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## Citrus Rail Operations and Cost Assessment 2011

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The rail / road debate continues into the 2012 citrus season with modest progress towards revitalizing the citrus rail volume base. The CGA's focus on rail development enters the third year in 2012, while much effort has been made with liaison between Transnet Freight Rail (TFR), Limpopo Department of Roads and Transport (LDRT) and the growers of Limpopo, the future of citrus rail still hangs in the balance. The CGA remains optimistic and we are lead to believe that rail endeavours are to receive some gusto on the part of TFR in the 2012 year.

Citrus rail transport operates on two platforms namely:

1. Citrus conventional break-bulk ambient rail: the conventional method of railing citrus from a packhouse or siding yard to a port receiving terminal or cold store. The common 'O' type wagons are used to transport 24 standard height pallets and the refurbished 'CX 6m Containers' are intended to transport 24 high cube pallets. In 2011 only the Letsitele area railed a few wagons to the Durban and Maputo ports.
2. Citrus Reefer Container Rail: a development that has been in operation in the citrus industry for 5 seasons but the full potential is still yet to be established. Empty Reefer containers are railed from a siding in port e.g. Durban to an inland rail head, the containers are offloaded and trucked to either a packhouse or inland freight station for the containers to be stuffed with citrus. The containers are then railed back to port and delivered to terminal stacks. This operation has been operating in Letsitele for a number of years and Groblersdal entered in 2011. There is still work continuing to introduce this operation in Polokwane for the greater Limpopo and Zimbabwe region to use the service.

### Recommended Reading

- <http://www.cga.co.za/site/files/5438/RSA%20CGA%20Rail%20e.pdf>
- <http://www.cga.co.za/site/files/5438/CGA%20-%20Maputo%20Port%20Citrus%20Operations%20and%20Logistics%20Cost%20Assessment%202011.pdf>

### CGA Progressing on Citrus Rail Developments

The CGA actively engages with Transnet Freight Rail executives and management, local government and industry to mobilize efforts to increase citrus rail activity. In March 2011 an industry workshop was held in Letsitele to discuss rail developments, this was well supported. In July 2011 a MOU was signed between TFR and Limpopo Department of Roads and Transport (LDRT). In August 2011, the Limpopo MEC for Transport as well as other senior staff from the department of transport and department of economic development were hosted in Letsitele. The purpose of this exercise was to inform and request assistance from the MEC and the department for facilitation of much needed rail developments in the area. In November 2011, as a follow up, letters were sent to the MEC LDRT, Mr Siyabonga Gama CE, TFR and Mr Themba Gwala, GM CAB (TFR) to encourage active involvement and development of a citrus rail workgroup with the inclusion of the CGA and growers, a response is yet to be received. Although disheartened by the fact that there is no apparent progress underway toward the established of a citrus rail workgroup with involvement from LDRT, TFR, CGA and Limpopo citrus growers, the CGA will continue to actively engage on rail developments for Limpopo. The strategic nature of citrus rail for Limpopo goes without saying,

1. To increase the effectiveness of citrus supply to the Maputo and Durban ports.
2. To offer the Limpopo citrus producing region a competitive and effective means of citrus transportation.
3. To reduce the effects of road transportation on the South African road networks.
4. To mitigate product losses during transportation.
5. To create long term sustainability to the Limpopo citrus producing region.

### Citrus Conventional Break-bulk Ambient Rail

It is common knowledge that rail requires high volumes of homogeneous types of cargo which is moved over vast distances to compete competitively with road transport. Scoping the citrus production demographics indicates that the Limpopo citrus region remains the most viable region to capitalize on rail advantages. However there exists three levels of difficulties facing this mode of citrus rail transportation,

1. Pricing: as can be seen from the tables below rail transport pricing involves the use of road trucks to transport citrus to a siding yard and a forklift to offload from trucks and reload to rail. Another factor to consider which is not incorporated into the rail pricing structure is the need for rail operators to provide the link between the growers and TFR. TFR do not provide a service directly to growers and therefore the rail price includes a third party commission – much like a transport broker. Therefore the rail price cannot compete with road transportation on this type of service to Durban. ***However in saying that there does exist a competitive pricing structure to rail from Limpopo to Maputo port.***
2. Equipment, capacity and efficiency:
  - a. On the equipment side it has been indicated that there are a mere ~200 'O' type wagons remaining in service. Since the industry stacks pallets as high cube (one additional layer) for containerized shipping (70% by volume), TFR developed the 'CX 6m Container' to transport 12 high cube pallets with 2 x 6m containers per rail wagon (24 pallets per wagon). The unfortunate circumstance is that due to the internal dimensions, only 10 citrus pallets can be loaded into each container permitting only 20 pallets per wagon. There are believed to be 240 wagons developed using 'CX 6m Containers'. This is another factor influencing the rail price due to the ability for road vehicles to transport 24 high cube pallets.
  - b. Capacity still remains problematic. On the Natcor line to Durban containers and Metro trains moving between Gauteng and Durban constrict general freight trains. All citrus traffic from Limpopo has been transferred to the Natcor line away from the Swaziland line due to coal trains constraining the Swazi corridor line. This presents a problem for the Hoedspruit region to rail to Durban.
  - c. One of the main requirements for rail to operate effectively is for block trains to be routed to port. Due to the severe decrease of volume of citrus rail; especially from Hoedspruit and Letsitele, service levels have been impacted. Less than block trains are routed with general freight and this requires consolidation adding to the transit time to port. It has been recorded that in some instances, especially in 2010 some wagons remained undelivered for up to 12 days to Durban and 6 days to Maputo.
3. Infrastructure: MPT in Maputo is the predominant receiving point for citrus so rail routed to MPT works effectively and there are no known infrastructure problems routing citrus to Maputo. Rail lines have been recently re-commissioned between Komatipoort and Maputo. However in Durban, of the 10 citrus receiving points, only 3 points can effectively receive rail at this time. One these points are located in Isipingo (30 km south of Durban) which causes a further 2 days delay. This is a major obstruction for the redeployment of citrus rail volumes for transporting break-bulk ambient to Durban. Citrus receiving points which are able to accept citrus in Durban are, FPT Durban in Point, 333 Logistics in Sydney Road and Ethekwini Cold Stores in Isipingo. There is a possibility for Bayhead Cold Stores to be audited and approved to accept rail.

There still exists a niche area where break-bulk ambient rail can provide an efficient and effective service:

1. Route all Russia packed fruit from Letsitele and Hoedspruit directly to either MPT Terminal in Maputo or to FPT Terminal in Durban – or where the ships call to load. 95% of all citrus routed to Russia is carried by break-bulk ships and all is stacked as standard height pallets. This will permit the use of ‘O’ type wagons.
2. Route all Europe and UK fruit that is targeted for the NYKCool and Seatrade break-bulk vessels directly to MPT terminal in Maputo and FPT terminal in Durban – or where the ships call to load. This will permit the use of ‘O’ type wagons.

#### Recommendations:

1. For the ‘CX 6m Containers’ to be effective, they will have to be reconfigured to allow 12 high cube pallets to be loaded per container without obstruction from the side walls. Until such time it is thought these containers are deemed ineffective. Under the current circumstances a rate per pallet should be offered.
2. Due to the fact that TFR requires third party service providers to operate rail accounts, this adds to the rail pricing structure. In most cases the rail operators offering a service to the citrus industry are road transport brokers, there could be a conflict of interest. It is recommended for TFR to establish a mechanism to offer a direct service to the citrus industry that is void of also providing road transport alternatives.
3. Rail pricing is required to be more competitive, especially due to the need for road haulage of citrus to a siding and a forklift to load. This adds ~R60 per pallet to the cost of rail. Refer to cost structures below.
4. It is recommended that an active rail principle be commissioned / elected in Hoedspruit and Letsitele on behalf of growers to coordinate rail activity from the area. Specifically to coordinate block trains.

#### Citrus Reefer Container Rail

The Reefer container train has been in operation within the citrus industry for the past few years albeit with modest progress. It is thought that the potential for this development to contribute positively in the Limpopo region has been overlooked. At present Reefer containers are collected from Durban and railed to inland sidings of Tzaneen for routing to Letsitele and Pretoria (Pretcon) for routing to Groblersdal. The main benefits of this service are:

1. Reduce the landside cost of citrus exports. Packing reefer containers at production point or an inland consolidation and cross docking facility omits the need for road trucking to port cold stores, cross docking and re-trucking of containers to container terminals. Transport and handling charges are dramatically reduced.
2. Product cold chain and packaging integrity are benefited.
3. Seamless delivery of citrus containers into congested port terminals i.e. Durban.

There are many challenges that are requiring address for this service to gain momentum and achieve the anticipated potential in the Limpopo region:

1. Participation from shipping lines to release empty containers from port depots to inland areas. Turnaround time of containers can be increased by as much as 10 days. Shipping lines have equipment constraints and therefore increasing dwell time on containers in South Africa can become problematic.
2. It is deemed advantageous if TFR and industry were to collectively select a single citrus container rail service provider. The service provider would coordinate all operational activity and provide a total container solution including but not limited to empty container collection in port, railing of containers inland, routing of containers to packing facilities and the re-routing of containers to port.
3. A constraint at packhouse level is the consolidation of product, either at packhouse level or to consolidate from multiple suppliers for a single export agent. In most instances citrus is consolidated from multiple farms and packed together in container lots. This prevents the ability for a greater region

to participate in the service. Larger packhouses have the ability to consolidate container lots but it is still problematic. It has been identified that citrus consolidation facilities located in Letsitele and Polokwane could benefit by utilizing the citrus reefer container rail service. Based on the cost assumptions, the introduction of these facilities still adds value and cost savings compared to trucking citrus to port to be packed from a cold store or packing station.

4. Port stack time integrity is also a major obstruction. Lead time is required to assign a container shipment to a vessel and this requires different stages of planning. Stack time adjustments are inherently being adjusted on a continual basis as well as vessel arrival dates shifted due to delays etc. If a container misses a shipping opportunity and is delayed in port then penalties and costs are incurred, any potential saving is lost if shipments are delayed or miss a shipment.
5. Transnet Port Terminals, Transnet Freight Rail, Shipping Lines and the rail service provider must work closely to ensure the citrus reefer container train works in a systematic and synchronized manner. Any penalties and costs raised due to missed-shipments should be waived to entice industry to utilize the service.

#### Recommendations:

1. A joint partnership between Transnet, shipping lines and citrus growers should be formed for the establishment and development of citrus consolidation facilities in Letsitele and Polokwane. Citrus can be consolidated from the greater Limpopo and Zimbabwe region into Letsitele and Polokwane where containers can be packed and railed to port.
2. In the interim leased sites can be obtained in Letsitele and Polokwane – common user basis.
3. A single citrus container rail service provider should be commissioned to provide a full end-to-end service to the industry.
4. The formation of a citrus container rail working group consisting of TFR, TPT, shipping lines, rail operators and logistics agents.
5. A business plan should be commissioned by the CGA on behalf of the industry to identify the potential of this service for future development. Identify equipment, capacity, infrastructure, service and development criteria.

#### Container Rail Volume Projections

It is believed that Limpopo could potentially route 5 citrus reefer container trains in the short term with volume growth based on the future outlook on equipment, capacity and infrastructure developments.

Area	Rail Head	Trains per Week	Containers per Week	Pallets per Week	Weeks per Year	Trains per Year	Containers per Year	Pallets per Year
Groblersdal	Pretoria	1	33	760	12	12	456	9120
Letsitele	Tzaneen	2	33	760	12	24	912	18240
North Limpopo/Zimbabwe	Polokwane	2	33	760	12	24	912	18240
<b>Total</b>		<b>5</b>	<b>134</b>	<b>2280</b>		<b>60</b>	<b>2280</b>	<b>45600</b>

#### Citrus Rail vs. Road Comparative Pricing

The following conclusions can be drawn from the cost assessment,

1. Break-bulk Conventional Rail:
  - a. Loading citrus stacked as standards height pallets on rail does not seem to be cost effective to Durban from the greater Limpopo Region.
  - b. There is a pricing advantage to transport high cube pallets on rail from the following areas to Durban,
    - i. Hoedspruit and Letsitele from the Letsitele rail siding.
    - ii. The greater northern Limpopo and Zimbabwe region from Polokwane.
  - c. Loading citrus to rail from Hoedspruit and Letsitele to Maputo is hugely cost effective, this applies to 15kg and 17kg standard and high cube pallet stacking (Orange and Grapefruit

varieties). Areas of Dendron, Zebediela and Thohoyandou should consider loading citrus to Maputo by rail from Letsitele siding.

2. Citrus Container Rail:

- a. It appears there are cost advantages for the greater Limpopo and Zimbabwe region to consider the container rail as a viable option. This routed from a rail head in Polokwane.
- b. Advantages are clear when packing citrus in containers at the packhouse directly as in the case of Groblersdal and Letsitele.
- c. The use of consolidation facilities has the potential to add operational benefits while still allowing the service to run competitively. Letsitele and Polokwane are typical locations for this development.

Notes on the cost tables below:

1. Road Transport prices are based on Fleetwatch CPK value including tolls etc. 15kg Standard height pallets 28 pallets per truck and high cube 24 pallets per truck. 17kg standard height pallets = 32 pallets per truck and high cube pallets = 28 pallets per truck.
2. TFR rail prices is based on 2011 rates received and exclude rail operator fees. All 24 pallets per wagon lot.
3. Container train rail rates indicative (TFR) and include container haulage at both ends.
4. CFM rates are based on rates received from CFM.
5. Forklift loading costs are indicative.

**LIMPOPO COMPARATIVE COST OF RAILING BREAK-BULK VS. ROAD HAULIAGE (2011) - STANDARD HEIGHT PALLETS**

TRANSPORT MODE	ROAD HAUL	RAIL	RAIL	ROAD HAUL	RAIL	RAIL
INLAND RAIL SIDING	N/A	HOEDSPRUIT	LETSITELE	N/A	LETSITELE	POLOKWANE
PORT	MAPUTO	MAPUTO	MAPUTO	DURBAN	DURBAN	DURBAN
Description of Service	Citrus road transport to port on 7-axis trucks	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.	Citrus road transport to port on 7-axis trucks	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.

**15KG A15C CARTONS STACKED STANDARD HEIGHT = 70 CARTONS PER PALLET**

RATE IN COST PER PALLET							
Transport Costs per Pallet	Hoedspruit	429	50	n/a	625	125	250
	Zebediela	629	n/a	188	607	n/a	104
	Dendron	629	n/a	188	650	n/a	104
	Letsitele	518	125	50	625	50	188
	Pont Drift	707	n/a	333	714	n/a	271
	Tshipise	707	n/a	333	714	n/a	271
	Mzingwane (Zim)	786	n/a	417	786	n/a	354
	<i>Rail Siding Forklift Loading Cost per Pallet</i>	0	10	10	0	10	10
<i>TFR Rail Electricity Surcharge and Insurance</i>	0	20	20	0	20	20	
<i>TFR 'O' Type Rail cost per Pallet</i>	0	192	258	0	550	490	
<i>CFM 'O' Type Rail cost Komatipoort to Maputo per</i>	0	90	90	0	0	0	
Total Transport Cost per Pallet = Road Transport + Rail Siding Handling + Rail Transport Cost (TFR & CFM) & Levies	Hoedspruit	429	362	n/a	625	705	770
	Zebediela	629	n/a	566	607	n/a	624
	Dendron	629	n/a	566	650	n/a	624
	Letsitele	518	437	428	625	630	707
	Pont Drift	707	n/a	712	714	n/a	790
	Tshipise	707	n/a	712	714	n/a	790
	Mzingwane (Zim)	786	n/a	795	786	n/a	874

**17KG E15C/D CARTONS STACKED STANDARD HEIGHT = 55 CARTONS PER PALLET**

RATE IN COST PER PALLET							
Transport Costs per Pallet	Hoedspruit	375	50	n/a	547	125	250
	Zebediela	550	n/a	188	531	n/a	104
	Dendron	550	n/a	188	569	n/a	104
	Letsitele	453	125	50	547	50	188
	Pont Drift	619	n/a	333	625	n/a	271
	Tshipise	619	n/a	333	625	n/a	271
	Mzingwane (Zim)	688	n/a	417	688	n/a	354
	<i>Rail Siding Forklift Loading Cost per Pallet</i>	0	10	10	0	10	10
<i>TFR Rail Electricity Surcharge and Insurance</i>	0	20	20	0	20	20	
<i>TFR 'O' Type Rail cost per Pallet</i>	0	192	258	0	550	490	
<i>CFM 'O' Type Rail cost Komatipoort to Maputo per</i>	0	90	90	0	0	0	
Total Transport Cost per Pallet = Road Transport + Rail Siding Handling + Rail Transport Cost (TFR & CFM) & Levies	Hoedspruit	375	362	n/a	547	705	770
	Zebediela	550	n/a	566	531	n/a	624
	Dendron	550	n/a	566	569	n/a	624
	Letsitele	453	437	428	547	630	707
	Pont Drift	619	n/a	712	625	n/a	790
	Tshipise	619	n/a	712	625	n/a	790
	Mzingwane (Zim)	688	n/a	795	688	n/a	874

**TRANSPORT COSTS CALCULATION**

Cost per Truck Load = 24 pallets per Truck								
TRANSPORT COST PER TRUCK LOAD	Region	Maputo by Road	Hoedspruit Siding	Letsitele Siding	Durban by Road	Letsitele Siding	Polokwane Siding	
	Hoedspruit	12000	1200	n/a	17 500	3 000	6 000	
	Zebediela	17600	n/a	4500	17 000	n/a	2 500	
	Dendron	17600	n/a	4500	18 200	n/a	2 500	
	Letsitele	14500	3000	1200	17 500	1 200	4 500	
	Pont Drift	19800	n/a	8000	20 000	n/a	6 500	
	Tshipise	19800	n/a	8000	20 000	n/a	6 500	
	Mzingwane (Zim)	22000	n/a	10000	22 000	n/a	8 500	
	RAIL PRICE PER WAGON = 24 Pallets per Wagon							
	TFR RAIL PRICE FROM RAIL HEAD TO PORT			4600	6200		13200	11750
CFM RAIL PRICE KOMATIPOORT TO MAPUTO			2 160	2 160	0	0	0	

**LIMPOPO COMPARATIVE COST OF RAILING BREAK-BULK VS. ROAD HAULIAGE (2011) - HIGH CUBE PALLETS**

TRANSPORT MODE	ROAD HAUL	RAIL	RAIL	ROAD HAUL	RAIL	RAIL	
INLAND RAIL SIDING	N/A	HOEDSPRUIT	LETSITELE	N/A	LETSITELE	POLOKWANE	
PORT	MAPUTO	MAPUTO	MAPUTO	DURBAN	DURBAN	DURBAN	
Description of Service	Citrus road transport to port on 7-axle trucks	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.	Citrus road transport to port on 7-axle trucks	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.	Citrus road hauled by truck to an inland rail siding. The pallets then offloaded and reloaded in rail wagons using a forklift.	
<b>15KG A15C CARTONS STACKED AS HIGH CUBE = 80 CARTONS PER PALLET</b>							
<b>RATE IN COST PER PALLET</b>							
Transport Costs per Pallet	Hoedspruit	500	50	n/a	729	125	250
	Zebediela	733	n/a	188	708	n/a	104
	Dendron	733	n/a	188	758	n/a	104
	Letsitele	604	125	50	729	50	188
	Port Drift	825	n/a	333	833	n/a	271
	Tshipise	825	n/a	333	833	n/a	271
	Mzingwane (Zim)	917	n/a	417	917	n/a	354
Rail Siding Forklift Loading Cost per Pallet	0	10	10	0	10	10	
TFR Rail Electricity Surcharge and Insurance	0	20	20	0	20	20	
TFR 'CX Container' Type Rail cost per Pallet	0	192	258	0	550	490	
CFM Container Rail cost Komatipoort to Maputo per	0	90	90	0	0	0	
Total Transport Cost per Pallet = Road Transport + Rail Siding Handling + Rail Transport Cost (TFR & CFM) & Levies	Hoedspruit	500	362	n/a	729	705	770
	Zebediela	733	n/a	566	708	n/a	624
	Dendron	733	n/a	566	758	n/a	624
	Letsitele	604	437	428	729	630	707
	Port Drift	825	n/a	712	833	n/a	790
	Tshipise	825	n/a	712	833	n/a	790
	Mzingwane (Zim)	917	n/a	795	917	n/a	874
<b>17KG E15C/D CARTONS STACKED AS HIGH CUBE = 85 CARTONS PER PALLET</b>							
<b>RATE IN COST PER PALLET</b>							
Transport Costs per Pallet	Hoedspruit	429	50	n/a	625	125	250
	Zebediela	629	n/a	188	607	n/a	104
	Dendron	629	n/a	188	650	n/a	104
	Letsitele	518	125	50	625	0	188
	Port Drift	707	n/a	333	714	n/a	271
	Tshipise	707	n/a	333	714	n/a	271
	Mzingwane (Zim)	786	n/a	417	786	n/a	354
Rail Siding Forklift Loading Cost per Pallet	0	10	10	0	10	10	
TFR Rail Electricity Surcharge and Insurance	0	20	20	0	20	20	
TFR 'CX Container' Type Rail cost per Pallet	0	192	258	0	550	490	
CFM Container Rail cost Komatipoort to Maputo per	0	90	90	0	0	0	
Total Transport Cost per Pallet = Road Transport + Rail Siding Handling + Rail Transport Cost (TFR & CFM) & Levies	Hoedspruit	429	362	n/a	625	705	770
	Zebediela	629	n/a	566	607	n/a	624
	Dendron	629	n/a	566	650	n/a	624
	Letsitele	518	437	428	625	580	707
	Port Drift	707	n/a	712	714	n/a	790
	Tshipise	707	n/a	712	714	n/a	790
	Mzingwane (Zim)	786	n/a	795	786	n/a	874
<b>TRANSPORT COSTS CALCULATION</b>							
<b>Cost per Truck Load = 24 pallets per Truck</b>							
TRANSPORT COST PER TRUCK LOAD	Region	Maputo by Road	Hoedspruit Siding	Letsitele Siding	Durban by Road	Letsitele Siding	Polokwane Siding
	Hoedspruit	12000	1200	n/a	17 500	3 000	6 000
	Zebidiela	17600	n/a	4500	17 000	n/a	2 500
	Dendron	17600	n/a	4500	18 200	n/a	2 500
	Letsitele	14500	3000	1200	17 500	1 200	4 500
	Port Drift	19800	n/a	8000	20 000	n/a	6 500
	Tshipise	19800	n/a	8000	20 000	n/a	6 500
Mzingwane (Zim)	22000	n/a	10000	22 000	n/a	8 500	
<b>RAIL PRICE PER WAGON = 24 Pallets per Wagon</b>							
TFR RAIL PRICE FROM RAIL HEAD TO PORT		4600	6200		13200	11750	
CFM RAIL PRICE KOMATIPOORT TO MAPUTO		2 160	2 160	0	0	0	

**LIMPOPO COMPARATIVE COST OF PACKING CITRUS CONTAINERS PORT VS. INLAND LOADED (RAIL)**

LOCATION OF CONTAINER PACK STATION	DURBAN PORT	PACKHOUSE	PACKHOUSE	LETSITELE HUB	POLOKWANE HUB
INLAND RAIL HEAD	N/A	PRETORIA	TZANEEN	TZANEEN	POLOKWANE
PORT CONTAINER TERMINAL	DCT	DCT	DCT	DCT	DCT
Description of Service	Citrus road hauled to Durban and citrus packed in container in port. Container is road hauled ex packstation in Durban to DCT	Container ex Durban and railed to Pretcon. Road haul to Groblersdal packhouse and returned. Railed ex Pretcon to DCT.	Container ex Durban and railed to Tzaneen. Road haul to Letsitele packhouse and returned. Railed ex Tzaneen to DCT.	Citrus road hauled to Letsitele Hub. Container ex Durban and railed to Tzaneen. Road haul to Letsitele Citrus Hub and returned. Railed ex Tzaneen to DCT.	Citrus road hauled to Polokwane Hub. Container ex Durban and railed to Polokwane. Road haul to Polokwane Citrus Hub and returned. Railed ex Polokwane to DCT.

**15KG A15C CARTONS STACKED HIGH CUBE = 80 CARTONS PER PALLET**

RATE IN COST PER PALLET						
Transport Costs to Pack Station per Pallet: 7 Axle Rig	Groblersdal	521	0	n/a	n/a	n/a
	Zebediela	708	n/a	n/a	n/a	104
	Dendron	783	n/a	n/a	n/a	104
	Letsitele	729	n/a	0	42	188
	Pont Drift	833	n/a	n/a	n/a	271
	Tshipise	833	n/a	n/a	n/a	271
	Mzingwane (Zim)	917	n/a	n/a	n/a	354
Handling Cost per Pallet	210	0	0	100	100	
Container Transport Costs from Pack Station to DCT per Pallet	100	734	825	825	700	
Total Transport and Handling per Pallet = Road Transport + Packstation handling + Container Transport (Road / Rail)	Groblersdal	831	734	n/a	n/a	n/a
	Zebediela	1 018	n/a	n/a	n/a	904
	Dendron	1 093	n/a	n/a	n/a	904
	Letsitele	1 039	n/a	825	967	988
	Pont Drift	1 143	n/a	n/a	n/a	1 071
	Tshipise	1 143	n/a	n/a	n/a	1 071
	Mzingwane (Zim)	1 227	n/a	n/a	n/a	1 154
RATE IN COST PER CARTON						
Transport Costs to Pack Station per Carton	Groblersdal	6.51	0.00	n/a	n/a	n/a
	Zebediela	8.85	n/a	n/a	n/a	1.30
	Dendron	9.79	n/a	n/a	n/a	1.30
	Letsitele	9.11	n/a	0.00	0.52	2.34
	Pont Drift	10.42	n/a	n/a	n/a	3.39
	Tshipise	10.42	n/a	n/a	n/a	3.39
	Mzingwane (Zim)	11.46	n/a	n/a	n/a	4.43
Handling Cost per Carton	2.63	0.00	0.00	1.25	1.25	
Transport Costs from Pack Station to DCT per Carton	1.25	9.17	10.31	10.31	8.75	
Total Transport and Handling per Carton = Road Transport + Packstation handling + Container Transport (Road / Rail)	Groblersdal	10.39	9.17	n/a	n/a	n/a
	Zebediela	12.73	n/a	n/a	n/a	11.30
	Dendron	13.67	n/a	n/a	n/a	11.30
	Letsitele	12.99	n/a	10.31	12.08	12.34
	Pont Drift	14.29	n/a	n/a	n/a	13.39
	Tshipise	14.29	n/a	n/a	n/a	13.39
	Mzingwane (Zim)	15.33	n/a	n/a	n/a	14.43

**17KG (E15C/D) CARTONS STACKED HIGH CUBE = 65 CARTONS PER PALLET**

RATE IN COST PER PALLET						
Transport Costs to Pack Station per Pallet: 7 Axle Rig	Groblersdal	446	0	n/a	n/a	n/a
	Zebediela	607	n/a	n/a	n/a	89
	Dendron	671	n/a	n/a	n/a	89
	Letsitele	625	n/a	0	42	161
	Pont Drift	714	n/a	n/a	n/a	232
	Tshipise	714	n/a	n/a	n/a	232
	Mzingwane (Zim)	786	n/a	n/a	n/a	304
Handling Cost per Pallet	210	0	0	100	100	
Container Transport Costs from Pack Station to DCT per Pallet	100	734	825	825	700	
Total Transport and Handling per Pallet = Road Transport + Packstation handling + Container Transport (Road / Rail)	Groblersdal	756	734	n/a	n/a	n/a
	Zebediela	917	n/a	n/a	n/a	889
	Dendron	981	n/a	n/a	n/a	889
	Letsitele	935	n/a	825	967	961
	Pont Drift	1 024	n/a	n/a	n/a	1 032
	Tshipise	1 024	n/a	n/a	n/a	1 032
	Mzingwane (Zim)	1 096	n/a	n/a	n/a	1 104
RATE IN COST PER CARTON						
Transport Costs to Pack Station per Carton	Groblersdal	6.87	0.00	n/a	n/a	n/a
	Zebediela	9.34	n/a	n/a	n/a	1.37
	Dendron	10.33	n/a	n/a	n/a	1.37
	Letsitele	9.62	n/a	0.00	0.64	2.47
	Pont Drift	10.99	n/a	n/a	n/a	3.57
	Tshipise	10.99	n/a	n/a	n/a	3.57
	Mzingwane (Zim)	12.09	n/a	n/a	n/a	4.67
Handling Cost per Carton	3.23	0.00	0.00	1.54	1.54	
Transport Costs from Pack Station to DCT per Carton	1.54	11.29	12.69	12.69	10.77	
Total Transport and Handling per Carton = Road Transport + Packstation handling + Container Transport (Road / Rail)	Groblersdal	10.74	9.17	n/a	n/a	n/a
	Zebediela	13.22	n/a	n/a	n/a	11.37
	Dendron	14.20	n/a	n/a	n/a	11.37
	Letsitele	13.49	n/a	10.31	12.20	12.47
	Pont Drift	14.86	n/a	n/a	n/a	13.57
	Tshipise	14.86	n/a	n/a	n/a	13.57
	Mzingwane (Zim)	15.96	n/a	n/a	n/a	14.67

**TRANSPORT COSTS CALCULATION**

ROAD TRANSPORT COSTS						
Region	Durban	N/A	Letsitele	Letsitele	Polokwane	
Groblersdal	12 500			0	0	
Zebediela	17 000			0	2 500	
Dendron	18 800			0	2 500	
Letsitele	17 500			1 000	4 500	
Pont Drift	20 000			0	6 500	
Tshipise	20 000			0	6 500	
Mzingwane (Zim)	22 000			0	8 500	

**CONTAINER RAIL COSTS**

Rail Head to Port	Durban	Pretcon - Durban	Letsitele - Durban	Letsitele - Durban	Polokwane - Durban
Rail Costs from Rail Head to DCT per Container	2 000	14 675	16 500	16 500	14 000