rooms are also designed on the same principal as cold rooms but operate at higher temperatures. For the purpose of this development a 20 m x 20 m de-greening room has been selected which will address the current need of the farmers.

3.9 COLD ROOM

Cold rooms are required for holding the fruit after packing until such time as it can be transported. The exporter determined that cold storage for 60 palettes would be adequate at this stage. For the same reasons as above it is preferable to install cold rooms inside the ware house structure. For the purpose of this development a 220 bin cold room has been selected which will address the current need of the farmers.

3.10 ELECTRICAL SUPPLY

The current electrical supply will have to be upgraded to cater for the new installation. Although the total demand can only be established once the mechanical equipment has been finalised, all information at hand indicates that the total demand will be in the order of 200 kVA. As the current supply is 100 kVA, upgrading of the supply will be required. Application has been made to ESKOM but no response has been received to date.

4. ESTIMATED COSTS AND PHASING OF THE PROJECT

4.1 OPERATING EXPENSES

The operating expense of a plant of this nature is :

Year 1

Mechanical equipment is under guarantee	R 000 000
Running cost of plant	R 600 000
Anticipated labour cost	R 1 500 000
Total	R 2 100 000

Years 2 – 4 (calculated per year)

Mechanical equipment maintenance costs	R 100 000
Running cost of plant	R 660 000
Anticipated labour cost	R 1 600 000
Total	R 2 360 000

Years 5 – 8 (calculated per year)

Mechanical equipment maintenance costs	R 250 000
Running cost of plant	R 720 000
Anticipated labour cost	R 1 800 000
Total	R 2 770 000

The anticipated electrical costs at current rates would be to the order of R35 000 per month which is included in the costs as provide above. Monthly running costs of a diesel driven generator would be to the order of R130 000 which will mean an extra monthly expenditure of R 95 000. Although this will have a significant influence on the profit margin we are of the opinion that it will be manageable in the short term.

Labour costs and turn-over of the past year was obtained from the two largest farms. The 3rd farm's figures are estimated using the available data. Based on this the current figures are as follows:

Turn-over	R 12 600 000
Farming costs (estimated)	R 5 000 000
Running cost of current plant	R 800 000
Labour cost	R 3 500 000
Profitability	R 3 300 000

Based on the above and the farming of the current cultivars the proposed plant profitability will be as shown below. There will be sufficient finance to run the generator if this is needed.

Turn-over	R 12 600 000
Farming costs (estimated)	R 5 000 000
Running cost of the plant	R 320 000
Generator costs	R 920 000
Labour cost	R 3 500 000
Profitability	R 2 860 000

4.2 BUDGET

The original budget presented in the Situation Report of 2012 was R26m excluding VAT. As a result of escalation and the need to apply for electrical upgrade from ESKOM the budget has to be revised. To date it was however not possible to get a quote from ESKOM for the electrical supply so this has been estimated.

A preliminary estimated cost for the development is set out in the table below. The estimate is based on quotes received from suppliers and where applicable, rates from recent contracts. In line with the discussion of paragraph 3.4 the cost for the rain water harvesting system has been included.

Regulatory requirements require that an architect be appointed for a structure of this size. Accordingly we include a quote from Osmond Lange to complete this work. It is our recommendation that Osmond Lange be appointed as a reimbursable expense to Lukhozi in this regard.

CONSTRUCTION COSTS

Building works inclusive of the pack house structure	R 10 900 000
Generator	R 900 000
Security fence and lighting	R 200 000
Road works	R 1 200 000
Rain water harvesting	R 270 000
Electrical connection	R 2 650 000
Mechanical equipment	R 7 400 000
Cold room storage	R 4 300 000
Sub-total	R 27 820 000
VAT	R 3 894 800
Total	**R 31 714 800**

PROFESSIONAL FEES AND REIMBURSABLE EXPENCES

Basic Professional Fees	R	3 044 394
Disbursements	R	114 000
Lump Sums for Additional Services	R	221 000
Provisional Sums for Selected Specialists & Supplementary & Other Services	R	556 200
Additional Services agreed with DRDAR (Architect)	R	397 673
Add Handling fee (As per Tender at 3 Percentage)	R	11 930
Sub-total 1	R	4 345 197
Add 15 % Contingencies	R	651 780
Sub-total 2	R	4 996 977
Add 14 % VAT	R	699 577
Total	**R**	**5 696 553**

TOTAL BUDGET REQUIRED IF CONSTRUCTED IN ONE PHASE

Construction costs	R	27 820 000
Professional fees and reimbursable expenses	R	4 996 977
Sub-total	R	32 816 977
VAT	R	4 594 377
Total	**R**	**37 411 353**

The farmers are in the process of preparing to plant new root stock (which will be producing in three years time) which will significantly influence their exposure to the market. The current orchards have a picking season from April to August whereas the new cultivars will be from March to October. The resultant will be a better spread of the picking and packing activities throughout the year which has an improved financial return. Due to the continuous changes of the industry and the significant variable cost difference between the different cultivars it is at this stage impractical to determine unit costs of the produce.

In line with this we embarked on an exercise to determine the best way to break the project up in phases. The structure can be divided into two different phases by reducing the warehouse area by 20 %. The resultant will be a saving of R900 000. The civil works can also be divided by eliminating the hardstands at this stage. This will have a further reduction of R350 000. At only 4 % of the total budget this is considered insignificant.

In lieu of the above and in light of the current budget, the escalated cost and the estimated time frame to complete the project it is recommended that the main construction work to be completed and the mechanical equipment be installed as a second phase to the main construction activities. This would also enable spreading of the budget over two financial years.

PHASE 1 CIVIL AND STRUCTURAL CONSTRUCTION

CONSTRUCTION COSTS

Building works inclusive of the pack house structure	R	10 900 000
Generator	R	900 000
Security fence and lighting	R	200 000
Road works	R	1 200 000
Rain water harvesting	R	270 000
Sub-total	R	13 470 000
VAT	R	1 885 800
Total	**R**	**15 355 800**

PROFESSIONAL FEES AND REIMBURSABLE EXPENCES

Basic Professional Fees	R	2 000 000
Disbursements	R	57 000
Lump Sums for Additional Services	R	110 500
Provisional Sums for Selected Specialists & Supplementary & Other Services	R	312 000
Additional Services agreed with DRDAR (Architect)	R	397 673
Add Handling fee (As per Tender at 3 Percentage)	R	11 930
Sub-total 1	R	2 889 103
Add 15 % Contingencies	R	325 890
Sub-total 2	R	3 214 993
Add 14 % VAT	R	450 099
Total	**R**	**3 665 092**

BUDGET REQUIRED

Construction costs	R 13 470 000
Professional fees and reimbursable expenses	R 3 214 993
Sub-total	R 16 684 993
VAT	R 2 335 899
Total	**R 19 020 892**

PHASE 2 MECHANICAL AND ELECTRICAL INSTALLATIONS

CONSTRUCTION COSTS

Electrical connection	R 2 650 000
Mechanical equipment	R 7 400 000
Cold room storage	R 4 300 000
Sub-total	R 14 350 000
VAT	R 2 009 000
Total	**R 16 359 000**

PROFESSIONAL FEES AND REIMBURSABLE EXPENCES

Basic Professional Fees	R 1 044 394
Disbursements	R 57 000
Lump Sums for Additional Services	R 110 500
Provisional Sums for Selected Specialists & Supplementary & Other Services	R 244 200
Additional Services agreed with DRDAR (Architect) and Additional Handling fee (As per Tender at 3 Percentage)	R -
Sub-total 1	R 1 456 094
Add 15 % Contingencies	R 325 890
Sub-total 2	R 1 781 984
Add 14 % VAT	R 249 478
Total	**R 2 031 462**

BUDGET REQUIRED

Construction Costs	R 14 350 000
Professional fees and reimbursable expenses	R 1 781 984
Sub-total	R 16 131 984
VAT	R 2 258 478
Total	**R 18 390 462**

TOTAL BUDGET REQUIRED FOR PHASES 1 & 2

Construction Costs	R 27 820 000
Professional fees and reimbursable expenses	R 4 996 977
Sub-total	R 32 816 977
VAT	R 4 594 377
Total	**R 37 411 353**

5. PROGRAMMING OF THE WORKS

Construction of the pack house and the auxiliary civil works is estimated at 9 months. Having taken cognisance of the time required for tender documentation and award we are of the opinion that Phase 1 should commence with immediate effect with the intention of getting a contractor on site by 1 March 2016 to complete construction by December 2016. Construction of Phase 2 should commence in January 2017 with final completion by May 2017. A proposed programme is as follows:

PHASE 1

Tender documentation ..... August 2015 – 14 November 2015
Approval of tender documentation ..... 14 November 2015 – 28 November 2015
Tender period ..... 28 November 2015 – 15 January 2016
Closing of tenders ..... 15 January 2016
Tender adjudication and award ..... 15 January 2016 – 12 February 2016
Submission of construction documentation ..... 12 February 2016 – 11 March 2016
Construction period ..... 11 March 2016 - December 2016

PHASE 2

Tender documentation .....2 May 2016 – 9 September 2016
Approval of tender documentation .....9 September 2016 – 23 September 2016
Tender period .....26 September 2016 – 14 October 2016
Closing of tenders.....14 October 2016
Tender adjudication and award .....14 October 2016 – 14 November 2016
Submission of construction documentation.....14 November 2016 – 3 January 2017
Construction period .....9 January 2017 - 1 May 2017

6. CONCLUSION

In summary of the above we recommend the following:

1. The pack house with the auxiliary buildings be constructed.
2. That the rain water harvesting alternative be implemented.
3. That construction project be undertaken in two phases but under one contract with Phase 1 comprising the structural and civil works and Phase 2 the cold and de-greening rooms and mechanical and electrical works.
4. That Osmond Lange be appointed for the architectural scope of the works.

We trust the above to meet with your approval and look forward to further instructions.

L.J. COETZER
for **LUKHOZI CONSULTING ENGINEERS (PTY) LTD**

LUKHOZI CONSULTING ENGINEERS (PTY) LTD
Kwa-Lukhozi
The Quarry
Quartzite Drive
Selborne
EAST LONDON
5201

TEL.: 043 – 721 1321
FAX.: 043 – 721 1330
E-MAIL: el@lukhozi.co.za
www.lukhozi.co.za

7 August 2015

619.rep/lb