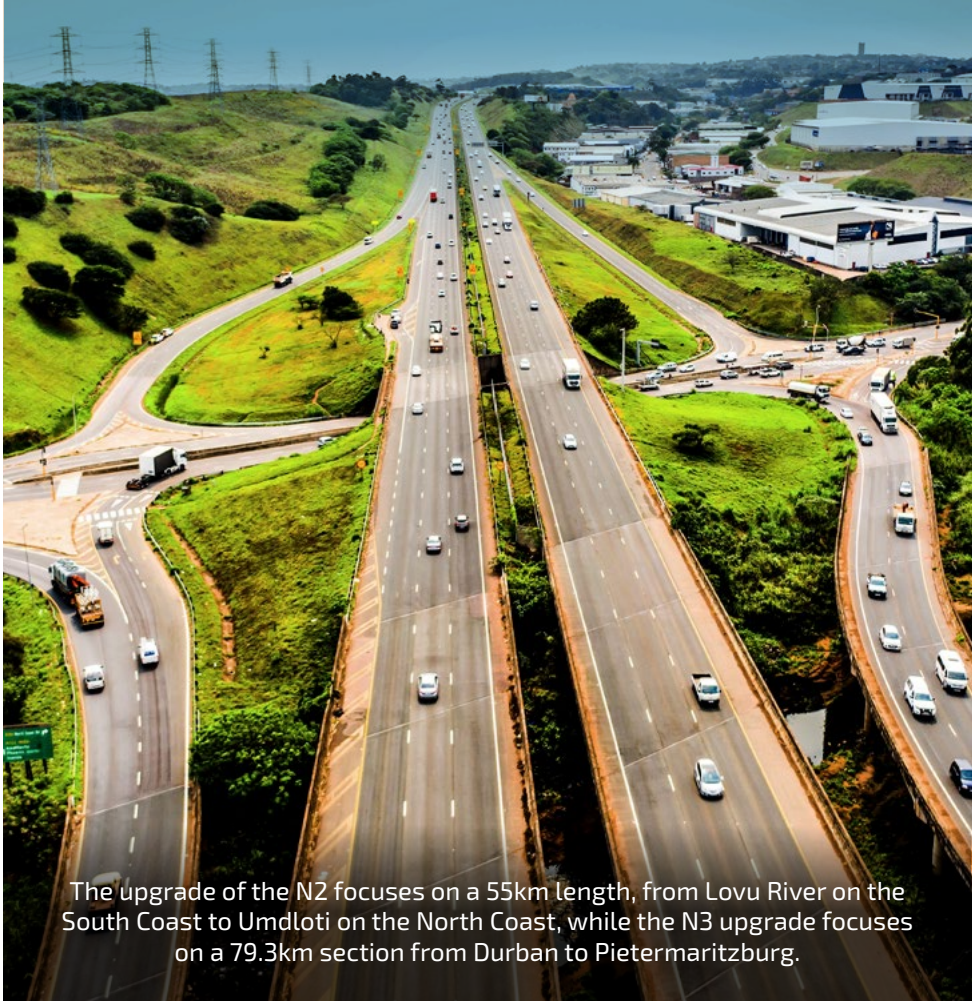


N2/N3

2023 | ISSUE 2

PROJECT UPGRADES

Produced by SANRAL



The upgrade of the N2 focuses on a 55km length, from Lovu River on the South Coast to Umdloti on the North Coast, while the N3 upgrade focuses on a 79.3km section from Durban to Pietermaritzburg.



transport

Department:
Transport
REPUBLIC OF SOUTH AFRICA

SANRAL



Strengthening South Africa's transport corridor



N3 upgrades from Cato Ridge to Dardanelles

When President Cyril Ramaphosa spoke about infrastructure development, he called it the flywheel that will unlock economic revival in a post-COVID-19 South Africa.

The upgrades of the N2 and N3 in KwaZulu-Natal form part of National Government's key Strategic Integrated Projects, SIP2: Durban-Free State-Gauteng Logistics and Industrial Corridor.

SIP2 aims to strengthen the logistics and transport corridor between South Africa's main industrial hubs, improve access to Durban's

export and import facilities and raise efficiency along the corridor.

The upgrade of the National Route 2 (N2) will focus on a 55km length, from Lovu River on the South Coast to Umdloti on the North Coast. The N3 upgrade will focus on a 79.3km section from Durban to Pietermaritzburg, which incorporates upgrading from Mayville (Sherwood) Interchange in eThekweni Metropolitan Municipality to Cedara in uMngeni Local Municipality, as well as the N2 from aMantzimtoti to Umdloti.

The N2 project is broken into 11 phases:

- 1. Lovu and Moss Kolnick:** addition of lanes and bridge widening;
- 2. Moss Kolnick to Isipingo (Umlaas canal):** addition of lanes and bridge widenings including upgrading of Isipingo Interchange
- 3. Adams Road Interchange:** upgrading of interchange
- 4. Isipingo Interchange:** upgrading of interchange
- 5. Isipingo to Higginson Interchange:** addition of lanes, bridge widenings
- 6. Higginson Interchange:** upgrading of interchange
- 7. Higginson Interchange to Edwin Swales:** addition of lanes, bridge widenings,
- 8. Edwin Swales Interchange (km 12.3) to south of EB Cloete Interchange (km 16.0):** addition of lanes, new bridges and bridge widening
- 9. Umgeni Interchange (km 20.72) to south of the Mount Edgcombe Interchange (km 30.45):** addition of lanes and bridge widening
- 10. EB Cloete (including portion of N2 North and N3 West) N2 Section 25 between Wiggins Rd (km 16.0) to Umgeni Road interchange (km 20.7) and N3 Section 1 between Sherwood Interchange (km 8.4) to Westville Viaduct (km 11.8):** addition of lanes, bridge widenings and erection of major steel arch
- 11. KwaMashu Interchange to Umdloti Interchange:** addition of lanes and bridge widenings

The N3 project is broken into 15 phases:

- 1. Westville Viaduct/Paradise Valley:** featuring the first ever network arch to be constructed in KwaZulu-Natal, which will also create additional lanes;
 - 2. Paradise Valley/Mariannhill Toll Plaza:** with additional lanes and upgrading of interchange in Richmond Road;
 - 3. The Mariannhill Toll Plaza/Key Ridge:** which entails 11km of the N3 to be widened into a 10-lane dual carriageway;
 - 4. Hammarsdale Interchange:** which is completed and was opened by the Minister of Transport in October 2020, with construction of a new bridge and six new on- and off-ramps to accommodate increased traffic volume;
 - 5. Hammarsdale to Uitkoms:** widening between 8 to 10 lanes and concrete pavement and a quarry;
 - 6. Uitkoms to Cato Ridge:** widening between 8 to 10 lanes and a concrete pavement and new rail bridge over N3;
 - 7. Key Ridge/Hammarsdale:** new bridges and concrete pavement where the upgrade will allow re-alignment of +/- 1.7km of N3 to reduce steep grades and remove sharp curves;
 - 8. Cato Ridge/Dardanelles:** two additional lanes to be added to the carriageway as well as improving the horizontal and vertical alignment and new asphalt pavement;
 - 9. Dardanelles/Lynnfield Park:** two additional lanes to be added to the carriageway; bridge widening, a new bridge and new asphalt pavement;
 - 10. Lynnfield Park/Ashburton:** two to three additional lanes per carriageway, bridge widening and concrete pavement;
 - 11. Ashburton Interchange/Murray Road:** two to three additional lanes per carriageway, concrete pavement, including unique loop on- and off-ramps and is between two high rock cuttings;
 - 12. Murray Road/New England Road:** two to three additional lanes per carriageway, concrete pavement and a new network arch bridge, also featuring a new concept, which is a divergent diamond interchange;
 - 13. New England/Twickenham:** widening of N3 by one lane per carriageway, collector-distributor roads to be constructed adjacent to N3. An existing interchange will be reconfigured to a diverging diamond interchange. The Russom Street railway bridge will be replaced;
 - 14. Upgrading to the Mariannhill Toll Plaza:** includes upgrading of the existing toll plaza and concrete pavement;
 - 15. Pietermaritzburg Ring Road:** realignment of 13km of N3 around the infamous townhill existing steep alignment.
- There are two supplementary contracts for the supply of natural aggregate and temporary barriers also forming part of N3 programme.

Improvements - These upgrades will include the widening of the N2 and N3 carriageways, with four or five lanes in each direction, and reconfiguration of most major interchanges along these route sections.

Packages - Due to the length and estimated cost of the entire N2 and N3 upgrades, the corridor will be split into a number of detailed design and construction packages. These may be broken down into further reasonably sized construction packages, based on the future available budget, resources and other constraints, also taking into consideration the impact on motorists during construction.

Timespan - The upgrading of the N2 and N3 is expected to take 8–10 years to complete, depending on funding availability. Construction has commenced in early 2020 on three of the projects on the N3 and in May 2022 on one of the projects on the N2

Cost - The total estimated construction cost for these upgrade projects is approximately R14 billion for the N2 and R26 billion for the N3. This excludes the cost of the N3 realignment around

Townhill in Pietermaritzburg, which is being investigated separately.

Stimulus - President Cyril Ramaphosa recently introduced the “stimulus package” as a new measure “to reignite growth, stimulate economic recovery and secure confidence in sectors affected by regulatory uncertainty and inconsistency”. Projects earmarked for the stimulus package will be funded from the existing budget envelope with R50 billion already identified by the government for all infrastructure projects nationally.

SANRAL’s allocation from the total stimulus package is +R3.5 billion, which will be used to initiate the SIP projects over the next two years. SANRAL has made significant progress in its road projects around the country, with six projects in construction valued at R6.5 billion in progress, and a further six major projects valued at R19.5 billion to be awarded.

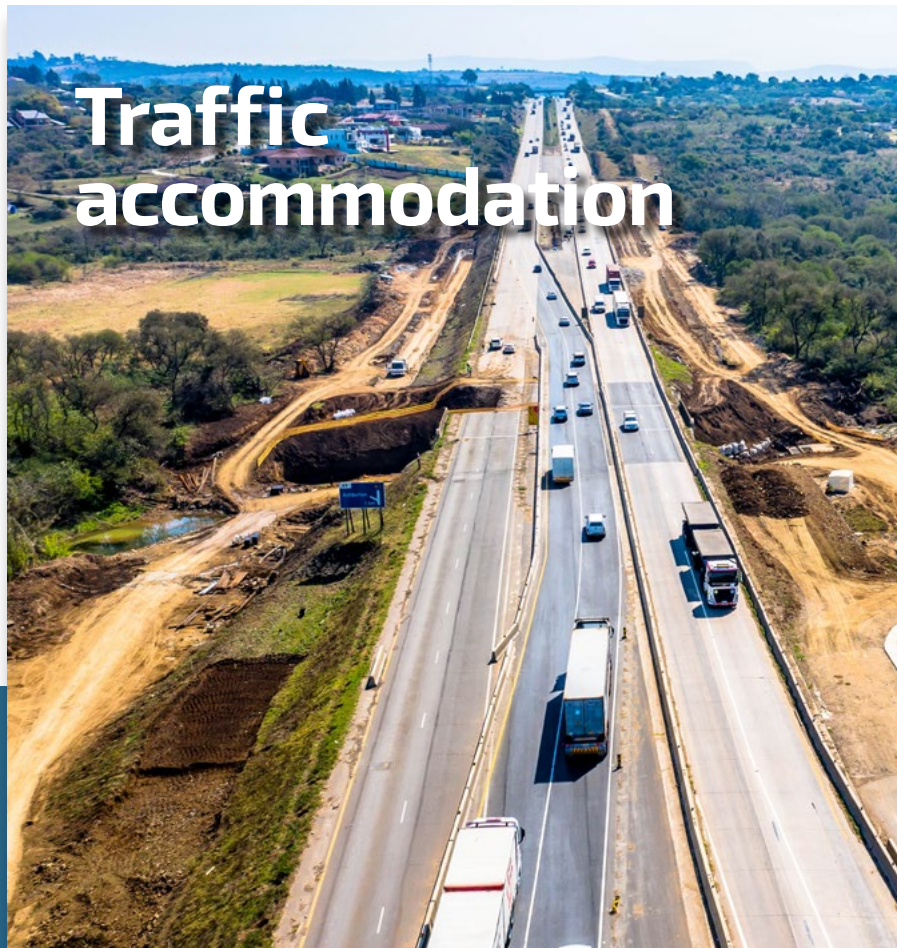
Jobs - The three current construction packages on the N3 have employed approximately 900 local labourers to date and the one N2 package has employed 150 labourers to date. There are 140 small, medium and micro enterprises (SMMEs) currently working on the various projects.

Under construction

Six packages that have been awarded and currently under construction are:

1. Cato Ridge (km 19.4) to Dardanelles Interchange (km 26.6), April 2021		4. KwaMashu Interchange to Umdloti Interchange, July 2022	
Commencement: 04/12/2021	Completion: 04/01/2025	Commencement: 08/02/2021	Completion: 12/01/2024
Duration: 51 months	Project value: R1.4bn	Duration: 40 months	Project value: R1.2bn
2. Dardanelles Interchange (km 26.6) to Lynnfield Park (km 30.6), January 2021		5. Manufacturing of precast concrete barriers to be used for the upgrading of national routes	
Commencement: 21/01/2021	Completion: 10/08/2024	Commencement: 20/04/2022	Completion: 24/08/2023
Duration: 48 months	Project value: R1.4bn	Duration: 27 Months	Project value: R185 million
3. Lynnfield Park (km 30.6) to Ashburton Interchange (km 1.5), April 2021		6. The provision of crushed aggregate for the upgrade of National Route 3, section 2 and 3	
Commencement: 15/01/2021	Completion: 15/05/2024	Commencement: 06/10/2021	Completion: 07/10/2027
Duration: 40 months	Project value: R1.2bn	Duration: 72 months	Project value: R363 million

Traffic accommodation



The N2 and N3 upgrade programme will have a traffic management plan to protect construction workers and motorists by safely conducting traffic around or through the work zone.

The work zones will have warning signs alerting motorists of upcoming changes in driving conditions and lane closures. As far as possible, two lanes will be open for traffic at any given time.

In the event that there is need for a detour, traffic will be accommodated on provincial

roads which will be assessed for safety and ride quality.

SANRAL will continuously make every effort during the construction phase to keep the public informed about the traffic accommodation and detours with on-going communication through radio and social media platforms.

A comprehensive Traffic Management Plan has been drafted and continuously updated as more contractors are appointed. It is available at the following link: https://www.nra.co.za/project-n2n3-upgrades?region_id=eastern

Technical design considerations

N2 KwaMashu Interchange upgrades

As a road authority, SANRAL's primary sphere of influence is engineering. However, the N2 and N3 upgrade programme will allow for the facilitation of an integrated approach to improve safety for all road users.

It is not just human factors, such as speeding, not wearing seatbelts or careless driving, that increase the risk of a crash occurring. Poor road design can also cause crashes.

Designing for all users - During the upgrade programme, the N2 and N3 will be designed with the needs of all road users in mind – including pedestrians, non-motorised road users and local communities and businesses. The safety of motorists and pedestrians alike will be a central consideration in every decision made about construction.

Quieter pavements - By using noise-reducing asphalt mixes and specialised concrete grinding techniques, motorists will be able to travel along the N2 and N3 peacefully with less tyre noise.

Robust pavements - More damage is caused to roads by heavy vehicles than light vehicles. To cater for growing volumes of freight traffic on the N2 and N3, the pavement design methods and materials to be used in sections most prone to deterioration will be carefully considered.



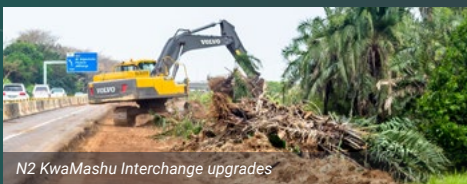
N3 vehicle traffic, Ashburton



KwaMashu Interchange to Umdloti upgrades

Environmental considerations - During construction on the N2 and N3, SANRAL commits to enhancing eco-efficiency and identifying and managing or eliminating environmental risks. SANRAL will encourage planting partnerships in its quest to re-populate the entire road reserve to a similar state to that which it was in before construction. Already during the upgrading of the Hammarsdale Interchange, several plant species, including a range of specially protected bulbs and aloes growing along the busy N3, have been translocated to a temporary nursery to save them from being destroyed.

Aesthetically pleasing - Bridge structures are built to last for decades and often serve as a gateway to a community. Good bridge design not only considers structural integrity, but also aesthetics. Therefore, SANRAL believes it is important for the new bridge structures along the N2 and N3 to be pleasing to the eye. The redesigned EB Cloete Interchange (Spaghetti Junction) will feature a cable-suspended bridge from an iconic arch. There are also two network arch bridges to be constructed on the N3.

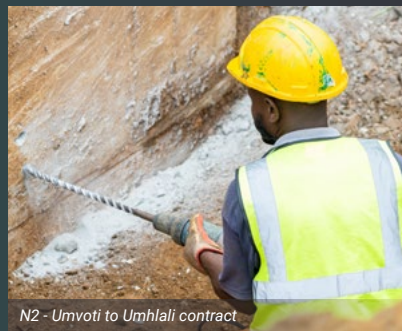


N2 KwaMashu Interchange upgrades

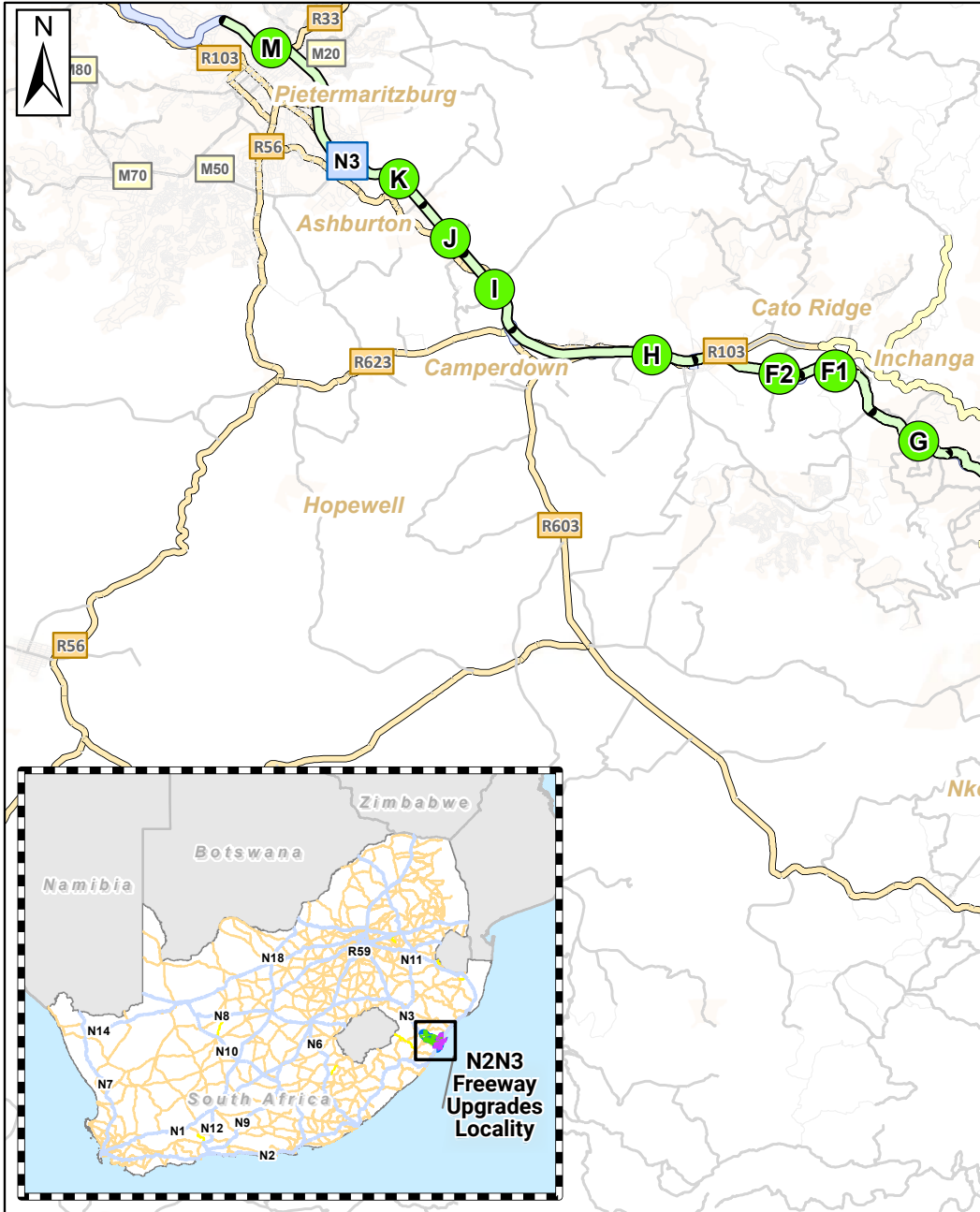
Geometric design - The upgrades on the N2 and N3 will utilise geometric design to optimise efficiency and safety while minimising cost and environmental damage. The smooth flow of traffic will be balanced.

Safety improvements - Apart from resolving chronic traffic congestion by creating greater mobility through construction of additional traffic lanes, the upgrading of the N2 and N3 will result in increased safety. Dangerous curves will be ironed out. Unsafe intersections will be redesigned. Major realignment of the N3 highway will take place at Key Ridge where the steep grades cause major traffic congestion and serious crashes.

Independent road safety audits on the designs have been undertaken under each of the projects and recommendations incorporated into the final designs.



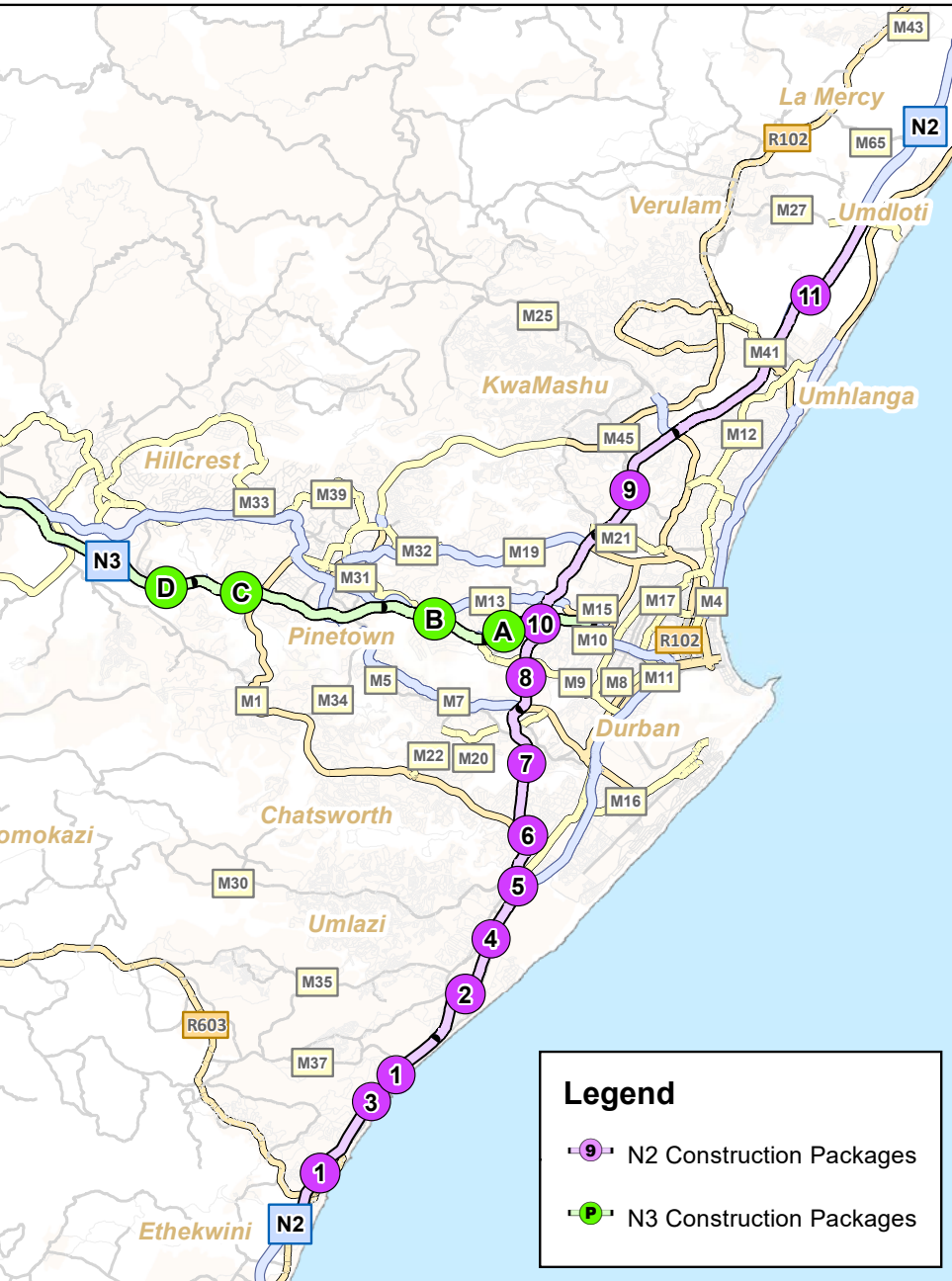
N2 - Umvoti to Umhlali contract





PROJECT:

N2 & N3 TRAFFIC MANAGEMENT

MAP:



Legend

-  N2 Construction Packages
-  N3 Construction Packages

LOCALITY MAP

SCALE(A4):
1:340 000

NO:
A1

N2 Project Packages

N2 upgrades,
KwaMashu Interchange

N2 AWARDED PROJECTS

PROJECT LOCATION	KEY FEATURE(S)	NUMBER OF LANES		NAMES OF ALL NEW/UPGRADED INTERCHANGES
		EXISTING	UPGRADED*	
KwaMashu Interchange to Umdloti Interchange	Approximately 13,7km section of the N3 will be upgraded from a two-lane dual carriageway to up to eight-lane dual carriageway.	2	4	• Sibaya
EB Cloete (including portion of N2 North and N3 West) N2 Section 25 between Wiggins Rd (KM 16.0) to Umgeni Road interchange (km 20.7) and N3 Section 1 between Sherwood Interchange (KM 8.4) to Westville viaduct (km 11.8)	Addition of lanes, bridge widenings and erection of major steel arch	3	6	• EB Cloete

PROJECTS TO BE AWARDED

KEY TO MAP	PROJECT LOCATION	KEY FEATURE(S)	NUMBER OF LANES		NAMES OF ALL NEW/UPGRADED INTERCHANGES
			EXISTING	UPGRADED*	
1	Lovu and Moss Kolnick	Addition of lanes and bridge widening	2	4	<ul style="list-style-type: none"> • Kingsway • Seadoone Road • Moss Kolnick Drive • Dickens Road • Joyner Road
2	Moss Kolnick to Isipingo (Umlaas canal)	Addition of lanes and bridge widenings including upgrading of Isipingo Interchange	2	4	-
3	Adams Road Interchange	Upgrading of interchange	-	-	• Adams Road
4	Isipingo Interchange	Upgrading of interchange	-	-	• Isipingo
5	Isipingo to Higginson Interchange	Addition of lanes, bridge widenings and upgrading of Higginson Interchange	3	5	-
6	Higginson Interchange	Upgrading of interchange	-	-	• Higginson
7	Higginson Interchange to Edwin Swales	Addition of lanes, bridge widenings, Higginson Interchange	3	5	• Higginson
8	Edwin Swales Interchange (km 12.3) to south of EB Cloete Interchange (km 16.0)	Addition of lanes and bridge widening	3	5 to 6	• Edwin Swales
9	Umgeni Interchange (km 20.72) to south of the Mount Edgecombe Interchange (km 30.45)	Addition of lanes and bridge widening	3	5	<ul style="list-style-type: none"> • Inanda • Queen Nandi Drive • KwaMashu

* While this is the maximum number of lanes for the respective section, it does not necessarily mean that this will be consistent through the entire section.

N3 Project Packages

N3 Cato Ridge to Dardanelles Interchange under construction

N3 AWARDED PROJECTS

PROJECT LOCATION	KEY FEATURE(S)	NUMBER OF LANES		NAMES OF ALL NEW/UPGRADED INTERCHANGES
		EXISTING	UPGRADED*	
Cato Ridge / Dardanelles	The existing horizontal and vertical alignment is substandard in places, and misty conditions make for unsafe driving. Two additional lanes will be added per carriageway. The horizontal and vertical alignment will be improved and street lighting will be included to improve safety.	2	4	–
Dardanelles / Lynnfield Park	Two additional lanes on each carriageway will be added, as well as an additional climbing lane on the southbound carriageway. Due to the proximity of the rail line, the R103 and the R603, the upgraded Dardanelles Interchange will have an unusual layout with long loop ramps on the western side of the N3.	2	5	• Dardanelles
Lynnfield Park / Ashburton	The R103 within the Lynnfield Park Interchange will have one additional lane in each direction and will feature dedicated right turns.	** NB 2 ** SB 3	** NB 4 ** SB 5	• Lynnfield Park
Ashburton /Murray Road	Three lanes on each carriageway will be added as well as upgrade of the R103 at Polly Shorts. The Ashburton Interchange will also be reconstructed.	** NB 2 ** SB 2	** NB 5 ** SB 5	• Ashburton

PROJECTS TO BE AWARDED

KEY TO MAP	PROJECT LOCATION	KEY FEATURE(S)	NUMBER OF LANES		NAMES OF ALL NEW/UPGRADED INTERCHANGES
			EXISTING	UPGRADED*	
B	Westville Viaduct / Paradise Valley	This project features the first ever network arch bridge to be constructed in South Africa. The structure allows the bridge to span across the entire N3 without any support piers, thereby creating space for additional lanes.	5	5	<ul style="list-style-type: none"> • Spine Road • Paradise Valley
C	Paradise Valley / Mariannahill Toll Plaza	This project will see additional lanes and upgrading of interchanges, including the Richmond Road Interchange upgrade which requires a 300m overpass, which will add a third level to the existing diamond type interchange.	3	5-6	<ul style="list-style-type: none"> • Farningham • Richmond
D	Mariannahill Toll Plaza / Key Ridge	The project will entail approximately 11km of N3 being widened into a 10-lane dual carriageway	3	5	<ul style="list-style-type: none"> • Assagay
F	Hammarsdale to Uitkoms	Widening between 8 to 10 lanes and concrete pavement and a quarry	3	4 to 5	<ul style="list-style-type: none"> • Hammarsdale
	Uitkoms to Cato Ridge	Widening between 8 to 10 lanes and a concrete pavement and new rail bridge over N3	3	5	<ul style="list-style-type: none"> • Cato Ridge • D12

* While this is the maximum number of lanes for the respective section, it does not necessarily mean that this will be consistent through the entire section.

N3 Project Packages (continued)



*N3 Cato Ridge to Dardanelles
Interchange under construction*

PROJECTS TO BE AWARDED

KEY TO MAP	PROJECT LOCATION	KEY FEATURE(S)	NUMBER OF LANES		NAMES OF ALL NEW/UPGRADED INTERCHANGES
			EXISTING	UPGRADED*	
G	Key Ridge / Hammarsdale	The existing N3 between Key Ridge and Cliffdale has steep grades and tight horizontal curves. These, coupled with the presence of the Peacevale Interchange, contribute to a high crash rate within this section of the N3. The upgrade project allows for a ±1.7km realignment of the N3 to reduce the steep grades and remove the tight curves, ultimately resulting in improved traffic operation and road user safety.	3	5	–
I	Murray Rd / New England Rd	The project features a diverging diamond interchange at the Market Road Interchange, which is still a fairly new concept in South Africa. A network arch bridge is also featured at the Blackburrow overpass. This project also includes a Collector Distributor (CD) road between Epworth Interchange and Market Road Interchange. The CD concept allows for the two interchanges to act as one due to their close proximity.	2	5	<ul style="list-style-type: none"> • Market Road • Epworth
J	New England Rd / Twickenham Rd	A new 2-lane CD road per direction will be added parallel to the N3 from the Blackburrow Road overpass bridge to Armitage Road Interchange to prevent local traffic congesting the N3. The New England Road Interchange will be reconfigured to a diverging diamond interchange. The Russom Street railway bridge will be replaced.	2	3	<ul style="list-style-type: none"> • New England • Ohrtmann Road • Twickenham Road

* While this is the maximum number of lanes for the respective section, it does not necessarily mean that this will be consistent through the entire section.

** NB=Northbound; SB=Southbound



A construction worker busy on the N2 upgrades at the KwaMashu Interchange

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