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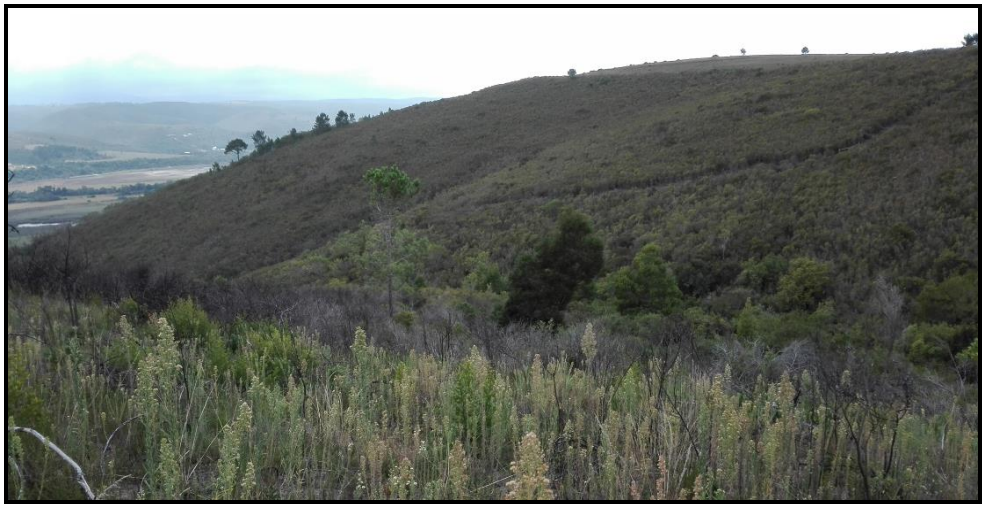
Post-Application Draft Scoping Report (SR) and Plan of Study for Environmental Impact Assessment (POSEIA)



Proposed Greenvalley Mixed-Use Development on Portion 28 & 32 of the Farm Wittedrift No. 306, & Associated Bulk Infrastructure, Plettenberg Bay

This Post-Application Draft Scoping Report is available for review & comment from 23 January 2023 to 22 February 2023

An Open Day will be held on 26 January 2023 at the Green Valley Community Hall, Rotterdam Street, Wittedrift (4pm – 6pm)

Application in terms of the National Environmental Management Act of 1998 (Act No. 107 of 1998), as amended, and the 2014 Environmental Impact Assessment (EIA) Regulations, as amended.

APPLICANT:	Bitou Local Municipality Contact: Melony Anne Paulsen (Director Community Services)
ENVIRONMENTAL CONSULTANT:	Sharples Environmental Services cc Primary Author of Draft Scoping Report: Betsy Ditcham
DEA & DP PROJECT REFERENCE:	Pre-Application: 16/3/3/6/1/D1/7/0076/21
SES REFERENCE NUMBER:	10/POSTAPP/DSR/GREENVALLEY/01/2023
DATE:	January 2023

PROJECT INFORMATION

Report Ref. No:	10/POSTAPP/DSR/GREENVALLEY/01/2023
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COMPILATION		
Role:	**Name:**	**E-Mail Address:**
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Author:	Betsy Ditcham	betsy@sescc.net
Reviewer:	John Sharples	john@sescc.net

Expertise

Sharples Environmental Services cc (SES) is an independent environmental consultancy and has since 1998 been actively engaged in the fields of environmental planning, assessment and management. We advise private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale PV and CPV renewable energy facilities, residential estates, resorts and golf courses to municipal service infrastructure installations and the planning of major arterials. SES has offices in George and in Cape Town.

Author of Report: BETSY DITCHAM (Director and Principle Environmental Assessment Practitioner) - Betsy has a Bachelor of Science Honours Degree in Wildlife Management from the University of Pretoria and a Bachelor of Science Degree (Zoology and Ecology) obtained from the University of Cape Town in 2005. She has 9 years' experience in the environmental field, including environmental assessments, legal compliance, on-site compliance monitoring, cleaner production and business greening and sustainability (carbon and environmental footprinting). In her time as a consultant, she has compiled a number of environment assessments and management plans for both private and governmental clients. Betsy is a shareholder of SES and registered with EAPASA as a certified Environmental Practitioner (EAPSA # 1480).

Report Reviewer: JOHN SHARPLES (Director and Principle Environmental Assessment Practitioner) - John started Sharples Environmental Services in 1998 and has overseen the company's growth and development since then. John also started the Cape Town office in 2010. John holds a Masters in Environmental Management from the University of the Free State as well as a Bachelor's degree in Conservation. He has consulted for 20 years running a team of highly trained and qualified consultants and prior to this gained 12 years of experience working for environmental organizations. John is registered with EAPASA as a certified Environmental Practitioner (EAPASA # 1485).

GLOSSARY OF TERMS

Activity - An activity or operation carried out as part of the construction or operation of the housing development and associated infrastructure.

Alternatives - In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –

i. The property on which or location where it is proposed to undertake the activity;

ii. The type of activity to be undertaken;

iii. The design or layout of the activity;

iv. The technology to be used in the activity, and;

v. The operational aspects of the activity.

Anthropogenic Impacts - Impacts originating in human activity, e.g. pollution, mining, destruction of vegetation etc.

Biodiversity - The diversity, or variety, of plants, animals and other living things in a particular area or region. It encompasses habitat diversity, species diversity and genetic diversity.

Community - Those people who may be impacted upon by the construction and operation of the project. This includes neighbouring landowners, local communities and other occasional users of the area.

Consultation - A process for the exchange of views, concerns and proposals about a proposed project through meaningful discussions and the open sharing of information.

Construction Phase - The stage of project development comprising site preparation as well as all construction activities associated with the development.

Cumulative Impact: The impact of an activity that by itself may not be significant but combined with other existing and potential future impacts may be significant.

Department of Environmental Affairs and Development Planning (DEA&DP) - The Provincial Directorate of the National Department for Environmental Affairs and Tourism. This Department is responsible for evaluating the viability of the development proposal and issuing the appropriate Authorization**.**

Ecology - The study of the interrelationships of organisms with and within their environment.

Ecosystem - The interconnected assemblage of all species populations that occupy a given area and the physical environment with which they interact.

Endemic / Endemism - Found only within the study area / tendency of being found only in the study area.

Environment - The surroundings within which humans exist and that are made up of

i. The land, water and atmosphere of the earth;

ii. /Micro organisms, plant and animal life;

iii. Any Part or combination of (i) and (ii) and the interrelationships among and between them; and

iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental authorization – The authorization by a competent authority of a listed activity.

Environmental Assessment Practitioner (EAP) – The person responsible for planning, management and co-ordination of environmental impact assessment, strategic environmental assessments, environmental management plans or any other appropriate environmental instrument introduced through regulations.

Environmental impact - An environmental change caused by some human act.

Environmental Impact Assessment (EIA) – In relation to an application to which scoping must be applied, means the process of collecting, organizing, analyzing, interpreting and communicating information that is relevant to the consideration of that application. This process necessitates the compilation of an Environmental Impact Report, which describes the process of examining the environmental effects of a proposed development, the anticipated impacts and proposed mitigatory measures.

Environmental Impact Report (EIR) - A report assessing the potential significant impacts as identified during the Scoping phase.

Environmental Management Plan (EMP) - A management programme designed specifically to introduce the mitigation measures proposed in the Reports and contained in the Conditions of Approval in the Authorization.

Fauna - The collective animals of a region.

Flora - The collective plants growing in a geographic area.

Heritage resource - A building, area, a ritual, etc. that forms part of a community's cultural legacy or tradition and is passed down from preceding generations.

Hydrological - (The study of) surface water flow.

Impact - A change to the existing environment, either adverse or beneficial, that is directly or indirectly due to the development of the project and its associated activities.

Integrated Environmental Management - The practice of incorporating environmental management into all stages of a project's life cycle, namely planning, design, implementation, management and review.

Interested and Affected Party (I&AP) – Any individual, group, organization or associations which are interested in or affected by an activity as well as any organ of state that may have jurisdiction over any aspect of the activity.

Mitigation Measures - Design or management measures that are intended to avoid and/or minimise or enhance an impact, depending on the desired effect. These measures are ideally incorporated into a design at an early stage.

NEMA EIA Regulations - The EIA Regulations means the regulations made under the National Environmental Management Act (Act 107 of 1998) (Government Notice No. R 324, R 325, R 326 and R 327 in the Government Gazette of 7th April 2017 refer).

No-go alternative – The option of not proceeding with the activity, implying a continuation of the current situation / status quo.

Operations Phase - The stage of the works following the Construction Phase, during which the development will function or be used as anticipated in the Environmental Authorisation.

Public Participation Process (PPP) - A process in which potential Interested and Affected Parties are given an opportunity to comment on, or raise issues relevant to, specific matters.

Red Data List - Species of plants and animals that because of their rarity and/or level of endemism are included on a Red Data List (usually compiled by the International Union for Conservation of Nature (IUCN)) which provides an indication of their threat of extinction and recommendations for their protection.

Registered Interested and Affected Party – All persons who, as a consequence of the Public Participation Process conducted in respect of an application, have submitted written comments or attended meeting with the applicant or environmental assessment practitioner (EAP); all persons who have requested the applicant or the EAP in writing, for their names to be placed on the register and all organs of state which have jurisdiction in respect of the activity to which the application relates.

Scoping process - A procedure for determining the extent of and approach to an EIA, used to focus the EIA to ensure that only the significant issues and reasonable alternatives are examined in detail

Scoping Report – The report describing the issues identified during the scoping process.

Significant impact – Means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Spatial Development Framework (SDF) - A document required by legislation and essential in providing conservation and development guidelines for an urban area, which is situated in an environmentally sensitive area and for which major expansion is expected in the foreseeable future.

Specialist Study - A study into a particular aspect of the environment, undertaken by an expert in that discipline.

Stakeholders - All parties affected by and/or able to influence a project, often those in a position of authority and/or representing others.

Sustainable Development - Development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. NEMA defines sustainable development as the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

ABBREVIATIONS

BA	Basic Assessment
BAR	Basic Assessment Report
BEE	Black Economic Empowerment
BNG	Breaking New Ground
CA	Competent Authority
CBA	Critical Biodiversity Area
DEA&DP	Department of Environmental Affairs & Development Planning
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
ESA	Ecological Support Area
FLISP	Finance Linked Individual Subsidy Programme
HOA	Home Owners' Association
HWC	Heritage Western Cape
I&AP	Interested and Affected parties
IDP	Integrated Development Plan
LUPO	Land Use Planning Ordinance (Ordinance 15 of 1985)
NEMA	National Environmental Management Act, 1998
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PPP	Public Participation Process
SANS	South African National Standard
TIA	Traffic Impact Assessment
VIS	Visual Impact Statement
WCPSDF	Western Cape Provincial Spatial Development Framework
ZVI	Zone of Visual Influence

BACKGROUND AND PURPOSE OF THIS REPORT

It is a legislative requirement according to the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, as amended, that once an application is submitted to obtain an Environmental Authorisation that potential or registered Interested and / or Affected Parties (interested in the proposed development or affected by the proposed development) are subjected to a consultation period (at least 30 days) on the Draft Scoping Report before their comments are taken into account and responded to in a Final Scoping Report.

Due to the time restrictions now applicable (in terms of number of days allowed before a Final Scoping Report must be submitted to the Competent Authority for consideration), it is required to conduct pre-application public and Authority consultation before an application form is submitted (pre-application phase) in order to resolve key issues of concern from the public and Authorities. **It is therefore critical that comments are received by Key Authorities and the Public on this Pre-Application Draft Scoping Report so that the design of the proposed development can be reviewed and additional specialist input can be obtained before the application form is submitted and the project is subjected to a time limit before which the Final Scoping Report must be submitted.**

The **Pre-Application Draft Scoping Report** was made available to identified Potential Interested & Affected Parties and Automatically Registered Key Authorities to review in order to provide comment on from the **23 April 2021 – 24 May 2021 (30 days).** The Pre-Application Draft Scoping Report was available for free download and review directly from our website (www.sescc.net) under the public documents tab.

Following the Pre-Application public participation period, the Application form was completed and submitted to the Department of Environmental Affairs and Development Planning (DEA&DP).

As per the legislated process, the Pre-Application Draft Scoping Report has been revised based on comments received and the Post-Application Draft Scoping Report is now being made available to identified Potential Interested & Affected Parties and Automatically Registered Key Authorities to review in order to provide comment from **23 January 2023 to 22 February 2023.** Following the second round of public participation, the Post-Application Draft Scoping Report will be finalised and submitted to DEA&DP for consideration (Acceptance/Rejection).

REQUIRED CONTENT OF A SCOPING REPORT AS PER THE 2014 NEMA EIA REGULATIONS

Appendix 2 of Government Notice 326 (7 April 2017) of the National Environmental Management Act No.107 of 1998 (NEMA) 2014 Environmental Impact Assessment (EIA) Regulations states the requirements for the content of a **Final Scoping Report** to be as per the table below. For ease of reference, we have noted in the table below where this required information can be found.

Please note that given the fact that this is a Draft Scoping Report, not all of the information required to be in a Final Scoping Report is yet available.

"A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include the following:"

Table 1: Required content of a Scoping Report according to the 2014 NEMA EIA Regulations and where in this Report the required content can be found	
a) details of- **(i) the EAP who prepared the report; and** **(ii) the expertise of the EAP, including a curriculum vitae;**	**Section 1.3 on page 19 and CV is in Annexure J**
b) the location of the activity, including-	**Section 4.1**

Table 1: Required content of a Scoping Report according to the 2014 NEMA EIA Regulations and where in this Report the required content can be found	
(i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Section 4.1 and Annexure A -C
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	Section 2.5 and Section 4.2
(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	Section 2
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 7
(h) a full description of the process followed to reach the proposed preferred activity, site and location within the site, including - (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 5 – Alternatives Section 6 – Environmental Attributes Section 8 – Public Participation Section 9 – Impacts & Risks Section 10 – Concluding Statement
(viii) the possible mitigation measures that could be applied and level of residual risk;	

Table 1: Required content of a Scoping Report according to the 2014 NEMA EIA Regulations and where in this Report the required content can be found	
(ix) the outcome of the site selection matrix; **(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and** **(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;**	
(i) a plan of study for undertaking the environmental impact assessment process to be undertaken, including- **(i)a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;** **(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;** **(iii) aspects to be assessed by specialists;** **(iv) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;** **(v) a description of the proposed method of assessing duration and significance;** **(vi) an indication of the stages at which the competent authority will be consulted;** **(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and** **(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;** **(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.**	**Annexure I**
(j) an undertaking under oath or affirmation by the EAP in relation to- **(i) the correctness of the information provided in the report;** **(ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and** **(iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;**	**Annexure K**
(k) an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	**Annexure K**
(l) where applicable, any specific information required by the competent authority; and	**N/A**
(m) any other matter required in terms of section 24(4)(a) and (b) of the Act.	**N/A**

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1. Summary and Background

1.1 Summary of Development Proposal

The Bitou Municipality proposes to construct a mixed-use development, consisting mostly of **low- and middle-income housing opportunities (299 single residential units, 165 double duplex, 9 single duplex and 92 high density single units), & associated infrastructure (water and sewage pipeline infrastructure)**. In addition, **business erven, community use areas, a Primary school, an early childhood development centre, places of worship, a sports field and Public Open Spaces** are proposed.

The approximate size of the development footprint for the mixed-use development is 19Ha. This however excludes the area to be disturbed for the installation of the bulk water and sewer infrastructure. It is proposed to construct approximately 6km of bulk water pipeline infrastructure and 5km bulk sewer pipeline infrastructure. Please refer to section 4.2.2 below for the detailed description of the proposed bulk service infrastructure.

The following is proposed to be developed as per the **Detailed Site Layout Plan** shown in **Appendix C1**:

Table 2: Aspects of the Proposed Development

Type of Development	Number
High density row housing	431 units
Single storey residential	299 units
Business	2
Community Use	2
Mixed Use / Commercial	1
Primary School	1
Early Childhood Development Centre	1
Sports	1
Place of Worship	3
POS	8
Roads (Preferred Alternative)	1
Bulk Sewage Pipeline Infrastructure *a new pump station is also proposed not included in the development footprint	**Approx. 5 191m long x 160mm**
Bulk Water Pipeline Infrastructure *A new sump, 3 x booster pump stations, and a new reservoir is also proposed not included in the development footprint.	**Approx. 355m long x 160mm** **Approx. 738m long x 160mm** **Approx. 4 923m long x 355mm**

Various bulk water and sewer infrastructure upgrades and new pipelines are proposed (as described in detail in section 4.2 below) to be constructed to service the mixed-use development proposal. Please refer to **Annexure B** which shows the location of the various bulk sewer pipelines proposed and the location of the proposed bulk water pipeline infrastructure. The proposed conceptual design routes are shown in **Appendix C2 & C3.**

Figure 1 below shows the proposed Site Location for the Mixed-Use Development and bulk sewage and water infrastructure (as per **Annexure A**). Figure 2 below (and **Annexure B**) shows the proposed site layout for the mixed-use development and the location of the proposed bulk water and sewage infrastructure proposed which is required to service the development.

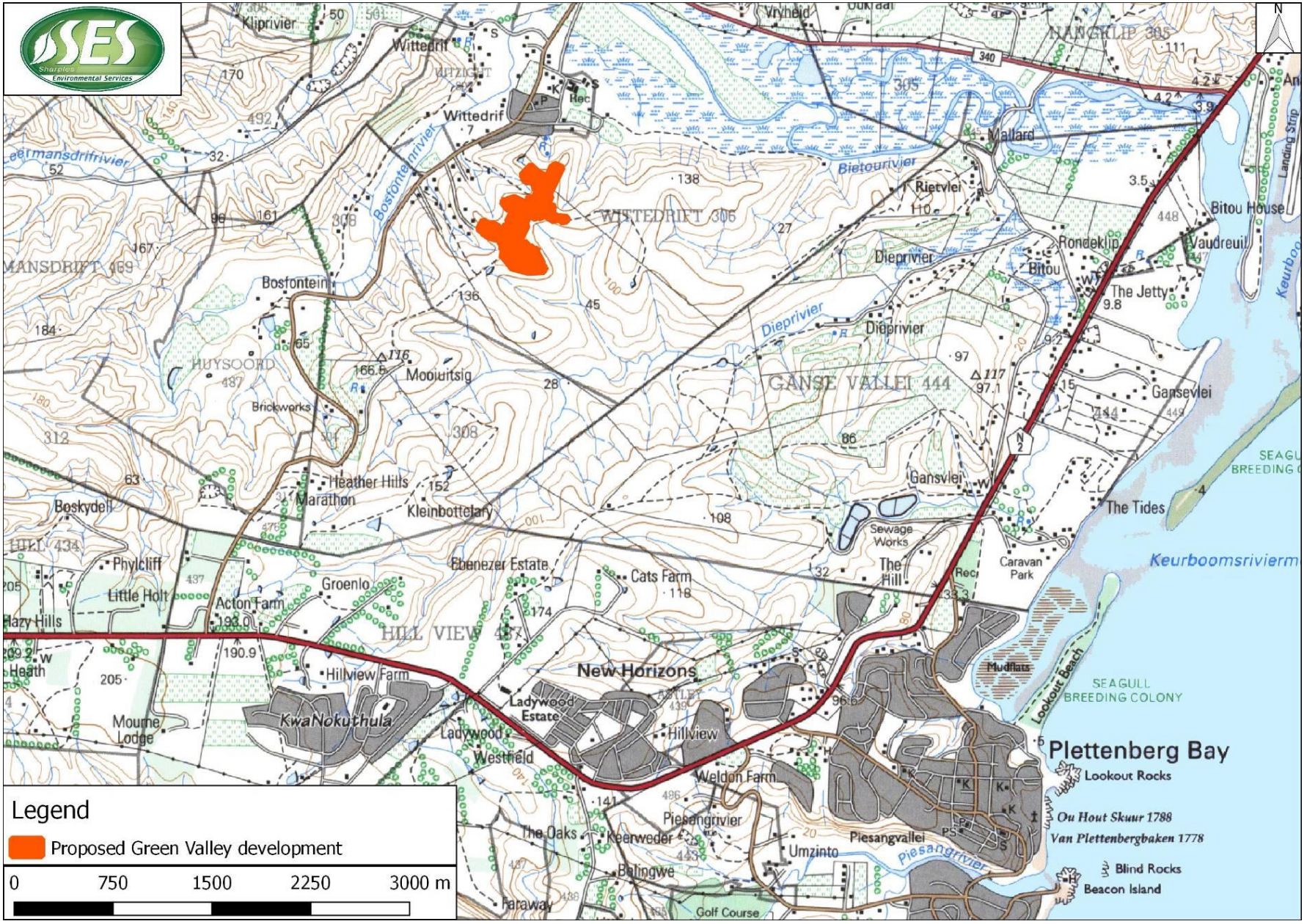

Figure 1: *The proposed location for the mixed use development, relative to Wittedrift and Plettenberg Bay.*

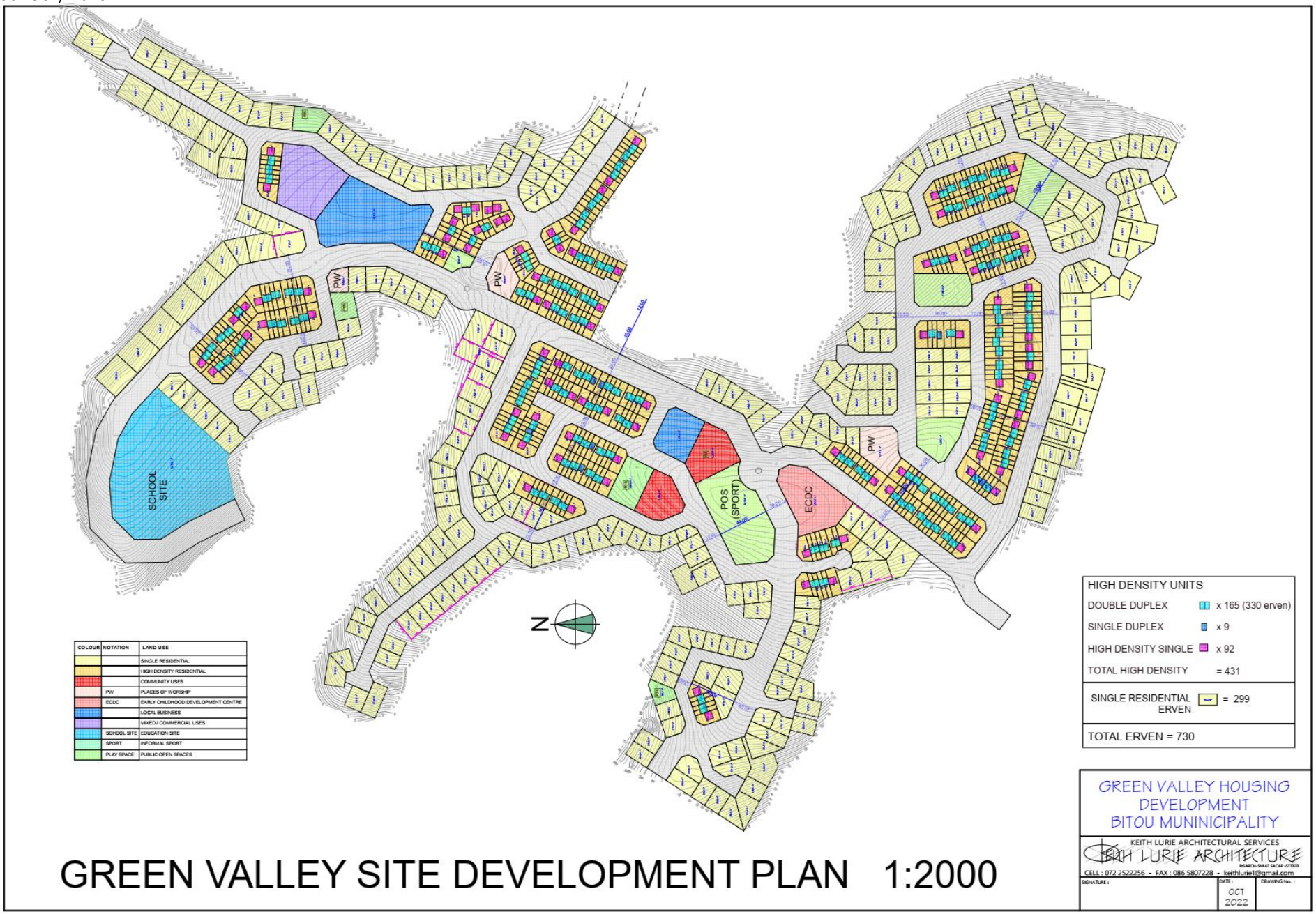

Figure 2: Conceptual Site Layout Plan for Proposed Mixed Use Development.

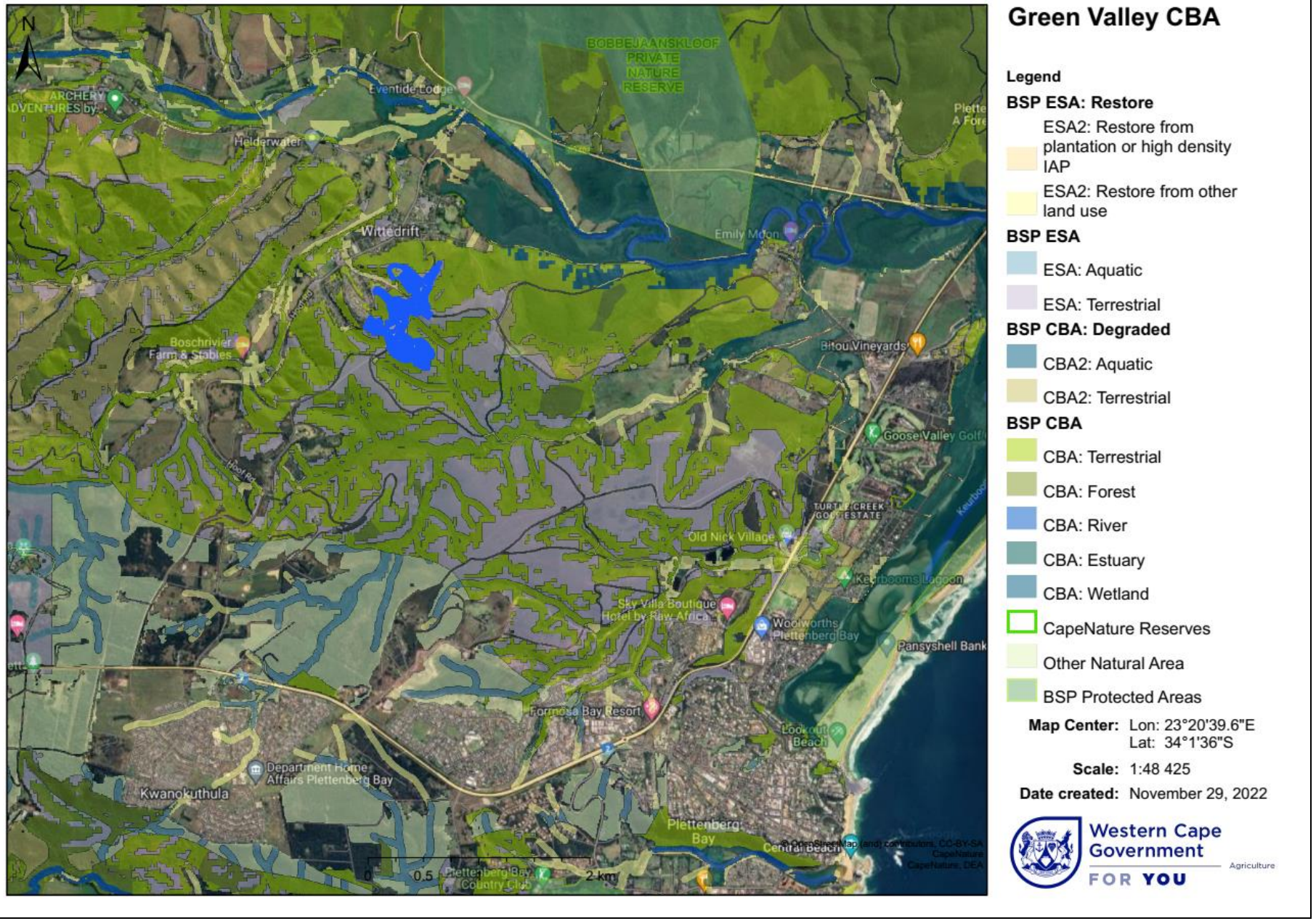

Figure 3: Map showing the Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA) as mapped in the 2017 Western Cape Biodiversity Framework

1.2 Summary of Need & Desirability

The Bitou Local Municipality Integrated Development Plan 2022-2027 (IDP) highlights the Bitou Municipalities phenomenal population growth over the past two decades. In 2021 the population of Bitou was reported at 69 321 people, making it the most populated municipal area in the Garden Route District (GRD). This total is expected to grow to 77 243 by 2025, equating to an average annual growth rate of 2.7 per cent.

The key challenges associated with this rate of population growth are outlined in the IDP to be as follows:

- **The need for additional housing opportunities;**
- The need for additional infrastructure services and bulk infrastructure;
- Increasing backlogs of infrastructure maintenance;
- Encroachment and illegal dwellings;
- More Illegal electrical connections;
- Increased unemployment;
- Increased health hazards; and
- Increases in crime.

With 21195 households in the Bitou municipal area, 71.1 per cent had access to formal housing, the lowest when compared with other municipalities in the GRD area. The District average was 82.7 per cent. Considering the high level of households living in informal dwellings (25.7 per cent), access to formal housing is a challenge in the Bitou municipal area.

Table 3 below summarises the housing and land need in the municipality for the main settlements and the rural areas. It is derived from the work on the waiting list databases of the municipality and the Department of Human Settlement (DHS).

Table 3: Current need for subsidized housing in Bitou and forecast to 2030 (Source: Bitou IDP 2017-2022)

Township	Item	Incremental Demand needed per Town (calculated from LUB)				Supply	
		Demand Database (Backlog)(ha)	Inc. 2016-2025 (ha)	Inc. 2025-2040 (ha)	2016-2040 (incl. Backlog) (ha)	SDA Areas (ha)	Planned Current Units
Kwanokuthula/ New Horizons/ Qolweni-Bossiesgif	Dwelling Units	5 347	4 489	7 655	17 491		4 425
	Land (ha)	155	176	301	632	307	
Plettenberg Bay Town	Dwelling Units	371	1 164	1 957	3 491		810
	Land (ha)	11	47	79	137	409	
Kranshoek	Dwelling Units	1 207	987	1 686	3 880		1 457
	Land (ha)	38	41	70	148	87	
Wittedrift	Dwelling Units	330	152	253	735		-
	Land (ha)	10	6	10	27	44	
Kurland	Dwelling Units	884	495	832	2 211		344
	Land (ha)	26	19	33	79	89	
Total Area	Dwelling Units	8 139	7 287	12 383	27 808		7 036
	Land (ha)	240	289	493	1 022	936	

There are therefore currently approximately 330 dwelling units on backlog in the Wittedrift area, which is anticipated to increase to 735 by 2040. This proposed extension to the existing Green Valley settlement will therefore contribute to reducing this number through the development of its proposed 299 single residential units and 431 high-density units (total of 730 units).

The 2022 Bitou Local Municipality Spatial Development Framework (SDF) states that future development in Wittedrift must be based on the settlement planning principles of walking distance as the primary measure of access, and functional and socio-economic integration between Wittedrift and Green Valley.

Several Strategic Development Areas have been identified where the current and future housing demand can be accommodated:

- Portion 28 of the Farm Wittedrift 306 (SDA17) at the top of the hill adjacent to Green Valley:

This government owned land is already listed as a project in the Bitou Housing Project Pipeline (Green Valley Phase 2) and is intended to cater for the development of 730 IRDP units to address the current backlog (informal settlements in Green Valley) and to cater for future demand (GAP and IRDP).

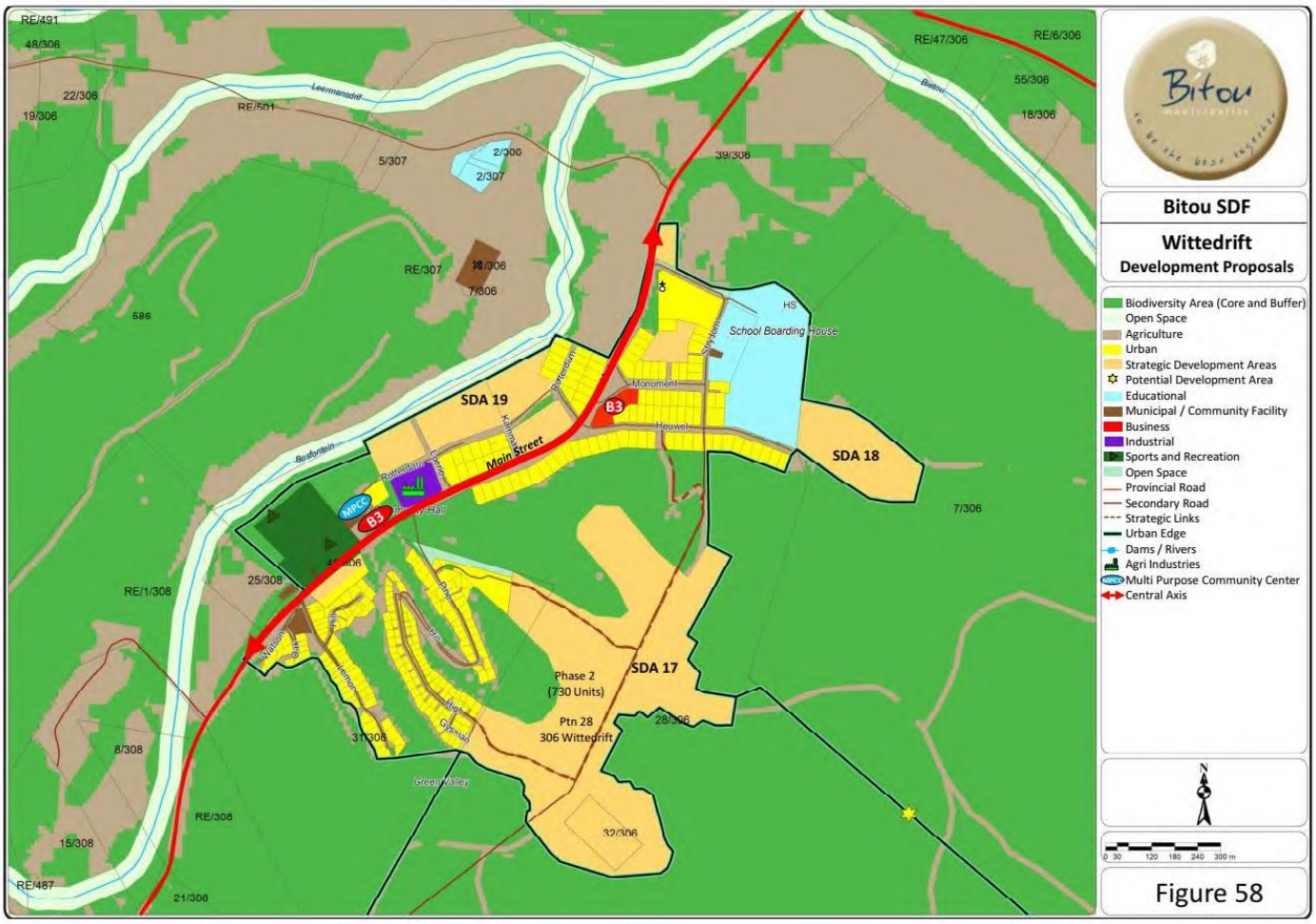

Figure 4: Wittedrift Conceptual Proposal as outlined in the Bitou SDF (2022).

Tony Barbour stated in the Socio-Economic Baseline Assessment (**Appendix H1**) that the proposed development is compatible with and supports the key principles and objectives contained in the relevant key land use planning and policy documents that pertain to the area, including the Western Cape Provincial Spatial Development Framework (2014), Bitou Local Municipality Integrated Development Plan 2019 and the Bitou Local Municipality Spatial Development Framework (2019). The site is within the urban edge and located in an area that has been identified as suitable for development in the Bitou Spatial Development Framework (SDF).

1.3 Details of the Environmental Assessment Practitioner (EAP)

Sharples Environmental Services cc is an independent environmental consultancy and has, since 1998, been actively engaged in the fields of environmental planning, assessment and management. We advise private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale PV and CPV renewable energy facilities, residential estates, resorts and golf courses to municipal service infrastructure installations and the planning of major arterials. SES has offices in George and in Cape Town.

The Principal EAP for this proposed development is **Betsy Ditcham.**

Betsy has a Bachelor of Science Honours Degree in Wildlife Management from the University of Pretoria and a double Bachelor of Science Degree (Zoology and Ecology) obtained from the University of Cape Town in 2005. She has 10 years' experience in the environmental field, including environmental assessments, legal compliance, on-site compliance monitoring, cleaner production

and business greening and sustainability (carbon and environmental footprinting). In her time as a consultant, she has compiled a number of environment assessments and management plans for both private and governmental clients. Betsy is a part-owner and Director of SES and has received her registration as an Environmental Impact Assessment Practitioner from EAPASA (Reg No: 1480).

Please refer to **ANNEXURE J** to view the Curriculum Vitae for Betsy Ditcham (author of this report).

2. Legislation and Policy Pertaining to this Application

2.1 The Scoping / EIA Process

Due to the fact that a mixed-use development of this size and nature is a "Listed" activity in the 2014 EIA Regulations promulgated in December 2014, and amended in 2017, it is required to undertake a Full Scoping and EIA Process. The Scoping and EIA Process is outlined in the figure below. The Competent Authority (Authority that will either grant or refuse the application) is the Provincial Department of Environmental Affairs & Development Planning, Western Cape.

The EIA process is informed by the Environmental Impact Assessment (EIA) Regulations Government Notice No. R 326 (7th April 2017) and typically follows four main phases, namely**, pre-application Public and Authority consultation Scoping Phase**, an **Application Phase, a post-application Scoping Phase and associated consultation and an Environmental Impact Assessment Phase and associated consultation** as illustrated in the Figure below. We are currently in the first stage of Post-Application Public & Authority Participation (Scoping Stage).

The objective of the "Scoping" Process, it to, through a consultative process to:

- Identify the **relevant policies and legislation** relevant to the activity;
- Motivate the **need and desirability** of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- identify and confirm the **preferred activity and technology alternative** through an identification of **impacts and risks and ranking process of such impacts and risks;**
- identify and confirm the **preferred site,** through a detailed site selection process, which includes an identification of impacts and risks inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- **identify the key issues to be addressed in the assessment phase;**
- **agree on the level of assessment** to be undertaken, including the methodology to be applied, the expertise required as well as the **extent of further consultation** to be undertaken to **determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts** to inform the location of the development footprint within the preferred site; and
- identify **suitable measures to avoid, manage or mitigate** identified impacts and to determine the **extent of the residual risks that need to be managed and monitored.**

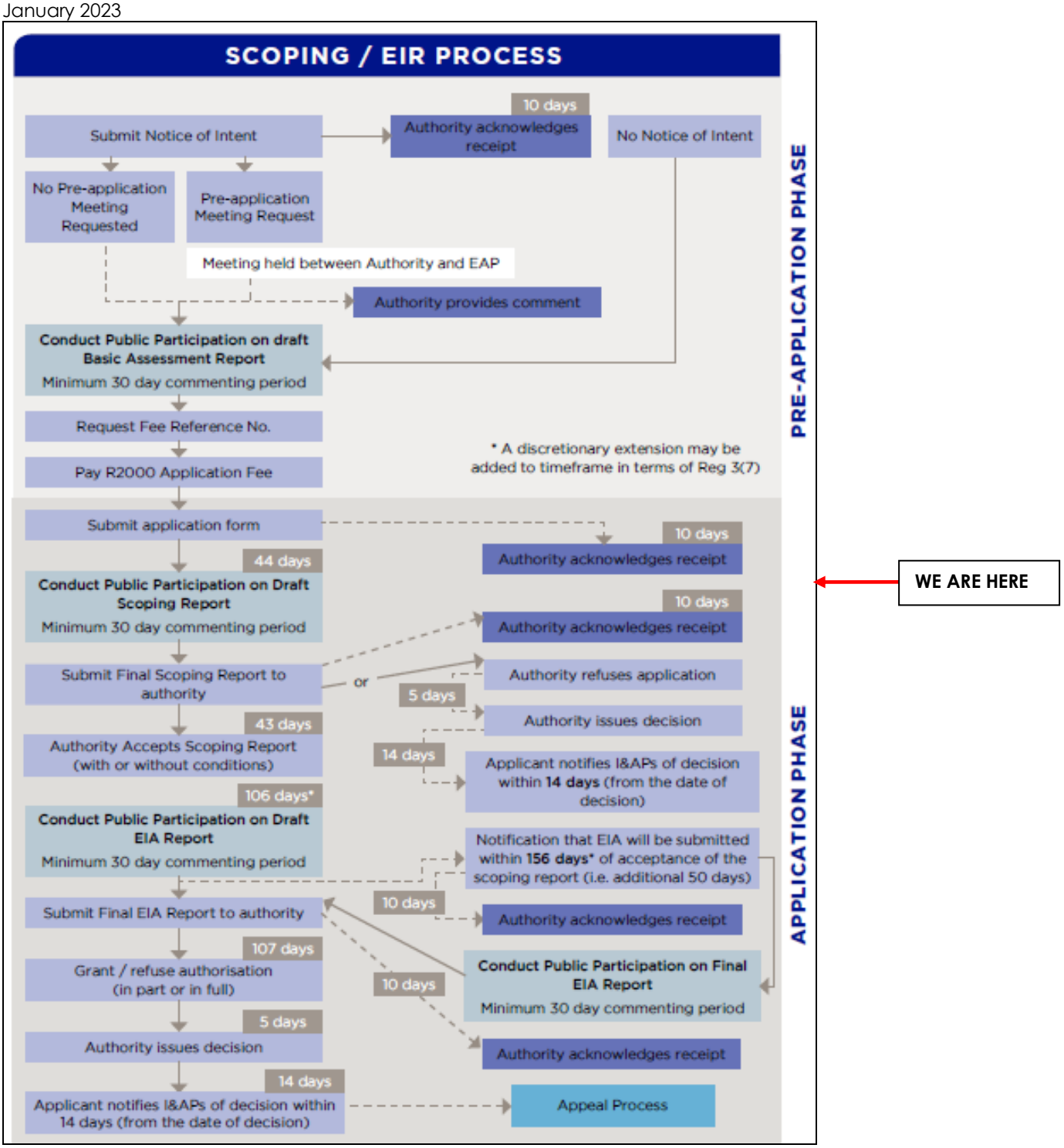

Figure 5: ***The Scoping / EIA Process***

2.2 List of Significant Regulations, Guidelines, Frameworks & Policies

The following Regulations (Acts) pertain to this development proposal and have been considered during the assessment process:

- The Constitution of South Africa (Act 108 of 1996);
- The National Environmental Management Act (NEMA), Act No 107 of 1998, as Amended;
- The Environmental Impact Assessment Regulations, December 2014, including Government Notices 982, 983, 984 and 985;
- National Environmental Management Biodiversity Act (Act 10 of 2004);
- National Waste Act (Act No. 59 of 2008);

- National Water Act (Act No. 36 of 1998);
- National Forest Act (Act No. 84 of 1998);
- National Biodiversity Act (Act No. 10 of 2004);
- National Heritage Resources Act (Act No 25 of 1999);
- The National Veld and Forest Fire Act (Act No 101 of 1998)
- The National Health Act (No. 61 of 2003) and Health Act 63 of 1977;
- Conservation of Agricultural Resources Act – CARA (Act 43 of 1983);
- Subdivision of Agricultural Land Act (Act 70 of 1970);
- Occupational Health and Safety Act (Act 85 of 1993);
- National Building Regulations and Building Standards Act (Act No 103 of 1977);
- Infrastructure Development Act (Act No.23 of 2014);
- Land Use Planning Ordinance (LUPO) Section 8 Scheme Regulations;
- Land Use Planning Act (LUPA) (Act No. 3 of 2014);
- Spatial Planning and Land Use Management Act (Act No 16 of 2013);
- National Roads Act (No. 93 OF 1996);
- Road Traffic Management Corporation Act (No. 20 OF 1999);
- The Municipal Systems Act (Act 32 of 2000);
- The Physical Planning Act (Act 125 of 1999);

The following guidelines pertain to this development proposal and have been considered during the assessment process:

- Circular EADP 0028/2014: One Environmental Management System
- Guideline for Determining the Scope of Specialist Involvement in EIA Processes;
- Guideline for the Review of Specialist Input into the EIA Process;
- Guideline for Involving Biodiversity Specialists in EIA Processes;
- Guideline for Involving Heritage Specialists in EIA Processes;
- Guideline for Involving Visual and Aesthetic Specialists in EIA Processes;
- Guideline for Environmental Management Plans;
- Guideline on Public Participation;
- Guideline on Alternatives;
- Guideline on Need and Desirability;
- DEAT (2002) Scoping, Information Series 2 ((Integrated Environmental Management Information Series: Impact Significance); and
- DEA (2010), Guideline on Need and Desirability, Integrated Environmental Management Guideline Series 9.

National, Provincial & Municipal Development Planning Frameworks considered during the assessment process include:

- National Development Plan 2030 (2012);
- Western Cape Provincial Spatial Development Framework (PSDF) 2014;
- Bitou Local Municipality Integrated Development Plan (IDP) 2022-2027;
- Bitou Local Municipality Local Economic Development Framework (2013);
- Bitou Local Municipality Integrated Human Settlements Plan (2011);
- Bitou Local Municipality Spatial Development Framework (SDF) (2022);
- The Western Cape Department of Human Settlements Strategic Plan (2015 -2020);
- Bitou Land Use Planning By-Law;

2.3 Summary Description of Relevant Significant Policy Documents

2.3.1 The Constitution of South Africa (Act No 108 Of 1996)

The Constitution of South Africa is the supreme law of the country of South Africa. It provides the legal foundation for the existence of the republic, sets out the rights and duties of its citizens, and defines the structure of the government. The constitution includes the right to have the environment protected.

Section 24 of The Constitution states the following:

Everyone has the right —

- to an environment that is not harmful to their health or well-being; and
- to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that —
    - prevent pollution and ecological degradation;
    - promote conservation; and
    - secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

2.3.2 The NEMA, Act No 107 of 1998, as Amended, and the EIA Regulations (2014)

The National Environmental Management Act (NEMA; No. 107 of 1998, as amended) gives effect to the Constitution of the Republic of South Africa by providing a framework for co-operative environmental governance and environmental principles that enable and facilitate decision-making on matters affecting the environment. NEMA requires that an environmental authorisation be issued by a competent authority (CA) before the commencement of an activity listed in Environmental Impact Assessment Regulations Listing Notices G.N. 324, 325, 326 & 327 published on the 7th April 2017.

Due to the fact that this development proposal is an activity listed in the EIA Regulations, a Full Scoping & EIA Process is required and the respective reports (Scoping and EIA) must be submitted to the Department of Environmental Affairs before they issue the Bitou Municipality with an Environmental Authorisation (either approval or rejection of the development proposal).

2.3.3 National Environmental Management: Biodiversity (Act 10 of 2004)

This Act is to provide for the management and conservation of South Africa's biodiversity through the protection of species and ecosystems; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; and the establishment of a South African National Biodiversity Institute.

This Act controls the management and conservation of South African biodiversity within the framework of NEMA. Amongst others, it deals with the protection of species and ecosystems that warrant national protection, as well as the sustainable use of indigenous biological resources. Sections 52 & 53 of this Act specifically make provision for the protection of critically endangered, endangered, vulnerable and protected ecosystems that have undergone, or have a risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention through threatening processes.

2.3.4 Conservation of Agricultural Resources Act – CARA (Act 43 Of 1983)

CARA provides for the regulation of control over the utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species. The Conservation of Agricultural Resources Act also defines different categories of alien plants. The purpose of this act is to ensure the long term sustainable use and conservation of natural agricultural resources. The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA) has the objective to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants. It is the only legislation promoting the sustainable use of natural agricultural resources at farm level.

2.3.5 Subdivision of Agricultural Land (Act No. 70 of 1970)

The purpose of this Act is to control the subdivision and use of Agricultural Land. Subdivision is likely to be needed where various portions of various farms need to be excised from the current farms and consolidated into a new property.

2.3.6 National Water Act (Act No 36 of 1998)

The Act provides the framework for the sustainable management of South Africa's water resources. It aims to protect, use, develop, conserve, manage and control water resources as a whole, promoting integrated water resource management that involves participation of all stakeholders. The Act declares the national government to be the public trustee of the nation's water. The Act is administered by the national Department of Water Affairs (DWA) via regional offices. The following section 21 "water uses" require Water Use Authorisation (either in the form of a Water Use License (WULA) or a General Authorisation (GA) Water Use Registration:

a) taking water from a water resource;
b) storing water;
c) impeding or diverting the flow of water in a watercourse;
d) engaging in a stream flow reduction activity contemplated in section 36;
e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
g) disposing of waste in a manner which may detrimentally impact on a water resource;
h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
i) altering the bed, banks, course or characteristics of a watercourse;
j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
k) using water for recreational purposes.

The proposed development requires a Water Use License (WUL) in terms of Chapter 4 and Section 21 (c) and (i) of the National Water Act No. 36 of 1998 and this must be secured prior to the commencement of construction.

These water uses will be associated with the following activities:

- The construction of infrastructure within the regulated area of the identified watercourses
- Wastewater pipelines crossing rivers, adjacent to rivers, as well as within 500 m of the boundary of a wetland.
- Earthworks and storm water runoff and erosion/sediment during construction
- Storm water runoff management during operation

The findings of the Aquatic Risk Matrix Assessment undertaken show that due to development risk being calculated as 'Moderate' (after mitigation) the development cannot be authorised in terms of the GA (General Authorisation) for Section 21 (c) and (i) water use under this scenario and requires a full license application. Also, the GA for Section 21 c and i water use does not apply for "Any water use associated with the construction, installation or maintenance of any sewerage pipeline, pipelines carrying hazardous materials and to raw water (wastewater) and wastewater treatment works" and therefore a full WULA is required.

A water use license is currently being applied for through the online eWULAAs system and with the BGCMA.

2.3.7 National Forest Act (Act No 84 of 1998)

The purpose of this Act is to:

- promote the sustainable management and development of forests for the benefit of all;
- create the conditions necessary to restructure forestry in Sate forests;
- provide special measures for the protection of certain forests and trees;
- promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes;

- promote community forestry;
- promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination.

This Act is governed by the National Department of Agriculture, Forestry and Fisheries who is a key commenting Authority in this EIA Process.

2.3.8 National Heritage Resources Act (Act No 25 of 1999)

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). Heritage Western Cape (HWC) is the enforcing authority in the Western Cape, and is registered as a Stakeholder for this environmental process. In terms of Section 38 of the National Heritage Resources Act, HWC will comment on the development proposal. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process. The National Heritage Resources Act requires relevant heritage authorities to be notified regarding this proposed development, as the following activities are relevant that require **Heritage Approval**:

a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

b) the construction of a bridge or similar structure exceeding 50 m in length;

c) any development or other activity which will change the character of a site—

i. exceeding 5 000 m^2 in extent; or

ii. involving three or more existing erven or subdivisions thereof; or

iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or

iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

d) the re-zoning of a site exceeding 10 000 m^2 in extent;

A Notice of Intent to Develop Application and associated Heritage Statement will therefore be submitted to Heritage Western Cape for their consideration.

2.3.9 The National Development Plan 2030 (2012)

In 2009 the South African government established the National Planning Commission (NPC). This Commission chaired by the Minister in the Presidency for national planning is charged with the responsibility to develop a long-term vision and strategic plan for South Africa. Given its responsibility to ensure greater synergy in terms of national planning imperatives, it is of paramount importance to align local government development and planning objectives with the overall national imperatives.

In November the NPC released its National Development Plan entitled "Vision for 2030". The following are the key priority areas of the plan:

- Creating an economy that will create more jobs.
- Improving infrastructure.
- Ensuring the transition to a low carbon economy.
- Enduring an inclusive and integrated rural economy.
- Reversing the spatial effects of apartheid.
- Improving the quality of education, training and innovation.
- Quality healthcare for all.
- Social protection.
- Building safer communities.
- Reforming the public services.
- Fighting corruption.
- Transforming the society and uniting the country.

2.3.10 Provincial Spatial Development Framework (2014)

Barbour (2016) explains that the overall policy objective of the PSDF is to secure environmentally sustainable development and the use of natural resources while promoting socio-economic development in the Western Cape Province.

Aim

The aim of the Western Cape PSDF is to:

- Give spatial expression to the national (i.e. NDP) and provincial (i.e. OneCape 2040) development agendas;
- Serve as basis for coordinating, integrating and aligning 'on the ground' delivery of national and provincial departmental programmes;
- Support municipalities to fulfil their Municipal Planning mandate in line with the national and provincial agendas; and
- Communicate government's spatial development intentions to the private sector and civil society.

Guiding Principles

Barbour (2016) states that the Western Cape's new PSDF is based on a number of spatial principles that is relevant to the proposed development, namely:

- Spatial justice – targeting the marginalised and disadvantaged groups in society. Inclusionary settlements focus on the public realm, supporting equitable access and making urban opportunities accessible to all, especially the poor.
- Sustainability and resilience – land development should be spatially compact, resource frugal, compatible with cultural and scenic landscapes and should not involve the conversion of high potential agricultural land or compromising ecosystems.
- Spatial efficiency – compaction as opposed to sprawl is preferred. Mixed use as opposed to mono-functional and prioritisation over public transport rather than private car use. When a settlement is compact higher densities provide thresholds to support viable public transport, reduce overall energy use and lower travel cost.
- Accessibility – Improving access to services, facilities, employment, training and recreation including improving the choice of safe and efficient transport nodes.
- Quality and liveability – a good environment is one that is diverse, varied and unique. Public spaces are the living rooms to settlements where people meet, play and relax. They need to be safe and attractive.

The PSDF emphasizes the need for creating compact and inclusive communities. Infill development is seen as a key strategy. Policies in the PSDF that are of relevance to this development proposal include:

- **Policy S3: Promote compact, mixed use and integrated settlements;**
- **Policy S5: Promote sustainable, integrated and inclusive housing;**

With regards to the vision as set out by the Western Cape PSDF, the proposed development directly meets the vision in that it proposes to develop a compact mixed use development, which will include inclusive housing opportunities. Furthermore, should this development proposal be accepted, the vision of 'working cape' will be addressed as a variety of short and long-term employment opportunities would be created through the proposed development, both during the construction and operational phases of the proposed development.

2.3.11 Western Cape Department of Human Settlements Strategic Plan (2015 - 2020)

Barbour (2017) explains that the vision set out in the Western Cape Department of Human Settlements Strategic Plan (2015-2020) is for residents of the Western Cape to have access to liveable, accessible, safe and multi-opportunity settlements. The mission of the Department of Human Settlements is:

- To provide settlements that offer good basic and socio-economic services;
- To offer a range of rental and ownership options that respond to the varied needs and incomes of households; and
- To consistently improve settlements through joint citizen and government effort supported by private sector contributions.

The strategy notes that in order to achieve the Department's vision, it will focus on increased housing opportunities and improved settlement functionality, efficiencies and resilience. Three strategic priorities have been developed to deliver on this mandate:

- Shift more resources to upgrade informal settlements in order to deal with problems of poor living conditions and insufficient access to basic services;
- Clean up the Housing Demand Database in municipalities in order to ensure that limited 'Building New Ground' (BNG) opportunities are allocated to the most deserving beneficiaries; and
- Embark on strategic partnerships in order to provide GAP/Affordable Housing and rental opportunities.

Barbour (2017) states that the Strategy notes that the National Development Plan (NDP) highlights the need for spatial transformation as a national priority. For the Western Cape, spatial planning is informed by the Western Cape Provincial Spatial Development Framework (PSDF). There are a number of key policy objectives that underpin the PSDF that are of relevance to the proposed development, namely:

- A strong sense of place and quality environments within settlements at all scales is increasingly recognised as an essential dimension of sustainable development.
- Accessibility to opportunities and services is a keystone to building a strong regional economy and facilitating equitable access to opportunities and services in a financially sustainable manner;
- The provision of sustainable and effective social services requires that these are rationalised, clustered and managed in an integrated manner;
- The provision and facilitation of an integrated and multi-modal transport system, relies on the appropriate location of mixed use areas and increased settlement densities to ensure adequate thresholds for sustainable public transport.

2.3.12 Bitou Local Municipality Integrated Development Plan (2017 - 2022)

The vision of the Bitou LM (Vision 2022) is "To be the best together". Its mission statement states **"We partner with communities and stakeholders to sustainably deliver quality services so that everyone in Bitou can live and prosper together".**

The Bitou LM's strategic developmental objectives are aligned with key national and provincial strategic goals. Council has approved the following objectives:

STRATEGIC OBJECTIVE	
SO1	Provide Excellent Service Delivery to the residents of Bitou Municipality.
SO2	Re-establish, grow and expand tourism within the municipality.
SO3	Put relevant control measures in place to ensure efficiency and excellence.
SO4	Provide basic service delivery to informal settlements and the poor.
SO5	Facilitate growth, jobs and empowerment of the people of Bitou.
SO6	To ensure the safety of residents and visitors of Bitou municipality
SO7	To build institutional and financial sustainability.

Barbour (2017) explains that sections 3 and 4 of the 2019 IDP are dedicated to an overview and analysis of the development challenges confronting the Bitou LM. The key challenges identified are the following:

- Huge backlogs in service infrastructure requiring municipal expenditure;
- Rising unemployment rates;
- Increases in inequality (Gini-coefficient);
- Extreme concentration of taxable income in affluent areas;
- Rising crime levels;
- Seasonality of the local tourism-based economy;
- Spatial separation and disparities between towns;
- In-migration of low skilled workers;

- Poor or lacking health facilities; and
- Environmental degradation.

Barbour (2016) states that during the period 1996 to 2011, the Bitou population mushroomed from 18 427 to 49 162 – an average growth rate of 5.4% per year from 1996 to 2011. The IDP notes that at the current rate of population increase the population will reach 100 000 by 2025. Key challenges associated with this are the following:
- The need for additional housing opportunities;
- The need for additional infrastructure services and bulk infrastructure (also to cater for seasonality);
- Increasing backlogs of infrastructure maintenance;
- Encroachment and illegal dwellings;
- More Illegal electrical connections;
- Increased unemployment;
- Increased health hazards; and
- Increases in crime.

The IDP also included key needs indicated by the various wards. The key needs identified by the Ward 7 communities, which includes Wittedrift and Green Valley, include:
- **Provision of housing;**
- **Upgrading and improving the existing sewage system;**
- Upgrading and maintenance of sports fields;
- **Provision of land for businesses;**
- Upgrade and maintain roads;
- Create employment opportunities and skills development;
- Improve services provided by local clinic at Green Valley;
- Establish a satellite police station at Green Valley;
- Construct a new primary school for Green Valley.

The latest 2022 - 2027 IDP highlights the Bitou Municipalities phenomenal population growth over the past two decades. In 2021 the population of Bitou was reported at 69 321 people, making it the most populated municipal area in the Garden Route District (GRD). This total is expected to grow to 77 243 by 2025, equating to an average annual growth rate of 2.7 per cent.

The key challenges associated with this rate of population growth are outlined in the IDP to be as follows:
- **The need for additional housing opportunities;**
- The need for additional infrastructure services and bulk infrastructure;
- Increasing backlogs of infrastructure maintenance;
- Encroachment and illegal dwellings;
- More Illegal electrical connections;
- Increased unemployment;
- Increased health hazards; and
- Increases in crime.

With 21195 households in the Bitou municipal area, 71.1 per cent had access to formal housing, the lowest when compared with other municipalities in the GRD area. The District average was 82.7 per cent. Considering the high level of households living in informal dwellings (25.7 per cent), access to formal housing is a challenge in the Bitou municipal area.

Table 3 below summarises the housing and land need in the municipality for the main settlements and the rural areas. It is derived from the work on the waiting list databases of the municipality and the Department of Human Settlement (DHS).

Table 4: Current need for subsidized housing in Bitou and forecast to 2030 (Source: Bitou IDP 2017-2022)

Township	Item	Incremental Demand needed per Town (calculated from LUB)				Supply	
		Demand Database (Backlog)(ha)	Inc. 2016-2025 (ha)	Inc. 2025-2040 (ha)	2016-2040 (incl. Backlog) (ha)	SDA Areas (ha)	Planned Current Units
Kwanokuthula/ New Horizons/ Qolweni-Bossiesgif	Dwelling Units	5 347	4 489	7 655	17 491		4 425
	Land (ha)	155	176	301	632	307	
Plettenberg Bay Town	Dwelling Units	371	1 164	1 957	3 491		810
	Land (ha)	11	47	79	137	409	
Kranshoek	Dwelling Units	1 207	987	1 686	3 880		1 457
	Land (ha)	38	41	70	148	87	
Wittedrift	Dwelling Units	330	152	253	735		-
	Land (ha)	10	6	10	27	44	
Kurland	Dwelling Units	884	495	832	2 211		344
	Land (ha)	26	19	33	79	89	
Total Area	Dwelling Units	8 139	7 287	12 383	27 808		7 036
	Land (ha)	240	289	493	1 022	936	

There are therefore currently approximately 330 dwelling units on backlog in the Wittedrift area, which is anticipated to increase to 735 by 2040. This proposed extension to the existing Green Valley settlement will therefore contribute to reducing this number through the development of its proposed 299 single residential units and 431 high-density units (total of 730 units).

The 2022 Bitou Local Municipality Spatial Development Framework (SDF) states that future development in Wittedrift must be based on the settlement planning principles of walking distance as the primary measure of access, and functional and socio-economic integration between Wittedrift and Green Valley.

Several Strategic Development Areas have been identified where the current and future housing demand can be accommodated:

- Portion 28 of the Farm Wittedrift 306 (SDA17) at the top of the hill adjacent to Green Valley:
  This government owned land is already listed as a project in the Bitou Housing Project Pipeline (Green Valley Phase 2) and is intended to cater for the development of 730 IRDP units to address the current backlog (informal settlements in Green Valley) and to cater for future demand (GAP and IRDP).

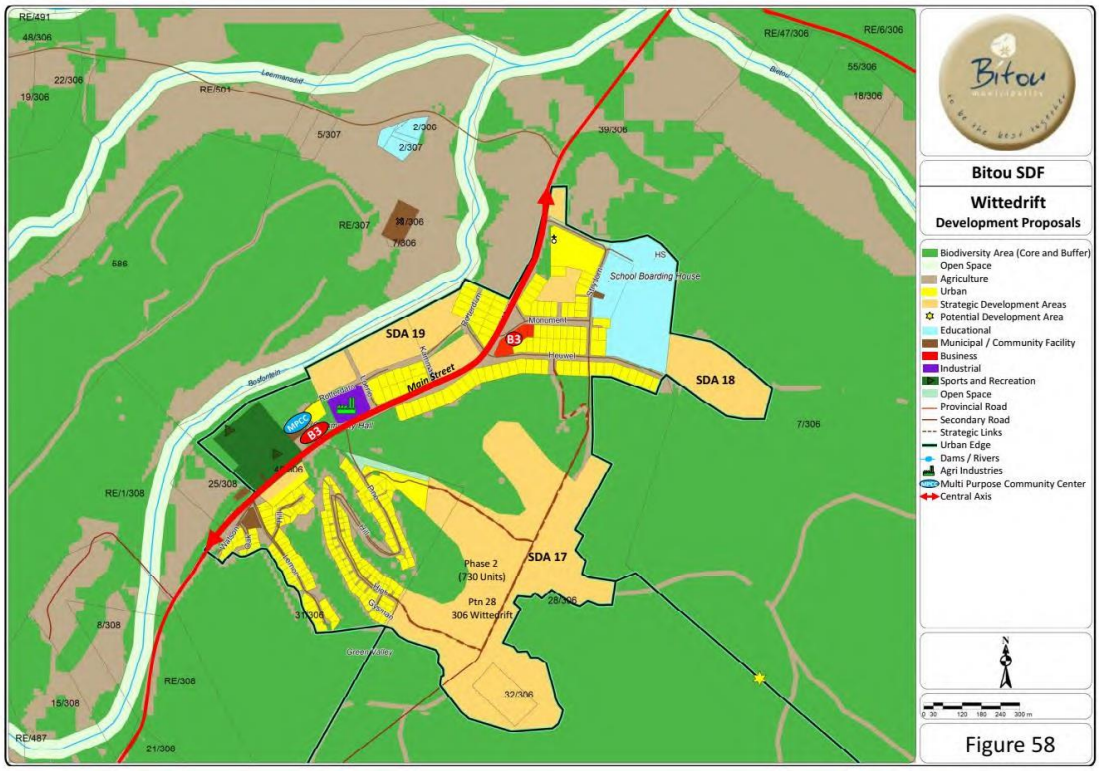

Figure 6: Wittedrift Conceptual Proposal as outlined in the Bitou SDF (2022).

2.3.13 Bitou Local Municipality Spatial Development Framework (2022)

Key objectives of the SDF include:

- Providing a spatial representation of the land development policies, strategies and objectives of the municipality in the context of local, district, provincial and national directives;
- Coordinating and integrating the spatial expression of the sectoral plans of the local and/ or provincial sector departments;
- **Addressing inefficient, impoverished and scattered land use patterns where the poor is generally located far away from places of socioeconomic opportunities;**
- Indicating the desired and intended pattern of land use development in the urban and rural parts of the municipality, including the delineation of areas in which development in general or development of a particular type would not be appropriate;
- **Managing the conflicting demand between agriculture, forestry, urban expansion and biodiversity conservation areas;**
- **Providing mechanisms for the establishment of a functional relationship between urban and rural areas both spatially and economically;**
- Identifying priority investment areas in urban and rural parts of the municipality;
- Focusing on defining the economic footprint of the municipality and formulating strategies on how this can be enhanced in a sustainable manner;
- Coordination and alignment of the municipal SDF with the district and provincial SDF, neighbouring municipal SDFs, and any other regional plans applicable;
- Channel public and private investment into priority areas and align the capital investment programmes of the municipality and different government departments into these areas in pursuit of the five SPLUMA principles;
- Link all of the above to the Municipal Budget via the Bitou Integrated Development Plan (IDP).

The SDF projects that:

- The Bitou LM population stands at approximately 59 157 people comprising an estimated 20 040 households.
- The Bitou LM population growth rate (3.8%) and household growth rate (5.8%) are significantly higher than that of any of the surrounding municipalities which could pose serious future challenges in terms of service delivery and job creation.
- Approximately 64.1% of households earn less than R3 500 per month. This poverty is mainly concentrated in Kranshoek, New Horizons, Bossiesgif, Kwanokuthula, Green Valley and Kurland.
- The bulk of the economic activity and employment opportunities are located in Plettenberg Bay town, while the potential in Harkerville, Wittedrift and Kurland/The Crags/Covie is limited.
- The housing demand stands at approximately 8 238 units which need to be addressed at appropriate densities on well-located land and with due consideration to the establishment of economic activities in these areas.
- The provision of community facilities and sufficient engineering services also need to be considered as part of the housing programme, in line with the national objective to establish sustainable human settlements.
- The projected additional population up to 2025 is about 17 968 people, representing 7 755 additional households.
- By 2040 the Bitou LM would need to accommodate an estimated additional 107 000 people, representing approximately 42 808 households.
- When adding the current housing backlog of 8 238 units (households) to the 7 755 additional households, then approximately 548 ha of land would be required for urbanisation purposes up to 2025 earmarked (at an average gross density of about 29 units/ha). This excludes the land demand for holiday accommodation which represents non-permanent residents.
- By 2040 the amount of land required will stand at about 1 066 ha comprising 692 ha for housing and 374 ha for other uses (calculated at average density = 27 units /ha).
- The 1 066 ha represents about 49.5% of the existing urban footprint of the Bitou LM, estimated at about 2 157 ha.

The BSDF states that future development in Wittedrift must be based on the settlement planning principles of walking distance as the primary measure of access, and functional and socioeconomic integration between Wittedrift and Green Valley.

Several Strategic Development Areas have been identified where the current and future housing demand can be accommodated:

- Portion 28 of the Farm Wittedrift 306 (SDA17) at the top of the hill adjacent to Green Valley:
  This government owned land is already listed as a project in the Bitou Housing Project Pipeline (Green Valley Phase 2) and is intended to cater for the development of 730 IRDP units to address the current backlog (informal settlements in Green Valley) and to cater for future demand (GAP and IRDP).

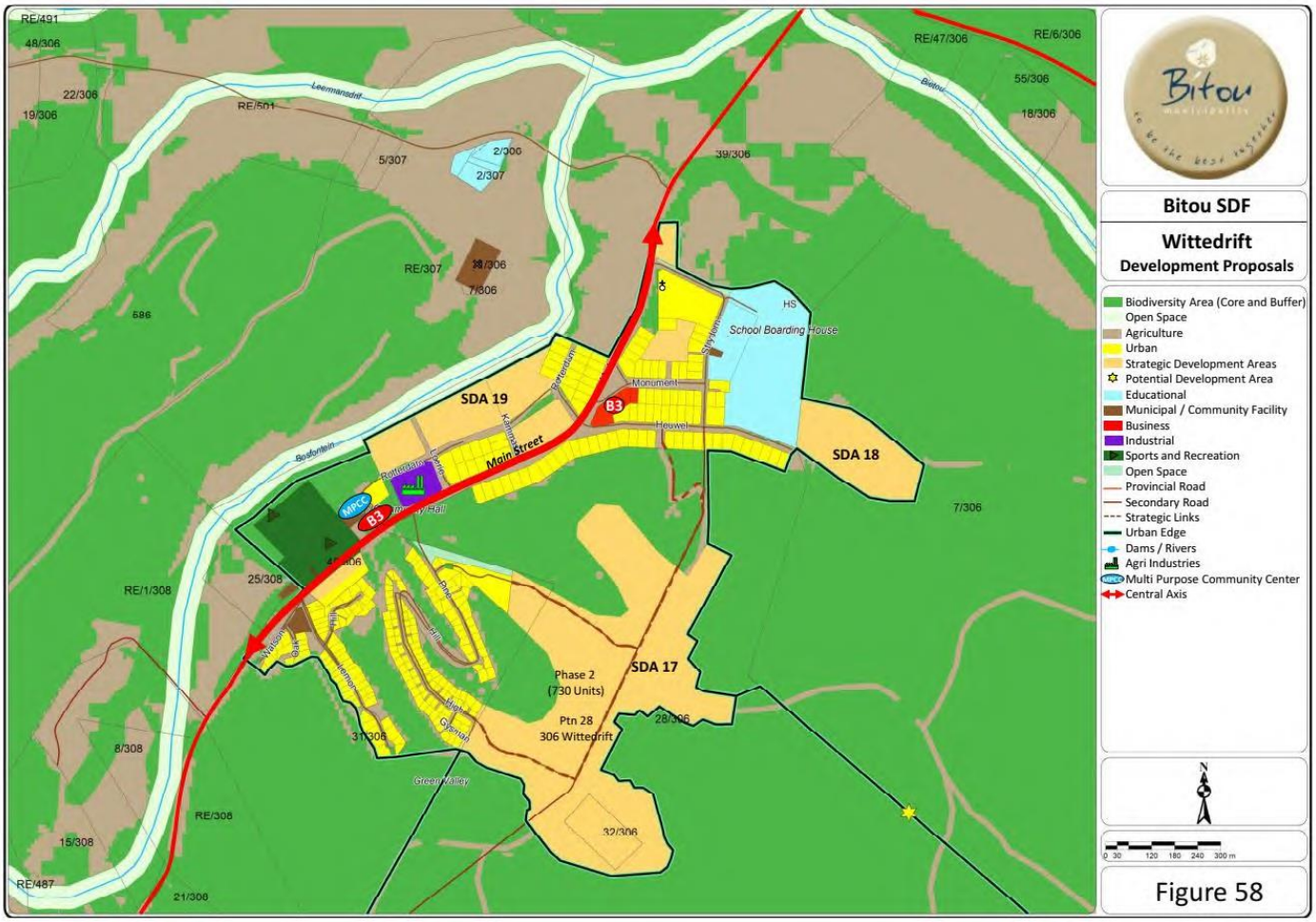

Figure 7: Wittedrift Development proposal (Source: Bitou SDF 2019)

2.3.14 Bitou Local Municipality Housing Integrated Human Settlements Plan (2011)

Barbour (2017) explains that in terms of Wittedrift/Green Valley the HSP notes that the current backlog was 277 and that an additional 633 would be needed to meet future demand. **The total number of housing units identified was therefore 910.** The SDF does, however, note that the future expansion of Wittedrift / Green Valley should be limited due to the areas limited economic development potential.

2.3.15 Spatial Planning and Land Use Management Act (2013)

Barbour (2017) explains that a number of the objectives set out in Section 3 of SPLUMA have a bearing on the proposed development, including:

- To provide a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;
- To ensure that the system of spatial planning and land use management promotes social and economic inclusion;
- To provide for development principles and norms and standards;
- To provide for the sustainable and efficient use of land;
- To provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and

- To redress the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.

In order to realise these objectives, Section 4 of SPLUMA introduces a new spatial planning system for the whole of South Africa. The spatial planning system has a number of components. The following are relevant to the study:

- Spatial Development Frameworks to be prepared and adopted by national, provincial and municipal spheres of government. In terms of Section 22, the Municipal Planning Tribunal (or other authority) may not make a decision which is inconsistent with a municipal development framework, although departures may be allowed, in certain circumstances, for site specific considerations;
- Development principles, norms and standards that are to guide spatial planning, land use management and land development. Development principles include the principle of spatial justice, spatial sustainability, efficiency, spatial resilience and good administration;
- The management and facilitation of land use through the mechanism of land use schemes. All municipalities are required to adopt land use schemes for their entire areas within 5 years after the commencement of SPLUMA.

2.4 Approvals Required Pre-Construction and Planning Phase

The table below summarises the various environmental and planning approvals required from the various Authorities, before the construction of the development may take place.

Table 5: Summary Pre-Construction Environmental & Planning Approvals Required

Competent Authority	In terms of Legislation	Type of Approval / Licence / Required
The Western Cape Department of Environmental Affairs and Development Planning (DEA & DP)	National Environmental Management Act (NEMA) and the 2014 EIA Regulations (April 2017)	**Environmental Authorisation** required in terms of the NEMA EIA Regulations (2014) for the activities listed in section 2.5 below.
Department of Water Affairs & Sanitation (DWS)	The National Water Act (NWA)	A **Water Use Authorisation** is required for approval of the following water uses: **21c) – impeding or diverting the flow of water in a watercourse;** **21i) - altering the bed, banks, course or characteristics of a watercourse;**
Heritage Western Cape (HWC)	National Heritage Resources Act (NHRA) – Section 38	A Notice of Intent to Develop Application (NID) is required to be submitted. **A "Final Comment"** is required for approval of the following Section 38 activities: **a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;** b) the construction of a bridge or similar structure exceeding 50 m in length; **c) any development or other activity which will change the character of a site—** **i. exceeding 5 000 m² in extent; or** **ii. involving three or more existing erven or subdivisions thereof; or** iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority; d) **the re-zoning of a site exceeding 10 000 m² in extent;**
Bitou Local Municipality	Section 15 (2) (h) of the Municipal Planning Bylaw	The **rezoning and subdivision** is required.

The above environmental and planning approvals are informed by the Environmental Impact Assessment (EIA) process, an integrated process through which information regarding the proposed development will be collected, organized, analysed and communicated to the relevant authorities for consideration.

2.5 Listed Activities in Terms of the EIA Regulations (2014)

Table 6: Listed Activities considered in terms of the NEMA Environmental Impact Assessment Regulations (2014) that are proposed to be triggered and therefore require an application for Environmental Authorisation to be submitted to the DEA & DP.

LISTING NOTICE 1 (GN No. R327 of 7th April 2017): Basic Assessment		
Activity #	**Description of Activity as per GN No. R 327**	**Reason for Listing or NOT listing.**
9	The development of infrastructure exceeding **1000m in length for the bulk transportation of water or storm water**: i. with **internal diameter of 0.36m** or more; OR ii. **peak throughput of 120 liters per second** or more; **EXCLUDING** where: a. such infrastructure is for bulk transportation of water or storm water or storm water drainage inside road reserve; or b. where such development will occur within urban areas.	It is proposed to construct the following infrastructure for the bulk transportation of water: • 738m x 160mm new rising main (Phase 1); • 4.9km x 355mm new bulk supply pipe (Phase 2); and • 355m x 166mm new bulk supply pipe. Although the length thresholds is clearly triggered, none of these proposed pipelines trigger the diameter threshold OR the peak throughput capacity thresholds. The Civil Engineering and Services Report confirmed that the peak flow (peak Annual Average Daily Demand) is approximately 30.6 litres per second. **This activity is therefore NOT triggered.**
10	The development and related operation of infrastructure exceeding **1000m in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes**: i. with **internal diameter of 0.36 m** or more; ii. **peak throughput of 120 liters per second** or more; EXCLUDING where: a. such infrastructure is for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside road reserve; or b. where such development will occur within urban areas.	It is proposed to construct the following infrastructure for the bulk transportation of sewage: • 5.19km x 160mm new gravity sewer. Although the length thresholds is clearly triggered, the proposed pipeline does not trigger the diameter threshold OR the peak throughput capacity thresholds. The Civil Engineering and Services Report confirmed that the peak flow (Peak Wet Weather Flow) is approximately 15 litres per second. **This activity is therefore NOT triggered.**
12	The **development** of i. dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100m in size; **ii. infrastructure or structures with a physical footprint of 100m² in size or more;** **where such construction occurs**- (a) **within a watercourse**; (b) in front of a development setback line; (c) if no development setback line exists, within 32m of a watercourse, measured from the edge of a watercourse	The proposed mixed use housing development and bulk infrastructure (and associated roads) is located within 32m from watercourses and is proposed to cross watercourses at various places. **This activity IS therefore triggered** .
19	The **infilling or depositing of any material of more than 10m³** into, or the dredging, excavation, removal or moving of soil, sand shells, shell grit, pebbles or rock of more than 10m³ from **i. a water course;** ii. the seashore; iii. the littoral active zone, an estuary or a distance of 100m inland of the high-water mark of the sea or an estuary, whichever distance is the greater-	The proposed mixed use housing development and bulk infrastructure (and associated roads) is located within 32m from watercourses and is proposed to cross watercourses at various places. **This activity IS therefore triggered** .
24	The **development of a road** – (i) for which an environmental authorization was obtained for the route determination in terms of Activity 5 in GN 387 of 2006 or Activity 18 in GN 545 of 2010; OR **(ii) with a reserve width wider than 13.5m, or where no reserve exists where the road is wider than 8m.**	DEA & DP confirmed that although the site is located within the urban edge (as recently amended to include the entire development) as indicated in the Bitou Municipalities SDF, the "urban edge" depicted in the Bitou SDF has not been adopted by the Competent Authority in terms of the 2014 EIA Regulations. The properties are all zoned Agriculture zone 1 and were not serviced or utilised for urban use. Therefore for the purpose of the 2014 EIA

	EXCLUDING (a) a road which is identified and included in Activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area OR (c) is 1km or shorter	Regulations and this application, the proposed sites do not conform to the "interim urban edge" and they are therefore **deemed to fall outside the urban area.** **This activity IS therefore triggered.**
27	The **clearance of an area or 1ha or more, but less than 20Ha of indigenous vegetation**, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The Botanical Impact Assessment confirms that more than 1ha of indigenous vegetation is required to be removed for the development and associated infrastructure. **This activity IS therefore triggered.**
28	**Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1st April 1998 and where such development:** (i) will occur inside an urban area, where the total land to be developed is bigger than 5ha; or **(ii) will occur outside an urban area, where the total land to be developed is bigger than 1ha;** EXCLUDING where such land has already been developed for residential, mixed, retail. Commercial, industrial or institutional purposes.	The site is zoned for Agriculture and grazing takes place in certain areas. DEA & DP confirmed that although the site is located within the urban edge (as recently amended to include the entire development) as indicated in the Bitou Municipalities SDF, the "urban edge" depicted in the Bitou SDF has not been adopted by the Competent Authority in terms of the 2014 EIA Regulations. The properties are all zoned Agriculture zone 1 and were not serviced or utilised for urban use on the 5th March 2012. Therefore for the purpose of the 2014 EIA Regulations and this application, the proposed sites do not conform to the "interim urban edge" and they are therefore deemed to fall outside the urban area. **This activity IS therefore triggered.**
48	The **expansion of infrastructure or structures where the physical footprint is expanded by 100m²** or more where such expansion occurs: **(a) within a watercourse;** (b) in front of a development setback line; **(c) if no development setback line exists, within 32m from a watercourse.**	The proposed mixed use housing development, bulk infrastructure (and associated roads) is located within 32m from watercourses. The construction of the access roads and internal roads could be seen as an expansion (extension) of the existing roads in the Greenvalley township) that are proposed to cross watercourses. **This activity IS therefore triggered**
56	The widening of a road by more than 6m or the lengthening of a road by more than 1km – (i) where the existing reserve is wider than 13.5m or (ii) where no reserve exists, where the existing road is wider than 8m.	Access for the proposed mixed use housing development is from an existing road (High Street) which is wider than 8m. **This activity IS therefore triggered.**

LISTING NOTICE 3 (GN No. R324): Basic Assessment

Activity #	Description of Activity as per GN No. R 324	Comment
2	The development of reservoirs, excluding dams, with a capacity of more than 250m3. i) Western Cape i) A protected area identified in terms of NEMPAA, excluding conservancies; **ii) In areas containing indigenous vegetation;** iii) Inside urban areas; aa) Areas zoned for use as Public Open Space; or bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the Competent Authority, or zoned for a conservation purpose.	A new 100kl reservoir is proposed for the development. **This activity is triggered.**
4	**The development of a road wider than 4m with a reserve less than 13.5m.** **i) in Western Cape**	Internal roads and the proposed access roads wider than 4m are proposed in various locations as per the site layout plan. The site is outside an urban area as explained above.

	ii) Areas outside urban areas **(aa) Areas containing indigenous vegetation**	**<u>This activity IS triggered.</u>**
12	The **clearance of an area of 300m² or more of indigenous vegetation** except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance plan. **(i) In Western Cape:** i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within CBAs identified in bioregional plans; iii. Within the littoral active zone or 100m inland from the high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or iv. On land, where at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning. v. On land designated for protection or conservation purposes in an EMF or a SDF adopted by the Minister.	The Botanical Impact Assessment states that more than 300m² of indigenous vegetation is proposed to be removed from within identified CBA areas. **<u>This Activity is therefore triggered.</u>**
14	**The development of –** **(ii) infrastructure or structures with a physical footprint of 10m² or more** **Where such development occurs –** **(a) within a watercourse** (b) in front of a development setback line (c) if no setback line has been adopted, within 32m of a watercourse, measured from the edge of a watercourse **i. Western Cape** **i) Outside urban areas:** **ff) Critical Biodiversity Areas or Ecosystem Service Areas as identified in systematic biodiversity plans adopted by the Competent Authority or bioregional plans.**	The entire proposed mixed use development is located on an ESA1 area and overlaps in areas into CBA zones. Bulk sewer and water infrastructure as well as access roads are proposed to cross watercourses. The proposed site is not in an urban area. **<u>This activity IS therefore triggered.</u>**
18	**The widening of a road by more than 4m, or the lengthening of a road by more than 1km** **(i) in Western Cape** **ii) all areas outside urban areas** **(aa) containing indigenous vegetation**	Access for the proposed mixed use housing development is from an existing road (High Street) which is located outside of the urban area. **<u>This activity IS therefore triggered.</u>**
LISTING NOTICE 2 (GN No. R325): Scoping & Environmental Impact Reporting		
15	The **clearance of an area of 20 hectares or more of indigenous vegetation**, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The Botanical Impact Assessment states that it is estimated that approximately 20ha of indigenous vegetation would be cleared.

Therefore, in summary, the following activities will be applied for:

- **Listing Notice 1: Activity No: 12, 19, 24, 27,28, 48 & 56;**
- **Listing Notice 2: Activity No 15; and**
- **Listing Notice 3: Activity No 2, 4, 12, 14 & 18**

3. Assumptions and Limitations

- The impact tables in Section 9 below includes the identified potential environmental impacts and risks identified for the proposed development, including the nature, significance, consequence, extent, duration and probability of impact, the degree to which the impact can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated. These impact tables have however only at this "scoping" stage been informed by the Scoping Phase Socio-Economic Impact Assessment, Botanical Impact Assessment and Freshwater Impact Assessment. **It must be noted that a detailed Socio-Economic Impact Assessment, Traffic Impact Assessment and a Visual Impact Assessment are still proposed to be undertaken during the "EIA Phase" to inform the findings of the Draft Environmental Impact Assessment Report**. The findings of the impact tables at this stage are largely only based on limited initial specialist input and therefore the professional opinion of the EAP (as provided in the impact tables and informed by specialist assessments) may change once more detailed specialist impact assessments occur on the proposed Site Layout Plan (**Appendix C1, C2 and C3**) and once we have received input from the public and the Authorities.
- With reference to the Table below, when determining the erf and or farm name for the erven and farms where the bulk water and sewer pipeline infrastructure is proposed, SES was limited to the routes provided for in the GLS Figure 1 & 2 (Appendix C2 & C3) which are not drawn to scale they are only conceptual routes based on existing contour maps available. GLS also provided conceptual shapefiles for the routes of the infrastructure to SES but it is clear that they are only conceptual routes and have not been surveyed on site. The pipeline infrastructure is going to be placed in the internal road reserves wherever possible. There may therefore be inaccuracies in terms of the co-ordinates, farm name and property owner information because the routes shown are not the exact location proposed for the bulk infrastructure they are conceptual drawing only.
- **A key issue at this stage is the proposed conceptual routes designed by GLS in their master planning for the bulk water and sewer infrastructure A more detailed bulk water and sewer capacity engineering assessment & report and detailed design plans is required in order to determine what the alternative options are to provide water and sewage treatment to the housing development and if it is really necessary to cross undisturbed areas of high botanical and freshwater sensitivity, to cross several tributaries and to remove a substantial amount of conservation worthy vegetation, as per the current conceptual designs for the bulk services (>10km of pipeline over hilly area). Perhaps, for example a conservancy tank treatment system with removal of the sewage by honey sucker truck for disposal and Ganse Valley WWTW is a better option which would avoid the bulk sewer pipeline requirement or it can be routes elsewhere without the need to cross such a hilly undisturbed landscape. This needs to be assessed further before the start of the application process.**
- **A more detailed bulk water and sewer capacity report is required before the construction of the proposed mixed-use development in order to determine the connection points for the development to the existing water and sewer system, to verify the sizes and costs for the required bulk infrastructure, to determine if the development of the infrastructure can be phased and to prepare detailed design drawings for the required bulk infrastructure.**

4. Detailed Description of the Proposed Project

4.1 Site Location and Description of Property

4.1.1 Summary Table Site and Farm Details

Please refer to the table below which is a summary of the site and farm details associated with this proposed mixed-use development and associated bulk services (water and sewage) infrastructure.

Table 7: Summary Table: Site and Farm Details

Province	Western Cape
District Municipality	Eden District Municipality
Local Municipality	Bitou Local Municipality
Ward number(s)	Ward No. 1
Nearest town(s)	Wittedrift – 300m away

	Plettenberg Bay / Goodvalley – 4km away New Horisons – 3.4km away

Property for Mixed Use Development			
Farm / Erf name or number	**Property Size**	**Development Footprint**	**Landowner**
Portion 28 of the Farm Wittedrift No 306	220.48Ha	**19.35Ha**	Bitou Local Municipality
Portion 31 of the Farm Wittedrift No. 306	36.63Ha		Bitou Local Municipality
Portion 32 of the Farm Wittedrift No. 306	1.77Ha		Bitou Local Municipality

4.1.2 Location of Proposed Mixed-Use Development and Associated Infrastructure

Please refer to the Location map in **Annexure A, Annexure B and Annexure C** which show the location maps and the layout (route) maps for the mixed-use development and the proposed bulk infrastructure.

The site for the proposed mixed-use development is located on **portions 28, 31 and 32 of the Farm Wittedrift No. 306.** It is an easterly extension of the existing Greenvalley informal settlement located on the outskirts of Wittedrift. The local municipality has already purchased the land on the ridge above Lemon Street in Green Valley known locally as Oppiekoppie. It is proposed to develop this ridge with dense low income residential housing.

It is proposed to construct a bulk water pipeline (new rising main) from an existing connection adjacent to the N2 in order to supply water to the mixed use development from the Plettenberg Bay Central Water Treatment Works. It will be required to cross various tributaries of the Bitou River. A new water storage reservoir is proposed to be located within the development footprint of the mixed use development.

Nadeson (2017) explain that the proposed development is located within a newly proposed "Green Valley Pump Station 2" drainage area, which at large falls within the greater Plettenberg Bay gravity drainage area. As a result, effluent generated from the sites will eventually drain towards the existing Gansevallei Wastewater Treatment Works. A new gravity sewer pipeline and pump station is proposed to be constructed from the mixed use development to the Ganse Vallei WWTW. Various tributaries of the Bosfonteinrivier and the Dieprivier are proposed to be crossed.

4.2 Detailed Description of the Proposed Development

4.2.1 Description of Proposed Mixed Use Development

The Bitou Municipality proposes to construct a mixed-use development, consisting mostly of **low- and middle-income housing opportunities (730 units), & associated infrastructure (water and sewage pipeline infrastructure)**. In addition, a **business erf, community use area and hall, an early childhood development centre, places of worship, and Public Open Spaces** are proposed.

The **approximate size of the development footprint for the mixed use development is 19.35Ha.** This however excludes the area to be disturbed for the installation of the bulk water and sewer infrastructure. It is proposed to construct **> 6km of bulk water pipeline infrastructure** and it is proposed to construct **> 5km of bulk sewer pipeline infrastructure. The approximate size of the development footprint for the bulk water and sewage infrastructure services is estimated to be approximately 17ha.**
The **total development footprint, inclusive of service infrastructure, is therefore approximately 37Ha.**

The conceptual architectural drawings below illustrate what the proposed single storey residential and high density row housing is expected to look like.

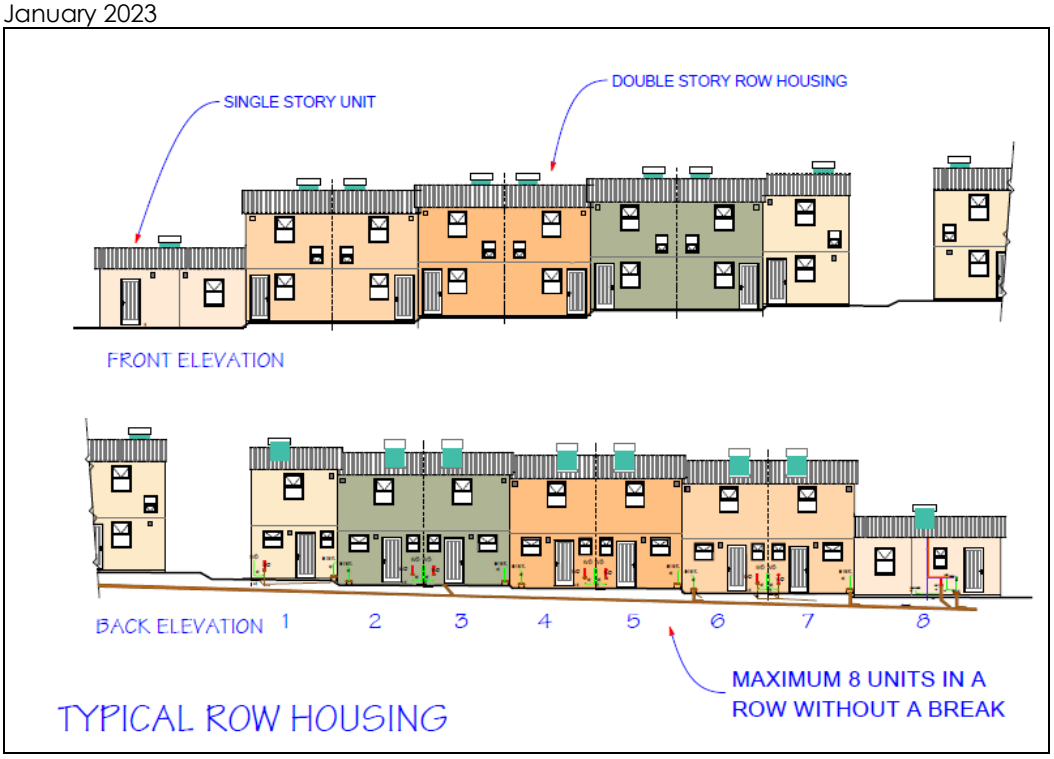

Figure 8: Typical high density row housing proposed (source: Keith Lurie Architecture)

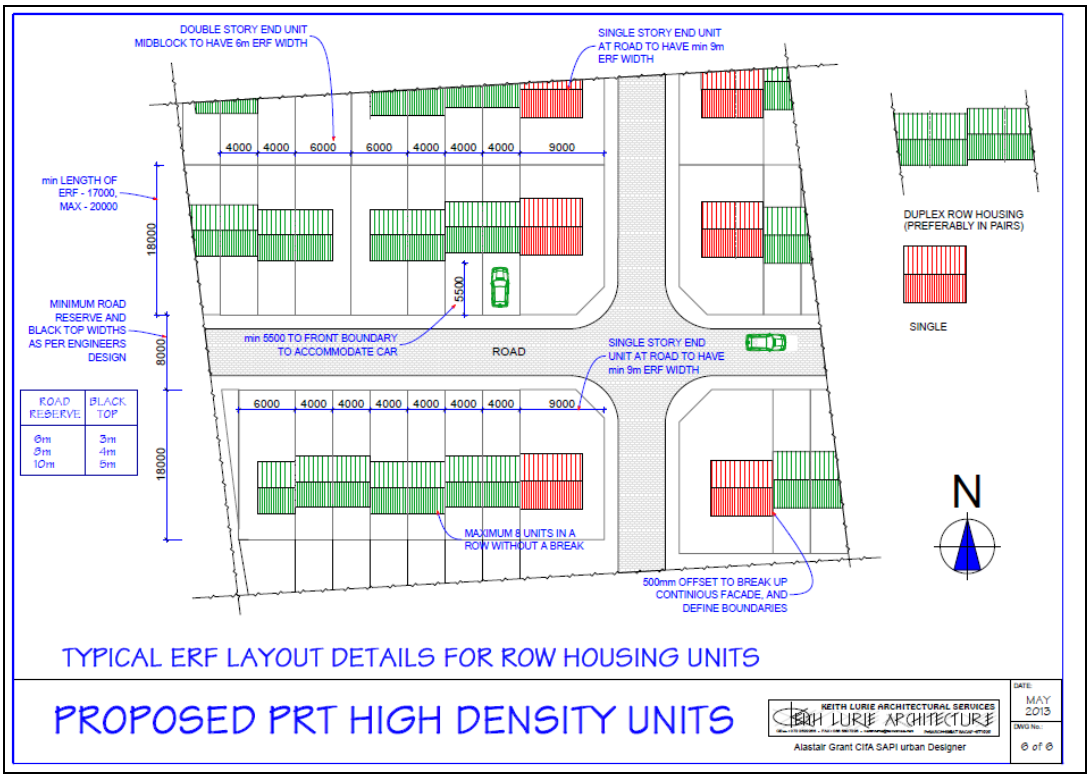

Figure 9: Typical erf layout details for high density row housing proposed (source: Keith Lurie Architecture)

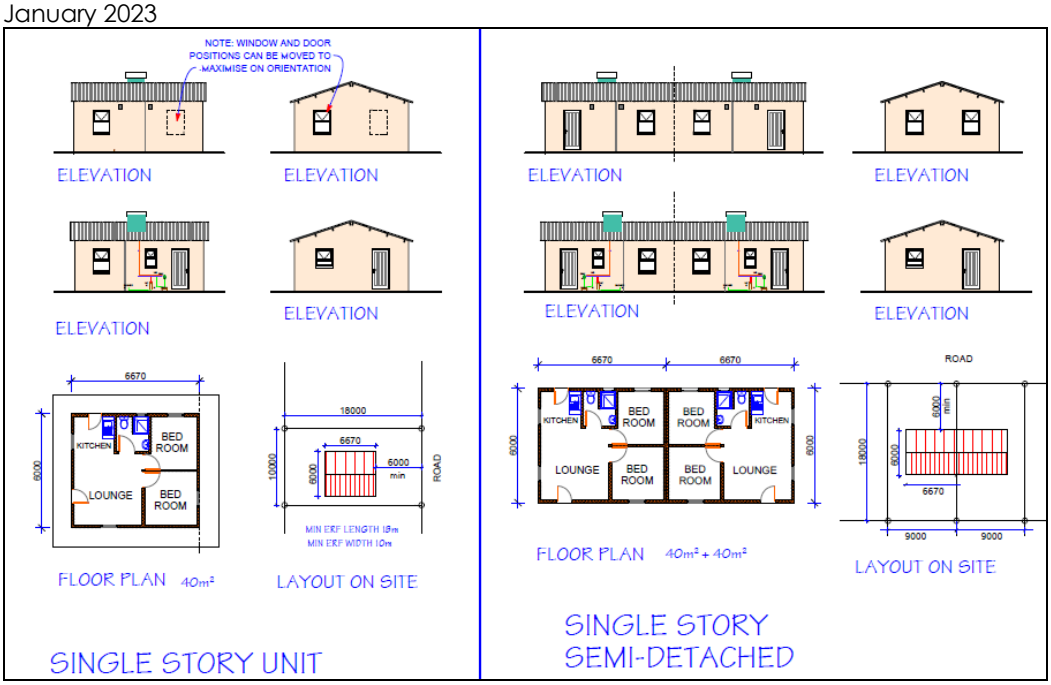

Figure 10: Typical designs for proposed single storey units (source: Keith Lurie Architecture)

4.2.2 Description of Proposed Sewer Infrastructure

4.2.2.1 Bulk Sewage Infrastructure

The proposed development is located within a newly proposed "Green Valley Pump Station 2" drainage area, which at large falls within the greater Plettenburg bay gravity drainage area. As a result, effluent generated from the sites will eventually drain towards the existing Gansevalei Wastewater Treatment Works (WWTW). Investigation of the bulk sewerage infrastructure, by GLS Consulting , found that the WWTW has a capacity of 9 Ml/day and has sufficient space to accommodate the effluent from the proposed sites.

There is, however, insufficient capacity in the existing bulk networks to accommodate the proposed developments. Thus, GLS recommends that various master plan items are to be implemented to accommodate the proposed developed.

Bulk sewage infrastructure upgrades are therefore required, as follows:

- **Item 1: New Greenvalley Main Pump Station; and**
- **Item 2: New Gravity Sewer Pipeline (5 191m X 160mm).**

Various activities are proposed to take place along the length and width of the proposed development footprint. These activities include the following:

- Trench excavation;
- Stockpiling of excavated material (topsoil and subsoil separate piles);
- Road for use by excavator and stringing of pipes;

A typical cross section is proposed to look like the cross section shown in the figure below:

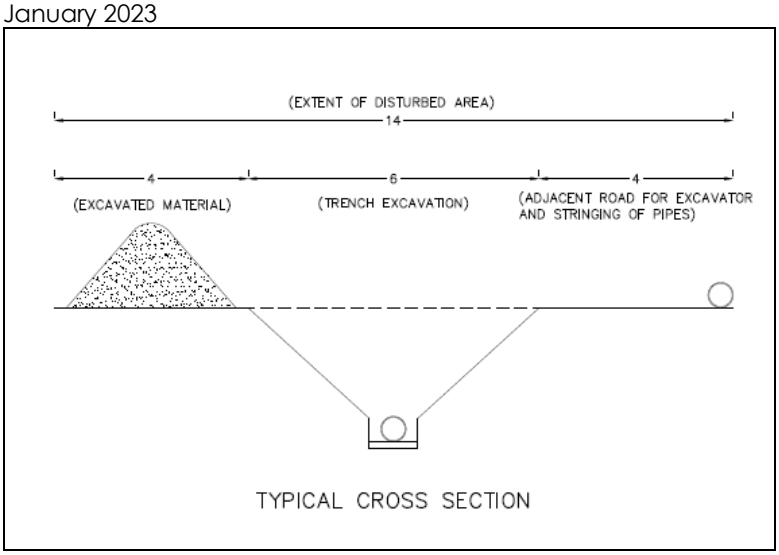

Figure 11: Typical cross section showing the proposed development footprint for the installation of a pipeline.

4.2.2.2 Internal Sewage Reticulation

Nadeson (2017) state that the expected Peak Wet Weather Flow (PWWF) for the proposed development is approximately 15 litres per second. A waterborne sewage system is proposed for the development. Each stand will be provided with a connection point to the closest line of the sewer system.

4.2.3 Description of Proposed Bulk Water Infrastructure

4.2.3.1 Bulk Water Infrastructure

GLS Consulting undertook a capacity analysis of the bulk water and sewer services in the area to ascertain if there are services (water, sewage, stormwater, roads) to support the proposed mixed use development. They found that although there is capacity in the WTW and WWTW to treat the water and the sewage there is insufficient capacity in the pipeline networks to transport the sewage to the Ganse Vallei WWTW and to transport water to the proposed mixed use development from the Plettenberg Bay WTW. The following bulk water infrastructure upgrades are therefore proposed to be constructed to service the mixed use development (as recommended by GLS, Phase 1 & 2 is both required to service the development):

Phase 1

- **BPW.B94: New 25kl sump;**
- **BPW.B41: New Booster Pump Station to existing Wittedrift Reservoir;**
- **BPW.B72: New Booster Pump Station to proposed new reservoir;**
- **BPW.B73:New Rising Main (738m x 160mm);**
- **BPW.B74: New 1000kl Reservoir; and**
- **BPW.B75: New Booster Pump Station.**

Phase 2

- **BPW.B69: New Bulk Supply Pipeline (4923m x 355mm); and**
- **BPW.B71: New Bulk Supply Pipeline (355m x 160mm).**

4.2.3.2 Internal Water Reticulation

Nadeson (2017) determined that the approximate Annual Average Daily Demand (AADD) is approximately 30.6 litres per second. It is proposed to install the required internal water pipes within the road reserve. Each stand will be provided with a connection point to the networks main line and provision will be made for metering.

4.2.4 Description of Proposed Bulk Storm Water Infrastructure

Stormwater for the development will generally be managed on a catchment-wide basis and will take into account the surrounding built and natural environment. Stormwater infrastructure proposed for the sites will comprise of combined surface drainage on surfaced roads and underground pipe systems.

All streets in the development will be designed to act as stormwater collectors and conveyors. To achieve this, the low side of the streets will be placed below the natural ground level to receive stormwater runoff from the tributary areas. The roads will have catch pits incorporated on the lower edges for stormwater to drain into pipe systems. Stormwater conveyed in the pipes will run through the site and will discharge into acceptable receiving bodies such as open fields, rivers or existing stormwater networks.

Minor storm events will be catered for in the buried pipe networks. The network will be sized to accommodate a 2 year flood recurrence interval. In this scheme road networks will not be allowed to flood.

For Major storms events, the road networks together with the underground stormwater pipes will be designed to accommodate a 50-year flood recurrence interval. Further to this, excess runoff from a major storm event, which will be conveyed within the roadway will not exceed a depth of 150mm above the highest point. Under such conditions, inconvenience to residents is acceptable but access by emergency vehicles should not be completely hindered.

4.2.5 Description of Proposed Electrical Infrastructure

An electrical services capacity analysis assessment was undertaken in October 2017 by Clinkscales Maughan-Brown Consulting Mechanical and Electrical Engineers. They found that the peak kVA demand for the proposed mixed use development is approximately 2 000kVA. It is proposed to install the following **bulk electrical services** as per the layout design drawing shown in the figure below):

- A <u>new 22kV bulk supply metering unit</u> is proposed to be installed on poles adjacent to an existing 200kVA pole mounted transformer;
- A <u>new 22kV underground</u> cable for the new metering unit to the new 22kV internal reticulation to be provided along road reserves.

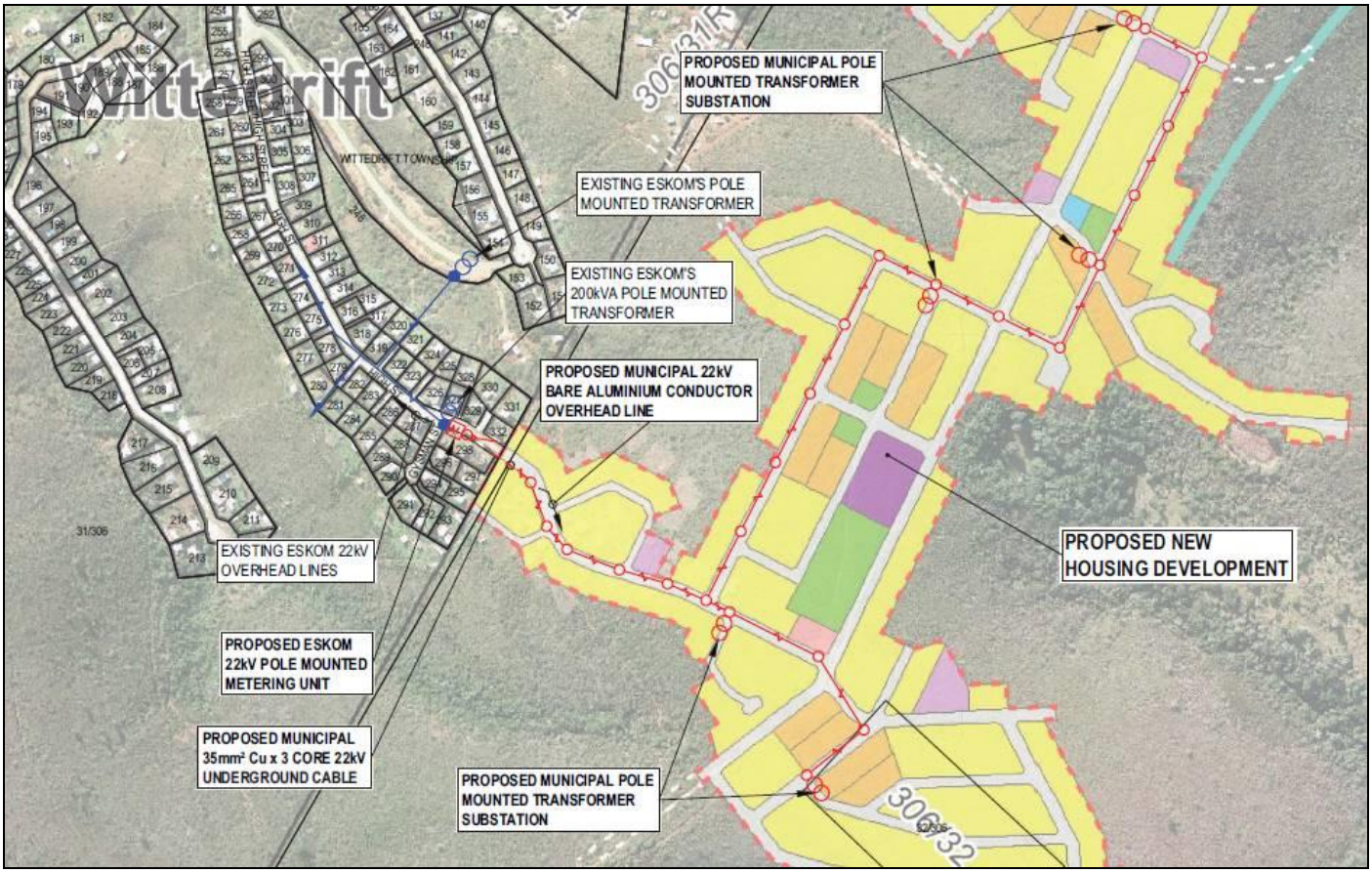

Figure 12: Proposed internal electrical services

As per the figure above, it is proposed to install the following **internal electrical services:**

- 22kV overhead lines constructed using wooden poles, galvanised support steelwork, aluminium alloy stranded bare conductors and porcelain and/or silicon rubber insulators;
- Distribution substations which will be pole mounted transformers to lower 22kV to 415 /240V for further distribution via the main Low Voltage (LV) network;
- LV overhead lines which will be XLPE insulated, hard drawn and stranded aluminium bundle conductors suspended on wooden poles;
- LV distribution boxes which will be polyethylene/glass fibre/steel type and mounted against wooden poles and serve as the distribution points for service connections.
- Circuit breakers and Main Control Units of the split prepayment meters will be houses within these boxes.
- Service connection cables which will be copper cored PVCAS type LV cables and installed underground.
- Streetlighting which will be energy efficient high mast floodlighting or conventional streetlights along the entrance roads beyond the boundaries of the development.
- Each house will be fitted with the User Interface Unit of the split prepayment meter and each consumer (house/unit owner) will have to enter into a separate supply agreement with the Municipality.
- All internal electrical services will be installed within the road reserves.

Clinkscales Maughan-Brown (2017) found that there is however currently no electricity supply capacity available on the Eskom 22kV bulk network for the proposed mixed use development. Spare capacity will only be available is approximately 2021 / 2022 once Eskom has constructed their new 66/22kV Substation adjacent to the Wittedrift turn-off near Bitou River from the N2 National Road.

4.2.6 Description of Proposed Access Roads & Internal Roads

The proposed site is positioned on a mountainous area with relatively steep side slopes. This results in various complexities when considering geometric routing of access roads to the proposed development. Main drawbacks associated with steep roads include:

- Excessive cut/fill quantities
- Difficulty in construction by conventional means
- Heavy vehicles being reduced to crawl speeds
- Scour potential due to high stormwater runoff velocities

In addition to providing safe access, the roads must also assist in social integration between Witterdrift and Green Valley. The latter, by providing a link between the two.

The design of internal road networks, intersections and access points will be in accordance with the guidelines stipulated in the DoHS minimum design and construction standards, Bitou municipality's guidelines and the red book. The pavement design for the various classes of road will take into account the recommendations and results of the detailed geotechnical investigation and will be based on accepted norms and standards. Geometric design of roads will compliment overland stormwater drainage. Subsoil drains installed alongside roadworks will be required where permeable silty sands are found to be above clayey silty material or where roadbox excavations intercept ground water levels.

The Traffic Impact Assessment investigated two proposed access roads to the development:

- Access Road 1: High Street is extended and connects with a local street in the Green Valley Development.
- Access Road 2: This street will connect to Pine Street via a proposed street extending from the north western side of the development.

According to the TIA, the 2023 total traffic conditions scenario analyses the background traffic conditions plus the development trips assigned and distributed through the road network. Based on the intersection capacity analyses, all of the study intersections can expect to operate satisfactorily during the respective weekday AM and PM peak hours. No capacity road improvements are thus required to accommodate the additional development trips. However, the intersection layouts are currently sub-standard and requires improvement.

The TIA also addressed the need for Non-Motorised transport facilities. Significant desire lines were identified along with future pedestrian desire lines expected once Green Valley is completed. Improvement proposals include the following:

- Sidewalks are proposed along the following roads:
  - The residential streets of the proposed Green Valley Development
  - Along Access Road 1
  - Along Access Road 2
  - Along Main Road from the existing sidewalks and extending to Lemon Street
- A pedestrian crossing is proposed along the Main Road, close to the Main Road/Pine Street intersection. The exact location must be determined during a detail design process
- Three exclusive NMT paths must be provided along the future pedestrian desire lines. Refer to Figure A8 for NMT Path Layout Examples which take into consideration the steep gradients of the paths.
- As soon as the land use proposals are more defined, traffic calming elements should be introduced in the development to ensure that speeding does not become an issue, especially with the steep gradients.
- Pedestrian crossing facilities should also be identified, if required and where appropriate.

Public Transport
Once the proposed land use is more defined, public transport embayments should also be provided at appropriate locations. A public transport embayment is proposed along the Main Road, close to the Main Road/Pine Street intersection.

Parking
Provision for at least one vehicle per dwelling unit to park off-street will be provided as part of the development, no additional on-street parking is required.

4.2.7 Solid Waste

Domestic waste is currently collected on a weekly basis at roadsides in wheelie-bins by selfcompacting refuse vehicles. Thereafter, the waste is disposed of at the waste transfer station on the northwestern boundary of Kwanokuthula, immediately south of the N2. The same system will apply for this development.

To facilitate smooth functioning of the solid waste collection system, roadways and turning shunts must be designed to accommodate easiest movement possible for refuse vehicles.

5. Alternatives

"Alternatives", in relation to a proposed activity, means different means of meeting the general purposes and requirements of the activity, which may include alternatives to –

(a) the property on which, or location where, it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

5.1 Description of Process to Reach the Preferred Alternative

5.1.1 Mixed Use Development Site Location and Layout Alternative

5.1.1.1 Process to Reach Preferred Alternative Location & Layout

The planning of Green Valley has taken place over eight or more years as various professional planning teams have been involved and throughout this period more information became available which influenced the layout that is being considered presently.

The site is on a high plateau with steep slopes on all sides. Access to the site is complicated due to the slopes. Sewerage from the site is another challenge as routes for gravitation sewers had to be carefully chosen to avoid pump stations that are costly to maintain.

The social amenities and facilities provided for on the layout plan were specifically provided according to the guidelines in the Development Parameters for the provision of facilities within settlements in the Western Cape. **Most importantly the entire site is located within the Plettenberg Bay Urban Edge and has been specifically set aside and planned for to be a future extension of Wittedrift for housing**. As explained in the first section of this Scoping Report, section 1.1, the current housing situation in Bitou is that there are no alternative vacant sites within the urban edge that can be compared to investigate which site is the preferred site. **Almost all sites adjacent to Plettenberg Bay and existing rural settlements, infrastructure, transport services etc are proposed to be infilled by subsidized housing given the phenomenal rate of population increase in Bitou and dire need to meet the housing demand.** No site alternatives have therefore been identified and comparatively assessed.

However, there have been many variations in the proposed layout design of the mixed-use development within the proposed site boundaries. It is also expected that the EIA Process will result in further variations of the layout because **one of the main objectives of an EIA process is to inform the design of the development based on Public & Authority comments and results of Specialist Studies, to aim to achieve a sustainable development in terms of social, economic and environmental impacts.**

The following alternative layout plans were created during the Pre-Application Phase:

- Original concept plan for the whole available area
- First concept for a smaller area - 2017
- Latest concept after revisions - 2019
- Final concept for consideration – 2022

Original concept of the whole area

In the original investigation of the site by an earlier planning team, a larger area was investigated and a concept plan was compiled. It was found that the demand was not that high for so many units. Furthermore, the site is on two levels with the lower laying area too low to serve without a pump station. The municipality aims to avoid pump stations due to the costly maintenance.

Due to the above reasons, this plan was not pursued further and the project was confined to a smaller area on the plateau where the sewerage could be served by gravity.

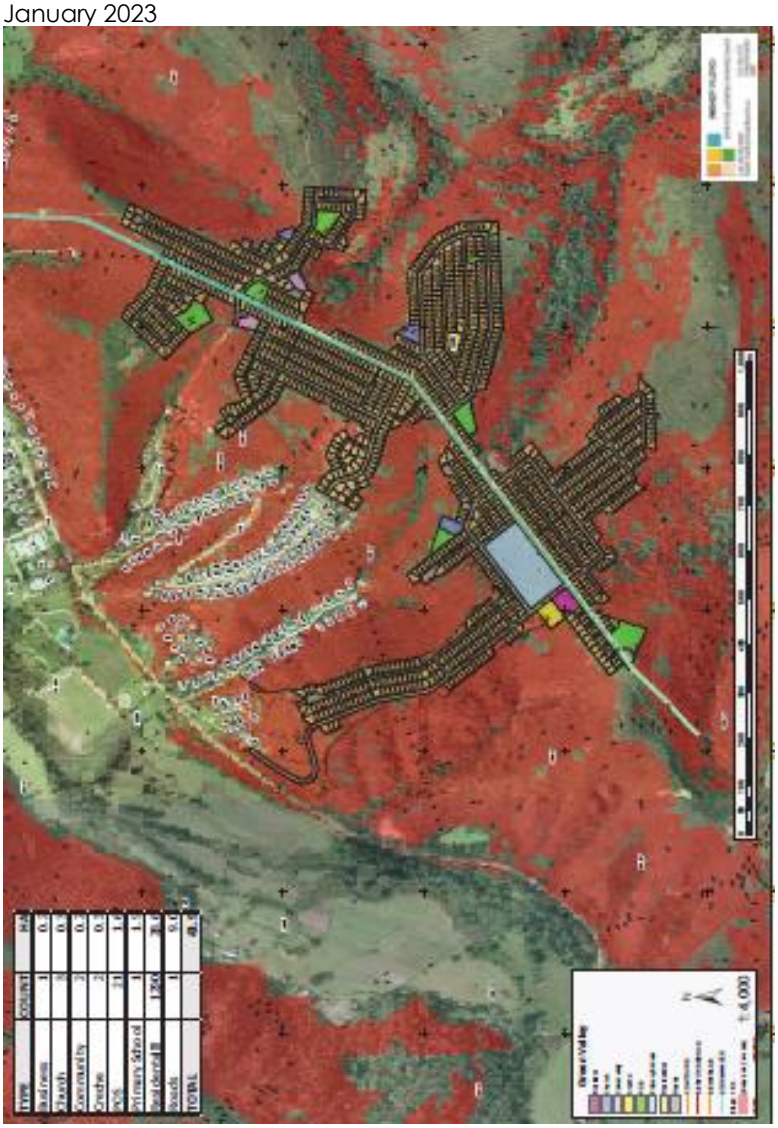

Figure 13: Original Layout Plan

2017 Concept Layout

The 2017 concept repeated the first layout for a smaller area that could be gravitated. However, there were areas that are flatter than 1:4 (grey area on plan) which according to the engineers at that time, also had to be avoided for the same reason (gravitation instead of pumping). The proceeding team of engineers had a different solution that enabled the other flat areas to be included.

At this stage, there were still several aspects that had to be investigated further such as sites for high density and the social needs that had to be provided.

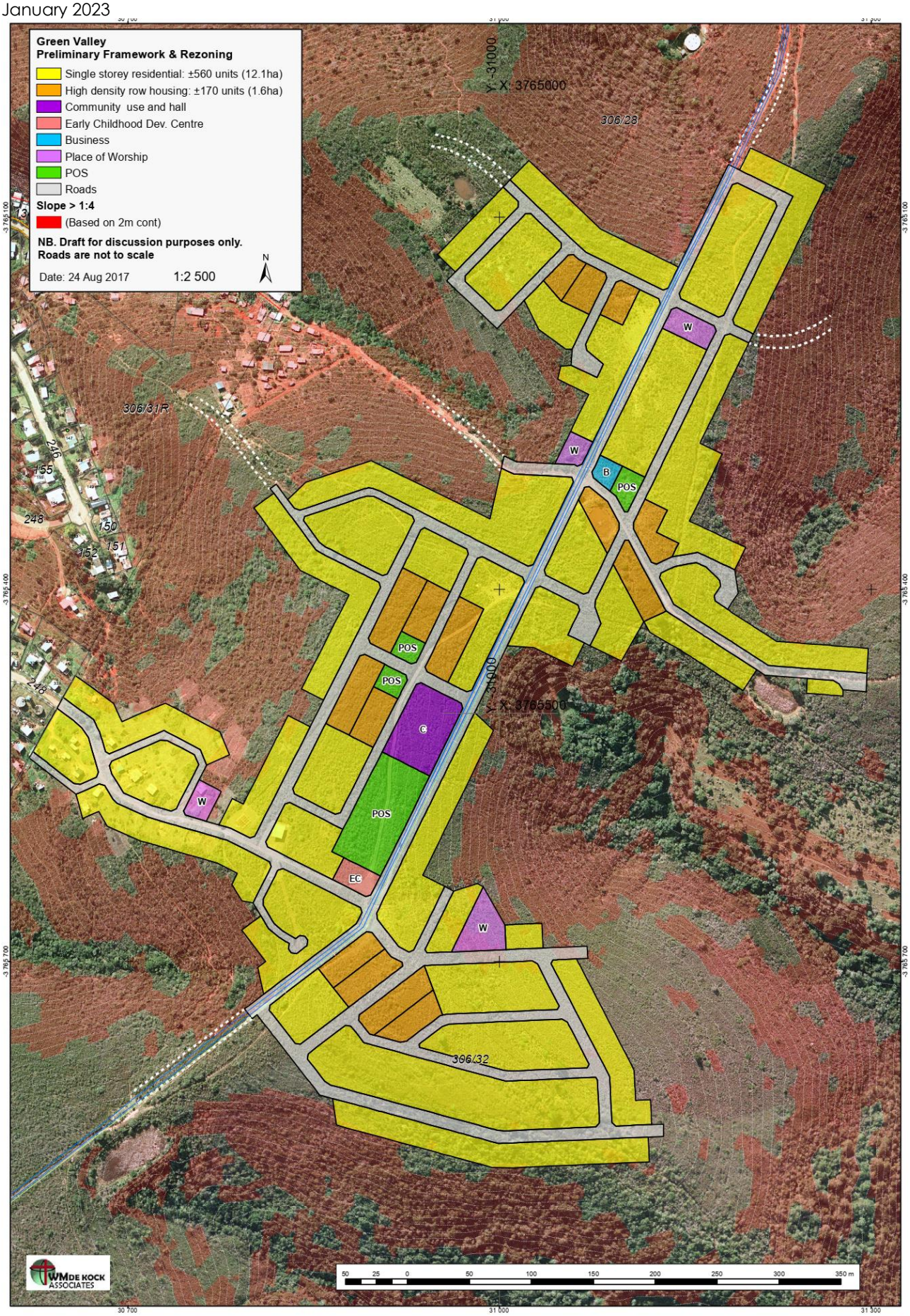

Figure 14: The first version of the site layout plan.

The second version of the layout plan was drafted in March 2019 and was as per the figure below.

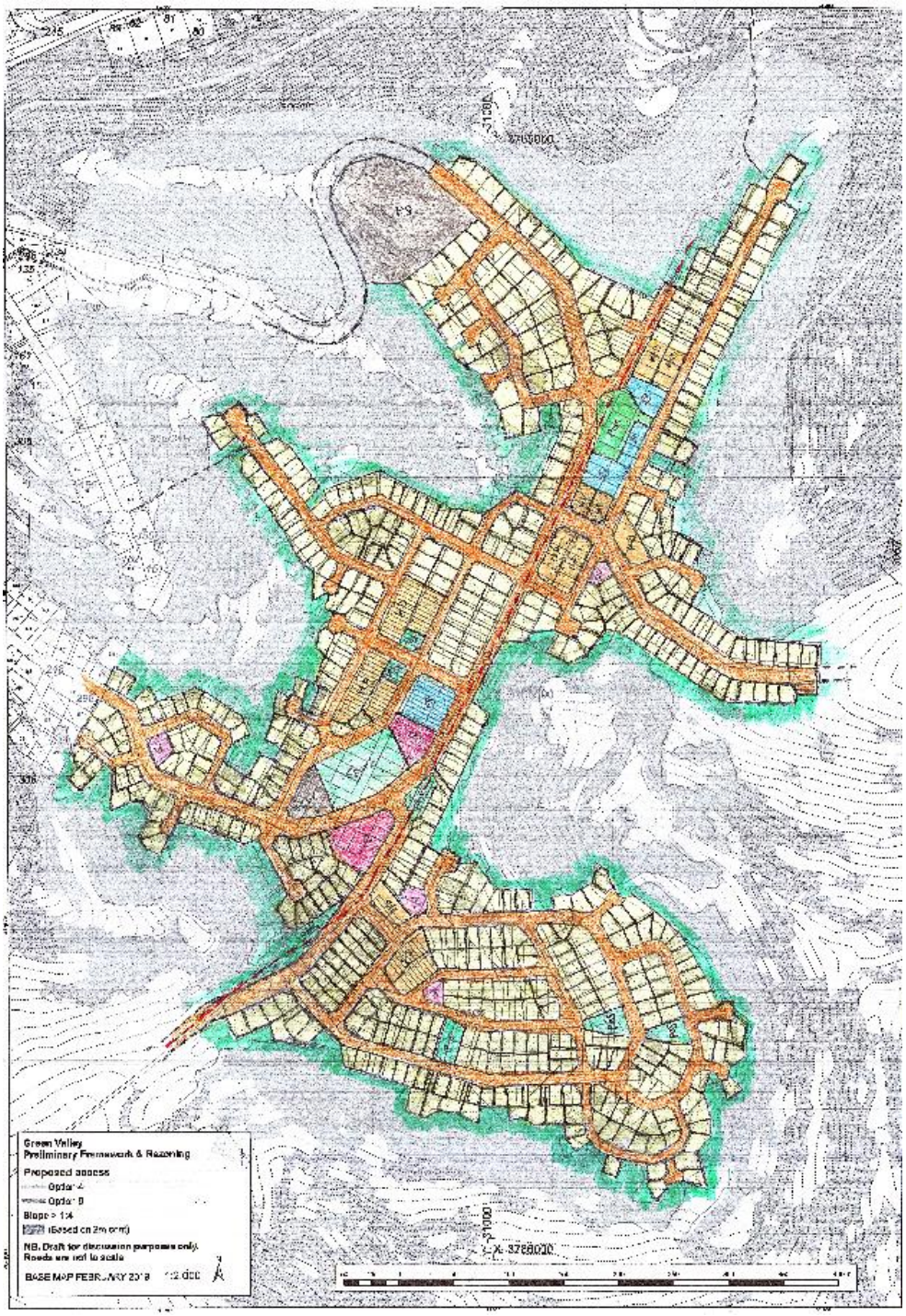

Figure 15: The second version of the site layout plan.

2019 Concept Layout

The layout was then further revised to utilise the full area flatter than 1:4 and to allow for the social uses needed such as education, business and sports fields. The plan was circulated for a first round for comments. It was also found that the 1:4 edge along the steep slopes varies over short distances and that the siting of dwellings along this edge had to be carefully planned upfront to avoid excessive cut and fill and the building of platforms at the construction phase.

The input from the municipal town planners on this layout included the revised street pattern in the central, that could be used as a 'shortcut', the use of the mixed-use and commercial sites and the use of the erf at the end of the cul de sac. The benefits or disadvantages of the location of the school site were also discussed. An alternative location for the school could be in the centre of the layout where it would be more central and accessible. This aspect is further addressed below.

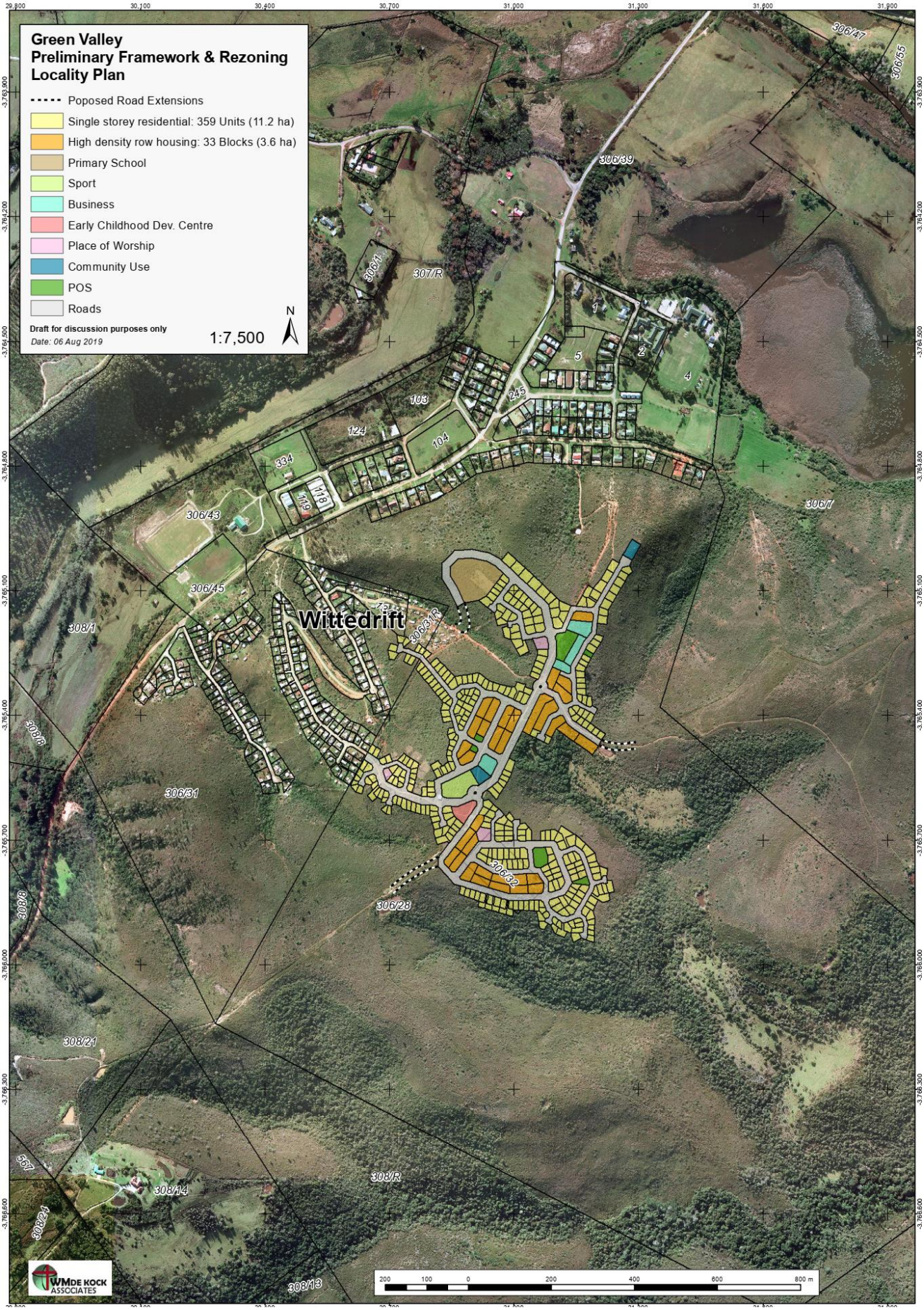

Figure 16: The third version of the site layout plan.

The 2022 preferred layout

In this layout which is presented as the preferred layout, the placing of the erven along the steep slopes were again checked for areas that will be too steep. The number of opportunities was increased to the target of 730 units by increasing the high-density units on suitable flatter sites.

The street pattern in the centre was amended to prevent a shortcut and to encourage the use of the main collector road. The mixed-use and commercial sites with parking are provided on two sites which are flexible for future further internal design.

The school site

Even though a secondary or primary school site is only required at thresholds of 1000 or 1500 units respectively, a school site is nevertheless provided should there be a future need. Although a location in the centre of the layout would have some benefits, the main aim of the project is to provide as many residential units on the developable land as possible. High-density units need level sites or else have to be shaped with terraces for the long buildings that have to be built thereon. The school site on the steeper slope as proposed would be able to contain high-density units as an alternative but the steep slope makes it unsuitable and uneconomical for this purpose. Educational buildings on the steeper site, however, could be designed along the contours with functional spaces on terraces.

The exchange of land uses of the central area and the school site would further result in considerably fewer units which would be contrary to the objective of the project. The school site is therefore retained on the steeper site in the preferred layout, while the central area is planned to accommodate a high number of high-density residential units.

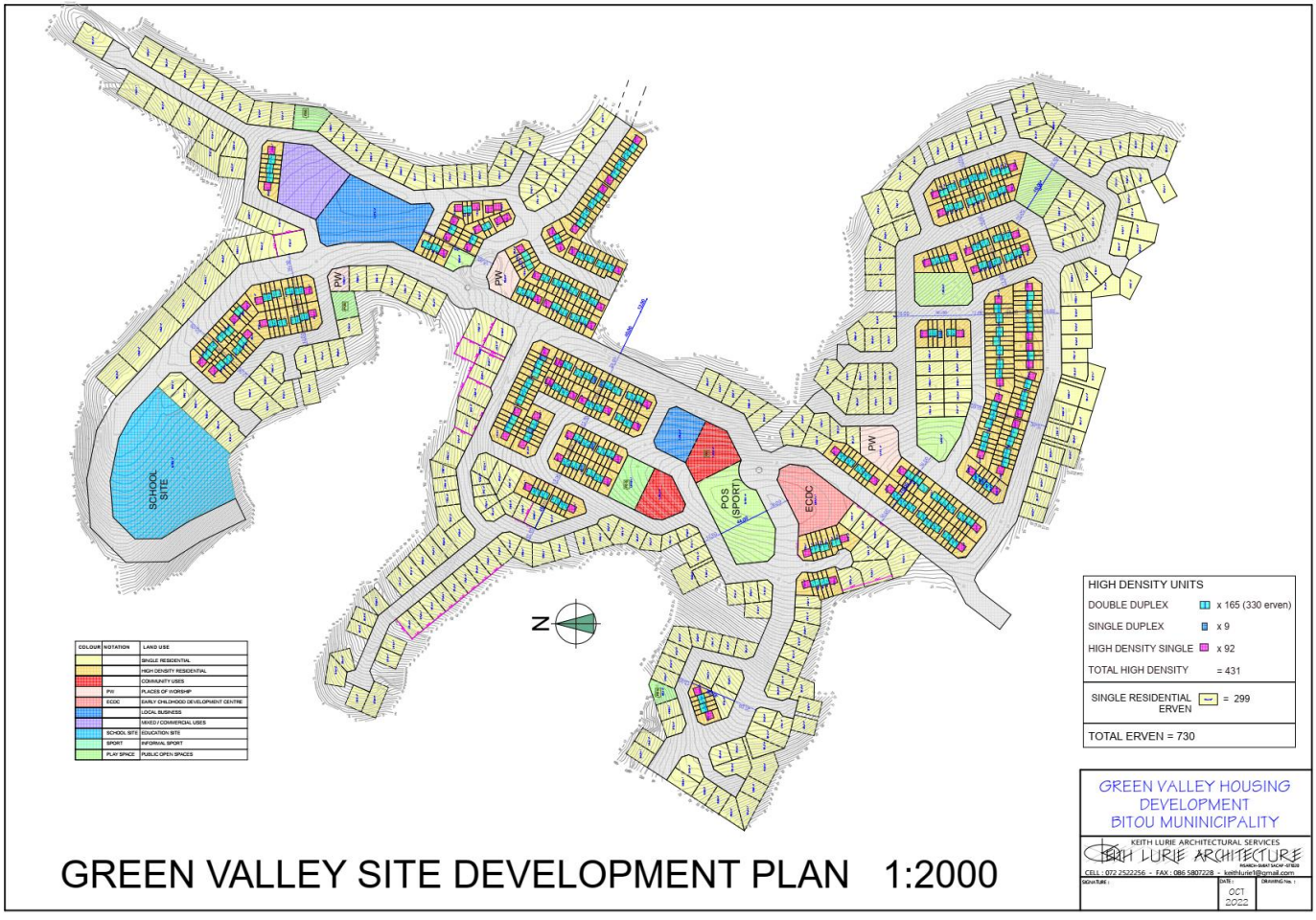

Figure 17: Current Preferred Layout

When one cross references the latest layout shown in the figure above with the previous versions, it is evident that that major changes in the layout were with regards to the inclusion of the Primary School and the allocation and location of the high density blocks.

5.1.2 Bulk Infrastructure Route Alternatives

No feasible pipeline route alternatives have been identified for the routes of the bulk water and sewer pipeline infrastructure yet. The routes have been preliminary designed to be the shortest routes possible, to avoid pump station infrastructure as far as practically possible, to be aligned within the road reserves as far as practically possible, to follow the contours, to allow for as much developable land as possible (to be designed along property borders) and to be interconnected with the existing infrastructure. No feasible or reasonable alternative routes have been identified yet.

5.1.3 Access Road Alternatives

There are two proposed access roads to the development.

- Access Road 1: High Street is extended and connects with a local street in the Green Valley Development
- Access Road 2: This street will connect to Pine Street via a proposed street extending from the northwestern side of the development.

No other feasible access road alternatives have been identified.

5.2 Alternatives Assessed

The following Alternatives have therefore being comparatively assessed in this Scoping Phase Assessment and will be assessed further in the EIA Phase.

1. **Alternative A:** The Proposed Site Layout for the Mixed-Use Development & Associated Bulk Infrastructure as shown in **Annexure C** – as described in detail in the description of the development above.

2. **Alternative B:** The NO-GO Alternative. The "No Go" alternative is the option of not developing the proposed mixed-use development and associated infrastructure. Barbour (2016) states that the no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction and operation phase as well as the benefits associated with the provision of more than 730 houses and much needed social facilities. **A high negative socio-economic impact significance would occur if the proposed development is not constructed.**

6. The Environmental Attributes

6.1 Climate

Plettenberg Bay is typified by an extremely mild maritime temperate climate with very few rainfall or temperature extremes. It is located within the Knysna Afromontane Forest biome, containing temperate gallery forest, supported by the mild temperatures and high, even distributed rainfall. Wittedrift normally receives about 762mm of rain per year, with rainfall occuring throughout the year. Wittedrift receives the lowest rainfall (54mm) in June and the highest (79mm) in October. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Wittedrift range from 18.7°C in July to 26.9°C in February. The region is the coldest during July when the mercury drops to 7°C on average during the night.

6.2 Topography

The site is located in an area characterised by hills with slopes up to 50% in some areas. The general topography can be described as mountainous. As can be seen from the figure, the proposed mixed use development is located on the top of a ridge that slopes in a north westerly direction and a south easterly direction. Given the topography of the site, runoff from half of the site will flow into the Western tributary network (into the Bosfontein River) and the other half into the Eastern tributary network (into the Bitou River & Diep River). The steep slopes surrounding the development have resulted in complexities when considering geometric routing of required access roads because gradients cannot exceed 7% for bus routes.

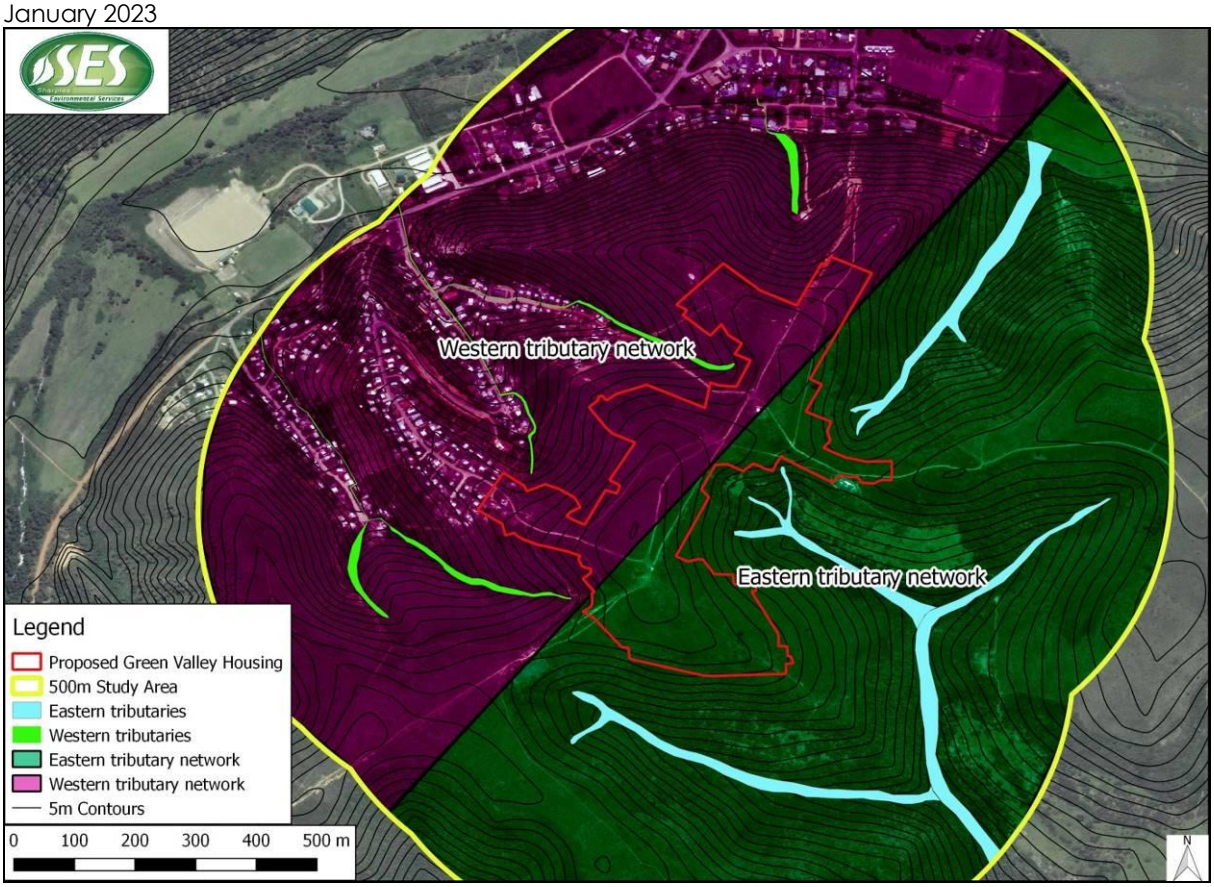

Figure 18: Map illustrating that the site is located on a ridge that slopes north-west (western tributary network) and south-east (easterly tributary network). (Source: Freshwater Impact Assessment).

6.3 Freshwater Resources

6.3.1 The Aquatic Environment

The figure below shows the freshwater resources which are likely to eb impacts on, that have been mapped by the freshwater ecologist. The study site, including the pipeline route, therefore is comprised of artificial wetlands, tributaries that flow in a north-west direction (called the "western tributaries") into the Bosfontein River and tributaries that flow in a south-easterly direction, referred to below as the "eastern tributaries", that flows into the Diep River and the Bitou River. Each of these freshwater resources within the study area has been described in detail in the next section (Bekker; 2017/2020).

With regards to the larger study area, outside of the 500m radius of the site, the most significant freshwater system (where one of the larger tributaries on site drain towards as can be seen in the image below) is the Bitou wetland and associated river system. The Bitou wetlands further downstream, located near the N2 Bridge, are also of a high ecological importance as they are considered to be one of the last undeveloped floodplains along the Western Cape coast. They comprise a series of freshwater marshes, supra- and inter-tidal saltmarsh, river channels and the Bitou Estuary channel itself.

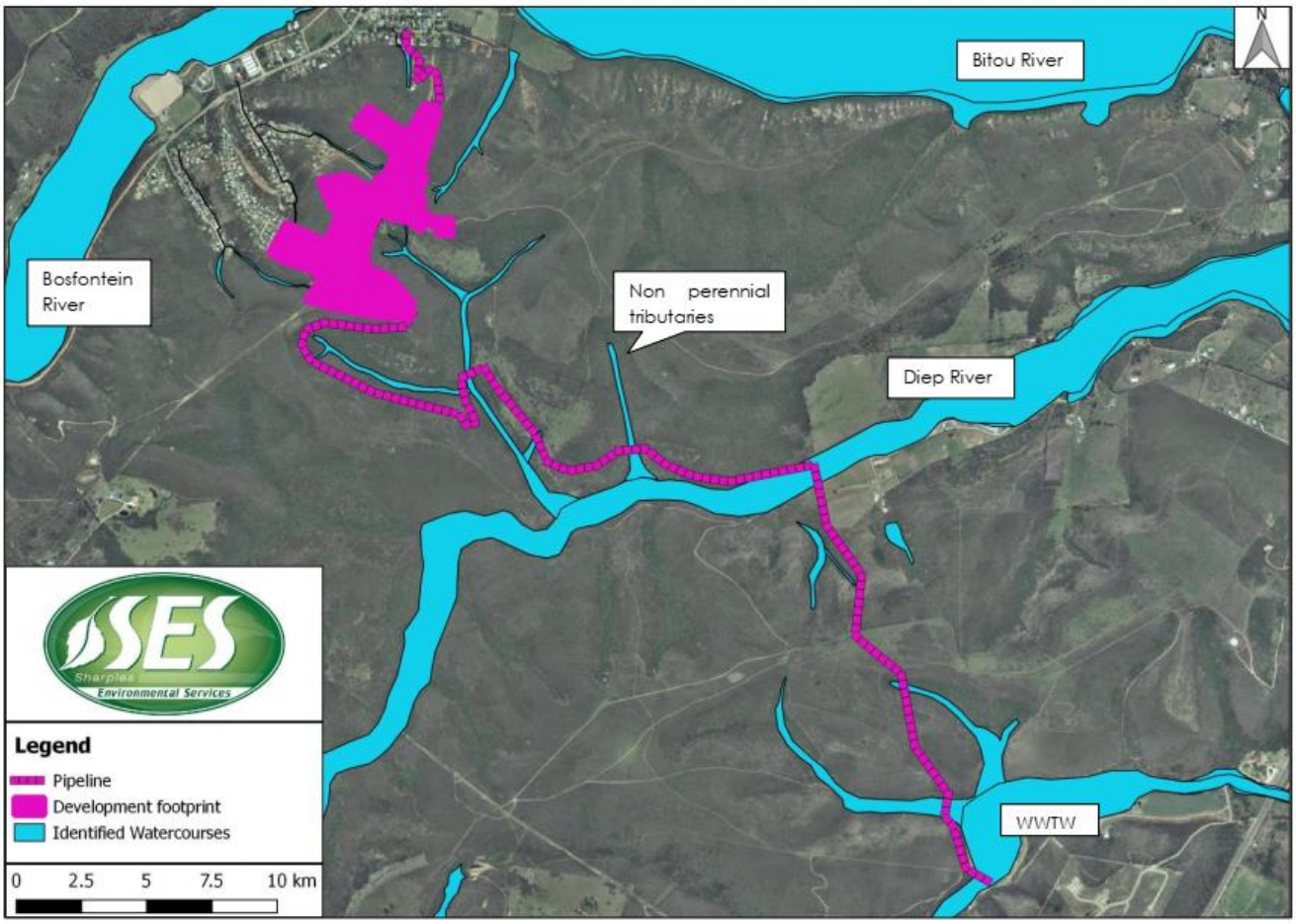

Figure 19: The proposed site of the development in relation to the watercourses identified as likely to be impacted upon. ***(Source: Freshwater Impact Assessment).***

6.3.1.1 Artificial Wetlands

Bekker (2020) explains in the Freshwater Impact Assessment that two artificial wetlands, resulting from dams, were identified within the study area (see figures below extracted from her assessment). These dams were produced by human beings and are not naturally occurring. The dams have become artificial wetlands as wetland plants have colonised a historically non-wetland area due to human activities. The dams are very small and were likely created for livestock drinking water. They are located at the head of drainage lines and not within the streams. The systems are shallow, well vegetated (dominated by *Typha capensis*) and geomorphically stable. The two smaller dams, within the development footprint, have been subjected to slightly more human impacts. These two systems will be impacted by the development, as even if they are not completely infilled and destroyed, they will receive stormwater and surface runoff inputs, pollutants and sediments. However, these artificial systems have a low functional importance and their loss is not considered significant. If they are not infilled for housing it is recommended that they are fenced. They could possibly be used as stormwater attenuation systems.

Figure 20: Photographs illustrating the two artificial wetlands that will be impacted by the development (Source: Freshwater Impact Assessment).

6.3.1.2 Western Tributaries

Please refer to Figure 16 above. Bekker (2017) states that the tributaries to the north and west of the study area mostly drain into the Bosfontein River, a larger tributary to the Bitou River and estuary. The tributaries are small systems with temporary flow . The systems are of similar ecological integrity as they share biophysical characteristics and have been similarly impacted by land use and cover changes. Towards their source, they are well-vegetated by indigenous plant species such as *searsia lucida, diospyros lycioides, searsia lancea, chrysanthemoides monilifera,* and *carissa bispinosa.* However, there is a moderate level of alien plant infestation in the more disturbed areas (species such as *acacia cyclops* and *Pennisetum clandestinum*). The rivers have a narrow, confined, and shallow channel consisting of a sandy clay bed.

Figure 21: Photographs illustrating the existing anthropogenic impacts on the western tributary network. Domestic waste is being dumped into the riparian habitat. Habitat destruction from housing, alien vegetation, and human waste is evident. (Source: Freshwater Impact Assessment).

The gravel roads and footpaths within the area have increased sediment inputs and caused erosion on the hillslope. The construction of informal housing and roads is increasing in an upslope direction within these drainage lines. These developments have destroyed riparian habitat to more than midway upslope of the valleys. The water is directed into the stormwater network via drains and no riparian vegetation remains. Domestic waste is being dumped into the drainage lines of the area causing obstruction of flow and affecting water quality. Human and animal waste is also entering the systems and affecting the water quality. The proposed development is located within these catchments and will result in further impacts on these systems**. The west tributary systems assessed have a Fair-Poor 'D' PES and a Low 'D' EIS which places it in the REC 'D' category which advocates the maintenance of the systems.**

6.3.1.3 Eastern Tributaries

Please refer to Figure 16 above. Bekker (2017) states that the tributaries to the south and east of the study area mostly drain into the Diep River, a larger tributary to the Bitou River and estuary. The tributaries are small systems with temporary flow. The systems are of similar ecological integrity as they share biophysical characteristics and have been similarly impacted by land use and cover changes. As opposed to the north western tributaries across the watershed, the tributaries to the Diep River, and one of the Bitou River mostly on the south and east of the study area are in near pristine condition. These tributaries are well vegetated with the typical scrub forest of riparian areas of this biome, with only a few alien invasive individuals evident. The instream vegetation was sparse, consisting mainly of *Dietes grandiflora*, amongst dry leaf litter from the forest canopy above. No herbaceous groundcover was observed*. Sideroxylon inerme* (Milkwood trees), a protected species, were observed within these systems. The tributaries all have narrow, shallow channels that are stable despite being steep longitudinally. No erosion was evident within these catchments.

Figure 22: Photographs illustrating the characteristics of the eastern tributary network. The near natural state of the riparian systems and their catchments. (Source: Freshwater Impact Assessment).

The existing impacts upon the systems include livestock grazing, small dams, and footpaths within their catchments. However, these impacts have not significantly changed the riparian areas. The proposed development is located within these catchments and will impact these systems.

The watercourses of the assessed south and eastern network obtained a score of Pristine to Nearnatural 'AB' for PES and a Moderate 'C' EIS. This places the systems in the REC 'B' category which recommends maintaining the river in its present state.

6.3.2 Freshwater habitat impacted by the sewage pipeline route

6.3.2.1 Diep River

A perennial Lower Foothills zoned river that originates in Kwanokuthula township of Pletternberg Bay and flows in a norther easterly direction to merge with the Bitou Estuary. There has been significant habitat loss at the head of the system due to drainage and infilling for the construction of houses. Kwanokuthula is densely populated and poorly serviced resulting in the pollution of remaining riparian habitat and downstream reaches. There are also a number of road crossings that have modified flow patterns and initiated erosion. The mid reaches and lower reaches are not directly impacted by urban development, but rather from farming activities (that have straightened the channel and removed riparian vegetation) and the dense infestation of alien invasive tree species (mostly Acacia mearnsii).

The reach of the river where the first pipeline crossing will be located is in largely natural ecological state. The river is free flowing through a confined channel that has a cobble and sand substrate. The sandy banks are largely vegetated by indigenous tree species with only a few alien individuals within the riparian area. In contrast, the downstream reach that will be crossed by the pipeline (and where the pump station is proposed) is in poor ecological condition. There is evidence of bank erosion and indigenous riparian vegetation has been replaced with alien plant species such as Pennisetum clandestimum and Acacia Mearnsii.

6.3.2.2 Non Perennial Tributaries

The Figure below indicates the watercourses that are likely to be affected by the proposed sewage pipeline route. In addition to the Diep River, the pipeline will also traverse small non perennial drainage lines which have therefore also been assessed in detail. These tributaries merge with the Diep River or the Gansvlei River, which both flow into the Bitou River complex, to the east. The southern portion of the pipeline route has been impacted by veld fires but vegetation has re-established. These small temporary tributaries have been assessed as a group due to their physical similarities.

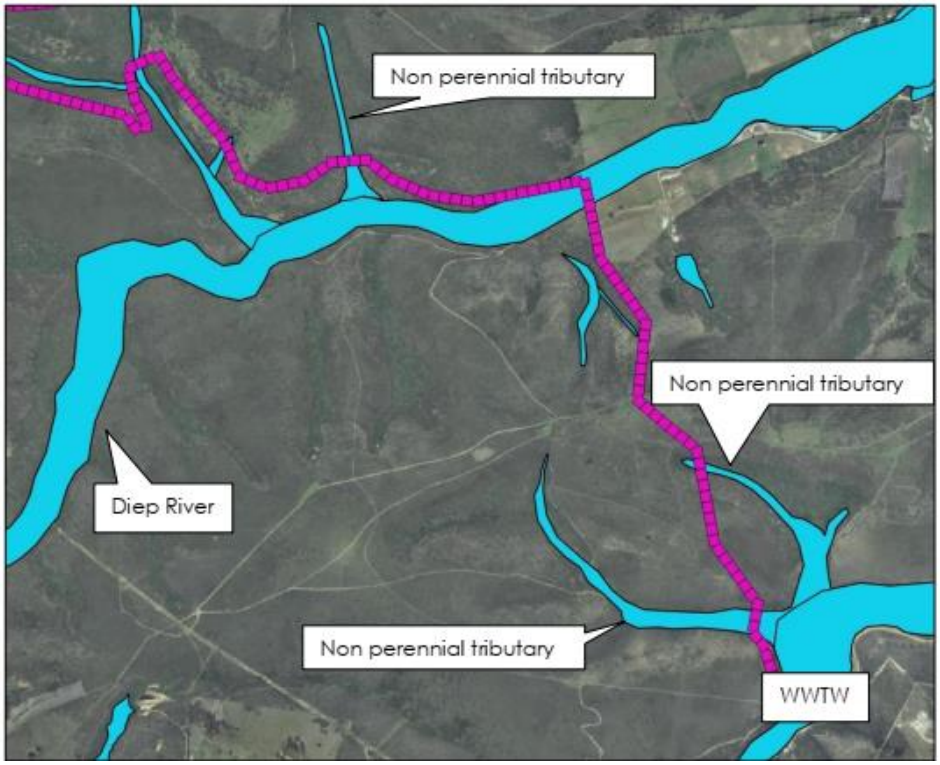

Figure 23: Map indicating the location of the non perennial streams (Source: Freshwater Habitat Assessment)

The tributaries are small drainage lines where surface runoff concentrates in a shallow channel during rainfall events. The systems are of similar ecological integrity as they share biophysical characteristics and have been similarly impacted by land use and cover changes. These tributaries are well-vegetated with the typical scrub forest of riparian areas of this biome, with only a few alien invasive individuals evident. The burnt areas have a higher infestation level. The streams and their small catchments are relatively undisturbed as there is limited human activity within the area. Dirt tracks and footpaths are present but have not initiated any erosion in the streams.

The non perennial streams proposed to be crossed by the pipeline were grouped for assessment and obtained a score of Largely-natural 'B' for PES and a Moderate 'C' EIS. This places the systems in the REC 'B' category which recommends maintaining the rivers in their present state.

6.3.3 National Freshwater Ecosystem Priority Areas (NFEPA's)

One of the tributaries of the area (north eastern tributary adjacent to proposed site) eventually feeds into the Bitou River, which is a FEPA system, and estuary (which is a FEPA wetland) of high conservation value. The **management objective for these NFEPA's is for them not be allowed to degrade but should rather be improved where possible.**

6.3.4 Aquatic Critical Biodiversity Areas and Ecological Support Areas

One of the tributaries of the area (north eastern tributary adjacent to proposed site) eventually feeds into the Bitou River and Estuary, which are both mapped as Aquatic Critical Biodiversity Areas of high conservation value.

6.4 Soil, Geology & Agricultural Potential

ENPAT online database described the sites geology as mainly conglomerate, sandstone, siltstone and mudstone of the Enon Formation, Uitenhage Group. The soils have a strong texture contrast, a marked clay accumulation and are a non-reddish colour. The soils have a very high erodibility factor.

Bekker (2017) states that the hilltops within the study area consist of partly calcareous sand which is from tertiary to quaternary marine and estuary deposits. Underlying this is the older cretacaceous to tertiary river deposits. The soils have a high erodibility factor of 0.58.

DAFF explains that a sites land capability is determined by the collective effects of soil, terrain and climate features, as the most intensive long-term use of land for rain-fed agriculture and at the same time indicates the permanent limitations associated with the different land-use classes. This sites land capability is that its non-arable land with a low-moderate potential for grazing. The site therefore has a low agricultural potential.

6.5 Vegetation

6.5.1 Vegetation Type and Description

The 2006 South African National Vegetation Map (Mucina and Rutherford), shows that the entire site for the mixed use development is located within the **Garden Route Shale Fynbos** vegetation unit. The 2018 Ecosystem Threat Status for Garden Route Shale Fynbos is **Vulnerable.**

Large parts of the site were affected by a veld fire (March 2017). The remaining fynbos can be described as senescent (woody) and infested with woody aliens (notably black wattle, rooikrans and black wood) on some of the steeper slopes. Structurally, it can be described as a mid-high (1.5-1.8 m) ericoid fynbos due to a dominance of micro-leaved shrubs, such as *Erica sparsa* and *Passerina corymbosa*.

The recovering fynbos in the previously burnt areas is currently dominated by only a few species, such as *Anthospermum aethiopicum*, *Euryops virgineus* and *Passerina* species. The fynbos regrowth is also lower (<1 m) than for the senescent fynbos and can be described as a low closed ericoid shrubland. It was recorded along the proposed gravity sewer, as well as along the south-eastern section of the proposed sewer line to the WWTW where it runs over a hill and then down the slope towards the WWTW. A part of this section appears to be fallow land as evidenced by the low number of indigenous species encountered.

The following indigenous shrub and tree species were recorded in the fynbos areas, namely *Passerina corymbosa*, *P. montivaga, Erica peltata, Erica cf sparsa*, *Osteospermum moniliferum*, *Helichrysum nudifolium*, *H. cymosum*, *Senecio ilicifolius, Metalasia pungens, Nidorella ivifolia*, *Elytropappus rhinocerotis*, *Euryops virgineus*, *Oedera calycina, Berkheya rigida, Delosperma virens*, *Carpobrotus* sp, *Crassula subulata, Euphorbia procumbens* (±5 plants), *Anthospermum aethiopicum (dominant), Searsia lucida, S. pallens, Myrsine africana, Indigofera cf heterophylla, Otholobium stachyerum, Aspalathus opaca ssp rostriloba, Asparagus africanus, Pelargonium alchemilloides, P. capitatum, P. candicans, Sideroxylon inerme, Olea europaea, Euclea crispa, Agathosma ovata, Rubus rigidus, Montinia caryophyllacea, Freylinia undulata, Barleria pungens, Exomis microphylla, Selago corymbosa and Leonotis ocymifolia.*

A single milkwood tree (*Sideroxylon inerme*) was recorded next to an impoundment in the vicinity of the proposed northern access road. A few bulbs were also recorded, including *Hypoxis sobolifera* and *Bobartia aphylla*. Members of the Restionaceae family are conspicuously absent, while Proteaceae is also absent or relatively scarce. Scarcity of the latter can be ascribed to the lack of regular fires, which are required by both re-seeding and sprouting members of the protea family. Restios also need fire in order to recruit successfully, but is also being replaced by C4 grasses as one move further eastwards into the summer rainfall region.

Sections of the proposed infrastructure also runs through or alongside pockets of Afrotemperate forest. The proposed northern access road (both alignment options) cuts through a narrow strip of riverine forest, while the northern end of the proposed gravity sewer runs alongside a similar, but more developed strip of riverine forest before entering the village below. The most extensive forest in the study area was encountered in the small valley, which is skirted and crossed in a few places by the north-western section of the proposed sewer line to the WWTW. The most mature forest was found in the valley bottom and is fortunately not significantly affected by the proposed project. Several large yellowwoods and saffrons were encountered here.

Parts of the sewer line route to the WWTW are inaccessible due to dense, tall scrub, notably a section on the south-facing hill slope west of the proposed pump station. The following indigenous tree, shrub and creeping species were recorded in the Afrotemperate forest some of which are also shared with the adjacent fynbos, namely *Podocarpus falcatus*, *Cassine peragua*, *Gymnosporia nemorosa*, *G. buxifolia, Elaeodendron croceum*, *Lauridia tetragona, Mystroxylon aethiopicum, Putterlickia*

pyracantha, Lachnostylis hirta, *Carissa bispinosa*, *Pterocelastrus tricuspidatus*, *Olea capensis* subsp *capensis*, *Pittosporum viridiflorum*, *Nuxia floribunda*, *Searsia lucida*, *S. refracta, S. rehmanniana* var. *glabrata*, *S. chirindensis*, *Tarchonanthus littoralis*, *Helichrysum petiolare*, *Gymnanthemum capense, Scutia myrtina*, *Calodendrum capense*, *Vepris lanceolata*, *Ochna serrulata, Afrocanthium cf mundianum*, *Burchellia bubalina*, *Schotia afra, Virgilia cf. divaricata*, *Grewia occidentalis*, *Anisodontea scabrosa, Colpoon compressum, Euclea undulata, E. crispa, E. schimperi*, *Diospyros dichrophylla*, *Trimeria grandifolia, Cussonia thyrsiflora*, *Buddleja saligna, Halleria lucida, Polygala myrtifolia*, *Notobubon laevigatum, Chironia* sp, *Asparagus aethiopicus, A. retrofractus* and *Trichocladus crinitus.* Vines, herbaceous species and hemicryptophytes recorded in the forest understorey include *Rhoicissus tridentata*, *Kedrostis nana*, *Senecioangulata, Mesembryanthemum cordifolium, Cynanchum obtusifolium* and *Asplenium rutifolium.*

A *Viscum rotundifolium* was also noted parasitizing on *Tarchonanthus littoralis*. The sedges *Cyperus fastigiatus* and *Eleocharis limosa*, along with the invasives *Cirsium vulgare* and *Ricinus communis*, were recorded at an impoundment in the valley directly west of the proposed pump station.

It is evident that significant areas on site have been disturbed/transformed by past farming activities, some of which are slowly recovering. Species diversity in these areas however remain low. The greatest diversity was encountered on the slope above Wittedrif where the northern access road will be located and in the Afrotemperate forest areas.

6.5.2 Species of Conservation Concern and protected tree species

Euphorbia procumbens is a potential Species of Conservation Concern recorded on site in the vicinity of the proposed access roads. Despite being widespread between Riversdale and the Eastern Cape, its numbers are very low, with only one historical collection record from the Plettenberg Bay area. Its chances of survival with the prospect of development are slim. Other known Species of Conservation Concern found in Garden Route Shale Fynbos, which may occur in the area are *Ruschia duthiae* (Vul), *Erica glandulosa* subsp. *fourcadei* (Vul), *Acmadenia alternifolia* (Vul), *Felicia westae* (En), *Selago burchellii* (Vul) and *Muraltia knysnaensis* (En) (see online Red List of South African Plants). *Acmadenia alternifolia* is more common on steeper, rockier coastal areas, while *Felicia westae* is found along stream banks in low-lying areas. The latter, which habitat has been severely degraded by alien infestation, has apparently not been recorded since 1944, but was rediscovered by CREW members in 2015.

A single *Sideroxylon inerme* (milkwood, protected tree species) was recorded in the vicinity of the proposed northern access road next to an impoundment. It appears to be located inside or very close to the future development site. Other protected tree species (in terms of the National Forests Act 84 of 1998) recorded on site include *Afrocarpus falcatus (*Outeniqua yellowwood) and *Pittosporum viridiflorum* (cheesewood). These are mainly associated with the Afrotemperate forest areas. While P. viridiflorum is fairly common throughout the area, A. falcatus is confined to mature forest areas in the valley bottom away from the proposed infrastructure. The removal of these tree requires a permit from the Department of Forestry.

6.5.3 Terrestrial Critical Biodiversity Areas & Ecological Support Areas

The proposed mixed use development site is, as can be seen from the figure below, **mostly located within an Ecological Support Area (ESA1) and it is surrounded by Critical Biodiversity Areas**. The proposed road and sewer line infrastructure is located almost entirely inside a mixture of mapped CBA's and ESA's. The terrestrial CBA's are associated with the steeper hill slopes and drainage lines, while the ESA's correspond with the flatter and seemingly more disturbed areas (fallow land areas). The proposed sewer line to the WWTW also skirts the bottom edge of a CBA forest in the small valley west of the proposed pump station.

Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. **Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services.** The primary purpose of a map of Critical Biodiversity Areas and Ecological Support Areas is to guide decision-making about where best to locate development. The objective is to maintain natural land and rehabilitate degraded to natural or near natural and manage for further degradation. **The ESA where the project is located is an important supporting area for maintaining ecological corridors.**

The Wadrif Private Nature Reserve is located about 2 km to the north on the northern side of the Keurbooms River. The Garden Route National Park is located further away to the west.

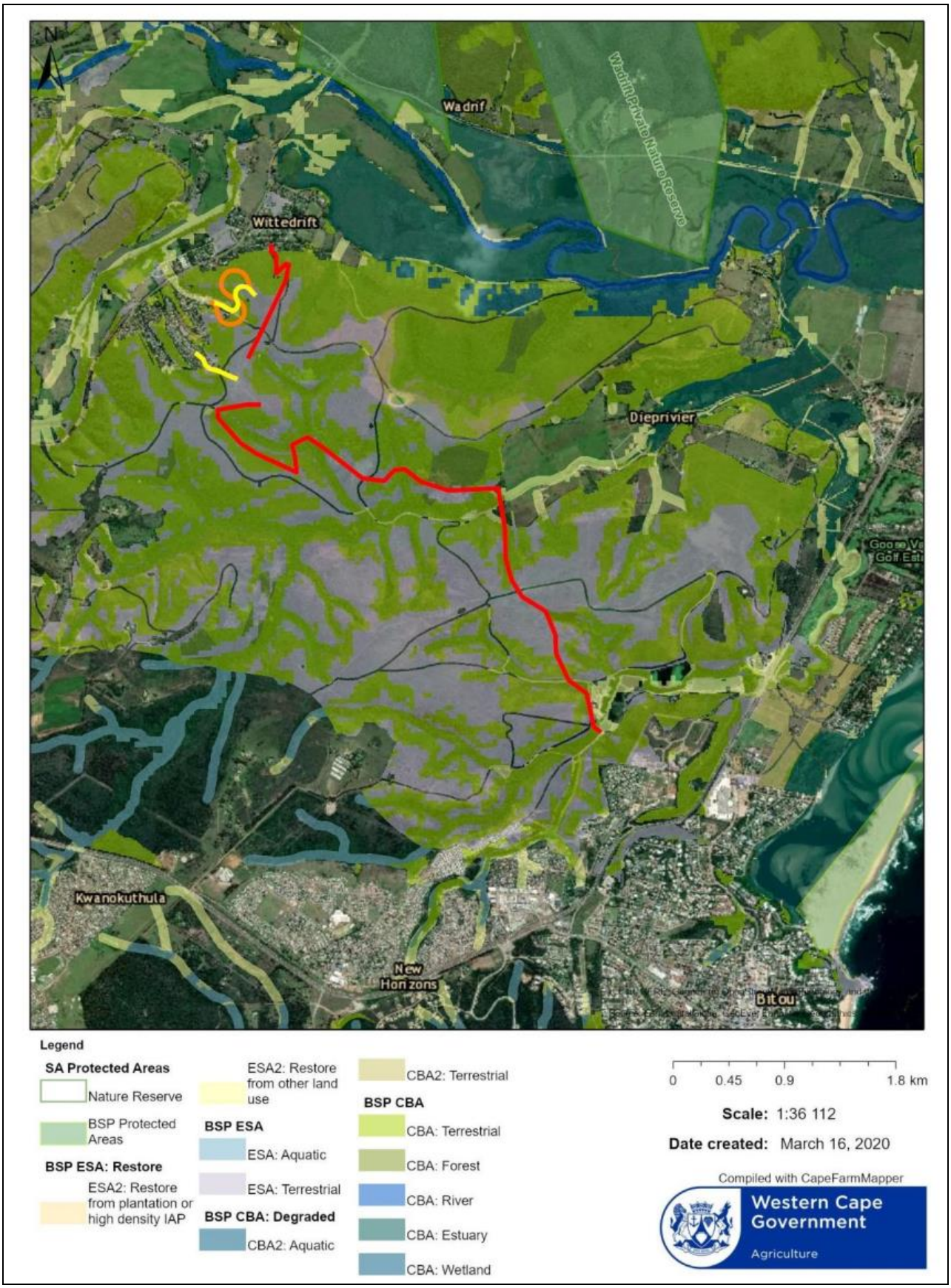

Figure 24: The proposed site for the mixed use development showing Terrestrial Critical Biodiversity Areas (green) and Ecological Support Areas (grey).

6.6 Archaeology & Heritage

According to the Archaeological Assessment conducted by the Agency for Cultural Resource Management in 2018, no archaeological remains were found during the field assessment, although it must be noted that visibility was extremely poor due to very dense vegetation cover. However, the location of the proposed housing site suggests that the receiving environment is not a sensitive archaeological landscape.

The probability of locating significant archaeological heritage during proposed construction activities is deemed to be low, and therefore there were no objections to the housing development proceeding

The South African Heritage Agency maps the site as being of high paleontological sensitivity. In addition, given the high value of the "sense of place" of the area this could contribute to the heritage significance of the area.

A Notice of Intent to Develop will be submitted to Heritage Western Cape by a Heritage Practitioner for further comment.

6.7 Socio Economic Environment

6.7.1 Greenvalley Socio Economic Overview

A socio-economic survey of households in Green Valley (Wittedrift), Forest Hill (Harkerville) and Kurland Village (The Crags) was undertaken by Embale Shamba cc in 2016. The overall goal of the survey was to obtain socioeconomic data that will inform planning for human settlement in Forest View (Harkerville), Green Valley (Wittedrift) and Kurland Village (The Crags). A total of 101 households were interviewed in Green Valley. **The key findings for Greenvalley are summarised below.**

- **Period of stay:** The survey found that 67.32 % of households interviewed had been staying for more than 13 years in Green Valley.
- **Age:** The highest number of heads of households interviewed was between 39-49 years old (28.71 %), with 24.75% being between 50-60 years old (24.75 %).
- **Marital status of heads of household**: The survey found that the majority of the heads of households were in a formal and or informal marital relationship. The majority of households were therefore made up of families as opposed to single people.
- **Highest qualifications**: 11.88 % of households interviewed had no education and or education between grades 1-3, whilst 31.68% had grade 11-12 education.
- **Household income**: The majority of the households interviewed earn between R 0-R 1400 per month (43.56 **%),** while 30.69% earned between R 1 401-R 3 500 per month and 8.81% earned between R 3 5010-R 7 500 per month. The survey also found the 68.9% of the households received childcare grants.
- **Location of work:** 45.59% of the households interviewed indicated that they worked in Plettenberg Bay, while 42.65% indicated that they worked in Wittedrift and the surrounding areas.
- **Transport to work**: The majority, 40.30%, indicated that they walked to work, while 26.87% relied on lifts and 14.93 used public transport.
- **Mode of transport for school children**: Most of the school-going children walk to school (74.68 %), which indicates that most of them receive education in the community.
- **Access to services and facilities**: Of the households interviewed 61.39% had access to water, 49.5% access to electricity, 36.63% access to sanitation, and 66.34% had access to refuse removal. These levels are all, on average, lower than the access to basic services in the Bitou Municipality and Eden DM (See Table 3.2).

6.7.2 Administrative Context Bitou

The Socio-Economic Impact Assessment undertaken by Barbour (2017) states that the proposed Green Valley residential development is located in the rural settlement of Wittedrift approximately 5 local municipalities which constitute the Eden

District Municipality. George is the administrative seat of the Eden District Municipality, and Plettenberg Bay that of the Bitou Local Municipality.

Barbour (2017) explains that the Bitou Local Municipal Area is relatively small at only 992 km^2. The northern portion of the municipal area is mountainous (Tsitsikamma range) and the settlement pattern is concentrated along the coast and on the coastal plain. Due to the mountainous terrain and other factors, only a small percentage of the area is considered suitable for intensive agriculture. Consequently the agricultural sector does not constitute the backbone of the local economy. Instead nature and coastal-based tourism is the key driver of the Bitou economy. The portion of the N2 through Bitou forms part of the internationally renowned Garden Route, with Plettenberg Bay – marketed by Plett Tourism as the "jewel of the Garden Route" - an established key attraction (Barbour, 2017).

Bitou settlements include Plettenberg Bay, Nature's Valley, Kranshoek, Covie, Harkerville, Keurbooms, Kurland, Wittedrift, Qolweni, Bossiesgif, New Horizons and Kwa-Nokothula. Plettenberg Bay is the only large town in the LM. Qolweni, Bossiesgif, New Horizons and Kwa-Nokothula are essentially Apartheid era satellite suburbs of Plettenberg Bay. The vast bulk of the municipality's population lives in Plettenberg Bay and these surrounding townships (Barbour, 2017).

Plettenberg Bay is as the main service centre in the Local Municipality, providing higher order medical, educational, commercial and administrative services. Kurland, Kranshoek and Nature's Valley are regarded as secondary settlements and the balance as small rural villages. All of them are reliant on Plettenberg Bay or other nearby large towns such as Knysna and George for major services (Barbour, 2017).

6.7.3 Demographic Bitou

6.7.3.1 Population

Barbour (2017) explains in the Socio-Economic Impact Assessment that according to Census 2011 the Bitou LM has a population of 49 162, representing 8.5% of the Eden DM population (574 265). Plettenberg Bay is by far the largest town (31 804), accounting for nearly 65% of the Bitou population. Census 2011 indicates that the majority of the Bitou population is Black African (45.2%), followed by Coloured (31.2%), and Whites (16.9%). Other groups accounted for 6.1%. The dominant language within the Municipality is Afrikaans (~42.3%), followed by isiXhosa (~37%) and English (~13%)(Census 2011).

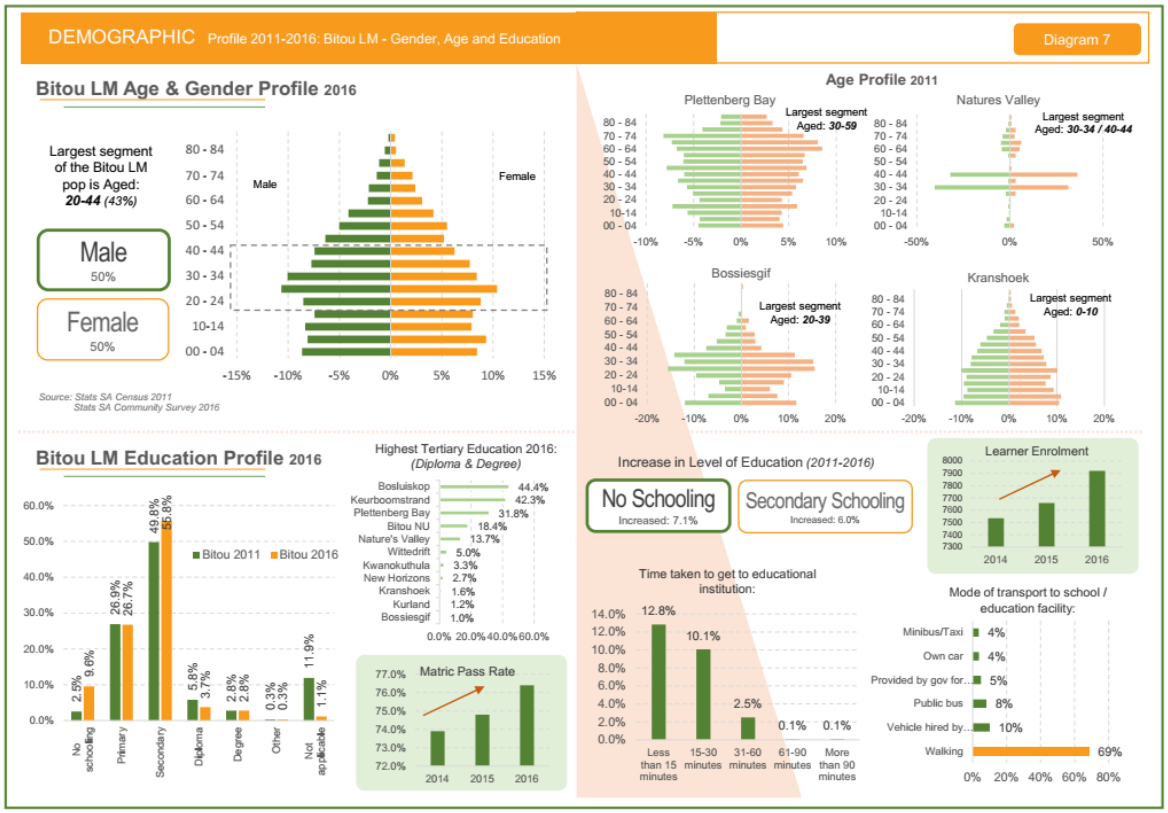

Figure 25: Overview of key demographic indicators for Bitou LM (Source: Bitou SDF 2022)

6.7.3.2 Employment levels

The Bitou Local Municipality has the highest unemployment rate of the 7 local municipalities comprising the Eden District. This is reflected in the high level of households in the Bitou Local Municipality that live close to or below the poverty line (64.1%). The Bitou Local Municipality also witnessed the highest rate of increase of the 7 local municiplaity's during the period 2001-2011. In this regard, while the Eden DM witnessed a 4% decrease to 22.5%, the Bitou unemployment rate increased by 3.8% to 30.1%. This figure is higher than the provincial average of 28.1%. This trend is also reflected in terms of youth unemployment (15-34 age group). Whilst the level for the Eden DM dropped 4% to 29.9%, unemployment in Bitou increased with 4.5% to 37.9% - 8% higher than the DM rate (Barbour, 2017). **It is therefore crucial to create employment opportunities within the mixed-use development.**

6.7.3.3 Household income

Barbour (2017) explains that based on the data from the 2011 Census, a significantly high 18.1 % of the population of the Bitou Local Municipality have no formal income, 4.4 % earn between 1 and R 4 800, 5.5 % earn between R 4 801 and R 9 600 per annum, 16.4 % between R 9 601 and 19 600 per annum and 19.7 % between R 19 600 and R 38 200 per annum (Census 2011). 64.1% of the households in the Bitou Local Municipality live close to or below the poverty line (living on less than R 3 200 per month).

6.7.3.4 Municipal service

The 2016 IDP highlighted the implications of the Local Municipalities high population growth rate for service delivery. Access to sufficient bulk water sources for potable use is specifically indicated as a major concern (Barbour; 2017).

7. Project Need and Desirability

7.1 Regional Need & Desirability

The Bitou Local Municipality Integrated Development Plan 2022-2027 (IDP) highlights the Bitou Municipalities phenomenal population growth over the past two decades. In 2021 the population of Bitou was reported at 69 321 people, making it the most populated municipal area in the Garden Route District (GRD). This total is expected to grow to 77 243 by 2025, equating to an average annual growth rate of 2.7 per cent.

The key challenges associated with this rate of population growth are outlined in the IDP to be as follows:

- **The need for additional housing opportunities;**
- The need for additional infrastructure services and bulk infrastructure;
- Increasing backlogs of infrastructure maintenance;
- Encroachment and illegal dwellings;
- More Illegal electrical connections;
- Increased unemployment;
- Increased health hazards; and
- Increases in crime.

With 21195 households in the Bitou municipal area, 71.1 per cent had access to formal housing, the lowest when compared with other municipalities in the GRD area. The District average was 82.7 per cent. Considering the high level of households living in informal dwellings (25.7 per cent), access to formal housing is a challenge in the Bitou municipal area.

Table 3 below summarises the housing and land need in the municipality for the main settlements and the rural areas. It is derived from the work on the waiting list databases of the municipality and the Department of Human Settlement (DHS).

Table 8: Current need for subsidized housing in Bitou and forecast to 2030 (Source: Bitou IDP 2017-2022)

Township	Item	Incremental Demand needed per Town (calculated from LUB)				Supply	
		Demand Database (Backlog)(ha)	Inc. 2016-2025 (ha)	Inc. 2025-2040 (ha)	2016-2040 (incl. Backlog) (ha)	SDA Areas (ha)	Planned Current Units
Kwanokuthula/ New Horizons/ Qolweni-Bossiesgif	Dwelling Units	5 347	4 489	7 655	17 491		4 425
	Land (ha)	155	176	301	632	307	
Plettenberg Bay Town	Dwelling Units	371	1 164	1 957	3 491		810
	Land (ha)	11	47	79	137	409	
Kranshoek	Dwelling Units	1 207	987	1 686	3 880		1 457
	Land (ha)	38	41	70	148	87	
Wittedrift	Dwelling Units	330	152	253	735		-
	Land (ha)	10	6	10	27	44	
Kurland	Dwelling Units	884	495	832	2 211		344
	Land (ha)	26	19	33	79	89	
Total Area	Dwelling Units	8 139	7 287	12 383	27 808		7 036
	Land (ha)	240	289	493	1 022	936	

There are therefore currently approximately 330 dwelling units on backlog in the Wittedrift area, which is anticipated to increase to 735 by 2040. This proposed extension to the existing Green Valley settlement will therefore contribute to reducing this number through the development of its proposed 299 single residential units and 431 high-density units (total of 730 units).

Barbour (2016) states that the Bitou population has increased by more than 20 000 in the decade between the 2001 and 2011 Census counts. This is an increase more than double the 1996 Bitou population (18 427). Between 1996 and 2011 the population has been growing at an average of 5.4% per year, the fourth fastest growth rate of any LM in South Africa, and the second fastest in the Western Cape. If this rate is maintained, the Census 2011 population is likely to double by 2025, and reach 138 776 by 2030. As pointed out in the IDP, **this is probably the greatest challenge facing the LM, and has significant implications for timeous service provision and infrastructure development in the LM** (Bitou IDP, 2016). **The phenomenal increase in the number of households has direct implications for housing and infrastructure provision and it is therefore clear that the proposed development that comprises 730 units, social amenities and bulk services infrastructure is needed and desired in the region.**

The 2022 Bitou Local Municipality Spatial Development Framework (SDF) states that future development in Wittedrift must be based on the settlement planning principles of walking distance as the primary measure of access, and functional and socio-economic integration between Wittedrift and Green Valley.

Several Strategic Development Areas have been identified where the current and future housing demand can be accommodated:

- Portion 28 of the Farm Wittedrift 306 (SDA17) at the top of the hill adjacent to Green Valley:
  This government owned land is already listed as a project in the Bitou Housing Project Pipeline (Green Valley Phase 2) and is intended to cater for the development of 730 IRDP units to address the current backlog (informal settlements in Green Valley) and to cater for future demand (GAP and IRDP).

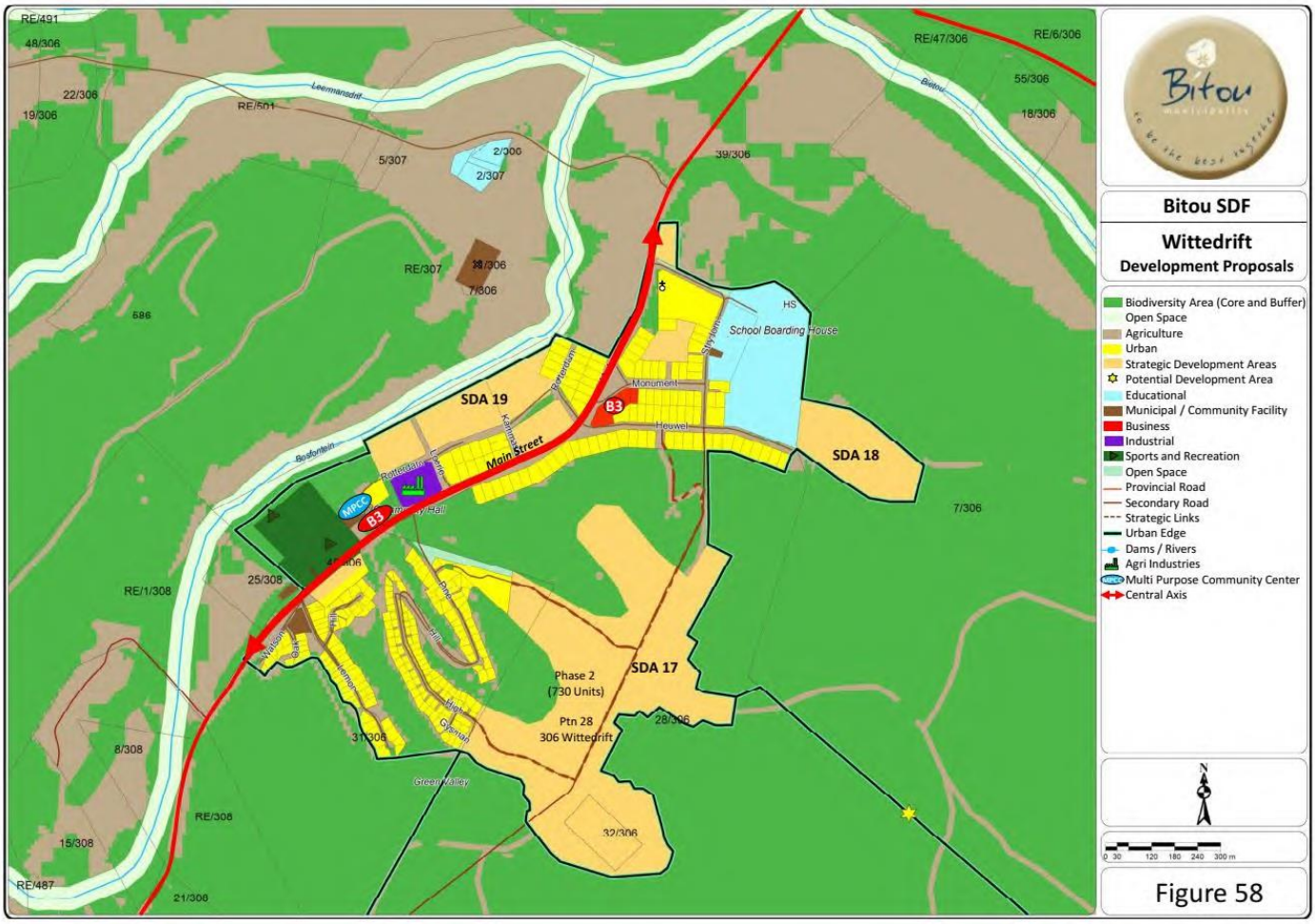

Figure 26: Wittedrift Conceptual Proposal as outlined in the Bitou SDF (2022).

Table 9: Bitou SDF Key Principles and comment on compatibility (need and desirability) of the proposed development (source: Social Impact Assessment by Tony Barbour, 2017)

Key principles listed in SDF	Comment on compatibility (need and desirability) of the proposed development
Provide for a mix of different kinds of land uses, e.g. residential, retail, business, and recreational opportunities	The proposed development provides a mix of land uses, mostly providing for low and middle income housing, but also including business, places of worship, community use, childhood development centre and public open spaces. **No school site is provided in the layout. A school site is however envisaged for the future extension of the site to the south which has not been planned at this stage.**
Create well-designed compact neighbourhoods where the different activities are in close proximity to each other	The proposed development provide for the establishment of a compact neighbourhoods where the different activities are in close proximity to each other.
Provide a variety of transportation choices, including private, public and non-motorised transport opportunities that are safe	**The proposed development does not specifically appear to cater for public transport. This issue will need to be confirmed during the assessment phase. The final layout and design should also ensure that the needs of pedestrians are catered for by designing wide pavements and planting of trees etc.**
Create a variety of housing opportunities, i.e. in terms of function, form and affordability	The proposed development provides a variety of housing opportunities, both in terms of affordability, size and density.
Encourage growth in existing	The proposed development will support growth in the existing

Key principles listed in SDF	Comment on compatibility (need and desirability) of the proposed development
communities this can be done through infrastructure upgrade, urban renewal new amenities and densification	adjacent communities through the upgrading of existing and provision of new infrastructure.
Preserve open spaces, natural beauty, and environmentally sensitive areas	The proposed development does identify open spaces and make provision for the conservation of these spaces and areas of natural beauty and environmental sensitivity.
Protect and enhance agricultural lands and secure these as a productive a land base for food security, employment, etc.	The **site is located within the urban edge** and has therefore been identified as suitable for development.
Utilize smarter, and cheaper infrastructure and green buildings and promote renewable and sustainable technologies	**The developers must ensure that the final design and construction ensure the use of smarter, and cheaper infrastructure and the development of green buildings and the promotion of renewable and sustainable technologies.**
Foster a unique neighbourhood identity building on the unique and diverse characteristics of each community;	The proposed development represents a natural expansion of the existing Greenvalley residential area. The development will therefore create an opportunity to develop a new neighbourhood that is associated with the unique and diverse characteristics of the adjacent communities.
Nurture engaged citizens through providing for residential work, and play areas	The proposed development makes provision for open spaces and areas for recreation. **The POS areas within the development should be designed to provide play areas for the community (parks for example).**

The Bitou IDP lists a number of key objectives. These objectives are listed in the table below. The table also comments on the compatibility (the need and desirability) of the proposed development in terms of these objectives.

Table 10: Bitou IDP Key Objectives and comment on compatibility (need and desirability) of the proposed development (source: Social Impact Assessment by Tony Barbour, 2017)

Key aspects identified in BLM IDP	Comment on compatibility of proposed development
Facilitating sustainable people-centred development and ensuring environmental integrity	The proposed mixed use development provides a combination of housing options, while also setting aside areas for public open space. Areas of conservation importance have been set aside for protection.
Proactively identifying and securing suitable land for settlement	The proposed development meets this requirement. **The area is also located within the urban edge and indicated within the SDF as suitable for housing.**
Providing effective basic services in a sustainable manner	The proposed development is aimed at meeting the needs to low to middle income households in an affordable and sustainable manner. **Bulk water and sewer infrastructure is proposed to be developed to provide services to the community.**
Facilitating local economic development with a particular focus on reducing poverty, creating jobs and developing the tourism and eco-tourism sectors	The proposed development will create employment and business opportunities for the local economy and community during both the construction and operational phase. **The potential for developing township related tourism opportunities should also be assessed.**
Facilitating social upliftment and community integration	The proposed development is aimed at meeting the needs to low to middle income households thereby creating an opportunity for social development. However, due to the location of the site there are likely to be limited opportunities for community integration with higher income

Key aspects identified in BLM IDP	Comment on compatibility of proposed development
	communities is the area.
Ensure efficient and affordable basic services to all residents of Bitou	The proposed development is aimed at meeting the needs to low to middle income households in an affordable and sustainable manner.
Address backlog in service infrastructure and housing	The proposed development is aimed at addressing the backlog in services and housing.
Poor or lacking health facilities	The need for a clinic will be assessed as part of the EIA Phase..
Construction of schools to relieve overcrowding	**The proposed development does make provision for a childcare development centre. The need for additional educational facilities will be assessed as part of the EIA. No school site is provided in the layout. A school site is however envisaged for the future extension of the site to the south which has not been planned at this stage.**
Establishment of a satellite fire-fighting services or park fire truck at police station for rapid Response	**The proposed development should include the establishment of a satellite fire-fighting station and a police station.**

Key development focus areas identified by the Bitou Local Economic Development (LED) Strategy for Bitou's key economic sectors are contained in the table below. The table also comments on the compatibility (need and desirability) of the proposed development in terms of these focus areas.

Table 11: Key Development Focus Areas identified in Bitou LED and comment on compatibility (need and desirability) of the proposed development (source: Social Impact Assessment by Tony Barbour, 2016)

Key aspects identified in BLM LED	Comment on compatibility of proposed development
Provision of space for SMME and informal trading	The proposed development makes provision for a business area (0.4ha).
Promotion of establishment of cooperatives amongst small business owners and informal sector	See above comment.
Development support to community, heritage and mainstream tourism products and routes	**The development should consider the establishment of cultural centre** that focuses on local heritage and also creates opportunity for tourists to visit the area.
Establishment of transport network centred around the Coming Together Project	**The proposed development does not appear to cater for public transport and establishment of a taxi rank/ bus terminal. This will be assessed as part of the EIA.**
Increased use of public transport services in tourism industry	**The development should consider the establishment of cultural centre** that focuses on local heritage and also creates and opportunity for tourists to visit the area.

The findings of the Socio-Economic review in terms of the need and desirability of the development pertaining to its alignment with land use planning and policies for the area indicate that **the proposed development is compatible with and supports the key principles and objectives contained in the relevant key land use planning and policy documents that pertain to the area, including the Western Cape Provincial Spatial Development Framework (2014), Bitou Local Municipality Integrated Development Plan 2016/ 2017 and the Bitou Local Municipality Spatial Development Framework (2013). In this regard the area is located in area that has been identified in the SDF as suitable for development. The area has therefore been identified as suitable for development** (Barbour; 2017).

7.2 Desirability of the Site Location

The proposed development is compatible with and supports the key principles and objectives contained in the relevant key land use planning and policy documents that pertain to the Western Cape and Bitou area, including the Western Cape Provincial Spatial Development Framework (2014), Bitou Local Municipality Integrated Development Plan 2016/ 2017 and the Bitou Local Municipality Spatial Development Framework (2013). **The proposed development is also located within the Urban Edge.** The proposed site has therefore been identified as a desirable site location. It is located directly adjacent to the existing Greenvalley Township and is an expansion of the existing Township.

The current housing situation in Bitou is that there are no alternative vacant sites within the urban edge that can be compared to investigate which site is the preferred site because **almost all sites adjacent to Plettenberg Bay and existing rural settlements are proposed to be infilled by subsidized housing.** There are therefore no additional land parcels available to be assessed given the numerous housing projects already underway (as listed above) in Bitou. This is therefore the only site available for this development proposal.

Barbour (2017) explains in the Baseline Socio-Economic Impact Assessment that Wittedrift should be developed as an education centre. In this regard a number of proposals for tertiary training facilities, such as culinary and hotel schools, private colleges and skills development centres have been mooted for the area.

The SDF notes that the local residents of Wittedrift and Green Valley are either employed on the surrounding farms, or work in the service businesses and education institutions in the village or commute to Plettenberg Bay. As can be seen from the Conceptual Proposals in the SDF for Wittedrift (figure below), **the municipality has identified the proposed vacant site for low-cost housing.**

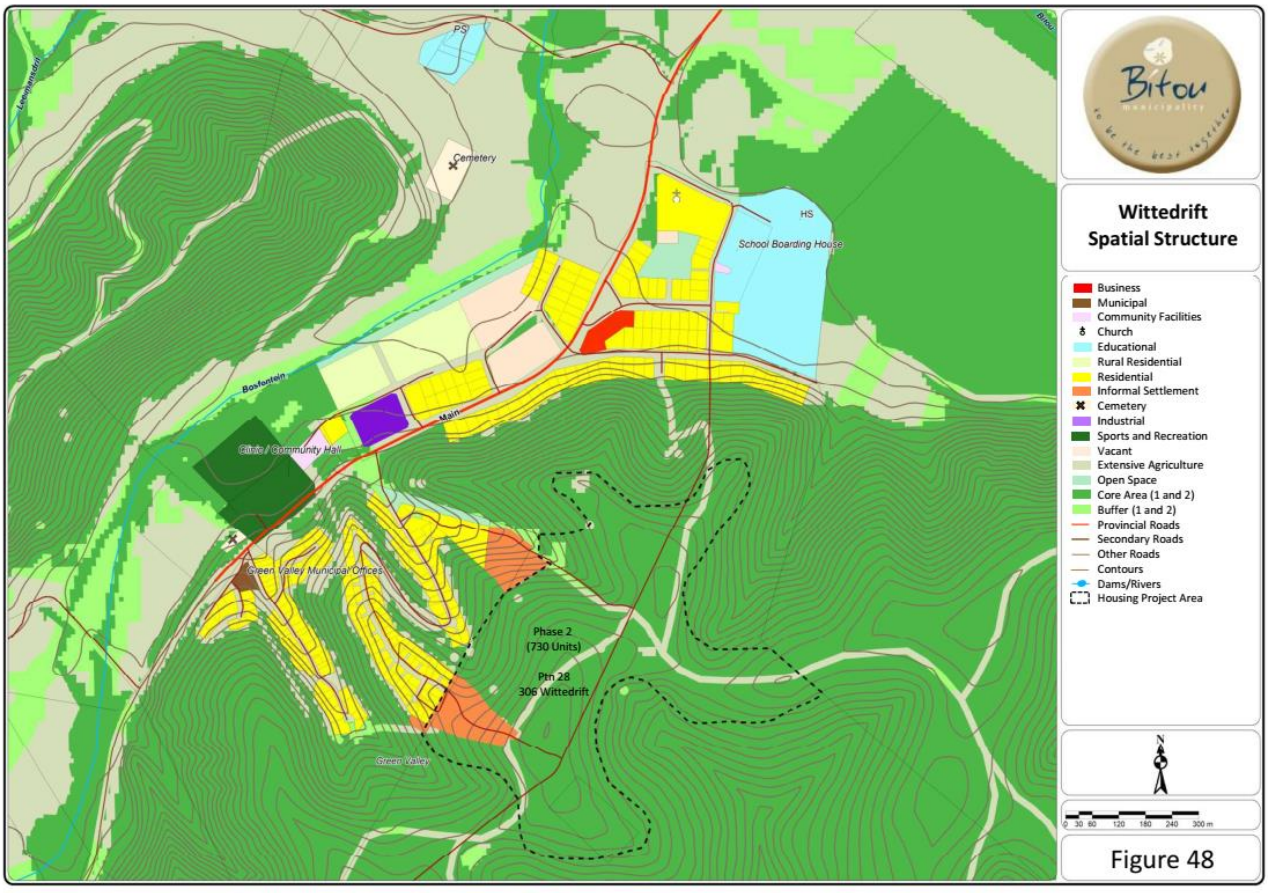

Figure 27: Conceptual proposals as outlined in the Bitou SDF.

Section 5.2.5, Broad Spatial Concept, outlines the main spatial elements that underpin the SDF. Of relevance to the proposed development are the Piesang, Bitou and Keurbooms River Valleys, with Wittedrift/Green Valley as the focus in the Bitou Valley.

The spatial elements listed in the SDF that are relevant to the proposed development include:

- **BV1 Promote development of Wittedrift/Green Valley as a settlement based on the principles of:**
  - ✓ walking distance as the primary measure of accessibility;
  - ✓ functional integration;
  - ✓ socio-economic integration;
  - ✓ taking into account locations for education institutions;
- BV4 Upgrade the gravel access road to the N2 as a scenic route. All building plan applications for residential dwellings and other buildings along this route should include visual impact assessments to ensure that views from this road are not negatively impacted.

Barbour (2017) highlights that in terms of the development of Wittedrift, the following points in the SDF under Section 5.11.2.2, Urban Development, are of relevance to the proposed development:

- Rather than developing further south on the hill side slopes abutting Green Valley it is proposed that all future development be concentrated on either side of the main access road creating a stronger image and sense of arrival in the settlement;
- The development of other existing vacant land in the village should be encouraged;
- The large piece of vacant land to the east, see area I, could be suitable for a large education institution;
- If land for more upmarket development is required in order to strengthen support for businesses and facilities the flat land on top of the ridge could be considered;
- In general all new and existing buildings in Wittedrift should be subject to Urban Design Guidelines to ensure that construction and renovation enhance rather than detract from the settlement sense of place;

Based on the information contained in the SDF **the Green Valley low income housing and mixed use development is located in an area that has been identified as suitable for development.**

Public Participation Process

8.1 Opportunity to Comment

It is a requirement according to the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014 that once an application is submitted to obtain an Environmental Authorisation in terms of the NEMA EIA Regulations that potential or registered Interested and / or Affected Parties (interested in the proposed development or affected by the proposed development) are subjected to a consultation period (at least 30 days) on the Draft Scoping Report before their comments are taken into account and responded to in a Final Scoping Report which is then submitted for decision making. Due to the time restrictions now applicable (in terms of number of days allowed before a Final Scoping Report must be submitted and Final EIA Report must be submitted) once an application for Environmental Authorisation is submitted, it is required to conduct pre-application public and Authority consultation before an application form is submitted (pre-application phase) in order to resolve key issues of concern from the public and Authorities before an application is submitted (and before the time restrictions apply where issues cannot be resolved in time resulting in a lapse of the application process.

There is therefore two 30-day Public & Authority Consultation phases during the **Scoping Phase**, the first one on this Pre-Application Draft Scoping Report and then a second 30 day Public & Authority Consultation Phase that will make a Version 2 of this Draft Scoping Report available (having considered I & AP comments received) for consultation post application form submission**. Please note that all comments submitted to SES in writing on the Pre-Application Draft Scoping Report have been responded to in a Comments & Response Table included in this Post-Application Draft Scoping Report (Post Application DSR). All those that submit comment are automatically registered on the database and will be notified for the remainder of the EIA process of all reports available for review and comment.**

This **Pre-Application Draft Scoping Report** (first round of Public & Authority Consultation) was made available to identified Potential Interested & Affected Parties and Automatically Registered Key Authorities to review in order to provide comment on from the **23 April 2021 – 24 May 2021(30 days).**

This Pre-Application Draft Scoping Report will be available for free download and review directly from our website (www.sescc.net) under the public documents tab.

Following the Pre-Application public participation period, the Application form was completed and submitted to the Department of Environmental Affairs and Development Planning (DEA&DP).

As per the legislated process, the Pre-Application Draft Scoping Report has been revised based on comments received and the Post-Application Draft Scoping Report is now being made available to identified Potential Interested & Affected Parties and Automatically Registered Key Authorities to review in order to provide comment from **23 January 2023 to 22 February 2023.** Following the second round of public participation, the Post-Application Draft Scoping Report will be finalised and submitted to DEA&DP for consideration (Acceptance/Rejection).

A Third Round of Public & Authority Consultation will also take place where the Environmental Impact Assessment Report (yet to be compiled) will be made available for another 30 days Consultation. The EIA Report will include all specialist assessments yet to be undertaken such as a Visual Impact Assessment and Traffic Impact Assessment as well as a more detailed Socio-Economic Impact Assessment.

8.2 Interested & Affected Party Register

A desktop assessment was undertaken in order to ascertain the farm numbers where the mixed-use development and bulk infrastructure are proposed to be located, as well as adjacent affected landowners & occupiers.

The Municipality was contacted who provided Sharples Environmental Servicers with the contact information for the property owners of the proposed sites to be developed and surrounding owners. All landowners and adjacent landowners contact details

were then included on the **Register of Potential Interested & Affected Parties** that has been included in this Draft Scoping Report as **Appendix E1**. Key Authorities (automatically must be registered) and other key stakeholders were also identified that were placed on the Register.

The Bitou Municipality own the land proposed to be developed for the mixed-use development site. The bulk water and pipeline infrastructure for the most part is proposed to be located within Municipal owned land and within road reserves but there are a few privately owned erven where the pipeline infrastructure is proposed.

Landowner Consent is not required for linear developments (such as the bulk sewer pipeline and water pipeline proposed) in terms of the NEMA EIA 2014 Regulations, as amended. It is only required to notify the landowner in writing. Further negotiations with the landowners will however need to take place when the servitudes need to be registered on their properties (before construction of the pipeline) so that the landowner can be appropriately compensated by the Municipality according to the value of the land proposed to be used for the pipeline and associated servitude. This is a separate consultation process not required to take place at this stage.

8.3 Site Notice

Three site notices (large billboard), in English, Afrikaans and Xhosa have been placed at the existing entrance to the Greenvalley Township, notifying potential Interested and Affected Parties (I & AP's) of the availability of the Draft Scoping Report and inviting I & AP's to register on the database as Registered Interested & Affected Parties. Please refer to **Appendix E2** for the content and proof of the site notice.

8.4 Newspaper Advertisement

A newspaper advertisement, in English, has been placed in the local newspaper notifying potential Interested and Affected Parties (I & AP's) of the availability of the Draft Scoping Report and inviting I & AP's to register on the database as Registered Interested & Affected Parties. Please refer to **Appendix E3** for the content and proof of the newspaper advert.

8.5 Public Open Day

A Public Open Day will be held on **26 January 2023**, at the Green Valley Community Centre on Rotterdam Street. The Open Day will run from 4pm to 6pm, and aims to identify any additional public concerns and address questions of clarity required in relation to the proposed project.

8. Description of the Impacts & Risks Identified

The impact tables in the section below includes the identified potential environmental impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of impact, the degree to which the impact can be reversed, may cause irreplaceable loss of resources and can be avoided, managed or mitigated. These impact tables have however only at this "scoping" stage been informed by the Scoping Phase Socio-Economic Impact Assessment, Botanical Impact Assessment and Freshwater Impact Assessment. It must be noted that a detailed EIA Phase Socio-Economic Impact Assessment, a detailed EIA Phase Traffic Impact Assessment and a detailed EIA Phase Visual Impact Assessment are still proposed to be undertaken during the "EIA Phase" to inform the findings of the Draft Environmental Impact Assessment Report, still to be compiled.

The findings of the impact tables therefore at this scoping stage are largely only based on limited initial baseline specialist input on only the conceptual layout in Appendix C and the professional opinion of the EAP may change once the additional specialist impact assessments occur and once we have received additional input from the public and the Authorities on this Report. An Integrated Heritage Impact Assessment may also be required to be informed by paleontological, archaeological, heritage and urban design and landscaping plans.

9.1 Screening Tool Results

The Department of Environmental Affairs (DEA) has developed a screening tool for an Environmental Authorization which identifies potential environmental sensitivities on the proposed site. The results of the tool can be found in **Appendix D**. Table 12 shows the findings of the tool:

Table 12: Results of the DEA Screening Tool

Theme	Sensitivity (Housing: H; Water Pipeline: W; Sewerage Pipeline: P)			
	Very High	High	Medium	Low
Agriculture Theme		W; S	H	
Animal Species Theme		H; W; S		
Aquatic Biodiversity Theme	H; W; S			
Archaeological and Cultural Heritage Theme	S			H; W
Civil Aviation Theme		H; W; S		
Defence Theme				H; W; S
Palaeontology Theme	H; W;S			
Plant Species Theme			H; W; S	
Terrestrial Biodiversity Theme	H; W; S			

Based on these results, the Screening tool recommended the following specialist assessments be conducted:

- Landscape / Visual Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment
- Paleontology Impact Assessment
- Terrestrial Biodiversity Impact Assessment
- Aquatic Biodiversity Impact Assessment
- Avian Impact Assessment
- Socio-Economic Assessment
- Plant Species Assessment
- Animal Species Assessment
- Agricultural Impact Assessment
- Geotechnical Assessment
- Civil Aviation Assessment

In response to these recommendations, the following studies were compiled for the pre-application Scoping Phase of the proposed development:

- Baseline Biodiversity Assessment with Plant Species Assessment
- Baseline Aquatic Biodiversity Impact Assessment
- Baseline Socio-Economic Assessment
- Engineering Services Report

The following studies are proposed for the EIA Phase:

- Agricultural Statement
- Socio-Economic Impact Assessment
- Biodiversity Impact Assessment with Plant Species Assessment
- Aquatic Biodiversity Impact Assessment
- Visual Impact Assessment
- Archaeological and Cultural Heritage Impact Assessment / Paleontology Impact Assessment should these be required by HWC

- Animal Species Assessments
    - Avian Impact Assessment
    - Invertebrate Statement
    - Mammal Statement
    - Reptile & Amphibian Statement

9.2 Potential Environmental Impacts Identified

8.2.1 Construction Phase

The following potential environmental impacts have been identified by the EAP and by initial input from Botanical, Freshwater and Socio-Economic specialists as impacts that may occur during the construction phase that need to firstly be avoided and if unavoidable, mitigated to an acceptable level of impact significance.

- **Botanical Impact** - **Permanent Loss of Fynbos / Forest:** The total area of good quality fynbos that will be disturbed amounts to ±15 ha, while 1.4 ha of Afrotemperate forest and 3 ha of riverine fringe forest/thicket will be disturbed. In the case of the development (residential) footprint, the loss of fynbos will be permanent.
- **Botanical Impact** – **Loss of Species of Concern & Protected Trees:** Potential loss of identified SCC and Protected Tree Species along the pipeline routes.
- **Botanical Impact** – **Vegetation Type and Habitat:** The impact during the construction of the sewer and water supply pipelines involves the removal of vegetation in a ±15 m wide strip, followed by trenching for the laying of the pipe, backfilling and finally rehabilitation of the disturbed surface. In instances where the pipelines will follow existing roads or farm tracks, the footprint width should be less. In all likelihood, the species which originally occurred along the pipeline routes will return, including aliens that may be present in the area. The species composition and structure of the good quality fynbos areas will be altered in the short to medium term and may return to its original form in the long term, if invasive aliens are controlled.
- **Botanical Impact** – **CBA's and ESA's:** the proposed development site is located mainly inside a mapped ESA. The associated access roads, sewage and water supply pipelines, on the other hand, are located inside a mixture of CBA's, ESA's and transformed areas. While the impact of the development footprint itself will be permanent, the impact of the service pipelines on ecological linkages, such as watercourses, CBA's and ESA's, is of a lesser concern since the pipeline routes follow a linear route underground.
- **Freshwater Resources Impact – Disturbance / loss of aquatic vegetation and habitat:** The disturbance or loss of aquatic vegetation and habitat refers to the direct physical destruction or disturbance of aquatic habitat caused by vegetation clearing, disturbance of riparian habitat, encroachment and colonisation of habitat by invasive alien plants. Indigenous aquatic vegetation within the stream catchments, and possibly within the riparian zone, will be removed and disturbed due to construction activities such as excavations and infilling, as well as machinery and workers on site. This will be a direct and immediate impact resulting in short to medium term vegetation loss. Alien invasive species may be introduced and encroach into disturbed areas. Alien invasive plant encroachment into disturbed areas can outcompete indigenous vegetation and reduce aquatic biodiversity (Bekker; 2017).
- **Freshwater Resources Impact – Erosion of the banks and sedimentation of the watercourses:** Sedimentation and erosion refers to the alteration in the physical characteristics of rivers as a result of increased turbidity and sediment deposition, caused by soil erosion and earthworks that are associated with construction activities, as well as instability and collapse of unstable soils during project operation. These impacts can result in the deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for aquatic dependent flora & fauna. Vegetation clearing and exposure of bare soils within and upslope of the stream habitats during construction will decrease the soil binding capacity and cohesion of the upslope soils and thus increase the risk of erosion and sedimentation downslope. This may cause the burying of aquatic habitat and also cause aquatic faunal fatalities. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Formation of rills and gullies from increased concentrated runoff. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. Soil compaction resulting in reduced infiltration and increased surface runoff together with the artificial creation of preferential flow paths due to construction activities, will result in increased quantities of flow entering the systems (Bekker, 2017).
- **Freshwater Impact – Water pollution:** Water and/or soil pollution cause negative changes in the physical, chemical and biological characteristics of water resources (i.e. water quality). This can result in possible deterioration in aquatic

ecosystem integrity and a reduction in, or loss of, species of conservation concern (i.e. rare, threatened/endangered species). During construction there are a number of potential pollution inputs into the aquatic systems (such as hydrocarbons and raw cement). These pollutants alter the water quality parameters such as turbidity, nutrient levels, chemical oxygen demand and pH. These alternations impact the species composition of the systems, especially species sensitive to minor changes in these parameters. Sudden drastic changes in water quality can also have chronic effects on aquatic biota in general and result in localised extinctions. Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the system by means of surface runoff or through dumping by construction workers. Raw cement entering the systems through incorrect batching procedure and/or direct disposal. The incorrect positioning and maintenance of the portable chemical toilets and use of the surrounding environment as ablution facilities may result in sewage and chemicals entering the systems (Bekker, 2017).

- **Freshwater Impact – Flow Modification:** The changes in the quantity, timing and distribution of water inputs and flows within the watercourse. Possible ecological consequences associated with this impact may include: deterioration in freshwater ecosystem integrity, reduction/loss of habitat for aquatic dependent flora & fauna, and a reduction in the supply of ecosystem goods & services. Land clearing and earth works upslope of the rivers will reduce infiltration rates and increase the surface runoff volume and velocity. Such changes in surface roughness and runoff rates may lead to some rill and gully erosion. Altered water inputs from upslope disturbances as well as modified water distribution and retention patterns will ultimately affect the hydrological integrity of water resources (Bekker, 2017).
- **Archaeological & Paleontological Impact –** It is proposed to clear approximately 20ha of mostly undisturbed area for the construction of the mixed use development and a further 17ha for the bulk services. Archaeological material or fossils could be damaged or destroyed.
- **Dust & Noise Impact:** Limited dust and noise impacts may result due to construction activities on the site. Excavations and associated earth-moving activities may generate noise and vibration which may pose a nuisance to surrounding residents and other land users. Movement of heavy vehicles to & from the site may generate noise, which may affect surrounding residents.
- **Traffic & Safety Impact:** It is proposed to deliver a significant amount of materials and equipment to the site during the construction phase of the development. Numerous truck trips will be required every day that could cause a temporary disturbance to traffic in the area. Impacts are expected to occur to the traffic in the area due to increased truck and construction vehicle traffic expected during the construction phase. Construction vehicles may impact on the existing road conditions (road capacity and congestion). Vehicles may impact on road safety conditions due to an increase in construction phase vehicles entering and exiting the site and they may impact on the condition of the existing road network.
- **Visual Impact:** The construction phase is associated with temporary disturbance as a result of construction (trench excavations, vehicles, machinery, fencing & signage) that may have a negative visual impact to the area.
- **Socio-Economic Impact (positive impact) – Creation of business and employment opportunities:** Barbour (2017) explains in the Socio-Economic Impact Assessment that the estimated capital expenditure costs for the development are expected to be region of R 800 million – 1 billion (2016 rand value). The proposed development will therefore represent a positive benefit for the local construction and building sector in the EDM and BLM. The majority of the building materials associated with the construction phase will be sourced from locally based suppliers from the EDM and BLM. This will represent a positive injection of capital into the areas local economy. The project should also be viewed within the context of the slump in the construction and building sector in the wake of the 2008 global financial crisis. Since 2008 there have been a limited number of large scale residential and mixed use developments in the EDM and BLM. The proposed development would therefore represent a significant opportunity for the local construction and building sector. For the purposes of the assessment it is assumed that ~ 600 employment opportunities will be created per annum during the construction phase for the residential component of the development. Based on information from similar employment numbers the total annual wage bill is estimated to be in the region of R 100 million. Of this total the annual wage bill for semi-skilled and skilled workers will be in the region of R 60 million and R 40 million respectively. The total wage bill over 5 years will therefore be in the region of R 500 million. A significant portion of the annual and total wage bill will be spent in the local EDM and BLM. This would in turn benefit local business (Barbour, 2017).
- **Socio-Economic Impact - Presence of construction workers and potential impacts on family structures and social networks.** Presence of construction workers may lead to potential impacts on family structures and social networks. Risk to local communities as a result of construction workers in the area has been identified.

- **Socio-Economic Impact - Threat to safety and security.** With approximately 600 construction phase staff per year in the area, this could pose a risk to nearby residents in terms of their safety and security.

8.2.2 Operation Phase

- **Botanical Impact - Establishment of alien vegetation** as a result of land disturbance. Of particular concern is the establishment of alien vegetation in the area disturbed for the route of the bulk services infrastructure.
- **Freshwater Resources Impact - Disturbance / loss of aquatic vegetation and habitat:** The disturbance or loss of aquatic vegetation and habitat refers to the direct physical destruction or disturbance of aquatic habitat caused by vegetation clearing, disturbance of riparian habitat, encroachment and colonisation of habitat by invasive alien plants. The project will introduce unnatural disturbance to aquatic ecosystems, promoting the establishment of disturbance-tolerant species, including colonization by invasive alien species, weeds and pioneer plants. Although this impact is initiated during the construction phase it is likely to persist into the operational phase. Residents of the proposed development may harvest wood from the riparian habitat for firewood or create footpaths through riparian habitat. The stormwater infrastructure of the housing and associated road network will increase and concentrate flows into the systems. This may lead to erosion in the systems (Bekker, 2017). Waste management practises and littering during the operation phase could lead to waste, raw materials or chemicals causing contamination and / or pollution of the natural wetlands and watercourse on site, leading to further downstream impacts.
- **Freshwater Resources Impact - Erosion of the banks and sedimentation of the watercourses:** Sedimentation and erosion refers to the alteration in the physical characteristics of rivers as a result of increased turbidity and sediment deposition, caused by soil erosion and earthworks that are associated with construction activities, as well as instability and collapse of unstable soils during project operation. These impacts can result in the deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for aquatic dependent flora & fauna. Where soil erosion problems and bank stability concerns initiated during the construction phase are not timeously and adequately addressed, these can persist into the operational phase of the development project and continue to have a negative impact on adjacent/downstream water resources in the study area. The increase in hardened surface by the development will be considerable and, if not mitigated against, will result in erosion in the systems. Surface runoff and velocities will be increased and flows may be concentrated by stormwater infrastructure. (Bekker, 2017).
- **Freshwater Resources Impact - Water Pollution:** Water and/or soil pollution cause negative changes in the physical, chemical and biological characteristics of water resources (i.e. water quality). This can result in possible deterioration in aquatic ecosystem integrity and a reduction in, or loss of, species of conservation concern (i.e. rare, threatened/endangered species). The increase in vehicles on the property due to the development increases the potential for pollutants to enter the systems. During maintenance of the development there could be water pollution impacts similar to those encountered in the construction phase. It is assumed that all waste water will be disposed of via existing infrastructure and will not be treated on the property. However, should any onsite waste water treatment infrastructure fail, and result in raw sewerage entering any watercourses, it may impact the water quality of the systems. In the operational phase there is potential for water pollution to occur during maintenance activities (Bekker, 2017). The nature of this type of development (low cost housing) is expected to result in litter and waste entering the nearby watercourses that border the site. Storm water from the site will be discharged into the watercourses that will most likely consist of litter and other waste. Polluted (nutrients and litter) discharged stormwater is expected to have a detrimental impact on the water quality of the downstream receiving aquatic ecosystems, if not mitigated effectively with stormwater management and litter management infrastructure and regular servicing and maintenance of the systems.
- **Freshwater Resources Impact - Flow Modification:** The changes in the quantity, timing and distribution of water inputs and flows within the watercourse. Possible ecological consequences associated with this impact may include: deterioration in freshwater ecosystem integrity, reduction/loss of habitat for aquatic dependent flora & fauna, and a reduction in the supply of ecosystem goods & services. Hardened/artificial infrastructure will alter the natural processes of rain water infiltration and surface runoff, promoting increased volumes and velocities of storm water runoff, which can be detrimental to the rivers receiving concentrated flows off of these areas. According to the SANRAL (2006), urbanisation typically increases the runoff rate by 20 -50%, compared with natural conditions. Increased volumes and velocities of storm water draining from the development and discharging into down-slope rivers can alter the natural ecology the systems, increasing the risk of erosion and channel incision/scouring (Bekker, 2017).

- **Visual Impact – Land use character & "sense of place":** It is proposed to change the land use character and existing sense of place of the site from an undeveloped site of natural vegetation where some agricultural activities dominate adjacent to an existing urban environment to a built up mixed use development of almost 20ha in size. The proposed development could impact on the "sense of place" of the area to sensitive receptors that can see the mixed use development when before they were not impacted upon by the existing adjacent urban development.
- **Traffic & safety impact:** An increase in traffic is expected to occur in the area as a result of more than 730 erven and various social amenities proposed. Vehicles may impact on the existing road network and road safety conditions due to an increase in vehicles entering and exiting the site.
- **Positive Socio-Economic Impact - Provision of low and middle income housing:** Barbour (2017) explains that the proposed development will assist to address the housing backlog in the area by providing 730 houses, specifically the housing needs of the low and middle income households. This will represent a significant social benefit for the households in the local municipality that currently live in informal areas.
- **Positive Socio-Economic Impact - Provision of schools and public spaces:** The proposed development makes provision for the establishment of an early childhood development centre and public open spaces. These components will contribute to an improved quality of life for many local residents in the local municipality who currently live in informal areas that are not well serviced and lack public facilities, such as parks and open spaces.
- **Positive Socio-Economic Impact - Employment and business:** Barbour (2017) explains that the business and retail components will create employment opportunities for local residents. The residential component may also create some opportunities for domestic workers and gardeners etc. However due to the low income levels these opportunities are likely to be limited. The development will also create increased demand for municipal services, such as waste, maintenance etc, which will require additional municipal posts to be created. The majority of the employment opportunities are likely to benefit Historically Disadvantaged Individuals (HDIs). Given the high unemployment levels in the surrounding areas, coupled with the low income and education levels, this would represent a positive social impact. The operational phase will also create opportunities for local businesses, such as local maintenance and building companies, garden services and security companies, petrol stations, shops and restaurants etc. and create opportunities for new businesses to develop. The increased number of households will also create opportunities for the taxi sector. The local estate agencies in the area and legal firms would also benefit from the sale and resale of properties associated with the new development.
- **Positive Socio-Economic Impact - Broaden the rates base:** The development will result in an increase in the rates base. In addition the proposed development would also generate revenue for the local municipality from the consumption of water and electricity (Barbour, 2016).

9.3 Methodology Applied in Impact Assessment

The following assessment methodology was used by the Specialists and the EAP. It has been adapted from the DEAT (2002) Information Series 5, Integrated Environmental Management Information Series on Impact Significance:

Table 13: Methodology in determining the extent, duration, probability, significance, reversibility and cumulative impact of an environmental impact (to be read with section 9.2 impact tables below).

Determination of Extent (Scale):

Site Specific	The impact is limited to the development site (development footprint) or part thereof.
Local	The impacted area includes the whole or a measurable portion of the site, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.
Regional	The impact would affect the broader region (e.g. neighbouring towns) beyond the boundaries of the adjacent properties.
National	The impact would affect the whole country (if applicable).

Determination of Duration:

Temporary	The impact will be limited to part of the construction phase or less than one month.
Short term	The impact will continue for the duration of the construction phase, or less than one year.
Medium term	The impact will continue for part the operational phase
Long term	The impact will continue for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

Determination of Probability:

Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
Probable	There is a possibility that the impact will occur to the extent that provisions must therefore be made.
Highly probable	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
Definite	The impact will take place regardless of any prevention plans.

Determination of Significance (without mitigation):

No significance	The impact is not substantial and does not require any mitigation action.
Low	The impact is of little importance, but may require limited mitigation.
Medium	The impact is of sufficient importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
Medium-High	The impact is of high importance and is therefore considered to have a negative impact. Mitigation is required to manage the negative impacts to acceptable levels.
High	The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
Very High	The impact is critical. Mitigation measures cannot reduce the impact to acceptable levels. As such the impact renders the proposal unacceptable.

Determination of Significance (with mitigation):

No significance	The impact will be mitigated to the point where it is regarded to be insubstantial.
Low	The impact will be mitigated to the point where it is of limited importance.
Medium	Notwithstanding the successful implementation of the mitigation measures, the impact

	will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.
High	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and, taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.

Determination of Reversibility:

Completely Reversible	The impact is reversible with implementation of minor mitigation measures
Partly Reversible	The impact is partly reversible but more intense mitigation measures
Barely Reversible	The impact is unlikely to be reversed even with intense mitigation measures
Irreversible	The impact is irreversible and no mitigation measures exist

Determination of Degree to which an Impact can be Mitigated:

Can be mitigated	The impact can be completely mitigated
Can be partly mitigated	The impact can be partly mitigated
Can be barely mitigated	It is possible to mitigate the impact only slightly
Not able to mitigate	It is not possible to mitigate the impacts

Determination of Loss of Resources:

No loss of resource	The impact will not result in the loss of any resources
Marginal loss of resource	The impact will result in marginal loss of resources
Significant loss of resources	The impact will result in significant loss of resources
Complete loss of resources	The impact will result in a complete loss of all resources

Determination of Cumulative Impact:

Negligible	The impact would result in negligible to no cumulative effects
Low	The impact would result in insignificant cumulative effects

Medium	The impact would result in minor cumulative effects
High	The impact would result in significant cumulative effects

9.4 Construction Phase Impact Tables

Note: There is only one site location and layout proposed for the mixed use development, as per **Appendix C1 – Referred to as Alternative A**. This has therefore been assessed compared to the NO-GO (**Alternative B**). The impacts associated to this layout plan have therefore been assessed as per the below tables.

8.4.1 Botanical Impact – Permanent Loss of Indigenous Fynbos Vegetation

	Botanical Impact - Permanent loss of indigenous fynbos vegetation, Species of Concern & Protected Trees	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:		The NO-GO Alternative of not providing housing to those in need is most likely to result in the informal Greenvalley Settlement expanding into the same area proposed to be formalised.
Nature of impact:	Negative	Negative
Extent and duration of impact:	Site Specific; Long Term	Site Specific; Long Term
Probability of occurrence:	Definite	Probable
Degree to which the impact can be reversed:	Barely Reversible	Barely Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	Marginal loss of resource
Cumulative impact prior to mitigation:	Low	Low
Significance rating of impact prior to mitigation	Medium	Low-Medium
Degree to which the impact can be mitigated:	Can be barely mitigated	Can be barely mitigated
Proposed mitigation:	• Arrange for a walkdown of the proposed routes by a botanist during its staking to mark protected tree species for protection. • A search and rescue of selected plant species, such as bulbs and succulents, is recommended if done at an appropriate time of the year, i.e. around July-August just before the main flowering season. Search and rescued species should be	None

	transplanted in suitable rehabilitation areas nearby in a similar vegetation type from which it originates. • If Euphorbia procumbens is found in a construction area it should be collected and transplanted in a suitable receiving area away from the development, such as a nearby nature reserve.	
Cumulative impact post mitigation:	Negligible	Negligible
Significance rating of impact after mitigation	**Low (-)**	**Low (-)**

8.4.2 Botanical Impact – Vegetation Type and Habitat

	Botanical Impact – Modification of Vegetation Type and Habitat	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:		The NO-GO Alternative of not providing housing to those in need is most likely to result in the informal Greenvalley Settlement expanding into the same area proposed to be formalised.
Nature of impact:	Negative	Negative
Extent and duration of impact:	Site Specific; Medium Term	Site Specific; Long Term
Probability of occurrence:	Definite	Probable
Degree to which the impact can be reversed:	Barely Reversible	Barely Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	Marginal loss of resource
Cumulative impact prior to mitigation:	Low	Low
Significance rating of impact prior to mitigation	Medium-High	Medium-High
Degree to which the impact can be mitigated:	Can be barely mitigated	Can be barely mitigated
Proposed mitigation:	• Pull the development back from the forest edge on the eastern side of site. • Utilise all the fallow areas outside the development footprint in favour of the good quality fynbos inside the footprint.	None

	• With regards to the access roads, shorter route options to the village below will certainly lessen the impact and should be investigated. • Remove and protect topsoil from fynbos areas to be disturbed, especially along the sewer and water supply pipeline routes. It can be used for rehabilitation of the disturbed area after construction work has been completed. • Demarcate/fence off the construction area. • Search and rescue of suitable plant species, such as succulents and bulbs. • Utilise farm tracks, fallow land and disturbed/degraded areas optimally in the positioning of infrastructure to minimise the impact on fynbos and Afrotemperate forest. • Remove and protect topsoil from fynbos/forest areas to be disturbed. It can be used for rehabilitation of the disturbed area after construction work has been completed. • Demarcate/fence off the construction corridors through fynbos and Afrotemperate forest area.	
Cumulative impact post mitigation:	Negligible	Negligible
Significance rating of impact after mitigation	**Medium (-)**	**Medium (-)**

8.4.3 Botanical Impact – CBA's & ESA's

	Botanical Impact – CBA's & ESA's	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:		The NO-GO Alternative of not providing housing to those in need is most likely to result in the informal Greenvalley Settlement expanding into the same area proposed to be formalised.
Nature of impact:	Negative	Negative
Extent and duration of impact:	Site Specific; Medium Term	Site Specific; Long Term
Probability of occurrence:	Definite	Probable
Degree to which the impact can be reversed:	Barely Reversible	Barely Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	Marginal loss of resource

Cumulative impact prior to mitigation:	Low	Low
Significance rating of impact prior to mitigation	Medium-High	Medium-High
Degree to which the impact can be mitigated:	Can be barely mitigated	Can be barely mitigated
Proposed mitigation:	• With regards to the access roads, shorter route options to the village below will certainly lessen the impact and should be investigated. • Remove and protect topsoil from fynbos areas to be disturbed, especially along the sewer and water supply pipeline routes. It can be used for rehabilitation of the disturbed area after construction work has been completed. • Demarcate/fence off the construction area. • Search and rescue of suitable plant species, such as succulents and bulbs. • Rehabilitation of pipeline routes and alien control in the long term.	None
Cumulative impact post mitigation:	Negligible	Negligible
Significance rating of impact after mitigation	**Low (-)**	**Low (-)**

8.4.4 Freshwater Resources Impact – Loss of Aquatic Habitat and Associated Biota

	Freshwater Resources Impact – Disturbance / loss of aquatic vegetation / habitat	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	The disturbance or loss of aquatic vegetation and habitat refers to the direct physical destruction or disturbance of aquatic habitat caused by vegetation clearing, disturbance of riparian habitat, encroachment and colonisation of habitat by invasive alien plants. Indigenous aquatic vegetation within the stream catchments, and possibly within the riparian zone, will be removed and disturbed due to construction activities such as excavations and infilling, as well as machinery and workers on site. (Bekker; 2017).	No Impact
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Local Extent; Medium Term Duration	N/A
Probability of occurrence:	Probable	N/A
Degree to which the impact can be reversed:	Irreversible	N/A

Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource.	N/A
Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	N/A
Proposed mitigation:	• A buffer area from the boundary of the riparian habitat must be adopted and demarcated. A minimum buffer of 15m is required between any proposed activities and the more degraded, western tributaries. For the eastern, near pristine watercourses, a 30m aquatic buffer zone is required from the boundary of the riparian zone to any proposed activities. • The ECO must advise on the most appropriate demarcation fencing and signage required to be erected prior to the construction phase to protect the NO-GO buffer areas. • Any development activities that need to take place within the aquatic habitat and their recommended buffers will be kept to a minimum and rehabilitated immediately afterwards. • Monitoring implementation and management of the final buffer areas should be undertaken throughout the duration of construction activities to ensure that the effectiveness of the final buffer zone areas is maintained. • The appointed Environmental Control Officer (ECO) must undertake at least once site inspection per fortnight, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.	N/A
Cumulative impact post mitigation:	Negligible	N/A
Significance rating of impact after mitigation	**Low(-)**	N/A

8.4.5 Freshwater Resources Impact – Erosion & Sedimentation

	Freshwater Resources Impact – Erosion of the banks and sedimentation of the watercourses.	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Sedimentation and erosion refers to the alteration in the physical characteristics of rivers as a result of increased turbidity and sediment deposition, caused by soil erosion and earthworks that are associated with construction activities, as well as instability and collapse of unstable soils during project operation. These impacts can result in the deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for aquatic dependent flora & fauna. Vegetation clearing and exposure	No Impact

	of bare soils within and upslope of the stream habitats during construction will decrease the soil binding capacity and cohesion of the upslope soils and thus increase the risk of erosion and sedimentation downslope. This may cause the burying of aquatic habitat and also cause aquatic faunal fatalities. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Formation of rills and gullies from increased concentrated runoff. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. Soil compaction resulting in reduced infiltration and increased surface runoff together with the artificial creation of preferential flow paths due to construction activities, will result in increased quantities of flow entering the systems (Bekker, 2017).	
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Regional Extent; Medium Duration	N/A
Probability of occurrence:	Highly probable	N/A
Degree to which the impact can be reversed:	Partly reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	N/A
Cumulative impact prior to mitigation:	Low	-N/A
Significance rating of impact prior to mitigation	Medium	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	-N/A
Proposed mitigation:	• The mitigation of impacts should focus on managing the runoff generated by the development and introducing it responsibly into the receiving environment. Therefore, the stormwater infrastructure must not be positioned where concentrated flows will enter these systems without efficient energy dissipaters (such as baffle structures like gabion mattresses). Additionally, these stormwater flows must enter the buffer area in a diffuse flow pattern. • On the steeper sections of the housing and road networks, and on slopes where stormwater will drain into a water resource, it is recommended that the frequency of stormwater outlets is increased to prevent erosion at discharge points. • Cleared areas and any other area susceptible to erosion should be provided with a suitable cover and stabilised as soon as possible via the implementation of appropriate erosion control measures, as described in the EMP. This may include use of cut-off drains, temporary/permanent drainage channels, brush-packing, mulching, planting or sodding, use of environmentally benign soil binders, use of geo-textile or other coverings. The appropriate measures should be selected by the contractor in consultation with the Engineer & ECO.	-N/A

	• Designated areas for stockpiling of raw materials must be identified before material is brought onto site. No stockpiling is to occur on or near slopes or water resources. All stockpiling areas must be approved by the ECO before stockpiling occurs. • Soil surfaces must not be left open for lengthy periods to prevent erosion. • Eroded areas will be planted with suitable indigenous vegetation. • The appointed Environmental Control Officer (ECO) must undertake at least once site inspection per fortnight, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.	
Cumulative impact post mitigation:	Low	-N/A
Significance rating of impact after mitigation	**Low(-)**	-N/A

8.4.6 Freshwater Resources Impact – Water Pollution

	Freshwater Resources Impact – Water Pollution	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Water and/or soil pollution cause negative changes in the physical, chemical and biological characteristics of water resources (i.e. water quality). This can result in possible deterioration in aquatic ecosystem integrity and a reduction in, or loss of, species of conservation concern (i.e. rare, threatened/endangered species). During construction there are a number of potential pollution inputs into the aquatic systems (such as hydrocarbons and raw cement). These pollutants alter the water quality parameters such as turbidity, nutrient levels, chemical oxygen demand and pH. These alternations impact the species composition of the systems, especially species sensitive to minor changes in these parameters. Sudden drastic changes in water quality can also have chronic effects on aquatic biota in general and result in localised extinctions. Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter the system by means of surface runoff or through dumping by construction workers. Raw cement entering the systems through incorrect batching procedure and/or direct disposal. The incorrect positioning and maintenance of the portable chemical toilets and use of the surrounding environment as ablution facilities may result in sewage and chemicals entering the systems (Bekker, 2017).	No Impact
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Regional Extent; Short Duration	N/A
Probability of occurrence:	Probable	N/A
Degree to which the impact can be	Irreversible	N/A

reversed:		
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	N/A
Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated:	Can be mitigated	N/A
Proposed mitigation:	• A buffer area from the boundary of the riparian habitat must be adopted and demarcated in consultation with the ECO. A minimum buffer of 15m is required between any proposed activities and the more degraded, western tributaries. For the eastern, near pristine watercourses, a 30m aquatic buffer zone is required from the boundary of the riparian zone to any proposed activities. • Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. Education and laws are just two best management practice examples. The most effective and economic way is to prevent the pollutants from reaching the water in the first place, rather than trying to remove them after-the-fact. Individually, people need to understand how their actions have the potential to contribute to pollution. Once they know this, they can make decisions about changing the way they do things to minimize their impacts. Structurally, consider the placement of stormwater grates. To ensure the efficiency of these, they must be regularly maintained. • The local authority should make an effort to prevent illegal dumping in this area by providing suitable waste disposal facilities where waste can be recycled and disposed of in a controlled manner. • The recommended use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater. • Clean and contaminated storm water must be kept separate. Contaminated run-off from the construction site must be prevented from flowing into the streams. • The working area and site camp must be clearly demarcated during the pre-construction phase. Land clearing and construction activities must be restricted to within the demarcated working area to prevent unnecessary disturbance, exposure or compacting of surrounding areas. • The appointed Environmental Control Officer (ECO) must undertake at least once site inspection per fortnight, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP. • The following mitigation measures must be implemented during the construction phase to avoid polluting the watercourses:	N/A

	General Pollution Management: • No pollution of surface water or ground water resources may occur due to any activity on the site. • No storm water runoff from any premises containing waste, or water containing waste emanating from construction activities may be discharged into the environment. Polluted stormwater must be contained on the site. • Cement batching / mixing may not take place directly on the soil surface, it must be done on an impervious lining that will prevent cement particles from contaminating the soil. **General Waste Management:** • Dedicated waste bins or skips must be provided on site, and kept in a demarcated area on an impermeable surface. • Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. • Waste must be placed in the appropriate waste bins/skips/ stockpiles. • Hazardous waste bins must be kept on an impermeable bunded surface capable of holding at least 110% of the volume of the bins. • Skips/ bins must be provided with secure lids or covering that will prevent scavenging and windblown waste or dust. • Waste bins/skips must be regularly emptied and must not be allowed to overflow. • Construction workers must be instructed not to litter and to place all waste in the appropriate waste bins provided on site. • The Contractor must ensure that all workers on site are familiar with the correct waste disposal procedures to be followed. • Waste generated on site must be classified and managed in accordance with the National Environmental Management: Waste Act – Waste Classification and Management Regulations (GN No. R. 634 of August 2013). • Disposal of waste to landfill must be undertaken in accordance with the National Environmental Management: Waste Act – National Norms and Standard for the Assessment of Waste for Landfill Disposal (GN No. R. 635 of August 2013). • All waste, hazardous as well as general, resulting from the proposed activities must be disposed of appropriately at a licensed Waste Disposal Facility (WDF). **Pollution Management – hydrocarbons (oil, fuel etc.)** • Vehicles and machinery must be in good working order and must be regularly inspected for leaks. • If a vehicle or machinery is leaking pollutants it must, as soon as possible, be taken to an appropriate location for repair. The ECO has the authority to request that any vehicle or piece of equipment that is contaminating the environment be removed from the site until it has been satisfactorily repaired.	

	• Repairs to vehicles/ machinery may take place on site, within a designated maintenance area at the site camp. Drip trays, tarpaulin or other impermeable layer must be laid down prior to undertaking repairs. • Refuelling of vehicles/ machinery may only take place at the site camp or vehicle maintenance yard. Where refuelling must occur, drip trays should be utilised to catch potential spills/ drips. • Drip trays must be utilised during decanting of hazardous substances and when refilling chemical/ fuel storage tanks. • Drip trays must be placed under generators (if used on site) water pumps and any other machinery on site that utilises fuel/ lubricant, or where there is risk of leakage/spillage. • Where feasible, fuel tanks should be elevated so that leaks are easily detected. • A spill kit to neutralise/treat spills of fuel/ oil/ lubricants must be available on site, and workers must be educated on how to utilise the spill kit. • Soil contaminated by hazardous substances must be excavated and disposed of as hazardous waste. **Pollution Management – Ablution facilities** • Chemical toilets should be kept at the site camp, on a level surface and secured from blowing over. • Toilets must be located well outside of any storm water drainage lines, and may not be linked to the storm water drainage system in any way. • Chemical toilets must be regularly emptied and the waste disposed of at an appropriate waste water disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets. • Ablutions should be further than 30m from watercourses. **Pollution Management – Hazardous Substances** • Any hazardous substances (materials, fuels, other chemicals etc.) that may be required on site must be stored according to the manufacturers' product-storage requirements, which may include a covered, waterproof bunded housing structure. • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases. • Hazardous chemicals and fuels should be stored on bunded, impermeable surfaces with sufficient capacity to hold at least 110% of the capacity of the storage tanks. **Cement Batching:** • Cement batching must take place on an impermeable surface large enough to retain any slurry or cement water run-off. If necessary, plastic/ bidem lined detention ponds (or similar) should be constructed to catch the run-off from batching areas. Once the water content of the cement water/ slurry has evaporated the dried cement should be scraped out of the detention pond and disposed of at an appropriate disposal facility authorised to deal with such	

	waste • Cement batching should take place on already transformed areas within the footprint of the facility. • Unused cement bags must be stored in such a way that they will be protected from rain. Empty cement bags must not be left lying on the ground and must be disposed of in the appropriate waste bin. • Washing of excess cement/concrete into the ground is not allowed. All excess concrete/ cement must be removed from site and disposed of at an appropriate location.	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	**Low(-)**	N/A

8.4.7 Freshwater Resources Impact – Flow Modification

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	Freshwater Resources Impact – Flow Modification	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	The changes in the quantity, timing and distribution of water inputs and flows within the watercourse. Possible ecological consequences associated with this impact may include: deterioration in freshwater ecosystem integrity, reduction/loss of habitat for aquatic dependent flora & fauna, and a reduction in the supply of ecosystem goods & services. Hardened/artificial infrastructure will alter the natural processes of rain water infiltration and surface runoff, promoting increased volumes and velocities of storm water runoff, which can be detrimental to the rivers receiving concentrated flows off of these areas. According to the SANRAL (2006), urbanisation typically increases the runoff rate by 20 -50%, compared with natural conditions. Increased volumes and velocities of storm water draining from the development and discharging into down-slope rivers can alter the natural ecology the systems, increasing the risk of erosion and channel incision/scouring (Bekker, 2017).	No Impact
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Local Extent; Medium Duration	N/A
Probability of occurrence:	Highly probable	N/A
Degree to which the impact can be reversed:	Barely Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	N/A

Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	N/A
Proposed mitigation:	• The mitigation of impacts should focus on managing the runoff generated by the development and introducing it responsibly into the receiving environment. Therefore, the stormwater infrastructure must not be positioned where concentrated flows will enter these systems without efficient energy dissipaters (such as baffle structures like gabion mattresses). Additionally, these stormwater flows must enter the buffer area in a diffuse flow pattern. • On the steeper sections of the housing and road networks, and on slopes where stormwater will drain into a water resource, it is recommended that the frequency of stormwater outlets is increased to prevent erosion at discharge points.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	**Low(-)**	N/A

8.4.8 Traffic & Safety Impact – Associated with Construction Vehicles

	Traffic & Safety Impact caused by construction activities	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	It is proposed to deliver a significant amount of materials and equipment to the site during the construction phase of the development. Numerous truck trips will be required every day that could cause a temporary disturbance to traffic in the area. Impacts are expected to occur to the traffic in the area due to increased truck and construction vehicle traffic expected during the construction phase. Construction vehicles may impact on the existing road conditions (road capacity and congestion). Vehicles may impact on road safety conditions due to an increase in construction phase vehicles entering and exiting the site and they may impact on the condition of the existing road network. The mountainous area poses significant challenges to mitigate the traffic impacts because heavy vehicles slow down considerably on steeper gradients (steeper than 7%), causing traffic impacts to other road users.	No Impact.
Nature of impact:	**Negative**	-No Impact
Extent and duration of impact:	Local; Temporary	-N/A

Probability of occurrence:	Highly Probable	-N/A
Degree to which the impact can be reversed:	Completely reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	-N/A
Cumulative impact prior to mitigation:	Low	-N/A
Significance rating of impact prior to mitigation	Medium	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	-N/A
Proposed mitigation:	• All construction vehicles must adhere to traffic laws when travelling to and from the site. • Construction related activities should comply with all relevant building regulations. In this regard activities on site should be restricted to between 07h00 and 18h00 during weekdays and 08h00 and 13h00 on Saturdays. No work should be permitted after 13h00 on Saturdays and on Sundays; • **Access to the site during construction should be via the R340 to the north east of the site and then the M395, which links the N2 to the south west and the R 340 to the north east of Wittedrift. The section of the M395 of the R 340 is surfaced, which would reduce traffic impacts in terms of damage to the existing road system and dust impacts.** • **Drivers should be made aware of the potential risk posed to school children and other road users along the M395. All drivers must ensure that speed limit of 60 km per hour is enforced;** • Any abnormal loads along the M395 should be timed to avoid peak traffic hours; • Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers; • All vehicles must be road-worthy and drivers must be qualified, made aware of the potential road safety issues, and need for strict speed limits. • All drivers and machinery operators must be sensitised to the fact that they are working in an area with a potentially high volume of foot and vehicle traffic, and must exercise due caution when entering/ exiting the site. • Appropriate signage should be erected to warn other road users about the presence of construction vehicles, particularly at the point where construction vehicles enter/ exit the site from the N2. • Speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. • Construction vehicles must adhere to the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles.	

	• The Contractor must ensure that any large or abnormal loads (including hazardous materials) that must be transported to/ from the site are routed appropriately, and that appropriate safety precautions are taken during transport to prevent road accidents. • Where possible, construction traffic that may obstruct traffic flow on the surrounding roads should be scheduled for outside of peak traffic times. • Where possible, heavy machinery should be parked within a secure demarcated area within the footprint of the site instead of moving the machinery to and from the site each day. • The appointed Environmental Control Officer (ECO) must undertake at least once site inspection per fortnight, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.	
Cumulative impact post mitigation:	Low	-N/A
Significance rating of impact after mitigation	**Low – Medium (-)**	-N/A

8.4.9 Archaeological & Paleontological Impact

	Agricultural Potential Impact - Loss of agricultural land	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	It is proposed to clear approximately 20ha of mostly undisturbed area for the construction of the mixed use development and a further 17ha for the bulk services. Archaeological material or fossils could be damaged or destroyed.	No Impact.
Nature of impact:	Negative	-No Impact
Extent and duration of impact:	Site Specific; permanent	N/A
Probability of occurrence:	Improbable	N/A
Degree to which the impact can be reversed:	Irreversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	N/A
Cumulative impact prior to mitigation:	Negligible	N/A
Significance rating of impact prior to mitigation	Low	N/A

Degree to which the impact can be mitigated:	Can be barely mitigated	N/A
Proposed mitigation:	• In the unlikely event that any heritage resources (human remains, grave stones, stone tools, artefacts, old coins and pottery, fossil shell middens, rock art and engravings, remains of old built structures etc.) are encountered during construction: ○ The finding should be protected from further disturbance (ideally left in situ) and the ECO and relevant Heritage Authority should be notified. ○ The finding should be handled and/or removed from site as per instructions issued by the Heritage Authority or delegated heritage specialist.	N/A
Cumulative impact post mitigation:	None	N/A
Significance rating of impact after mitigation	**Low(-)**	N/A

8.4.10 Dust & Noise Impact – Associated with Construction Activities

	Dust & Noise Impact: Dust & Noise impacts may result due to construction & excavation activities on the site.	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Dust impacts may result due to construction activities and excavation activities on the site. Excavations and associated earth-moving activities may generate noise and vibration which may pose a nuisance to surrounding residents and other land users. Movement of heavy vehicles to & from the site may generate noise, which may affect surrounding residents.	No Impact
Nature of impact:	Negative	No Impact
Extent and duration of impact:	Site Specific; Temporary	-N/A
Probability of occurrence:	Highly probable	-N/A
Degree to which the impact can be reversed:	Irreversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	-N/A
Cumulative impact prior to mitigation:	Low	-N/A

Significance rating of impact prior to mitigation	Medium	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	-N/A
Proposed mitigation:	**Dust Mitigation:** • **Access to the site during construction should be via the R340 to the north east of the site and then the M395, which links the N2 to the south west and the R 340 to the north east of Wittedrift. The section of the M395 of the R 340 is surfaced, which would reduce traffic impacts in terms of damage to the existing road system and dust impacts.** • Land clearing and earthmoving activities should not be undertaken during strong winds, where possible. • Cleared areas should be provided with a suitable cover as soon as possible, and not left exposed for extended periods of time. • Stockpiles of topsoil, spoil material and other material that may generate dust must be protected from wind erosion (e.g. covered with netting, tarpaulin or other appropriate measures. Note that topsoil should not be covered with tarpaulin as this may kill the seedbank). • The location of stockpiles must take into account the prevailing wind direction, and should be situated so as to have the least possible dust impact to surrounding residents, road-users and other land-users. • Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution. • The speed limit should be set at 20-40km/h. • Dust must be suppressed on access roads and the construction site during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that will not result in the generation of excessive run off. • Dust suppression measures such as the wetting down of sand heaps as well as exposed areas around the site must be implemented especially on windy days. • The use of straw worked into the sandy areas may also help and the ECO must advise when this is necessary. • If dust appears to be a continuous problem the option of using shade cloth to cover open areas may be necessary or the erecting of shade netting above the fenced off are may need to be explored. • All vehicles transporting sand need to have tarpaulins covering their loads which will assist in any windblown sand occurring off the trucks. • Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material. • Material loads should be properly covered during transportation. • Dust levels specified in the *National Dust Control Regulations* (GN 827 of November 2013) may not be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m^2/day, measured using reference method ASTM D1739; • A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been	-N/A

	received. • The appointed Environmental Control Officer (ECO) must undertake a site inspection once per week, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP. **<u>Noise Mitigation:</u>** • A noise complaints register will be opened. • Excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. • Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. • Vehicles and equipment must be kept in good working condition. If deemed necessary, machinery and equipment should be fitted with mufflers/ exhaust silencers. No unnecessary disturbances should be allowed to emanate from the construction site. • Due to the location of the proposed development site to residents, noise levels must be kept to a minimum at all times. If excessive noise is expected on the boundary of the residential erven bordering the site they must be informed in advance of when the high noise levels will occur and for how long they will occur. • Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time. • Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors. • The noise management and monitoring measures prescribed in the EMPr must be adhered to. The appointed Environmental Control Officer (ECO) must undertake a site inspection once per week, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP. • The appointed Environmental Control Officer (ECO) must undertake at least once site inspection per fortnight, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.	
Cumulative impact post mitigation:	Low	-N/A
Significance rating of impact after mitigation	**Low (-)**	-N/A

8.4.11 Visual Impact – Associated with Construction Activities

	Visual Impact – Associated with Construction Activities	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	The construction phase is associated with temporary disturbance as a result of construction (trench excavations, vehicles, machinery, fencing & signage) that may have a negative visual impact to the area.	No Impact
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Site Specific. Temporary	-N/A
Probability of occurrence:	Definite	-N/A
Degree to which the impact can be reversed:	Partly reversible	-N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	-N/A
Cumulative impact prior to mitigation:	Medium	-N/A
Significance rating of impact prior to mitigation	Medium	-N/A
Degree to which the impact can be mitigated:	Can be partly mitigated.	-N/A
Proposed mitigation:	• Consult with the ECO when determining the appropriate site for the site camp. • The site camp must be kept neat and tidy and free of litter at all times. • Waste must be managed according to the EMPr and the mitigation measures listed above in terms of waste management. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy. • The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. • The site camp, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible.	-N/A

	• The site camp may require visual screening via shade cloth or other suitable material. • Special attention should be given to the screening of highly reflective material. • Use of lighting (if required) should take into account surrounding residents and land users and should present little or no nuisance. Downward facing, spill-off type lighting is recommended. • Construction vehicles must enter and leave the site during working hours. • Working areas, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • The appointed Environmental Control Officer (ECO) must undertake at least once site inspection per fortnight, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.	
Cumulative impact post mitigation:	Low	-N/A
Significance rating of impact after mitigation	**Low – medium (-)**	-N/A

8.4.12 Socio-Economic Impact –Creation of Business & Employment Opportunities

	Socio-Economic Impact – Creation of business and employment opportunities ***Note:** Only a Scoping Phase Socio-Economic Impact Assessment has informed these findings. A detailed socio-economic impact assessment is currently underway and will inform the findings of the Draft EIA Report	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Barbour (2017) explains in the Socio-Economic Impact Assessment that the estimated capital expenditure costs for the development are expected to be region of R 800 million – 1 billion (2016 rand value). The proposed development will therefore represent a positive benefit for the local construction and building sector in the EDM and BLM. The majority of the building materials associated with the construction phase will be sourced from locally based suppliers from the EDM and BLM. This will represent a positive injection of capital into the areas local economy. The project should also be viewed within the context of the slump in the construction and building sector in the wake of the 2008 global financial crisis. Since 2008 there have been a limited number of large scale residential and mixed use developments in the EDM and BLM. The proposed development would therefore represent a significant opportunity for the local construction and building sector. For the purposes of the assessment it is assumed that ~ 600 employment opportunities will be created per annum during the construction phase for the residential component of the development. Based on information from similar employment numbers the total annual wage bill is estimated to be in the region of R 100 million. Of this total the annual wage bill for semi-skilled and skilled workers will be in the region of R 60 million and R 40 million respectively. The total wage bill over 5 years will therefore be in the region of R 500	Barbour (2017) states that the no-development option would result in a lost opportunity in terms of the employment opportunities associated with the construction and operation phase as well as the benefits associated with the provision of more than 2000 houses and schools and other much needed social facilities. A high

	million. A significant portion of the annual and total wage bill will be spent in the local EDM and BLM. This would in turn benefit local business (Barbour, 2017).	negative socio-economic impact significance would occur if the proposed development is not constructed.
Nature of impact:	**Positive**	**Negative**
Extent and duration of impact:	Regional; temporary (construction phase)	Regional; temporary (construction phase)
Probability of occurrence:	Definite	Definite
Degree to which the impact can be reversed:	N/A – this is a positive impact, proposed to be enhanced	N/A
Degree to which the impact may cause irreplaceable loss of resources:	N/A – this is a positive impact, proposed to be enhanced	No loss of resource
Cumulative impact prior to mitigation:	Medium (positive)	Medium (negative)
Significance rating of impact prior to mitigation / **enhancement:**	Medium (positive)	High (negative)
Degree to which the impact can be mitigated:	N/A – this is a positive impact, proposed to be **enhanced**	The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Proposed **enhancement** / mitigation:	In order to enhance local employment and business opportunities associated with the construction phase of the project the following measures are proposed to be implemented: • The developer will inform the local authorities, local community leaders, organizations and councillors of the project and the potential job opportunities for local builders and contractors; • The developer will establish a database of local construction companies in the area, specifically SMME's owned and run by HDI's, prior to the commencement of the tender process for the bulk services component of the project. These companies will be notified of the tender process and invited to bid for project related work; • The developer in consultation with the appointed contractor/s will look to employ a percentage of the labour required for the construction phase from local area in order to maximize opportunities for members from the local HD communities.	The NO-GO Alternative assumes no mitigation. It assumes the status quo.
Cumulative impact post mitigation:	Medium (positive)	Medium (negative)
Significance rating of impact after	**High (positive)**	**High (negative)**

enhancement		

8.4.13 Socio-Economic Impact – Family Structures & Social Networks

	Socio-Economic Impact - family structures and social networks. ***Note:** Only a Scoping Phase Socio-Economic Impact Assessment has informed these findings. A detailed socio-economic impact assessment is currently underway and will inform the findings of the Draft EIA Report	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Presence of construction workers may lead to potential impacts on family structures and social networks. Risk to local communities as a result of construction workers in the area has been identified.	No Impact.
Nature of impact:	**Negative**	No Impacts
Extent and duration of impact:	Site Specific; Temporary	N/A
Probability of occurrence:	Improbable	N/A
Degree to which the impact can be reversed:	Irreversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	N/A
Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation	Low	N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	N/A
Proposed mitigation:	• The developer will seek to appoint a local contractor for the bulk services contract; • The developer in consultation with the appointed contractor will implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase; • The movement of construction workers on and off the site will be closely managed and monitored by the contractors. • No construction workers, with the exception of security personnel, will be permitted to stay overnight on the site.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	**Low (-)**	N/A

8.4.14 Socio-Economic Impact – Threat to Safety & Security

	Socio-Economic Impact - Threat to safety and security. ***Note:** Only a Scoping Phase Socio-Economic Impact Assessment has informed these findings. A detailed socio-economic impact assessment is currently underway and will inform the findings of the Draft EIA Report	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Presence of construction workers may lead to potential impacts in terms of threats to safety and security. Risk to local communities as a result of construction workers in the area has been identified.	No Impact.
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Site Specific; temporary	N/A
Probability of occurrence:	Improbable	N/A
Degree to which the impact can be reversed:	Partly Reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	N/A
Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated:	Can be partly mitigated	N/A
Proposed mitigation:	The developer and or contractors cannot be held responsible for the off-site, after-hours behaviour of all construction employees. However, the contractors appointed by the developer and individual homeowners will ensure that all workers employed on the project are informed at the outset of the construction phase that any construction workers found guilty of theft will be dismissed and charged. All dismissals will be in accordance with South African labour legislation. In addition, the following mitigation measures are recommended. These recommendations apply to the construction of the bulk infrastructure on the site and the establishment of housing by individual homeowners: • No construction workers, with the exception of security personnel, will be allowed to stay on site overnight; • Construction related activities will comply with all relevant building regulations. In this regard activities on site will be restricted to between 07h00 and 18h00 during weekdays and 08h00 and 13h00 on Saturdays. No work will be permitted after 13h00 on Saturdays and on Sundays.	N/A

Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	**Low (-)**	N/A

9.5 Operation Phase Impact Tables

8.5.1 Freshwater Resources Impact – Disturbance / Loss of aquatic vegetation and habitat

	Freshwater Resources Impact – Disturbance / loss of aquatic vegetation and habitat	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	The disturbance or loss of aquatic vegetation and habitat refers to the direct physical destruction or disturbance of aquatic habitat caused by vegetation clearing, disturbance of riparian habitat, encroachment and colonisation of habitat by invasive alien plants. The project will introduce unnatural disturbance to aquatic ecosystems, promoting the establishment of disturbance-tolerant species, including colonization by invasive alien species, weeds and pioneer plants. Although this impact is initiated during the construction phase it is likely to persist into the operational phase. Residents of the proposed development may harvest wood from the riparian habitat for firewood or create footpaths through riparian habitat. The stormwater infrastructure of the housing and associated road network will increase and concentrate flows into the systems. This may lead to erosion in the systems (Bekker, 2017). Waste management practises and littering during the operation phase could lead to waste, raw materials or chemicals causing contamination and / or pollution of the natural wetlands and watercourse on site, leading to loss of aquatic habitat on site and further downstream impacts.	The status quo of the freshwater environment within and adjacent to the site (the western tributaries) are on a negative trajectory in terms of their ecological condition due to the informal low cost housing Greenvalley establishment. Should the site not be developed formally, one can expect that the impact of further informal development and use of the open area within the site will continue. Thus, while this No-Go alternative has the least potential of directly impacting on the freshwater features, one can pragmatically expect that informal development and its associated impact on the surrounding area will impact on these aquatic ecosystems when Greenvalley expands further eastwards, further deteriorating the water quality and modifying/reducing aquatic habitat. This is assuming the

		Municipality do not stop the expansion of Greenvalley.
Nature of impact:	Negative	Negative
Extent and duration of impact:	Local Extent; Permanent Duration	Local; Long term
Probability of occurrence:	Probable	Improbable
Degree to which the impact can be reversed:	Barely reversible	Barely reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resources	Marginal loss of resource
Cumulative impact prior to mitigation:	Medium	Low
Significance rating of impact prior to mitigation	Low-Medium	Low
Degree to which the impact can be mitigated:	Can be barely mitigated	The NO-GO Assumes no mitigation – status quo remains.
Proposed mitigation:	• A buffer area from the boundary of the riparian habitat must be adopted and demarcated. A minimum buffer of 15m is required between any proposed activities and the more degraded, western tributaries. For the eastern, near pristine watercourses, a 30m aquatic buffer zone is required from the boundary of the riparian zone to any proposed activities. • Mitigation measures must include a focus on managing the runoff generated by the development and introducing it responsibly into the receiving environment. **The stormwater management plan must attempt to include porous pavements, grassed swales, and infiltration trenches and basins within the property** (as per The South African Guideline for Sustainable Drainage Systems by Armitage et al. 2013). • **The permanent storm water management plan must be properly monitored and maintained throughout the operational phase. Blockages in the system must be cleared timeously.** • **Appropriate waste water infrastructure (grates or litter traps) must be installed to prevent polluted water from entering the surrounding environment.** • The recommended use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater. • Residents should be educated regarding the effects of pollution on the environment and the responsible methods for the disposal of waste. • **Maintenance of the buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any infrastructure or agricultural activities must be**	The NO-GO Assumes no mitigation – status quo remains.

	prevented and litter removed. • Any development activities that need to take place within the aquatic habitat and their recommended buffers will be kept to a minimum and rehabilitated immediately afterwards. • The invasive alien plants within the stream corridors within and downstream of the site will be removed. These areas will need to be monitored and managed to ensure that they remain clear of alien invasive plants and do not spread down the stream corridor.	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	**Low(-)**	**Low(-)**

8.5.2 Freshwater Resources Impact – Flow Modification, Erosion and Sedimentation

	Freshwater Resources Impact – Erosion of the banks and sedimentation of the watercourses:	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Sedimentation and erosion refers to the alteration in the physical characteristics of rivers as a result of increased turbidity and sediment deposition, caused by soil erosion and earthworks that are associated with construction activities, as well as instability and collapse of unstable soils during project operation. These impacts can result in the deterioration of aquatic ecosystem integrity and a reduction/loss of habitat for aquatic dependent flora & fauna. Where soil erosion problems and bank stability concerns initiated during the construction phase are not timeously and adequately addressed, these can persist into the operational phase of the development project and continue to have a negative impact on adjacent/downstream water resources in the study area. The increase in hardened surface by the development will be considerable and, if not mitigated against, will result in erosion in the systems. Surface runoff and velocities will be increased and flows may be concentrated by stormwater infrastructure. (Bekker, 2017).	
Nature of impact:	**Negative**	Negative
Extent and duration of impact:	Local Extent; Permanent Duration	
Probability of occurrence:	Highly Likely	
Degree to which the impact can be reversed:	Partly Reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	

Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation	Medium	
Degree to which the impact can be mitigated:	Can be partly mitigated	

Proposed mitigation:	• **The stormwater management infrastructure must be designed to ensure the run-off from the development is not highly concentrated before entering the watercourses. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion.**
	• **It is proposed to install headwalls with flow energy dissipaters at all storm water pipe outlets (design has been provided in the EMPR). Additionally gabion structures are proposed to be incorporated into the headwall structures to aid in the catching of solid waste.**
	• A detailed Storm Water Management Plan will be designed during the pre-construction and design phase, based on the principles of the Conceptual SWMP.
	• Public Open Spaces will also be utilised for storm water infiltration in the final detailed Storm water Management Plan design.
	• The area will need to be monitored to ensure that erosion of the streams downstream of the site does not become eroded, especially at the proposed storm water discharge points. If erosion and scouring is noted then erosion rehabilitation measures must be installed as follows:
	• The scale and nature of the erosion and storm water control measures implemented on site should be appropriate to the conditions on site, and sufficient to achieve the desired outcomes (soil preservation, prevention of flooding, storm water control) to the satisfaction of the ECO and consulting engineer.
	  ○ Small-scale control measures: This may include the use of shade netting, geo-fabric or similar barriers in areas susceptible to erosion and along exposed slopes. The netting/fabric is placed directly across the path of flow of storm water. Poles and logs, staked in along the contours of a slope susceptible to erosion may also be used.
	  ○ Medium-scale control measures: This may entail the establishment of small berms and benches cut into affected slopes, as well as the placement of poles and logs along the contours of the slope. Berms can be created to divert storm water run-off into surrounding vegetated areas.	

Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation	**Low(-)**	

8.5.3 Freshwater Resources Impact – Water Pollution

	Freshwater Resources Impact – Water Pollution	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Water and/or soil pollution could cause negative changes in the physical, chemical and biological characteristics of water resources (i.e. water quality). This can result in possible deterioration in aquatic ecosystem integrity and a reduction in, or loss of, species of conservation concern (i.e. rare, threatened/endangered species). The increase in vehicles on the property due to the development increases the potential for pollutants to enter the systems. In the operational phase there is potential for water pollution to occur during maintenance activities (Bekker, 2017). The nature of this type of development (low cost housing) is expected to result in litter and waste entering the nearby watercourses that border the site. Storm water from the site will be discharged into the watercourses that will most likely consist of litter and other waste. Polluted (nutrients and litter) discharged stormwater is expected to have an impact on the water quality of the downstream receiving aquatic ecosystems, if not mitigated effectively with stormwater management and litter management infrastructure and regular servicing and maintenance of the systems.	The status quo of the freshwater environment within and adjacent to the site (the western tributaries) are on a negative trajectory in terms of their ecological condition due to the informal low cost housing Greenvalley establishment. Should the site not be developed formally, one can expect that the impact of further informal development and use of the open area within the site will continue. Thus, while this No-Go alternative has the least potential of directly impacting on the freshwater features, one can pragmatically expect that informal development and its associated impact on the surrounding area will impact on these aquatic ecosystems when Greenvalley expands further eastwards, further deteriorating the water quality and modifying/reducing aquatic habitat. This is assuming the Municipality do not stop the expansion of Greenvalley.
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Local Extent; Permanent Duration	Local; Long term
Probability of occurrence:	Highly probable	Improbable

Degree to which the impact can be reversed:	Partly reversible	Barely reversible
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	Marginal loss of resource
Cumulative impact prior to mitigation:	Medium – High The impacts of the Green Valley housing development, when assessed on their own, are found to be acceptable (after mitigation). However, due to increasing development within the broader Plettenberg Bay area, the combination of development impacts (including those associated with Green Valley housing) becomes cumulatively significant. The cumulative impacts upon the tributaries of the broader area will ultimately impact systems of highly significant ecological, social and economic value, such as the Bitou and Keurbooms rivers and estuaries.	Low
Significance rating of impact prior to mitigation	Medium	Medium
Degree to which the impact can be mitigated:	Can be partly mitigated	The NO-GO Assumes no mitigation – status quo remains.
Proposed mitigation:	• **Mitigation measures must include a focus on managing the runoff generated by the development and introducing it responsibly into the receiving environment. The stormwater management plan must attempt to include porous pavements, grassed swales, and infiltration trenches and basins within the property (as per The South African Guideline for Sustainable Drainage Systems by Armitage et al. 2013).** • **The permanent storm water management plan must be properly monitored and maintained throughout the operational phase. Blockages in the system must be cleared timeously.** • The recommended use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater. • Residents should be educated regarding the effects of pollution on the environment and the responsible methods for the disposal of waste. • **Appropriate waste water infrastructure (grates or litter traps) must be installed to prevent polluted water from entering the surrounding environment.** • **Maintenance of the buffer area must be implemented during the operation phase for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any infrastructure or agricultural activities must be prevented and litter removed.** • Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. • The local authority should make an effort to prevent illegal dumping in this area by providing suitable waste disposal facilities where waste can be recycled and disposed of in a controlled manner. • Regular inspections of the buffer areas and watercourses downstream of the site during the operational phase	None. The NO-GO assumes no mitigation.

	should be undertaken to ensure that functions are not undermined by inappropriate activities. The community could be involved in the monitoring and clean-up of these systems. Annual Auditing is therefore required during the operational phase.	
Cumulative impact post mitigation:	Low - Medium	N/A
Significance rating of impact after mitigation	**Low (-)**	**Low (-)**

8.5.4 Botanical Impact – Establishment of Alien Vegetation & Fire Risk (directly associated with alien vegetation)

	Botanical Impact - Establishment of alien vegetation & fire risk (directly associated with alien vegetation)	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Alien vegetation may establish as a result of land disturbance. Of particular concern is the establishment of alien vegetation in the area disturbed for the route of the bulk services infrastructure and within the stream channels.	No Impact
Nature of impact:	Negative	No Impact
Extent and duration of impact:	Site Specific; Long Term	N/A
Probability of occurrence:	Definite	N/A
Degree to which the impact can be reversed:	Can be mitigated	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Marginal loss of resource	N/A
Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation	Medium	N/A
Degree to which the impact can be mitigated:	Can be mitigated	N/A
Proposed mitigation:	• The alien invasive plants within the stream corridors on the site should be removed during the construction phase. These areas will need to be monitored and managed to ensure that they remain clear of alien invasive plants and that alien invasive plants do not spread downstream. • There is a good chance that indigenous species will re-colonise the disturbed areas, such as the sewer pipeline route, if the aliens are controlled. Regular follow-up clearing of aliens is required in order to achieve rehabilitation	N/A

	successfully. It is assumed that the responsibility of alien clearing will rest with the local authority. If not, an alien clearing contractor will be employed to conduct alien clearing. • An Environmental Control Officer will oversee compliance with all the prescribed environmental requirements and mitigation measures listed here, and will be on site regularly. • **The presence of dense stand of woody aliens on the adjacent properties poses a fire risk to the future residents and requires the need for firebreaks of a suitable width between the development and the alien infested properties. It is a legal requirement for the adjacent landowners to clear the vegetation on their land, and the local authority must ensure that this is implemented prior to occupation.**	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	**Low (-)**	N/A

8.5.5 Visual Impact – Change of Land Use and Impact to "Sense of Place"

	Visual Impact – Change of land use and impact to "sense of place" ***Note** that a detailed Visual Impact Assessment is currently underway which will inform the findings of the Draft EIA Report.	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	It is proposed to change the land use character and existing sense of place of the site from an undeveloped site where agricultural activities dominate adjacent to an existing urban environment to a built up mixed use development of almost 20ha in size. The proposed development could impact on the "sense of place" of the area to sensitive receptors that can see the mixed use development when before they were not impacted upon by the existing adjacent urban development. Given the location of the proposed development on the top of a hill it will likely be seen for very far distances (to be confirmed in the VIA). The undulating hills and landscapes largely undeveloped provide a "sense" of place" of natural beauty in the area and will be further impacted upon by low cost housing development.	No Impact
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Local; Long Term	N/A
Probability of occurrence:	Definite	N/A
Degree to which the impact can be reversed:	Barely reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	N/A

Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation	Medium - High	N/A
Degree to which the impact can be mitigated:	Can be barely mitigated	N/A
Proposed mitigation:	• A detailed **Architectural Design Plan / Urban Design Plan** will be compiled and included in the EMPR, post EA, before the development is constructed. • A **Landscaping Plan** will be compiled and included in the EMPR, post EA, before the development is constructed.	N/A
Cumulative impact post mitigation:	Medium	N/A
Significance rating of impact after mitigation	**Medium (-)**	N/A

8.5.6 Traffic & Safety Impact

	Traffic & Safety Impact	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	An increase in traffic is expected to occur in the area as a result of more than 730 erven and various social amenities proposed. Vehicles may impact on the existing road network and road safety conditions due to an increase in vehicles entering and exiting the site.	No Impact
Nature of impact:	**Negative**	No Impact
Extent and duration of impact:	Local extent; long term	N/A
Probability of occurrence:	Probable	N/A
Degree to which the impact can be reversed:	Partly reversible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource	N/A
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A

Degree to which the impact can be mitigated:	Can be partly mitigated	N/A
Proposed mitigation:	The necessary road markings, traffic signage, speed limits and early warning systems will need to be developed as per the requirements of the relevant roads-authority (and outcome of the traffic impact assessment yet to be undertaken) to ensure the safety of vehicular and pedestrian traffic during the operational phase of the development.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	**Low – Medium (-)**	N/A

8.5.7 Socio-Economic Impact – Provision of Low and Middle Income Housing

	Socio-Economic Impact - Provision of low and middle income housing	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Barbour (2017) explains that the proposed development will assist to address the housing backlog in the area by providing 730 houses, specifically the housing needs of the low and middle income households. This will represent a significant social benefit for the households in the local municipality that currently live in informal areas.	The No-Development option would represent a lost opportunity in terms of the employment opportunities associated with the construction and operational phase, as well as the benefits associated with the provision of housing and schools etc.
Nature of impact:	**Positive**	**Negative**
Extent and duration of impact:	Regional extent; permanent	Regional extent; permanent
Probability of occurrence:	Definite	Improbable
Degree to which the impact can be reversed:	N/A – This is a positive impact proposed to be enhanced.	Completely reversible
Degree to which the impact may cause irreplaceable loss of resources:	N/A – This is a positive impact proposed to be enhanced.	No loss of resource
Cumulative impact prior to **enhancement** / mitigation:	High positive	Medium – high negative
Significance rating of impact prior to **enhancement** / mitigation	High positive	Medium – High negative

Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated
Proposed **enhancement / mitigation**:	The proposed development represents an enhancement measure on its own.	The NO-GO Alternative assumes no mitigation – status quo remains
Cumulative impact post mitigation:	High positive	High negative
Significance rating of impact after **enhancement** /mitigation	**High (+)**	**High (-)**

8.5.8 Socio-Economic Impact – Provision of Schools and Public Spaces

	Socio-Economic Impact - Provision of schools and public spaces	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	The proposed development makes provision for the establishment of an early childhood development centre and public open spaces. These components will contribute to an improved quality of life for many local residents in the local municipality who currently live in informal areas that are not well serviced and lack public facilities, such as parks and open spaces.	The No-Development option would represent a lost opportunity in terms of the employment opportunities associated with the operational phase, as well as the benefits associated with the provision of housing and schools etc.
Nature of impact:	**Positive**	**Negative**
Extent and duration of impact:	Regional extent; permanent	Regional extent; permanent
Probability of occurrence:	Definite	Improbable
Degree to which the impact can be reversed:	N/A – This is a positive impact proposed to be enhanced.	Completely reversible
Degree to which the impact may cause irreplaceable loss of resources:	N/A – This is a positive impact proposed to be enhanced.	No loss of resource
Cumulative impact prior to mitigation:	High positive	Medium – high negative
Significance rating of impact prior to mitigation	High positive	Medium – High negative
Degree to which the impact can be	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated

mitigated:		
Proposed mitigation:	The NO-GO Alternative assumes no mitigation.	
Cumulative impact post mitigation:	High negative	
Significance rating of impact after mitigation	**High (+)**	**High (-)**

8.5.9 Socio-Economic Impact – Creation of Business and Employment Opportunities

	Socio-Economic Impact – Creation of business and employment opportunities	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	Barbour (2017) explains that the business and retail components will create employment opportunities for local residents. The residential component may also create some opportunities for domestic workers and gardeners etc. However due to the low income levels these opportunities are likely to be limited. The development will also create increased demand for municipal services, such as waste, maintenance etc, which will require additional municipal posts to be created. The majority of the employment opportunities are likely to benefit Historically Disadvantaged Individuals (HDIs). Given the high unemployment levels in the surrounding areas, coupled with the low income and education levels, this would represent a positive social impact. The operational phase will also create opportunities for local businesses, such as local maintenance and building companies, garden services and security companies, petrol stations, shops and restaurants etc. and create opportunities for new businesses to develop. The increased number of households will also create opportunities for the taxi sector. The local estate agencies in the area and legal firms would also benefit from the sale and resale of properties associated with the new development.	The No-Development option would represent a lost opportunity in terms of the employment opportunities associated with the construction and operational phase, as well as the benefits associated with the provision of housing and schools etc.
Nature of impact:	**Positive**	**Negative**
Extent and duration of impact:	Regional extent; permanent	Regional extent; permanent
Probability of occurrence:	Definite	Improbable
Degree to which the impact can be reversed:	N/A – This is a positive impact proposed to be enhanced.	Completely reversible
Degree to which the impact may cause irreplaceable loss of resources:	N/A – This is a positive impact proposed to be enhanced.	No loss of resource
Cumulative impact prior to mitigation:	High positive	High negative
Significance rating of impact prior	High positive	High negative

to mitigation		
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated
Proposed mitigation:	The proposed development represents an enhancement measure on its own.	The NO-GO assumes no mitigation
Cumulative impact post mitigation:	High positive	High negative
Significance rating of impact after mitigation	**High (+)**	**High (-)**

8.5.10 Socio-Economic Impact – Broaden the Rates Base

	Socio-Economic Impact - Broaden the rates base	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
DESCRIPTION OF IMPACT:	The development will result in an increase in the rates base. In addition the proposed development would also generate revenue for the local municipality from the consumption of water and electricity (Barbour, 2017).	The No-Development option would represent a lost opportunity in terms of the employment opportunities associated with the construction and operational phase, as well as the benefits associated with the provision of housing and schools etc.
Nature of impact:	**Positive**	**Negative**
Extent and duration of impact:	Regional extent; permanent	Regional extent; permanent
Probability of occurrence:	Definite	Improbable
Degree to which the impact can be reversed:	N/A – This is a positive impact proposed to be enhanced.	Completely reversible
Degree to which the impact may cause irreplaceable loss of resources:	N/A – This is a positive impact proposed to be enhanced.	No loss of resource
Cumulative impact prior to mitigation:	medium positive	Medium negative
Significance rating of impact prior to mitigation	medium positive	Medium negative
Degree to which the impact can be	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated

mitigated:		
Proposed mitigation:	The proposed development represents an enhancement measure on its own.	By rather constructing the proposed mixed use development.
Cumulative impact post mitigation:	medium positive	Medium negative
Significance rating of impact after mitigation	**Medium (+)**	**Medium (-)**

9. Concluding Environmental Statement

9.1 Outcome of Scoping Phase Comparative Assessment

9.1.1 Construction Phase Impacts Post Mitigation

The following conclusions can be drawn from the impact assessment findings as shown in the impact tables above for the construction phase:

- The proposed development of Site Alternative A (the only site and layout alternative for the mixed use) is expected to result in a **Low-Medium negative impact to the botanical environment** as a consequence of the loss of indigenous fynbos vegetation. However, the findings of this assessment are that even if the NO-GO Alternative is implemented, **therefore the proposed development is not authorised, then the existing Greenvalley informal settlement is likely to eventually expand eastwards anyway to the same site where formal housing is proposed to be constructed resulting in a similar impact of Low – medium significance**.
- **A high negative socio-economic impact significance in terms of employment and job opportunities (during the construction phase) would occur if the proposed development is not constructed (NO-GO Alternative B).**
- **Traffic and safety impacts** and the **visual impacts** during the construction phase are expected to be mitigated to a **Low-Medium significance.**
- All other identified impacts expected to occur during the construction phase are expected to be mitigated to a **Low significance**, which means that it is expected to mitigate the impact to the point where it is of limited importance.

The table below is a summary of the projected impacts that could take place **during the construction phase** of the development and the associated significance of the impact, **post mitigation.**

Table 14: Summary Table of Projected Construction Phase Impacts AFTER MITIGATION

CONSTRUCTION PHASE IMPACTS		
IMPACT	**IMPACT SIGNIFICANCE (after mitigation)**	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
Botanical Impact - Permanent Loss of Indigenous Vegetation	Low (-)	Low (-)
Botanical Impact – Vegetation & Habitat	Medium (-)	Medium (-)
Botanical Impact – CBA's * ESA's	Low (-)	Low (-)
Freshwater Resources Impact – Disturbance / loss of aquatic habitat and biota	Low (-)	No Impact
Freshwater Resources Impact – Erosion of the banks and sedimentation of the watercourse	Low (-)	No Impact
Freshwater Resources Impact – Water Pollution	Low (-)	No Impact
Freshwater Resources Impact – Flow Modification	Low (-)	No Impact
Archaeological & Paleontological Impact	Low (-)	
Traffic & Safety Impact	Low – Medium (-)	No Impact
Dust & Noise Impact Associated with Construction Activities	Low (-)	No Impact
Visual Impact Associated with Construction Activities	Low – Medium (-)	No Impact
Socio-Economic – Creation of business and employment opportunities	High (+)	High (-)
Socio-Economic - Presence of construction workers & potential impacts on family and social networks	Low (-)	No Impact

Socio-Economic - Threat to safety and security	Low (-)	No Impact

9.1.2 Operation Phase Impacts Post Mitigation

The table below is a summary of the projected impacts that could take place during the **operational phase** of the development and the associated significance of the impact, **post mitigation.**

The following conclusions can be drawn from the scoping phase impact assessment findings as shown in the impact tables above for the operational phase:

- Given the nature of the type of development proposal associated with increased run-off volumes, polluted runoff, littering and poor waste management practises, the proposed development of Site Alternative A (the only site and layout alternative) is expected to result in freshwater impacts in terms of the **loss of aquatic habitat, flow modification, erosion & sedimentation of a Low negative significance (after mitigation)**. **Water pollution impacts downstream of the site have been assessed by the EAP to be of a Low-Medium negative significance (after mitigation) due to the high ecological importance of the Bitou River and associated wetlands downstream of the site and the fact that although freshwater impacts can be mitigated to an acceptable level it is unlikely that they will be avoided.** The status quo of the freshwater environment within and adjacent to the site (the western tributaries) are on a negative trajectory in terms of their ecological condition due to the informal low cost housing Greenvalley establishment. **Should the site not be developed formally, one can expect that the impact of further informal development and expansion of Greenvalley eastwards**. Thus, while this No-Go alternative has the least potential of directly impacting on the freshwater features, one can pragmatically expect that informal development and its associated impact on the surrounding area will impact on these aquatic ecosystems when Greenvalley expands further eastwards, further deteriorating the water quality and modifying/reducing aquatic habitat. This is assuming the Municipality does not stop the expansion of Greenvalley. **Therefore, the NO-GO Alternative is expected to have freshwater impacts of a Low negative significance in terms of the loss of habitat and water pollution, if the proposed Greenvalley development is not authorized.**
- A **significant high negative socio-economic impact** significance in terms of the **provision of low and middle income housing opportunities**, **creation of employment and business opportunities** and the **provision of schools and public open spaces would occur if the proposed development is not constructed (NO-GO Alternative B).**
- A significant medium negative socio-economic impact in terms of broadening the rates base of the municipal region would occur if the proposed development is not constructed (NO-GO Alternative B).
- A significant impact expected to occur, **even after mitigation, is the Visual Impact to the "sense of place"** of the area and to those that can see the low cost housing development located on the hill, assessed to be of a **Medium negative significance.** Other significant impacts ranked to be of a **Low-Medium negative significance after mitigation** is the expected impacts to the **freshwater environment downstream of the site as a result of water pollution** and **traffic and safety impacts** also assessed by the EAP to be of a **Low-Medium significance after mitigation.**

Table 15: Summary Table of Projected Operation Phase Impacts AFTER MITIGATION

OPERATION PHASE IMPACTS		
IMPACT	**IMPACT SIGNIFICANCE (after mitigation)**	
	Alternative A: Proposed Mixed Use Development & Associated Bulk Infrastructure	**Alternative B: NO – GO**
Freshwater Resources Impact – Loss of aquatic habitat and associated biota	Low (-)	Low (-)
Freshwater Resources Impact – Water Pollution	Low - Medium (-)	Low (-)
Freshwater Resources Impact – Flow Modification, Erosion & Sedimentation	Low (-)	No Impact
Visual Impact – Change of land use and "sense of place"	Medium (-)	No Impact
Traffic & Safety Impact	Low – Medium (-)	No Impact
Botanical Impact - Establishment of alien vegetation	Low (-)	No Impact

Socio-Economic Impact - Provision of low and middle income housing	High (+)	High (-)
Socio-Economic Impact - Provision of schools and public spaces	High (+)	High (-)
Socio-Economic Impact - Employment and business	High (+)	High (-)
Socio-Economic Impact - Broaden the rates base	Medium (+)	Medium (-)

9.2 Conclusions, Findings and Recommendations

- The conclusions in terms of the findings of the impact assessment have been described in the concluding statement above and will therefore not be repeated here. In summary however, **the pre-application scoping phase assessment has concluded that although the development proposal is expected to result in significant visual, botanical, freshwater and traffic impacts, effective mitigation measures have been recommended that if implemented is expected to avoid impacts from occurring and for those that are unavoidable, will result in environmental impacts of acceptable levels (medium and Low-Medium significance). Given the high socio-economic impact expected and the dire need to provide subsidized housing to those in need it is recommended that DEA & DP approve the development once in line with the EIA Regulation Information requirements. The Wittedrift and Greenvalley communities have voiced their need through protest and strike action and the Government has a mandate to supply the community with housing and infrastructure to they can have a decent quality of life.**
- Given the content requirement of the Scoping Report listed in Appendix 2 of the 2014 EIA Regulations, as amended in 2017, it is now required to include in the Scoping Report the "*impacts and risks, including the nature, significance, consequence, extent, duration an probability of such identified impacts*", the "*positive and negative impacts that the proposal will have on the environment and the community*", "*mitigation measures*" and a "*concluding statement indicating the preferred alternative and location*". In addition, due to the very stringent timeframes now applicable once an application is submitted it is now a requirement, as endorsed by DEA & DP, to undertake pre-application specialist studies and pre-application public consultation and to do most of the specialist work and consultation upfront to avoid delays in the EIA process due to issues not being able to be resolved within the timeframe once the application is submitted. Therefore the specialist studies that specifically inform the design and the location and layout of the mixed use development have already been completed. This includes a freshwater, botanical and socio-economic baseline assessments. Since the 2014 EIA Regulations, as amended, were published it is now a requirement to complete a lot of the work upfront during pre-application scoping stage and make this information available to the Public and the Authorities so that their concerns can be effectively responded to by adjusting the layout and / or description of the development etc before the official application process starts otherwise due to the strict timeframes issues will not be able to resolved in time and the application could lapse.
- **Please note that given the fact that this is a Draft Scoping Report, not all of the information required to be in a Final Scoping Report is yet available. This Draft Scoping Report therefore does not yet contain the detailed information required to be submitted in a Final Scoping Report for decision making, it is only at this stage being published as an information document to obtain key issues and concerns.**
- The clear need for the project has been explained in this Scoping Report. The Bitou Local Municipality has experienced phenomenal population growth over the past two decades. The key challenges associated with this rate of population growth is the need for additional housing opportunities and the need for additional infrastructure services and bulk infrastructure. This development proposal speaks directly to both of these key needs in the municipal region. The population of the town of Wittedrift has already grown so much that without the required formal housing infrastructure available, has resulted in the informal low-cost housing settlement of Greenvalley having established. If formal low-cost housing is not developed in Wittedrift this will inevitably result in the existing Greenvalley informal housing community simply expanding further eastwards anyway.
- As can be seen from the Bitou SDF there are a few vacant areas available for housing (only areas in Wittedrift available for housing within the urban edge).
- There are approximately 10 000 people on the waiting list that are in need of a serviced house in the Bitou Municipal Area. There are 730 households on the waiting list for housing in Greenvalley. This proposed development proposal will contribute to reduce the number of people in need of a house and it will provide key infrastructure services to Wittedrift.
- The proposed development is compatible with and supports the key principles and objectives contained in the relevant key land use planning and policy documents that pertain to the area, including the Western Cape Provincial Spatial

Development Framework (2014), Bitou Local Municipality Integrated Development Plan 2022-2027 and the Bitou Local Municipality Spatial Development Framework (2022). The proposed development is also located entirely within the Urban Edge. The area has therefore been identified as suitable for development in the land use planning and policy documents.

- A key finding in the Freshwater Impact Assessment was that **stormwater management mitigation measures must include a focus on managing the runoff generated by the development and introducing it responsibly into the receiving environment. The stormwater management plan must attempt to include porous pavements, grassed swales, and infiltration trenches and basins within the property** (as per the *South African Guideline for Sustainable Drainage Systems by Armitage et al. 2013*)**. A Stormwater Management Plan must therefore be designed that responds to the findings in the Freshwater Impact Assessment in terms of managing the runoff generated by the development.**
- Clinkscales Maughan-Brown (2017) found that there is **currently no electricity supply capacity available on the Eskom 22kV bulk network for the proposed mixed use development.** Spare capacity will only be available in approximately 2021 / 2022 once Eskom has constructed their new 66/22kV Substation adjacent to the Wittedrift turn-off near Bitou River from the N2 National Road.
- **The Freshwater impact assessment states that it is imperative that a broader, strategic aquatic assessment be undertaken in relation to current and future development in this area. This would allow for the identification and protection of sensitive aquatic habitat on a catchment scale and aid sustainable development planning.** It needs to be confirmed if this is a requirement by DEA & DP to inform this proposed development application.
- Based on the findings of the Scoping Phase, it is still proposed to undertake the following detailed Specialist Impact Assessment Studies during the EIA Phase:
    - Urban Design / Architectural Design and Landscaping Plan;
    - A Detailed EIA Phase Visual Impact Assessment;
    - A Detailed EIA Phase Traffic Impact Assessment;
    - A Detailed EIA Phase Socio-Economic Impact Assessment;
    - A Detailed EIA Phase Freshwater Impact Assessment, inclusive of the freshwater impact associated with the proposed bulk sewer and water infrastructure routes.
    - A Detailed EIA Phase Botanical Impact Assessment inclusive of the freshwater impact associated with the proposed bulk sewer and water infrastructure routes.
    - Agricultural Compliance Statement;
    - Avian Impact Assessment;
    - Invertebrate, Mammal, Reptile and Amphibian Compliance Statements;
    - In addition, an Integrated Heritage Impact Assessment may be requested by Heritage Western Cape given the undisturbed nature and scenic value of the site providing a significant “sense of place” in the area.

10. References

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