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DRAFT BASIC ASSESSMENT REPORT

Proposed development of medium-high density middle-income residential housing on ERF 7614 KNYSNA, Garden Route District Municipality, Western Cape

*In terms of the **National Environmental Management Act** (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations*

For 30-day review and comment period
2 December 2024 – 27 January 2025
DFFE Reference: 14/12/16/3/3/1/3078

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DATE:	December 2024

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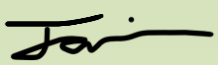
STATEMENT OF INDEPENDENCE

I, **Claire de Jongh**, in terms of section 33 of the NEMA, 1998 (Act No. 107 of 1998), as amended, hereby declare that I provide services as an independent Environmental Assessment Practitioner (EAPASA Reg: **2021/3519**) and receive remuneration for services rendered for undertaking tasks required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and the Environmental Impact Assessment Regulations, 2014 (as amended). I have no financial or other vested interest in the project.



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EXECUTIVE SUMMARY

Introduction

A medium to high density residential development is proposed on Erf 7614. The site is approximately 5.6 hectares (ha) in extent and located in close proximity to the Knysna CBD in the Western Cape Province. The proposed development triggers Activities in Listing Notice 1 of the Environmental Impact Assessment Regulations, 2014 (as amended, 2017) published in terms of the national Environmental Management Act (Act 107 of 1998) (NEMA) and therefore requires an environmental authorisation to be issued by the competent authority before development can commence.

The project is currently in planning and design phase; this basic assessment report forms part of the application process for environmental authorisation required for the following activities:

- LN1, Activity 19 - The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;
- LN1, Activity 27 - The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation…
- LN1, activity 67 - Phased activities for all activities—(i) listed in this Notice, which commenced on or after the effective date of this Notice or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices, where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold

Environmental authorisation is required as part of the rezoning process; detailed designs will only be done once the EA process is concluded, and rezoning is in place due to relevant professional costs.

The application for environmental authorisation was accepted by the competent authority - National Department of Fisheries, forestry and Environmental (DFFE) on 14 November 2024. The draft Basic assessment report will be distributed to all registered Interested and Affected Parties (IAPS) for a 30-day comment and review period (excluding period between 15 December 2024 to 5 January 2025). The draft BAR will be updated to incorporate the comments received and a final basic assessment report will be submitted (within 90 days of application – 14 February 2025) to the DFFE for 107-day decision making period. The draft BAR is available on Eco Route's Website: www.ecoroute.co.za.

Overview of proposed project

The development proposal (concept planning stage) entails the development of affordable middle-income housing on Erf 7614, Knysna. Erf 7614 is located within walking distance to the Knysna CBD and is approximately 5.6 hectares in extent. The site is currently vacant. The development proposal entails the development of 2 – 4 storey buildings and a maximum 274 flats. Average unit sizes are estimated to be between 30m2 to 65m2. The development will provide communal open space areas and parking areas.

The present zoning of the property is "Undetermined Zone" and the intention is to make an application for the rezoning of the land to "Sub-divisional Area" which would allow for the further subdivision of the land into three (3) "General Residential III" erven, 1 communal "Open Space II" erf, and 2 "Public Road" erven. The property was previously subdivided to allow 3 General Residential Sites, 2 Public Roads, and 1 Public Place. The rezoning application intends to re-instate the previously approved SG Diagrams.

The proposal entails the development of three residential areas and an open space area and internal roads. The three residential areas (portions A, b and C) are proposed to be developed in three phases.

Two layout plans have been developed. Alternative 1 was used to inform the specialist verification studies carried out; alternative 2 is a concept layout which was developed following recommendations from the verification studies namely that units in the largest proposed residential area was placed in an area identified as a wetland.

Concept layout alternative 1 proposed 274 units; concept layout alternative 2 proposes 262 units and takes into account the delineated wetland area.

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Stormwater management measures have been designed for layout 1 and based on 1:50 year storm events. Stormwater management measures have been assessed and recommendations provided. Water, electricity and sewage treatment demand will be provided by Knysna municipality; alternative technologies based on renewable resources are addressed. The waste hierarchy will be required to be followed during the construction and operational phase of the project and based on continual improvement.

Figure 1: Concept layout alternative 1

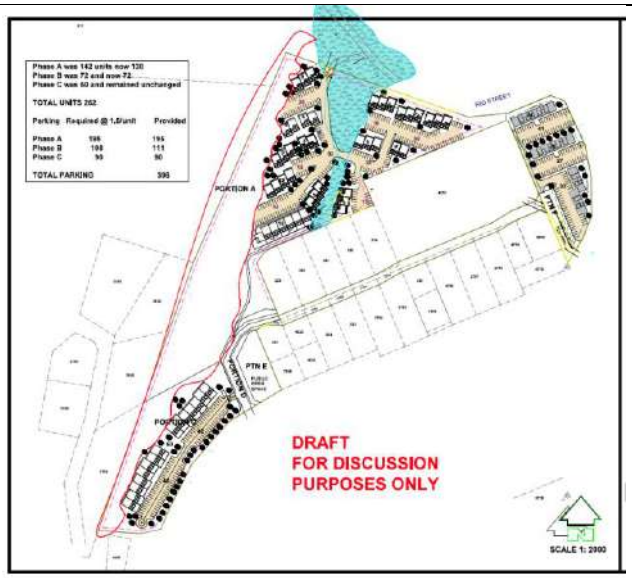

Figure 2: Concept layout alternative 2

Site sensitivities and summary of impact assessment

Alternatives Assessed:

- **Site:** Erf 7614 – only site assessed; site is owned by the applicant; no other site is available as an alternative site for this development proposal
- **Activity**: Medium to high density residential development; site is deemed to be suited to residential use as per the SDF and previous approvals for similar development concepts; location is within the urban edge and in close proximity to existing services. The activity of medium to high residential housing is assessed; no-go alternative is assessed.
- **Layout:** Two layouts have been developed; alternative layout 1 was developed and initial assessments carried out; the conceptual alternative layout 2 was developed and based on outcomes of initial assessments.
- **Technology:** Proposed measures to provide / manage services

The environmental sensitivities identified in the DFFE National Screening Tool and verification of sensitivities is provided in Table 1**Error! Not a valid bookmark self-reference.**

The following specialist studies have been carried out:

- Aquatic Assessment (draft) has been carried out by Confluent Environmental (Pty) Ltd, August 2024
- Terrestrial Biodiversity & Terrestrial Plant Species Report by Confluent Environmental (Pty) Ltd, August 2024
- Terrestrial Animal Species Assessment, Site Sensitivity Verification Report by Confluent Environmental (Pty) Ltd, completed March 2024

On 15 July 2021, **Heritage Western Cape** stated that no further studies in terms of Section 38 of the NHRA are required. An application in terms of Section 35 of the NHRA is required to address the impact on archaeology and palaeontology. Assessments by paleontology and archaeology specialists prior to the start of construction will need to be carried out and any required Section 35 applications will need to be submitted to HWC for any resources.

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Table 1: Verification of environmental sensitivity identified in DFFE screening tool report and indication of required specialist studies:

Theme	**Sensitivity as per DFFE screening tool report**	**Verification**	**Inclusion in Basic Assessment / Motivation for Exclusion**
Agriculture	Medium sensitivity	Low sensitivity	The property is situated within the urban edge of the Knysna, is within walking distance to CBD and the site is earmarked as a restructuring zone. Surrounding land uses includes roads and residential areas. Some sections of the western portion of the property are very steep, the site has not been used for agricultural purposes in the past. The site is deemed to have a low agricultural sensitivity. No agriculture assessment is deemed to be necessary.
Animal Species	High sensitivity	Low sensitivity	The site appears to have been heavily disturbed over the last 87 years disturbances include quarrying activities and construction and demolition activities and clearing activities. Main habitat types identified on Erf 7614. • Alien plant invasions to varying degrees, with some past vegetation clearing evident, and a closed canopy (mostly trees) (A). • Alien plant invasions to varying degrees, with some past vegetation clearing evident, and an open canopy (limited to no trees) (B). • Seasonal wetland zone including some densely vegetated areas and some cleared patches (C). • Artificial lawns experiencing varying degrees of maintenance and some alien plant invasions (D). No avifauna ,reptilian, amphibian, terrestrial invertebrate, or mammal SCC were found on site and there was little suitable habitat for any of the avifauna SCC given the general lack of indigenous vegetation and dense stands of alien plant invasions (*A. mearnsii* and other alien species). A small troop of 4-5 vervet monkeys were seen in the invaded black wattle area in the west of the site. The habitat is highly modified and does not represent suitable habitat for the Yellow-winged Agile Grasshopper or the butterfly SCC which largely rely on fynbos habitat. Additionally, no larval food/host plant species were found on site during the Botanical Specialist Assessment. There was no suitable habitat for the Knysna Leaf-folding Frog (*A. knysnae*), The site sensitivity for the terrestrial animal theme of Erf 7614 is LOW. A Compliance Statement has been prepared for animal species. No further studies are deemed necessary.
Aquatic Biodiversity	Very High	Very High	Erf 7614 falls within quaternary catchment K50B in the catchment of the Knysna River. According to the National Freshwater Ecosystem Priority Atlas (NFEPA; Nel et al., 2011) the sub-quaternary reach (SQR 9117) is classified as a Freshwater Ecosystem Priority Areas (FEPA). This category requires that any development conducted on Erf 7614 must strive to do so with the least amount of impact on the environment to maintain the good condition (A or B ecological category) of the river catchment within which it occurs. All watercourses on or nearby to Erf 7614 drain to the Knysna Estuary which is ranked as the number one most important estuary in South Africa. Two non-perennial rivers or natural lines of drainage are mapped on the property flowing in a Southwest direction over the property. As the rainfall intensity in the area is classified as Very High and the inherent erosion potential of soils also as High, erosion of soils and stormwater management are factors that must be carefully considered when developing in this area, especially considering the large amounts of stormwater associated with urban developments and the fact that the development site is situated within a natural drainage line on a relatively steep gradient. The verification of a wetland on Erf 7614 confirms the Aquatic Sensitivity of the site as Very High in terms of the DFFE screening tool.

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Theme	Sensitivity as per DFFE screening tool report	Verification	Inclusion in Basic Assessment / Motivation for Exclusion
			An aquatic impact assessment has been carried out. The final SDP and SWMP will be required to be assessed by the aquatic specialist; updated plans and assessment to be submitted to the DFFE for approval prior to commencement.
Archaeological and Cultural Heritage	Very High sensitivity	Very High sensitivity	On 15 July 2021, Heritage Western Cape stated that no further studies in terms of Section 38 of the NHRA are required. An application in terms of Section 35 of the NHRA is required to address the impact on archaeology and palaeontology. Assessments by paleontology and archaeology specialists prior to start of construction will need to be carried out and any required Section 35 applications will need to be submitted to HWC for any resources
Paleontological	Very High sensitivity	Very High sensitivity	On 15 July 2021, Heritage Western Cape stated that no further studies in terms of Section 38 of the NHRA are required. An application in terms of Section 35 of the NHRA is required to address the impact on archaeology and palaeontology. Assessments by paleontology and archaeology specialists prior to start of construction will need to be carried out and any required Section 35 applications will need to be submitted to HWC for any resources
Plant Species Assessment	Medium sensitivity	Low sensitivity	The site is very heavily invaded and the habitats transformed . Two protected yellowwood seedlings were found on the site (*Podocarpus latifolius* and *Afrocarpus falcatus*) ; One very large milkwood tree (*Sideroxylon inerme inerme*; was also observed on the site. Apart from the protected trees, no other species of conservation concern were identified, and no Red Listed plant species were found on the site. The plant species theme has a Low sensitivity. A Compliance Statement has been prepared for plant species. No further studies are deemed necessary.
Terrestrial Biodiversity Impact	Very high Sensitivity	Low sensitivity	The site is located within an urban area and currently represents transformed vegetation with a high density of alien plants. Very isolated indigenous thicket / forest vegetation occur on the north-eastern portion of the site. No part of the site is part of the mapped BSP layers, nor does the site represent significant natural habitat. Given the findings on this report, the terrestrial biodiversity theme of the site is confirmed to have a Low sensitivity. A Compliance Statement has been prepared for terrestrial biodiversity. No further studies are deemed necessary
Socio-Economic	NA	NA	Aspects related to socio-economic impacts will be addressed in the basic assessment, however no specific specialist study is deemed to be required.
Civil Aviation Assessment	Medium sensitivity	Low sensitivity	A civil aviation assessment / compliance statement is excluded as the proposed development will not have an impact on civil aviation aerodrome.
Defence theme	Low sensitivity	Low sensitivity	A defence them compliance statement is excluded as the proposed development will not have an impact on the defense theme.

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Construction and operational activities

It is recommended that the EA (if authorised) allows for construction to commence within three years of the EA to allow sufficient time to conclude the planning phase.

Construction Phase is estimated to be 24 - 60 months per phase. The construction phase will entail the following scope of works:

1. Establishment of Contractor on-site.
2. Site clearing
3. Excavations and stockpiling
4. Development of roads
5. Installation of services
6. Construction of units
7. Waste and ablution management facilities
8. Construction materials
9. Deliveries to /from site

Operational management will include ongoing maintenance of services (electricity, sewage, water), stormwater management, waste management, wetland and open space area management and internal roads.

Imapct Assessment summary

A summary of impacts is provided in Table 2

Table 2: Assessment of existing impacts (no-go alternative) and impacts identified for proposed housing development with indication of significance with and without mitigation

Project phase	Impact – housing development (262 units)	No go / baseline existing impacts	Impact rating and significance – no mitigation	Impact rating and significance – with mitigation
Planning	Delays and economic	NA	Negative medium	Negligible
Planning and construction	Heritage, archaeology and palaeontology	NA	Negative medium	Positive low
Planning, construction, operational	Terrestrial biodiversity, indigenous vegetation and flora species	Negative medium high	Negative medium high	Negative medium
Planning, construction, operational	Fire risk	Negative medium high	Negative medium	Negative low
Planning and construction phase	Fauna habitats and fauna species	Negative high	Negative medium	Negative medium
Operations	Fauna habitats and fauna species		Negative medium	Negative low
Planning and operational	Aquatic and stormwater management	Negative high	Negative medium high (layout 1)	Negative medium (layout 2)
Construction	Aquatic and stormwater management		Negative medium	Negative low
Construction	Wetland management		Negative medium	Negative low
Operations	Wetland management		Negative medium	Negative low
Construction	Alien invasive species	Negative medium	Negative medium	Positive low
Planning and operations	Alien invasive species		Negative medium	Positive low
Planning and construction	Soil erosion and dust	Negative low	Negative medium high	Negative low
Planning and construction	General waste	Negative low	Negative medium	Negative low
Planning and construction	Hazardous waste		Negative medium	Negative low
Operations	General and hazardous waste (cumulative impact on landfill and wwtw)		Negative medium	Negative medium
Planning and operations	Change in land use – economic	Negative medium	Positive medium high	

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Project phase	Impact – housing development (262 units)	No go / baseline existing impacts	Impact rating and significance – no mitigation	Impact rating and significance – with mitigation
Planning and operations	Change in land use – density	Na	Negative medium high	Negligible
Planning and operations	Change in land use – sense of place	Negligible	Negative medium high	Negative medium high
Planning and operations	Change in land use – housing	Negative medium	Positive medium high	Positive medium high
Planning and construction	Social - employment and skills	Negligible	Positive medium	Positive medium high
Construction	Social - crime	Negative low	Negative medium	Negative low
Operations	Social - crime		Negative medium	Negative low
Construction	Traffic	Negative low	Negative low	Negative low
Operations	Traffic		Negative low	Negative low
Construction	Noise	NA	Negative medium	Negative low
Operations	Noise		Negative low	Negative low
Construction	Visual	Positive low	Negative medium	Negative medium
Operations	Visual		Negative medium	Negative medium
Planning, construction, operations	Water use	Negligible	Negative low	Negative low
Planning, construction, operations	Energy use	Negligible	Negative low	Negative low
Planning, construction, operations	Aviation	Negligible	Negligible	Negligible

Conclusion and recommendations

Erf 7614 falls within ward 10 of Knysna and located with the urban edge. The Knysna SDF identifies this site suitable for development. The site has been through various development proposals. The most significant impact identified on site is the presence of a wetland area; existing cumulative impacts from existing urban activities on terrestrial biodiversity and aquatic features on the site is rated as negative of high significance. The impact of the proposed activity (medium/high density residential development) on sense of place of existing residents was identified as negative of medium high significance. The impact on economic and housing aspects was identified as positive of medium high significance.

Concept layout 1 (272 units) placed housing within the wetland area; concept layout 2 (262 units) places proposed housing outside the delineated wetland area. Design considerations will need to take into account increased runoff and the identified watercourse on site to ensure adequate stormwater management and flood protection measures are in place. Stormwater management measures will need to be revised and updated as well as the 1: 100 stormwater events and the expected stormwater flows before and after construction and incorporating Sustainable Urban Drainage System (SUDS). Measures to ensure that predevelopment stormwater flows are maintained, and excessive flows are catered for using suitable design and measures are required; the removal of alien invasive trees (which are using a large amount of the water on site) and the increase in hard surfaces must be taken into account to ensure stormwater management is adequate.

It is recommended that the developable area (excluding steep areas and wetland area) be used to determine the minimum density that can be developed to ensure the project is financially feasible to provide housing to middle income class group.

The proposed development will offer affordable housing on an erf located within an urban area; the site is considered to have an overall medium environmental sensitivity due to the wetlands on site and historical endangered fynbos. The site is currently impacted by AIS and surrounding urban developments (roads, housing, bulk service infrastructure). Residential housing is required for the area and the selected erf is deemed suitable if the site can be adequately serviced, suitable protection is offered to the wetlands; suitable flood protection is in place and ongoing AIS removal and indigenous landscaping take place.

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Detailed site Development plans will be submitted for each phase before building plan approval. The detailed designs will need to be revised and be based on recommendations and measures included in this basic assessment report and any conditions of the EA (if authorised). The finals SDPs and detailed stormwater designs will need to be assessed by the aquatic specialist; the final SWMP and assessment will need to be submitted to DFFE for approval prior to construction; The final SDP and SWMP will be required for the WULA process.

If environmental authorisation is issued for the proposed development, it is recommended that all mitigation measures presented in this draft impact assessment report and included in the accompanying draft EMPr are included as conditions of the environmental authorisation.
The draft basic assessment will be distributed to registered IAPs for a 30-day review and comment period. The assessment will then be updated to address the comments, and the final BAR will be

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BASIC ASSESSMENT REPORT REQUIREMENTS:

Appendix 1 of Regulation 982 of the 2014 EIA Regulations describes the contents required to complete a basic assessment report. The below table indicates how Appendix 1 requirements were incorporated into the basic assessment report:

Scope of assessment and content of basic assessment reports	Reference in Draft BAR
(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include -	
(a) Details of – (i) The EAP who prepared the report; and (ii) The expertise of the EAP, including curriculum vitae.	Appendix A: Curriculum Vitae of EAP
(b) The location of the activity, including – (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 items (i) and (ii) is not available, the co-ordinates of the boundary of the property.	Section 2. Location and Property information
(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure 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.	Appendix B: Layout maps – concept layouts Alternative 1 and Alternative 2 Appendix D: Planning and Bulk Services
(d) a description of the scope of the proposed activity, including – (i) All listed and specified activities triggered and being applied for; and (ii) A description of the activities to be undertaken including associated structures and infrastructure	Section 3.Description of proposed development
(e) A description of the policy and legislative context within which the development is proposed, including – (i) An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and have been considered in preparation of the report; and (ii) How the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks and instruments.	Table 5: Legislation, policies, plans and guidelines
(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 5** Need and Desirability of proposed development
(g) A motivation for the preferred site, activity and technology alternative	**Section 7:** A motivation for the preferred site, activity and technology alternative Appendix D: Planning and Bulk Services
(h) A full description of the process followed to reach the proposed preferred alternative within the site including: (i) Details of all alternatives considered.	**Section 7:** A motivation for the preferred site, activity and technology alternative
(ii) Details of the public participation process undertaken in terms of regulation 41 of the regulations, including copies and supporting documents and inputs.	Appendix E: Comments and Response Report and Public Participation Process

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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.	
(iii) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects. (iv) 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. (v) 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. (vi) 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. (vii) The possible mitigation measures that could be applied and level residual risk (viii) The outcome of the site selection matrix	Section 9: Impact Assessment Methodology Section 10: Impact Assessment
(ix) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	**Section 7:** A motivation for the preferred site, activity and technology alternative
(x) A concluding statement indicating the preferred alternatives, including the preferred location of the activity.	**Section 12:** Conclusion and Recommendations
(i) A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including - A description of all environmental issues and risks that were identified during the basic assessment process; and An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures	Section 9: Impact Assessment Methodology Section 10: Impact Assessment
(j) An assessment of each identified potentially significant impact and risk, including - Cumulative impacts; The nature, significance and consequences of the impact and risk; The extent and duration of the impact and risk; The probability of the impact and risk occurring; The degree to which the impact and risk can be reversed; The degree to which the impact and risk may cause irreplaceable loss of resources; and The degree to which the impact and risk can be mitigated	Section 10: Impact Assessment
(k) Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report.	Section 10: Impact Assessment
(l) An environmental impact statement which contains: • A summary of the key findings of the environmental impact assessment; • A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and • A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives	Section 10: Impact Assessment EXECUTIVE SUMMARY

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(m) Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr.	Section 10: Impact Assessment
(n) Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	Section 10: Impact Assessment Section 12: Conclusion and Recommendations
(o) A description of assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Section 11: ASSUMPTIONS & LIMITATIONS
(p) A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Section 12: Conclusion and Recommendations
(q) Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded and the post construction monitoring requirements finalised.	NA
(r) An undertaking under oath or affirmation by the EAP in relation to: The correctness of the information provided in the reports; The inclusion of comments and inputs from stakeholders and I&APs; The inclusion of inputs and recommendations from the specialist reports where relevant; and Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties	Undertaking under oath under application section
(s) Where applicable, details of any financial provisions for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts	Decommissioning and closure not applicable. The applicant will adhere to the rehabilitation requirements of construction and operational phases.
(t) Any specific information that may be required by the competent authority.	Draft BAR and appendices
(u) Any other matters required in terms of section 24(4)(a) and (b) of the Act.	Refer to report below in entirety.

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Glossary of Terms

AIS	Alien Invasive species
BAR	**Basic Assessment Report –** A tool used by the EAP to submit to the competent authority if listed activities is triggered in Regulations GNR 327 and GNR 324 as per NEMA to make a decision regarding a proposed development.
CBA	**CBA Critical Biodiversity Area** – Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.
DEA&DP	**Department of Environmental Affairs and Development Planning** – the provincial authority for sustainable environmental management and integrated development planning.
DFFE	**Department of Forestry, Fisheries and the Environmental** – the national authority for sustainable environmental management and integrated development planning.
DWS	**Department of Water and Sanitation** – authority for issuing water use licenses / general authorisations within regulated areas
EAP	**Environmental Assessment Practitioner –** An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2) must – (a) be independent. (b) Have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these regulations and any guidelines that have relevance to the proposed activity. (c) Ensure compliance with these Regulations (d) Perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application. (e) Take into account, to the extent possible, the matters referred to in regulation 18 when preparing the application and any report, plan or document relating to the application; and (f) Disclose to the proponent or applicant, registered and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing – i. Any decision to be taken with respect to the application by the competent authority in terms of these regulations; or ii. The objectivity of any report, plan or document to be prepared by the EAP or specialist, in terms of these Regulations for submission to the competent authority; unless access to that information is protected by law, in which case it must be indicated that such protected information exists and is only provided to the competent authority. (2) In the event where the EAP or specialist does not comply with sub regulation (1)(a), the proponent or applicant must, prior to conducting public participation as contemplated in chapter 5 of these regulations, appoint another EAP or specialist to externally review all work undertaken by the EAP or specialist, at the applicants cost. (3) An EAP or specialist appointed to externally review the work of an EAP or specialist as contemplated in sub regulation (2), must comply with sub regulation (1).
ECO	**Environmental Control Officer** – A site agent who needs to ensure that all environmental authorisation and conditions are adhered to during the construction phase of the project.
EMPr	**Environmental Management Programme –** can be **defined** as "an **environmental management** tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced".
ESA	**Ecological Support Area –** Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services.

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GA	**General Authorisations -** The General Authorisations allows for users/ potential water users to do certain limited water related activities/works. No water use licence required but must be registered with DWS.
IAP	**Interested and Affected Party/ies** - in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 42.
MMP	**Maintenance Management Plan –** means a maintenance management plan for maintenance purposes defined and adopted by the competent authority
NEMA	**National Environmental Management Act (Act 107 of 1998) as amended 2017** – national environmental legislation that provides principles for decision-making on matters that affect the environment.
PA	**Protected Area -** A protected area is an area of land or sea that is formally protected by law and managed mainly for biodiversity conservation. Protected areas recognised in the National Environmental Management: Protected Areas Act (Act 57 of 2003) (hereafter referred to as the Protected Areas Act) are considered formal protected areas in the NPAES. This is a narrower definition of protected areas than the International Union for Conservation of Nature (IUCN) definition.1 The NPAES distinguishes between land-based protected areas, which may protect both terrestrial and freshwater biodiversity features, and marine protected areas.

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DRAFT BASIC ASSESSMENT REPORT
Proposed development of medium – high density affordable middle income residential housing on ERF 7614 KNYSNA, Garden Route District Municipality, Western Cape

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List of Appendices

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1. Introduction

Bugali Investments is proposed to develop residential units (medium to high density) on Erf 7614 located in Knysna, Western Cape. **Eco Route Environmental Consultancy** has been appointed by Bugali Investments to carry out the environmental authorisation application process for the proposed development.

The proposed development triggers Activities in Listing Notice 1 of the Environmental Impact Assessment Regulations, 2014 (as amended, 2017) published in terms of the national Environmental Management Act (Act 107 of 1998) (NEMA) and therefore requires an environmental authorisation to be issued by the competent authority before development can commence.

The project is currently in planning and design phase; this basic assessment report forms part of the application process for environmental authorisation as required in terms of the NEMA 214 EIA regulations (as amended, 2017) for the following activities:

- LN1, Activity 19 - The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;
- LN1, Activity 27 - The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation…
- LN1, activity 67 - Phased activities for all activities—(i) listed in this Notice, which commenced on or after the effective date of this Notice or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices, where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold

Environmental authorisation is required as part of the rezoning process; detailed designs will only be done once the EA and rezoning is in place due to relevant professional costs.

The application for environmental authorisation was accepted by the competent authority - National Department of Fisheries, forestry and Environmental (DFFE) on 14 November 2024.

The draft Basic assessment report will be distributed to all registered Interested and Affected Parties (IAPS) for a 30-day comment and review period (excluding period between 15 December 2024 to 5 January 2025).

The draft BAR will be updated to incorporate the comments received and a final basic assessment report will be submitted (within 90 days of application – 14 February 2025) to the DFFE for 107-day decision making period.

The draft BAR is available on Eco Route's Website: www.ecoroute.co.za.

Review and comment period on draft BAR: 02/12/ 2024 – 27/01/2025

2. Location and Property information

Erf 7614 is located close to the Knysna CBD. Refer to locality map in Figure 3; property details are provided in Table 3.

Table 3: Property details

Province:	Western Cape
District Municipality:	Garden Route Municipality
Local Municipality:	Knysna Municipality
Ward number(s):	Ward 10
Nearest town(s):	Knysna

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Erf Number	Erf 7614
Surveyor General 21-digit code:	C03900050000761400000
Zoning:	Undetermined
Urban Edge:	Yes
Coordinates of centre of property:	34° 1'43.05"S ; 23° 2'55.28"E

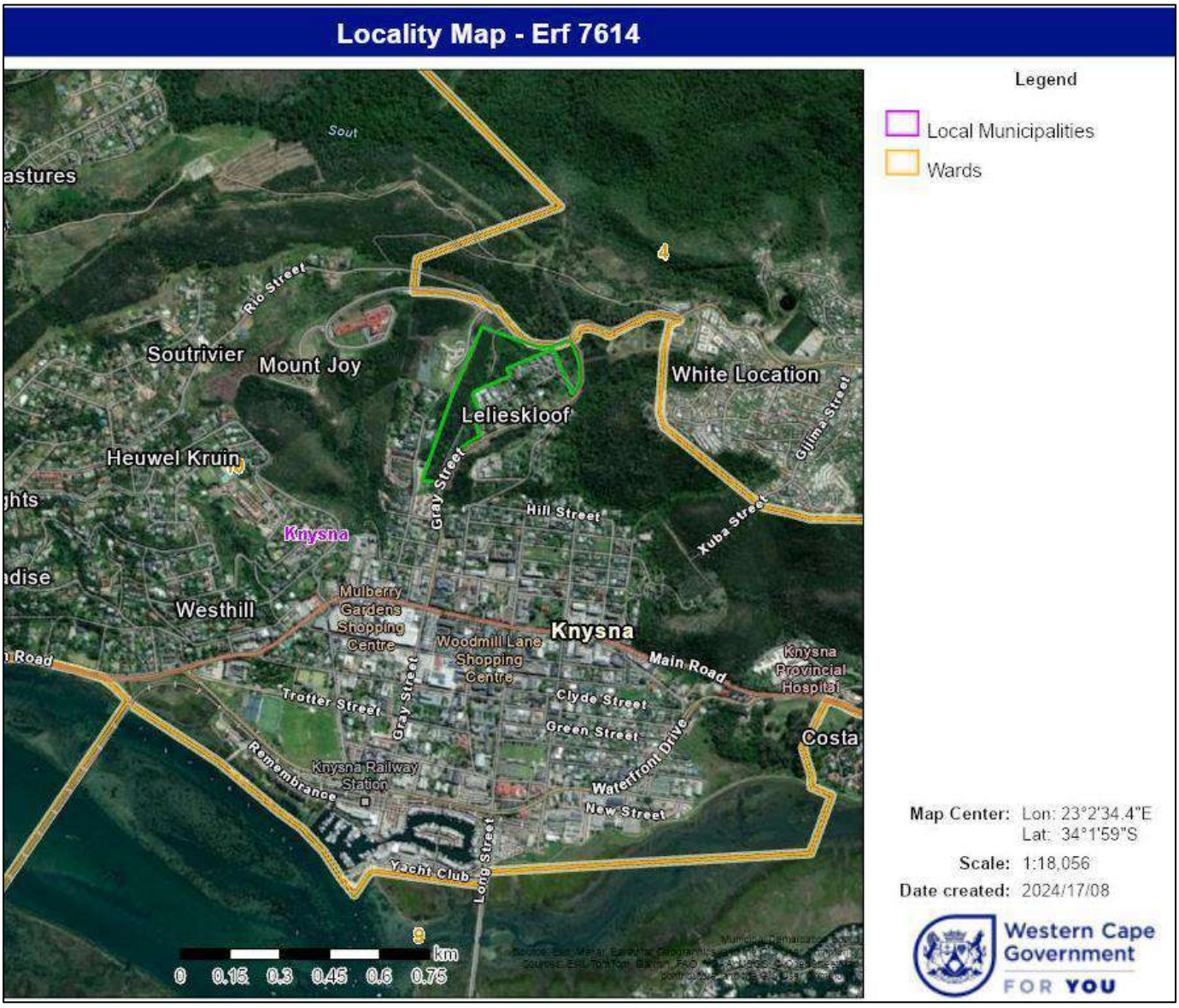

Figure 3: Locality map

3. Description of proposed development

The development proposal (concept planning stage) entails the development of affordable middle-income housing on Erf 7614, Knysna. Erf 7614 is located within walking distance to the Knysna CBD and is approximately 5.6 hectares in extent. The site is currently vacant.

The development proposal entails the development of 2 – 4 storey buildings and a maximum 274 flats. Average unit sizes are estimated to be between 30m2 to 65m2. The development will provide communal open space areas and parking areas.

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The present zoning of the property is "Undetermined Zone" and the intention is to make an application for the rezoning of the land to "Sub-divisional Area" which would allow for the further subdivision of the land into three (3) "General Residential III" erven, 1 communal "Open Space II" erf, and 2 "Public Road" erven. The property was previously subdivided to allow 3 General Residential Sites, 2 Public Roads, and 1 Public Place. The rezoning application intends to re-instate the previously approved SG Diagrams.
The proposal entails the development of three residential areas and an open space area and internal roads. The three residential areas are proposed to be developed in three phases.

Two layout plans have been developed. Alternative 1 was used to inform the specialist verification studies carried out; alternative 2 is a concept layout which was developed following recommendations from the verification studies namely that units in the largest proposed residential area was placed in an area identified as a wetland.

Concept layout alternative 1 proposed 274 units; concept layout alternative 2 proposes 262 units and takes into account the delineated wetland area.

The proposed development areas include the following:

- Portion A - residential Precinct 1: The largest phase and is situated in the northwestern portion of the site; this area measures 3,4466ha. This precinct comprises 8 buildings containing approximately 142 units (Alternative 1) and 130 units (Alternative 2)
- Portion B represents residential Precinct 2 and is situated to the east of the site is; this area measures 6531m². The amended SDP for this precinct was approved for 72 units. (no change between Alternative 1 and 2)
- Portion C represents residential Precinct 3 and is situated to the south of the development property; this area measures 1.1054ha. The preliminary Site Development plan indicates two 4 storey buildings with a total of 60 units in this precinct. (no change between Alternative 1 and 2)
- Portion D is a 15m wide public road reserve and was originally requested by the Directorate Technical Services. The position of this road stems from the originally approved GP 6113/1994. The public road on Portion D will only be partially constructed, to the point where access is required for Portion A. Portion D will be transferred to the Knysna Municipality. A preliminary road design for a 6m wide public road has been prepared by Hofmeyr and Associates to ensure that the road cadastral is sufficient to accommodate the planned link to Lelieskloof Avenue.
- Portion E presents an existing public road that provides access to The Knoll development on Erf 4972 as well as to Portion C. This road portion will be transferred to the Knysna Municipality.
- Portion F presents a Public Open Space to the east of the planned access road to Portion C. This Public Place is required for the functioning of the Stormwater system.

Subdivision Table Portion Nr	**Erf Nr**	**SG Nr**	**Size**	**Zoning**	**Nr of units**	**Density**
Portion A	13555	147/2010	3,4466ha	General Residential Zone III	142 (alternative 1) 130 (alternative 2)	41.2
Portion B	13556	148/2010	6531m²	General Residential Zone III	72	110.2
Portion C	13554	146/2010	1.1054ha	General Residential Zone III	60	53
Portion D	13557	149/2010	1846m²	Transport Zone II	0	0
Portion E	15559	151/2010	758m²	Transport Zone II	0	0
Portion F	13558	150/2010	1623m³	Open Space Zone I	0	0

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TOTAL			5,6278ha		274 (alternative 1) 262 (alternative 2)	48.7

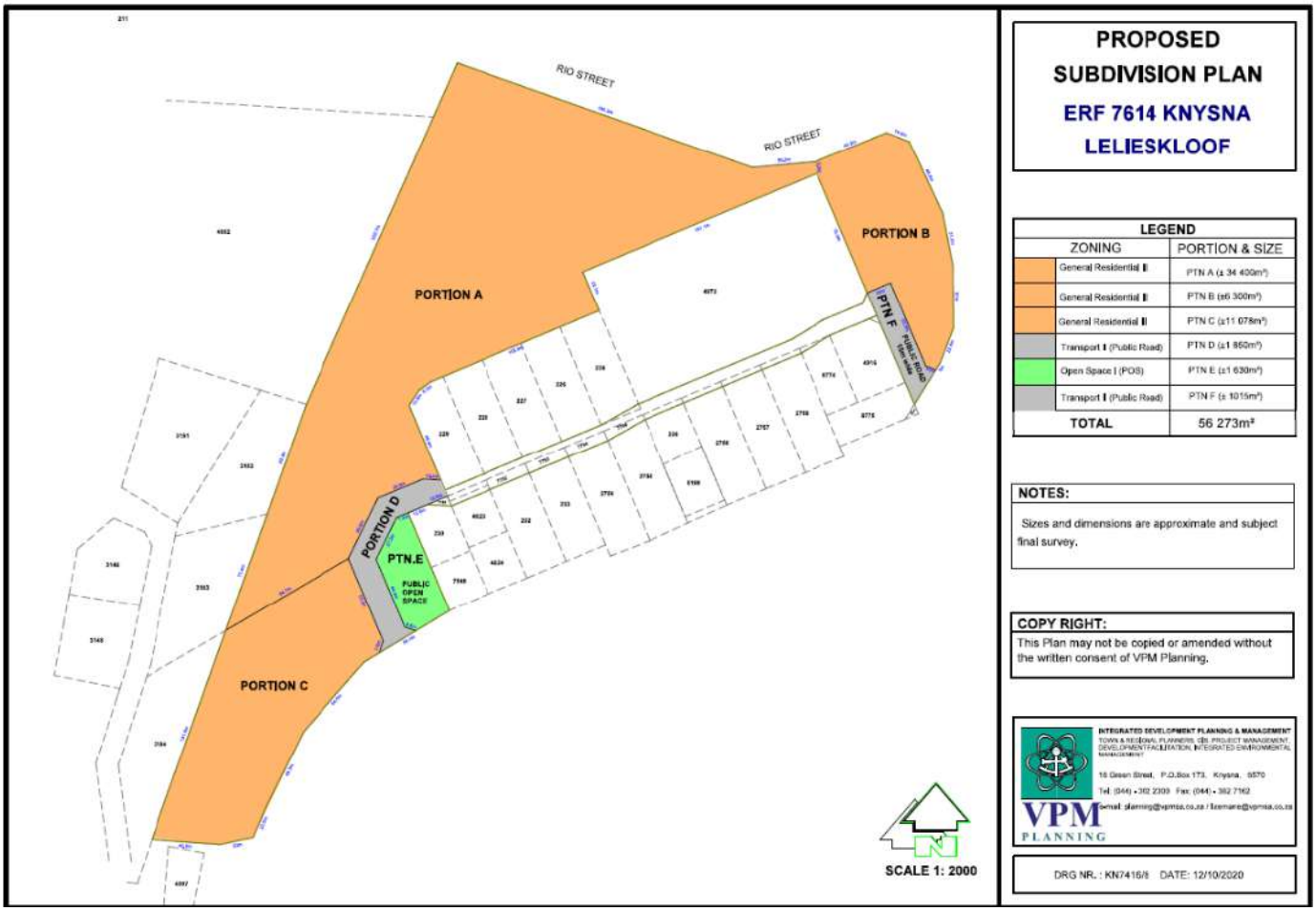

Figure 4: Proposed subdivision plan (adapted from VPM Planning,, 2020)

Detailed site Development plans will be submitted for each phase before building plan approval. The detailed designs and detailed stormwater management plan will need to be revised and be based on recommendations and measures included in this basic assessment report and any conditions of the EA (if authorised).

Each precinct is proposed to have its own access and not be linked internally. This will lower traffic flow through the development and will also disperse traffic more evenly through the existing road networks. Precincts will be connected via pedestrian ways, as the proximity to town will allow many people to walk to town.

A Traffic Impact Assessment (TIA) was prepared for a 220-unit development in 2007 and approved by the Knysna Municipality at the time. In 2014 the TIA was revised to accommodate the increase of the units to 274. Draft alternative layout 2 proposes 262 units.
The Traffic Impact Study addresses the suitability and safety of proposals for site access, as well as the capacity of the existing and future road network within the influence radius. At the time it was confirmed that the traffic impact of the envisaged development is within acceptable limits and that the suggested improvements conform to the standards and parameters set by the authority.

- Access 1 is an existing access point to the site from Rio Street and will provide access to Portion A. Safe shoulder sight distances of approximately 120 and 130m are achieved to the east and west respectively.

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- Access 2 is an existing access road, which serves Oaklands Development as well as Portion B of the development. The TIA recommended that vegetation be cleared on both approaches to this access, particularly the section towards Rio Drive such that shoulder sight distance can be improved. Should this be done, acceptable sight distances of approximately 100m to the south and 120 to the north can be achieved.
- Access 3 is situated along Concordia Road, at the originally approved public access point (Portion E). This access point will provide access to Portion C. The current informal access to the development and the Gardeners kloof residential area is further south and traverses over the southern portion of the site and dangerously intersects with Gray Street. This access point will be closed, and new access will be constructed. Shoulder sight distance of approximately 320m to the north and 140m to the south is achieved at this intersection with the existing public road. This portion of the property will be subdivided and transferred to the Knysna Municipality. Due to the steepness of the terrain, the rest of the originally proposed Gardeners Kloof Avenue cannot be constructed. Only Portion A will obtain access from this access point.

The lower-lying areas of the property have a relatively even gradient. Some sections of the western portion of the property are very steep with gradients steeper than 1:2. Slopes steeper than 25 % (1:4) will be avoided.
Building design will take advantage of the slope of the site allowing ground contact at two levels, hence reducing the height. Buildings will range from 2 storeys to 4 storeys. Buildings higher than 3 storeys will have lift access. The heights of buildings will not exceed the 12m-height limitation as prescribed in the Knysna Zoning Scheme Bylaw. As a result of previous public participation processes, some buildings will be restricted to 8,5m or 2 storeys to ensure the protection of views from the surrounding residential properties.

The aim of the proposed development is to create affordable housing for the middle-income group. Units will cater to a wide variety of residents.

UNIT TYPE	SIZE	% OF DEVELOPMENT	UNIT NR (Alternative 1)	UNIT NR (Alternative 1)
Bachelor flat	30-35m²	±20%	55	
One-bedroom flat	35-40m²	±35%	96	
2 bedroom flat	40-50m²	±25%	68	
3 bedroom flat	50-60m²	±20%	55	
Total			274	262

The new Zoning Scheme By-law required 1.75 bays per unit and 0.25 bays per unit for guests, effectively 2 bays per unit. Application to relax parking ratio to 1.5 parking bays is requested as it is unlikely that many units will have 2 cars. Parking areas are fragmented; traffic calming is ensured by provision of parking courts.
Open space areas are proposed adjacent to buildings; landscaping with indigenous vegetation and removal of alien invasive plants from steeper open space areas is proposed.

Hofmeyr and Associates Consulting Engineers was appointed to calculate the service demand of the development and to and investigate the availability of bulk supply. The following is a summary of the revised 2020 Engineers bulk Services Report (Refer to Appendix G):

Water Demand and Supply

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Municipal water main can supply the water demand for the planned development. A separate bulk water connection will be created for each precinct. Internal reticulation will be constructed from these points to supply all units within the planned development.
Annual average Daily Water Demand (AADD) :
274 Units (Alternative 1) @ AADD of 1 000 litres / day / unit
Total AADD of development (Alternative 1) = 274 000 litres / day
Instantaneous peak flow for the development
At peak flow factor of 8 = 25,3 litres / sec

Note:
262 Units (Alternative 2) @ AADD of 1 000 litres / day / unit
Total AADD of development (Alternative 1) = 262 000 litres / day

Fire Flow (fire category moderate risk to low risk Group 1) = 15 litres / sec
The existing Municipal water storage reservoirs for the area are located at the water treatment works and have a full supply level of approximately 125m above MSL. These reservoirs feed several gravity water mains in the area.

Municipal water pipes are running through the property; the pipes will be retained or rerouted as necessary and will be protected by servitudes.

Sewage management
The Municipality will provide a connection point from the existing surrounding network to each property and has adequate capacity in the bulk system to accommodate the full sewage flow of the development.
These requirements are summarized as follows:
Daily sewage discharge: 274 Units (alternative 1) @ 800 litres / day = 219 200 l / day
Peak flow (including 15%extraneous flow) @ peak factor 2,5 = 7,29 l /sec
Note: Daily sewage discharge: 262 Units (alternative 2) @ 800 litres / day = 209 600 l / day
Municipal sewer pipes are running through the property; these pipes will be retained or rerouted as necessary and will be protected by servitudes.

Stormwater management
The developer will provide stormwater management measures for the site.
The first stormwater management plan is provided as Drawing no 06/187-02Rev A and based on concept layout alternative 1. An updated stormwater management based on alternative layout 2 and recommendations provided in the aquatic verification and assessment report will need to be compiled.
Detailed site Development plans will be submitted for each phase before building plan approval; the detailed stormwater management plans will need to be developed and be based on recommendations and measures included in this basic assessment report and any conditions of the EA (if authorised). This will need to be submitted to DWS as part of the water use license authorisation process.

Electricity
The Service agreement states that the maximum demand for the development is in the order of 600kVA. The Development will connect to the surrounding 11kva network. Internal circulation will be done by the developer. The electrical reticulation service agreement is attached

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Solid Waste management

Communal refuse storage facilities will be constructed for each block of apartments. These facilities will be emptied on a regular basis by the Municipal refuse collection service.

Conclusion

The proposed development requires an environmental authorisation to be issued by the competent authority before development can commence. The listed activities contained within the 2014 EIA Regulation (as amended, 2017) published in terms of the NEMA applicable to the proposed development and which require environmental authorisation are provided in Table 4.

Table 4: Listed activities in NEMA 2014 EIA Regulations, 2014, applicable to the proposed development

Activity No.	Activity as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Description of portion of the proposed project to which the applicable listed activity relates.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	A wetland occurs on site. Stormwater management measures and roads will be developed in this area.
27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except 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 site is approximately 5.6 hectares in extent and currently vacant with no activities currently taking place on the property.
67	Phased activities for all activities—(i) listed in this Notice, which commenced on or after the effective date of this Notice or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices, where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold	Development of roads and three residential precincts in phases; some precincts are more than 1 ha / development within watercourse

4. Relevant legislation, guidelines and spatial tools

Legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and have been considered in the planning process are provided in Table 5.

Table 5: Legislation, policies, plans and guidelines

Legislation, Policy, Plan, Guideline, Spatial Tool	Administering Authority	Relevance
National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) (ICMA)	DFFE Coastal	Not applicable
National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).	Heritage WC	Applicable
National Water Act, 1998 (Act No. 36 of 1998) (NWA).	DWS	Applicable

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Legislation, Policy, Plan, Guideline, Spatial Tool	Administering Authority	Relevance
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM:AQA).	Local authority	Not applicable
National Environmental Management Waste Act (Act No. 59 of 2008) ("NEM:WA")	DFFE / DEADP	Not applicable
National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004 (NEMBA).	DFFE	May be applicable – NEMBA TOPS permits Applicable – clearing alien invasive plants
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA).	DFFE	Falls within 10km of protected area
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Department Agriculture, Land Reform and Rural Development	Not applicable
Constitution Of The Republic Of South Africa (Act 108 Of 1996)	RSA	Section 24 – Supreme law of RSA
Nature And Environmental Conservation Ordinance No 19 Of 1974	CAPE NATURE	Permit Application if EA is granted.
National Environmental Management Act (Act 107 Of 1998) and NEMA 2014 EIA Regulations (As Amended, 2017)	DFFE	Environmental Authorisation Required of activities on Listing Notice 1 of EIA REgualtions
National Environmental Management Amendment Act (Act 62 Of 2008)	DFFE CAPE NATURE DWS WC HERITAGE	Consultation With Relevant Authorities for relevant permits / authorisations
NATIONAL FORESTS ACT (ACT 84 OF 1998)	DFFE	No protected trees to be cut, destroyed or damaged, Permits required. G
Forestry Laws Amendment Act (Act 35 Of 2005)	DFFE	As above
Water Services Act (Act 108 Of 1997)	DWS	Water and sanitation
Sea Shore Act (Act 21 Of 1935)	DFFE	Not applicable
National Veld and Forest Fire Act (Act 101 Of 1998)	DAFF	As required - Firebreaks: Fire Management Practices:
Subdivision Of Agricultural Land Act (Act 70 Of 1970)	DAFF	Not applicable
National Health Act (Act 61 Of 2003)	DEPARTMENT OF HEALTH	As required
National Roads Act, Act 7 Of 1998	SANRAL	As required, the DBAR will be sent to Department for comment.
National Road Traffic Act (Act 93 Of 1996)	WC ROADS DPT, JURISDICTION	As required, the DBAR will be sent to Department for comment.
Advertising on Roads and Ribbon Development Act (Act 21 Of 1940)	WESTERN CAPE ROAD AUTHORITY	As required, the DBAR will be sent to Department for comment.
National Development Act, 108 of 1998	RSA	Need and desirability
Western Cape Land Use Planning Act, 2014 (Act 3 of 2014)	KNYSNA LOCAL MUNIPALITY	Guided by the development principles Spatial Justice: Spatial Sustainability: Spatial Efficiency: Good Administration: Spatial Resilience:
SPLUMA (Act 13 Of 2013)	KNYSNA LOCAL MUNIPALITY	Guided by the development principles
Western Cape Constitution Act 1 Of 1998	Western Cape	Supreme law of WC
Western Cape Nature Conservation Laws Amendment Act (Act 3 Of 2000)	CAPENATURE	As required
Western Cape Nature Conservation Board Act (Act 15 Of 1998)	CAPENATURE	Promote and ensure nature conservation
Western Cape Planning And Development Act (Act 7 Of 1999)	CAPENATURE	Land use planning
Western Cape Land Administration Act (Act 6 Of 1998)	PROVINCIAL AND LOCAL AUTHORITIES	Land use planning

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Legislation, Policy, Plan, Guideline, Spatial Tool	Administering Authority	Relevance
Western Cape Provincial Spatial Development Framework 2014	Local Government, DFFE; DEADP	Land use planning
Integrated Development Plan	Local	Land use planning
KNYSNA Municipality: Standard Municipal Land-Use Planning By-Law (2016)	KNYSNA LOCAL MUNIPALITY	Rezoning the following aspects will be considered when the decision are made: Desirability of the proposed utilisation of land The impact of the proposed land development on municipal engineering services The integrated development plan, including the municipal spatial development framework Provincial spatial development framework Policies, principles and the planning and development norms and criteria set by the national and provincial government The matters referred to in section 42 of the Spatial Planning and Land Use Management Act Principles referred to in Chapter VI of the Land Use Planning Act
Knysna Municipality Standard By-Law on Municipal Land Use Planning, 2016	KNYSNA LOCAL MUNIPALITY	Planning
Knysna Zoning Scheme By-Law	KNYSNA LOCAL MUNIPALITY	Planning
Knysna Spatial Development Framework	KNYSNA LOCAL MUNIPALITY	Planning
DFFE Screening tool and relevant protocols	DFFE	Screening report; sensitive environments; assessments required
SANBI VEGMAP 2018	DFFE	Historical vegetation types / Biome
National Freshwater Ecosystem Priority Areas	DWS	Identify FEPA
Threatened ecosystems / Protected areas National Biodiversity Assessment, 2011 / 2018	DFFE	Identify threatened ecosystems / Protected areas
Western Cape Biodiversity Spatial Plan, 2017	DFFE / DEADP	Conservation features
Outeniqua Sensitive Coastal Area Extension Report (OSCAER)	National, provincial, local	Application process required
Species Environmental Assessment Guidelines (SANBI 2020)	DFFE	Fauna assessment
Ecosystem Guidelines for Environmental Assessment in the Western Cape, fynbos Forum	DFFE	Guidelines for development in fynbos biome
Outeniqua Strategic Water Source Area (SWSA)	DWS	Identify SWSA that require protection
Watercourse Buffer tool, Macfarline and Bredin, 2016	DWS	Aquatic assessment - Tool to determine required buffer
WET-Health Version 2 method, Macfarlane et al. (2020).	DWS	Aquatic assessment Determine Present Ecological State
DWS Risk Matrix	DWS	Determine risk on water courses associated with development
TMH 16 Volume 1- South African Traffic Impact and Site Assessment Manual	KNYSNA LOCAL MUNIPALITY	Traffic impact assessment
DEA (2014), Companion to the EIA Regulations 2014, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs, (DEA), Pretoria, South Africa	DFFE / DWS / Heritage WC / Cape Nature	EA from DFFE WUL / GA from DWS Approval form Heritage WC Permits for search and rescue of fauna / flora as required – DFFE / Cape Nature
DEADP (2014) Guideline on Public Participation, EIA Guideline and Information Document Series. Western Cape Department of Environmental Affairs & Development Planning	DFFE / DEADP	Public participation process
South African Civils Aviation Association	SACAA	Not applicable – low sensitivity
Guideline for Involving Heritage Specialists in EIA Processes June 2005	DFFE / DEADP	Heritage
NEMA EIA Regulations Guideline and Information Document Series:	DFFE / DEADP	As required

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Legislation, Policy, Plan, Guideline, Spatial Tool	Administering Authority	Relevance
Guideline on Alternatives Guideline on Appeals Guideline on Exemption Applications Guideline on Need and Desirability Guideline on Public Participation Guideline on Transitional Arrangements Guideline for determining the Scope of Specialist Involvement in EIA Processes Guideline for involving Visual and Aesthetic Specialists in EIA Processes Guideline for involving Social Assessment Specialists in EIA Processes Guideline for involving Hydrogeologists in EIA Processes Guideline for involving Biodiversity Specialists in EIA Processes Guideline for Environmental Management Plans		

5. Need and Desirability of proposed development

Residential housing is considered to be suitable to Erf 7614 for the following reasons:

- The site is situated within urban area
- The site is accessible and in close proximity to the Knysna CBD and with other nearby amenities and facilities
- The site is currently vacant
- The proposed housing development will contribute to in fill development.
- The property is in close proximity to various bulk service connection points.
- The proposed development will contribute to economic growth and development

Need

Consistency with the existing approved Spatial Development Framework (SDF), the current Integrated Development Plan (IDP) and other municipal planning policy is important in the consideration of need.

The lack of affordable housing in the Garden Route is a well-known problem. Due to relatively high land prices and building costs, profit-driven private developments are often forced to cater to the higher income brackets. The Local and Provincial Government, on the other hand, have a certain obligation to provide housing for the poor. Subsequently, the middle-income earners are not being catered for at all. This has a negative effect on the upward mobility of the workforce and the self-esteem of the individual.

The developers have identified this problem, and they intend to provide for this lower-middle-income market. A certain density is required to ensure an economy scale that will guarantee the financial viability of the project and at the same time to reach the affordability level of the target market. Presently standard mortgage rate is at its lowest level in almost 50 years which acts as a positive catalyst in the lower bracket of the residential property market. Lower rates make it easier for first-time property buyers to enter the market. This development will facilitate access for lower-income groups to enter the property market and to establish themselves in a well-planned and managed residential estate.

Need For Higher Density

It is generally accepted worldwide that future urban development must focus on a more compact urban form where higher densities, mixed land uses, and “walkable communities” will bring about a more efficient and environmentally

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sustainable living and working environment. Current densification policies, at national, provincial, and municipal levels, encourage the densification of existing urban areas through the development of under-utilized vacant land within urban areas.

Densities of 25 du/ha have been recommended as the average densities within urban areas. This density is derived from local and international research, which has found that this is a minimum density at which urban settlements begin to significantly improve their urban performance. Presently the density of most Knysna is less than 10du/ha. This is less than 50% of what average gross densities should be to achieve adequately performing urban settlements. Taking into account that there is very limited remaining development land available within the urban area, it implies that any future development within the urban area must be developed at much higher densities to compromise for the historical low densities. The density of this development is calculated at approximately ±50 units per ha.

Socio-Economic Need Of The Broader Community

South Africa has the challenge of high unemployment and skills shortages. At the end of 2018, the unemployment rate was reported to be 27,2%5, and one of the main goals that South Africa has set itself in the National Development Plan is to cut the unemployment rate to 6% by 2030.

Knysna has a very similar demographic profile to the rest of the country. Socio-economic studies included in the SDF indicate high levels of poverty and unemployment. The social needs of the larger community should receive due consideration when the Spatial Development Framework is prepared.

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. According to the plan, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society. Growth and jobs, education and skills, and a capable and developmental state are the main aims of this document.

Any development will create construction jobs for local contractors and laborers. The employment opportunities associated with the construction phase are frequently dismissed as temporary employment. However, while these jobs may be classified as “temporary” it is worth noting that the people employed in the construction industry by its very nature rely on “temporary” jobs for their survival. In this regard “permanent” employment in the construction sector is linked to the ability of construction companies to secure a series of temporary projects over a period of time. Each development, therefore, contributes to creating “permanent” employment in the construction sector. The scale and nature of this development will ensure jobs for many years.

The construction industry is an important player in job creation, not only in the construction sector but in other sectors of the economy as well. The construction industry uses a wide range of inputs such as manufacturing of construction materials and equipment, mining of raw materials, forestry, transportation, real estate, finance, and professional services which all contribute indirectly to more jobs that are created across several sectors.

Knysna also needs a larger permanent residential base that can support the local service industry. The availability of affordable new homes will attract people to the town and thereby contributing to a vibrant economic self-sufficient community.

From studying the content of the draft KSDF 2020, it appears that the SDF does in principle promote growth and development as mechanisms to stimulate the economy and create jobs. The new SDF confirms that ...” *without more economic investment and in particular, job-generating economic activity it will be difficult for the Municipality to maintain a sustainable revenue base and raise sufficient revenue to subsidise a growing poor population. The Municipality is considered to have reached the limit of the burden it can place on existing ratepayers*”.

It also acknowledges that ...” New businesses and households’ contribution to municipal revenue will expand the rates base and reduce the pressure on existing ratepayers to shoulder higher and higher costs.

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South Africa is mandated by the National Development Act to be a developmental state. In this light, it will be difficult for any decision-making body to deny any form of economic activity unless there are substantial negative environmental impacts that cannot be mitigated.

Desirability

Desirability refers to the place, i.e. is the land suitable for locating the type of land-use/activity being proposed. Desirability factors include the location of the site as well as its physical constraints and opportunities:

Location is critical when creating a high-density residential development. It should be located within or adjacent to established urban areas with convenient access to basic urban amenities such as shops schools, entertainment, and transport.

The property is situated within an existing urban area and adjacent to one of the main feeder roads in town. It represents an infill development close to the Central Business District (CBD). The property is included in the Urban Edge of Knysna (KSDF 2008) and is also in an area identified as a “Restructuring Zone”. The site is conveniently located along a main distributor road and taxi route and is within walking distance of schools, shops, and other social facilities.

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6. Preferred site, activity and technology alternative

- **Site:** Erf 7614 – only site assessed; site is owned by the applicant; no other site is available as an alternative site for this development proposal
- **Activity**: Medium to high density residential development; site is deemed to be suited to residential use as per the SDF and previous approvals for similar development concepts; location is within the urban edge and in close proximity to existing services. The activity of medium to high residential housing is assessed; no-go alternative is assessed.
- **Layout:** Two layouts have been developed; alternative layout 1 was developed and initial assessments carried out; the conceptual alternative layout 2 was developed and based on outcomes of initial assessments.
- **Technology:** Proposed measures to provide / manage services

The Department of Forestry, Fisheries and Environment (DFFE) has launched an on-line screening tool that is applied at the initial stages of an assessment. A Screening Report has been generated for the site; the DFFE National Screening Tool indicates the following environmental sensitivities which has assisted in the identification of potential impacts:

- Agriculture theme: Medium sensitivity
- Animal species theme: High sensitivity
- Aquatic biodiversity theme: Very high sensitivity
- Archaeological and Cultural Heritage theme: Very High sensitivity
- Palaeontology theme: Very High sensitivity
- Plant species theme: Medium sensitivity.
- Terrestrial biodiversity theme: Very High Sensitivity
- Civil aviation theme: Medium sensitivity
- Defence theme: Low sensitivity

The following specialist studies have been carried out:

- Aquatic Assessment has been carried out by Confluent Environmental (Pty) Ltd, August 2024
- Terrestrial Biodiversity & Terrestrial Plant Species Report by Confluent Environmental (Pty) Ltd, August
- Terrestrial Animal Species Assessment, Site Sensitivity Verification Report by Confluent Environmental (Pty) Ltd, completed March 2024

On 15 July 2021, **Heritage Western Cape** stated that no further studies in terms of Section 38 of the NHRA are required. An application in terms of Section 35 of the NHRA is required to address the impact on archaeology and palaeontology. The following is deemed necessary:

- Site assessments prior to construction phase by Palaeontological and Archaeological specialist to identify any sites which required Section 35 permits:
  Assessments by paleontology and archaeology specialists prior to the start of construction will need to be carried out and any required Section 35 applications will need to be submitted to HWC for any resources.

The town planner and engineers have considered the outcomes of the specialist reports;
Concept alternative layout 1 is not recommended due to development planned within a wetland; **Concept alternative layout 2** was developed and has been assessed.
Stormwater management measures have been designed for layout 1 and based on 1:50 year storm events; stormwater management measures will need to be revised and updated for alternative layout 2 as well as the 1: 100 stormwater events and the expected stormwater flows before and after construction and incorporating Sustainable Urban

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Drainage System (SUDS). Measures to ensure that predevelopment stormwater flows are maintained, and excessive flows are catered for using suitable design and measures are required; the removal of alien invasive trees (which are using a large amount of the water on site) and the increase in hard surfaces must be taken into account to ensure stormwater management is adequate.

Water, electricity and sewage treatment demand will be provided by Knysna municipality; alternative technologies based on renewable resources are addressed.
The waste hierarchy will be required to be followed during the construction and operational phase of the project and based on continual improvement.

The proposed development will offer affordable housing on an erf located within an urban area; the site is considered to have an overall medium environmental sensitivity due to the wetlands on site and historical endangered fynbos. The site is currently impacted by AIS and surrounding urban developments (roads, housing, bulk service infrastructure). Residential housing is required for the area and the selected erf is deemed suitable if the site can be adequately serviced, suitable protection is offered to the wetlands; suitable flood protection is in place and ongoing AIS removal and indigenous landscaping take place.

7. A motivation for the preferred site, activity and technology alternative

"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 –

(a) The property on which, or location where, it is proposed to undertake the activity	Erf 7614 is located within urban area; access and bulk service infrastructure is in place
(b) The type of activity to be undertaken	Medium to high density residential development. Alternative 1: 274 units; 1:50 year stormwater management Alternative 2: 262 units; 1:100 stormwater management; protection of wetlands
(c) The design or layout of the activity	Alternative 1: 274 units; 1:50 year stormwater management Alternative 2: 262 units; 1:100 stormwater management and SUDS; protection of wetlands
(d) The Technology to be used in the activity	Bulk services provided by Knysna Municipality; The following is recommended: Rainwater tanks to supplement water supply / assist with stormwater management Solar panels on roofs to supplement energy supply Waste management hierarchy and continual improvement as services and technologies become available: - Re-use and composting of organic / food waste to reduce quantities waste requiring disposal - Recycling of glass, tins, plastics to reduce quantities waste requiring disposal

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(e) The operation aspect of the activity	Bulk services provided by Knysna Municipality; The following is recommended: Rainwater tanks to supplement water supply / assist with stormwater management Solar panels to supplement energy supply Waste management hierarchy and continual improvement as services and technologies become available: - Re-use and composting of organic / food waste to reduce quantities waste requiring disposal - Recycling of glass, tins, plastics to reduce quantities waste requiring disposal Ongoing AIS clearing and indigenous landscaping
(f) The option of not implementing the activity	Approximately 262 housing units will not be developed. Site is currently transformed and infested with AIS and although clearing is required in terms of the NEMBA, clearing of AIS would not make financially sense if the site is not generating an income that can be used to manage the property.
(g) A motivation for the preferred site, activity and technology alternative.	The proposed development will offer affordable housing on an erf located within an urban area; the site is considered to have an overall medium environmental sensitivity due to the wetlands on site and historical endangered fynbos. The site is currently impacted by AIS and surrounding urban developments (roads, housing, bulk service infrastructure). Residential housing is required for the area and the selected erf is deemed suitable if the development can be adequately serviced, suitable protection is offered to the wetlands and ongoing AIS removal and indigenous landscaping take place.
(h) A full description of the process followed to reach the proposed preferred alternative	Alternative layout 1 was assessed; alternative layout 2 was developed as a result of the assessment process and input from specialists and registered IAPs.

8. Details of the alternatives considered

Concept layout alternative 1: 274 units; 1:50 year stormwater management

Concept layout alternative 2: 262 units outside wetland area

No go alternative: No development of high-density residential units

Detailed designs and management measures must be developed based on relevant planning mitigation measures

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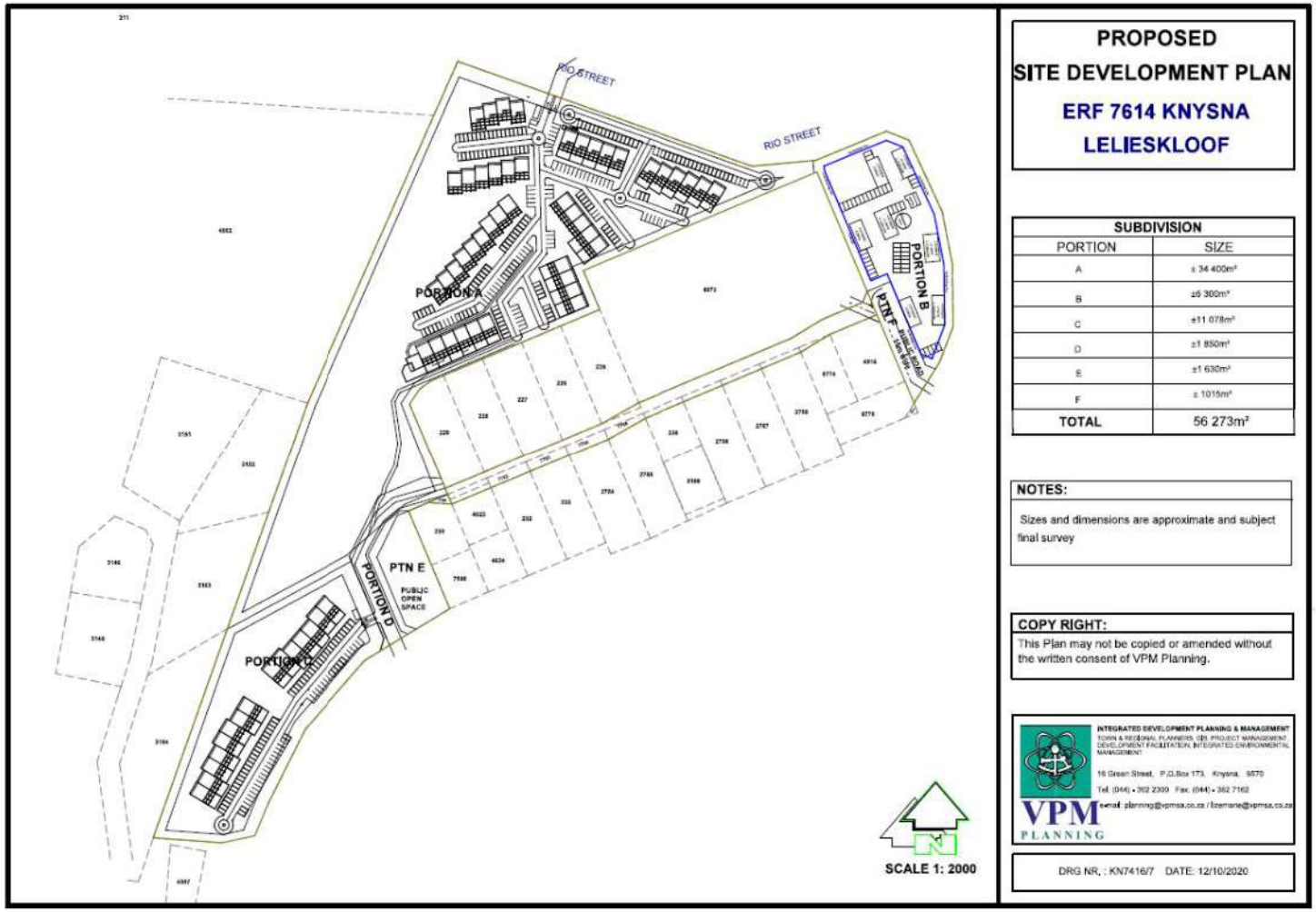

Figure 5: Concept layout alternative 1

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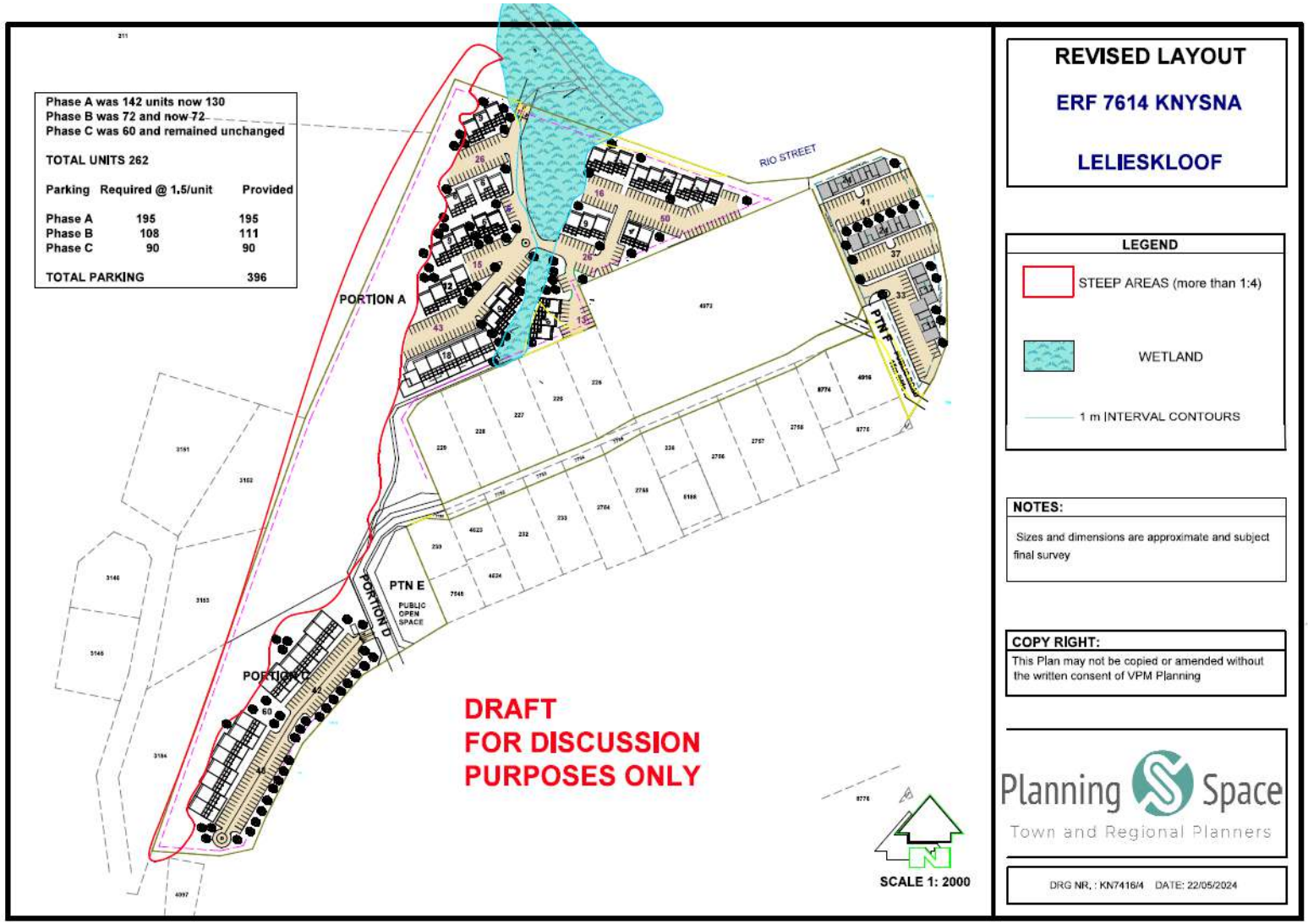

Figure 6: Concept layout alternative 2

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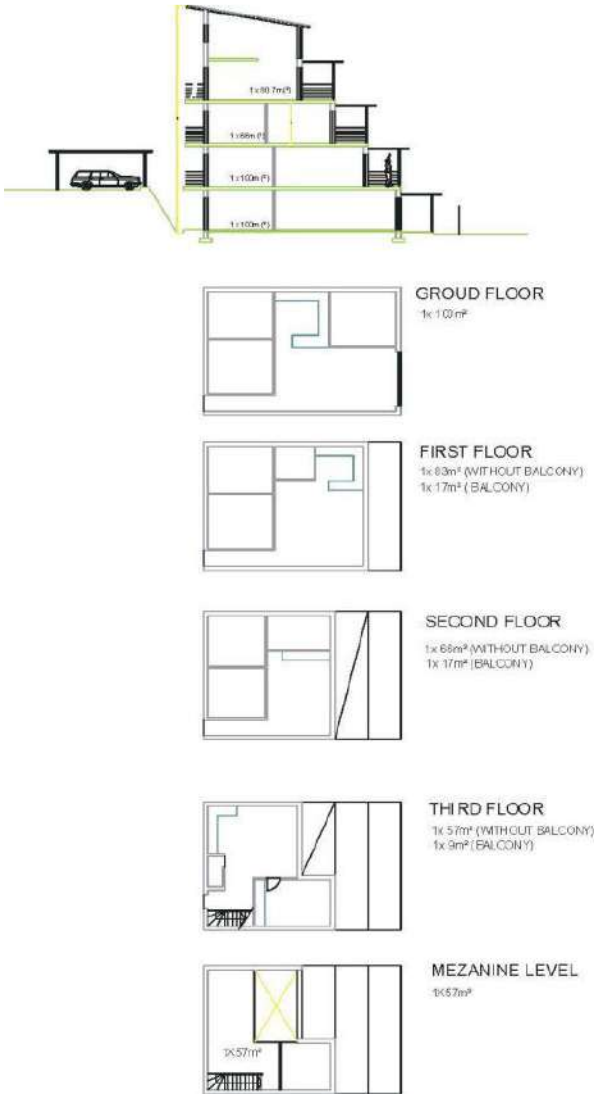

Figure 7: Proposed unit plan

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9. Impact Assessment Methodology

Impact Identification and Assessment Methodology

The purpose of impact assessment is to assign a qualified significance to impacts which are predicted to occur as a result of the various aspects of an activity.
The following definitions apply:

- Activity: A distinct process or task undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation.
- Environmental aspect: An element of an organisation's activities, products and services which can interact with the environment. The interaction of an aspect with the environment may result in an impact.
- Environmental impacts: The consequences of these aspects on environmental resources or receptors of particular value or sensitivity, for example, disturbance due to noise and health effects due to poorer air quality.
- Receptors: Comprise, but are not limited to, people or human-made systems, such as local residents, communities and social infrastructure, as well as components of the biophysical environment such as aquifers, flora and paleontology.

Aspects
Aspects associated with the proposed project are differentiated into construction and operation phases of the project. The nature of the impact is described. Once this has been undertaken the significance of the impact is determined.

Identifying significant environmental impacts
The significant environmental impacts are identified using three sources of information:

- The nature of the receiving environment (the environment includes the social, cultural and biophysical environment)
- A review and understanding of the aspects associated with the proposed project.
- All comments received from interested and affected parties during the public participation process. The issues raised will be described giving consideration to the associated activity and the aspect of that activity that is likely to result in an impact.

Nature of the impact
Impacts on the environment can lead to changes in existing conditions; the nature of the impact can be direct, indirect or cumulative.

- Direct impacts refer to changes in environmental components that result from direct cause-effect consequences of interactions between the environment and project activities. The direct impact is caused by the action and occurs at the same time and place.
- Indirect (Secondary) impacts result from cause-effect consequences of interactions between the environment and direct impacts. The indirect impact is caused by the action and occurs later in time or is further removed in distance.
- Cumulative impacts refer to the combined effect of changes to the environment caused by multiple human activities over space and time. Cumulative impact is the sum of existing conditions and the direct / indirect impacts resulting from the project. Example: A single cut in the forest is unlikely to have a detectable

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change, however increasing multiple cuts in the forest caused by a number of human activities is likely to decrease fauna and flora and increase soil erosion. Cumulative effects can thus be additive or synergistic. A synergistic effect refers to when the combined effect is greater than the sum of individual effects.

Method for assessing the overall significance of impacts

The overall significance of the impact is critical for defining mitigation and monitoring strategies. The qualified significance of predicted impacts assists to determine the manner in which aspects should be managed in order to avoid or minimise the predicted impacts.

Overall significance of the impacts is determined through systematically rating the following criteria of the impacts:

- The status of the impact
- The spatial extent of the impact
- The severity of negativity or degree of positivity of the impact
  - The duration of the impact
  - The frequency of the impact
  - The intensity of the impact
- The consequence of the impact
- The probability of the impact occurring

Impact Status

A qualitative rating of positive or negative is assigned to impact status. Refer to Table 6 (methodology).

Spatial Extent

The spatial extent for each aspect, receptor and impact is defined. The geographical coverage (spatial extent) description will take account of the following factors:

- The physical extent / distribution of the aspect
- The physical extent / distribution of the receptor
- The proposed impact as a result of the aspect
- The nature of the baseline environment within the area of impact

For example, the impacts of noise are likely to be confined to a smaller geographical area than the impacts of atmospheric emissions, which may be experienced at some distance. The significance of impacts also varies spatially; noise may be significant in the immediate vicinity. A qualitative description is assigned to the rating. A quantitative value ranging from 1 – 6 is assigned to the rating. Refer to Table 6 (methodology).

Duration

The duration refers to the length of time that an aspect of a proposed project may cause change on the receiving environment. The receiving environment could refer to either the social or cultural or biophysical environment. The change caused may be a positive or negative change. A qualitative description is assigned to the rating. A quantitative value ranging from 1 – 6 is assigned to the rating.

Frequency

The frequency of the impact occurring refers to how often the aspect results in a given impact on the receiving environment. The receiving environment could refer to either the social or cultural or biophysical environment. The impact may be positive or negative. A qualitative description is assigned to the rating. A quantitative value ranging from 1 – 6 is assigned to the rating.

Intensity

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The intensity refers to the magnitude of the impact experienced by the receiving environment. The environment could refer to either the social or cultural or biophysical environment. The impact experienced may be a positive or negative impact. A qualitative description is assigned to the rating. A quantitative value ranging from 1 – 6 is assigned to the rating.

Severity / Degree
The severity is ***the sum of the intensity, duration and frequency*** of the impact and therefore a quantitative value ranging from 3 – 18 is assigned to the rating. If the impact is positive, the degree of positivity is determined. A qualitative description is assigned to the rating.

Consequence
A qualitative description is assigned to the rating. The consequence is the sum of the Severity (Intensity + Duration + Frequency) and Spatial Extent. Therefore, a quantitative value ranging from 4 – 24 is assigned to the rating.

Probability
In order to determine the significance of the impact, the probability of the impact occurring must first be rated. The probability refers to the likelihood that an impact will result from the aspect in question. A qualitative description is assigned to the rating. A quantitative value ranging from 1 – 6 is assigned to the rating.

Overall Significance
A definition of a "significant impact" for the purposes of the study is: "An impact which, either in isolation or in combination with others, could, in the opinion of the specialist, have a material influence on the decision-making process, including the specification of mitigating measures."

A qualitative description is assigned to the rating. The significance is the sum of the Consequence and Probability. Therefore a quantitative value ranging from 5 - 30 is assigned to the rating. A value of 5, 6 or 7 represents a low significance and described as "not harmful". A value of 30 presents a Very High Significance and is described as an "environmental disaster"

Mitigation
The Mitigation ratings are described qualitatively according to the success and feasibility of the mitigation option in question. The impacts are further rated before and after mitigation / management options. Negative impacts are assessed with mitigation measures in place in order to give an overall significance rating with mitigation in place. Positive impacts are assessed with management measures in place in order to give an overall significance rating with management in place.

Reversibility
A qualitative indication of the reversibility of negative impacts is provided.

Confidence
The confidence of the EAP is assigned a qualitative value.

Table 6: Impact Assessment Rating methodology

Impact Status		
Rating	**Negative**	**Positive**
Description	An impact is rated negative if any degree of negative change will occur in the receiving environment as a result of any aspect of the proposed project. The environment refers to the social environment or the cultural environment or the biophysical environment.	An impact is rated positive if any degree of positive change will occur in the receiving environment as a result of any aspect of the proposed project. The environment refers to the social environment or the cultural environment or the biophysical environment.

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	Negative impacts are to be avoided, minimised, or mitigated.			Positive impacts are to be enhanced.		
Scale (Spatial Extent) Refers to the spatial area the aspect will impact on the environment. The impact may be positive or negative.						
Rating	**Activity specific**	**Site specific**	**Local area Specific**	**Municipal**	**Provincial / National**	**International**
Description	Impact only experienced on area where activity is located	Impact extends to the entire site of the project	Impact extends beyond site into surrounding areas	Impact extends beyond local area into municipal areas	Impact extends beyond municipal area into provincial and may extend nationally	Impact extends beyond national area
Value	1	2	3	4	5	6
Duration Refers to the length of time that the aspect may cause a change on the environment. The change may be positive or negative.						
Rating	**Very Short term**	**Short term**	**Short - Medium term**	**Medium term**	**Medium - Long term**	**Long term**
Description	1 day to 3 month	3 months to one year	One year to three years	Three years to ten years	Life of operation	Extends beyond post closure
Value	1	2	3	4	5	6
Frequency Refers to how often the aspect may impact on the environment. The impact may be positive or negative.						
Rating	**Rarely**	**Infrequent**	**Seldom**	**Regular**	**Often**	**Continuously**
Description	Could occur annually	Could occur within 6 months	Monthly	Weekly	Daily	Non stop
Value	1	2	3	4	5	6
Intensity (Magnitude / Size) Refers to the intensity of the impact experienced by the receiving environment. The impact may be positive or negative.						
Rating	**Low**	**Low to medium**	**Medium**	**Medium to High**	**High**	**Very High**
Description	Low intensity experienced only by receiving environment and / or occurs within 100 metres of activity	Low – medium intensity on receiving environment and / or occurs 100 – 500 metres of activity	Medium intensity on receiving environment and / or occurs 500 – 1000 metres of activity	Medium to high intensity on receiving environment and / or occurs within 1000 – 5000 metres of activity	High intensity on receiving environment and / or occurs within 5000 – 10 000 metres of activity	Very high intensity on receiving environment and / or within 10 000 metres or beyond of the activity
Value	1	2	3	4	5	6
Severity of negative impact Severity (Intensity + Duration + Frequency) The severity of an environmental aspect is determined by the degree of change to the baseline environment, and considers the following: The reversibility of the negative impact, The sensitivity of the receptor to the stressor, The impact duration, its permanency and whether it increases or decreases with time.						
Rating	**Negligible**	**Low Negative**	**Medium Negative**	**Medium - High Negative**	**High Negative**	**Very High Negative**
Description	There will be negligible impact as a result of the aspect	There will be a minor impact as a result of the aspect.	The aspect will result in a moderate impact. Reversibility of	The aspect will result in a high impact. Reversibility of the	The aspect will result in a high impact. Reversibility of the	The aspect will result in a severe impact.

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		This is easily reversible.	the impact easy but costly.	impact possible but costly.	impact difficult and costly.	Reversibility of the impact not likely.
Value	3	4-6	7-9	10-12	13-15	16-18
Degree of positive impact Degree (Intensity + Duration + Frequency) The severity of an environmental aspect is determined by the degree of change to the baseline environment, and considers the following: The enhancement of the positive impact, The sensitivity of the receptor to the opportunity, The impact duration, its permanency and whether it increases or decreases with time.						
Rating	**Negligible**	**Low Positive**	**Medium Positive**	**Medium High Positive**	**High Positive**	**Very High Positive**
Description	There will be negligible impact as a result of the aspect	There will be a minor impact as a result of the aspect.	The aspect will result in a moderate impact.	The aspect will result in a high impact.	The aspect will result in a high impact.	The aspect will result in a very high positive impact.
Value	3	4-6	7-9	10-12	13-15	16-18
Negative Consequence Consequence = (Severity + Spatial extent)						
Rating	**Negligible**	**Negative low**	**Negative Medium**	**Negative Medium High**	**Negative High**	**Negative Very High**
Description	Impact has insignificant consequence on receiving environment. Requires little or no mitigation.	Impact requires in situ mitigation and receptor mitigation.	Impact requires in situ mitigation and receptor mitigation	Impact requires in situ mitigation, receptor mitigation and repair or restoration.	Impact requires in situ mitigation, receptor mitigation and repair or restoration and possible compensation.	Impact is to be avoided
Value	4	5-8	9-12	13-16	17-20	20-24
Positive Consequence Consequence = (Degree + Spatial extent)						
Rating	**Negligible**	**Positive low**	**Positive Medium**	**Positive Medium High**	**Positive High**	**Positive Very High**
Description	Impact has insignificant consequence on receiving environment.	Impact has a positive consequence; management required to enhance positive outcomes.	Impact has a positive consequence; management required to enhance positive outcomes.	Impact has a positive consequence; management required to enhance positive outcomes.	Impact has a positive consequence; management required to maintain positive outcomes.	Widespread / substantial beneficial effect. No alternative ways to achieve same benefits. Management required to maintain positive outcomes.
Value	4	5-8	9-12	13-16	17-20	20-24
Probability Refers to the likelihood that an impact will result from the aspect in question. The impact may be positive or negative.						
Rating	**Slim**	**Slight**	**Plausible**	**Probable**	**Expected**	**Anticipated**
Description	0 - 9% likelihood	10 – 25 % likelihood	26 - 50% likelihood	51 - 75% likelihood	76 - 90% likelihood	91 - 100 % likelihood
Value	1	2	3	4	5	6
Negative Significance (Consequence + Probability)						

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Rating	**Negligible**	**Low**	**Medium**	**Medium High**	**High**	**Very High**
Description	Not harmful	Slightly harmful	Harmful	Very Harmful	Considerably Harmful	Disaster
Value	5	6-10	11-15	16-20	21-25	26-30
Positive Significance (Consequence + Probability)						
Rating	**Negligible**	**Low**	**Medium**	**Medium High**	**High**	**Very High**
Description	Insignificant	Slightly positive	Positive	Positive but not substantial.	Substantial positive impact.	Necessity
Value	5	6-10	11-15	16-20	21-25	26-30
Mitigation of negative impact						
Rating	**None**	**Likely**	**Possible**	**Difficult**	**Unlikely**	**Not possible**
Description	Mitigation not required. Impact remains the same.	Impact can be avoided with mitigation which has proven results.	Impact can be minimised and managed with mitigation	Difficult or costly to mitigate.	Difficult and costly to mitigate	Impact cannot be mitigated
Management of positive impact						
Rating	**None**	**Likely**	**Possible**	**Difficult**	**Unlikely**	**Not possible**
Description	Management not required. Impact remains the same.	Impact can be easily enhanced with management which has proven results.	Impact can be enhanced with management	Difficult or costly to enhance but possible	Difficult and costly to enhance	Impact cannot be enhanced
Confidence Refers to the confidence level the EAP has in predicting the impact.						
Rating	**Low**	**Medium low**	**Medium**	**Medium High**	**High**	**Very High**
Indication of Reversibility						
Rating	**Not applicable**	**Likely**	**Possible**	**Difficult**	**Unlikely**	**Irreversible**
Description	Positive impact Negligible impact	Impact is reversible with minimal intervention	Impact is reversible with interventions	Difficult or costly to reverse	Difficult and costly to reverse	Impact is permanent

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10. Impact Assessment

This section provides a description of baseline conditions of various environmental and social features of the site as well as the impacts identified for relevant development phases, the assessment of impacts and recommended mitigation measures.

The project is currently in planning and design phase; this basic assessment report forms part of the application process for environmental authorisation as required in terms of the NEMA 214 EIA regulations (as amended, 2017) for the following activities:

- LN1, Activity 19 - The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;
- LN1, Activity 27 - The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation…

Environmental authorisation is required as part of the rezoning process; detailed designs will only be done once the EA and rezoning is in place due to relevant professional costs.
It is recommended that the EA (if authorised) allows for construction to commence within three years of the EA to allow sufficient time to conclude the planning phase (rezoning, detailed design, SWMP, WULA).
Construction Phase is estimated to be 24 - 60 months per phase. The construction phase will entail the following scope of works:

10. Establishment of Contractor on-site.
11. Site clearing
12. Excavations and stockpiling
13. Development of roads
14. Installation of services
15. Construction of units
16. Waste and ablution management facilities
17. Construction materials
18. Deliveries to /from site

Operational management will include ongoing maintenance of services (electricity, sewage, water), stormwater management, waste management, wetland and open space area management and internal roads.

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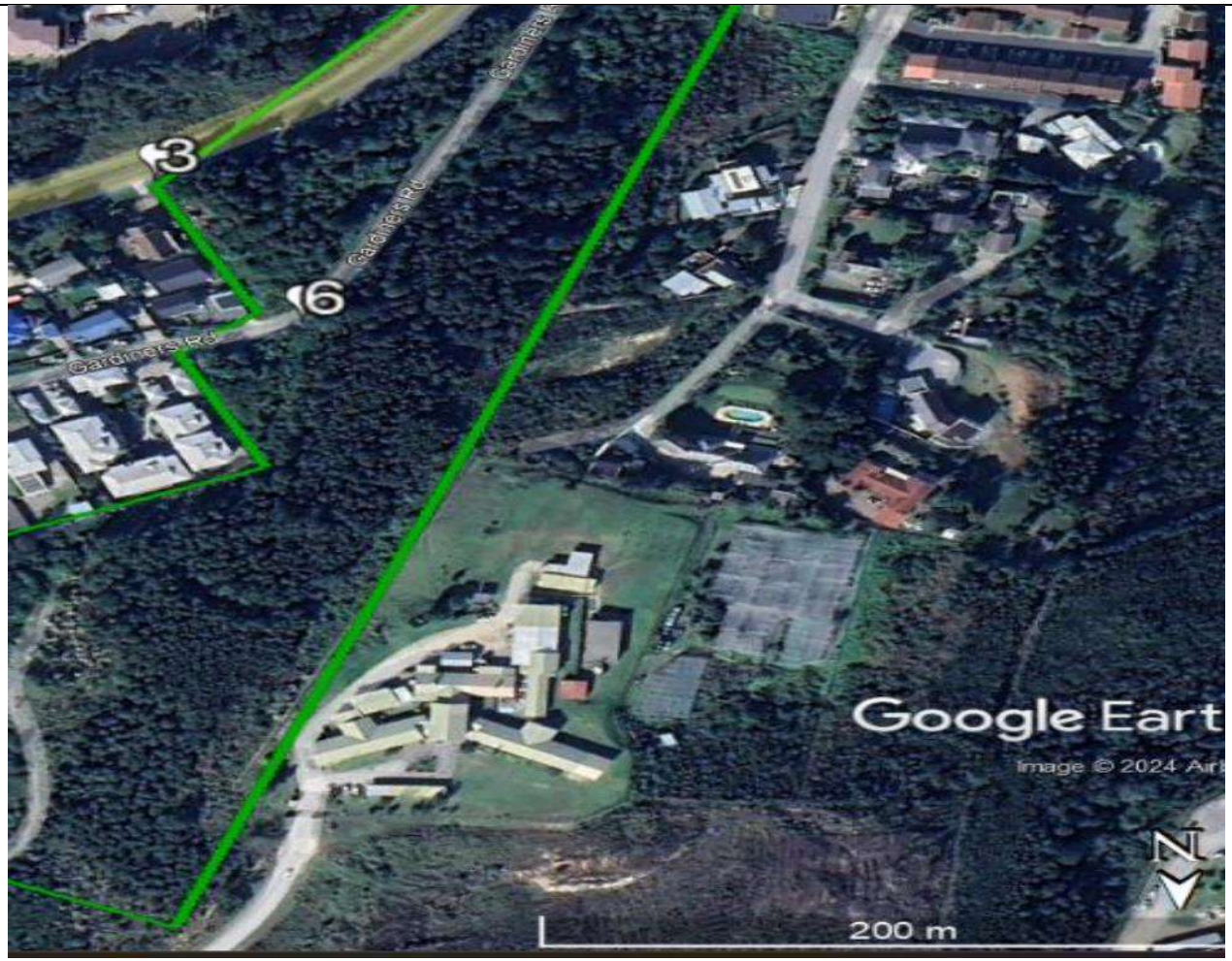
a. Photographs of site



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1	 View from corner of Rio / Gray Street facing north	1	 View from corner of Rio Street / Gray street facing south showing NE corner of Erf 7614.
2	 View from Gray street facing west (eastern side of Ef 7614)	3	 View from Gray street facing west (eastern side of Ef 7614)

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4	 View from Gardiners Road facing north (southern most section of Erf 7614)	5	 View from League street facing NE (showing SW corner of Erf 7614)
6	 View from Gardiners showing north, showing central portion of Erf 7614	7	 View from Rio Street facing south, showing northern most section of Erf 7614

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b. Impacts and Assessment

PLANNING AND DESIGN					
The proposed development of a medium to high residential development on Erf 7614 requires a number of approvals to be in place prior to the start of construction. Commencement of construction prior to receiving required approvals can result in project delays. Many approvals will have conditions, and all preconstruction conditions must be in place prior to the start of construction to avoid project delays. Required approval for site layouts, development plans and engineering drawings must be in place prior to the start of construction. Correct environmental management planning and budget allocation must be carried out during the planning phase to ensure required mitigation measures are put in place.					
Activity	Medium to high residential development				
Layout	Concept layouts 1 and 2; finals SDPs				
Phase	Planning and Design Construction Operations				
Aspect	Management				
Nature of Impact	**Direct - Economic - Commencement prior to required approvals in place can lead to delays in project and economic loss**				
Impact Rating	**Impact Status**	**Negative Impact**		**Negligible**	
		Without mitigation		With mitigation	
	Spatial	Local	3	Activity	
	Duration	Short	3	Short	
	Frequency	Seldom	3	Rarely	
	Intensity	Low – medium	2	Low	
	Severity	Medium	8	Low	
	Consequence	Medium	11	Low	
	Probability	Probable	4	Expected	
	Impact Significance	**Medium**	**15**	**Negligible**	
	Mitigation	Likely - Impact can be avoided with mitigation which has proven results.			
	Confidence	High			
	Reversibility	Possible			
Nature of impact	**Direct - Fauna, Flora, Water, Soil - Poor environmental management planning and / or lack of budget for environmental management will result in unmitigated impacts.**				
Impact Rating	As per impacts identified for planning, construction and operational phase without mitigation / with mitigation				

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Mitigation Measures	• Ensure all approvals in place – EA, Heritage permits, search and rescue permits, WULA • Ensure all preconstruction requirements are in place prior to construction • Ensure layouts, designs and accompanying engineering drawings and SWMPs are approved by relevant authorities as required • All preconstruction requirements included as conditions of the Environmental Authorisation (if attained) to be met. • All preconstruction requirements included as conditions in any other license, authorisation, approval etc. required for the site to be met. • Method statements for construction phase are to be compiled by the project team and be aligned to mitigation measures and conditions of the Environmental Authorisation (if attained) and all other approvals (if attained) • Construction team should include a suitably qualified internal Environmental site officer to assist with daily environmental management on site and compliance with the CEMP and conditions of the EA (if attained) and all other approvals (if attained) • Appoint a suitably qualified external environmental control officer to ensure environmental management requirements are met by carrying out monthly external audits. • Suitable budget to be assigned to environmental management requirements for construction and operational phase • Operational management plans are to be aligned to mitigation measures and conditions of the Environmental Authorisation (if attained) and all other approvals (if attained)

HERITAGE, ARCHAEOLOGY AND PALAEONTOLOGY

The screening tool report indicates a VERY HIGH sensitivity for the Archaeological and Cultural Heritage theme and the Palaeontology theme. This sensitivity is confirmed by the EAP. On 15 July 2021, Heritage Western Cape stated that no further studies in terms of Section 38 of the NHRA are required. An application in terms of Section 35 of the NHRA is required to address the impact on archaeology and palaeontology. Assessments by paleontology and archaeology specialists prior to start of construction will need to be carried out and any required Section 35 applications will need to be submitted to HWC for any resources identified in the site assessments.

Activity	Medium to high residential development
Layout	Alternative 1 and 2
Phase	Planning, Construction and Operational Phase
Aspect	Site clearing; construction activities; excavation activities, operations
Nature of impact:	Direct Negative - Loss of archaeological resources / disturbance to heritage With mitigation measures in place, findings of heritage resources is considered a positive impact.

Impact Rating

Impact Status	**Negative**		**Positive**	
	Without mitigation		With mitigation	
Spatial	Activity	1	Activity	1

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Duration	Very short	1	Very short	1
Frequency	Infrequent	2	Seldom	3
Intensity	High	5	Medium	3
Severity	Low	8	Low	7
Consequence	Low	9	Low	8
Probability	Probable	4	Slight	2
Impact Significance	**Medium**	**13**	**Low**	**10**
Mitigation	Possible – impacts can be prevented with mitigation during construction phase.			
Confidence	High			
Reversibility	Permanent impact (Loss of any artefacts)			

Mitigation Measures

Planning phase

- Paleontology / archaeology specialists to carry out site assessments prior to start of construction and submission of any required Section 35 applications need to be submitted to HWC based on the site assessments and any resources identified.

Construction phase

- Construction managers/foremen should be informed before construction starts on the possible types of archaeological / palaeontology sites they may encounter (based on assessments) and the procedures to follow when they find sites.
- ESO to supervise site clearing
- If resources are unearthed during construction, the find brought to the immediate attention of the developer and all work is to be stopped immediately and reported by the ECO accompanied by photographs and coordinates. This must be sent to WC Heritage as soon as possible to inspect the findings. Any recommendations followed from such an investigation must be carried out.
- Any discovered artefacts shall not be removed under any circumstances without consent from the WC Heritage Authority.
- Archaeological Sites may include:
    - Dense accumulations of marine shell – evidence of prehistoric shell midden
    - Concentrations of shell associated with pieces of bone, pottery and stone artefacts
    - Concentrations of fossilized bone
    - Concentrations of blue and white china, pieces of irons, coins etc.
    - Human remains including burials

Operational Phase

- Follow procedure if any artefacts discovered by residents in operational phase

Activity	No go alternative
Nature of impact:	Baseline conditions will likely remain the same – negligible impacts on heritage.

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TERRESTRIAL BIODIVERSITY, INDIGENOUS VEGETATION AND FLORA SPECIES

The screening tool report indicates a VERY HIGH sensitivity for the Terrestrial biodiversity theme and a Medium sensitivity for plant species theme.
Vegetation mapped on Erf 7614, in terms of the 2018 National Vegetation map, is Garden Route Shale Fynbos (FFh 9). This vegetation has an ecosystem status of endangered in terms of the Revised National List of threatened ecosystems, 2022. In terms of the Western Cape Biodiversity Spatial Plan (BSP), the site does not fall within a critical biodiversity area (CBA) or Ecological Support Area (ESA). The site falls within 200 meters of the Pledge Nature Reserve and within 2.5km of Eastford Private Nature Reserve (NEMPA category B); the site falls within 1.2 km of the Garden Route national Park (NEMPAA: Category A).
The site is located within an urban area with surrounding land uses including residential house, guest houses and roads. The site currently represents transformed vegetation with a high density of alien plants. Very isolated indigenous thicket / forest vegetation occur on the north-eastern portion of the site north of the overgrown lawn mapped in the revised vegetation map compiled by Confluent, 2024. The terrestrial biodiversity theme of the site is confirmed to have a Low sensitivity. The
Two protected seedlings were found on the site (*Podocarpus latifolius and Afrocarpus falcatus*) ; a forestry license will be required to be obtained for the yellowwood seedlings, and they are to be retained within the open space area on Erf 7614. One very large milkwood tree (*Sideroxylon inerme inerme*; Lat: -34.028242 Lon: 23.05104) was also observed on the site, and this tree must remain protected on the site. Apart from the protected trees, no other species of conservation concern were identified, and no Red Listed plant species were found on the site. The plant species theme has a Low sensitivity. The impact on vegetation and terrestrial biodiversity will be similar for both alternatives, vegetation (consisting of high density of AIS) will be removed and the site transformed to a residential housing development. Mitigation includes retaining of the identified forest tree species in designated open spaces on the site, removal and ongoing removal of AIS. Plant species included in Garden Route shale fynbos and indigenous forest trees should be used in landscaping in the open space areas. The steep areas of the site must be suitably vegetated to reduce runoff and erosion and absorb water.

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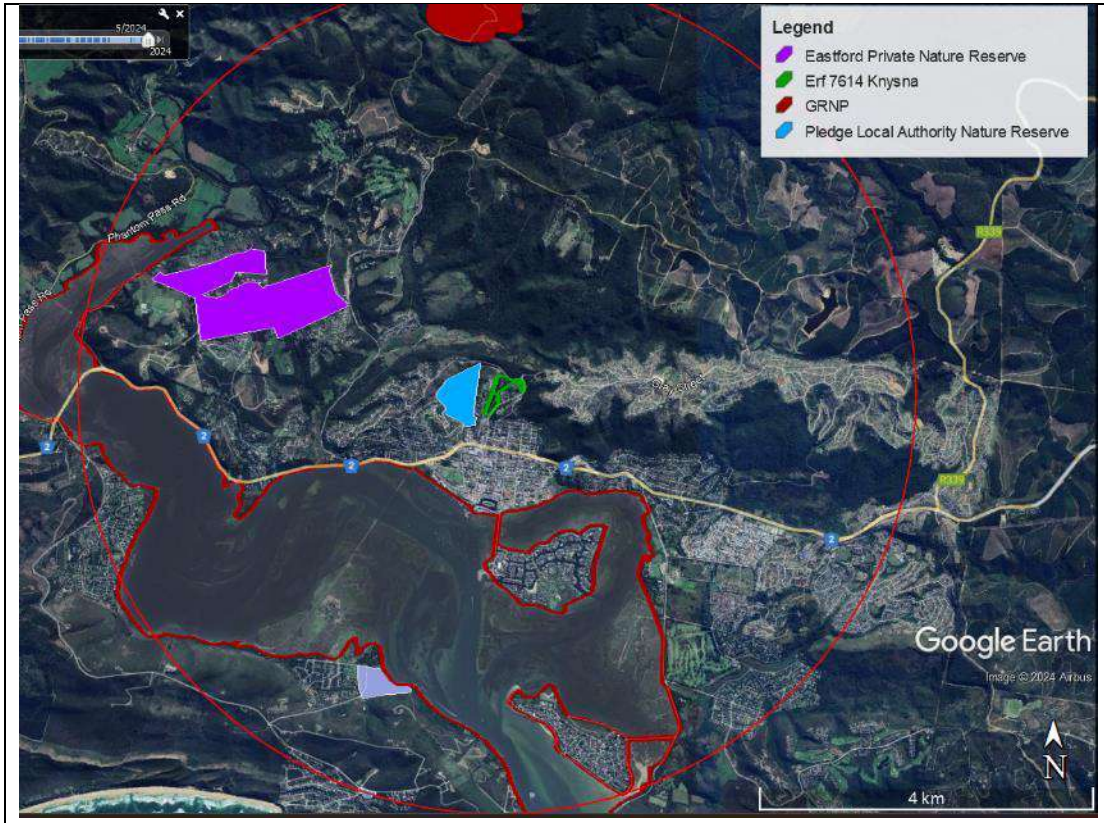

Figure 8: Protected areas within 5km radius of site; site falls in close proximity to Pledge Nature Reserve (NEMPA category B)

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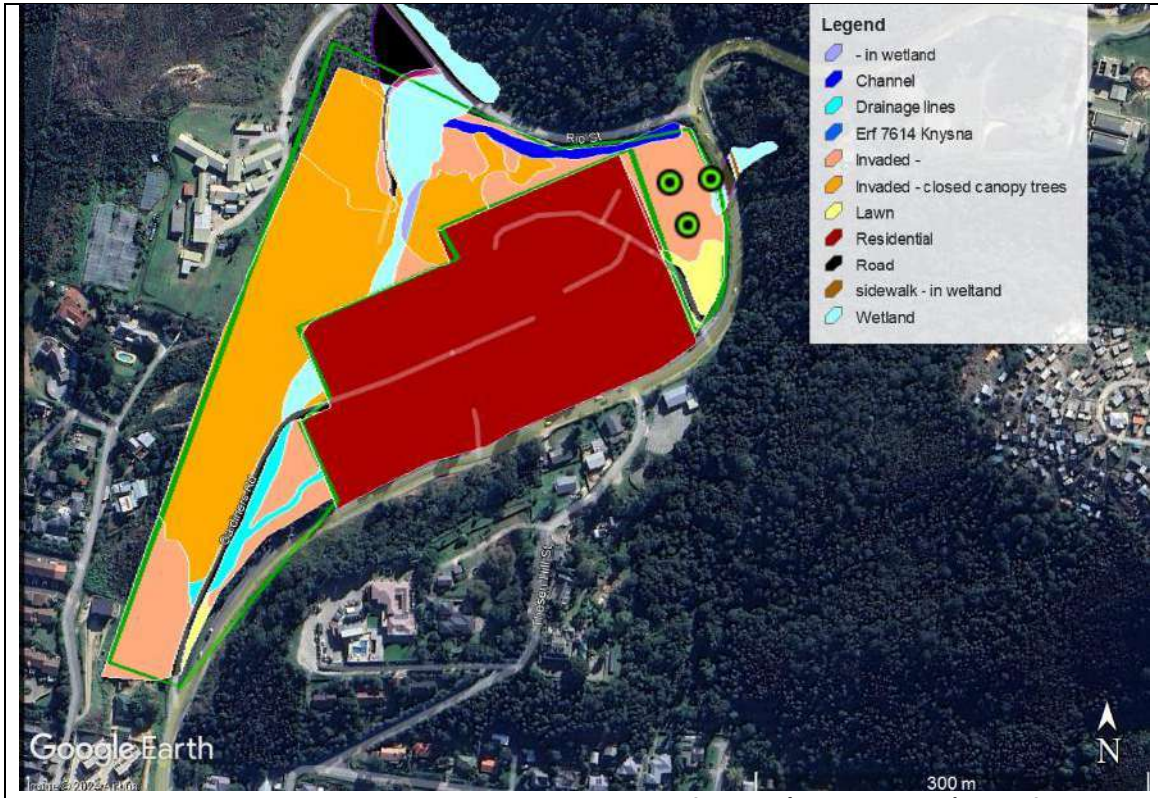

Figure 9: Vegetation currently occurring on site is transformed (lawn and AIS) with few protected species in NE corner

Activity	Medium to high residential development
Layout	Alternative concept Layout 1 and Layout 2
Phase	Construction and operational Phase
Aspect	Construction activities and maintenance and landscaping
Nature of impact:	**Direct impact on terrestrial biodiversity – vegetation will be removed and site transformed to medium high residential housing**

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Site	2	Activity	1

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Duration	Long term	5	Long term	5
Frequency	Once off	1	Once off	1
Intensity	Low to medium	2	Low to medium	2
Severity	Medium to high	8	Medium	8
Consequence	Medium	10	Medium	9
Probability	Anticipated	6	Probable	4
Impact Significance	**Medium High**	**16**	**Medium**	**13**
Mitigation	Possible – impacts can be minimised with mitigation during construction phase.			
Confidence	High			
Reversibility	Any disturbances to fynbos outside the development footprint areas will be difficult to reverse.			

Mitigation Measures

Planning Phase – Planning Team

- Very large Milkwood tree on site (*Sideroxylon inerme inerme*; Lat: -34.028242 Lon: 23.05104) may not be disturbed; and must be cordoned off during construction phase and retained in the open space area on site.
- Two protected seedlings found on the site (*Podocarpus latifolius and Afrocarpus falcatus*) must be retained in open space area
- Permits to be applied for transplanting of yellowwood seedlings to designated open space areas within boundaries of the erf;
- Search for plants that will require permits must take place prior to start of construction; relevant permits must be applied for

Construction phase – planning team

- Once permits are in place, collection of plants must take place and retained in a onsite nursery
- Any additional SCC and indigenous plants with a high survival likelihood that are observed during construction within a development footprint must be rescued (soil in-tact) and added to the rescued plants in the indigenous nursery.
- Identify area on site which will not be disturbed by construction activities for establishment of an on-site indigenous plant nursery on site and area to store removed topsoil / vegetation
- Rescued plants must all be placed in suitable containers / bags
- Cordon off protected trees and no-go areas

Construction Phase – construction team

- All construction activities must remain with development footprint.
- Movement of workers must be limited to areas under construction.
- Ongoing removal of AIS within construction footprints by contractor/s
- Staff should also be told that plants may not be collected outside of the search and rescue operation.
- Gathering of firewood / plants in adjacent areas is not permitted.

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- Record of permits for removal / transplanting of sensitive species of conservational concern / protected trees to be kept on record in EM file for audit purposes.
- Contractual fines to be imposed on any employee who is found attempting to remove indigenous flora.
- The site ESO to oversee topsoil and indigenous vegetation clearing and storage. Topsoil and indigenous vegetation removed must be stockpiled together for use in rehabilitation and landscaping on the site.
- Materials used during construction must be sourced and transported responsibly to minimise the risk of introducing new invasive plants.

Post construction – Construction team

- Revegetation of areas disturbed by construction activities is an essential part of concluding the construction phase
- Undertake revegetation of the disturbance envelope outside of the permanent disturbance footprint.
- Construction sites must be cleared of all waste material, rubble, and debris associated with the construction phase at regular intervals during, and at the conclusion of the construction phase.
- Site preparation – remove all non-native weeds from the site of revegetation to reduce competition with native plant species.
- Post planting care - Regularly water & monitor the newly planted fynbos, particularly during the establishment phase. Apply a thin layer of mulch to conserve moisture and suppress weeds. Continue removing any invasive species that may reappear.
- If more plants are required for successful coverage of disturbed areas, augmentation with sourced plants can be done. Species selection – Base additional species selection first on important species listed for Garden Route Shale Fynbos (Refer to Appendix C – Specialist reports)

Applicant to ensure the following actions are carried out
Construction and Operational Phase – applicant to ensure following is carried out:

- Old AIS material to be cleared from site and disposed at registered landfill site – no dumping or burning permitted
- Ensure invasive species in the wetland and drainage lines on Erf 7614, like bug weed (*Solanum mauritianum*), black wattles (*Acacia mearnsii*), and canna lilies (*Canna x generalis cf. indica*), have first priority for alien clearing efforts on the site and clearing starts during construction phase.
- All AIS removed to be stockpiled for offsite disposal / some AIS can be sold for firewood / some AIS (without seed bearing material) can be chipped and used as mulch / composted for use in rehabilitation / landscaping

Operational Phase

- Landscaping with indigenous vegetation
- Trimmings used for mulch - Cut vegetation should not be consolidated (gathered into piles) and left next to the side of the road where clearing took place. Instead, the cut vegetation should either be removed from site, or disposed of in a scattered/spread-out manner within the immediate surrounding of where it was cut

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	• No removal of plants from open areas with exception of AIS • No NEMBA listed invasive plants (e.g., kikuyu grass, Cenchrus clandestinus) permitted.
Activity	No go alternative
Nature of impact:	Cumulative This vegetation type has been mapped as Endangered, because it is narrowly distributed with high rates of habitat loss in the past 28 (1990-2018), placing the ecosystem type at risk of collapse (GN 47526, Revised national list of threatened ecosystems in need of protection in terms of NEM: BA, Act No. 10 of 2004). Existing cumulative impacts on terrestrial biodiversity on property - past human activities and existing surrounding urban activities (roads, development, dumping) as well as alien invasive vegetation on the site and on surrounding properties has resulted in a fragmented site of low biodiversity.

Impact rating

Impact Status	**Negative**	
Spatial	Site	2
Duration	Long term	6
Frequency	Continuous	6
Intensity	Low	1
Severity	Medium	13
Consequence	Low	15
Probability	Expected	5
Impact Significance	**Medium High**	**20**

FIRE RISK

With the occurrence of the high number of alien vegetation on the site and historical fynbos, the site is considered to have a high fire risk.

Activity	Medium to high residential development
Layout	Concept Layouts 1 and 2
Phase	Planning, Construction and Operational Phase
Aspect	Fire prevention and response
Nature of impact:	Direct – Damage to surrounding vegetation and infrastructure due to unplanned fires

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Local	3	Site	2
Duration	Very short	1	Very Short	1
Frequency	Rarely	1	Rarely	1
Intensity	Medium high	4	Medium	3
Severity	Low	6	Medium	5

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Consequence	Medium	9	Medium	7
Probability	Probable	4	Plausible	3
Impact Significance	Medium	13	Low	10
Mitigation	Possible			
Confidence	High			
Reversibility	Possible			

Mitigation Measures

Construction and operations

- A fire prevention, response and management plan must be designed for the site for both construction and operational phase.
- Job specific training to be provided to individuals responsible for dealing with fire management.
- If a fire is detected it must be attended to immediately;
- Adequate fire-fighting measures must be available and readily accessible on site.
- No open fires permitted on construction site.
- During operational phase fires may only be permitted in designated areas equipped with fire safety features; no designated fire areas permitted in southern fynbos area.
- No cigarette butts or burning substances are permitted to be released into the environment. All cigarette butts to be extinguished first and then disposed of in a waste receptacle (sand buckets) provided.
- Implement alien invasive vegetation mitigation measures. Incorporate thicket vegetation into landscaping to assist with fire prevention.
- Separate fire water reticulation to be provided.
- Health and safety obligations as required by applicable National regulations and municipal bylaws to be implemented
- Ensure all emergency numbers are in place and visible at all times
- Ensure security guard and key personnel has all emergency numbers on hand at all times

Activity

No go alternative

Nature of impact:

Baseline conditions will likely remain the same – alien invasive trees on site; historical fynbos vegetation

Imapct rating

Impact Status	**Negative**	
Spatial	Local	3
Duration	Very short	1
Frequency	Rarely	1
Intensity	High	5
Severity	Medium	7
Consequence	Medium	10
Probability	Expected	5
Impact Significance	Medium High	15

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FAUNA HABITATS AND FAUNA SPECIES

The Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool revealed a HIGH sensitivity for the terrestrial animal species theme across the majority of Erf 7614 as well as a few small areas highlighted as MEDIUM sensitivity.

The site appears to have been heavily disturbed over the last 87 years; disturbances include quarrying activities, construction and demolition activities, clearing activities.

Most of the property consists of dense vegetation, especially along the steep slopes in the west, with a few patches having been cleared in the south and north, suggesting the presence of alien plants and recent control measures. The north-eastern section of the property has a small patch of open vegetation, likely a maintained (mowed) entrance along the access road to the residential development bordering Erf 7614. Two drainage lines are mapped, flowing in a south-westerly direction across the property.

Main habitat types identified on Erf 7614.

Alien plant invasions to varying degrees, with some past vegetation clearing evident, and a closed canopy (mostly trees)

Alien plant invasions to varying degrees, with some past vegetation clearing evident, and an open canopy (limited to no trees)

Seasonal wetland zone including some densely vegetated areas and some cleared patches

Artificial lawns experiencing varying degrees of maintenance and some alien plant invasions

North eastern indigenous vegetation

No avifauna ,reptilian, amphibian, terrestrial invertebrate, or mammal SCC were found on site and there was little suitable habitat for any of the avifauna SCC given the general lack of indigenous vegetation and dense stands of alien plant invasions (A. mearnsii and other alien species). A small troop of 4-5 vervet monkeys were seen in the invaded black wattle area in the west of the site. The habitat is highly modified and does not represent suitable habitat for the Yellow-winged Agile Grasshopper or the butterfly SCC which largely relies on fynbos habitat. Additionally, no larval food/host plant species were found on site during the Botanical Specialist Assessment. There was no suitable habitat for the Knysna Leaf-folding Frog (*A. knysnae*),

The site sensitivity for the terrestrial animal theme of Erf 7614 is LOW

The dense habitat along the northern-eastern boundary contains many indigenous tree species. Although small in size, this patch of vegetation can provide suitable habitat and refugia for multiple animals (small mammals, reptiles, frogs, birds). Additionally, it is aesthetically pleasing and can assist in noise reduction from the adjacent busy Concordia Road. It is therefore recommended for that the indigenous vegetation not be cleared.

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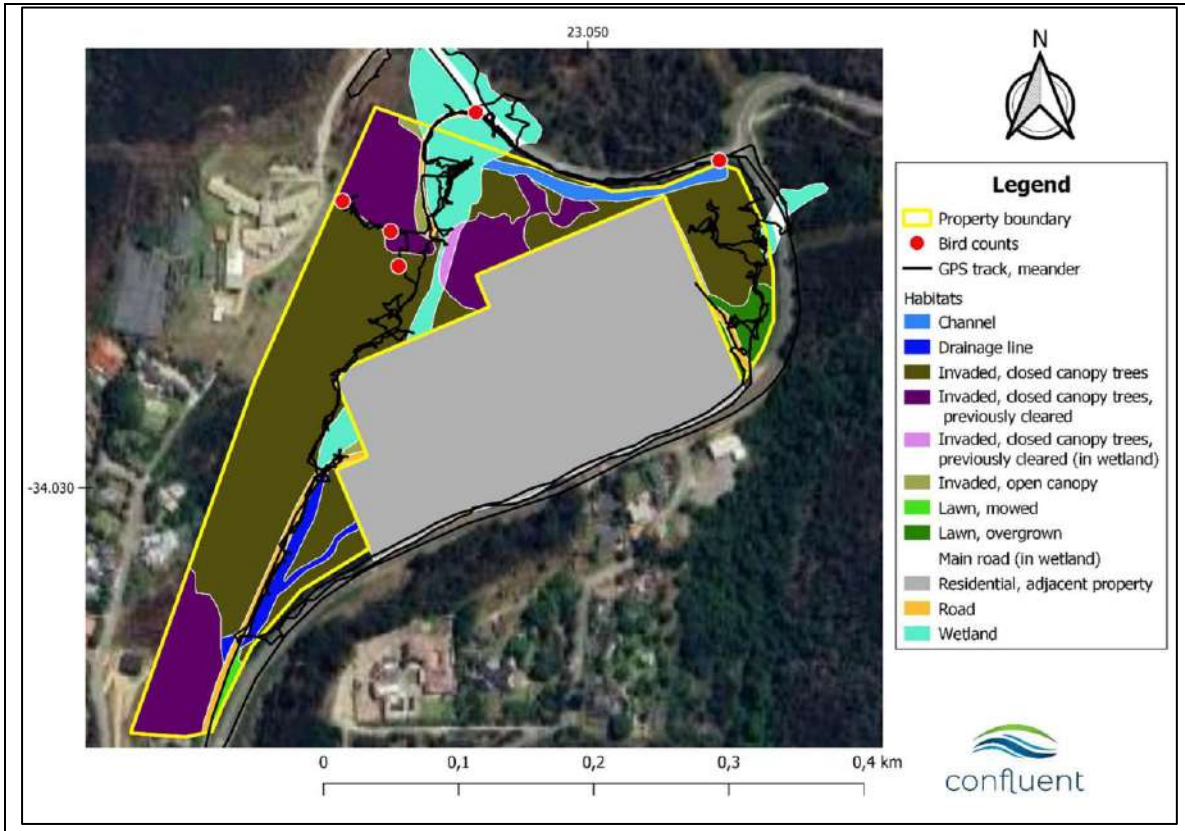

Figure 10: Habitats identified on the site (Adapted from confluent fauna CS, 2024)

Activity	**Medium to high residential development**		
Layout	**Concept Layout 1 and layout 2**		
Phase	**Planning and Construction Phase**		
Aspect	**Site clearing; construction activities**		
Nature of impact:	Direct - Loss of Faunal Habitat: Activity will result in the permanent loss of habitat (majority of site transformed and low biodiversity) and disturbance and displacement of faunal species inhabiting the site Direct - Loss of faunal SSC and other animals due to construction activities: Activities associated with bush clearing, killing of perceived dangerous fauna, may lead to increased mortalities among faunal species.		
Impact Rating	**Impact Status**	**Negative**	**Negative**

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		Without mitigation		With mitigation	
	Spatial	Site	2	Site	2
	Duration	Short to medium	3	Very short	1
	Frequency	Seldom	3	Seldom	3
	Intensity	Medium	3	Low to medium	2
	Severity	Medium	9	Low	6
	Consequence	Medium	11	Low	9
	Probability	Probable	4	Plausible	3
	Impact Significance	**Medium**	**15**	**Medium**	**12**
	Mitigation	Possible – impacts can be minimised with mitigation during construction phase.			
	Confidence	High			
	Reversibility	Permanent impact (Loss of SCC, habitat)			

Mitigation Measures

Planning – planning and design

- Given the multistorey development plans, an effort should be made to prevent any possible bird collisions with infrastructure, wires or antennae with the use of anti-collision devices
- Implementation of alien plant control measures and revegetation measures, especially along the western slopes where no development footprint is intended
- Preserving native trees and indigenous vegetation occurring in the north-east of the site for provision of habitat and assist with visual and noise mitigation in this area
- Site walkovers to be conducted by fauna search and rescue team prior to commencement of construction;
- Any permits for sensitive fauna species of conservational concern to be in place prior to construction. A permit is required for activities that disturb protected bird species, particularly during the breeding season. Sites with eggs or chicks are considered to be protected sites. Allow 3 months for this process. Some animal species that potentially occur in the project area are protected under CITES and the PNCO. Although the status of these species is not necessarily equivalent to that of SCC, a permit is required for their removal where appropriate. For example, tortoises are listed on Schedule 2 of the PNCO and will require permits for their removal and relocation to similar habitat.

Construction - Planning and construction team

- Keep records of any fauna search and rescue permits and reports.
- Some animals may move onto site once construction is underway. A person to assist with rescue should be on call for such circumstances.
- No animals are to be harmed or killed; Contractual fines to be imposed on any employee who is found attempting to harm fauna on site and in surrounding areas.
- Movement of workers must be limited to areas under construction. Access to surrounding areas is not permitted; these must be designated as no-go areas during construction.

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	• Keep clearing activities to the minimum; clear areas in a phased manner to allow any smaller animal species to move into safe areas • All open excavations must be securely fenced or barricaded. Excavations must be checked daily for trapped fauna. Trapped animals are to be rescued and released. • Establish strict speeding regulations during construction phase. All personnel and visitors to abide to speeding regulations. • A turning area for construction vehicles should be demarcated within the existing footprint of proposed hard surfaces like roads or houses Guidelines for encounters with all animal species encountered (regardless of whether they are SCC or not) during any stage of development (construction / operation) on site. • If any animals are seen on site, a photo or video should be taken if at all possible (to assist in identification) and all fauna encountered on site should be reported to the ECO immediately. This is particularly important when: • An animal is harmed or compromised in any way during construction. • Ground-dwelling animals, their nests or eggs are unearthed during earthworks (e.g. moles, tortoise eggs, terrapins/frogs estivating). • Any animal with limited mobility is found on site (e.g. tortoises, moles, chameleons). • Any potentially dangerous animal is encountered, examples: potentially venomous animal (e.g. snakes, scorpions), medium-large animal that has become cornered in a room/enclosed area such that it cannot escape (e.g. porcupines, monkeys, baboons, antelope). It is critical in the case of snakes/scorpions to get pictures/videos to aid in identification and appropriate treatment of anyone needing medical assistance. • Any animal that shows reluctance to escape or move away from the construction site, thereby increasing its exposure to harm or increasing the risk of injuring people on site. • The ECO should provide guidance or assistance to get all animals to safety, treating any injured animals and issuing instructions on when to continue with construction (once they are satisfied that all animals have been removed from site) or put additional measures in place to protect animals on the site from harm. Contact details to be kept on hand: • For any injured animals / relocation of - local SPCA can collect and treat most animals and should be a first point of call for assistance. • If they cannot directly assist, they will revert and notify the relevant authorities/vets. Garden Route - SPCA George: 044 878 1990; SPCA Mossel Bay: 044 693 0824 • Assistance with snake removals/relocations, identifications, or bite treatment: • African Snakebite Institute (all details available on www.africansnakebiteinstitute.com); • General Enquiries: +27 73 186 9176; Snakebite Emergencies: +27 82 494 2039
Phase	Planning and Operational Phase
Aspect	Operational activities;

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<table>
<tr><td>Nature of impact:</td><td>Direct – disturbance to fauna</td></tr>
<tr><td>Impact Rating</td><td>
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<tr><td>Impact Status</td><td colspan="2">Negative</td><td colspan="2">Negative</td></tr>
<tr><td></td><td colspan="2">Without mitigation</td><td colspan="2">With mitigation</td></tr>
<tr><td>Spatial</td><td>Site</td><td>2</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Very short</td><td>1</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Seldom</td><td>2</td><td>Infrequent</td><td>2</td></tr>
<tr><td>Intensity</td><td>Low to medium</td><td>2</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Low</td><td>5</td><td>Low</td><td>4</td></tr>
<tr><td>Consequence</td><td>Low</td><td>7</td><td>Low</td><td>5</td></tr>
<tr><td>Probability</td><td>Probable</td><td>4</td><td>Plausible</td><td>3</td></tr>
<tr><td>Impact Significance</td><td>Medium</td><td>11</td><td>Low</td><td>8</td></tr>
<tr><td>Mitigation</td><td colspan="4">Likely</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible</td></tr>
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</td></tr>
<tr><td>Mitigation Measures</td><td>Operational / Management team
Implement waste management measures and include applicable resident responsibilities in body corporate / management rules
Body corporate / management rules to include no feeding of wildlife is permitted, and no disposal/discarding of any food waste (bones, scraps, fruit pips/cores) within the surrounding environment is allowed.
Put in place waste management mitigation measures to prevent attraction of wildlife to food waste areas
Establish strict speeding regulations during operational phase. All residents, staff and visitors to abide to speeding regulations.
Contact details to be kept on hand:
For any injured animals / relocation of - local SPCA can collect and treat most animals and should be a first point of call for assistance.
If they cannot directly assist, they will revert and notify the relevant authorities/vets.
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General Enquiries: +27 73 186 9176; Snakebite Emergencies: +27 82 494 2039</td></tr>
<tr><td>Activity</td><td>No go alternative</td></tr>
<tr><td>Nature of impact:</td><td>Existing cumulative impacts on habitats on property - past human activities and existing surrounding urban activities as well as alien invasive vegetation on the site and on surrounding properties has resulted in a fragmented site of low biodiversity.</td></tr>
<tr><td>Impact Rating</td><td>
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<tr><td>Impact Status</td><td>Negative</td><td></td></tr>
<tr><td>Spatial</td><td>Local</td><td>3</td></tr>
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Duration	Long term	6
Frequency	Continuous	6
Intensity	Low	1
Severity	Medium	13
Consequence	Medium	16
Probability	Anticipated	6
Impact Significance	**High**	**22**

AQUATIC SYSTEMS AND STORMWATER MANAGEMENT

According to the DFFE screening tool, aquatic biodiversity on site has a very high sensitivity. Mean annual precipitation is approximately 893mm/ annum with annual runoff being 664m3 / ha.

In terms of the WC BSP, no CBA or ESA are mapped on site but are associated with surrounding area. Erf 7614 falls within quaternary catchment **K50B** in the catchment of the Knysna River. The site falls within a strategic water source area (SWSA). According to the National Freshwater Ecosystem Priority Atlas (NFEPA; Nel et al., 2011) the sub-quaternary reach (SQR 9117) is classified as a Freshwater Ecosystem Priority Areas (FEPA). This category requires that any development conducted on Erf 7614 must strive to do so with the least amount of impact on the environment to maintain the good condition (A or B ecological category) of the river catchment within which it occurs. All watercourses on or nearby to Erf 7614 drain to the Knysna Estuary which is ranked as the number one most important estuary in South Africa. Two non-perennial rivers or natural lines of drainage are mapped on the property flowing in a Southwest direction over the property.

These drainage lines meet towards the southwest corner of the property from where they are no longer mapped. At a desktop level it appears that the southern of the two drainage lines has been completely built over, while the northern one may still be functional.

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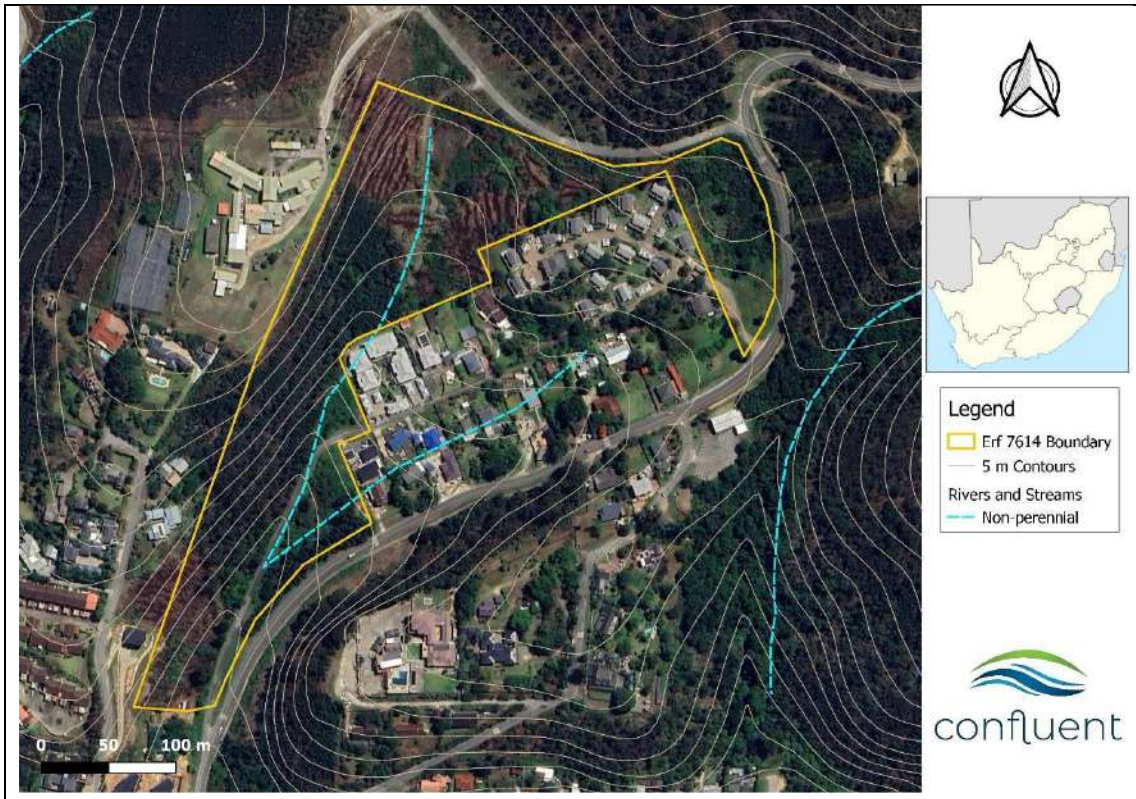

Figure 11: Location of Erf 7614 in relation to mapped watercourses (adapted from confluent aquatic VR, 2024)

A number of wetland features were observed during the site visit – soils (30 – 40 cm clay layer), natural wetland plants. Dominant soils in the wetland area showed mottling indicative of seasonal saturation. The soil has a duplex profile with a distinct clay layer approximately 30-40 cm from the surface. This layer of soil inhibits water infiltration causing periodic saturation of the A horizon leading to wetland conditions on the site.

The wetland is classified as an unchanneled broad valley-bottom wetland which increases in gradient and confinement (narrows) towards the lower part of the site. The Present Ecological state of the wetland was determined to be moderately modified. The combination of infilling for the existing housing development resulting in channelling the wetland through pipes under the houses and into excavated channels (drainage lines) downstream significantly affected this area of the wetland. Downstream of the housing complex the water exits the piped culvert into a channel approximately 1.5m deep which flows parallel to the road. The most natural area of the wetland is located in the upper portion of the property where vegetation within the wetland is all indigenous and fairly diverse. In adjacent areas of the wetland are dense patches of alien vegetation dominated by black wattles (*Acacia mearnsii*). In the drainage lines below the housing complex alien vegetation includes exotic garden plants and invasive species

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such as sword fern (*Nephrolepis cordifolia*) and cannas (*Canna indica*). Dumping in the form of cut alien plants, garden waste, and household refuse has occurred at various points of the wetland and drainage lines.

The main impact affecting water quality is that a high amount of stormwater is diverted into the wetland which will likely carry high sediment loads into the wetland.

The Ecological Importance and Sensitivity (EIS) was determined to be **Moderate** for the wetland on Erf 7614 - the wetland was found to still play an important hydro functional role, especially for the attenuation of stormwater, erosion control and sediment trapping. Furthermore, while the majority of reference vegetation has been transformed and invaded by alien plants across the remainder of the site, the wetland represents an area of predominantly indigenous vegetation representative of wetlands typical of the southern Cape. The buffer width determined for the wetland is 15 m and for the drainage lines downstream of the housing complex is 10m.

As the **rainfall intensity** in the area is classified as Very High and the inherent **erosion potential** of soils also as High, erosion of soils and stormwater management are factors that must be carefully considered when developing in this area, especially considering the large amounts of stormwater associated with urban developments and the fact that the development site is situated within a natural drainage line on a relatively steep gradient.

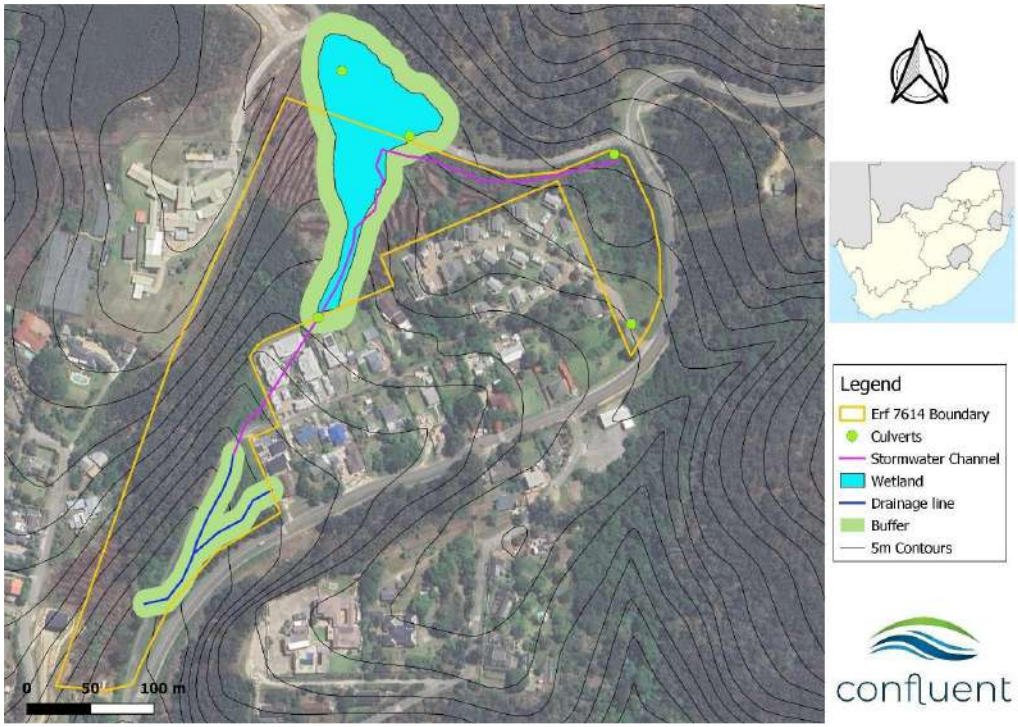

Figure 12: Wetland delineation and buffers (adapted from confluent aquatic VR, 2024)

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Stormwater management

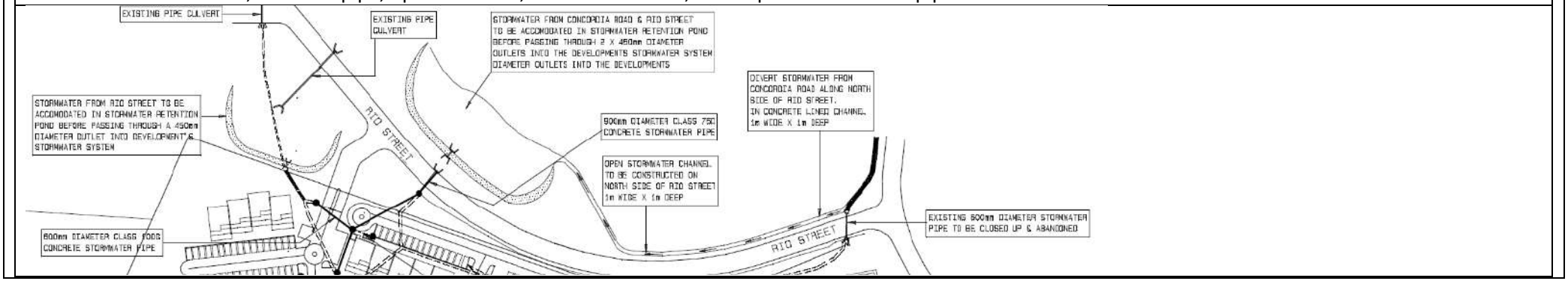
Increased runoff can be expected due to vegetation removal and increased hard surfaces on the site. Stormwater management measures will need to be put in place during construction phase. Design considerations will need to take into account increased runoff and the identified watercourse on site to ensure adequate stormwater management and flood protection measures are in place; this will be particularly important for Portions A and B of the development which are placed closer to steeper areas and wetland area.

A stormwater management plan was included in the engineering services report compiled by Hofmeyr & Associates (2020) for the current SDP. The plan proposes four stormwater retention ponds at various points both on the site and off the site. In it, the current drainage channel north of the existing housing complex would be closed and stormwater would be rerouted north of Rio Road via a brick and concrete channel into a constructed retention dam. Remaining stormwater from the western extent of Rio Road would be channelled under the road via an existing culvert into a second retention dam. It can be seen that both these dams are located within the delineated wetland area, along with a range of other infrastructure including roads, and housing.

The construction of stormwater retention dams mimics some of the functions of a natural wetlands in terms of slowing flow, spreading surface water and controlling the release of water downstream. As there is a natural wetland in existence on the site, this feature must be preserved, and the proposed housing development reorientated around it. The concept layout 1 SDP would result in total transformation and loss of the remaining wetland area delineated on the site. Is therefore recommended that subsequent plans be developed to accommodate the wetland, drainage lines, and buffer areas

In terms of the National Water Act, water uses identified in association with the proposed housing development are Section 21 c) and i) water uses. The proposed development is taking place in the regulated area of the wetland (defined as 500m from a wetland) which requires completion of the DWS Risk Matrix to determine the level of risk associated with the proposed development. The results of the Risk Matrix determined the overall risk of the development to be Medium which indicates that a Water Use License would be required. However, the only activity which carries any medium risk is that of constructing instream stormwater retention ponds as per the concept 1 layout stormwater management plan. This plan will be altered based on the mitigation measures provided in this section and the Risk Matrix can be reassessed.

Stormwater plan for concept 1 (northern roads): SW retention pond to be accommodated SW from Rio street; SW retention pond with 2 x 450mm outlets for water from Concordia and Rio street, concrete pipe, open channels, concrete channel, close up abandoned SW pipe



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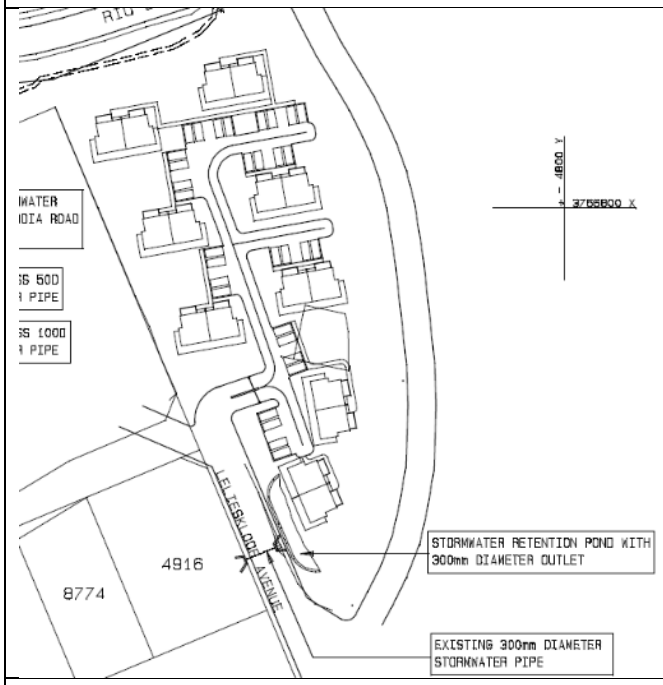
Stormwater plan Portion C (NE of site) SW detention pond with 300mm outlet; Existing 300 mm SW pipes	
	
Stormwater plan Portion B (north and central of site) - Concrete lined SW channels (1.5m width; 1 m depth); Concrete SW pipes (class 1000; 450mm) and (class 500; 300mm) and (class 1000; 300mm); Backfill existing open SW channel; section drain towards existing SW brick lined channel through erven 227, 228, 229; remaing to drain at NW corner of Erf 220 via 2m wide and 1 m deep culvert to SW retntion pond; exsitng SW culvert (1.5 m x 1.7 m deep) on erf 7548; open unlined SW channel on erf 7548	

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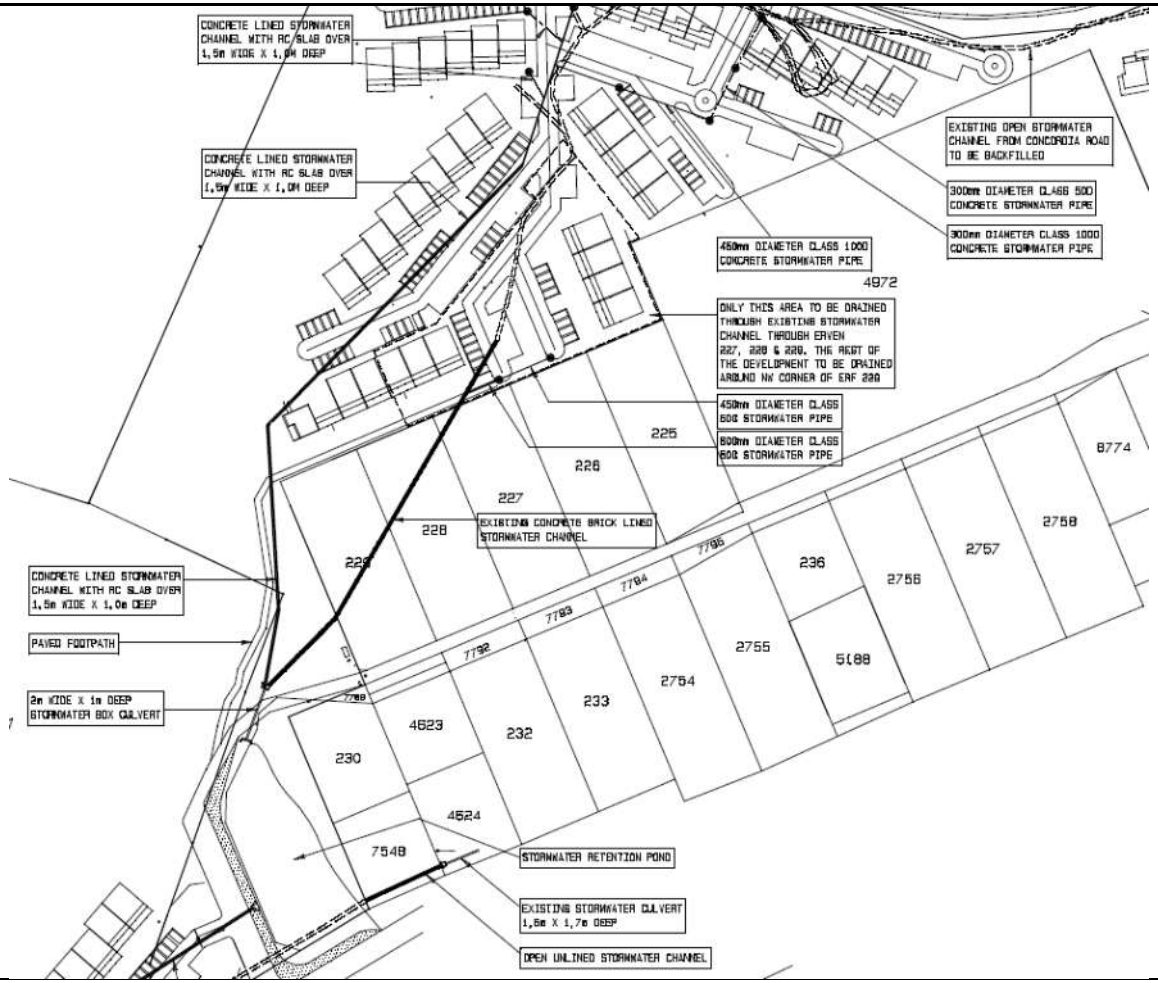

Stormwater plan Portion A (south of site)

- Concrete lined SW channel (2m width; 1 m depth); open unlined SW channel; existing 1050mm diameter pipe culvert

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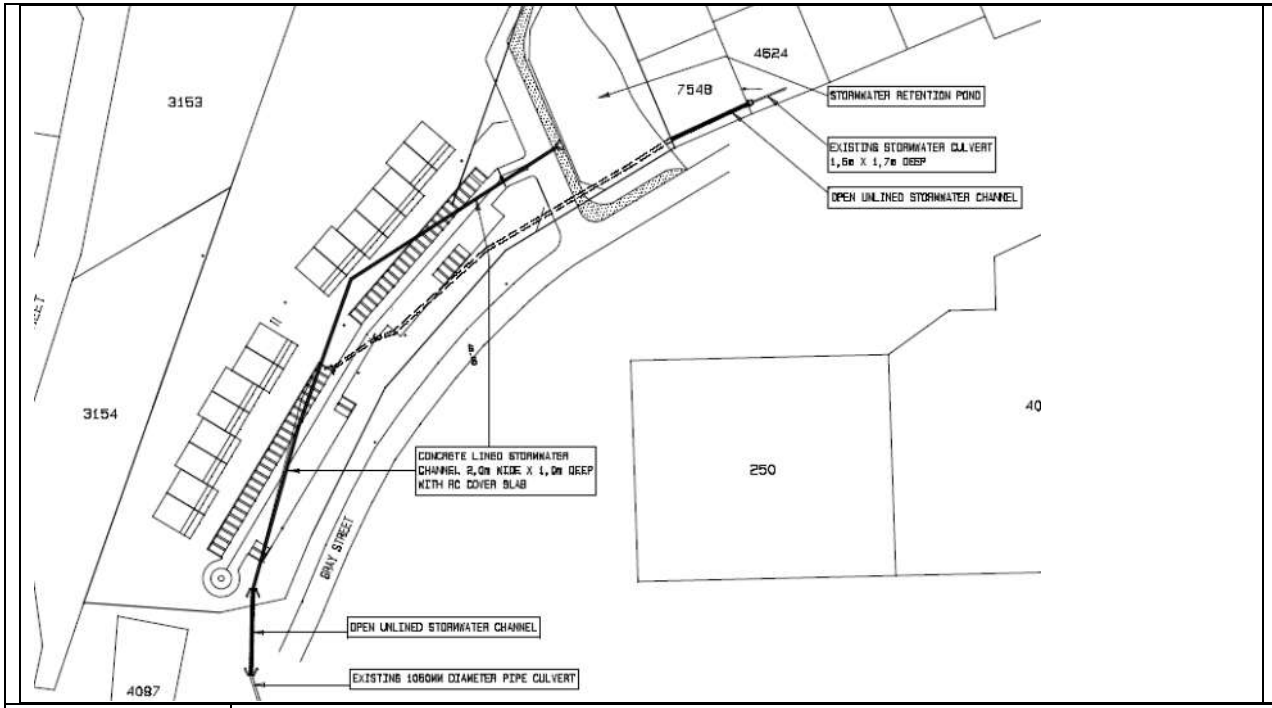

Activity	Medium to high residential development
Layout	Alternative Concept Layout 1
Phase	Planning and operational phase
Aspect	Development plan and stormwater management
Nature of impact:	Direct – impact on sensitive aquatic features (SWSA) - Development of roads, parking areas and other impervious surfaces, along with wetland draining or infilling has the potential to change quantities of water in watercourses by intercepting, increasing, reducing or diverting flows from their normal path.

Impact Rating

Impact Status	**Negative**	
Spatial	Local	3
Duration	Continuous	6
Frequency	Rare	1
Intensity	Medium	3
Severity	High	10
Consequence	Medium high	13

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	Probability	Expected	5
	Impact Significance	**Medium High**	**18**
	Mitigation	Impact requires in situ mitigation – refer to layout 2 below	
	Confidence	High	
	Reversibility	Permanent impact	

Mitigation Measures	Planning: • Alternative 1 places houses in the delineated wetland. This plan is therefore not recommended, and an alternative layout is recommended to be proposed due to impact on sensitive aquatic features. • Place structures outside delineated area and update stormwater management plan. • Mitigation is to replan the development layout and stormwater management measures around the wetland feature including the recommended buffer area of 15m. The alternative development scenario of development in the wetland area to any degree would trigger the need for identification of an offset area to compensate for the wetland loss which is not recommended as it is not likely this is available within the same catchment area and is a complex (but not impossible) process.
Layout	**Alternative Concept Layout 2**
Phase	Planning and operational phase
Aspect	Development plan and stormwater management
Nature of impact:	Direct - Impacts on aquatic system A high-density residential development on the relatively steep gradients present on Erf 7614 is likely to generate high runoff rates that will need to be effectively managed to mitigate cumulative flood risks downstream. Furthermore, *Erf 7614 represents the last significant greenfield site* in the local catchment which drains to the dense urban development of central Knysna below. Preserving the wetland on this site is all that would be left of the functional green space in this catchment. It is possible to reduce this impact from a *Moderate to Negligible negative impact*. There is only moderate confidence in this assessment however as it was largely qualitative and is not based on modelled pre- and post-development runoff values. These need to show a significant reduction in post-development runoff volumes which should aim to match those of pre-development runoff. Cumulative - The mitigation measures are provided with the intent of minimising cumulative flood-related impacts downstream due to high density development in high-lying areas.

Impact Rating

Impact Status	**Negative**	
Spatial	Site	2
Duration	Medium	4
Frequency	Rare	1
Intensity	Low	1
Severity	Low	6

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Consequence	Low	8
Probability	Probable	4
Impact Significance	**Medium**	**12**
Mitigation	Even with the proposed mitigation measures there is a degree of uncertainty as to whether the impact can be mitigated given the high density of the development and gradient of the site. Careful planning and modelling is required.	
Confidence	High	
Reversibility	Permanent impact	

Mitigation Measures

- Mitigation is to replan the development layout and stormwater management around the wetland feature including the recommended buffer area of 15m (to be confirmed following revised SDP and SWMP)
- Keep the retention dam indicated in Portion B as this is not aligned to a natural wetland and provides an excellent regional control for stormwater from this section of development.
- The retention dam indicated for Portion E of the development could be constructed to function more like a wetland than the drainage line of its current state which is modified. But this area should retain a natural range of indigenous wetland plants similar to those in the wetland on Portion A to achieve this which means the entire area may not be functional as public open space as indicated in the layout.
- For Portion A, a retention structure in the wetland could be considered at the lowest end of the wetland before it is channelled beneath the existing housing complex as this is currently the poorest area of habitat.
- Rerouting stormwater north of Rio Road into a retention dam north of the road is not supported because this will create a channelled flow with higher volumes into the wetland on Portion A which could promote channelisation and erosion of wetland habitat. Consider an alternative method of conveying stormwater through Portion B to the retention dam on that site.
- Focus efforts on source and local controls to reduce dependence on the retention dams. Ensure rainwater tanks are installed throughout. These can be plumbed into use for toilet flushing.
- Use open / grass block pavers as a substitute for closed paving on walkways and parking areas to encourage better water infiltration and less runoff.
- Use landscaped / garden areas as stormwater attenuation zones. Using appropriate layering these areas can function as soakaways and be placed below gutters of buildings to catch runoff before it is distributed further.
- Planted trees and gardens in public areas should be lowered below hard surfaces or have 'gappy' curbs to encourage the retention and filtration of surface runoff. Some examples are provided including tree pits.
- Incorporate vegetated swales with periodic check dams instead of concrete drains where runoff may occur throughout the development.
- Any stormwater outlets directing runoff towards the wetland area must discharge into the buffer to a stilling basin before seeping to the wetland.
- Detailed site Development plans will be submitted for each phase before building plan approval. Detailed SDP and SWMP to be sent to aquatic specialist for review and assessment;

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<table>
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Detailed SDP and SWMP and accompanying reports to be submitted to DFFE for approval prior to construction.
Detailed SDP and SWMP to be submitted to DWS for water use license authorization. Allow 300 days for this process.

</td></tr>
<tr><td>Phase</td><td>Construction Phase</td></tr>
<tr><td>Aspect</td><td>Stormwater runoff</td></tr>
<tr><td>Nature of impact:</td><td>Direct – erosion and sedimentation

The combination of the area’s high rainfall intensity, erodibility of soils, steep slopes on the site and the need for bulk earthworks will create a high-risk situation from the perspective of soil erosion from the site resulting in sedimentation and smothering of plants and stream substrates downstream. High rainfall events are common in the area and rainfall is received year-round making planning for such events an essential aspect of the construction phase.

</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><td>Impact Status</td><td>Negative</td><td></td><td>Negative</td><td></td></tr>
<tr><td></td><td>Without mitigation</td><td></td><td>With mitigation</td><td></td></tr>
<tr><td>Spatial</td><td>Local</td><td>3</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Very Short</td><td>1</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Seldom</td><td>3</td><td>Infrequent</td><td>2</td></tr>
<tr><td>Intensity</td><td>Low to medium</td><td>2</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Medium</td><td>6</td><td>Low</td><td>4</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>9</td><td>Low</td><td>5</td></tr>
<tr><td>Probability</td><td>Probable</td><td>4</td><td>Probable</td><td>4</td></tr>
<tr><td>Impact Significance</td><td>Medium</td><td>13</td><td>Low</td><td>9</td></tr>
<tr><td>Mitigation</td><td colspan="4">Possible - Impact can be minimised and managed with mitigation</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible</td></tr>
</table>
</td></tr>
<tr><td>Mitigation Measures</td><td>

Proactively plan ahead to limit and contain the amount of sediment-laden runoff that leaves the site during a storm event.
As far as possible the objective is that only clear-flowing water should leave the site.
In addition to the mitigation measures provided, the ECO must apply adaptive management and may apply any feasible methods to achieve these objectives as the project progresses.
Daily and weekly site meetings must consider forecasted rainfall to avoid working during such periods, and to plan accordingly for predicted high rainfall events. Work on the site must cease altogether during rainfall.
The site office must have a store of materials suitable for rapid response to erosion control such as shade-cloth (silt-fencing), haybales (check-dams), wooden droppers, hessian fabric, and fencing wire.
All building material stores should be kept on flat areas and bunded to prevent material loss during rainfall.
Consider only commencing with bulk earthworks in one portion of the erf at a time to limit the extent of vulnerable areas to be managed.

</td></tr>
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<table>
<tr><td></td><td>

- Prior to bulk earthworks, install a continuous silt fence along the lower extent of the site to catch soil and silt. The silt fence must be inspected regularly to check for failure or areas that must be cleared to maintain function.
- Monitor the site during / following periods of rainfall, and install haybale check dams at any concentrated flow paths.
- Following rainfall, any sediment-laden water that must be pumped out of pools in excavated areas must not be directed to the wetland, streams or stormwater drains (as these lead to streams). A temporary haybale coffer dam can be constructed to contain water until it seeps into the ground, evaporates or slowly disperses through the haybales which act as a filter.
- Monitoring of the entire area of exposed soil before, during and after rainfall is essential to ensure proactive measures can be taken preventing the runoff of sediment-laden water to aquatic systems.

</td></tr>
<tr><td colspan="2">Wetland management</td></tr>
<tr><td>Phase</td><td>Construction Phase</td></tr>
<tr><td>Aspect</td><td>Site preparation - Vehicles, workers and materials</td></tr>
<tr><td>Nature of impact:</td><td>Direct - Impacts on aquatic system
Failure to identify sensitive features and effectively communicate with the construction team results in disturbance or destruction of aquatic features due to misinformed contractors commencing with work on site.</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><td>Impact Status</td><td>Negative</td><td></td><td>Negative</td><td></td></tr>
<tr><td></td><td>Without mitigation</td><td></td><td>With mitigation</td><td></td></tr>
<tr><td>Spatial</td><td>Site</td><td>2</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Very Short</td><td>1</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Regular</td><td>4</td><td>Infrequent</td><td>2</td></tr>
<tr><td>Intensity</td><td>Low to medium</td><td>2</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Medium</td><td>7</td><td>Low</td><td>4</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>9</td><td>Low</td><td>5</td></tr>
<tr><td>Probability</td><td>Probable</td><td>4</td><td>Probable</td><td>4</td></tr>
<tr><td>Impact Significance</td><td>Medium</td><td>13</td><td>Low</td><td>9</td></tr>
<tr><td>Mitigation</td><td colspan="4">Possible - Impact can be minimised and managed with mitigation</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible</td></tr>
</table>
</td></tr>
<tr><td>Mitigation Measures</td><td>

- Sensitive aquatic features that are to be preserved must be clearly delineated and communicate to all personnel associated with the construction works for the full duration.
- An Environmental Control Officer (ECO) must be employed for the duration of construction to monitor implementation of mitigation measures relating to all environmental authorisations.
- Pre-construction, temporary fencing must be erected along the wetland and stream buffers.

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<tr><td></td><td>

Delineation of the buffer must be undertaken with the site surveyor.
Use materials that are least likely to be stolen such as wooden stakes and orange mesh construction-type fencing.
Signage indicating the wetland, stream and buffers as No-go areas for vehicles and personnel must be placed in multiple areas on fencing.
Once temporary fencing is established and before any bulk earthworks occur, all contractors must attend a site induction with the ECO and be briefed that vehicles, workers, equipment and materials may not encroach into No-Go areas around wetlands.
Any indigenous / protected trees or other vegetation to be preserved on the site should be boarded or fenced off for protection during the construction phase (Confluent Botanical Assessment).
The contractor may implement fines or the termination of contracts for encroachment into the No-Go area as any damage must be rehabilitated under guidance by an aquatic specialist.

</td></tr>
<tr><td>Phase</td><td>Operational Phase</td></tr>
<tr><td>Aspect</td><td>Management of Buffer and Wetland Areas within Development</td></tr>
<tr><td>Nature of impact:</td><td>Direct – degradation of wetland / management of wetlands</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><th>Impact Status</th><th colspan="2">Negative</th><th colspan="2">Positive</th></tr>
<tr><td></td><td colspan="2">Without mitigation</td><td colspan="2">With mitigation</td></tr>
<tr><td>Spatial</td><td>Activity</td><td>1</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Very short</td><td>1</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Regular</td><td>3</td><td>Infrequent</td><td>2</td></tr>
<tr><td>Intensity</td><td>Low - Medium</td><td>2</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Low</td><td>6</td><td>Low</td><td>4</td></tr>
<tr><td>Consequence</td><td>Low</td><td>7</td><td>Low</td><td>5</td></tr>
<tr><td>Probability</td><td>Probable</td><td>4</td><td>Plausible</td><td>3</td></tr>
<tr><td>Impact Significance</td><td>Medium</td><td>11</td><td>Low</td><td>8</td></tr>
<tr><td>Mitigation</td><td colspan="4">Possible - Impact can be minimised and managed with mitigation; positive impact can result</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible</td></tr>
</table>
</td></tr>
<tr><td>Mitigation Measures</td><td>

Ensure the wetland is maintained in a near natural state while the surrounding buffer (to be confirmed following revised SDP and SWMP) provides a mixed use function which could contribute to green space within the development.
The edge of the wetland should be delineated by sinking wooden bollards (with no lighting) approximately every 50m along the wetland. This is preferable to fencing off the wetland.
Garden and maintenance staff must be informed that no maintenance (apart from removal of aliens and litter), herbicide application, or dumping of garden waste can take place in the wetland.
Mowing, weed-eating, brush-cutting or trimming of the wetland vegetation is not permitted.

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Buffer areas may include a number (4-5) of cleared, mowed and maintained areas for recreation (e.g. jungle gym or bird hide) linked by pathways through natural indigenous vegetation in the buffer (not the wetland).
No herbicides can be used to maintain pathways in the wetland area or buffer.
Encroachment of recreational areas into the wetland, and infilling of any sort is not permitted.
Do not plant any kikuyu grass in the buffer. If areas must be grassed, then kweek (Cynodon dactylon) or buffalo grass (Stenotaphrum secondatum) is recommended.

</td></tr>
<tr><td>Nature of impact:</td><td>Cumulative - Historically the proposed development site has been heavily disturbed during the last 87 years: Quarrying on the west, vegetation clearing, development of road (in wetland area); development and demolishment of houses (in delineated wetland area), alien trees. The aquatic system has been transformed by urban activities.</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><th>Impact Status</th><th>Negative</th><th></th></tr>
<tr><td>Spatial</td><td>Local</td><td>3</td></tr>
<tr><td>Duration</td><td>Medium - Long term</td><td>5</td></tr>
<tr><td>Frequency</td><td>Often</td><td>5</td></tr>
<tr><td>Intensity</td><td>Medium High</td><td>4</td></tr>
<tr><td>Severity</td><td>High</td><td>14</td></tr>
<tr><td>Consequence</td><td>Medium High</td><td>17</td></tr>
<tr><td>Probability</td><td>Anticipated</td><td>6</td></tr>
<tr><td>Impact Significance</td><td>High</td><td>23</td></tr>
</table>
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ALIEN INVASIVE SPECIES

The site is located within an urban area and currently represents transformed vegetation with a high density of alien plants. Invasive alien plants have a significant negative impact on the environment by causing direct habitat destruction, increasing the risk and intensity of wildfires, and reducing surface and sub-surface water. Landowners are under legal obligation to control alien plants occurring on their properties. Alien Invasive Plants require removal according to the Conservation of Agricultural Resources Act 43 of 1983 (CARA) and the National Environmental Management: Biodiversity Act (10 of 2004; NEMBA): Alien and Invasive Species Lists (GN R598 and GN R599 of 2014). Large tracts of alien invasive trees will be cleared; Correct AIS management can result in a decrease in alien invasives on the site

Activity	Medium to high residential development
Layout	Alternative Layout 1
Phase	Construction Phase
Aspect	Landscaping and AIS management
Nature of impact:	Direct - Increase / decrease alien invasive vegetation

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Impact Rating	**Impact Status**	**Negative**		**Positive**		
		Without mitigation		With mitigation		
	Spatial	Activity	1	Activity	1	
	Duration	Short to medium	3	Short to medium	2	
	Frequency	Seldom	3	Infrequent	2	
	Intensity	Low	1	Low	1	
	Severity	Low	7	Low	5	
	Consequence	Low	8	Low	6	
	Probability	Probable	4	Probable	4	
	Impact Significance	**Medium**	**12**	**Low**	**10**	
	Mitigation	Possible – impacts can be managed with mitigation during construction phase.				
	Confidence	High				
	Reversibility	Possible - Impact is reversible with interventions				

Mitigation Measures

Construction Phase – Planning / construction

- ESO must be familiar with AIS currently on site and potential AIS that could be introduced
- ESO to oversee:
- Area on site to be designated for storage of removed alien trees
- All removed alien trees must either be removed from site and disposed of at a registered waste disposal facility. Alternatively, and preferred, the plant material (not seed bearing) can be mulched using a woodchipper on site to assist with erosion and dust control throughout construction and rehabilitation activities. Any seed-bearing material is to be disposed of at a registered landfill.
- Materials used during construction must be sourced and transported responsibly to minimise the risk new invasive plants
- Ongoing hand removal of alien invasive plants must be done throughout construction phase as soon as the plant is detected.
- During rehabilitation, Check ensure topsoil is weed free.
- During construction and rehabilitation check for weed regrowth and manage timeously (before seed is set)
- Keep records of removal and disposal method

Phase	Planning and Operational Phase
Aspect	Operational activities; landscaping
Nature of impact:	Direct - Increase / decrease alien invasive vegetation Establishment of aliens in disturbed areas and the wetland post-construction resulting in habitat degradation Although a lot of the area currently covered by dense alien plants will be transformed to built infrastructure, the remaining open spaces could easily be recolonised by aliens if not consistently managed.

Impact Rating	**Impact Status**	**Negative**	**Positive**

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	Without mitigation			With mitigation	
Spatial	Site	2		Site	2
Duration	Medium to long	5		Medium to long	5
Frequency	Infrequent	2		Infrequent	2
Intensity	Low to medium	2		Low	1
Severity	Medium	9		Low	4
Consequence	Medium	11		Low	5
Probability	Plausible	3		Plausible	3
Impact Significance	**Medium**	**14**		**Low**	**8**
Mitigation	Possible				
Confidence	High				
Reversibility	Possible				

Mitigation Measures

Operational Phase – Management / landscaping

- It is the legislated responsibility of the landowner to manage aliens on their property.
- Immediately following conclusion of construction the entire site (Erf 7614) must be thoroughly inspected for remnant alien plants.
- Operational management to include ongoing removal of alien invasive trees from the property; open space area to be kept free of alien trees and weeds.
- Alien invasive management to continue during operational phase as follows:
- Alien clearing is to continue outside of the proposed development footprint in clear management blocks. All alien clearing needs to occur in a planned manner on the site as per an alien management and eradication plan; Areas that have recently been cleared of aliens need to be prioritised as the second highest priority areas of alien clearing effort.
- Ongoing removal of invasive species in the wetland and drainage lines on Erf 7614, like bug weed (Solanum mauritianum), black wattles (*Acacia mearnsii*), and canna lilies (*Canna x generalis cf. indica*)
- Cleared outside of the proposed development area on Erf 7614 must be revegetated with naturally occurring forest species (i.e Milkwood, yellow wood) / species occurring within Garden Route Shale (i.e., *Passerina corymbosa, Protea aurea, protea neriifolia. Searsia lucida* (erosion prevention), *Pelargonium cordifolium. crassula orbicularis, Crassula roggeveldii* etc, Refer terrestrial report.
- Small seedlings must be hand-pulled or removed with tree poppers,
- Bigger trees must be ring-barked or cut with a chainsaw and the stump treated with herbicide. This applies to both the wetland and buffer areas. However, herbicide cannot be used in the wetland area.
- Landscaping with indigenous vegetation; steep areas to be keep vegetated with suitable species to assist with runoff and erosion control
- Duties of operational landscaping to include ensuring the ongoing removal of alien invasive trees and weeds on the property.
- Where alien invasive plants are removed at the root; suitable indigenous vegetation recommended to be planted to hold the soil.

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Follow-up inspections and control must take place on a 6-monthly (bi-annual) basis to ensure aliens are consistently controlled and removed from the site. This must be continued until the site can be declared 'weed-free' for the most part.
A significant effort should be made to revegetate any bare areas of the site with indigenous plants found in the area.
Open space areas at the very least should contain plants from the area given the high rates of infestation of open spaces with alien and exotic plants in Knysna.
Under no circumstances may removed alien plants be discarded in the wetland or surrounding open space.
Management must inform the landscaping / gardening team that no dumping of vegetation or discarding of waste material may happen in the wetland or buffer area.

</td></tr>
<tr><td>Activity</td><td>No go alternative</td></tr>
<tr><td>Nature of impact:</td><td>Direct - Baseline conditions will likely remain the same – property invaded with alien trees</td></tr>
<tr><td></td><td>
<table>
<tr><th>Impact Status</th><th>Negative</th><th></th></tr>
<tr><td>Spatial</td><td>Site</td><td>2</td></tr>
<tr><td>Duration</td><td>Medium to long</td><td>5</td></tr>
<tr><td>Frequency</td><td>Infrequent</td><td>2</td></tr>
<tr><td>Intensity</td><td>Low to medium</td><td>2</td></tr>
<tr><td>Severity</td><td>Medium</td><td>9</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>11</td></tr>
<tr><td>Probability</td><td>Possible</td><td>4</td></tr>
<tr><td>Impact Significance</td><td>Medium</td><td>15</td></tr>
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SOIL, GEOLOGY, TOPOGRAPHY

The site is a narrow strip of land situated between 90 (Northen) to 40 (southern) MASL. *Depth to groundwater is estimated at 33.52 meters bgl. The soils on site are derived from sandstone and* considered to have high erodibility with the estimated erosion potential of soil (k-factor) being 0.65 (high).

Geology classification (Council for geoscience)

Lithostratigraphic: PENINSULA, PAKHUIS AND CEDARBERG FORMATIONS

Lithology: Pebbly quartz arenite, diamictite, minor conglomerate, mudrock, siltstone and shale

Broad Soils Classification (ENPAT)

Geology: Mainly conglomerate, sandstone, siltstone and mudstone of the Enon Formation, Uitenhage Group; subordinate quartzitic sandstone of the Table Mountain Group, Cape Supergroup.

Soil Types (Soil types and descriptions for the Western Cape; DAFF):

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Site is mapped as a CA soil type, class "soils with a strong texture contrast and described as "*soils with a marked clay accumulation, strongly structured and a non-reddish colour. In addition, one or more of vertic, melanic and plinthic soils may be present; depth ranges from between 450 mmm to 750mm. Clay content is less than 15%.*"

Land Types (Agricultural Research Council):

Land Type: Db34; Description: B-horizons not red; Class: PRISMACUTANIC AND/OR PEDOCUTANIC DIAGNOSTIC HORIZONS DOMINANT

Removal of vegetation (which has a binding action on underlying soils) could lead destabilization of sandy sediment leading to erosion; Exposed soils leads to erosion by wind and water. Foundations established for the development of the residential blocks and other buildings on sight will lead to compaction (densification) of the soil.

Dust can be expected during construction phase and care must be taken to prevent wind erosion / dust generation by ensuring correct stripping and stockpiling methods are carried out.

The lower-lying areas of the property have a relatively even gradient. Some sections of the western portion of the property are very steep with gradients steeper than 1:2. Slopes steeper than 25 % (1:4) will be avoided.

Concept layout 2 is environmentally preferred and is assessed; Mitigations to be incorporated into final SDPs.

Activity	Medium to high residential development
Layout	Concept layout 2

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<table>
<tr><td>Phase</td><td>Planning and Construction Phase</td></tr>
<tr><td>Aspect</td><td>Removal of vegetation, excavation activities, general construction activities, bare soil, stockpiling, stormwater management, vehicle entrainment, general maintenance activities</td></tr>
<tr><td>Nature of impact:</td><td>Direct – soil erosion, dust generation</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><td>Impact Status</td><td colspan="2">Negative</td><td colspan="2">Negative</td></tr>
<tr><td></td><td colspan="2">Without mitigation</td><td colspan="2">With mitigation</td></tr>
<tr><td>Spatial</td><td>Site</td><td>2</td><td>Site</td><td>2</td></tr>
<tr><td>Duration</td><td>Short to medium</td><td>3</td><td>Short</td><td>2</td></tr>
<tr><td>Frequency</td><td>Regular</td><td>4</td><td>Rare</td><td>1</td></tr>
<tr><td>Intensity</td><td>Medium</td><td>2</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Medium</td><td>9</td><td>Low</td><td>5</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>11</td><td>Low</td><td>6</td></tr>
<tr><td>Probability</td><td>Expected</td><td>5</td><td>Probable</td><td>4</td></tr>
<tr><td>Impact Significance</td><td>Medium High</td><td>16</td><td>Low</td><td>10</td></tr>
<tr><td>Mitigation</td><td colspan="4">Not possible with alternative 1 – new layout is required. Layout is not recommend</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible / Difficult - damage to soil structure difficult to reverse / possible to manage erosion and stockpiles</td></tr>
</table>
</td></tr>
<tr><td>Mitigation Measures</td><td>Planning – Planning team
Alternative concept layout 1 is not recommended
Development on areas with 1:4 gradient or steeper is not recommended.
Design the proposed development site to follow natural contour lines as far as possible.
Construction and maintenance activities – Construction and operational (as required) Team
Prepare method statement to indicate how soil will be managed during site clearing and must include these mitigation measure:
Site clearing to be done in phased manner. No blanket clearing of vegetation is permitted to avoid large areas of unconsolidated soils;
Topsoil should be cleared in a phased manner Topsoil includes 150 to 250 mm of soil and needs to be stripped separately. Topsoil from vegetation on the site in new excavation areas must be stripped to a maximum depth of 30cm, or in cases where the bedrock is shallower than this, then the entire soil layer is to be removed. Topsoil is to be kept in designated piles of maximum 1 m in height, to prevent anaerobic conditions from smothering seeds and rendering them inviable and must be suitably covered with shade cloth (or another breathable material with a fine mesh) to prevent any additional invasive species seeds from falling in and establishing in the soil.
Designated areas for storage of topsoil and subsoil to be on level areas - Designated area/s for storage of topsoil to be selected in conjunction with ESO and ECO; area/s selected should be an area which will not be disturbed from construction activities for duration of construction period. This</td></tr>
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<table>
<tr><td></td><td>must be done to avoid double handling of topsoil stockpiles. Stockpile subsoils separately in designated and demarcated area; used as fill material for levelling.
• Topsoil cleared to be placed on designated area; the topsoil will be invaluable during rehabilitation otherwise the project will need to buy in topsoil / mulch / plants for landscaping.
• Excavated material generated on site to be used as fill material for site levelling.
• Do not create multiple tracks
• Prepare method statement to indicate how dust will be prevented during construction and include the following
• Cover all fine building materials with shade cloth to prevent dust
• Topsoil and subsoil stockpiles are not to be higher than 1.5 m.
• Topsoil and subsoil stockpiles should be covered, wetted or otherwise stabilised:
• Cover subsoils with shade cloth; Cover topsoil with shade cloth / vegetate if it will be kept for longer for 3 months.
• Exposed areas should be wetted during windy / dry conditions
• Ensure appropriate storm water control mechanisms are implemented.
• Ongoing rehabilitation throughout construction with stored topsoil and vegetation</td></tr>
<tr><td>Activity</td><td>No go alternative</td></tr>
<tr><td>Nature of impact:</td><td>Baseline conditions will likely remain the same – minimal disturbance to soil structure; AIS seeds</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><th>Impact Status</th><th>Negative</th><th></th></tr>
<tr><td>Spatial</td><td>Site</td><td>2</td></tr>
<tr><td>Duration</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Seldom</td><td>3</td></tr>
<tr><td>Intensity</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Medium</td><td>5</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>7</td></tr>
<tr><td>Probability</td><td>Plausible</td><td>3</td></tr>
<tr><td>Impact Significance</td><td>Low</td><td>10</td></tr>
</table>
</td></tr>
</table>

WASTE POLLUTION AND HAZARDOUS MATERIALS

General waste generated during construction phase will include excavated material that will not be reused for level / fill material, building rubble, alien invasive material containing seed that cannot be used for mulch and general waste items such as metals, plastics, paper, tins. Waste streams need to be estimated and correctly managed on site (storage), in transit and offsite (licensed waste sites / recycling operations).

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Hazardous waste generated during construction phase includes sewage, any fuel / oil / chemical spillages. Hazardous materials used during construction phase need to be correctly managed.
Care must be taken to ensure hazardous materials are contained at all times to prevent pollution to the underlying soil and polluted stormwater runoff.

An engineering services report was prepared by Hofmeyer and associates in 2020:
Total volume of refuse generated by the development
27 units @ 160 litres / per unit / week = 43,2 m³ / week.
When compacted this reduces to 43,2/ 2,8 = 15,4 m³ / week.
Communal refuse storage facilities will be constructed for each block of apartments. These facilities will be emptied on a regular basis by the Municipal refuse collection service.

Investigations to reduce, reuse and recycle waste generated throughout the construction and operational phases of the development are recommended.

Activity	Medium to high residential development
Layout	Alternative Layout 1
Phase	Planning and Construction Phase
Aspect	General waste
Nature of impact:	**Direct – pollution of soil; polluted runoff, aquatic systems, fauna and flora**

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Local	3	Activity	1
Duration	Short - medium	1	Very short	1
Frequency	Regular	4	Infrequent	2
Intensity	Low to medium	2	Low	1
Severity	Medium	7	Low	4
Consequence	Medium	10	Low	5
Probability	Probable	4	Probable	4
Impact Significance	**Medium**	**14**	**Low**	**9**
Mitigation	Possible - Impact can be minimised and managed with mitigation			
Confidence	High			
Reversibility	Possible			

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Mitigation Measures	Construction Team – Planning • Determine waste streams and quantities to ensure provision of adequate waste management facilities on site; Investigate disposal / reuse/ recycling services. • Include details of waste stream and preferred management option in general waste method statement. • Receptacles (covered, labelled) to be provided for smaller general waste items generate on site. If waste will be recycled, provide separately labelled receptacle as required per waste stream. • Food waste bins provided are to be wildlife proof; All waste, particularly food waste, should be regularly removed from the property and disposed of appropriately to prevent the scent of old products increasing the attractiveness to the disposal area and surrounding development for wildlife / if it is composted on site it must be done using combination of anaerobic and aerobic process within sealed room / container. • Workers must be provided with a designated break area including bins, clean water and toilets nearby. All located outside of the wetland and buffer areas. • No laydown areas / driving permitted in wetland area. Construction Team • General Waste receptacles should be emptied on a regular basis. • Excavated material from site levelling will as far as possible be used on-site as fill material. Excess excavated material that cannot be used in this way will be exported from the site and reused as fill at other construction activities elsewhere in Knysna LM or disposed of at an appropriately licensed waste disposal facility. Construction waste (e.g. packaging material, unused concrete) not reused / recycled must be disposed of at an appropriately licensed waste disposal facility. • Area for storage of rubble not for reuse to be designated and demarcated. • Alien invasive material with seeds to be placed in bags and sealed for disposal at registered waste site. Waste that is not reused / recycled must be disposed of at an appropriately registered and licensed waste disposal facility. • Ensure good housekeeping of the site (i.e. no litter) at all times. • Vervet monkeys were observed on the site making the secure and disciplined disposal of food waste a very high priority. These animals have limited options for dispersal beyond this area so care must be taken when interacting with them. • Portable toilets to be provided at SHEQ standards of 1 per 10-15 workers. Cleaned regularly with easy access. • The site must be kept free of litter and waste (e.g. packaging) which can be blown around. • Materials must be stockpiled on level ground outside of wetland and buffer areas. Loose materials must be bunded with sandbags or similar and/or covered with a geotextile to prevent migration of material during rainfall. • No burning of waste. • No dumping or burial of waste • Record of disposal / recycling kept.

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<table>
<tr><td>Phase</td><td colspan="5">Planning and Construction Phase</td></tr>
<tr><td>Aspect</td><td colspan="5">Hazardous materials</td></tr>
<tr><td>Nature of impact:</td><td colspan="5">Direct – pollution of soil; polluted runoff, aquatic systems, fauna and flora
Poorly placed or managed bulk materials, refuelling areas, leaking vehicles and portable toilets can potentially pollute aquatic habitats on site and downstream, especially when combined with heavy rainfall events.</td></tr>
<tr><td>Impact Rating</td><td colspan="5">
<table>
<tr><td>Impact Status</td><td colspan="2">Negative</td><td colspan="2">Negative</td></tr>
<tr><td></td><td colspan="2">Without mitigation</td><td colspan="2">With mitigation</td></tr>
<tr><td>Spatial</td><td>Activity</td><td>1</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Very short</td><td>1</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Seldom</td><td>3</td><td>Infrequent</td><td>2</td></tr>
<tr><td>Intensity</td><td>Medium</td><td>3</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Medium</td><td>7</td><td>Low</td><td>4</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>8</td><td>Low</td><td>6</td></tr>
<tr><td>Probability</td><td>Probable</td><td>4</td><td>Probable</td><td>4</td></tr>
<tr><td>Impact Significance</td><td>Medium</td><td>12</td><td>Low</td><td>10</td></tr>
<tr><td>Mitigation</td><td colspan="4">Possible – impacts can be managed during construction phase.</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible</td></tr>
</table>
</td></tr>
<tr><td>Mitigation Measures</td><td colspan="5">Construction – Planning team
• Prepare method statement indicating what hazardous substance (fuel, oil, sewage etc) will be on site and how they will be managed.
• Complete spill kits with accompanying storage container required to be on site equipped with hazardous bin for placement of spills cleaned up using absorbents
• Any fuel and other hazardous substances to be stored on site in bunded area equipped with roof under lock and key with appropriate signage
• If generators are refuelled on site, they must be placed on trays, which rest on clean sand and once construction is complete this must be removed from the site and disposed of at an appropriately registered waste disposal facility.

Concrete, cement, plastering, and painting:
• Mixing areas be clearly defined on the site and must be surrounded by an impermeable material (i.e. create a temporary coffer dam with sandbags and thick plastic sheeting) to prevent any runoff and absorption into the surrounding soils.
• The designated mixing areas should be limited to areas that will become future hard surfaces on the site. No concrete and cement mixing is allowed in areas outside of the proposed hardened surfaces of the camping block.
• No concrete and cement mixing is allowed in areas outside the site development plans (SDPs).</td></tr>
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Cleaning of cement, plastering & paint equipment must be done into a designated, bunded, & lined slurry sump or container to avoid contaminating the environment.

Construction – Construction Team

Drip trays required to be placed under all equipment using fuels /oils.
Hazardous bins required for storage of any hazardous waste materials.
Wash station to be provided for cleaning of hazardous paint / building materials
Do not leave machinery / vehicles running unnecessarily. Service machines and vehicles regularly to prevent unnecessary fumes and leaks.
Records of any hazardous waste disposal to be kept
No mixing of cement may take place within the wetland or buffer areas.
Vehicles must be checked daily for leaks and are not permitted on site if leaking fuel until they have been repaired.
Fuel stores and vehicle refuelling areas must be located outside wetland and buffer areas on level ground. Materials for cleaning up spills must be available on site.

</td></tr>
<tr><td>Phase</td><td>Operational Phase</td></tr>
<tr><td>Aspect</td><td>Waste management (general and hazardous)</td></tr>
<tr><td>Nature of impact:</td><td>Cumulative – increasing disposal at landfill and WWTW</td></tr>
<tr><td>Impact rating</td><td>
<table>
<tr><th>Impact Status</th><th colspan="2">Negative</th><th colspan="2">Negative</th></tr>
<tr><td></td><td colspan="2">Without mitigation</td><td colspan="2">With mitigation</td></tr>
<tr><td>Spatial</td><td>Activity</td><td>1</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Life operation</td><td>5</td><td>Life operation</td><td>5</td></tr>
<tr><td>Frequency</td><td>Regular</td><td>4</td><td>Regular</td><td>4</td></tr>
<tr><td>Intensity</td><td>Low</td><td>1</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Medium High</td><td>10</td><td>Medium High</td><td>10</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>11</td><td>Medium</td><td>11</td></tr>
<tr><td>Probability</td><td>Probable</td><td>4</td><td>Plausible</td><td>3</td></tr>
<tr><td>Impact Significance</td><td>Medium</td><td>15</td><td>Medium</td><td>13</td></tr>
<tr><td>Mitigation</td><td colspan="4">Difficult – few recycling options available in Knysna LM / recycling will likely not be implemented</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible – Few recycling options available/ cumulative impact at landfill and WWTW</td></tr>
</table>
</td></tr>
<tr><td>Mitigation Measures</td><td>Operational Team:

Provide adequate number of waste management facilities required for number of units. Waste areas must be made rodent and scavenger proof

</td></tr>
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Recycling and reuse is encouraged to prevent excessive landfill disposal. Ongoing investigations into recycling options encouraged throughout operational phase.
On site composting is recommended for green waste; compost can be used in landscaping.
Provide waste management area for general and hazardous waste bins. Ensure the waste storage areas are designed in line with the refuse storage chamber design guidelines; the design should include, inter alia, suitably bunded area, non-permeable flooring, provision of a water tap for easy cleaning, suitable access to waste service providers, lockable doors, adequate ventilation, adequate roofing.
Ensure weekly waste collection services are in place
Ensure the site is litter free for the life of the operation and suitable waste receptacles are provided in landscaped areas which are correctly maintained and emptied regularly
House rules for each portion (no litter, scavenger proof bins, no feeding wildlife etc)
Ensure sewage reticulation on site is maintained in good working order for life of operation

</td></tr>
<tr><td>Activity</td><td>No go alternative</td></tr>
<tr><td>Nature of impact:</td><td>Baseline conditions will likely remain the same (litter / dumping)</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><th>Impact Status</th><th>Negative</th><th></th></tr>
<tr><td>Spatial</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Infrequent</td><td>2</td></tr>
<tr><td>Intensity</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Low</td><td>4</td></tr>
<tr><td>Consequence</td><td>Low</td><td>5</td></tr>
<tr><td>Probability</td><td>Plausible</td><td>3</td></tr>
<tr><td>Impact Significance</td><td>Low</td><td>8</td></tr>
</table>
</td></tr>
</table>

CHANGE IN LAND USE – UNDETERMINED TO RESIDENTIAL III

The present zoning of the property is “Undetermined Zone” and the intention is to make an application for the rezoning of the land to “Sub-divisional Area” which would allow for the further subdivision of the land into three (3) “General Residential III” erven, 1 communal “Open Space II” erf, and 2 “Public Road” erven.
The site is current vacant. The property is included in the Urban Edge of Knysna (KSDF 2008), it is within walking distance to Knysna CBC, and is also in an area identified as a “Restructuring Zone”. The site is conveniently located along a main distributor road and taxi route and is within walking distance of schools, shops, and other social facilities.

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The development aims to facilitate access for lower-income groups to enter the property market and to establish themselves in a well-planned and managed residential estate. Current densification policies, at national, provincial, and municipal levels, encourage the densification of existing urban areas through the development of under-utilized vacant land within urban areas. Densities of 25 du/ha have been recommended as the average densities within urban areas at which urban settlements begin to significantly improve their urban performance. Presently the density of most Knysna is less than 10du/ha. This is less than 50% of what average gross densities should be to achieve adequately performing urban settlements. Taking into account that there is very limited remaining development land available within the urban area, it implies that any future development within the urban area must be developed at much higher densities to compromise for the historical low densities. The density of this development is calculated at approximately ±50 units per ha.

Economies of scale are applied in order to ensure economic feasibility to provide housing to the target income group.

The wage distribution data of Knysna indicates high levels income inequality and the disparities within the socio-economic landscape within Knysna. In Knysna, 33.2 per cent of workers fall into the [R3200 - R6400] income range, and 22,2 per cent are in the (R 6400–R 12800) bracket. However, there are no workers in the highest income brackets, such as (819200 rand –1638400 rand). Compared to other municipalities in the Garden Route, Knysna has a relatively higher concentration of workers in the (3 200 – 6 400) income range. This data highlights the income disparities and distribution within Knysna, showcasing the concentration of workers in the middle–income brackets and the absence of extremely high-income earners in the region. These income distribution patterns have socio–economic implications for the area, including factors like living standards, affordability, and access to goods and services. Core challenges to KM includes, inter alia, demand for adequate quality housing opportunities. (Knysna Municipality, IDP, amended 2024 – 2025).

The area north of Rio Road is currently vacant. The density of surrounding erven is low residential and low- medium density residential; some of the properties are used for tourism purposes in the form of bed and breakfasts and lodges. Surrounding property values in the immediate area ranges from R1.4 million to R5 million with rates ranging from R1300 – R2000 per month.

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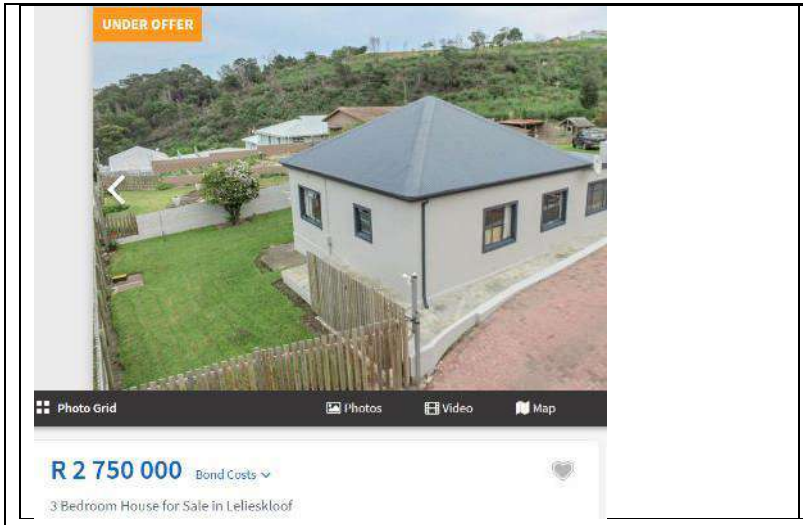

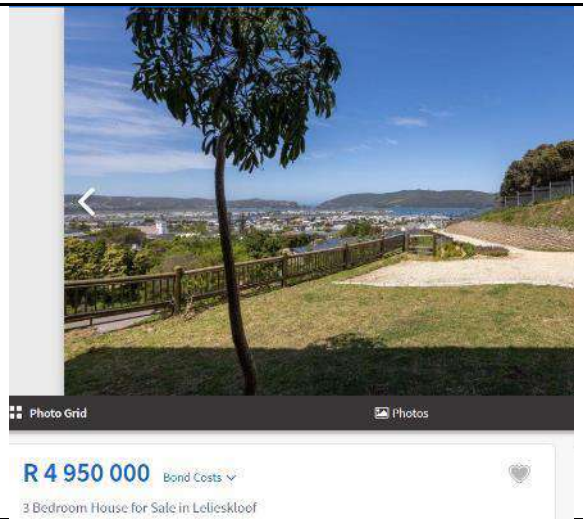

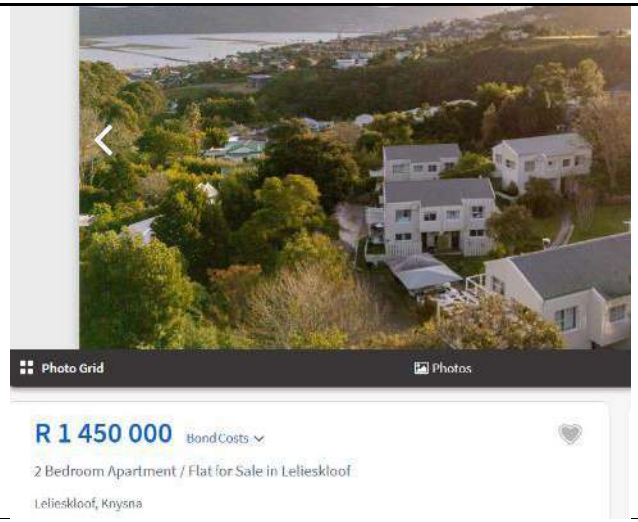

Impacts identified for change in landuse include:

- Economic impact – significant increase in revenue from site
- Social impact – provide up to 262 houses
- Social impact – too dense development can lead to social conflict if not correctly planned and managed
- Social impact – impact on adjacent landowners; sense of place

An average of 50 units per ha is calculated for the total erf size of 5.6 ha. The density is recommended to be determined based on the amount of developable area (I,e area excluding wetlands and steep slopes; estimated 2ha) and a feasibility study carried out to determine the density required to provided houses to the targeted middle income group.

Activity	Medium to high residential development
Layout	*Concept layouts 1 and 2*
Aspect	Sales and rates
Phase	Planning and Operations
Impact:	**Economic – rates / sales from units** **262 residential units will result in a positive economic impact through sales of the units and the rates received by the Knysna LM during operational phase.** **The change in land use to provide additional houses to the middle-income market is a positive impact.**

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<table>
<tr><td>Impact Rating</td><td>
<table>
<tr><td>Impact Status</td><td colspan="2">Positive</td></tr>
<tr><td>Spatial</td><td>Activity</td><td>1</td></tr>
<tr><td>Duration</td><td>Long term</td><td>5</td></tr>
<tr><td>Frequency</td><td>Seldom</td><td>3</td></tr>
<tr><td>Intensity</td><td>Medium</td><td>3</td></tr>
<tr><td>Severity</td><td>Medium high</td><td>11</td></tr>
<tr><td>Consequence</td><td>Medium</td><td>12</td></tr>
<tr><td>Probability</td><td>Anticipated</td><td>6</td></tr>
<tr><td>Impact Significance</td><td>Medium High</td><td>18</td></tr>
</table>
</td></tr>
<tr><td>Phase</td><td>Planning and Operational</td></tr>
<tr><td>Aspect</td><td>262 residential units developed on 5.6 ha, of which a maximum of 4 ha are developable</td></tr>
<tr><td>Impact</td><td>Density - social conflict and impacts on the natural environmental can arise from high density residential development if services and infrastructure are not correctly planned and managed. If correctly planned and managed, social conflict should be negligible.</td></tr>
<tr><td></td><td>
<table>
<tr><td>Impact Status</td><td colspan="2">Negative</td><td colspan="2">Negligible</td></tr>
<tr><td></td><td colspan="2">Without mitigation</td><td colspan="2"></td></tr>
<tr><td>Spatial</td><td>Site</td><td>2</td><td colspan="2"></td></tr>
<tr><td>Duration</td><td>Medium to long</td><td>5</td><td colspan="2"></td></tr>
<tr><td>Frequency</td><td>Regular</td><td>4</td><td colspan="2"></td></tr>
<tr><td>Intensity</td><td>Low</td><td>1</td><td colspan="2"></td></tr>
<tr><td>Severity</td><td>Medium High</td><td>10</td><td colspan="2"></td></tr>
<tr><td>Consequence</td><td>Medium</td><td>12</td><td colspan="2"></td></tr>
<tr><td>Probability</td><td>Probable</td><td>4</td><td colspan="2"></td></tr>
<tr><td>Impact Significance</td><td>Medium High</td><td>16</td><td colspan="2"></td></tr>
<tr><td>Mitigation / Management</td><td colspan="4">Possible – impacts can be planned for and prevented during planning and operational phase.</td></tr>
<tr><td>Confidence</td><td colspan="4">High</td></tr>
<tr><td>Reversibility</td><td colspan="4">Possible</td></tr>
</table>
</td></tr>
<tr><td>Phase</td><td>Construction and operational</td></tr>
<tr><td>Impact</td><td>Sense of place
Surrounding erven are used for low and medium density residential with some properties used for tourism. The proposed development site , although heavily invaded, provides a natural area to surrounding residents. Sense of place will likely be impacted on by construction activities and the development of a high-density residential area. This impact is expected to be a medium-term impact (3 to 10 years) until the new development is accepted and a new sense of place developed. Existing tourism establishments surrounding the site could also be negatively impacted on by the development. Architecturally designed units situated in a landscaped garden may also contribute to a positive feeling of well-being and prosperity in the area.</td></tr>
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	Impact Status	**Negative**		**Negative**	
		Without mitigation		With mitigation	
	Spatial	Local	3	Local	3
	Duration	Medium	4	Medium	4
	Frequency	Regular	4	Regular	4
	Intensity	Low	1	Low	1
	Severity	Medium	9	Medium	9
	Consequence	Medium High	13	Medium High	13
	Probability	Probable	4	Probable	4
	Impact Significance	**Medium High**	**17**	**Medium High**	**17**
	Mitigation / Management	Difficult			
	Confidence	High			
	Reversibility	Difficult / possible			
Phase	Operational				
Impact	Provision of housing for middle income persons				
	Impact Status	**Positive**		**Positive**	
		Without mitigation		With mitigation	
	Spatial	Municipal	4	Municipal	4
	Duration	Medium to long	5	Medium to long	5
	Frequency	Rarely	1	Rarely	1
	Intensity	Low	1	Low	1
	Severity	Low	7	Low	7
	Consequence	Medium	11	Medium	11
	Probability	Expected	5	Expected	5
	Impact Significance	**Medium High**	**16**	**Medium High**	**16**
	Management	Possible			
	Confidence	High			
	Reversibility	Not applicable			
Mitigation Measures	• Determine the space available on the site excluding steep areas and wetland areas and determine density for the final site development plans based on developmental area available and the minimum density that can be developed to ensure the project is financially feasible to provide housing to middle income class group. • Design and planning to fit in with surrounding land uses as far as possible				
Activity	No go alternative				

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Nature of impact:	Direct / Indirect - The site is currently vacant. Without the proposed development, no additional housing in the area will be provided; no revenue will be provided for management of AIS on site.
Impact rating	

Impact Status	**Negative**	
Spatial	Activity	1
Duration	Medium to long	4
Frequency	Seldom	3
Intensity	Low	1
Severity	Medium	8
Consequence	Medium	9
Probability	Expected	5
Impact Significance	**Medium**	**14**

Activity	No go alternative

SOCIAL – EMPLOYMENT CREATION AND SKILLS DEVELOPMENT

The site is situated within ward 10 of the Knysna LM. According to the IDP 2024 – 2025, in 2022 the population of
Extracted from KM IDP (amended 2024 – 2025)
It is projected that Knysna will have a total workforce of 23,317 individuals in 2023. Among them, 19,217 (81,6 per cent) will be formally employed, while 4 100 (18, 4 per cent) will work in the informal sector.
The majority of those in formal employment in Knysna were comprised of semi-skilled workers (35, 5 per cent) and skilled workers (19, 8 per cent)
Core challenges to KM includes, inter Alia, slow economic growth resulting in increased unemployment and decreased job creation. (Knysna Municipality, IDP, amended 2024 – 2025).
The proposed development will contribute to the creation of direct employment opportunities and skills development through the creation of construction jobs for local contractors and labourers. Indirect employment could be created through the use of various materials and services required for the construction phase.

Activity	Medium to high residential development
Layout	Alternative Concept Layout 1 and layout 2
Phase	Construction and planning phase
Aspect	Employment
Nature of impact:	**Direct / Indirect – Creation of employment and skills transfer**
Impact Rating	

Impact Status	**Positive**		**Positive**	
	Without mitigation		With mitigation	
Spatial	Municipal	4	Municipal	4

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Duration	Short to medium	3	Short to medium	3
Frequency	Infrequent	2	Seldom	3
Intensity	Low	1	Low	1
Severity	Low	6	Low	7
Consequence	Medium	10	Medium	11
Probability	Probable	4	Expected	5
Impact Significance	**Medium**	**14**	**Medium High**	**16**
Mitigation	Possible			
Confidence	High			
Reversibility	Possible			

Mitigation Measures	Construction • Use local labour. • Use local suppliers of required materials and services where possible. • Advertise locally making use of local resources for this purpose. • Weekly toolbox talks to be held to upskill labour force • Use reputable agencies / avenue (i.e. Department of Labour) to screen staff employed.
Activity	No go alternative
Nature of impact:	Baseline conditions will likely remain the same – no additional employment
Impact Rating	**Impact Status** / **Negligible**

SOCIAL – CRIMINAL ACTIVITIES

Crime is a major challenge in the Knysna Municipality. Poor lighting and alien vegetation on the property can lead to use of the site for criminals. The development of residential accommodation on Erf 7614 is expected to reduce opportunities for criminals; access control will be put in place. Criminal activities can increase in the area during construction phase; measures must be put in place to ensure safety and security during construction and operational phases.

Activity	Medium to high residential development
Layout	Alternative Layout 1
Phase	Construction Phase
Aspect	Criminal activities
Nature of impact:	**Direct – INCREASED CRIME DURING CONSTRUCTION PHASE**

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Impact Rating	**Impact Status**	**Negative**		**Negative**	
		Without mitigation		With mitigation	
	Spatial	Site	2	Activity	1
	Duration	Very short	1	Very short	1
	Frequency	Seldom	3	Infrequent	2
	Intensity	Low to medium	2	Low	1
	Severity	Medium	6	Low	4
	Consequence	Medium	8	Low	5
	Probability	Plausible	3	Plausible	3
	Impact Significance	**Medium**	**11**	**Low**	**8**
	Mitigation	Possible			
	Confidence	High			
	Reversibility	Possible / Difficult			

Mitigation Measures	• There must be strict access control to and from the site. • A security guard should be stationed on site for the duration of the construction phase and guard the site 24 / 7. • Movement of all personnel and workers must be limited to areas under construction. Access to surrounding areas is not permitted. • No employment to take place on site. Employment should take place through reputable recruitment agencies / avenues. • No wages to be paid on site. • Restrict employment to local residents as far as possible. • No weapons / alcohol / narcotics allowed on site • Sever contractual fines imposed for personnel / contract workers bring weapons / alcohol / narcotics on site. • Workers are not to be housed on site but to return to their homes after hours.
Phase	Operational phase
Aspect	Criminal activities
Nature of impact:	**Direct – criminal activities**

Impact Rating	**Impact Status**	**Negative**		**Negative**	
		Without mitigation		With mitigation	
	Spatial	Site	2	Activity	1
	Duration	Very short	1	Very short	1
	Frequency	Seldom	3	Infrequent	2
	Intensity	Low to medium	2	Low	1
	Severity	Medium	6	Low	4

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Consequence	Medium	8	Low	5
Probability	Plausible	3	Plausible	3
Impact Significance	**Medium**	**11**	**Low**	**8**
Mitigation	Possible			
Confidence	High			
Reversibility	Possible / Difficult			

Mitigation Measures	There must be strict access control to and from the development. Ensure a security measures are in place (i.e. lighting, cameras, security guard)
Activity	No go alternative
Nature of impact:	Baseline conditions will likely remain the same – criminals can access site

Impact Status	**Negative**	
Spatial	Activity	1
Duration	Very short	1
Frequency	Infrequent	2
Intensity	Low	1
Severity	Low	4
Consequence	Low	5
Probability	Plausible	3
Impact Significance	**Low**	**8**

TRAFFIC MANAGEMENT

The proposed development is situated in Lelieskloof to the north of the Knysna CBC and is bounded by Gray Street to the east and Rio Drive to the north. Gray Street links Knysna with the Concordia residential area north of the town centre.

A Traffic Impact Assessment (TIA) was prepared by Engineering Advice and Services for a 220-unit development in 2007 and approved by the Knysna Municipality at the time. In 2014 the TIA was revised to accommodate the increase of the units to 274. Draft alternative layout 2 proposes 262 units.
The Traffic Impact Study addresses the suitability and safety of proposals for site access, as well as the capacity of the existing and future road network within the influence radius. At the time it was confirmed that the traffic impact of the envisaged development is within acceptable limits and that the suggested improvements conform to the standards and parameters set by the authority.

- Access 1 is an existing access point to the site from Rio Street and will provide access to Portion A. Safe shoulder sight distances of approximately 120 and 130m are achieved to the east and west respectively.

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- Access 2 is an existing access road, which serves Oaklands Development as well as Portion B of the development. The TIA recommended that vegetation be cleared on both approaches to this access, particularly the section towards Rio Drive such that shoulder sight distance can be improved. Should this be done, acceptable sight distances of approximately 100m to the south and 120 to the north can be achieved.
- Access 3 is situated along Concordia Road, at the originally approved public access point (Portion E). This access point will provide access to Portion C. The current informal access to the development and the Gardeners kloof residential area is further south and traverses over the southern portion of the site and dangerously intersects with Gray Street. This access point will be closed, and new access will be constructed. Shoulder sight distance of approximately 320m to the north and 140m to the south is achieved at this intersection with the existing public road. This portion of the property will be subdivided and transferred to the Knysna Municipality. Due to the steepness of the terrain, the rest of the originally proposed Gardeners Kloof Avenue cannot be constructed. Only Portion A will obtain access from this access point.

Each precinct is proposed to have its own access and not be linked internally. This will lower traffic flow through the development and will also disperse traffic more evenly through the existing road networks. Precincts will be connected via pedestrian ways, as the proximity to town will allow many people to walk to town.
The traffic generated by the proposed residential development will have little impact on the capacity of the Main Road / Gray Street and Gray Street / Rio Drive intersections with the intersections continuing to operate at LOS C and A respectively after development implementation.
The TIA concluded that the impact of the proposed development on the road network is acceptable, with minimal increases in delays, and consequently no upgrading of the road network other than that required to provide access to the proposed development is required to be implemented by the developer.

Activity	Medium to high residential development
Layout	Alternative concept Layouts 1 and 2
Phase	Construction Phase
Aspect	Personnel vehicles, construction vehicles, deliveries / collections, machinery
Nature of impact:	**Direct – impact on other road users**

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Local	3	Local	3
Duration	Very short	1	Very short	1
Frequency	Infrequent	2	Rarely	1
Intensity	Low	1	Low	1
Severity	Low	4	Low	3
Consequence	Low	7	Low	6
Probability	Plausible	3	Slight	2
Impact Significance	Low	10	Low	8
Mitigation	Possible			

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	Confidence	High
	Reversibility	Likely
Mitigation Measures	• Appropriate road and construction signage in place. Road signage should be erected and provided to full municipal standards. • Ensure strict access control to and from the construction site at all times. • All construction vehicles are to be monitored to ensure they are not overly full so the likelihood of spillage of debris is prevented. • Any loose materials transported to / from site must be covered. • Surrounding area and roads should be monitored for debris and materials associated with the proposed development and cleaned up a soon as such becomes apparent. • All materials to be delivered in a safe manner at designated delivery area located within footprint of the development site; ensure sufficient space is allocated in the construction site plan to provide safe turning for larger trucks. • Speed travelled by construction vehicles must be kept to a minimum and speed limits enforced. • No transport of construction machinery / materials to or from the site to take place on public holidays or weekends.	
Activity	Medium to high residential development	
Layout	Alternative concept Layouts 1 and 2	
Phase	Operational Phase	
Aspect	Road network	
Nature of impact:	**Cumulative – impact on other road users**	

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Local	3	Local	3
Duration	Very short	1	Very short	1
Frequency	Infrequent	2	Rarely	1
Intensity	Low	1	Low	1
Severity	Low	4	Low	3
Consequence	Low	7	Low	6
Probability	Plausible	3	Slight	2
Impact Significance	Low	10	Low	8
Mitigation	Possible			
Confidence	High			
Reversibility	Likely			

Mitigation Measures	• Sight distance of 120m to the north when exiting Access 2 is achievable provided that the building line is set back, the fence line is positioned lower than the road and the verge is kept clear of vegetation that may hinder visibility;

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<table>
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Sight distance of 90m to the south when exiting Access 2 is achievable provided that the building line and fence line is set back and the verge is kept clear of vegetation
No upgrading of the road network other than that required to provide access to the proposed development is required to be implemented by the developer.
Any updates to TIA based on final SDPs to be carried out for approval of TIA by Knysna Municipality

</td></tr>
<tr><td>Activity</td><td>No go alternative</td></tr>
<tr><td>Nature of impact:</td><td>Baseline conditions will likely remain the same – existing impacts on traffic conditions as a result of existing activities</td></tr>
<tr><td></td><td>
<table>
<tr><td>Impact Status</td><td>Negative</td><td></td></tr>
<tr><td>Spatial</td><td>Local</td><td>3</td></tr>
<tr><td>Duration</td><td>Very short</td><td>1</td></tr>
<tr><td>Frequency</td><td>Rarely</td><td>1</td></tr>
<tr><td>Intensity</td><td>Low</td><td>1</td></tr>
<tr><td>Severity</td><td>Low</td><td>3</td></tr>
<tr><td>Consequence</td><td>Low</td><td>6</td></tr>
<tr><td>Probability</td><td>Slim</td><td>1</td></tr>
<tr><td>Impact Significance</td><td>Low</td><td>7</td></tr>
</table>
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NOISE

The surrounding area is characterised by typical low density residential activities which generate noise i.e. vehicles, residents. The ambient level of noise in the area is low. Sources of noise during construction phase include construction personnel, vehicles and machinery used for clearing of vegetation, levelling, excavation, concrete etc. The noise generated is likely to be experienced by those in the immediate vicinity of the construction activity (residential areas to the east and west). The proposed development will be developed in phases. Construction timeframes have not been confirmed but based on experience it is estimated to be between 24 - 60 months per phase.
The high residential accommodation development will generate noise typical of residential activities and add to the ambient noise level of the area.

<table>
<tr><td>Activity</td><td>Medium to high residential development</td></tr>
<tr><td>Layout</td><td>concept Layout 1 and 2</td></tr>
<tr><td>Phase</td><td>Construction Phase</td></tr>
<tr><td>Aspect</td><td>Noise impact</td></tr>
<tr><td>Nature of impact:</td><td>Direct – Noise impacts on residents in the area</td></tr>
<tr><td>Impact Rating</td><td>
<table>
<tr><td>Impact Status</td><td>Negative</td><td>Negative</td></tr>
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	Without mitigation		With mitigation	
Spatial	Site Specific	2	Activity Specific	1
Duration	Very Short term	1	Very Short term	1
Frequency	Often	5	Often	5
Intensity	Low – medium	2	Low	1
Severity	Medium	8	Medium	7
Consequence	Medium	10	Low	8
Probability	Plausible	3	Slight	2
Impact Significance	Medium	13	Low	10
Mitigation	Possible			
Confidence	High			
Reversibility	Possible			

Mitigation Measures

- No loud music to be allowed on site.
- All vehicles and machinery must be kept in good working condition.
- Working hours and deliveries / collections to be restricted to day time hours (i.e. 8 am to 5pm)
- No construction work to take place after hours or on Sundays or on public holidays.
- A complaints register should be kept to document complaints and the corrective action taken.

Phase	Operational Phase
Aspect	Noise generation
Nature of impact:	**Direct – noise impacts on surrounding residents**

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Activity	1	Activity	1
Duration	Very short	1	Very short	1
Frequency	Infrequent	2	Infrequent	2
Intensity	Low	1	Low	1
Severity	Low	4	Low	4
Consequence	Low	5	Low	5
Probability	Plausible	3	Plausible	3
Impact Significance	**Low**	**8**	**Low**	**8**
Mitigation	Likely			
Confidence	High			
Reversibility	Possible			

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Mitigation Measures	• Ensure municipal bylaws applicable to noise in residential areas are included in "house rules" distributed to owners / residents • Any maintenance work carried out on site during the life of operation complies to construction phase mitigation measures. • Landscaped and open space areas will assist to absorb noise impacts on adjacent residents.
Activity	No go alternative
Nature of impact:	Baseline conditions will likely remain the same – negligible noise impacts
	Impact Status | **Negligible**

VISUAL IMPACT

Concept layout alternative 1 proposed 274 units; concept layout alternative 2 proposes 262 units and this layout takes into account the delineated wetland area.
The proposed development will be developed in phases. Construction timeframes are estimated to be between 24 - 60 months per phase.
The proposed development will not be visible from any identified scenic route. Road users of Concordia and Rio Street will observe the property; however, the site is within the urban area and earmarked for development.
The lower-lying areas of the property have a relatively even gradient. Some sections of the western portion of the property are very steep with gradients steeper than 1:2. Slopes steeper than 25 % (1:4) will be avoided. Buildings will range from 2 storeys to 4 storeys. Buildings higher than 3 storeys will have lift access. The heights of buildings will not exceed the 12m-height limitation as prescribed in the Knysna Zoning Scheme Bylaw. Building design will take advantage of the slope of the site allowing ground contact at two levels, hence reducing the height. As a result of previous public participation processes carried out for the previous rezoning process, some buildings will be restricted to 8,5m or 2 storeys to ensure the protection of views from the surrounding residential properties.
Architecturally designed units situated in a landscaped garden could contribute to a positive feeling of well-being and prosperity in the area. The visual imapct of the construction site and new development in the area is expected to be a medium-term impact, thereafter the visual impacts will become negligible.

Activity	Medium to high residential development
Layout	Alternative Concept Layouts 1 and 2
Phase	Planning and Construction Phase
Aspect	Construction site
Nature of impact:	Direct – Visual impact on nearby receptors

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Local	3	Local	3
Duration	Short to medium	3	Short to medium	3
Frequency	Often	5	Often	5

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Intensity	Low to medium	2	Low	1
Severity	Medium High	10	Medium	9
Consequence	Medium High	13	Medium	12
Probability	Plausible	3	Slight	2
Impact Significance	Medium	15	Medium	14
Mitigation	Difficult (construction site must be well managed to minimise visual impacts)			
Confidence	High			
Reversibility	Permanent impact (Loss of SCC, habitat)			

Mitigation Measures

Construction Team

- Ensure good housekeeping measures on site and compliance with construction EMPr

Phase: Planning and Operational Phase

Aspect: Medium – high residential area

Nature of impact: Direct – Visual impact on receptors

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Local	3	Local	3
Duration	Short to medium	3	Short to medium	3
Frequency	Often	5	Often	5
Intensity	Low	1	Low	1
Severity	Medium	9	Medium	9
Consequence	Medium	12	Medium	12
Probability	Plausible	3	Slight	2
Impact Significance	Medium	15	Medium	14
Mitigation	Difficult			
Confidence	High			
Reversibility	Difficult			

Mitigation Measures

Planning Team

- Final SDP to take advantage of slope to mitigate visual impacts and take into account restrictions required to ensure protection of views from surrounding residential properties.

Operational Management

- Ensure good housekeeping measures on site; house rules to include relevant mitigation measures to reduce visual impacts.

Activity: No go alternative

Nature of impact: Baseline conditions will likely remain the same – Positive low visual impacts of undeveloped site; residents

Impact Status	**Positive Low**

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WATER USE

Water will be required during the construction phase; the amount of water required will need to be determined by the resident engineer.
The majority of the water required for the operational phase of the development is proposed to be sourced from the Knysna LM.
An engineering services report was prepared by Hofmeyer and associates in 2020:

Water connection:

The water connection for the development off the existing 160mm reticulation watermain which is located in a servitude running north south, along the eastern boundary of the site, at the north eastern corner of the site.

Water Demand

Annual average Daily Water Demand (AADD)
274 Units @ AADD of 1 000 litres / day / unit
Total AADD of development = 274 000 litres / day
Instantaneous peak flow for the development
At peak flow factor of 8 = 25,3 litres / sec
Fire Flow (fire category moderate risk to low risk Group 1) = 15 litres / sec

The existing Municipal water storage reservoirs for the area are located at the water treatment works and have a full supply level of approximately 125m above MSL. These reservoirs feed several gravity water mains in the area.
Services Level Agreement to be concluded with as a prerequisite for the Development to proceed.

Activity	Medium to high residential development
Layout	Alternative concept Layouts 1 and 2
Phase	Planning, Operation and Construction Phase
Aspect	Water requirements
Nature of impact:	**Direct impact – Implement local catchment and reuse of water and water saving measures to mitigate impact**

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Activity	1	Activity Specific	1
Duration	Very short	1	Very Short	1
Frequency	Regular	4	Seldom	3
Intensity	Low	1	Low	1

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Severity	Low	6	Low	5
Consequence	Low	7	Low	6
Probability	Plausible	3	Slight	2
Impact Significance	Low	10	Low	8
Mitigation	Possible			
Confidence	High			
Reversibility	Possible			

Mitigation Measures

Planning and operational

- Maintenance plan to maintain sewage and water reticulation infrastructures; Avoid leaking taps and pipes / unnecessary water waste / sewage leaks.
- Incorporate rainwater tanks and re-use of water into final SDPs

Construction Phase

- Water uses during construction phase include, for example, drinking water, wash water, dust control water, mixing water. Water requirements to be calculated by resident engineer and sources of water to be confirmed prior to the start of construction.
- Avoid leaking taps and pipes / unnecessary water waste.

Activity: **No go alternative**

Nature of impact: Baseline conditions will likely remain the same – negligible impacts on water use

Impact Status	**Negligible**

ENERGY USE

Electrical reticulation prepared by AILSA consulting, 2006:

The development will have an electrical maximum demand of 600kVA which will be supplied via two mini substations situated at the load centres of the development.
The Electrical Department of Knysna Municipality have indicated that their network in
the immediate area will not be able to accommodate this load due to the fact that the transformer at the Salt River Substation is at capacity.
As you are aware, the upgrading of the Salt River Substation is being investigated by ourselves and we have a further meeting with Knysna Municipality on 2006-11-02 in order to finalise the fast tracking of the installation of the transformer.
Should these negotiations be successful, it would mean that the possibility exists that the Developer would be able to buy into the capacity created on the transformer and hence ensure that the required demand would be available.

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Confirmation from Knysna LM is required.
Cumulative impacts are experienced on use of fossil fuels from the majority of human activities.

Activity	Medium to high residential development
Layout	Alternative concept Layouts 1 and 2
Phase	Planning, Operation and Construction Phase
Aspect	Energy requirements
Nature of impact:	**Direct impact – Implement energy saving measures to reduce impact**

Impact Rating

Impact Status	**Negative**		**Negative**	
	Without mitigation		With mitigation	
Spatial	Activity	1	Activity Specific	1
Duration	Very short	1	Very Short	1
Frequency	Regular	4	Seldom	3
Intensity	Low	1	Low	1
Severity	Low	6	Low	5
Consequence	Low	7	Low	6
Probability	Plausible	3	Slight	2
Impact Significance	Low	10	Low	8
Mitigation	Possible			
Confidence	High			
Reversibility	Possible			

Mitigation Measures

Planning and operational
It is recommended that energy saving measures and reduction on fossil fuel be investigated for the site. Some measures include:

- Energy efficient lighting (i.e. LED / compact fluorescent)
- Solar roofing

Activity	No go alternative
Nature of impact:	**Baseline conditions will likely remain the same – energy requirements for low density residential**

Impact Status	**Negligible**

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AVIATION			
The proposed residential buildings will not exceed the 12m-height limitation as prescribed in the Knysna Zoning Scheme Bylaw. It seems unlikely that the proposed residential development situated in an urban area will impact the flight path, considering existing residential developments are already in place to the south, west and east of Erf 7614. The South African Civil Aviation Authority (SACAA) has been included in the IAP register to provide formal comment on the application.			
Activity	No go alternative		
Nature of impact:	**Baseline conditions will likely remain the same – no impacts on aviation.**		
	Impact Status	**Negligible**	

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11. ASSUMPTIONS & LIMITATIONS

This section provides a brief overview of specific assumptions and limitations having an impact on this environmental application process:

- It is assumed that the information on which this report is based (specialist studies and project information, as well as existing information) is correct, factual and truthful.
- It is assumed that any issues regarding the development in terms of character of the area and its resources, have been taken into account during the strategic planning for the area.
- It is assumed that all the relevant mitigation and management measures and agreements specified in this report will be implemented in order to ensure minimal negative impacts and maximum environmental benefits.

12. Conclusion and Recommendations

Erf 7614 falls within ward 10 of Knysna and located with the urban edge. The Knysna SDF identifies this site suitable for development. The site has been through various development proposals. The most significant impact identified on site is the presence of a wetland area; existing cumulative impacts from existing urban activities on terrestrial biodiversity and aquatic features on the site is rated as negative of high significance. The impact of the proposed activity (medium/high density residential development) on sense of place of existing residents was identified as negative of medium high significance. The impact on economic and housing aspects was identified as positive of medium high significance.

Concept layout 1 (272 units) placed housing within the wetland area; concept layout 2 (262 units) places proposed housing outside the delineated wetland area. Design considerations will need to take into account increased runoff and the identified watercourse on site to ensure adequate stormwater management and flood protection measures are in place. It is recommended that the developable area (excluding steep areas and wetland area) be used to determine the minimum density that can be developed to ensure the project is financially feasible to provide housing to middle income class group.

The proposed development will offer affordable housing on an erf located within an urban area; the site is considered to have an overall medium environmental sensitivity due to the wetlands on site and historical endangered fynbos. The site is currently impacted by AIS and surrounding urban developments (roads, housing, bulk service infrastructure). Residential housing is required for the area and the selected erf is deemed suitable if the site can be adequately serviced, suitable protection is offered to the wetlands; suitable flood protection is in place and ongoing AIS removal and indigenous landscaping take place.

Detailed site Development plans will be submitted for each phase before building plan approval. The detailed designs will need to be revised and be based on recommendations and measures included in this basic assessment report and any conditions of the EA (if authorised). The finals SDPs and detailed stormwater designs will need to be assessed by the aquatic specialist; the final SWMP and assessment will need to be submitted to DFFE for approval prior to construction; The final SDP and SWMP will be required for the WULA process.

If environmental authorisation is issued for the proposed development, it is recommended that all mitigation measures presented in this draft impact assessment report and included in the accompanying draft EMPr are included as conditions of the environmental authorisation.

The draft basic assessment will be distributed to registered IAPs for a 30-day review and comment period. The assessment will then be updated to address the comments, and the final BAR will be submitted to the DFFE for consideration. .

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List of Appendices: