Landside Logistics Supporting the Port of Durban

Paul Sessions

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1. Port of Durban

eThekwini Municipality


+/- 13000 HV per day
+/- 14500 HV per day
Durban South
Umbilo
Clairwood
Bluff
Ocean View
Cave Rock
Durban
M4
M7
M12
S. Coast Rd
Bayhead Rd
Maydon Rd
Bulk & Break Bulk Terminals
Solomon Mahlangu M7
Bluff Rd
Langeberg Rd
Container Terminals
A Check
Seafarer Rd
SARS
Iran Rd
Liquid Bulk Terminals
Bulk Terminals
Vehicle & Break Bulk Terminals
Anton Lembede St
Margret Mncadi Ave
Gladys Manzi Rd
Umgeni Rd
Market Rd
Cannongate Rd
Florence Nzama St
Sylvester Ntuli Rd
K E Masinga Rd
Tara Rd
Grays Inn Rd
Lighthouse Rd
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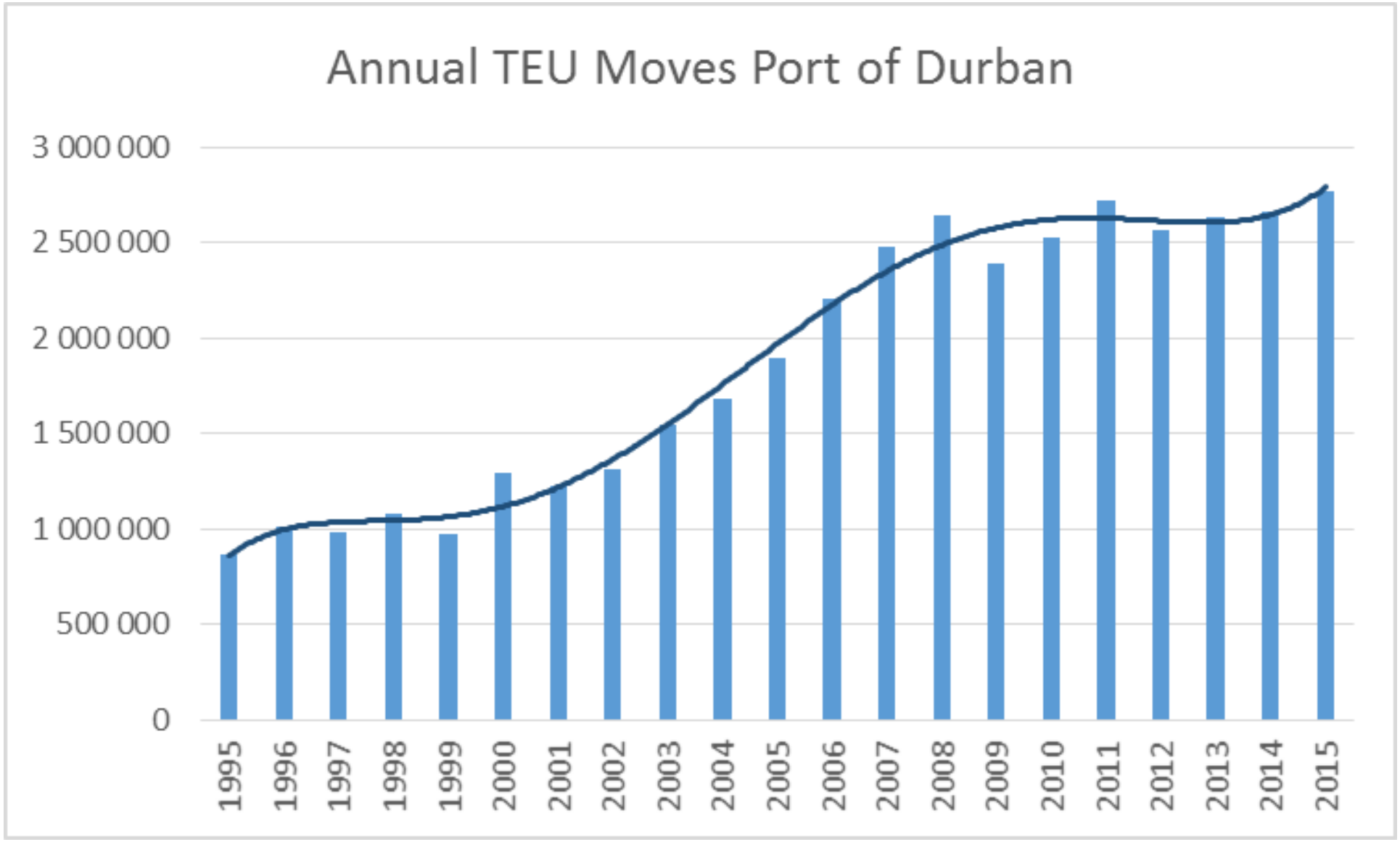
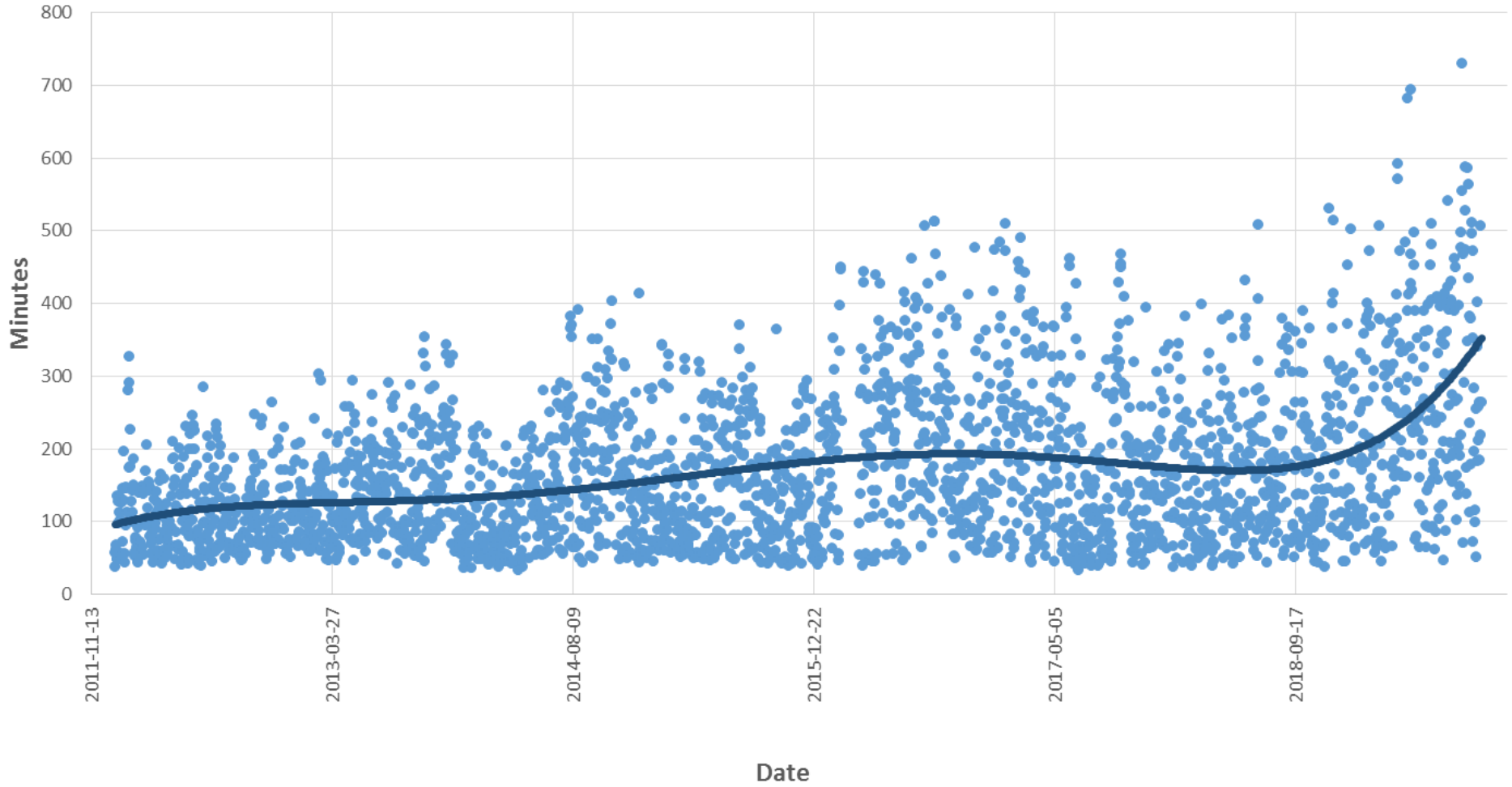

Annual TEU Moves Port of Durban
3 000 000
2 500 000
2 000 000
1 500 000
1 000 000
500 000
0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

Ave. Daily Pier 2 Truck Turnaround Time (minutes)

(excl. truck stuck outside port & between A-Check / Terminal)



South Africa's major logistics challenge

- In 2019 South Africa is ranked 143 out of 212 countries in the 'Trading Across Borders' ranking conducted by the World Bank
- We come:
  - 112th in hours to complete documentary compliance for imports @ 36 hours
  - 169th in hours to complete documentary compliance for exports @ 92 hours
  - 61st in documentary compliance cost to export @ US$ 55
  - 66th in documentary compliance cost to import @ US$ 73
  - 206th in total cost to export @ US$ 1257
  - 164th in total cost to import @ US$ 676
- Recently congestion has resulted in Shipping Lines bypassing Port of Durban or leaving before loading all exported cargo
- Freight is globally recognised as business' last opportunity for cost control, particularly in the sectors of manufacturing, mining, agriculture & construction.

Transnet Long Term Planning Framework (2017) Proposed Durban Port Expansion

Project	Addition TEU's	Thearetical Port Capacity	Year	Capacity Growth from 2019
2019 TEU Capacity		3,3 million TEU	2019	
DCT Berth Deepening	0,5 million TEU	3,8 million TEU	approx. +5 years	14,7%
Salisbury Island Infill	1,7 million TEU	5,5 million TEU	approx. +10 years	64,7%
DDOP Phase 1	2,4 million TEU	7,9 million TEU	approx. +20 years	135,3%

- Salisbury Infill anticipated to increase traffic by 57% to 75% of current levels
- Current freight corridors will exceed available capacity & the network/terminals will not function

Key Status Quo Findings

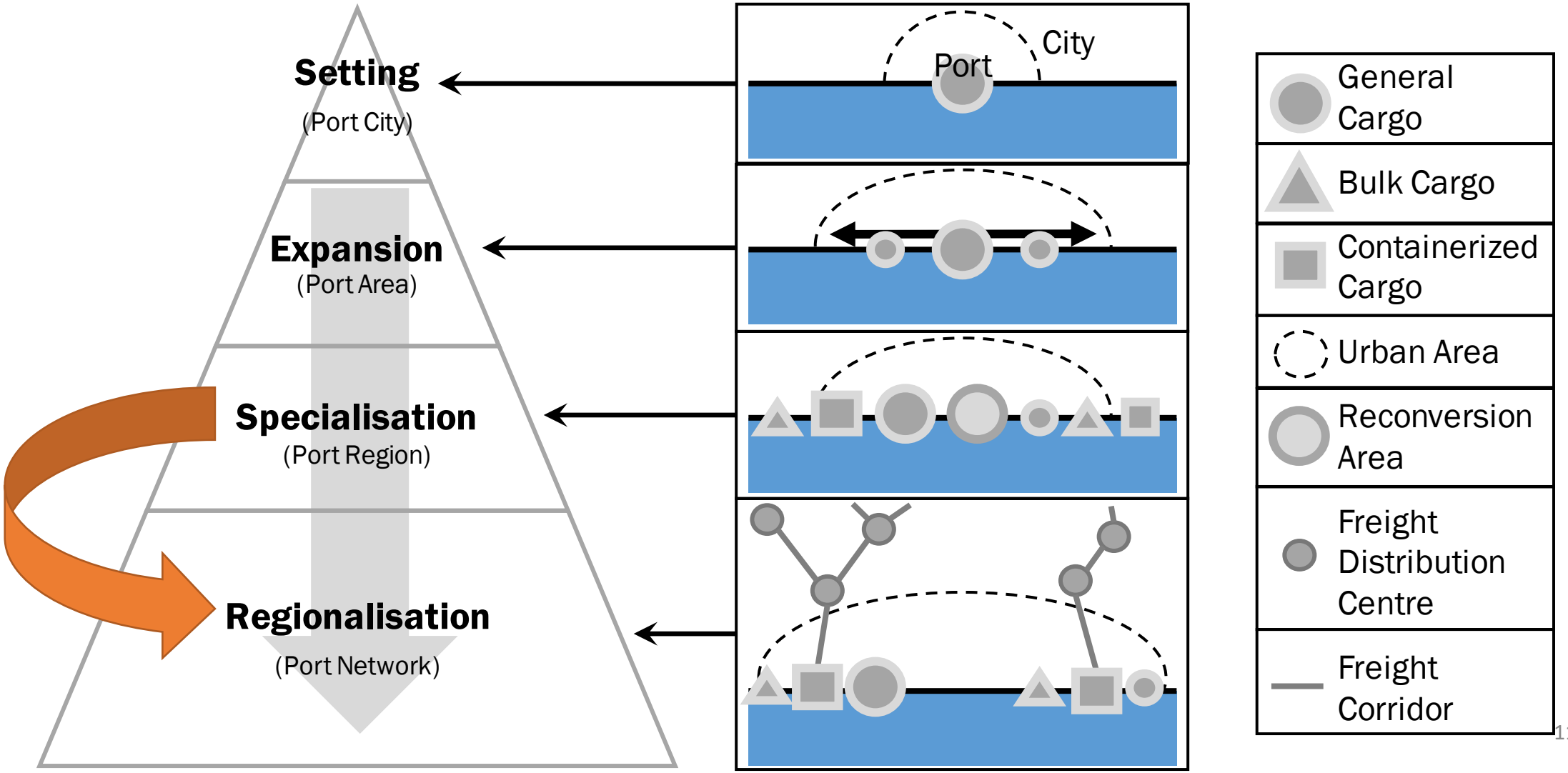
Year	Containers (million TEU)	Car Units ('000)	Dry Bulk (Tons '000)	Liquid Bulk (Tons '000)	Break Bulk (Tons '000)	Port Heavy Vehicles (per day)	Rail Modal Share (%)
2013	2.65	497	10 077	30 856	2 017	10 376	Container = 16% Cars = 50% Dry Bulk = 50%
2020	3.54	577	10 834	35 336	2 120	11 865	Container = 30% Cars = 80% Dry Bulk = 60%
2030	5.43	792	12 640	48 367	2 381	15 534	Container = 30% Cars = 80% Dry Bulk = 70%
2040	8.21	1 121	15 160	66 391	2 753	21 691	Container = 30% Cars = 80% Dry Bulk = 70%

2. Regionalisation & eThekwini's Supply Chain Networks

eThekwini Municipality

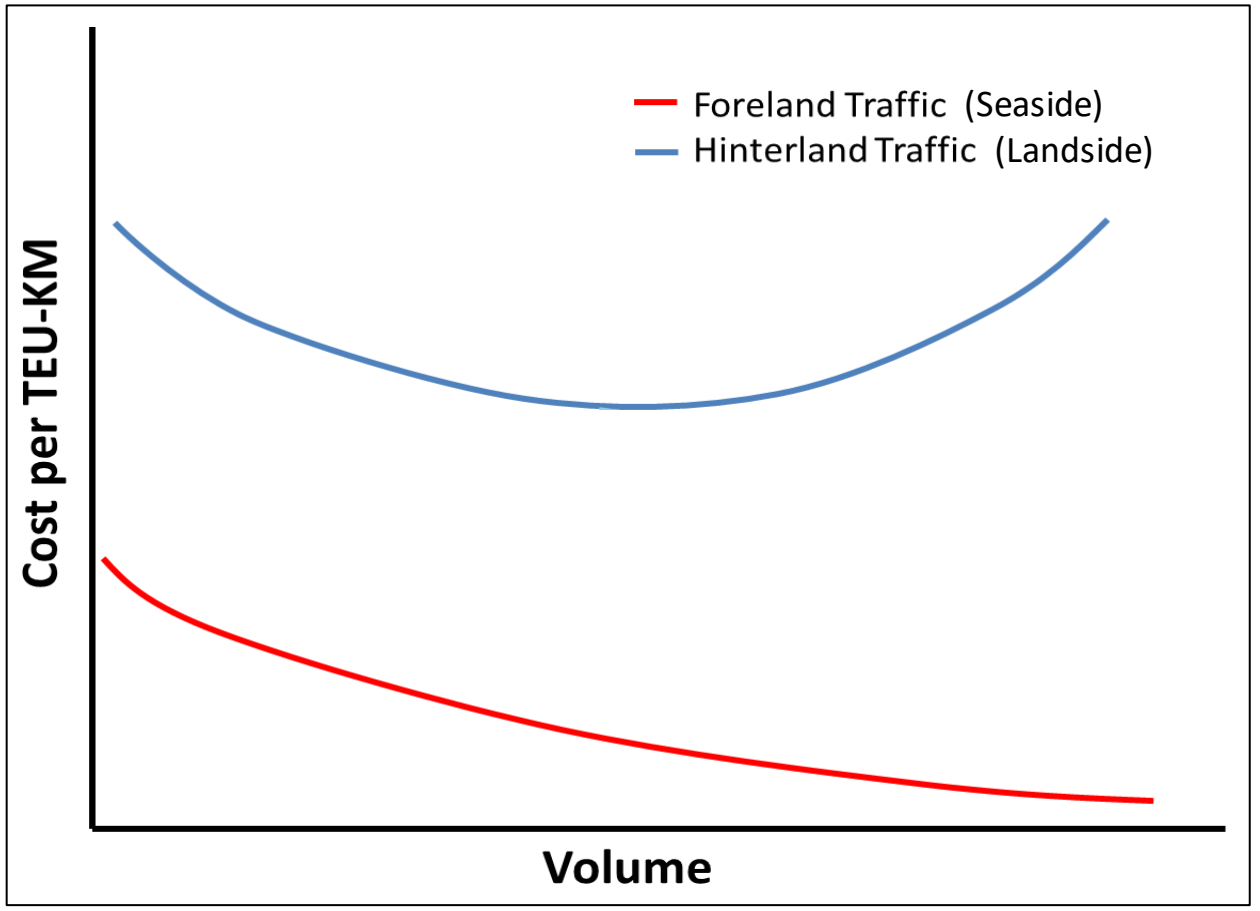
Port City Evolution

Source: Notteboom T., Rodrigue J. 2005



Cost per TEU-km for hinterland and foreland traffic

Source: Rodrigue, J. and Notteboom, T. 2010



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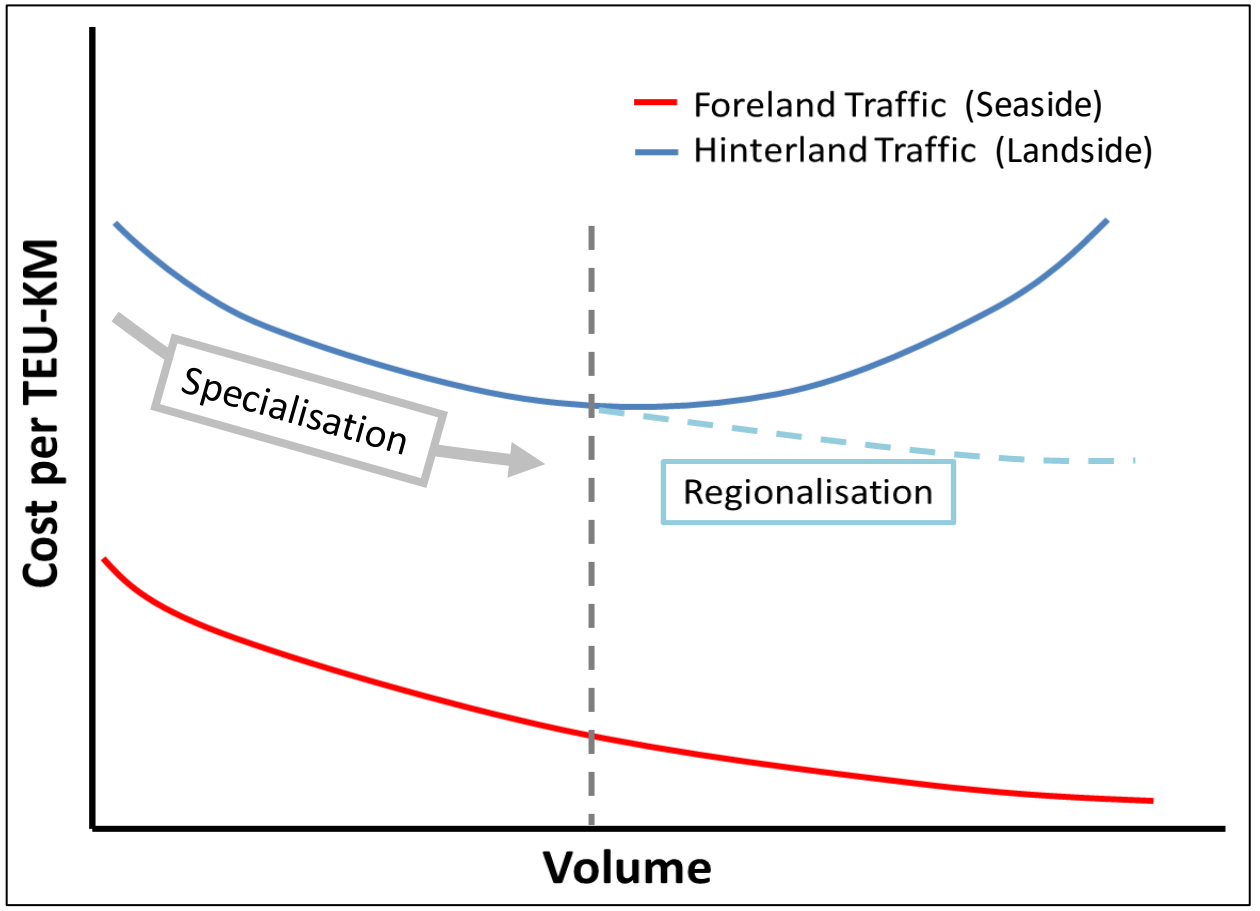
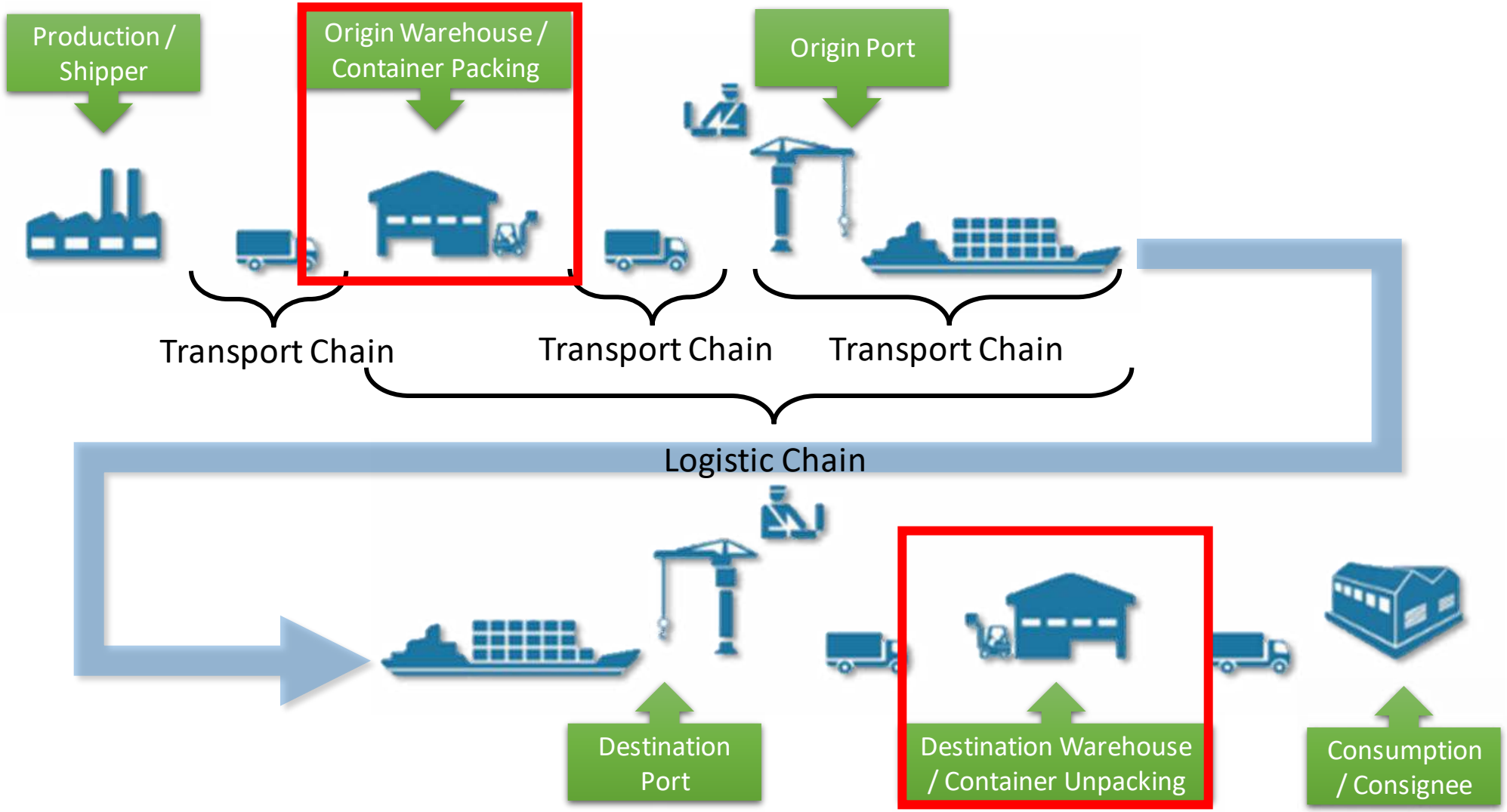
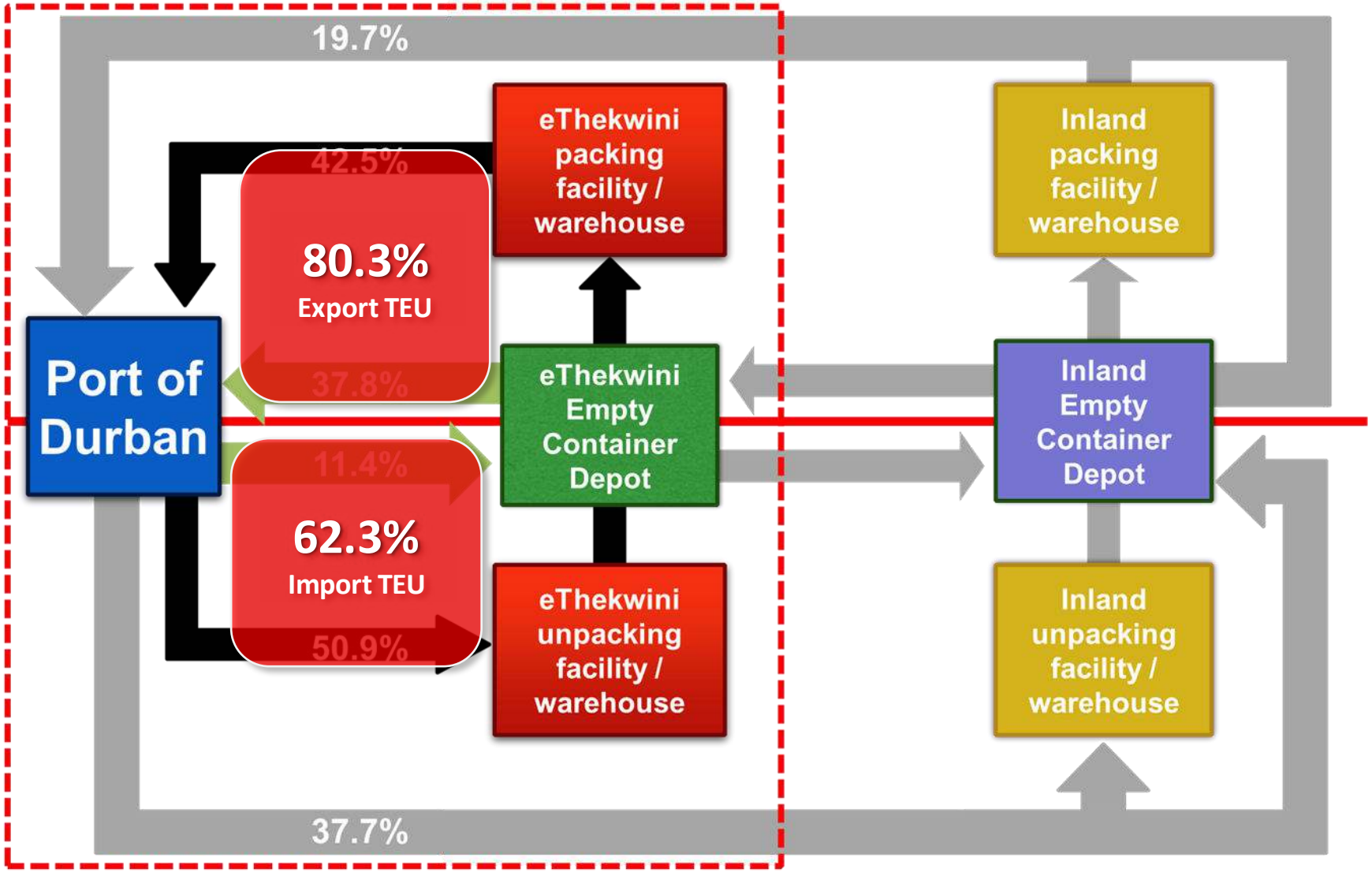


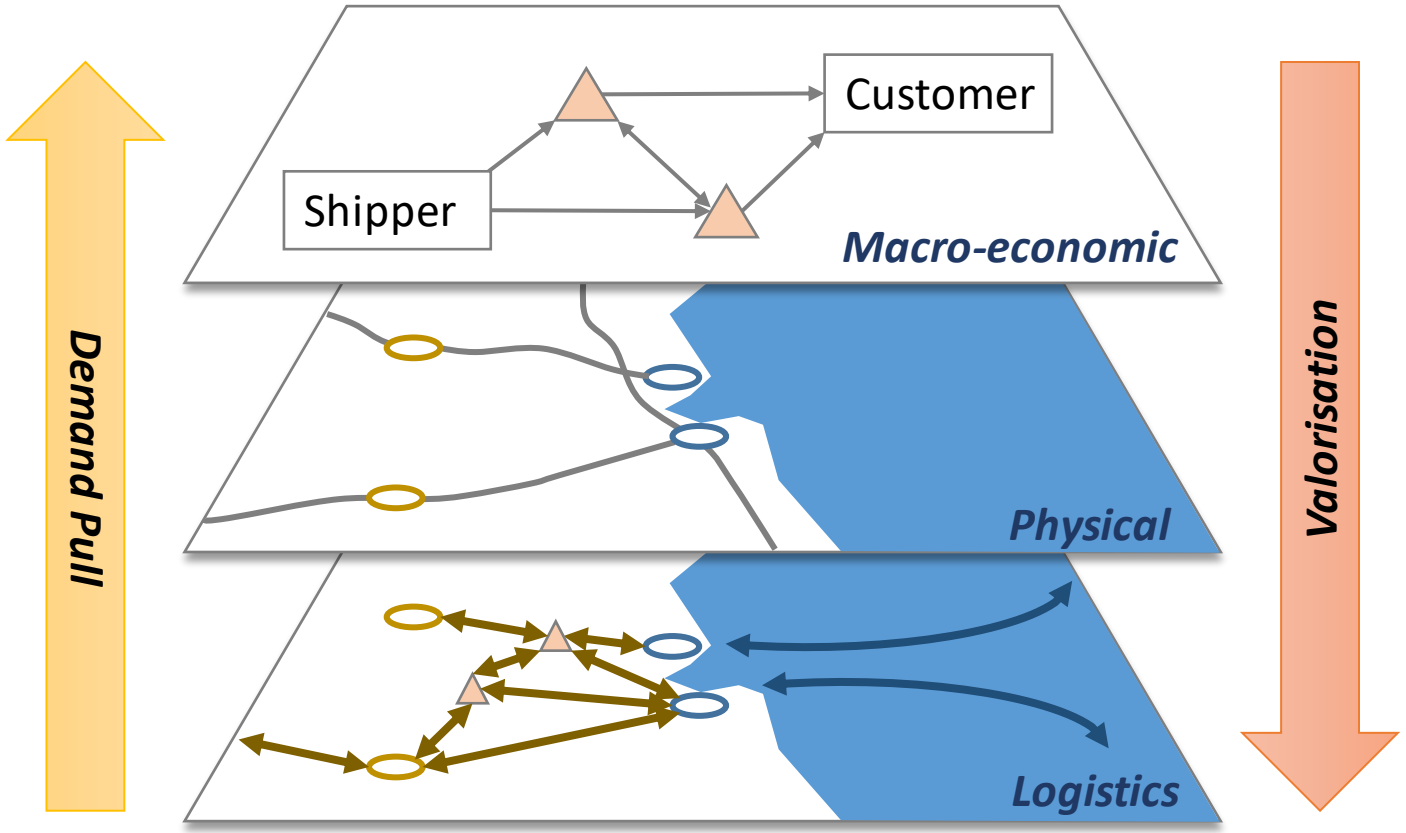
Silo'd Transport Chain Planning vs. Comprehensive Container Supply Chain Planning



eThekwini Role in Freight & Logistics Container Supply Chain

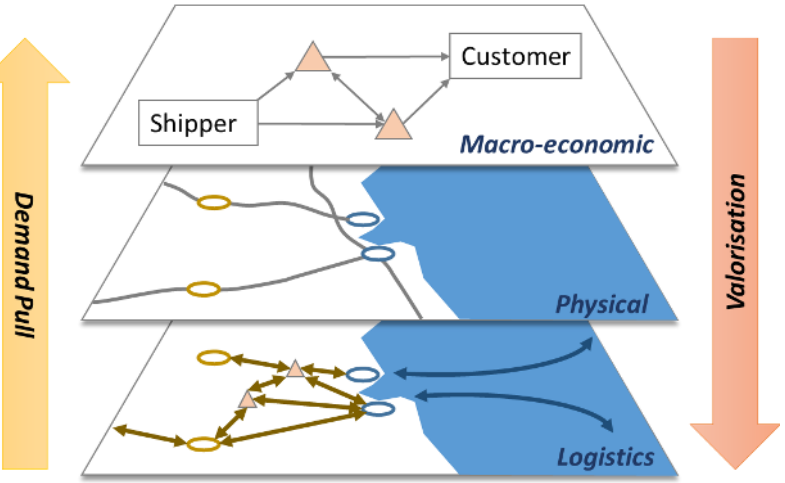


South Africa's Freight & Logistics Planning Shortfalls



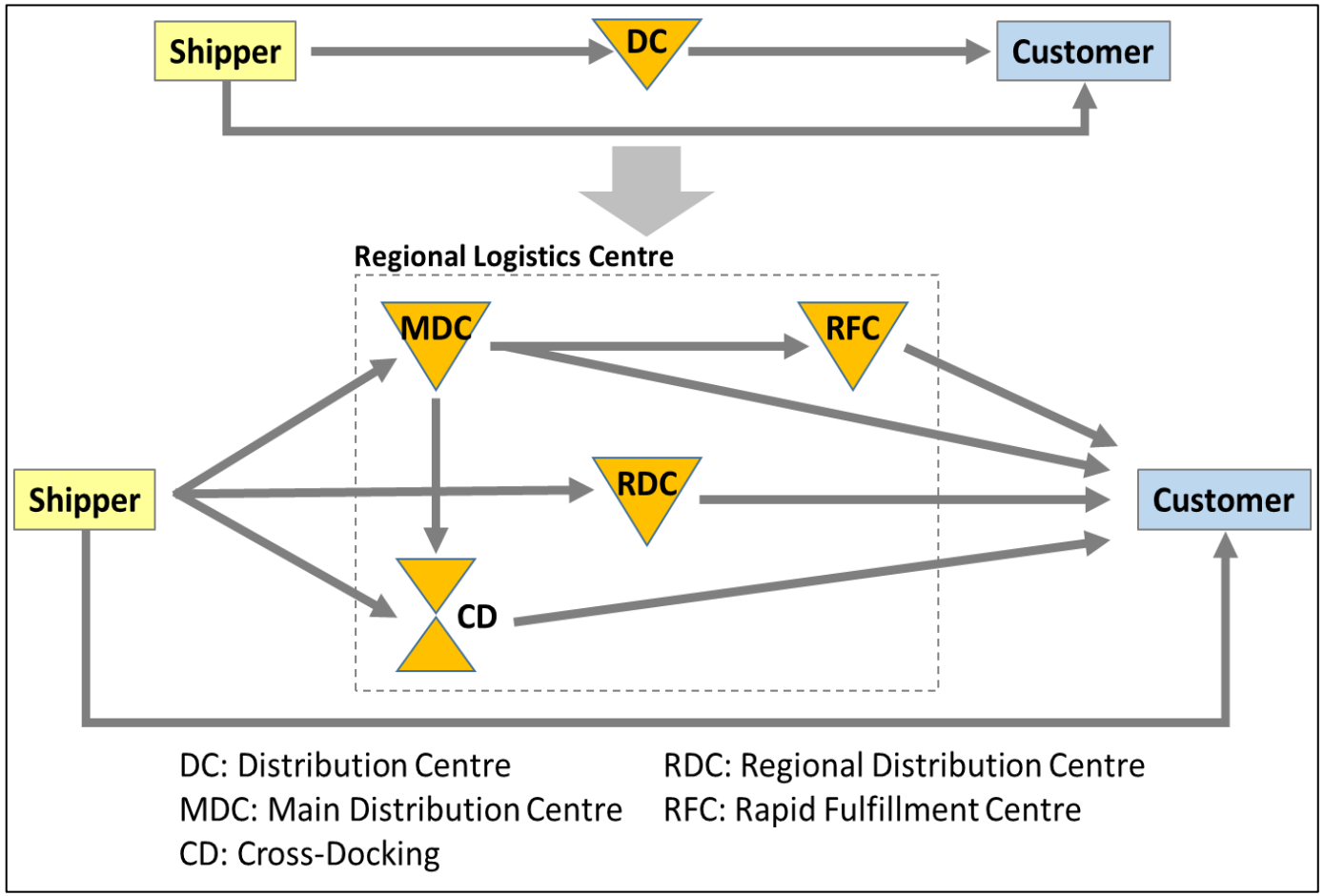
Literature Review & Analysis of Global Logistics Trends

	Macro-economic	Physical	Logistical
Concept	Transport demand	Transport supply	Flows
Element	Logistical sites (production and consumption) as part of GCCs	Transport links and terminals	Mode, Timing, punctuality and frequency of services
Attributes	Interest rates, exchange rates, prices, savings, production, debt	Capacity, corridors, terminals, Physical assets (fixed and mobile)	Added value, ton-kms, TEU, Value of time, ICT
Challenge	International division of production and consumption	Additional capacity (modal and intermodal)	Supply chain management

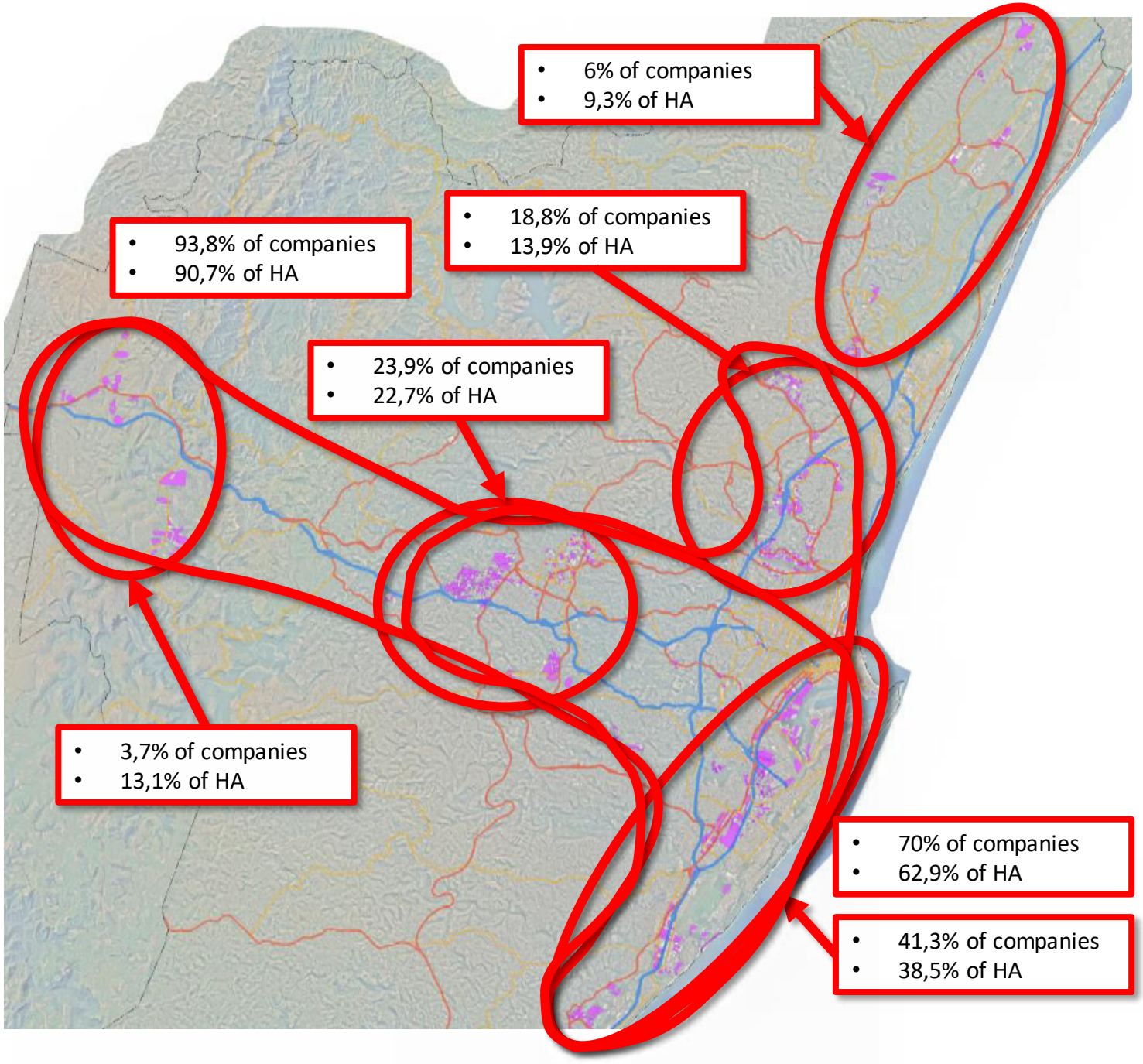


Reconfiguration of logistics networks: from chains to networks

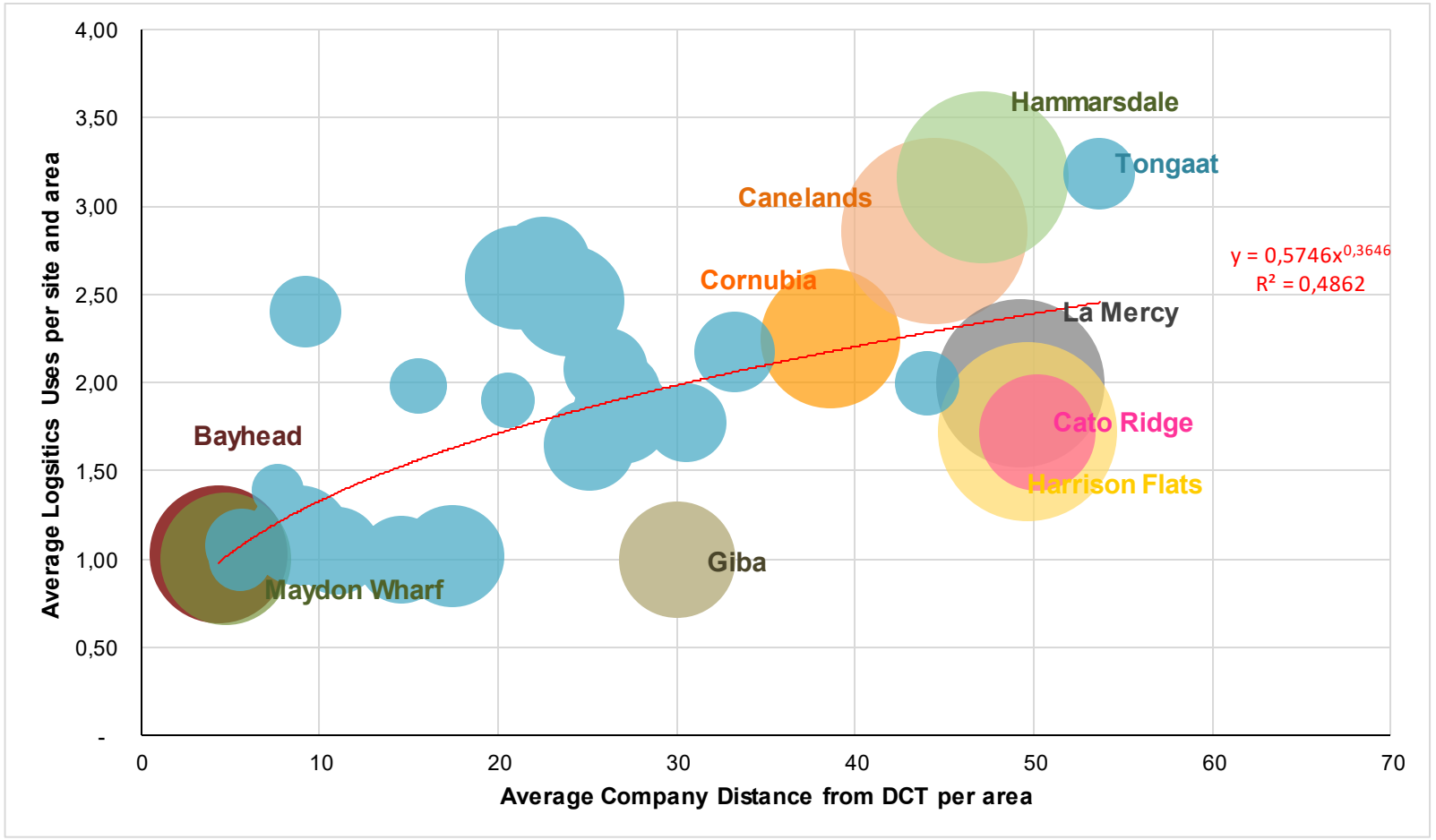
Source: Notteboom et al (2008)



- 1178 logistics operators were identified
- 1865.39 hectares of land
- average logistics operator approximately:
  - 1.58 hectare site
  - 19.83 km driving distance from the DCT
- Areas with highest concentration of firms:
  - Clairwood (132)
  - Westmead (129)
  - Springfield/Umgeni (107)
  - Prospecton (60)
  - Umbogintwini (56)
  - Queensmead Industrial (49)

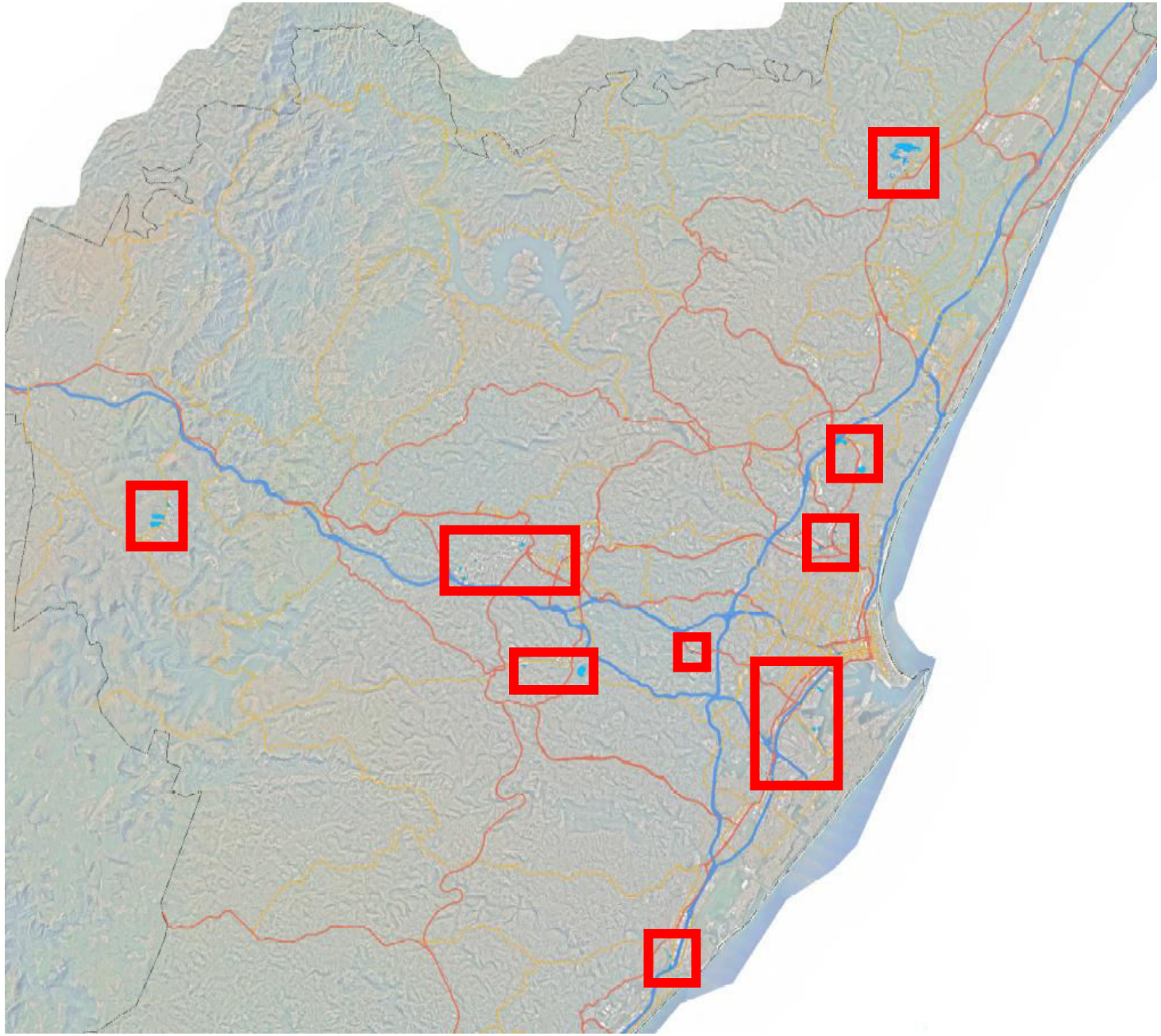


Average Usage per Site by Driving Distance



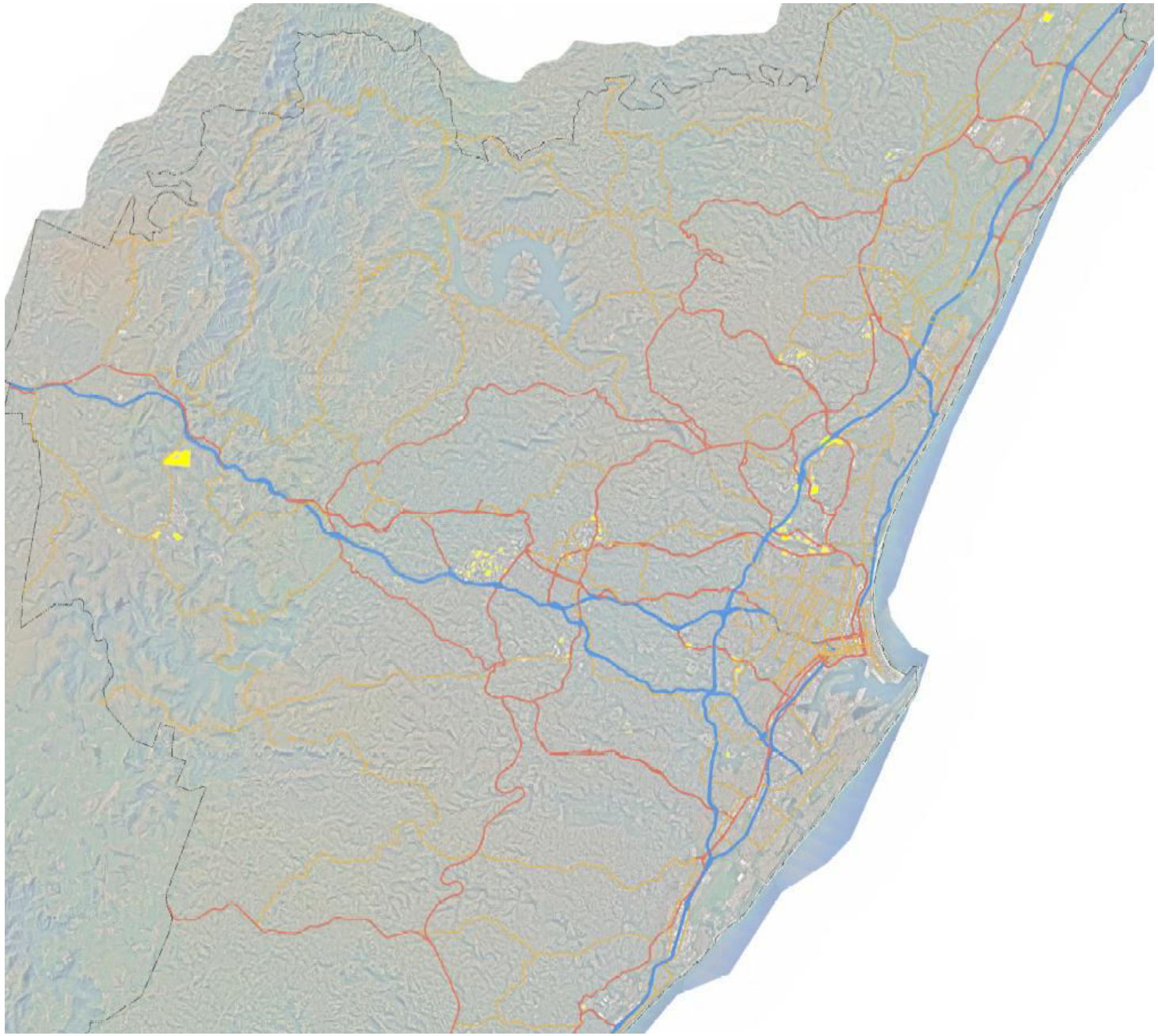
Cold Storage

- 30 operators
  - 15 – within 20km driving distance of DCT
  - 7 – Bayhead & Maydon Wharf
  - 7 – Marian Hill, Mahogany Ridge, Pinetown & Westmead
- Citrus cold storage facilities tend to be located closer to DCT (ave. 16.7km) & occupy on average 1.55 HA site



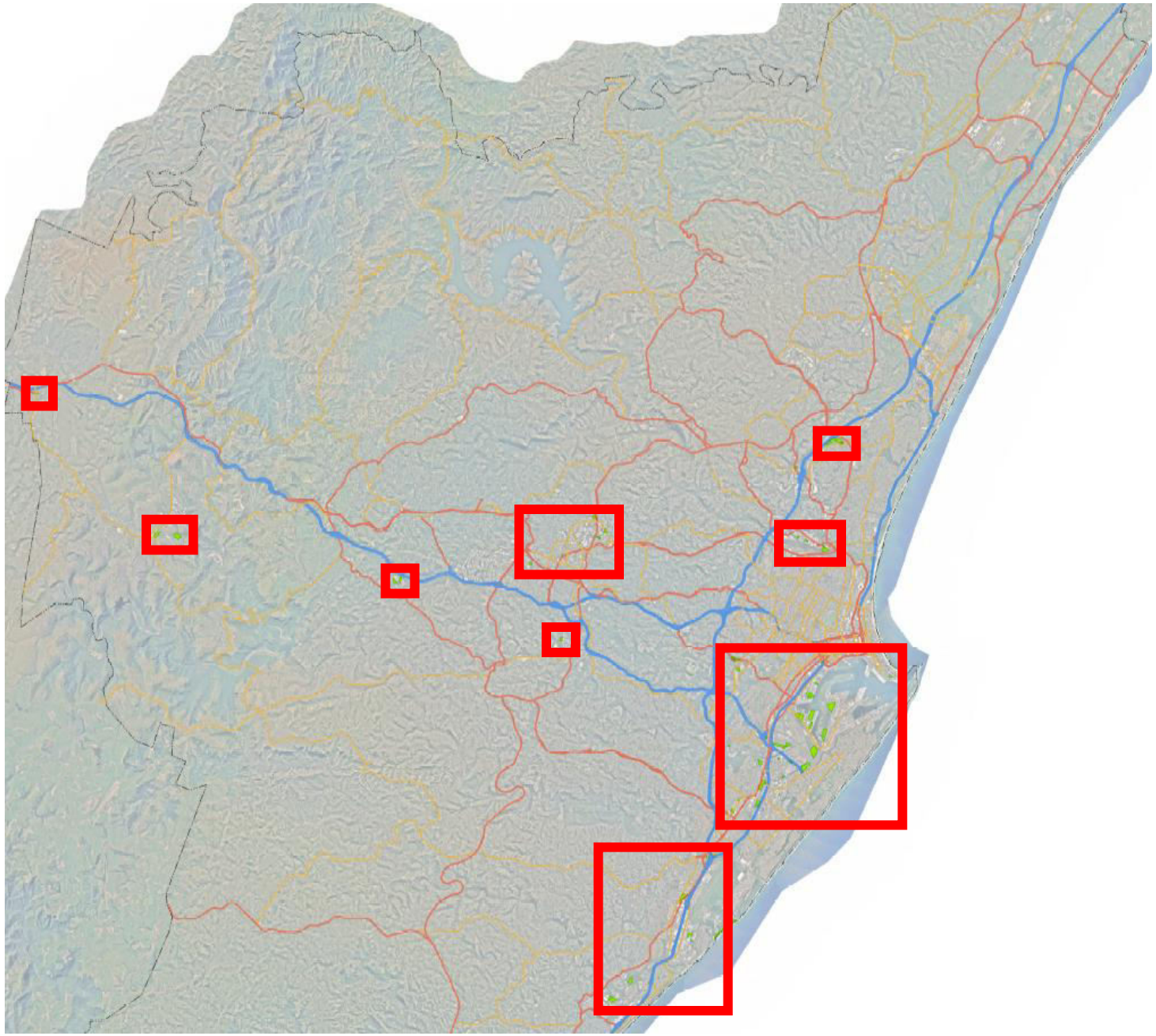
Container Depots

- Container depots are facilities that handle and store full containers, as well as conducting packing or unpacking of containers.
- 91 container depot facilities (occupying 127.23 HA)
- Average container depot operation is:
  - 25.26 km from DCT; &
  - 1.4 HA



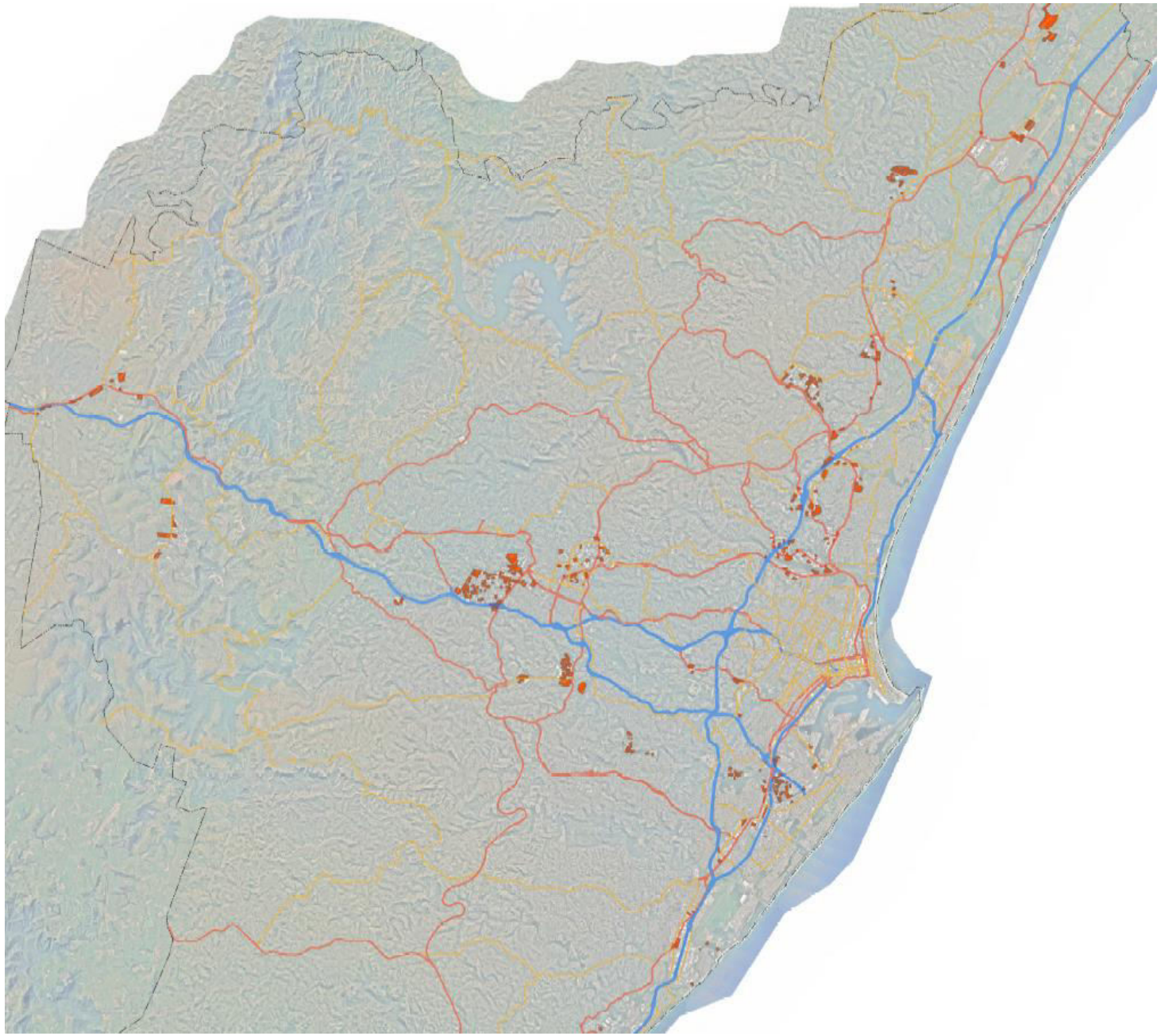
Empty Container Depots

- 54 empty container depots
- Average driving distance DCT 10,21km
- Average size 2,72 HA
- 20 sites no further than 5km from DCT
- No site has a rail siding



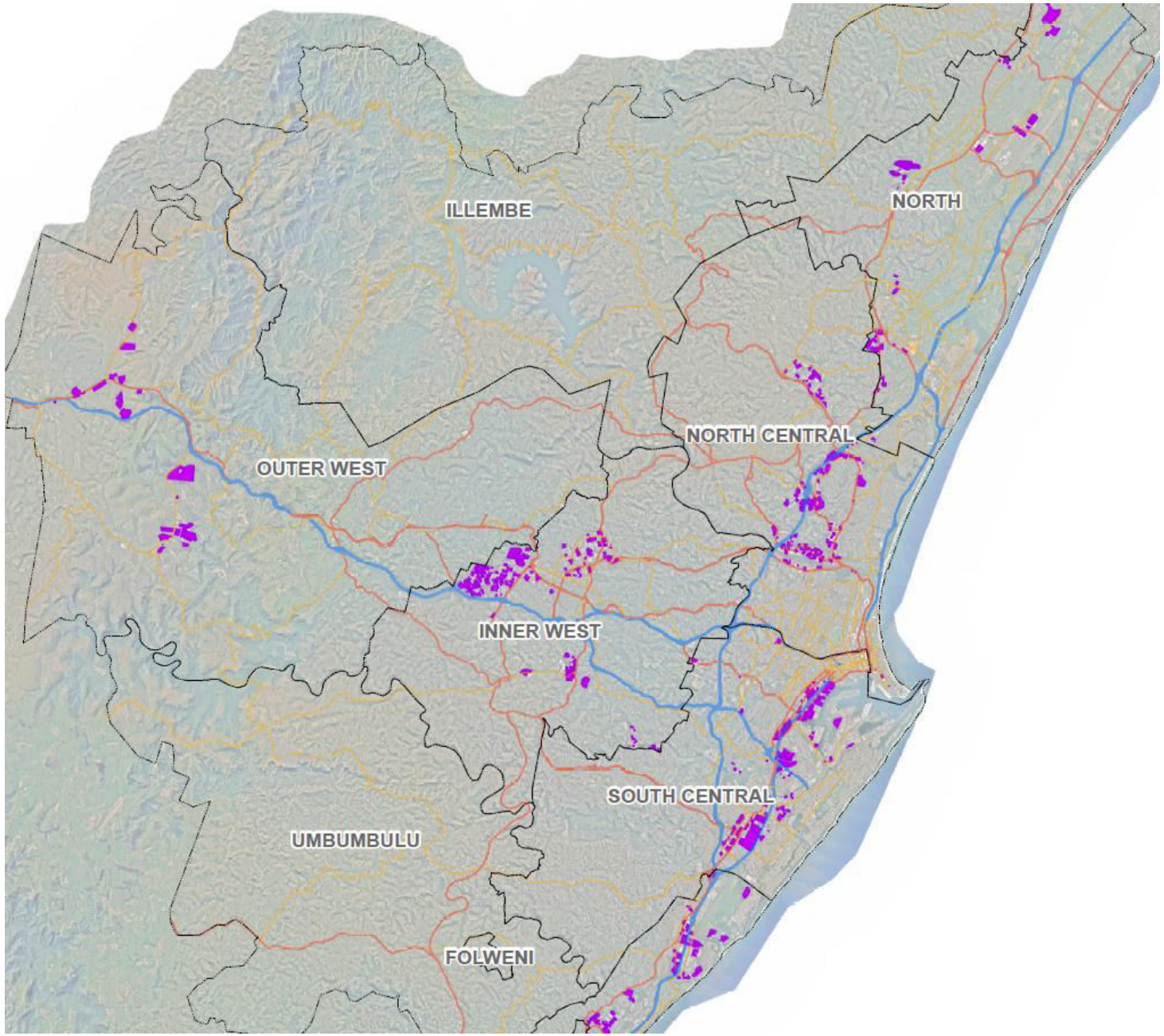
Trucking

- 430 sites
- Ave. driving distance DCT = 20,16km
- Ave. Size = 1.38HA
- Overwhelming majority of trucking sites are small
- Median trucking operations is:
  - 15,3km form DCT
  - 0,21HA in size



Warehousing & Distribution

- 1235,53 HA in usage
- 615 companies
- Ave. driving distance DCT = 22KM
- Average size = 2,01 HA
- 87% of warehouses are no further than 30km from DCT




3. Integrated Freight & Logistics Strategic Framework & Action Plan for eThekwini
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eThekwini Municipality

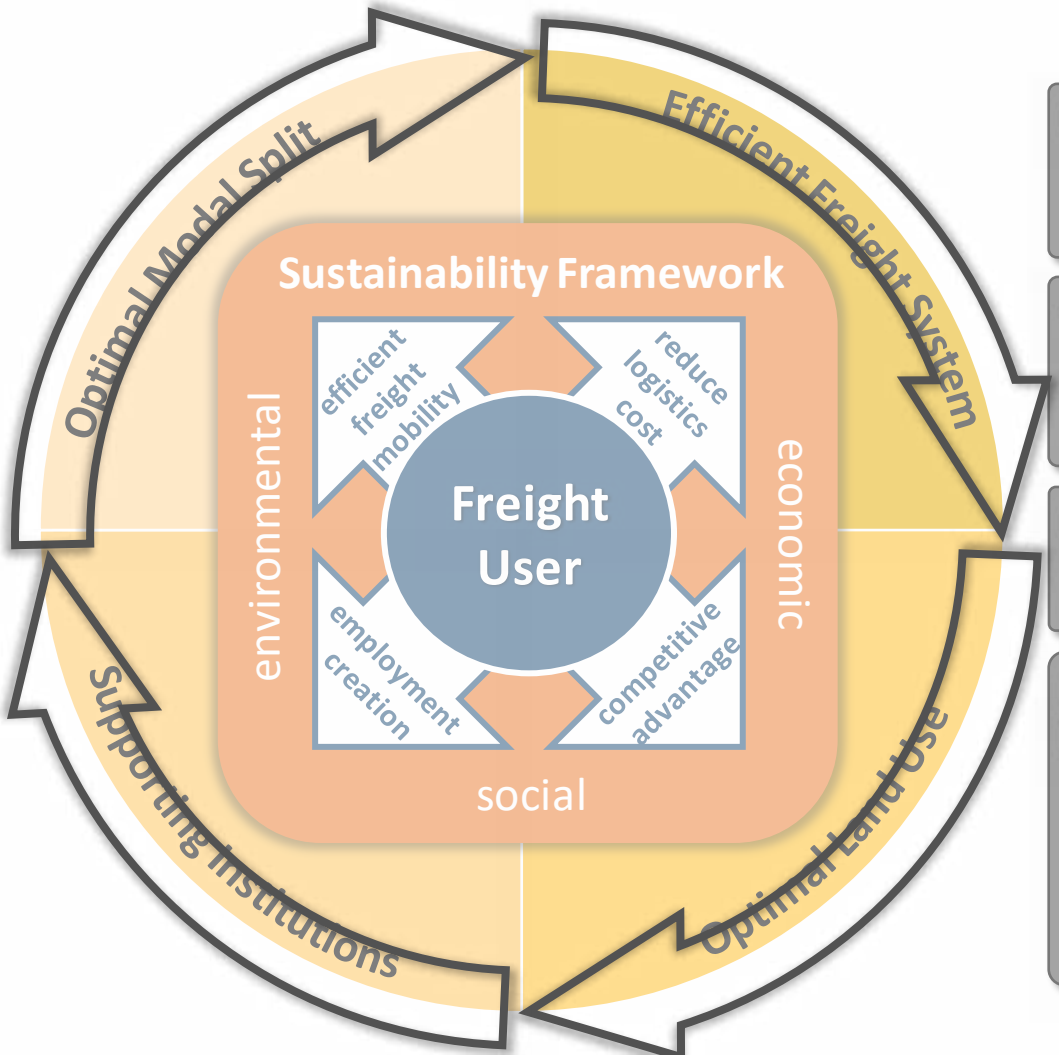
Integrated Freight & Logistics Strategic Framework & Action Plan for eThekwini

Strategic Framework Development Logic

Infrastructure
- Road infrastructure
- Port & Rail infrastructure
- Truck Stops
- Intermodal Facilities
- Truck Staging Areas
- Weigh Bridge /WIM
- ITS & Traffic Signage

Operations
- Incident Management System
- Freight Management System

Policy & Regulation
- Policy revision
- Route hierarchies



Land Use
- Freight Land Use Plan
- Port Land Use Interface Zone

Communications
- Freight Communications Strategy

Funding
- Funding sources
- Incentives & penalties

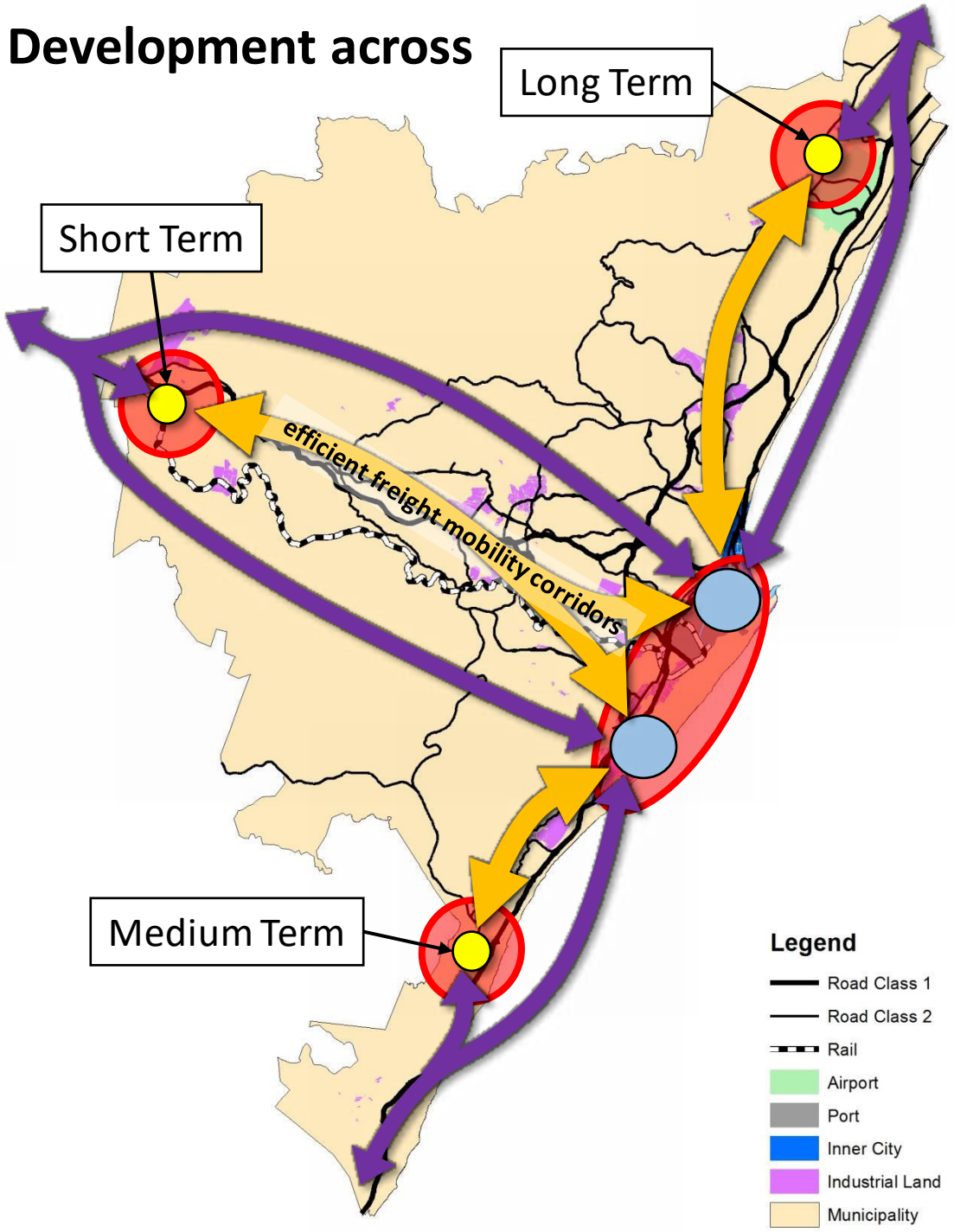
Institutional Development
- Road rail liaison
- Incident management,
- Incentives / penalties
- Dedicated freight resources

Timeframe of Interventions

	2015-2020	2021-2025	2026-2035
Infrastructure • Road infrastructure • Truck Stops (TS) • Intermodal Facilities • Truck Staging Areas (SA) • Weigh Bridge /WIM • ITS and Traffic Signage	• Freight Route 1a, MR577 & M7/N2/N3 • CR & CFPM T-Stops • 1 Intermodal Facility • 2 Truck Stops • Freight Traffic Signs and enforcement on all routes • 5 Truck Staging Areas • 2 Weighbridges and 7 Weigh in Motion Stations	• M7, DFR 1b, N2/N3 , MR579 and R603 • 2 Intermodal Facilities • 4 Truck Stops • 3 Truck Staging Areas • 4 Weighbridges and 4 Mobile Weighbridges • Port expansion	• N2/N3, R603 and MR579 • 1 Intermodal Facility • 2 Truck Stops • 3 Truck Staging Areas • 10 Mobile Weighbridges • Rail upgrade
Land Use • Enforcement of Freight Land Use Plans • City & port interface zone	• Update Land-use plan • Enforce Town Planning Scheme • Plan and implement interface zone	• Revise land use plans • Enforce Town Planning Scheme	• Revise land use plans • Enforce Town Planning Scheme
Policy and regulation • Policy revision • Route hierarchies	• Policy Lobby Group • Implement Transport Policy • Hazardous/Abnormal Freight Routes	• Monitor and lobby policy revision • Revise freight routes	• Monitor and lobby policy revision • Revise freight routes
Operations • Incident Management(IM) • Freight Management system	• Implemented Incident Management System • Implemented Freight Management System	• Implemented Incident Management System • Expand Freight Management System	• Expand Freight Management System
Institutional development • Road rail liaison • Incident management, • Incentives / penalties • Dedicated freight resources • Funding mechanisms	• Expand Hazardous Freight Management Team (HFMT) • Establish Freight Management Section (FMU) at eThekwini Municipality • Dedicated Metro Police	• Increase HFMT capacity • Increase FMU capacity • Prepare incentives for reduction in emissions	• Increase DMU capacity • Increase FMU capacity • Prepare penalties for emissions • Implement short haul rail operations
Funding • Funding sources • Incentives and penalties	• List projects that are PPP candidates • Government Funding Options • Identify funding sources	• Identify Investors • Identify funding sources	• Identify funding sources
Communications • Freight Comms Strategy	• Communications Strategy • Communication actions	• Communications actions and monitoring	• Communications actions and monitoring

Freight & Logistics Strategic Development across the Municipal Area

- Port of Durban
- **Freight Intensive Nodes**
- Intermodal Hub & Freight Logistics Nodes
- **National freight distribution**



Truck Stops

Located at periphery of Municipal Area, holding trucks for extend period & release when required by Port or Logistics Operators

Hazardous Vehicle Inspection

Fire Department can conduct hazardous vehicle inspections & issue hazardous permits at key freight locations

Traffic Management Centre

Controls all traffic, port & freight information & operates the Smart Port City Freight System between various elements

License Plate Recognition

LPR cameras located on freight corridors monitoring movements with weigh-in-motions to notify of potential overloading violations

Truck Route Hierarchy

Heavy Vehicle utilise routes designed to heavy vehicle carrying load specification, between key freight, industrial & port nodes

Variable Message Signs

Communicating key freight, port, & traffic information to Heavy Vehicle drivers

Port

Truck Staging Areas

Temporary Heavy Vehicle holding areas in key industrial & freight nodes, as well as surrounding port precinct. Coordinates heavy vehicle call in to port area.

Weighbridges & Enforcement

Heavy Vehicle enforcement carried out on key freight corridors & in key freight nodes by dedicated Metro Police Freight Unit

Logistics / Industrial Area

Implementation Phasing Plan

		Project Phase	Partnerships	Start Date	Budget Est.
1	M7 rehabilitation	Implementation	eThekwini	2018/19	R 50 mill
2	M7 expansion	Detailed design	eThekwini, Roads, SANRAL, KZN DOT	2020/21	R 140 mill
3	Cato Ridge Intermodal Hub	Implementation	Cato Ridge Logistics Hub Consortium, Transnet, SANRAL, eThekwini	2019/20	TBC
4	National Road Capacity Improvements N2/N3	Detailed Design	SANRAL	2020/21	+/- R 35 bill
5	2nd access to container terminal	Prelim Design / EIA	eThekwini, Transnet Group, TNPA,	2020/21	R 3 bill
6	SDB Truck Stop & Staging Area	Feasibility / Conceptual Design	eThekwini, TPT, TNPA, Transnet Group	2019/20	R 7.5 mill (planning cost actual cost TBC)
7	Freight Management System	Status Quo Analysis	eThekwini, TPT, Transnet Group, KZN DOT,	2020/21	TBC
8	Truck Route Hierarchy, abnormal & hazardous management	Conceptual Design	eThekwini, Transnet, Disaster Management, Metro Police, Fire Dept	2020/21	TBC
9	Bylaw amendment & legislation advocacy		eThekwini		TBC


2. Rehabilitate & Upgrade M7 (N2 – R102) to 4 + 4 lanes
R 190 Mill
4. Upgrade South C Rd (M7 – Bayhead)
Cost TBC
10. Develop access to DDOP 2 + 2 lanes
Cost TBC
7. Development of Truck Stops & Port related Truck Staging
Cost TBC
3. Upgrade Bayhead Rd & Langeberg Rd
Transnet
1. DCT Berth Deepening (203-205)
Transnet
9. Durban Dig Out Port (year 2040)
Transnet
6. Develop 2nd access to Port 2 + 2 lanes
R 3 Bill
8. Border Management Agency & Enforcement Facility (Weighbridge)
5. Salisbury Infill (year 2030)
Transnet
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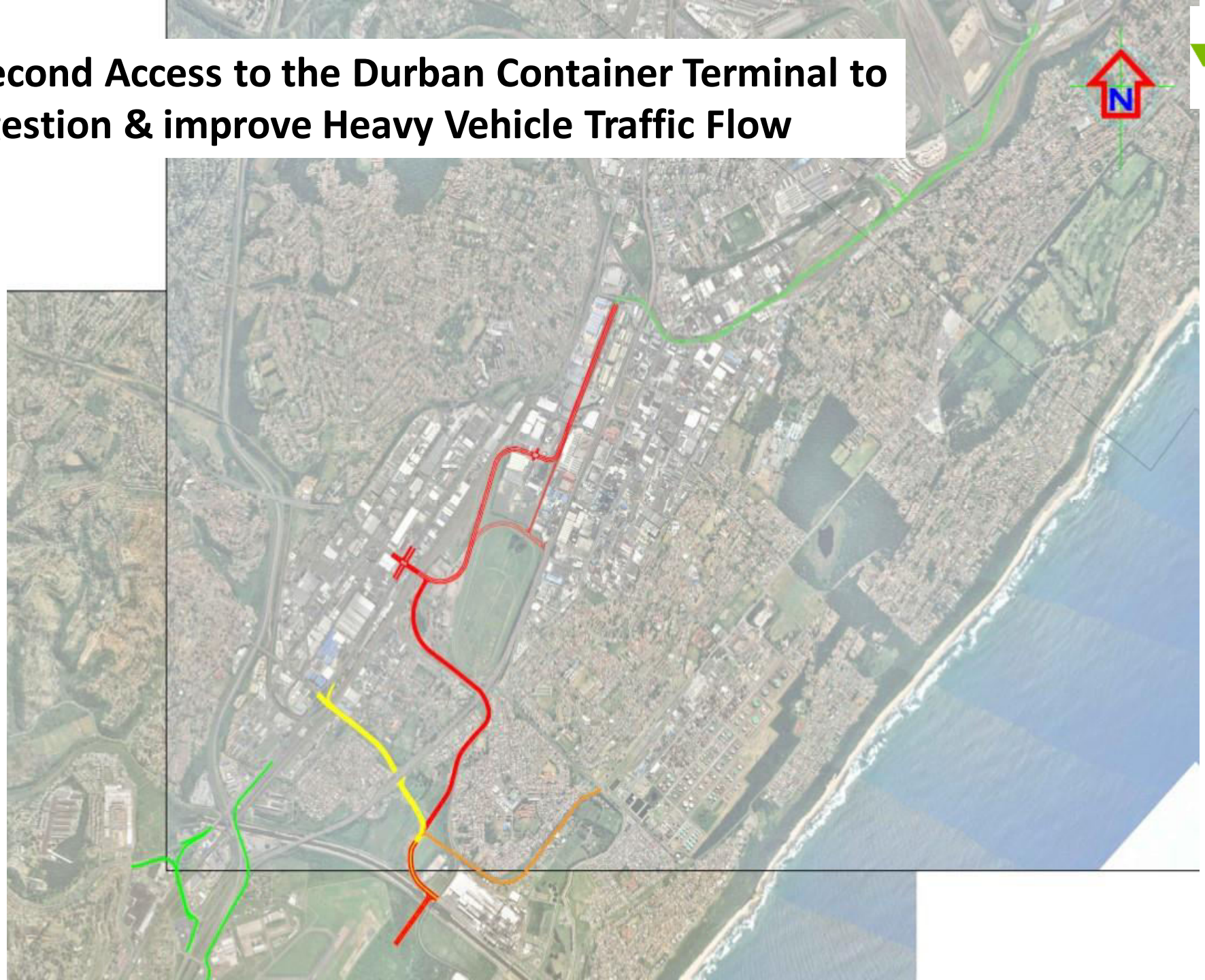
Proposed Second Access to the Durban Container Terminal to reduce congestion & improve Heavy Vehicle Traffic Flow



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