

TRAFFIC IMPACT ASSESMENT

Afro Fishing Fish Expansion Project, Quay 1,
Mossel Bay Harbour

Report Number 20190528



Date: May 2019

Revision 0

QUALITY ASSURANCE DATA

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LIST OF ABBREVIATIONS

TIA	Traffic Impact Assessment
WCG	Western Cape Government
TNPA	Transnet National Ports Authority
CBD	Central Business District
AMP	Access Management Plan
AMG	Access Management Guidelines (2016)
RAG	Road Access Guidelines (2002)
RDE	Roadside Development Environment
GLA	Gross Leasable Area
SATGRM	South African Trip Generation Rates Manual
LOS	Level of Service
DoT	Department of Transport
RDE	Roadside Development Environment
MR	Main Road
DR	Divisional Road

1 INTRODUCTION

1.1 Background

Urban Engineering (Pty) Ltd was appointed by Afro Fishing (Pty) Ltd to undertake a Transportation investigation pertaining to the proposed extensions at their current cannery in the Mossel Bay Harbour. A locality plan indicating Afro Fishing's position within the Harbour and Central Business District (CBD) has been included as Figure 1-1.



Figure 1-1 - Locality Plan

The extension will include the expansion of their current operations to include a fish meal and oil reduction process, freezing facility and cold store. The expansion will be operated from the old I&J facility adjacent to the current Afro Fishing facility. (refer to Figure 1-2 for a layout plan).



Figure 1-2 - Layout Plan

1.2 Project Proposal

The proposal entails the harvesting of industrial fish, e.g. anchovy, red-eye, etc., from local waters for the sole purpose of producing fishmeal and fish oil.

The overall expansion project will include the following:

1. Fish meal and oil reduction plant
2. Fish freezing plant
3. Cold store
4. Fish meal warehouse
5. New canned product warehouse

The plant will have a capacity to process 1 000 tons per day of raw fish. The proposed project will produce fish meal and fish oil products for export markets. The project will positively impact local service providers, the Mossel Bay economy, SMME's and ancillary industries. In terms of employment opportunities, the expansion will increase direct employment from 341 to approximately 560 persons.

Afro Fishing (Pty) Ltd envisages an investment of R350-400m in this project. The investment will diversify Afro Fishing into other fisheries, namely anchovy, sardinella and red-eye herring. The project will increase the canned fish production of which a large percentage of the canned fish production goes into the National Schools Nutrition Program for which Afro Fishing supplies 'affordable protein' for school feeding.

1.3 Objective of this report

The purpose of this investigation is to determine whether any additional traffic generated by the proposed development, will influence the surrounding road network within the immediate vicinity of the site.

The following methodology will be used to perform this investigation:

- i. Assess the traffic conditions on the existing road network
- ii. Assess the traffic generation effects of the proposed development
- iii. Superimpose (ii) on (i) and reassess traffic operations on the road network
- iv. Assess the interface conditions between the road network and the proposed development
- v. Highlight any traffic concerns resulting from the proposed development
- vi. Make recommendations

2 MOSSEL BAY HARBOUR

2.1 Background

Mossel Bay is the first place in South Africa discovered by the Portuguese in 1488 that developed into a town (Baumann & Winter, 2001). They were attracted to the site because of the sheltered bay and availability of fresh water. These features were also the reason for the development of the place into one of the first harbours on the Cape south coast for the export of local farmer's produce, mainly wheat and wool, as well as aloe juice and red ochre from Albertinia. The first documented evidence of the harbour's existence, dates back to photographs taken in 1864, which clearly shows a jetty in Varkens Bay as well as a large store on the site of the present railway line.

Today Mossel Bay is an active harbour catering for the fishing industry and the developing oil industry, which began with Mossgas in the late 1980s. Mossel Bay is the smallest of the commercial ports on the South African coast. It is also the only South African port that operates two offshore mooring points within port limits. It is home to one of only a few gas-to-liquids refineries around the world. The majority of the vessels calling at the port are relatively small.

2.2 Discovery of Gas Condensate

The recent discovery (Port Ready for Service, 2019) of a significant gas condensate in the Brulpadda zone of the Outeniqua Basin (175km offshore) has sparked renewed interest in Mossel Bay Harbour. The harbour will be expected to provide land and quay space for the logistics based operations, as well as marine services such as piloting, berthing, craft services and vessel and traffic control, to the vessels involved in the drilling expedition.

2.3 Transnet National Port Plan 2019

According to Transnet's National Ports Plan 2019 (TNPA, 2019), the current port activities are listed in Table 2-1. (Break Bulk or MPT as it is also referred to, consists of cargo that is handled in packages such as boxes, crates, bags, drums, machine parts, sacks, or refrigerated cargos such as fruit or meat.)

CATEGORY	TYPE OF OPERATION	DESCRIPTION
Freight Traffic	Break Bulk	Mainly coastwise import and export operations, mainly offshore supply and local fish industry
	Liquid Bulk	Import of crude and export of fuels coastwise
Other Services	Fishing	The port serves resident trawlers and accommodates fish processing plants
	Maritime Engineering	There is a 200t slipway facility, it caters primarily for repairs to trawlers up to 30m length
	Harbour Services	Related to port operations and cargo handling
	Maritime Commercial	Cruise vessels anchor in the bay and passengers are ferried to shore. The port accommodates a yacht club, restaurants, fish shop and recreational boating activities.
	Bunker Services	Bunker fuel is provided by tanker trucks

Table 2-1 - Current Port Activities

There are three (TNPA, 2019) port precincts, Quay 4, the Vincent Jetty and the Low-level Wharf. The Vincent Jetty Precinct accommodates part of the fishing industry as well as the ship-repair industry. The Low-level Wharf Precinct accommodates part of the fishing industry and the harbour breakwater. The Quay 4 Precinct accommodates the break bulk (MPT) terminal, and includes storage facilities for use by the liquid bulk industry.



Figure 2-1 - Mossel Bay Harbour - Berth Names

Comparing the theoretical harbour capacity, to the actual 2017/2018 volumes from the 2019 Ports Plan (TNPA, 2019), indicates that the harbour is currently operating far under capacity as indicated in Table 2-2.

CARGO TYPE	NUMBER OF BERTHS	ACTUAL VOLUME 2017/2018	THEORETICAL BERTH CAPACITY	UNITS
Break Bulk	3	11 579	110 000	Tons/year
Liquid Bulk	2	1 677 390	8 000 000	Kilolitres/year

Table 2-2 - Mossel Bay Harbour - Actual Volumes vs Capacity

2.4 Short, Medium- and Long-Term Planning for Mossel Bay Harbour

Based on the 2019 National Ports Plan (TNPA, 2019), the short medium and long term planning for Mossel Bay harbour is as follows:

SHORT TERM (2028)

- Break bulk storage area increases by 1 ha due to the new proposed port limits
- Commercial logistics to increase to 2 ha
- Maritime engineering activities to expand

MEDIUM TERM (2048)

- Port activities remain the same for the short to medium terms

LONG TERM (2048 AND BEYOND)

- Infill between 4 and quay 5 to provide quay length to accommodate an additional vessel
- Extension of the breakwater towards the north, including infill
- The existing maritime commercial at quay 5 to relocate to a new proposed location on the northern side of the port.
- Ann additional breakwater next to the new proposed marina.
- Land reclamation next to Quay 4 to provide additional storage area and quay length.

The short, medium- and long-term plans have been included as **ANNEXURE A** to this report.

3 MOSSEL BAY CENTRAL PRECINCT PLAN

The Mossel Bay Central Precinct Plan (WM de Kock Associates, 2013) was prepared in co-operation with the Transnet National Ports Authority to investigate and recommend the most suitable strategy for revitalizing the Central Business District (CBD). The report includes a in depth traffic and pedestrian investigation prepared by SMEC Consulting Engineers.

The findings of the transportation investigation have been summarised as follows:

- Louis Fourie Road and George Road are major corridors carrying traffic from the residential areas to the CBD. Marsh Street and Bland Street are major feeder into the CBD.
- Level of service relating to vehicular traffic and pedestrians was deemed acceptable.
- Minibus taxis form the means of public transport transporting commuters from the residential areas to the CBD.
- Based on visual observations, it was assumed that parking facilities in the Mossel Bay CBD were occupied between 60% and 100%. Parking bays at popular venues had a higher occupancy rate.

The report included detailed intersection analyses of various CBD intersections. In order to estimate future traffic volumes, 2012 traffic volumes were increased with a 10-year horizon based on one of three possible scenarios:

SCENARIO 1: 1% growth, or the “no action-option”

SCENARIO 2: 3% growth, or the “some intervention-option”

SCENARIO 3: 5% growth, or the “actively stimulating development-option”

Applying the above scenarios, the level of service for various intersections, were calculated. Four of the relevant intersections are listed below.

INTERSECTION	SCENARIO	AM PEAK HOUR		PM PEAK HOUR	
		LOS	V/C RATIO	LOS	V/C RATIO
Bland Street / Kloof Street	Scenario 1	C	0.419	C	0.296
	Scenario 2	C	0.503	C	0.359
	Scenario 3	C	0.588	C	0.437
Bland Street / Field Street	Scenario 1	B	0.156	B	0.113
	Scenario 2	B	0.192	B	0.138
	Scenario 3	C	0.234	B	0.169
Marsh Street / Kloof Street	Scenario 1	D	0.635	E	1.00
	Scenario 2	D	0.773	E	1.00
	Scenario 3	E	0.923	F	1.193
Marsh Street / Field Street	Scenario 1	E	1.000	E	1.000
	Scenario 2	E	1.000	E	1.000
	Scenario 3	E	1.000	E	1.000

Table 3-1 - Intersection Level of Service, based on 2013 Report

4 THE SURROUNDING ROAD NETWORK

Depending on which guidelines are being used, the nomenclature used in road classification varies slightly. For ease of reference, the differences between the terms used in the 2006 Department of Transport (DoT) Guidelines and those specified in 2010 in the Road Classification and Access Management Guideline (COTO), are listed below:

Road Class	Function	DoT 2006 Guidelines	COTO 2010 (TRH 26 Manual)
Class 1	Mobility	Primary Distributor	Principal Arterial
Class 2		Regional Distributor	Major Arterial
Class 3		District Distributor	Minor Arterial
Class 4	Access	District Collector	Collector
Class 5		Access Road	Local Street
Class 6		Non-motorised access way	Walkway

Table 4-1 - Road Classification Nomenclature

A limited number of the trips generated by the existing CBD and harbour area originate within these areas. Traffic is mainly the result of commuters that enter the CBD from the residential areas situated to the West and North West of the CBD. This link between the residential areas and the harbour/CBD is mainly provided by Louis Fourie Road, from where it feeds the Marsh Street and George Road corridors.

Marsh Street and George/Bland Road form the spine of the CBD and runs in an east-west direction. These roads terminate in The Point Area, which is a major tourism destination within Mossel Bay. Church Street runs in a north-south direction and intersects both of these roads. It provides a links with the CBD and the residential area to the South and the Harbour to the North.

The Mossel Bay Roads Master Plan was compiled by Hatch Goba in February 2015. The complete plan has been included as **ANNEXURE B** to this report, but an extract of the relevant section of the master plan has been included as Figure 4-1 below:

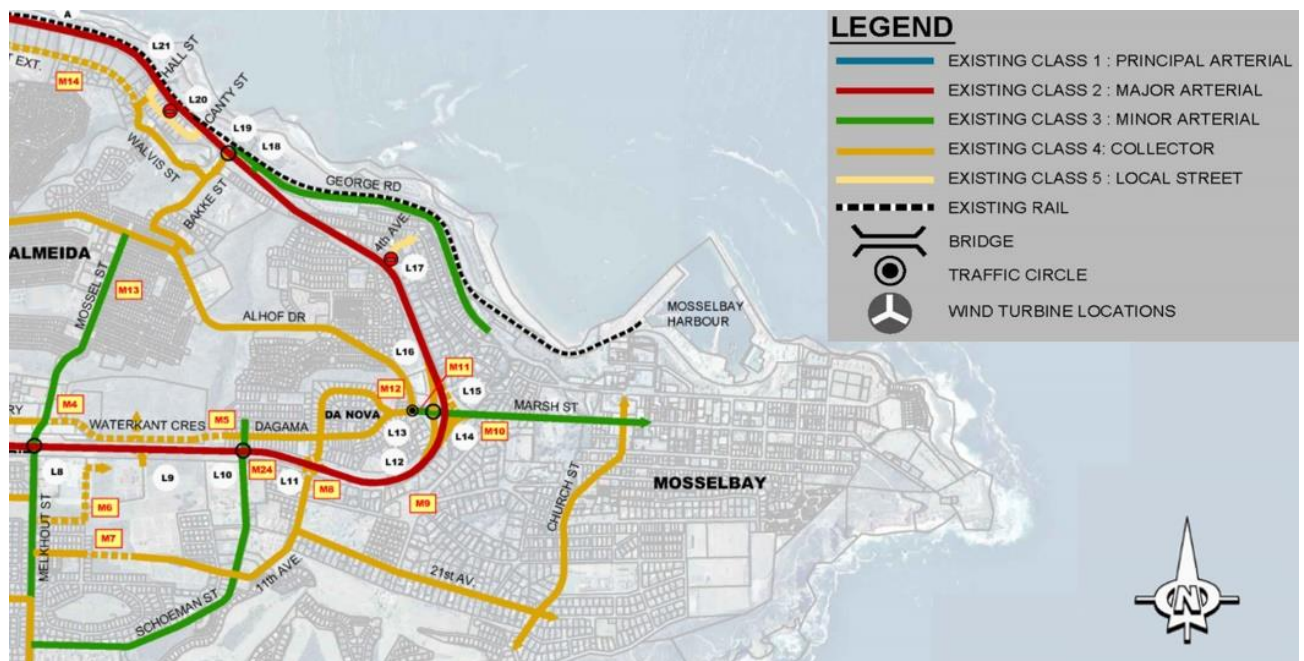


Figure 4-1 - Roads Masterplan

Based on Figure 4-1, Louis Fourie Road, March Street and Bland Street can be classified as follows:

- Louis Fourie: Class 2 Major Arterial
- Marsh Street and Bland Street: Class 3 Minor Arterial

According to the South African Road Classification and Access Management Manual (THR 26), these classifications are defined as follows:

Class 2 Major Arterials

Major arterials typically serve traffic in metropolitan areas, cities and medium to large towns where, they are used to provide general overall mobility to the whole city or town. Arterials are used to serve important economic activity centres that are not served by Class 1 arterials.

The Class 2 arterials are also be used to serve as connectors to rural Class 2 routes and should preferably start and stop at arterials of equal or higher Class (1 or 2).

Major arterials should be continuous routes with a minimum length of about 10 km. The arterial would typically carry large volumes of traffic of about 20 000 to 60 000 vehicles per day.

Class 3 Minor Arterials

Minor arterials are typically required to serve traffic in most urban areas, including small towns where they are used to provide connections between districts of the city or town and form the last leg of the journey on the mobility road network. They typically bring traffic to within one kilometre of its final destination, providing general overall mobility to the whole town. The arterials are also used to serve economic activity centres that are not served by Class 1 or 2 arterials.

They should preferably start and stop at arterials of equal or one higher Class (2 to 3), but can connect to Class 1 principal arterials.

Minor arterials function as through routes on a district scale. While still carrying predominantly through traffic, they serve shorter distance trips with a length of around 2 km, but can be as short as a single block if connecting higher order routes.

The minor arterials would typically carry volumes of traffic of between 10 000 and 40 000 vehicles per day.

5 EXISTING CANNERY

In order to better understand the actual and expected trip generation, a site inspection and meeting with the CEO of Afro Fishing was held on site on 07 July 2019. During the meeting, the following became evident with regards to the existing cannery:

- The bulk of the raw product (fish such as sardines) enter the site via fishing ships, directly from Mossel Bay Harbour. These ships dock at Quay 1 directly next to the cannery (refer to Figure 5-1) and fish are offloaded directly into the facility by means of mechanised conveyance systems.
- To keep up with demand, an additional 3-4 container trucks of fish are also transported via road freight from Port Elizabeth to Afro Fishing in Mossel Bay. These trucks enter the cannery via the only accessible gate situated along Bland Street (refer to Figure 5-1). Offloading of these trucks usually commence at 4am in the morning and by noon the trucks are ready to drive back to Port Elizabeth again.



Figure 5-1 - Transport of fish to the cannery

- Other deliveries to site include ingredients, packaging and low sulphur oil (LSO). These products are delivered to site via the road network, making use of trucks and small bakkies at a frequency of approximately 2 loads per week.
- Currently the cannery provides in excess of 300 direct and indirect employment opportunities. These range from “on site” jobs such as sorting and packing at the facility to various “offsite” jobs such as fishing and boat maintenance. The bulk of these workers make use of public transport to reach the cannery, while others make their way to fishing boats in a completely different section of the harbour. This was especially evident in the Afro Fishing parking area where there are only about 18-20 parking bays available while only approximately 55% of parking bays were occupied at the time of the inspection (refer to Figure 5-2).



Figure 5-2 - Parking Bay Occupancy

- The perceived low traffic impact is further substantiated by visual assessment of random historical aerial photographs of the site (refer to Figure 5-3 below) which indicated that on average, between 8 and 12 light vehicles and 0 heavy vehicles are parked at the cannery.

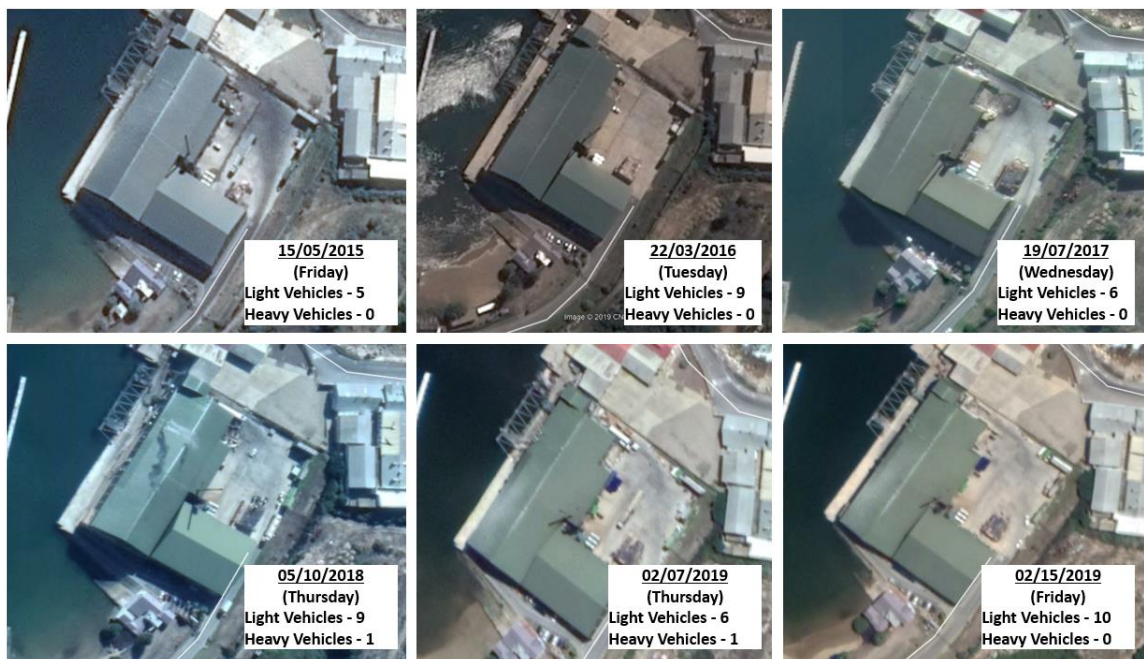


Figure 5-3 - Aerial Photographs of the Site

- Allowable, annual fishing quotas are usually finalised by mid-January. It is therefore customary for the fishing industry to close during the peak summer holiday season between mid-December and end-January. This off- season is usually used to perform routine scheduled maintenance.

6 NEW FISH MEAL AND OIL REDUCTION FACILITY, FREEZING FACILITY AND COLD STORE

The following is relevant to the expansion planned and the new proposed fish meal and oil reduction facility:

- It is envisaged that the new proposed facility will create in excess of 200 new job opportunities. Once again, the bulk of these workers will make use of busses and taxi's as means of transit.
- The proposed facility will also be subject to the fishing industry's mid-December to end January closure period. Just like with the cannery, this off-period will also be used to perform routine maintenance to the processing facility and undertake fishing vessels repairs and surveying.
- It is envisaged that fish meal production will increase from 4,444 tons within the first year, to approximately 6,667 tons in year three. Fish oil in the same period is estimated to increase from 800 tons to 1,200 tons. A breakdown of the planned production volumes is included as Table 6-1 below.

Production

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Fish landed	20000	25000	30000
Fish meal produced	4444	5556	6667
Fish oil produced in tons	800	1000	1200
Fish oil produced in litres	879121	1098901	1318681

Table 6-1 - Planned Production Volumes

6.1 Trip Generation

The expected, annual delivery schedule pertaining specifically to the proposed facility has been included as Table 6-2 below.

DESCRIPTION	NUMBER OF DELIVERIES PER ANNUM	TYPE OF DELIVERY
Fuel Oil (Low Sulphur Oil)	50	35 ton loads
EQ Antioxidant	3	1 ton bakkie loads
Fish Meal packaging	2	Truck Loads
Fish Oil Packaging	2	6m containers
Total Trips per annum	57	

Table 6-2 – Expected Annual IN” Traffic as a result of the Fish Meal and Oil Reduction facility

Until Mossel Bay harbour becomes an import/export harbour, the final product (Fish Meal and Oil) will be transported by means of container trucks along the road network. Using the annual production volumes specified in Table 6-1, and dividing it into 20t container volumes (21t for fish oil) it is possible to estimate the total number of containers (annually) that will leave the site with finished product as indicated in Table 6-3:

DESCRIPTION		YEAR 1	YEAR 2	YEAR 3
Fish Meal	Expected Annual Production	4,444 tons	6,900 tons	6,900 tons
	Capacity of one Container	20 tons	20 tons	20 tons
	Number of Containers per annum	222	345	345
Fish Oil	Expected Annual Production	800 tons	1,500 tons	1,500
	Capacity of one Container	21 tons	21 tons	21 tons
	Number of Containers per annum	38	71	71
Total Number of Containers per annum		260	416	416

Table 6-3 - Expected Annual "OUT" Traffic as a result of the Fish Meal and Oil Reduction Facility

Adding the total number of annual "IN" trips (Table 6-2) with the total number of annual "OUT" trips (Table 6-3) it follows that (besides the daily commute of workers to the facility) an additional 317 trips are expected to be added to the road network in the first year of operation. (This number increases to approximately 473 combined total trips for the second and third year of production). Using the worst-case scenario (473 trips) over a 11-month production period, results in an average of 43 additional trips per month or 2.15 trips per working day (20 working days per month) added to the surrounding road network. These trips are not expected to coincide with the current AM and PM peak hour periods and therefore the additional trip generation is deemed insignificant from a transportation point of view.

In the long term, the port of Mossel Bay will become an import/export port. When that happens the finished product will be exported directly via shipping lines and the road network not required.

6.2 Internal reticulation

Part of the lease agreement between Afro Fishing and Transnet National Ports Authority, included a provision that a gate could be installed between the existing Afro Fishing cannery site and the proposed Fish Meal and Oil Reduction facility. This gate will help to increase circulation between the two facilities and will help distribute traffic to and from the facilities as access will be possible via Portnet gates 2 and 3. Currently Afro Fishing only uses Portnet gate no 2. In other words, vehicles will have the option to either access the site via Bland Street or via Kloof street. (refer to Figure 6-1 below).



Figure 6-1 - New Access Gate Between Existing Cannery and New Proposed Facility

7 SUMMARY

Mossel Bay Harbour is a very important and strategic transportation and commercial node within the Southern Cape. In terms of freight volumes, it is currently one of the smallest harbours within the Transnet National Ports Authority's (TNPA) network. The harbour is currently operating at approximately 10% of its capacity in terms of Break Bulk and 20% of capacity in terms of Liquid Bulk. It is expected that the recent finding of oil condensate within the Southern Cape offshore region, will expedite the future long-term planning for Mossel Bay Harbour. Long Terms planning for the harbour includes expanding the harbour's import/export capabilities.

Mossel Bay Central Business District is the economic hub of Mossel Bay. It is important that traffic within the Central Business District is managed and optimized to limit transportation related delays.

The existing Afro Fishing Cannery is the ideal harbour business from a transportation impact point of view. Raw materials (fish) are delivered to the facility directly from fishing ships and trawlers, minimizing the impact on the surrounding road network.

The proposed Fish Meal and Oil Reduction facility is also expected to have a very low impact on the surrounding road network, since the proposed facility is expected to generate very low volumes of vehicular and truck traffic. The expected trip generation rate of the facility is very low, leading to an increase in job opportunities without negatively affecting the road network.

Both the existing Cannery and the new proposed facility will be closed during the summer holiday season, when the influx of visitors to the Mossel bay region, leads to increased pressure on the road network.

8 CONCLUSION

The proposed development of the Fish Meal and Oil Reduction facility is expected to have a very small impact on the surrounding road network and hence the development could be allowed to continue from a transportation point of view.

9 REFERENCES

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Prepared by:

Frans van Aardt (B.Eng, M.Eng, Pr.Eng)
(on behalf of Urban Engineering (Pty) Ltd)

ANNEXURE A
TNPA - SHORT, MEDIUM
AND LONG TERM
HARBOUR PLANS

MOSEL BAY - CURRENT LAYOUT



0 50 100 150 200
metres

4	BREAK BULK / MPT
6	FISHING
0.6	MARITIME ENGINEERING
0.03	COM. LOGISTICS
3	MARITIME COM.
5	TNPA OTHER
18.6	TOTAL

NOTE: AREAS IN HECTARES

- PORT LIMITS
- ROADS
- RAILWAY LINES



MOSSEL BAY - SHORT TERM LAYOUT - 2028



0 50 100 150 200
metres

5	BREAK BULK / MPT
6	FISHING
1	MARITIME ENGINEERING
2	COM. LOGISTICS
8	MARITIME COM.
5	TNPA OTHER
27	TOTAL

NOTE: AREAS IN HECTARES

- PORT LIMITS
- PROPOSED PORT LIMITS
- ROADS
- RAILWAY LINES



MOSSEL BAY - MEDIUM TERM LAYOUT - 2048



0 50 100 150 200
metres

5	BREAK BULK / MPT
6	FISHING
1	MARITIME ENGINEERING
2	COM. LOGISTICS
8	MARITIME COM.
5	TNPA OTHER
27	TOTAL

NOTE: AREAS IN HECTARES

- PORT LIMITS
- PROPOSED PORT LIMITS
- ROADS
- RAILWAY LINES



MOSSEL BAY - LONG TERM LAYOUT - BEYOND 2048



0 50 100 150 200
metres

5	BREAK BULK / MPT
4	FISHING
1	MARITIME ENGINEERING
2	COM. LOGISTICS
9	MARITIME COM.
40	TNPA OTHER
61	TOTAL

NOTE: AREAS IN HECTARES

- PORT LIMITS
- PROPOSED PORT LIMITS
- ROADS
- RAILWAY LINES



ANNEXURE B
MOSSEL BAY ROADS
MASTER PLAN



SEE SHEET 2

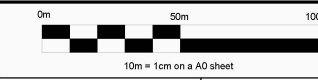
SEE SHEET 3

LEGEND

- EXISTING CLASS 1 - PRINCIPAL ARTERIAL
- EXISTING CLASS 2 - MAJOR ARTERIAL
- EXISTING CLASS 3 - MINOR ARTERIAL
- EXISTING CLASS 4 - COLLECTOR
- EXISTING CLASS 5 - LOCAL STREET
- EXISTING RAIL
- BRIDGE
- TRAFFIC CIRCLE
- WIND TURBINE LOCATIONS
- PROPOSED CLASS 1 - PRINCIPAL ARTERIAL
- PROPOSED CLASS 2 - MAJOR ARTERIAL
- PROPOSED CLASS 3 - MINOR ARTERIAL
- PROPOSED CLASS 4 - COLLECTOR
- PROPOSED CLASS 5 - LOCAL STREET
- PROPOSED CLASS 1 WALKWAY
- URBAN EDGE
- SIGNALISED INTERSECTION
- PARTIAL SIGNALISED INTERSECTION

- LOUIS FOURIE CORRIDOR MANAGEMENT PLAN**
- L1 Access to be closed off
 - L2 Re-align Flora rd opposite Croz Street and signalise new 4-way intersection.
 - L3 Access to be closed off
 - L4 Provide new signalised intersection towards Pinnacle Point
 - L5 Provide exclusive right and left turn slip lanes
 - L6 Access to be closed off
 - L7 4 Way Signalised Int. providing a new northern link to Bill Jeffrey Rd.
 - L8 4 Way Signalised Int. with protected left turn slip lane
 - L9 Left-in, Left-out (LILO) operation to Magistrates Court
 - L10 Schoeman Street Intersection Upgrade
 - L11 Exclusive right turn lane to 11th Ave, Melkhout St extended to Louis Fourie with LILO.
 - L12 Upgrade to 2 lane off ramp
 - L13 Widening over bridge to accommodate additional lane
 - L14 Marsh Street loop with an additional left turn slip lane
 - L15 Realign off-ramp to eliminate conflict with Plaza Av. Off ramp into dedicated left turn lane.
 - L16 Marsh Street intersection upgrade
 - L17 4th Avenue Access to be closed off in long-term.
 - L18 George Street realigned to form signalised intersection with Bakker St.
 - L19 Bakker Street intersection upgrade and realigned with revised George St. layout
 - L20 Direct access closed, Carnty Street access restrictions (median opening to IN only)
 - L21 Direct access closed, Hall Street access restrictions (median opening to OUT only)
 - L22 Private dwelling access (Blue waters House, Adventure ride) - restrict to LILO operation
 - L23 Park Crescent direct access closed & realigned to Kiewiet Cres. signalised intersection.
 - L24 Beach Blvd West intersection - Lower rail line and provide bridge over line.
 - L25 Maintain Signalised full-access control.
 - L26 Median break with protected right turn lanes to Agri retail & caravan facility.
 - L27 Watson Road upgrade to "Seagull Intersection" with partial signalisation
 - L28 Bally Cres. & Beach Blvd East upgrade to "Seagull Intersection" with partial signalisation
 - L29 Upgrade to "Seagull Intersection" with Via Apple Rd & provide Petro SA evacuation route
 - L30 Langeberg Mall Rd upgrade existing intersection and provide additional lane capacity
 - L31 Gericke Road - restrict to LILO operation on Louis Fourie. Extend to intersect Garret Rd.
 - L32 Viai Road Link extended to Garret Rd intersection.
 - L33 New Wassenaar under bridge to TR331 link connecting to Hartenzicht Str.
 - L34 Direct access to Louis Fourie Rd restricted to LILO operation
 - L35 Upgrade Boekenhul Av. 4 way intersection with dedicated left and right lanes
 - L36 Extend Swellendam Rd to Wassenaar St with median break & right turn protection
 - L37 Upgrade 4 way intersection with dedicated left and right lanes
 - L38 Signalised Waboom Intersection with dedicated left and right lanes

- SUPPORTING MUNICIPAL ROAD UPGRADES**
- M1 Extend Kreupelhout. To provide access to the proposed Technikon site.
 - M2 Extend Apiesdoring Street from Spekboom St to Flora Rd.
 - M3 Extend Grunter Road. Change Grunter/Bill Jeffreys to a 4-Way Signalised int.
 - M4 Change roundabout to a signalised intersection. Provide additional lanes and a left slip lane.
 - M5 Extend Bill Jeffrey Rd to provide access to new hospital site and link up with Da gama St. Review of geometry at Mossel St and Schoemans St int.
 - M6 New link from Melkhout St south of Mossel Bay Mall providing new access to Magistrates court.
 - M7 Provide parallel route between Heiderand and CBD
 - M8 Close off 10th avenue access onto 11th Ave for safety reasons.
 - M9 Upgrade to an urban road. Change 17th/18th/19th Ave. intersection to a roundabout.
 - M10 Additional right turning lane for the traffic turning right into Marsh street from Cape Road.
 - M11 Changed to a LILO intersection (access to Bayview shopping centre)
 - M12 Rationalising the T-junctions into a two lane roundabout.
 - M13 Dual Mossel street/Bill Jeffrey to Mossel Street/Alhof Street for northbound direction.
 - M14 Extend Walvis Rd to contour the topography parallel with TR 331 and terminate with cul-de-sac.
 - M15 Provide an additional right turning lane from Beach Blvd West into Beach Blvd East.
 - M16 New link between Depot Rd and Garret St to provide an additional route to and from Hartenbos.
 - M17 Upgrade subway to allow for two-way vehicle travel.
 - M18 Reimland Ave to be closed at Onderbos Ave. Access to filling station to be restricted to LILO operation.
 - M19 Rookven Smit provide a painted junction to prevent vehicles from blocking the entrance/exit to Lofty Nel Street.
 - M20 Changed to a 2-lane roundabout.
 - M21 Upgrade subway to accommodate 2-way traffic Investigate alternative route for evacuation.
 - M22 Extend Mayxhale Road (diamond int)
 - M23 Extend Adriaans Ave over the N2.
 - M24 Upgrade int. to provide a two lane approach for the northbound traffic along Schoeman Street.
 - M25 Wassenaar/Mossag link - route to be determined



NO.	DATE	ADDITIONS AND AMENDMENTS	APPROVED		DESIGNED BY:	S. STRANACK
			CONS.	PRE		
	FEB 2015				CHECKED BY:	C. MANCHIP
					DRAWN BY:	S. STRANACK
					CHECKED BY:	C. MANCHIP

PREPARED IN COLLABORATION WITH THE WESTERN CAPE GOVERNMENT TRANSPORT DEPARTMENT AND HATCH GOBA

MOSSEL BAY/MOSSEL BAYI/MOSSEL BAAI MUNICIPALITY/MASIPALA/MUNISIPALITEIT

MOSSEL BAY: ROAD MASTER PLAN

SCALE
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