

Cape Town's Experience

Presentation to SABOA

10th March 2016

Kerasha Naidoo



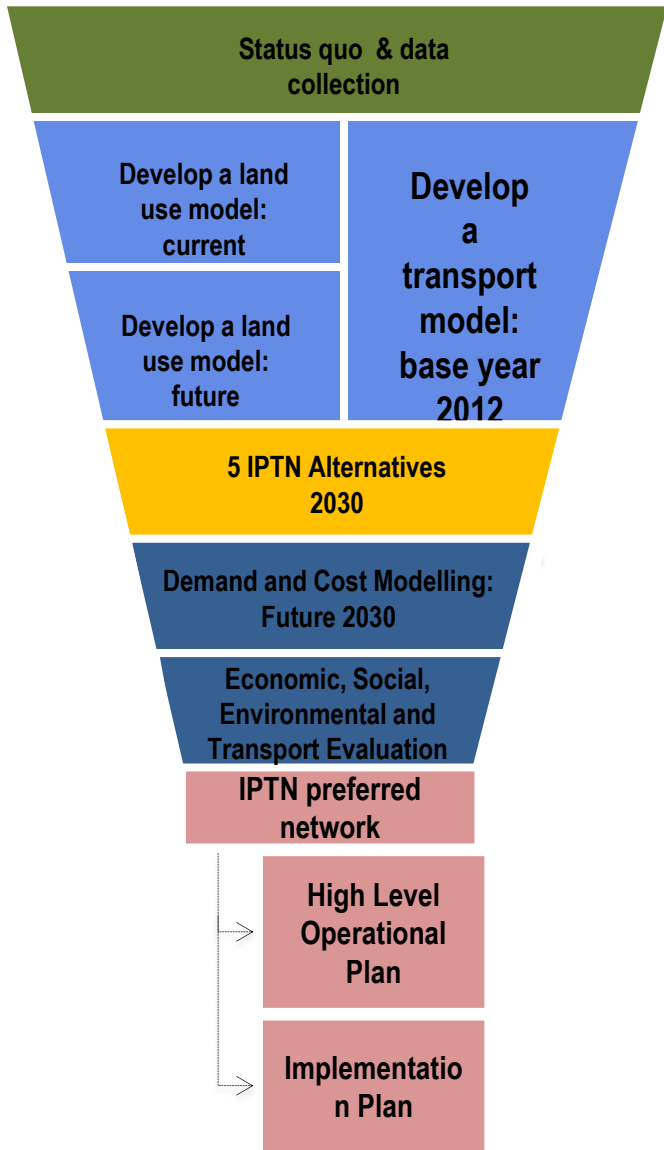
The City of Cape Town's Transport Authority

Presentation outline



1. City's IPTN 2032
2. Phase 1A
3. City's Intervention
 - Moderation process
 - Optimisation process
4. Key lessons learnt and intervention for future phases

1. IPTN 2032



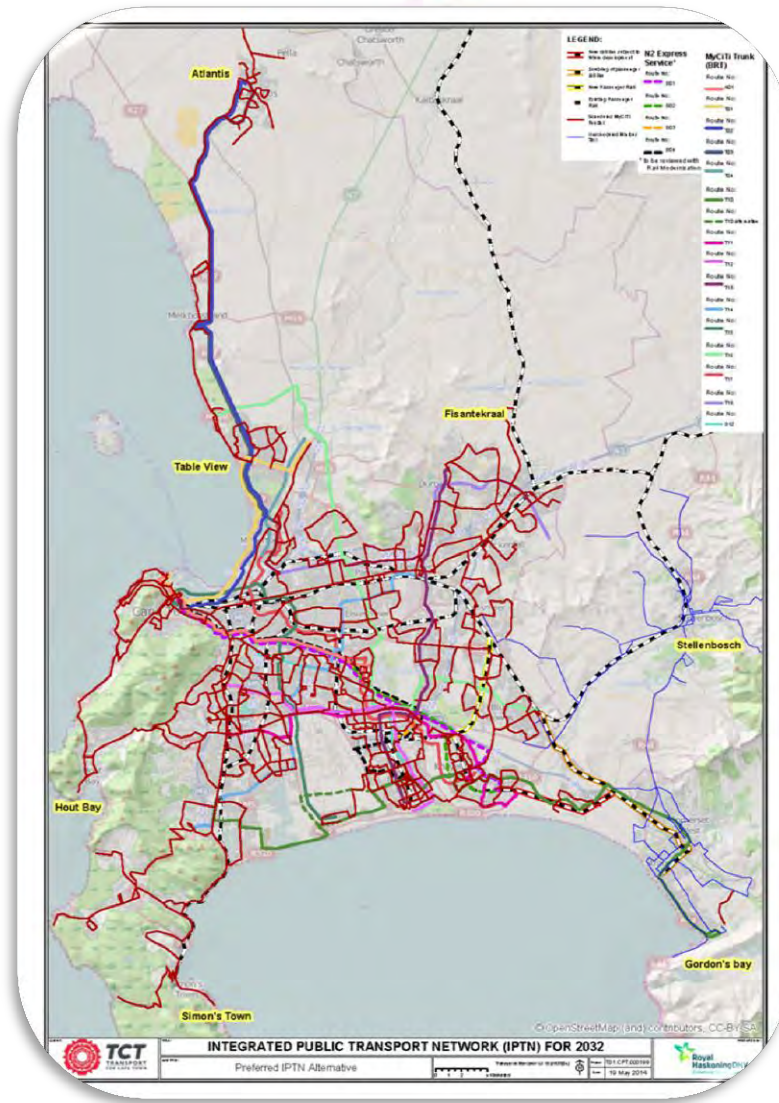
Status Quo and Lessons Learnt

Understanding Land Use and Transport Patterns

Alternatives

Evaluation Framework

Preferred network, operations and prioritisation of components



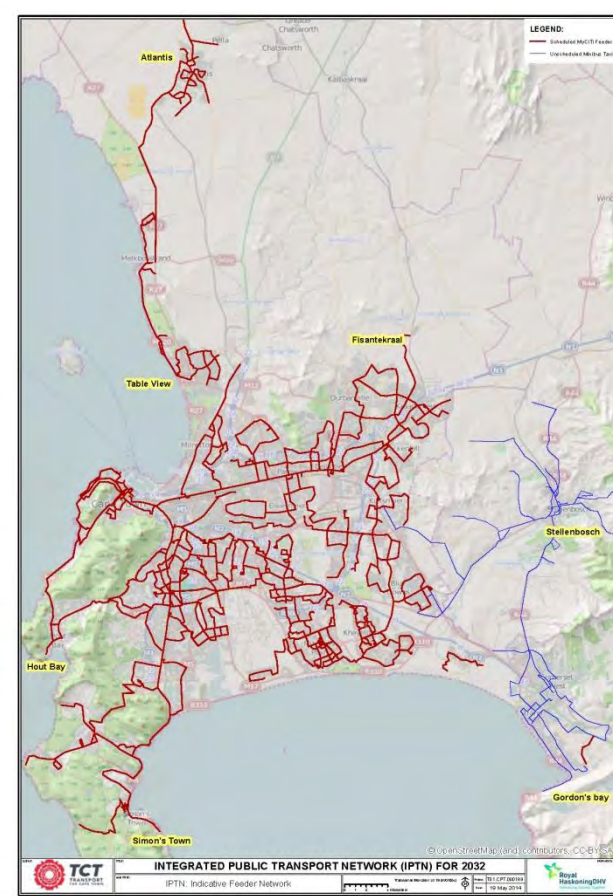
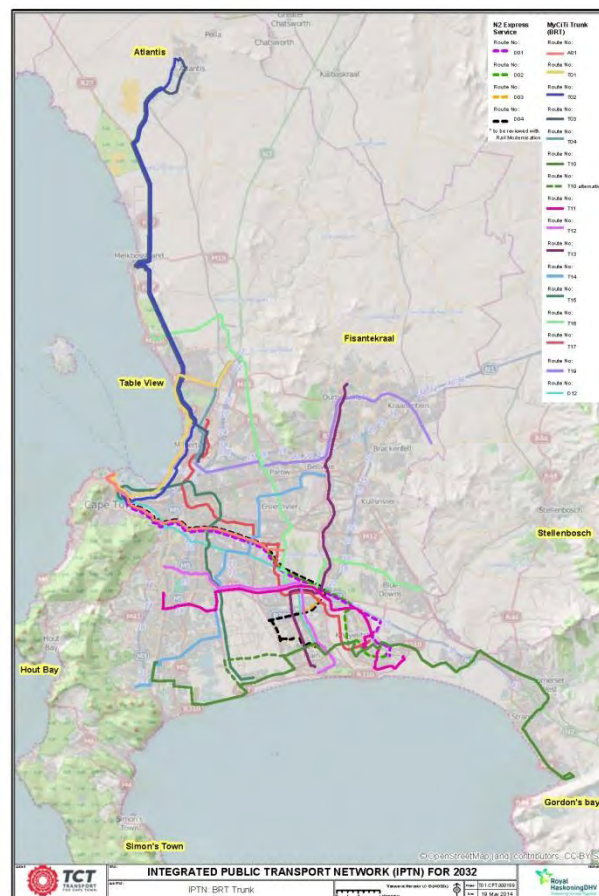
1. IPTN 2032 COMPONENTS



1. Rail

2. BRT trunks

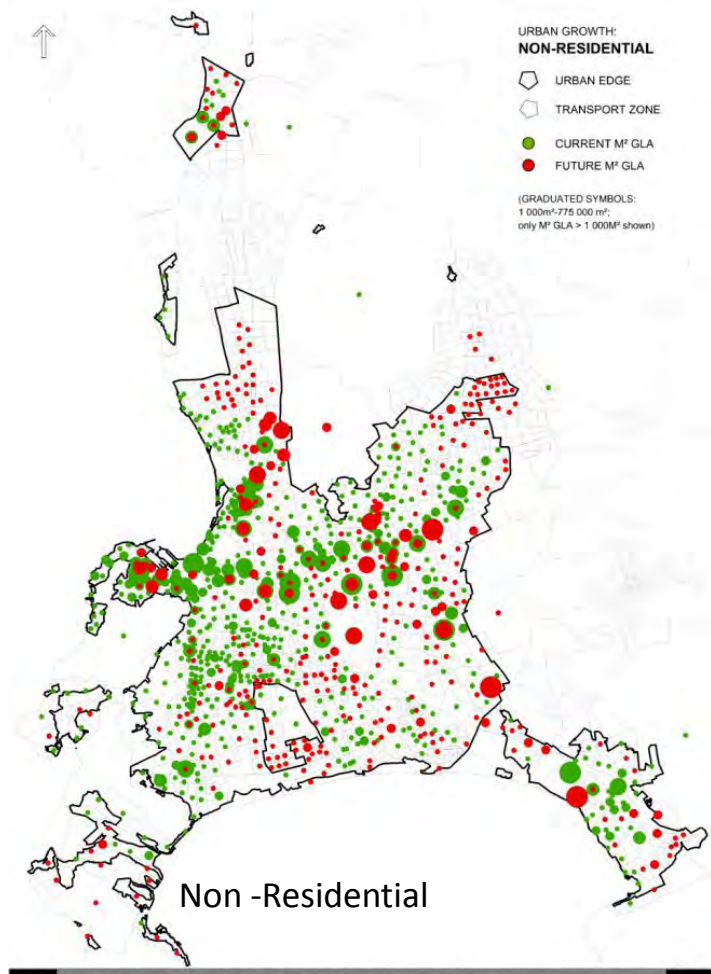
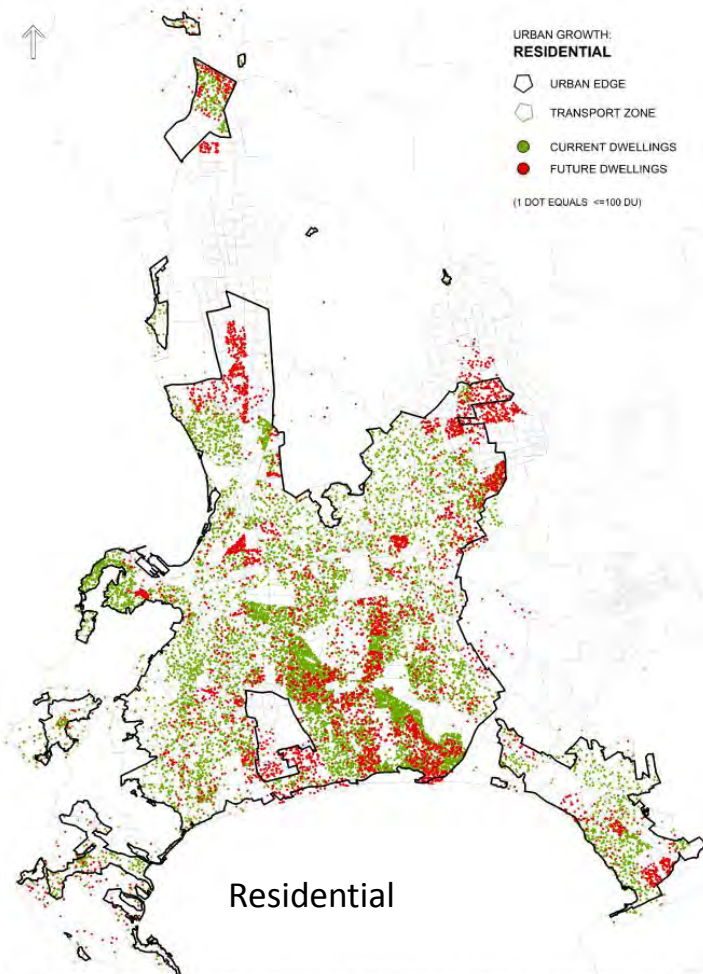
3. Supporting feeder services



1. IPTN 2032 COMPONENTS

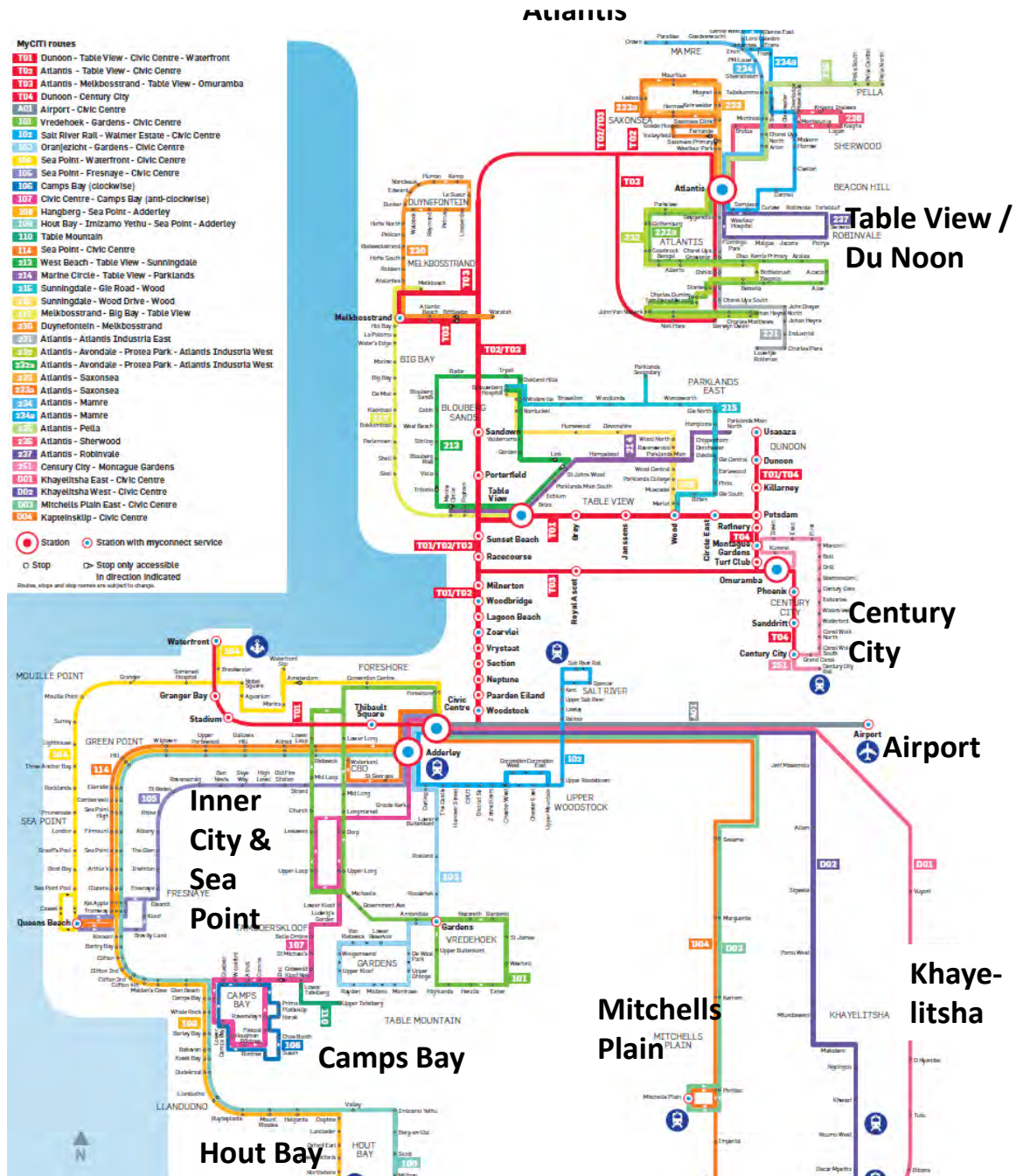


4. More Transit Orientated Development (TOD) type Land-use plan



Current MyCiTi services – Phase 1 and N2 Express

- 37 Routes
- 4 dedicated trunks
- 33 feeder routes
- 42 bus stations and 500+ bus stops
- 227 Peak busses – 509 drivers
- 64000 weekday passengers
- 4 Operators
 - 3 (12 year contracts)
 - 1 (3 year contract)



Current MyCiTi services – Phase 1 and N2 Express



18m

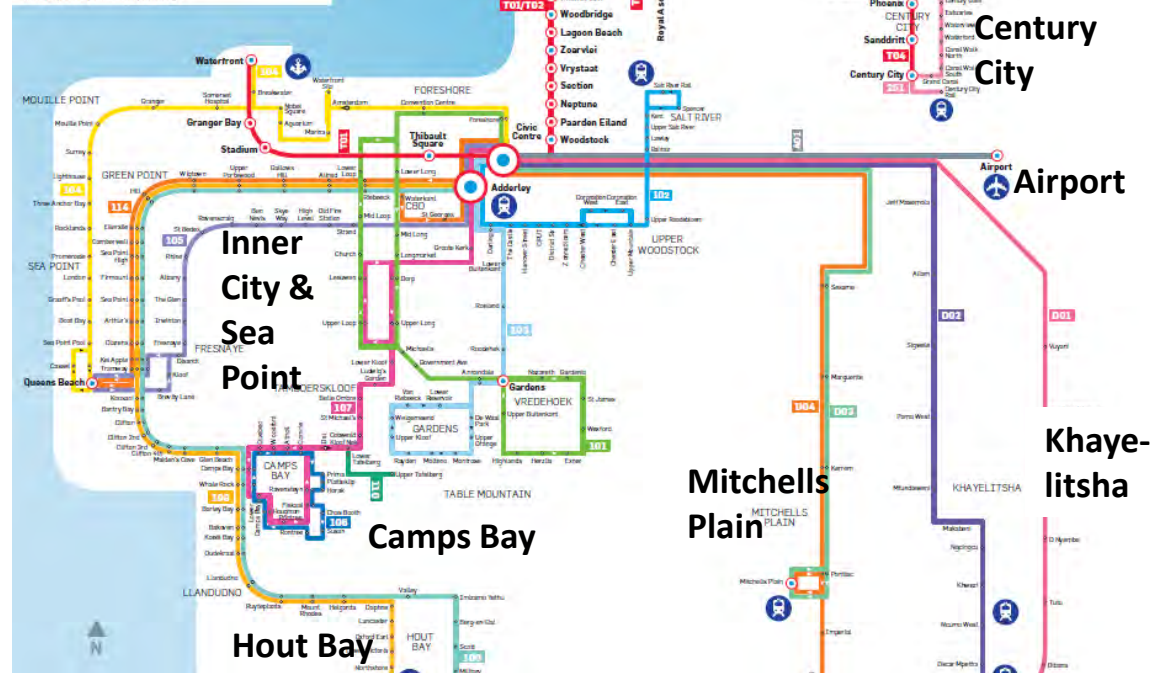


12m



9m

- MyCiTi routes**
- T01** Dunoon – Table View – Civic Centre – Waterfront
 - T02** Atlantis – Table View – Civic Centre
 - T03** Atlantis – Melkbosstrand – Table View – Omuramba
 - T04** Dunoon – Century City
 - A01** Airport – Civic Centre
 - 101** Vredehoek – Gardens – Civic Centre
 - 102** Salt River Rail – Walmer Estate – Civic Centre
 - 103** Oranjezicht – Gardens – Civic Centre
 - 104** Sea Point – Waterfront – Civic Centre
 - 105** Sea Point – Fresenaye – Civic Centre
 - 106** Camps Bay (clockwise)
 - 107** Civic Centre – Camps Bay (anti-clockwise)
 - 108** Hangberg – Sea Point – Adderley
 - 109** Hout Bay – Imizamo Yethu – Sea Point – Adderley
 - 110** Table Mountain
 - 111** Sea Point – Civic Centre
 - 112** West Beach – Table View – Sunningdale
 - 113** Marine Circle – Table View – Parklands
 - 114** Sunningdale – Gile Road – Wood
 - 115** Sunningdale – Wood Drive – Wood
 - 116** Melkbosstrand – Big Bay – Table View
 - 117** Duynfontein – Melkbosstrand
 - 201** Atlantis – Atlantis Industria East
 - 202** Atlantis – Avondale – Protea Park – Atlantis Industria West
 - 203** Atlantis – Avondale – Protea Park – Atlantis Industria West
 - 204** Atlantis – Saxonsa
 - 205** Atlantis – Marmre
 - 206** Atlantis – Pella
 - 207** Atlantis – Sherwood
 - 208** Atlantis – Robinvale
 - 209** Century City – Montague Gardens
 - D01** Khayelitsha East – Civic Centre
 - D02** Khayelitsha West – Civic Centre
 - M01** Mitchells Plain East – Civic Centre
 - M02** Kapteinshoop – Civic Centre
- Station ● Station with myconnect service
○ Stop ○ Stop only accessible
→ In direction indicated
- Routes, stops and stop names are subject to change.*



Presentation outline



1. City's IPTN 2032

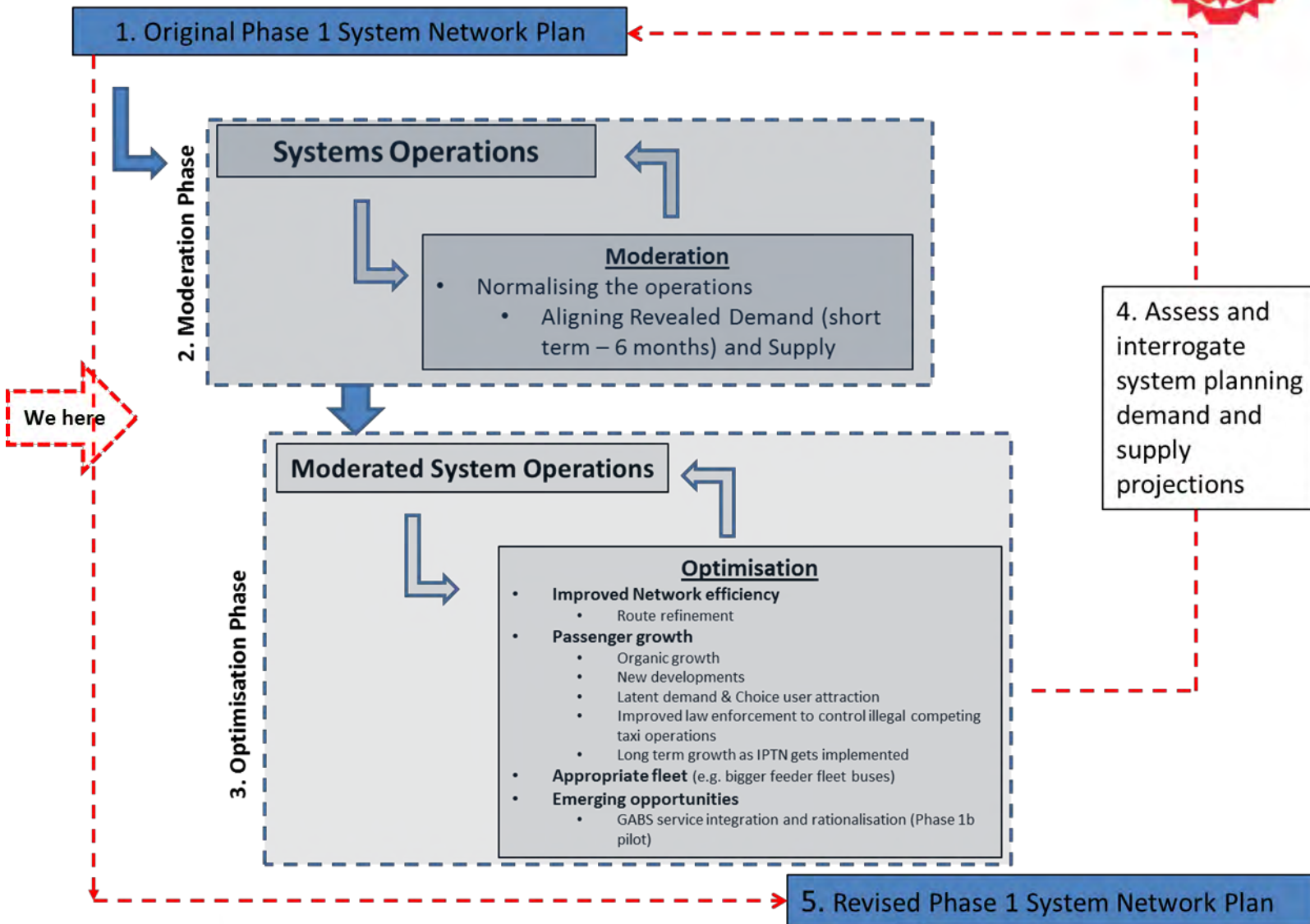
2. Phase 1A Financial Bottom line

3. City's Intervention

- Moderation process
- Balancing the books for Phase 1 and N2 Express

4. Key lessons learnt and
intervention for future phases

Moderation & Optimisation phases



Moderation process

What did we do?

Detailed analysis:
120 items costed
/ranked

Ref No	Description of measure	Measures to be taken to address measure	Shortened description	Confirmed?
26.01	Investigate routes and areas where taxis are operating and where our 6m should be implemented		Implementation of the 6m service reconsidered.	Provisional
27.00	27. Route by Route analysis (detailed review)			
27.02	Current systems plan and timetable is not attracting high levels of patronage along some routes and along most routes at different times of the day.	Undertake detailed route by route analysis based on demand profiles to assess profitability and identify potential cost savings	Route-by-Route optimisation: Balanced approach (existing routes)	Yes
27.04	Route-by-Route: application of deficit reduction principles on routes not yet implemented.		Route-by-Route: application of deficit reduction principles on routes not yet implemented.	Yes
29.00	29. Alternative income generation strategies to reduce deficit			
29.01	Cost reduction measures must be considered in parallel with income strategies to balance costs.	Increasing tariffs / fares for future financial years to reflect actual costs for distances travelled.	Assess impact of base fare increases	Yes: 2015/16
29.02	Cost reduction measures must be considered in parallel with income strategies to balance costs.	Resolve 'Core and Non-Core' services funding allocation on budget.	Resolve core and non-core issues: Ensure that City dept. fund their own costs unless MyCiTi core cost.	Provisional
30.00	30. Infrastructure improvements			
30.02	Congestion and signalling slows down buses and increases cycle time which requires additional buses to service demand.	Optimise system performance by identifying congestion points and improving Infrastructure routing to prioritise MyCiTi bus right of ways.	Infrastructure and signal improvements to prioritise public transport.	Yes

Moderation process

Examples of tools and measures

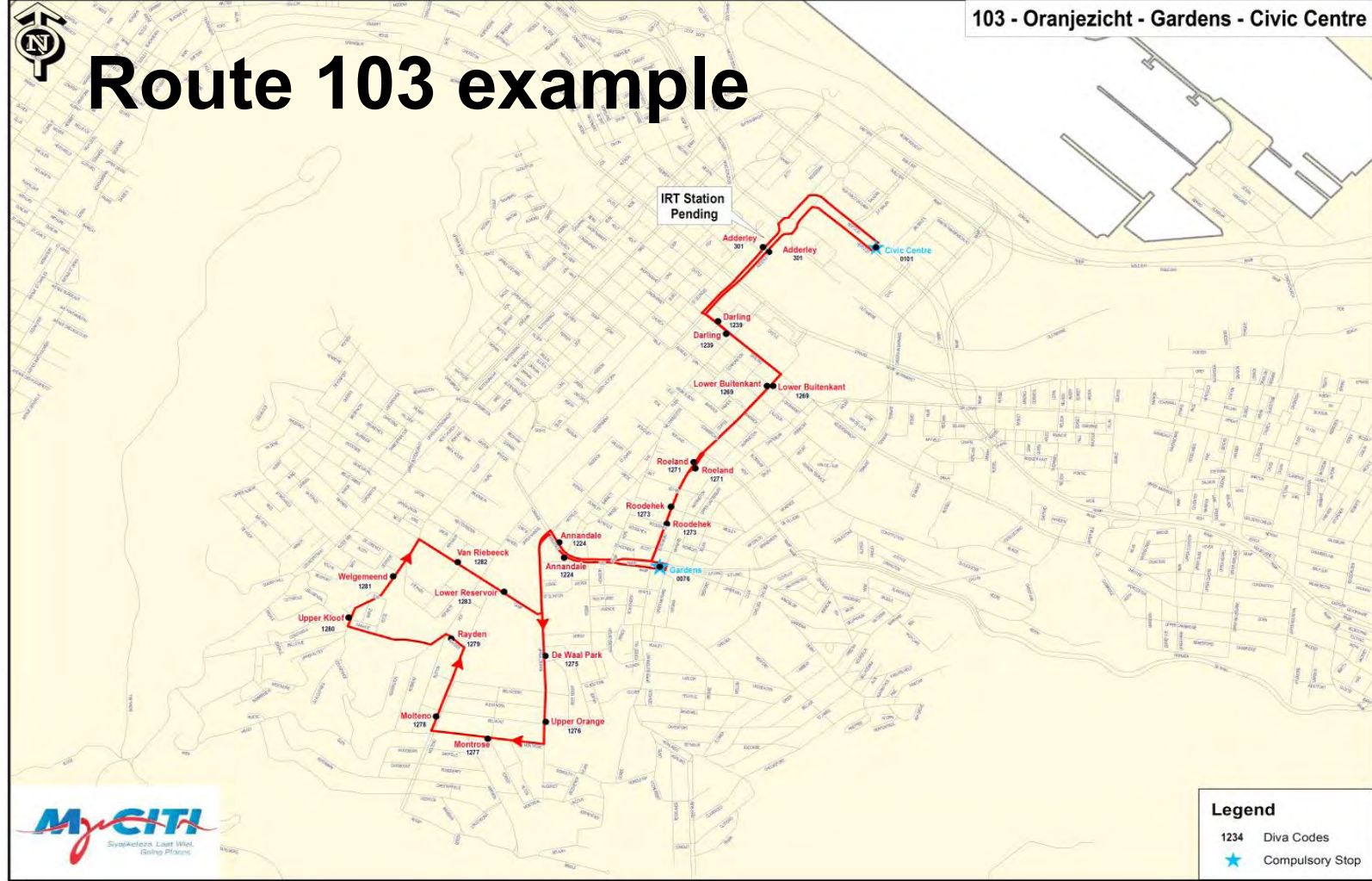


Red text =
examples
summarised in
following slides

1. **Route by route analysis and demand and supply verification**
2. Analysis of Station Management costs
 - Reducing staff at stations (doors, PIDs, queuing), reduced kiosk hours linked to loads
3. Cost reductions resulting from improved bus: driver ratios
4. Reducing recovery/cycle times - improving signaling and infrastructure changes
5. **Developing strategies for improved TDM in the short – medium term**
 - **Increasing peak-of-peak fare and shortening duration of peak period**
 - **Concept of peak capping**
6. Conceptualisation of hybrid MyCiTi-minibus-taxi model
 - Investigating retaining minibus-taxi services in periods where the level of public transport demand and associated financial viability does not warrant all day fully scheduled service
7. Improved law enforcement to reduce illegal minibus-taxi operations, accompanied by synchronised marketing and promotion.



Route 103 example



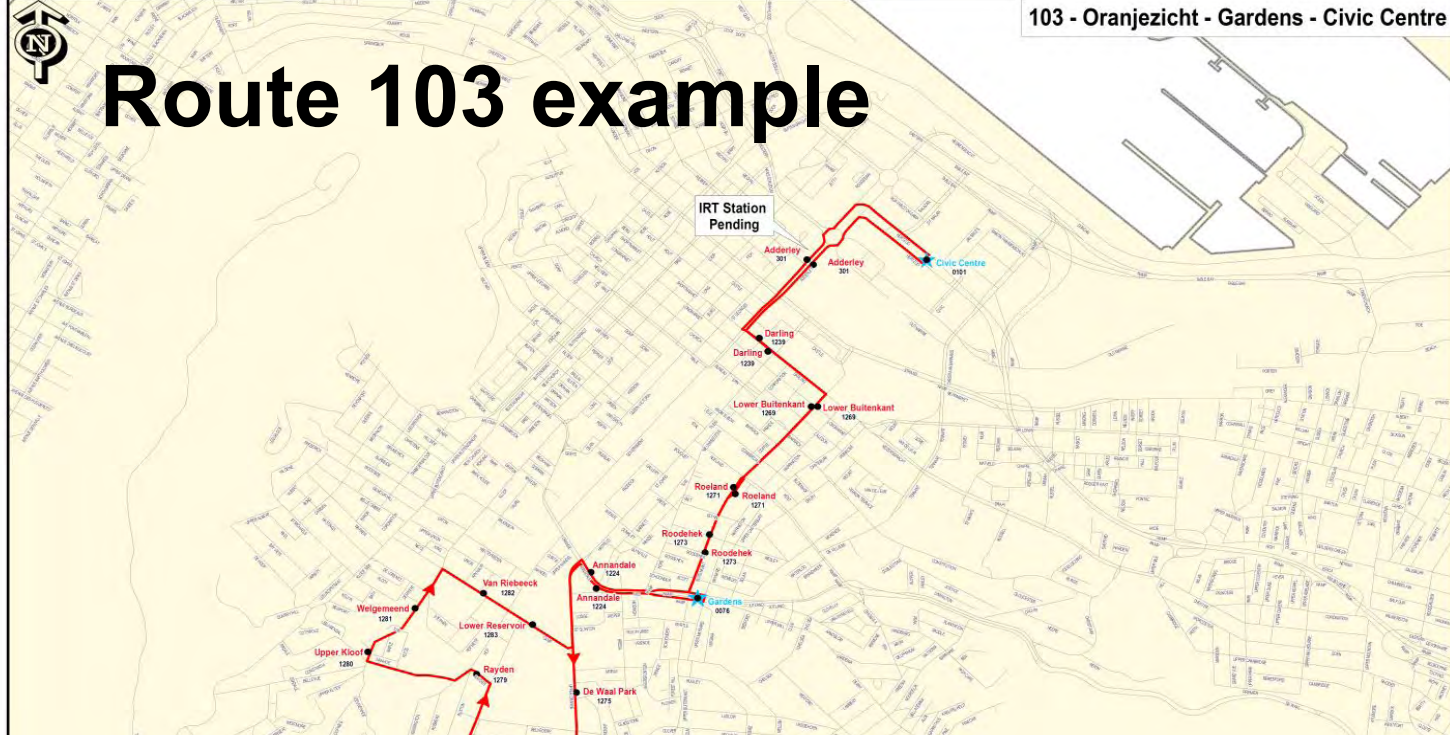
Legend

- 1234 Diva Codes
- ★ Compulsory Stop

- Weekday cycle times all longer than timetabled.
- Very peaked demand in weekday AM peak.
- PM peak demand approx. half of the AM peak demand.
- Low inter-peak demand. Almost zero evening demand after 19:30.
- Only 20% pax boarding on residential loop
- Low weekend demand, less than 40% of weekday demand.
- Significant minibus taxi competition
- Revenue/Cost ratio: 36%

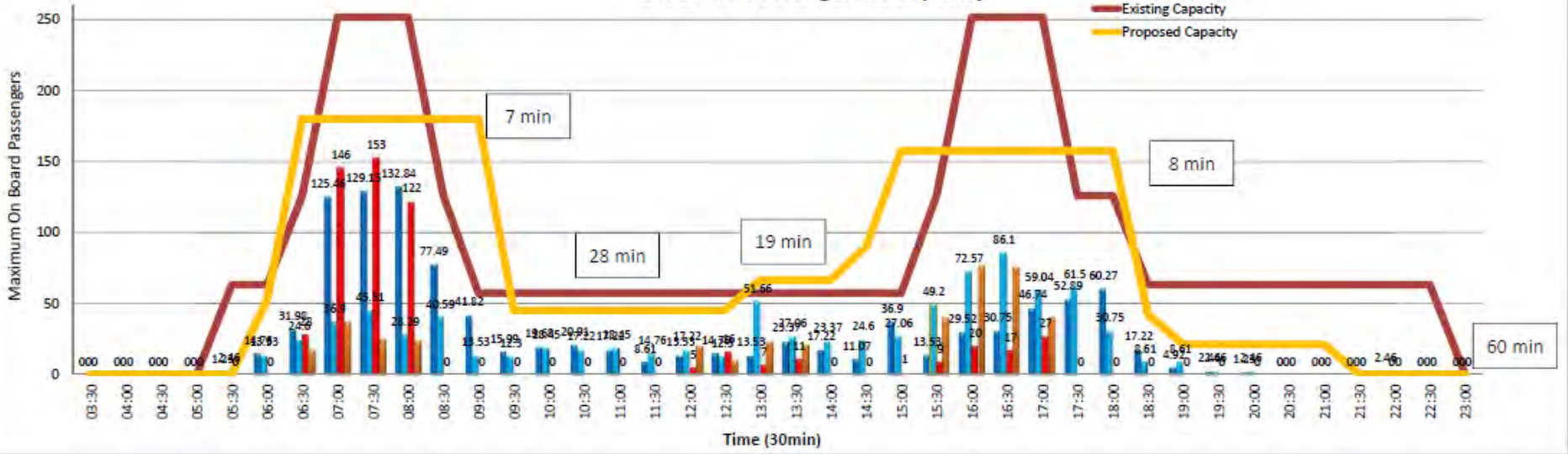


Route 103 example



Weekday - Thursday - 12 June 2014
Route 103
Both Directions
On Board Passengers vs Capacity

- Route 103 - Civic Centre to Gardens to Oranjezicht
- Route 103 - Oranjezicht to Gardens to Civic Centre
- Manual Survey to Oranjezicht
- Manual Survey to Civic
- Existing Capacity
- Proposed Capacity

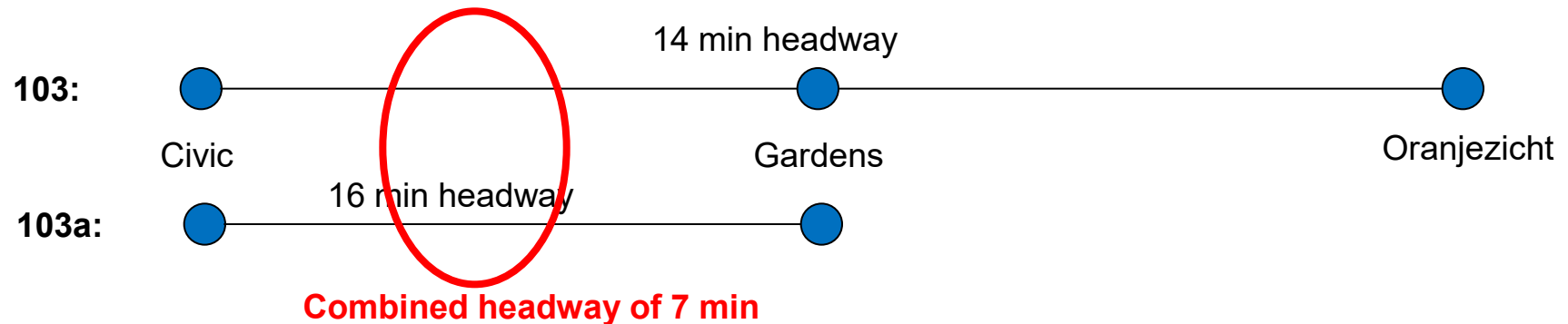


Route 103 Proposals

1. Amend headways

Operational Input Values		Weekday						
		05:30 - 06:00	06:00 - 09:00	09:00 - 13:00	13:00 - 15:30	15:30 - 19:00	19:00 - 20:00	20:00 - 21:30
Headway (min)	Existing	20	5	22	23	5	20	20
	Proposed 103		14	28	19	14	60	60
	Proposed 103a		16			34		
Combined headway			7			10		

Operational Input Values		Saturday				Sunday & PH			
		06:00 - 09:00	09:00 - 15:00	15:00 - 19:00	19:00 - 21:30	07:00 - 09:00	09:00 - 15:00	15:00 - 19:00	19:00 - 21:30
Headway (min)	Existing	30	30	30	30	30	30	30	30
	Proposed 103	60	30	30	60	60	60	60	60
	Proposed 103a								

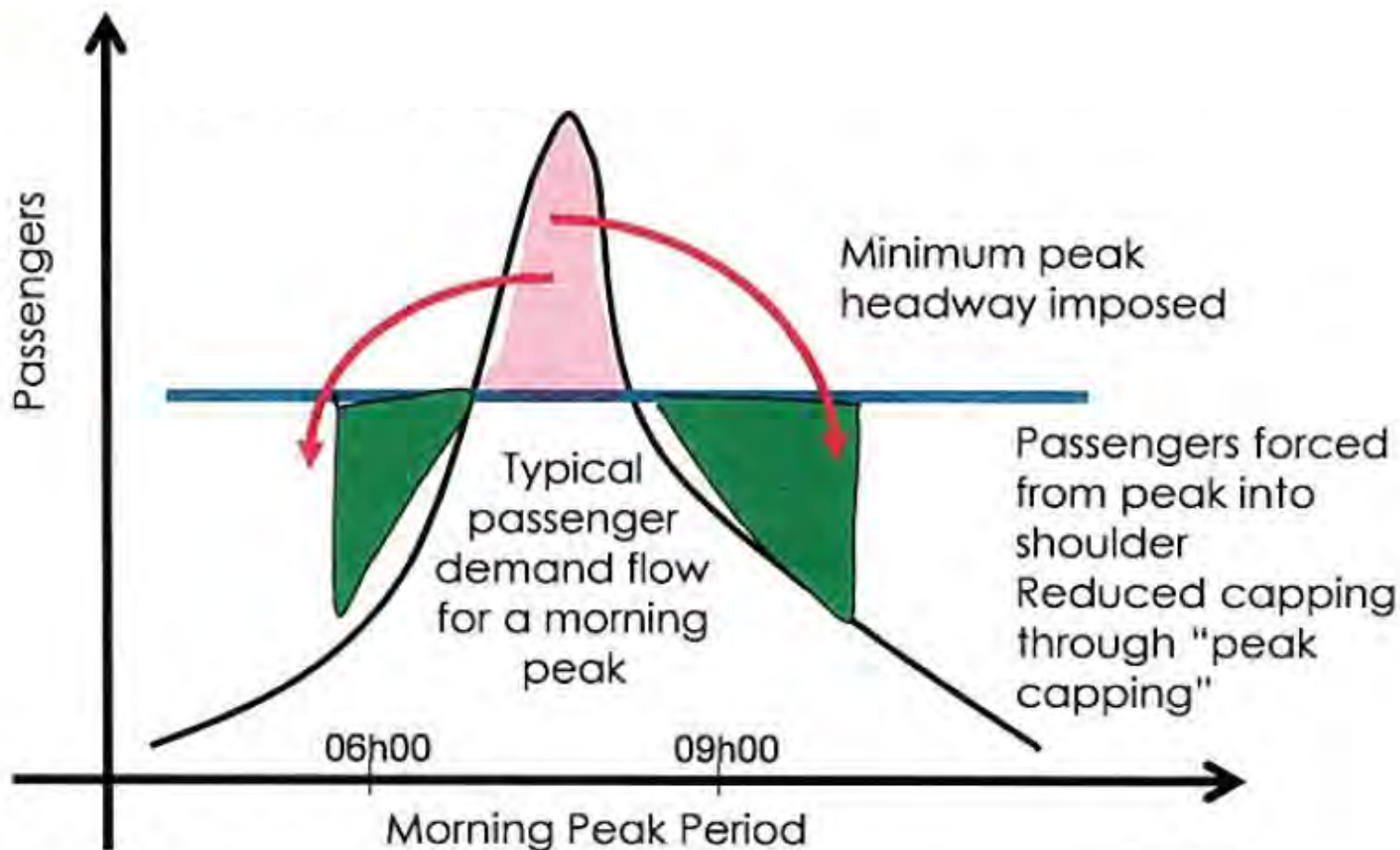




Route 103 Proposals

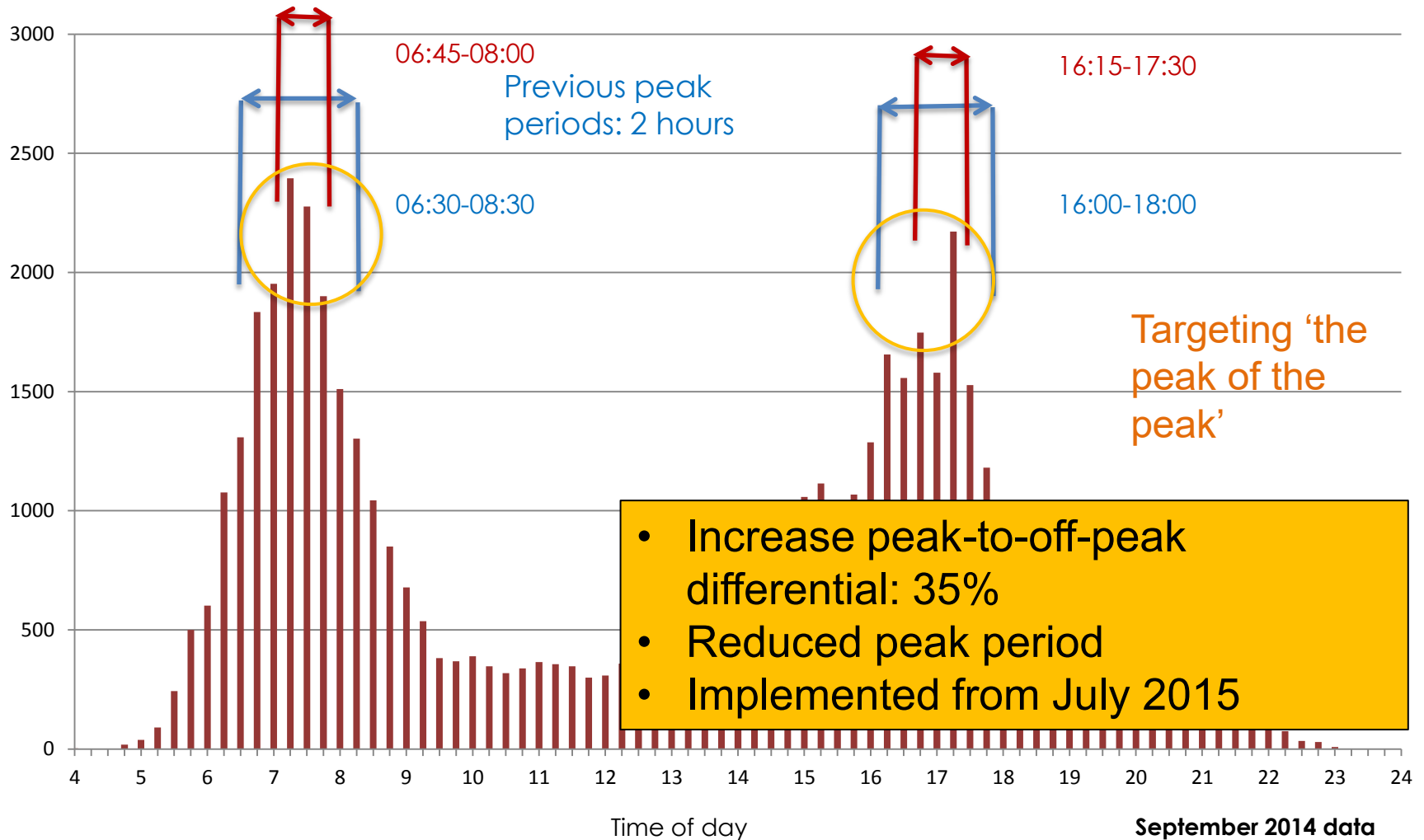
1. Last bus departs at 21:00 on all days.
2. Operate short-turn buses (103a) in the weekday AM and PM peak periods between Civic and Gardens.
3. Strategy related to minibus taxis in peak & off-peak to be developed and implemented
4. Results in a saving of R1 609 745 per annum

Travel Demand Measures (TDM) - MyCiTi peak capping, and incentivising off peak travel (tariff structure)



MyCiTi peak capping, and incentivising off peak travel

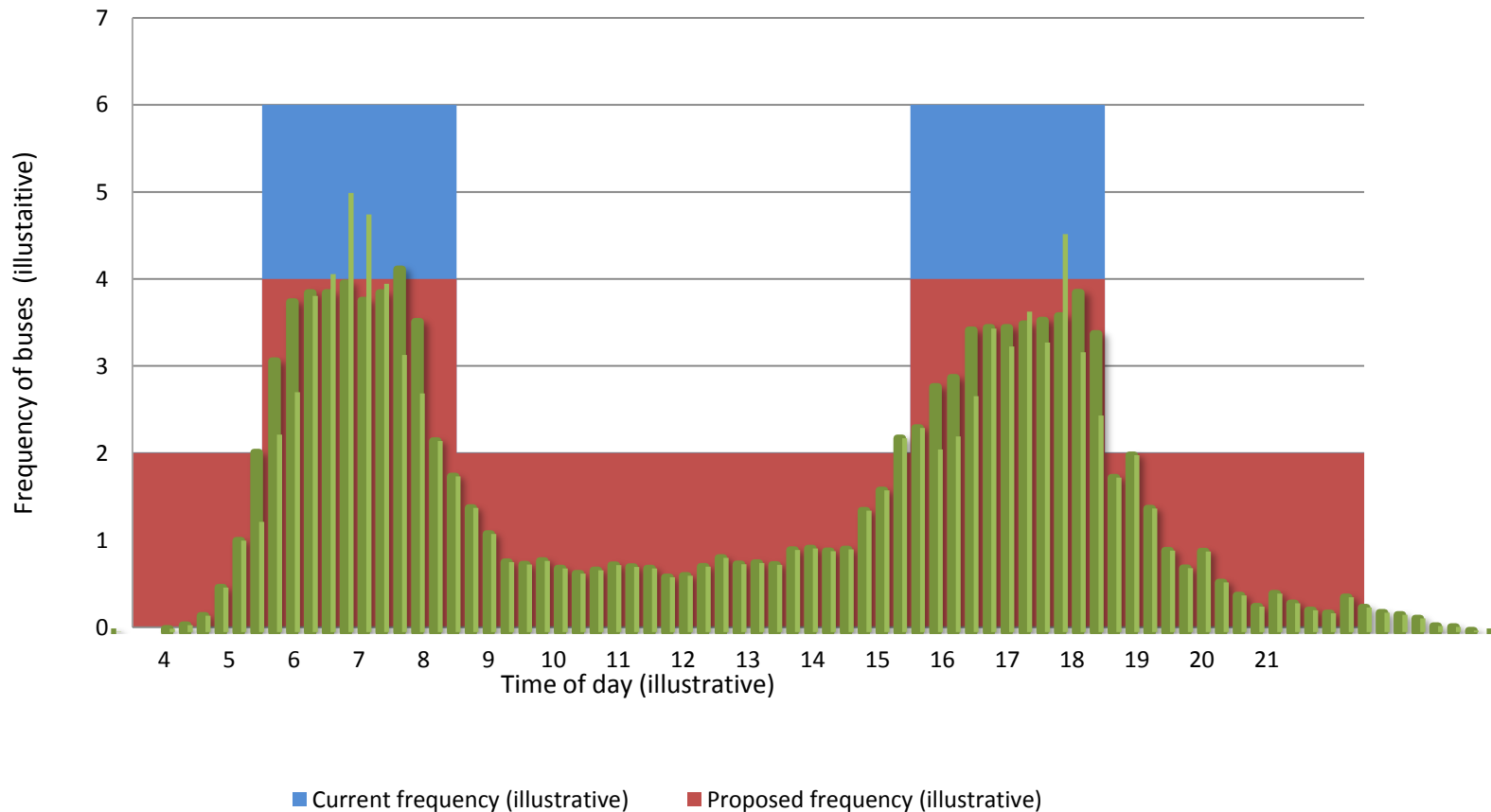
Passenger boardings by time of day



MyCiTi peak capping, and incentivising off peak travel

Service frequency and passenger boarding

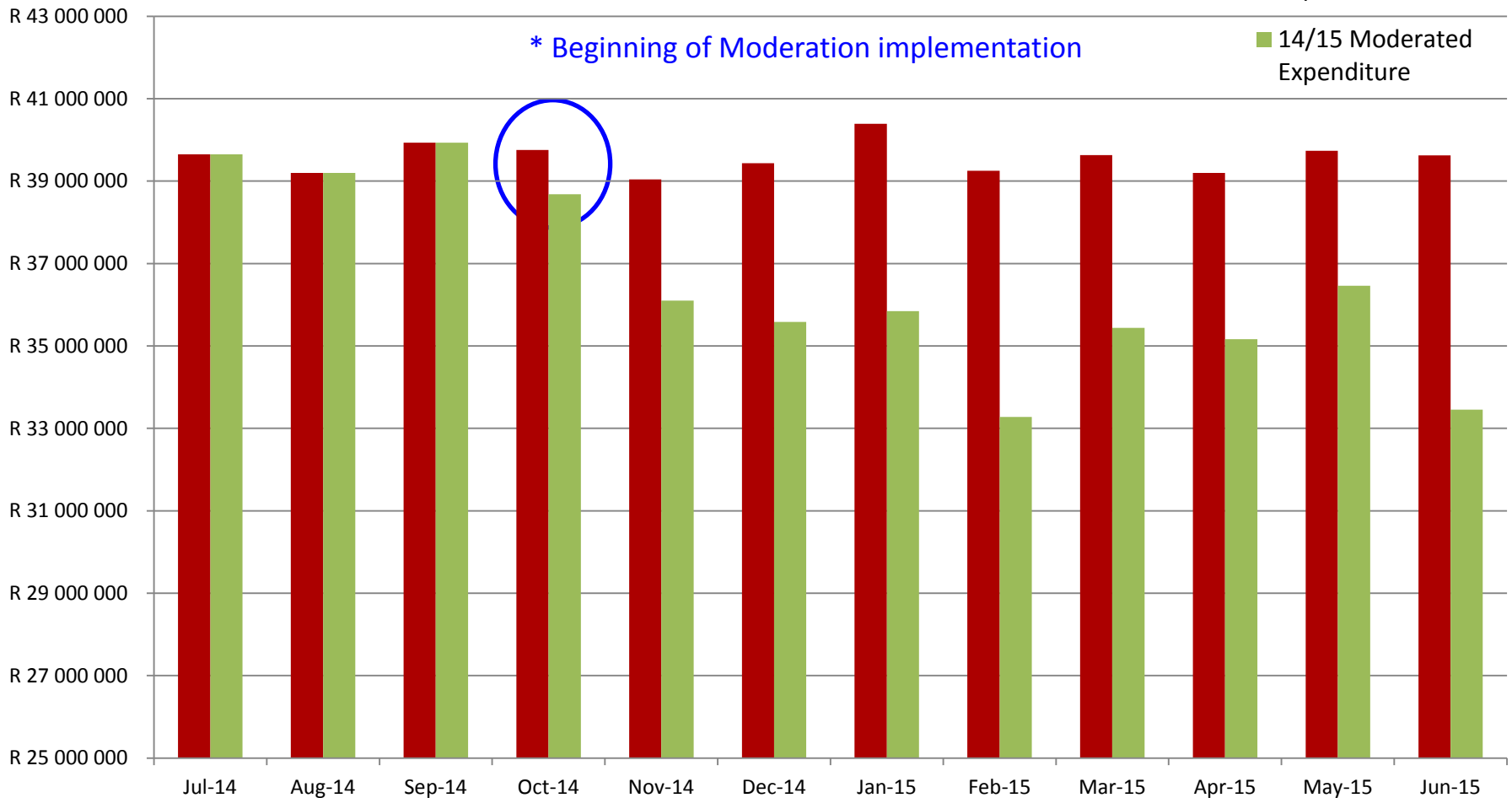
Service frequency



Moderation process Impact on expenditure

- * Excludes fuel price savings
- * No rollout from Oct-14 to Jun-15

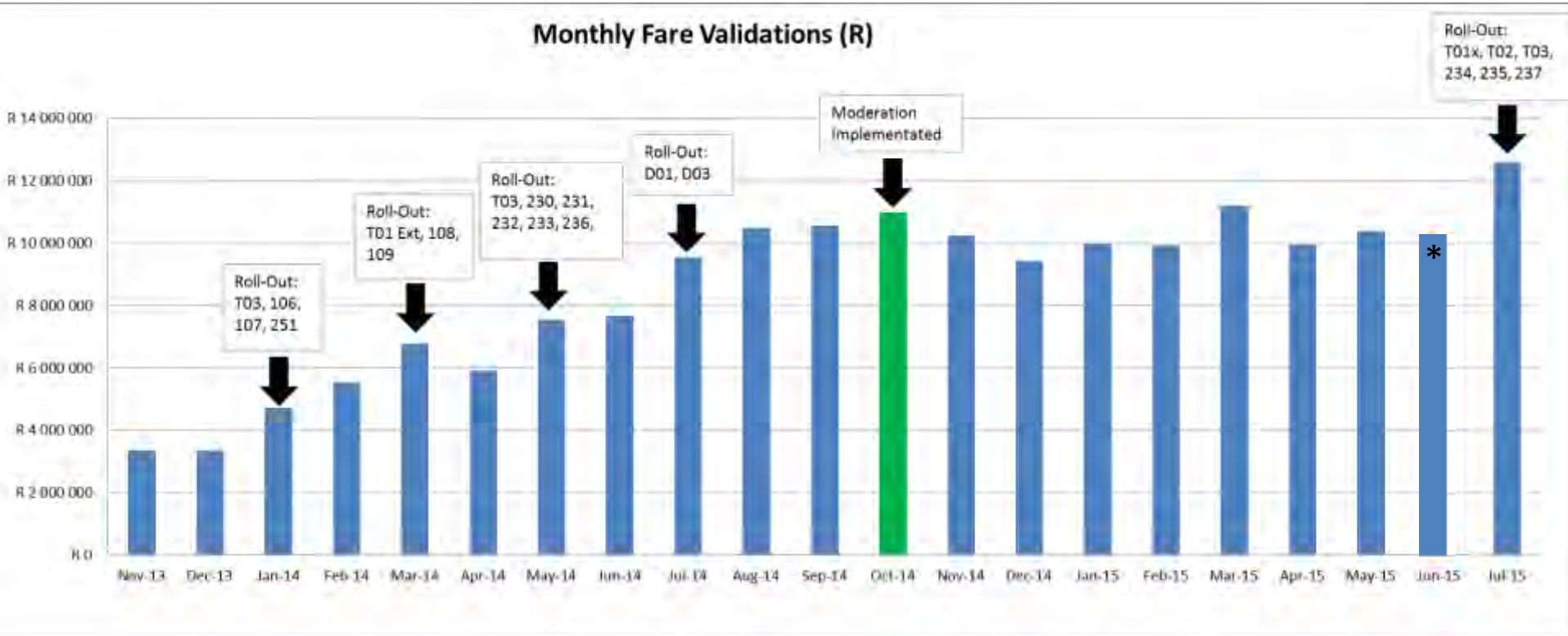
Comparison of 2014/15 Unmoderated vs Moderated Expenditure



Moderation measures (cont.)

Impact on revenue

- * Excludes savings due to lower fuel price
- * No new services from Oct-14 to Jun-15



* correction applied to Jun-15 due to known loss of revenue data

Moderation process

Impact on revenue : cost ratio

Comparison of Kilometre Allocations & Revenue

VOC	12 Yr Contract					Pre-moderation - Sep 14			Post-moderation - Nov 14			July 15		
	Peak buses	Projected km	%	Guaranteed km	Guaranteed %	Peak buses	Actual km	%	Peak buses	Actual km	%	Peak buses	Actual km	%
TPI	106	353 382	32.6%	265 037	75.0%	85	412 038	37.5%	65	294 950	32.8%	63	306 042	27.7%
Kidrogen	133	513 420	47.4%	385 065	75.0%	64	405 136	36.9%	64	339 025	37.7%	71	453 194	41.0%
TBRT	49	216 267	20.0%	151 387	70.0%	46	280 606	25.6%	48	265 142	29.5%	62	345 799	31.3%
Total	288	1 083 069	100.00%	801 488		195	1 097 780	100.00%	177	899 117	100.00%	196	1 105 035	100.00%

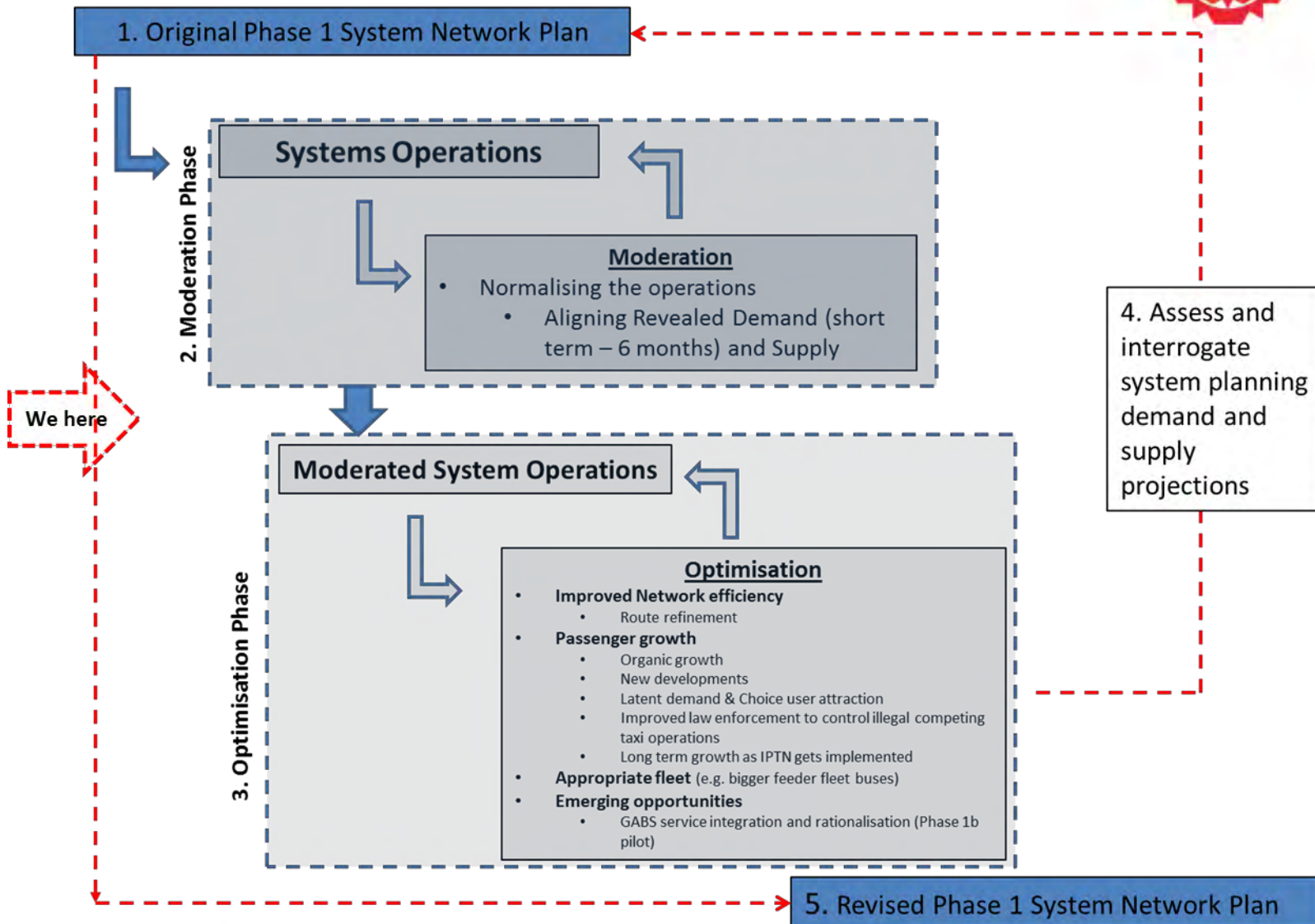
1. Revenue : cost ratio improvements ongoing
2. Despite signif. roll-outs in July 15, monthly kms similar to pre-moderation
3. Revenue reduced by 3% from Sep-14 to Nov 14
4. N2 Express not included as not moderated

*Total monthly VOC costs (incl. depot maintenance, security, events, provisions)

	Pre-moderation - Sep 14	Post-moderation - Nov 14	July 15
Revenue	R 10 565 445	R 10 246 687	R 12 588 600
*VOC Costs	R 31 614 562	R 28 344 800	R 33 600 155
R/C Ratio	33.4%	36.2%	37.5%

-9.2%
-18.1% reduction
0.5%
0.7% increase

Moderation & Optimisation phases



Category 1: easy to achieve and / or low passenger impact

- Improving competitiveness of MyCiTi services by amending routes to allow more direct travel (slides to follow)
- Review of planning for Phase 1B services and adopting new approaches to integration with provincially contracted bus operator (GABS) in Phase 1B (slides to follow)
- Resolve AFC data problems to drive higher revenue
- Resolve re fare losses due to technology issues - e.g. load shedding, emergency buttons used to circumvent fares, gates down
- Detailed analysis of routes to reduce peak buses, but maintain current service standards
- Further optimisation of routes to tailor services to demand (e.g. reduce under-utilised trips in off peak), but maintain adequate standards
- Introduce night service routes throughout system from 8pm to improve evening services on busy route segments
- Introduce further trunk extensions
- Increase advertising revenue
- Review retail concession offerings
- Implement fare system Vending Machines (Include technology associated with cell phones)
- Reallocate kms to VOC with lower operating rates
- Implement partial off-peak closure of stations

Category 2: Moderately difficult to achieve and/or with moderate passenger impact

- Introduce night service type routes on Sundays where appropriate
- Reduce driver to bus ratio from 2.07 to 1.9
- Peak sharing of buses between routes
- Infrastructure interventions to improve traffic congestion bottlenecks and reduce required recovery time
- Review 12m and 18m bus fuel consumption & maintenance rates
- Negotiate financial contribution from private companies benefitting from services (eg Century City, Atlantis Industria, etc)
- Improve passenger transfer efficiency
- Reduce station management costs by 5%
- Further tariff increases
- Re-negotiate VOC rates
- Parking Fees
- Increased penalties levied
- Aggressive marketing and advertising linked to hybrid approach
- Undertake enforcement of illegal taxis, and related industry transition measures

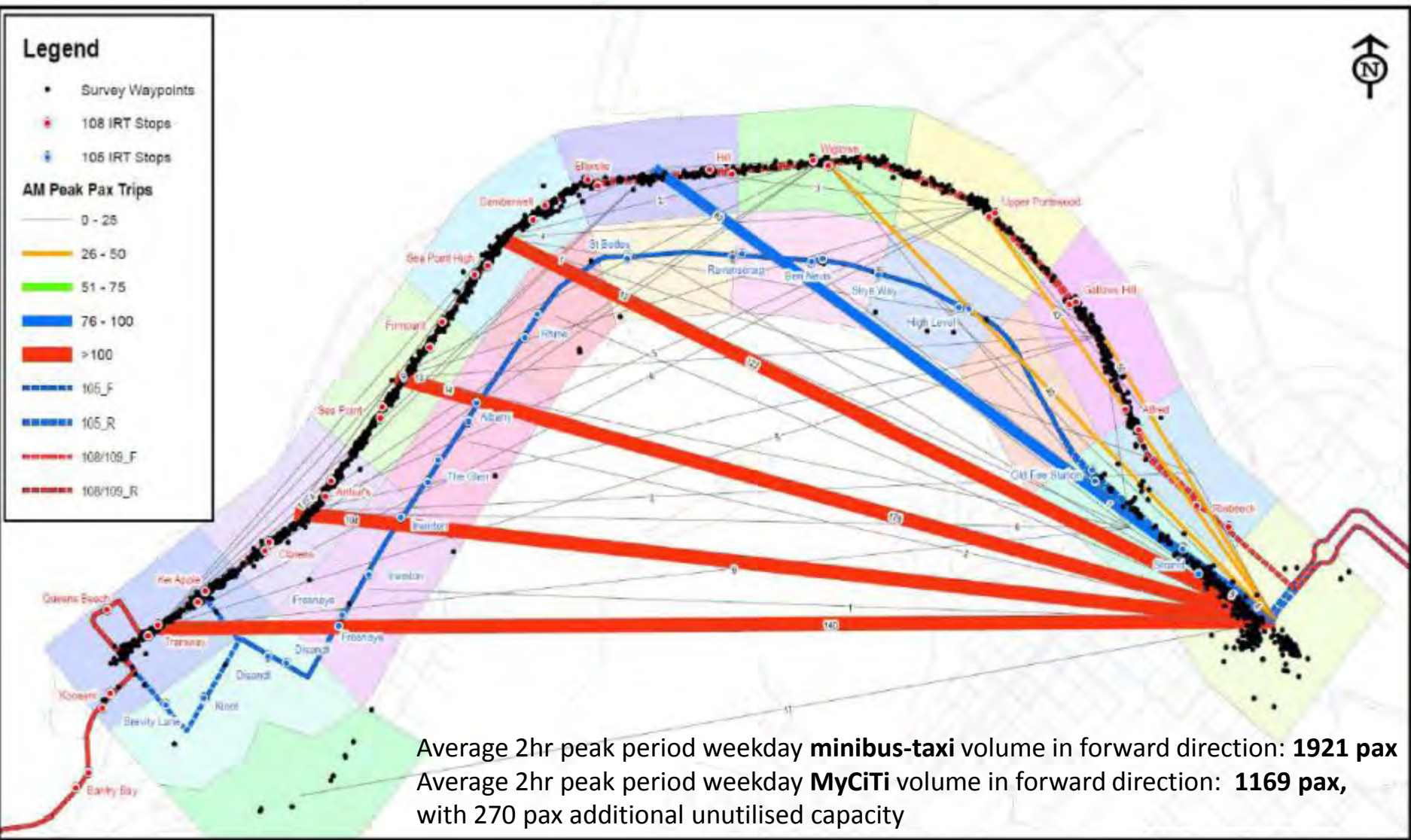
Optimisation process:

(i) Improving competitiveness of MyCiTi services by amending routes to allow more direct travel – LEARNING LESSONS

- Understanding user preference for modal choice
 - Surveys undertaken by Communications show passenger perceptions:
 - Mismatched origin-destinations (O-D's)
 - Longer waiting times & less capacity on MyCiTi
 - The barrier of the myconnect card
- 'Onboard surveys' of minibus-taxi services undertaken of passenger O-D's
- Route extensions and amendments proposed to improve competitiveness of MyCiTi services and increase revenue
 - 112: Trunk extension
 - 101&103: Route amendments
 - 115: Kloof Street - Adderley – Waterfront

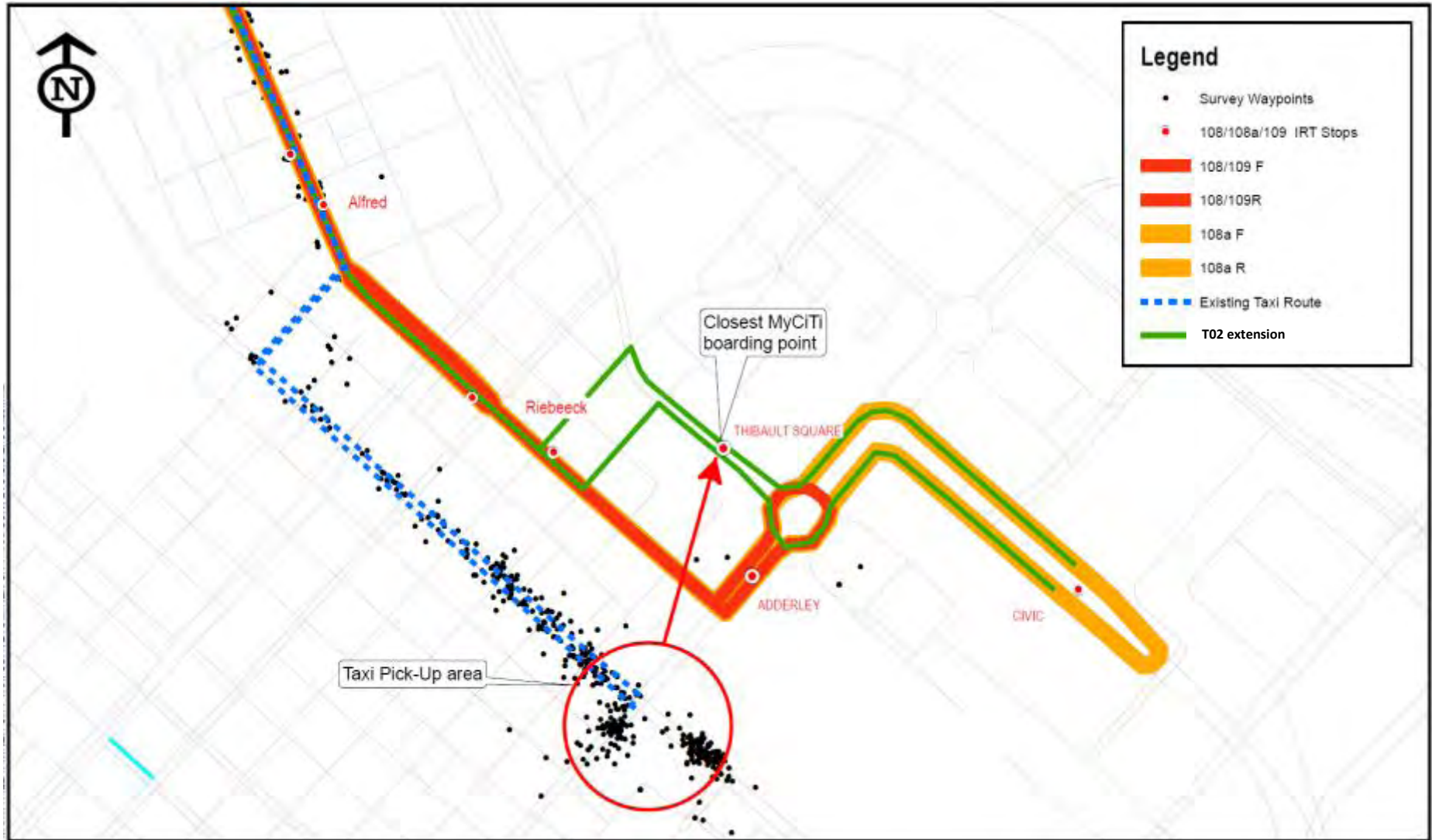
112: Trunk extension

Surveyed Taxi Passenger O-D's along Somerset Rd



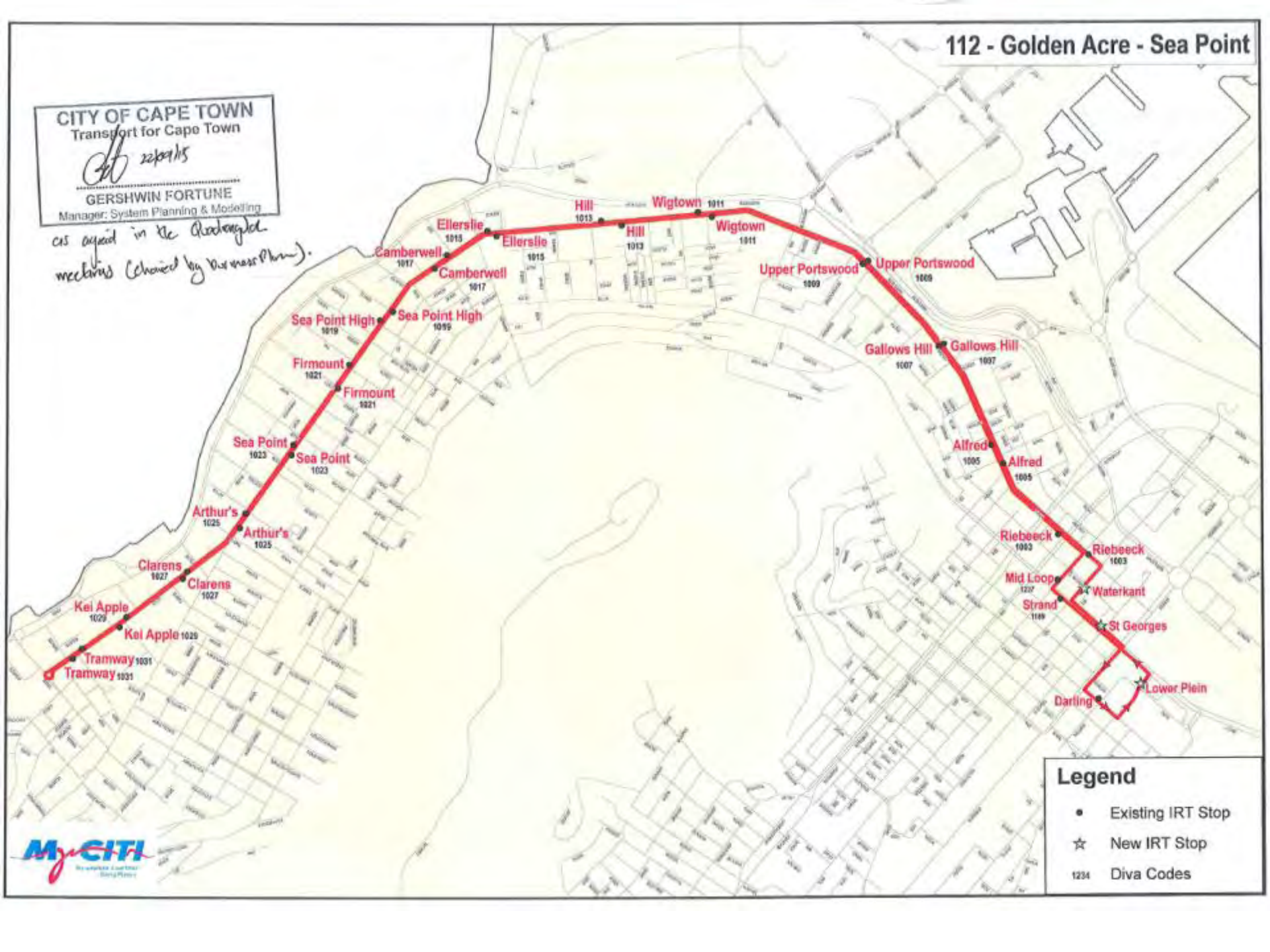
112: Trunk extension

Surveyed Taxi Passenger O-D's from Adderley/Strand to Seapoint along Somerset Road



CITY OF CAPE TOWN
 Transport for Cape Town
CFB 22/09/15
 GERSHWIN FORTUNE
 Manager, System Planning & Modelling

*as agreed in the reconfigured
 network (covered by our next Plan).*



- Legend**
- Existing IRT Stop
 - ☆ New IRT Stop
 - 1234 Diva Codes



Optimisation process:

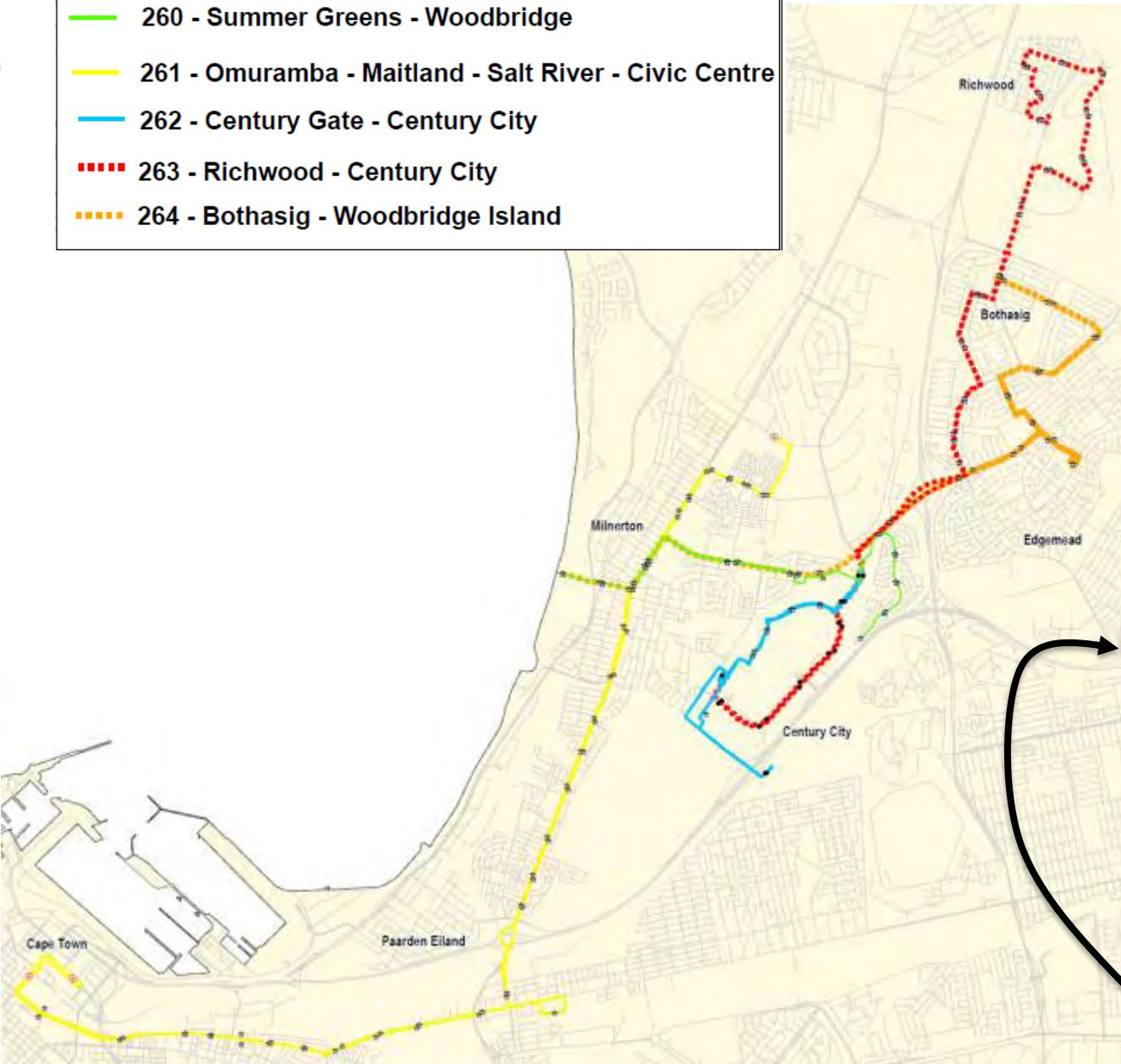
ii.) New approaches to integration with provincially contracted bus operator (GABS) in Phase 1B

- Original approach to Phase 1 was to replace all current operators with MyCiTi services – however: **Lessons learned from Phase 1**
 - A complementary mix of BRT services and existing scheduled bus services is required, which combines s(41) ‘MyCiTi services’ with s(46) ‘existing contracted services’
- City seeking to retain some GABS services in Phase 1B area, and integrate with them with MyCiTi services
- Is it important that this thinking is implemented as soon as possible:
 1. to ensure that integrated PT is achieved in Cape Town, achieving efficiencies and reducing operating deficit of two systems existing together
 2. to test integration model with existing services
 3. Test application before embarking on Phase 2

Phase 1b services

Legend

- 260 - Summer Greens - Woodbridge
- 261 - Omuramba - Maitland - Salt River - Civic Centre
- 262 - Century Gate - Century City
- - - - 263 - Richwood - Century City
- - - - 264 - Bothasig - Woodbridge Island



Route
260
261
262
263
264

Phase 1A R/C average = 45%

Proposed that GABS services remain in Richwood, Bothasig and Edgemean

Existing scheduled s(46) bus services in Phase 1b area



- Proposed these existing services remain.
- Need to ensure integration between MyCiTi (s41) and existing scheduled services (s46).
- **Significant challenges without Contracting Assignment**

<u>Route</u>	<u>Trips per day</u>
Edgemean – City	15 trips
City – Edgemean	20 trips
Summer Greens – City	12 trips
City – Summer Greens	6 trips
Bothasig – City	5 trips
City - Bothasig	5 trips
Salt River – Bothasig	1 trip
Century City – City	7 trips
City – Century City	1 trip
Richwood – City	7 trips
City – Richwood	8 trips

New approaches to integration with provincially contracted bus operator (GABS)

- Original approach to Phase 1 was to replace all current operators with MyCiTi services – however: **Lessons learned from Phase 1**
 - A complementary mix of BRT services and existing scheduled bus services is required, which combines s(41) ‘MyCiTi services’ with s(46) ‘existing contracted services’
- Once Contracting Authority is assigned, services envisaged to co-exist under TCT branding, and during transitional period will change incrementally over time into a single high quality MyCiTi type service
 - Trunks will be provided by BRT type services in dedicated rights of way to improve efficiencies
 - Feeder services will be drawn largely from current services
- Integrated ticketing, unified branding, and quality control measures will ensure integration between the two types of contracted services during the transitional period
- Integrated transport solution for s(41) and s(46) contracts requires integration of funding sources, especially operational funding (PTOG & PTNG) – **urgently Requires assignment of Contracting Authority function, for Phase 1b AND Phase 2**

Practical examples of desirable actions effectively prevented by failure to assign contracting function and associated PTOG

- City has insufficient leverage to ensure
 - **Fare integration** cash/clipcard to smartcard AFC system
 - **System integration:** routes of provincially subsidised services cannot be optimally aligned with MyCiTi routes
 - **Service quality standards:** appropriate contractual mechanisms not in place to ensure high quality of service
 - **Vehicle livery and branding :** Unified branding can only take place when the above criteria are met
 - **Vehicle**
 - **Allocating MyCiTi 9m vehicles to GABS:** Option – unpack costs
 - **Re-capitalisation:** ensuring appropriate bus types are purchased to enable s(46) contracted service to use MyCiTi infrastructure in future, needed to dock at stations; and provide universal access
 - **Changing GABS services:** financial risks – determine before action
 - Could **add efficiencies to GABS services** (for improved services at the same level of subsidy): eg passing lanes etc

Some key lessons learned



- **Operational financial sustainability is essential**
 - If not financially sustainable – then must reconfigure system to make it sustainable (may entail cutting services)
- **...but difficult to achieve in SA cities – due to**
 - Apartheid urban form
 - Long distances
 - Tidal and very peak movement
 - Low income levels
- **Current Phase 1 and N2 Express services**
 - Initially very large operating deficit – How to address?
 - Short term: Moderation
 - Medium to Long Term: Optimisation, improving efficiencies and revenue enhancement

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Approach towards future phases

- Cape Town cannot afford a City-wide system built on Phase 1 principles
- Change BRT model towards TOD/TDM and integrated hybrid design
 - TOD = incremental over long time to change urban form and demand patterns
 - But, everything we do must incentivise it
- Design for flexibility
- **On high demand trunks and core feeders (TOD corridors) – better efficiency BRT**
 - stations on trunk corridors – built and run only as and when they are required
 - choose bus types that lower operating cost per passenger
 - comparative advantage over other modes
 - Seat renewal and bi-directional demand
- **Review feeder service model**
 - Design a hybrid solution between BRT and minibus-taxis
 - Incremental changes to improve current scheduled transport services

Approach towards future phases

Review of Feeder service model

- **Integrated public transport service model**
 - Role of 'traditional' bus services
 - Role Mini-bus taxi services (Ph1 and Ph2A)
- **Greater focus on feeder priority measures**
- **Bigger feeder buses**
- **Universal Access standards**
- **Park & Ride facilities**



New approaches to integration with provincially contracted bus operator (GABS)

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Approach towards future phases

Infrastructure provision

- **Station types: Mixture of open and closed stations**
 - Reduce operational cost linked to closed stations
 - Increase closed station spacing
 - Incremental implementation
 - Only when demand achieves a threshold then Closed station can be provided
 - Requires flexibility within the design to come back and construct a closed station if required

System Optimisation

- **Route short turns to align more accurately with demand**
- **Improved fleet utilisation**
 - Buses can be used on different routes to maximise utilisation
- **More extensive use of Trunk Extensions or Complementary services.**
 - Where trunks penetrate feeder area
 - Reduces need for transfer
 - Reduces feeder fleet size
- **Express services**

Long term – aggressively encourage more TOD

- **Property development in prioritised station precincts**
- **Commercialisation**

**THANK
YOU**



The City of Cape Town's Transport Authority