

Date: 28 July 2023

Our Ref: UDS627/Reports/

51 Lourensford Estate
Somerset West
7130

Attention: Mr. Riaan van Dyk

Dear Sir

**TRAFFIC IMPACT STATEMENT FOR THE PROPOSED DEVELOPMENT ON RE 6503 AND 6504,
PLETTENBERG BAY**

This company was appointed to prepare a Traffic Impact Statement (TIS) for a proposed development on RE 6503 and 6504 in Plettenberg Bay as part of the NEMA process.

1. LOCALITY AND BACKGROUND

The subject property is located in Plettenberg Bay east of the N2 (National Route 2) and is currently accessed via Beacon Way as shown in **Diagram 1** below and the attached **Locality Plan**.



Diagram 1: Location of Subject Property



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Reg no. 2003/043709/23

urban development solutions



2. PROPOSED DEVELOPMENT

The development is proposed to have 77 residential units. Of the 77 units, 37 units are proposed to be single residential units and 40 units will be apartments with the possibility of being developed as retirement units. The proposed estate will be access-controlled with access via a new road constructed along the southern boundary of the property to Susan Street. This will be further discussed in *Section 4*.

Please see the proposed layout on the attached **Alternative 1 Preferred Proposal** prepared by *Marike Vreken Urban and Environmental Planners*.

3. TRAFFIC IMPACT

3.1 Existing Traffic

Traffic counts were performed on Monday, the 22nd May 2023 during the AM (06:00 – 09:00) and PM (15:30 – 18:30) at the following intersections which were agreed upon with the Bitou Municipality:

1. N2 / Beacon Way intersection
2. Beacon Way / School Access Road intersection
3. Beacon Way / Checkers / Market Square intersection
4. Beacon Way / Zenon Street

The 2023 peak hour traffic volumes are as indicated in the attached **Figure 1**. The peak hours were found to be 07:15 – 08:15 and 16:15 – 17:15, which coincides with the morning and evening commuter peak periods.

3.2 Traffic Generated

The South African Trip Data Manual TMH17 was used to estimate the trips expected to be generated by the proposed development. TMH17 suggests a trip generation rate of 1 trip per single residential unit and 0.35 trips per retirement unit. However, as there exists the possibility that the apartments will not be developed as retirement units, a trip generation rate of 0.65 was units for the 40 apartment units. The proposed development is thus expected to generate peak hour trips as indicated below.

Single Residential Units				
Number of Units	37			
Trip Generation Rate / Unit	Weekday AM		Weekday PM	
	1		1	
Trips Generated	37		37	
Directional Split & Vehicular Trips	Weekday AM		Weekday PM	
	IN	OUT	IN	OUT
	25%	75%	70%	30%
	9	28	26	11

Apartments				
Number of Units	40			
Trip Generation Rate / Unit	Weekday AM		Weekday PM	
	0.65		0.65	
Trips Generated	26		26	
Directional Split & Vehicular Trips	Weekday AM		Weekday PM	
	IN	OUT	IN	OUT
	25%	75%	70%	30%
	7	20	18	8
TOTAL	16	47	44	19

Therefore, 63 trips are expected during the peak hours with 16 IN / 47 OUT during the AM peak hour and in the 44 IN / 19 OUT.

3.3 Traffic Distribution and Growth

The South African Trip Data Manual (TMH17) suggests an annual growth rate of 0 – 3% for low growth areas and 3 – 4% for average growth areas. As the area around Beacon Way is mostly built up, low growth is expected, however, to err on the side of caution an annual growth rate of 3% was used. The existing traffic was projected to 2028 to evaluate a 5-year future scenario both with and without the proposed development in order to establish whether the road network can accommodate the projected growth. See **Figure 2** for the *Projected 2028 AM/PM Peak Hour Traffic Volumes*.

The expected trip distribution is as indicated in the attached **Figure 3**. As far as possible, the background traffic was used to model the trip distribution. It should be noted that the access from the property was modelled via the new proposed access on the southern boundary of the property, rather than the existing roadway which provides access to the adjacent school. This will be discussed further in *Section 4*.

Figure 4 shows the estimated 2028 AM/PM peak hour traffic volumes, including the traffic generated by the proposed development as well as a 3% annual growth rate.

3.3 Traffic Impact

The existing traffic was analysed using SIDRA Intersection Analysis 9.1. Service levels A to D (up to 35 seconds of delay) are considered acceptable, where a level of service (LOS) below D and a degree of saturation above 0.85 is considered unacceptable.

N2 / Beacon Way Intersection

The N2 / Beacon Way intersection is a priority-controlled T-junction with a stop control on Beacon Way. There are turning lanes on each approach as shown in **Diagram 2**. It should be noted that according to the local municipality, the intersection is planned to be upgraded to a roundabout in the near future.



Diagram 2: N2 / Beacon Way intersection

The existing 2023 traffic volumes along with the existing lane layout was analysed and the intersection is experiencing an overall delay of approximately 7.8 seconds in the AM peak hour and 211.2 seconds in the PM peak hour. The worst delay, in both peak hours, is experienced on the right-turning movement along Beacon Way which experiences a LOS E with a delay of 42.7 seconds in the AM peak hour and a LOS F with delays exceeding 1000 seconds in the PM peak hour.

In 2028, after applying a 3% growth rate p.a., the intersection is expected to experience an average delay of 27.2 seconds in the AM peak hour and 477.6 seconds in the PM peak hour. The worst delay, in both peak hours, is experienced on the right-turning movement along Beacon Way which experiences a LOS F with unacceptable delays in the AM and PM peak hour. However, according to the Bitou Municipality, the N2 / Beacon Way intersection will be upgraded to a roundabout in the near future. Using the proposed roundabout, an overall LOS A is expected to be experienced in the AM (5.8 second delay) and PM (6.8 second delay) peak hour. The worst delay is expected to be experienced on the right-turning movement along Beacon Way with 10.3 seconds delay in the AM peak hour and 10.4 seconds delay in the PM peak hour.

After the subject development's traffic is added to the network, the upgraded intersection is still expected to experience an overall delay of 5.8 seconds in the AM peak hour and 6.8 seconds in the PM peak hour. The worst delay is expected to be maintained with the right-turning movement along Beacon Way, which experiences a LOS B in both the AM (10.3 seconds). The worst delay in the PM peak hour is expected on the right-turning movement along the southern south-western approach of the N2 with a delay of 11.4 seconds.

No further upgrades above and beyond the aforementioned roundabout are required to accommodate the development.

Beacon Way / School Access Road / Filling Station Intersection

The Beacon Way / School Access Road / Filling Station intersection is currently priority-controlled with a stop control on the side streets as shown in **Diagram 3** below. There is one lane per direction on all approaches.



Diagram 3: Beacon Way / Filling Station / School Access Road intersection

The existing 2023 traffic volumes along with the existing lane layout were analysed and the intersection is expected to experience an overall average delay of approximately 6.6 seconds in the AM peak hour and 2.2 seconds in the PM peak hour. The worst delay, in both peak hours, is experienced on the right-turning movement along the school access road on the eastern approach which experiences a LOS C with a delay of 16.8 seconds in the AM peak hour and 20.7 seconds in the PM peak hour.

In 2028, after applying a 3% growth rate p.a., the intersection is expected to experience an average delay of 7.6 seconds in the AM peak hour and 2.2 seconds in the PM peak hour. The worst delay, in both peak hours, is experienced on the right-turning movement along the school access road on the eastern

approach which experiences a LOS C with a delay of 21.4 seconds in the AM peak hour and a LOS D in the PM peak hour with a delay of 26.5 seconds.

After the subject development's traffic is added to the network, the intersection is expected to experience an average delay of 7.6 seconds in the AM peak hour and 2.7 seconds in the PM peak hour. The worst delay is experienced on the right-turning movement along the school access road on the eastern approach which experiences a LOS C with a delay of 22.9 seconds in the AM peak hour. The worst movement in the PM peak hour is expected to be experienced on the right-turning movement from the western approach with a LOS D and a delay of 31.2 seconds. It is expected that in all the scenarios above, the early afternoon peak would experience congestion at the end of the school day.

It should be noted that it was initially proposed to allow access via this servitude, however, after the municipality expressed concerns, the access was relocated to the preferred access along the southern boundary as currently shown on the attached **Alternative 1 Preferred Proposal**. No upgrades are required at this intersection due to the development.

Beacon Way / Checkers / The Market Square Intersection

The Beacon Way / Checkers / The Market Square intersection is a full signalized intersection as shown below in **Diagram 4**. There are turning lanes on each approach.



Diagram 4: Beacon Way / Checkers / The Market Square intersection

The existing 2023 traffic volumes along with the existing lane layout was analysed and the intersection is expected to experience an overall average delay of approximately 23.7 seconds in the AM peak hour and 29.3 seconds in the PM peak hour. The worst delay, in both peak hours, is experienced on the right-turning movement along Beacon Way northern approach which experiences a LOS D with a delay of 35.3 seconds in the AM peak hour and 36.1 seconds in the PM peak hour.

In 2028, after applying a 3% growth rate p.a., the intersection is expected to experience an average delay of 24.4 seconds in the AM peak hour and 32.3 seconds in the PM peak hour. The worst delay, in both peak hours, is experienced on the right-turning movement along Beacon Way northern approach which experiences a LOS D with a delay of 38.4 seconds in the AM and PM peak hour.

After the subject development's traffic is added to the network, the intersection is expected to experience an overall delay of 28.4 seconds in the AM peak hour and 36.1 seconds in the PM peak hour. The worst delay, in both peak hours, is expected to be experienced on the right-turning movement along Beacon Way northern approach which experiences a LOS D with a delay of 45.0 seconds in the AM peak hour and 49.6 seconds in the PM peak hour.

No upgrades are required due to the development.

Beacon Way / Zenon Street Intersection

The Beacon Way / Zenon Street intersection is a roundabout as shown below in **Diagram 5**. The intersection will provide access between the proposed development and the larger road network. This will be further discussed in *Section 4*.



Diagram 5: Beacon Way / Zenon Street intersection

The existing 2023 traffic volumes along with the existing lane layout was analysed and the intersection is expected to experience an overall average delay of approximately 5.0 seconds in the AM peak hour and 5.3 seconds in the PM peak hour. All movements experience a LOS A or B.

In 2028, after applying a 3% growth rate p.a., the intersection is expected to experience an average delay of 5.1 seconds in the AM peak hour and 5.3 seconds in the PM peak hour. All movements are still expected to experience a LOS A or B.

After the subject development's traffic is added to the network, the intersection is expected to experience an overall delay of 5.3 seconds in the AM peak hour and 5.6 seconds in the PM peak hour. As above, the intersection is expected to experience a LOS A or B on all movements.

No upgrades are required at this intersection due to the introduction of the development.

4. GEOMETRY

The proposed development is in a region accessed via the N2 / Beacon Way intersection. The N2 is a National Route (NR00208) and as previously mentioned, the intersection is planned to be upgraded to a roundabout in the near future.

Beacon Way is a two-lane road. The Beacon Way / Filling Station / School Access Road intersection is a priority-controlled intersection with no turning lanes. It should be noted that the School Access Road provides access to the adjacent school, Checkers' delivery yard and was initially proposed to provide access to the subject property.

The Bitou Municipality expressed a concern regarding increasing the number of vehicles travelling along the school access road due to the congestion caused by the school. After a meeting with the Bitou Municipality, three access alternatives were identified as indicated below in **Diagram 6**. The preferred access was identified to be the western access (Identified alternate access 1) as the other two accesses would encroach upon the "very high" sensitivity area as identified in the NEMA Planning Report. Traffic will travel via Susan Street, Plato Street and Zenon Street to reach Beacon Way where vehicles will have access to the wider road network.

It should be noted that it seems as though vehicles have travelled along the access road, past the school and delivery yard and informally used part of the subject property to turn around. This area will fall away as it would be developed as part of the gatehouse area.



Diagram 6: Access route for subject property

The Minimum Standards for Civil Engineering Services in Townships (2007) states that a minimum of 6-metres stacking distance is required for less than 15 residential units and 12-metres stacking distance is required for 40 units. There are no stipulated requirements for developments larger than 40-units, however, based on the data available and assuming a best fit trendline, the recommended stacking for 77 units should be between 18- and 23-metres. The layout of the gatehouse has not been confirmed, therefore, sufficient stacking distance should be provided during further design stages. Based on the available layout, 50+ metres are available for stacking in each lane, which equates to 100+ metres in the two entry lanes. This is considered sufficient.

In addition to this, it should be ensured that one of the entry lanes are at least 4.0 metres wide to accommodate emergency vehicles.

The internal roads are a minimum of 5.5-metres wide with road reserves ranging between 10- and 12-metres. It should be ensured that vehicles parked in driveways and garages have sufficient space to reverse. It is also recommended that sight-distance be considered in the placement of trees.

It is anticipated that refuse collection will be at the gatehouse.

Plato Road is approximately 525-metres long and it is suggested that it be considered that speed humps be provided along the straight lengths with appropriate spacing between them.

5. NON-MOTORISED AND PUBLIC TRANSPORT

A sidewalk exists along at least one side of Beacon Way. There are no formal sidewalks along Plato Road, however there is sufficient space for residents to walk on the unpaved sidewalk. As previously mentioned, it is suggested that traffic calming be considered along Plato Road to increase pedestrian safety. In addition to this, it is suggested that a pedestrian gate be considered along the western boundary allowing residents access to the school and retail areas.

It is not expected that additional public transport infrastructure would be required as result of the proposed development.

6. PARKING

The Bitou Municipality Zoning Scheme recommends 2 bays per unit for single residential units and 1.25 bays per apartment. However, as the client would like the option of developing retirement units, 2 bays per unit with an additional 0.25 bays per unit for visitors is required for the 40 apartments. Therefore, a total of 90 off-street parking bays (2.25 bays x 40 units) are required to accommodate the retirement units.

According to the civil engineer, each single residential unit has been designed to accommodate two parking bays and a garage. 80 bays will be provided in front of the retirement units with an additional 42 bays will be available for visitors at the clubhouse. While this is considered sufficient, it is recommended that a minimum of three parking bays are available for disabled users as per the Bitou Municipality Zoning Scheme.

Parking spaces should also be provided in accordance with normal parking standards, i.e. 2.5 by 5.0 metre bays and 3.7 by 5.0 metre bays for disabled users with 7.5 metre aisle widths as per the Bitou Municipality Zoning Scheme.

7. CONCLUSIONS

It can therefore be concluded that:

- This subject property (RE 6503 and 6504) is located to the east of the N2, currently accessed via Beacon Way.
- The municipality suggested alternate access be investigated due to possible congestion issues along Beacon Way.
- The proposed development will accommodate 77 units, of which 37 are proposed to be single residential units and 40 units will be retirement units.

- Traffic counts were performed on Monday, 22nd May 2023 at the N2/Beacon Way intersection, Beacon Way / Filling Station / School Access intersection, Beacon Way / Market Square / Checkers intersection, Beacon Way / Zenon Street.
- Using TMH17, 63 trips are expected during the peak hours with 16 IN / 47 OUT during the AM peak hour and 44 IN / 19 OUT during the PM peak hour.
- A 3% annual growth rate was used to project the traffic to 2028 to evaluate a 5-year future scenario.
- SIDRA 9.1 results were as follows:
 - N2 / Beacon Way Intersection:
 - Existing (2023 traffic): Average delay of 7.8 seconds (AM peak hour) and 211.2 seconds (PM peak hour). The worst delay is experienced on the right-turning movement along Beacon Way which experiences a LOS F and unacceptable delays.
 - Projected 2028 traffic: Average delay of 27.2 seconds (AM peak hour) and 477 seconds (PM peak hour). The worst delay is expected to be experienced on the right-turning movement along Beacon Way which experiences a LOS F and unacceptable delays.
 - The local municipality has confirmed that the N2/Beacon Way intersection will be upgraded to a roundabout. The Projected 2028 traffic was therefore analysed using the approved roundabout. An average delay of 5.8 seconds (AM peak hour) and 6.8 seconds (PM peak hour) is expected with the upgrade. The worst delay is expected to be experienced on the right-turning movement along Beacon Way which experiences a 10.4 second delay in the PM peak hour.
 - Estimated (2028 + Subject Development): Using the upgraded intersection, the average delays were maintained after the development traffic was added.
 - No further upgrades above and beyond the aforementioned roundabout is required.
 - Beacon Way / Filling Station / School Access Intersection:
 - Existing (2023 traffic): Average delay of 6.6 seconds (AM peak hour) and 2.2 seconds (PM peak hour). The worst delay is expected to be experienced on the right-turning movement along the school access which experiences a 20.7 second delay in the PM peak hour.
 - Projected 2028 traffic: Average delay of 7.6 seconds (AM peak hour) and 2.2 seconds (PM peak hour). The worst delay is expected to be experienced on the right-turning movement along the school access which experiences a 26.5 second delay in the PM peak hour.
 - Projected (2028 + Subject Development): Average delay of 7.6 seconds (AM peak hour) and 2.7 seconds (PM peak hour). The worst delay is expected to be experienced on the right-turning movement along the school access which experiences a 31.2 second delay in the PM peak hour.

- No additional lanes are required.
 - Beacon Way / The Market Square / Checkers Intersection
 - Existing (2023 traffic): Average delay of 23.7 seconds (AM peak hour) and 29.3 seconds (PM peak hour). The worst delay is expected to be experienced on the right-turning movement along Beacon Way which experiences a 36.1 second delay in the PM peak hour.
 - Projected 2028 traffic: Average delay of 24.4 seconds (AM peak hour) and 32.3 seconds (PM peak hour). The worst delay is expected to be experienced on the right-turning movement along Beacon Way which experiences a 38.4 second delay in the PM peak hour.
 - Projected (2028 + Subject Development): Average delay of 28.4 seconds (AM peak hour) and 36.1 seconds (PM peak hour). The worst delay is expected to be experienced on the right-turning movement along Beacon Way which experiences a 49.6 second delay in the PM peak hour.
 - No additional lanes are required.
 - Beacon Way / Zenon Street
 - Existing (2023 traffic): Average delay of 5.0 seconds (AM peak hour) and 5.3 seconds (PM peak hour). All movements are expected to experience a LOS A or B.
 - Projected 2028 traffic: Average delay of 5.1 seconds (AM peak hour) and 5.3 seconds (PM peak hour). All movements are expected to experience a LOS A or B.
 - Projected (2028 + Subject Development): Average delay of 5.3 seconds (AM peak hour) and 5.6 seconds (PM peak hour). All movements are expected to experience a LOS A or B.
 - The intersection was modelled as the main access to the wider road network and was able to accommodate all 63 trips. No upgrades are required.
- As mentioned, the N2 / Beacon Way intersection is planned to be upgraded to a roundabout in the near future.
- Access to the subject property is proposed to be gated, however the details for the guard house has not been confirmed. The Minimum Standards for Civil Engineering Services in Townships (2007) only stipulates specifications up to 40 units, however, using the ratios provided, stacking distance should be provided between 18- and 23-metres. Based on the available information, sufficient space is available.
- An entry lane of minimum 4.0 metres should be provided for emergency vehicles.
- Internal roads are 5.5-metres wide with road reserve widths ranging from 10.0- to 12.0-metres.
- It is anticipated that refuse collection will occur at the gatehouse.
- Each single residential unit will include a garage and space for 2 parked cars outside the garage. 80 bays are provided outside the retirement units with an additional 42 bays for visitors at the clubhouse.

8. RECOMMENDATIONS

The development be recommended on condition that:

- Sufficient stacking space exceeding 23-metres be provided.
- A minimum entry lane of 4.0-metres be provided.
- Sufficient sight distance be ensured in the placement of trees along the internal roads.
- It should be ensured that there is sufficient space for vehicles reversing out of driveways.
- Traffic calming be considered along roads within the development longer than 100-metres.
- Traffic calming be considered along Plato Road with appropriate spacing between them.
- A pedestrian gate be considered on the western boundary of the subject erf, providing access to the school and retail areas.

Trust the above is sufficient for the purpose of the investigation. More information can be provided upon request.

Yours faithfully,





Compiled by: Shameez Patel Papathanasiou (MScEng)

Approved by Piet van Blerk (PrEng)

UDS AFRICA



ATTACHMENTS

Locality Plan

Alternative 1 Preferred Proposal

Figure 1 - Existing AM/PM Peak Hour Traffic Volumes (22 May 2023)

Figure 2 - Projected 2028 AM/PM Peak Hour Traffic Volumes
(Using a 3% growth rate p.a.)

Figure 3 – Distribution of Traffic Generated by the Development

Figure 4 – Estimated 2028 AM/PM Peak Hour Traffic Volumes (Incl. Proposed Development
as well as a 3% growth rate p.a.)

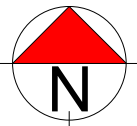


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Locality Plan



SCALE 1: 2500

PLAN 4

PLETTENBERG BAY ERF 6503

ALTERNATIVE 1 PREFERRED PROPOSAL

LEGEND

ZONING:	QTY	AREA (ha)	%
Residential Zone I	9	2,2671	11.86
Residential Zone II	28	2,6675	13.96
Residential Zone IV	5	0,7949	4.16
Open Space Zone II	14	0,6985	3.65
Open Space Zone III	1	10,5784	55.35
Private Road	4	2,1065	11.02
TOTAL	61	19,1129	100

NOTES

- Sizes and dimensions are approximate and subject to final survey
- For Property details, refer to SG 8205/1996
- 0.5m Contour intervals, surveyed by VPM Surveys

DRAWN:	MV	CHECKED:	MV
PLAN NO:	Pr2309PB6503L05		
PLAN DATE:	25 July 2023		
STORED:	z:\drawings\App\Pr2309PB6503L05.dwg		

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APPROVED IN TERMS OF SECTION 23(1) OF THE BITOU MUNICIPALITY'S BY-LAW ON MUNICIPAL PLANNING AS PUBLISHED IN P.N. 273/2015 ON 12 AUGUST 2015

MUNICIPAL MANAGER

DATE: _____



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