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SITE SENSITIVITY VERIFICATION REPORT

**Proposed improvement on National Route
N14 - Section 12 from Coligny (km 0.0) to
Ventersdorp (km 58.40) and establishment
of borrow pits at various locations, in
North-West Province, in North-West
Province**

Report No: 24019-46-Rep-001

For submission to:

Department of Forestry, Fisheries and the
Environment
Chief Director: Integrated Environmental
Authorisations
Private Bag X447
Pretoria
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Project Title **Proposed improvement on National Route N14 - Section 12 from Coligny (km 0.0) to Ventersdorp (km 58.40) and establishment of borrow pits at various locations, in North-West Province, in North-West Province**

Project No **24019**

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DOCUMENT APPROVAL

ACTION	DESIGNATION	NAME	DATE	SIGNATURE
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RECORD OF REVISIONS

Date	Revision	Author	Comments

EXECUTIVE SUMMARY

Zitholele Consulting (Pty) Ltd (Zitholele) was appointed by SMEC South Africa (Pty) Ltd, on behalf of South African National Roads Agency SOC Limited (SANRAL) to provide environmental services for the proposed improvement on National Road N14 Section 12 from Coligny (km 0.0) to Ventersdorp (km 58.4) in North-West Province.

The project is located within the Local Municipalities of Ditsobotla and JB Marks, which are under the District Municipalities of Ngaka Modiri Molema and Dr Kenneth Kaunda, respectively. Ventersdorp is the nearest major town to the project. The route runs in the easterly direction from N14/R503 (km 0.0) intersection at Coligny to near the N14/R53 intersection (km 58.4) in Ventersdorp.

Based on traffic recommendations, a 13.4m carriageway is proposed for SANRAL's Geometric Design Guidelines to provide climbing lanes, where deemed necessary in future, if growth exceeds the forecast. The final traffic analysis will determine the extent of the proposed improvements on the route, which may comprise of climbing / passing lanes.

The road improvement includes widening of some structures along the route to accommodate the proposed geometric design and lane arrangement consisting of total surfaced width 13.4m. The N14 section 12 consists of road over rail, overpass, by-pass lanes and river bridges. There 4 existing bridges and 15 major culverts along the route.

There are several bridges along the N14-Section 12 that will be upgraded as follows:

- B3552: Coligny Rail Bridge at km1.3 (bridge to be widened and rehabilitated)
- B1103: Taaibospuit Tributary 5 River km 21.4 (bridge to be demolished and replaced to be in level of the new road level)
- B5194 : Schoonspruit River Bridge km 55.7 (bridge to be extended to accommodate the land arrangement)

A new road over rail bridge at km20.66 is proposed to ensure safety and to allow for the N14 to meet the requirements of a Class 1 and Class 2 road.

A new bridge at km55.65 with 5 spans and a cell structure will be constructed across the Schoonspruit River.

The road width required to accommodate the new bridges and upgrades range between 13.4m to 20.8m.

Some of the major drainage culverts will be extended to accommodate the proposed road geometry and the required total surfaced width of 13.4m. Some of the culverts will be demolished and replaced and some will be widened and extended to accommodate the road widening. At least four new culverts will be constructed.

The road width required to accommodate the new culverts and upgrades range between 13.4m to 20.8m.

An interchange is proposed at the N14/R30 and the design is still to be approved by SANRAL.

A butterfly-type intersection is proposed at the N14/R503 intersection. The design is to be approved by SANRAL.

Passing lanes are proposed on both sides of the N14 and will alternate between the east bound (towards Pretoria) and westbound (towards Lichtenburg). The proposed surfaced width will be 13.4 where there would be no passing lanes. In instances where there would be passing lanes, an additional 3.5m of surfaced width is required on the N14 where the passing lane will be located. In such instances, the required lane width from the edge of the surfaced roadway, will be 16.9m in width.

The study area utilised for the environmental screening assessment was taken as the 40m wide corridor from the centre line of the existing N14, as provided to Zitholele Consulting in the form a Google Earth Kmz file.

The project also involves the use of material from proposed borrow pits, which will be assessed for environmental impacts.

A desktop assessment of the environmental sensitivities and features of the development site was undertaken through assessment of existing national and regional scale GIS information and layers.

According to the web-based Screening Tool Report by the DFFE, the wetlands and aquatic sensitivity analysis for the N14 – Section 12 indicates low sensitivity for most of the study area, with the exception of areas along the study area falling within the Critical Biodiversity Area (CBA 1), Ecological Support Area (ESA) 1 and ESA 2, rivers, and wetlands of the Dry Highveld Grassland Bioregion (seep, depression and channelled valley bottom wetlands), which exhibit very high sensitivity. In some areas along the proposed upgrades, there are wetlands/drainage lines traversing or are located close to the study area. Tributaries of the Taaibospruit and the Skoonspruit are traversed or are located close to the proposed road upgrade. Some of the wetlands and rivers falls within the National Freshwater Ecosystem Priority Area (NFEPA).

The Department of Forestry, Fisheries, and the Environment (DFFE) is the Competent Authority for the BA process. Additionally, the Department of Water and Sanitation (DWS) necessitates a General Authorization (GA) under Sections 21 (c) and 21 (i) of the National Water Act, 1998 (Act No. 36 of 1998) for water use activities related to the proposed upgrade for SANRAL as a designated applicant. A Risk Assessment Matrix (RAM) is to be compiled by a South African Council of Natural and Scientific Professions (SACNASP) Registered Wetland Ecologist to determine the risk category of the proposed road improvements on the wetlands occurring within the 500m radius of the proposed road improvements and proposed borrow pits. Therefore, the

Environmental Assessment Practitioner (EAP) suggests that a Wetland/Aquatic Compliance Statement be undertaken, as a minimum.

The study area falls within the Critically Endangered Ecosystem and falls within the endangered Vaal-Vet Sandy Grassland. The study area occurs within CBA 1, CBA 2, ESA 1 and ESA 2 of the North West Biodiversity Sector Plan and the National Protected Area Expansion Strategy (NPAES). These areas show very high sensitivity in terms of the terrestrial biodiversity theme. The road upgrades will mainly be located within the existing road reserve. As a minimum, the EAP suggests that a Terrestrial Biodiversity Compliance Statement be undertaken.

During the site visit, agricultural practices such as crop cultivation (mainly maize), grazing, central pivot irrigation and ploughing were taking place along the N14. Several of the proposed borrow pits are vacant land. As a minimum, the EAP suggests that an Agricultural Compliance Statement be undertaken.

The presence of heritage and paleontological resources will be confirmed by an Archaeological and Palaeontological Impact Assessment, respectively.

Several specialist studies have been identified to evaluate the potential improvement of the N14-Section 12 and proposed borrow pits on the receiving biophysical and socio-economic environment by the DFFE Screening Tool. The applicability and need for these studies will however be assessed and discussed with the DFFE to confirm the need to undertake these studies.

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LIST OF ACRONYMS

CBA	Critical Biodiversity Area
DFFE	The Department of Forestry, Fisheries, and the Environment
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ESA	Ecological Support Area
GA	General Authorization
NEMA	National Environmental Management Act
NFEPA	National Freshwater Ecosystem Priority Area
NPAES	National Protected Area Expansion Strategy
RAM	Risk Assessment Matrix
SACNASP	Council of Natural and Scientific Professions
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency SOC Limited
SSRVR	Site Sensitivity Verification Report
TIA	Traffic Impact Assessment

1 INTRODUCTION

Zitholele Consulting (Pty) Ltd (Zitholele) was appointed by SMEC South Africa (Pty) Ltd, on behalf of SANRAL, to provide Environmental Services i.e. a Basic Assessment for the proposed improvement of National Route N14 Section 12 from Coligny (km0.0) to Ventersdorp (km58.4), in North West Province. The project is located within the Local Municipalities of Ditsobotla and JB Marks which are under the District Municipalities of Ngaka Modiri Molema and Dr Kenneth Kaunda, respectively. Ventersdorp is the nearest major town to the project. The route runs in the easterly direction from N14/R503 (km 0.0) intersection at Coligny to near the N14/R53 intersection (km58.4) in Ventersdorp.

The N14 road is a two-lane single carriageway road with gravel shoulders and is categorized in terms of TRH4 as a Category B Road.

The proposed road upgrade is an improvement solution, to relieve congestion to an acceptable level of service, improve road safety, and adequate pavement capacity for a 20-year design period.

The National Route N14 runs from Springbok in the Northern Cape to Pretoria in Gauteng. It passes through Upington, Kuruman, Vryburg, Krugersdorp and Centurion. Land use along the project road is largely restricted to game and livestock farming including crop farming.

Several borrow pits will be established at various locations near the proposed road upgrade. A mining permit would be required from the Department of Mineral Resources and Energy (DMRE) for the proposed establishment of these borrow pits via applications to this Department, in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (as amended).

2 PROJECT BACKGROUND

Based on traffic recommendations, a 13.4m carriageway is proposed for SANRAL's Geometric Design Guidelines to provide climbing lanes, where deemed necessary in future, if growth exceeds the forecast. The final traffic analysis will determine the extent of the proposed improvements on the route, which may comprise of climbing / passing lanes.

The road improvement includes widening of some structures along the route to accommodate the proposed geometric design and lane arrangement consisting of total surfaced width 13.4m. The N14 section 12 consists of road over rail, overpass, by-pass lanes and river bridges. There 4 existing bridges and 15 major culverts along the route.

To accommodate the proposed road widening, including the extension of the existing culvert, the surfaced width of the N14 will be 16.5m.

Material sources from proposed borrow pits are required for the road upgrade. The application for mining permits will be lodged with the Department of Mineral Resources and Energy (DMRE).

3 DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Project Location

3.1.1 N14, Section 12 (start at km 0.00 and end at km 58.40)

The N14-Section 12 occurs within Ward 17 of the Ditsobotla Local Municipality and Ward 34 of the J.B. Marks Local Municipality of the of the Ngaka Modiri Molema and Dr Kenneth Kaunda District Municipalities in the Northwest Province. This section is crossed by numerous local access routes, to small towns and settlements such as Ventersdorp, Klipplaatdrip, Verdoornpark, Coligny, Amanabad and Tlhabologang, along the N14.

Refer to the locality of the N14 – Section 12 in Figure 1.

3.1.2 Proposed borrow pits

As part of the road improvements, material sources from several proposed borrow pits, near the road reserve have been identified as borrow material for road construction material. The table below provides the location of the proposed borrow pits.

Table 1: Location of the proposed borrow pits

Potential source/Borrow pit	Approximate site centre	Km chainage	Approximate Area (ha)	Lithology
Existing borrow pit	26° 18' 05.66"S 26° 46' 15.96"E	2.8km north west of Ventersdorp	4.49	Quartzite
BP04	26° 20' 27.76"S 26° 47'31.14"E	Along R30 1,7km south of km54.4 on N14	1.7	Basaltic lava, agglomerate, tuff
Outcrop 1.0 (Part 1)	26° 20' 15.19"S 26° 44' 04.61"E	Along gravel road 151m north of km47.4 on N14	4.29	Quartzite
Outcrop 1.0 (Part 2)	26° 20' 25.46"S 26° 44'01.91"E	Along gravel road 151m north of km47.4 on N14	4.44	Quartzite
Diabase cut	26° 20'36.60"S 26°43'30.94"E	46.6 on N14	4.0	Diabase
BP01	26° 20'28.08"S 26°18'07.96"E	69m west of km2.0 on N14	0.6	Granite
Granite quarry	26° 20'46.61"S 26°20'11.20"E	Along gravel road, 1,2km south of km5 on N14	0.4	Granite
BP02	26° 20'41.97"S 26°20'21.88"E	Along gravel road, 1,15km south of km5 on N14	2.9	Granite

Potential source/Borrow pit	Approximate site centre	Km chainage	Approximate Area (ha)	Lithology
Site 1: Boulder field	26° 20'18.56"S 26°22'37.88"E	Km10.2	4.98	Quartzite, greywacke, conglomerate
Gravel cut 1	26° 20'18.53"S 26°38'45.10"E	Between km38.00 to km38.6	0.5	Quartzite, greywacke, conglomerate
BP03	26° 20'45.88"S 26°39'42.74"E	Between 40.2 to km40.4	3.6	Quartzite, greywacke, conglomerate
Quarry cut	26° 20'48.04"S 26°39'51.01"E	Between 40.4 to km40.6	4.97	Quartzite, greywacke, conglomerate
New B1103	26° 19' 49.71"S 26° 29' 17.85"E	266km south of km 21.6 on section of proposed re-alignment of N14	2.17	Basaltic lava

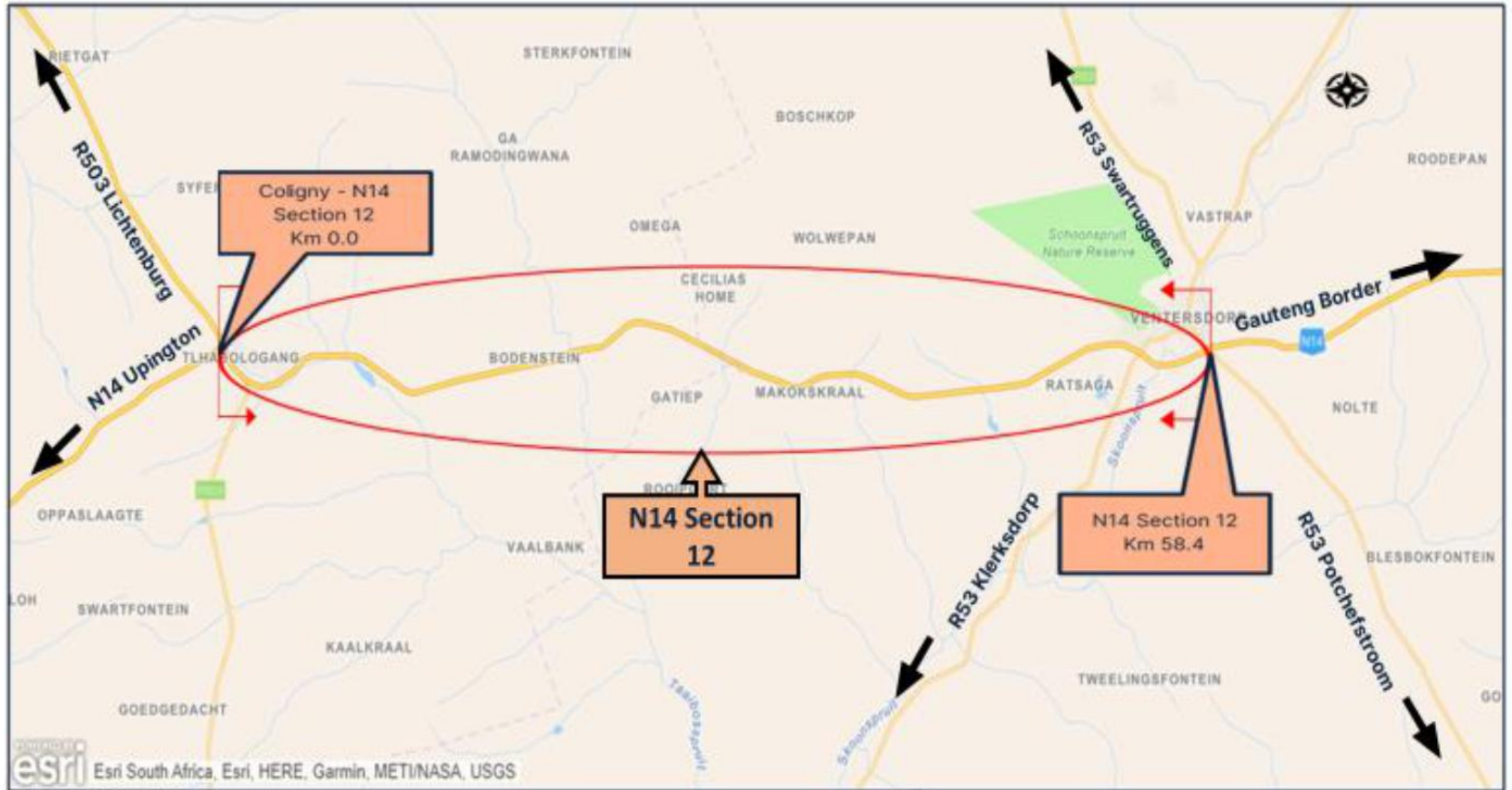


Figure 1: Locality Map of the N14 – Section 12

3.2 Project Descriptions

As discussed earlier, the N14-Section 12 will be upgraded to accommodate the 13,4m wide carriageway. Existing bridges, culverts, the N14/R30 interchange and a new road over rail bridge is proposed. New bridges and culverts will also be constructed. Passing lanes are proposed on the east bound and west bound sections along the N14.

3.3 Bridges

Please refer to the below paragraphs for a description of proposed bridge upgrades and new bridges that will be required.

3.3.1 B3552: Coligny Rail Bridge at km1.3

The Coligny Rail Bridge B3552 carries the N14 over a railway line at a skew of 8°. The existing bridge will be widened and rehabilitated as follows:

- Installation of an erosion protection solution such as gabions and pitching stone;
- Repair of concrete spalling on the barriers;
- Lift the asphalt layer to prevent damming of water on the deck; and
- Repair and install side drains to approaches.

3.3.2 New road over rail bridge at km20.66

A new road over rail bridge is to be located near Bodenstein at km20.66 at the N14 road and railway crossing. The proposed bridge is going to have a skew of 31°. The minimum clear span of bridge is 11.9 m and a minimum vertical clearance of 5.08 m.

3.3.3 B1103: Taaibospuit Tributary 5 River km 21.4

Due to the change in road level at km 20.66 to accommodate the railway crossing bridge; the road is lifted by 3.2 m at location of structure B1103. To accommodate this change in road level, it is recommended that the existing bridge be demolished and be replaced with a new bridge that will be at the level of the proposed road. The new bridge will consist of precast beams and slab deck with wall type piers.

3.3.4 B5194 : Schoonspruit River Bridge km 55.7

The solution considers extending the existing structure to accommodate the recommended lane arrangement at a fill slope of 1:2 and to avoid the risk of overloading the structure with additional load. The extended part of the structure will be doweled into the existing structure.

3.3.5 New bridge at km55.65

A new bridge with 5 spans (cell structure) is proposed at km55.65 to accommodate the road widening.

3.3.6 B5316 : Stasie Avenue Overpass Bridge km 58.35

The underpass bridge B5316 is located at km 58.35 and carries the N14 over Stasie Avenue at a skew of 30°. It is a supported bridge consisting of one span that is approximately 16.5 m. The road width measured from parapet to parapet is approximately 13.0 m.

The available width of 13.0 m is insufficient to accommodate the required the full 13.4 m surfaced road. Keeping the existing structure will require the available 13.0 m width to be utilised for the lane arrangement which will result in a reduced surfaced shoulder of 2.6 m and 3.0 m on the eastbound and westbound lane respectively. Though this is option does not accommodate the required full lane arrangement, it is a highly cost-effective solution. The relevant signage is required to work in conjunction with this solution to ensure safety.

3.4 Culverts

Some of the major drainage culverts will be extended to accommodate the proposed road geometry and the required total surfaced width of 13.4m. Some of the culverts will be demolished and replaced and some will be widened and extended to accommodate the road widening. At least four new culverts will be constructed.

There are several minor culverts along the N14. Six culverts need to be upgraded due to their current size being smaller than the proposed minimum size to facilitate maintenance. Two of the culverts will be upgraded to accommodate a Class 1 runoff evaluation. Five culverts meet the requirements for a Class 2 road. Fourteen culverts will be upgraded to suit Class 2 requirements.

Refer to Table 1 below that provides a summary of the major culverts that will be upgraded and new culverts that will be constructed.

Table 2: Major culverts to be upgraded and constructed

Culvert Structure Number	Chainage (km)	Description (no. cells)	Comment
C1276	3.6	2	Demolish to replace
C002	7.4	6	Extension on both sides
New	7.6	3	New structure
New	7.65	3	New structure
New	7.88	2	New structure
C4357	8.1	6	Extension on both sides
C43	12.41	4	Demolish to replace
C42 (CM A-U)	16.75	1	Extension on both sides
C4850	22.5	4	Extension on both sides & widening
C40	28.82	2	Extension on both sides
C4354	30.1	1	Extension on both sides
New	30.24	2	New structure
C38	31.81	2	Extension on both sides & widening
C233	37.7	2	Extension on both sides
C4849	45.2	4	Extension on both side
C4848	46.1	3	Demolish to replace
C34	52.2	2	Extension on both sides & widening
Unknown 21	57.3 (was 2.9)	1	

3.5 N14/R30 Interchange

Currently there is an at-grade four way intersection with the N14/R30, located at km54.4 of the N14. Available information indicates future planned developments in the area.

The current at-grade intersection will be upgraded to a grade separated intersection to alleviate the traffic generated due to the development. Preliminary information indicates that the N14 will pass under the R30.

A diamond interchange, is proposed at this interchange.

3.6 Possible Future Developments – N14/R503 intersection

A butterfly-type intersection is proposed at the N14/R503 intersection. The design is to be approved by SANRAL.

3.7 Passing lanes

Passing lanes are proposed on both sides of the N14 and will alternate between the east bound (towards Pretoria) and westbound (towards Lichtenburg). The proposed surfaced width will be 13.4 where there would be no passing lanes. In instances where there would be passing lanes, an additional 3.5m of surfaced width is required on the N14 where the passing lane will be located.

In such instances, the required lane width from the edge of the surfaced roadway, will be 16.9m in width.

Tables 2 and 3 indicates where the passing lanes may be located along the N14 – Section 12.

Table 3: Proposed location of the passing lanes going east bound on the N14 – Section 12

Start (km chainage)	End (km chainage)	Proposed Length of passing lane (km)
0.15	1.2	1.05
6.6	12.3	5.7
21.6	25.3	3.7
37.6	40.9	3.3
46.2	48.35	2.15
56.6	57.8	1.2

Table 4: Proposed location of the passing lanes going west bound on the N14 – Section 12

Start (km chainage)	End (km chainage)	Proposed Length of passing lane (km)
1.4	2	0.6
16.7	19.6	2.9
25.7	29.3	3.6
41.2	45.9	4.7
48.9	54.2	5.3
55.6	56.4	0.8

4 DFFE SCREENING TOOL REQUIREMENTS

In terms of GN R 960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the DFFE's national web based environmental screening tool (<https://screening.environment.gov.za>) is compulsory for the submission of applications in terms of Regulation 19 and 21 of the 2014 EIA Regulations.

The screening tool assessments were undertaken for the project study area. the Screening Tool Reports for the proposed road improvements for N14 – Section 12 (from km0m to km 58.4) was generated.

In addition, the screening tool assessments were undertaken for the proposed borrow pits. The Screening Tool Reports for the proposed borrow pits was generated.

The results of the screening tool assessments for the N14-Section 12 road upgrade for the various themes are presented in Table 4.

Table 5: Themes identified by the DFFE Screening Tool for N14-Section 12

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme		X		
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme		X		
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

The results of the screening tool assessments for the proposed borrow pits for the various themes are presented in Tables 6 to 16.

Table 6: Themes identified by the DFFE Screening Tool for proposed borrow pit – BP04

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme		X		
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 7: Themes identified by the DFFE Screening Tool for proposed borrow pit – Outcrop 1.0

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 8: Themes identified by the DFFE Screening Tool for proposed borrow pit – Diabase Cut

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 9: Themes identified by the DFFE Screening Tool for proposed borrow pit – BP01

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme				X
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 10: Themes identified by the DFFE Screening Tool for proposed borrow pit – Site boulder field

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 11: Themes identified by the DFFE Screening Tool for proposed borrow pit – Gravel cut 1

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 12: Themes identified by the DFFE Screening Tool for proposed borrow pit – BP03

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme				X
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 13: Themes identified by the DFFE Screening Tool for proposed borrow pit – Quarry cut

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme				X
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 14: Themes identified by the DFFE Screening Tool for proposed borrow pit – BP02

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 15: Themes identified by the DFFE Screening Tool for proposed borrow pit – Granite Quarry

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Table 16: Themes identified by the DFFE Screening Tool for proposed borrow pit – New B1103

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme				X
Defense Theme				X
Paleontology Theme			X	
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

5 SPECIALIST ASSESSMENT IDENTIFICATION

According to the Screening Tool Report, the following Specialist Assessments were identified and recommended to be undertaken as part of the environmental process for N14 -Section 12 and the proposed borrow pits:

- Agricultural Impact Assessment
- Landscape/Visual Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Palaeontology Impact Assessment
- Terrestrial Biodiversity Impact Assessment
- Aquatic Biodiversity Impact Assessment
- Noise Impact Assessment
- Traffic Impact Assessment
- Geotechnical Assessment
- Socio-Economic Assessment
- Ambient Air Quality Assessment
- Plant Species Assessment
- Animal Species Assessment

In accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of National Environmental Management Act, NEMA, 1998 (Act No. 107 of 1998) this Site Sensitivity Verification Report (SSRVR) has essentially been compiled to provide a rationale for the Specialist Studies undertaken as part of the Scoping and Environmental Impact Reporting (S&EIR) Process.

6 SITE SENSITIVITY VERIFICATION METHODOLOGY

The EAP team undertook a site visit along the study area for N12-Section 12 and proposed borrow pits on 25 June 2024. Refer to the site photos in Photoplate 1 for the road upgrade and Photoplate 2 for the proposed borrow pits. The site findings were compared to the findings of the various themes of the Screening Tool Report.

6.1 Desktop Analysis

The study area is situated in the North West Province, of South Africa. The N14 – Section 12 that is proposed for upgrade falls within the Local Municipalities of Ditsobotla and JB Marks, which are under the District Municipalities of Ngaka Modiri Molema and Dr Kenneth Kaunda, respectively.

According to the web-based Screening Tool Report by the DFFE, the wetlands and aquatic sensitivity analysis for the N14 – Section 12 ad borrow pits indicates low sensitivity for most of the study area, with the exception of areas along the study area falling within the Critical Biodiversity Area (CBA 1), Ecological Support Area (ESA) 1 and ESA 2, rivers, and wetlands of the Dry Highveld Grassland Bioregion (seep, depression and channelled valley bottom wetlands), which exhibit very high sensitivity. In some areas along the proposed upgrades and borrow pits, there are wetlands/drainage lines traversing or are located close to the study area. Tributaries of the Taaibospruit and the Skoonspruit are traversed or are located close to the proposed road upgrade. Some of the wetlands and rivers falls within the National Freshwater Ecosystem Priority Area (NFEPA).

The study area falls within the Critically Endangered Ecosystem and falls within the endangered Vaal-Vet Sandy Grassland. The study area occurs within CBA 1, CBA 2, ESA 1 and ESA 2 of the North West Biodiversity Sector Plan and the National Protected Area Expansion Strategy (NPAES). These areas show very high sensitivity in terms of the terrestrial biodiversity theme.

According to the Screening Tool Report, N14 - Section 12 mainly has high and medium sensitivity for agriculture, as there are some areas falling within features consisting annual crop cultivation/plant pastures rotation. During the site visit, agricultural practices such as crop cultivation (mainly maize), grazing, central pivot irrigation and ploughing were taking place along the N14. The borrow pits sites were mainly vacant and the soil resources potential of the borrow pits must be determined through specialist verification.

The DFFE Screening Tool Report, 2024 indicates that some of the sections of the proposed upgrade falls within the land capability area of moderate – high. Therefore, an Agricultural Compliance Statement is recommended to confirm the sensitivity rating for the agricultural theme.

In terms of the archaeological and cultural heritage theme, (DFFE Screening Tool Report, 2024), N14 – Section 12 falls within a very high archaeological sensitivity area. According to the National Heritage Resources Act, 1999 (Act No. 25 of 1999), Section 38 (Heritage Impact Assessments) application to the South African Heritage Resources Agency (SAHRA) is required when the

proposed development triggers a) the construction of a road, or other similar form of linear development exceeding 300m in length. The proposed borrow pits will also change the land use of the site. As the intersection upgrades will be more than 300m in length and the land use will change for the borrow pits, an Archaeological and Cultural Heritage Impact Assessment / Exemption form undertaking an HIA, will be undertaken for the N14 – Section 12 and borrow pits.

According to the palaeontological theme, (DFFE Screening Tool Report, 2024) N14 - Section 12 occurs within a medium palaeontological sensitive area. The Palaeontologist will determine if a Palaeontological Impact Assessment or an exemption from undertaking a Palaeontological Impact Assessment would be required, by generating the fossil sensitivity map. This map will determine the different levels of the estimated palaeontological sensitivity, as this is an important step forward in the proactive management of palaeontological and geological heritage resources. The map will guide and assist developers, heritage officers and practitioners in screening paleontologically sensitive areas at the earliest stages of the development cycle.

6.2 Site Assessment

The EAP team undertook a site visit along the study area on 25 June 2024.

This Site Sensitivity Verification Report has used the information collected by the EAP, to confirm or dispute (as may be applicable) the environmental sensitivity ratings identified by the National Screening Tool (see Table 1). A copy of the Screening Report is attached as Appendix B of the Site Sensitivity Verification Report. The Specialist Assessments/Theme and sensitivity ratings identified by the Screening Tool are summarised in Table 4.

The areas where the upgrade and construction activities have been proposed, were visited by the team and onsite observations and conditions were recorded. The observations from the on-site assessment are summarised in Photoplate 1 for N14 - Section 12 and Photoplate 2 for the proposed borrow pits.

N14 - Section 12



B3552 Coligny Rail Bridge B3552 carries the N14 over a railway line to be widened and rehabilitated.



Culvert C1276 at km3.6 to be demolished and replaced with the same type of culvert.



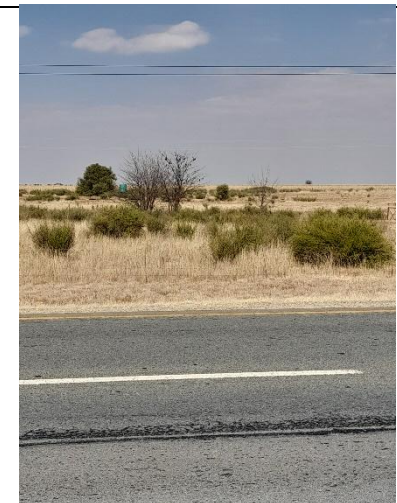
Culvert C002 at km7.4 to be extended on both sides. A tributary runs under the existing N14 at this point.



A new culvert with three cells is to be construction at km7.6.



A new culvert with three cells is to be construction at km7.65.



A new culvert with two cells is to be construction at km7.88.



Culvert C4357 at km 8.1 to be extended on both sides with a six cell configuration.



Vegetation along the N14 to be removed for the widening of the road.



Culvert C43 at km12.41 to be demolished and replaced. A watercourse and wetland is associated with this culvert.



The box culvert C42 at km16.75 is to be extended on both sides.



New raised road over railway line to be constructed at km20.3.



Bridge B1103 at km21.4 is an existing bridge that will be demolished and will be replaced with a new bridge that will be at the level of the proposed road. The new bridge will consist of precast beams and slab deck with wall type piers.



Culvert C4850 at km22.5 to be extended and widened on both sides.



Vegetation to be removed for the increased shoulder width.



Box culvert C40 at km28.82 to be extended on both sides with two cells.



Culvert C4354 at km30.1 to be extended on both sides.



Culvert C4849 at km45.2 to be extended on both sides.



Culvert C4849 at km45.2 to be extended on both sides.



Culvert C34 at km52.2 to be widened and extended on both sides.



N14/R30 interchange at km54.4 to be upgraded.



Bridge B5195 at km55.7 at the Schoonspruit River to be extended.



A new bridge with 5 spans (cell structure) is proposed at km55.65 to accommodate the road widening. Dense reeds and a wetland/watercourse (Schoonspruit River) occurs in this area.



End of the N14-Section 12 road upgrade at km 58.4. R53 is under the N14.

Photoplate 1: N14 – Section 12 Road Improvements

Proposed Borrow Pits



BP04 – consists of grassland on vacant land



Outcrop 1.0 -Consists of rocky outcrop on vacant land



Diabase cut – located on either side of the N14



BP01 – Area was used as a borrow pit previously



Granite Quarry - Area was used as a borrow pit previously



BP02 - Area was used as a borrow pit previously



Site 1: Boulder field – grassland and rocky outcrop dominant



Gravel cut 1 – consists of grasslands



BP03 - consists of grasslands



Quarry cut – was used as a borrow pit previously



New B1103

Photoplate 2: Proposed borrow pits

7 SITE SENSITIVITY VERIFICATION

This Site Sensitivity Verification Report has considered the information collected by the EAP during a desktop and site assessment, to confirm or dispute (as may be applicable) the environmental sensitivity ratings identified by the National Screening Tool (see Table 17 for the proposed road upgrade and Table 18 for the proposed borrow pits). A copy of the Screening Report is attached as Appendix B of the Site Sensitivity Verification Report. The Specialist Assessments/Theme and sensitivity ratings identified by the Screening Tool are summarised in Table 5, including the EAP's responses thereto.

Table 17: Specialist Assessments/themes and sensitivity ratings identified by DFFE's web-based Screening Tool, N14 - Section 12: km 0.0 to km 58.4

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
Agricultural Impact Assessment	High	Based on the observations on site and consideration of satellite imagery, some of the land adjacent to the sections to be widened to accommodate the road improvements, were agricultural land uses, such as maize farming and agricultural practises such as central pivots irrigation, ploughed land, areas under grazing etc were taking place along the N14. Therefore, some agricultural land may be acquired for the new road reserve in light of the improvements that are proposed. Since the upgrade will include limited widening and therefore loss of potential land, and due to the fact that the upgrade is for a national road in national interest, the sensitivity is anticipated to be low. However, in terms of the Agriculture Assessment Protocol, a compliance statement is required even if the sensitivity is low. A Soil /Agricultural Specialist compliance statement is therefore required in terms of the Agriculture specialist assessment protocol.	The outcome of the findings of the Soil/Agricultural Compliance Statement will be provided in the Draft Environmental Impact Report.
Landscape/Visual Impact Assessment	None Provided	Low / Medium and High	The nature of the development (<i>road improvements</i>) for majority of the road upgrade sections, will not alter the character, nor sense of place of the study area, as the N14 already exists. Furthermore, visual impacts will only occur

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
			<p>during the construction period which will be of a short-term duration. With the implementation of mitigation measures to minimise the impacts on a limited number of sensitive receptors, occurring in proximity to the site for majority of the study area, the visual character of the site will not be compromised by views by these receptors. Furthermore, the road improvements will be at road level, thereby not impacting on views of the surrounding receptors.</p> <p>However, there will be one section of the N14 at km20.66, where a raised road will be constructed over the existing railway line. This raised road may impact on the sensitive views of the nearby business/community. It is only for this section that a Landscape / Visual Impact Assessment is deemed necessary. The findings of the VIA will be included in the Draft EIR.</p>
Archaeological and Cultural Heritage Impact Assessment	Very High	This is to be determined by the Archaeologist through a site verification assessment.	The outcome of the findings by the Archaeologist will be provided in the Draft EIR.
Palaeontology Impact Assessment	Medium	This is to be determined by the Palaeontologist through a site verification assessment.	The outcome of the findings by the Palaeontologist will be provided in the Draft EIR.
Terrestrial Biodiversity Impact Assessment	Very High	This is to be determined by the Terrestrial Ecologist through a site verification assessment.	The outcome of the findings by the Terrestrial Ecologist will be provided in Draft EIR.
Aquatic Biodiversity Impact Assessment	Very High	This is to be determined by the Aquatic Ecologist through a Compliance Statement and a Risk Assessment Matrix (RAM).	The outcome of the findings by the Aquatic Ecologist will be provided in the Draft EIR.
Noise Impact Assessment	None Provided	Low	Limited noise may be generated during the construction phase that will be of a short-term duration. With the implementation of noise abatement measures, to minimise the impacts on a limited number of sensitive receptors, occurring in proximity to the site where the intersection upgrade will occur area, the significance of noise impacts will be minimised to low. A Specialist Noise Impact Assessment is therefore not deemed necessary due to the short-term duration of the construction activities and the noise mitigation measures that will be implemented.
Traffic Impact Assessment	None Provided	High	A Traffic Impact Assessment was undertaken during the Detailed Design Phase to inform the requirement for the road improvements, as well as the traffic recommendations. The findings of this study will be included in the Draft EIR.

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
Geotechnical Assessment	None Provided	This is to be determined by the Geotechnical Specialist through a Geotechnical Assessment which will form part of the engineering design process.	The outcome of the findings by the Geotechnical Specialist will be provided in the Draft EIR.
Socio-Economic Assessment	None Provided	Based on the observations made on site, the potential socio-economic impacts are expected to be negligible due to the limited extent and short duration of the proposed road upgrade project. Potential socio-economic impacts associated with road upgrade projects have been well documented and are predictable and will be addressed in the draft BAR. The potential socio-economic sensitivity is therefore expected to be negligible.	<p>The EAP disputes the requirement for a Socio-Economic Impact Assessment as the road upgrades will improve the safety needs for all road users. The impacts during the construction phase will be of a short-term duration and a limited extent. Potential socio-economic impacts will be addressed in the Draft EIR.</p> <p>A limited number of jobs will be provided during the construction phase which will be of a short-term duration that will have a positive impact on the local community residing the local municipal area.</p> <p>Comments received during public review of the Draft EIR will be included in the Comments and Responses Report of the Final EIR. Comments received during the public review period will be addressed by the EAP directly with the Interested and Affected Parties (I&APs).</p>
Ambient Air Quality Impact Assessment	None Provided	It is anticipated that the proposed upgrade project will produce minimal dust and vehicle emissions that will be released into the atmosphere. The sensitivity rating is therefore expected to be low. Air quality / dust nuisances during construction would be managed through the effective implementation of the relevant provisions of the EMPr.	There may be air quality impacts (<i>such as dust entrainment</i>) during the construction phase, but with the implementation of dust suppression measures, this impact will be of low significance and of a short-term duration. Therefore, a specialist Air Quality Impact Assessment is not deemed necessary.
Plant Species Assessment	Medium	This is to be determined by the Terrestrial Ecologist through a site verification assessment.	The outcome of the findings by the Terrestrial Ecologist will be provided in the Draft EIR.
Animal Species Assessment	High	This is to be determined by the Terrestrial Ecologist through a site verification assessment.	The outcome of the findings by the Terrestrial Ecologist will be provided in the Draft EIR.

Table 18: Specialist Assessments/themes and sensitivity ratings identified by DFFE's web-based Screening Tool for the proposed borrow pits

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
Agricultural Impact Assessment	High Medium	Based on the observations on site and consideration of satellite imagery, the proposed borrow pits sites are vacant and are not used for agricultural practises, therefore the sensitivity is low. A Soil /Agricultural Specialist compliance statement is therefore required in terms of the Agriculture specialist assessment protocol.	The outcome of the findings of the Soil/Agricultural Compliance Statement will be provided in the Draft Environmental Impact Report.
Landscape/Visual Impact Assessment	None Provided	Low	There are no sensitive receptors (such as residential and business operations) located close to the proposed pits. The proposed borrow pits will be at ground level. Furthermore, visual impacts will only occur during the construction period which will be of a short-term duration. With the implementation of mitigation measures, the visual character of the site will not be compromised. Therefore, a Landscape / Visual Impact Assessment is not deemed necessary.
Archaeological and Cultural Heritage Impact Assessment	Very High Low	This is to be determined by the Archaeologist through a site verification assessment.	The outcome of the findings by the Archaeologist will be provided in the Draft EIR.
Palaeontology Impact Assessment	Medium	This is to be determined by the Palaeontologist through a site verification assessment.	The outcome of the findings by the Palaeontologist will be provided in the Draft EIR.
Terrestrial Biodiversity Impact Assessment	Very High	This is to be determined by the Terrestrial Ecologist through a site verification assessment.	The outcome of the findings by the Terrestrial Ecologist will be provided in Draft EIR.
Aquatic Biodiversity Impact Assessment	Very High Low	This is to be determined by the Aquatic Ecologist through a Compliance Statement and a Risk Assessment Matrix (RAM).	The outcome of the findings by the Aquatic Ecologist will be provided in the Draft EIR.
Noise Impact Assessment	None Provided	Low	Limited noise may be generated during the construction phase that will be of a short-term duration. With the implementation of noise abatement measures, to minimise the impacts on a limited number of sensitive receptors, occurring in proximity to the site where the proposed borrow pits are to be located, the significance of noise impacts will be minimised to low. A Specialist Noise Impact Assessment is therefore not deemed necessary due to the short-term duration of the construction activities and the noise mitigation measures that will be implemented.
Traffic Impact Assessment	None Provided	High	No additional Traffic Impact Assessment will be conducted during the Detailed Design

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
			Phase. The existing data from the assessment and Preliminary Design Report, will be used.
Geotechnical Assessment	None Provided	This is to be determined by the Geotechnical Specialist through a Geotechnical Assessment which will form part of the engineering design process.	The outcome of the findings by the Geotechnical Specialist will be provided in the Draft EIR.
Socio-Economic Assessment	None Provided	Based on the observations made on site, the potential socio-economic impacts are expected to be negligible due to the limited extent and short duration of the proposed road upgrade project. Potential socio-economic impacts associated with road upgrade projects have been well documented and are predictable and will be addressed in the draft BAR. The potential socio-economic sensitivity is therefore expected to be negligible.	<p>The EAP disputes the requirement for a Socio-Economic Impact Assessment as the impacts during the construction phase will be of a short-term duration and a limited extent. Potential socio-economic impacts will be addressed in the forthcoming Draft EIR that will be made available for public review and comment.</p> <p>A limited number of jobs will be provided during the construction phase which will be of a short-term duration that will have a positive impact on the local community residing the local municipal area.</p> <p>Comments received during public review of the Draft EIR will be included in the Comments and Responses Report of the Final EIR. Comments received during the public review period will be addressed by the EAP directly with the Interested and Affected Parties (I&APs).</p>
Ambient Air Quality Impact Assessment	None Provided	It is anticipated that the proposed upgrade project will produce minimal dust and vehicle emissions that will be released into the atmosphere. The sensitivity rating is therefore expected to be low. Air quality / dust nuisances during construction would be managed through the effective implementation of the relevant provisions of the EMPr.	There may be air quality impacts (<i>such as dust entrainment</i>) during the construction phase, but with the implementation of dust suppression measures, this impact will be of low significance and of a short-term duration. Therefore, a specialist Air Quality Impact Assessment is not deemed necessary.
Plant Species Assessment	Medium	This is to be determined by the Terrestrial Ecologist through a site verification assessment.	The outcome of the findings by the Terrestrial Ecologist will be provided in the Draft EIR.
Animal Species Assessment	High	This is to be determined by the Terrestrial Ecologist through a site verification assessment.	The outcome of the findings by the Terrestrial Ecologist will be provided in the Draft EIR.

8 CONCLUSION

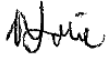
Based on the outcome of this Site Sensitivity Verification Report, the following specialist studies will be undertaken for the proposed improvements on N14 – Section 12 and the proposed borrow pits:

- Agricultural Site Assessment to inform a Soil/Agricultural Compliance Statement
- Archaeological and Heritage Impact Assessment
- Palaeontological Impact Assessment
- Terrestrial Biodiversity Impact Assessment (include Plant and Animal Species Assessment)
- Aquatic Compliance Statement and Risk Matrix Assessment (RAM). An aquatic/wetland specialist will undertake a site verification assessment to inform a Compliance Statement and a Risk Assessment Matrix (RAM)
- Traffic Impact Assessment (TIA). The TIA will be undertaken as part of the engineering design scope of works
- Geotechnical Assessment. The geotechnical assessment will be undertaken as part of the engineering scope of works

A Visual Impact Assessment will be undertaken for the proposed re-alignment/road over rail for the N14-Section 12.

As part of these studies, the Specialists will gather data relevant to identifying and assessing environmental impacts that might occur as a result of the proposed project in their particular field of expertise. They will provide baseline information through their site verification assessments and will identify and assess impacts according to predefined rating scales. The Specialists will suggest ways in which negative impacts could be mitigated and benefits could be enhanced. The results of the Specialist Studies will be integrated into the draft Environmental Impact Report.

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APPENDIX A: CV's of Project Team

APPENDIX B: DFFE Screening Tool Report