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GaGE CONSULTING
MERCHELLE'S COLLECTIVE
REFLECTING THE FUTURE IN ENGINEERING
RCE
Z3 CONSULTING ENGINEERS
6th April 2022
CONTRACT SANRAL N.002-210-2016/2F
N2 Wild Coast Toll Highway Section 21 Between Kulumbe (KM 21.50) And The Mtamvuna River (KM 32.80) (Package 7)
SANRAL
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC LTD
BUILDING SOUTH AFRICA THROUGH BETTER ROADS

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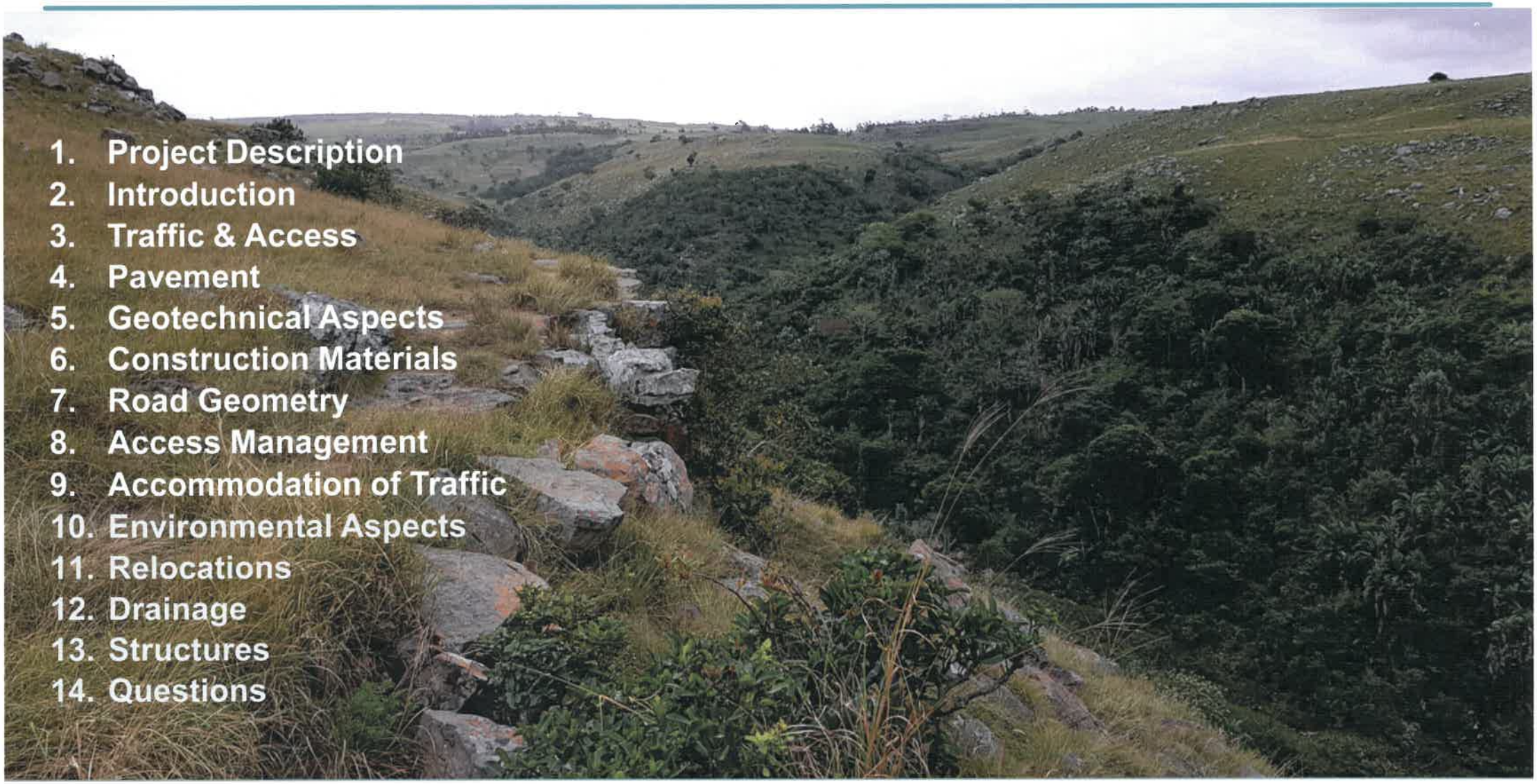

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PROJECT DESCRIPTION

- Package 7 of the N2WCTH is a "Greenfields" Section,
- Located within the Mbizana Local Municipality and in the District Municipality of Alfred Nzo,
- Project starts at Km 21,500 of Section 21 and ends at Km 31,900 (Project length 10.4Km),
- The project includes two interchanges:
  - Ebenezer Interchange - Km 28,500
  - Mzamba Interchange - Km 31,100
- The project also includes two river bridges:
  - Mpahlane River Bridge - Km 25,570
  - Mzamba River Bridge - Km 27,770
- Construction of a Quarter-Link at Sigidi,
- 13 Major culverts required,
- Construction of local Access Roads under the Access Management Contract,

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INTRODUCTION

LOCALITY PLAN

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INTRODUCTION

LOCALITY PLAN

PROJECT TEAM

Client: South African National Roads Agency SOC Limited (Southern Region)

Consulting Engineers: V3 Consulting Engineers (Pty) Ltd

Targeted Enterprise: RCE Projects (Pty) Ltd

GaGE Consulting (Pty) Ltd

Z3 Engineers (Pty) Ltd

Merchelles Collective (Pty) Ltd

TRAFFIC APPROACH

- Public transport facilities
  - It is likely that public transport facilities may be required at the proposed quarter link intersection at Sigidi, Ebenezer interchange ramps and at the Mzamba Interchange at the Wild Coast Sun,
  - The provision of safe crossing facilities in the form of Underpasses are shown on the next slide (Line Diagram)

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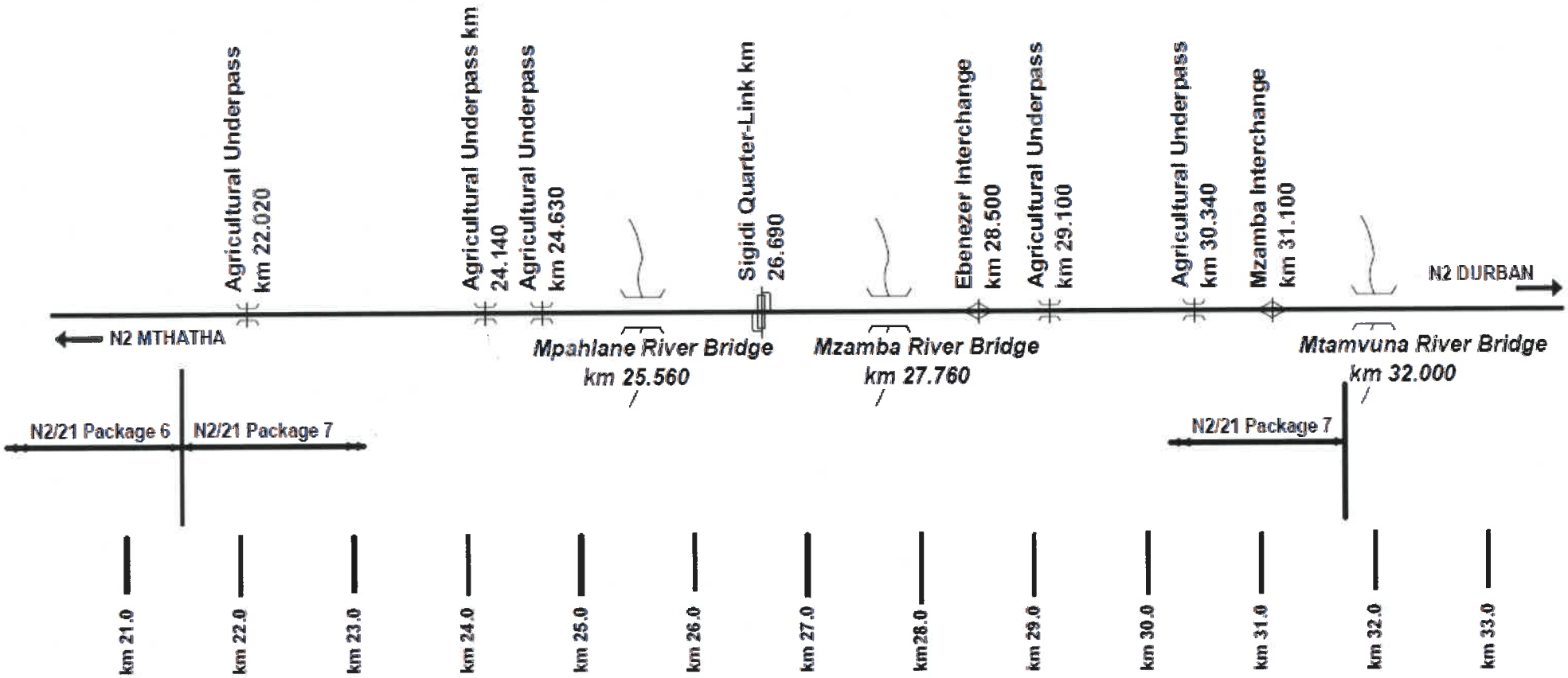
TRAFFIC & ACCESS

LINE DIAGRAM

- Indicates structure locations and Access Road Crossing Locations



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GEOTECHNICAL ASPECTS

DETAILED DESIGN INVESTIGATION

- Geotechnical investigations are to commence soon,
- Trial holes and test pit excavations are to be done on the Alignment centreline,
- The drilling contract might start November 2021,
- The investigations will include the bridges, interchange(s), cuttings and embankments,
- At the bridge sites, investigations will include deep boreholes,

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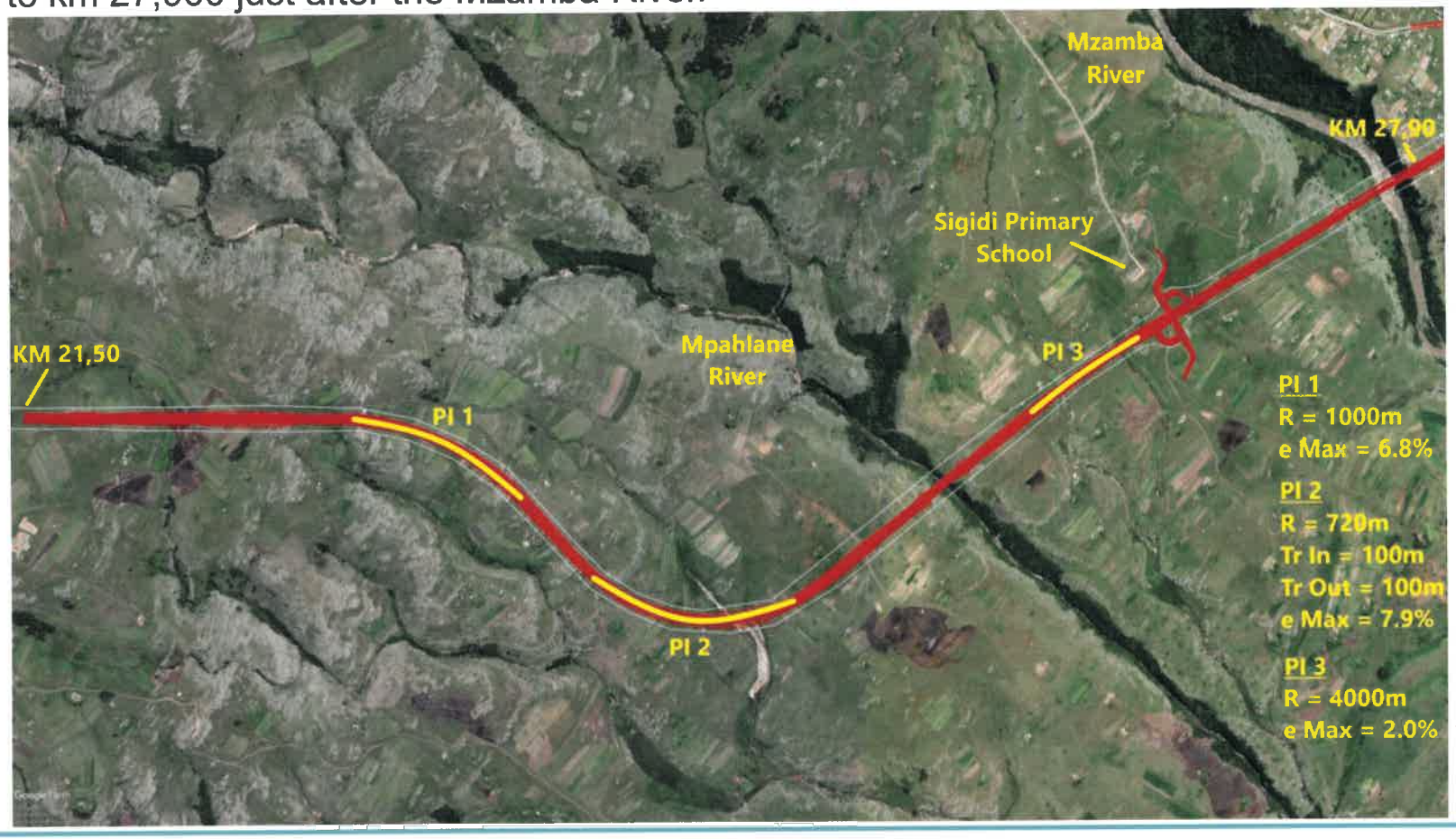
ROAD GEOMETRY

HORIZONTAL AND VERTICAL DESIGN

- The slide below shows the horizontal properties of the alignment from the start of the project at Km 75,600 at Kulumbe, to km 27,900 just after the Mzamba River.

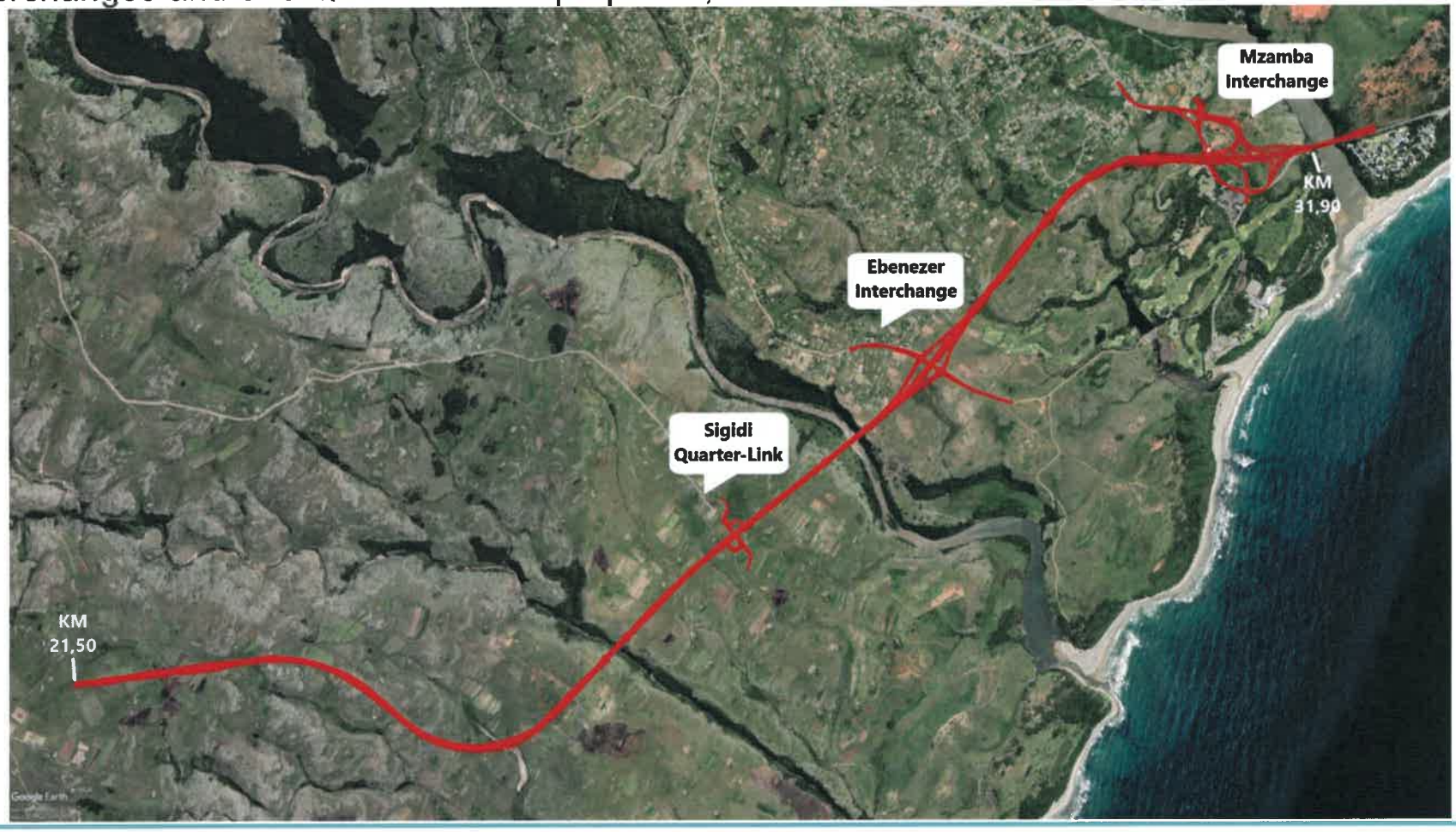


HORIZONTAL AND VERTICAL DESIGNS - Alternative 3

- This slide shows the horizontal alignment properties of the N2 from the Mzamba River Bridge at Km 27,900 to the end of the project at the Mtamvuna River bridge at Km 31,900.

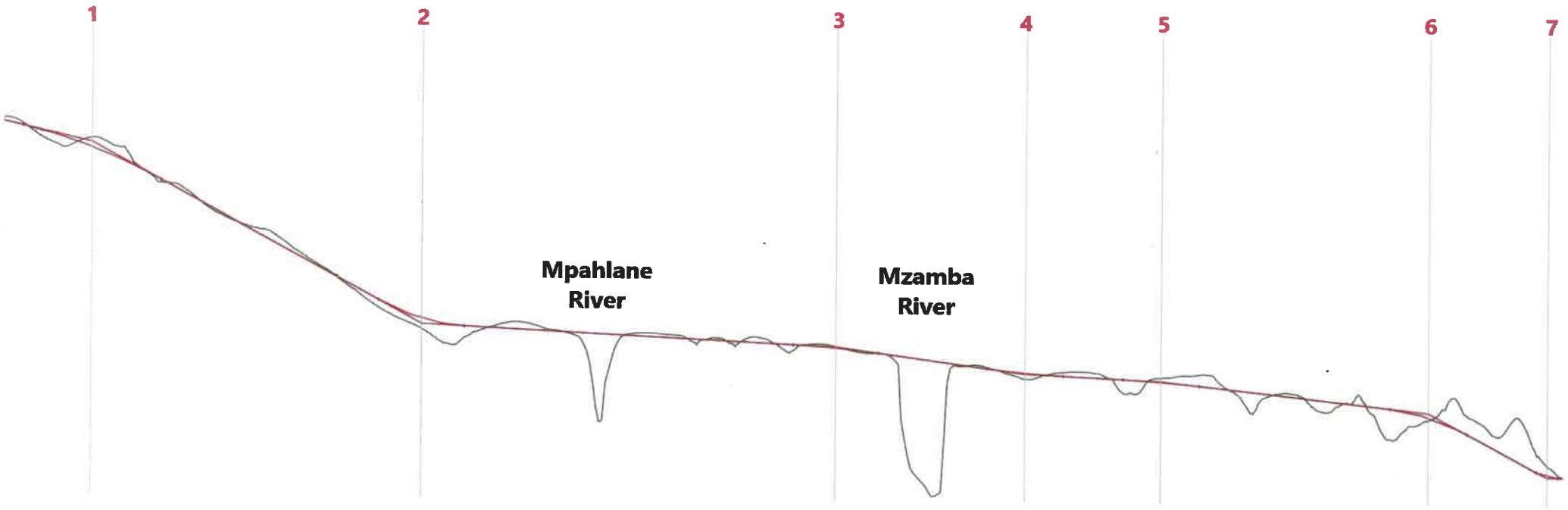
ACCESS AND INTERCHANGES DESIGN

- Two Interchanges and one Quarter-Link is proposed, as shown below.



HORIZONTAL AND VERTICAL DESIGNS - Alternative 3

- The picture below shows the general vertical alignment of the proposed N2.



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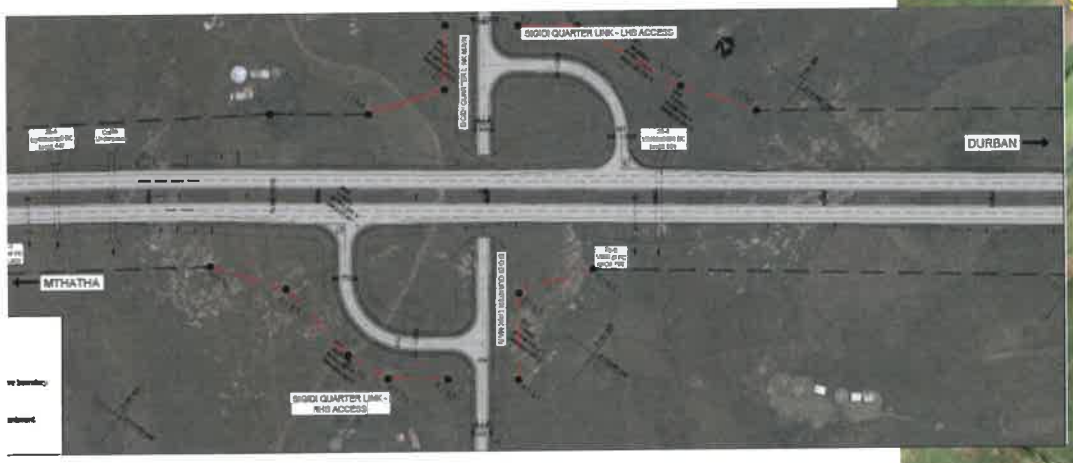
ROAD GEOMETRY

SIGIDI QUARTER-LINK

- The Sigidi Quarter-Link is located at KM 26,700
- Sigidi is located between the Mpahlane and Mzamba rivers,
- The nearest alternative access for Sigidi is Kulumbe or Mzamba interchanges implying a trip of approx. 17Km.



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ROAD GEOMETRY

EBENEZER INTERCHANGE

- Situated at KM 28,800, this interchange facilitates the exchange of traffic between the N2 and the DR08118,

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ROAD GEOMETRY

MZAMBA INTERCHANGE

- Facilitates the exchange of traffic between the N 2 and the R61,

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ROAD GEOMETRY

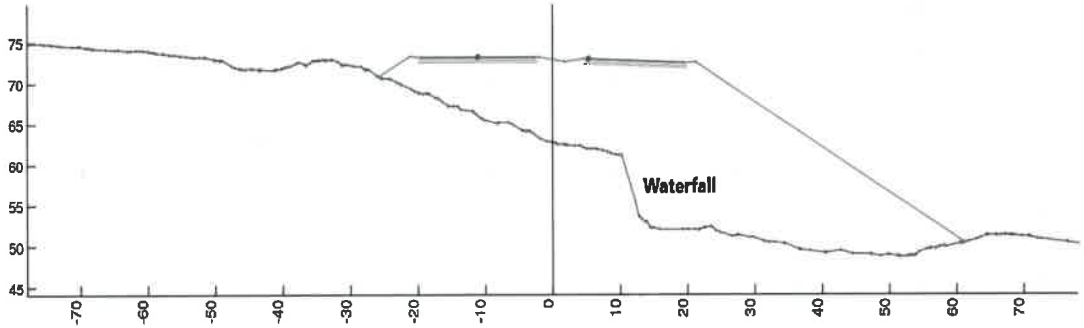
CHALLENGES ENCOUNTERED

- During the culvert design procedure, it was noted that there is a waterfall located within the project area,
- It is approximately 8 – 10m in height and is situated in a cluster of dense vegetation. It is for this reason that it was probably missed during the environmental procedures,

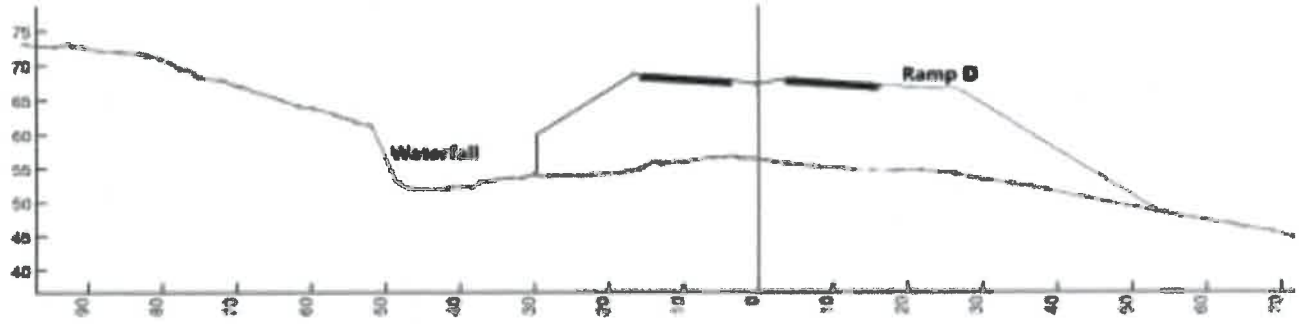
ROAD GEOMETRY

CHALLENGES ENCOUNTERED

- The original Concept alignment, passed over the waterfall as shown,
- It is for this reason that adjustments needed to be done in order to save this waterfall, as shown in the two cross sections.



(Concept Alignment)



(New proposed N2 Alignment)

ROAD GEOMETRY

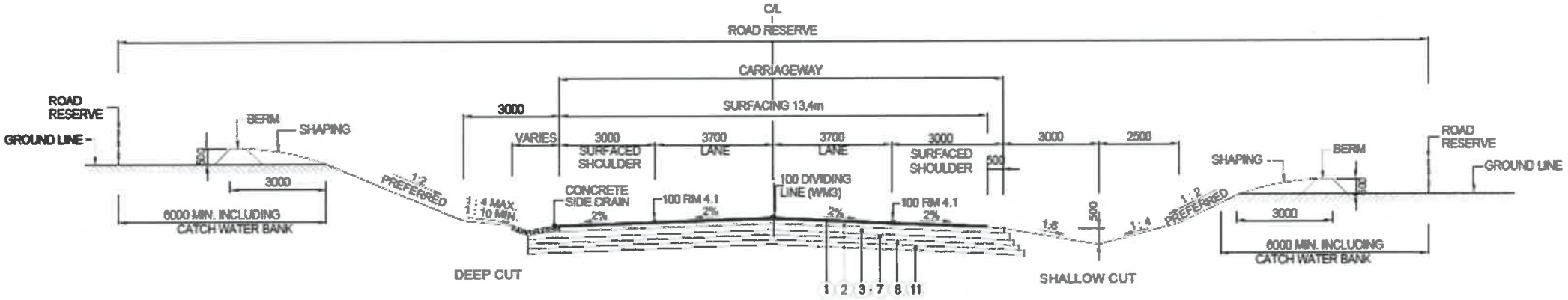
SPEED LIMITS

- It is recommended to have a posted speed of 120km/h for the rural section, and 80km/h for the approach to the Mzamba Interchange and Mtamvuna River,

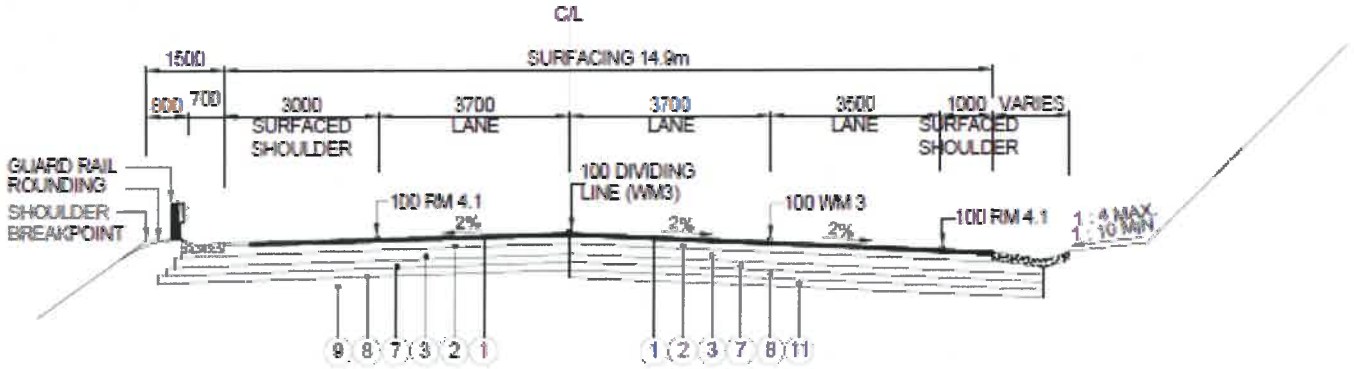
ROAD GEOMETRY

CROSS SECTION – N2 Current Development

- The cross section below shows what will be built now, without passing lanes,



- The cross section below shows what will be built now, with a passing lane shown on the Right,



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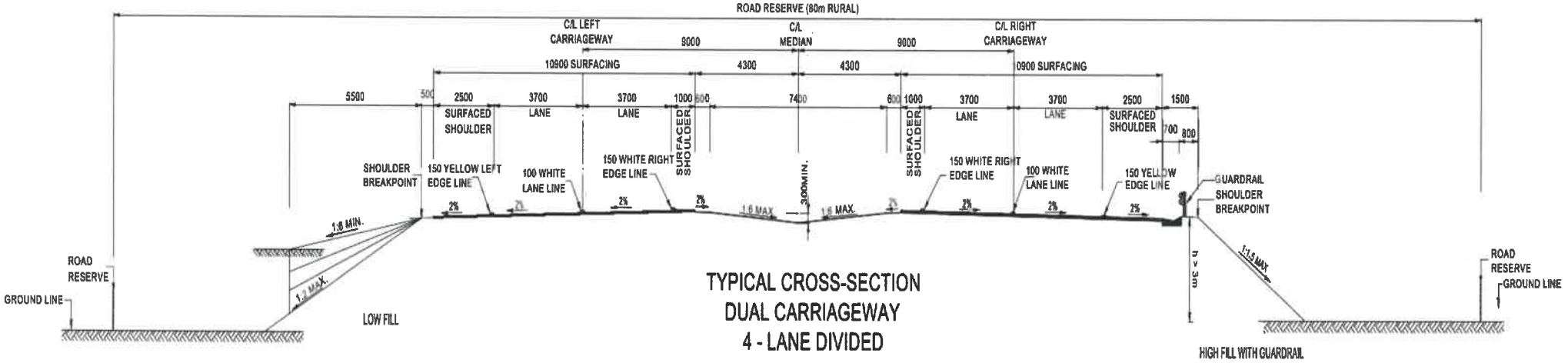
ROAD GEOMETRY

CROSS SECTION – Tie in with Eastern Region

- The cross section below will be constructed from within the last horizontal curve for the current development, to aide with the construction of the new Mtamvuna River Bridge.



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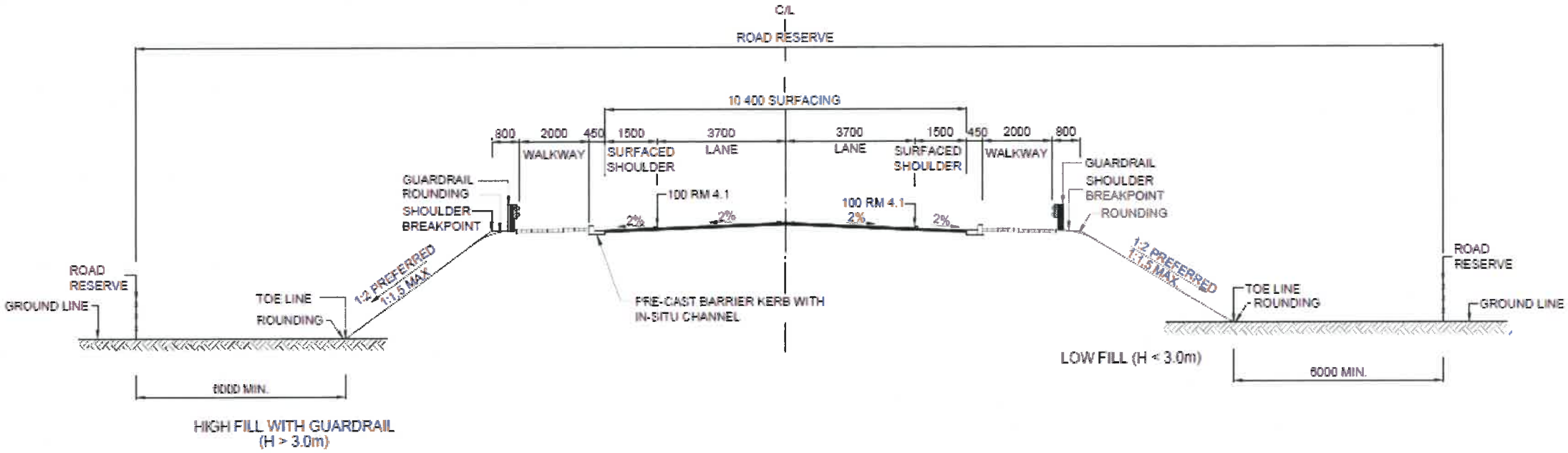
ROAD GEOMETRY

CROSS SECTION – R61 existing



TYPICAL CROSS SECTION
SINGLE CARRIAGEWAY ROADS WITH 1,5m SURFACED SHOULDER

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ROAD GEOMETRY

TIE IN Existing R61 (Eastern Region)

- Eastern Region proposed to construct a duplication of the existing Steel Bridge structure up-stream.
- The new R61 cross section is a undivided 4 lane section east of the Mtamvuna river.
- More interaction is required between the two SANRAL regions to finalize the tie-in in the details design phase.
- The detail design will be dual carriageway from Km 30.0 to the end, Mtamvuna River.
- Transition will be designed to tie into the existing steel bridge over the Mtamvuna River.

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ACCESS MANAGEMENT

- Vehicular access and cross movement would be provided by means of interchanges, the Sigidi quarter-link, as well as vehicle and agricultural underpasses,
- Informal tracks and gravel roads will be upgraded by local SMME Contractors, registered with CIDB as grades 1CE to 6CE,
- These community access roads will be constructed under a separate contract,

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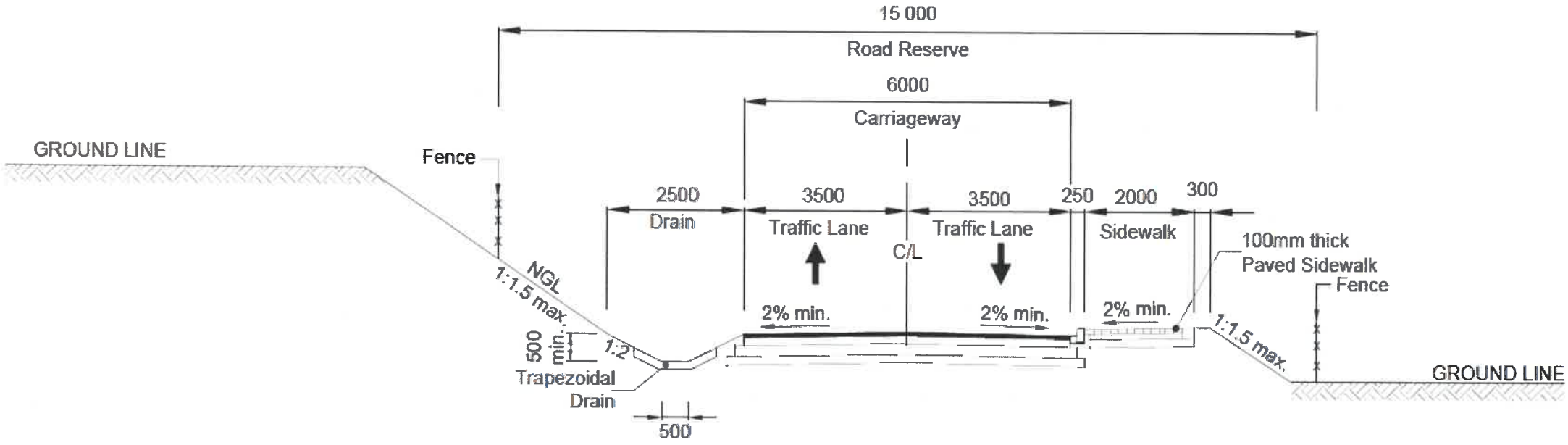
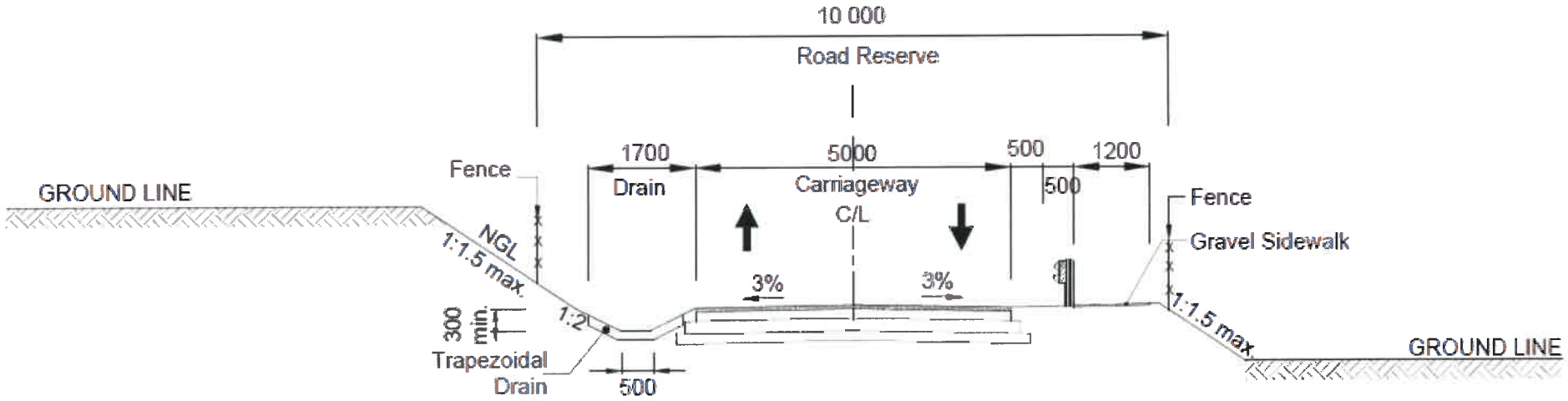
ACCESS MANAGEMENT

CROSS SECTION – Class 4



TYPICAL CROSS SECTION
CLASS 4 SURFACE ROAD

CROSS SECTION – Class 5



TYPICAL CROSS SECTION
CLASS 5 GRAVEL ROAD

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ACCESS MANAGEMENT

GENERAL ARRANGEMENTS – Full Extent

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ACCESS MANAGEMENT

GENERAL ARRANGEMENTS - Kulumbe Section

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ACCESS MANAGEMENT

GENERAL ARRANGEMENTS – Sigidi Section

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ACCESS MANAGEMENT

GENERAL ARRANGEMENTS – Mzamba Section

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ACCOMMODATION OF TRAFFIC

- As this portion of the N2 Wild Coast Corridor is in essence a Greenfields section, traffic accommodation will only be required at the end of the project where the N2 crosses the R61 and Mtamvuna River Bridge,
- Cross movement will be maintained where applicable,
- Special attention shall be given to the safety of livestock and pedestrians during construction, as well as all other road users that find themselves within the road reserve (and adjacent) during construction.

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ENVIRONMENTAL ASPECTS

- The Environmental Authorization for the N2 project was received on 19th April 2010,
- An Environmental service provider will be appointed for the service and access roads, Spoil sites, new relocation sites and licencing for additional water abstraction points
- The appointment of a registered archaeologist will be required who will be responsible for the relocation of all graves on the Relocation, Access and Main Contracts.
- The process of procuring a service provider has started and will be finalized once clarity has been received on the current Pandemic status.

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RELOCATIONS

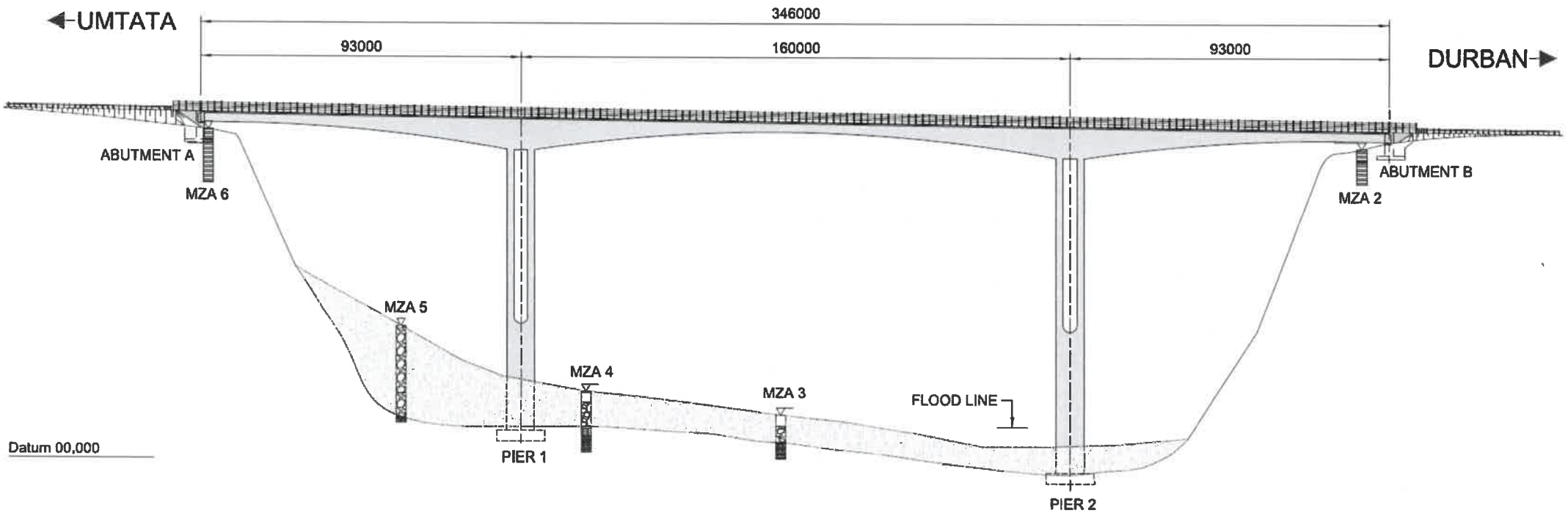
- Capturing of Notional Sites will commence soon for Package 7.
- The buildings to be relocated will be replaced with similar size structures on alternative land acquired through the Project. Crop fields will be replaced with similar sized fields. Where portions of fences are affected, the full road frontage fence will be replaced;
- Homesteads and crop or storage fields has been avoided as far as possible during the planning of the Access Road Network. It is however that envisaged that some relocation will be required for the Access Contract. The afore-mentioned will however be confirmed once the topographical survey is received and more detailed designs can be undertaken
- Below is a preliminary list of the relocations identified.
- The information will also be updated once the road reserve is finalised,

Relocation Type	Plan Type	Description	Number of
Same Site	Building Plan	There exists enough space on the current property to relocate dwellings within the allocated boundaries.	11
Offsite	CLR Plan	Insufficient land exists to relocate property within existing boundaries, dwelling to be relocated to another site.	8
Beneficiary Owned site	CBASS Plan	There exists another property locally that is owned by the family.	TBA
Land Compensation only	None	A portion of the property will be removed for the Main works contract.	TBA

RIVER BRIDGES

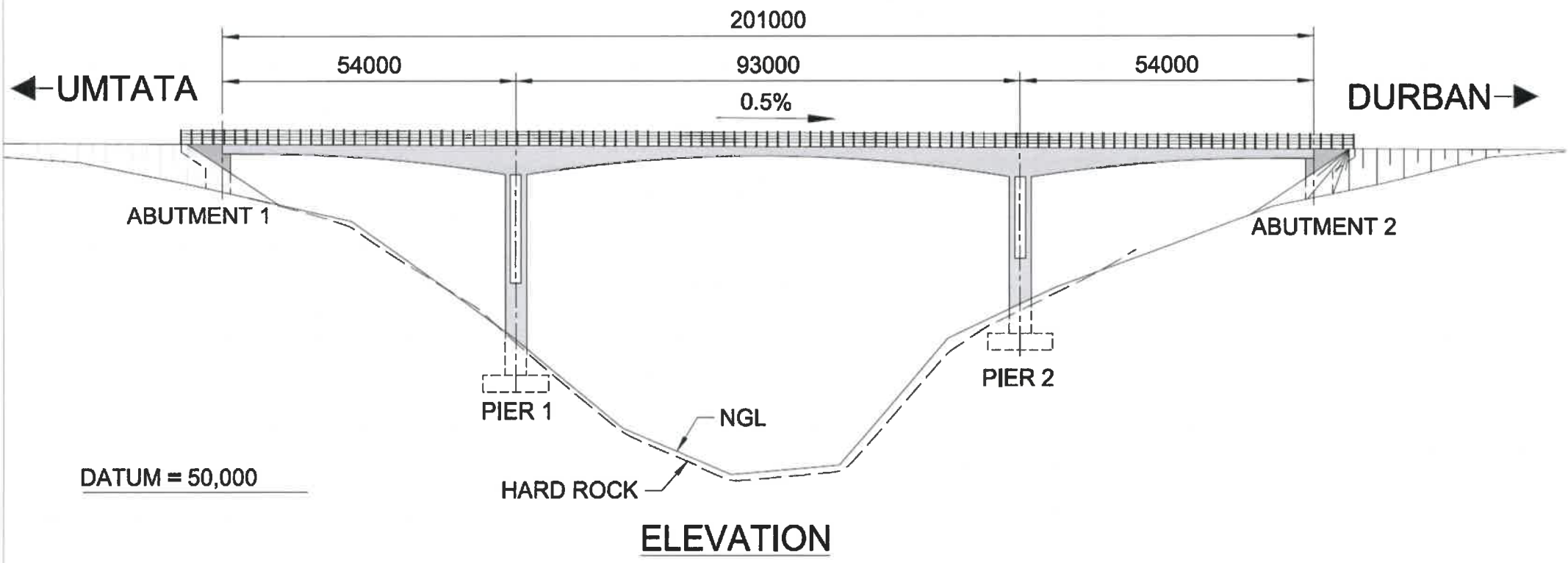
MEGA BRIDGES: POSTULATED DESIGN							
Package	**Name**	**Structural Type**	**Deck Section**	**Bridge Length L [m]**	**Deck Width W [m]**	**max Height H [m]**	**Deck Area [m^2]**
7	Mpahlane	Continuous haunched deck 73m spans	Prestressed concrete box	187	19.1	61	3 572
	Mzamba	Continuous haunched deck 73m spans	Prestressed concrete box	333	19.1	93	6 360

MZAMBA: Haunched Balanced Cantilever

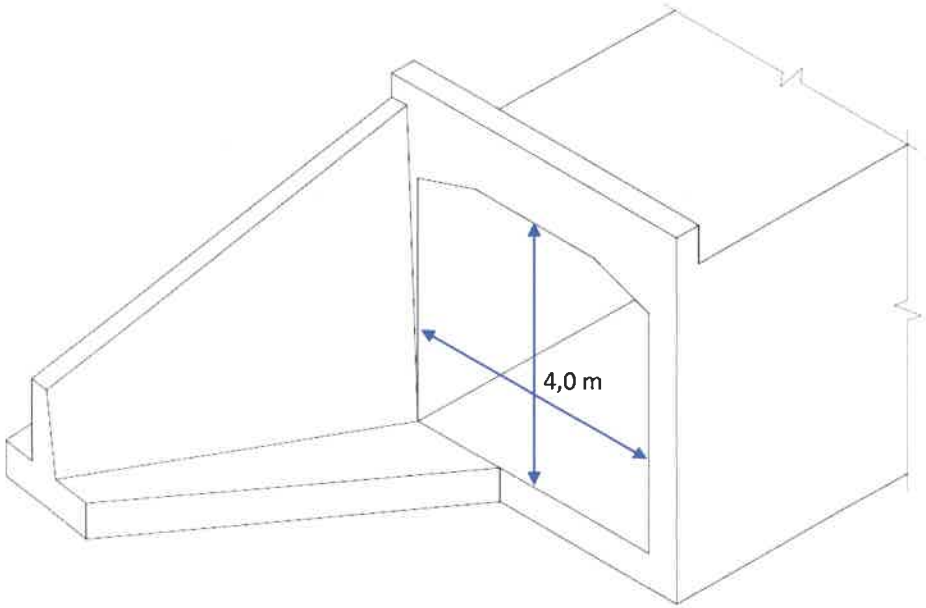


MZAMBA BRIDGE ELEVATION

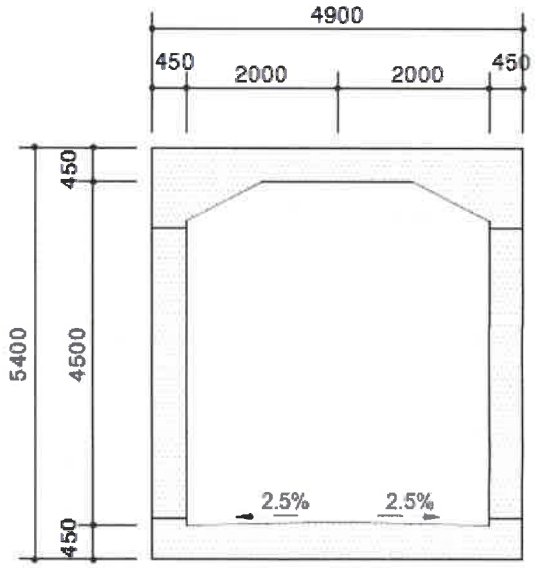
MPAHLANE: Haunched Balanced Cantilever



OTHER STRUCTURES – Typical Agricultural Underpasses



Part Isometric view



Agricultural Underpass

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QUESTIONS/IMIBUZO