

**SITE SENSITIVITY VERIFICATION REPORT FOR
THE REPAIR OR REPLACEMENT OF BRIDGES
AND CULVERT STRUCTURES ON TRUNK ROAD
TR3305**

(DEA&DP REFERENCE: 16/3/3/6/7/1/C3/1/0162/20)

Report on Structures 1

21 May 2021

**Prepared for:
Western Cape Government:
Department of Transport and Public Works**

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1. BACKGROUND

Chameleon Environmental has been appointed by BVi Engineering (Pty) Ltd on behalf of the Western Cape Government: Department of Transport and Public Works to facilitate the Basic Assessment process in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and a Water Use License in terms of the National Water Act, 1998 (Act No. 36 of 1998), for the proposed repair or replacement of bridges and culvert structures on Trunk Roads 3305, 3501, 5801, Divisional road 2307 and Main road 584. The applicant is the Western Cape Government: Department of Transport and Public Works. There are 40 structures included in this application, 30 major culverts and 10 bridges on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culvert,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

2. SCOPE OF REPORT

This Site Sensitivity Verification Report has been compiled for submission to the Western Cape Department of Environmental Affairs and Development planning for the structures in the Screening report named Structures 1 and consists of the following structures in Table 1 below on TR3305 (N12):

Table 1: Structures in Report

Structure number	Kilometer reading
B4374	Km 1.0
B4372	Km 3.51
B4331	Km 3.77
B4329	Km 4.78
C11603	Km 6.08
C12303	Km 10.10
C12304	km 10.20
B4035	Km 10.34

The structures were grouped together in order to draw the polygon around them. There are, therefore, large areas in the polygon between the culverts that will not be affected or included in the BAR, only the structures. This report addresses the findings of the Screening Tool Report, generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.



FIGURE 1: LOCALITY MAP OF THE PROPOSED STRUCTURES

3. SENSITIVITIES IDENTIFIED IN THE SCREENING TOOL

As per the Screening Tool Report (Appendix I), the proposed site is located within a Very high sensitivity area from an Aquatic Biodiversity Theme, A Palaeontology Theme and a Terrestrial Biodiversity Theme.

A High sensitivity from an Agricultural Theme, Animal Species Theme and an Archaeological and Cultural Heritage Theme.

Medium and Low sensitivity from a Civil aviation Theme Plant species Theme and Defence Theme.

Table 2: Sensitivities Identified in Screening Tool

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	
Defence Theme				X
Palaeontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

4. SPECIALIST STUDIES IDENTIFIED

Based on the above detailed sensitivities, the Screening Tool Report identifies and recommends the following specialist assessments:

1. Landscape/Visual Impact Assessment;
2. Archaeological and Cultural Impact Assessment;
3. Palaeontological Impact Assessment;
4. Terrestrial Biodiversity Impact Assessment;
5. Aquatic Biodiversity Impact Assessment;
6. Hydrology Impact Assessment;
7. Socio Economic Assessment;
8. Animal Species Assessment.

5. DISCUSSION OF REQUIRED ASSESSMENT REPORTS

5.1 *Landscape/Visual Impact Assessment*

This sensitivity and recommendation for a specialist study is **disputed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts on TR3305 (N12) within the N12 road reserve. The structures are, therefore, not new structures but existing structures that will either be replaced or repaired. It is expected that the proposed project will have no adverse visual impacts on the surrounding environment but could visually improve the culverts once repaired and could have a positive visual impact on the environment and road user.

Therefore, as the proposed development will have **positive impact on the visual aspects** of the surrounding environment, it is not required that a Visual Impact Assessment be compiled.

5.2 Archaeological and Cultural Heritage Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

Some of the structures could be older than 60 years' and a phase 1 Archaeological and Cultural Heritage Impact Assessment will be conducted as part of the BAR application by Dr J van Schalkwyk and due consideration will be given to the potential impact of the proposed development on archaeological and cultural heritage resources.

5.3 Palaeontological Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area has a high sensitivity of fossil remains to be found, for which a palaeontological assessment and protocol for finds is required. A palaeontological assessment will be conducted as part of the BAR application by Dr H Fourie and due consideration will be given to the potential impact of the proposed development on palaeontological resources.

5.4 Terrestrial Biodiversity and Aquatic Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The structures to be repaired or replaced are within existing watercourses. A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services. The aim of the assessment will be to identify the impact of the proposed project on the water courses as it is anticipated that more than 10 cubic m of material will be excavated from the structures.

This study will also provide information for the GA/WULA application at the Department of Water and Sanitation (DWS) and the Risk Assessment that is required.

5.5 Hydrology

The sensitivity and recommendation for this assessment is **confirmed but an additional specialist study will be not conducted** for the following reasons:

Information on the hydrology of the streams will be provided by the consulting engineers to the project, BVi Engineering and no additional specialist study will be required.

5.6 Socio-Economic Impact Assessment

The sensitivity and recommendation for this assessment is **disputed** for the following reasons:

Roads by its nature are used, among other, for the delivery of goods and services to the public and are used to build and improve the economy of the country. The proposed development is aimed to repair and replace broken structures and it is believed it will have a positive socio-economic impact on the region. In addition, road users will have a safer road to travel on.

Therefore, as the proposed development will have **positive socio-economic impact**, a Socio-Economic Impact Assessment will not be undertaken.

5.7 Animal Species Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts within the TR3305 (N12) road reserve. The proposed project could have adverse impacts on animal species within the road reserve for instance snakes.

A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services which will include an assessment on animal species and proposed mitigation measures included.

**SITE SENSITIVITY VERIFICATION REPORT FOR
THE REPAIR OR REPLACEMENT OF BRIDGES
AND CULVERT STRUCTURES ON TRUNK ROAD
TR3305**

(DEA&DP REFERENCE: 16/3/3/6/7/1/C3/1/0162/20)

Report on Structures 2

21 May 2021

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5.6 Socio Economic Impact Assessment	8

1. BACKGROUND

Chameleon Environmental has been appointed by BVi Engineering (Pty) Ltd on behalf of the Western Cape Government: Department of Transport and Public Works to facilitate the Basic Assessment process in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and a Water Use License in terms of the National Water Act, 1998 (Act No. 36 of 1998), for the proposed repair or replacement of bridges and culvert structures on Trunk Roads 3305, 3501, 5801, Divisional road 2307 and Main road 584. The applicant is the Western Cape Government: Department of Transport and Public Works. There are 40 structures included in this application, 30 major culverts and 10 bridges on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culvert,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

2. SCOPE OF REPORT

This Site Sensitivity Verification Report has been compiled for submission to the Western Cape Department of Environmental Affairs and Development planning for the structures in the Screening report named Structures 2 and consists of the following structures in Table 1 on TR3305 (N12):

Table 1: Structures in Report

Structure number	Kilometer reading
B12305	Km17.5
B12306	Km18.71
B4033	Km 21.14
C12307	Km 21.61
C12308	Km 22.43
B4048	Km 22.78
C12309	km 23.08

The structures were grouped together in order to draw the polygon around them. There are, therefore, large areas in the polygon between the culverts that will not be affected or included in the BAR, only the structures. This report addresses the findings of the Screening Tool Report, generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.

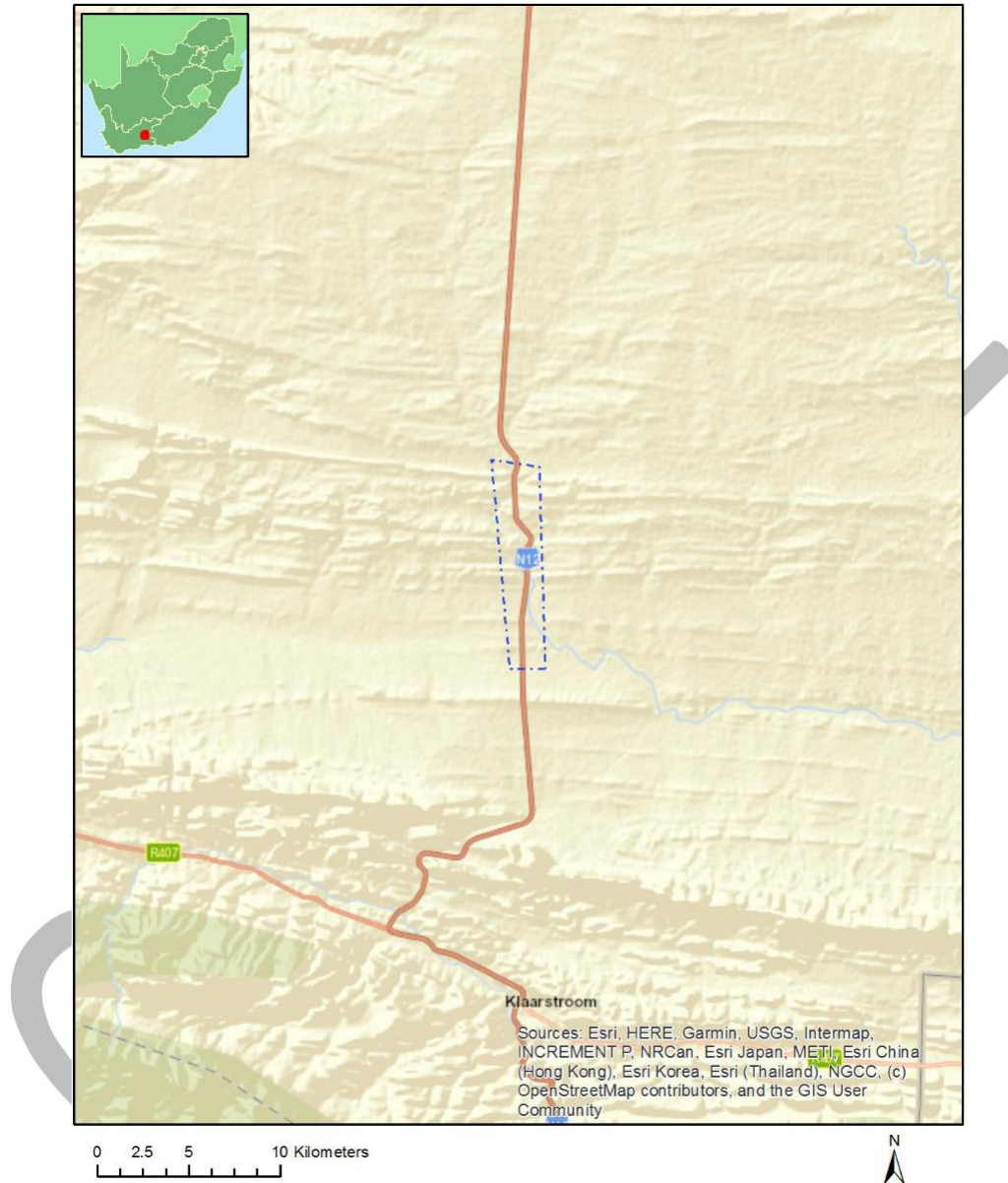


FIGURE 1: LOCALITY MAP OF THE PROPOSED STRUCTURES

3. SENSITIVITIES IDENTIFIED IN THE SCREENING TOOL

As per the Screening Tool Report (Appendix I), the proposed site is located within a Very high sensitivity area from an Aquatic Biodiversity Theme, A Palaeontology Theme and a Terrestrial Biodiversity Theme.

A High sensitivity from an Animal Species Theme.

Medium and Low sensitivity from an Agricultural Theme, Archaeological and Cultural Heritage Theme, Civil Aviation Theme, Plant species Theme and Defence Theme.

Table 2: Sensitivities identified in Screening Tool

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	
Defence Theme				X
Palaeontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

4. SPECIALIST STUDIES IDENTIFIED

Based on the above detailed sensitivities, the Screening Tool Report identifies and recommends the following specialist assessments:

1. Landscape/Visual Impact Assessment;
2. Archaeological and Cultural Impact Assessment;
3. Palaeontological Impact Assessment;
4. Terrestrial Biodiversity Impact Assessment;
5. Aquatic Biodiversity Impact Assessment;
6. Hydrology Impact Assessment;
7. Socio Economic Assessment;
8. Plant Species Assessment
9. Animal Species Assessment.

5. DISCUSSION OF REQUIRED ASSESSMENT REPORTS

5.1 Landscape/Visual Impact Assessment

This sensitivity and recommendation for a specialist study is **disputed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts on TR3305 (N12) within the N12 road reserve. The structures are, therefore, not new structures but existing structures that will either be replaced or repaired. It is expected that the proposed project will have no adverse visual impacts on the surrounding environment but could visually improve the culverts once repaired and could have a positive visual impact on the environment and road user.

Therefore, as the proposed development will have **positive impact on the visual aspects** of the surrounding environment, it is not required that a Visual Impact Assessment be compiled.

5.2 Archaeological and Cultural Heritage Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

Some of the structures could be older than 60 years' and a phase 1 Archaeological and Cultural Heritage Impact Assessment will be conducted as part of the BAR application by Dr J van Schalkwyk and due consideration will be given to the potential impact of the proposed development on archaeological and cultural heritage resources.

5.3 Palaeontological Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area has a high sensitivity of fossil remains to be found, for which a palaeontological assessment and protocol for finds is required. A palaeontological assessment will be conducted as part of the BAR application by Dr H Fourie and due consideration will be given to the potential impact of the proposed development on palaeontological resources.

5.4 Terrestrial Biodiversity, Plant Species and Aquatic Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The structures to be repaired or replaced are within existing watercourses. A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services. The aim of the assessment will be to identify the impact of the proposed project on the water courses as it is anticipated that more than 10 cubic m of material will be excavated from the structures.

This study will also provide information for the GAWULA application at the Department of Water and Sanitation (DWS) and the Risk Assessment that is required.

5.5 Hydrology

The sensitivity and recommendation for this assessment is **confirmed but an additional specialist study will be not conducted** for the following reasons:

Information on the hydrology of the streams will be provided by the consulting engineers to the project, BVi Engineering and no additional specialist study will be required.

5.6 Socio Economic Impact Assessment

The sensitivity and recommendation for this assessment is **disputed** for the following reasons:

Roads by its nature are used, among other, for the delivery of goods and services to the public and are used to build and improve the economy of the country. The proposed development is aimed to repair and replace broken structures and it is believed it will have a positive socio-economic impact on the region. In addition, road users will have a safer road to travel on.

Therefore, as the proposed development will have **positive socio-economic impact**, a Socio-Economic Impact Assessment is thus not required.

5.7 Animal Species Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts within the TR3305 (N12) road reserve. The proposed project could have adverse impacts on animal species within the road reserve for instance snakes.

A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services which will include an assessment on animal species and proposed mitigation measures included.

**SITE SENSITIVITY VERIFICATION REPORT FOR
THE REPAIR OR REPLACEMENT OF BRIDGES
AND CULVERT STRUCTURES ON TRUNK ROAD
TR3305**

(DEA&DP REFERENCE: 16/3/3/6/7/1/C3/1/0162/20)

Report on Structures 3

21 May 2021

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5.5 Hydrology	7
5.6 Socio Economic Impact Assessment	8

1. BACKGROUND

Chameleon Environmental has been appointed by BVi Engineering (Pty) Ltd on behalf of the Western Cape Government: Department of Transport and Public Works to facilitate the Basic Assessment process in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and a Water Use License in terms of the National Water Act, 1998 (Act No. 36 of 1998), for the proposed repair or replacement of bridges and culvert structures on Trunk Roads 3305, 3501, 5801, Divisional road 2307 and Main road 584. The applicant is the Western Cape Government: Department of Transport and Public Works. There are 40 structures included in this application, 30 major culverts and 10 bridges on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culvert,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

2. SCOPE OF REPORT

This Site Sensitivity Verification Report has been compiled for submission to the Western Cape Department of Environmental Affairs and Development planning for the structures in the Screening report named Structures 3 and consists of the following structures in Table 1 on TR3305 (N12):

Table 1: Structures in Report

Structure number	Kilometer reading
B4040	Km 43.39
C11607	Km54.97
C11608	Km 55.56
C11609	Km 57.54
C11610	Km 59.79
C11611	Km 60.92
C11613	km 64.16
C11614	Km 69.51
C11615	Km 72.12
C11617	Km 74.33
C12315	Km 76.86
C11619	Km 79.22
C11620	Km 80.09

The structures were grouped together in order to draw the polygon around them. There are, therefore, large areas in the polygon between the culverts that will not be affected or included in the BAR, only the structures. This report addresses the findings of the Screening Tool Report, generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.

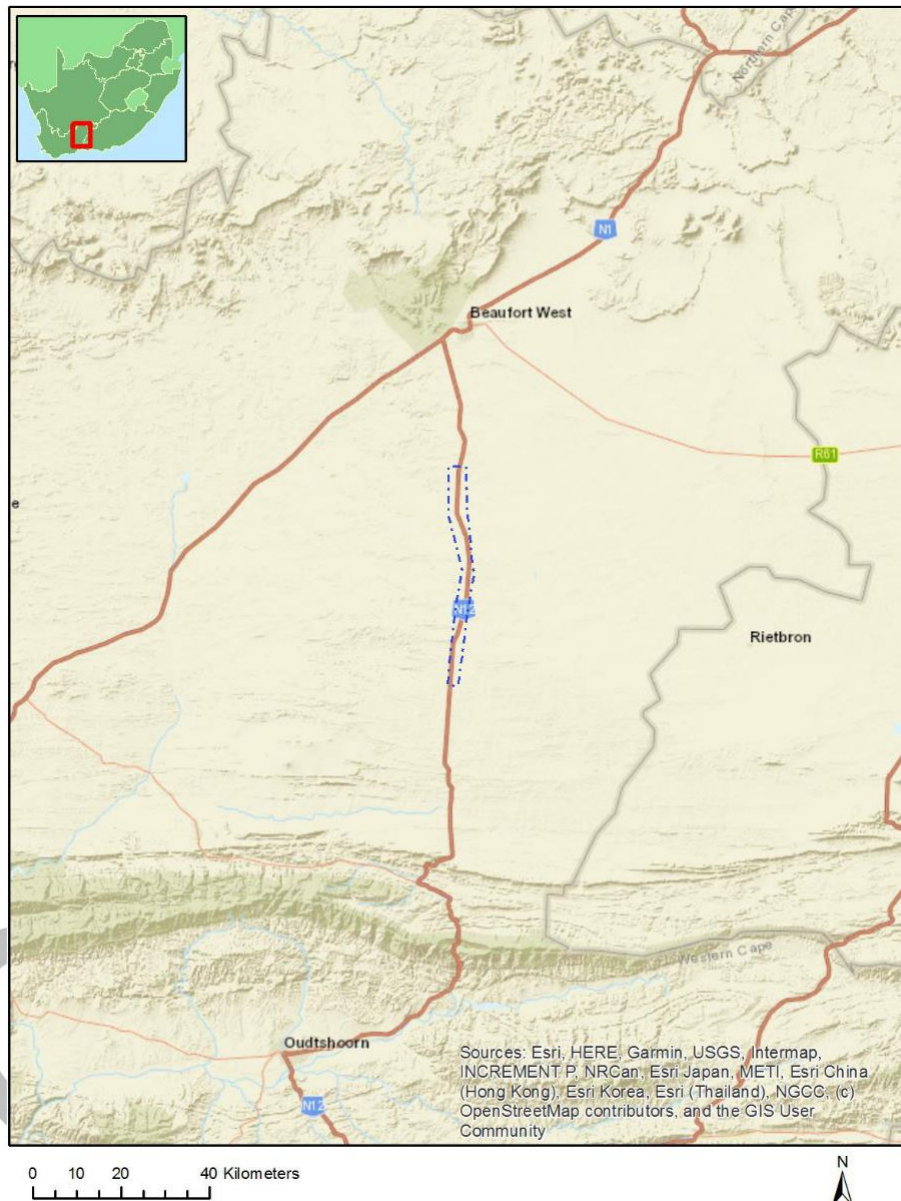


FIGURE 1: LOCALITY MAP OF THE PROPOSED STRUCTURES

3. SENSITIVITIES IDENTIFIED IN THE SCREENING TOOL

As per the Screening Tool Report (Appendix I), the proposed site is located within a Very high sensitivity from an Agricultural Theme, Aquatic Biodiversity Theme, A Palaeontology Theme and a Terrestrial Biodiversity Theme.

A High sensitivity from an Animal Species Theme and Civil Aviation Theme.

Medium and Low sensitivity from an Archaeological and Cultural Heritage Theme, Plant Species Theme and Defence Theme.

Table 2: Sensitivities identified in Screening Tool

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		
Defence Theme				X
Palaeontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

4. SPECIALIST STUDIES IDENTIFIED

Based on the above detailed sensitivities, the Screening Tool Report identifies and recommends the following specialist assessments:

1. Landscape/Visual Impact Assessment;
2. Archaeological and Cultural Impact Assessment;
3. Palaeontological Impact Assessment;
4. Terrestrial Biodiversity Impact Assessment;
5. Aquatic Biodiversity Impact Assessment;
6. Hydrology Impact Assessment;
7. Socio Economic Assessment;
8. Plant Species Assessment;
9. Animal Species Assessment.

5. DISCUSSION OF REQUIRED ASSESSMENT REPORTS

5.1 *Landscape/Visual Impact Assessment*

This sensitivity and recommendation for a specialist study is **disputed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts on TR3305 (N12) within the N12 road reserve. The structures are, therefore, not new structures but existing structures that will either be replaced or repaired. It is expected that the proposed project will have no adverse visual impacts on the surrounding environment but could visually improve the culverts once repaired and could have a positive visual impact on the environment and road user.

Therefore, as the proposed development will have **positive impact on the visual aspects** of the surrounding environment, it is not required that a Visual Impact Assessment be compiled.

5.2 Archaeological and Cultural Heritage Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

Some of the structures could be older than 60 years' and a phase 1 Archaeological and Cultural Heritage Impact Assessment will be conducted as part of the BAR application by Dr J van Schalkwyk and due consideration will be given to the potential impact of the proposed development on archaeological and cultural heritage resources.

5.3 Palaeontological Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area has a high sensitivity of fossil remains to be found, for which a palaeontological assessment and protocol for finds is required. A palaeontological assessment will be conducted as part of the BAR application by Dr H Fourie and due consideration will be given to the potential impact of the proposed development on palaeontological resources.

5.4 Terrestrial Biodiversity, Plant Species and Aquatic Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The structures to be repaired or replaced are within existing watercourses. A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services. The aim of the assessment will be to identify the impact of the proposed project on the water courses as it is anticipated that more than 10 cubic m of material will be excavated from the structures.

This study will also provide information for the GA/WULA application at the Department of Water and Sanitation (DWS) and the Risk Assessment that is required.

5.5 Hydrology

The sensitivity and recommendation for this assessment is **confirmed but an additional specialist study will be not conducted** for the following reasons:

Information on the hydrology of the streams will be provided by the consulting engineers to the project, BVi Engineering and no additional specialist study will be required.

5.6 Socio Economic Impact Assessment

The sensitivity and recommendation for this assessment is **disputed** for the following reasons:

Roads by its nature are used, among other, for the delivery of goods and services to the public and are used to build and improve the economy of the country. The proposed development is aimed to repair and replace broken structures and it is believed it will have a positive socio-economic impact on the region. In addition, road users will have a safer road to travel on.

Therefore, as the proposed development will have **positive socio-economic impact**, a Socio-Economic Impact Assessment is thus not required.

5.7 Animal Species Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts within the TR3305 (N12) road reserve. The proposed project could have adverse impacts on animal species within the road reserve for instance snakes.

A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services which will include an assessment on animal species and proposed mitigation measures included.

**SITE SENSITIVITY VERIFICATION REPORT FOR
THE REPAIR OR REPLACEMENT OF BRIDGES
AND CULVERT STRUCTURES ON TRUNK ROAD
TR3305 AND DR2307**

(DEA&DP REFERENCE: 16/3/3/6/7/1/C3/1/0162/20)

Report on Structures 4

21 May 2021

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5.6 Socio Economic Impact Assessment	8

1. BACKGROUND

Chameleon Environmental has been appointed by BVi Engineering (Pty) Ltd on behalf of the Western Cape Government: Department of Transport and Public Works to facilitate the Basic Assessment process in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and a Water Use License in terms of the National Water Act, 1998 (Act No. 36 of 1998), for the proposed repair or replacement of bridges and culvert structures on Trunk Roads 3305, 3501, 5801, Divisional road 2307 and Main road 584. The applicant is the Western Cape Government: Department of Transport and Public Works. There are 40 structures included in this application, 30 major culverts and 10 bridges on the following roads:

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- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

2. SCOPE OF REPORT

This Site Sensitivity Verification Report has been compiled for submission to the Western Cape Department of Environmental Affairs and Development planning for the structures in the Screening report named Structures 4 and consists of the following structures in Table 1 on TR3305 (N12) and DR2307:

Table 1: Structures in Report

Structure number	Kilometer reading
N12	
C11623	Km 91.18
B4145	Km 95.75
C12316	Km 97.98
C11624	Km 101.78
C4141A	Km 104.86
DR02307	
C11343	km 3.75
C11348	Km 6.83

The structures were grouped together in order to draw the polygon around them. There are, therefore, large areas in the polygon between the culverts that will not be affected or included in the BAR, only the structures. This report addresses the findings of the Screening Tool Report, generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.

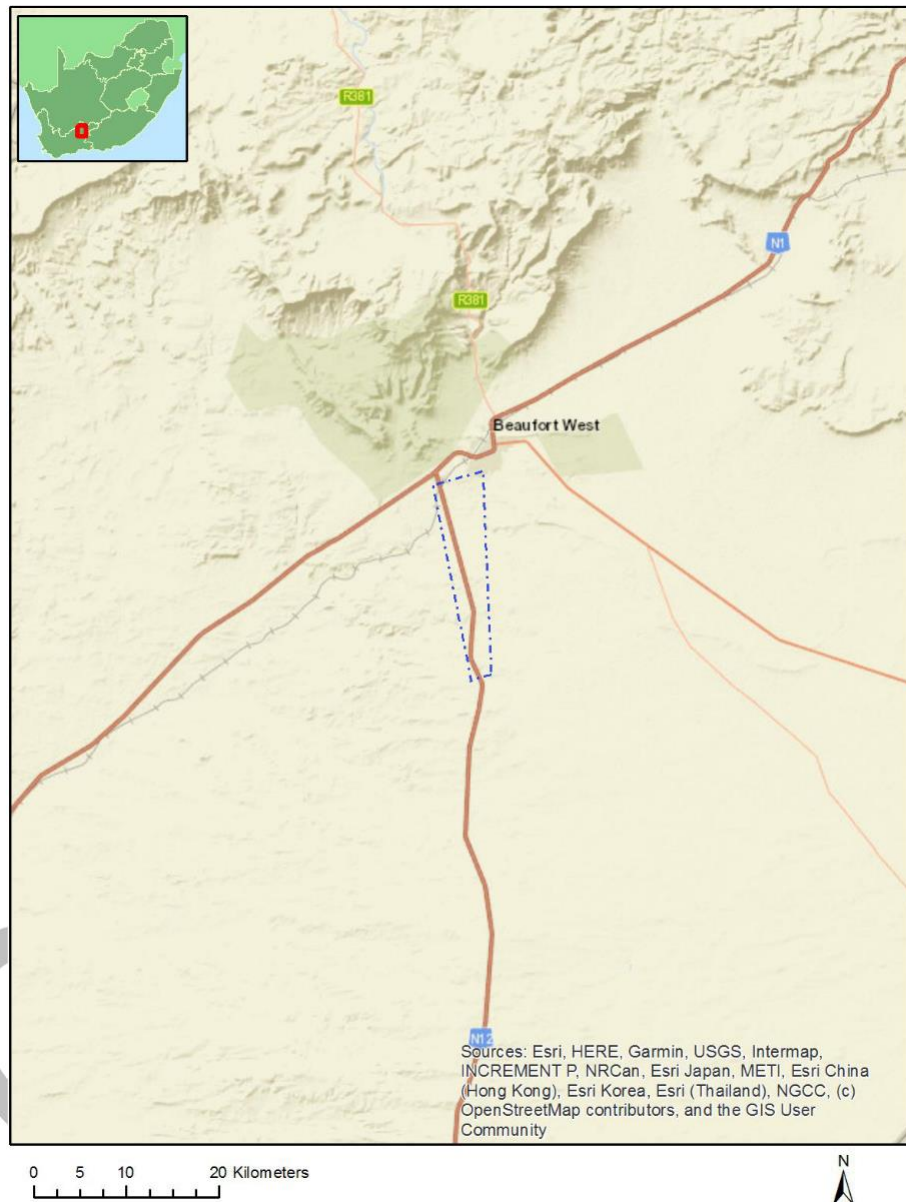


FIGURE 1: LOCALITY MAP OF THE PROPOSED STRUCTURES

3. SENSITIVITIES IDENTIFIED IN THE SCREENING TOOL

As per the Screening Tool Report (Appendix I), the proposed site is located within a Very high sensitivity from an Agricultural Theme, Aquatic Biodiversity Theme, A Palaeontology Theme and a Terrestrial Biodiversity Theme.

A High sensitivity from an Animal Species Theme and Civil Aviation Theme.

Medium and Low sensitivity from an Archaeological and Cultural Heritage Theme, Plant Species Theme and Defence Theme.

Table 2: Sensitivities identified in Screening Tool

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		
Defence Theme				X
Palaeontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

4. SPECIALIST STUDIES IDENTIFIED

Based on the above detailed sensitivities, the Screening Tool Report identifies and recommends the following specialist assessments:

1. Landscape/Visual Impact Assessment;
2. Archaeological and Cultural Impact Assessment;
3. Palaeontological Impact Assessment;
4. Terrestrial Biodiversity Impact Assessment;
5. Aquatic Biodiversity Impact Assessment;
6. Hydrology Impact Assessment;
7. Socio Economic Assessment;
8. Plant Species Assessment;
9. Animal Species Assessment.

5. DISCUSSION OF REQUIRED ASSESSMENT REPORTS

5.1 *Landscape/Visual Impact Assessment*

This sensitivity and recommendation for a specialist study is **disputed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts on TR3305 (N12) and DR 02307 and within the N12 and DR02307 road reserve. The structures are, therefore, not new structures but existing structures that will either be replaced or repaired. It is expected that the proposed project will have no adverse visual impacts on the surrounding environment but could visually improve the culverts once repaired and could have a positive visual impact on the environment and road user.

Therefore, as the proposed development will have **positive impact on the visual aspects** of the surrounding environment, it is not required that a Visual Impact Assessment be compiled.

5.2 Archaeological and Cultural Heritage Impact Assessment

The sensitivity and recommendation for this assessment is confirmed for the following reasons:

Some of the structures could be older than 60 years' and a phase 1 Archaeological and Cultural Heritage Impact Assessment will be conducted as part of the BAR application by Dr J van Schalkwyk and due consideration will be given to the potential impact of the proposed development on archaeological and cultural heritage resources.

5.3 Palaeontological Impact Assessment

The sensitivity and recommendation for this assessment is confirmed for the following reasons:

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area has a high sensitivity of fossil remains to be found, for which a palaeontological assessment and protocol for finds is required. A palaeontological assessment will be conducted as part of the BAR application by Dr H Fourie and due consideration will be given to the potential impact of the proposed development on palaeontological resources.

5.4 Terrestrial Biodiversity, Plant Species and Aquatic Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The structures to be repaired or replaced are within existing watercourses. A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services. The aim of the assessment will be to identify the impact of the proposed project on the water courses as it is anticipated that more than 10 cubic m of material will be excavated from the structures.

This study will also provide information for the GA/WULA application at the Department of Water and Sanitation (DWS) and the Risk Assessment that is required.

5.5 Hydrology

The sensitivity and recommendation for this assessment is **confirmed but an additional specialist study will be not conducted** for the following reasons:

Information on the hydrology of the streams will be provided by the consulting engineers to the project, BVi Engineering and no additional specialist study will be required.

5.6 Socio Economic Impact Assessment

The sensitivity and recommendation for this assessment is **disputed** for the following reasons:

Roads by its nature are used, among other, for the delivery of goods and services to the public and are used to build and improve the economy of the country. The proposed development is aimed to repair and replace broken structures and it is believed it will have a positive socio-economic impact on the region. In addition, road users will have a safer road to travel on.

Therefore, as the proposed development will have **positive socio-economic impact**, a Socio-Economic Impact Assessment is thus not required.

5.7 Animal Species Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts within the TR3305 (N12) road reserve. The proposed project could have adverse impacts on animal species within the road reserve for instance snakes.

A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services which will include an assessment on animal species and proposed mitigation measures included.

**SITE SENSITIVITY VERIFICATION REPORT FOR
THE REPAIR OR REPLACEMENT OF BRIDGES
AND CULVERT STRUCTURES ON TRUNK ROAD
TR3501**

(DEA&DP REFERENCE: 16/3/3/6/7/1/C3/1/0162/20)

Report on Structures 5

21 May 2021

**Prepared for:
Western Cape Government:
Department of Transport and Public Works**

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PREPARED FOR: BVi Engineering (Pty) Ltd on behalf of the Western Cape Government:
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1. BACKGROUND

Chameleon Environmental has been appointed by BVi Engineering (Pty) Ltd on behalf of the Western Cape Government: Department of Transport and Public Works to facilitate the Basic Assessment process in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and a Water Use License in terms of the National Water Act, 1998 (Act No. 36 of 1998), for the proposed repair or replacement of bridges and culvert structures on Trunk Roads 3305, 3501, 5801, Divisional road 2307 and Main road 584. The applicant is the Western Cape Government: Department of Transport and Public Works. There are 40 structures included in this application, 30 major culverts and 10 bridges on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culvert,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

2. SCOPE OF REPORT

This Site Sensitivity Verification Report has been compiled for submission to the Western Cape Department of Environmental Affairs and Development planning for the structures in the Screening report named Structures 5 and consists of the following structures in Table 1 on TR3501:

Table 1: Structures in Report

Structure number	Kilometer reading
C11301	Km 3.29
C11302	Km 7.06

The structures were grouped together in order to draw the polygon around them. There are, therefore, large areas in the polygon between the culverts that will not be affected or included in the BAR, only the structures. This report addresses the findings of the Screening Tool Report, generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.

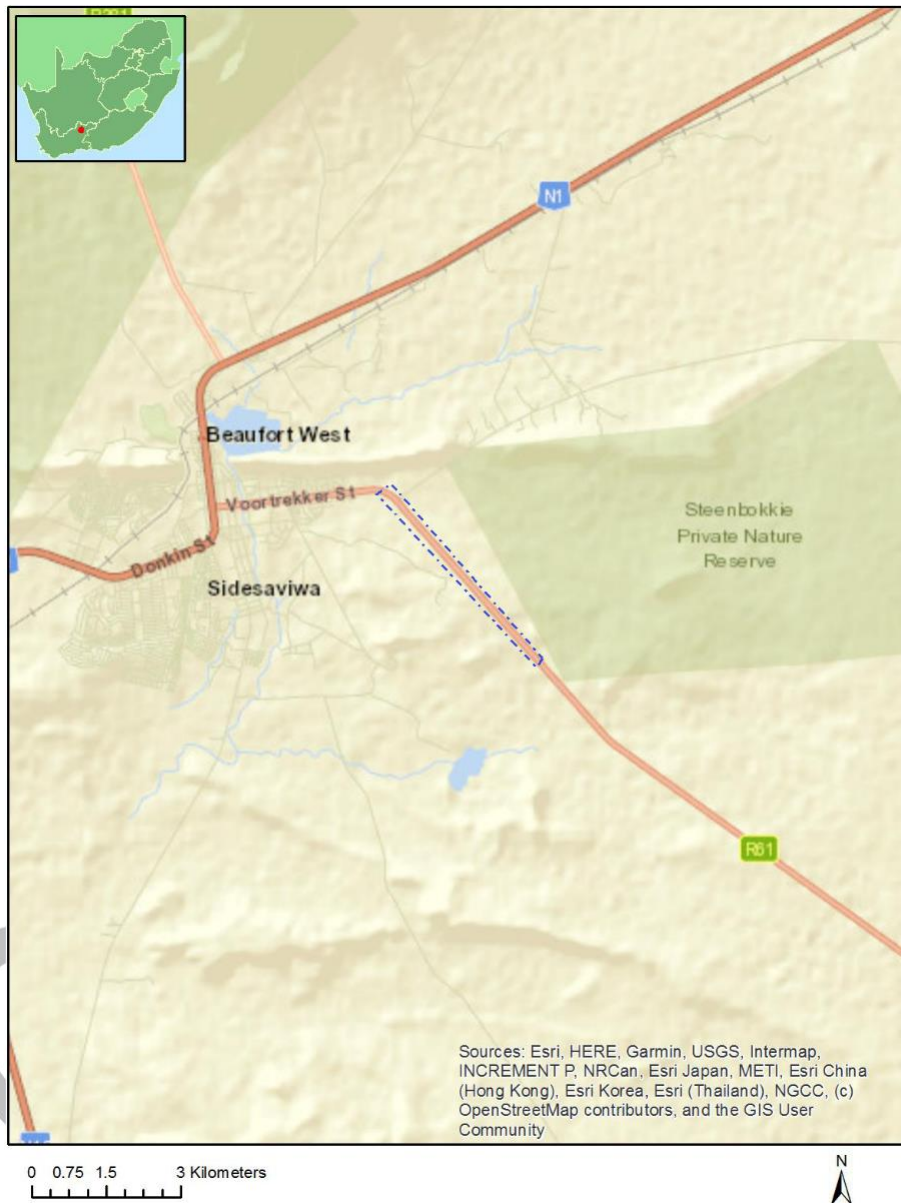


FIGURE 1: LOCALITY MAP OF THE PROPOSED STRUCTURES

3. SENSITIVITIES IDENTIFIED IN THE SCREENING TOOL

As per the Screening Tool Report (Appendix I), the proposed site is located within a Very high sensitivity from an Aquatic Biodiversity Theme, A Palaeontology Theme and a Terrestrial Biodiversity Theme.

A High sensitivity from an Animal Species Theme, Archaeological and Cultural Heritage Theme and Civil Aviation Theme.

Medium and Low sensitivity from an Agricultural Theme, Plant Species Theme and Defence Theme.

Table 2: Sensitivities identified in Screening Tool

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		
Defence Theme				X
Palaeontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

4. SPECIALIST STUDIES IDENTIFIED

Based on the above detailed sensitivities, the Screening Tool Report identifies and recommends the following specialist assessments:

1. Landscape/Visual Impact Assessment;
2. Archaeological and Cultural Impact Assessment;
3. Palaeontological Impact Assessment;
4. Terrestrial Biodiversity Impact Assessment;
5. Aquatic Biodiversity Impact Assessment;
6. Hydrology Impact Assessment;
7. Socio Economic Assessment;
8. Plant Species Assessment;
9. Animal Species Assessment.

5. DISCUSSION OF REQUIRED ASSESSMENT REPORTS

5.1 *Landscape/Visual Impact Assessment*

This sensitivity and recommendation for a specialist study is **disputed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts on TR3501 within the TR3501 road reserve. The structures are, therefore, not new structures but existing structures that will either be replaced or repaired. It is expected that the proposed project will have no adverse visual impacts on the surrounding environment but could visually improve the culverts once repaired and could have a positive visual impact on the environment and road user.

Therefore, as the proposed development will have **positive impact on the visual aspects** of the surrounding environment, it is not required that a Visual Impact Assessment be compiled.

5.2 Archaeological and Cultural Heritage Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

Some of the structures could be older than 60 years' and a phase 1 Archaeological and Cultural Heritage Impact Assessment will be conducted as part of the BAR application by Dr J van Schalkwyk and due consideration will be given to the potential impact of the proposed development on archaeological and cultural heritage resources.

5.3 Palaeontological Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area has a high sensitivity of fossil remains to be found, for which a palaeontological assessment and protocol for finds is required. A palaeontological assessment will be conducted as part of the BAR application by Dr H Fourie and due consideration will be given to the potential impact of the proposed development on palaeontological resources.

5.4 Terrestrial Biodiversity, Plant Species and Aquatic Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The structures to be repaired or replaced are within existing watercourses. A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services. The aim of the assessment will be to identify the impact of the proposed project on the water courses as it is anticipated that more than 10 cubic m of material will be excavated from the structures.

This study will also provide information for the GA/WULA application at the Department of Water and Sanitation (DWS) and the Risk Assessment that is required.

5.5 Hydrology

The sensitivity and recommendation for this assessment is **confirmed but an additional specialist study will be not conducted** for the following reasons:

Information on the hydrology of the streams will be provided by the consulting engineers to the project, BVi Engineering and no additional specialist study will be required.

5.6 Socio Economic Impact Assessment

The sensitivity and recommendation for this assessment is **disputed** for the following reasons:

Roads by its nature are used, among other, for the delivery of goods and services to the public and are used to build and improve the economy of the country. The proposed development is aimed to repair and replace broken structures and it is believed it will have a positive socio-economic impact on the region. In addition, road users will have a safer road to travel on.

Therefore, as the proposed development will have **positive socio-economic impact**, a Socio-Economic Impact Assessment is thus not required.

5.7 Animal Species Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts within the TR3305 (N12) road reserve. The proposed project could have adverse impacts on animal species within the road reserve for instance snakes.

A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services which will include an assessment on animal species and proposed mitigation measures included.

**SITE SENSITIVITY VERIFICATION REPORT FOR
THE REPAIR OR REPLACEMENT OF BRIDGES
AND CULVERT STRUCTURES ON TRUNK ROAD
TR5801**

(DEA&DP REFERENCE: 16/3/3/6/7/1/C3/1/0162/20)

Report on C11408 and C11409

21 May 2021

**Prepared for:
Western Cape Government:
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1. BACKGROUND

Chameleon Environmental has been appointed by BVi Engineering (Pty) Ltd on behalf of the Western Cape Government: Department of Transport and Public Works to facilitate the Basic Assessment process in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and a Water Use License in terms of the National Water Act, 1998 (Act No. 36 of 1998), for the proposed repair or replacement of bridges and culvert structures on Trunk Roads 3305, 3501, 5801, Divisional road 2307 and Main road 584. The applicant is the Western Cape Government: Department of Transport and Public Works. There are 40 structures included in this application, 30 major culverts and 10 bridges on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culvert,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

2. SCOPE OF REPORT

This Site Sensitivity Verification Report has been compiled for submission to the Western Cape Department of Environmental Affairs and Development planning for the structures in the Screening report named C11408 and C11409 and consists of the following structures in Table 1 on TR5801:

Table 1: Structures in Report

Structure number	Kilometer reading
C11408	Km 6.81
C11409	Km 7.74

The structures were grouped together in order to draw the polygon around them. There are, therefore, large areas in the polygon between the culverts that will not be affected or included in the BAR, only the structures. This report addresses the findings of the Screening Tool Report, generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.

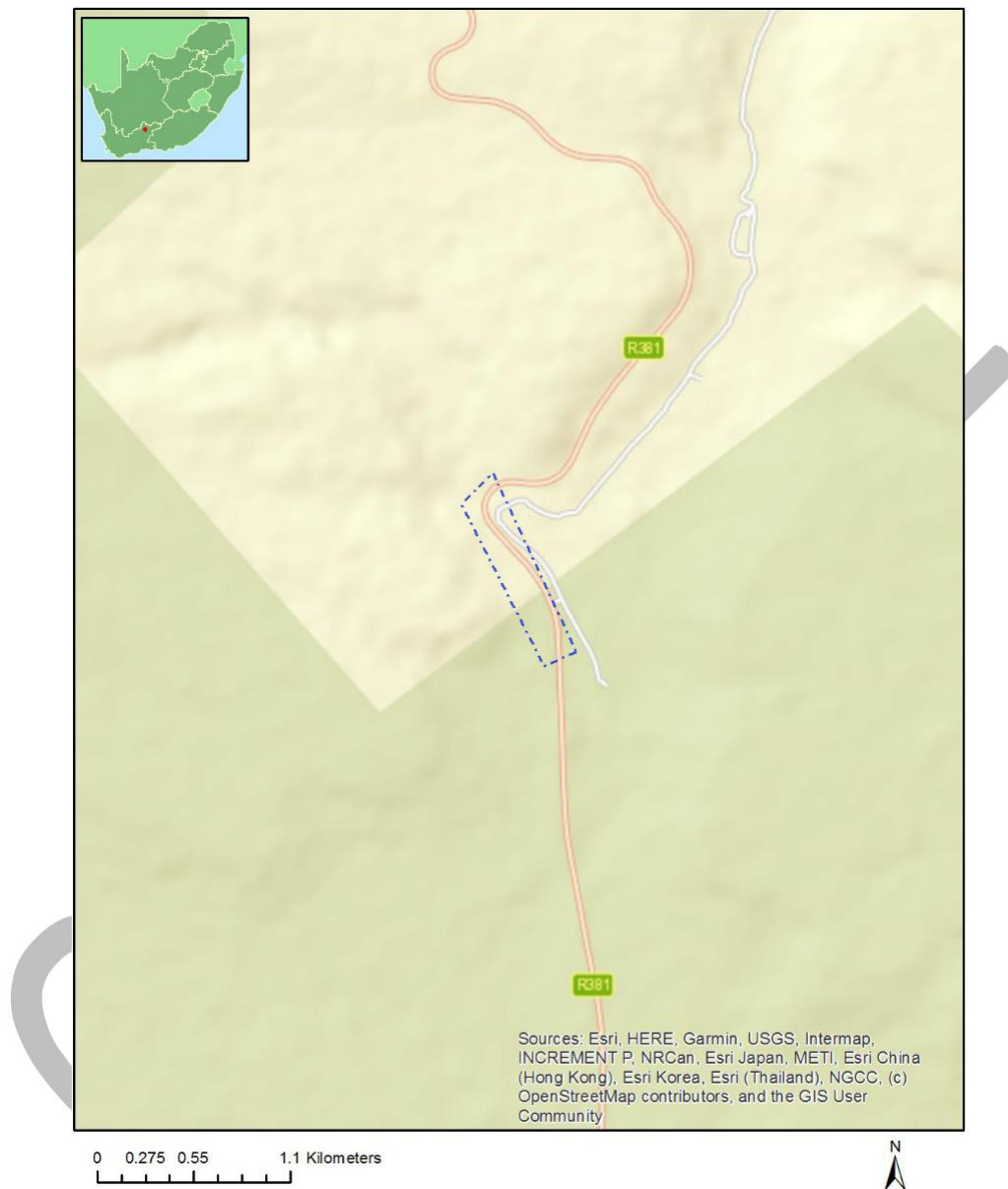


FIGURE 1: LOCALITY MAP OF THE PROPOSED STRUCTURES

3. SENSITIVITIES IDENTIFIED IN THE SCREENING TOOL

As per the Screening Tool Report (Appendix I), the proposed site is located within a Very high sensitivity from an A Palaeontology Theme and a Terrestrial Biodiversity Theme.

A High sensitivity from an Animal Species Theme, Archaeological and Cultural Heritage Theme.

Medium and Low sensitivity from an Agricultural Theme, Civil Aviation Theme, Plant Species Theme, Aquatic Biodiversity Theme and Defence Theme.

Table 2: Sensitivities identified in Screening Tool

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	
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

4. SPECIALIST STUDIES IDENTIFIED

Based on the above detailed sensitivities, the Screening Tool Report identifies and recommends the following specialist assessments:

1. Landscape/Visual Impact Assessment;
2. Archaeological and Cultural Impact Assessment;
3. Palaeontological Impact Assessment;
4. Terrestrial Biodiversity Impact Assessment;
5. Aquatic Biodiversity Impact Assessment;
6. Hydrology Impact Assessment;
7. Socio Economic Assessment;
8. Plant Species Assessment;
9. Animal Species Assessment.

5. DISCUSSION OF REQUIRED ASSESSMENT REPORTS

5.1 Landscape/Visual Impact Assessment

This sensitivity and recommendation for a specialist study is **disputed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts on TR5801 within the TR5801 road reserve. The structures are, therefore, not new structures but existing structures that will either be replaced or repaired. It is expected that the proposed project will have no adverse visual impacts on the surrounding environment but could visually improve the culverts once repaired and could have a positive visual impact on the environment and road user.

Therefore, as the proposed development will have **positive impact on the visual aspects** of the surrounding environment, it is not required that a Visual Impact Assessment be compiled.

5.2 Archaeological and Cultural Heritage Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

Some of the structures could be older than 60 years' and a phase 1 Archaeological and Cultural Heritage Impact Assessment will be conducted as part of the BAR application by Dr J van Schalkwyk and due consideration will be given to the potential impact of the proposed development on archaeological and cultural heritage resources.

5.3 Palaeontological Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area has a high sensitivity of fossil remains to be found, for which a palaeontological assessment and protocol for finds is required. A palaeontological assessment will be conducted as part of the BAR application by Dr H Fourie and due consideration will be given to the potential impact of the proposed development on palaeontological resources.

5.4 Terrestrial Biodiversity, Plant Species and Aquatic Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The structures to be repaired or replaced are within existing watercourses. A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services. The aim of the assessment will be to identify the impact of the proposed project on the water courses as it is anticipated that more than 10 cubic m of material will be excavated from the structures.

This study will also provide information for the GA/WULA application at the Department of Water and Sanitation (DWS) and the Risk Assessment that is required.

5.5 Hydrology

The sensitivity and recommendation for this assessment is **confirmed but an additional specialist study will be not conducted** for the following reasons:

Information on the hydrology of the streams will be provided by the consulting engineers to the project, BVi Engineering and no additional specialist study will be required.

5.6 Socio Economic Impact Assessment

The sensitivity and recommendation for this assessment is **disputed** for the following reasons:

Roads by its nature are used, among other, for the delivery of goods and services to the public and are used to build and improve the economy of the country. The proposed development is aimed to repair and replace broken structures and it is believed it will have a positive socio-economic impact on the region. In addition, road users will have a safer road to travel on.

Therefore, as the proposed development will have **positive socio-economic impact**, a Socio-Economic Impact Assessment is thus not required.

5.7 Animal Species Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts within the TR3305 (N12) road reserve. The proposed project could have adverse impacts on animal species within the road reserve for instance snakes.

A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services which will include an assessment on animal species and proposed mitigation measures included.

**SITE SENSITIVITY VERIFICATION REPORT FOR
THE REPAIR OR REPLACEMENT OF BRIDGES
AND CULVERT STRUCTURES ON TRUNK ROAD
MR584**

(DEA&DP REFERENCE: 16/3/3/6/7/1/C3/1/0162/20)

Report on C11404

21 May 2021

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5.6 Socio Economic Impact Assessment	8

1. BACKGROUND

Chameleon Environmental has been appointed by BVi Engineering (Pty) Ltd on behalf of the Western Cape Government: Department of Transport and Public Works to facilitate the Basic Assessment process in terms of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) and a Water Use License in terms of the National Water Act, 1998 (Act No. 36 of 1998), for the proposed repair or replacement of bridges and culvert structures on Trunk Roads 3305, 3501, 5801, Divisional road 2307 and Main road 584. The applicant is the Western Cape Government: Department of Transport and Public Works. There are 40 structures included in this application, 30 major culverts and 10 bridges on the following roads:

- TR3305 (N12) – 23 major culverts and 10 bridges,
- DR2307 – 2 major culverts,
- MR584 – 1 major culvert,
- TR3501 (R61) – 2 major culverts, and
- TR5801 (R381) – 2 major culverts.

2. SCOPE OF REPORT

This Site Sensitivity Verification Report has been compiled for submission to the Western Cape Department of Environmental Affairs and Development planning for the structures in the Screening report named C11404 and consists of the following structure in Table 1 on MR584:

Table 1: Structures in Report

Structure number	Kilometer reading
C11404	Km 4.59

The structures were grouped together in order to draw the polygon around them. There are, therefore, large areas in the polygon between the culverts that will not be affected or included in the BAR, only the structures. This report addresses the findings of the Screening Tool Report, generated from the National Web Based Environmental Screening Tool, and provides a motivation for the various specialist studies identified to be conducted.



FIGURE 1: LOCALITY MAP OF THE PROPOSED STRUCTURES

3. SENSITIVITIES IDENTIFIED IN THE SCREENING TOOL

As per the Screening Tool Report (Appendix I), the proposed site is located within a Very high sensitivity from an A Palaeontology Theme and a Terrestrial Biodiversity Theme.

A High sensitivity from an Animal Species Theme.

Medium and Low sensitivity from an Agricultural Theme, Civil Aviation Theme, Plant Species Theme, Aquatic Biodiversity Theme and Defence Theme.

Table 2: Sensitivities identified in Screening Tool

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity				X
Civil Aviation Theme				X
Defence Theme				X
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity	X			

4. SPECIALIST STUDIES IDENTIFIED

Based on the above detailed sensitivities, the Screening Tool Report identifies and recommends the following specialist assessments:

1. Landscape/Visual Impact Assessment;
2. Archaeological and Cultural Impact Assessment;
3. Palaeontological Impact Assessment;
4. Terrestrial Biodiversity Impact Assessment;
5. Aquatic Biodiversity Impact Assessment;
6. Hydrology Impact Assessment;
7. Socio Economic Assessment;
8. Plant Species Assessment;
9. Animal Species Assessment.

5. DISCUSSION OF REQUIRED ASSESSMENT REPORTS

5.1 Landscape/Visual Impact Assessment

This sensitivity and recommendation for a specialist study is **disputed** for the following reasons:

The proposed project entails the repair or replacement of a culvert on MR584 within the MP584 road reserve. The structure is, therefore, not a new structure but an existing structure that will either be replaced or repaired. It is expected that the proposed project will have no adverse visual impacts on the surrounding environment but could visually improve the culvert once repaired and could have a positive visual impact on the environment and road user.

Therefore, as the proposed development will have **positive impact on the visual aspects** of the surrounding environment, it is not required that a Visual Impact Assessment be compiled.

5.2 Archaeological and Cultural Heritage Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

Some of the structures could be older than 60 years' and a phase 1 Archaeological and Cultural Heritage Impact Assessment will be conducted as part of the BAR application by Dr J van Schalkwyk and due consideration will be given to the potential impact of the proposed development on archaeological and cultural heritage resources.

5.3 Palaeontological Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The Palaeontological Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>) indicate that most of the project area has a high sensitivity of fossil remains to be found, for which a palaeontological assessment and protocol for finds is required. A palaeontological assessment will be conducted as part of the BAR application by Dr H Fourie and due consideration will be given to the potential impact of the proposed development on palaeontological resources.

5.4 Terrestrial Biodiversity, Plant Species and Aquatic Impact Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The structures to be repaired or replaced are within existing watercourses. A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services. The aim of the assessment will be to identify the impact of the proposed project on the water courses as it is anticipated that more than 10 cubic m of material will be excavated from the structures.

This study will also provide information for the GA/WULA application at the Department of Water and Sanitation (DWS) and the Risk Assessment that is required.

5.5 Hydrology

The sensitivity and recommendation for this assessment is **confirmed but an additional specialist study will be not conducted** for the following reasons:

Information on the hydrology of the streams will be provided by the consulting engineers to the project, BVi Engineering and no additional specialist study will be required.

5.6 Socio Economic Impact Assessment

The sensitivity and recommendation for this assessment is **disputed** for the following reasons:

Roads by its nature are used, among other, for the delivery of goods and services to the public and are used to build and improve the economy of the country. The proposed development is aimed to repair and replace broken structures and it is believed it will have a positive socio-economic impact on the region. In addition, road users will have a safer road to travel on.

Therefore, as the proposed development will have **positive socio-economic impact**, a Socio-Economic Impact Assessment is thus not required.

5.7 Animal Species Assessment

The sensitivity and recommendation for this assessment is **confirmed** for the following reasons:

The proposed project entails the repair or replacement of bridges and culverts within the TR3305 (N12) road reserve. The proposed project could have adverse impacts on animal species within the road reserve for instance snakes.

A terrestrial biodiversity and aquatic assessment will be undertaken by Mr J Maree of Flori Scientific Services which will include an assessment on animal species and proposed mitigation measures included.

APPENDIX C - PHOTOGRAPHS



Photo 1: Culvert C11404



Photo 2: Culvert C11409



Photo 3: Culvert C11408



Photo 4: Culvert C11301



Photo 5: Culvert C11302



Photo 6: Culvert C11343



Photo 7: Culvert C11348



Photo 8: Bridge B4131A



Photo 9: Culvert C11624



Photo 10: C12316



Photo 11: Bridge B4145



Photo 12: Culvert C11623



Photo 13: Culvert C11620



Photo 14: Culvert C11619



Photo 15: Bridge B4374



Photo 16: Culvert C12315



Photo 17: Culvert C11617



Photo 18: Culvert C11615



Photo 19: Culvert C11614



Photo 20: Culvert C11613



Photo 21: Culvert C11611



Photo 22: Culvert C11610



Photo 23: Culvert C11609



Photo 24: Culvert C11608



Photo 25: Culvert C11607



Photo 26: Bridge B4040



Photo 27: Culvert C12309



Photo 28: Bridge B4048



Photo 29: Culvert C12308



Photo 30: Culvert C12307



Photo 31: Bridge B4033



Photo 32: Culvert C12306



Photo 33: Culvert C12305



Photo 34: Bridge B4035



Photo 35: Culvert C12304



Photo 36: Culvert C12303



Photo 37: Culvert C11603



Photo 38: Bridge B4329



Photo 39: Bridge B4331



Photo 40: Bridge B4332