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KWADUKUZA MUNICIPALITY

Strategic Transportation Study (STS)

Ballito Drive to Sheffield Manor and Surrounds

03 December2020

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Project Scope & Deliverables

SMEC South Africa (Pty) Ltd was commissioned by KwaDukuza Municipality (KDM) to undertake a Strategic Transport Study for the Road Network from Ballito to Sheffield Manor and Surrounds.

Project Deliverables include:

- Saturn Travel Demand Model;
- Roads Master Plan derived from the outcomes of the Saturn Model development;
- Travel Demand Model Report

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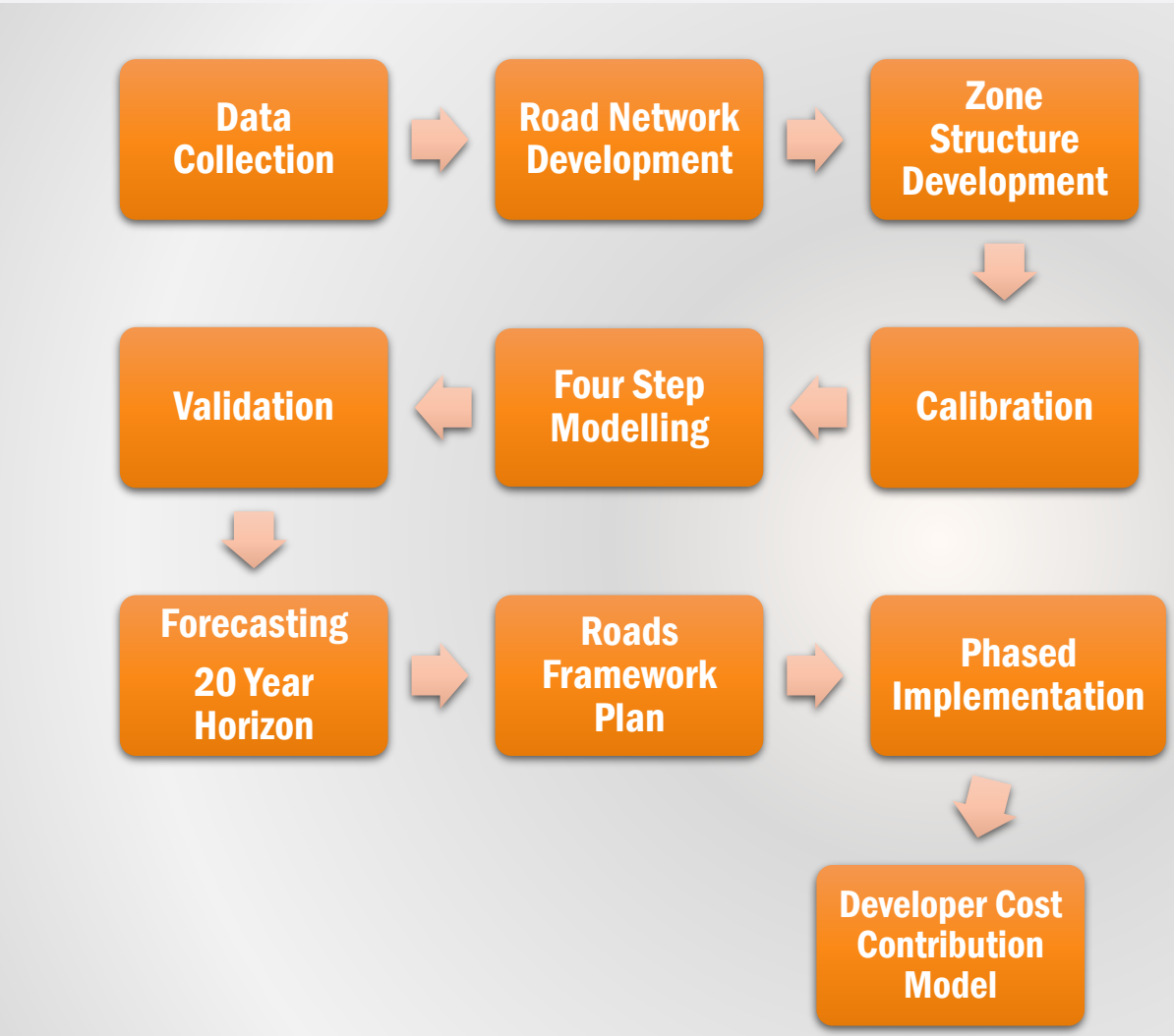
The Traffic Modelling Methodology
(Macro-Simulation using SATURN Software)



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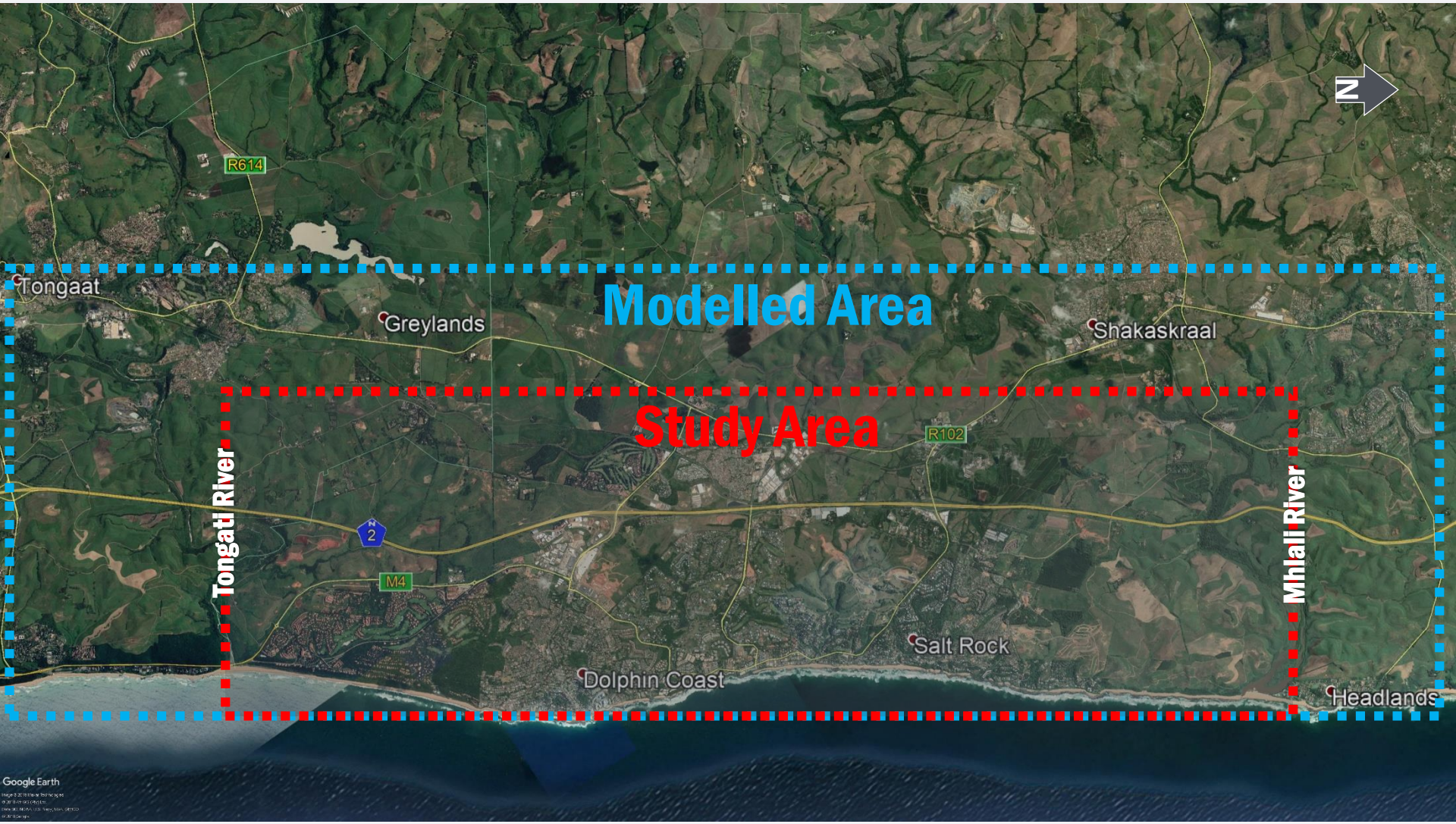
Study Area Extent



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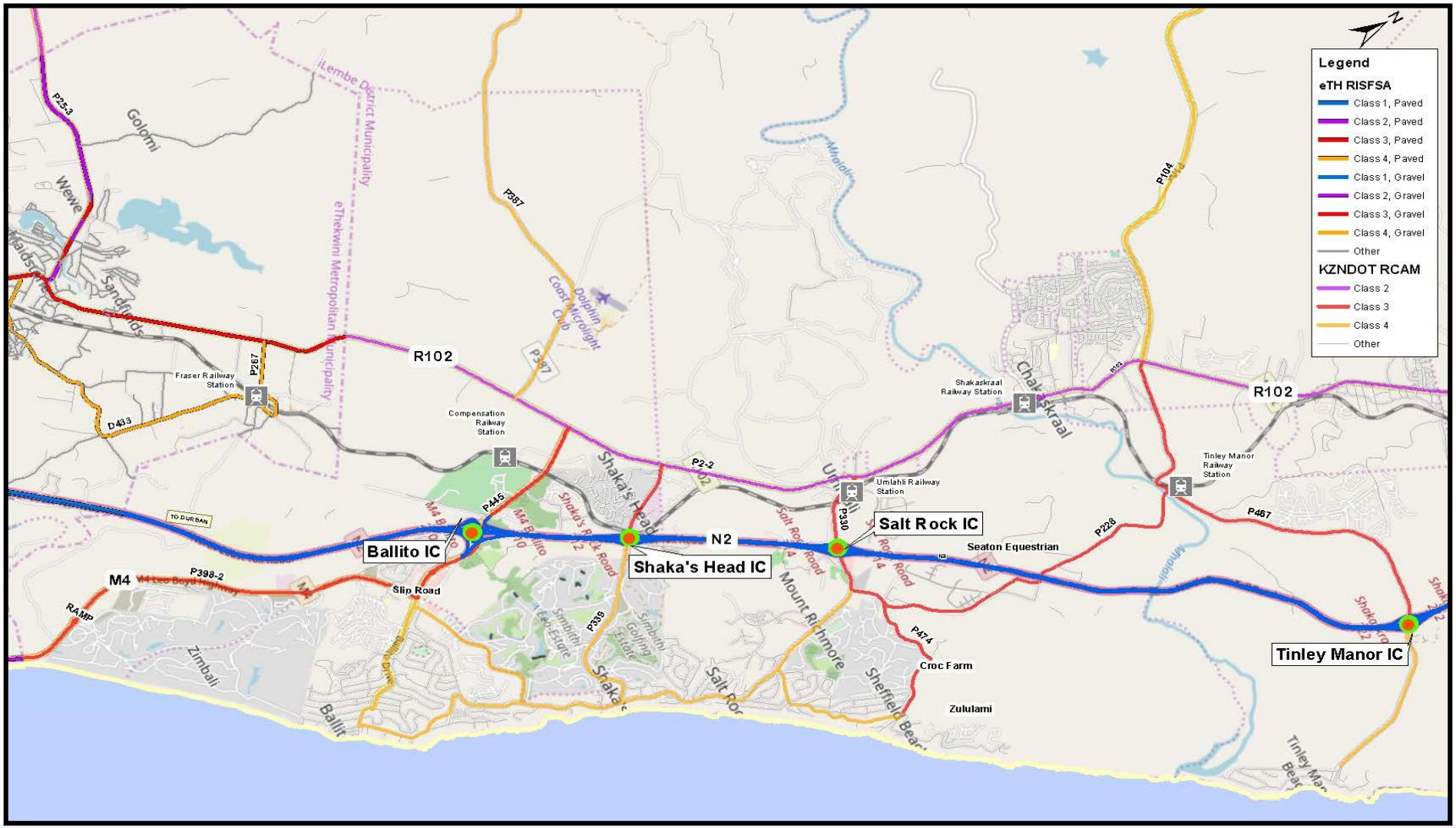
Existing Road Network Classification



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Data Collection

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Data Used

- Traffic Impact Assessments
- Traffic Survey Data from TIAs
- New Traffic Surveys undertaken June 2019
- SANRAL Design of Upgrade to N2 Section 27 from Ballito to Tinley Manor (JG Afrika)
- KwaDukuza Landuse Shapefiles, DFA Layout 2017, Zoning LUMS 2017 and Landuse for Unkown areas
- KwaDukuza Local Municipality Scheme Nov 2016
- KwaDukuza Draft Integrated Development Plan for 2019-20
- KwaDukuza City Development Strategy (Iyer)
- Greater Compensation Area Conceptual and Development Framework Plan (RHDHV)
- The 50 Year Durban Aerotropolis Master Plan, Final Draft January 2018

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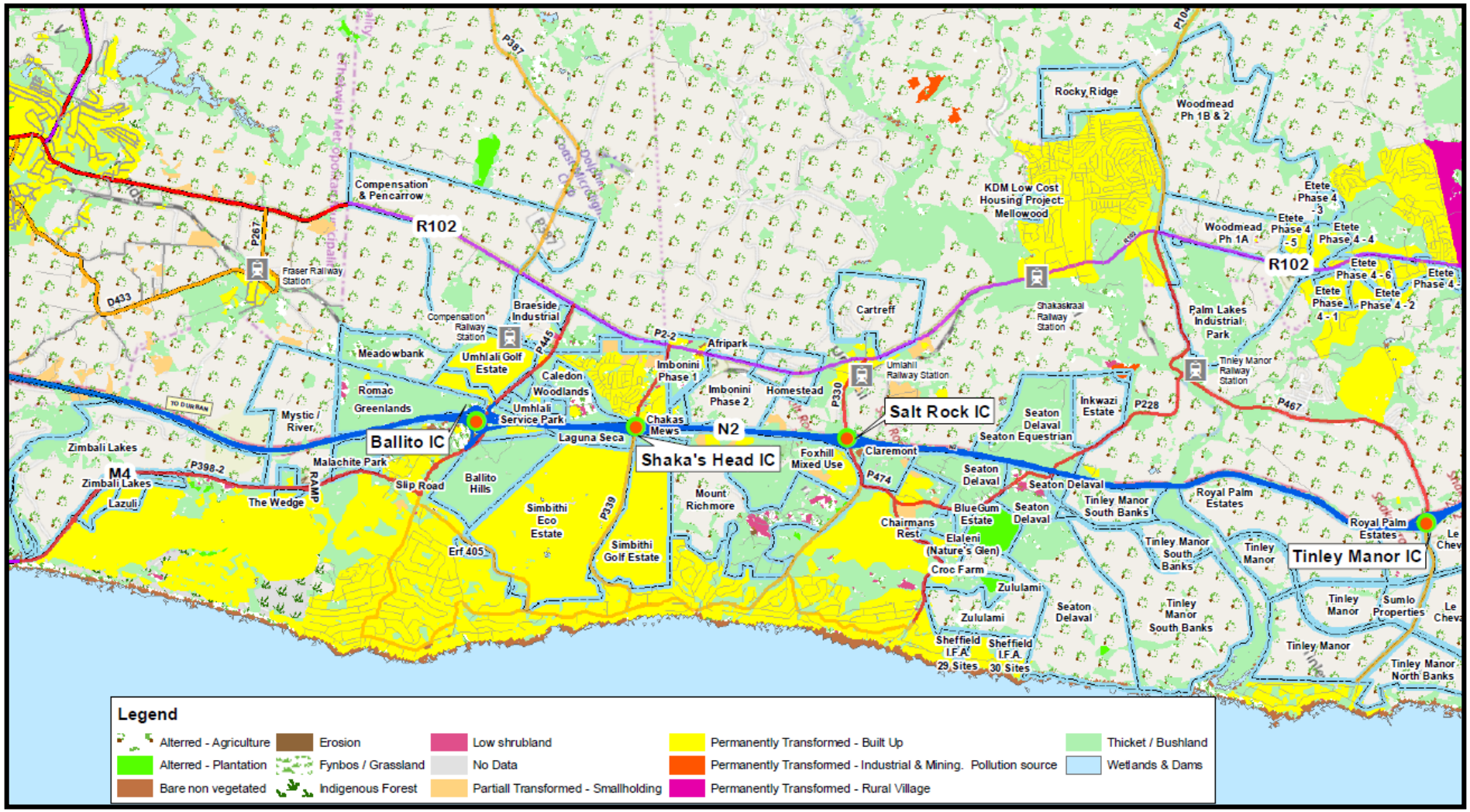
Existing Study Area Land-use



(Source: KZN Ezemvelo Wildlife)

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Traffic Impact Assessment Reports (TIAs) Received within Study Area

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Traffic Impact Assessment Reports (TIAs) Received within Study Area

Traffic Impact Assessments			
1.	Compensation	15.	Chakas Mews
2.	Romac	16.	Imbonini Phase 2
3.	Greenlands	17.	Umhlali Park
4.	Lazuli	18.	Springvale
5.	Hilltop Estate	19.	Zululami
6.	Zimbali Lakes	20.	Blue Gum
7.	Wedge	21.	Seaton
8.	Imbali	22.	Tinley Manor South Banks
9.	Erf 3243 Ballito	23.	Mystic River
10.	Malachite	24.	Homestead
11.	Ballito Hills School	25.	Cartreff
12.	Ballito Hills	26.	Homestead
13.	Ballito Bay Mall	27.	Erf 405 Ballito
14.	Laguna Seca		

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Kwadukuza Landuse Management Scheme (LUMS) Received

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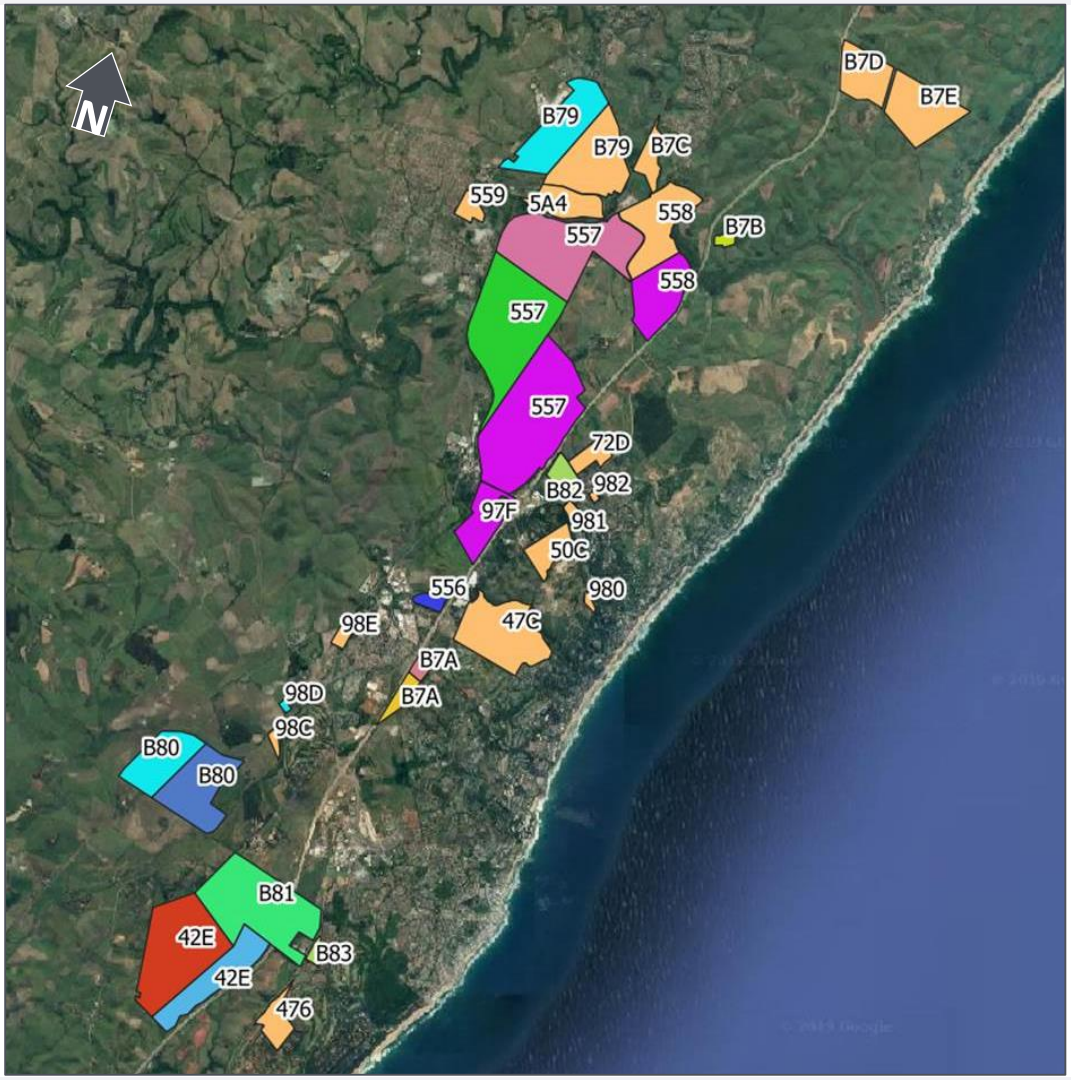
KwaDukuza Additional Land-use for (LUMS) Unknown Areas



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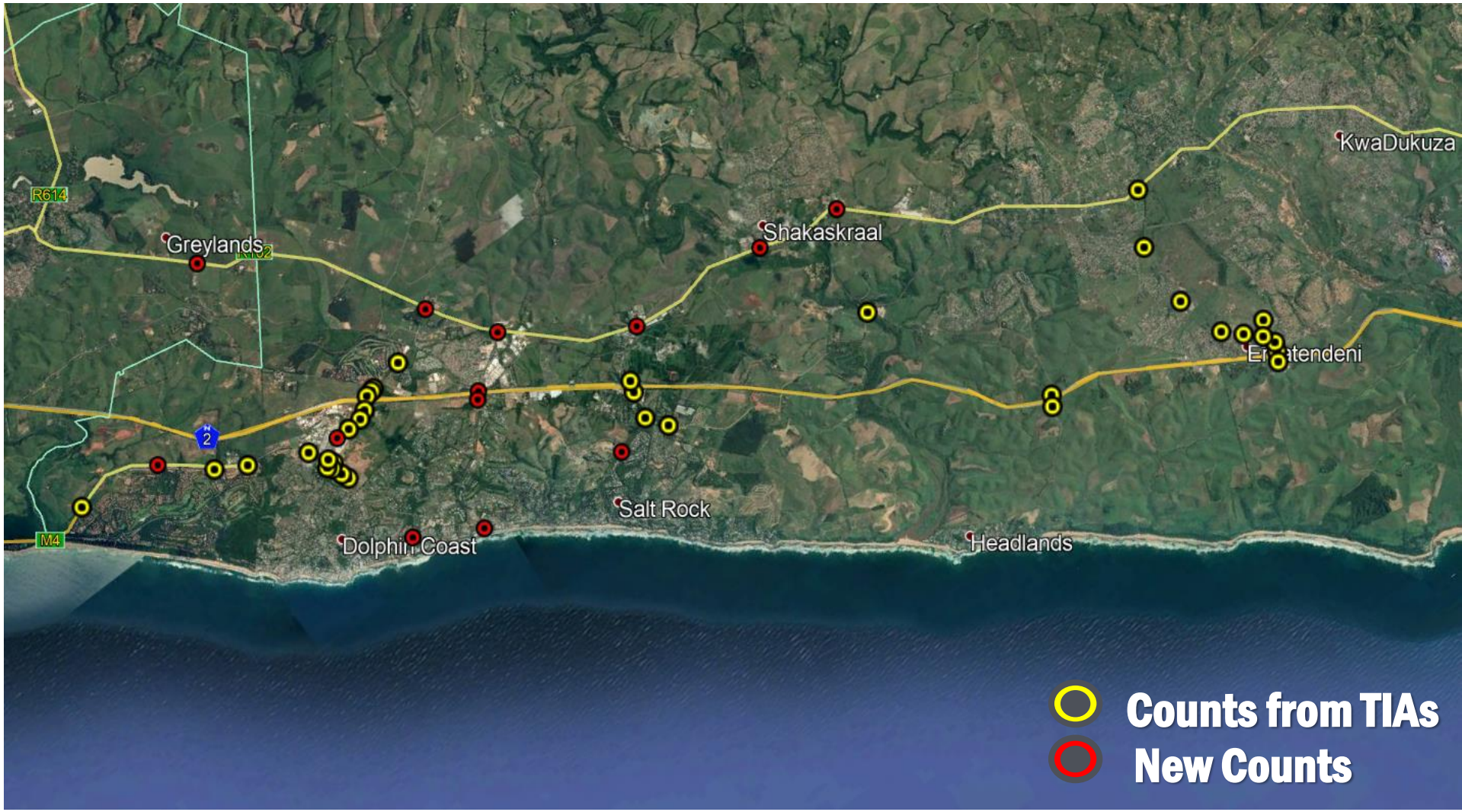
Traffic Survey: June 2019



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Traffic Modelling and Forecasting

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Model Scenarios

Taking into consideration the strategic nature of the envisaged road improvements, as well as the planned developments within the study area, the following model scenarios formed part of the assignment:

- 2019 Base Year Traffic Flows;
- 2039 Horizon Year with full TIA Development; and
- 2039 Horizon Year with LUMS

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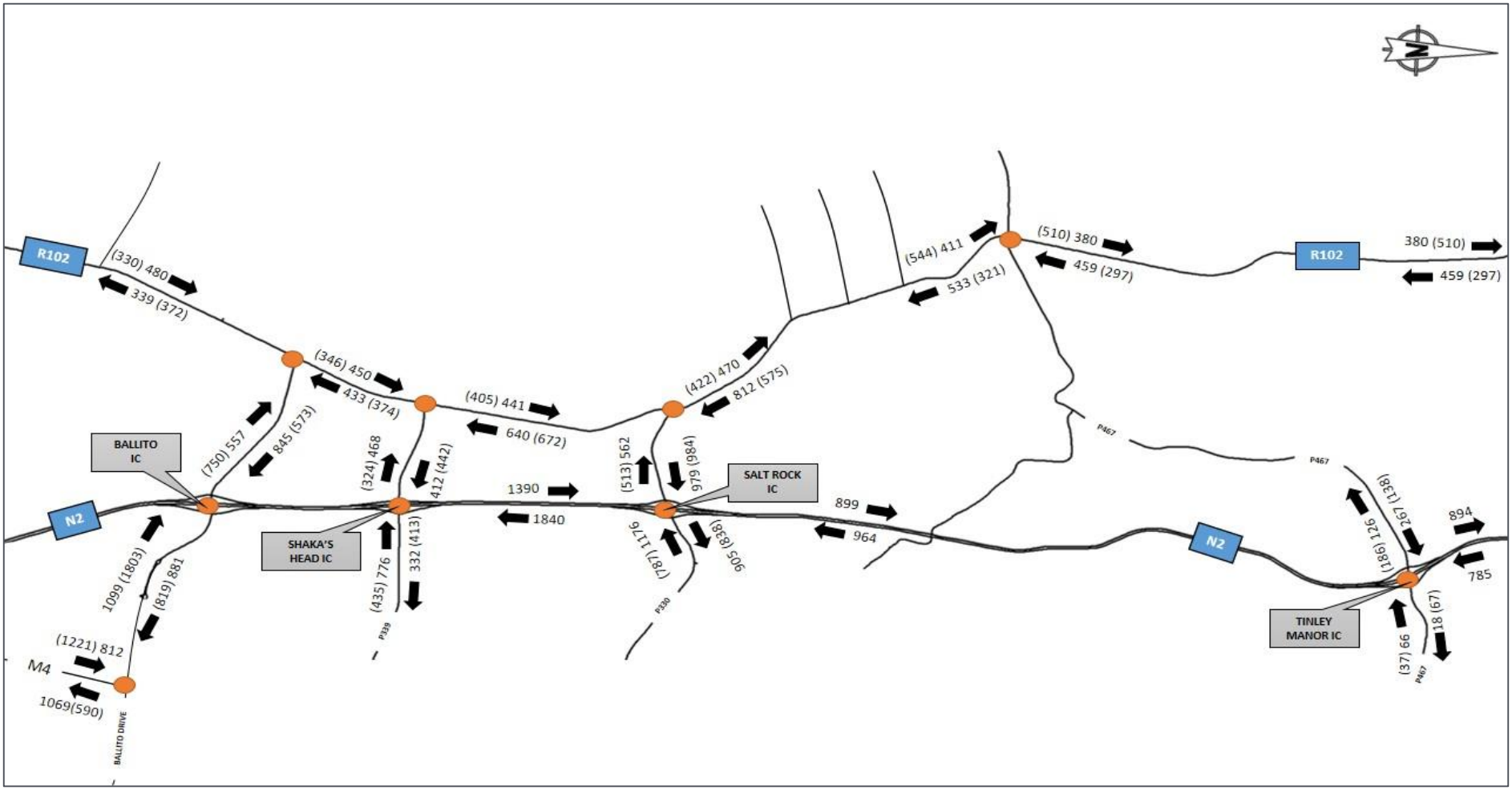
2019 Base Year Traffic Flows



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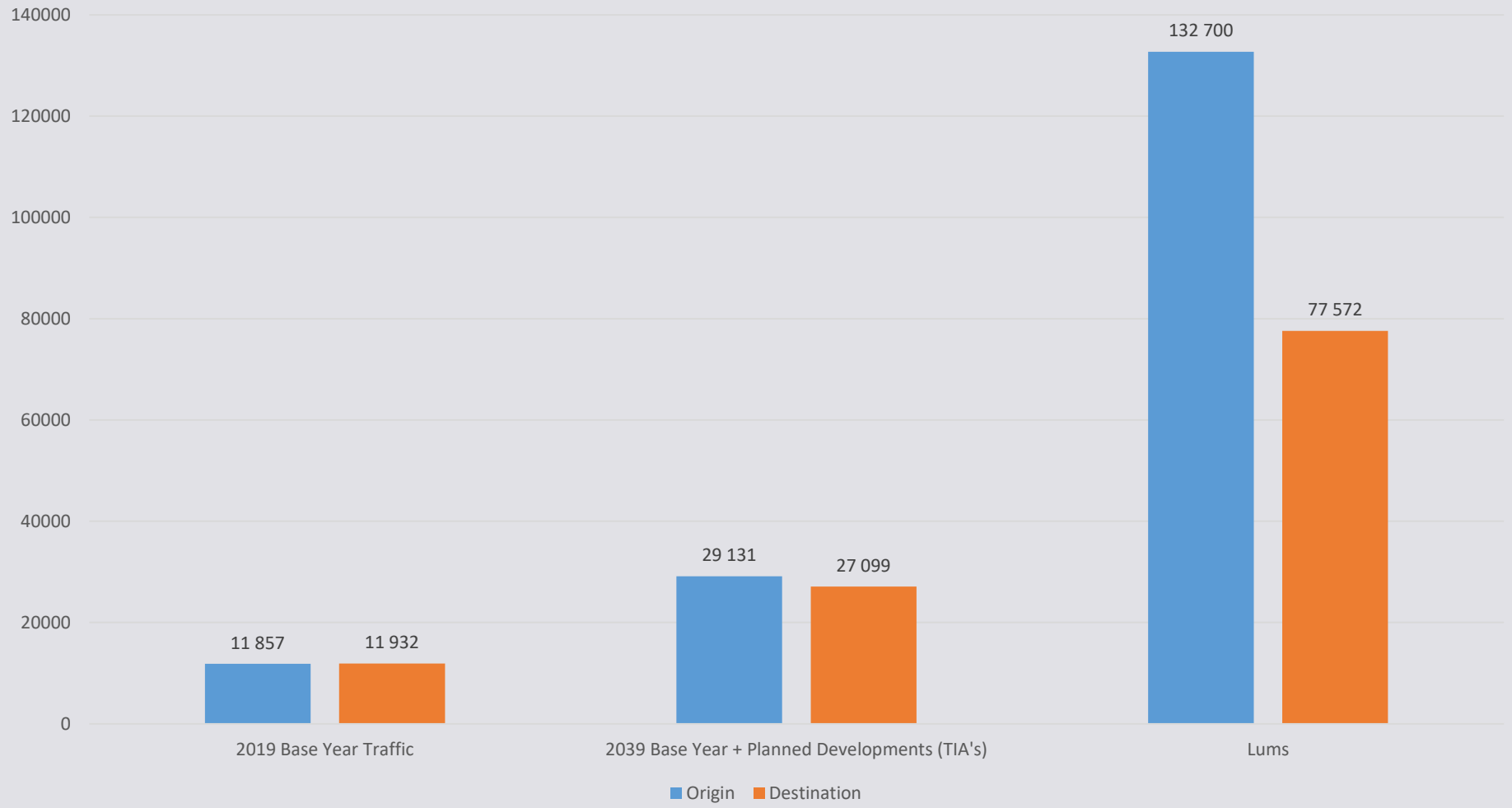
Trips and Trip Generation



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2039 Horizon Year + LUMS Data

- The current proposed KwaDukuza LUMS trips and trip generation are significantly higher than the existing and TIA trips; and therefore
- No realistic road network improvements would be able to accommodate the anticipated traffic flows;
- It is our submission that refinement of the land use bulks is required;
- Then would it be appropriate to develop an ultimate road network to accommodate the 30 Year Horizon traffic flows with full build-out of the LUMS Land Parcels bulks;
- SMEC further submit that the LUMS trip generation warrants a solution that includes public transport; and
- A detailed public transport study should therefore be undertaken. *(See Public Transport Thresholds included in the STS, i.e. Mini Bus taxi, BRT and Rail)*

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Link Capacity Analysis

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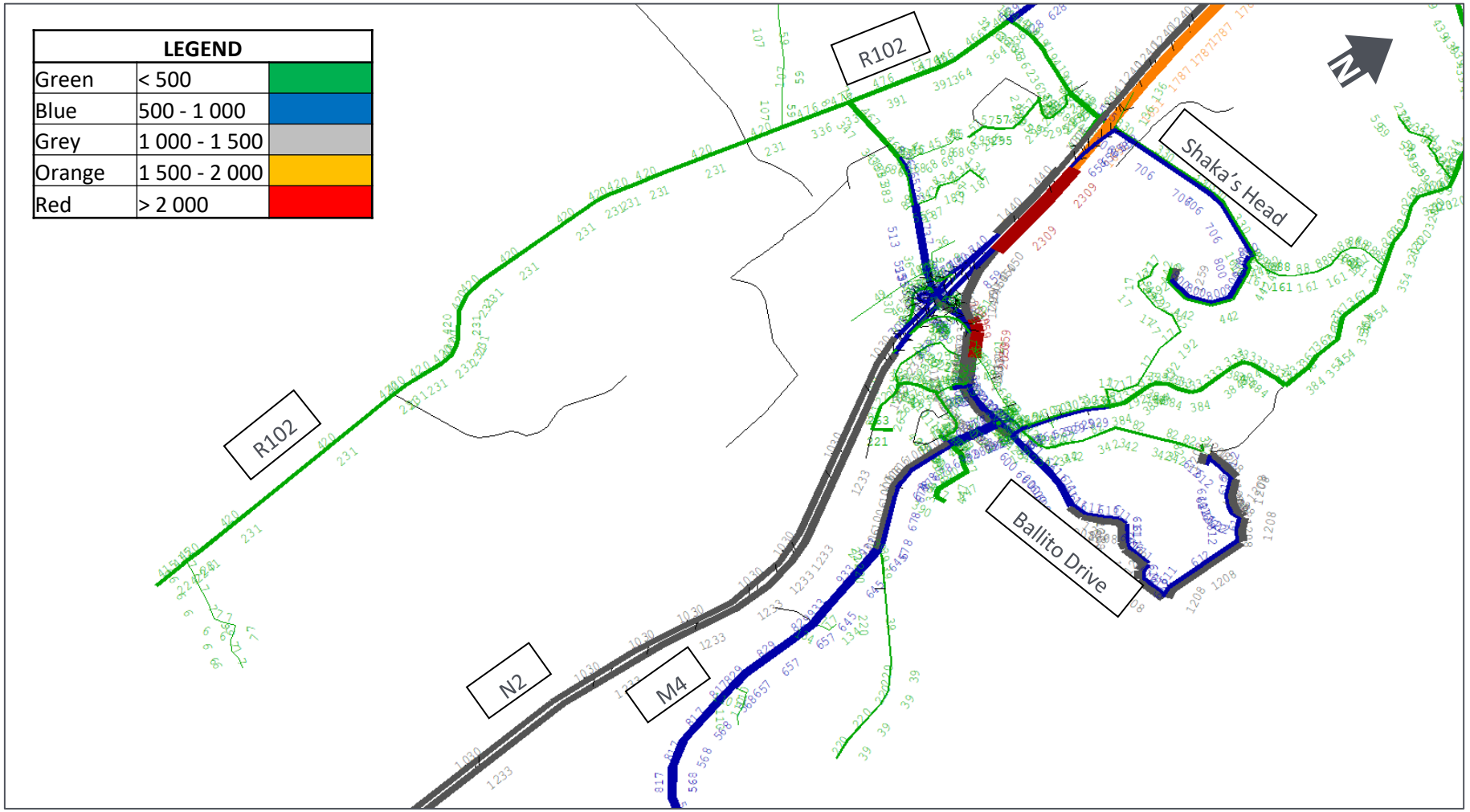
2019 Base Year
AM Peak Hour Link Flows (1 of 2)



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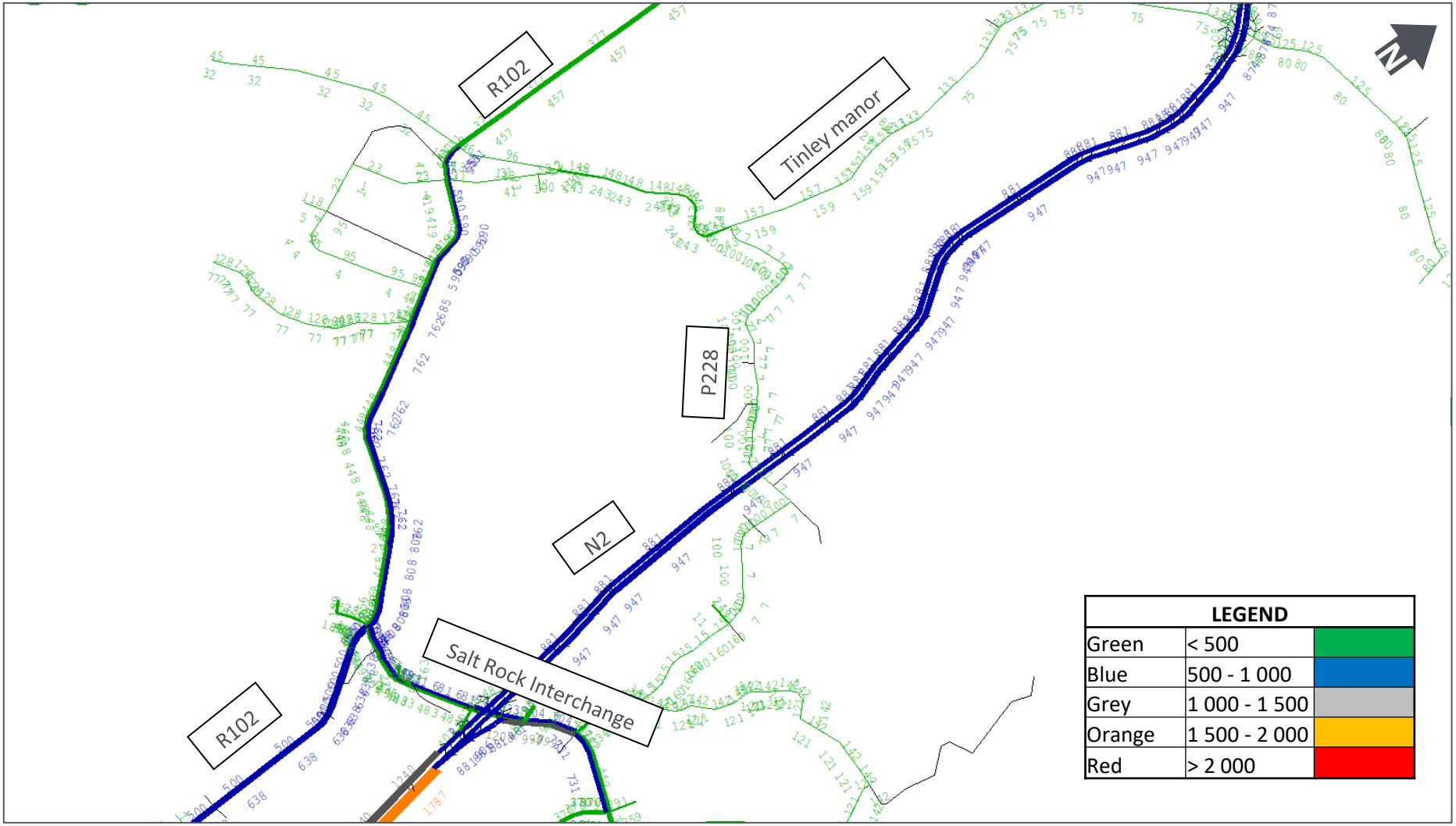
2019 Base Year
AM Peak Hour Link Flows (2 of 2)



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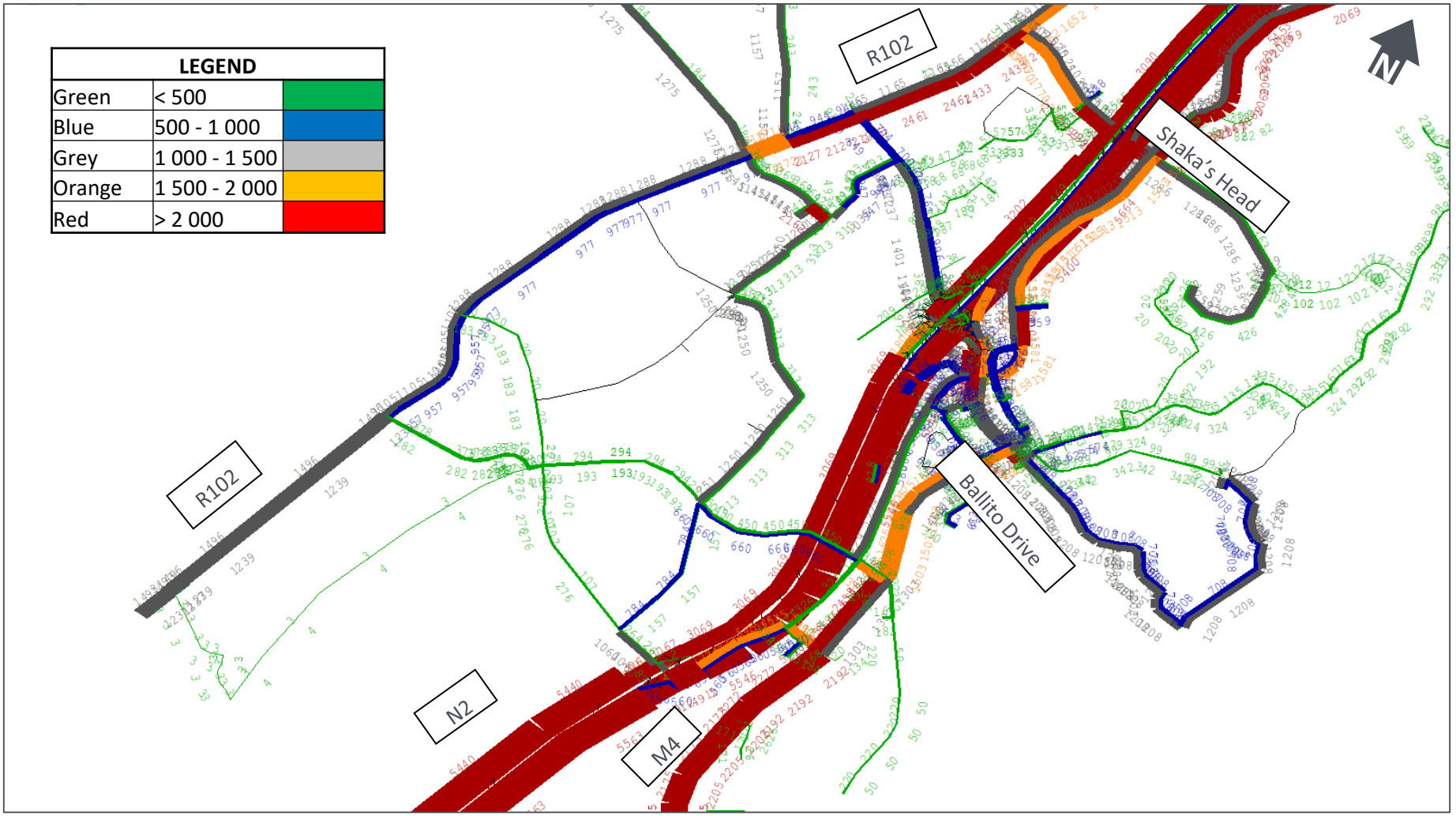
2039 Horizon Year + TIAs
AM Peak Hour Link Flows (1 of 2)



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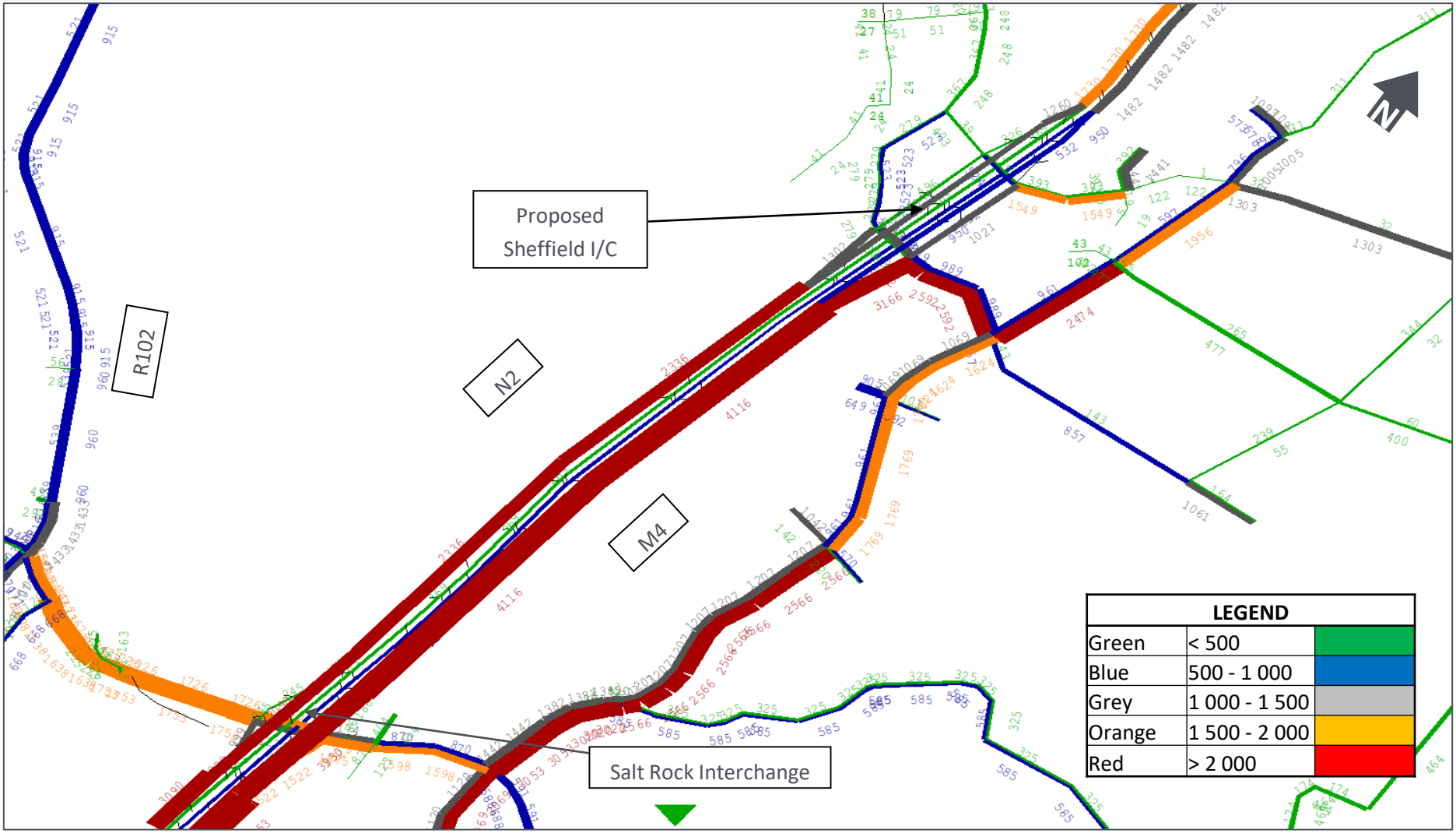
2039 Horizon Year + TIAs
AM Peak Hour Link Flows (2 of 2)



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Link Road Capacity Improvements Required for 2039 Horizon Year traffic

- Provide C/D Roads with 3 lanes per direction along the N2, from Ballito Interchange to Sheffield Interchange;
- New Zimbali Interchange;
- Upgraded Ballito Interchange;
- Upgraded Shaka's Rock Interchange;
- Upgraded Salt Rock Interchange;
- New Sheffield split diamond Interchange;
- R102 widened to 2 lanes per direction from the south to Ballito Drive;
- R102 widened to 2 lanes per direction from Ballito Drive to Salt Rock Road;
- R102 widened to 2 lanes per direction from Salt Rock Road to the north;

Link Road Capacity Improvements Required for 2039 Horizon Year traffic

- M4 widened to 2 lanes per direction from the south to Ballito Drive;
- M4 extended with 2 lanes per direction from Zimbali area to Sheffield Interchange;
- Ballito Drive widened to 2 lanes per direction from R102 to Ballito Interchange;
- Main Road widened to 2 lanes per direction from R102 to M4; and
- Salt Rock Road widened to 2 lanes per direction from R102 to M4.

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Intersection Capacity Analysis

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2019 Base Year

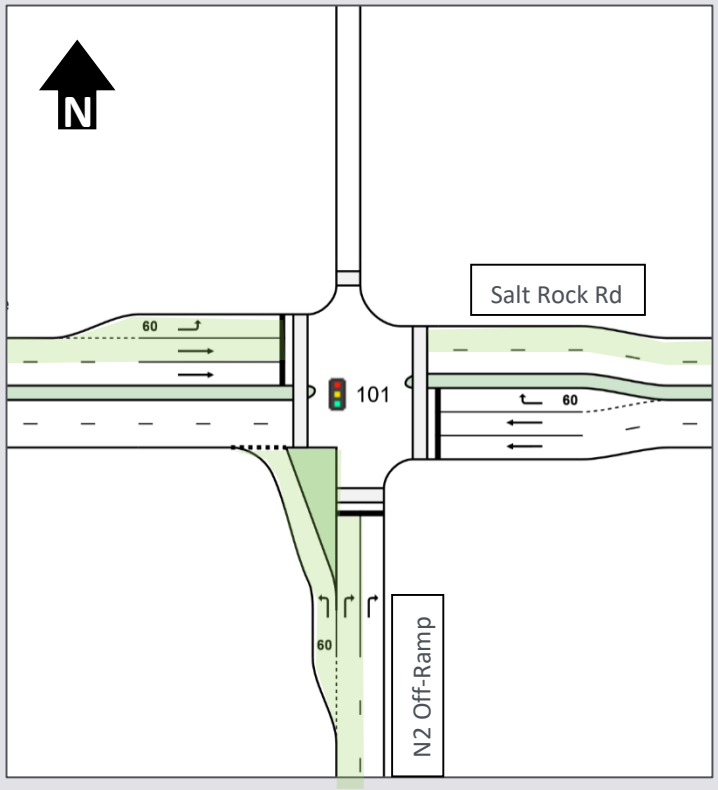
The following intersections require road capacity improvements to accommodate the 2019 Base Year traffic flows:

- M4 & Zimbali West Gate;
- M4 & Zimbali North Gate;
- M4 & Albertina Way;
- Ballito Drive & Douglas Crowe Drive;
- Ballito Drive & Simbithi Drive;
- N2 & Salt Rock I/C, West Terminal;
- N2 & Salt Rock I/C, East Terminal; and
- P330 Salt Rock Road & P228.

The road capacity improvements associated with the above are deemed to be those with the highest priority at present

2039 Horizon Year + TIAs

The intersection capacity analyses for the 20 Year Horizon Design Year are discussed in detail in the STS and Ultimate upgrades proposed. Example of the Salt Rock I/C West Terminal is detailed below:



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Roads Master Plan

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Ultimate 2039 Roads Master Plan
(1 of 2)

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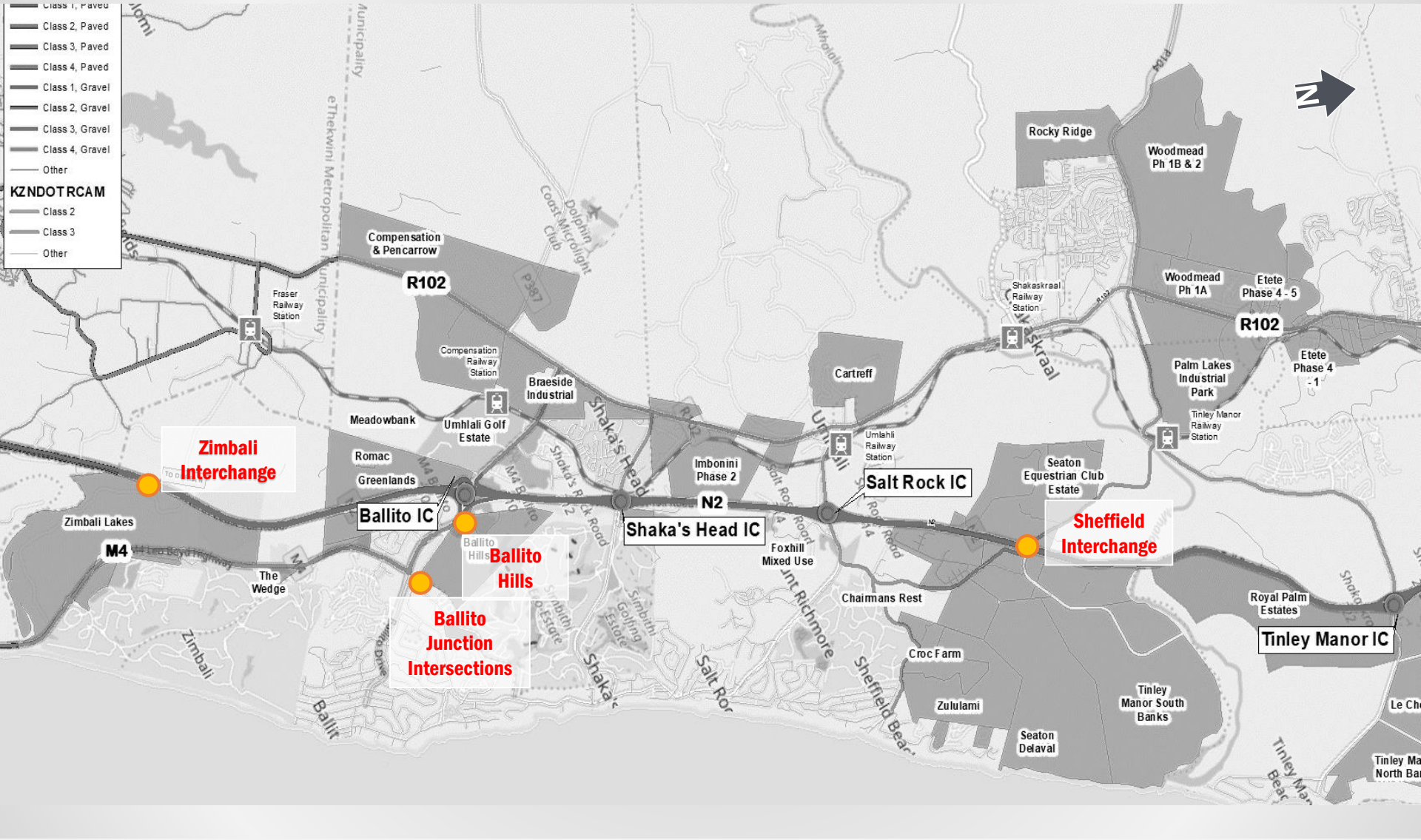
Ultimate 2039 Roads Master Plan
(2 of 2)

Roads Master Plan - Focus Areas



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Focus Areas - Traffic Flow, Capacity and Geometrics Considers

A focus areas report has been prepared to detail the upgrades and geometric improvements required in order to improve traffic flows at various intersections within the study area. The report has been included as Annexure H with in the STS. The associated drawings for the focus areas are listed below and shown in the following slides:

- DM0176-ZIM-IC-01 (Zimbali Interchange Option 1);
- DM0176-ZIM-IC-02 (Zimbali Interchange Option 2);
- DM0176-BALL-RDS-GEN-01 (Existing M4 Albertina);
- DM0176-BALL-MALL-INT-01 (Ballito Junction);
- DM0176-BALL-HILL-RDS-EXT-01 (M4 Extension);and
- DM0176-PROP-SHEFF-IC-01 (Sheffield Interchange)

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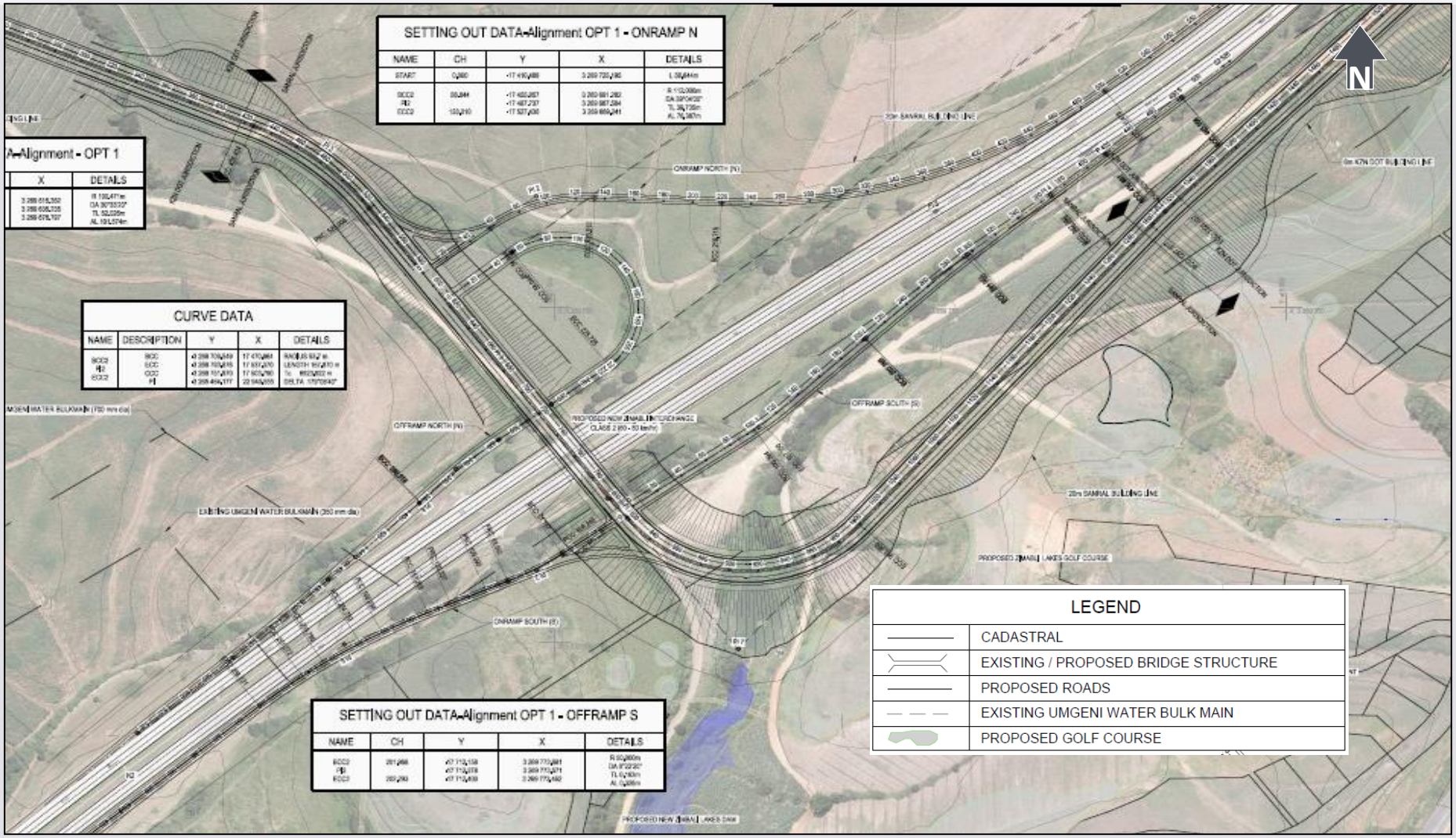
Zimbali Interchange Option 1



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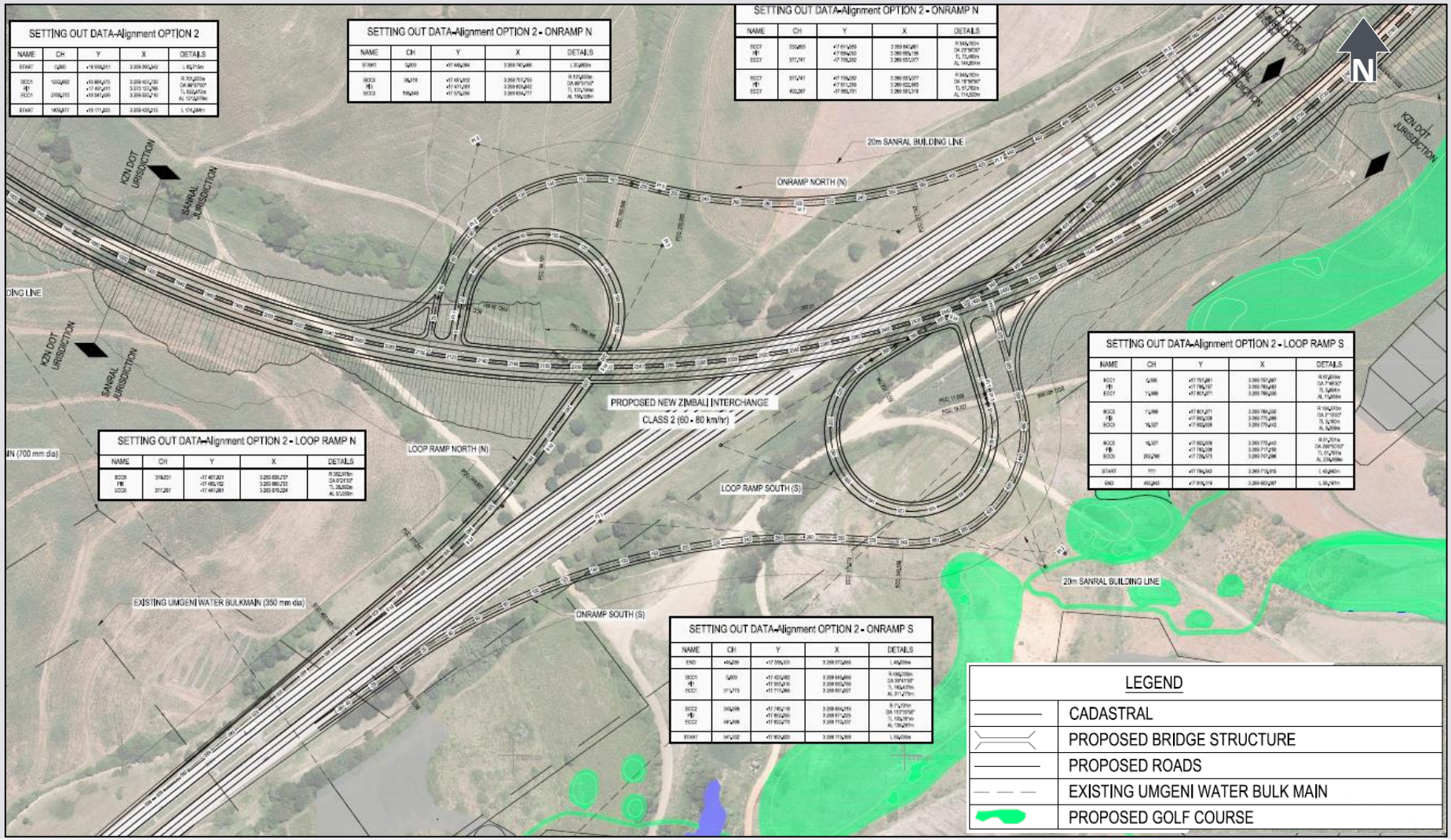
Zimbali Interchange Option 2



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Existing M4/R627 (2+2) Upgrade From Albertina Way to Ballito Drive

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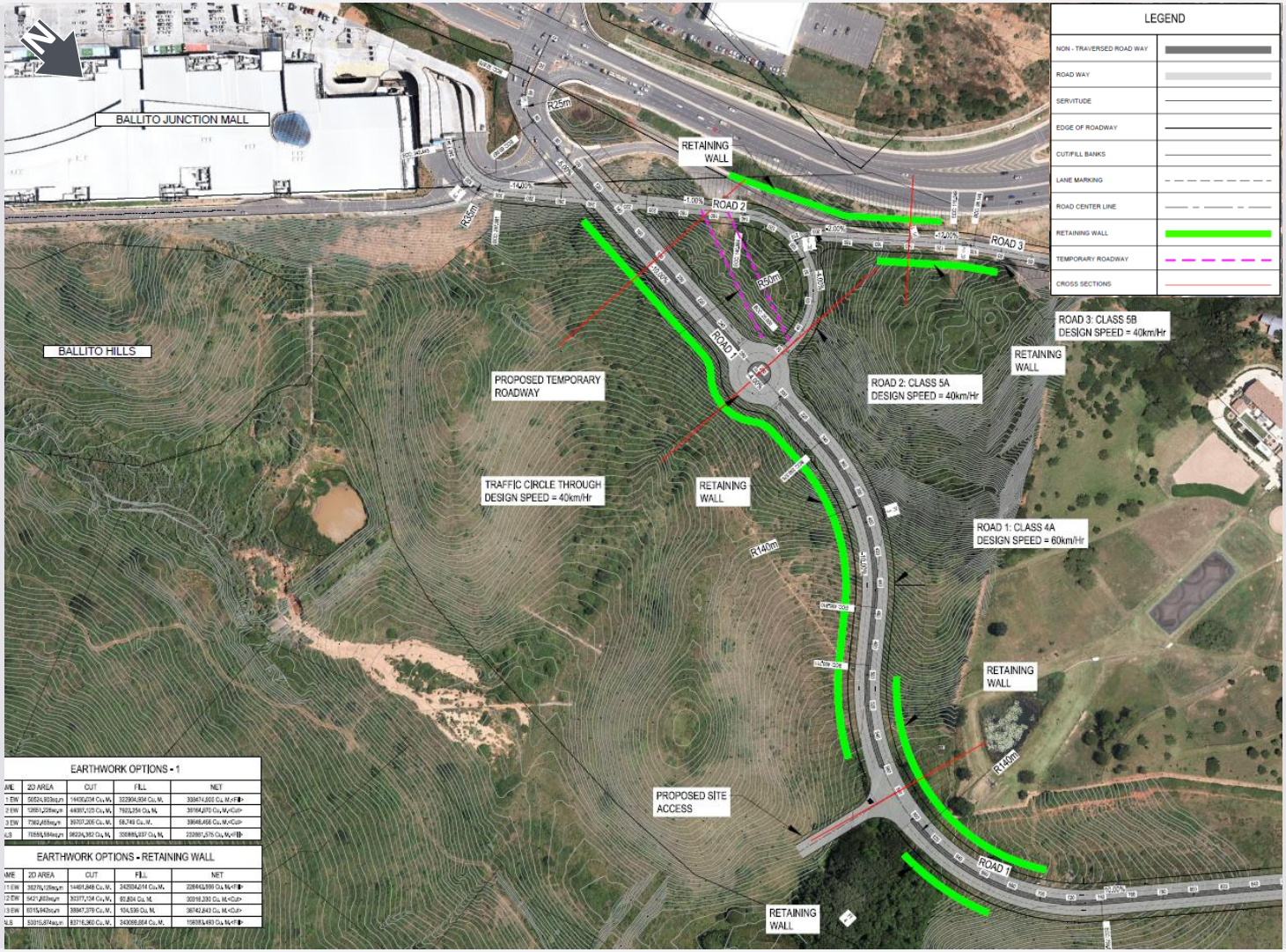
Ballito Junction Mall (Eastern) Intersections

Ballito Hills M4 Extension Alignment



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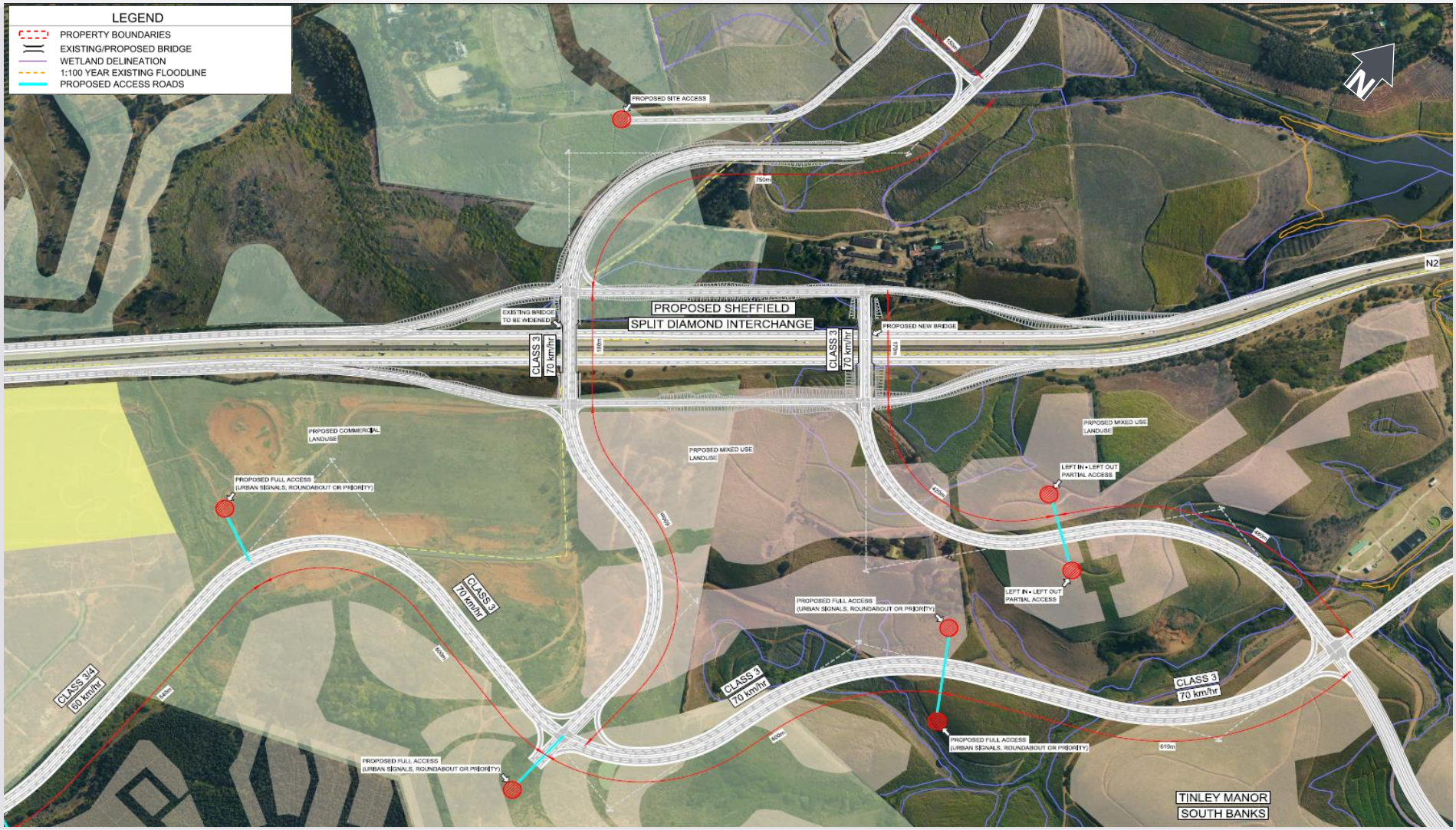
Sheffield Split Diamond Interchange



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Roads Infrastructure Cost

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2039 Horizon Year + TIAs Road Infrastructure Cost

The cost associated with implementing the road infrastructure above are set out in Table below:

Road Classification	Basic Function	Design Typology	Total Estimated Cost (R million)*
Class 1	Mobility	Freeway	–
Class 2	Mobility	Highway	**R 1 422.24**
Class 3	Mobility	Main Road	**R 1 275.99**
Class 4	Access/Activity	Major/minor collector	**R 1 287.85**
Class 5	Access/Activity	Local Street,	**R 78.22**
		Total	**R 4 064.30**

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2039 Horizon Year + TIAs Road Infrastructure Cost

* The cost estimates are indicative, high level, based on current information available and are to be used for the cost contribution model only. The cost estimate base date is November 2019. The estimate allows for:

- Road Earthworks;
- Road Surfacing;
- Road Layerworks;
- Kerbs and Channels;
- Road Stormwater and Crossings;
- Road Signage and Markings;
- Road Furniture, Controls and Sidewalks;
- Traffic Accommodation;
- Data Services Relocation and New Installations; and
- New Bridges and Existing Bridge Widening.

The cost estimates exclude allowances for any electrical and street lighting infrastructure. It further excludes VAT, professional fees and escalation. The cost estimate allows for 20% P & G's and 25% for structures and 10% contingency.

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Conclusion and Recommendations

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Conclusion and Recommendations

- The proposed roads master plan will provide a common and enabling framework to support and manage the growth and development in the region;
- Given the dynamic nature of the region, it is recommended that the traffic model is maintained and updated at regular intervals to monitor and evaluate the impact of developments over time, and possible changes in travel patterns and demand;
- In addition to maintaining the traffic model, it is recommended that other trip reduction interventions such as peak spreading strategies is investigated, and consideration given to preparing a comprehensive public transport plan; and

Conclusion and Recommendations

- That the ESC policy based on COTO TMH 15 be adopted as the determinant of road bulk contributions to service any new township establishment or new development in the KDM area and that cost parameters be updated annually to ensure contribution levels remain current.

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Thank You

Information

Contact

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Future Engagements

January and February 2021 – Date and Venue to Be confirmed in due course