IMPACT ASSESSMENTS

1   Potential Traffic Impacts

1.1   Impact Rating System

The impact rating system used for the study is indicated in the tables below. The assessment of impacts is based on the professional judgement of specialists at GIBB, fieldwork, and desk-top analysis. The significance of potential impacts that may result from the proposed development has been determined in order to assist decision making processes related to this project.

The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. The criteria used to determine impact consequences are presented in the following table.

Table 1: Criteria used to determine the Consequence of the Impact

Rating	Definition of Rating	Score
A. Extent– the area over which the impact will be experienced		
None		0
Local	Confined to project or study area or part thereof (e.g. site)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
(Inter) national	Nationally or beyond	3
B. Intensity– the magnitude of the impact in relation to the sensitivity of the receiving environment		
None		0
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered	3
C. Duration– the time frame for which the impact will be experienced		
None		0
Short-term	Up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years	3

The combined score of these three criteria corresponds to a **Consequence Rating**, as follows:

Table 2: Method used to determine the Consequence Score

Combined Score (A+B+C)	0 – 2	3 – 4	5	6	7	8 – 9
Consequence Rating	Not significant	Very low	Low	Medium	High	Very high

Once the consequence has been derived, the probability of the impact occurring will be considered using the probability classifications presented in the following table.

Table 3: Probability Classification

Probability– the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

The overall significance of impacts will be determined by considering consequence and probability using the rating system prescribed in the following table.

Table 4: Impact Significance Ratings

Significance Rating	Possible Impact Combinations		
	Consequence		Probability
Insignificant	Very Low	&	Improbable
	Very Low	&	Possible
Very Low	Very Low	&	Probable
	Very Low	&	Definite
	Low	&	Improbable
	Low	&	Possible
Low	Low	&	Probable
	Low	&	Definite
	Medium	&	Improbable
	Medium	&	Possible
Medium	Medium	&	Probable
	Medium	&	Definite
	High	&	Improbable
	High	&	Possible
High	High	&	Probable
	High	&	Definite
	Very High	&	Improbable
	Very High	&	Possible
Very High	Very High	&	Probable
	Very High	&	Definite

Finally, the impacts will also be considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The system for considering impact status and confidence (in assessment) is laid out in the following table.

Table 5: Impact status and confidence classification

Status of impact	
Indication whether the impact is adverse (negative) or beneficial (positive).	+ ve (positive – a 'benefit')
	– ve (negative – a 'cost')
Confidence of assessment	
The degree of confidence in predictions based on available information, GIBB's judgment and/or specialist knowledge.	Low
	Medium
	High

The impact significance rating should be considered by authorities in their decision-making process based on the implications of ratings ascribed below:

- **Insignificant:** the potential impact is negligible and will not have an influence on the decision regarding the proposed activity/development.
- **Very Low:** the potential impact is very small and should not have any meaningful influence on the decision regarding the proposed activity/development.
- **Low:** the potential impact may not have any meaningful influence on the decision regarding the proposed activity/development.
- **Medium:** the potential impact should influence the decision regarding the proposed activity/development.
- **High:** the potential impact will affect the decision regarding the proposed activity/development.
- **Very High:** The proposed activity should only be approved under special circumstances.

Practicable mitigation measures will be recommended and impacts will be rated in the prescribed way both with and without the assumed effective implementation of mitigation measures. Mitigation measures will be classified as either:

- **Essential**: must be implemented and are non-negotiable; or
- **Optional:** must be shown to have been considered and sound reasons provided by the proponent, if not implemented.

1.2   Traffic Impacts

As indicated in *Chapters 5: Access* and *Chapter 7: Intersection Capacity Analysis*, traffic volumes were assessed to indicate the impact of the proposed developments (Erf 11305 [Site Layout Options A & B] and Erf 1948) during weekday morning and evening peak traffic hours.

A general assessment has been undertaken of impacts on various factors as described below. Note that this assessment does not deal with issues relating to noise, emissions, job creation or environmental matters, as the author is not qualified to comment on these issues.

The following potential traffic related impacts relating to the project have been identified. Note that some impacts will occur over the course of construction of the facilities on site while others will be permanent.

1.2.1 Construction Traffic Impacts

- Increased Construction Traffic on Existing Roads
  Construction vehicles will primarily travel along Victoria Drive to the sites and will interact with existing general traffic on the surrounding roads.
- Road Condition
  The condition of the approach roads, especially Victoria Drive, may be negatively impacted upon by heavy construction vehicles during construction.
- Traffic Safety
  The safety of road users (vehicular traffic and vulnerable road users, e.g. pedestrians and cyclists) along Victoria Drive and the surrounding roads may be compromised due to the higher than normal presence of construction vehicles on these roads.
  The following safety issues may arise:
  - Possible collisions between faster moving passing traffic and slow moving construction vehicles at the entrances to the settlement areas;
  - Possible collisions due to construction vehicles travelling through established residential areas;
  - The drivers of construction vehicles may experience sight distance obstructions at the site access intersections typically caused by the presence of construction related equipment, e.g. dirt bins, temporary road signs, etc.;
  - Impact of construction traffic on residents in the existing informal settlements.

1.2.2 Operational Traffic Impacts

- Increased Traffic and Pedestrian Volumes on Existing Roads
  Additional weekday peak hour vehicle trips will make use of the roads within the study area, namely: Buffelsfontein Road, 17th Avenue, Titian Road, Sibelius Street, Schubert Road, Beethoven Avenue, Glendore Road and Victoria Drive.
  Additional pedestrian movement along Victoria Drive, Beethoven Avenue, Schubert Road, Sibelius Street, Titian Road and Buffelsfontein Road.
- Road Condition
  Additional vehicle trips will make use of Victoria Drive, Beethoven Avenue, Schubert Road, Sibelius Street, Titian Road and Buffelsfontein Road, contributing to deterioration of these roads should no maintenance be effected.
- Operational Capacity
  Additional vehicle trips will necessitate the implementation of intersection upgrades to improve traffic flow on the affected road network.
- Traffic Safety
  The following safety issues may arise:
  - Possible collisions with current pedestrian and vehicle traffic as a result of additional vehicle movements on the affected road network;
  - Possible collisions with public transport vehicles and pedestrians at multiple intersections and access points to community facilities, should no pedestrian and public transport facilities be provided;

➢ Possible collisions with entering and exiting vehicles at the access intersections to Erf 11305 and Erf 1948, as well as all new intersections (internal) associated with these developments, should inadequate sight distances not be provided or maintained.

2   Impact Assessments

This impact assessment has been carried out for all proposed developments, i.e. Erf 11305 (Site Layout Options A & B) and Erf 1948.

2.1   Construction Traffic Impacts

The following table summarises the assessment of the potential Construction Traffic Impacts identified and discussed in the preceding section.

Table 6: Impact Assessment: Construction Traffic Impacts (With Developments)

Assessment		Prior Mitigation										Post Mitigation									
Impact Description	Phase	Extent	Intensity	Duration	Combined Score	Consequence Rating	Probability	Significance	Confidence	Status (+0-)	Mitigation Measures	Classification	Extent	Intensity	Duration	Combined Score	Consequence Rating	Probability	Significance Rating	Confidence	Status (+0-)
Increased Construction Traffic on Existing Roads	Construction	1 – Local	2 – Medium	2 – Medium Term	5	Low	Definite	Low	High	- ve	Ensure construction vehicles are visible and make use of Victoria Drive to gain access to site(s).	Essential	1 – Local	1 – Low	2 – Medium Term	4	Very Low	Definite	Very Low	High	- ve
Road Condition	Construction	1 – Local	2 – Medium	2 – Medium Term	5	Low	Definite	Low	High	- ve	Ensure construction vehicles travel along Victoria Drive only.	Essential	1 – Local	1 – Low	2 – Medium Term	4	Very Low	Definite	Very Low	High	- ve
Traffic Safety – Conflict with General Traffic	Construction	1 – Local	2 – Medium	2 – Medium Term	5	Low	Definite	Low	High	- ve	Install warning signage and ensure adequate sight distance along affected routes.	Essential	1 – Local	1 – Low	2 – Medium Term	4	Very Low	Definite	Very Low	High	+ ve

2.2 Operational Traffic Impacts

The following table summarises the assessment of the potential Operational Traffic Impacts identified and discussed in the preceding section.

Table 7: Impact Assessment: Operational Traffic Impacts (No Developments)

Assessment		Prior Mitigation											Post Mitigation									
Impact Description	Phase	Extent	Intensity	Duration	Combined Score	Consequence Rating	Probability	Significance	Confidence	Status (+0-)	Mitigation Measures	Classification	Extent	Intensity	Duration	Combined Score	Consequence Rating	Probability	Significance Rating	Confidence	Status (+0-)
Increased Traffic and Pedestrian Volumes on Existing Residential Roads - Buffelsfontein Road, 17th Avenue, Titian Road, Sibelius Street, Schubert Road, Beethoven Avenue, Glendore Road and Victoria Drive	Operational	1 – Local	1– Low	3 – Long Term	5	Low	Definite	Low	High	- ve	No development takes place.	Optional	1 – Local	1 – Low	3 – Long term	5	Low	Definite	Low	High	- ve
Road Condition of Existing Residential Roads affected by additional traffic- Victoria Drive, Beethoven Avenue, Schubert Road, Sibelius Street, Titian Road and Buffelsfontein Road, contributing to deterioration of these roads should no maintenance be effected	Operational	1 – Local	2 – Medium	3 – Long Term	6	Medium	Definite	Medium	High	- ve	No development takes place.	Optional	1 – Local	2 – Medium	3 – Long term	6	Medium	Definite	Medium	High	- ve
Operational Capacity – negative effect on intersection capacity	Operational	1 – Local	1– Low	3 – Long Term	5	Low	Definite	Low	High	- ve	No development takes place.	Optional	1 – Local	1– Low	3 – Long Term	5	Low	Definite	Low	High	- ve
Traffic Safety - conflicts between vehicles and pedestrians	Operational	1 – Local	1– Low	3 – Long Term	5	Low	Definite	Low	High	- ve	No development takes place.	Optional	1 – Local	1– Low	3 – Long Term	5	Low	Definite	Low	High	- ve

Table 8: Impact Assessment: Operational Traffic Impacts (With Developments)

Assessment												Prior Mitigation	Post Mitigation								
Impact Description	Phase	Extent	Intensity	Duration	Combined Score	Consequence Rating	Probability	Significance	Confidence	Status (+0-)	Mitigation Measures	Classification	Extent	Intensity	Duration	Combined Score	Consequence Rating	Probability	Significance Rating	Confidence	Status (+0-)
Increased Traffic and Pedestrian Volumes on Existing Residential Roads - Buffelsfontein Road, 17th Avenue, Titian Road, Sibelius Street, Schubert Road, Beethoven Avenue, Glendore Road and Victoria Drive	Operational	1 – Local	2 – Medium	3 – Long Term	6	Medium	Definite	Medium	High	- ve	Upgrade intersections; provide additional facilities for public transport and vulnerable road users (pedestrians and cyclists).	Essential	1 – Local	1 – Low	3 – Long term	5	Low	Definite	Low	High	- ve
Road Condition of Existing Residential Roads affected by additional traffic- Victoria Drive, Beethoven Avenue, Schubert Road, Sibelius Street, Titian Road and Buffelsfontein Road, contributing to deterioration of these roads should no maintenance be effected	Operational	1 – Local	3 – High	3 – Long Term	7	High	Definite	High	High	- ve	Upgrade road network due to increased traffic volumes by 2022 and 2027.	Essential	1 – Local	1 – Low	3 – Long term	5	Low	Definite	Low	High	- ve
Operational Capacity – negative effect on intersection capacity	Operational	1 – Local	3 – High	3 – Long Term	7	High	Probable	High	High	- ve	Improvement of 2 intersections by 2022 and 1 intersection by 2027.	Essential	1 – Local	1 – Low	2 – Medium Term	4	Very Low	Definite	Very Low	High	- ve
Traffic Safety - conflicts between vehicles and pedestrians	Operational	1 – Local	3 – High	3 – Long Term	7	High	Probable	High	High	- ve	Implement public transport and NMT facilities and services, e.g. sidewalks, street lighting, public transport feeder services.	Essential	1 – Local	1 – Low	2 – Medium Term	4	Very Low	Probable	Very Low	High	+ ve