

# ***Transport Impact Assessment***

## ***Cemetery Portion 33 of 437 Bitou Municipality***

***Western Cape***

***November 2023***



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## SUMMARY SHEET

Report Type	Transport Impact Assessment
Title	Cemetery Portion 33 of 437 Bitou Municipality
Location	Western Cape
Client	Eco Route Environmental Consultancy
Reference Number	ITS 4624
Project Team	Christoff Krogscsheepers Pieter Arangie Alain Rousseau
Contact Details	Tel: 021 914 6211
Date	November 2023
Report Status	Final
File Name	G:\4624 TIA Bitou Cemetery, Plettenberg Bay\12 Reports\Issued\4624 TIA Bitou Cemetery Plettenberg Bay PA 2023-11-09.docx

## TABLE OF CONTENTS

### Report - Summary Table

*This transport impact assessment is reported only in a summary table instead of a lengthy report to assist review and interpretation of the results. This summary table includes all the relevant information that is normally contained in a report. It should be sufficient for review and interpretation of the expected transport impacts as well as the comprehension of the required measures to mitigate the transport impact. If any more detail is required, please contact the authors.*

### Annexures

Annexure A: Figures

### List of Figures

Figure 1 Locality Map

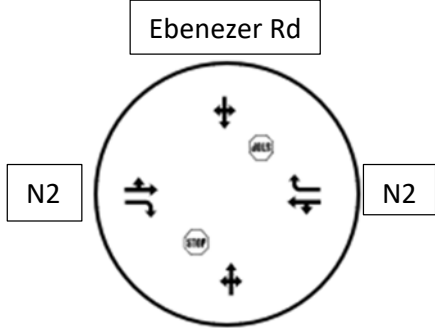
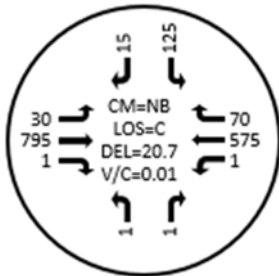
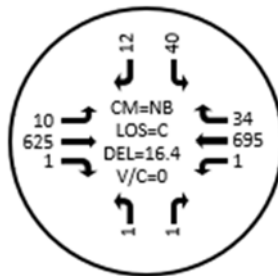
Figure 2 Site Development Plan

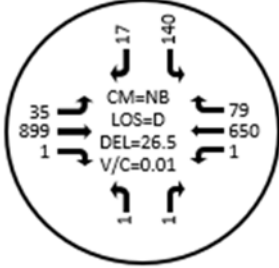
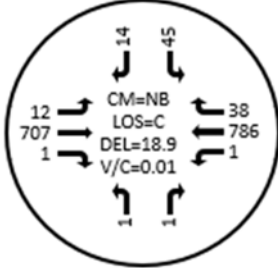

### List of Tables

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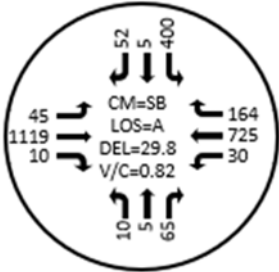
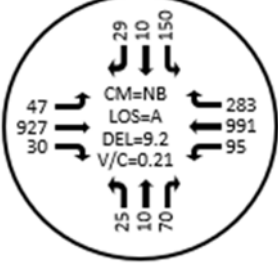
COTO	Committee of Transport Officials
HCM	Highway Capacity Manual
LOS	Level of Service
NMT	Non-motorised Transport
SATGR	South African Trip Generation Rates
SQM	Square Meters (m <sup>2</sup> )
TIA	Transport Impact Assessment
V/C	Volume to Capacity Ratio
WCG	Western Cape Government

<b>Transport Impact Assessment</b>													
Cemetery Portion 33 of 437 Bitou Municipality, Western Cape													
<b>1 Purpose of Study</b>	<p>This report summarises an investigation of the transport related impacts of the proposed development of the Cemetery on Portion 33 of Farm 437 in Plettenberg Bay.</p> <p>The purpose of this report is to identify possible constraints within the surrounding transport network and to recommend appropriate mitigation measures.</p>												
<b>2 Locality</b>	<p>The proposed development is located to the north of the N2 and to the west of at the Ebenezer Road in Plettenberg Bay. Refer to <b>Figure 1</b> in Annexure A for the Locality Map.</p>												
<b>3 Land Use</b>	<p><b>Existing Use:</b> The land is currently mostly vacant.</p> <p><b>Proposed Land Use:</b></p> <ul style="list-style-type: none"> <li>• Burial and interment areas of approximately 9,779ha,</li> <li>• Caretakers Dwelling 75m<sup>2</sup>,</li> <li>• Chapel 250m<sup>2</sup></li> <li>• Crematorium 150m<sup>2</sup></li> </ul> <p>See <b>Figure 2</b> in Annexure A for the Site Development Plan.</p>												
<b>4 Existing Roadways in Site Vicinity</b>	<p>A summary of the existing roadways in the site vicinity is provided below.</p> <p><i>Roadways in Study Area:</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Roadway</th> <th style="text-align: center;">Classification</th> <th style="text-align: center;">Speed Limit (km/h)</th> <th style="text-align: center;">NMT Facilities</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">National Route 2 (NR2-8)</td> <td style="text-align: center;">N2 National Road (Class 2)</td> <td style="text-align: center;">60</td> <td style="text-align: center;">Yes, localised</td> </tr> <tr> <td style="text-align: center;">Ebenezer Road</td> <td style="text-align: center;">Municipal street (Class 4)</td> <td style="text-align: center;">Not posted (40km/h)</td> <td style="text-align: center;">Sidewalks along both sides</td> </tr> </tbody> </table>	Roadway	Classification	Speed Limit (km/h)	NMT Facilities	National Route 2 (NR2-8)	N2 National Road (Class 2)	60	Yes, localised	Ebenezer Road	Municipal street (Class 4)	Not posted (40km/h)	Sidewalks along both sides
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Ebenezer Road	Municipal street (Class 4)	Not posted (40km/h)	Sidewalks along both sides										
<b>5 Traffic Surveys &amp; Analyses Hours</b>	<p>Traffic surveys were conducted to determine the peak hour traffic volumes at the intersections in the study area. The surveys were conducted on 24 February 2023 during the a.m. and p.m. peak hours.</p> <p>The following peak hours are investigated:</p> <ul style="list-style-type: none"> <li>• Weekday AM peak hour      07:15 – 08:15</li> <li>• Weekday PM peak hour      16:15 – 17:15</li> </ul>												

	<p>The peak traffic generation period of the cemetery development will not coincide with the peak hours of the surrounding road network. Typically, a cemetery will generate trips during the off-peak periods between 10:00 in the morning and 15:45 in the afternoon</p>
<p><b>6 Scenarios Analysed</b></p>	<p>The transport impact of the proposed development was analysed for the following scenarios:</p> <ol style="list-style-type: none"> <li>1. 2023 Existing conditions</li> <li>2. 2028 Future traffic conditions (Existing 2023 traffic volumes escalated with a growth rate as discussed in Section 9 of this study)</li> </ol>
<p><b>7 Study Intersections (existing control)</b></p>	<p>Based on the nature and the extent of the proposed development, only the N2/Ebenezer Road intersection was evaluated. See the existing intersection layout and control below.</p> 
<p><b>8 Existing Intersection Operations</b></p>	<p>The Existing Traffic conditions are based on existing intersection geometries, controls and counted traffic volumes. See the existing traffic volumes and analysis results in the bubbles below.</p> <div style="display: flex; justify-content: space-around;"> <div> <p>AM Peak Hour</p>  </div> <div> <p>PM Peak Hour</p>  </div> </div> <p>Based on the existing traffic capacity analysis results, the study intersection is currently operating at an acceptable Level-of-Service (LOS) during the weekday a.m. and p.m. peak hours.</p>

<p><b>9 Future 2028 Traffic Conditions</b></p>	<p>Future Growth Rate: An average 2.5 percent growth rate per annum was used to account for general traffic growth in the vicinity of the development. The growth rate is based on historic traffic counts along the N2 in the site vicinity. See the 2028 future traffic volumes and analysis results in the bubbles below.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>AM Peak Hour</p>  </div> <div style="text-align: center;"> <p>PM Peak Hour</p>  </div> </div> <p>From the analyses, it is clear that the study intersection will continue to operate at an acceptable Level-of-Service (LOS) during the weekday a.m. and p.m. peak hours in the 2028 future traffic conditions.</p>
<p><b>10 Site Access</b></p>	<p>Access to the proposed development is proposed via a new western leg to the existing Ebenezer Road/Saringa Road intersection.</p>
<p><b>11 Long-Term Road Planning</b></p>	<p>Long-term road improvements in the immediate vicinity of the site includes the planned realignment of the N2-Bypass route as illustrated below. The timeframe for the planned N2 By-pass is uncertain and it is not expected that this will happen in the near future. The planning of the development access road made provision for the future N2 By-pass as shown on the SDP.</p> 

<p><b>12 Trip Generation Rates and Development Trips</b></p>	<p>Trip generation rates were obtained from The Committee of Transport Officials Trip Data Manual (<i>TMH17 - COTO 2013</i>) for the proposed land uses. Based on the trip generation rate of 0.2 trips per hectare suggested in THM17 for cemeteries (COTO566) the proposed development ca generate 2 vehicular trips during the typical weekday peak hours.</p> <p>The peak traffic generation period of the cemetery will not coincide with the peak hours of the surrounding road network. Typically, a cemetery generates trips during the off-peak periods between 10:00 in the morning and 15:45 in the afternoon.</p>
<p><b>13 Traffic Impact</b></p>	<p>Due to the nature of the development, it will only generate vehicular trips during off-peak periods. The existing demand on the road network during this period is significantly lower (50 percent) compared to the peak hours and will easily accommodate the additional development trips.</p> <p>The proposed cemetery will not generate trips during the peak hours of the surrounding road network and the operations at the study intersection will be acceptable during the off-peak periods, when the (cemetery) development could generated some additional trips on the road network.</p> <p>The study intersection will operate acceptably with the development completed and no external road upgrades are required for the proposed development.</p>
<p><b>14 Sensitivity Check Scenario</b></p>	<p>To evaluate a sensitivity check scenario, the road network was also analysed for a future scenario, including the various erven that have been identified for development of housing in Qolweni, Ebanhaeser and in Kwanokuthula, Plettenberg Bay as described in the report: <i>Transport Impact Assessment for N2 Housing Developments – Plettenberg Bay</i> dated January 2019, prepared by <i>Innovative Transport Solutions (Pty) Ltd.</i></p> <p>Based on the capacity analysis the N2/Ebenezer Road intersection will operate under constraint and does not have sufficient capacity to accommodate the traffic associated with the housing developments. It is recommended that this intersection be upgraded to a two-lane roundabout in the long term once all the housing developments have been implemented.</p>

	<p>See the future traffic volumes including the trips associated with the housing projects and analysis results with the intersection upgraded to a 2-lane roundabout in the bubbles below.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>AM Peak Hour</p>  <p>CM=SB LOS=A DEL=29.8 V/C=0.82</p> </div> <div style="text-align: center;"> <p>PM Peak Hour</p>  <p>CM=NB LOS=A DEL=9.2 V/C=0.21</p> </div> </div> <p>With the recommended upgrade implemented the N2/Ebenezer Road intersection will operate at an acceptable Level-of-Service, with the housing development trips included.</p>
<p><b>15 Parking</b></p>	<p>The SDP makes provision for 53 formal parking bays plus 3 bus parking bays on site, which is sufficient. There is also space available on site to accommodate overflow parking if necessary.</p>
<p><b>16 Pedestrians and Cyclists</b></p>	<p>There are existing sidewalks along the N2 and Ebenezer Road in the site vicinity. It is recommended that sidewalks be provided along both sides of the access road between Ebenezer Road and the site.</p>
<p><b>17 Public Transport</b></p>	<p>There are existing public transport facilities available along the N2 and Ebenezer Road and no additional public transport facilities are recommended as part of the proposed development.</p>
<p><b>18 Conclusions &amp; Recommendations</b></p>	<p>This report summarises an investigation of the transport impacts of the proposed development of a Cemetery on Portion 33 of Farm 437 in Plettenberg Bay. Based on the evaluation in this report, the following are concluded and recommended:</p> <p><b>2023 Existing Traffic:</b> The road network currently operates acceptably, and no road upgrades are proposed.</p> <p><b>2028 Future Traffic:</b> A growth rate of 2.5% per annum was used for background growth.</p>



**18 Conclusions &  
Recommendations  
(Continued)**

**Development Trips:** The development trip generation during the weekday peak hours will be insignificant. The peak traffic generation period of the cemetery will not coincide with the peak hours of the surrounding road network. Typically, a cemetery will generate trips during the off-peak periods.

**Site Access:** Access to the proposed development is proposed via a new western leg to the existing Ebenezer Road/Saringa Road intersection. The access road can be accommodated with the planned future N2 By-pass alignment.

**Traffic Impact:** The proposed cemetery will not generate trips during the peak hours of the surrounding road network and the operations at the study intersection will be acceptable during the off-peak periods, when the (cemetery) development could generate some additional trips on the road network.

The study intersection will operate acceptably with the development completed and no external road upgrades are required for the proposed development.

**Sensitivity Check Scenario:** To evaluate a sensitivity check scenario, the network was also analysed for a future scenario, including the various planned housing developments along the N2 near Plettenberg Bay.

Based on the capacity analysis the N2/Ebenezer Road intersection does not have sufficient capacity to accommodate the traffic associated with the housing developments and it is recommended that this intersection be upgraded to a two-lane roundabout in the long term once all the housing developments have been implemented.

**Parking:** The SDP makes provision for 53 formal parking bays plus 3 bus parking bays on site, which is sufficient. There is also space available on site to accommodate overflow parking if necessary.

**Pedestrians, Cyclists and Public Transport:** There are existing sidewalks along the roads in the site vicinity. It is recommended that sidewalks be provided along both sides of the access road between Ebenezer Road and the site. There are existing public

<p><b>18 Conclusions &amp; Recommendations</b> <i>(Continued)</i></p>	<p>transport facilities available in the site vicinity and no additional public transport facilities are recommended as part of the proposed development.</p> <p>Based on the above investigation, it is evident that the current road network can accommodate the proposed development.</p> <p>It is recommended that this development be approved, from a transport engineering point of view.</p>
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**REFERENCES**

1. Highway Capacity Manual (HCM).
2. Western Cape Government, Draft Access Management Guidelines. July 2016
3. Transportation Research Board Highway Capacity Manual, Special Report No. 209. 2000
4. Committee of Transport Officials, South African Trip Data Manual, TMH 17, September 2017
5. Committee of Transport Officials, South African Impact and Site Traffic Assessment Manual, TMH 16 Volume 1, August 2012

Annexure A

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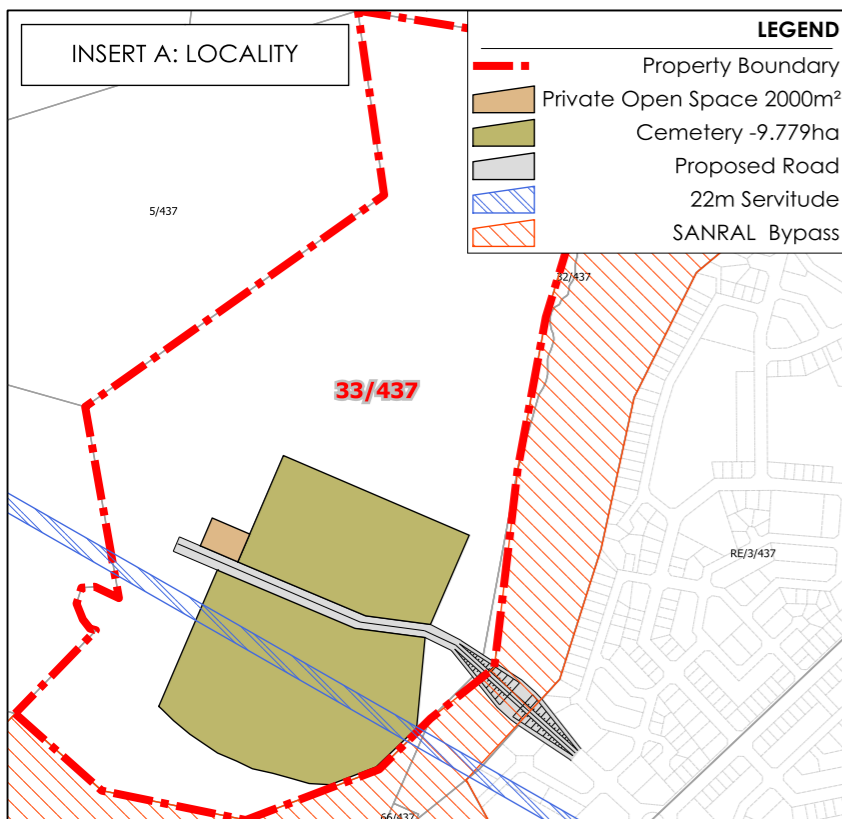
Figures



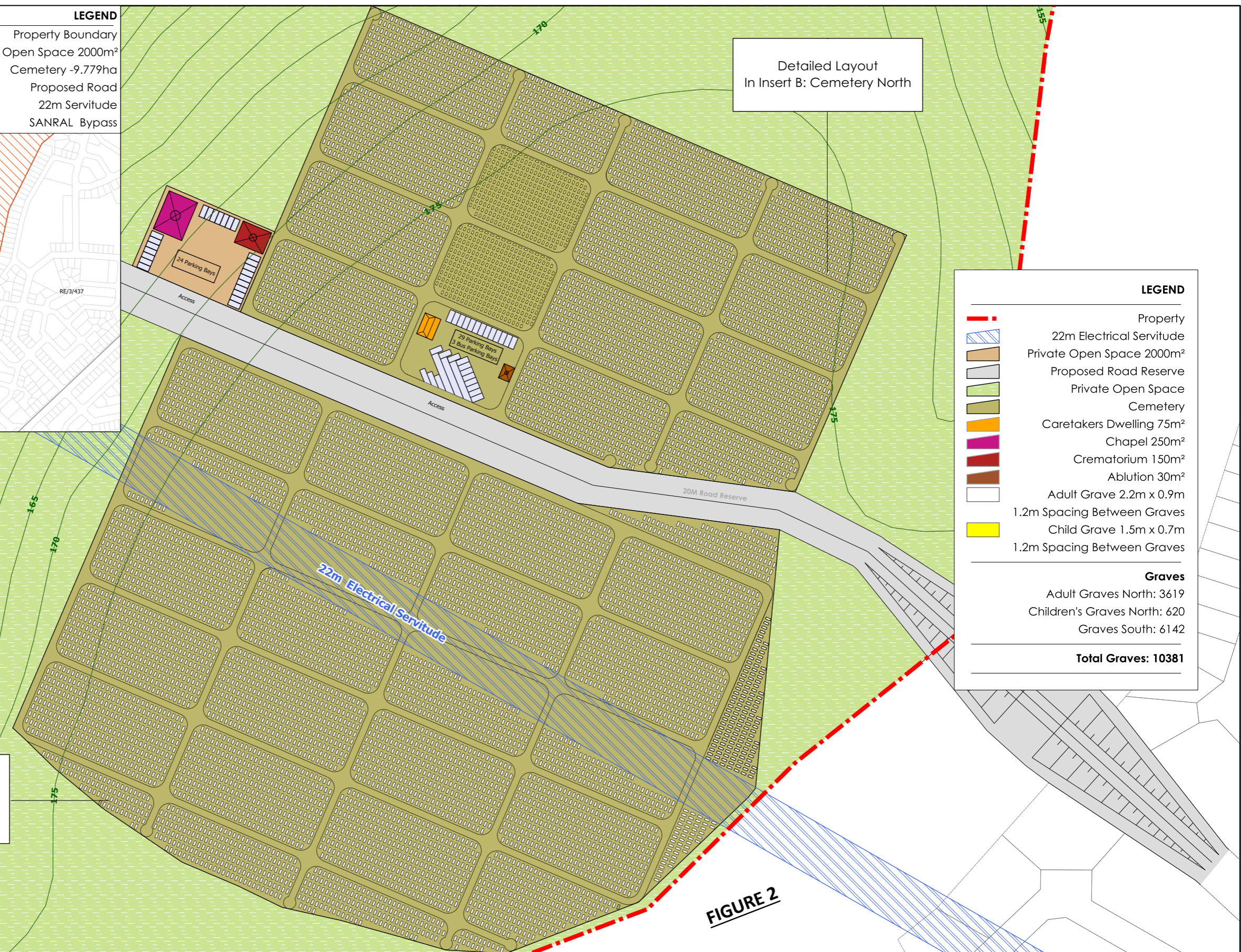
PROJECT: BITOU CEMETERY, PORTION 33 FARM 437, PLETTENBERG BAY

FIGURE: LOCALITY PLAN

NUMBER: 01



- LEGEND**
- Property Boundary
  - Private Open Space 2000m<sup>2</sup>
  - Cemetery -9.779ha
  - Proposed Road
  - 22m Servitude
  - SANRAL Bypass



- LEGEND**
- Property
  - 22m Electrical Servitude
  - Private Open Space 2000m<sup>2</sup>
  - Proposed Road Reserve
  - Private Open Space
  - Cemetery
  - Caretakers Dwelling 75m<sup>2</sup>
  - Chapel 250m<sup>2</sup>
  - Crematorium 150m<sup>2</sup>
  - Ablution 30m<sup>2</sup>
  - Adult Grave 2.2m x 0.9m
  - 1.2m Spacing Between Graves
  - Child Grave 1.5m x 0.7m
  - 1.2m Spacing Between Graves
- Graves**
- Adult Graves North: 3619
  - Children's Graves North: 620
  - Graves South: 6142
- Total Graves: 10381**

Detailed Layout  
In Insert C: Cemetery South

**FIGURE 2**

**BITOU CEMETERIES**

**PORTION 33 OF THE FARM  
HILLVIEW NO 437**

**PREFERRED LAYOUT:  
DETAILED CEMETERY LAYOUT**

Projection: Transverse Mercator  
Centre Lon: 23°19'46" E  
Centre Lat: 34°02'36" S  
Created: 2018/02/15  
Scale: 1:1800

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