1 June 2021 Our Reference: 21-063_Rev0

Bitou Municipality
4 Sewell Street
PLETTENBERG BAY
6600

TRANSPORTATION INVESTIGATION: REDEVELOPMENT AND REZONING OF NORTHERN PORTION OF ERF 2103, PLETTENBERG BAY.

1 INTRODUCTION

Urban Engineering (Pty) Ltd was appointed by Saskia Vogel to conduct a transportation investigation pertaining to the proposed redevelopment and rezoning of the northern portion of erf 2103 in Plettenberg Bay.

2 OBJECTIVE OF THIS REPORT

This study will aim to look at the effect of any additional traffic generated by the proposed development on the surrounding road network. Where necessary, the report will also aim to introduce mitigative measures to reduce this impact at the site as well as on the surrounding transportation network.

3 TERMS OF REFERENCE

Transportation investigations essentially need to be undertaken in accordance with the following guidelines:

- Manual for Traffic Impact Studies RR 93/635 (DoT, 1995)
- South African Traffic Impact and Site Traffic Assessment Manual (TMH 16 Volume 1, COTO)
- South African Trip Generation Rates Manual (SATGRM – RR92/228, 2nd Edition)
- Access Management Guidelines (WCG Dept. Transport and Public Works, 2016)

Based on the Manual for Traffic Impact Studies, there are four (4) scenarios with regards to trip generation threshold values for Transportation Investigations (summarized in Table 3-1 below)

Scenario 1	More than 150 peak hour trips	Prepare a Traffic Impact Study (TIS) also refer to as a Traffic Impact Assessment (TIA)
Scenario 2	Less than 150 and more than 50 peak hour trips	Prepare a Traffic Impact Statement (TISm)
Scenario 3	Less than 50 peak hour trips	No study required, except if the surrounding road network is operating at or above capacity
Scenario 4	A study may be requested at the discretion of the responsible road authority	

Table 3-1 - Trip Generation Thresholds for Transportation Investigations

4 STUDY OBJECTIVES

The study objectives are:

i. Assess the traffic conditions on the existing road network

ii. Assess the traffic generation effects of the proposal (if any)

iii. Assess the interface conditions between the road network and the proposed development

iv. Highlight any traffic concerns resulting from the proposed development (including parking and pickup and drop off requirements at this venture)

v. Make recommendations

5 LOCALITY AND STATUS QUO

Erf 2103 is situated south of Plettenberg Bay's Central Business District, next to DR1775 or Piesang Valley Road. It is currently an undeveloped "green fields" site, zoned for agricultural use (Agricultural Zone 1).

Figure 5-1 - Locality Plan

The DR1775 (Piesang Valley Road) cuts through erf 2103 and separates it into a distinct Northern- and Southern section.

A transportation investigation for the whole of erf 2103 was conducted by Urban Engineering (Pty) Ltd in 2020 and a report for this study was issued in June 2020 [reference 20190616PVD(Rev2)]. Subsequently, the proposed usage for the Northern section was revised to a Doggy Daycare and rehabilitation centre. Only the proposed Doggy Daycare and rehabilitation centre and associated facilities on the section of the erf 2103 north of Piesang Valley Road is the subject of this report.

The Northern section (henceforth referred to as “the site”) is situated within the Piesang River flood plain, and is bordered by Piesang River to the north and DR1775 to the south. A tributary of the Piesang River divides the northern section site into two sections.

Figure 5-2 - Site photograph

A large portion of the northern section of erf 2103 is situated below the 1 in 50-year flood line as indicated in Figure 5-3.

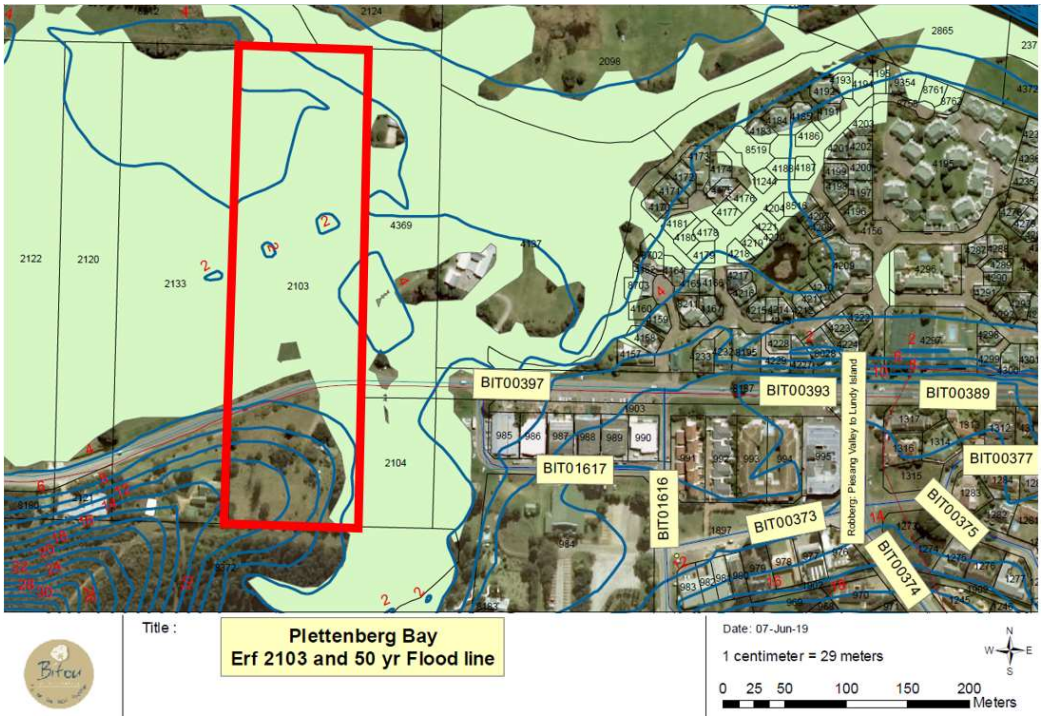


Figure 5-3 - 50 Year Flood Line

6 THE SURROUNDING ROAD NETWORK

Depending on which guidelines are being used, the nomenclature used in road classification varies slightly. The differences between the terms used in the 2006 Department of Transport (DoT) Guidelines and those specified in 2010 in the Road Classification and Access Management Guideline (COTO), are listed below:

Road Class	Function	DoT 2006 Guidelines	COTO 2010 (TRH 26 Manual)
Class 1	Mobility	Primary Distributor	Principal Arterial
Class 2		Regional Distributor	Major Arterial
Class 3		District Distributor	Minor Arterial
Class 4	Access	District Collector	Collector
Class 5		Access Road	Local Street
Class 6		Non-motorised access way	Walkway

Table 6-1 - Road Classification Nomenclature

Piesang Valley Road (or Division Road 1775 or DR1775, as it is also known) used to be a provincial divisional road under the authority of the Western Cape Government's Department of Transport and Public Works. During 2014, the section from km1.90 (Minor Road 7211) to km2.99(Main Road 382) ceased to exist as a divisional road under jurisdiction of the Western Cape Government and continued to exist as a Municipal street under jurisdiction of Bitou Municipality.

Based on the Road Classification reflected on Bitou Municipality's GIS system, the section of Piesang Valley Street relevant to this investigation is currently classified as a **Class 4 Collector Street**. However, according to the document, "Preparation of a Functional Road Hierarchy and Access Management Plan for Bitou Local Municipality" prepared by Aurecon Consulting Engineers in February 2011, Piesang Valley Road is classified as an "**Existing Class 3**" road (refer to Figure 6-1 below).

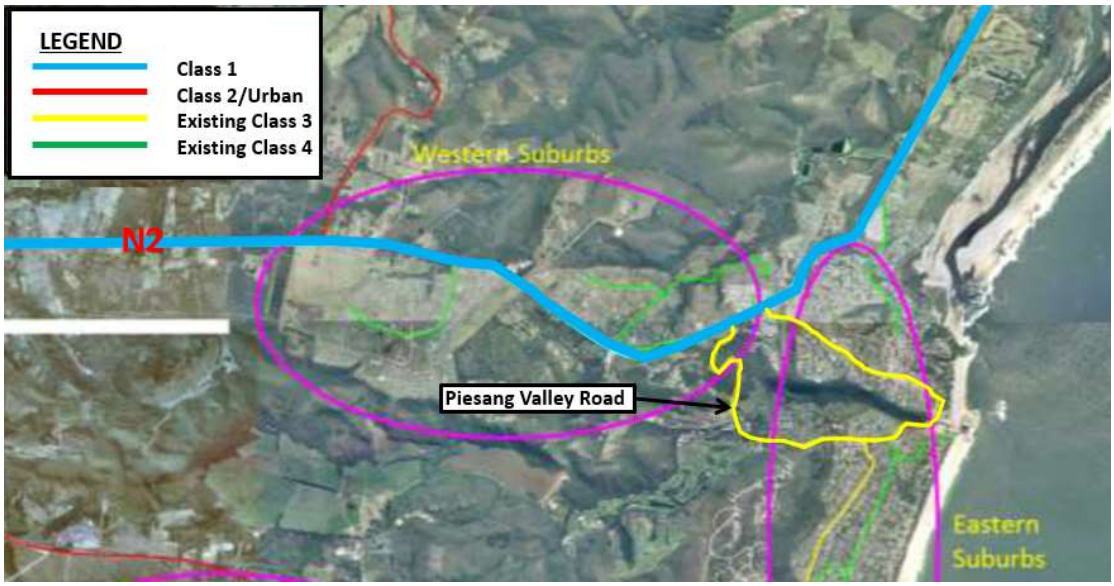


Figure 6-1 – Classification of Piesang Valley Road

6.1 TRAFFIC VOLUMES

The Provincial Government of the Western Cape (PGWC), has embarked on a very detailed traffic count program over the last 20 or so years. This program consists of various counting stations across the Western Cape and traffic counts are conducted on a fairly regular basis. The results of these counts have been made available to the public by means of the PWGC's Road Network Information System (RNIS). Station Nr 2721 is situated at the junction of Piesang valley road, and National Road 2. The Average Annual Daily Traffic Volumes (AADT) counted along the Piesang Valley leg of the intersection has been indicated in tabular format below:

Description	15/11/1999	21/08/2002	09/11/2004	17/03/2010	13/11/2015	06/11/2018
Light	2,408	2,546	3,141	3,988	4,678	4,285
Heavy	230	146	433	316	273	231
Taxi	98	47	76	189	104	156
Bus	27	20	38	4	33	27
Total	2,763	2,593	3,724	4,452	4,324	4,699

A recent, manual traffic count was conducted by Aganang Consulting Engineers as part of the Garden Route District Municipality's Development of a Rural Road Asset Management System. A traffic count was conducted on 12 May 2019 at the junction of Robberg Road and Piesang Valley Road. The results of the count indicated AADT volumes of 6885 and 8991 for the Western and Eastern legs respectively.

6.2 CLASS 4 COLLECTORS

Collector streets are used to penetrate local neighbourhoods with the purpose of collecting (and distributing) traffic between local streets and the arterial system. The streets are mainly intended to serve an access function with limited mobility and traffic volumes; trip lengths and continuity must be limited. They should ideally not carry any through traffic but only traffic with an origin or destination along or near the street. The majority of the traffic using the collector street will have a destination in the street itself or in a local street leading off the collector. A collector street must not be quicker to use to pass through an area than a mobility road although it is recognized that in the absence of a mobility route, collectors must allow for some through traffic, albeit at low speeds. Residential collectors should not carry more than about 10 000 vehicles per day or 1 000 vehicles during peak hours. These volumes are the maximum that can safely be accommodated on this class of streets. If Class 4b residential collector street volumes exceed 10 000 per day, this is an indication that re-classifying the road may be required. The lengths of the roads should be limited to a maximum of about 2 km.

6.3 CLASS 3 URBAN MINOR ARTERIALS

Arterials are used to provide general overall mobility to the whole metropolitan area or city but can also be used to serve important economic activity centres such as airports and harbours. Minor arterials function as through routes. While still carrying predominantly through traffic, they serve shorter distance trips with a length of around 2 km, but can be as short as a single block if connecting higher order routes. The minor arterials would typically carry volumes of traffic, of between 10 000 and 40 000 vehicles per day.

Based on the above guidelines, it is likely that with continued growth within the Bitou area, the importance of the Piesang Valley Road with regards to mobility will also increase. Even though Piesang valley road is currently officially classified as a **Class 4 Collector** (according to Bitou's GIS), this classification should be re-evaluated within the next 5-10 years, to be more aligned with the classification in Bitou Municipality's "*Functional Road Hierarchy*" report (**Class 3 Distributor**).

7 THE PROPOSED DEVELOPMENT

This report addresses the proposed development on the Northern section of erf 2103. The proposed development consists of two single residential dwelling units, a rehabilitation centre for rescued dogs and a dog training centre. A new bridge will be used to cross the Piesang River Tributary where necessary. Access to the site is proposed via Piesang Valley Road (DR1775).

Site Development Plans have been attached as Annexure A to this report, but for ease of reference, relevant extracts of the development plan have been included below.

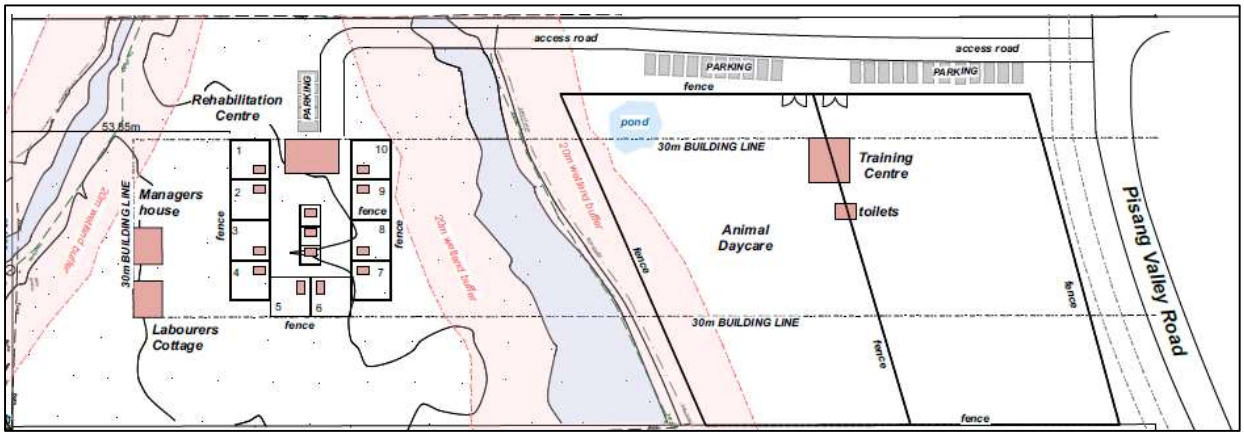


Figure 7-1 – Extract of Site Development Plan

8 TRIP GENERATION (PROPOSED SCENARIO)

The "South African Trip Data Manual, TMH 17 Volume 1," (COTO, September 2012) document was used as the guideline document to estimate the peak hour trips expected to be generated by the proposed development. In terms of trip generation, the development can be divided into three (3 No.) different components, each generating different trip volumes in different peak hours. These components are listed below:

- Manager's house and labourers' cottage (single dwelling units)
- A rehabilitation centre with controlled access (only open to the public on appointment)
- A training facility (only open to the public on appointment)

With regards to the manager's house and labourers' cottage accommodation, the TMH17 document defines single dwelling units as follows:

- **210 Single Dwelling Units -** Single dwelling units are detached houses on individual erven. The units usually have individual accesses to streets.

210 Single Dwelling Units **1D/unit**

Description	AM Peak	PM Peak	Saturday	Sunday
Trip Rate	1	1	0.5	0.5
IN/OUT	25 : 75	70 : 30	50 : 50	50 : 50

There is no TMH17 definition that best fits the ethos of the rehabilitation centre and training facility components of the proposed development. Therefore, the proposed usage of the facilities was used to estimate their trip generation potential.

Rehabilitation centre **1 Kennel**

Description	AM Peak	PM Peak	Saturday	Sunday
Trip Rate	0.2	0.2	0.2	0.2
IN/OUT	50 : 50	50 : 50	50 : 50	50 : 50

Training centre **1 Facility**

Description	AM Peak	PM Peak	Saturday	Sunday
Trip Rate	0	12	12	12
IN/OUT	0 : 0	50 : 50	50 : 50	50 : 50

The resultant trip generation calculation has been attached as Annexure B to this report, but has been summarised in Table 8-1 below for ease of reference.

Description	Size (GLA)	AM Peak		PM Peak		Saturday		Sunday	
		In	Out	In	Out	In	Out	In	Out
Lodging	2 Units	1	2	2	1	1	1	1	1
Rehabilitation centre	10 kennels	2	2	2	2	2	2	2	2
Training centre	Whole facility	0	0	6	6	6	6	6	6
Total		3	4	10	9	9	9	9	9
		7		19		18		18	

Table 8-1 – Resultant trip generation for the proposed development

9 GEOMETRIC CONSTRAINTS

9.1 SITE ACCESS

At the time of writing this report, the development of the neighbouring erf (erf 2104) on the southern side of Piesang Valley Road has been completed. Part of the development conditions for erf 2104, was that a shared access be constructed on the boundary between erf 2104 and the southern section of erf 2103. Part of the reasoning behind the shared access was to protect mobility along Piesang Valley Road. This shared access has been indicated on the development plan of both erven 2104 and 2103 (refer to Figure 9-1 below).

Based on the same principle of protecting mobility, a shared access should be provided for the northern section of erf 2103 and neighbouring erf 4369, as indicated in Figure 9-1 and Figure 9-2 below. The proposed site access to the northern section and the adjacent erf 4369 is directly from DR1775.

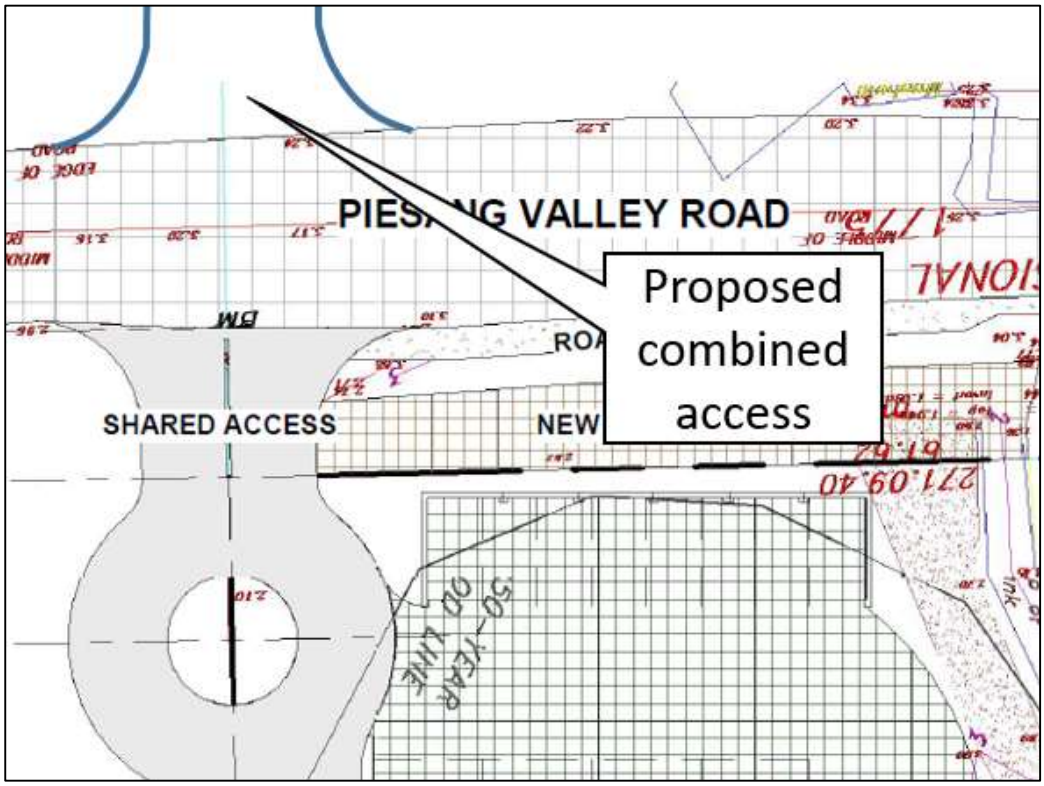


Figure 9-1 – New access aligned with existing access to opposing site

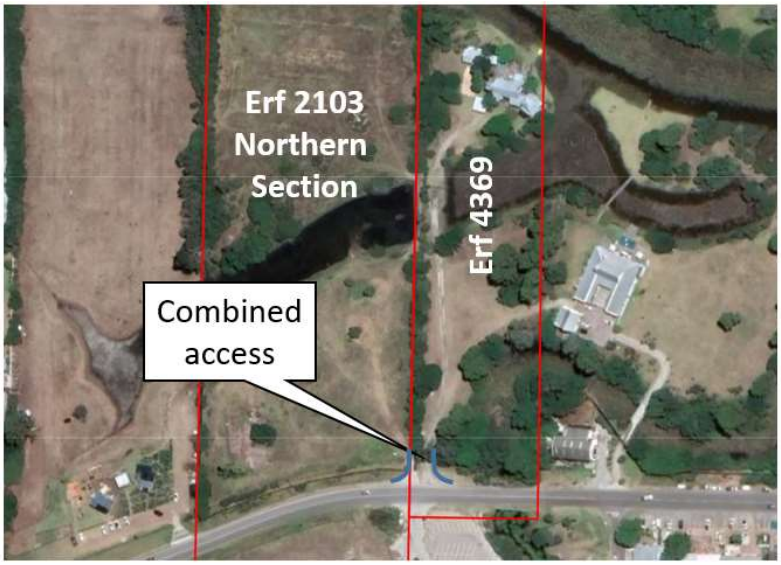


Figure 9-2 – Location of combined access to the Northern section of erf 2103 and erf 4369

9.2 SIGHT DISTANCES

As is evident from the figures below, the Line of sight towards the west and east is acceptable.

Figure 9-3 – Line of site towards the west

Figure 9-4 – Line of site to the east

9.3 THROAT LENGTHS

As no access control is planned for the proposed development, there is adequate stacking distance within the site.

9.4 PARKING

The low intensity use of the proposed development means that actual parking requirements are expected to be low. However, in order to calculate the theoretical parking requirements, the guidelines specified in the *South African Parking Standard (Dot Nov 1985)*, as applicable, have been applied to the development and the results are indicated in the table below.

Description	Number	Description	Parking Requirement	Bays required
Residential	2	Units	1.75 bays per dwelling 0.25 Bays per visitor	4
Rehabilitation centre	10	Kennels	0.25 bays per kennel 2 bays for staff	5
Training centre	12	Trainer	1 bay per trainer	12

Table 9-1 – Parking requirements

The proposed Site Development Plan makes provision for 5 parking bays for the rehabilitation centre and 22 parking bays for the training centre. The total number of bays for these facilities are deemed sufficient. For each facility, 1 parking bay will be reserved for physically disabled persons which in turn satisfies the requirements specified in Bitou Municipality's By-Law as indicated in the table below.

Total no of parking bays	Required number of bays accessible to the physically disabled
1–50	1
51–100	2
101–150	3
151–200	4
For every additional 100 bays	1 additional parking bay

Table 9-2 – Disabled parking bays requirement

The two dwelling units will provide 2 parking bays each in the form of a carport or garage.

9.5 TURNING LANES AT MR344 INTERSECTION

The 2002 guideline document published by the Provincial Administration Western Cape, (*Road Access Guidelines,*) was used to determine whether left and/or right turning lanes are warranted as a result of the additional generated traffic.

Using the worst-case scenario (PM Peak Hour Period) as reference, the guidelines indicate that neither left-or right dedicated turning lanes are warranted (60km/h speed limit).

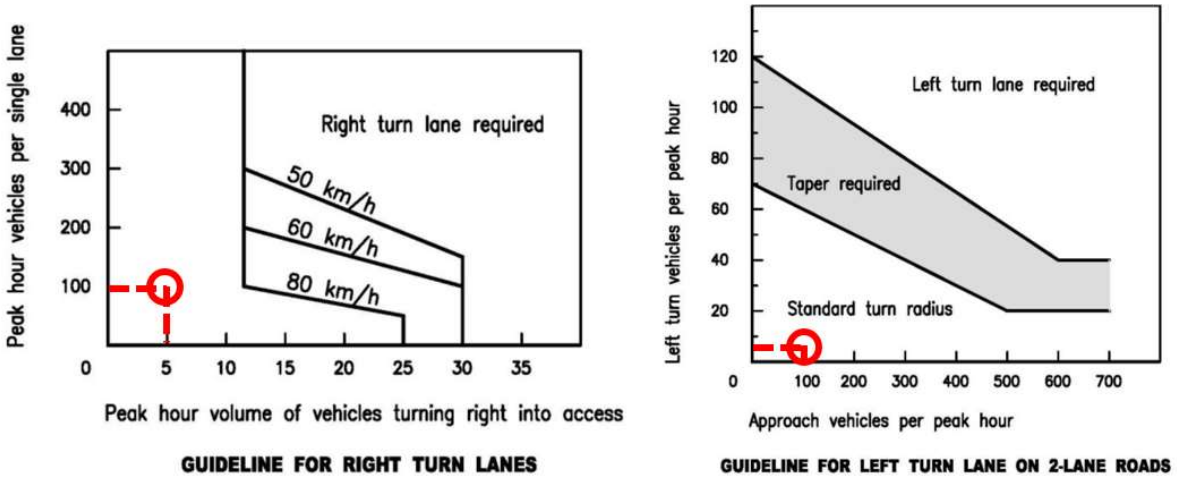


Figure 9-5 - Warrant for turning lanes

10 SUMMARY

The various components of this transportation investigation are summarised below:

- **Road Authority** – The section of Piesang Valley Road (DR1775) relevant to this report, is a Municipal street under jurisdiction of Bitou Municipality
- **Road Classification** – According to Bitou Municipality's GIS system Piesang Valley Road is currently classified as a Class 4 Collector.
- **Trip Generation –** It is estimated that the worst-case scenario will take place during the PM peak hour when a total of 19 (IN and OUT) trips could be generated by the development. Trip

generation volumes can therefore be classified as mild and will easily be accommodated within the surrounding road network.

- **Access points** – A shared access point is required between the Northern section of erf 2103 and erf 4369. This access point should align with the combined access point between erf 2104 and the Southern section of erf 2103. The access point will allow combined ingress and egress to both erf 4369 and the Northern section of erf 2103.
- **Sight distances** –Sight distances for the proposed development are sufficient.
- **Parking –** Parking offering is more than adequate and in line with the specifications of the South African Parking Standards Guideline document.
- **Turning Lanes –** Dedicated Left and Right turn lanes are not warranted.

11 CONCLUSION AND RECOMMENDATIONS

Based on the findings of this report, the impact of the proposed development on the surrounding road network is acceptable and hence it can be supported from a transportation engineering point of view, subject to the following conditions:

1. Access to erf 2103 and erf 4369 should be combined to form one single point of ingress/egress. This, combined section of road should be at least 30 m long.
2. The position of the combined access to the northern section of erf 2103 and erf 4369, must be aligned with the combined access to erf 2104 and the Southern section of erf 2103.
3. All accesses and internal roads should be designed to allow safe egress during periods of high flood levels.
4. No development should be allowed to take place within the road reserve.

Prepared by: _____

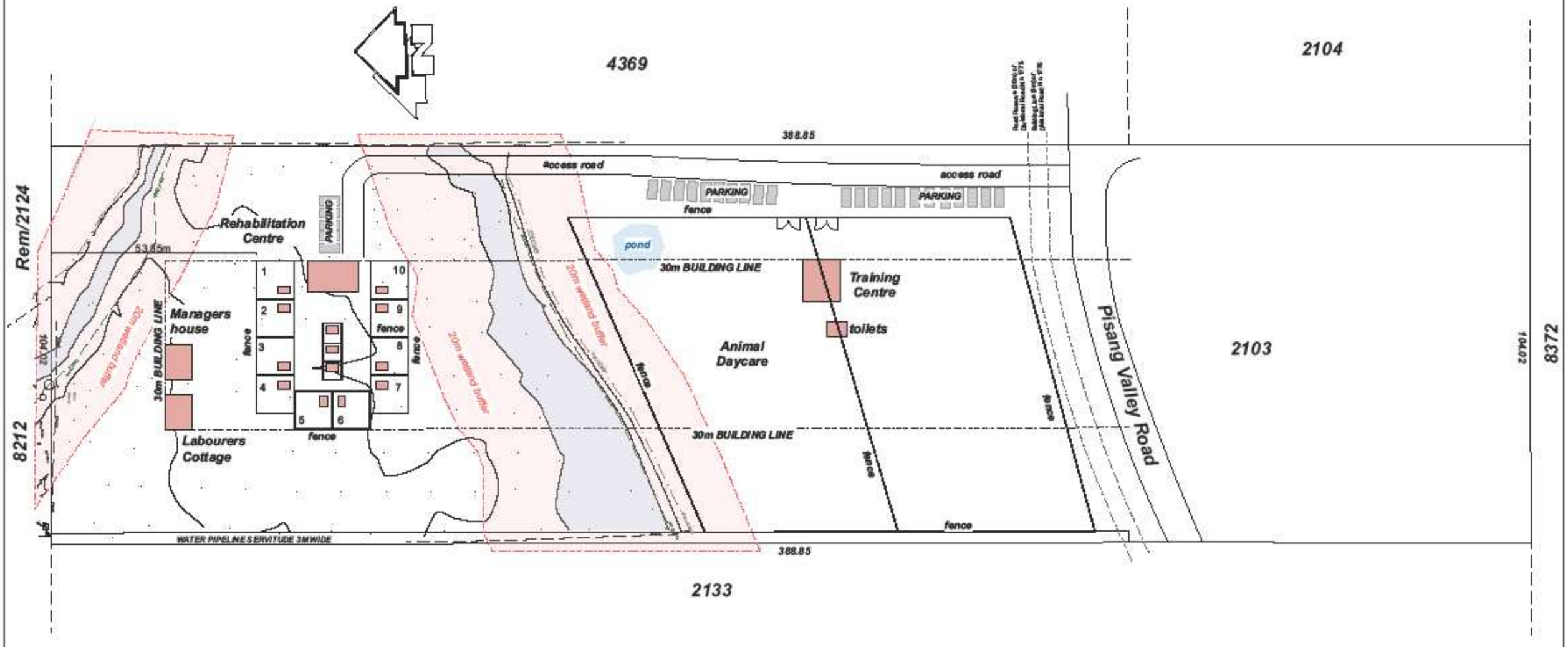
Ruan Espach (B.Eng)
(on behalf of Urban Engineering (Pty) Ltd)

Reviewed by: _____

Digitally signed by Frans van Aardt
Date: 2021.06.03 12:24:10 +02'00'

Frans van Aardt (B.Ing, M.Ing, Pr.Eng)
(on behalf of Urban Engineering (Pty) Ltd)

ANNEXURE A
SITE DEVELOPMENT PLAN



Site Developement Plan 1:1000

ERF 2103, Pisang Valley, Plettenberg Bay
DEVELOPMENT PROPOSAL FOR
TANAKA FOUNDATION
"THE HAPPY PLACE"

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dNA
ARCHITECTURAL DESIGN SOLUTIONS

ANNEXURE B
TRIP CALCULATION SHEET

Description	Size (GLA)	AM Peak		PM Peak		Saturday		Sunday	
		In	Out	In	Out	In	Out	In	Out
Lodging	2 Units	1	2	2	1	1	1	1	1
Rehabilitation centre	10 kennels	2	2	2	2	2	2	2	2
Training centre	Whole facility	0	0	6	6	6	6	6	6
Total		3	4	10	9	9	9	9	9
		7		19		18		18	

Description	Size unit	Daily trip rate	Peaking factor	Hourly trip rate
Animal rehab centre	1 Enclosure	2	0.15	0.3
Training centre	Facility	30	0.4	12

210 Single Dwelling Units **1D/unit**

Description	AM Peak	PM Peak	Saturday	Sunday
Trip Rate	1	1	0.5	0.5
IN/OUT	25 : 75	70 : 30	50 : 50	50 : 50

Rehabilitation centre **Kennels**

Description	AM Peak	PM Peak	Saturday	Sunday
Trip Rate	0.3	0.3	0.3	0.3
IN/OUT	50 : 50	50 : 50	50 : 50	50 : 50

Training centre **1 trainer/animal**

Description	AM Peak	PM Peak	Saturday	Sunday
Trip Rate	0	12	12	12
IN/OUT	0 : 0	50 : 50	50 : 50	50 : 50