DRAFT BASIC ASSESSMENT REPORT

THE PROPOSED DEVELOPMENT ON FARM 838 HUMANSDORP, WITHIN THE KOUGA LOCAL MUNICIPALITY, EASTERN CAPE

DEDEAT REF: EC08/C/LN1&3/M/29-2026.

Prepared for: PROUD HERITAGE PROPERTIES 255 (PTY) LTD

Submitted in support of an application for Environmental Authorisation in terms of Section 24(5) of the National Environmental Management Act, Act 107 of 1998, as amended 07 April 2017

HORTCOUTURE
LANDSCAPE ARCHITECTURE & PLANNING

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Document Control

Document Title	THE PROPOSED DEVELOPMENT ON FARM 838 HUMANSDORP, WITHIN THE KOUGA LOCAL MUNICIPALITY, EASTERN CAPE.		
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Lead Author	Warren Lange	BL (Pret) Pr Larch (SACLAP) Reg. EAP (2020/1503) Pr. Sci. Nat. (147880)	
Co-Author	Anastasia Doyle	Cand. EAP (2023/6415) MSS Sociology	
Reviewer	Warren Lange	BL (Pret) Pr Larch (SACLAP) Reg. EAP (2020/1503) Pr. Sci. Nat. (147880)	
Registered Environmental Assessment Practitioner	Warren Lange		
Report Distribution	All interested and Affected Parties		
Report Version	Version 1		
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1			
2			
3			
Final Date for EA			

Basic Assessment Report Checklist

(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-	**Compiler**	**Reviewer**
(i) the EAP who prepared the report; and	✓	✓
(ii) the expertise of the EAP, including a curriculum vitae;	✓	✓
(b) the location 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 in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	**N/A**	**N/A**
(c) a plan which locates the proposed activity or activities applied for as well as 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	**N/A**	**N/A**
(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	**N/A**	**N/A**
(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;	✓	✓
(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 the 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;	✓	✓
(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;	✓	✓
(g) a motivation for the preferred site, activity and technology alternative;	✓	✓
(h) a full description of the process followed to reach the proposed preferred alternative within the site, including -	✓	✓
(i) details of all the alternatives considered;	✓	✓

(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	✓	✓
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	✓	✓
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	✓	✓
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	✓	✓
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with alternatives;	✓	✓
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	✓	✓
(viii) the possible mitigation measures that could be applied and level of residual risk;	✓	✓
(ix) the outcome of the site selection matrix;	✓	✓
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	**N/A**	**N/A**
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity	✓	✓
(i) 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;	✓	✓
(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and	✓	✓
(ii) 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;	✓	✓
(j) an assessment of each identified potentially significant impact and risk, including-	✓	✓
(i) cumulative impacts;	✓	✓

(ii) the nature, significance and consequences of the impact and risk;	✓	✓
(iii) the extent and duration of the impact and risk;	✓	✓
(iv) the probability of the impact and risk occurring;	✓	✓
(v) the degree to which the impact and risk can be reversed;	✓	✓
(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and	✓	✓
(vii) the degree to which the impact and risk can be avoided, managed or mitigated;	✓	✓
(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 report;	✓	✓
(l) an environmental impact statement which contains-	✓	✓
(i) a summary of the key findings of the environmental impact assessment:	✓	✓
(ii) 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	✓	✓
(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	✓	✓
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of proposed impact management outcomes and the development for inclusion in the EMPr;	✓	✓
(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;	✓	✓
(o) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	✓	✓
(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;	✓	✓
(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;	✓	✓
(r) an undertaking under oath or affirmation by the EAP in relation to-	✓	✓
(i) the correctness of the information provided in the reports;	✓	✓
(ii) the inclusion of comments and inputs from stakeholders and I & APs;	✓	✓

(iii) the inclusion of inputs and recommendations from the specialist	✓	✓
reports where relevant; and	✓	✓
(iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	✓	✓
(s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	**N/A**	**N/A**
(t) any specific information that may be required by the competent authority; and	✓	✓
(u) any other matter required in terms of section 24(4)(a) and (b) of the Act.	✓	✓
APPENDICES	✓	✓
Appendix A – Site Development Plan	✓	✓
Appendix B – Site Photographs	✓	✓
Appendix C – Facility Illustrations	✓	✓
Appendix D – Specialist Reports	✓	✓
Appendix E – PPP & C&R Trail	✓	✓
Appendix F – EMPR	✓	✓
Appendix G – Other	✓	✓
Site Sensitivity Verification Report	✓	✓
Environmental Screening Report	✓	✓
Other	N/A	N/A
(2) Where a government notice gazetted by the Minister provides for the basic assessment process to be followed, the requirements as indicated in such notice will apply.		

Details of the EAP

Contact Person

Mr Warren Lange
Email: warren@hortcouture.co.za

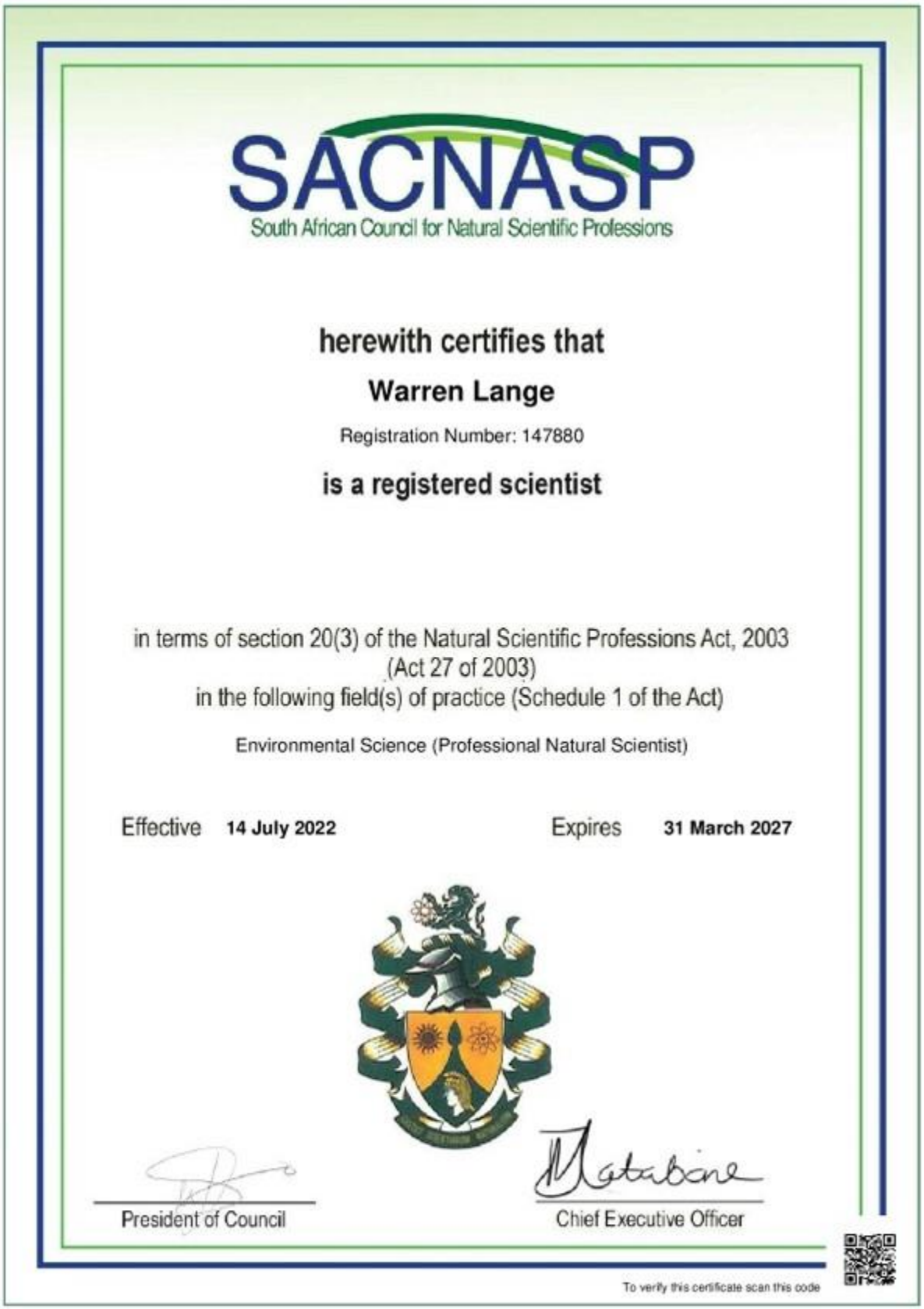
EAP's expertise and qualifications

Hort Couture is a consulting company offering holistic solutions in the disciplines of Environmental Planning & Consulting, and Landscape Architecture. We undertake a variety of specialized projects in the Residential, Commercial, Institutional and Industrial spheres, and have competency in all aspects of environmental planning and consulting. Our main areas of expertise include:

Environmental Planning and Consulting, including Environmental Impact Assessment (EIA), Public Participation Processes (PPP), Environmental Management Programme (EMPr), Protected Area Management Plans (PAMP), Feasibility Studies, Visual impact assessment (VIA), Environmental Auditing, Environmental Control Officer (ECO) and specialist environmental studies.
Urban Design, including Masterplanning, Urban Planning, Urban Design Frameworks (UDF), urban open space and land-use assessment and planning.
Landscape Architectural Services, including spatial assessment and full tailored landscape design package solutions for private, commercial, industrial and institutional clients.

Warren Lange is a principle member of Hort-Couture Landscape Architects and Planners.
Warren Lange holds a Bachelor of Landscape Architecture degree obtained from the University of Pretoria in 1994 and is registered as a professional member with the Environmental Assessment Practitioners of South Africa (EAPASA) as well as the South African Council for the Landscape Architectural Profession (SACLAP). His professional EAPASA registration number is 2020/1503 and SACLAP registration number is 20244. Warren is also registered with ILASA (the institute of Landscape Architects of South Africa, as well as IAASA (Institute of Environmental Assessment Practitioners of South Africa). Warren is also further registered a professional Natural Scientist with SACNASP (South African Council for Natural Scientific Professions) in the field of practice Environmental Science with registration number 147880.

Warren Lange has been involved in several environmental and terrestrial ecology specialist studies over the past several years. He currently resides in Port Alfred and is intimately knowledgeable about local environmental conditions within the Ndlambe Municipality as well as the Eastern Cape coast. His specialist skills further cover master planning and design with relation to environmental and social sustainability.



SACNASP
South African Council for Natural Scientific Professions

herewith certifies that

Warren Lange

Registration Number: 147880

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **14 July 2022** Expires **31 March 2027**

President of Council

Chief Executive Officer

To verify this certificate scan this code

SOUTH AFRICAN COUNCIL FOR THE LANDSCAPE ARCHITECTURAL PROFESSION

REGISTRATION CERTIFICATE

THIS IS TO CERTIFY THAT

Warren Wayne Lange

IS REGISTERED AS A

Professional Landscape Architect

In terms of the regulations of Section 19(2)(a) of the Landscape Architectural Profession Act, 2000 (Act No.45 of 2000)

REGISTER PARTICULARS

REGISTRATION NUMBER:	20244
ID NUMBER:	7101295105083
REGISTRATION RENEWAL DATE:	1 August 2030
CERTIFICATE SERIAL NUMBER:	PRCL 2008026
CERTIFICATE DATE OF ISSUE:	2020-08-24

CONTACT DETAILS

EMAIL ADDRESS:	war*en@h*rtc*utu*e.co.*a
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Mr Ngwako Edward Hutamo
PRESIDENT

Mrs C. E. Chinga
REGISTRAR

SAQA
SACLAP is a SAQA recognised professional body. SAQA ID no: 1250

SACLAP has confirmed the above information, for digital certification and sharing by PrivySeal Limited, at 14:14 PM (Africa/Johannesburg) on 20 Mar 2026

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Environmental Assessment Practitioners Association of South Africa

Registration No. 2020/1503

Herewith certifies that

WARREN LANGE

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 April 2026

Expires: 31 March 2027

Chairperson

Registrar

SAQA

Environmental Assessment Practitioners Association of South Africa

Registration No. 2023/6415

Herewith certifies that

ANASTASIA ROXANE DOYLE

is registered as an

Candidate Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 April 2026

Expires: 31 March 2027

Chairperson

Registrar

SAQA

List of abbreviations

BA Basic Assessment

BAR Basic Assessment Report

BSP Biodiversity Sector Plan

CA Competent Authority

CBA Critical Biodiversity Area

DEDEAT Department of Economic Development Environmental Affairs and Tourism

DAFF Department of Agriculture, Forestry and Fisheries

EA Environmental Authorisation

EAP Environmental Assessment Practitioner

ECO Environmental Control Officer

EIA Environmental Impact Assessment

EMPr Environmental management programme

IDP Integrated Development Plan

IEM Integrated Environmental Management

I&APs Interested and/or affected parties

MPA Marine Protected Area

NEMA National Environmental Management Act, 1998 (Act 107 of 1998)

PP Public Participation

PPP Public Participation Process

SANBI South African National Biodiversity Institute

SBDM Sarah Baartman District Municipality

SDF Spatial Development Framework

ECBCP Eastern Cape Biodiversity Conservation Plan

List of Figures and Tables

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BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:	
NEAS Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014 as amended, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for. This report is current as of 1 OCTOBER 2022. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority **unless indicated otherwise by the Department**.
7. No faxed or e-mailed reports will be accepted **unless indicated otherwise by the Department**.
8. The report must be compiled by an independent environmental assessment practitioner (EAP). The EAP must satisfy conditions 11 below.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

11.1 The Environmental Assessment Practitioner (EAP) must be registered in terms of S24H Regulations with the Registration Authority EAPASA as from 8 August 2022.

11.2. S24H (14) states that "only a person registered as an Environmental Assessment practitioner may perform tasks in connection with an application for an environmental authorisation contemplated in

(a)Chapter 5 of the Act read with the Environmental impact Assessment Regulations.

(b)Section 24G of the Act

(c) Chapter 5 of the National Environmental Management Waste Act 2008 (Act No 59 of 2008) read with the Environmental Impact Assessment Regulations

11.3. Tasks in regulation 14 may only be conducted by an EAP that is registered

11.4. Regulations 20 of S24H indicates the offences and penalties as indicated below:

"*20. Offences and penalties*

(1) A person is guilty of an offence if that person-

(a) contravenes regulation 14 of the Regulations; or

(b) pretends to be a registered environmental assessment practitioner or registered candidate environmental assessment practitioner.

(2) A person convicted of an offence in terms of subregulation (1) is liable to the penalties contemplated in section 49B(3) of the Act.".

Section 49B(3) of the Act states:

"A person convicted of an offence in terms of section 49A(1)(h), (l), (m), (n), (o) or (p) is liable to a fine or to imprisonment for a period not exceeding one year, or to both a fine and such imprisonment."

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	[redacted]	NO

If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

1.1. Activity description

The proposed development entails the establishment of a small scale residential and tourism accommodation facility together with associated agricultural and supporting infrastructure on Farm 838, a property located adjacent to the Kromme River within a sensitive coastal and riparian environment. The site comprises a historically disturbed and partially transformed brownfields area that has previously been subject to anthropogenic modification and limited agricultural disturbance. The proposed development has accordingly been designed to utilise and consolidate development within these previously disturbed portions of the property as far as reasonably possible in order to minimise intrusion into intact natural vegetation and sensitive riparian environments.

The development is intended to comprise a mixed residential, eco-tourism and agricultural lifestyle component, designed in a manner that seeks to integrate with the surrounding natural landscape character and ecological functioning of the Kromme River corridor. The overall development footprint is anticipated to cover approximately 5 000 m² to 6 000 m² and will include a combination of built structures, internal access infrastructure, raised walkways and associated services infrastructure.

The primary development components will include:

- One main residential dwelling of approximately 400 m² incorporating bedrooms, living spaces, kitchen and dining facilities, outdoor entertainment areas, a swimming pool and associated timber decks;
- Four self-contained accommodation units of approximately 70 m² each, intended for low intensity tourism and guest accommodation purposes, constructed either as pod style or conventional structures and linked to the main dwelling via elevated timber walkways;
- Agricultural and storage infrastructure including an approximately 800 m² agricultural shed and storage building with a steel superstructure;
- A boat storage facility and associated jetty infrastructure, subject to any additional approvals required in terms of the Integrated Coastal Management Act (ICMA);
- Two greenhouse structures of approximately 300 m² each;
- Beekeeping infrastructure and associated low intensity agricultural support facilities;
- Internal gravel access roads, parking and circulation infrastructure;
- Security fencing and associated services infrastructure;
- Off grid and sustainability orientated infrastructure including rainwater harvesting systems, renewable energy systems, wastewater treatment infrastructure and stormwater management measures.

The proposed architectural approach is intended to maintain a low density and environmentally sensitive development character, making use of natural materials such as timber, stone, brick, steel and glazing systems to reduce visual intrusion and integrate with the surrounding landscape. Elevated timber walkways are proposed between structures in order to reduce direct disturbance to the underlying ground surface, minimise compaction and maintain local drainage and ecological connectivity where possible.

The site occurs within a sensitive environmental setting associated with the Kromme River system and broader coastal ecological corridor. The surrounding environment supports indigenous vegetation and ecological processes characteristic of coastal and riparian systems within the Kouga region. Due to the environmental sensitivity of the receiving environment, the development has been designed to cluster

infrastructure within defined development nodes and previously disturbed areas while retaining surrounding natural vegetation and ecological buffer areas to the greatest extent practicable.

Construction activities will involve conventional site establishment, vegetation clearing, earthworks, excavation, foundation preparation, building construction and associated infrastructure installation. Vegetation clearing will be limited to the minimum extent required for development platforms, access routes and services infrastructure. Rehabilitation and revegetation of disturbed areas with indigenous species are proposed as part of the overall environmental management approach in order to improve long term ecological functioning and reduce erosion risk.

The proposed development further seeks to incorporate environmentally responsible design principles and sustainability measures, including water conservation, rainwater harvesting, renewable energy generation, low intensity tourism infrastructure and improved management of historically disturbed areas. It is further anticipated that the development may contribute positively toward local economic activity and employment opportunities during both the construction and operational phases.

Given the location of the property adjacent to the Kromme River and within the broader coastal environmental zone, the proposed development triggers listed activities in terms of the Environmental Impact Assessment Regulations, 2017, promulgated under the National Environmental Management Act (Act 107 of 1998), as amended. A Basic Assessment process is therefore being undertaken in support of an application for Environmental Authorisation to the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT).

The environmental assessment process will evaluate the potential impacts associated with the proposed development, including but not limited to:

- Impacts on indigenous vegetation and terrestrial biodiversity;
- Impacts on riparian and aquatic ecological functioning;
- Stormwater management and erosion risks;
- Visual and sense of place impacts;
- Construction related impacts including dust, noise and waste management;
- Potential cumulative impacts within the broader Kromme River and coastal environment;
- Impacts associated with access, services infrastructure and operational activities.

Appropriate avoidance, minimisation, rehabilitation and management measures will be incorporated into the Environmental Management Programme (EMPr) to ensure that the development is undertaken in a manner consistent with the principles of sustainable development, environmental responsibility and long-term ecological integrity.

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1.2. Project Location

The subject property comprises Farm 838, Humansdorp, situated within the Kouga Local Municipality, Eastern Cape Province. The property is located adjacent to the Kromme River within a sensitive coastal and riparian landscape setting characterised by a combination of transformed areas, indigenous vegetation and associated estuarine ecological systems. The site lies within the broader St Francis Bay and Kromme River environmental corridor, an area recognised for its ecological, scenic and recreational value.

The approximate central coordinates of the study area are:

- Latitude: 34.13753752326126° South
- Longitude: 24.830239585072032° East

The property is accessed via the existing regional road network associated with the St Francis Bay and Humansdorp area and is located within a predominantly low density coastal and agricultural landscape context. The surrounding land uses comprise a mixture of conservation areas, private residential properties, tourism related developments, agricultural activities and natural riparian environments associated with the Kromme River system.

The study area includes both the proposed development footprint and the broader receiving environment that may potentially be influenced by the proposed activity. This includes the immediate riparian and terrestrial environments, adjacent vegetation communities, drainage pathways, access routes and surrounding visual landscape context.

The site itself comprises a partially transformed brownfields area interspersed with indigenous vegetation and disturbed open areas. The broader receiving environment contains environmentally sensitive features associated with the Kromme River corridor, including indigenous coastal and riparian vegetation, ecological connectivity zones and areas potentially susceptible to erosion and stormwater related impacts. Portions of the surrounding environment may further support faunal movement and habitat functioning associated with the estuarine and coastal ecological systems of the region.

The locality of the site within proximity to the Kromme River and coastal zone necessitates careful environmental planning and management in order to minimise disturbance to ecological processes, protect biodiversity and maintain the visual and environmental character of the area. The proposed development footprint has therefore been conceptualised to consolidate development within previously disturbed areas as far as practicable, while retaining surrounding natural vegetation and ecological buffer areas.

The locality map below further illustrates the position of Farm 838 in relation to the surrounding regional and local context, including nearby access routes, the Kromme River system and adjacent land uses.

Figure 1. Locality Map

1.3. Listed Activities applied for

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2017, Environmental Authorisation must be obtained from the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) before any listed activity may commence.

The proposed development on Farm 838, Humansdorp, triggers a Basic Assessment process due to the nature and location of the proposed residential, tourism, agricultural and associated infrastructure within a sensitive coastal and riparian environment adjacent to the Kromme River.

Based on the current project description, the following listed activities are anticipated to be triggered:

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 (GN R327)	Describe the portion of the proposed project to which the applicable listed activity relates.
GN R 327 (LISTING NOTICE 1): 17(v)(e)	The development of infrastructure or structures with a development footprint of 50 square metres or more, where such development occurs within 100 metres inland of the high-water mark of the sea or an estuary, where no development setback	The proposed development on Farm 838 includes residential, accommodation, access, service and associated infrastructure within proximity to the Kromme River and estuarine environment. The

	line exists.	cumulative development footprint will exceed 50 m² and portions of the proposed infrastructure are expected to occur within the regulated coastal or estuarine proximity zone.
19A(ii)	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from, an area seaward of the development setback line or, where no such development setback line exists, within 100 metres inland of the high-water mark of the sea or an estuary.	This activity is anticipated to be triggered by site preparation, foundation excavation, access road construction, service installation, landscaping, stormwater infrastructure and associated earthworks required for the proposed development. These works may involve the excavation, removal, moving, infilling or depositing of more than 5 m³ of material within 100 metres inland of the high-water mark of the Kromme River estuary, or within the applicable regulated coastal or estuarine proximity area.
GN R 324 (LISTING NOTICE 3): 5(a)(iii)	The development of resorts, lodges, hotels and tourism or hospitality facilities that sleep less than 15 people. a. Eastern Cape (iii) Outside urban areas, in areas within 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater.	The proposed development includes four self-contained sleeper units associated with low intensity tourism and guest accommodation on Farm 838. The accommodation component is small scale and is intended to sleep fewer than 15 people. The activity is therefore anticipated to be applicable as the proposed tourism or hospitality accommodation is located outside an urban area and within proximity to the Kromme River estuarine environment.
12(a)(iii)	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. a. Eastern Cape (iii) Within the littoral active zone or 100 metres inland from the high-water mark of the sea, whichever distance is the greater, excluding where such removal will occur behind the development setback line on	This activity may be triggered where indigenous vegetation clearance of 300 m² or more is required for building platforms, access routes, services infrastructure, walkways, landscaping, stormwater infrastructure or associated construction areas within the regulated coastal or estuarine proximity zone. The final extent of vegetation clearance will be confirmed through the final site layout, site sensitivity verification,

	erven in urban areas.	specialist input and the Basic Assessment process.

Table 1. Listed Activities

2. Biophysical environment

2.1. Climate

The proposed development site on Farm 838 is located within the coastal zone of the Kouga Local Municipality, in the broader St Francis Bay and Kromme River estuarine environment. The area is influenced by a temperate to subtropical coastal climate, moderated by its proximity to the Indian Ocean, with generally mild winters, warm summers, frequent coastal winds and rainfall that may occur throughout the year. Kouga Municipality describes the regional climate as subtropical, with rainfall varying from approximately 650 mm per annum in the St Francis Bay area to approximately 400 mm per annum in the Gamtoos River Valley, and notes that the area is generally windy.

The St Francis Bay area receives rainfall throughout the year, with no pronounced dry season. Available climate data indicates mean annual rainfall in the order of approximately 528 mm to 601 mm per annum, with average daily maximum temperatures ranging from approximately 18.5°C in July to approximately 24°C in February. These conditions are typical of the south-eastern coastal belt of the Eastern Cape, where moderate rainfall, coastal humidity and wind exposure influence vegetation structure, soil moisture, erosion potential and site rehabilitation requirements.

The site's location within the Kromme River estuarine environment is climatically and hydrologically important. Rainfall events in the broader Kromme River catchment may result in elevated river flows, flood pulses and the downstream movement of sediment and debris into the estuary and river mouth area. This was evident during recent heavy rainfall events affecting the Kromme River from the Tsitsikamma catchment downstream to St Francis Bay, where flooding, strong river flows and debris movement were reported. Accordingly, stormwater management, erosion control, flood resilience and the protection of riparian and estuarine functioning are important considerations for the proposed development.

Climate change is defined as a change in climate attributed directly or indirectly to human activity that alters the composition of the global atmosphere, in addition to natural climate variability over comparable time periods. In the Eastern Cape coastal context, projected climate change implications include increasing temperatures, changes in rainfall distribution and intensity, increased frequency and severity of extreme weather events, coastal flooding risk and sea level rise. These pressures are particularly relevant to low-lying coastal settlements, estuarine margins and development located near the high-water mark of the sea or estuarine systems.

The Sarah Baartman District Municipality Adaptation Plan identifies climate change vulnerability and adaptation planning as an important policy and risk management consideration for the district. The district disaster management context further recognises that the region is affected by extreme weather events, including drought and runaway fires, which may be exacerbated by drought conditions and broader climate change effects. For the Farm 838 site, the most relevant climate-related risks are likely to include stormwater runoff during high intensity rainfall events, erosion of exposed soils, increased pressure on

riparian and estuarine systems, flood risk within low-lying areas, wind exposure, drought-related vegetation stress and the need for resilient landscaping and rehabilitation measures.

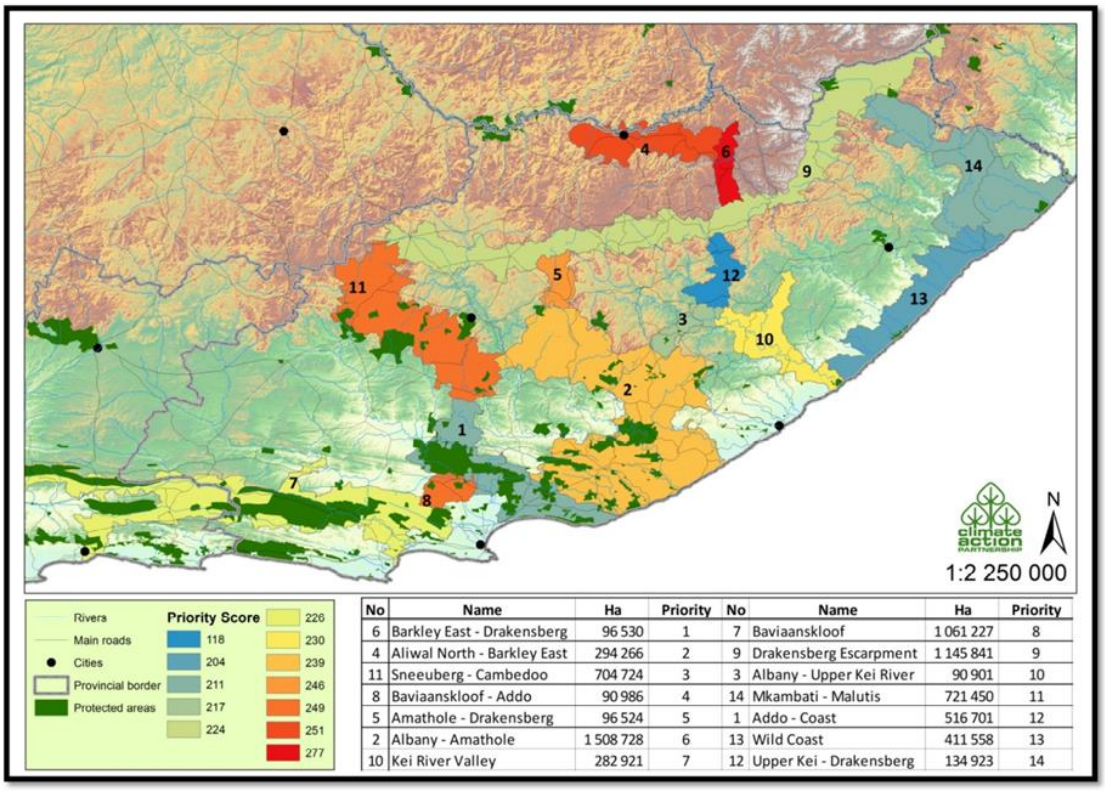
Given the location of the proposed development within the area of influence of the Kromme River and estuarine environment, the Basic Assessment must ensure that the site layout, construction methodology and operational management respond appropriately to the local climate and climate change context. This includes avoiding unnecessary disturbance of stabilising vegetation, limiting exposed soil surfaces during construction, implementing effective stormwater controls, maintaining natural drainage patterns as far as possible, preventing sediment-laden runoff from entering the estuary, using locally appropriate indigenous vegetation in rehabilitation and landscaping, and ensuring that infrastructure is designed with due consideration of coastal and estuarine risk.

The general climate of the site and surrounding area is therefore not regarded as a fatal constraint to the proposed development, but it does inform the environmental management approach. The coastal, windy and seasonally variable rainfall conditions, together with the site's proximity to the Kromme River estuarine system, require that the development be planned and implemented in a manner that is climate-resilient, e rosion-conscious and protective of downstream aquatic and estuarine receiving environments.

No.	Corridor Name	Ha	Terr. CBA 1 [1]	Terr. CBA 2 [1]	Terr. CBA 3 [1]	Aqu. CBA 1 [1]	Aqu. CBA 2 [1]	Natural [1]	Total	Priority
1	Addo - Coast	516 701	27	53	5	25	28	73	211	3
2	Albany - Amathole	1 508 728	16	64	5	40	36	78	239	9
3	Albany - Upper Kei River	90 901	8	51	25	22	28	83	217	5
4	Aliwal North - Barkley East	294 266	1	59	11	12	81	87	251	13
5	Amathole - Drakensberg	96 524	1	75	0	0	75	95	246	10
6	Barkley East - Drakensberg	96 530	36	53	3	53	40	92	277	14
7	Baviaanskloof	1 061 227	14	53	4	46	23	86	226	7
8	Baviaanskloof - Addo	90 986	24	57	16	16	84	52	249	11
9	Drakensberg Escarpment	1 145 841	30	42	3	30	38	81	224	6
10	Kei River Valley	282 921	13	68	10	62	14	63	230	8
11	Sneeuberg - Cambedoo	704 724	6	81	0	20	47	95	249	12
12	Upper Kei - Drakensberg	134 923	1	6	60	0	0	51	118	1
13	Wild Coast	411 558	37	55	0	49	5	58	204	2
14	Mkambati - Malutis	721 450	32	61	3	40	24	51	211	4

[1] Data are percentages of the corridor.

Figure 2 Prioritisation of climate adaptation corridors in the EC



No	Name	Ha	Priority	No	Name	Ha	Priority
6	Barkley East - Drakensberg	96 530	1	7	Baviaanskloof	1 061 227	8
4	Aliwal North - Barkley East	294 266	2	9	Drakensberg Escarpment	1 145 841	9
11	Sneeuberg - Cambedoo	704 724	3	3	Albany - Upper Kei River	90 901	10
8	Baviaanskloof - Addo	90 986	4	14	Mkambati - Malutis	721 450	11
5	Amathole - Drakensberg	96 524	5	1	Addo - Coast	516 701	12
2	Albany - Amathole	1 508 728	6	13	Wild Coast	411 558	13
10	Kei River Valley	282 921	7	12	Upper Kei - Drakensberg	134 923	14

Figure 3. Eastern Cape Climate Adaptation Corridors

2.2. Topography

The proposed development site on Farm 838 is located within the coastal and estuarine landscape of the Kouga Local Municipality, in the broader St Francis Bay and Kromme River area. The regional topography is strongly influenced by the coastal plain, estuarine margins, low-lying floodplain areas, stabilised and semi-stabilised dune forms, and gently undulating landforms associated with the lower reaches of the Kromme River system.

The St Francis Bay and Kromme River area is generally characterised by low elevation coastal terrain, with localised undulations associated with dune ridges, estuarine banks, historical floodplain features and modified developed areas. Within this coastal setting, topography plays an important role in determining drainage direction, stormwater movement, erosion risk, flood sensitivity and the relationship between proposed development footprints and the receiving estuarine environment.

Within the broader St Francis Bay coastal environment, dune and coastal landforms are important physical features influencing drainage, erosion risk, exposure and development suitability. Although the Farm 838 site is located within the Kromme River estuarine area rather than directly on an exposed beach frontage, these coastal geomorphological processes remain relevant to the wider area of influence, particularly in relation to wind exposure, sandy soils, sediment movement, stormwater management and the need to avoid unnecessary disturbance of stabilising vegetation.

Topography of the site

The site-specific topography of Farm 838 is relatively low-lying and gently sloping. The highest portion of the site is approximately 7 m above mean sea level, with the landform gently falling in a south-easterly direction towards the Kromme River high-water mark. For assessment purposes, the high-water mark is treated as being at approximately 0 m elevation. The site therefore has an approximate maximum vertical fall of 7 m from the upper portion of the property down towards the estuarine edge.

The average slope is calculated using slope percentage = vertical fall ÷ horizontal distance × 100

Based on an approximate elevation change of 7 m, the slope percentage must be calculated against the measured horizontal distance from the highest point of the site to the high-water mark. For example, where the horizontal distance is approximately 200 m, the average slope would be calculated as follows:

- 7 m ÷ 200 m × 100 = 3.5%

This confirms that the site can generally be described as gently sloping towards the south-east and the Kromme River estuarine environment. The final slope percentage should be confirmed against the surveyed site plan, contour plan or GIS measurement of the actual horizontal distance between the upper site level and the high-water mark.

The natural fall of the land towards the Kromme River is an important environmental consideration. Even where gradients are gentle, disturbance of vegetation, exposure of sandy soils, formation of access routes, building platforms, service trenches and landscaping areas may increase the potential for sediment-laden runoff to move downslope towards the estuarine receiving environment. The topographic context therefore requires careful control of construction-phase earthworks, stockpiling, stormwater discharge, erosion protection and post-construction rehabilitation.

The low-lying estuarine setting also means that the final layout must respond to any applicable development setback, floodline, estuarine functional zone, riparian or aquatic buffer, geotechnical constraints and specialist recommendations. Infrastructure should, as far as practicable, be positioned to avoid unnecessary disturbance of sensitive lower-lying areas, natural drainage features and stabilising riparian or estuarine vegetation. Where structures, access routes or service infrastructure are located within proximity to the Kromme River, the design must ensure that natural drainage is maintained, concentrated runoff is avoided, and erosion or sedimentation of the estuarine environment is prevented.

The topography of the site is not, in itself, regarded as a fatal constraint to the proposed development, provided that the final development layout is informed by the site sensitivity verification, aquatic input, stormwater design and environmental management measures. The principal topography-related management requirements are likely to include limiting the development footprint, avoiding unnecessary cut and fill, maintaining stable ground levels where possible, controlling runoff during construction, rehabilitating disturbed areas promptly, and ensuring that stormwater is managed in a dispersed, energy-reduced and environmentally responsible manner before it can enter the Kromme River system.

Figure 4 below indicates the elevation and gradient of the activity.

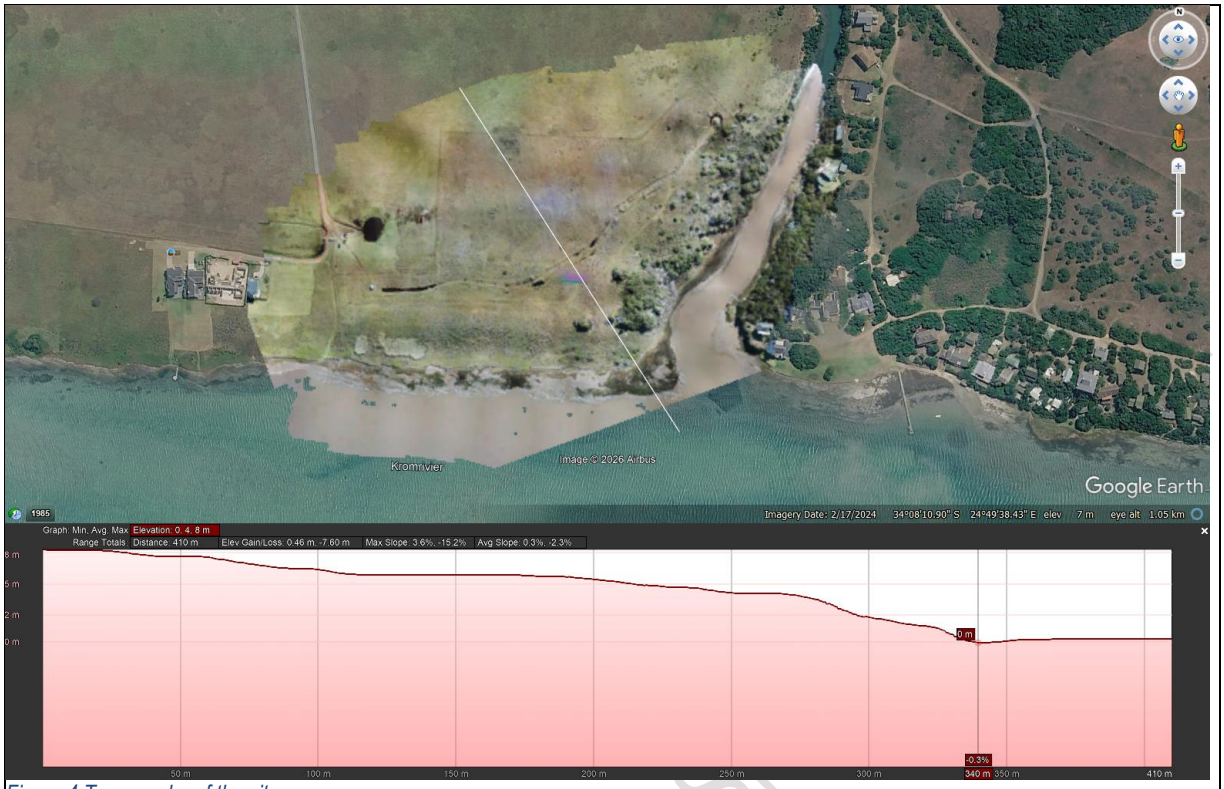


Figure 4 Topography of the site

2.3. Geology and Soils

From a broad municipal and regional perspective, the proposed development site on the Remainder of Farm 838 is located within the coastal St Francis Bay and Kromme River estuarine landscape of the Kouga Local Municipality. The area forms part of a low-lying coastal and estuarine setting, where geology, soils, sediment movement, surface drainage, shallow groundwater conditions and estuarine processes are closely interrelated.

Site-specific mapping prepared for the proposed development indicates that the property is located at approximately 34°8'14.69"S and 24°49'49.19"E. The geology map for the site indicates that the Remainder of Farm 838 is underlain by the ALGOA geological unit, while the broader surrounding area includes CERES geology further to the north-west of the site. The mapped ALGOA unit covers the subject property and its immediate estuarine-margin context, which confirms that the site is more directly associated with younger coastal and estuarine geological deposits than with exposed inland bedrock units.

The site-specific soils map indicates that the Remainder of Farm 838 falls within mapped PL2 soils. The PL2 soil classification covers the full mapped extent of the subject property on the soils map, including the low-lying portions adjacent to the Kromme River and estuarine edge. This confirms that the site is not characterised by a complex mapped soil pattern at the available mapping scale, but rather by a single dominant mapped soil unit across the development area.

The mapped ALGOA geology is consistent with the site's coastal and estuarine setting. In practical terms, the surface geology and soils of the site are expected to be dominated by relatively young unconsolidated to weakly consolidated coastal, alluvial and estuarine materials, including sandy substrates, reworked

sediments and locally moisture-influenced soils. This is consistent with the site's position along the Kromme River, its low elevation and its gentle south-easterly fall towards the high-water mark.

The soils on the site are therefore expected to be sandy to sandy loam in character, with potential local variation arising from past disturbance, estuarine influence, organic matter accumulation, alluvial deposition, fill material, vegetation cover and proximity to the high-water mark. Lower-lying portions of the site, particularly those closer to the Kromme River, may be influenced by shallow groundwater, periodic saturation, salinity, fluctuating moisture conditions and estuarine sediment movement. These conditions are important in relation to foundation suitability, bearing capacity, erosion risk, stormwater infiltration, vegetation establishment and rehabilitation success.

The site has a maximum elevation of approximately 7 m above mean sea level and gently slopes in a south-easterly direction towards the Kromme River high-water mark. This topographic and geological relationship increases the importance of controlling stormwater and sediment movement during construction. Even where slopes are gentle, exposed sandy soils may be vulnerable to erosion where vegetation is removed, earthworks are undertaken, or runoff is concentrated. Construction activities such as excavation, trenching, access formation, service installation, building platform preparation, stockpiling and landscaping may therefore create a risk of sediment-laden runoff moving downslope towards the estuarine receiving environment if not properly managed.

The mapped PL2 soils do not, in themselves, indicate a fatal constraint to development. However, given the estuarine-margin setting, the soils should be treated as potentially sensitive from an erosion, drainage, rehabilitation and construction management perspective. Disturbance of stabilising vegetation should be limited, topsoil should be stripped and reused where suitable, exposed soils should be stabilised as soon as possible, and all stockpiles should be located outside sensitive estuarine areas and protected from wind and water erosion.

The land capability and agricultural potential of the site are expected to be limited by the sandy coastal soil conditions, proximity to the estuarine environment, possible moisture and salinity influence, low elevation, biodiversity sensitivity and the proposed tourism and accommodation land use. The site is therefore more appropriately assessed in relation to its coastal, estuarine, ecological and low-intensity tourism context than as high potential agricultural land.

The geology and soils of the site are not regarded as a fatal flaw to the proposed development, provided that the final layout, engineering design and construction methodology respond appropriately to the mapped site conditions. The main geology and soil related management requirements are likely to include limiting the development footprint, avoiding unnecessary cut and fill, maintaining natural drainage patterns as far as possible, preventing concentrated runoff, protecting the Kromme River estuarine margin, stabilising disturbed areas promptly, and ensuring that stormwater is managed in a dispersed and energy-reduced manner before it can enter the river or estuarine environment.

In summary, the Remainder of Farm 838 is mapped as being underlain by ALGOA geology and PL2 soils. These site-specific mapping results confirm a coastal and estuarine substrate context, where the key environmental considerations are not regional geological instability, but rather the local behaviour of sandy and potentially moisture-influenced soils, stormwater movement, erosion control, vegetation retention, rehabilitation and protection of the Kromme River estuarine receiving environment.

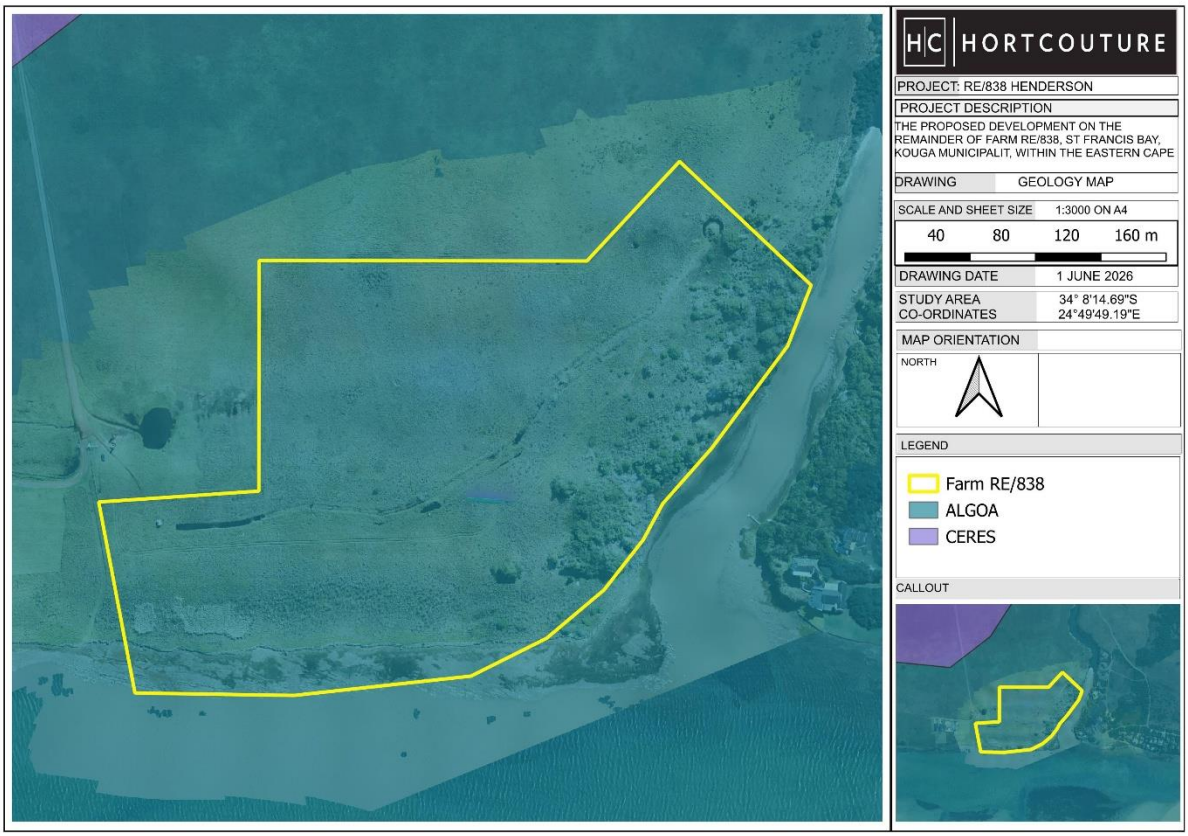


Figure 5 Underlying Geology

Figure 6 General Soils

Mapped soil unit	Mapped occurrence on Farm 838	Site specific soil interpretation	Environmental and development implications	Management and mitigation requirements for the DBAR / EMPr
PL2 soils	The site specific soils map indicates that the full mapped extent of the Remainder of Farm 838 falls within the PL2 soils unit. No other soil units are shown within the subject property at the mapping scale provided.	The PL2 mapping is consistent with the site's low lying coastal and estuarine margin position adjacent to the Kromme River. The soils are expected to be dominated by sandy to sandy loam coastal and estuarine materials, with possible local variation caused by historical disturbance, reworked sediment, organic accumulation, fill, shallow groundwater influence and proximity to the high-water mark.	The mapped soils do not, in themselves, represent a fatal constraint to development. However, the sandy and estuarine margin context may increase susceptibility to erosion, sediment movement, windblown sand, localised saturation, seepage, salinity influence and reduced rehabilitation success if soils are exposed or runoff is concentrated. Lower-lying areas closer to the Kromme River must therefore be treated as more sensitive from a stormwater, erosion and sediment control perspective.	Limit the development and construction footprint; avoid unnecessary cut and fill; retain stabilising vegetation where possible; strip and stockpile suitable topsoil separately for reuse; locate stockpiles outside sensitive estuarine and drainage areas; protect stockpiles from wind and water erosion; avoid concentrated stormwater discharge; install sediment control measures before bulk earthworks; stabilise exposed soils immediately after disturbance; rehabilitate with locally appropriate indigenous vegetation; and confirm foundation, seepage, groundwater and bearing capacity conditions through engineering or geotechnical input where required.

Table 2 Site specific soil conditions

2.4. Hydrology

The proposed development site on the Remainder of Farm 838 is located within the lower Kromme River estuarine environment, in the St Francis Bay area of the Kouga Local Municipality. Unlike an inland freshwater river setting, the hydrological character of this site is directly influenced by its position adjacent to the Kromme River Estuary and the high-water mark. The site is therefore located within an estuarine-margin environment where tidal water level variation, estuarine sediment movement, stormwater runoff, shallow groundwater conditions and local drainage patterns are important environmental considerations.

Regional hydrological context

The Kromme River Estuary is a permanently open estuary located near St Francis Bay. The river is approximately 95 km long, with the last approximately 14 km regarded as estuarine. The system has been significantly influenced by upstream impoundments and abstraction, with reduced freshwater inflows into the estuary and increased sedimentation being recognised features of the system.

The Kromme River Estuary is also described as being freshwater starved, with two major dams on the Kromme River restricting freshwater inflow and contributing to sedimentation within the estuarine system. The estuary functions as a natural sediment trap, where sediment may enter from both the tidal head and inlet. In an unmodified system, periodic freshwater floods would assist in scouring accumulated sediment from the channels, but upstream flow regulation has altered this balance.

Published water resource assessments further note that the Kromme Estuary receives very limited freshwater inflow and has effectively become strongly marine influenced during periods of low inflow, with the potential for reverse salinity gradients under low flow and high evaporation conditions. This confirms that the estuarine hydrology of the site's area of influence is not defined only by river runoff, but by the interaction between tidal exchange, reduced freshwater inflow, salinity, sediment movement and local catchment runoff.

Hydrodynamic modelling undertaken for the Kromme River Estuary indicates that the model domain extended from the mouth of the Kromme River to the Impofu Dam and the St Francis Bay coastal area. The modelling was forced by tidal variation and river discharge downstream of Impofu Dam. Historical records considered in that study indicated generally very low river discharge downstream of Impofu Dam for most of the available data period, although short duration high discharge events also occur. This is important for Farm 838 because day to day estuarine water levels and currents may be strongly tide influenced, while episodic flood or high rainfall events can still introduce short term elevated flows, sediment movement and inundation risk.

Site specific hydrological setting

The Remainder of Farm 838 is situated immediately adjacent to the Kromme River estuarine environment. The site locality coordinates shown on the project mapping are approximately 34°8'14.69"S and 24°49'49.19"E. The site-specific soils and geology mapping confirms that the property is mapped as PL2 soils and ALGOA geology, consistent with a low-lying coastal and estuarine substrate context. The site has a maximum elevation of approximately 7 m above mean sea level and gently slopes in a south-easterly direction towards the Kromme River high-water mark. This means that the natural drainage tendency of the site is towards the estuarine receiving environment. Any disturbance of vegetation, exposure of sandy soils, formation of building platforms, service trenches, access routes, stormwater infrastructure or landscaped areas must therefore be managed to avoid sediment-laden runoff entering the estuary.

The hydrological environment of the site is therefore defined by the following key features:

- The site is located adjacent to the Kromme River Estuary and within the area of influence of the high-water mark.
- The site is low lying and gently drains towards the estuarine edge.
- The mapped soils and geology indicate a coastal and estuarine substrate setting, with potential sandy, alluvial and moisture-influenced soil conditions.

- The site is likely to be affected by surface runoff during rainfall events, with potential for downslope movement of sediment if exposed soils are not stabilised.
- Lower portions of the site closer to the estuarine margin may be influenced by shallow groundwater, fluctuating moisture conditions, salinity and periodic inundation.
- The receiving environment is sensitive due to estuarine habitat, sediment dynamics, water quality sensitivity and ecological connectivity.

For the purposes of this assessment, the following definitions apply:

- Watercourse means a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water which the Minister may declare to be a watercourse.
- Estuary means a body of surface water that is permanently or periodically open to the sea, in which a rise and fall of water level as a result of tides is measurable at spring tides when the body of surface water is open to the sea, or in respect of which the salinity is measurably higher as a result of the influence of the sea.
- High-water mark means the highest line reached by coastal waters, excluding exceptional or abnormal floods, and is relevant for determining regulated proximity to the estuarine and coastal environment.
- Estuarine functional zone means the area in and around an estuary that includes the open water area, estuarine habitat and adjacent areas influenced by estuarine processes.

Regulated hydrological context and development proximity

Given the site's proximity to the Kromme River Estuary and the high-water mark, the development falls within a hydrologically sensitive area. Development activities within 100 m inland of the high-water mark of the sea or an estuary, and earthworks involving the movement of more than 5 m³ of material within this regulated area, are relevant to the listed activity assessment. The hydrological assessment must therefore consider both the physical proximity of the development to the estuary and the potential for indirect impacts through stormwater, erosion, sedimentation, wastewater failure, accidental contamination and vegetation disturbance.

The proposed development should be assessed against the final site layout, the verified high-water mark, any applicable development setback, aquatic specialist input, floodline information where available, and the mapped sensitivity of the estuarine margin. Where development components occur close to the high-water mark or within the regulated proximity zone, the design must be based on avoidance and minimisation principles.

Floodline and inundation risk

The site's low-lying estuarine setting requires a precautionary approach to flood and inundation risk. Although routine estuarine water levels are influenced by tidal exchange, the Kromme River system can still experience high water levels during storm events, elevated catchment runoff, strong winds, high tides, storm surge conditions or combined coastal and riverine events. The hydrodynamic modelling information for the Kromme River Estuary confirms that both tidal variation and river discharge are relevant hydrodynamic drivers.

In the absence of a detailed site-specific hydraulic or floodline assessment, it should be assumed that the lower-lying portions of Farm 838 nearest to the Kromme River high-water mark have increased sensitivity to inundation, erosion and waterlogging. A conservative approach should be adopted, whereby permanent structures and vulnerable infrastructure are placed outside lower-risk estuarine margin areas as far as practicable, and are designed to avoid damage from periodic high water levels or stormwater concentration.

Where development within proximity to the estuarine edge is unavoidable, design measures should include appropriate finished floor levels, erosion-resistant edge treatment, stormwater attenuation, energy dissipation, avoidance of concentrated discharge points, and the use of permeable or low-impact surfaces where feasible. Any final floodline or finished floor level requirements should be confirmed by the project engineer, informed by site levels, estuarine water levels, stormwater design and the applicable municipal or specialist requirements.

Stormwater and drainage

The natural fall of the site towards the Kromme River means that stormwater management is one of the most important hydrological design considerations. The objective should be to maintain natural drainage patterns as far as possible, reduce runoff velocity, prevent erosion, trap sediment before it reaches the estuary, and avoid the creation of concentrated discharge points.

Stormwater from roofs, hard surfaces, access routes and parking or service areas should be dispersed, attenuated and treated before discharge. Measures may include vegetated swales, level spreaders, silt traps, small attenuation features, permeable surfaces, controlled roof water discharge, energy dissipation at outlets and retention of existing vegetation. Direct discharge of untreated stormwater into the estuary should not be permitted.

During construction, temporary stormwater and erosion controls must be installed before major earthworks commence. These should include silt fencing, hay bales or other sediment barriers, diversion berms where appropriate, stabilised construction access, controlled stockpile areas, progressive rehabilitation and immediate stabilisation of exposed soils following disturbance.

Wastewater and water quality

Given the site's proximity to the Kromme River Estuary, wastewater management is a key hydrological and water quality consideration. Any on-site wastewater treatment system must be designed, installed and maintained to prevent seepage, overflow or failure that could affect groundwater, surface runoff or the estuarine receiving environment. The final wastewater solution should be confirmed through the engineering design process and must comply with applicable municipal, health, water use and environmental requirements.

No untreated wastewater, greywater, sewage effluent, wash water, cement-contaminated water, hydrocarbons or construction-related pollutants may be discharged onto the ground in a manner that could flow towards the Kromme River. Construction activities such as concrete batching, equipment washing, refuelling, storage of chemicals and waste handling must be undertaken outside sensitive areas and must include pollution prevention controls.

Hydrological sensitivity

The site is considered to be of moderate to high hydrological sensitivity due to its direct proximity to the Kromme River Estuary, its low-lying estuarine-margin setting, its gentle fall towards the high-water mark, its mapped coastal and estuarine soil and geology context, and its potential connectivity to the estuarine receiving environment through stormwater, groundwater and sediment movement.

Potential hydrological impacts associated with the proposed development include:

- Alteration of natural surface runoff patterns.
- Increased runoff from roofs, access roads and hardened surfaces.
- Erosion of exposed sandy soils during construction.
- Sedimentation of the Kromme River Estuary.
- Localised disturbance of estuarine-margin vegetation and soil stability.
- Potential contamination from wastewater, hydrocarbons, cement wash water or polluted stormwater.
- Increased flood or inundation exposure if infrastructure is located too close to lower-lying estuarine areas.
- Disturbance of shallow groundwater or moisture-influenced soils during excavation.

Required hydrological management measures

The following measures should be incorporated into the layout, design, construction methodology and EMPr:

- Confirm the high-water mark, relevant setbacks and estuarine sensitivity areas before finalising the development footprint.
- Limit the development footprint and avoid unnecessary disturbance of lower-lying estuarine-margin areas.
- Retain existing stabilising vegetation wherever possible, particularly along the estuarine edge and natural drainage pathways.
- Avoid unnecessary cut and fill and minimise bulk earthworks.
- Install temporary erosion and sediment control measures before earthworks commence.
- Prevent sediment-laden runoff from entering the Kromme River Estuary.
- Manage stormwater through attenuation, dispersion, vegetated treatment and energy dissipation.
- Avoid direct discharge of untreated stormwater into the estuary.
- Locate stockpiles, material storage, refuelling areas and construction camps outside sensitive estuarine-margin areas.
- Stabilise and rehabilitate exposed soils as soon as possible after disturbance.
- Use locally appropriate indigenous vegetation for rehabilitation and landscaping.
- Ensure that wastewater infrastructure is designed and maintained to prevent seepage, overflow or contamination of groundwater or surface water.
- Maintain construction plant and machinery to prevent hydrocarbon leaks.
- Ensure that emergency spill response materials are available on site during construction.

Conclusion

The hydrological environment of Farm 838 is defined by its direct relationship with the Kromme River Estuary and its low-lying, gently south-easterly draining landform. The site is not an upstream freshwater

river setting, but an estuarine-margin environment influenced by tidal exchange, reduced freshwater inflow, sediment movement, local stormwater runoff, shallow groundwater conditions and the proximity of the high-water mark.

While the hydrological sensitivity of the site is moderate to high, the proposed development can be assessed and managed through a precautionary approach that prioritises avoidance of the estuarine edge, effective stormwater control, erosion prevention, water quality protection, appropriate wastewater management, and rehabilitation of disturbed areas. The final layout, engineering design and EMPr must ensure that the proposed development does not result in unacceptable impacts on the hydrological or ecological functioning of the Kromme River Estuary.

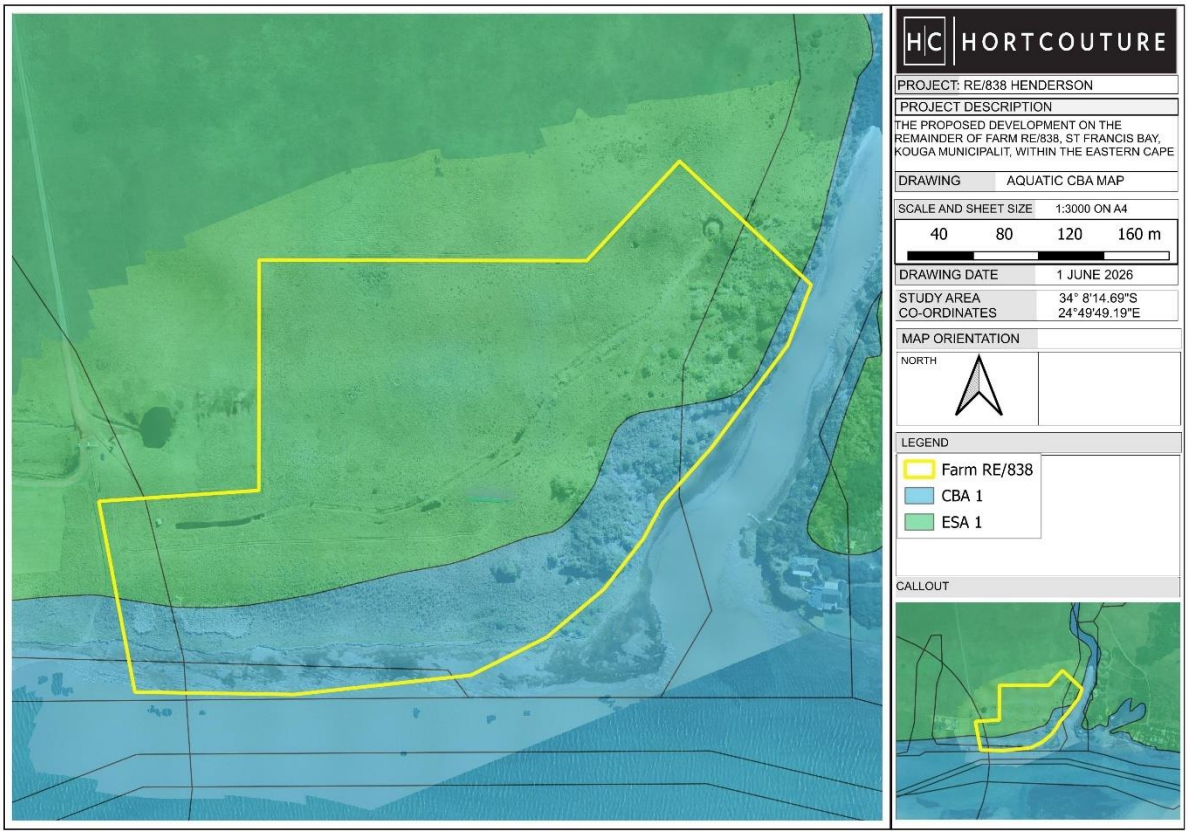


Figure 7 Site Aquatic map

2.5. Vegetation

Vegetation within a site and its surrounding area reflects the combined influence of climate, geology, soil form, topography, hydrology, disturbance history, fire, grazing, land use and ecological processes. In coastal and estuarine landscapes, vegetation patterns are often further influenced by soil moisture, salinity, wind exposure, sandy substrates, alluvial deposition, floodplain processes and proximity to estuarine, riparian and coastal systems.

The proposed development site on the Remainder of Farm 838 is situated within the lower Kromme River and St Francis Bay area of the Kouga Local Municipality. The site is located within a sensitive coastal and estuarine landscape, where terrestrial vegetation, alluvial or riparian vegetation, estuarine edge habitats,

sandy soils, drainage pathways and the Kromme River receiving environment must be considered together. The site should therefore not be assessed as an isolated terrestrial footprint only, but within the broader ecological context of its relationship with the Kromme River Estuary, the high water mark and the surrounding coastal vegetation mosaic.

According to SANBI, the ecosystem units used for the NBA 2025 terrestrial ecosystem assessment are based on the 2024 National Vegetation Map. The National Vegetation Map is a foundational spatial dataset used for biodiversity assessment, environmental planning and conservation management in South Africa. At the scale of a development application, however, mapped vegetation types must always be interpreted together with site verification, aerial imagery, ground-truthing and specialist assessment, as desktop mapping may not fully reflect the current condition, extent, transformation history or ecological integrity of vegetation within the actual development footprint.

The updated 2024 vegetation mapping for Farm 838 indicates that the site and its immediate area of influence are associated with a mapped vegetation mosaic comprising Albany Alluvial Vegetation, Sundays Mesic Thicket, Humansdorp Shale Renosterveld, non-terrestrial estuarine habitat associated with the Kromme River Estuary, and Elands Forest Thicket in the surrounding mapped landscape. The mapping therefore places the site within a complex coastal, alluvial, thicket, renosterveld and estuarine transition area, rather than within a single uniform vegetation unit. However, the accuracy and site-scale applicability of the 2024 vegetation mapping is disputed in relation to the actual observed site condition and will be verified and, where necessary, corrected or remapped in the terrestrial biodiversity assessment.

The mapped vegetation types should therefore not be interpreted as a direct description of the current on-site vegetation condition. Initial site assessment, aerial imagery and site visit / ground-truthing indicate that the property has been substantially transformed by historical agricultural practices and by activities associated with a previously approved residential development dating to approximately 1993. Historical works reportedly included installation of infrastructure, including stormwater elements and road stabilisation. The site also shows evidence of previous broad-scale or blanket clearing, with the present vegetation cover comprising secondary regrowth rather than intact representative vegetation of the mapped vegetation units.

Based on the available aerial imagery and initial on-site verification, the majority of the inland portions of the property appear to be transformed or degraded. These areas are characterised primarily by open, low, graminoid-dominated secondary regrowth, scattered low shrubs and isolated woody regrowth. The vegetation structure appears relatively uniform and open, and does not display the dense, structurally intact thicket, renosterveld or alluvial vegetation condition that would be expected in undisturbed examples of the mapped vegetation units. The visible vehicle tracks, fence lines, open pasture-like cover, previous clearing patterns and general absence of well-developed shrub or tree structure support the interpretation of historical agricultural transformation and secondary vegetation recovery.

The main Kromme River channel frontage also appears to be modified or degraded. Aerial imagery and site observations indicate that functional riparian or alluvial woody vegetation has been removed or substantially degraded along much of the immediate channel edge. In several areas, the estuarine margin appears to be dominated by low vegetation, exposed or sparsely vegetated estuarine-edge areas and secondary cover rather than a continuous riparian belt. This reduces the natural buffering, sediment

trapping, bank stabilisation, habitat and filtration functions that would normally be expected along an intact estuarine or alluvial edge.

Although the main Kromme channel frontage is degraded, it remains environmentally sensitive because it is directly connected to the Kromme River Estuary. It should therefore not be treated as an area available for unmanaged disturbance. Rather, it should be considered a sensitive rehabilitation and buffer zone where further vegetation loss, erosion, sedimentation, stormwater concentration and wastewater impacts must be avoided. Rehabilitation of degraded estuarine-margin vegetation should be considered where feasible, using locally appropriate indigenous species and informed by specialist recommendations.

By contrast, the south-eastern portion of the site, particularly along the creek or drainage feature, appears to retain more intact and structurally developed woody riparian or alluvial vegetation. The aerial imagery shows denser thicket or riparian vegetation, including taller shrub and small tree cover, with a more complex canopy structure than the transformed inland graminoid areas. This area appears to correspond more closely with remnant alluvial / riparian vegetation and may represent the most intact remaining expression of the mapped Albany Alluvial Vegetation context on the property. This eastern creek corridor should therefore be treated as a higher-sensitivity area and should be avoided, buffered and protected as far as practicable, subject to confirmation by the aquatic and terrestrial biodiversity specialists.

Non-terrestrial estuarine habitat is mapped along the southern estuarine edge of the site and within the Kromme River system. This confirms that the property is directly influenced by the estuarine receiving environment. Although much of the proposed development footprint may be terrestrial and modified, the proximity of the site to mapped estuarine habitat means that indirect impacts must be carefully assessed and managed. These include stormwater runoff, erosion, sedimentation, wastewater risk, construction disturbance, vegetation clearance, edge effects and potential contamination of the Kromme River Estuary.

Sundays Mesic Thicket is mapped across portions of the broader site context, particularly towards the northern and north-eastern parts of the mapped area. Where thicket-like vegetation occurs on site, it may represent secondary thicket regrowth, retained thicket remnants or transitional vegetation rather than intact representative Sundays Mesic Thicket. The actual condition, species composition and ecological importance of these areas must be confirmed during the terrestrial biodiversity assessment.

Humansdorp Shale Renosterveld is mapped in the wider area of influence to the north and north-west of the site. Although its direct representation within the development footprint appears uncertain based on the transformed and graminoid-dominated condition of much of the property, its mapped presence remains relevant. Renosterveld vegetation types may support geophytes, herbs, graminoids and small shrubs that are seasonal or cryptic and may not be visible throughout the year. However, where the site has been historically cleared, cultivated or otherwise transformed, the existing graminoid-dominated regrowth may not represent intact Humansdorp Shale Renosterveld. This must be specifically verified by the terrestrial biodiversity specialist.

Elands Forest Thicket is mapped in the surrounding landscape to the west and north-west of the property. Based on the vegetation map and aerial review, this unit appears to occur mainly adjacent to or near the property rather than as the dominant vegetation within the proposed development footprint. Its presence remains relevant to the broader receiving environment and ecological connectivity of the area, particularly

where thicket or forest-thicket patches occur along drainage lines, sheltered areas or less disturbed margins.

The site-specific condition of the vegetation must therefore be confirmed through specialist ground-truthing, as the mapped vegetation types do not necessarily reflect present ecological condition at the scale of the development footprint. Farm 838 occurs within a landscape that has experienced historical disturbance, access formation, edge effects, localised vegetation modification, agricultural transformation, previous clearing, infrastructure installation, estuarine influence and surrounding land use pressure. The current vegetation is therefore likely to comprise a mosaic of transformed inland areas, secondary graminoid-dominated regrowth, scattered indigenous regrowth, degraded or modified estuarine-margin areas, and more sensitive retained riparian or alluvial vegetation along the eastern creek.

From an ecological function perspective, the remaining vegetation on Farm 838 is important for the following reasons:

- It contributes to soil stability on sandy, alluvial and estuarine-margin soils.
- It assists with reducing runoff velocity and trapping sediment before stormwater reaches the Kromme River Estuary.
- It provides habitat, refuge and ecological connectivity for fauna, invertebrates and bird species using the estuarine margin, secondary grassland, thicket regrowth and remaining riparian areas.
- It contributes to the buffering of the Kromme River edge and eastern drainage feature from construction and operational disturbance.
- It may contain remnant indigenous species, geophytes, seasonal herbs or thicket and renosterveld species despite the transformed condition of much of the site.
- It supports post-disturbance rehabilitation potential through retained topsoil, rootstock, seedbank and natural recruitment where such material remains viable.

The vegetation sensitivity of the site is therefore variable. Transformed or previously cleared areas dominated by secondary graminoid regrowth are likely to have lower botanical sensitivity than intact representative vegetation of the mapped units. However, the highest sensitivity is associated with retained riparian vegetation along the eastern creek, any remaining estuarine-margin vegetation, drainage pathways, lower-lying areas close to the high water mark, thicket patches, and any confirmed occurrences of protected species or species of conservation concern. The degraded condition of the main Kromme River channel edge also indicates a need for rehabilitation, buffering and careful stormwater management rather than further disturbance of the estuarine edge.

Potential vegetation-related impacts associated with the proposed development include:

- Loss or disturbance of remaining indigenous vegetation within mapped threatened or sensitive vegetation contexts.
- Further degradation of already modified estuarine-margin areas.
- Disturbance of intact riparian or alluvial vegetation along the eastern creek.
- Fragmentation of remaining natural or semi-natural vegetation patches.
- Loss of soil seedbank and reduced natural rehabilitation potential.
- Increased alien invasive plant establishment following disturbance.
- Erosion and sedimentation resulting from vegetation clearance on sandy or alluvial soils.
- Indirect impacts on the Kromme River Estuary through reduced vegetation buffering and increased runoff.

- Potential loss of seasonal or cryptic species that may not be visible outside the optimal flowering or survey period.

The proposed development should therefore follow an avoidance and minimisation approach that is informed by the actual transformed and sensitive areas on site. Development should preferably be located in historically transformed, previously disturbed, low-sensitivity or already modified portions of the property. The retained riparian vegetation along the eastern creek, remaining estuarine-margin vegetation, drainage pathways, alluvial vegetation, thicket regrowth of ecological value and any confirmed sensitive plant species should be avoided and buffered as far as practicable.

Vegetation clearance should be limited to the approved development footprint and should not extend into areas outside the authorised working area. Prior to clearance, the ECO and relevant specialists should inspect the footprint for protected plants, transplantable species, geophytes, species of conservation concern and sensitive vegetation patches. Search and rescue should be undertaken where feasible and appropriate. Topsoil from areas supporting indigenous vegetation or viable seedbank should be carefully stripped, stockpiled separately, protected from erosion and reused in rehabilitation.

Alien invasive plant control should form part of both the construction and operational environmental management requirements. Disturbance creates favourable conditions for alien plant establishment, especially in coastal, alluvial and estuarine environments. Alien invasive species should be removed in accordance with the NEMBA Alien and Invasive Species Regulations, and follow-up clearing should be undertaken until rehabilitation is stable.

Rehabilitation and landscaping should use locally appropriate indigenous species that reflect the verified site condition and the confirmed vegetation units following specialist assessment. Particular attention should be given to reinstating vegetation structure and buffering along the main Kromme River channel edge where riparian vegetation has previously been removed, and protecting and enhancing the more intact riparian vegetation associated with the eastern creek. The use of aggressive lawn or pasture species should be avoided in sensitive natural areas, particularly near the estuarine edge and creek. Where temporary soil stabilisation is required, seed mixes should be used cautiously and should not compromise the recovery of indigenous vegetation or introduce species inappropriate to the receiving environment.

In conclusion, the vegetation context of Farm 838 must be understood as mapped sensitive but site transformed. The 2024 vegetation mapping places the site and its immediate area of influence within a mosaic of Albany Alluvial Vegetation, Sundays Mesic Thicket, Humansdorp Shale Renosterveld, non-terrestrial estuarine habitat and nearby Elands Forest Thicket. However, initial site verification, aerial imagery and ground-truthing indicate that the current on-site vegetation is substantially modified across much of the property as a result of historical agricultural use, previous blanket clearing and earlier development-related infrastructure. The existing vegetation is dominated in many areas by secondary graminoid regrowth and does not appear to fully represent intact examples of the mapped vegetation types. The accuracy and applicability of the 2024 vegetation mapping at site scale is therefore disputed and will be verified, refined and, where necessary, remapped in the terrestrial biodiversity assessment. The assessment should apply a precautionary approach that directs development towards transformed areas, protects the intact riparian or alluvial vegetation along the eastern creek, rehabilitates the degraded Kromme River edge where feasible, controls alien invasive plants, prevents erosion and sedimentation, and uses ecologically appropriate rehabilitation and landscaping.

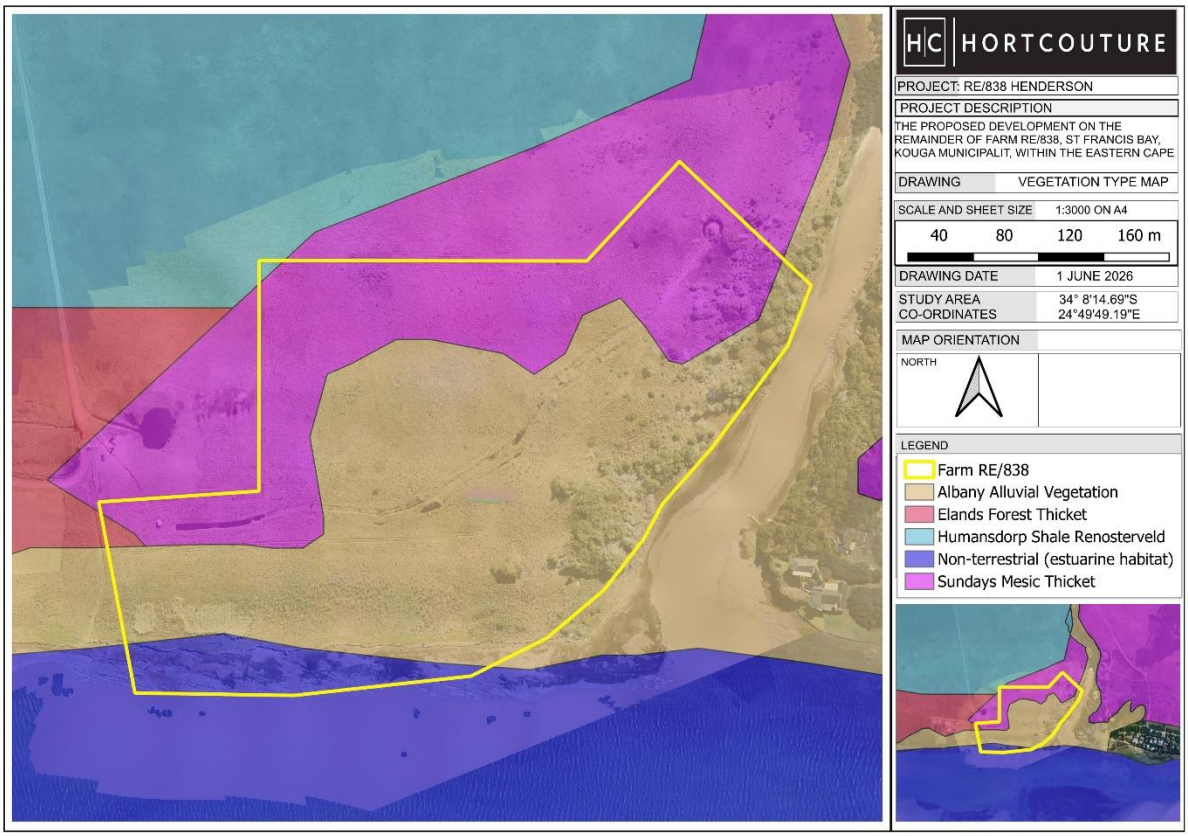


Figure 8 Vegetation map as per the 2024 veg map

Main taxa associated with the mapped vegetation types present on Farm 838

The table below lists principal taxa associated with the vegetation types and habitat units mapped on the attached Farm RE/838 vegetation type map, namely Albany Alluvial Vegetation, Humansdorp Shale Renosterveld, Sundays Mesic Thicket, Elands Forest Thicket and non-terrestrial estuarine habitat. The listed taxa are reference taxa associated with these mapped vegetation and habitat types and do not constitute a confirmed site species list. Actual presence, abundance and condition on Farm 838 must be confirmed through site verification, specialist assessment and pre clearance inspection.

Mapped vegetation type or habitat unit	Biome or habitat context	Growth form or vegetation component	Main taxa associated with the mapped unit	Farm 838 relevance
Albany Alluvial Vegetation	Azonal vegetation associated with alluvial, riparian and floodplain settings	Riparian and alluvial woody vegetation	*Vachellia natalitia, Vachellia karroo, Salix mucronata, Schotia afra, Searsia longispina, Searsia lancea, Diospyros lycioides, Azima tetracantha, Cadaba aphylla*	Mapped across the lower and central parts of the property and most closely linked to the Kromme River margin, drainage, alluvial soils, sediment filtering and estuarine edge

				stability.
Albany Alluvial Vegetation	Azonal vegetation associated with alluvial, riparian and floodplain settings	Shrubs, climbers and succulent elements	*Asparagus striatus, Asparagus suaveolens, Carissa haematocarpa, Lycium cinereum, Amphiglossa callunoides, Cotyledon campanulata, Glottiphyllum longum, Malephora lutea*	Relevant to alluvial shrubland, estuarine edge vegetation and disturbed or semi natural patches. Succulent and shrub taxa should be checked before clearance, especially in less disturbed areas.
Albany Alluvial Vegetation	Azonal vegetation associated with alluvial, riparian and floodplain settings	Graminoids, reeds and wet margin vegetation	*Cynodon dactylon, Sporobolus nitens, Sporobolus virginicus, Digitaria eriantha, Eragrostis curvula, Eragrostis obtusa, Phragmites australis, Juncus kraussii, Cyperus spp.*	Relevant to soil binding, sediment trapping and rehabilitation potential, particularly near the estuarine margin, drainage pathways and seasonally moist lower lying areas.
Albany Alluvial Vegetation	Azonal vegetation associated with alluvial, riparian and floodplain settings	Herbs and seasonal taxa	*Rorippa fluviatilis, Thesium junceum, Haworthia sordida, Orbea pulchella* and other seasonal alluvial herbs where suitable microhabitat remains	Seasonal and cryptic species may be under recorded outside suitable survey periods. This supports a precautionary pre clearance inspection where alluvial vegetation remains.
Humansdorp Shale Renosterveld	Fynbos, renosterveld shrubland and grassland mosaic	Shrub layer	*Elytropappus rhinocerotis, Helichrysum anomalum, Oedera genistifolia, Cliffortia strobilifera, Metalasia densa, Morella serrata, Anthospermum galioides, Barleria pungens, Clutia rubricaulis, Euryops munitus, Felicia filifolia, Hermannia flammea, Indigofera denudata, Indigofera heterophylla, Passerina rubra, Pelargonium sidoides, Tephrosia capensis*	Mapped to the north of the property and overlapping the northern portion of Farm 838. Any intact or semi intact renosterveld remnants should be treated as sensitive due to the Endangered status of the vegetation type.
Humansdorp Shale Renosterveld	Fynbos, renosterveld shrubland and grassland	Geophytes, herbs and seasonal flora	*Bobartia orientalis, Geissorhiza heterostyla, Ledebouria cooperi, Oxalis punctata, Oxalis smithiana, Satyrium*	Renosterveld species richness is often seasonal and may be hidden

	mosaic		*membranaceum, Arctotis acaulis, Berkheya heterophylla, Centella asiatica, Gazania linearis, Gerbera piloselloides, Helichrysum nudifolium, Senecio othonniflorus*	outside flowering periods. Site verification should not rely only on woody cover or dry season visibility.
Humansdorp Shale Renosterveld	Fynbos, renosterveld shrubland and grassland mosaic	Graminoids and restioid elements	*Themeda triandra, Aristida junciformis, Brachiaria serrata, Cymbopogon marginatus, Eragrostis capensis, Eragrostis curvula, Ficinia nigrescens, Ficinia tristachya, Merxmuellera disticha, Pentaschistis pallida, Restio tetragonus, Sporobolus africanus, Tristachya leucothrix*	Useful for identifying residual renosterveld grassland structure, disturbance condition and rehabilitation potential in the mapped northern vegetation unit.
Humansdorp Shale Renosterveld	Fynbos, renosterveld shrubland and grassland mosaic	Notable or conservation significant taxa associated with the vegetation type	*Aloe africana, Delosperma patersoniae, Trichodiadema fourcadei, Cyrtanthus wellandii*	These taxa illustrate the potential conservation importance of remnant renosterveld habitat. Confirmed individuals within or near the footprint should be avoided, rescued or managed as recommended by the specialist.
Sundays Mesic Thicket	Albany Thicket, mesic thicket expression	Thicket trees and tall shrubs	*Euclea undulata, Pappea capensis, Schotia afra, Sideroxylon inerme, Pterocelastrus tricuspidatus, Cassine peragua, Mystroxylon aethiopicum, Dovyalis rhamnoides, Gymnosporia spp., Grewia occidentalis, Searsia spp.*	Mapped along the northern and north eastern vegetation mosaic close to Farm 838. Where this unit occurs within or near the site it should be assessed for thicket structure, woody cover, connectivity and protected tree presence.
Sundays Mesic Thicket	Albany Thicket, mesic thicket expression	Climbers, shrubs and understorey	*Asparagus spp., Rhoicissus tomentosa, Rhoicissus tridentata, Cynanchum spp., Carissa bispinosa, Ehretia rigida, Azima tetracantha, Scutia myrtina*	Relevant to dense thicket clumps, margins and transitional areas. Disturbance can open the canopy and promote alien plant establishment and erosion.
Sundays Mesic	Albany Thicket,	Succulent and	*Aloe africana, Aloe ferox,*	Mesic thicket is

Thicket	mesic thicket expression	graminoid components	*Cotyledon orbiculata, Crassula spp., Panicum maximum, Setaria sphacelata, Digitaria eriantha*	generally less succulent rich than arid thicket, but succulents and grasses can occur in margins and openings. These areas may support natural rehabilitation if retained.
Elands Forest Thicket	Forest and thicket transition vegetation	Forest and thicket canopy trees	*Sideroxylon inerme, Apodytes dimidiata, Olea capensis, Cassine peragua, Pterocelastrus tricuspidatus, Mystroxylon aethiopicum, Euclea natalensis, Euclea racemosa, Mimusops caffra, Scolopia mundii, Tarchonanthus littoralis*	Mapped near the western and south western vegetation mosaic and may be relevant to dense thicket or forest edge patches in the area of influence. Any protected Milkwood should be identified and managed in accordance with applicable permit requirements.
Elands Forest Thicket	Forest and thicket transition vegetation	Understorey shrubs, climbers and lianas	*Dovyalis rhamnoides, Carissa bispinosa, Grewia occidentalis, Maytenus spp., Rhoicissus tomentosa, Asparagus spp., Jasminum angulare, Cynanchum spp., Scutia myrtina*	Important for habitat structure, faunal refuge and connectivity. Forest thicket remnants should be avoided where possible due to slow recovery after clearing.
Elands Forest Thicket	Forest and thicket transition vegetation	Ground layer and edge vegetation	*Panicum maximum, Setaria sphacelata, Oplismenus hirtellus, Pteris spp.* and other shade tolerant herbs and graminoids where suitable microhabitat occurs	Relevant where shaded thicket or forest edge patches occur. Ground layer may be sparse under closed canopy but remains sensitive to trampling and soil disturbance.
Non terrestrial estuarine habitat	Estuarine open water, intertidal and salt marsh habitat	Estuarine macrophytes, reeds and salt marsh plants	*Zostera capensis where suitable submerged habitat occurs, Ruppia spp., Phragmites australis, Juncus kraussii, Sarcocornia perennis, Sporobolus virginicus, Triglochin striata, Cotula*	Mapped along the southern margin adjacent to the Kromme River. This is a receiving environment rather than a terrestrial

			coronopifolia, Limonium spp.	development area and should be avoided and buffered from sediment, stormwater, wastewater and construction disturbance.
Non terrestrial estuarine habitat	Estuarine open water, intertidal and salt marsh habitat	Aquatic and estuarine edge habitat functions	Open water, mudflats, sandbanks, intertidal margins, salt marsh, reedbed and shallow aquatic habitat, with associated algae and estuarine macrophytes	This mapped unit is highly relevant to hydrology, stormwater, erosion control, wastewater management and the high water mark. No direct disturbance should occur unless specifically assessed and authorised.

Source and use note: The mapped units are taken from the attached Farm RE/838 vegetation type map. The taxa listed are representative vegetation type and habitat taxa for DBAR baseline purposes only. They must be verified during site inspection and specialist assessment before vegetation clearance or search and rescue planning.

Updated 2024 Vegetation Map and 2025 NBA Classification, Farm 838

The table below updates the vegetation classification for Farm 838 to reflect the site specific SANBI mapped features shown on the vegetation type map, together with the current transformed condition observed for the property. The mapping indicates a vegetation mosaic comprising Albany Alluvial Vegetation, Sundays Mesic Thicket, Humansdorp Shale Renosterveld, non-terrestrial estuarine habitat and nearby Elands Forest Thicket. However, the site appears largely transformed by historical agricultural practices, previous broad scale clearing and infrastructure associated with a previously approved residential development from approximately 1993, including stormwater and road stabilisation. Current on site vegetation therefore requires specialist verification and should not be assumed to represent intact mapped vegetation.

2018 or previous vegetation reference	**Updated 2024 SANBI mapped feature**	**2025 NBA ecosystem threat status**	**2025 NBA protection level**	**Biome or realm**	**Site specific relevance for DBAR**
Albany Alluvial Vegetation	EN Albany Alluvial Vegetation	Endangered	Confirm against final NBA 2025 terrestrial layer. Previous threatened ecosystem information indicates this	Albany Thicket, azonal alluvial vegetation	Farm 838 is mapped extensively within Albany Alluvial Vegetation, particularly across the central and lower lying portions of the property adjacent to the Kromme River. However, the site appears historically

			ecosystem is not protected or poorly represented.		transformed, with previous blanket clearing and secondary regrowth dominated mainly by graminoids. Riparian vegetation along much of the main Kromme channel appears to have been removed. Remaining alluvial or estuarine margin vegetation should be verified by the aquatic and terrestrial specialists, with particular attention to erosion control, sediment trapping, stormwater movement and rehabilitation potential.
Sundays Mesic Thicket	Sundays Mesic Thicket	Confirm against final NBA 2025 layer. Current mapping indicates this unit in the site context and northern or north eastern mapped area.	Confirm against final NBA 2025 layer.	Albany Thicket	Sundays Mesic Thicket is mapped in the broader site context and may occur as part of the northern or north eastern vegetation mosaic. On site expression may be limited or altered due to historical agricultural disturbance, previous clearing, secondary graminoid regrowth and edge effects. Any thicket like patches or woody regrowth should be assessed on site to determine whether they represent retained indigenous thicket, secondary thicket regrowth or degraded transitional vegetation.
Humansdorp Shale Renosterveld	EN Humansdorp Shale Renosterveld	Endangered	Not Protected	Fynbos, Renosterveld	Humansdorp Shale Renosterveld is mapped in the broader area of influence, particularly towards the northern or north western context of the site. Where this unit overlaps with the property or development footprint, it must be ground truthed because renosterveld

					species may include seasonal geophytes, herbs and graminoids that are not always visible. Due to past clearing and agricultural transformation, current secondary growth may not fully represent intact renosterveld. Specialist verification is required before final sensitivity conclusions are made.
Non terrestrial estuarine habitat	Non terrestrial estuarine habitat, Kromme River Estuary	Relevant estuarine ecosystem status to be confirmed against the NBA 2025 estuarine layer.	Relevant estuarine protection level to be confirmed against the NBA 2025 estuarine layer.	Estuarine realm	Non terrestrial estuarine habitat is mapped along the Kromme River edge and forms part of the direct receiving environment for the site. Even if the proposed development footprint is located on transformed terrestrial areas, indirect impacts to the estuary remain important. Stormwater runoff, erosion, sedimentation, wastewater risk and construction related contamination must be strictly managed. The removal of riparian vegetation along the main Kromme channel increases the need for rehabilitation and buffering of the estuarine edge.
Elands Forest Thicket	Elands Forest Thicket	Confirm against final NBA 2025 layer. Mapped mainly in the surrounding western or north western landscape context.	Confirm against final NBA 2025 layer.	Albany Thicket, forest thicket mosaic	Elands Forest Thicket appears to be mapped mainly adjacent to or near the property rather than as the dominant on site vegetation unit. It remains relevant to the broader ecological context, particularly where thicket or forest thicket elements provide habitat, screening, connectivity or edge buffering. Direct overlap with the development footprint should be

					confirmed by GIS and site verification.
Transformed and secondary vegetation condition	Site transformed condition, not a SANBI vegetation type	Not applicable, represents current condition rather than a vegetation type	Not applicable	Modified terrestrial vegetation	The property appears largely transformed by historical agricultural use, previous blanket clearing and infrastructure installed for a previously approved residential development in approximately 1993. Current vegetation appears to comprise mainly secondary regrowth dominated by graminoids, with scattered indigenous regrowth in places. This condition may not fully represent the mapped vegetation types. The most sensitive remaining vegetation is expected to include intact riparian vegetation along the eastern creek, any remaining estuarine margin vegetation, thicket patches and any confirmed protected species or species of conservation concern.

Source notes: SANBI confirms that NBA 2025 terrestrial ecosystem units are based on the 2024 National Vegetation Map. The mapped vegetation must be read together with the site specific vegetation type map, current transformed site condition, and specialist verification. The EN prefix is treated as indicating Endangered for DBAR screening. Final protection levels and ecosystem classifications should be checked against the final SANBI spatial layer or Screening Tool output before DBAR submission.

The proposed development should therefore follow an avoidance and minimisation approach that is informed by the actual transformed and sensitive areas on site. Development should preferably be located in historically transformed, previously disturbed, low-sensitivity or already modified portions of the property. Retained riparian vegetation along the eastern creek, any remaining estuarine-margin vegetation, drainage pathways, alluvial vegetation, thicket regrowth of ecological value and any confirmed sensitive plant species should be avoided and buffered as far as practicable.

Vegetation clearance should be limited to the approved development footprint and should not extend into areas outside the authorised working area. Prior to clearance, the ECO and relevant specialists should inspect the footprint for protected plants, transplantable species, geophytes, species of conservation concern and sensitive vegetation patches. Search and rescue should be undertaken where feasible and

appropriate. Topsoil from areas supporting indigenous vegetation or viable seedbank should be carefully stripped, stockpiled separately, protected from erosion and reused in rehabilitation.

Alien invasive plant control should form part of both the construction and operational environmental management requirements. Disturbance creates favourable conditions for alien plant establishment, especially in coastal, alluvial and estuarine environments. Alien invasive species should be removed in accordance with the NEMBA Alien and Invasive Species Regulations, and follow-up clearing should be undertaken until rehabilitation is stable.

Rehabilitation and landscaping should use locally appropriate indigenous species that reflect the site's coastal, alluvial, thicket, renosterveld and estuarine-margin context. Particular attention should be given to reinstating vegetation structure and buffering along the main Kromme River channel edge where riparian vegetation has previously been removed, and protecting and enhancing the more intact riparian vegetation associated with the eastern creek. The use of aggressive lawn or pasture species should be avoided in sensitive natural areas, particularly near the estuarine edge and creek. Where temporary soil stabilisation is required, seed mixes should be used cautiously and should not compromise the recovery of indigenous vegetation or introduce species inappropriate to the receiving environment.

In conclusion, the vegetation context of Farm 838 must be understood as both mapped sensitive and site transformed. The updated vegetation mapping shows that the site and its immediate area of influence occur within a mosaic of Albany Alluvial Vegetation, Sundays Mesic Thicket, Humansdorp Shale Renosterveld, non terrestrial estuarine habitat and nearby Elands Forest Thicket. However, the current on-site vegetation appears to have been substantially modified by historical agricultural use, previous blanket clearing and infrastructure associated with a previously approved residential development. The existing vegetation is therefore likely to be dominated in many areas by secondary graminoid regrowth and may not fully represent the mapped vegetation types. Specialist verification is required to confirm actual botanical condition, sensitivity, species composition and appropriate mitigation. The assessment should apply a precautionary approach that directs development towards transformed areas, protects the intact riparian vegetation along the eastern creek, rehabilitates the degraded Kromme River edge where feasible, controls alien invasive plants, prevents erosion and sedimentation, and uses ecologically appropriate rehabilitation and landscaping.

2.6. Eastern Cape Biodiversity Conservation Plan

As indicated in the ECBCP (2019), there are several Terrestrial and Aquatic CBA layers that are generated in the planning process. These layers include:

- Protected Areas (PA);
- Critical Biodiversity Areas (CBA);
- Ecological Support Areas (ESA);
- Other Natural Areas (ONA); and
- No Natural Habitat remaining (NNR).

The following section provides more detailed descriptions of each layer as set out in the ECBCP (2019):

Protected Areas

According to the ECBCP (2019), Protected Areas are areas that have been formally declared or recognised in terms of NEMPAA. This refers to "State owned" reserves, which includes National PAs managed by SANParks, Provincial PAs managed by Eastern Cape Parks and Tourism Agency, municipal reserves, Private Nature Reserves, and Protected Environments. A number of municipal and provincial reserves have not been formally proclaimed under any legislation, but are zoned accordingly in relevant Spatial Development Frameworks and are recognised as de facto Protected Areas.

Conservation Areas were limited to DAFF forest reserves along the Wild Coast.

Critical Biodiversity Areas (CBAs)

According to the ECBCP (2019), CBAs are selected to meet biodiversity targets for species, ecosystems and ecological processes and include:

- Critically Endangered and Endangered Ecosystems;
- Critical linkage points (bottle-necks or pinch-points) in the corridor network; and
- All areas required to meet biodiversity targets and to ensure future persistence of species, ecosystems and special habitats.

CBAs are areas of high biodiversity value and should therefore be maintained in a natural state, with no further loss of habitat.

Ecological Support Areas (ESAs)

According to the ECBCP (2019), ESAs are areas NOT essential for meeting biodiversity targets, but are essential in terms of:

- Terrestrial landscape: Ensuring connectivity between CBAs, strengthening climate change resilience, and proper function of ecosystem infrastructure for delivery of ecosystem services. From a terrestrial perspective, ESAs may include riparian areas, coastal corridors, ridges, etc.
- Aquatic landscape: ESAs extend into catchments that are essential for the maintenance of CBA rivers and wetlands.

ESAs need to be maintained in a semi-natural, if not natural, state.

Other Natural Areas (ONAs)

ONAs are areas in a natural or near natural state that have not been identified as priority areas in the current plan. ONAs still support biodiversity and deliver ecosystem services.

No Natural habitat Remaining (NNR)

NNR areas that are heavily, permanently, modified and are no longer considered natural. Although some biodiversity and ecological function may be retained, irreversible impacts on biodiversity mean that they cannot contribute towards targets. In addition, the ECBCP (2019) categorises the terrestrial biodiversity using set criteria. The table below highlights the different Map categories based this criterion.

Map Category	Criteria headings	Description of criteria
PROTECTED AREAS	Protected Areas	Biosphere Reserves.
		World Heritage Sites.
		State Owned - SANParks, ECPTA or Municipal.
		Protected Environments.

		Marine Protected Areas.
		Private Nature Reserves.
CONSERVATION AREAS	**Conservation Areas**	DAFF forest reserves.
Terrestrial CBAs and ESAs		
CBA 1	**Critical Patches**	1. Critically Endangered ecosystems (SA VEG MAP2012), 2. National Forest Inventory including critically endangered/high priority forest patches and priority forestclusters
	Irreplaceable Sites	Irreplaceable Sites (selection frequency>80%) – planning units were selected to meet targets for: (1) vegetation types, (2) species points and (3) expert areas.
	Special habitats	Bat roost sites and 500m radius.
		Cape Vulture breeding colonies and roost sites (500m buffer).
		Bearded Vulture nests (500m buffer).
CBA 2	**Forest**	All other forests.
	MARXAN analysis	Best Design Sites (selection frequency<80%) - Planning Units selected to meet targets for: (1) vegetation types, (2) species points, (3) expert areas.
	Special habitats	Selected cliffs buffered by 100m.
ESA 1	**Forest**	CBA1 forest patch 500m buffer.
	Special habitats	Cliff buffers 500m.
	Ecological Corridor	Other sites required to complete the ecological corridor network.
	Eastern Cape corridors	Best Design Corridor Sites - Planning units selected to meet 60% targets for vegetation types.
		Nodes used for corridor network analysis.
	Ecological infrastructure	Climate change refugia.
		Coastal functional zone.
		Climate change resilience.
ESA 2	Where there is no natural habitat remaining in an area that would have been designated as a CBA 1, CBA 2 or ESA1, it is designated as an ESA 2.	
ONA	All remaining natural areas not included in the above CBA or ESA categories	
NNR	These are areas that are considered to have been irreversibly modified or impacted and which do not contribute to maintain biodiversityor ecological processes. These include: settlement areas, croplands, mining areas, forest plantation, derived from the Eastern Cape 2017 Integrated Land Cover Map	

The ECBCP (2019) refers to the land-use and development guidelines in relation to the spatial planning and decision-making. In this regard, the desired state and management protocol is related to the CBA category categorised in the mapping. It is recommended in the ECBCP (2019) that each category should be described with due regard for its desired state and the management objectives to be followed to achieve the desired state. The following tables indicates the required categories and management objectives:

CBA MAP CATEGORY	DESIRED STATE	LAND MANAGEMENT OBJECTIVE
Protected Areas	Natural	Protected Areas are managed through Protected Area Management Plans and are therefore not managed through the ECBCP2019.
Critical Biodiversity Area 1	Natural	Maintain in a natural state (or near-natural state if this is the current condition of the site) that secures the retention of biodiversity pattern and ecological processes: For areas classified as CBA1, the following objectives must apply: • Ecosystem and species must remain intact and undisturbed; • Since these areas demonstrate high irreplaceability, if disturbed or lost, biodiversity targets will not be met; • Important: these biodiversity features are at, or beyond, their limits of acceptable change. If land use activities are unavoidable in these areas, and depending on expert opinion of the condition of the site, a Biodiversity Offset must be designed and implemented.
Critical Biodiversity Area 2	Natural	Maintain in natural (or near-natural state if this is the current condition of the site) that secures the retention of biodiversity pattern and ecological processes: For areas classified as CBA2, the following objectives must apply: • Ecosystem and species must remain intact and undisturbed; • There is some flexibility in the landscape to achieve biodiversity targets in these areas. It must be noted that the loss of a CBA2 area may elevate other CBA 2 areas to a CBA 1 category. • These biodiversity features are at risk of reaching their limits of acceptable change. If land use activities are unavoidable in these areas, and depending on the condition of the site, set-aside areas must be designed in the layout and implemented. If site specific data confirms that biodiversity is significant, unique and/or highly threatened or that a Critically Endangered or Endangered species is present, Biodiversity Offsets must be implemented.
Ecological Support Area 1	Functional	Maintain ecological function within the localised and broader landscape. A functional state in this context means that the area must be maintained in a semi-natural state such that ecological function and ecosystem services are maintained. For areas classified as ESA1, the following objectives apply: • These areas are not required to meet biodiversity targets, but they still perform essential roles in terms of connectivity, ecosystem service delivery and climate change resilience. • These systems may vary in condition and maintaining function is the main objective, therefore: • Ecosystems still in natural, near natural state should be maintained.

		• Ecosystems that are moderately disturbed/degraded should be restored.
Ecological Support Area 2	Functional	Maintain current land use with no intensification For areas classified as ESA2, the following objectives apply: • These areas have already been subjected to severe and/or irreversible modification • These areas are not required to meet biodiversity targets, but they may still perform some function with respect to connectivity, ecosystem service delivery and climate change resilience Objective is to maintain remaining function, therefore: • Areas should not undergo any further deterioration in ecological function. • Opportunities to change land use practices to improve ecological function (i.e. cultivation agriculture to livestock grazing agriculture) are desirable in ESA2 areas.
Other Natural Areas and No Natural Habitat Remaining	Production	No desired state or management objective is provided for ONA or NNR.

(ECBCP, 2019)

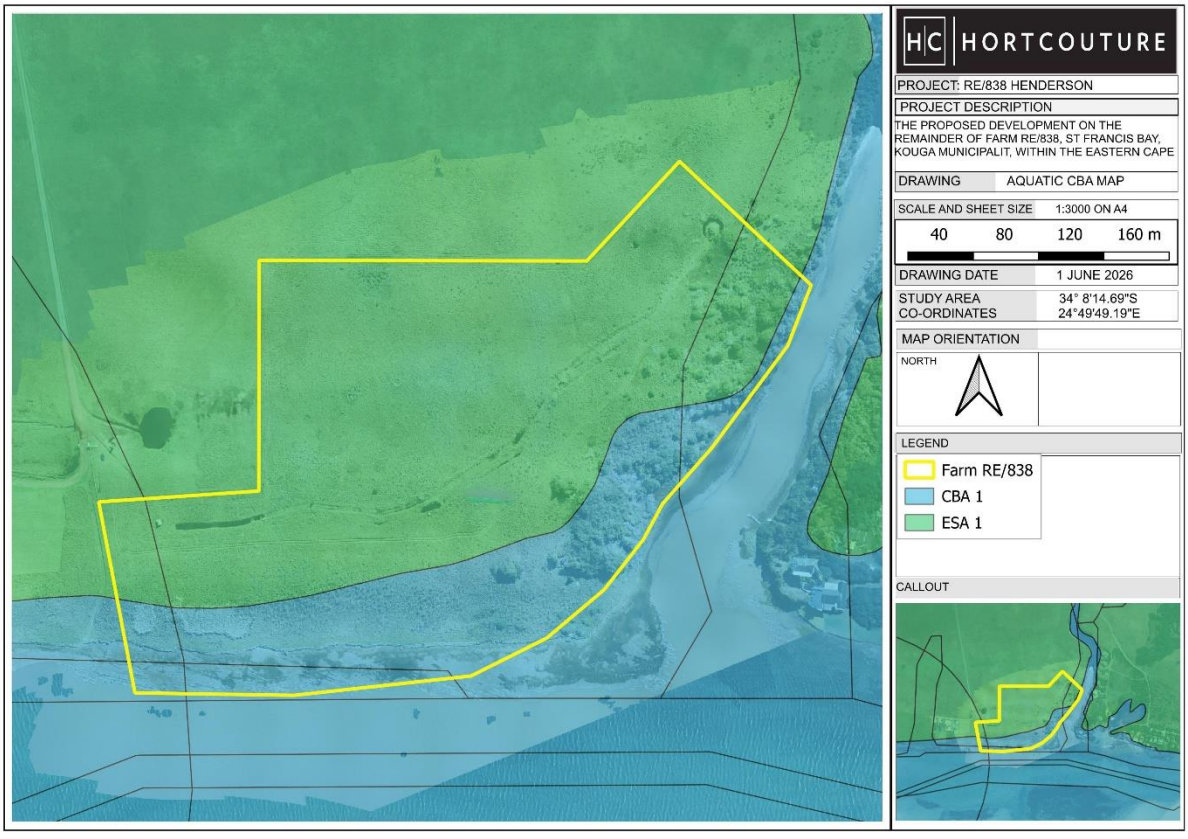


Figure 9 Aquatic Biodiversity

The proposed development site on the Remainder of Farm 838 is situated within the St Francis Bay and lower Kromme River area of the Kouga Local Municipality. The site occurs within a sensitive coastal and estuarine landscape where terrestrial biodiversity, aquatic biodiversity, estuarine habitat, alluvial vegetation, riparian functioning, stormwater movement and land use planning must be considered together.

The Eastern Cape Biodiversity Conservation Plan, ECBCP, provides the provincial biodiversity spatial planning framework for identifying Critical Biodiversity Areas, Ecological Support Areas, Other Natural Areas and areas where No Natural Habitat remains. These spatial biodiversity planning categories are intended to guide land use planning and environmental decision-making by identifying areas required to meet biodiversity targets, maintain ecological processes and support sustainable development.

The aquatic CBA map indicates that the majority of Farm RE/838 falls within an Aquatic Ecological Support Area 1, while the lower-lying southern and south-eastern portions of the property, including the estuarine edge and areas adjacent to the Kromme River channel, fall within an Aquatic Critical Biodiversity Area 1. The aquatic CBA 1 area broadly corresponds with the Kromme River Estuary and its immediately associated margin, confirming that the southern portion of the property is directly linked to a sensitive aquatic and estuarine receiving environment.

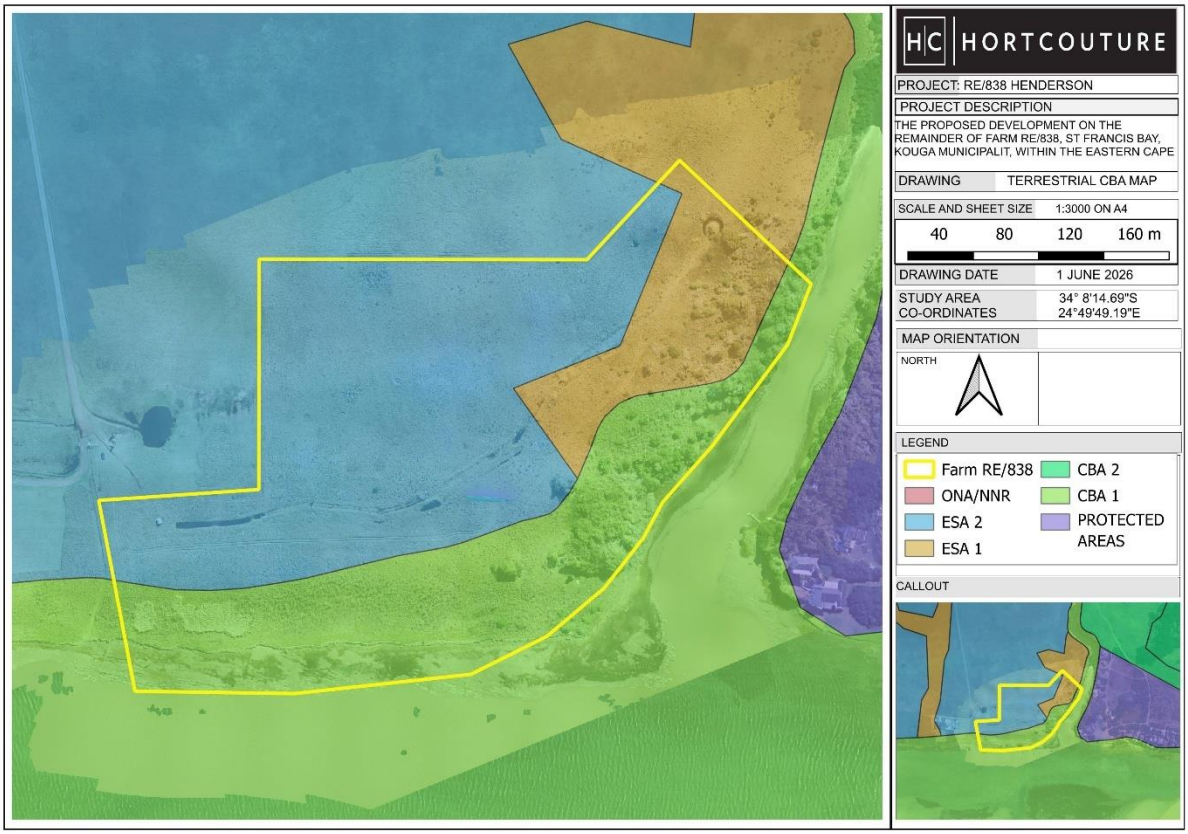


Figure 10 Terrestrial Biodiversity

The terrestrial CBA map indicates that the property is also situated within a mixed terrestrial biodiversity planning context. The western and north-western portions of the property are mapped largely as Terrestrial

Ecological Support Area 2, the northern and north-eastern portions are mapped as Terrestrial Ecological Support Area 1, and the southern and eastern portions closer to the Kromme River and estuarine edge are mapped as Terrestrial Critical Biodiversity Area 1. This confirms that the site and surrounding area form part of a terrestrial and aquatic biodiversity planning mosaic, with the highest mapped biodiversity sensitivity associated with the Kromme River edge, estuarine interface and adjacent lower-lying areas.

For the purposes of the DBAR, the ECBCP land use guidance must be interpreted in light of the actual site condition. Although the site and its immediate area of influence are mapped within sensitive biodiversity planning categories, the property appears to be substantially transformed by historical agricultural practices, earlier broad-scale vegetation clearing and works associated with a previously approved residential development dating to approximately 1993. Infrastructure reportedly installed at that time included stormwater and road stabilisation elements. The current vegetation condition is therefore not considered to represent pristine or intact mapped vegetation across the entire site.

The site appears to comprise a mosaic of transformed areas, secondary graminoid-dominated regrowth, scattered indigenous regrowth, removed or degraded riparian vegetation along the main Kromme River channel, and more intact riparian vegetation along the creek or drainage feature in the eastern portion of the site. This means that the mapped biodiversity categories and vegetation types should not be interpreted as a direct and complete reflection of present-day site condition. They remain important planning triggers, but must be refined through site sensitivity verification and specialist input.

The development proposal is for low-intensity tourism and accommodation use rather than conventional urban expansion or an intensive residential township. Within the ECBCP land use guideline framework, low impact tourism, recreation and accommodation are generally more compatible with biodiversity-sensitive areas than higher-intensity urban land uses, provided that the development is carefully sited, footprint-limited, clustered where appropriate, serviced responsibly and managed through strict environmental controls.

The following interpretation is therefore relevant to Farm 838:

- The site is located in a sensitive terrestrial and aquatic biodiversity planning context associated with the Kromme River Estuary.
- The aquatic CBA map indicates Aquatic CBA 1 along the lower southern and south-eastern estuarine edge of the property, with Aquatic ESA 1 over the balance of the property.
- The terrestrial CBA map indicates Terrestrial CBA 1 along the eastern and southern estuarine interface, with Terrestrial ESA 1 and ESA 2 across the remaining portions of the site.
- The site is not in a pristine condition and appears to have been substantially transformed by historical land use and previous development-related works.
- Remaining natural or semi-natural areas, especially the intact riparian vegetation along the eastern creek, the estuarine margin, drainage pathways and any representative indigenous vegetation remnants, must be treated as sensitive.
- Previously transformed or cleared portions of the site should be prioritised for development placement, subject to specialist confirmation.
- The main Kromme River channel edge, where riparian vegetation has reportedly been removed, should not be treated as an opportunity for further unmanaged disturbance, but rather as an area requiring careful stormwater control, edge stabilisation and rehabilitation where feasible.
- The eastern creek and associated intact riparian vegetation should be avoided, buffered and protected as far as practicable.

- All estuarine and aquatic receiving environments must be protected from sedimentation, polluted runoff, wastewater seepage, erosion and construction disturbance.

The ECBCP land use categories of "Not Appropriate" and "Restricted" must therefore be understood as decision-support categories rather than automatic prohibitions. Where land uses are identified as not appropriate or restricted within CBA or ESA contexts, the intention is to prevent biodiversity loss, avoid degradation of ecological support areas and ensure that any development proposal is subjected to detailed specialist assessment, strict avoidance and mitigation measures, footprint reduction and, where necessary, set-aside or offset considerations.

In this context, development on Farm 838 should only proceed where the final layout demonstrates that the proposal:

- Uses previously transformed or degraded areas wherever possible.
- Avoids intact riparian vegetation and sensitive estuarine-margin habitat.
- Avoids or minimises development within the mapped Aquatic CBA 1 and Terrestrial CBA 1 areas as far as practicable.
- Maintains ecological and hydrological functioning of the Kromme River Estuary and eastern creek.
- Limits the development footprint and avoids unnecessary vegetation clearance.
- Manages stormwater in a dispersed, attenuated and sediment-controlled manner.
- Prevents wastewater, sewage, greywater, hydrocarbons, cement wash water and other pollutants from reaching the estuary or creek.
- Provides for alien invasive plant control and ecological rehabilitation.
- Is informed by terrestrial biodiversity, plant species and aquatic specialist input.
- Is implemented under an approved EMPr with ECO oversight.

The relevant ECBCP land use guideline interpretation for Farm 838 is summarised below.

Type of development	Associated land use activity	SPLUMA / land use purpose	Biodiversity planning context	ECBCP interpretation	Site specific application to Farm 838
Low intensity tourism and accommodation	Small scale guest accommodation, sleeper units, access, services, stormwater, landscaping and associated infrastructure	Special / tourism / low density accommodation	Aquatic ESA 1 over much of the site, Aquatic CBA 1 along the estuarine edge, Terrestrial ESA 1 and ESA 2 over much of the property and Terrestrial CBA 1 along the Kromme River interface	Restricted in sensitive biodiversity planning areas unless specialist assessment demonstrates that impacts can be avoided, minimised and managed	The proposed development should be directed to previously transformed and historically cleared portions of the property. The footprint must be limited, clustered where possible and informed by specialist verification.

Other urban influence / residential type infrastructure	Buildings, access, services, roads, stormwater infrastructure and hardened surfaces	Residential / tourism-supporting infrastructure	Terrestrial CBA / ESA and Aquatic CBA / ESA sensitivity context	Not appropriate or restricted where it results in loss or degradation of important biodiversity or ecological support areas	Development should not be treated as conventional urban expansion. Infrastructure should be low impact, footprint-limited and located away from intact riparian vegetation, the eastern creek and sensitive estuarine-margin areas.
Aquatic or estuarine margin disturbance	Stormwater outlets, earthworks, vegetation clearance, services, access and construction activity near the high water mark, creek or drainage pathways	Aquatic interface / estuarine edge	Aquatic CBA 1 and Terrestrial CBA 1 along the Kromme River edge and lower estuarine margin	Restricted and subject to specialist assessment, avoidance, buffers and strict mitigation	No unmanaged disturbance should occur along the Kromme River edge or eastern creek. Stormwater must be attenuated, dispersed and treated before discharge. Sediment controls must be installed before earthworks.
Rehabilitation and ecological management	Alien clearing, stabilisation, indigenous landscaping, reinstatement of vegetation buffers, erosion control	Environmental management / open space support	CBA / ESA support areas and estuarine receiving environment	Compatible where it improves ecological condition and supports biodiversity objectives	Rehabilitation should focus on stabilising transformed areas, controlling alien invasive plants, improving the degraded main Kromme River edge where

					feasible and protecting the intact eastern riparian corridor.

Note: The table should be read with the aquatic and terrestrial CBA mapping for Farm 838 and refined through site sensitivity verification and specialist input.

In terms of regional biodiversity importance, the site falls within the broader Maputaland-Pondoland-Albany biodiversity hotspot, a region recognised for high levels of biodiversity and endemism and for the convergence of several major vegetation systems, including subtropical thicket, forest, grassland and coastal ecosystems. This regional setting reinforces the need to avoid unnecessary loss of remaining indigenous vegetation and to maintain ecological processes, even on sites that have been historically modified.

The Farm 838 site is also located within a sensitive estuarine area of influence. The Kromme River Estuary is a key ecological, recreational and landscape feature of St Francis Bay. Development within this context must therefore ensure that land use does not result in cumulative degradation of estuarine functioning, bank stability, water quality, sediment dynamics, riparian habitat or visual character.

The following biodiversity planning principles should guide the assessment and final layout:

- Maintain and protect intact riparian vegetation, particularly along the eastern creek.
- Avoid further degradation of the Kromme River edge and rehabilitate degraded estuarine margins where feasible.
- Restrict development to transformed or lower-sensitivity areas as far as possible.
- Avoid unnecessary development within the mapped Aquatic CBA 1 and Terrestrial CBA 1 areas.
- Avoid unnecessary development below relevant flood, high water mark or estuarine setback thresholds.
- Maintain natural drainage patterns and prevent concentrated runoff.
- Protect ecological corridors associated with the estuary, creek and drainage pathways.
- Remove and manage alien invasive plants.
- Use locally appropriate indigenous species for rehabilitation and landscaping.
- Ensure that specialist findings inform the final site development plan and EMPr.

In conclusion, the ECBCP and biodiversity planning context do not automatically exclude the proposed low-intensity tourism development on Farm 838, but they do require a cautious and evidence-based approach. The aquatic and terrestrial CBA maps confirm that the site falls within a mixed biodiversity planning context, with Aquatic ESA 1 and Terrestrial ESA 1 / ESA 2 across large portions of the site, and Aquatic CBA 1 and Terrestrial CBA 1 associated with the Kromme River estuarine edge. The site also shows clear evidence of historical transformation. The appropriate planning response is therefore not blanket exclusion of development, but careful placement within transformed areas, avoidance of intact riparian and estuarine-margin habitat, strict stormwater and erosion control, rehabilitation of degraded areas, specialist verification and enforceable EMPr conditions.

CBA Map Category, Desired State and Land Management Objectives

CBA map category	Desired state	Land management objective	Site specific application to Farm 838
Critical Biodiversity Area 1, Terrestrial	Natural or near natural, where this is the current condition	Maintain in a natural or near natural state that secures the retention of biodiversity pattern and ecological processes. For areas classified as CBA 1, the following objectives generally apply: Ecosystems, species and ecological processes should remain intact and undisturbed. Biodiversity features are highly irreplaceable. Further loss or degradation may compromise biodiversity targets. Where land use activities are unavoidable, detailed specialist assessment is required to confirm the actual site condition, ecological sensitivity, species composition and mitigation requirements. Depending on the sensitivity and residual impact, avoidance, strict footprint reduction, set aside areas, rehabilitation and, where necessary, biodiversity offset requirements may need to be considered.	The terrestrial CBA map indicates that Terrestrial CBA 1 is primarily associated with the eastern and south eastern portion of Farm 838, along the Kromme River interface and lower estuarine margin. This area is also closely associated with remaining riparian or estuarine margin habitat and the more sensitive drainage and creek environments. Although the property is substantially transformed in places through previous agricultural activity, historical blanket clearing and earlier infrastructure associated with a previously approved residential development, the CBA 1 areas should still be treated as sensitive until verified by specialist assessment. Development should avoid intact riparian vegetation, the eastern creek and any remaining representative indigenous vegetation in this zone. Where the CBA 1 area has already been transformed, rehabilitation, stormwater control, alien plant management and erosion prevention should be prioritised.
Critical Biodiversity Area 1, Aquatic	Natural or near natural, where this is the current condition	Maintain in a natural or near natural state that secures aquatic biodiversity pattern, hydrological processes, water quality, estuarine functioning and ecological connectivity. For aquatic CBA 1 areas, the following objectives generally apply: Aquatic ecosystems and	The aquatic CBA map indicates that Aquatic CBA 1 occurs along the southern and south eastern estuarine edge of Farm 838, associated with the Kromme River Estuary and adjacent lower lying estuarine margin. This is the most sensitive aquatic planning zone on the site. Although riparian vegetation along portions of the

		associated riparian or estuarine habitats should remain intact and functional. Direct disturbance should be avoided. Sedimentation and pollution must be prevented. Hydrological functioning must not be compromised. Where activities are unavoidable, specialist aquatic assessment, conservative buffers, strict stormwater and erosion controls, and rehabilitation measures are required.	main Kromme channel appears to have been historically removed, this does not reduce the need to protect the estuarine edge. The area should be managed to prevent further disturbance, erosion, sedimentation, polluted runoff, wastewater seepage and uncontrolled access. Any development or infrastructure within proximity to this area must be strongly motivated, footprint limited and informed by aquatic specialist input. Rehabilitation of degraded estuarine margin areas should be considered where feasible.
Ecological Support Area 1, Terrestrial	Functional, semi natural where applicable	Maintain ecological function within the local and broader landscape. ESA 1 areas are not necessarily required to meet biodiversity pattern targets in the same way as CBAs, but they perform important roles in supporting ecological processes, landscape connectivity, climate resilience, runoff moderation, habitat linkage and buffering of more sensitive biodiversity areas. Natural or near natural ESA 1 areas should be maintained, while moderately disturbed or degraded areas should be restored where feasible.	The terrestrial CBA map indicates that Terrestrial ESA 1 occurs across portions of Farm 838, particularly towards the northern and north eastern sections of the property and adjoining the CBA 1 estuarine interface. These areas may have been modified by previous agricultural use and historical clearing, but still form part of the ecological support landscape surrounding the Kromme River Estuary. Development in ESA 1 areas should be carefully sited within already disturbed or transformed portions, avoid unnecessary vegetation clearance, maintain drainage patterns, and retain any indigenous regrowth or thicket / riparian linkage where feasible. Rehabilitation and alien plant control should be used to improve ecological function.
Ecological Support Area 2, Terrestrial	Functional, supporting landscape connectivity	Maintain or restore ecological function where required. ESA 2 areas generally provide supporting	The terrestrial CBA map indicates that Terrestrial ESA 2 occurs over much of the western and north western portion of Farm 838.

	and ecological processes	ecological functions at a broader landscape scale and may include areas that are more modified than ESA 1, but which still contribute to connectivity, buffering, water movement, climate adaptation and biodiversity persistence. Land use activities may be more flexible than in CBA areas, but must still avoid unnecessary degradation and must incorporate appropriate mitigation and rehabilitation measures.	These areas appear to correlate broadly with historically transformed or cleared portions of the property, including areas where secondary graminoid dominated regrowth is present. Subject to specialist confirmation, these areas are likely to be more suitable for accommodating development than the CBA 1 estuarine edge or intact riparian areas. Development should still remain footprint limited, should avoid any remaining sensitive vegetation patches, and should include stormwater, erosion and rehabilitation controls to prevent indirect impacts on the Kromme River Estuary.
Ecological Support Area 1, Aquatic	Functional	Maintain ecological function within the local and broader aquatic landscape. A functional state means that the area must be maintained in a semi natural condition, or rehabilitated where degraded, so that aquatic ecosystem services, drainage, runoff filtration, sediment trapping, connectivity and climate resilience are maintained. For ESA 1 areas, ecosystems still in a natural or near natural state should be maintained, while moderately disturbed or degraded ecosystems should be restored where feasible.	The aquatic CBA map indicates that Aquatic ESA 1 covers much of Farm 838 outside the immediate Aquatic CBA 1 estuarine edge. This confirms that the wider property remains hydrologically connected to the Kromme River Estuary through surface runoff, drainage pathways, sandy or alluvial soils, stormwater movement and the eastern creek system. Development within Aquatic ESA 1 should be located preferentially within transformed areas and must include strict stormwater attenuation, sediment trapping, erosion control, wastewater safeguards and rehabilitation. The intact riparian vegetation along the eastern creek should be avoided and protected, as it contributes directly to aquatic ecological support function.
Other Natural Areas or No Natural Habitat	Compatible with sustainable	Other Natural Areas may retain some ecological value and should be managed to	Where site verification confirms historically transformed areas, previous blanket clearing, road

Remaining, where mapped or verified	land use, subject to ecological verification	avoid unnecessary degradation. No Natural Habitat Remaining areas are typically transformed areas where biodiversity pattern targets are no longer represented, although such areas may still provide limited ecological support functions, particularly where they occur near watercourses, estuaries or sensitive receiving environments. Development should preferably be directed to transformed areas, but this must not result in unmanaged indirect impacts on adjacent CBAs or ESAs.	stabilisation, stormwater infrastructure or secondary graminoid regrowth with low botanical sensitivity, these areas should be prioritised for the development footprint. However, even transformed areas on Farm 838 remain within the area of influence of the Kromme River Estuary and must be managed to prevent sedimentation, contaminated runoff, alien plant spread and further degradation of the estuarine edge or eastern creek.
Overall site interpretation for Farm 838	Mixed sensitivity, transformed in part but within sensitive aquatic and terrestrial planning context	Apply avoidance, minimisation, rehabilitation and specialist verification. The planning objective is to direct development away from intact or higher sensitivity areas and into transformed or lower sensitivity areas, while maintaining ecological and hydrological function across the site.	The site should not be described as uniformly natural or uniformly transformed. The correct interpretation is that Farm 838 falls within a sensitive terrestrial and aquatic biodiversity planning context, but the current site condition appears substantially modified in places by historical agricultural practices, previous blanket clearing and earlier development related infrastructure. Specialist input is required to verify the actual ecological condition and to distinguish between lower sensitivity transformed areas, secondary regrowth, degraded estuarine margin areas, intact riparian vegetation along the eastern creek, and any remaining representative indigenous vegetation. The final layout should avoid the eastern creek and sensitive estuarine margin, prioritise transformed areas, limit the footprint, manage stormwater and wastewater strictly, and

			include rehabilitation and alien invasive plant control.

Feature Summary and Environmental Planning Context for Farm 838

The table below provides a site-specific summary for the Remainder of Farm 838, St Francis Bay, based on the mapped vegetation, aquatic and terrestrial CBA context, observed transformed site condition and Kromme River estuarine setting. Items marked for confirmation should be checked against the final Screening Tool report, specialist assessments and current spatial datasets before DBAR submission.

FEATURE	DESCRIPTION	IMPLICATIONS / COMMENT
National Environmental Screening Tool	Screening Tool themes for Farm 838 must be confirmed from the project-specific Screening Tool report. Given the site locality and available mapping, elevated sensitivities are expected for the aquatic biodiversity, terrestrial biodiversity and plant species themes, with additional likely sensitivity for archaeology / cultural heritage and palaeontology due to the coastal and estuarine setting.	The Screening Tool output should be appended to the DBAR and used to confirm final specialist requirements. Based on the available site information, aquatic, terrestrial biodiversity and plant species input should be retained. Animal species considerations should be addressed through the terrestrial biodiversity assessment. Any heritage or palaeontological sensitivity should be addressed through the appropriate heritage screening, NID or specialist process where required.
National Vegetation Map, 2018 / previous desktop reference	Previous broad-scale vegetation mapping for the area should not be used on its own to describe current on-site vegetation condition. The site has experienced historical agricultural transformation, earlier blanket clearing and infrastructure works associated with a previously approved residential development dating to approximately 1993.	Older vegetation mapping should be treated as contextual only. The site-specific assessment must rely on the updated 2024 SANBI mapped vegetation, the 2025 NBA classification and ground-truthing by the relevant specialist.
National Vegetation Map, 2024	The updated vegetation type map for Farm 838 and its immediate area of influence indicates a vegetation mosaic comprising Albany Alluvial Vegetation, Sundays Mesic Thicket, Humansdorp Shale Renosterveld, non terrestrial estuarine habitat associated with the Kromme River Estuary, and Elands Forest Thicket in the surrounding mapped	The mapped vegetation context confirms that the site occurs within a sensitive coastal, alluvial, thicket, renosterveld and estuarine transition zone. However, mapped vegetation does not equal current site condition. Specialist verification is required because much of the property appears transformed and dominated by secondary graminoid regrowth.

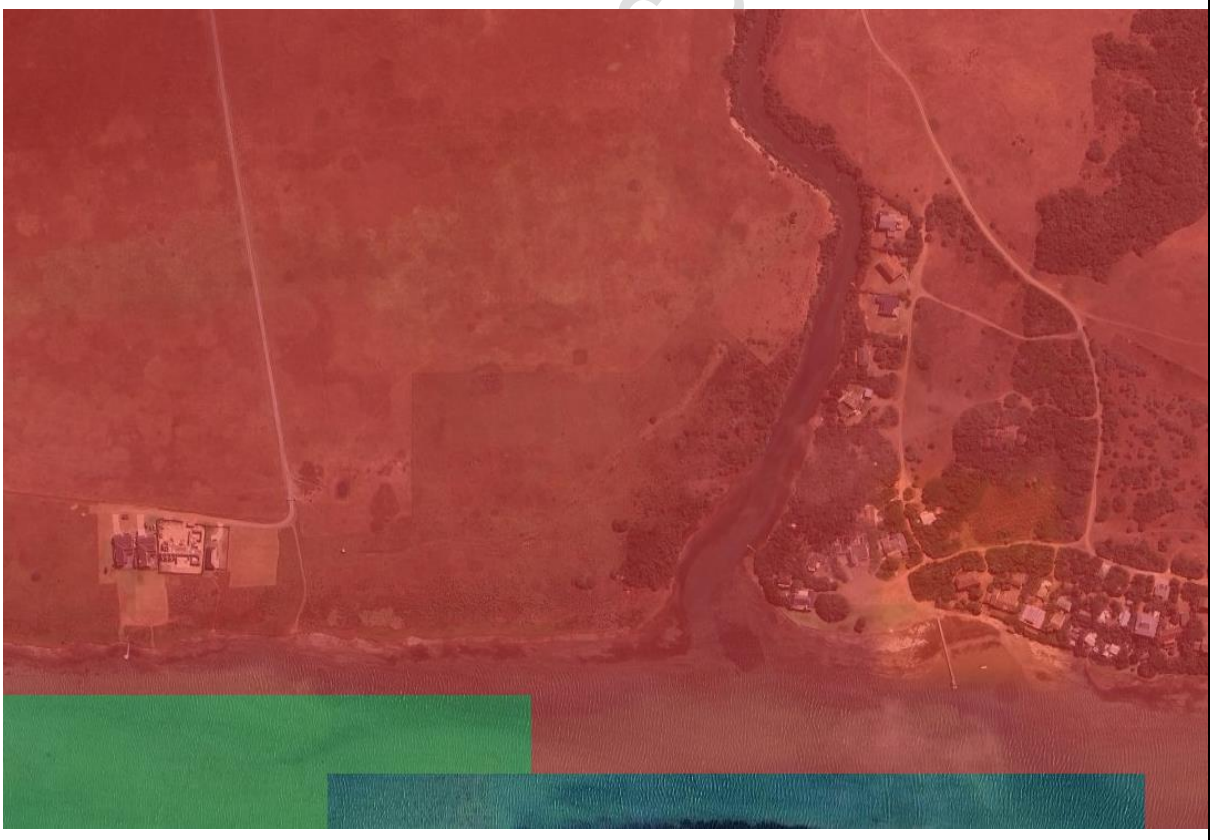
	landscape.	
2025 NBA Ecosystem Threat Status	The site-specific SANBI mapped features include EN_Albany Alluvial Vegetation and EN_Humansdorp Shale Renosterveld. The EN prefix indicates an Endangered ecosystem threat status. The Kromme River Estuary and associated non terrestrial estuarine habitat form part of the sensitive receiving environment.	The Endangered mapping supports a precautionary approach, footprint minimisation, avoidance of intact representative vegetation, protection of riparian and estuarine-margin areas, and rehabilitation of disturbed areas. Final ecosystem threat status and protection level should be checked against the final NBA 2025 / Screening Tool spatial output before DBAR submission.
Site vegetation condition	The property appears largely transformed by historical agricultural practices, previous broad-scale clearing and development-related infrastructure. The current vegetation appears to comprise secondary regrowth, primarily graminoids, with scattered indigenous regrowth. Riparian vegetation along the main Kromme River channel appears to have been removed, while more intact riparian vegetation remains along the creek in the eastern portion of the site.	The site should not be described as pristine or as fully representative of the mapped vegetation types. Development should be directed to transformed and historically cleared areas, while the eastern creek, intact riparian vegetation, estuarine edge and any remaining representative indigenous vegetation should be avoided and protected.
Eastern Cape Biodiversity Conservation Plan, 2019, Aquatic CBA Map	The aquatic CBA map indicates Aquatic ESA 1 over much of Farm 838, with Aquatic CBA 1 along the lower southern and south-eastern estuarine edge associated with the Kromme River Estuary and adjacent margin.	Aquatic CBA 1 and the estuarine edge should be treated as the highest aquatic sensitivity area. Development must avoid unmanaged disturbance of the estuarine margin, prevent sedimentation and polluted runoff, and include strict stormwater attenuation, erosion controls, wastewater safeguards and rehabilitation.
Eastern Cape Biodiversity Conservation Plan, 2019, Terrestrial CBA Map	The terrestrial CBA map indicates a mixed biodiversity planning context. Terrestrial ESA 2 occurs across much of the western and north-western portion of the property, Terrestrial ESA 1 occurs towards the northern and north-eastern portions, and Terrestrial CBA 1 is associated with the eastern and southern Kromme River interface and lower estuarine margin.	The mapped terrestrial CBA 1 areas should be avoided as far as practicable, particularly where they coincide with riparian vegetation, the eastern creek or estuarine-margin habitat. ESA areas may accommodate low-impact development where specialist input confirms transformation or lower sensitivity, subject to footprint minimisation and strict environmental controls.

Regional planning, STEP and broader thicket / coastal landscape context	Farm 838 occurs within the broader Eastern Cape coastal and thicket landscape associated with the St Francis Bay and Kromme River environment. The site includes mapped thicket, alluvial and renosterveld components in the surrounding landscape.	Regional biodiversity planning reinforces the need to maintain ecological corridors, protect estuarine and riparian functions, avoid unnecessary vegetation clearance and manage cumulative impacts within the lower Kromme River landscape.
Protected Areas, SAPAD	No formally protected area is understood to occur directly within the Farm 838 development footprint. The wider St Francis Bay, Kromme River and coastal landscape includes conservation areas and sensitive coastal open space systems that contribute to regional biodiversity value.	The proposed development is not expected to directly affect a protected area, but indirect impacts on ecological connectivity, estuarine functioning and landscape character must be avoided through appropriate layout, stormwater control, vegetation retention and rehabilitation.
National Protected Area Expansion Strategy, NPAES	The direct overlap with NPAES priority areas must be confirmed against the current spatial dataset. The site is, however, located within a biodiversity-sensitive coastal and estuarine landscape.	Where any NPAES or expansion priority is confirmed, the layout should avoid the most sensitive areas and retain functional ecological linkages. This must be checked during final spatial screening.
Strategic Water Source Areas, SWSA	No site-specific SWSA overlap has been confirmed from the information currently available.	If the Screening Tool or specialist assessment confirms no SWSA overlap, this feature is not expected to create a specific development constraint. Stormwater and water quality controls remain essential because of the Kromme River Estuary.
Freshwater Ecosystem Priority Areas, FEPA	The Kromme River Estuary and associated drainage and estuarine-margin areas form the key aquatic receiving environment for the site. FEPA overlap must be confirmed against current freshwater and estuarine spatial datasets.	Regardless of final FEPA status, the project must prevent sedimentation, erosion, wastewater seepage and contaminated runoff entering the estuary or eastern creek. Aquatic specialist input should confirm the relevant freshwater / estuarine management requirements.
Regional Hotspots and Regions of Endemism	The site falls within the broader Maputaland-Pondoland-Albany biodiversity hotspot, a region recognised for high biodiversity value, endemism and the convergence of multiple vegetation	The regional hotspot context supports a precautionary approach to indigenous vegetation loss, habitat fragmentation and cumulative coastal development pressure. The transformed nature of the site reduces but does not remove the need for

	systems including thicket, forest, grassland, fynbos / renosterveld and coastal ecosystems.	specialist verification and sensitive layout planning.
Important Bird Areas, IBA	No direct Important Bird Area overlap has been confirmed for the Farm 838 development footprint from the information presently available.	The estuarine setting may still support birds associated with the Kromme River, riparian vegetation and open estuarine habitat. Construction disturbance, lighting, noise and vegetation clearance should be managed to reduce impacts on estuarine and riparian bird use.
Ramsar sites	No Ramsar wetland overlap has been identified for the site based on the information presently available.	No direct Ramsar-related implication is anticipated, but the estuarine receiving environment remains sensitive and must be protected.
Within 32 m of watercourses	Portions of the site and possible infrastructure are located within 32 m of the Kromme River, the estuarine margin, and / or the eastern creek or drainage feature. The exact extent must be confirmed by aquatic delineation and layout overlay.	Activities within 32 m of a watercourse may trigger listed activities and require strict mitigation. Development near the eastern creek and estuarine edge should be avoided where practicable, with buffers, stormwater control, erosion prevention and rehabilitation applied.
Within 100 m of rivers / estuarine high-water mark	The property directly adjoins the Kromme River Estuary and falls within the regulated proximity of the high-water mark and estuarine environment.	Development, earthworks, services, landscaping and stormwater infrastructure within 100 m of the estuary are environmentally sensitive and may trigger listed activities. Final layout must be assessed against the high-water mark, estuarine edge, flood / inundation risk and aquatic specialist recommendations.
Within 100 m of estuaries	Farm 838 is directly associated with the Kromme River Estuary and its estuarine margin. Non terrestrial estuarine habitat is mapped along the southern edge of the site and in the adjoining river system.	This is a key site constraint. The DBAR and EMPr must address estuarine water quality, sediment movement, stormwater attenuation, wastewater safeguards, erosion control, setback interpretation, rehabilitation and construction-phase exclusion from sensitive areas.
Within 500 m of wetlands	Potential wetland, creek, drainage or estuarine-margin features must be confirmed by the aquatic specialist. The eastern creek and lower-lying estuarine margin are the most relevant hydrological features	If wetland or riparian indicators are confirmed, appropriate buffers, avoidance and authorisation requirements must be applied. The eastern creek should be protected as a sensitive aquatic / riparian feature.

	identified from the site context.	
Forest elements	Elands Forest Thicket is mapped in the surrounding landscape to the west and north-west of the property. It does not appear to be the dominant mapped unit within the main development footprint but may contribute to ecological connectivity in the broader landscape.	Any thicket or forest-thicket patches on or adjacent to the site should be verified and avoided where feasible. Protected tree or forest-related requirements should be checked during specialist site inspection.
Surrounding land uses	The surrounding land use context includes the Kromme River Estuary, low-density coastal / riverine development, open or undeveloped land, historically transformed agricultural areas, and sensitive estuarine or riparian habitats.	The proposed development should respond to the low-intensity coastal and estuarine context. Layout and design should avoid creating an urbanised edge, protect visual and landscape character, prevent stormwater impacts, and use transformed portions of the property preferentially.

2.7. Paleontological and heritage resources



Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

The proposed development site on the Remainder of Farm 838 is located within the lower Kromme River and St Francis Bay area of the Kouga Local Municipality. The site is situated within a coastal and estuarine landscape that has experienced historical agricultural use, previous vegetation clearing and earlier development-related disturbance associated with a previously approved residential development dating to approximately 1993. While the site does not presently indicate obvious above-ground heritage features, the broader coastal and estuarine setting requires that archaeological, cultural heritage and palaeontological considerations be addressed as part of the Basic Assessment process.

Palaeontological sensitivity

The National Web-based Environmental Screening Tool identifies the palaeontology theme as Very High for the proposed development area. In addition, the SAHRIS Palaeontological Sensitivity Map indicates that the broader site and surrounding area fall within a moderate to very high palaeontological sensitivity context. This means that fossil-bearing geological formations or sediments may be present within the area of influence, and that subsurface palaeontological material could potentially be encountered during excavation, trenching, foundation preparation, service installation, access construction, stormwater works or other ground disturbance activities.

The site-specific geology mapping for Farm 838 indicates that the property is underlain by Algoa geology, which is consistent with a coastal and estuarine substrate setting. The mapped soils are PL2 soils, and the site is low-lying, gently sloping towards the Kromme River Estuary. The development area has also been subject to historical agricultural disturbance and previous vegetation clearing. These factors may reduce the likelihood of intact near-surface fossil material in already disturbed areas, but they do not exclude the possibility of fossil remains being present below the disturbed soil profile or within undisturbed subsurface sediments.

A site visit did not identify any visible fossil material or palaeontologically significant surface finds. No obvious palaeontological features were observed in exposed surface areas. However, the absence of visible fossils during a site inspection does not confirm the absence of palaeontological resources,

particularly where fossil material may be buried below the surface and only exposed during construction-related excavations.

Given the Very High palaeontological sensitivity returned by the Screening Tool, palaeontological sensitivity must be addressed through the heritage process and specialist input. A heritage screening report will be prepared by a suitably qualified heritage specialist, and a Notice of Intent to Develop, NID, will be submitted to the Eastern Cape Provincial Heritage Resources Authority, ECPHRA, for comment and direction. The NID process will allow ECPHRA to determine whether any further heritage, archaeological or palaeontological assessment, mitigation, monitoring or permitting is required before commencement of the proposed development.

Archaeological and cultural heritage sensitivity

The National Screening Tool returns a lower sensitivity for archaeological and cultural heritage themes, and no discernible archaeological, cultural or historic features were identified during the site inspection. No buildings, structures, graves, stone artefact scatters, shell middens, cultural landscape features or other visible heritage indicators were identified within the assessed development footprint during the site visit.

A desktop consideration of the site's known historical context did not identify any specific cultural or archaeological features directly associated with the property. However, the site is located in a coastal and estuarine landscape, and such environments may be associated with historical occupation, shell middens, archaeological deposits, old pathways, informal burial locations, historical farming remains or other features that may not be visible at surface level. The transformed and previously cleared condition of the site may also have obscured or disturbed surface indicators.

Accordingly, while the archaeological and cultural heritage sensitivity of the site appears to be low based on available information and site inspection, a precautionary approach remains necessary. Subsurface archaeological material, graves, human remains or other heritage resources may still be uncovered during earthworks. This is particularly relevant where excavations extend into previously undisturbed soil profiles, lower-lying estuarine-margin sediments or areas not previously affected by agricultural or development-related disturbance.

Heritage screening and NID process

A heritage screening report will be compiled by a suitably qualified heritage practitioner to consider the heritage, archaeological, cultural landscape and palaeontological context of the proposed development site. The purpose of the screening report will be to determine the likely heritage sensitivity of the site, assess whether any visible or known heritage indicators are present, consider the Screening Tool sensitivities, and provide a professional recommendation on whether further specialist heritage studies are required.

Following completion of the heritage screening report, a Notice of Intent to Develop will be submitted to ECPHRA for review and comment. The NID submission will provide the heritage authority with the opportunity to consider the proposed development and determine whether:

- No further heritage studies are required.
- A heritage impact assessment is required.

- A palaeontological assessment or palaeontological desktop assessment is required.
- An archaeological assessment is required.
- Specific mitigation, monitoring or chance-find procedures must be implemented.
- Any permit requirements or additional heritage authority conditions must be addressed.

The final DBAR and EMPr must be updated, where required, to reflect any comment, instruction or requirement issued by ECPHRA. No construction-related disturbance should commence until the required heritage process has been completed and the competent authority has considered the relevant heritage input.

Conclusion

The heritage sensitivity of the site is considered low in respect of visible archaeological, cultural and historical features, as no discernible heritage resources were identified during the site inspection and the Screening Tool indicates low sensitivity for these themes. However, this does not exclude the possibility of subsurface archaeological or cultural material being uncovered during earthworks.

By contrast, the palaeontological sensitivity of the site is regarded as important due to the Very High palaeontology sensitivity returned by the National Screening Tool and the moderate to very high sensitivity indicated by SAHRIS palaeontological mapping. Although no fossil material was identified during the site visit, palaeontological resources may occur below the surface and may only become visible during excavation or construction.

A heritage screening report will therefore be prepared by a suitably qualified heritage specialist, and a Notice of Intent to Develop will be submitted to ECPHRA for comment and possible further action. The outcome of the ECPHRA process must be incorporated into the Basic Assessment and EMPr, where required. The proposed development may proceed only subject to the completion of the required heritage process, implementation of a heritage and fossil chance-find protocol, contractor induction, ECO oversight and immediate reporting of any finds to the relevant heritage authority.

2.8. Socio-economic Profile

The Kouga Local Municipality falls within the Sarah Baartman District Municipality in the Eastern Cape Province and is located west of the Nelson Mandela Bay metropolitan area. The municipal area includes a number of established coastal, inland and rural settlements, including Jeffreys Bay, Humansdorp, St Francis Bay, Cape St Francis, Oyster Bay, Hankey, Patensie, Loerie and Thornhill, together with smaller rural settlements and agricultural nodes. Kouga's settlement pattern is therefore characterised by a combination of coastal tourism towns, inland service centres, agricultural settlements and dispersed rural communities.

The municipal economy has traditionally been strongly influenced by tourism, agriculture, property development, services and coastal recreation. Kouga Municipality also notes that, while the region has historically been characterised by economic activities focused on tourism and agriculture, it is increasingly positioning itself as one of South Africa's energy hubs, with wind farms already in operation and additional renewable energy projects in the pipeline.

The proposed Farm 838 development is located within the St Francis Bay and lower Kromme River area. St Francis Bay and Cape St Francis function as coastal tourism and residential settlements within the municipal hierarchy and form part of the municipality's broader coastal economy. The local area is associated with holiday accommodation, second homes, marine and estuarine recreation, tourism services, hospitality, small-scale commercial activity, construction, maintenance services and seasonal employment linked to the visitor economy.

Kouga Municipality settlement hierarchy

The settlement hierarchy of Kouga Municipality reflects the distribution of primary service centres, secondary coastal and inland nodes, rural settlements and smaller local nodes. The hierarchy may be summarised as follows:

Primary Nodes
Humansdorp
Jeffreys Bay
Secondary Nodes
Hankey
Patensie
St Francis Bay / Cape St Francis
Rural Nodes
Oyster Bay
Loerie
Thornhill
Other Nodes
Maatjiesfontein
Melon
Longmore Forest Village
Cambria
Andrieskraal

Humansdorp and Jeffreys Bay operate as the principal economic and service hubs within the municipality. Humansdorp functions as an important inland service centre supporting the surrounding agricultural areas and coastal settlements, while Jeffreys Bay is a major coastal town and tourism destination. St Francis Bay and Cape St Francis form an important secondary coastal node, with a strong tourism, leisure, hospitality and property-related economy.

The Kouga municipal area is socially and economically diverse. Population growth, coastal migration, seasonal tourism demand and the expansion of urban and peri-urban settlement areas place ongoing pressure on municipal infrastructure, housing, roads, water, sanitation, waste management and coastal environmental systems. The municipality's Integrated Development Plan remains the key planning instrument guiding municipal budgeting, housing, roads, water, sanitation, community facilities and service delivery priorities.

The Kouga region's coastal settlements are attractive to permanent residents, retirees, seasonal visitors, holiday homeowners and tourists. This contributes positively to the local economy through construction activity, accommodation demand, hospitality, retail, maintenance services and recreational tourism. It also

creates seasonal fluctuations in service demand, particularly in coastal settlements such as St Francis Bay, Cape St Francis, Oyster Bay and Jeffreys Bay.

The climate and natural environment of Kouga support both tourism and agriculture. Kouga Municipality describes the regional climate as subtropical and conducive to outdoor activities and agricultural production, with rainfall ranging from approximately 650 mm per year in the St Francis Bay area to approximately 400 mm in the Gamtoos River Valley. The area is also generally described as windy. These climatic conditions support outdoor recreation and coastal tourism, but also require development to respond appropriately to wind exposure, stormwater, erosion risk and climate resilience.

Agriculture remains important in the wider municipal economy, particularly in the Gamtoos Valley, Hankey, Patensie, Loerie and surrounding rural areas. Coastal tourism, hospitality, residential development, property services, construction, estuarine recreation and small business activity are more prominent in the St Francis Bay and Cape St Francis local economy. The proposed Farm 838 development therefore occurs within a local economic setting where low-intensity tourism accommodation is consistent with the broader coastal tourism character of the area, provided that environmental impacts are appropriately avoided, mitigated and managed.

Site-specific socio-economic context

The Remainder of Farm 838 is situated adjacent to the Kromme River Estuary within the St Francis Bay area. The property is zoned for agricultural use, but occurs within a broader coastal and estuarine landscape where tourism, recreation, holiday accommodation and low-density residential uses form part of the surrounding area's socio-economic character. The site has also been historically affected by agricultural practices, previous vegetation clearing and infrastructure associated with a previously approved residential development dating to approximately 1993.

The proposed development comprises low-intensity tourism and accommodation infrastructure. From a socio-economic perspective, the development has the potential to contribute to the local economy through short-term construction employment, use of local contractors, procurement of materials and services, operational employment, tourism accommodation supply, rates and service revenue, and increased support for local businesses in St Francis Bay, Cape St Francis and Humansdorp.

Potential positive socio-economic effects include:

- Temporary construction-phase employment and contractor opportunities.
- Use of local suppliers, plant hire, materials, security, maintenance and landscaping services.
- Operational employment associated with accommodation management, cleaning, maintenance and guest services.
- Support for the local tourism and hospitality economy.
- Improved productive use of a historically transformed and partly disturbed property.
- Potential rehabilitation and environmental management of degraded portions of the site, including estuarine-edge stabilisation and alien plant control.
- Potential negative socio-economic effects may include:
- Increased local traffic during construction and operation.
- Nuisance impacts such as noise, dust, visual intrusion and construction disturbance.
- Pressure on municipal or on-site services if water, sanitation, waste and access are not properly designed.

- Potential conflict with neighbouring landowners or river users if visual, access, privacy, stormwater or ecological impacts are not well managed.
- Risk of cumulative pressure on the Kromme River Estuary if development is not appropriately located and controlled.

The socio-economic benefits of the proposed development are therefore dependent on responsible design and implementation. The project should prioritise local employment and procurement where feasible, maintain a low-intensity development character, avoid unnecessary expansion of the development footprint, protect the Kromme River Estuary, manage construction impacts, and ensure that water, wastewater, stormwater, access and waste systems are appropriately designed.

Local tourism and development context

St Francis Bay and Cape St Francis are established tourism and recreation destinations within Kouga. The area is strongly associated with coastal holidays, boating, estuarine recreation, surfing, fishing, walking, nature-based tourism and accommodation. The Kromme River Estuary is an important ecological, recreational and landscape asset that contributes to the identity and economy of the area.

The proposed development is therefore aligned in principle with the local tourism economy, but only if it remains low impact and compatible with the environmental sensitivity of the estuarine setting. In this regard, the development should not be assessed only in terms of direct economic contribution, but also in terms of its ability to maintain the environmental quality that underpins the local tourism economy.

The Kromme River Estuary is a key socio-economic and environmental resource. It supports recreation, visual amenity, property value, biodiversity, ecosystem services and the broader sense of place of St Francis Bay. Any degradation of water quality, riparian vegetation, bank stability, estuarine functioning or visual character could undermine both environmental and socio-economic values. The proposed development must therefore be implemented in a manner that protects the estuary and avoids cumulative negative impacts.

Development need and desirability

The proposed development may be considered desirable from a socio-economic perspective where it supports low-intensity tourism, makes use of a historically transformed property, contributes to local employment and services, and remains compatible with the character of the St Francis Bay tourism economy. The development should, however, be subject to the findings of the Basic Assessment process, specialist input, municipal planning requirements and environmental authorisation conditions.

The need and desirability of the proposal should be assessed against the following considerations:

- The development should support the local tourism economy without creating an urban-scale development footprint.
- The layout should prioritise previously transformed or disturbed areas.
- The development should protect the Kromme River Estuary and associated riparian or estuarine-margin vegetation.
- The project should not result in unacceptable pressure on municipal services or on-site environmental infrastructure.

- Wastewater, stormwater and waste management must be designed to avoid pollution of the estuary.
- Construction and operational impacts must be managed through an approved EMPr.

The project should contribute positively to local employment, procurement and tourism services where feasible.

Conclusion

The Kouga municipal economy is shaped by tourism, agriculture, property development, services and an emerging renewable energy sector. St Francis Bay and Cape St Francis function as important secondary coastal nodes within this municipal economy, with tourism, recreation, accommodation, construction and property services forming key local economic activities.

The proposed Farm 838 development has the potential to make a limited but positive socio-economic contribution through construction-phase work, operational employment, local procurement and additional low-intensity tourism accommodation. However, the site is located within a sensitive Kromme River estuarine setting, and the socio-economic benefits of the development depend on the protection of the very environmental resources that support the local tourism and property economy.

Accordingly, the proposed development should be considered acceptable from a socio-economic perspective only where it is implemented as a low-intensity, environmentally responsive development that is located primarily within transformed areas, protects the estuarine edge and eastern creek, avoids unnecessary vegetation clearance, manages stormwater and wastewater responsibly, and contributes to the local tourism economy without degrading the environmental character of the St Francis Bay and Kromme River area.

3. FEASIBLE AND REASONABLE ALTERNATIVES

"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;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that

realistic alternatives have not been considered to a reasonable extent.

Project Alternatives and Motivation

The consideration of feasible and reasonable alternatives forms an important part of the Basic Assessment process. In terms of the EIA Regulations, alternatives may include different means of meeting the general purpose and requirements of the proposed activity, including alternatives relating to the property or location, the type of activity, the design or layout, the technology to be used, operational aspects, and the option of not implementing the activity.

For the proposed low-intensity tourism accommodation development on the Remainder of Farm 838, the alternatives assessment has been informed by the purpose and need of the proposed activity, the applicant's interest in developing this specific property, the existing site condition, and the environmental sensitivity of the receiving environment. The site is located within the lower Kromme River and St Francis Bay area, within a sensitive coastal and estuarine landscape. It is also located within mapped terrestrial and aquatic biodiversity planning areas, including Aquatic ESA 1 over much of the site, Aquatic CBA 1 along the estuarine edge, Terrestrial ESA 1 and ESA 2 over much of the property, and Terrestrial CBA 1 along the Kromme River interface.

The alternatives assessment also takes into account that the property is not pristine. The site appears to have been substantially transformed by historical agricultural practices, previous blanket clearing, and infrastructure associated with a previously approved residential development dating to approximately 1993. Existing or historical infrastructure reportedly includes stormwater elements and road stabilisation. The current vegetation condition appears to include secondary graminoid-dominated regrowth, areas of scattered indigenous regrowth, degraded or removed riparian vegetation along the main Kromme River channel, and more intact riparian vegetation associated with the eastern creek.

The alternatives considered are therefore directed toward achieving the proposed low-intensity tourism accommodation activity in the least environmentally damaging practicable manner. The primary focus has been on layout, footprint, construction method, technology, servicing and operational management alternatives within the property.

Property or Location Alternatives

The proposed activity is site-specific, as the applicant seeks to develop the Remainder of Farm 838 for low-intensity tourism accommodation. Alternative properties were therefore not considered feasible or reasonable, as they would not meet the applicant's purpose and need in relation to the use of this specific property.

The assessment has consequently focused on the realistic and practicable alternatives available within the site, particularly the selection of the preferred development footprint, the placement of the proposed accommodation units, the avoidance of sensitive features, the servicing approach and the operational management of the development.

Activity Alternatives

Activity alternatives were considered at a conceptual level. A more intensive residential development, larger tourism facility, resort-style development or higher-density accommodation model would result in a larger development footprint, increased vegetation clearance, greater servicing requirements, increased traffic, higher visual exposure and a greater risk of impact on the Kromme River Estuary and associated aquatic and terrestrial biodiversity features.

These higher-intensity activity alternatives were therefore not preferred.

The preferred activity is a low-intensity tourism accommodation development comprising four accommodation units and associated low-impact infrastructure. This activity is considered more compatible with the transformed condition of portions of the property and the sensitivity of the surrounding estuarine environment. The reduced scale of the activity allows the development footprint to be limited, avoids unnecessary bulk infrastructure, and supports a design response that can be informed by the mitigation hierarchy.

Location and Layout Alternatives

Layout alternatives represent the primary alternatives considered for this application. The original development concept included a larger number of possible chalet locations. Each proposed chalet position was assessed in terms of environmental sensitivity, physical feasibility and servicing practicality. The purpose of this assessment was to identify the four least environmentally damaging practicable chalet positions.

The layout assessment considered the following criteria:

- Degree of existing disturbance and whether the position falls within previously cleared or transformed land.
- Extent of vegetation clearance required.
- Proximity to the Kromme River Estuary, the high-water mark and the eastern creek.
- Presence or absence of intact riparian vegetation.
- Mapped aquatic and terrestrial CBA and ESA sensitivity.
- Potential impact on mapped vegetation types, including Albany Alluvial Vegetation, Humansdorp Shale Renosterveld, Sundays Mesic Thicket, Elands Forest Thicket and estuarine habitat.
- Slope, ground stability and constructability.
- Potential for stormwater runoff and sediment movement toward the estuary.
- Access feasibility and the ability to use or align with historically disturbed access areas.
- Visual exposure and compatibility with the Kromme River landscape character.
- Servicing feasibility, including water, energy, wastewater, access and maintenance requirements.
- Ability to avoid the more intact riparian vegetation along the eastern creek.
- Ability to avoid further unmanaged disturbance of the degraded main Kromme River edge.

The outcome of the layout alternatives assessment was the selection of four preferred chalet positions. These positions are considered to represent the most appropriate balance between development feasibility and environmental avoidance. The preferred layout directs development

toward areas that are comparatively more transformed or of lower sensitivity, while avoiding or minimising impacts on the most sensitive riparian, estuarine-margin and aquatic features.

The preferred layout therefore supports the mitigation hierarchy by avoiding sensitive areas where possible, minimising the development footprint, reducing the need for vegetation clearance, limiting earthworks, improving stormwater management and allowing for rehabilitation and environmental management of degraded areas.

Design and Construction Method Alternatives

Design and construction method alternatives were considered in light of the sensitive estuarine setting and the need to reduce construction disturbance.

The preferred construction method is to undertake the works predominantly by hand or through manual labour methods. Heavy construction machinery will not be retained on site and will only be used where strictly necessary, approved and properly managed for specific construction tasks.

Manual construction methods are preferred because they:

- Reduce soil compaction and disturbance.
- Limit the need for wide construction access routes.
- Reduce the risk of damage to surrounding vegetation.
- Reduce noise and dust impacts.
- Limit the risk of fuel, oil or hydraulic leaks from heavy plant.
- Allow for more controlled construction within a sensitive landscape.
- Reduce the overall construction footprint.

The proposed accommodation units will be constructed using materials that are visually recessive and compatible with the surrounding coastal and estuarine landscape. Materials will include brick and plaster, timber decking, metal roof sheeting, natural stone or similar approved materials. The material palette should use natural and muted tones to reduce visual intrusion and to ensure that the structures blend into the surrounding landscape as far as practicable.

Highly reflective materials, visually intrusive colours, extensive hard surfacing and construction methods requiring unnecessary cut and fill should be avoided.

Technology and Services Alternatives

Technology alternatives were considered in relation to electricity supply, water supply, wastewater treatment, stormwater management and operational servicing. The preferred technology alternative is an off-grid, low-service-impact development model that avoids unnecessary bulk infrastructure and reduces operational pressure on municipal services.

Electricity Supply

The preferred electricity supply alternative is off-grid renewable energy, primarily solar power with battery storage. This avoids the need for new Eskom electrical infrastructure, reduces reliance on

the national electricity grid, and limits the need for additional service trenches or bulk supply infrastructure across the site.

Water Supply

Rainwater harvesting will be incorporated to supply operational water requirements where feasible. This approach reduces the demand for potable water and supports a lower-impact operational model. Water demand should be further reduced through low-flow fittings, water-efficient appliances, responsible guest management and ongoing maintenance of tanks, gutters, filters and pumps.

Wastewater Treatment and Reuse

Effluent treatment is a key technology consideration due to the site's proximity to the Kromme River Estuary, mapped aquatic sensitivity and potential shallow groundwater or moisture-influenced soil conditions. The preferred wastewater alternative is the implementation of on-site wastewater treatment package plant systems designed to treat effluent generated by the proposed development to an appropriate standard.

The treated effluent will be reused within the development where feasible, including for toilet flushing, irrigation of landscaped or rehabilitated areas, and other appropriate recycling uses. This approach reduces potable water demand, limits wastewater disposal requirements and supports a more sustainable and resource-efficient operational model.

The wastewater treatment package plant systems must be designed, installed, operated and maintained to ensure reliable treatment performance and to prevent seepage, overflow, odour, groundwater contamination, polluted surface runoff or discharge of untreated or inadequately treated effluent into the Kromme River Estuary or associated drainage features. Treated water reuse must be undertaken in a controlled manner and must not result in ponding, runoff, nuisance conditions, salinity build-up, soil saturation or indirect contamination of surface or groundwater resources.

The final wastewater treatment and reuse design must be prepared or confirmed by an appropriately qualified engineer and must comply with all applicable municipal, health, environmental and water resource requirements. The system must include appropriate capacity, backup measures, monitoring, maintenance access and operational management procedures to ensure long-term functionality and protection of the receiving environment.

Stormwater Management

Stormwater management is a critical technology and design consideration for the site because the land generally drains toward the Kromme River Estuary and the eastern creek. The preferred approach is a low-impact stormwater design that disperses, slows, attenuates and treats runoff before it can reach the estuarine receiving environment.

Stormwater measures may include permeable surfaces, vegetated swales, level spreaders, sediment traps, roof water harvesting, energy dissipation structures, controlled discharge points,

silt barriers during construction and progressive stabilisation of disturbed areas. Direct discharge of untreated or sediment-laden runoff into the Kromme River Estuary or eastern creek must not be permitted.

Operational Alternatives

Operational alternatives relate to how the development will function after construction and how potential impacts will be managed over time. The preferred operational alternative is a low-impact management model that incorporates environmental control into the daily functioning of the development.

The preferred operational approach includes:

- Off-grid renewable energy operation.
- Rainwater harvesting and water conservation.
- Reuse of treated effluent for toilet flushing, irrigation and other appropriate recycling uses.
- Regular maintenance of wastewater treatment systems.
- Controlled stormwater management.
- Waste minimisation, separation and lawful disposal.
- Avoidance of uncontrolled access to sensitive riparian and estuarine-margin areas.
- Alien invasive plant control.
- Rehabilitation and maintenance of disturbed areas.
- Protection of the eastern creek and associated intact riparian vegetation.
- Rehabilitation and stabilisation of degraded areas along the main Kromme River edge where feasible.
- Ongoing environmental monitoring and compliance with the EMPr.

This operational model is preferred because it reduces demand on bulk services, reduces the risk of pollution, supports water efficiency, and aligns the proposed development with the sensitive estuarine context of Farm 838.

No-Go Alternative

The no-go alternative entails retaining the status quo, with no new tourism accommodation development being implemented on the site. This alternative must be retained as the baseline against which the impacts of the preferred alternative are assessed.

The environmental advantages of the no-go alternative include:

- No additional vegetation clearance for new development.
- No new earthworks, foundations, access works or service trenches.
- No additional construction-phase disturbance.
- No additional risk of sedimentation, erosion, stormwater impact or wastewater failure.
- No further potential disturbance to the Kromme River estuarine environment.
- No additional visual or landscape character impact.

However, the no-go alternative must also be considered in light of the current condition and history of the site. The property appears to have been substantially transformed by historical agricultural practices, previous broad-scale clearing and earlier development-related

infrastructure. Riparian vegetation along the main Kromme River channel appears to have been removed or degraded in places, while much of the site appears to support secondary graminoid-dominated regrowth rather than intact representative vegetation of the mapped vegetation types.

Under the no-go alternative, the site would remain in its current condition and no structured opportunity would necessarily arise for improved environmental management, alien invasive plant control, erosion stabilisation, rehabilitation of degraded estuarine edges, formal stormwater management or long-term monitoring. The no-go alternative would also not realise potential socio-economic benefits associated with low-intensity tourism accommodation, including local construction employment, operational employment, procurement, maintenance services and support for the St Francis Bay tourism economy.

The no-go alternative is therefore the lowest-impact alternative in terms of avoiding new development disturbance, but it does not address the existing transformed or degraded condition of the site and does not provide the socio-economic benefits associated with the proposed development.

Motivation for the Preferred Alternative

The preferred alternative comprises the development of four low-intensity tourism accommodation units and associated infrastructure, located in the least environmentally damaging practicable positions identified through the layout screening process.

The preferred alternative is motivated on the basis that it:

- Reduces the development from the broader set of potential chalet positions to the four most suitable locations.
- Prioritises previously disturbed, transformed or lower-sensitivity areas.
- Avoids, as far as practicable, intact riparian vegetation associated with the eastern creek.
- Recognises the sensitivity of the Kromme River Estuary and avoids unmanaged disturbance of the estuarine edge.
- Limits the overall development footprint.
- Provides a low-intensity tourism accommodation use rather than a conventional residential estate or higher-density development.
- Uses manual labour and low-impact construction methods to reduce disturbance.
- Uses a visually recessive material palette suited to the surrounding landscape.
- Avoids the need for bulk electricity supply through off-grid solar technology.
- Reduces potable water demand through rainwater harvesting and reuse of treated effluent.
- Uses wastewater treatment package plant systems designed to treat effluent on site and reuse treated water within the development.
- Requires stormwater to be managed through attenuation, dispersion, sediment control and energy dissipation.
- Allows for rehabilitation, alien invasive plant control, erosion management and environmental oversight through the EMPr.

The preferred layout is considered environmentally preferable to a larger development footprint or to chalet positions located closer to intact riparian vegetation, sensitive estuarine-margin areas,

unstable slopes or areas requiring greater clearance and earthworks. The preferred layout also supports clustering and control of infrastructure, which reduces fragmentation and allows for more effective environmental management.

The preferred construction method is considered appropriate because manual labour and limited machinery reduce the risk of unnecessary disturbance, soil compaction, vegetation damage, noise, dust and pollution. The preferred material palette is considered appropriate because it allows the structures to be visually integrated into the landscape and reduces long-term maintenance requirements.

The preferred technology alternative is considered appropriate because the development will operate on a low-impact and largely self-sufficient basis. Off-grid solar power, rainwater harvesting and on-site wastewater treatment with reuse of treated water reduce the need for bulk service infrastructure and reduce the physical and operational footprint of the development.

The selection of the four preferred chalet positions was based on the need to minimise vegetation clearing, use historically disturbed land where feasible, avoid intact riparian vegetation, consider slope and site stability, reduce terrestrial and aquatic biodiversity impacts, maintain access feasibility, limit visual exposure and ensure practical servicing.

The preferred alternative is therefore considered to represent a reasonable and practicable development option. It allows for a limited tourism accommodation use on a historically transformed property, while incorporating avoidance, minimisation, rehabilitation and management measures to reduce potential impacts on the Kromme River Estuary, the eastern creek, mapped biodiversity features, vegetation, soils and sense of place.

Adequacy of Alternatives Considered

The alternatives considered are regarded as reasonable and feasible in the context of the proposed activity, the applicant's interest in the property and the environmental sensitivity of the site. Alternative properties were not considered feasible because the activity is linked to the applicant's use of Farm 838. More intensive activity alternatives were not preferred because they would increase environmental risk and servicing demand. Layout alternatives were considered in detail because they represent the most meaningful opportunity to avoid and minimise site-specific impacts.

The no-go alternative has been retained as the baseline for comparison. The preferred alternative remains subject to confirmation through specialist input, public participation, competent authority review, heritage authority comment where applicable, and implementation of an approved EMPr.

No listed activities may commence until Environmental Authorisation has been granted by the competent authority and any applicable appeal period has been concluded.

Paragraphs 3 – 13 below should be completed for each alternative.

4. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites if applicable.

	Latitude(S):		Longitude(E):	
Alternative: Only option Alternative S1[1] (preferred and only site alternative)	-34°	1375’	24°	8306’
	o	‘	o	‘
	o	‘	o	‘

~~Alternative S2 (if any) Alternative S3 (if any)~~

~~**In the case of linear activities:**~~

~~**Alternative:**~~	~~**Latitude(S):**~~		~~**Longitude(E):**~~	
~~Alternative S1 (preferred or only route alternative)~~				
~~4.1. Starting point of the activity~~	o	‘	o	‘
~~4.2. Middle point of the activity~~	o	‘	o	‘
~~4.3. End point of the activity~~	o	‘	o	‘
~~Alternative S2 (ifany)~~				
~~4.4. Starting point of theactivity~~	o	‘	o	‘
~~4.5. Middle point of theactivity~~	o	‘	o	‘
~~4.6. End point~~	o	‘	o	‘
~~4.7.~~	o	‘		‘
~~4.8.~~	o	‘	o	‘
~~4.9. of the activity~~				
~~Alternative S3 (ifany)~~				
~~4.10. Starting point of theactivity~~				

~~4.11. Middle point of theactivity~~
~~4.12. End point of theactivity~~

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

5. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
Alternative A1 (**preferred activity alternative**)	2,500 m²
~~Alternative A2 (if any)~~	~~m~~
~~Alternative A3 (if any)~~	~~m~~

~~or, for linear activities~~:

Alternative:	**Length of the activity:**
~~Alternative A1 (preferred activity alternative)~~	~~m~~
~~Alternative A2 (if any)~~	~~m~~
~~Alternative A3 (if any)~~	~~m~~

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
~~Alternative A1 (preferred activity alternative)~~	~~m²~~
~~Alternative A2 (if any)~~	~~m²~~
~~Alternative A3 (if any)~~	~~m²~~

6. SITE ACCESS

Does ready access to the site exist?	YES ■
If NO, what is the distance over which a new access road will be built	~~m~~

Describe the type of access road planned:

Access to the proposed development will make use of existing site access routes associated with the previous development activities on the property. These existing routes will serve as the primary internal access roads to the site and to the areas identified for development. Secondary access routes will branch from the main access road where required to service the proposed residential and agricultural components of the development.

The access road layout has been selected to follow routes through already transformed and previously disturbed areas as far as practicable. This approach is intended to avoid the removal or disturbance of primary or intact indigenous vegetation and to limit clearance to secondary regrowth vegetation where unavoidable. The use of existing disturbed access alignments will reduce the

need for new vegetation clearance, earthworks and fragmentation of remaining natural or semi-natural vegetation.

The access routes will be designed and managed to limit residual environmental impacts, particularly in relation to stormwater runoff, soil erosion, sediment movement and disturbance of sensitive biodiversity features. Road alignments should avoid intact riparian vegetation, the eastern creek, estuarine-margin areas and any sensitive vegetation or species identified during specialist verification. Where access roads cross or pass near drainage areas, appropriate erosion control, stormwater attenuation and energy dissipation measures must be implemented.

Dedicated parking areas will be provided in suitable transformed or lower-sensitivity areas. From these parking areas, pedestrian access will be implemented to provide controlled movement to the accommodation units and other development areas. This will reduce the need for vehicle access to each sensitive portion of the site, limit disturbance, reduce compaction and assist in managing access within the environmentally sensitive Kromme River estuarine setting.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

7. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

7.1. the scale of the plan which must be at least a scale of 1:500;
7.2. the property boundaries and numbers of all the properties within 50 metres of the site;
7.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
7.4. the exact position of each element of the application as well as any other structures on the site;
7.5. the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
7.6. all trees and shrubs taller than 1.8metres;
7.7. walls and fencing including details of the height and construction material;
7.8. servitudes indicating the purpose of the servitude;
7.9. sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- rivers;
- the 1:100-year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

7.10. for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
7.11. the positions from where photographs of the site were taken.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions

with a description of each photograph. Photographs must be attached under **Appendix B** to this form**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATIONS

A detailed illustration of the activity must be provided, data scale of 1:200 as **Appendix C** for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

10 (a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 9 500 000
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown
Will the activity contribute to service infrastructure?	No
Is the activity a public amenity?	No
How many new employment opportunities will be created in the development phase of the activity?	15-20
What is the expected value of the employment opportunities during the development phase?	Unknown
What percentage of this will accrue to previously disadvantaged individuals?	80%
How many permanent new employment opportunities will be created during the operational phase of the activity?	3-5
What is the expected current value of the employment opportunities during the first 10 years?	Unknown
What percentage of this will accrue to previously disadvantaged individuals?	80%

10(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

The proposed development on the Remainder of Farm 838 is considered necessary and desirable as it seeks to establish a low-intensity, environmentally responsive working farm and small tourism accommodation facility within a historically transformed property in the St Francis Bay and lower Kromme River area. The activity will retain the agricultural character and zoning of the property,

while introducing a limited tourism accommodation component through the required consent use process in terms of SPLUMA and the applicable municipal planning framework.

The proposed development is not intended to establish a conventional residential township, intensive resort or high-density urban development. Rather, it represents a scaled-down and lower-impact development model when compared with the previous higher-density residential development that was approved for the property in approximately 1993. The previous development approval appears to have resulted in certain site works and infrastructure, including road stabilisation and stormwater-related infrastructure, and the property has also been affected by historical agricultural use, previous blanket vegetation clearing and secondary vegetation regrowth.

The current proposal therefore provides an opportunity to make productive and managed use of an already transformed property, while avoiding the more intensive development form previously contemplated. By limiting the proposed development to a small number of tourism accommodation units, retaining the working farm component, and placing infrastructure within already disturbed or lower-sensitivity areas as far as practicable, the proposal responds to the site's environmental constraints and reduces the potential development bulk within the Kromme River estuarine landscape.

The need for the activity is informed by the applicant's intention to establish a viable mixed-use rural and tourism-based land use that supports the continued agricultural use of the property while generating supplementary economic activity through small-scale tourism accommodation. The St Francis Bay and Kromme River area is an established tourism and recreation destination within the Kouga Local Municipality, and low-impact accommodation of this nature is consistent with the broader tourism character of the area, provided that it is appropriately located, serviced and managed.

The proposed activity is expected to contribute to the local economy through temporary construction employment, use of local contractors and suppliers, operational employment, maintenance work, landscaping and rehabilitation work, cleaning, guest services and general farm-related activities. The development will therefore provide employment and procurement opportunities, while contributing to the broader St Francis Bay, Cape St Francis and Humansdorp tourism and service economy.

The desirability of the activity is strengthened by the proposed self-sufficient and low-service-impact design approach. The development will not rely on significant municipal bulk infrastructure and is intended to operate with a high degree of self-sufficiency. Electricity will be supplied through off-grid renewable energy systems, primarily solar power with battery storage. Water demand will be reduced through rainwater harvesting and water-efficient fittings. Wastewater will be treated through on-site wastewater treatment package plant systems, with treated water reused within the development for toilet flushing, irrigation and other appropriate recycling uses. This approach reduces pressure on municipal services, supports water conservation and limits the need for extensive new service infrastructure.

The proposed wastewater treatment and reuse system is particularly important given the proximity of the site to the Kromme River Estuary and associated aquatic sensitivity. The final system must be designed and confirmed by an appropriately qualified engineer and must prevent seepage,

overflow, polluted runoff or contamination of surface water and groundwater. When properly designed, operated and maintained, the reuse of treated water will reduce potable water demand and support a more sustainable operational model.

From an environmental perspective, the development is desirable to the extent that it can be used as a mechanism to improve the management of a historically disturbed site. The property appears to have been substantially transformed by previous agricultural activity and broad-scale clearing. Riparian vegetation along the main Kromme River channel appears to have been removed or degraded in places, while more intact riparian vegetation remains along the eastern creek. The proposed development creates an opportunity to formalise environmental management of the property, including stormwater control, erosion prevention, alien invasive plant management, rehabilitation of disturbed areas, and reinstatement of functional riparian vegetation where feasible.

The rehabilitation of previously cleared or degraded riparian and estuarine-margin areas is an important component of the desirability of the proposal. Reinstating indigenous vegetation along degraded drainage and estuarine-edge areas can assist with improving ecological function, stabilising soils, filtering runoff, reducing sediment movement, improving habitat value and strengthening ecological services associated with the Kromme River system. The development should therefore be implemented with a rehabilitation and landscape management plan that prioritises locally appropriate indigenous species, protection of the intact eastern riparian corridor, and improvement of degraded areas along the main Kromme River edge where feasible.

The proposed development also responds to the mitigation hierarchy by directing development towards areas that have already been disturbed or transformed, avoiding intact riparian vegetation and sensitive estuarine-margin areas as far as practicable, limiting the development footprint, reducing construction disturbance, and managing residual impacts through an EMPr. Existing site access routes associated with previous development activities will be used as the main access roads wherever possible. Secondary access will be aligned through transformed areas to avoid primary vegetation, while pedestrian access from dedicated parking areas will reduce the need for vehicle movement across sensitive parts of the site.

The activity is also desirable because it supports a lower-intensity rural tourism use without removing the agricultural function of the property. The working farm component will be retained, and the tourism facility will operate as a complementary land use rather than a replacement of the agricultural character of the site. This is consistent with a rural development approach where small-scale tourism, agriculture and environmental rehabilitation can be integrated, subject to appropriate planning approval and environmental authorisation.

The no-go alternative would avoid additional construction impacts, vegetation clearance and servicing risks. However, it would also leave the property in its current transformed and partly degraded condition, without necessarily securing rehabilitation of degraded riparian areas, improved stormwater management, alien plant control or long-term environmental oversight. The no-go alternative would also not create employment, tourism accommodation, local procurement opportunities or improved productive use of the property. The preferred alternative therefore offers a more balanced outcome, provided that the final layout and environmental management measures are implemented as proposed.

The development is considered desirable only if it remains limited in scale, avoids sensitive areas, protects the Kromme River Estuary and eastern creek, and operates within strict environmental controls. The environmental acceptability of the activity will depend on the findings of the specialist assessments, final site development plan, stormwater and wastewater design, rehabilitation commitments, public participation, heritage authority input where applicable, and the implementation of the approved EMPr.

In summary, the need and desirability of the proposed activity are supported by the following considerations:

- The development will retain the agricultural zoning and working farm component of the property, with tourism accommodation introduced through the required consent use process.
- The proposal is a scaled-down and lower-impact alternative to the previously approved higher-density residential development.
- The development will make productive use of a historically transformed property while avoiding a larger development footprint.
- The activity will support local employment, local procurement, tourism accommodation and economic activity in the St Francis Bay and Kouga area.
- The development will be largely self-sufficient and will not place significant additional demand on municipal bulk services.
- Renewable energy, rainwater harvesting, wastewater treatment, water reuse and recycling will form part of the operational model.
- The layout will prioritise transformed and previously disturbed areas and avoid sensitive riparian and estuarine-margin areas as far as practicable.
- The proposal creates an opportunity to rehabilitate previously cleared or degraded riparian vegetation and improve ecological services.
- The development can contribute to stormwater control, erosion management, alien plant management and long-term environmental oversight of the property.

The activity is compatible with a low-intensity rural tourism use, provided that it is implemented in accordance with specialist recommendations, municipal planning approval, environmental authorisation and the EMPr.

On this basis, the proposed activity is considered to be needed and desirable in principle, subject to the outcome of the Basic Assessment process and the implementation of appropriate avoidance, mitigation, rehabilitation and management measures.

Indicate any benefits that the activity will have for society in general:

The proposed activity is expected to provide a number of direct and indirect benefits to society, particularly at the local municipal and community scale. These benefits relate to local economic activity, employment creation, tourism support, improved use of a historically transformed property, environmental rehabilitation and reduced reliance on municipal services.

The proposed development will support the local economy by establishing a small-scale tourism accommodation facility within the St Francis Bay and Kromme River area. St Francis Bay is an established tourism and recreation destination, and additional low-intensity accommodation can contribute to the local visitor economy without introducing a large resort or high-density residential development. Visitors to the facility are expected to support local businesses, including restaurants, shops, fuel stations, tourism operators, maintenance contractors and service providers in St Francis Bay, Cape St Francis, Humansdorp and the broader Kouga area.

The activity will also create employment and procurement opportunities during both the construction and operational phases. During construction, opportunities may arise for local labour, small contractors, builders, landscapers, material suppliers, transport providers, security services and environmental rehabilitation teams. During operation, the development may support employment linked to farm management, accommodation management, cleaning, maintenance, landscaping, guest services, security, wastewater system maintenance and general property upkeep.

The development will retain the working farm component of the property and will therefore support continued productive rural land use. The tourism accommodation component will operate as a complementary consent use and will not replace the agricultural character of the property. This mixed-use model can assist in improving the economic viability of the property while maintaining its rural and agricultural function.

The proposal is also socially beneficial because it represents a reduced and more environmentally responsive alternative to the previously approved higher-density residential development. Instead of pursuing a larger residential layout, the current proposal seeks to limit development bulk, reduce the footprint, make use of previously disturbed areas, avoid sensitive vegetation and implement low-impact servicing. This provides a more balanced development outcome that allows for economic use of the property while reducing potential pressure on the Kromme River estuarine environment.

The activity will not place significant additional pressure on municipal bulk infrastructure. The development is intended to operate on a largely self-sufficient basis, using off-grid renewable energy, rainwater harvesting and wastewater treatment package plant systems. Treated wastewater will be reused within the development for toilet flushing, irrigation and other appropriate recycling uses. This approach supports responsible resource use, reduces potable water demand, reduces wastewater disposal requirements and limits the need for additional municipal services.

The activity also provides an opportunity for environmental improvement of a historically transformed and partly degraded site. The property appears to have been affected by historical agricultural practices, previous blanket clearing and earlier development-related works. Riparian vegetation along the main Kromme River channel appears to have been removed or degraded in places, while more intact riparian vegetation remains along the eastern creek. Through the proposed development and EMPr, there is an opportunity to formalise alien invasive plant control,

stormwater management, erosion control, rehabilitation of disturbed areas and reinstatement of functional indigenous riparian vegetation where feasible.

These environmental management and rehabilitation measures can provide broader public benefit by improving ecological services associated with the site. Rehabilitated riparian and estuarine-margin vegetation can assist with bank stability, sediment trapping, runoff filtration, habitat provision, visual softening and protection of the Kromme River Estuary. Improved stormwater and wastewater management can also reduce the risk of downstream impacts, which is important given the ecological, recreational and socio-economic value of the Kromme River system.

The development may further contribute to the broader tourism identity and rural economy of Kouga Municipality by supporting low-impact, nature-based and farm-based accommodation. This type of development can help diversify local tourism offerings, encourage longer visitor stays and support sustainable economic activity, provided that environmental safeguards are implemented and maintained.

In summary, the activity may benefit society in general through:

- Creation of temporary construction employment.
- Creation of operational employment and maintenance opportunities.
- Use of local contractors, suppliers and service providers.
- Support for the St Francis Bay, Cape St Francis, Humansdorp and Kouga tourism economy.
- Retention of the working farm component and productive rural land use.
- Establishment of a small-scale tourism facility without introducing a high-density residential development.
- Reduced reliance on municipal electricity, water and wastewater infrastructure.
- Promotion of renewable energy, rainwater harvesting, wastewater treatment, water reuse and recycling.
- Formal environmental management of a historically transformed property.
- Rehabilitation of degraded riparian and estuarine-margin areas where feasible.
- Improved stormwater, erosion and alien invasive plant management.
- Protection and enhancement of ecological services linked to the Kromme River Estuary.

The proposed activity is therefore expected to provide local socio-economic benefits while also creating an opportunity for improved environmental management of the property. These benefits will, however, depend on the development remaining low intensity, being located primarily within transformed areas, protecting the eastern creek and Kromme River estuarine edge, and being implemented in accordance with specialist recommendations and the approved EMPr.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The proposed activity is expected to provide direct and indirect benefits to the local communities in and around St Francis Bay, Cape St Francis, Humansdorp and the broader Kouga municipal area. These benefits are expected to arise during both the construction and operational phases of the development.

During the construction phase, the development will create opportunities for local employment and local contractor participation. This may include work opportunities for builders, general labourers, carpenters, plumbers, electricians, solar installers, landscapers, rehabilitation teams, fencing contractors, transport providers, security services and suppliers of construction materials. Where feasible, preference should be given to suitably skilled local labour and local small businesses, thereby retaining a portion of project expenditure within the local economy.

During the operational phase, the proposed working farm and small tourism accommodation facility will create ongoing employment and service opportunities. These may include accommodation management, cleaning, laundry, garden and landscape maintenance, farm work, security, guest services, maintenance of wastewater treatment systems, solar systems, rainwater infrastructure, access routes and general property management. The activity therefore has the potential to provide longer-term, recurring work opportunities beyond the temporary construction phase.

The proposed tourism component will also support local businesses by increasing visitor presence and spending in the area. Guests using the accommodation are likely to make use of local shops, restaurants, fuel stations, tourism operators, fishing and boating services, cleaning and laundry services, maintenance providers and other businesses in St Francis Bay, Cape St Francis and Humansdorp. This will contribute to the local tourism economy and support existing community-based and small business activity.

The development will retain the working farm component of the property and will therefore continue to support rural land use and agricultural activity. This is beneficial to the local community because it avoids the complete conversion of the property into a conventional residential estate and instead promotes a mixed rural economy based on agriculture, tourism and environmental management. The proposed tourism use will be ancillary to the agricultural character of the property and will require only the applicable consent use approval under SPLUMA.

The proposal is also beneficial because it represents a reduced and more appropriate development form when compared with the previously approved higher-density residential development. A smaller, low-intensity tourism facility will have a lower demand for services, a reduced footprint and less potential to alter the character of the area than a larger residential layout. This is important for the local community because the Kromme River and surrounding landscape are important recreational, visual and environmental assets that contribute to the identity and value of the area.

The activity will not place significant additional pressure on municipal infrastructure. The development will rely on self-sufficient systems, including off-grid renewable energy, rainwater harvesting, on-site wastewater treatment package plant systems, water reuse and recycling. Treated effluent will be reused within the development for toilet flushing, irrigation and other appropriate recycling uses. This reduces the burden on municipal water, electricity and wastewater infrastructure and supports a more responsible development model in an area where municipal service capacity and environmental sensitivity must be carefully managed.

The project also creates an opportunity for local environmental improvement. The property has been historically transformed through agricultural practices, previous broad-scale clearing and earlier development-related infrastructure. The proposed development can formalise environmental management of the site through alien invasive plant control, erosion management, stormwater control, rehabilitation of disturbed areas and reinstatement of functional riparian vegetation where feasible. These measures can benefit the local community by helping to protect the Kromme River Estuary, which is a shared ecological, recreational and amenity resource.

Rehabilitation of degraded riparian and estuarine-margin areas may improve local ecosystem services, including sediment trapping, bank stabilisation, runoff filtration, habitat value, visual softening and erosion control. This has local community value because the Kromme River Estuary supports recreation, tourism, property value, biodiversity and the broader sense of place of St Francis Bay.

The development may also help diversify the local tourism offering by providing a small-scale farm-based and nature-based accommodation option. This can support longer visitor stays and attract visitors seeking a quieter, lower-impact tourism experience linked to the rural and estuarine character of the area.

In summary, the activity may benefit local communities through:

- Temporary construction employment.
- Operational employment and ongoing maintenance work.
- Opportunities for local contractors, suppliers and service providers.
- Support for local tourism, hospitality, retail and recreation businesses.
- Retention of the working farm component and rural character of the property.
- A reduced development footprint compared with a previous higher-density residential approval.
- Reduced reliance on municipal water, electricity and wastewater services.
- Use of renewable energy, rainwater harvesting, wastewater treatment, water reuse and recycling.
- Improved environmental management of a historically transformed property.
- Rehabilitation of degraded riparian and estuarine-margin areas where feasible.
- Protection of the Kromme River Estuary as a local recreational, ecological and visual asset.

The benefits to local communities will be maximised where the applicant prioritises local labour and procurement, maintains the low-intensity character of the development, implements the approved EMPr, protects the Kromme River and eastern creek, and ensures that the working farm and tourism facility operate in a responsible and environmentally sustainable manner.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
Constitution Act (No. 108 of 1996)	Constitution Assembly	1996
National Environmental Management Act	Department of Environmental	1998

(NEMA) (No. 107 of 1998)	Affairs	
National Environment Management: Biodiversity Act (NEMBA) (No.10 of 2004)	Department of Environmental Affairs	2004
National Water Act (No. 36 of 1998)	Department of Water and Forestry	1998
National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008)	Department of Environmental Affairs	2008
Eastern Cape Biodiversity Conservation Plan (Berliner and Desmet, 2007)	Department of Economic Development, Environmental Affairs and Tourism	2007
Eastern Cape Environmental Conservation Ordinance	Department of Economic Development, Environmental Affairs and Tourism	1974
Environment Conservation Act (ECA)	Environment Conservation Act (ECA)	1989
Provincial Nature Conservation Bill (Eastern Cape)		2003
National Forest Act	Department of Agriculture, Forestry & Fisheries	1998
National Environmental Management: Integrated Coastal Management Act (ICMA)	Department of Economic Development, Environmental Affairs and Tourism	2004
Ndlambe Local Municipality Integrated Development plan (Final Reviewed IDP 2018 2019) Spatial Development Framework (SDF Second Draft Dec 2012)	Ndlambe Local municipality	2012-2019
Town Planning Scheme – Section 8	Ndlambe Local municipality	2003
Biodiversity Sector Plan for the Ndlambe Municipality (D.C Vromans, K.S. Maree, S.D. Holness and A.L. Skowno 2012)	Department of Economic Development, Environmental Affairs and Tourism	2012
Makana Local Municipality Integrated Development plan (Final Reviewed IDP 2025) Spatial Development Framework (SDF Second Draft Dec 2013)	Makana Local municipality	2013 and 2025
Makana Integrated Land Use Scheme: Approved by Makana Local Municipal Council 2016-11-02).	Makana Local municipality	2016
Act No. 16 of 2013: Spatial Planning and Land Use Management Act 2013 (SPLUMA)	Department of Rural Development and Land Reform (DRDLR)	2013
Eastern Cape Biodiversity Conservation Plan (ECBCP) 2019	Department of Economic Development Environmental Affairs and Tourism (DEDEAT)	2019
Civil Aviation Act 13 of 2009	South African Civil Aviation Authority	2009

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

12(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES ■
If yes, what estimated quantity will be produced per month?	10m^3

How will the construction solid waste be disposed of (describe)?

All solid waste generated by the activity will be collected on site, and then removed to the licensed local Municipal landfill site in Port Alfred.

Where will the construction solid waste be disposed of (describe)?

The Humansdorp Landfill Site which is a regional waste management facility operated by the Kouga Local Municipality. Situated adjacent to the northern industrial area (accessible via Felix Road),

Will the activity produce solid waste during its operational phase?	YES ■
If yes, what estimated quantity will be produced per month? Depends on seasonality and capacity	+/-2m^3

How will the solid waste be disposed of (describe)?

Household waste generated by the activity during the operational phase will be collected on site, and then removed to the licensed local Municipal landfill site in Port Alfred by means of the Ndlambe Municipal refuse removal program

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

NA

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	■ NO

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?	■ NO

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

12(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	■	NO
If yes, what estimated quantity will be produced per month?	Approx 20-45m^3	
Will the activity produce any effluent that will be treated and/or disposed of on site?	Yes	■

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	■

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Wastewater generated by the proposed development will be treated on site through suitably designed wastewater treatment package plant systems. The systems will be designed to treat effluent to a standard that allows for safe and controlled reuse within the development, subject to final engineering design, applicable municipal requirements, health requirements and any water resource or environmental authorisations that may be applicable.

The treated wastewater will be reused as far as practicable for non-potable purposes, including toilet flushing, irrigation of landscaped or rehabilitated areas, dust suppression where appropriate during construction or maintenance activities, and other suitable recycling uses within the development. This will reduce demand for potable water, reduce the volume of wastewater requiring disposal, and support the self-sufficient and low-impact operating model proposed for the site.

The following measures will be implemented to ensure optimal reuse and recycling of wastewater:

- The wastewater treatment package plant systems will be designed by an appropriately qualified engineer to accommodate the expected peak and average wastewater volumes generated by the development.
- The treatment system will include sufficient capacity, retention time, treatment performance, backup measures and maintenance access to ensure reliable operation.
- Treated water will be stored in dedicated non-potable water storage tanks or holding infrastructure before reuse.
- The treated water reuse system will be clearly separated from the potable water supply system to prevent cross-contamination.
- All treated water distribution lines, tanks and reuse points will be clearly marked as non-potable water.
- Treated water will be reused primarily for toilet flushing and controlled irrigation of landscaped or rehabilitated areas.
- Irrigation using treated water will be managed to avoid over-application, ponding, runoff, soil saturation, nuisance conditions or movement of treated effluent towards the Kromme River Estuary or drainage features.
- Treated water will not be discharged directly into the Kromme River Estuary, eastern creek, drainage lines or any surface water feature.
- The system will be operated and maintained in accordance with the supplier's specifications and the engineer's requirements.
- Regular maintenance, inspection and desludging, where required, will be undertaken to ensure the treatment system remains functional.
- Water-efficient fittings and appliances will be installed to reduce the volume of wastewater generated.
- The reuse system will be monitored to ensure that treated water is used safely and does not result in odour, seepage, overflow, contamination or environmental nuisance.

Any excess treated effluent that cannot be reused immediately must be managed through an approved disposal or irrigation method that does not pose a risk to groundwater, surface water, the estuarine environment or public health.

In summary, the proposed development will seek to maximise wastewater reuse through on-site treatment and recycling of treated effluent for non-potable uses. The system will be designed to reduce potable water demand, minimise wastewater disposal, and prevent any untreated or inadequately treated effluent from entering the Kromme River Estuary or associated drainage features.

12(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	[redacted] NO
If yes, is it controlled by any legislation of any sphere of government?	[redacted] NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

Limited emissions are expected during the construction phase of the proposed activity. These will primarily relate to temporary dust generation from vegetation clearance, minor earthworks, access preparation, movement of construction materials, excavation, stockpiling and general construction activity. Dust emissions are expected to be localised, short-term and low in concentration, and will be managed through the mitigation measures contained in the EMPr.

Construction-phase emissions may also include minor exhaust emissions from construction vehicles, delivery vehicles and small equipment used on site. These emissions will be temporary and limited in scale, particularly as the construction methodology will rely predominantly on manual labour and will not require extensive heavy machinery on site.

No significant air emissions are expected during the operational phase of the development. The development will operate on an off-grid renewable energy basis and will not require fuel-based bulk energy generation under normal operating conditions. No industrial processes, high-emission activities or activities likely to generate significant atmospheric pollutants are proposed.

Potential dust and minor exhaust emissions during construction will be managed through measures such as limiting disturbed areas, stabilising exposed soils, controlling vehicle speeds, covering or dampening stockpiles where required, avoiding unnecessary idling of vehicles, maintaining equipment in good working order, and implementing rehabilitation as soon as practicable after disturbance.

12(d) Generation of noise

Will the activity generate noise? **Other than normal construction noise**	[redacted] NO
If yes, is it controlled by any legislation of any sphere of government?	[redacted] NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

Low levels of temporary noise will be generated during the construction phase of the proposed activity. Noise will mainly be associated with manual construction activities, handheld tools, delivery vehicles, limited excavation, access preparation, material handling and the occasional use of construction equipment where necessary.

The construction approach will rely predominantly on manual labour and handheld equipment where practicable. The use of heavy machinery will be limited to specific tasks where it is unavoidable and will not be continuous. As a result, construction noise is expected to be localised, intermittent and of short duration.

Noise impacts will be managed through the mitigation measures included in the EMPr, including restricting construction activities to normal working hours, maintaining equipment in good working

order, avoiding unnecessary idling of vehicles, limiting the use of noisy equipment, and ensuring that construction personnel remain within the approved working areas.

No significant operational noise is expected. Operational noise will be limited to normal low-intensity tourism and working farm activities, including vehicle movement, guest activity, maintenance and general site management. These noise levels are expected to be low and compatible with the rural and tourism character of the area, provided that the development is operated responsibly.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

Municipal	water board	groundwater	river, stream, dam or lake	Other (rainwater)	the activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month: N/A

Does the activity require a water use permit from the Department of Water Affairs? ■ NO

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

14. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The proposed development will incorporate energy-efficient design measures in accordance with the applicable requirements of SANS 10400-XA and relevant national and local building regulations. The building design will consider fenestration, insulation, orientation, ventilation and thermal performance to reduce unnecessary heating, cooling and energy demand.

The development will operate on an off-grid renewable energy basis, with solar power and battery storage used as the primary energy source. This will reduce reliance on conventional grid electricity and support a more sustainable operational model.

Energy-efficient fittings and systems will be incorporated into the design where feasible, including LED lighting, energy-efficient appliances, low-energy external lighting, timers or motion sensors where appropriate, and efficient hot water systems. The design will also promote natural ventilation and daylighting to reduce the need for artificial lighting and mechanical cooling.

Water-saving fittings, including low-flow taps, low-flow showerheads and dual-flush toilets, will be used to reduce water demand and the associated energy required for pumping, heating and wastewater treatment. Rainwater harvesting and treated wastewater reuse will further support the low-resource and energy-efficient operation of the development.

Overall, the design approach seeks to minimise operational energy demand through passive design, renewable energy generation, efficient fittings, water-saving measures and compliance with the applicable energy efficiency requirements.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Alternative energy has been incorporated as a core component of the proposed development design. The development is intended to operate on an off-grid basis, with solar photovoltaic panels and battery storage forming the primary energy supply system for the accommodation units and associated operational infrastructure.

The use of off-grid solar energy will reduce reliance on Eskom or municipal electricity supply and will avoid the need for new bulk electrical infrastructure across the site. This is particularly appropriate given the site's sensitive Kromme River estuarine setting, where the installation of additional service infrastructure could result in unnecessary trenching, vegetation disturbance, soil exposure and potential erosion impacts.

The solar energy system will be designed to meet the normal operational requirements of the development, including lighting, small appliances, water pumping, wastewater treatment system requirements, security systems and general accommodation-related energy needs. Battery storage will be included to provide power during night-time periods and periods of reduced solar generation.

The design will further reduce energy demand through the incorporation of energy-efficient measures, including LED lighting, energy-efficient appliances, passive ventilation, natural lighting, appropriate building orientation, insulation and compliance with applicable SANS 10400-XA energy efficiency requirements. Water-efficient fittings, rainwater harvesting and wastewater reuse will also reduce the energy required for water supply, pumping and treatment.

Any backup power system, if required, must be limited in scale, appropriately located, acoustically managed and used only where necessary. Preference should be given to battery storage and renewable energy backup rather than routine generator use.

Overall, the incorporation of off-grid solar power, battery storage and energy-efficient design measures will support a low-impact and self-sufficient operational model, reduce pressure on municipal infrastructure, limit the need for additional service corridors, and contribute to the environmental sustainability of the proposed development.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):	1

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section?

	NO

If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

~~Flat~~	~~1:50 – 1:20~~	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

~~Alternative S3 (if any):~~

~~Flat~~	~~1:50 – 1:20~~	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline
2.2 Plateau
2.3 Side slope of hill/mountain
2.4 Closedvalley
2.5 Openvalley
2.6 Plain
2.7 Undulating plain / lowhills
2.8 Dune
2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:		~~**Alternative S2 (if any):**~~		~~**Alternative S3 (if any):**~~	
Shallow water table (less than 1.5m deep)	YES	~~NO~~	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Dolomite, sinkhole or doline areas	~~YES~~	NO	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Seasonally wet soils (often close to water bodies)	YES	~~NO~~	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Unstable rocky slopes or steep slopes with loose soil	~~YES~~	NO	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Dispersive soils (soils that dissolve in water)	~~YES~~	NO	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Soils with high clay content (clay fraction more than 40%)	~~YES~~	NO	~~YES~~	~~NO~~	~~YES~~	~~NO~~
Any other unstable soil or geological feature	~~YES~~	NO	~~YES~~	~~NO~~	~~YES~~	~~NO~~
An area sensitive to erosion	~~YES~~	NO	~~YES~~	~~NO~~	~~YES~~	~~NO~~

If you are unsure about any of the above or if you are concerned that any of the above aspects may

be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUNDCOVER

Indicate the types of ground cover present on the site:

4.1 ~~Natural veld – good condition~~[E]
4.2 Natural veld – scattered aliens[E]
4.3 ~~Natural veld with heavy alien infestation~~[E]
4.4 ~~Veld dominated by alien species~~[E]
4.5 ~~Gardens~~
4.6 ~~Sport field~~
4.7 Cultivated land (previously cultivated land, grazing pasture)
4.8 ~~Paved surface~~
4.9 ~~Building or other structure~~
4.10 ~~Bare soil~~

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

~~Natural veld - good condition~~[E]	Natural veld with scattered aliens[E]	~~Natural veld with heavy alien infestation~~[E]	~~Veld dominated by alien species~~[E]	~~Gardens~~
~~Sport field~~	Cultivated land (previously cultivated land, grazing pasture)	~~Paved surface~~	~~Building or other structure~~	~~Bare soil~~

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural Area
5.2 ~~Low density residential~~
5.3 ~~Medium density residential~~
5.4 ~~High density residential~~
5.5 ~~Informal residential~~
5.6 ~~Retail commercial &warehousing~~
5.7 ~~Light industrial~~
5.8 ~~Medium industrial[AN]~~
5.9 ~~Heavy industrial[AN]~~
5.10 ~~PowerStation~~
5.11 ~~Office/consulting room~~
5.12 ~~Military or police base/station/compound~~
5.13 ~~Spoil heap or slimes dam[A]~~
5.14 ~~Quarry, sand or borrow pit~~
5.15 ~~Dam or reservoir~~
5.16 ~~Hospital/medical centre~~
5.17 ~~School~~
5.18 ~~Tertiary education facility~~
5.19 ~~Church~~
5.20 ~~Old age home~~
5.21 ~~Sewage treatment plant[A]~~
5.22 ~~Train station or shunting yard[N]~~
5.23 ~~Railway line~~
5.24 ~~Major road (4 lanes or more)[N]~~
5.25 ~~Airport[N]~~
5.26 ~~Harbour~~
5.27 ~~Sport facilities~~
5.28 ~~Golf course~~
5.29 ~~Polo fields~~
5.30 ~~Filling station[H]~~
5.31 ~~Landfill or waste treatment site~~
5.32 ~~Plantation~~
5.33 Agriculture
5.34 River, stream or wetland (Kromme setuary)
5.35 Nature conservation area
5.36 ~~Mountain, koppie or ridge~~
5.37 ~~Museum~~
5.38 ~~Historical building~~
5.39 Protected Area
5.40 ~~Graveyard~~
5.41 ~~Archaeological site~~

5.42 ~~Other land uses(describe)~~

If any of the boxes marked with an "N "are ticked, how will this impact/be impacted upon by the proposed activity.

N/A

If any of the boxes marked with an"An"are ticked, how will this impact/be impacted upon by the proposed activity.

If YES, specify and explain: N/A If YES, specify: N/A

If any of the boxes marked with an"H"are ticked, how will this impact/be impacted upon by the proposed activity.

N/A

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including	■	NO
Archaeological or paleontological sites, on or close (within 20m) to the site?		No known
If YES, explain:	N/A	
If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.		
Briefly explain the findings of the specialist:	N/A	
Will any building or structure older than 60 years be affected in any way?	YES	■
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	■
If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.		

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority)at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;
(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  (vii) any other party as required by the competent authority;
(c) placing an advertisement in—
  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be under taken: Provided that this paragraph need
not be complied with if an advertisement has been placed in an official *Gazette* referred to in sub regulation 54(c)(ii); and
(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and
(b) state—
(i) that the application has been submitted to the competent authority in terms of these Regulations, as the case maybe;
(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
(iii) the nature and location of the activity to which the application relates;
(iv) where further information on the application or activity can be obtained; and
(iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30(thirty) calendar days before the submission of the application.

List of authorities informed:

- Department of Economic Development, Environmental Affairs and Tourism (DEDEAT)- Cacadu Region
- Kouga Municipality
- Department of Forestry, Fisheries and the Environment (DFFE)
- Department of Water and Sanitation
- Department of Agriculture
- Eastern Cape Provincial Heritage Resources Authority (ECPHRA)
- South African Civil Aviation Authority (SACAA)
- DFFE - Oceans and Coasts

List of authorities from whom comments have been received:

None

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub regulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	■ NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

The following comments were received by Stakeholders: **None to date**

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

The following comments were received by I&APs: **None to date.**

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

Response to the comment above: **None to date.**

2. MITIGATION HIERARCHY

The assessment and management of potential environmental impacts associated with the proposed activity have been guided by the mitigation hierarchy, namely avoidance, minimisation, rehabilitation and, where necessary, offsetting. This approach is consistent with the principles of the National Environmental Management Act and best practice environmental impact assessment requirements. The purpose of applying the mitigation hierarchy is to ensure that environmental impacts are systematically identified, reduced and managed to acceptable levels before a decision is made on the proposed activity.

Avoidance

Avoidance is the first and most important step in the mitigation hierarchy. Where possible, the proposed activity must be planned and designed to avoid sensitive environmental features and areas of high ecological, hydrological, heritage, social or visual sensitivity. This may include avoiding watercourses, wetlands, estuaries, riparian areas, steep slopes, unstable soils, intact indigenous vegetation, protected species, heritage resources, high biodiversity areas, flood-prone areas and other identified environmental constraints.

Avoidance must inform the selection of the preferred site, activity footprint, layout, access routes, service alignments and construction methodology. Where sensitive areas are identified, they should be excluded

from the development footprint as far as practicable and, where necessary, demarcated as no-go areas during construction and operation.

Minimisation

Where impacts cannot be entirely avoided, minimisation measures must be applied to reduce the extent, duration, intensity and significance of the impact. This includes refining the layout, reducing the development footprint, clustering infrastructure, limiting vegetation clearance, restricting construction activities to approved areas, controlling access, reducing earthworks, managing stormwater, preventing erosion, controlling dust and noise, and applying appropriate pollution prevention measures.

Minimisation also includes the use of appropriate construction methods, timing of works, responsible material storage, waste management, wastewater management, traffic control, environmental awareness training and implementation of an approved Environmental Management Programme. The objective is to ensure that unavoidable impacts are kept as limited and localised as possible.

Rehabilitation

Rehabilitation must be implemented where disturbance cannot be avoided or fully minimised. The aim of rehabilitation is to restore disturbed areas to a stable, safe and environmentally functional condition. Rehabilitation may include reinstatement of topsoil, recontouring of disturbed areas, stabilisation of exposed surfaces, erosion control, removal of waste and construction material, alien invasive plant control, revegetation with suitable indigenous species and ongoing maintenance until the rehabilitated area is stable.

Rehabilitation should be undertaken progressively wherever possible, rather than being left only until the end of construction. Post-construction monitoring may be required to confirm that rehabilitation measures are effective and that additional corrective action is implemented where necessary.

Offsets

Offsets are considered a measure of last resort and should only be considered where significant residual impacts remain after all reasonable avoidance, minimisation and rehabilitation measures have been applied. Offsets must not be used to justify avoidable impacts on sensitive or irreplaceable environmental features.

Where residual impacts are identified that cannot be adequately mitigated, offset requirements must be determined in consultation with the competent authority and relevant specialists, and must be developed in accordance with applicable national or provincial biodiversity offset guidelines or other relevant policy requirements.

Conclusion

The mitigation hierarchy must be applied throughout the planning, assessment, construction, operational and, where applicable, decommissioning phases of the proposed activity. The preferred alternative should demonstrate that sensitive features have been avoided as far as practicable, unavoidable impacts

have been minimised, disturbed areas will be rehabilitated, and any significant residual impacts will be addressed through appropriate additional measures.

Through the consistent application of the mitigation hierarchy, the Basic Assessment process ensures that environmental risks are considered early, impacts are reduced through design and management, and the proposed activity is implemented in a manner that supports responsible and sustainable development.

3. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATIONMEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

3.1. SITE SELECTION IMPACT ASSESSMENT AND ALTERNATIVES ANALYSIS

The selection of development locations constitutes one of the primary impact avoidance measures available to the project and forms a key component of the alternatives assessment. The site selection process has therefore been used to direct the proposed development away from the most sensitive ecological and hydrological areas and towards areas that have already been transformed, historically disturbed or are characterised by secondary vegetation regrowth.

The initial SDP layout indicates the general location of the proposed development components, including Unit 1, Unit 2, Unit 3, Unit 4, the main house, barn and services area, and the proposed jetty. The layout reflects a reduced and refined development footprint when compared with the earlier higher-density residential development previously approved for the property. The current proposal is therefore based on a low-intensity working farm and tourism accommodation model, with the development footprint concentrated in selected areas rather than spread across the entire property.

The site has been subject to historical agricultural use, previous broad-scale clearing and earlier development-related disturbance. Existing internal access routes are present and appear to be associated with the previous development layout and stabilisation works. These existing access routes will be used as the main access routes to the proposed development areas as far as practicable. This is a key impact avoidance and minimisation measure, as it reduces the need for new road alignments, additional earthworks, vegetation clearance and disturbance of currently intact or semi-intact vegetation.

The site selection process has also been informed by initial on-site verification, aerial imagery and ground-truthing. These indicate that large portions of the site, particularly the inland areas and sections along the main Kromme River channel, are degraded or transformed and are dominated largely by secondary graminoid regrowth, scattered shrubs and localised woody regrowth. By contrast, the south-eastern section of the site, particularly along the creek or drainage feature, appears to retain more intact riparian or alluvial vegetation. This area is likely to represent the most sensitive remaining vegetation feature on the property and should be avoided and buffered as far as practicable.

The 2024 vegetation mapping for the property indicates a mosaic of mapped vegetation and habitat features, including Albany Alluvial Vegetation, Sundays Mesic Thicket, Humansdorp Shale Renosterveld, non-terrestrial estuarine habitat and nearby Elands Forest Thicket. However, the site-scale applicability of this mapping is disputed in light of the observed transformed condition of much of the property and will be verified, refined and, where necessary, remapped in the terrestrial biodiversity report. For the purposes of the present layout assessment, the precautionary approach has been applied by treating intact riparian vegetation, the eastern creek, estuarine margins, drainage pathways and any remaining representative indigenous vegetation as higher-sensitivity areas.

3.1.1. Assessment Methodology

A site selection assessment was undertaken to identify the least environmentally damaging practicable layout for the proposed development components. The assessment considered the general location of each structure shown in the KMZ, together with the proposed access arrangements, service areas, pedestrian movement, boardwalks, walkways and jetty location.

The assessment was informed by the following criteria:

- Degree of previous transformation and disturbance.
- Vegetation condition and whether vegetation is primary, secondary or degraded.
- Potential impact on intact riparian or alluvial vegetation.
- Proximity to the Kromme River Estuary, high-water mark and eastern creek.
- Mapped aquatic and terrestrial CBA / ESA sensitivities.
- Slope, soil stability and erosion risk.
- Access feasibility and ability to use existing disturbed routes.
- Potential requirement for new clearing or earthworks.
- Stormwater and sediment movement risk.
- Servicing feasibility, including wastewater, water, solar energy and maintenance access.
- Visual exposure and sense-of-place considerations.
- Ability to avoid or minimise impacts on aquatic biodiversity.

This approach ensures that the preferred layout is based on avoidance and minimisation principles and that development is directed towards areas with the lowest reasonable environmental impact.

3.1.2. Existing Access and Internal Movement

The use of existing internal access roads is a key component of the preferred layout. These access roads are associated with previous development activity and appear to have been partially stabilised. Their reuse is environmentally preferable to the creation of entirely new access routes because it limits new soil disturbance, reduces the clearing of vegetation, avoids unnecessary fragmentation and allows the development to make use of already transformed portions of the site.

Secondary access routes will be taken off the main internal access road only where required. These secondary routes must be aligned through previously transformed or secondary regrowth areas as far as practicable. No new access should be routed through intact riparian vegetation, the eastern creek corridor or sensitive estuarine-margin habitat unless unavoidable and approved through the environmental authorisation and specialist recommendations.

Dedicated parking areas should be located in transformed or lower-sensitivity areas. From these parking areas, pedestrian access should be used to reach accommodation units and other low-impact activity areas. This will reduce unnecessary vehicle movement, limit soil compaction, reduce erosion risk and assist with the protection of sensitive areas.

3.1.3. Assessment of Development Components

Unit 1

Unit 1 is located inland from the main estuarine edge and is positioned within an area that has been previously transformed or modified. The surrounding vegetation appears to be largely secondary regrowth rather than intact representative riparian or alluvial vegetation. The position is therefore considered broadly suitable, subject to final specialist verification, because it is located away from the most intact eastern creek vegetation and can make use of the existing access system with limited additional disturbance.

Unit 2

Unit 2 is also located inland and is situated within a transformed or secondary regrowth area. The location is relatively close to the existing access network and does not appear to require significant new access disturbance. Provided that the final micro-siting avoids any sensitive plant species, drainage features or more intact woody vegetation patches, this position is considered acceptable from a site selection perspective.

Unit 3

Unit 3 is located further north-east within the inland portion of the property. This area is generally more open and dominated by secondary vegetation rather than intact thicket or riparian vegetation. The site appears to be accessible from the existing internal road system or short secondary access alignments. The main management considerations for this location relate to limiting clearance, managing stormwater and ensuring that no disturbance extends into more sensitive vegetation associated with drainage or creek features.

Unit 4

Unit 4 is located towards the more north-eastern portion of the layout. This location should be carefully assessed in relation to any proximity to the eastern creek, intact riparian vegetation or mapped higher-sensitivity features. If specialist verification confirms that the unit is located within previously transformed or secondary vegetation and outside intact riparian habitat, it may be acceptable subject to strict micro-siting and mitigation. If intact Albany Alluvial or creek-associated vegetation is identified within or immediately adjacent to the footprint, the unit should be shifted or reduced to avoid such areas.

Main House

The main house is positioned closer to the estuarine edge than the inland accommodation units. This location must therefore be carefully managed in relation to visual exposure, stormwater runoff, estuarine edge stability and proximity to the high-water mark. The location appears to be associated with a more open and modified portion of the site rather than intact riparian woodland. However, because of its proximity to the Kromme River Estuary, the final footprint should be tightly controlled, and any walkways, decks or access routes near the estuarine margin should be elevated or otherwise designed to minimise ground disturbance.

Barn and Services Area

The barn and services area is located further inland and appears to be positioned within a previously transformed or lower-sensitivity portion of the property. This is considered an appropriate planning response because service infrastructure, storage, maintenance access and farm-related infrastructure should be located away from the estuarine edge, eastern creek and intact riparian vegetation. This area is suitable for concentrating operational infrastructure, provided that stormwater, wastewater, fuel, chemical storage and waste management are properly controlled.

Jetty

The proposed jetty is located along the Kromme River frontage. The placement of the jetty must be justified through avoidance and minimisation principles, given the sensitivity of the estuarine receiving environment. The preferred jetty location should be positioned where there is a suitable rock outcrop or more stable substrate, where disturbance to aquatic vegetation and estuarine habitat is minimised, and where access can be achieved without unnecessary clearing or bank disturbance.

The proposed jetty access should comprise an articulated or elevated access walkway leading to a floating pontoon. This approach is preferred over hard, fixed or ground-level access structures because it reduces disturbance to the estuarine margin, allows for changing water levels, limits the footprint within sensitive habitat and reduces the need for excavation, infilling or hard engineering along the bank. The final jetty design must be informed by aquatic specialist input and any applicable coastal, water use, estuarine, municipal or environmental authorisation requirements.

3.1.4. Boardwalks and Walkways

Where pedestrian access is required near sensitive areas, the estuarine edge or the eastern creek, boardwalks and walkways should be elevated rather than constructed directly on the ground. Elevated walkways are preferred because they reduce trampling, soil compaction, root disturbance, erosion, vegetation clearance and alteration of surface water movement. They also allow sensitive groundcover and hydrological processes to continue beneath the structure.

Boardwalks should be designed to follow the least sensitive alignment, avoid intact woody riparian vegetation where possible, and minimise the number and size of support posts. Construction should be undertaken using manual methods where feasible, with no unnecessary clearing outside the approved footprint. The final alignment should be confirmed by the ECO and relevant specialists before installation.

3.1.5. Vegetation and Alien Plant Management

The preferred development layout is based on the use of transformed and secondary regrowth areas where possible. Vegetation clearance should therefore be limited to areas of secondary growth that occur within the approved development footprint. Primary or intact indigenous vegetation, particularly creek-associated riparian vegetation and any remaining representative Albany Alluvial Vegetation, should be avoided.

Scattered alien invasive plants within or near the development footprint will be removed as part of the environmental management and rehabilitation process. Alien clearing should be undertaken in a controlled manner to avoid destabilising soils or increasing erosion risk. Follow-up clearing will be required to prevent regrowth and reinvasion, particularly in disturbed areas and along drainage routes.

3.1.6. Comparative Impact Interpretation

The site selection assessment confirms that the primary environmental constraints on the property are associated with:

- The Kromme River Estuary and high-water mark.
- The eastern creek and associated intact riparian / alluvial vegetation.
- Estuarine-margin areas and drainage pathways.
- Mapped aquatic and terrestrial CBA / ESA features.
- Areas with intact woody vegetation or higher habitat value.
- Erosion and stormwater risks on disturbed or sandy soils.
- By contrast, the lower-impact development opportunities are associated with:
- Previously transformed inland areas.
- Areas of secondary graminoid-dominated regrowth.
- Existing access routes and previously stabilised road alignments.
- Areas away from the eastern creek and intact riparian vegetation.
- Areas where service infrastructure can be concentrated without extending into sensitive habitat.

The preferred layout generally responds to these constraints by placing the main development components within already modified or lower-sensitivity portions of the property and by relying on existing access routes where possible. The layout must, however, still be confirmed through terrestrial biodiversity, plant species and aquatic specialist input, particularly in relation to Unit 4, the estuarine edge, jetty access and any boardwalk or walkway alignments near sensitive areas.

3.1.7. Preferred Development Locations and Infrastructure Layout

Based on the site selection assessment, the preferred development layout comprises:

- Four accommodation units located primarily within transformed or secondary regrowth areas.
- A main house positioned to limit additional disturbance and subject to strict estuarine-edge controls.
- A barn and services area located further inland within a more transformed or lower-sensitivity portion of the property.
- Use of existing access routes as the primary internal road network.
- Secondary access only where required and aligned through transformed areas.
- Dedicated parking in suitable lower-sensitivity areas.
- Pedestrian access to selected development areas to reduce vehicle movement.
- Elevated boardwalks or walkways near sensitive areas.
- A jetty located at a suitable rock outcrop or lower aquatic sensitivity area, with articulated access and a floating pontoon.

This layout is preferred because it directs the development away from the most sensitive intact riparian and estuarine-margin features, reduces vegetation clearance, uses existing disturbed infrastructure, and allows the development to function with a limited footprint.

3.1.8. Alignment with the Mitigation Hierarchy

The site selection outcome aligns with the mitigation hierarchy as follows:

- Avoidance is achieved by directing development towards transformed and secondary regrowth areas, avoiding the intact eastern creek riparian corridor as far as practicable, and limiting disturbance of estuarine-margin habitat.
- Minimisation is achieved through reuse of existing access roads, reduced development bulk, low-impact construction methods, elevated walkways near sensitive areas, controlled pedestrian access, limited machinery use and careful micro-siting.
- Rehabilitation is achieved through removal of scattered alien vegetation, stabilisation of disturbed areas, rehabilitation of degraded estuarine-margin areas where feasible, and use of locally appropriate indigenous vegetation.

Offsetting is not proposed at this stage and should only be considered if the specialist assessments identify significant residual impacts that cannot be avoided, minimised or rehabilitated.

3.1.9. Conclusion

The site selection assessment confirms that the preferred layout represents a reasonable and practicable development alternative for Farm 838. The layout makes use of existing access infrastructure and focuses development within areas that have already been transformed or are dominated by secondary vegetation regrowth. This reduces the need for new disturbance and limits potential impacts on intact Albany Alluvial Vegetation, riparian vegetation, estuarine habitat and aquatic biodiversity.

The most sensitive area identified through initial assessment is the south-eastern creek corridor, where more intact riparian or alluvial vegetation remains. This area should be avoided, buffered and protected. The main Kromme River edge, although degraded in places, remains sensitive due to its estuarine function and should be managed as a rehabilitation and buffer area rather than an area for further disturbance.

The proposed use of elevated walkways, controlled pedestrian access, reuse of existing roads, low-impact servicing, alien plant removal and careful jetty placement further supports the environmental acceptability of the preferred layout. The final acceptability of the layout remains subject to the findings of the terrestrial biodiversity, aquatic, plant species, heritage and engineering assessments, and must be incorporated into the final site development plan and EMPr.

3.1.1. Evaluation Matrix Table

Scoring: 1 = very low environmental constraint / preferred condition; 5 = very high environmental constraint / least suitable condition. Lower total scores indicate lower overall environmental risk and greater suitability. The scoring is preliminary and must be confirmed through terrestrial biodiversity, aquatic, plant species, heritage and engineering inputs.

Criterion	Unit 1	Comment	Unit 2	Comment	Unit 3	Comment	Unit 4	Comment	Main house	Comment	Barn and services	Comment	Jetty, access walkway and floating pontoon	Comment
Vegetation clearing	2	Located in previously transformed / secondary regrowth area. Limited clearance expected and should avoid intact riparian vegetation.	2	Generally inland and within secondary regrowth. Clearance expected to be limited if micro-sited away from woody regrowth and drainage features.	2	Located in more open inland area dominated by secondary vegetation. Limited indigenous clearing anticipated subject to specialist verification.	3	More constrained due to closer relationship with north-eastern / creek side vegetation context. Requires careful micro-siting to avoid remnant riparian / alluvial vegetation.	3	Located near the estuarine edge in a modified/open area. Clearing may be limited, but proximity to the Kromme edge increases sensitivity.	1	Located further inland in a transformed / lower sensitivity area. Very limited clearing expected.	3	Directly associated with estuarine edge. Clearing and disturbance must be minimised through use of suitable rock outcrop, articulated access and elevated / floating structures.
Previous disturbance	1	Falls within historically transformed land with secondary growth and existing disturbance influence.	1	Appears associated with transformed / previously cleared inland areas and existing access routes.	2	Open secondary regrowth indicates previous disturbance, although final condition must be verified.	2	Occurs near more sensitive vegetation context but still within broader historically disturbed property.	2	Area appears modified and open, although located near sensitive estuarine edge.	1	Best suited to disturbed service / agricultural area, away from sensitive estuarine edge.	3	Located along estuarine edge where disturbance must be assumed sensitive despite selected lower-impact placement.

Criterion	Unit 1	Comment	Unit 2	Comment	Unit 3	Comment	Unit 4	Comment	Main house	Comment	Barn and services	Comment	Jetty, access walkway and floating pontoon	Comment
Aquatic / estuarine proximity	**3**	Inland from main estuarine edge but still within broader Kromme River area of influence.	**3**	Inland but hydrologically connected through runoff pathways; stormwater controls required.	**3**	Inland position reduces direct estuarine impact but runoff and drainage connectivity remain relevant.	**4**	Closer to the eastern creek / riparian context and requires stronger avoidance and buffer controls.	**4**	Closer to the Kromme River estuarine edge and high-water mark. Requires strict setback, stormwater and erosion controls.	**2**	Located away from estuarine edge and preferred for services, provided runoff and wastewater risks are controlled.	**5**	Located within / immediately adjacent to the estuarine environment. Highest aquatic permitting and mitigation sensitivity.
Riparian / Albany Alluvial sensitivity	**2**	Expected to avoid intact Albany Alluvial or riparian vegetation if kept within transformed secondary regrowth.	**2**	Acceptable if outside intact riparian / alluvial remnants and confirmed by specialist assessment.	**2**	Likely low to moderate sensitivity in current position, subject to ground-truthing of woody regrowth and drainage proximity.	**4**	Potentially higher sensitivity due to proximity to eastern creek and remnant alluvial/riparian vegetation.	**3**	Main channel riparian vegetation appears degraded/removed, but estuarine edge remains sensitive and suitable for rehabilitation.	**1**	Located away from remnant riparian / alluvial vegetation and therefore preferred for operational infrastructure.	**4**	Requires avoidance of intact bank vegetation and placement where aquatic / riparian biodiversity is lowest.
Slope, soil stability and erosion risk	**2**	Generally stable transformed area; erosion risk manageable with standard controls.	**2**	Moderate risk associated with sandy / alluvial soils; requires controlled runoff.	**2**	Generally acceptable if positioned on stable ground and runoff is dispersed.	**3**	Potentially increased erosion risk due to drainage / creek proximity; careful stormwater design required.	**3**	Estuarine-edge position increases need for erosion control, stable platforms and energy dissipation.	**2**	Inland position with manageable erosion risk if hardstand, drainage and stockpiles are controlled.	**4**	Bank and estuarine margin stability are key constraints. Design must avoid undermining, scour and sediment release.

Criterion	Unit 1	Comment	Unit 2	Comment	Unit 3	Comment	Unit 4	Comment	Main house	Comment	Barn and services	Comment	Jetty, access walkway and floating pontoon	Comment
Access requirement	**1**	Can be served from existing partially stabilised internal access routes with limited new disturbance.	**1**	Accessible from existing internal route system and short secondary access if required.	**2**	Accessible from existing routes with limited secondary access alignment through transformed areas.	**3**	Access must avoid eastern creek and intact riparian vegetation; may require careful alignment.	**2**	Access feasible via existing road system, with vehicle movement limited near estuarine edge.	**1**	Excellent access suitability due to inland and service-oriented location near existing disturbed access.	**3**	Access should be pedestrian only where feasible, via elevated/articulated walkway to reduce bank disturbance.
Servicing feasibility	**2**	Feasible using off-grid solar, rainwater harvesting and wastewater package plant infrastructure with limited service trenching.	**2**	Feasible with low-impact services, provided trenching remains within disturbed alignments.	**2**	Feasible but requires controlled routing of services through transformed areas.	**3**	More constrained if service routes approach creek/riparian vegetation; requires careful alignment.	**3**	Servicing feasible but higher sensitivity due to proximity to estuary and wastewater/stormwater risk.	**1**	Most suitable location for concentrating services and farm infrastructure away from sensitive margins.	**3**	Minimal services should be provided. Lighting, if any, must be low-level and ecological impacts limited.
Construction disturbance	**2**	Low disturbance expected if manual labour and controlled footprint are used.	**2**	Low to moderate disturbance; requires no-go demarcation and limited clearing.	**2**	Low to moderate disturbance if kept within approved footprint.	**3**	Higher sensitivity due to creek proximity. Manual construction and demarcation required.	**3**	Construction near estuarine edge requires strict sediment, stormwater and access controls.	**2**	Construction manageable in transformed area but must control fuel, waste and stockpiles.	**4**	Construction in/near estuary is sensitive. Should be small-scale, manual where possible, and timed/managed to avoid aquatic disturbance.
Visual exposure / sense of place	**2**	Low to moderate visual impact if materials are muted and vegetation screening retained.	**2**	Low to moderate visual impact with careful design and reduced bulk.	**2**	Potentially more visible from inland perspectives but acceptable with muted materials and low building profile.	**3**	More sensitive due to position near vegetated creek / north-eastern landscape context.	**4**	Most visually sensitive terrestrial structure due to estuarine frontage; low profile and natural finishes required.	**2**	Can be screened/located inland, reducing visual impact.	**3**	Visible from water but low-profile floating and articulated structures reduce visual intrusion.

Criterion	Unit 1	Comment	Unit 2	Comment	Unit 3	Comment	Unit 4	Comment	Main house	Comment	Barn and services	Comment	Jetty, access walkway and floating pontoon	Comment
Aquatic biodiversity disturbance	**2**	Indirect risk only, mainly through runoff and sediment if not controlled.	**2**	Indirect risk through stormwater and erosion pathways.	**2**	Indirect risk manageable through stormwater controls.	**3**	Potential indirect and edge effects on eastern creek if not adequately buffered.	**4**	Higher indirect risk due to estuarine-edge proximity and stormwater/wastewater sensitivity.	**2**	Low direct risk if located inland, but service area pollution prevention is critical.	**5**	Direct aquatic interface. Placement on suitable rock outcrop and low-biodiversity area is essential.
Rehabilitation / management opportunity	**1**	Development can be paired with rehabilitation of disturbed secondary vegetation and alien removal.	**1**	Good opportunity to stabilise and improve transformed areas while limiting disturbance.	**1**	Development can be managed with local rehabilitation and erosion control.	**2**	Opportunity to protect adjacent creek vegetation if footprint is kept outside sensitive areas.	**2**	Opportunity to rehabilitate degraded Kromme River edge and improve stormwater management.	**1**	Suitable location to centralise management infrastructure and reduce broader site disturbance.	**3**	May provide controlled access to estuary, reducing informal trampling, but requires strict aquatic controls.
Total Score	**20**		**20**		**22**		**33**		**33**		**16**		**40**	
Rank	**2**		**2**		**4**		**5**		**5**		**1**		**7**	

Interpretation: The barn and services area, Unit 1 and Unit 2 represent the lowest relative environmental risk because they are located in transformed or secondary regrowth areas and can be serviced by existing disturbed access routes. Unit 3 remains acceptable subject to specialist verification. Unit 4 and the main house are more constrained due to proximity to sensitive creek, riparian or estuarine-edge contexts. The jetty is the highest constraint component because it interfaces directly with the estuary, but the proposed use of a suitable rock outcrop, articulated access walkway and floating pontoon reduces the footprint and avoids more intrusive bank disturbance. The final layout must be confirmed through specialist input and incorporated into the EMPr.

IMPACT SIGNIFICANCE, SITE SELECTION AND LOCATION OF DEVELOPMENT

Nature of Impact

The primary impact associated with site selection relates to the placement of development infrastructure within the sensitive lower Kromme River and St Francis Bay estuarine landscape. The site is located within an area influenced by the Kromme River Estuary, mapped aquatic and terrestrial CBA / ESA features, estuarine-margin soils, secondary vegetation regrowth, degraded riparian areas along the main Kromme River channel, and more intact riparian / alluvial vegetation associated with the eastern creek.

The main potential impacts associated with inappropriate site selection include vegetation clearing, loss or disturbance of remaining indigenous vegetation, disturbance of riparian or estuarine-margin habitat, increased erosion and sedimentation risk, fragmentation of ecological connectivity, disturbance to fauna, and increased pressure on the Kromme River Estuary through poorly managed stormwater, wastewater, access and construction activity.

The site is, however, not regarded as uniformly intact. Initial site verification, aerial imagery and ground-truthing indicate that large portions of the property have been transformed through historical agricultural activities, previous broad-scale clearing and earlier development-related works associated with a previously approved residential development. These transformed areas are generally characterised by open, graminoid-dominated secondary regrowth with scattered shrubs and isolated woody regrowth. The site selection process has therefore focused on directing development into these already disturbed and lower-sensitivity areas, while avoiding the more intact riparian vegetation associated with the eastern creek and minimising further impact along the Kromme River estuarine edge.

Without appropriate site selection

If the development layout were not informed by site selection, avoidance and sensitivity screening, and if development were allowed to occur within the most sensitive portions of the property, the following impacts would likely occur:

- Direct loss or disturbance of remaining intact indigenous riparian or alluvial vegetation.
- Disturbance of the eastern creek and associated riparian corridor.
- Further degradation of the already modified Kromme River estuarine edge.
- Increased erosion, sedimentation and polluted runoff entering the Kromme River Estuary.
- Fragmentation of remaining ecological linkages between the estuary, creek and inland vegetation patches.
- Disturbance to fauna using the estuarine margin, creek corridor, thicket regrowth and secondary grassland areas.
- Increased construction footprint through the creation of new roads, service routes and access alignments.
- Increased risk of soil compaction, vegetation loss and stormwater concentration.
- Greater visual intrusion within the estuarine landscape.
- Increased risk of wastewater, stormwater or construction-related impacts on sensitive aquatic receiving environments.

Pre-mitigation impact significance

Impact Assessment Criteria	Pre-mitigation Assessment
Extent	Local to site level, with potential indirect effects on the Kromme River Estuary, eastern creek and associated ecological support functions.
Duration	Long-term to permanent where vegetation, habitat or bank stability is lost or where erosion patterns are established.
Intensity	Moderate to high, due to the potential loss or degradation of sensitive estuarine-margin, riparian, alluvial and ecological support areas.
Probability	High if development is poorly located or if access, services and structures are placed within sensitive areas without avoidance or mitigation.
Overall significance	High.

With site selection and mitigation applied

Through the application of the site selection process, the proposed development is directed towards areas that are already transformed, previously cleared or dominated by secondary vegetation regrowth. The preferred layout makes use of existing access routes associated with earlier development disturbance, including partially stabilised access alignments, thereby reducing the need for new road construction and additional vegetation clearance.

The preferred development components are positioned to make use of lower-sensitivity areas as far as practicable, while avoiding the most sensitive features, including the eastern creek, intact riparian / alluvial vegetation, estuarine-margin areas and any confirmed sensitive vegetation or species identified through specialist verification.

The use of existing access roads, dedicated parking areas and pedestrian movement routes will reduce the need for vehicle access into sensitive areas. Where boardwalks or walkways are required near the estuarine edge or sensitive vegetation, these will be elevated rather than placed directly on the ground, thereby reducing soil compaction, trampling, root disturbance and interference with surface water movement.

The proposed jetty will be located where substrate and aquatic conditions are most suitable, including preference for a stable rock outcrop or area with lower aquatic biodiversity sensitivity. The proposed articulated jetty access walkway and floating pontoon will reduce the need for hard engineering, excavation, infilling or permanent disturbance of the estuarine margin.

The application of site selection and mitigation results in the following impact reductions:

- Avoidance of the most sensitive intact riparian and alluvial vegetation associated with the eastern creek.

- Reduction of development within higher-sensitivity estuarine-margin areas.
- Reduced vegetation clearance by prioritising transformed and secondary regrowth areas.
- Reuse of existing access infrastructure, thereby reducing new disturbance.
- Reduced fragmentation of remaining natural or semi-natural vegetation patches.
- Lower risk of erosion and sedimentation through careful road, walkway and stormwater design.
- Improved ability to manage runoff through low-impact stormwater controls.
- Reduced risk of construction disturbance through manual construction methods and limited heavy machinery use.
-
- Improved opportunity for alien plant clearing and rehabilitation of degraded areas.
- Protection and possible reinstatement of functional riparian vegetation and ecological services along degraded estuarine margins.

Residual impacts associated with the preferred layout will be further mitigated through the implementation of the EMPr, including erosion control, stormwater management, vegetation management, access control, alien invasive plant control, wastewater management, rehabilitation and ECO monitoring.

Post-mitigation impact significance

Impact rating aspect	Post-mitigation assessment
Extent	Localised and largely confined to the approved development footprints, access routes, service areas and managed pedestrian routes.
Duration	Medium to long-term, although several impacts can be reduced through rehabilitation, stabilisation and ongoing environmental management.
Intensity	Low to moderate, provided that the development remains within transformed or lower-sensitivity areas and avoids the eastern creek and sensitive estuarine-margin vegetation.
Probability	Low to medium, provided that specialist recommendations, micro-siting requirements and EMPr mitigation measures are implemented.
Overall significance	Low to medium.

Conclusion

The application of a structured site selection and alternatives assessment process has substantially reduced the potential environmental impacts associated with the proposed development. The preferred layout directs development away from the most sensitive areas and into portions of the site that have already been transformed or are dominated by secondary regrowth. This approach reduces vegetation loss, limits new access disturbance, avoids intact riparian vegetation along the eastern creek, and reduces the risk of erosion, sedimentation and indirect impacts on the Kromme River Estuary.

The use of existing partially stabilised access roads, elevated walkways near sensitive areas, controlled pedestrian access, carefully positioned development footprints and a low-impact jetty design further supports the mitigation hierarchy. The preferred layout is therefore considered to represent the least environmentally damaging practicable alternative currently identified, subject to confirmation through terrestrial biodiversity, aquatic, plant species, heritage and engineering specialist input.

With implementation of the recommended mitigation measures and strict adherence to the EMPr, the significance of impacts associated with site selection and development location is expected to be reduced from high before mitigation to low to medium after mitigation.

ENVIRONMENTAL IMPACT ASSESSMENT

1. Overview of Potential Impacts

The proposed development on the Remainder of Farm 838 comprises a low intensity working farm and small tourism accommodation facility within the lower Kromme River and St Francis Bay estuarine landscape. The proposed activity includes accommodation units, a main house, barn and services area, internal access routes, pedestrian walkways, boardwalks where required, off grid services infrastructure, wastewater treatment package plant systems, treated water reuse, stormwater infrastructure and a proposed jetty with articulated access and floating pontoon.

The site is located within a sensitive coastal and estuarine receiving environment associated with the Kromme River Estuary. The mapped environmental context includes aquatic and terrestrial CBA and ESA features, mapped vegetation units, estuarine edge habitat, alluvial soils, secondary vegetation regrowth, transformed inland areas, degraded riparian conditions along portions of the main Kromme River channel, and more intact riparian or alluvial vegetation associated with the eastern creek.

Initial site verification, aerial imagery and ground truthing indicate that the property is not uniformly intact. Large portions of the site, particularly inland areas and sections along the main Kromme River frontage, appear to have been transformed by historical agricultural activity, previous blanket clearing and earlier infrastructure associated with a previously approved residential development. These areas are generally characterised by secondary graminoid dominated regrowth, scattered low shrubs and isolated woody regrowth. By contrast, the south eastern portion of the site, particularly along the creek or drainage feature, appears to retain more intact riparian or alluvial vegetation and is therefore considered to be of higher sensitivity.

The proposed development has been designed to respond to this site condition by directing development towards transformed and lower sensitivity areas, making use of existing partially stabilised access routes, limiting development bulk, using off grid services, incorporating wastewater treatment and reuse, and providing for elevated walkways or boardwalks where pedestrian access is required near sensitive areas. The proposed jetty is to be placed where substrate conditions are suitable, preferably at a stable rock outcrop or lower aquatic sensitivity location, with an articulated access walkway and floating pontoon to reduce direct disturbance to the estuarine edge.

The potential impacts associated with the proposed development are expected to be primarily localised, but may affect sensitive estuarine, riparian and ecological systems if not appropriately avoided, mitigated and managed. The main environmental risks relate to the proximity of the site to the Kromme River Estuary, the eastern creek, remaining riparian vegetation, mapped biodiversity features, sandy and alluvial soils, stormwater movement, wastewater management and the cumulative sensitivity of the estuarine landscape.

The key impacts associated with the proposed development include:

1. Vegetation clearing and disturbance of secondary regrowth, scattered indigenous vegetation and any remaining sensitive vegetation patches
2. Potential disturbance of riparian or alluvial vegetation, particularly along the eastern creek and estuarine margin
3. Disturbance of the Kromme River estuarine edge through access, construction, stormwater discharge, pedestrian movement or jetty-related activity
4. Soil disturbance, erosion and sediment movement towards the Kromme River Estuary or eastern creek
5. Stormwater runoff from roofs, access routes, parking areas, service areas and disturbed surfaces
6. Potential pollution from wastewater systems, treated water reuse, greywater, hydrocarbons, cement wash water, chemicals or construction materials
7. Loss or disturbance of faunal habitat associated with secondary grassland, thicket regrowth, riparian vegetation, estuarine margin habitat and the creek corridor
8. Disturbance to fauna during construction through noise, movement, vegetation clearance and temporary human activity
9. Impacts on biodiversity connectivity and ecological function, particularly where development occurs near the eastern creek, estuarine edge or remaining vegetation linkages
10. Disturbance of aquatic and terrestrial CBA / ESA areas
11. Visual and landscape impacts within the Kromme River and St Francis Bay estuarine setting
12. Noise, dust and general nuisance impacts during the construction phase
13. Access and traffic related impacts, including possible disturbance from internal vehicle movement and construction access
14. Servicing impacts, including the operation and maintenance of off grid solar systems, rainwater harvesting, wastewater treatment package plant systems and treated water reuse
15. Waste generation and pollution risk during construction and operation
16. Potential impacts on heritage and palaeontological resources
17. Cumulative impacts associated with incremental development pressure along the Kromme River Estuary and surrounding St Francis Bay landscape

The assessment of these impacts must be undertaken in accordance with the mitigation hierarchy. Avoidance must remain the primary response, particularly in relation to the intact eastern creek riparian corridor, estuarine edge, sensitive vegetation remnants, drainage pathways and any areas confirmed by specialists to be of high sensitivity. Where impacts cannot be fully avoided, the development must minimise disturbance through careful micro siting, reduced footprints, use of existing access routes, manual construction methods, elevated walkways, stormwater control, erosion prevention, wastewater treatment, treated water reuse, alien plant control and rehabilitation of disturbed areas.

Each impact is assessed in the sections below, with reference to the site-specific conditions of Farm 838, the proposed layout, the preferred low impact development approach, and the mitigation measures required to reduce residual impacts to acceptable levels.

2. Vegetation Clearing and Habitat Loss

Nature of Impact

The proposed development will require limited vegetation clearing for accommodation footprints, the main house, barn and services area, access adjustments, pedestrian routes, boardwalk supports, service infrastructure, stormwater infrastructure and associated construction working areas.

The site does not appear to support intact representative vegetation across the full development area. Initial site verification, aerial imagery and ground-truthing indicate that much of the property has been historically transformed by agricultural use, previous broad-scale clearing and earlier development-related infrastructure. These areas are now largely characterised by secondary graminoid-dominated regrowth, scattered low shrubs and isolated woody regrowth.

Notwithstanding the transformed condition of much of the site, vegetation clearing may still result in the loss of secondary habitat, disturbance of scattered indigenous plants, removal of soil-stabilising cover and localised disturbance of remaining sensitive vegetation patches. The greatest sensitivity is associated with the more intact riparian or alluvial vegetation along the eastern creek, remaining estuarine-margin vegetation, drainage pathways, thicket regrowth of ecological value and any species of conservation concern that may be confirmed during specialist assessment.

Vegetation clearing may also cause secondary impacts, including increased soil exposure, erosion, sediment movement towards the Kromme River Estuary, edge effects, disturbance to faunal habitat, alien invasive plant establishment and reduced rehabilitation potential if topsoil and seedbank material are not managed correctly.

Assessment

The significance of vegetation clearing varies across the site depending on the current ecological condition of the vegetation to be affected. Large portions of the inland site appear to be transformed or degraded and dominated by secondary graminoid regrowth. These areas are considered to have lower botanical sensitivity than intact indigenous vegetation and are more suitable for accommodating development, subject to specialist verification.

The proposed layout has been informed by the principle that development should be directed towards previously transformed or disturbed areas wherever practicable. The use of existing access routes, including partially stabilised routes associated with previous development activity, will reduce the need for new vegetation clearance and additional fragmentation.

The main Kromme River channel frontage appears modified in places, with functional riparian vegetation removed or degraded along portions of the estuarine edge. Although this area is degraded, it remains

sensitive due to its direct connection to the Kromme River Estuary and its potential role in sediment control, stormwater filtration, bank stability and rehabilitation. Clearing in this area must therefore be avoided as far as practicable and should not result in further degradation of the estuarine margin.

The south-eastern section of the site, particularly along the creek or drainage feature, appears to retain more intact riparian or alluvial vegetation. This area is likely to represent the most sensitive remaining vegetation feature on the property and may correspond more closely with remnant Albany Alluvial Vegetation. Development should avoid this area as far as practicable, and any boardwalks or walkways required near this zone should be elevated and carefully positioned to minimise vegetation disturbance, root disturbance, trampling and soil compaction.

The 2024 mapped vegetation context for the site includes Albany Alluvial Vegetation, Sundays Mesic Thicket, Humansdorp Shale Renosterveld, non-terrestrial estuarine habitat and nearby Elands Forest Thicket. However, the site-scale applicability of the mapping is disputed in light of the transformed site condition and will be verified, refined and, where necessary, remapped through the terrestrial biodiversity assessment. The impact assessment must therefore be based on both mapped sensitivity and actual site condition.

Overall, the vegetation clearing impact is considered manageable where clearing is limited to transformed or secondary regrowth areas, intact riparian vegetation is avoided, sensitive vegetation patches are demarcated as no-go areas, and rehabilitation is implemented promptly. Without such controls, the impact could become more significant due to erosion, alien invasion and incremental loss of remaining indigenous vegetation.

Mitigation Measures

Avoidance and footprint control

- Vegetation clearing must be limited strictly to the approved development footprint.
- The final layout must be informed by the terrestrial biodiversity, plant species and aquatic specialist assessments.
- Development must be preferentially located within transformed, historically cleared or secondary regrowth areas.
- The intact riparian or alluvial vegetation along the eastern creek must be avoided and buffered as far as practicable.
- Remaining estuarine-margin vegetation and drainage pathways must be avoided wherever possible.
- No clearing may occur outside the authorised footprint without prior approval.
- The final micro-siting of structures, access routes, services, boardwalks and pedestrian routes must avoid sensitive vegetation patches and protected species where identified.

Use of existing disturbed areas

- Existing access roads and partially stabilised routes must be used as far as practicable.
- New access routes must be kept to the minimum required width and length.
- Secondary access routes must be aligned through already transformed areas wherever feasible.
- Dedicated parking areas must be placed in lower-sensitivity or already disturbed areas.
- Pedestrian access must be used to limit vehicle movement into sensitive parts of the site.

Elevated walkways and boardwalks

- Where walkways or boardwalks are required near the estuarine edge, eastern creek or sensitive vegetation, they must be elevated rather than placed directly on the ground.
- Boardwalk alignments must avoid intact woody vegetation and root zones as far as practicable.
- Boardwalk construction must be undertaken using low-impact methods, preferably by hand.
- The number and size of support posts must be minimised.
- Site demarcation and protection

No-go areas must be clearly demarcated before construction commences.

- The eastern creek corridor, sensitive riparian vegetation, estuarine edge and any specialist-identified sensitive vegetation patches must be treated as protected areas during construction.
- Construction personnel, vehicles, materials and equipment must remain within approved working areas.
- Temporary fencing, danger tape or other visible markers must be used to prevent accidental encroachment.

Vegetation management

- A pre-clearance inspection must be undertaken by the ECO and, where required, the relevant specialist.
- Any protected plants, transplantable species, geophytes or species of conservation concern must be identified before clearing.
- Search and rescue must be undertaken where required and feasible.
- Vegetation may not be cleared for convenience, landscaping preference or improved views.
- Pruning or trimming must be kept to the minimum required for construction and safe access.
- Scattered alien invasive plants must be removed in a controlled manner.

Topsoil and seedbank management

- Topsoil from areas supporting indigenous vegetation or viable seedbank must be stripped separately where feasible.
- Topsoil must be stockpiled in low heaps and protected from erosion, compaction and contamination.
- Topsoil must be reused in rehabilitation as soon as practicable.
- Topsoil may not be mixed with subsoil, rubble, cement waste or contaminated material.

Erosion and sediment control

- Cleared areas must be stabilised as soon as practicable.
- Exposed soils must be protected from wind and water erosion.
- Sediment barriers, silt fencing, brush packing, mulch or other suitable controls must be installed where runoff could move towards the Kromme River Estuary or eastern creek.
- Clearing must be phased to avoid exposing large areas at once.
- Clearing should be avoided during periods of heavy rainfall where possible.

Rehabilitation and restoration

- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable.
- Rehabilitation must use locally appropriate indigenous species informed by the verified vegetation condition and specialist recommendations.
- Rehabilitation should prioritise stabilisation of disturbed soils, reinstatement of vegetation cover and restoration of ecological function.
- Degraded estuarine-margin areas should be rehabilitated where feasible.
- The main Kromme River edge should be considered for reinstatement of functional indigenous riparian or estuarine-margin vegetation where appropriate.

- Natural regeneration should be promoted where viable.

Alien invasive species control

- Alien invasive plant control must be implemented during construction and operation.
- Alien clearing must be undertaken in accordance with the NEMBA Alien and Invasive Species Regulations.
- Follow-up control must be undertaken to prevent regrowth and reinvasion.
- Disturbed areas must be monitored for alien plant establishment until rehabilitation is stable.

Monitoring and compliance

- The ECO must monitor vegetation clearing and no-go area compliance during construction.
- Cleared areas must be checked against the approved layout and demarcated footprint.
- Any unauthorised clearing must be recorded, reported and rehabilitated.
- Corrective action must be implemented immediately where vegetation damage, erosion or alien plant establishment is observed.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where development is confined to transformed and secondary regrowth areas, existing access routes are used, the eastern creek and intact riparian vegetation are avoided, and rehabilitation is effectively implemented. The residual impact may remain medium in areas close to the estuarine edge or sensitive riparian vegetation due to the site's hydrological and ecological connectivity with the Kromme River Estuary.

3. Potential Disturbance of Riparian or Alluvial Vegetation, Particularly Along the Eastern Creek and Estuarine Margin

Nature of Impact

The proposed development occurs within the lower Kromme River estuarine landscape and includes development components within proximity to estuarine-margin areas, drainage features and remnant riparian or alluvial vegetation. The potential impact relates to the direct or indirect disturbance of riparian and alluvial vegetation, particularly along the eastern creek and along the Kromme River estuarine margin.

Initial site verification, aerial imagery and ground-truthing indicate that much of the main Kromme River channel frontage has been modified or degraded, with functional riparian vegetation removed or substantially reduced in places. However, the eastern creek or drainage feature appears to retain more intact riparian or alluvial vegetation, with a denser and more structurally complex woody vegetation component than the more transformed inland areas.

Riparian and alluvial vegetation performs important ecological and hydrological functions, including bank stabilisation, sediment trapping, runoff filtration, flow attenuation, habitat provision, faunal movement, shading, nutrient cycling and buffering of the estuarine receiving environment. Disturbance to these areas could result in reduced ecological function, increased erosion, sediment movement into the Kromme River Estuary, loss of habitat connectivity and reduced resilience of the site to stormwater and flood-related processes.

Assessment

The eastern creek corridor is considered one of the most sensitive vegetation and hydrological features on the property. It appears to contain remnant riparian or alluvial vegetation that may correspond more closely with the mapped Albany Alluvial Vegetation context than the transformed inland portions of the site. This area should therefore be treated as a higher-sensitivity feature pending confirmation by the terrestrial biodiversity and aquatic specialists.

The Kromme River estuarine margin is also sensitive, despite being degraded in places. The historical removal or degradation of riparian vegetation along the main channel edge does not reduce the environmental importance of the area. Instead, it indicates that the estuarine edge has reduced ecological function and should be managed as a rehabilitation and buffer area rather than being subjected to further disturbance.

Potential impacts may arise from vegetation clearing, pedestrian movement, boardwalk or walkway installation, stormwater discharge, construction access, material storage, earthworks, jetty-related works, accidental encroachment and edge effects. Even where direct clearing is limited, indirect disturbance may occur through trampling, root damage, soil compaction, altered runoff, erosion, sediment deposition, alien plant establishment and disturbance to fauna using the riparian corridor.

The preferred layout should avoid the eastern creek and its associated riparian vegetation as far as practicable. Where access is required near sensitive areas, elevated boardwalks or walkways are preferred over ground-level paths. Along the estuarine margin, any required access to the proposed jetty should be carefully aligned and designed to minimise disturbance, preferably using an articulated elevated walkway and floating pontoon placed at a suitable lower-sensitivity substrate such as a stable rock outcrop.

Without mitigation, disturbance of riparian or alluvial vegetation could result in moderate to high local impacts, particularly if the eastern creek corridor or estuarine edge vegetation is cleared, fragmented or subject to uncontrolled access. With appropriate avoidance, micro-siting, elevated access structures, stormwater control and rehabilitation, the residual impact can be reduced.

Mitigation Measures

Avoidance and buffers

- The eastern creek and associated riparian or alluvial vegetation must be avoided as far as practicable.
- A suitable buffer must be applied to the eastern creek and any intact riparian vegetation, informed by the aquatic and terrestrial biodiversity specialists.
- No development footprint, storage area, laydown area, parking area or construction camp may be located within intact riparian vegetation unless specifically assessed and authorised.
- The Kromme River estuarine margin must be treated as a sensitive buffer and rehabilitation area, even where existing vegetation is degraded.

Final layout confirmation

- The final site development plan must be informed by specialist verification of the eastern creek, estuarine edge, riparian vegetation and alluvial vegetation.

- The terrestrial biodiversity and aquatic specialists must confirm whether any development components require relocation or micro-siting to avoid sensitive riparian or alluvial areas.
- The 2024 vegetation mapping should be refined at site scale through the terrestrial biodiversity assessment, with specific attention to the actual extent and condition of remnant Albany Alluvial Vegetation.

Controlled access

- Access to the eastern creek corridor must be restricted.
- No uncontrolled pedestrian tracks may be allowed through riparian vegetation.
- Vehicle access must not be permitted within riparian or estuarine-margin areas except where specifically authorised for construction or maintenance.
- Dedicated pedestrian routes must be clearly demarcated and managed.

Elevated boardwalks and walkways

- Where pedestrian access is required near the estuarine edge, creek or sensitive riparian vegetation, elevated boardwalks or walkways must be used rather than ground-level paths.
- Boardwalks must be aligned to avoid mature woody vegetation, root zones and sensitive groundcover as far as practicable.
- Boardwalk construction must minimise support posts, excavation, trimming and soil disturbance.
- Installation should be undertaken using manual methods wherever feasible.

Jetty access

- The proposed jetty must be located where aquatic and estuarine disturbance will be minimised.
- Preference must be given to a stable rock outcrop or other lower-sensitivity substrate, subject to aquatic specialist confirmation.
- The jetty access must use an articulated walkway and floating pontoon design to reduce direct disturbance to the estuarine edge and accommodate changing water levels.
- No infilling, hardening or unnecessary bank modification may occur unless specifically assessed and authorised.

Vegetation protection

- Riparian vegetation may not be cut, trimmed or removed for convenience, views or informal access.
- Any pruning required for safety or authorised access must be kept to the minimum necessary and must be supervised by the ECO.
- No firewood collection, dumping, informal clearing or storage may be permitted in riparian areas.

Stormwater and erosion control

- Roof runoff must be collected from the proposed structures and directed to rainwater harvesting tanks for reuse within the development.
- Where rainwater harvesting tanks are full, overflow or secondary discharge must be managed through appropriate stormwater controls to prevent erosion, concentrated flow, sediment movement or discharge directly into sensitive areas.
- Stormwater must not be discharged directly into the eastern creek or Kromme River Estuary without attenuation, energy dissipation and sediment control.
- Runoff from roof overflows, access routes, parking areas, service areas and other hardened or disturbed surfaces must be dispersed, slowed and treated before reaching riparian, creek or estuarine areas.
- Secondary discharge from full tanks must be directed to stable, vegetated or engineered discharge points, such as level spreaders, vegetated swales, infiltration areas, stone energy dissipaters or other approved low-impact stormwater measures.

- Silt fencing, sediment traps, brush packing, level spreaders, mulch, erosion-control matting or other suitable measures must be installed where needed, particularly downslope of disturbed areas and near the estuarine edge or eastern creek.
- All stormwater infrastructure must be maintained to ensure that outlets do not scour, block, overflow uncontrollably or create preferential erosion pathways towards the Kromme River Estuary.
- Erosion at the estuarine edge, creek banks or drainage pathways must be stabilised immediately.

Construction management

- No stockpiles, cement mixing, refuelling, chemical storage or waste storage may occur within riparian, creek or estuarine-margin areas.
- Construction personnel must be inducted on the sensitivity of the eastern creek and estuarine edge.
- No-go areas must be demarcated before construction begins.
- The ECO must inspect sensitive areas regularly during construction.

Rehabilitation and restoration

- Degraded riparian and estuarine-margin areas should be rehabilitated where feasible.
- Rehabilitation must use locally appropriate indigenous species suited to alluvial, riparian and estuarine-margin conditions.
- The degraded main Kromme River edge should be considered for reinstatement of functional indigenous vegetation, subject to specialist guidance.
- Disturbed areas adjacent to riparian zones must be stabilised and revegetated as soon as possible.

Alien invasive plant control

- Alien invasive species within riparian and estuarine-margin areas must be removed in a controlled manner.
- Alien clearing must avoid destabilising banks or exposing soils to erosion.
- Follow-up clearing must be undertaken to prevent regrowth.

Monitoring and compliance

- The ECO must monitor compliance with no-go areas, buffer areas and boardwalk / access alignments.
- Any accidental damage to riparian or alluvial vegetation must be recorded and rehabilitated.
- Post-construction monitoring must confirm that rehabilitated areas are stable and that alien plant regrowth is controlled.

Residual Impact - Low to medium following mitigation.

The residual impact can be reduced to low where the eastern creek and intact riparian vegetation are avoided, buffer areas are maintained, access is controlled and elevated walkways are used. A medium residual impact may remain along the estuarine margin due to the site's direct hydrological connection with the Kromme River Estuary and the existing degraded condition of portions of the main channel edge, which will require careful rehabilitation and long-term management.

4. **Disturbance of the Kromme River Estuarine Edge Through Access, Construction, Stormwater Discharge, Pedestrian Movement or Jetty-Related Activity**

Nature of Impact

The proposed development occurs adjacent to the Kromme River Estuary and includes development components within the area of influence of the estuarine edge. Potential disturbance to the estuarine edge may arise from construction access, pedestrian movement, boardwalk or walkway installation, stormwater discharge, service installation, vegetation clearance, material storage, and jetty-related works.

Although portions of the main Kromme River channel frontage appear to be historically degraded, with riparian vegetation removed or substantially reduced in places, the estuarine edge remains environmentally sensitive due to its direct connection to the Kromme River system. The estuarine margin performs important functions, including bank stability, sediment trapping, filtration of runoff, habitat provision, ecological connectivity, visual buffering and support for estuarine processes.

Disturbance of the estuarine edge could result in erosion, sedimentation, trampling of vegetation, bank destabilisation, loss of remaining estuarine-margin vegetation, increased runoff velocity, water quality impacts and disturbance to aquatic and semi-aquatic fauna. The proposed jetty, if not appropriately located and designed, could also result in localised disturbance of aquatic habitat, bank structure, estuarine vegetation and substrate conditions.

Assessment

The Kromme River estuarine edge is one of the key environmental constraints associated with the site. The site slopes generally towards the estuary, and surface runoff from roofs, access routes, parking areas, service areas and disturbed construction surfaces could move downslope towards the estuarine receiving environment if not properly managed.

The proposed development has responded to this sensitivity through the use of existing access routes, limiting the development footprint, directing development to transformed or secondary regrowth areas, and proposing controlled pedestrian access from dedicated parking areas. Where walkways are required near the estuarine edge, elevated boardwalks are preferred to reduce trampling, soil compaction, vegetation disturbance and interruption of natural surface flow.

Rainwater harvesting forms part of the development design. Roof runoff will be collected and directed to rainwater harvesting tanks for reuse within the development. Where tanks are full, overflow or secondary discharge must be managed through appropriate stormwater controls to avoid concentrated runoff, erosion or direct discharge into the Kromme River Estuary.

The proposed jetty is a specific estuarine-edge impact consideration. The jetty should be placed where local substrate conditions are suitable, preferably where a stable rock outcrop or lower-sensitivity substrate is present and where there is reduced presence of aquatic biodiversity or sensitive estuarine vegetation. An articulated access walkway and floating pontoon are preferred, as this approach reduces the need for hard engineering, infilling, excavation or permanent alteration of the estuarine edge.

Without mitigation, disturbance of the Kromme River estuarine edge could result in moderate to high local impacts, particularly through erosion, sedimentation, bank disturbance, vegetation loss, water quality

impacts and cumulative degradation of estuarine function. With appropriate avoidance, micro-siting, stormwater management, elevated access structures, construction controls and rehabilitation, the impact can be reduced to an acceptable level.

Mitigation Measures

Avoidance and layout control

- The Kromme River estuarine edge must be treated as a sensitive environmental feature.
- Development infrastructure must be set back from the estuarine edge as far as practicable.
- The final layout must be informed by aquatic, terrestrial biodiversity and engineering input.
- No unnecessary disturbance may occur within the estuarine margin or high-water mark area.
- The development footprint must be limited to approved and demarcated areas only.
- No construction camp, laydown area, stockpile, chemical storage area, cement mixing area or refuelling area may be located near the estuarine edge.

Access control

- Existing access routes must be used as far as practicable to reduce new disturbance.
- Vehicle access to the estuarine edge must be restricted to essential construction or maintenance requirements only.
- No informal tracks may be created to the river edge.
- Dedicated parking areas must be located in transformed or lower-sensitivity areas away from the estuarine margin.
- Pedestrian movement must be confined to approved routes, walkways or boardwalks.

Boardwalks and walkways

- Where access is required near the estuarine edge, elevated boardwalks or walkways must be used rather than ground-level paths.
- Boardwalks must be aligned to avoid sensitive vegetation, unstable banks and sensitive substrate areas.
- Boardwalk construction must minimise excavation, support post footprint, trimming and soil disturbance.
- Boardwalks must be constructed using low-impact methods, preferably by hand where feasible.
- The final alignment must be approved by the ECO and relevant specialists before construction.

Jetty-related mitigation

- The proposed jetty must be located at the least sensitive practicable point along the estuarine edge.
- Preference must be given to a stable rock outcrop or other suitable substrate where disturbance to aquatic biodiversity and estuarine vegetation can be minimised.
- The jetty design must use an articulated access walkway and floating pontoon where feasible.
- Hard engineering, infilling, dredging, excavation or unnecessary bank modification must be avoided.
- The jetty footprint must be limited to the minimum size required for safe access and use.
- Jetty construction must be undertaken under appropriate environmental supervision.
- Any permits, authorisations or approvals required for the jetty must be obtained before construction.

Stormwater and erosion control

- Roof runoff must be collected from the proposed structures and directed to rainwater harvesting tanks for reuse within the development.

- Where rainwater harvesting tanks are full, overflow or secondary discharge must be managed through appropriate stormwater controls to prevent erosion, concentrated flow, sediment movement or discharge directly into sensitive areas.
- Stormwater must not be discharged directly into the Kromme River Estuary without attenuation, energy dissipation and sediment control.
- Runoff from roof overflows, access routes, parking areas, service areas and disturbed surfaces must be dispersed, slowed and treated before reaching the estuarine edge.
- Secondary discharge from full tanks must be directed to stable, vegetated or engineered discharge points, such as level spreaders, vegetated swales, infiltration areas, stone energy dissipaters or other approved low-impact stormwater measures.
- Silt fencing, sediment traps, brush packing, level spreaders, mulch, erosion-control matting or other suitable measures must be installed where needed.
- Stormwater outlets must be inspected and maintained to ensure that they do not scour, block, overflow uncontrollably or create preferential erosion pathways towards the Kromme River Estuary.

Construction management

- Construction activities near the estuarine edge must be kept to the minimum necessary.
- No cement wash water, hydrocarbons, chemicals, wastewater, greywater or polluted runoff may enter the estuary.
- Equipment and materials must be stored away from the estuarine edge.
- Construction personnel must be inducted on the sensitivity of the Kromme River Estuary.
- No waste, rubble, spoil or construction material may be dumped within the estuarine margin.
- Spill response materials must be available on site during construction.

Wastewater and water quality protection

- The wastewater treatment package plant systems must be designed, installed, operated and maintained to prevent seepage, overflow, odour, groundwater contamination or surface runoff contamination.
- No untreated or inadequately treated effluent may be discharged to the Kromme River Estuary.
- Treated water reuse must be controlled and must not result in ponding, runoff, soil saturation or seepage towards the estuary.
- The wastewater treatment and reuse system must be confirmed by an appropriately qualified engineer.

Rehabilitation and edge stabilisation

- Disturbed areas near the estuarine edge must be stabilised and rehabilitated as soon as practicable.
- Rehabilitation must use locally appropriate indigenous species suitable for estuarine-margin or alluvial conditions.
- Degraded portions of the Kromme River edge should be rehabilitated where feasible to improve buffering, sediment control and ecological function.
- Alien invasive plants must be removed in a controlled manner and followed up to prevent reinvasion.
- No landscaping may introduce inappropriate invasive or aggressive species near the estuarine edge.

Monitoring and compliance

- The ECO must monitor construction activities near the Kromme River estuarine edge.

- No-go areas, access routes, boardwalk alignments and jetty work areas must be clearly demarcated.
- Any erosion, bank instability, sediment movement, vegetation damage or pollution incident must be recorded and corrected immediately.
- Post-construction monitoring must confirm that disturbed areas are stable and that stormwater infrastructure is functioning effectively.

Residual Impact - Low to medium following mitigation.

The residual impact can be reduced to low where development is kept away from the estuarine edge, elevated walkways are used, access is controlled, stormwater is properly attenuated and dispersed, and the jetty is placed and designed to minimise disturbance. A medium residual impact may remain due to the site's direct proximity to the Kromme River Estuary and the inherent sensitivity of estuarine-edge processes, particularly during construction and jetty installation.

5. Soil Disturbance, Erosion and Sediment Movement Towards the Kromme River Estuary or Eastern Creek

Nature of Impact

The proposed development will require localised soil disturbance associated with construction of the accommodation units, main house, barn and services area, access adjustments, parking areas, pedestrian routes, boardwalk supports, service trenches, stormwater infrastructure, wastewater treatment systems and jetty-related access works.

The site occurs within a low-lying coastal and estuarine setting adjacent to the Kromme River Estuary. The property has a gentle fall towards the estuary and eastern creek, with mapped soils and geology indicating a sandy, alluvial and estuarine-margin context. These conditions increase the potential for erosion and sediment movement where vegetation is removed, soils are exposed, runoff is concentrated or construction activities are not properly controlled.

Although much of the site appears to be historically transformed and dominated by secondary graminoid regrowth, this vegetation still provides soil cover and assists with stabilising exposed surfaces. Clearing or disturbance of this cover may increase runoff velocity, erosion, sediment mobilisation and downslope movement of sediment towards the Kromme River Estuary or the eastern creek. Sedimentation of these receiving environments could affect water quality, aquatic habitat, estuarine processes, riparian vegetation and ecological function.

Assessment

The risk of soil disturbance and erosion varies across the site. Lower-risk areas are generally those that are already transformed, gently sloping, accessible from existing roads and located away from the estuarine edge and eastern creek. Higher-risk areas include slopes or disturbed areas draining directly towards the Kromme River Estuary, the eastern creek, drainage pathways, estuarine-margin soils,

exposed sandy areas, access routes, stockpile areas and any construction work close to the high-water mark or watercourse edge.

The use of existing partially stabilised access roads is a positive design response because it reduces the need for new road construction, new cut and fill, new vegetation clearing and additional soil exposure. Locating development within previously transformed and secondary regrowth areas further reduces the risk of disturbing intact soil profiles and sensitive vegetation.

However, the site's drainage relationship with the Kromme River Estuary means that even small areas of exposed soil can create localised sedimentation risk during rainfall events if not properly managed. This is particularly relevant where roof runoff, access road runoff, parking area runoff or overflow from rainwater harvesting tanks is not adequately dispersed and attenuated.

Rainfall runoff from roof areas will be collected in rainwater harvesting tanks for reuse within the development. Where tanks are full, overflow or secondary discharge must be managed through suitable stormwater controls to prevent concentrated flow, erosion or sediment transport towards the estuary or eastern creek.

Without mitigation, soil disturbance and erosion could result in moderate to high localised impacts, particularly during the construction phase or after heavy rainfall. With appropriate erosion control, stormwater management, phased clearing, stabilisation and rehabilitation, the residual impact can be reduced to low to medium.

Mitigation Measures

Footprint control and avoidance

- Soil disturbance must be limited strictly to the approved development footprint.
- Development must be located within previously transformed, disturbed or lower-sensitivity areas as far as practicable.
- No unnecessary clearing, grading or earthworks may occur outside the authorised footprint.
- The eastern creek, estuarine edge, drainage pathways and intact riparian vegetation must be avoided and buffered as far as practicable.
- Construction activities must avoid unstable, saturated or highly erosion-prone areas unless specifically assessed and approved.

Access and road management

- Existing access roads and partially stabilised routes must be used as far as practicable.
- New access routes must be kept to the minimum length and width required.
- Access routes must be aligned through transformed areas wherever feasible.
- Road surfaces must be stabilised where required to prevent rutting, erosion and sediment movement.
- Vehicle speeds must be controlled to reduce dust, rutting and surface disturbance.
- No informal tracks may be created.

Clearing and earthworks control

- Vegetation clearing must be phased and limited to the area required for immediate construction.
- Large areas of exposed soil must not be left open unnecessarily.
- Earthworks must be scheduled, where possible, to avoid heavy rainfall periods.

- Cut and fill must be minimised.
- Excavated material must be reused where suitable or removed to an approved location.
- Spoil may not be pushed downslope or placed near the Kromme River Estuary, eastern creek or drainage pathways.

Stockpile management

- Topsoil and subsoil must be stockpiled separately where feasible.
- Stockpiles must be located away from the estuarine edge, eastern creek and drainage pathways.
- Stockpiles must be kept as low as practicable and stabilised or covered where necessary.
- Sediment controls must be placed downslope of stockpiles where runoff risk exists.
- Stockpiles must not be contaminated with cement, hydrocarbons, waste or construction rubble.

Stormwater management

- Roof runoff must be collected and directed to rainwater harvesting tanks for reuse within the development.
- Where rainwater harvesting tanks are full, overflow or secondary discharge must be managed through appropriate stormwater controls.
- Stormwater must not be discharged directly into the Kromme River Estuary or eastern creek without attenuation, energy dissipation and sediment control.
- Runoff from roof overflows, access routes, parking areas, service areas and disturbed surfaces must be dispersed, slowed and treated before reaching sensitive areas.
- Secondary discharge from full tanks must be directed to stable, vegetated or engineered discharge points, such as level spreaders, vegetated swales, infiltration areas, stone energy dissipaters or other approved low-impact stormwater measures.
- Stormwater infrastructure must be designed to avoid concentrated flow, scour and preferential erosion pathways.
- Energy dissipation must be installed at all discharge points where erosion risk exists.

Sediment and erosion controls

- Silt fencing, sediment traps, brush packing, level spreaders, mulch, erosion-control matting or similar measures must be installed where needed.
- Sediment controls must be installed before major clearing or earthworks commence.
- Sediment barriers must be maintained and cleared of accumulated sediment when required.
- Exposed sandy soils must be stabilised as soon as practicable.
- Temporary diversion berms may be used where required to keep clean runoff separate from disturbed areas.
- Erosion rills, gullies or scour points must be repaired immediately.

Construction-phase pollution prevention

- No cement wash water, hydrocarbons, chemicals, wastewater, greywater or polluted runoff may enter the Kromme River Estuary, eastern creek or drainage pathways.
- Concrete mixing and equipment washing must occur only in designated areas away from sensitive receptors.
- Refuelling, storage of fuels and storage of chemicals must occur outside sensitive areas and on protected surfaces.
- Spill kits must be available on site.
- Any spill must be contained and cleaned immediately.

Rehabilitation and stabilisation

- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable.

- Rehabilitation must include recontouring where required, topsoil replacement, mulching, seeding or planting with locally appropriate indigenous species.
- Rehabilitation must prioritise erosion-prone areas, drainage pathways, disturbed slopes and areas draining towards the Kromme River Estuary or eastern creek.
- The degraded estuarine edge should be stabilised and rehabilitated where feasible, subject to specialist input.
- Rehabilitation must be monitored until vegetation is established and soil surfaces are stable.

Monitoring and compliance

- The ECO must inspect erosion and sediment control measures regularly during construction.
- Additional inspections must be undertaken after significant rainfall events.
- Any sediment movement towards the estuary or eastern creek must be reported and corrected immediately.
- Stormwater outlets, tank overflows and erosion control structures must be maintained throughout construction and operation.
- Unauthorised disturbance or erosion damage must be rehabilitated at the contractor's cost.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where disturbance is confined to transformed areas, existing access routes are used, exposed soils are stabilised quickly, and stormwater is properly attenuated and dispersed. A medium residual risk may remain due to the site's direct drainage relationship with the Kromme River Estuary and eastern creek, particularly during high rainfall events or where construction occurs near the estuarine margin.

6. Stormwater Runoff from Roofs, Access Routes, Parking Areas, Service Areas and Disturbed Surfaces

Nature of Impact

The proposed development will generate stormwater runoff from new and altered surfaces, including roof areas, access roads, parking areas, service areas, pedestrian routes, disturbed construction areas and any compacted surfaces associated with the accommodation units, main house, barn and services infrastructure.

The site drains generally towards the Kromme River Estuary and the eastern creek. As a result, unmanaged stormwater has the potential to cause erosion, sediment movement, concentration of flow, localised scouring, disturbance of vegetation, reduced water quality and indirect impacts on riparian and estuarine receiving environments.

Roof areas will generate clean runoff, which provides an opportunity for rainwater harvesting and reuse. However, once harvesting tanks are full, overflow or secondary discharge must be carefully managed to prevent concentrated flows being discharged downslope towards sensitive areas. Runoff from access roads, parking areas, service areas and disturbed construction surfaces may contain sediment, hydrocarbons, organic material, litter or other pollutants and must therefore be slowed, dispersed and treated before it reaches the Kromme River Estuary, eastern creek or drainage pathways.

Assessment

Stormwater management is a key impact consideration for the proposed Farm 838 development due to the site's low-lying estuarine setting and direct hydrological relationship with the Kromme River Estuary. Although the proposed development footprint is limited and the development is low intensity, unmanaged runoff could have disproportionate local effects where flow becomes concentrated or where exposed soils are present.

The main stormwater risks include:

- Concentrated discharge from roof areas, particularly when rainwater harvesting tanks are full.
- Runoff from access roads and parking areas causing erosion, rutting and sediment movement.
- Sediment-laden runoff from disturbed construction areas entering the Kromme River Estuary or eastern creek.
- Polluted runoff from service areas, waste handling areas, wastewater infrastructure or maintenance activities.
- Increased runoff velocity from compacted surfaces.
- Scouring at discharge points and preferential flow paths.
- Cumulative degradation of the already modified estuarine edge.

The proposed rainwater harvesting approach is a positive mitigation measure, as it reduces the volume of roof runoff discharged directly into the landscape and supports water self-sufficiency. However, rainwater harvesting alone does not eliminate stormwater risk, because tank overflow must still be safely managed during prolonged or high-intensity rainfall events.

The use of existing access roads and previously disturbed areas will reduce the extent of new compacted surfaces. Nevertheless, all access, parking and service areas must be designed to maintain low-velocity sheet flow where possible, avoid concentrated discharge and prevent sediment movement into sensitive areas.

Without mitigation, the impact of stormwater runoff could be moderate to high, particularly during construction and heavy rainfall events. With appropriate rainwater harvesting, attenuation, energy dissipation, sediment control, erosion control and ongoing maintenance, the residual impact can be reduced to low to medium.

Mitigation Measures

Rainwater harvesting and roof runoff management

- Roof runoff from all buildings must be collected and directed to rainwater harvesting tanks for reuse within the development.
- Rainwater tanks must be appropriately sized and connected to the roof drainage system.
- Gutters, downpipes and first-flush systems must be designed to reduce sediment, leaf litter and debris entering storage tanks.
- Where rainwater harvesting tanks are full, overflow or secondary discharge must be managed through approved stormwater control measures.

- Tank overflow may not be discharged directly downslope towards the Kromme River Estuary, eastern creek or sensitive vegetation areas.
- Overflow must be directed to stable, vegetated or engineered discharge points, such as level spreaders, vegetated swales, infiltration areas, stone energy dissipaters or other low-impact stormwater measures.

Stormwater attenuation and energy dissipation

- Stormwater must be slowed, dispersed and attenuated before leaving developed or disturbed areas.
- Concentrated flow must be avoided as far as possible.
- Energy dissipation must be provided at all stormwater outlets, tank overflows and drainage discharge points where erosion risk exists.
- Discharge points must be located away from unstable soils, steep banks, riparian vegetation and sensitive estuarine-margin areas.
- Stormwater infrastructure must be designed to prevent scouring, gullying or undercutting.

Runoff from access roads and parking areas

- Existing access routes must be used as far as practicable to limit new compacted areas.
- Access roads and parking areas must be designed to shed runoff in a controlled and dispersed manner.
- Road gradients and crossfalls must avoid concentrating runoff towards the estuary or eastern creek.
- Where required, mitre drains, cross drains, swales, gravel stabilisation, erosion-control stone or other suitable measures must be installed.
- Parking areas must be located within transformed or lower-sensitivity areas and stabilised to prevent rutting and sediment movement.
- No informal vehicle tracks may be created.

Runoff from service areas

- Service areas must be designed to prevent polluted runoff entering the stormwater system.
- Waste handling, fuel storage, chemical storage and maintenance activities must occur in controlled areas away from sensitive receptors.
- Any areas with pollution risk must be bunded, contained or otherwise designed to prevent contaminated runoff.
- No wastewater, greywater, chemical water, cement wash water or contaminated runoff may be discharged into stormwater systems.

Construction-phase stormwater control

- Temporary stormwater controls must be installed before major clearing, earthworks or excavation commence.
- Disturbed areas must be kept as small as practicable and rehabilitated progressively.
- Clean runoff must be diverted away from active construction areas where feasible.
- Dirty runoff from disturbed areas must be intercepted and treated before leaving the site.
- Silt fencing, sediment traps, brush packing, mulch berms, sandbags, straw bales, geotextiles or similar measures must be used where required.
- Stormwater controls must be inspected after rainfall and repaired where damaged.

Protection of the Kromme River Estuary and eastern creek

- Stormwater must not be discharged directly into the Kromme River Estuary or eastern creek without attenuation, energy dissipation and sediment control.
- No stormwater outlet may cause erosion of the estuarine edge, creek bank or drainage pathway.

- Runoff must be dispersed through stable vegetated areas wherever feasible.
- Any discharge route towards the estuary or creek must be inspected regularly for erosion, sediment build-up or vegetation damage.
- Additional controls must be installed immediately if erosion or sediment movement is observed.

Erosion and sediment control

- Exposed soils must be stabilised as soon as practicable.
- Sediment barriers must be placed downslope of disturbed areas where runoff could move towards sensitive receptors.
- Stockpiles must be located away from drainage routes and protected from erosion.
- Stormwater must not be allowed to flow over loose spoil, cement waste, rubble or contaminated material.
- Erosion rills, gullies or scour points must be repaired immediately.

Operational maintenance

- Stormwater infrastructure must be maintained for the life of the development.
- Gutters, downpipes, tank inlets, tank overflows, swales, level spreaders, drains and sediment traps must be inspected and cleaned regularly.
- Tank overflows must be checked after heavy rainfall events to ensure that discharge remains controlled.
- Vegetated stormwater features must be maintained to ensure effective filtration and erosion control.
- Any damaged or blocked stormwater infrastructure must be repaired immediately.

Monitoring and compliance

- The ECO must monitor stormwater controls during construction.
- Post-rainfall inspections must be undertaken during construction and early operation.
- Any sediment movement, erosion, scouring or uncontrolled discharge must be recorded and corrected.
- The final stormwater design must be confirmed by an appropriately qualified engineer or competent professional.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where roof runoff is harvested, tank overflows are controlled, access and parking runoff is dispersed, and sediment control measures are effectively maintained. A medium residual risk may remain due to the site's direct hydrological connection to the Kromme River Estuary and eastern creek, particularly during intense rainfall events or where stormwater infrastructure is not properly maintained.

7. Potential Pollution from Wastewater Systems, Treated Water Reuse, Greywater, Hydrocarbons, Cement Wash Water, Chemicals or Construction Materials

Nature of Impact

The proposed development will introduce potential pollution risks during both the construction and operational phases. These risks relate to wastewater treatment systems, treated effluent reuse, greywater management, stormwater runoff from service areas, hydrocarbons from vehicles or equipment, cement

wash water, chemicals, paints, sealants, cleaning products, construction materials, waste storage and accidental spills.

The site is located adjacent to the Kromme River Estuary and includes drainage pathways and sensitive estuarine-margin and riparian areas. As a result, any uncontrolled discharge, seepage, spill, overflow or polluted runoff could move towards the Kromme River Estuary or eastern creek, with potential impacts on water quality, aquatic habitat, riparian vegetation, soil condition and estuarine ecological function.

The proposed development intends to use wastewater treatment package plant systems, with treated effluent reused for appropriate non-potable purposes such as toilet flushing, irrigation, dust suppression and other approved uses. While this approach reduces reliance on municipal infrastructure and promotes water reuse, it requires careful design, operation, monitoring and maintenance to ensure that treated water does not cause pollution, seepage, ponding, nutrient enrichment, odour, runoff or contamination of groundwater or surface water.

Assessment

The pollution risk is considered significant due to the receiving environment rather than the scale of the development. The proposed development is low intensity and limited in footprint, but it is located within a sensitive estuarine setting where even small pollution incidents may have disproportionate effects if contaminants enter the Kromme River Estuary, eastern creek or drainage pathways.

Construction phase pollution risks include cement wash water, sediment-laden runoff, hydrocarbons from plant and vehicles, paints, solvents, adhesives, fuel, oils, litter, rubble, building material residues and accidental spills. Particular care is required where construction occurs near the estuarine edge, access routes, service areas, boardwalks or jetty-related works.

Operational phase pollution risks include wastewater package plant failure, overflow, poor maintenance, treated effluent misuse, greywater discharge, inappropriate irrigation, runoff from treated water reuse areas, chemical storage, cleaning products, waste handling and polluted runoff from parking or service areas.

The proposed wastewater treatment and reuse system is acceptable in principle, provided that it is designed by an appropriately qualified engineer or competent professional, sized for the expected peak occupancy and operational demand, and maintained by a suitably competent service provider. No untreated or inadequately treated effluent may be discharged to the environment. Treated effluent reuse must be controlled and must not result in runoff, soil saturation, ponding, odour or seepage towards the Kromme River Estuary or eastern creek.

The average monthly effluent volume is expected to depend on occupancy. At full occupancy of approximately 8 persons, using a conservative 100 to 150 litres per person per day, the system may generate approximately 24 to 36 m³ per month. A conservative upper occupancy scenario of 14 persons could generate approximately 42 to 63 m³ per month. The final wastewater treatment capacity, storage requirements and reuse areas must be confirmed by the project engineer.

Without mitigation, the impact of pollution from wastewater, hydrocarbons, cement wash water, chemicals or construction materials could be moderate to high, particularly if contaminants enter the estuarine receiving environment. With proper design, containment, construction management, monitoring and operational maintenance, the residual impact can be reduced to low to medium.

Mitigation Measures

Wastewater treatment system design

- The wastewater treatment package plant system must be designed by an appropriately qualified engineer or competent professional.
- The system must be sized for the expected peak occupancy, operational demand and maintenance requirements.
- The design must include sufficient treatment, storage and reuse capacity to prevent overflow, seepage or emergency discharge.
- The wastewater system must be located outside sensitive riparian, estuarine-margin and flood-prone areas as far as practicable.
- The final position of the system must be confirmed with reference to soil conditions, groundwater risk, drainage direction, flood risk and proximity to the Kromme River Estuary and eastern creek.

No untreated effluent discharge

- No untreated or inadequately treated effluent may be discharged to the Kromme River Estuary, eastern creek, drainage pathways, soil surface or groundwater.
- Emergency overflow from wastewater infrastructure must not discharge into sensitive areas.
- Any system failure must be treated as an environmental incident and reported, contained and corrected immediately.
- The system must include alarms, monitoring points or other appropriate safeguards to identify failures or abnormal operating conditions.

Treated water reuse

- Treated effluent may only be reused for approved non-potable purposes, such as toilet flushing, irrigation, dust suppression or other uses confirmed by the engineer and relevant authority.
- Treated water reuse must not result in ponding, soil saturation, runoff, seepage, odour or nuisance conditions.
- Treated effluent may not be applied to steep, unstable, saturated or erosion-prone areas.
- Treated effluent irrigation or reuse areas must be set back from the Kromme River Estuary, eastern creek, drainage pathways and sensitive vegetation as far as practicable.
- Reuse areas must be designed to match soil absorption capacity, vegetation requirements and seasonal rainfall conditions.
- Treated water storage tanks and pipework must be clearly marked as non-potable.
- Cross-connection between potable and non-potable systems must be prevented.

Greywater management

- Greywater must be directed into the approved wastewater treatment or reuse system unless a separate approved greywater management system is provided.
- Greywater may not be discharged directly onto the ground, into stormwater systems, drainage lines, the eastern creek or the Kromme River Estuary.
- Greywater reuse, if proposed, must be controlled and must not create odours, ponding, runoff, soil contamination or attraction of pests.
- Only environmentally appropriate cleaning products should be used where greywater forms part of the reuse system.

Hydrocarbon management

- Refuelling, servicing and maintenance of vehicles or equipment must occur only in designated areas away from the Kromme River Estuary, eastern creek and drainage pathways.
- Fuel, oil and lubricants must be stored in bunded or contained areas.
- Drip trays must be used under stationary equipment where leakage risk exists.
- Spill kits must be available on site during construction and operation.
- Any hydrocarbon spill must be contained, cleaned and disposed of at an approved facility.
- Contaminated soil must be removed and disposed of appropriately.

Cement and concrete management

- Cement mixing must occur only in designated areas away from the estuarine edge, eastern creek and drainage pathways.
- Cement wash water may not be discharged onto the ground, into stormwater systems, into drainage pathways or into the Kromme River Estuary.
- A designated concrete washout area or contained washout system must be provided where concrete works are required.
- Hardened cement waste must be removed from site and disposed of at an approved facility.
- No cement, mortar, grout or plaster residues may be left on exposed soil or within vegetated areas.

Chemical and material storage

- Paints, solvents, adhesives, sealants, cleaning products, fuels and other chemicals must be stored in a secure, covered and contained area.
- Chemicals must not be stored near the Kromme River Estuary, eastern creek, drainage pathways or stormwater discharge points.
- All containers must be sealed when not in use.
- Material Safety Data Sheets must be available on site where hazardous substances are stored or used.
- Empty containers, contaminated packaging and chemical residues must be disposed of at an approved facility.

Construction material management

- Construction materials must be stored within approved laydown areas.

- Loose materials such as sand, cement, aggregate and soil must be protected from wind and stormwater erosion.
- No building materials, rubble, spoil or waste may be stockpiled near the estuarine edge, eastern creek or drainage pathways.
- Material storage areas must be inspected regularly to prevent dispersal, leakage or contamination.

Waste management

- All construction and operational waste must be stored in designated waste areas.
- Waste storage areas must be secured to prevent wind dispersal, animal access or stormwater contamination.
- Waste must be removed from site regularly and disposed of at an approved facility.
- No burning, burying or dumping of waste may occur on site.
- Recyclable waste should be separated where feasible.

Stormwater and polluted runoff control

- Polluted runoff must be prevented from entering the stormwater system.
- Service areas, waste handling areas and maintenance areas must be designed to prevent contaminated runoff.
- Clean stormwater must be kept separate from dirty or contaminated runoff.
- Runoff from parking, service and maintenance areas must be dispersed and treated before reaching sensitive receptors.
- Stormwater control measures must be inspected and maintained regularly.
- Construction management and environmental awareness
- All contractors must be inducted on pollution prevention requirements before commencing work.
- The EMPr must include clear method statements for cement handling, refuelling, spill response, waste management, wastewater management and material storage.
- No contractor may discharge liquids, wastewater, wash water or chemicals onto the site.
- A spill response procedure must be displayed or available on site.
- The ECO must monitor compliance during construction.

Operational management and maintenance

- The wastewater treatment system must be operated and maintained by a competent person or service provider.
- Maintenance records must be kept and made available for inspection.
- The system must be inspected regularly for leaks, odours, blockages, overflows or treatment failure.
- Treated water quality must be monitored where required by the engineer, EMPr or relevant authority.
- Reuse areas must be inspected to ensure that ponding, seepage, runoff or vegetation stress does not occur.
- Any system malfunction must be repaired immediately.

Monitoring and compliance

- The ECO must inspect pollution control measures during construction.
- All spills, leaks, wastewater failures or pollution incidents must be recorded and reported.
- Corrective action must be implemented immediately following any incident.
- Post-construction operational monitoring must be undertaken to confirm that wastewater systems, reuse systems, stormwater controls and service areas are functioning as intended.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where wastewater treatment systems are properly designed, operated and maintained, treated water reuse is controlled, and pollution prevention measures are implemented during construction and operation. A medium residual risk may remain due to the sensitivity of the Kromme River Estuary and eastern creek, particularly in the event of wastewater system failure, uncontrolled tank overflow, poor maintenance or accidental spills near sensitive receiving environments.

8. **Loss or Disturbance of Faunal Habitat Associated with Secondary Grassland, Thicket Regrowth, Riparian Vegetation, Estuarine Margin Habitat and the Creek Corridor**

Nature of Impact

The proposed development may result in the localised loss or disturbance of faunal habitat associated with secondary grassland, thicket regrowth, riparian vegetation, estuarine-margin habitat and the eastern creek corridor. Although much of the site has been historically transformed through agricultural activity, previous broad-scale clearing and earlier development-related disturbance, the remaining vegetation and open areas still provide habitat and movement opportunities for small mammals, reptiles, amphibians, birds, invertebrates and other fauna adapted to disturbed coastal and estuarine-edge environments.

The faunal sensitivity of the site is not uniform. The transformed and secondary grassland areas are likely to provide lower habitat complexity than intact riparian or thicket vegetation, but they may still support foraging, shelter and movement by generalist species. The more intact riparian or alluvial vegetation along the eastern creek, the estuarine margin of the Kromme River, thicket regrowth patches and drainage-linked vegetation are expected to have higher faunal value due to greater structural diversity, cover, moisture availability, connectivity and proximity to aquatic habitat.

Potential impacts on fauna include direct habitat loss, displacement, disturbance during vegetation clearing, noise and human activity during construction, accidental injury or mortality, disruption of movement corridors, increased lighting disturbance, increased domestic waste attraction, and indirect effects associated with erosion, pollution, alien vegetation and degradation of riparian or estuarine habitat.

Assessment

The most significant faunal habitat on the property is expected to be associated with the eastern creek corridor, remaining riparian and alluvial vegetation, estuarine-margin habitat along the Kromme River and denser thicket regrowth patches. These areas provide shelter, foraging habitat, movement routes and ecological connectivity between the estuary, creek and inland vegetation. They may also support species

that rely on moist, sheltered or structurally complex vegetation, including amphibians, reptiles, small mammals, birds and invertebrates.

The more open transformed and secondary graminoid-dominated areas are likely to have reduced faunal sensitivity due to past disturbance and lower habitat complexity. However, these areas remain ecologically functional to some degree and may be used by generalist fauna for movement and foraging. Development within these areas is therefore preferred from a faunal perspective, provided that clearing remains limited and disturbance is controlled.

The proposed layout reduces faunal impact by locating development components primarily within transformed or previously disturbed areas and by making use of existing access routes. This reduces the need for new vegetation clearing, limits fragmentation and avoids unnecessary disturbance of more intact habitat. The eastern creek and intact riparian vegetation should remain the primary faunal no-go and buffer areas.

The construction phase represents the period of greatest faunal disturbance, particularly during vegetation clearing, earthworks, movement of workers and vehicles, noise-generating activities and installation of services or boardwalks. Operational impacts are expected to be lower but may include disturbance from lighting, pedestrian movement, pets, waste, vehicle access, noise and general human presence.

Without mitigation, the loss or disturbance of faunal habitat could be moderate to high where development encroaches into riparian, estuarine-margin or thicket habitat. With appropriate layout control, pre-clearance inspections, faunal rescue where required, protection of the eastern creek, controlled lighting, waste management and rehabilitation, the residual impact can be reduced to low to medium.

Mitigation Measures

Avoidance and habitat protection

- Development must be directed towards transformed, previously cleared or secondary regrowth areas wherever practicable.
- The eastern creek corridor and associated riparian or alluvial vegetation must be avoided as far as possible.
- Remaining intact riparian vegetation, dense thicket regrowth and estuarine-margin vegetation must be treated as sensitive faunal habitat.
- No unnecessary clearing, trimming or disturbance may occur within habitat patches outside the approved development footprint.
- Faunal movement corridors between the eastern creek, Kromme River Estuary and inland vegetation must be maintained as far as practicable.

Footprint control and demarcation

- All development footprints, construction areas, access routes, parking areas and service areas must be clearly demarcated before construction commences.
- No-go areas must be clearly marked and communicated to all contractors.
- Construction personnel and vehicles must remain within approved work areas.

- No stockpiling, laydown areas, waste storage, cement mixing or parking may occur within riparian, creek, estuarine-margin or dense thicket habitat.

Pre-clearance inspection and faunal rescue

- A pre-clearance inspection must be undertaken by the ECO and, where necessary, a suitable faunal specialist before vegetation clearing begins.
- Any fauna encountered during clearing must be allowed to move away safely or must be relocated by an appropriately competent person where required.
- Particular care must be taken when clearing dense vegetation, logs, rocks, burrows, leaf litter or damp areas that may provide shelter for reptiles, amphibians, small mammals or invertebrates.
- Clearing must proceed slowly and progressively to allow fauna to disperse.
- No fauna may be harmed, collected, hunted, trapped or killed by construction personnel.

Vegetation clearing controls

- Clearing must be limited to the minimum area required for construction.
- Vegetation must be cleared in a phased manner and only immediately before construction in that area.
- Large areas must not be cleared and left inactive for extended periods.
- Clearing must avoid the breeding season of sensitive fauna where identified by the ECO or relevant specialist.
- Any hollow logs, woody debris, rocks or natural shelter features should be retained within rehabilitation or no-go areas where feasible.

Protection of the eastern creek and estuarine margin

- The eastern creek corridor must be maintained as a protected habitat and movement corridor.
- No uncontrolled access may be allowed through the creek corridor.
- Ground-level paths through riparian vegetation must be avoided.
- Where pedestrian access is required near sensitive habitat, elevated boardwalks or walkways must be used to reduce trampling, compaction and habitat disturbance.
- Boardwalks must be aligned to avoid dense vegetation, root zones, burrows and sensitive microhabitats as far as practicable.

Construction phase disturbance control

- Construction noise must be kept to the minimum practicable level.
- Construction must be limited to normal working hours unless otherwise approved.
- Vehicle speeds must be controlled to reduce faunal collision risk, dust and noise.
- Open trenches, excavations or holes must be inspected daily and before backfilling to ensure that trapped fauna are removed safely.
- Excavations should be covered or provided with escape ramps where left open overnight.
- Lighting during construction must be minimised and directed away from riparian, creek and estuarine habitats.

Operational phase disturbance control

- External lighting must be low-level, downward-directed and shielded to minimise disturbance to nocturnal fauna.
- Lighting must avoid spill into the eastern creek, estuarine margin and dense vegetation areas.
- Pedestrian movement must be confined to approved paths, walkways and boardwalks.
- No informal trails may be established through sensitive habitat.
- Noise and disturbance from tourism use must be managed through house rules and operational controls.
- Pets must be controlled, and free-roaming domestic animals should not be permitted in sensitive habitat areas.

Waste and food-source management

- All waste must be stored in animal-proof containers.
- Waste must be removed from site regularly.
- Food waste may not be left exposed where it could attract scavengers, rodents or invasive fauna.
- No feeding of wildlife may be permitted.
- Litter must be prevented from entering the Kromme River Estuary, eastern creek or surrounding vegetation.

Pollution and habitat quality protection

- No wastewater, greywater, hydrocarbons, chemicals, cement wash water or polluted runoff may enter faunal habitat areas, the eastern creek or Kromme River Estuary.
- Stormwater must be managed to avoid erosion, sedimentation and degradation of riparian or estuarine habitat.
- Treated effluent reuse must not result in ponding, runoff, seepage or habitat degradation.
- Spill response measures must be available during construction and operation.

Alien invasive species control

- Alien invasive plants must be removed from disturbed and sensitive areas in a controlled manner.
- Follow-up alien control must be undertaken to prevent reinvasion.
- Rehabilitation must use locally appropriate indigenous species to restore habitat value.
- Alien control should be undertaken carefully to avoid unnecessary disturbance to fauna using the vegetation.

Rehabilitation and habitat restoration

- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable.
- Rehabilitation must prioritise soil stabilisation, vegetation cover, habitat connectivity and restoration of local indigenous vegetation structure.
- Degraded estuarine-margin areas should be rehabilitated where feasible to improve habitat function.

- Natural woody debris, brush packing or mulch may be used where appropriate to assist soil protection and provide microhabitat.
- Rehabilitation success must be monitored until vegetation is established and habitat stability is achieved.

Monitoring and compliance

- The ECO must monitor vegetation clearing, faunal rescue requirements, no-go area compliance and habitat disturbance during construction.
- Any faunal mortality, injury or sensitive species encounter must be recorded and reported where required.
- Corrective measures must be implemented immediately where unauthorised habitat disturbance occurs.
- Post-construction monitoring must confirm that disturbed areas are rehabilitated and that sensitive habitat areas remain protected.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where development remains within transformed and secondary regrowth areas, the eastern creek and intact riparian vegetation are avoided, and faunal movement corridors are maintained. A medium residual impact may remain where development occurs close to the estuarine margin, creek corridor or dense thicket regrowth, due to the inherent sensitivity and connectivity value of these habitats within the Kromme River estuarine landscape.

9. Disturbance to Fauna During Construction Through Noise, Movement, Vegetation Clearance and Temporary Human Activity

Nature of Impact

The construction phase may result in temporary disturbance to fauna through noise, movement of workers and vehicles, vegetation clearance, excavation, service installation, material deliveries, operation of tools and general human activity. These impacts are expected to be most relevant during site establishment, vegetation clearing, earthworks, access preparation, construction of the accommodation units, main house, barn and services area, installation of wastewater and stormwater infrastructure, boardwalk construction and jetty-related works.

Although the proposed development is low intensity and much of the site has been historically transformed, the property remains connected to the Kromme River Estuary, eastern creek, secondary grassland, thicket regrowth, riparian vegetation and estuarine-margin habitat. These areas may be used by birds, reptiles, amphibians, small mammals, invertebrates and other fauna for foraging, shelter, breeding, dispersal and movement.

Construction disturbance may result in temporary displacement of fauna from the immediate work areas, disruption of movement patterns, disturbance of nesting or sheltering fauna, injury or mortality during vegetation clearance, entrapment in excavations, increased stress due to noise and vibration, and increased risk of conflict between workers and wildlife. Faunal disturbance may be greater in areas close

to the eastern creek, dense thicket regrowth, riparian vegetation and the estuarine edge, where habitat structure and connectivity are higher.

Assessment

The impact is expected to be most significant during the construction phase and primarily localised to active work areas. Fauna occurring within transformed and secondary regrowth areas are likely to include generalist species that are relatively tolerant of disturbance. However, riparian and estuarine-margin habitats are likely to support a wider range of fauna and provide more important refuge and movement areas.

The eastern creek corridor is considered the most important faunal refuge and movement corridor on the property and should be avoided as far as practicable. Disturbance in this area could affect fauna that rely on sheltered, moist or structurally complex vegetation. The Kromme River estuarine edge also requires careful management due to its ecological sensitivity, habitat function and connection to the broader estuarine system.

Construction activities may temporarily displace fauna from work areas, but this impact can be reduced where clearing is limited, undertaken in a phased manner and preceded by ECO inspection. The use of existing access routes and transformed areas will reduce new disturbance and limit the need for vegetation removal. Manual or low-impact construction methods, particularly near sensitive vegetation, boardwalks and the jetty access, will further reduce disturbance.

Without mitigation, construction-related faunal disturbance could be moderate, particularly where vegetation clearing occurs near riparian or estuarine habitats. With appropriate pre-clearance inspections, controlled clearing, construction timing, no-go demarcation, access control, fauna rescue procedures and contractor awareness, the residual impact can be reduced to low.

Mitigation Measures

Pre-construction inspection and planning

- A pre-construction inspection must be undertaken by the ECO before site establishment and vegetation clearing.
- The ECO must identify potential faunal refuges, including dense vegetation, burrows, logs, rock piles, damp areas, drainage lines and riparian margins.
- Where required, a suitably qualified faunal specialist must assist with pre-clearance inspections or faunal relocation.
- Sensitive faunal habitat areas, particularly the eastern creek, dense riparian vegetation and estuarine-margin vegetation, must be demarcated as no-go or restricted-access areas before construction commences.

Vegetation clearing and fauna displacement

- Vegetation clearing must be limited to the approved development footprint.
- Clearing must be phased and undertaken progressively to allow fauna to move away from disturbance areas.
- Clearing must proceed from the most disturbed areas outward, where practicable, to avoid trapping fauna.

- Dense vegetation, woody debris, rocks and potential refuges must be checked before removal.
- Any fauna encountered must be allowed to move away safely or must be relocated by a competent person where necessary.
- No fauna may be harmed, captured, collected, hunted or killed by construction personnel.

Protection of sensitive habitat

- The eastern creek corridor must be avoided and protected as a faunal refuge and movement corridor.
- No unnecessary construction activity may occur within riparian vegetation, the estuarine margin or dense thicket regrowth.
- Construction camps, laydown areas, stockpiles, waste storage areas and parking areas must be located in transformed or lower-sensitivity areas.
- Access to the estuarine edge must be restricted to approved routes and authorised activities.
- Ground-level informal paths through sensitive habitat must not be allowed.

Construction noise and activity control

- Construction activities must be limited to normal working hours unless otherwise approved.
- Unnecessary noise, shouting, hooting, revving of vehicles and prolonged idling must be avoided.
- Equipment must be maintained in good working order to reduce unnecessary noise and vibration.
- Generators, if required, must be located away from sensitive habitats where practicable and must be fitted with noise-reducing measures where necessary.
- Manual or low-impact construction methods must be used near the eastern creek, estuarine margin, boardwalks and jetty access where feasible.

Vehicle and access control

- Vehicle movement must be restricted to approved access routes.
- Vehicle speeds must be limited on site to reduce collision risk, dust, noise and disturbance.
- No informal tracks may be created.
- Construction vehicles must not enter no-go areas, riparian vegetation, the eastern creek corridor or estuarine-margin habitat.
- Excavation and trench safety
- Open trenches, excavations and holes must be inspected daily for trapped fauna.
- Excavations left open overnight must be covered where feasible or provided with escape ramps.
- Any trapped fauna must be removed safely by a competent person before works continue.
- Excavations must be backfilled as soon as practicable once works are complete.

Lighting control

- Construction lighting must be kept to the minimum necessary for safety and security.
- Lights must be downward-directed and shielded to prevent spill into riparian vegetation, the eastern creek and the Kromme River estuarine edge.
- Night-time construction must be avoided unless specifically approved.
- Permanent operational lighting must also be designed to minimise disturbance to nocturnal fauna.

Worker conduct and environmental awareness

- All workers must receive environmental induction before commencing work.
- The induction must include the importance of the Kromme River Estuary, eastern creek, riparian vegetation and faunal habitats.
- Workers must be instructed not to harm, collect, feed, chase, trap or disturb fauna.
- No domestic animals may be brought onto the construction site.
- No fires, hunting, trapping or wildlife collection may be permitted.

Waste and food management

- Waste must be stored in closed, animal-proof containers.
- Food waste must not be left exposed where it may attract scavengers, rodents or other animals.
- Waste must be removed from site regularly and disposed of at an approved facility.
- No litter may be allowed to enter the Kromme River Estuary, eastern creek or surrounding vegetation.

Pollution prevention

- No cement wash water, hydrocarbons, chemicals, greywater, wastewater or polluted runoff may enter faunal habitat areas.
- Spill kits must be available on site.
- Pollution incidents must be contained and cleaned immediately.
- Contaminated soil or material must be removed and disposed of appropriately.

Rehabilitation and habitat recovery

- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable after construction.
- Rehabilitation must use locally appropriate indigenous vegetation to restore habitat cover and reduce erosion.
- Brush packing, mulch, retained woody material or natural debris may be used where suitable to provide microhabitat and assist stabilisation.
- Rehabilitation must prioritise areas near the estuarine edge, drainage pathways and any disturbed secondary vegetation.

Monitoring and compliance

- The ECO must monitor faunal disturbance, vegetation clearing, no-go area compliance and excavation safety during construction.
- Any faunal injury, mortality, sensitive species encounter or relocation must be recorded.
- Corrective action must be implemented where unauthorised disturbance occurs.
- Post-construction monitoring must confirm that disturbed areas are stabilised and rehabilitated.

Residual Impact - Low following mitigation.

The residual impact is expected to be low where construction is limited to approved footprints, sensitive habitats are avoided, clearing is phased, fauna are allowed to disperse, no-go areas are enforced and worker conduct is properly managed. A low to medium residual impact may remain where works occur close to the Kromme River estuarine edge, eastern creek or dense riparian vegetation due to the sensitivity and habitat value of these areas.

10. Impacts on Biodiversity Connectivity and Ecological Function, Particularly Where Development Occurs Near the Eastern Creek, Estuarine Edge or Remaining Vegetation Linkages

Nature of Impact

The proposed development may affect biodiversity connectivity and ecological function where buildings, access routes, pedestrian pathways, service infrastructure or jetty-related activities occur near remaining

vegetation linkages, the eastern creek, the Kromme River estuarine edge and areas of thicket or riparian regrowth.

Biodiversity connectivity refers to the ability of vegetation patches, riparian corridors, drainage lines and estuarine margins to support the movement, dispersal, foraging and refuge requirements of fauna and flora. Ecological function refers to the role these areas play in maintaining natural processes such as runoff filtration, sediment trapping, bank stabilisation, nutrient cycling, habitat provision, faunal movement, seed dispersal and resilience of the estuarine landscape.

Although much of Farm 838 has been historically transformed by agricultural activity, previous clearing and earlier development-related disturbance, the site remains ecologically connected to the Kromme River Estuary. The eastern creek corridor, estuarine margin, remnant riparian vegetation, thicket regrowth and secondary vegetation areas collectively contribute to the ecological functioning of the property and its connection to the broader estuarine environment.

The greatest risk to connectivity and ecological function would occur if development fragments the eastern creek corridor, removes remaining riparian or alluvial vegetation, creates barriers to faunal movement, increases edge effects, concentrates stormwater flows, or further degrades the already modified Kromme River estuarine edge.

Assessment

The site is not regarded as a uniformly intact natural system. Large portions of the property have been transformed and are now characterised by secondary graminoid regrowth, scattered shrubs and isolated woody regrowth. These areas provide some ecological function, but generally have lower connectivity and habitat value than intact riparian or alluvial vegetation.

The eastern creek corridor is considered the most important remaining connectivity feature on the property. It appears to retain more intact riparian or alluvial vegetation and provides a functional ecological linkage between inland vegetation, drainage processes and the estuarine receiving environment. This corridor should therefore be avoided, buffered and protected as far as practicable.

The Kromme River estuarine edge is also functionally important, even where degraded. The existing degradation of portions of the river edge does not remove its ecological importance. Instead, it increases the need to prevent further disturbance and to promote rehabilitation where feasible. A degraded estuarine edge can still provide sediment control, movement habitat, aquatic-terrestrial transition function and potential for ecological recovery.

The proposed layout reduces connectivity impacts by directing the main development components toward transformed or secondary regrowth areas and making use of existing access routes. This reduces the need for new fragmentation and avoids unnecessary disturbance of intact vegetation. Elevated walkways or boardwalks near sensitive areas will also reduce ground-level trampling, soil compaction and disruption of vegetation linkages.

Without mitigation, impacts on biodiversity connectivity and ecological function could be moderate to high, particularly if the eastern creek, estuarine margin or remaining vegetation linkages are fragmented or

degraded. With avoidance, micro-siting, controlled access, stormwater management, rehabilitation and long-term vegetation management, the residual impact can be reduced to low to medium.

Mitigation Measures

Avoidance of key ecological linkages

- The eastern creek corridor must be avoided and protected as a primary ecological linkage.
- Development must not fragment the eastern creek corridor or remove intact riparian or alluvial vegetation unless specifically assessed and authorised.
- The Kromme River estuarine edge must be treated as a sensitive ecological interface and managed to prevent further degradation.
- Remaining thicket regrowth, riparian vegetation and vegetation linkages between the estuary, creek and inland areas must be retained as far as practicable.
- Development must be directed to transformed, historically disturbed or secondary regrowth areas wherever feasible.

Layout and micro-siting

- The final site development plan must be informed by the terrestrial biodiversity, aquatic and plant species specialist assessments.
- Development footprints, access routes, service corridors and pedestrian routes must be micro-sited to avoid sensitive vegetation, drainage features and functional movement corridors.
- Buildings and infrastructure must be clustered where practicable to reduce habitat fragmentation.
- New service routes must follow existing disturbed corridors as far as possible.
- No unnecessary fencing, walls or barriers may be placed across ecological linkages.

Access and movement control

- Existing access routes must be used as far as practicable to reduce new fragmentation.
- Vehicle movement must be restricted to approved routes only.
- No informal tracks may be created through vegetation, the eastern creek corridor or the estuarine edge.
- Pedestrian movement must be directed along approved walkways, boardwalks or managed routes.
- Access to sensitive habitat areas must be restricted during both construction and operation.

Elevated boardwalks and walkways

- Where pedestrian access is required near the eastern creek, estuarine edge or sensitive vegetation linkages, elevated boardwalks or walkways must be used.
- Boardwalks must be aligned to maintain vegetation continuity and avoid root zones, mature woody vegetation and sensitive groundcover.
- Boardwalk construction must minimise support posts, soil disturbance and vegetation trimming.
- Ground-level paths through riparian vegetation must be avoided.

Stormwater and hydrological function

- Stormwater must be managed to maintain natural drainage patterns as far as practicable.
- Roof runoff must be collected and directed to rainwater harvesting tanks for reuse.
- Where tanks are full, overflow or secondary discharge must be dispersed through appropriate attenuation, energy dissipation and low-impact stormwater measures.
- Stormwater must not be discharged directly into the Kromme River Estuary or eastern creek without attenuation, sediment control and energy dissipation.
- Concentrated flows that may erode, fragment or degrade vegetation linkages must be avoided.

- Runoff from access routes, parking areas and service areas must be slowed, dispersed and treated before reaching sensitive areas.

Vegetation protection and rehabilitation

- Remaining indigenous vegetation that contributes to connectivity must be retained as far as practicable.
- Clearing must be limited strictly to approved footprints.
- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable.
- Rehabilitation must use locally appropriate indigenous species suited to the verified site vegetation and ecological context.
- Degraded estuarine-margin areas should be rehabilitated where feasible to improve ecological function.
- Rehabilitation should aim to strengthen vegetation continuity between secondary regrowth areas, the estuarine margin and the eastern creek corridor.

Alien invasive species control

- Alien invasive plants must be controlled to prevent further degradation of ecological linkages.
- Alien clearing must be undertaken carefully to avoid destabilising soils or removing functional cover without follow-up rehabilitation.
- Follow-up alien control must be implemented during both construction and operation.
- Cleared areas must be monitored for reinvasion and stabilised with appropriate indigenous vegetation.

Faunal movement and habitat continuity

- Faunal movement routes between the estuary, eastern creek and inland vegetation must be maintained as far as practicable.
- Open space between development components should be retained to allow movement of small fauna.
- External lighting must be low-level, downward-directed and shielded to avoid disrupting nocturnal fauna movement.
- Fencing, if required, must not unnecessarily block faunal movement through retained habitat areas.
- Pets and domestic animals must be controlled to reduce disturbance to wildlife.

Pollution prevention

- No wastewater, greywater, hydrocarbons, cement wash water, chemicals or polluted runoff may enter the eastern creek, estuarine edge or retained vegetation linkages.
- The wastewater treatment and reuse system must be designed and managed to prevent seepage, overflow, ponding or runoff towards sensitive areas.
- Waste storage, service areas and maintenance areas must be located away from ecological linkages and sensitive habitats.

Monitoring and compliance

- The ECO must monitor compliance with no-go areas, access routes, vegetation clearing limits and rehabilitation requirements.
- The condition of the eastern creek, estuarine edge and retained vegetation linkages must be inspected during construction.
- Any unauthorised clearing, fragmentation, erosion, pollution or disturbance of ecological linkages must be recorded and corrected immediately.

- Post-construction monitoring must confirm that retained ecological linkages remain functional and that rehabilitated areas are stabilising.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where the eastern creek corridor, estuarine edge and remaining vegetation linkages are avoided, retained and rehabilitated, and where development remains within transformed or secondary regrowth areas. A medium residual impact may remain where development occurs close to sensitive connectivity features, given the site's location within the Kromme River estuarine landscape and the importance of maintaining ecological function along the creek and estuarine margin.

11. Disturbance of Aquatic and Terrestrial CBA / ESA Areas

Nature of Impact

The proposed development is located within an environmentally sensitive landscape associated with the Kromme River Estuary, the eastern creek, estuarine-margin vegetation, secondary vegetation regrowth, riparian or alluvial vegetation, and mapped aquatic and terrestrial Critical Biodiversity Area and Ecological Support Area features.

Based on the available biodiversity mapping, portions of Farm 838 fall within aquatic and terrestrial CBA / ESA categories. The aquatic mapping indicates that the broader property is associated with Aquatic ESA 1, with higher-sensitivity Aquatic CBA 1 features associated with the lower southern and south-eastern estuarine edge and areas linked to the Kromme River system. The terrestrial mapping similarly indicates a mosaic of Terrestrial ESA 1, Terrestrial ESA 2 and Terrestrial CBA 1 features, with the more sensitive areas generally associated with the Kromme River estuarine margin, eastern creek and remaining vegetation linkages.

Potential impacts on these mapped CBA / ESA areas include vegetation clearance, habitat fragmentation, alteration of drainage patterns, erosion, sedimentation, pollution, disturbance of riparian and estuarine-edge vegetation, reduced ecological connectivity, loss of ecological support function and cumulative degradation of biodiversity features.

The sensitivity of the mapped CBA / ESA areas must, however, be interpreted together with the verified site condition. Initial site assessment indicates that the property is not uniformly intact and that large portions have been historically transformed by agricultural activity, earlier broad-scale clearing and previous development-related disturbance. These transformed areas are now characterised largely by secondary graminoid regrowth, scattered shrubs and isolated woody regrowth. By contrast, the eastern creek, estuarine edge and any remaining intact riparian or alluvial vegetation retain higher biodiversity importance and are the main areas where CBA / ESA disturbance must be avoided.

Assessment

The mapped CBA / ESA status of the site indicates that the property occurs within a landscape of biodiversity importance. The purpose of these mapped areas is generally to maintain ecological pattern,

ecological processes, connectivity, aquatic function, habitat value and resilience within the broader Kromme River estuarine system.

The main impact concern is therefore not simply the presence of development within a mapped CBA / ESA area, but whether the development will compromise the ecological function that the CBA / ESA is intended to protect. On Farm 838, the most important functional components appear to be the eastern creek corridor, the Kromme River estuarine edge, remnant riparian or alluvial vegetation, drainage pathways, remaining vegetation linkages and areas that support stormwater filtration, sediment control and faunal movement.

The proposed layout reduces impacts on mapped CBA / ESA areas by directing development towards historically transformed or disturbed portions of the property and by making use of existing access routes where practicable. This reduces the need for new vegetation clearance, avoids unnecessary fragmentation and helps retain the more sensitive functional features of the site.

The eastern creek corridor should be regarded as a high-sensitivity ecological feature due to its likely role in aquatic support function, riparian vegetation retention, habitat connectivity and drainage. The Kromme River estuarine edge is also sensitive, even where degraded, due to its direct connection with the estuary and its potential role in bank stability, sediment trapping, water quality protection and rehabilitation.

Where the mapped CBA / ESA areas overlap with transformed or secondary regrowth areas, development may be acceptable if it does not compromise ecological process, aquatic function, biodiversity connectivity or rehabilitation potential. Where the mapped CBA / ESA areas overlap with intact riparian, alluvial, creek or estuarine-margin habitat, avoidance must be prioritised.

Without mitigation, disturbance of aquatic and terrestrial CBA / ESA areas could result in moderate to high impacts, particularly where sensitive functional features are affected. With careful site selection, micro-siting, avoidance of the eastern creek, protection of the estuarine edge, stormwater control, wastewater management, alien clearing and rehabilitation, the residual impact can be reduced to low to medium.

Mitigation Measures

Specialist verification and layout confirmation

- The final layout must be informed by the aquatic, terrestrial biodiversity and plant species specialist assessments.
- The mapped aquatic and terrestrial CBA / ESA features must be verified at site scale and interpreted in relation to actual vegetation condition, aquatic function, drainage features, habitat value and ecological connectivity.
- The final site development plan must avoid or minimise impacts on confirmed sensitive CBA / ESA features.
- Any development components located close to the eastern creek, estuarine edge or remaining riparian vegetation must be micro-sited with specialist input.

Avoidance of high-sensitivity functional areas

- The eastern creek corridor must be avoided and protected as a priority aquatic and terrestrial ecological feature.

- Intact riparian or alluvial vegetation must be retained as far as practicable.
- The Kromme River estuarine edge must be treated as a sensitive buffer and rehabilitation area.
- Development must avoid drainage pathways, unstable banks, sensitive vegetation patches and areas that provide important ecological connectivity.
- No unnecessary development infrastructure, storage areas, parking areas, construction camps or service areas may be placed within sensitive CBA / ESA features.

Use of transformed and lower-sensitivity areas

- Development must be directed towards historically transformed, previously cleared or secondary regrowth areas wherever practicable.
- Existing access routes must be used as far as possible to reduce new disturbance.
- New access roads and service routes must be kept to the minimum necessary and aligned through lower-sensitivity areas.
- Parking and service areas must be located in transformed or already disturbed areas.

Footprint limitation and demarcation

- The development footprint must be limited strictly to the approved layout.
- All no-go areas must be demarcated before construction commences.
- The eastern creek, estuarine edge, intact riparian vegetation and any specialist-confirmed sensitive CBA / ESA features must be clearly marked as restricted-access areas.
- Construction personnel, vehicles, materials and equipment must remain within approved working areas.
- Any unauthorised clearing or encroachment into CBA / ESA features must be rehabilitated immediately.

Aquatic protection measures

- No stormwater, sediment, wastewater, greywater, hydrocarbons, cement wash water or chemical runoff may enter the eastern creek or Kromme River Estuary.
- Stormwater must be attenuated, dispersed and treated before reaching aquatic or riparian areas.
- Roof runoff must be directed to rainwater harvesting tanks for reuse.
- Where rainwater harvesting tanks are full, overflow or secondary discharge must be managed through appropriate stormwater controls, including energy dissipation and sediment control.
- No direct discharge may occur into aquatic CBA features without specialist-approved mitigation.

Vegetation and habitat protection

- Vegetation clearing must be limited to the approved footprint and must avoid intact indigenous vegetation as far as practicable.
- Clearing of riparian, alluvial or estuarine-margin vegetation must be avoided unless specifically assessed and authorised.
- Search and rescue must be undertaken where required by the plant species or terrestrial biodiversity specialist.
- No vegetation may be cleared for views, convenience, informal access or landscaping preference.
- Retained vegetation linkages must be protected to maintain ecological function.

Connectivity and ecological process

- Faunal movement corridors between the eastern creek, estuarine edge and inland vegetation must be maintained as far as practicable.
- Development components must be clustered where feasible to reduce fragmentation.
- Fencing, lighting and access controls must not unnecessarily disrupt ecological connectivity.

- External lighting must be low-level, downward-directed and shielded away from riparian and estuarine habitats.
- No informal paths or tracks may be allowed through retained vegetation linkages.

Boardwalks, walkways and jetty-related works

- Where access is required near sensitive CBA / ESA features, elevated boardwalks or walkways must be used.
- Boardwalks must be aligned to avoid intact vegetation, root zones, drainage paths and sensitive substrate areas.
- The proposed jetty must be located at the least sensitive practicable point along the estuarine edge, preferably where a stable rock outcrop or lower-sensitivity substrate is confirmed.
- The jetty must use an articulated access walkway and floating pontoon design where feasible to reduce direct disturbance.
- Hard engineering, infilling, bank modification or unnecessary excavation must be avoided.

Alien invasive species control and rehabilitation

- Alien invasive plants must be removed in a controlled manner, particularly from disturbed CBA / ESA areas, riparian zones and the estuarine edge.
- Follow-up alien control must be undertaken during construction and operation.
- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable.
- Rehabilitation must use locally appropriate indigenous species suitable for the verified vegetation and site conditions.
- Degraded estuarine-margin areas should be rehabilitated where feasible to improve ecological support function.

Construction management

- Construction activities must be managed in accordance with the EMPr.
- No stockpiles, laydown areas, waste storage, cement mixing, refuelling or chemical storage may occur within sensitive CBA / ESA areas.
- Construction must be phased to minimise exposed soil and disturbance.
- Manual or low-impact construction methods must be used near sensitive areas where feasible.
- All contractors must be inducted on the sensitivity of the CBA / ESA features.

Monitoring and compliance

- The ECO must monitor compliance with no-go areas, clearing limits, access controls and specialist recommendations.
- The condition of the eastern creek, estuarine edge and retained vegetation linkages must be monitored during construction.
- Any erosion, sedimentation, pollution, vegetation damage or unauthorised encroachment into CBA / ESA areas must be recorded and corrected immediately.
- Post-construction monitoring must confirm that disturbed areas are rehabilitated and that ecological support functions are not being further degraded.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where development remains within transformed and lower-sensitivity portions of the site, the eastern creek and estuarine edge are avoided and protected, and specialist recommendations are implemented. A medium residual impact may remain where development

occurs within mapped CBA / ESA areas, even if transformed, due to the broader ecological support function of the site and its direct connection to the Kromme River Estuary.

12. Visual and Landscape Impacts within the Kromme River and St Francis Bay Estuarine Setting

Nature of Impact

The proposed development may result in visual and landscape impacts within the sensitive Kromme River and St Francis Bay estuarine setting. These impacts may arise from the introduction of new built structures, roof forms, access routes, parking areas, service infrastructure, boardwalks, external lighting, construction activity and the proposed jetty within a landscape that is valued for its estuarine, riverine, agricultural and coastal character.

The Kromme River Estuary and surrounding St Francis Bay landscape have a high visual amenity value due to the presence of open water, riparian vegetation, natural landforms, estuarine edges, agricultural open space and low-density settlement patterns. Development that is poorly sited, visually dominant, brightly coloured, over-scaled or exposed on sensitive edges may alter the existing landscape character and reduce the visual quality of the estuarine setting.

The proposed development is, however, low intensity in nature and is intended to function as a working farm and small-scale tourism accommodation facility rather than a dense residential estate. The site has also been historically transformed by agricultural use, previous clearing and earlier development-related infrastructure. This reduces the visual sensitivity of some inland portions of the property, although the estuarine edge, eastern creek and open river-facing areas remain visually sensitive.

Assessment

The visual impact of the proposed development will depend on the final location, scale, design, colour, materials, lighting and screening of the proposed structures and associated infrastructure. The most visually sensitive areas are likely to be those visible from the Kromme River Estuary, river users, neighbouring properties, public viewpoints, access routes and elevated positions in the surrounding landscape.

Development located within transformed inland areas, secondary regrowth and existing disturbed corridors is expected to have a lower visual impact, particularly where structures are set back from the estuarine edge, kept low in scale, use recessive colours and are screened by retained vegetation. In contrast, structures, access routes or lighting placed close to the estuarine edge, eastern creek or exposed river-facing areas may be more visually prominent and could affect the natural and semi-natural character of the estuarine landscape.

The use of existing access routes is a positive visual mitigation measure, as it avoids the creation of new road scars and limits additional disturbance across the landscape. Similarly, directing parking and service areas to lower-sensitivity and visually less exposed locations will reduce visual clutter.

The proposed jetty and associated access walkway will introduce a visual element at the estuarine edge. The impact can be reduced if the jetty is kept modest in scale, uses simple and recessive materials, is located at the least visually and environmentally intrusive position, and avoids unnecessary hard engineering, retaining walls, infilling or visually dominant structures. A floating pontoon and articulated access walkway are preferable to more intrusive fixed structures where feasible.

Construction phase visual impacts will be temporary and will relate to cleared areas, stockpiles, vehicles, materials, temporary fencing, exposed soils and construction activity. Operational phase impacts will be longer term and will relate to the visibility of the buildings, access routes, lighting, parking, services, boardwalks and jetty.

Without mitigation, visual and landscape impacts could be moderate, particularly if structures are visually exposed, poorly integrated or located too close to the estuarine edge. With appropriate siting, architectural treatment, colour control, vegetation retention, lighting control and rehabilitation, the residual impact can be reduced to low to medium.

Mitigation Measures

Layout and siting

- Development must be located within transformed, previously disturbed or visually less sensitive areas as far as practicable.
- Structures must be set back from the Kromme River estuarine edge and eastern creek as far as practicable.
- The final layout must avoid unnecessary visual intrusion into the riverine and estuarine landscape.
- Buildings, parking areas, service infrastructure and access routes must be clustered or arranged to reduce visual spread across the site.
- Development must avoid visually prominent ridgelines, exposed edges and sensitive river-facing positions where feasible.

Built form and scale

- Buildings must be kept low in scale and visually recessive within the landscape.
- The architectural form must be consistent with a low-intensity farm and nature-based tourism character.
- Large, bulky or visually dominant building forms must be avoided.
- Roof forms must be simple and must avoid excessive height, glare or visual prominence.
- Service infrastructure, tanks, wastewater infrastructure, refuse areas and maintenance areas must be screened or located in visually unobtrusive positions.

Materials and colours

- External materials must be natural, muted and visually recessive.
- Highly reflective, bright or contrasting colours must be avoided.
- Roof sheeting, walls, decks, balustrades and other external finishes must be selected to blend with the surrounding vegetation, soil tones and estuarine landscape.
- Reflective glass, shiny metal finishes and high-glare surfaces must be avoided or minimised.
- Natural stone, timber, muted plaster and other low-reflectivity materials should be used where appropriate.

Vegetation retention and screening

- Existing indigenous vegetation must be retained as far as practicable to assist with visual screening.
- No vegetation may be removed for the purpose of opening views unless specifically approved.
- Sensitive vegetation along the eastern creek and estuarine margin must be retained for ecological and visual buffering.
- Where screening is required, locally appropriate indigenous vegetation must be used.
- Rehabilitation planting must be used to soften building edges, access routes, parking areas and service areas.

Access, parking and services

- Existing access routes must be used as far as practicable to avoid new visual scars.
- New access tracks must be kept to the minimum width and length required.
- Parking areas must be located in visually discreet positions and screened where necessary.
- Cut and fill must be minimised to avoid visible earthworks scars.
- Service corridors must follow existing disturbed routes where feasible.

Boardwalks, walkways and jetty

- Boardwalks and walkways must be modest in scale and visually recessive.
- Elevated walkways must use materials and colours that blend into the landscape.
- The proposed jetty must be kept to the minimum size required for safe and functional use.
- The jetty must avoid visually intrusive hard engineering, unnecessary bank modification or bulky structures.
- The articulated walkway and floating pontoon must be designed to sit lightly within the estuarine edge.

Lighting control

- External lighting must be kept to the minimum necessary for safety and security.
- Lighting must be downward-directed, low-level and shielded.
- Lighting must not spill into the Kromme River Estuary, eastern creek, riparian vegetation or neighbouring properties.
- Bright white, flashing or high-intensity lighting must be avoided.
- Motion sensors, timers and low-glare fittings must be used where appropriate.

Construction phase visual management

- Construction areas must be kept neat and orderly.
- Stockpiles, materials, waste and equipment must be stored within designated areas.
- Construction waste must be removed regularly.
- Exposed soils must be stabilised and rehabilitated as soon as practicable.
- Temporary construction lighting must be minimised and directed away from sensitive receptors.
- No unnecessary clearing may occur outside approved footprints.

Rehabilitation and landscape integration

- All disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable.
- Rehabilitation must use locally appropriate indigenous vegetation.
- Revegetation must aim to soften visual disturbance, stabilise exposed soils and restore landscape character.
- Degraded estuarine-margin areas should be rehabilitated where feasible to improve both ecological and visual function.
- Alien invasive plant control must be implemented to prevent further degradation of the landscape character.

Monitoring and compliance

- The ECO must monitor compliance with clearing limits, rehabilitation requirements and construction housekeeping.
- Any unauthorised clearing, visual scarring or disturbance outside approved areas must be rehabilitated.
- Post-construction monitoring must confirm that exposed areas have been stabilised and that rehabilitation planting is establishing.
- Lighting, screening and service infrastructure must be checked during operation to ensure that visual impacts remain controlled.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where development is kept low in scale, visually recessive, set back from sensitive edges and integrated into transformed or lower-sensitivity portions of the site. A medium residual impact may remain where structures, boardwalks or the jetty are visible from the Kromme River Estuary or neighbouring viewpoints, due to the inherent visual sensitivity of the estuarine landscape.

13. Noise, Dust and General Nuisance Impacts During the Construction Phase

Nature of Impact

The proposed development may result in temporary noise, dust and general nuisance impacts during the construction phase. These impacts may arise from site establishment, vegetation clearance, limited earthworks, construction of the accommodation units, main house, barn and services area, installation of wastewater and stormwater infrastructure, delivery of materials, movement of vehicles, use of hand tools and small construction equipment, boardwalk construction and jetty-related works.

The site is located within a sensitive rural, agricultural and estuarine setting associated with the Kromme River Estuary and St Francis Bay landscape. Although construction activities will be temporary and localised, nuisance impacts may affect nearby receptors, users of the Kromme River Estuary, neighbouring properties, fauna using the estuarine margin and eastern creek, and the general sense of tranquillity associated with the riverine landscape.

Dust impacts may arise from vehicle movement on gravel or disturbed surfaces, exposed soils, stockpiles, material handling, excavation, trenching and wind erosion. Noise impacts may arise from delivery vehicles, construction workers, tools, generators, pumps, excavation equipment and general construction activity. General nuisance impacts may include temporary visual disturbance, increased traffic, litter, construction lighting, worker presence, waste storage, material stockpiles and disruption to the quiet rural character of the area.

Assessment

The noise, dust and nuisance impacts are expected to be primarily temporary and localised to the construction phase. The proposed development is low intensity and does not require large-scale bulk

earthworks or industrial construction activity. The use of existing access routes and preference for low-impact construction methods will reduce the scale and duration of disturbance.

The highest nuisance risk is expected during site establishment, delivery of materials, vegetation clearance, trenching, construction of foundations and services, and any works near the estuarine edge or proposed jetty area. Dust generation may be higher during dry and windy conditions, particularly where exposed soils, access roads and stockpiles are not stabilised or dampened. Noise disturbance may be more noticeable due to the relatively quiet surrounding estuarine and agricultural landscape.

Potential sensitive receptors include neighbouring landowners, river users, wildlife associated with the eastern creek and Kromme River estuarine edge, and any tourism or recreational users in the broader St Francis Bay and Kromme River setting. Construction close to riparian or estuarine habitat may also disturb birds, small mammals, reptiles, amphibians and other fauna through noise, movement and human presence.

Without mitigation, construction nuisance impacts could be moderate, particularly during dry windy periods or where activities occur close to the estuarine edge, neighbouring properties or sensitive habitats. With appropriate working hours, dust suppression, access control, good housekeeping, waste management, equipment maintenance and ECO monitoring, the residual impact can be reduced to low.

Mitigation Measures

Construction timing and working hours

- Construction activities must be limited to normal working hours unless otherwise approved.
- No noisy construction activities may take place at night, on Sundays or public holidays unless required for safety, emergency purposes or specifically approved.
- High-noise activities must be scheduled to minimise disturbance to nearby receptors.
- Construction near the estuarine edge, eastern creek or sensitive habitat areas must be planned to minimise duration and disturbance.

Noise control

- All construction equipment, tools, vehicles, pumps and generators must be maintained in good working order.
- Unnecessary revving, hooting, shouting, loud music and prolonged idling must be prohibited.
- Generators, compressors or pumps, if required, must be located away from sensitive receptors and sensitive habitat areas as far as practicable.
- Noise-generating equipment should be fitted with silencers or noise-reducing measures where feasible.
- Manual or low-impact construction methods must be used near sensitive riparian, estuarine and vegetation areas where practicable.

Dust control

- Dust generation must be controlled during dry and windy conditions.
- Exposed soils, access routes and active work areas must be dampened where necessary, using water in a controlled manner that does not create runoff or erosion.
- Vehicle speeds must be limited on site to reduce dust generation.
- Stockpiles of soil, sand or fine material must be covered, stabilised or dampened where required.

- Cleared areas must be kept to the minimum necessary and rehabilitated or stabilised as soon as practicable.
- Dust-generating activities should be avoided during strong wind events where practicable.

Access and traffic management

- Construction vehicles must use approved access routes only.
- Existing access routes must be used as far as practicable to reduce new disturbance and dust generation.
- No informal tracks may be created.
- Deliveries must be scheduled to minimise disturbance and avoid unnecessary vehicle movements.
- Vehicles transporting loose material must be covered where necessary to prevent spillage and dust.
- Parking for construction vehicles must be limited to designated disturbed or lower-sensitivity areas.

Site housekeeping

- The construction site must be kept neat and orderly.
- Materials, waste, equipment and stockpiles must be stored in designated areas.
- Construction waste must be removed regularly and disposed of at an approved facility.
- No litter, rubble, spoil or unused material may be left in vegetated areas, drainage pathways, the eastern creek corridor or the Kromme River estuarine edge.
- Waste bins must be provided and secured against wind, animals and stormwater movement.

Control of construction footprint

- The construction footprint must be limited to the approved and demarcated areas.
- No-go areas, including the eastern creek, estuarine edge, intact riparian vegetation and sensitive vegetation patches, must be clearly marked before construction commences.
- Construction personnel, vehicles and equipment must remain within authorised work areas.
- Laydown areas, stockpiles, cement mixing areas, fuel storage and waste storage must be located away from sensitive receptors and sensitive environmental areas.

Lighting control

- Temporary construction lighting must be kept to the minimum required for safety and security.
- Lighting must be downward-directed and shielded to prevent glare and spill into neighbouring properties, the eastern creek, riparian vegetation and the Kromme River Estuary.
- Night-time construction lighting must be avoided unless specifically required and approved.

Pollution and nuisance prevention

- No cement wash water, wastewater, greywater, hydrocarbons, chemicals or polluted runoff may be discharged onto the ground or into stormwater, drainage pathways, the eastern creek or the Kromme River Estuary.
- Refuelling, maintenance and chemical storage must take place only in designated controlled areas.
- Spill kits must be available on site.
- Any spill, leak or pollution incident must be contained and cleaned immediately.

Community and neighbour management

- Nearby affected landowners or occupiers should be informed of the construction programme where appropriate.
- Complaints relating to noise, dust, traffic or nuisance must be recorded and addressed promptly.
- A responsible site contact person must be available to respond to construction-related concerns.

Faunal disturbance control

- Construction workers must be inducted on the sensitivity of the Kromme River Estuary, eastern creek and surrounding habitats.
- No fauna may be disturbed, chased, fed, harmed or collected.
- Noise and movement near sensitive habitat areas must be minimised.
- Open excavations must be checked for trapped fauna before works continue.

Rehabilitation and stabilisation

- Disturbed areas not required for permanent infrastructure must be stabilised and rehabilitated as soon as practicable.
- Exposed soils must be protected from wind and water erosion.
- Rehabilitation must use locally appropriate indigenous vegetation where planting is required.
- Temporary access or work areas must be reinstated once construction is complete.

Monitoring and compliance

- The ECO must monitor noise, dust and nuisance controls during construction.
- Dust, waste, housekeeping, access control and no-go area compliance must be checked regularly.
- Additional inspections must be undertaken during dry windy conditions and after rainfall events where erosion or sediment movement may occur.
- Any complaints, incidents or non-compliances must be recorded and corrective action implemented.

Residual Impact - Low following mitigation.

The residual impact is expected to be low because construction-related noise, dust and nuisance impacts will be temporary, localised and manageable through standard construction-phase controls. A low to medium residual impact may occur during specific high-activity periods, material deliveries, dry windy conditions or works close to the estuarine edge, eastern creek or neighbouring receptors, but these impacts can be reduced through effective site management and ECO oversight.

14. Access and Traffic Related Impacts, Including Possible Disturbance from Internal Vehicle Movement and Construction Access

Nature of Impact

The proposed development will generate access and traffic related impacts during both the construction and operational phases. These impacts may arise from construction vehicle movement, delivery of materials, movement of workers, internal vehicle circulation, parking, servicing, maintenance access, waste collection, emergency access and visitor access associated with the accommodation units, main house, barn and services area.

The site is located within a rural, agricultural and estuarine landscape adjacent to the Kromme River Estuary. Internal access therefore requires careful management to avoid unnecessary disturbance of transformed vegetation, secondary regrowth, riparian or alluvial vegetation, drainage pathways, the estuarine edge and the eastern creek corridor.

A key site-specific consideration is that the property already contains access routes associated with previous agricultural use and earlier development-related disturbance. These include existing and partially stabilised access alignments. The use of these existing routes is an important mitigation measure, as it reduces the need for new road construction, additional vegetation clearing, soil disturbance, compaction, erosion and fragmentation of vegetation linkages.

Assessment

Access and traffic impacts are expected to be most significant during the construction phase, when delivery vehicles, contractor vehicles, workers and construction equipment will move through the site. Potential impacts include dust generation, noise, rutting, soil compaction, erosion, accidental encroachment into no-go areas, disturbance of fauna, damage to vegetation, sediment movement and general nuisance to neighbouring landowners or users of the broader estuarine landscape.

Operational phase traffic is expected to be low intensity and associated mainly with residents, guests, staff, maintenance vehicles, waste collection and occasional service vehicles. The nature of the proposed development is not expected to generate high traffic volumes. However, unmanaged internal vehicle movement could still result in disturbance if vehicles enter sensitive areas, create informal tracks, park outside designated areas or travel too close to the Kromme River estuarine edge or eastern creek.

The preferred access approach is to use the existing internal access roads and disturbed corridors as far as practicable. Parking should be located in already transformed or lower-sensitivity areas, with pedestrian access used to reach units where this would reduce vehicle movement into sensitive parts of the site. Where access is required near the estuarine edge, eastern creek or sensitive vegetation, vehicle movement must be avoided or strictly limited, and pedestrian movement should be channelled onto approved walkways or elevated boardwalks.

Without mitigation, access and traffic impacts could be moderate, particularly where new access routes are created, vehicles move across undisturbed areas, or access roads concentrate runoff towards the Kromme River Estuary or eastern creek. With appropriate use of existing routes, restricted vehicle movement, designated parking, erosion control, dust suppression and rehabilitation, the residual impact can be reduced to low.

Mitigation Measures

Use of existing access routes

- Existing internal access roads and partially stabilised disturbed routes must be used as far as practicable.
- New access routes must be avoided unless clearly required and approved.
- Where new access is unavoidable, it must be kept to the minimum width and length required for safe construction and operational use.
- Access routes must be aligned through transformed, previously disturbed or lower-sensitivity areas wherever feasible.
- Access routes must avoid intact riparian vegetation, the eastern creek corridor, estuarine-margin vegetation, drainage pathways and sensitive vegetation patches.

Access route design and stabilisation

- Access roads must be designed to minimise erosion, rutting, compaction and concentrated runoff.
- Road gradients, crossfalls and drainage outlets must be designed to prevent stormwater discharge directly towards the Kromme River Estuary or eastern creek.
- Where required, road surfaces must be stabilised using appropriate low-impact materials.
- Mitre drains, cross drains, swales, level spreaders, stone pitching, energy dissipaters or other erosion control measures must be installed where needed.
- Access roads must not create preferential flow paths towards sensitive areas.

Construction access management

- Construction access must be limited to approved routes only.
- Construction vehicles may not enter no-go areas, riparian vegetation, the eastern creek corridor or estuarine-margin areas.
- Deliveries must be planned and managed to reduce unnecessary vehicle trips.
- Heavy vehicle movement must be limited to the minimum necessary.
- Vehicle turning areas must be located within transformed or already disturbed areas.
- No informal turning circles, tracks or shortcuts may be created.

Parking and vehicle control

- All construction and operational parking must be confined to designated parking areas.
- Parking areas must be located in transformed or lower-sensitivity portions of the site.
- No parking may occur within riparian vegetation, drainage pathways, the estuarine edge, eastern creek corridor or sensitive vegetation patches.
- Operational parking should be designed to reduce the need for vehicles to access individual units where pedestrian access is feasible.
- Dedicated pedestrian routes must be provided where required to reduce vehicle movement.

Internal movement and pedestrian access

- Internal vehicle movement must be minimised as far as practicable.
- Pedestrian movement must be directed along approved paths, walkways or boardwalks.
- No informal footpaths may be created through sensitive vegetation, the eastern creek corridor or the estuarine edge.
- Where access is required near sensitive areas, elevated boardwalks or walkways must be used to reduce trampling, soil compaction and vegetation disturbance.
- Access to the jetty must be limited to the approved route and must not result in uncontrolled movement along the estuarine edge.

Dust, noise and nuisance control

- Vehicle speeds must be limited on all internal access roads.
- Dust suppression must be implemented during dry and windy conditions where vehicle movement causes dust.
- Vehicles transporting loose material must be covered where necessary.
- Unnecessary hooting, revving and idling must be prohibited.
- Construction traffic must be limited to normal working hours unless otherwise approved.
- Traffic must be managed to minimise nuisance to neighbouring landowners and users of the broader area.

Protection of vegetation and sensitive areas

- No-go areas must be demarcated before construction commences.
- Retained vegetation along access routes must be protected from damage by vehicles and machinery.

- Access route edges must be clearly defined where there is a risk of vehicles straying into vegetation.
- Any accidental damage to vegetation must be reported, recorded and rehabilitated.
- Vegetation may not be cleared to widen access routes unless specifically approved.

Stormwater and erosion control along access routes

- Runoff from access routes and parking areas must be slowed, dispersed and treated before reaching the Kromme River Estuary, eastern creek or drainage pathways.
- Stormwater from access roads may not be discharged directly into sensitive areas without attenuation, energy dissipation and sediment control.
- Sediment traps, silt fencing, brush packing or other erosion controls must be installed where required.
- Rills, rutting, scour points or erosion along access roads must be repaired immediately.
- Access roads must be inspected after significant rainfall events.

Pollution prevention

- Construction and operational vehicles must be maintained in good working order to prevent oil, fuel or hydraulic leaks.Refuelling and maintenance must take place only in designated areas away from the Kromme River Estuary, eastern creek and drainage pathways.Spill kits must be available on site.Any spill must be contained and cleaned immediately.Contaminated soil must be removed and disposed of at an approved facility

Waste collection and servicing access

- Waste collection and service vehicles must use approved routes only.
- Service areas must be located in accessible but environmentally lower-risk locations.
- Waste storage areas must be positioned away from sensitive habitats and stormwater pathways.
- Servicing access must not require unnecessary disturbance of vegetation or wet areas.

Emergency access

- Emergency access must be provided in a manner that uses existing disturbed routes as far as possible.
- Emergency access routes must be clearly identified and maintained.Emergency access requirements must be balanced with the need to avoid sensitive areas.

Rehabilitation of temporary access disturbance

- Temporary construction access areas not required for operation must be rehabilitated after construction.
- Compacted areas must be loosened, reprofiled and stabilised where necessary.
- Topsoil must be replaced where feasible.
- Rehabilitation must use locally appropriate indigenous vegetation or natural regeneration where suitable.

Monitoring and compliance

- The ECO must monitor access control, vehicle movement, parking areas and no-go compliance during construction.
- Access roads must be inspected for dust, rutting, erosion, sediment movement and vegetation damage.
- Any unauthorised tracks or parking areas must be closed and rehabilitated.
- Operational access controls must be incorporated into the OEMP to prevent long-term informal access impacts.

Residual Impact -Low following mitigation.

The residual impact is expected to be low where existing access routes are used, new access is minimised, parking is confined to transformed areas, vehicle movement is controlled, and erosion and stormwater impacts are managed. A low to medium residual impact may remain during construction or heavy rainfall events where vehicle movement could cause rutting, dust, erosion or sediment movement if controls are not actively maintained.

15. Servicing Impacts, Including the Operation and Maintenance of Off-Grid Solar Systems, Rainwater Harvesting, Wastewater Treatment Package Plant Systems and Treated Water Reuse

Nature of Impact

The proposed development will rely on a range of on-site services infrastructure, including off-grid solar energy systems, rainwater harvesting tanks, wastewater treatment package plant systems, treated water reuse infrastructure, non-potable reticulation, stormwater controls, storage areas and associated maintenance access.

The use of off-grid and resource-efficient services is a positive design response because it reduces reliance on municipal bulk infrastructure and limits the need for extensive external service connections. However, these systems still require careful siting, design, operation and maintenance to avoid environmental impacts. Potential impacts include visual intrusion from panels and tanks, soil disturbance from service trenches and foundations, stormwater concentration from roof runoff and tank overflows, pollution risk from wastewater system failure, treated water runoff or ponding, noise from pumps or backup systems, and disturbance associated with routine servicing or maintenance.

Because the site is located adjacent to the Kromme River Estuary and includes drainage pathways, an eastern creek, estuarine-margin vegetation and mapped CBA / ESA features, poorly managed services infrastructure could result in indirect impacts on sensitive receiving environments. Particular attention is required to wastewater treatment, treated water reuse, tank overflow management, service area placement, stormwater discharge and maintenance access.

Assessment

The proposed servicing approach is considered appropriate in principle, provided that the systems are designed and managed to suit the sensitivity of the site. Off-grid solar systems, rainwater harvesting and treated water reuse support a low-resource development model and reduce pressure on municipal infrastructure. However, the environmental acceptability of the development depends on these systems functioning reliably over the long term.

The wastewater treatment package plant system represents the highest servicing-related environmental risk. If poorly designed, undersized, inadequately maintained or incorrectly operated, the system could

result in untreated or partially treated effluent discharge, seepage, odours, overflows, nutrient enrichment, groundwater contamination or polluted runoff towards the Kromme River Estuary or eastern creek. Treated water reuse must therefore be carefully controlled and must not result in ponding, soil saturation, runoff, seepage or nuisance conditions.

Rainwater harvesting is a positive mitigation measure, as roof runoff will be collected and reused. However, when tanks are full, overflow or secondary discharge must be managed through suitable stormwater infrastructure to avoid concentrated discharge, erosion or sediment movement towards sensitive areas.

Off-grid solar systems are generally low impact, but may result in visual impacts, glare, battery storage risks, maintenance requirements and minor infrastructure disturbance if not correctly placed. Solar panels, inverters, batteries and cabling must be positioned in already disturbed or lower-sensitivity areas, and battery storage must be safe, contained and protected from weather, fire risk and accidental damage.

Service trenches, reticulation lines, tanks, pumps and maintenance access should be located within existing disturbed corridors or development footprints wherever practicable. The creation of new service corridors through intact vegetation, riparian habitat, the eastern creek corridor or estuarine-margin areas must be avoided.

Without mitigation, servicing impacts could be moderate to high, particularly in relation to wastewater failure, treated water misuse or uncontrolled stormwater overflow. With appropriate engineering design, environmental siting, containment, maintenance, monitoring and operational controls, the residual impact can be reduced to low to medium.

Mitigation Measures

General servicing design and siting

- All services infrastructure must be designed by appropriately qualified professionals and must be suitable for the site's estuarine setting.
- Service infrastructure must be located within transformed, previously disturbed or lower-sensitivity areas as far as practicable.
- Services must avoid the eastern creek, Kromme River estuarine edge, drainage pathways, intact riparian vegetation and sensitive vegetation patches.
- Service trenches and reticulation corridors must follow existing access routes or disturbed corridors wherever feasible.
- The number and length of service trenches must be minimised.
- Service infrastructure must be shown on the final site development plan and must be approved before construction.

Off-grid solar systems

- Solar panels must be positioned to minimise vegetation clearing, glare and visual intrusion.
- Solar infrastructure must be located on roofs or within already disturbed service areas wherever feasible.
- Ground-mounted panels, if required, must avoid sensitive vegetation and must be placed in transformed or lower-sensitivity areas.

- Battery storage, inverters and electrical equipment must be housed in a secure, weatherproof and ventilated area.
- Battery storage areas must include appropriate fire safety and spill or leak containment measures, where applicable.
- Solar infrastructure must be maintained in accordance with manufacturer specifications.
- Damaged panels, batteries, cables or electrical equipment must be repaired or replaced promptly.
- End-of-life panels, batteries and electrical components must be disposed of through approved recycling or hazardous waste channels where required.

Backup power

- Any backup generator, if required, must be used only as a secondary or emergency power source.
- Generators must be located away from the eastern creek, estuarine edge, neighbouring receptors and sensitive habitats as far as practicable.
- Generators must be placed on stable, contained surfaces to prevent fuel or oil contamination.
- Fuel storage must be bunded and secured.
- Noise, fumes and spill risks from backup systems must be managed.

Rainwater harvesting

- Roof runoff from all buildings must be collected and directed to rainwater harvesting tanks for reuse within the development.
- Rainwater harvesting tanks must be appropriately sized for the roof catchment area and expected water demand.
- Tanks must be placed on stable foundations and located outside sensitive riparian, creek or estuarine-margin areas.
- Tank foundations and platforms must not destabilise soils or concentrate runoff.
- Gutters, downpipes and first-flush systems must be maintained to prevent blockage, overflow and contamination.

Tank overflow and secondary discharge

- Where rainwater harvesting tanks are full, overflow or secondary discharge must be managed through appropriate stormwater controls.
- Tank overflow may not be discharged directly downslope towards the Kromme River Estuary, eastern creek or sensitive vegetation.
- Overflow must be directed to stable, vegetated or engineered discharge points.
- Level spreaders, vegetated swales, infiltration areas, stone energy dissipaters, dispersion trenches or other approved low-impact stormwater measures must be used where required.
- Overflow infrastructure must be inspected after heavy rainfall events to confirm that no erosion, scouring or sediment movement is occurring.

Wastewater treatment package plant systems

- The wastewater treatment package plant system must be designed, installed and commissioned by appropriately qualified professionals.
- The system must be sized for the anticipated peak occupancy, including the accommodation units, main house and any staff or operational requirements.
- The system must include sufficient capacity, redundancy, storage and safeguards to prevent overflow, seepage or untreated discharge.
- The wastewater system must be located outside sensitive riparian, creek, estuarine-margin and flood-prone areas as far as practicable.
- No untreated or inadequately treated effluent may be discharged to the Kromme River Estuary, eastern creek, drainage pathways, soil surface or groundwater.

- The system must include alarms, inspection points or other suitable mechanisms to identify malfunction, blockage or treatment failure.

Wastewater system operation and maintenance

- The package plant must be operated and maintained by a competent person or service provider.
- Maintenance records must be kept and made available for inspection.
- The system must be inspected regularly for leaks, odours, blockages, overflows, pump failure or abnormal discharge.
- Sludge or residual waste from the system must be removed by an approved service provider and disposed of at an authorised facility.
- Emergency response procedures must be in place for system failure, overflow or pollution incidents.
- Any system failure must be reported, contained and corrected immediately.

Treated water reuse

- Treated water may only be reused for approved non-potable purposes, such as toilet flushing, irrigation, dust suppression or other uses confirmed by the engineer and relevant authority.
- Treated water reuse must not result in ponding, soil saturation, seepage, runoff, odour, nuisance conditions or vegetation stress.
- Reuse areas must be located away from the Kromme River Estuary, eastern creek, drainage pathways and sensitive vegetation as far as practicable.
- Irrigation or reuse volumes must be matched to soil absorption capacity, vegetation demand, rainfall conditions and seasonal constraints.
- Treated water may not be sprayed or discharged in a manner that allows drift or runoff into sensitive habitats.
- All treated water tanks, pipes and outlets must be clearly marked as non-potable.
- Cross-connections between potable and non-potable systems must be prevented.

Greywater management

- Greywater must be directed into the approved wastewater treatment or reuse system unless a separate approved greywater system is provided.
- Greywater may not be discharged directly onto the ground, into stormwater systems, drainage lines, the eastern creek or the Kromme River Estuary.
- Only environmentally appropriate cleaning products should be used where greywater forms part of the treatment and reuse system.

Service trenches and reticulation

- Service trenches must be kept to the minimum depth, width and length required.
- Trenches must avoid sensitive vegetation, tree root zones, riparian areas, drainage pathways and the eastern creek.
- Excavated topsoil and subsoil must be stockpiled separately where feasible.
- Trenches must be backfilled, compacted appropriately and stabilised as soon as possible.
- Open trenches must be inspected daily for trapped fauna and must be provided with escape ramps where left open overnight.

Stormwater and erosion control around services

- Service areas must be designed to prevent erosion and polluted runoff.
- Runoff from tanks, pumps, package plants, access routes and service areas must be dispersed, slowed and treated before reaching sensitive areas.
- Stormwater must not be allowed to flow through wastewater infrastructure, chemical storage areas or maintenance areas.

- Erosion controls must be installed downslope of disturbed service areas where required.

Pollution prevention and hazardous materials

- Chemicals, fuels, oils, cleaning products and maintenance materials must be stored in secure and contained areas.
- No refuelling, chemical storage or maintenance may occur near the Kromme River Estuary, eastern creek or drainage pathways.
- Spill kits must be available at service and maintenance areas.
- Any spills must be contained, cleaned and disposed of appropriately.
- Waste electrical components, batteries, filters, sludge, contaminated absorbents and other service-related waste must be disposed of through approved channels.

Visual and landscape integration

- Solar panels, tanks, pump houses, package plants and other service infrastructure must be visually integrated as far as practicable.
- Tanks and service structures must use muted, non-reflective colours where visible.
- Service areas should be screened with locally appropriate indigenous vegetation where required.
- Service infrastructure must not dominate the estuarine landscape or be placed in unnecessarily exposed positions.

Operational monitoring and compliance

- An Operational Environmental Management Programme must include specific requirements for solar, rainwater, wastewater, treated water reuse and stormwater system maintenance.
- Maintenance schedules must be prepared for all key service systems.
- The owner or operator must keep records of wastewater servicing, tank inspections, system failures, sludge removal, treated water quality monitoring where required, and stormwater maintenance.
- The condition of tank overflows, reuse areas, wastewater systems, stormwater outlets and service areas must be monitored during operation.
- Any erosion, seepage, odour, pollution, ponding or system malfunction must be corrected immediately.

Residual Impact - Low to medium following mitigation.

The residual impact is expected to be low where off-grid solar, rainwater harvesting and wastewater treatment systems are professionally designed, correctly located, well maintained and monitored. A medium residual risk may remain in relation to wastewater treatment failure, treated water reuse, tank overflow or service-related pollution due to the site's direct hydrological connection to the Kromme River Estuary and eastern creek.

16. Waste Generation and Pollution Risk During Construction and Operation

Nature of Impact

The proposed development will generate waste during both the construction and operational phases. Construction waste may include packaging, rubble, timber offcuts, metal, plastic, cement bags, mortar waste, spoil, excavated material, redundant materials, domestic waste from workers and potentially small

quantities of hazardous waste such as paint containers, adhesives, sealants, oils, contaminated absorbents and chemical residues.

Operational waste will be generated by the accommodation units, main house, barn and services area, staff or maintenance activities and guest use. This may include domestic refuse, recyclable materials, food waste, garden waste, cleaning product containers, wastewater system maintenance waste, sludge from the package plant, used filters, batteries, solar system components and general maintenance-related waste.

The site is located adjacent to the Kromme River Estuary and includes drainage pathways, estuarine-margin areas, the eastern creek and mapped aquatic and terrestrial biodiversity features. Poorly managed waste may therefore result in pollution of soil, stormwater, riparian vegetation, the eastern creek or the Kromme River Estuary. Waste may also attract scavenging animals, rodents or invasive species, create odour or nuisance conditions, affect visual amenity and contribute to cumulative degradation of the estuarine setting.

Assessment

Waste generation from the proposed development is expected to be limited and manageable due to the low-intensity nature of the development. However, the receiving environment is sensitive, and pollution risks are elevated because of the site's proximity to the Kromme River Estuary and eastern creek.

During construction, the highest risk relates to poor housekeeping, uncontrolled stockpiling, windblown litter, rubble disposal, cement-contaminated waste, chemical containers, hydrocarbon spills and waste being stored too close to sensitive areas. Waste may be mobilised during rainfall if not properly contained and may move downslope towards drainage pathways, the eastern creek or the estuarine edge.

During operation, waste impacts may arise if refuse storage areas are poorly located, not animal-proof, not collected regularly, or if guests and staff are not required to separate and manage waste properly. Food waste may attract animals, while unsecured waste may be dispersed by wind or stormwater. Maintenance of the wastewater package plant and off-grid solar systems may also generate specialist waste streams that must be removed by appropriately authorised service providers.

The preferred approach is to apply waste minimisation, separation, containment and regular removal. Waste storage and handling areas must be located in transformed or lower-sensitivity areas away from the estuarine edge, eastern creek, drainage pathways and sensitive vegetation. No waste, rubble, spoil or contaminated material may be dumped, buried or burned on site.

Without mitigation, waste generation and pollution risk could result in moderate impacts, particularly where waste enters the stormwater system, estuarine edge or creek corridor. With appropriate waste management, pollution prevention, housekeeping, recycling, secure storage and ECO monitoring, the residual impact can be reduced to low.

Mitigation Measures

Waste management planning

- A waste management procedure must be included in the EMPr and implemented during construction and operation.
- All waste must be managed according to the waste hierarchy, namely avoidance, reduction, reuse, recycling, recovery and disposal as a last resort.
- The contractor must identify approved disposal facilities before construction commences.
- Waste handling responsibilities must be clearly assigned to the contractor during construction and to the owner or operator during operation.
- No waste may be dumped, buried or burned on site.

Construction waste control

- Construction waste must be stored in designated waste areas only.
- Waste storage areas must be located in transformed or lower-sensitivity areas away from the Kromme River Estuary, eastern creek, drainage pathways and sensitive vegetation.
- Waste areas must be clearly demarcated and kept neat.
- Rubble, offcuts, packaging, cement bags, plastics, metals and general waste must be separated where feasible.
- Waste must be removed from site regularly and disposed of at an approved facility.
- Reusable materials must be salvaged and reused where practicable.

Hazardous and contaminated waste

- Hazardous waste must be stored separately from general waste.
- Paints, solvents, adhesives, sealants, oils, fuel containers, contaminated rags, spill absorbents, batteries, filters and chemical containers must be stored in a secure, covered and contained area.
- Hazardous waste may not be disposed of with general waste.
- Hazardous or contaminated waste must be removed by an appropriately authorised service provider or disposed of at a facility authorised to accept such waste.
- Records of hazardous waste removal should be kept where applicable.

Cement and building material waste

- Cement bags, mortar waste, plaster residues and concrete waste must be contained and removed from site.
- Cement-contaminated water or cement residues may not enter soil, stormwater, drainage pathways, the eastern creek or the Kromme River Estuary.
- Concrete washout must occur only in a designated contained washout area where required.
- Hardened cement waste must be removed to an approved disposal facility.
- No cement, mortar or plaster residue may be left in vegetated areas or near the estuarine edge.

Spoil and excavated material

- Excavated material must be reused on site where suitable and approved.
- Excess spoil must be removed to an approved location.
- Spoil may not be pushed downslope, dumped in vegetation, placed in drainage pathways or stored near the eastern creek or Kromme River Estuary.
- Spoil stockpiles must be protected from erosion and sediment movement.
- Topsoil must be stockpiled separately from subsoil where feasible and reused in rehabilitation.

Operational waste management

- Operational waste must be stored in designated refuse areas.
- Refuse areas must be located away from the Kromme River Estuary, eastern creek, drainage pathways and sensitive vegetation.
- Refuse storage areas must be enclosed, secure and animal-proof.
- Waste must be collected regularly and removed to an approved waste facility.

- Guests, staff and maintenance personnel must be required to use designated waste facilities only.
- No litter may be allowed to accumulate on site.

Recycling and waste separation

- Recyclable waste should be separated where feasible, including glass, paper, cardboard, plastic and metal.
- Dedicated recycling containers should be provided in the accommodation, main house, barn or service area where practicable.
- Organic waste should be managed in a controlled manner and must not attract pests or wildlife.
- Composting may only be undertaken if it is properly contained, managed and located away from sensitive areas.

Wastewater system and servicing waste

- Sludge, filters or residual waste from the wastewater treatment package plant must be removed by an approved or competent service provider.
- Wastewater system residues may not be disposed of on site.
- Maintenance waste from pumps, filters, tanks, solar systems, batteries or electrical equipment must be stored and disposed of appropriately.
- Used batteries, damaged solar panels and electrical components must be sent to approved recycling or disposal facilities where required.

Windblown litter and animal attraction

- Waste containers must be fitted with lids and secured against wind and animals.
- Food waste must not be left exposed.
- Animal-proof bins must be used to prevent attraction of rodents, scavengers, monkeys, birds or other fauna.
- No feeding of wildlife may be permitted.
- The site must be inspected regularly for litter, particularly after windy conditions or high visitor use periods.

Pollution prevention

- Waste storage areas must be designed to prevent contaminated runoff.
- Waste may not be stored where stormwater can wash material into drainage pathways, the eastern creek or the Kromme River Estuary.
- Chemicals, oils and liquid waste must be stored in bunded or contained areas.
- Spill kits must be available where hazardous substances or liquid waste are stored or used.
- Any spill or waste-related pollution incident must be contained, cleaned and reported immediately.

Construction housekeeping

- The contractor must maintain good housekeeping throughout the construction phase.
- Waste must be removed from work areas daily or stored in appropriate containers.
- Building materials must be stored neatly within approved laydown areas.
- No waste may be left in no-go areas, vegetation patches, drainage pathways, the eastern creek corridor or estuarine margin.
- The site must be cleaned and all construction waste removed before practical completion.

Operational housekeeping

- The owner or operator must maintain a clean and orderly site during operation.
- Guest information should include waste separation, litter prevention and protection of the Kromme River Estuary and eastern creek.

- Maintenance personnel must be instructed not to dump garden refuse, rubble or service waste on site.
- Garden waste, alien vegetation biomass and cleared material must be managed in a way that does not spread alien species or create fire risk.

Monitoring and compliance

- The ECO must monitor waste management and housekeeping during construction.
- Waste storage areas, hazardous waste storage, cement washout areas and disposal records must be inspected.
- Any waste-related non-compliance must be corrected immediately.
- During operation, waste management requirements must be incorporated into the OEMP.
- The owner or operator must ensure regular inspection of refuse areas, recycling areas, service areas and stormwater pathways for litter, leakage or pollution risk.

Residual Impact - Low following mitigation.

The residual impact is expected to be low where waste is minimised, separated, securely stored, regularly removed and disposed of at approved facilities. A low to medium residual risk may remain where hazardous waste, wastewater servicing waste, food waste or windblown litter is poorly managed, due to the site's direct connection to the Kromme River Estuary and eastern creek.

17. Potential Impacts on Heritage and Palaeontological Resources, Particularly Given the Very High Palaeontological Sensitivity Indicated by the Screening Tool

Nature of Impact

The proposed development may result in potential impacts on heritage and palaeontological resources through vegetation clearing, earthworks, excavation for foundations, service trenches, access adjustments, wastewater infrastructure, stormwater infrastructure, boardwalk supports, jetty-related works and any localised disturbance of the ground surface.

The National Web-Based Environmental Screening Tool has indicated very high palaeontological sensitivity for the broader site area. This does not necessarily confirm the presence of fossil material within the proposed development footprint, but it does indicate that the geological or sedimentary context may have palaeontological potential and that specialist consideration is required.

Potential heritage and palaeontological impacts may include the disturbance, damage, destruction or exposure of fossils, sub-surface archaeological material, historical artefacts, shell material, bone, stone tools, old structural remains, graves or other heritage resources that may not be visible during initial site inspection. These resources, if present, are non-renewable and cannot be replaced once destroyed.

The site has been historically transformed by agricultural activity, previous broad-scale clearing and earlier development-related disturbance. This may have reduced the likelihood of intact surface heritage material in some areas. However, historical disturbance does not remove the possibility of sub-surface palaeontological or archaeological finds, particularly in an estuarine-margin and alluvial landscape where buried material may be present below the disturbed surface layer.

Assessment

The proposed development is relatively low intensity and will result in localised rather than extensive earthworks. The preferred layout has been directed towards transformed and previously disturbed areas as far as practicable, which reduces the likelihood of disturbing intact heritage contexts. However, excavation for foundations, service trenches, wastewater systems, stormwater infrastructure and jetty-related access may still expose sub-surface material.

The palaeontological sensitivity identified by the Screening Tool is the primary heritage-related concern. The Screening Tool rating must be interpreted together with the site-specific geology, soils, degree of historical disturbance, depth of proposed excavation and the findings of the appointed heritage practitioner or palaeontologist. Where the site is underlain by deposits with palaeontological potential, even small-scale excavations may require a chance-find protocol, ECO awareness and possible specialist response if fossil material is exposed.

From a cultural heritage perspective, no specific heritage features have been confirmed within the proposed development footprint based on the information currently available. However, the site's proximity to the estuarine environment means that archaeological resources such as shell material, stone artefacts or other historical material cannot be ruled out without appropriate heritage screening and authority input.

A heritage screening report and Notice of Intent to Develop process must inform the final assessment and mitigation requirements. The Eastern Cape Provincial Heritage Resources Authority must be afforded the opportunity to confirm whether further heritage studies, palaeontological assessment, archaeological assessment, monitoring, permits or specific conditions are required.

Without mitigation, impacts on heritage or palaeontological resources could be moderate to high where excavation damages or destroys material before it is identified. With appropriate heritage screening, authority consultation, chance-find procedures, worker awareness, ECO monitoring and specialist response where required, the residual impact can be reduced to low.

Mitigation Measures

Heritage authority process

- The heritage screening report and Notice of Intent to Develop must be submitted to ECPHRA for consideration where required.
- No construction may commence until the relevant heritage process has been completed and any ECPHRA requirements have been incorporated into the final EMPr.
- Any conditions issued by ECPHRA must be implemented in full.
- If ECPHRA requires a Heritage Impact Assessment, palaeontological assessment, archaeological assessment or monitoring, this must be completed before construction commences in the affected areas.

Avoidance and footprint control

- Ground disturbance must be limited to the approved development footprint.
- Excavations must be kept to the minimum depth and extent required for the development.
- Service trenches and infrastructure must follow existing disturbed corridors or approved routes as far as practicable.
- No unnecessary earthworks, grading or disturbance may occur outside the approved footprint.
- Areas identified by the heritage practitioner or ECPHRA as sensitive must be avoided or protected.

Construction phase controls

- The ECO must be informed of the heritage and palaeontological sensitivity of the site before construction commences.
- The contractor must be briefed on the possibility of fossil or heritage finds.
- Excavation must proceed with caution, particularly where undisturbed deposits or deeper soil profiles are encountered.
- Where required by the heritage practitioner, palaeontologist or ECPHRA, monitoring must be undertaken during excavation in sensitive areas.

Chance-find procedure

- A chance-find procedure must be included in the EMPr and implemented during construction.
- If any fossil material, bone, shell, stone artefacts, pottery, historical objects, structural remains, graves or other possible heritage resources are uncovered, work must stop immediately in the affected area.
- The find must be protected from further disturbance, damage, removal or collection.
- The ECO, heritage practitioner and relevant authority must be notified immediately.
- Work may only recommence in the affected area once the find has been inspected and the relevant authority or specialist has provided written confirmation of the required way forward.
- No fossils, artefacts or heritage material may be removed from site by contractors, workers or visitors.

Protection of finds

- Any chance find must be cordoned off and protected from vehicles, machinery, weathering and unauthorised access.
- The location of the find must be recorded.
- Photographs may be taken for reporting purposes, but material must not be disturbed unless instructed by the relevant specialist or authority.
- If human remains or possible graves are encountered, work must cease immediately and the relevant heritage and law enforcement procedures must be followed.

Worker awareness

- All construction personnel must receive environmental induction that includes heritage and palaeontological awareness.

- Workers must be shown examples of possible fossil, shell, bone, stone artefact or heritage material where available.
- Workers must be instructed not to collect, remove, damage or trade any heritage or palaeontological material.
- The chance-find procedure must be explained clearly to all site personnel.

Material handling and stockpiling

- Excavated material must be managed in a way that allows inspection if required.
- Spoil from deeper excavations must not be removed from site until it has been checked where a potential find is suspected.
- Stockpiles must be placed in approved areas and must not cover or damage any identified heritage-sensitive area.

Reporting and record keeping

- All heritage-related incidents, finds or suspected finds must be recorded by the ECO.
- Records must include the date, location, description of the find, photographs where appropriate, actions taken and specialist or authority instructions received.
- All correspondence with ECPHRA, the heritage practitioner or palaeontologist must be retained as part of the project compliance record.

Operational phase considerations

- Operational impacts on heritage and palaeontological resources are expected to be limited once construction is complete.
- No future expansion, new excavation, landscaping excavation, service trenching or jetty modification may occur outside approved areas without confirming whether additional heritage requirements apply.
- Any finds made during operation, maintenance or future earthworks must be managed in accordance with the chance-find procedure.

Monitoring and compliance

- The ECO must monitor compliance with the heritage and palaeontological mitigation measures during construction.
- The ECO must ensure that the chance-find procedure is available on site and understood by the contractor.
- Any non-compliance with heritage requirements must be recorded and corrected immediately.
- Where ECPHRA or the specialist requires monitoring, the monitoring requirements must be implemented as specified.

Residual Impact - Low following mitigation.

The residual impact is expected to be low where the heritage process is completed, ECPHRA requirements are implemented, excavation is limited to approved footprints and a chance-find procedure

is enforced. A low to medium residual risk may remain due to the very high palaeontological sensitivity indicated by the Screening Tool and the possibility of sub-surface material being exposed during excavation, service trenching or other ground disturbance.

18. Cumulative impacts associated with incremental development pressure along the Kromme River Estuary and surrounding St Francis Bay landscape

Nature of Impact

Cumulative impacts may arise where the proposed development contributes, in combination with existing and future land uses, to incremental development pressure along the Kromme River Estuary and the surrounding St Francis Bay landscape. These impacts are not limited to the direct footprint of the development, but relate to the broader pattern of progressive change within the estuarine, riparian, agricultural and coastal landscape.

The Kromme River Estuary is a sensitive receiving environment that is already influenced by surrounding residential, agricultural, tourism, recreational and access-related activities. Incremental development along the estuarine edge may contribute to cumulative vegetation loss, habitat fragmentation, increased runoff, bank disturbance, wastewater risk, visual change, boating and jetty-related disturbance, alien plant spread, lighting impacts, disturbance to fauna and the gradual loss of rural and estuarine landscape character.

Although the Farm 838 proposal is low intensity and substantially reduced in scale when compared with the previously approved residential development, it still introduces built structures, access, services, boardwalks, a proposed jetty and operational activity into a sensitive estuarine landscape. The cumulative impact assessment must therefore consider whether the proposed development would contribute to unacceptable incremental degradation of the Kromme River Estuary or whether the preferred layout and mitigation measures are sufficient to maintain ecological and landscape function.

Assessment

The proposed development is not expected to result in significant cumulative impacts if it remains limited to the preferred low intensity working farm and tourism accommodation use, is confined to transformed or previously disturbed portions of the site, and avoids the eastern creek, intact riparian or alluvial vegetation and sensitive estuarine-margin areas.

The site has already been subject to historical agricultural transformation, previous broad-scale clearing and earlier development-related disturbance. As such, the preferred development footprint is largely directed towards areas where ecological integrity has already been reduced. This reduces the cumulative ecological impact when compared with development in intact riparian, alluvial or thicket vegetation.

The proposed development is also substantially less intensive than a conventional residential estate or higher-density tourism development. The reduced number of accommodation units, the use of existing access routes, off-grid solar energy, rainwater harvesting, wastewater treatment and reuse, controlled

pedestrian routes, elevated walkways and limited jetty infrastructure all contribute to reducing cumulative pressure on municipal infrastructure, vegetation, hydrology and estuarine processes.

However, cumulative impacts may still arise if development is not strictly controlled, if future expansion occurs without further assessment, if informal access routes develop, if wastewater or stormwater systems are poorly maintained, if the jetty results in increased activity at the estuarine edge, or if rehabilitation and alien plant control are not implemented. The greatest cumulative sensitivity remains associated with the Kromme River estuarine edge, the eastern creek corridor, remnant riparian or alluvial vegetation, aquatic and terrestrial CBA / ESA features, visual landscape character and long-term operational management.

Cumulative impacts must therefore be managed through strict footprint control, avoidance of high-sensitivity areas, long-term maintenance of services infrastructure, rehabilitation of disturbed and degraded areas, alien invasive plant control, stormwater and wastewater monitoring, and prohibition of unauthorised expansion or additional infrastructure.

Without mitigation, cumulative impacts could be moderate to high over time, particularly if this development contributes to further edge hardening, vegetation loss, informal access, increased estuarine activity, visual intrusion or water quality decline. With the proposed low-impact layout, services approach, rehabilitation and long-term operational controls, the cumulative residual impact can be reduced to low to medium.

Mitigation Measures

Limitation of development scale and footprint

- The development must remain limited to the authorised low intensity working farm and tourism accommodation use.
- No additional accommodation units, buildings, access roads, jetties, parking areas, service areas or hard infrastructure may be added without the required environmental assessment, authorisation or approval.
- All development must remain within the approved and demarcated footprints.
- The final site development plan must avoid the eastern creek, intact riparian or alluvial vegetation and sensitive estuarine-margin areas as far as practicable.

Avoidance of cumulative estuarine-edge degradation

- The Kromme River estuarine edge must be treated as a sensitive environmental interface and not as an area for incremental expansion.
- Further hardening, infilling, bank modification, vegetation clearing or informal access along the estuarine edge must be avoided.
- The proposed jetty must be the only authorised river access structure unless future approvals are obtained.
- The jetty must remain limited in scale and must use a low-impact articulated walkway and floating pontoon design where feasible.
- No further informal boat launching, bank stabilisation, reclamation or river-edge landscaping may occur without assessment and approval.

Protection of the eastern creek and ecological corridors

- The eastern creek corridor must be protected as a key ecological linkage and higher-sensitivity feature.
- No future development or informal access may fragment the eastern creek corridor.
- Retained vegetation linkages between the Kromme River Estuary, eastern creek and inland vegetation must be maintained as far as practicable.
- Fencing, lighting, landscaping and pedestrian movement must not obstruct or degrade ecological connectivity.

Use of existing disturbance and infrastructure

- Existing access routes must be used as far as practicable to avoid cumulative road proliferation.
- No informal tracks or additional access routes may be created during construction or operation.
- Parking, services and maintenance areas must remain within transformed or lower-sensitivity areas.
- Temporary construction disturbance must be rehabilitated after construction.

Stormwater and erosion management

- Stormwater systems must be designed and maintained to avoid cumulative erosion, sedimentation and concentration of runoff towards the Kromme River Estuary or eastern creek.
- Roof runoff must be collected in rainwater harvesting tanks for reuse.
- Where tanks are full, overflow or secondary discharge must be dispersed through suitable low-impact stormwater measures.
- Runoff from access routes, parking areas, service areas and disturbed surfaces must be slowed, treated and dispersed before reaching sensitive areas.
- Stormwater outlets and discharge points must be inspected and maintained to prevent long-term scour or sediment movement.

Wastewater and treated water reuse management

- The wastewater treatment package plant systems must be professionally designed, correctly installed and maintained for the life of the development.
- No untreated or inadequately treated effluent may be discharged into the environment.
- Treated water reuse must be controlled and must not result in ponding, seepage, runoff, soil saturation, odour, nutrient enrichment or pollution of the Kromme River Estuary or eastern creek.
- Maintenance records must be kept for the wastewater treatment and reuse systems.
- Any system failure must be treated as an environmental incident and corrected immediately.

Rehabilitation and ecological enhancement

- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practicable.
- Degraded portions of the estuarine edge should be rehabilitated where feasible to improve buffering, sediment control and ecological function.
- Rehabilitation must use locally appropriate indigenous species.
- Natural regeneration should be promoted in areas where the seedbank and vegetation structure allow.
- Rehabilitation must aim to strengthen ecological function rather than create formalised ornamental landscaping in sensitive areas.

Alien invasive species control

- Alien invasive plant control must be implemented during construction and operation.
- Follow-up clearing must be undertaken to prevent reinvasion of disturbed areas, riparian zones and the estuarine edge.

- Alien plant control must be undertaken carefully to avoid destabilising soils or creating further erosion.
- Removed alien biomass must be managed to prevent regrowth, dispersal or fire risk.

Visual and landscape management

- The development must maintain a low intensity, visually recessive farm and nature-based tourism character.
- Buildings must remain low in scale and use muted, non-reflective colours and materials.
- Service infrastructure, tanks, waste areas and wastewater infrastructure must be screened or located in visually discreet areas.
- External lighting must be low-level, downward-directed and shielded to prevent cumulative night-time visual disturbance.
- No unnecessary vegetation clearing may occur for views.

Operational controls

- An Operational Environmental Management Programme must be implemented for the life of the development.
- The OEMP must include requirements for access control, stormwater maintenance, wastewater maintenance, treated water reuse, waste management, alien clearing, lighting control, jetty management and rehabilitation monitoring.
- Guests, staff and maintenance personnel must be informed of the sensitivity of the Kromme River Estuary and eastern creek.
- Rules must be implemented to prevent littering, wildlife disturbance, uncontrolled access, fire risk, off-road driving and damage to sensitive vegetation.

Future expansion and change in use

- Any future expansion, intensification, change in use or additional infrastructure must be subject to the required environmental screening and approvals.
- The cumulative impact of any future phase must be assessed before implementation.
- No incremental expansion may occur on the basis that the current development is already authorised.
- Any additional river access, jetty modification, boardwalk extension or new service infrastructure must be assessed before construction.

Monitoring and compliance

- The ECO must monitor cumulative impact controls during construction.
- Post-construction monitoring must confirm that rehabilitation is successful, stormwater systems are functioning, wastewater systems are maintained and sensitive areas remain protected.
- The condition of the eastern creek, estuarine edge, access routes, jetty area and rehabilitated areas must be monitored during operation.
- Any erosion, alien plant reinvasion, wastewater malfunction, stormwater failure, unauthorised access or vegetation damage must be corrected immediately.

Residual Impact - Low to medium following mitigation.

The residual cumulative impact is expected to be low where the development remains low intensity, confined to transformed and lower-sensitivity areas, and is managed through strict operational controls. A medium residual impact may remain due to the site's location within the sensitive Kromme River Estuary

and St Francis Bay landscape, and because cumulative effects depend not only on this development but also on broader development pressure, recreational use and land-use change along the estuary.

19. Overall Impact Conclusion

The environmental impact assessment has identified and assessed the key construction and operational phase impacts associated with the proposed development on Farm 838. The assessment confirms that the site is located within a sensitive lower Kromme River and St Francis Bay estuarine landscape, where the main environmental constraints relate to the Kromme River Estuary, the eastern creek, remaining riparian or alluvial vegetation, mapped aquatic and terrestrial CBA / ESA features, estuarine-margin soils, ecological connectivity, stormwater movement, wastewater management, visual sensitivity and cumulative development pressure.

A total of 17 potential impact areas were identified and assessed, namely:

1. Vegetation clearing and disturbance of secondary regrowth, scattered indigenous vegetation and sensitive vegetation patches.
2. Disturbance of riparian or alluvial vegetation, particularly along the eastern creek and estuarine margin.
3. Disturbance of the Kromme River estuarine edge through access, construction, stormwater discharge, pedestrian movement or jetty-related activity.
4. Soil disturbance, erosion and sediment movement towards the Kromme River Estuary or eastern creek.
5. Stormwater runoff from roofs, access routes, parking areas, service areas and disturbed surfaces.
6. Potential pollution from wastewater systems, treated water reuse, greywater, hydrocarbons, cement wash water, chemicals and construction materials.
7. Loss or disturbance of faunal habitat associated with secondary grassland, thicket regrowth, riparian vegetation, estuarine-margin habitat and the creek corridor.
8. Disturbance to fauna during construction through noise, movement, vegetation clearance and temporary human activity.
9. Impacts on biodiversity connectivity and ecological function, particularly near the eastern creek, estuarine edge and remaining vegetation linkages.
10. Disturbance of aquatic and terrestrial CBA / ESA areas.
11. Visual and landscape impacts within the Kromme River and St Francis Bay estuarine setting.
12. Noise, dust and general nuisance impacts during the construction phase.
13. Access and traffic related impacts, including disturbance from internal vehicle movement and construction access.
14. Servicing impacts, including the operation and maintenance of off-grid solar systems, rainwater harvesting, wastewater treatment package plant systems and treated water reuse.
15. Waste generation and pollution risk during construction and operation.
16. Potential impacts on heritage and palaeontological resources
17. Cumulative impacts associated with incremental development pressure along the Kromme River Estuary and surrounding St Francis Bay landscape.

The assessment indicates that the potential impacts are primarily localised and can be managed, provided that the development remains within the preferred low-intensity layout and the mitigation hierarchy is

strictly applied. The most important mitigation measure is avoidance. Development must be directed towards transformed, historically disturbed and secondary regrowth areas, while avoiding the eastern creek, intact riparian or alluvial vegetation, sensitive estuarine-margin areas, drainage pathways and any specialist-confirmed sensitive habitat or species locations.

The site is not considered to be uniformly intact. Initial site verification, aerial imagery and ground-truthing indicate that large portions of the property have been transformed through historical agricultural activity, previous broad-scale clearing and earlier development-related disturbance. These areas have reduced ecological integrity relative to intact riparian or alluvial vegetation and are therefore more suitable for accommodating the proposed low-intensity development. However, the degraded condition of parts of the site does not remove the sensitivity of the broader receiving environment, particularly given the site's direct relationship with the Kromme River Estuary.

The eastern creek corridor is considered one of the most important remaining ecological features on the property and should be treated as a high-sensitivity avoidance and buffer area. The Kromme River estuarine edge is also sensitive, even where degraded, and must be managed as a protected interface and rehabilitation opportunity. Any access, boardwalk or jetty-related works must be carefully micro-sited, designed and supervised to prevent bank disturbance, erosion, vegetation loss, water quality impacts and cumulative degradation of estuarine function.

The proposed design approach includes several positive impact-reduction measures, including use of existing access routes, a reduced and low-intensity development footprint, off-grid solar energy, rainwater harvesting, wastewater treatment and treated water reuse, controlled pedestrian movement, elevated boardwalks where required, and a low-impact jetty approach using an articulated access walkway and floating pontoon. These measures substantially reduce the need for new disturbance, municipal service connections, additional road construction, uncontrolled stormwater discharge and unnecessary encroachment into sensitive areas.

The key residual risks relate to the site's hydrological and ecological connection to the Kromme River Estuary and eastern creek. These risks are most relevant in relation to stormwater runoff, erosion and sediment movement, wastewater treatment failure, treated water reuse, pollution incidents, access control, jetty construction and cumulative operational impacts. These risks can be reduced to acceptable levels through engineering design, specialist micro-siting, ECO oversight, strict footprint control, stormwater attenuation, wastewater maintenance, alien plant control, rehabilitation and long-term implementation of the OEMP.

The assessment concludes that, before mitigation, several impacts could be of moderate to high significance if development were poorly located or allowed to encroach into sensitive riparian, estuarine or CBA / ESA areas. With the preferred layout, site selection process and mitigation measures applied, most impacts are expected to be reduced to low or low to medium significance. The medium residual rating that remains for certain impacts reflects the inherent sensitivity of the estuarine setting rather than the scale of the proposed development itself.

On this basis, the proposed development is considered environmentally acceptable, provided that:

- The final layout is confirmed by the relevant aquatic, terrestrial biodiversity, plant species, heritage and engineering inputs.

- The eastern creek and intact riparian / alluvial vegetation are avoided and protected.
- The Kromme River estuarine edge is managed as a sensitive buffer and rehabilitation area.
- All structures, services, access routes, boardwalks and the jetty are micro-sited to minimise disturbance.
- Stormwater, wastewater and treated water reuse systems are professionally designed, maintained and monitored.
- No unauthorised expansion, additional access, vegetation clearing or estuarine-edge disturbance occurs.
- The EMPr, CEMP and OEMP are implemented in full, with ECO monitoring during construction and appropriate operational compliance monitoring thereafter.

Subject to these requirements, the proposed Farm 838 development is considered to represent a low-intensity and mitigatable land-use outcome that makes use of already transformed portions of the property while retaining and protecting the key ecological features that support the Kromme River estuarine environment.

IMPACT ASSESSMENT METHODOLOGY AND SCORING

1. Methodology

The impact assessment was undertaken using a semi quantitative scoring methodology aligned with DEDEAT and NEMA Appendix 1 requirements. Each identified impact was assessed in terms of its extent, duration, intensity and probability to determine an overall significance rating.

The assessment considers both pre mitigation and post mitigation scenarios, thereby demonstrating the effectiveness of proposed mitigation measures in reducing environmental risk.

2. Impact Rating Criteria

Criterion	Description
Extent	Site specific, local, or regional scale of impact
Duration	Short term, medium term, long term, or permanent
Intensity	Low, moderate, or high severity of impact
Probability	Likelihood of occurrence, ranging from low to high

Additional qualitative considerations:

Factor	Description
Reversibility	Ability of the environment to recover from the impact
Irreplaceability	Degree to which affected resources can be replaced
Confidence	Level of certainty in the assessment

3. Scoring System

Criterion	Score	Definition
Extent	1	Site specific
	2	Local
	3	Regional
Duration	1	Short term
	2	Medium term
	3	Long term
	4	Permanent
Intensity	1	Low
	2	Moderate
	3	High
Probability	1	Low
	2	Medium
	3	High

4. Significance Calculation

Component	Formula
Significance Score	(Extent + Duration + Intensity) × Probability

This calculation reflects both the severity of the impact and the likelihood of occurrence, ensuring that higher risk impacts are appropriately emphasised.

5. Significance Rating Thresholds

Score Range	Significance Rating
4 – 7	Low
8 – 11	Medium
12 – 16	High
17-21	Very High
22-27	Severe

Post mitigation significance is calculated using the same methodology after the application of mitigation measures to demonstrate the reduction in environmental risk.

IMPACT ASSESSMENT TABLE

Farm 838 Impact Assessment Table
Proposed low-intensity tourism/accommodation development, Lower Kromme River / St Francis Bay, Kouga Local Municipality Scoring formula: (Extent + Duration + Intensity) × Probability. Ratings: Low 1–10, Medium 11–15, High 16–24, Severe 25+.

Impact	Extent	Duration	Intensity	Probability	Significance Score (Pre)	Significance Rating (Pre)	Key Mitigation Measures	Extent (Post)	Duration (Post)	Intensity (Post)	Probability (Post)	Significance Score (Post)	Significance Rating (Post)	Reversibility	Irreplaceability	Confidence
Clearing of transformed or secondary terrestrial vegetation within the development footprint	2	3	2	3	21	High	Locate infrastructure within historically transformed or secondary regrowth areas; demarcate no-go areas; keep the footprint compact; undertake rehabilitation and indigenous revegetation after construction.	1	2	1	1	4	Low	High	Low to Moderate	High

Disturbance or loss of remnant riparian or Albany Alluvial vegetation, particularly along the eastern creek and estuarine edge	3	4	3	3	30	Severe	Avoid intact riparian and estuarine-edge vegetation; maintain buffers; use existing disturbed routes where possible; implement specialist demarcation and ECO oversight.	1	3	1	1	5	Low	Low to Partial	High	High
Disturbance to the Kromme River estuarine edge from access, jetty, walkway or pontoon-related works	3	4	3	3	30	Severe	Minimise estuarine-edge works; use articulated or elevated access where required; avoid sensitive intertidal or riparian habitat; prevent direct discharge and sediment release.	1	3	1	2	10	Low	Partial	High	Medium to High
Soil erosion, sedimentation and localised bank instability during construction	2	3	2	3	21	High	Phase earthworks; install erosion and sediment controls; stabilise exposed soil; avoid works during heavy rainfall; rehabilitate disturbed surfaces immediately.	1	2	1	1	4	Low	High	Low to Moderate	High
Stormwater runoff and water quality impacts to drainage lines, the eastern creek and Kromme River estuary	2	4	3	3	27	Severe	Prepare a site-specific stormwater management plan; use SuDS principles; attenuate and disperse runoff; prevent contaminated runoff and direct discharge to aquatic habitats.	1	3	1	1	5	Low	Moderate to High	High	High
Disturbance to fauna and game species using open, riparian and remnant habitat areas	2	2	2	2	12	Medium	Restrict clearing to the approved footprint; conduct pre-clearance checks; control construction noise, speed and lighting; allow fauna to move away naturally.	1	1	1	1	3	Low	High	Moderate	Medium

Fragmentation of biodiversity corridors between the estuarine edge, eastern creek and remaining natural vegetation	3	4	3	2	20	High	Cluster tourism units in transformed areas; avoid riparian corridors and intact vegetation; retain ecological linkages; prevent fencing or lighting that blocks movement.	1	3	1	1	5	Low	Partial	High	Medium to High
Alien invasive plant spread following disturbance	2	3	2	3	21	High	Implement alien invasive clearing before and after construction; prevent import of contaminated soil; monitor regrowth; use locally indigenous species for rehabilitation.	1	2	1	1	4	Low	High	Low	High
Waste, hydrocarbons, cement washout and general construction pollution	2	2	2	2	12	Medium	Implement waste and pollution management; provide designated storage and refuelling areas; remove waste to licensed facilities; prohibit cement washout onto soil or near watercourses.	1	1	1	1	3	Low	High	Low	High
Wastewater and sanitation impacts associated with tourism accommodation	2	4	3	2	18	High	Install legally compliant wastewater infrastructure; locate systems outside buffers and flood-prone areas; provide maintenance contracts and monitoring; prevent seepage or overflow.	1	4	1	1	6	Low	Moderate	High	High
Visual and landscape character impacts from tourism units and access infrastructure	2	4	2	2	16	High	Use low-impact clustered layouts; retain screening vegetation; control building height, colours and lighting; avoid visually prominent ridgelines and estuarine edge intrusion.	1	4	1	1	6	Low	Moderate	Moderate	Medium

Noise, dust and temporary disturbance during construction	2	1	2	3	15	Medium	Limit work to normal daytime hours; maintain equipment; implement dust suppression; keep construction camps and stockpiles within demarcated disturbed areas.	1	1	1	1	3	Low	High	Low	High
Access, traffic and internal road disturbance	2	2	2	2	12	Medium	Use existing access and disturbed alignments where feasible; minimise new roads; control construction traffic; rehabilitate temporary tracks and compacted areas.	1	2	1	1	4	Low	Moderate to High	Low to Moderate	High
Cumulative transformation pressure within the lower Kromme River and St Francis Bay landscape	3	4	3	2	20	High	Limit the development footprint; direct development to transformed areas; protect riparian and estuarine habitat; implement monitoring, ECO oversight and adaptive management.	1	4	1	1	6	Low	Partial	Moderate to High	Medium

Impact Assessment Statement:

The impact assessment undertaken for the proposed Farm 838 development confirms that the anticipated environmental impacts are generally manageable, provided that the development footprint is appropriately positioned, the final layout avoids sensitive estuarine and riparian areas, and the recommended mitigation measures are fully implemented through the Environmental Management Programme.

The site-specific assessment indicates that the majority of the proposed development footprint is located within land that has been historically transformed by agricultural use and associated disturbance. These areas have a reduced ecological sensitivity when compared to intact natural vegetation, riparian habitat and estuarine areas located within the broader property context. The development is therefore considered acceptable from an environmental impact perspective, provided that it remains confined to the verified lower sensitivity portions of the site.

The key environmental sensitivities associated with Farm 838 relate primarily to the proximity of the Kariega River estuarine environment, remnant natural vegetation, ecological connectivity within the broader landscape, potential faunal movement, erosion risk, stormwater management, visual change and the need for responsible wastewater and service infrastructure. These sensitivities do not necessarily preclude development, but they do require careful layout planning, avoidance of sensitive areas, and appropriate construction and operational controls.

The highest pre-mitigation risks relate to riparian and estuarine disturbance, vegetation clearance, habitat loss, biodiversity connectivity, soil erosion, sedimentation, stormwater management and servicing. Without mitigation, these impacts could result in avoidable ecological degradation, disturbance to natural systems, and increased pressure on the surrounding receiving environment. However, with the implementation of avoidance measures, strict footprint control, erosion and stormwater management, rehabilitation, waste management, responsible lighting and noise controls, and compliant wastewater infrastructure, these impacts can be reduced to low post-mitigation significance.

The impact assessment further indicates that the proposed development can be planned in a manner that avoids direct disturbance to the most sensitive environmental features. The retention of riparian areas, estuarine buffers, natural drainage features and areas of higher ecological value will be essential to ensuring that the development does not result in unacceptable biodiversity or aquatic impacts. Development should therefore be clustered within already transformed or disturbed portions of the site, with no unnecessary expansion into intact or semi-intact natural vegetation.

Construction phase impacts are expected to be temporary and localised, provided that they are properly managed. These include vegetation disturbance, soil exposure, dust, noise, waste generation, construction traffic and potential sediment runoff. These impacts are typical of small to medium-scale tourism or lodge developments and can be effectively mitigated through standard environmental management measures, including site demarcation, construction method control, erosion protection, dust suppression, designated laydown areas, responsible waste disposal, and ECO monitoring.

Operational phase impacts are expected to be longer term but manageable, provided that the development is operated in accordance with approved environmental controls. The main operational risks relate to wastewater management, stormwater discharge, waste handling, fire risk, disturbance to fauna, lighting impacts, maintenance of rehabilitated areas, and the potential cumulative effect of increased human presence in a sensitive landscape. These risks can be reduced through appropriate design, ongoing management, environmental awareness, maintenance of infrastructure, and adherence to the operational EMPr.

Overall, the impact assessment concludes that the proposed development is not expected to result in unacceptable environmental impacts, provided that the final layout is informed by site sensitivity verification, avoids sensitive ecological and estuarine areas, and implements the recommended mitigation measures. The development is considered environmentally reasonable and defensible, subject to strict adherence to the approved footprint, specialist recommendations, and ongoing environmental management requirements.

Project environmental risks:

The proposed Farm 838 development presents a number of environmental risks which require consideration during the planning, construction and operational phases of the project. These risks are primarily associated with the location of the site within a sensitive broader landscape, including the proximity of the Kariega River estuarine environment, remnant natural vegetation, drainage features, biodiversity movement corridors and areas of higher ecological value.

The principal environmental risk is the potential for inappropriate placement of infrastructure within or too close to sensitive ecological areas. If the final layout is not properly informed by site-specific environmental assessment, there is a risk of encroachment into riparian areas, estuarine buffers, remnant natural vegetation and areas that contribute to ecological connectivity. This may result in unnecessary habitat loss, fragmentation, disturbance to fauna and degradation of sensitive receiving environments. This risk can be reduced by ensuring that all development is located within verified transformed or lower sensitivity areas and that sensitive areas are clearly demarcated as no-go zones.

A further risk relates to vegetation clearance and habitat disturbance. Although the majority of the proposed footprint is associated with transformed agricultural land, portions of the broader site contain remnant natural vegetation and ecological features that should be retained. Uncontrolled clearing could result in the loss of indigenous vegetation, disturbance of faunal habitat, increased alien invasive plant establishment and reduced ecological function. This risk must be managed through strict clearing limits, pre-construction demarcation, search and rescue where applicable, alien plant control, and post-construction rehabilitation.

Soil erosion and sedimentation represent an important project risk, particularly during the construction phase when soils may be exposed. If not properly controlled, stormwater runoff from disturbed areas could transport sediment into lower-lying areas, drainage lines or the estuarine environment. This may affect water quality and aquatic habitat. Erosion control measures, phased clearing, stabilisation of

exposed soils, silt protection, responsible stormwater routing and rapid rehabilitation of disturbed areas will be required to manage this risk.

Stormwater and water quality impacts are also relevant, particularly in relation to increased hardened surfaces, access roads, roof areas, parking areas and service infrastructure. Poorly designed stormwater systems may concentrate runoff, increase erosion, or discharge polluted water into sensitive receiving environments. The project should therefore incorporate sustainable stormwater design principles, including attenuation, dispersal, energy dissipation, sediment trapping, and no direct discharge of polluted runoff into riparian or estuarine areas.

Wastewater and servicing present a key operational environmental risk. The development must ensure that all wastewater infrastructure is appropriately designed, authorised where required, installed by competent persons, and maintained for the lifespan of the development. Any failure of wastewater systems could result in contamination of soils, groundwater, surface water or the estuarine environment. This risk must be managed through compliant sanitation infrastructure, regular inspection, maintenance records, emergency response measures and prohibition of untreated discharge to the environment.

Faunal disturbance may occur as a result of construction activity, noise, lighting, human movement, fencing, vehicle movement and increased operational activity. The broader property context supports fauna and may form part of a wider ecological movement landscape. The risk can be reduced through footprint limitation, avoidance of sensitive habitats, responsible lighting design, speed control, no hunting or trapping, no disturbance of wildlife, and maintaining natural corridors where feasible.

Visual and landscape character impacts are relevant due to the rural and natural landscape setting of Farm 838. Poorly sited or visually prominent structures could alter the sense of place and reduce the visual quality of the area. This risk can be addressed through sensitive architectural design, low-impact building placement, use of recessive colours and materials, retention of screening vegetation, limitation of unnecessary lighting, and rehabilitation of disturbed areas.

Construction-related risks include dust, noise, waste, accidental spills, cement contamination, uncontrolled access, laydown impacts and disturbance outside the approved footprint. These risks are temporary but require active management. Contractors must comply with the EMPr, and all staff should receive environmental induction before commencing work on site. An ECO should monitor compliance during the construction phase and ensure that corrective action is implemented where required.

Cumulative impacts must also be considered. While the development itself may be limited in extent, incremental development pressure within estuarine and rural landscape settings can contribute to broader habitat loss, increased disturbance, visual change and pressure on ecological systems. The project must therefore be implemented in a manner that avoids unnecessary expansion, protects sensitive areas, and maintains the ecological function of the broader property.

In summary, the project environmental risks are considered manageable, provided that avoidance remains the primary mitigation approach and that the development footprint is restricted to verified lower sensitivity areas. The successful reduction of risk will depend on careful layout planning, implementation of the EMPr, specialist input where required, ECO oversight, responsible construction practices, and ongoing operational environmental management.

Alternative A (preferred alternative)

Alternative A represents the preferred development alternative and entails the establishment of the proposed tourism and lodge development within the verified lower sensitivity portions of Farm 838. This alternative is preferred on the basis that the proposed development can be located predominantly within historically transformed and disturbed agricultural areas, while avoiding the more sensitive ecological features associated with the Kariega River estuarine environment, riparian areas, drainage features, remnant natural vegetation and areas of higher biodiversity value.

The preferred alternative allows for the intended land use to proceed in a manner that is compatible with the existing transformed character of the proposed development footprint, provided that the final layout is informed by site sensitivity verification and specialist input. Development under this alternative must remain clustered and contained within areas of lower environmental sensitivity, with sensitive areas demarcated and retained as no-go areas. This will reduce the risk of unnecessary vegetation clearance, habitat fragmentation, faunal disturbance, erosion, sedimentation and water quality impacts.

From an environmental perspective, Alternative A is considered acceptable because the key risks identified through the impact assessment can be effectively mitigated. These include limiting the development footprint, avoiding estuarine and riparian buffers, retaining remnant natural vegetation where feasible, implementing erosion and stormwater controls, managing construction activities through an approved EMPr, ensuring compliant wastewater infrastructure, controlling waste and pollution, and implementing rehabilitation following construction.

Alternative A also provides a practical opportunity to support appropriate rural tourism development while maintaining the ecological function of the broader property. The alternative allows for the economic and social benefits of the project to be realised, including tourism investment, job creation during construction and operation, improved land use value, and potential long-term management of the property in a manner that supports conservation compatible land use.

Provided that the recommended mitigation measures are implemented, the preferred alternative is not expected to result in unacceptable environmental impacts. The post-mitigation significance of the identified impacts is expected to be reduced to low levels, and the development can proceed without materially compromising the sensitive environmental features of the broader site. Alternative A is therefore considered the environmentally preferred and reasonable alternative.

No-go alternative (compulsory)

The no-go alternative represents the option of not proceeding with the proposed tourism and lodge development on Farm 838. Under this alternative, the site would remain in its current state and no construction, vegetation clearance, service installation or operational tourism use associated with the proposed development would occur.

From a strictly environmental perspective, the no-go alternative would avoid the direct construction related impacts associated with the preferred alternative. These would include disturbance to soils, vegetation clearance within the development footprint, temporary construction noise, dust, waste generation, stormwater risks, erosion potential and increased human activity. Sensitive ecological features such as the

Kariega River estuarine environment, riparian areas, remnant natural vegetation and faunal movement areas would remain unaffected by the proposed development.

However, the no-go alternative would also mean that the potential benefits of the project would not be realised. These include the opportunity to establish a controlled and environmentally managed tourism development within already transformed portions of the property, local employment opportunities, economic investment, increased tourism value, and the potential for improved land management, rehabilitation and alien invasive plant control linked to the development approval and EMPr requirements.

The no-go alternative would also not necessarily result in improved environmental management of the property. Existing transformed agricultural areas would remain in their current condition, and any current land use pressures, alien invasive vegetation, erosion concerns or unmanaged disturbance would continue unless separately addressed by the landowner. In this regard, the no-go alternative would avoid new development impacts but would not provide a structured mechanism for rehabilitation, environmental monitoring or long-term operational environmental management.

When compared with the preferred alternative, the no-go option has the lowest immediate physical impact, as no development would take place. However, given that the proposed development can be located within lower sensitivity transformed areas and that the key environmental risks can be reduced to low significance through mitigation, the no-go alternative is not considered necessary from an environmental impact perspective. It would result in the loss of the project benefits without providing a proportionate environmental advantage, provided that Alternative A is implemented in accordance with the recommended mitigation measures and approved EMPr.

The no-go alternative is therefore retained as the compulsory baseline alternative for comparative purposes, but it is not preferred. Alternative A is considered the preferred and environmentally reasonable option, subject to strict avoidance of sensitive areas, footprint control, specialist recommendations and ongoing environmental management.

4. CLIMATE CHANGE ASSESSMENT

Climate change issues must be considered as part of the EIA process Please consider the Climate Change guideline. EAP must determine:

a) The potential impact of climate change on society and the economy, whether the impact is negative or positive, considering that society needs to be at the centre of the proposed development;

Human and ecological system vulnerabilities are interdependent in relation to climate change. In terms of socio-economic development South Africa is heavily reliant on intensive resource extraction and energy demands in sectors such as mining and agriculture. Spatial planning in relation to the development of infrastructure, utilities and services also place a heavy demand on the receiving environment. Given that the development goals of the country and the environment are interconnected planning in these areas are subject to climate change variability. This is specifically pertinent to meeting the objectives of

sustainable development, concerns which undeniably will be exacerbated by unpredictable weather patterns such as increased temperatures, variable rainfall patterns and sea-level rise.

Key sectors (but not limited to) have been identified has having high sensitivity and potential risks to the changes in weather patterns these sectors include public infrastructure and utilities, mining, agriculture, forestry and land use change, human settlements (urban, rural and coastal) and waste treatment facilities. Indicators to assess the potential impacts of climate change are both socio-economic and environmental referred to as baseline risks or vulnerabilities. Baseline socio-economic impacts relate to human health through the spread of disease, food and water security, air quality, secure access to services, livelihoods and settlements/displacement. In this case it is necessary to assess the potential impact of a development on the receiving environment both built and natural as it contributes to climate change (NCCAS, 2019).

The aforementioned indicators are used to assess vulnerabilities that are likely to be exacerbated or potentially benefit from the development process. The impact of the development is also measured against the type of development, development scale/footprint, waste production and the development duration. However, from a project level a socio-ecological life-cycle assessment which integrates climate change mitigation and resilience measures from the on-set of a development project needs to be conducted. This process would involve an accurate reflection of the carbon inventory and atmospheric effects of a proposed development, which falls outside the scope of a basic environmental assessment.

Even though the basic assessment gives recommendations on sustainable mitigation measures and alternative technologies it does not detail the process from the manufacturing and sourcing of materials and architectural considerations in the planning and design phase. Specialist assessment will need to be conducted for a detailed analysis on the overall carbon footprint of a development and the capacity of the development to cope with environmental stresses over time. Factoring in these areas would give due regard to the cumulative impacts a specific development will have in terms of meeting the decarbonisation goals of South Africa while simultaneously meeting the objectives of sustainable development .

Apart from intensive industrial processes such as the transformation of land, agricultural and mining sectors high risk areas include coastal settlements due to the projected sea-level rise, these include settlements in low lying areas, floodplains and estuaries. Flooding and erosion in coastal areas will result in the loss of resources, ecosystems and infrastructure and increase the vulnerability of estuaries. This is pertinent as approximately 40% of South African's live and work in coastal areas. Oceans and coasts are also vital carbon sinks as they absorb carbon dioxide from the atmosphere where a destabilisation could cause changes in the carbon cycle.

Besides our oceans acting as carbon capture systems other terrestrial ecosystems are also significant in carbon sequestration such as soils and vegetation. Disturbance to these natural systems through development initiatives need to be effectively mitigated and managed as highlighted in the basic assessment to promote sustainability and climate resilience. The main vegetation carbon sinks in South Africa include the grassland and savannah biomes. Even though the restoration, rehabilitation and conservation of these biomes are crucial, management systems need to be considered in light of land use and socio-economic pressures.

At the same time the rate at which greenhouse gases are released through development processes needs to be assessed in relation to the carrying capacity and resilience of water and land systems such

as coastal and terrestrial ecosystems. This also relates to the effect of a development on the resilience of existing infrastructure and management systems. The following table represents key areas that could be impacted by development processes and contribute to the myriad of climate change factors. Many of the baseline environmental risks have also been considered in the systematic screening section of this report. In general, the construction phase has the most significant socio-economic and environmental impacts therefore focus will be placed on this phase. The key considerations that guided this summary was whether the development would have positive or negative climate change impacts or in turn whether the development would be adversely affected by it, either directly or indirectly (Byer et al., 2012).

The proposed development on Farm 838 relates to a low impact development within a rural landscape associated with the Kromme River system. The site context includes historically transformed agricultural land, remnant natural vegetation, estuarine and riparian sensitivities, drainage and stormwater considerations, and a receiving environment that may be vulnerable to climate related stressors such as increased temperatures, drought, variable rainfall, extreme storm events, erosion, flooding and pressure on water resources.

At a broad level, climate change is expected to affect both human and ecological systems. Human and ecological vulnerabilities are interdependent, particularly in landscapes where rural livelihoods, tourism, biodiversity, water resources and estuarine systems are closely linked. Increased temperature, altered rainfall patterns, more intense storm events, drought cycles and sea level related influences on coastal and estuarine systems may affect water availability, infrastructure resilience, ecosystem functioning and the long term sustainability of land use activities.

The main climate change considerations relevant to this development include water security, stormwater management, erosion and sedimentation, heat stress, wildfire risk, ecological resilience, estuarine vulnerability, vegetation loss, carbon storage, construction related emissions, operational resource use and the resilience of infrastructure over time. These considerations are particularly relevant given the broader coastal and estuarine context of the Kariega River system and the sensitivity of riparian and estuarine receiving environments.

The proposed development is not an industrial, mining, energy generation or large scale infrastructure project and is therefore not expected to result in significant greenhouse gas emissions when compared to higher emission sectors. However, project level emissions will arise from vegetation clearing, construction machinery, transport of materials, embodied carbon in building materials, energy use, water use, waste generation and long term operational activities associated with the lodge and tourism use. These emissions are expected to be localised and relatively limited in scale, but should still be minimised through appropriate design, material selection, energy efficiency and operational management.

A full carbon inventory, life cycle assessment and embodied carbon assessment falls outside the scope of a basic environmental assessment. However, the environmental assessment and EMPr can include practical mitigation measures to reduce the development's contribution to climate change and improve resilience. These include limiting the development footprint, retaining natural vegetation where feasible, rehabilitating disturbed areas, controlling alien invasive plants, using energy efficient design, incorporating renewable energy where practical, reducing water demand, implementing sustainable stormwater systems, and ensuring responsible waste and wastewater management.

The primary climate related vulnerability for the proposed development is not its greenhouse gas contribution, but rather its exposure to climate driven environmental risks. These include increased stormwater runoff during intense rainfall events, erosion of disturbed soils, sediment movement towards the Kariega River system, drought related pressure on water supply, heat stress during construction and operation, wildfire risk in dry periods, and the need to maintain ecological buffers and natural drainage functions. These risks can be managed through the final layout, engineering design, environmental controls and operational management.

The preferred development alternative should therefore be designed to avoid sensitive estuarine, riparian and drainage areas and to retain natural buffers as climate resilience features. These areas assist with flood attenuation, sediment trapping, ecological connectivity, water quality protection and landscape resilience. Development should be clustered within already transformed or lower sensitivity areas, with no unnecessary encroachment into intact natural vegetation, riparian areas or the estuarine functional zone.

Stormwater management is a key climate change adaptation requirement for the development. Climate projections generally indicate increasing variability in rainfall and the potential for more intense storm events. The development must therefore avoid concentrated, unmanaged stormwater discharge into drainage lines, riparian zones or the Kariega River system. Stormwater should be managed through sustainable drainage principles, including attenuation, dispersal, energy dissipation, sediment trapping, permeable surfaces where feasible, and stabilisation of disturbed areas.

Water security is also an important project level consideration. Tourism developments can increase local water demand, particularly during dry periods. The project should therefore incorporate water efficient fittings, rainwater harvesting where feasible, responsible irrigation practices, use of locally appropriate planting, leak detection, maintenance systems, and measures to reduce unnecessary potable water demand. Landscaping should avoid high water demand ornamental species and should favour locally indigenous and drought tolerant species.

Wastewater management is a further climate resilience and pollution prevention consideration. Increased rainfall intensity, flooding or poor maintenance can compromise poorly designed sanitation systems. The development must therefore ensure that wastewater infrastructure is appropriately designed, located outside sensitive areas, authorised where required, maintained and monitored. No untreated wastewater should enter soils, drainage features, riparian areas or the Kariega River system.

Heat stress and occupational health risks may become more relevant under projected climate conditions. Construction workers, staff and visitors may be exposed to higher temperatures and more frequent heat stress conditions. Construction phase management should include access to shade, drinking water, suitable working hours during extreme heat, emergency response procedures and worker awareness. Operational design should include passive cooling, shaded outdoor spaces, natural ventilation and reduced reliance on energy intensive cooling where feasible.

Fire risk is also relevant in rural and semi natural landscapes, particularly during dry and windy periods. The development should include appropriate fire management measures, including controlled vegetation management around structures, emergency access, firefighting water supply where required, responsible

storage of flammable materials, no uncontrolled burning, staff awareness and compliance with local fire management requirements.

From a biodiversity and ecological resilience perspective, the retention of natural vegetation, ecological corridors, riparian buffers and estuarine protection areas will contribute positively to climate change adaptation. These areas provide habitat, support faunal movement, reduce erosion, assist with water quality protection and maintain ecological function under changing climatic conditions. Any unavoidable disturbance must be rehabilitated as soon as possible using appropriate indigenous species.

The following table summarises the key climate change vulnerabilities and considerations relevant to the proposed Farm 838 development.

Climate Change Consideration	Relevance to Farm 838	Potential Risk	Recommended Response or Mitigation	Residual Risk with Mitigation
Increased temperature and heat stress	Relevant during construction and operation, particularly for workers, staff and visitors	Heat exhaustion, reduced worker productivity, increased cooling demand and visitor discomfort	Provide shade, drinking water, heat safety procedures, suitable working hours during extreme heat, passive cooling, natural ventilation and shaded outdoor areas	Low
Drought and water security	Relevant due to rural tourism use and potential pressure on local water resources	Increased water demand, reduced water availability, stress on landscaping and operational water supply	Use water efficient fittings, rainwater harvesting where feasible, drought tolerant indigenous landscaping, leak detection, maintenance and responsible irrigation	Medium to Low
Intense rainfall and storm events	Relevant due to exposed soils during construction, access roads, roofs and hardened surfaces	Increased runoff, erosion, sedimentation and possible impacts on the Kariega River receiving environment	Implement sustainable stormwater design, attenuation, energy dissipation, sediment trapping, erosion control, phased clearing and rapid stabilisation	Low
Soil erosion and sedimentation	Relevant during earthworks, clearing and road or service installation	Sediment movement into drainage features, riparian areas or the estuarine environment	Limit disturbance, stabilise exposed soils, install silt controls, avoid steep or sensitive areas, rehabilitate disturbed areas promptly	Low
Estuarine and riparian vulnerability	Highly relevant due to the broader Kariega River estuarine context	Disturbance to sensitive buffers, reduced water quality, erosion and ecological degradation	Avoid riparian and estuarine areas, retain buffers, demarcate no go areas, prevent direct discharge and maintain natural drainage functions	Low
Sea level and estuarine influence	Relevant at broader coastal and estuarine scale, depending on final siting and elevation	Increased flood or backwater influence in low lying estuarine areas over the long term	Avoid low lying and sensitive estuarine areas, confirm final layout against topography, flood risk and specialist recommendations	Low to Medium
Vegetation loss and reduced carbon storage	Relevant where vegetation clearing is required	Loss of local carbon storage, reduced ecological resilience and increased alien plant risk	Minimise clearing, retain natural vegetation, rehabilitate disturbed areas, control alien invasive plants and use indigenous planting	Low
Biodiversity and ecological connectivity	Relevant due to remnant natural vegetation, fauna and landscape connectivity	Habitat fragmentation and reduced resilience under climate stress	Cluster development in transformed areas, avoid ecological corridors, retain natural buffers and manage lighting, noise and access	Low
Wildfire risk	Relevant in rural landscapes during dry and windy periods	Damage to infrastructure, risk to people, fauna and vegetation	Prepare fire management measures, maintain defendable space around structures, ensure emergency access, manage fuel loads responsibly and prohibit uncontrolled burning	Medium to Low

Climate Change Consideration	Relevance to Farm 838	Potential Risk	Recommended Response or Mitigation	Residual Risk with Mitigation
Construction emissions	Relevant but limited in scale	Emissions from machinery, transport, materials and temporary energy use	Maintain machinery, reduce unnecessary trips, source materials locally where feasible, minimise waste and avoid unnecessary vegetation clearing	Low
Operational energy use	Relevant during lodge operation	Increased electricity demand and indirect emissions	Use energy efficient lighting and appliances, passive design, solar energy where feasible and responsible operational management	Low
Waste generation	Relevant during construction and operation	Methane generation from waste, pollution and resource inefficiency	Implement waste separation, recycling where feasible, correct disposal, no littering and ongoing waste management procedures	Low
Wastewater infrastructure resilience	Relevant due to proximity to sensitive receiving environments	Pollution from system failure, overflow or poor maintenance	Install compliant wastewater systems, locate infrastructure outside sensitive areas, maintain regularly, inspect and prevent untreated discharge	Low
Cumulative climate resilience	Relevant in the broader estuarine and rural landscape context	Incremental pressure on natural systems, water resources and landscape resilience	Keep the footprint compact, avoid sensitive areas, retain buffers, implement the EMPr and maintain long term environmental management	Low

Table 3 Climate change vulnerabilities and project level considerations for Farm 838

At municipal and district scale, climate change risks relevant to the broader area include increased heat stress, water resource pressure, economic vulnerability, coastal and estuarine exposure, infrastructure vulnerability, flood risk and changing rainfall patterns. Kouga Municipality contains a number of coastal and estuarine settlements and is therefore exposed to risks associated with sea level rise, flooding, erosion, storm events and pressure on water resources. These broader risks support the need for careful siting, avoidance of sensitive areas, resilient design and responsible long term environmental management.

For Farm 838, the most important climate change indicators are water security, heat stress, drought, stormwater management, erosion control and the protection of ecological functions associated with the Kariega River system. The development must therefore be designed and managed in a manner that does not increase the vulnerability of the receiving environment and that improves the resilience of the site through avoidance, rehabilitation, resource efficiency and responsible operational practices.

Overall, the proposed development is not expected to generate significant climate change impacts at a regional scale. The climate change risks associated with the project are considered manageable, provided that the development footprint is limited to transformed or lower sensitivity areas, sensitive ecological and estuarine features are avoided, stormwater and wastewater systems are properly designed and maintained, and resource efficient design principles are incorporated into the final development. Under these conditions, the development can proceed without materially increasing climate change vulnerability in the receiving environment.

b) The potential alternatives of the proposed development, alternatives that will have less impact on climate change (environment and generation of waste included), the society and economy;

The preferred development alternative for Farm 838 is Alternative A, which entails the establishment of the proposed small scale tourism accommodation development within the verified lower sensitivity and historically disturbed portions of the property. This alternative is considered preferable as it allows the proposed land use to proceed while limiting the development footprint, avoiding sensitive vegetation and drainage areas, and reducing the need for extensive earthworks, vegetation clearance, road construction and service infrastructure.

The preferred alternative has a lower climate change and environmental impact when compared to a more extensive or dispersed layout, as the development can be clustered and positioned to make use of areas that are already disturbed or transformed. By keeping each chalet small in scale and by restricting disturbance to the minimum practical footprint, the proposal reduces the loss of vegetation, limits soil disturbance, reduces construction related emissions, and decreases the potential for erosion, sedimentation and stormwater impacts.

The construction method is also relevant to the climate change assessment. The proposed chalets are small scale structures and are expected to be constructed largely with hand held tools and limited use of heavy machinery. This reduces fuel use, construction related emissions, noise, dust and disturbance

when compared with conventional large scale construction. The limited construction intensity further reduces the volume of waste generated and the potential for uncontrolled site disturbance.

A further alternative would be a more intensive development option, with a larger number of units, larger building footprints, increased access roads, more extensive services and greater reliance on heavy machinery. This option is not preferred as it would increase vegetation clearance, soil disturbance, stormwater runoff, visual impacts, energy demand, waste generation and greenhouse gas emissions. It would also increase the long term operational pressure on the site and the surrounding local environment.

The no go alternative would avoid all direct construction and operational impacts associated with the proposed development. However, it would also prevent the socio economic benefits associated with the project, including local tourism opportunities, employment during construction and operation, increased land use value, and improved environmental management linked to an approved EMPr. The no go alternative would not necessarily improve the current ecological condition of already transformed portions of the site, nor would it create a structured mechanism for rehabilitation, alien plant control, stormwater management or ongoing environmental monitoring.

Alternative A is therefore considered the preferred alternative from a climate change, environmental and socio economic perspective, provided that the layout remains compact, sensitive areas are avoided, construction disturbance is minimised, waste is managed, and water, energy and wastewater systems are designed for long term resilience.

c) whether, and to what extent, the proposed development will result in the release of greenhouse gas (GHG) emissions;

The proposed development will result in some greenhouse gas emissions, primarily during the construction phase and to a lesser extent during the operational phase. These emissions will arise from the transport of materials, limited use of construction vehicles, delivery vehicles, fuel use, embodied carbon in building materials, waste generation, and operational energy demand once the chalets are in use.

However, the scale of emissions is expected to be low. The development comprises small scale chalet style accommodation with a limited overall footprint. Construction is expected to be undertaken predominantly with hand held tools and limited heavy equipment, which will substantially reduce fuel consumption and associated emissions when compared with larger building or infrastructure projects. The proposal does not include industrial processes, mining, intensive agriculture, manufacturing, large scale energy generation or other activities typically associated with high greenhouse gas emissions.

Vegetation clearance may result in a minor localised loss of carbon storage, but this impact is expected to be limited where clearing is restricted to the smallest practical footprint and where natural vegetation, drainage areas and sensitive ecological features are avoided. Any disturbed areas outside the approved development footprint should be rehabilitated, and locally indigenous vegetation should be used where landscaping or stabilisation is required.

Operational emissions will depend on the final energy, water and waste management systems. These can be reduced through passive design, natural ventilation, energy efficient lighting and appliances, solar energy where feasible, water efficient fittings, rainwater harvesting where feasible, responsible waste management and appropriate wastewater infrastructure.

Overall, the proposed development is expected to make a negligible to low contribution to greenhouse gas emissions at a municipal or regional scale. The main climate related focus should therefore be on reducing resource consumption, maintaining ecological buffers, protecting drainage and wetland or riparian functions where present, and ensuring that the development is resilient to future climate variability within the Kouga Municipality and local Farm 838 area.

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d) whether the proposed development is necessary to achieve long term decarbonisation goals;

The proposed development is not, in itself, necessary to achieve national or regional long term decarbonisation goals. It is not a renewable energy project, climate mitigation project, carbon offset project or strategic decarbonisation intervention. However, the development can be implemented in a manner that is consistent with long term decarbonisation principles.

The project provides an opportunity to apply low impact tourism development principles at site level. This includes limiting the development footprint, reducing reliance on heavy machinery during construction, retaining natural vegetation, avoiding sensitive ecological areas, minimising waste, reducing water demand, incorporating energy efficient design, and using renewable energy where feasible.

The development should therefore not be presented as a project that directly achieves decarbonisation targets, but rather as a small scale development that can align with decarbonisation and climate resilience objectives through its design, construction method and operational management. The use of low impact construction methods, compact siting, passive cooling, reduced energy demand and responsible water and waste management will assist in ensuring that the development does not undermine climate change mitigation objectives.

Provided that the development is implemented in accordance with the recommended mitigation measures and the EMPr, it is considered compatible with long term decarbonisation goals at a project scale.

e) the impact of the development on social, economic, natural and built environment that are crucial for climate change, adaptation and resilience;

The proposed development may have both positive and negative implications for climate change adaptation and resilience. These implications relate to the social, economic, natural and built environment within the local Farm 838 area and the broader Kouga Municipality context.

From a social perspective, the development may support local employment during construction and operation, create opportunities for local service providers and contribute to the tourism economy. These benefits can support local resilience where employment and income opportunities are created in a responsible and sustainable manner. However, this benefit will depend on the use of local labour, local procurement where feasible, and responsible operational management.

From an economic perspective, the development may contribute positively to the local tourism sector and the productive use of the property. Tourism related development can support economic diversification, particularly where it is compatible with the natural and rural character of the area. The economic benefit must, however, be balanced against the need to protect natural systems that support long term environmental and economic resilience, including vegetation, drainage features, water quality and landscape character.

From a natural environment perspective, the main risk is the potential disturbance of vegetation, soils, drainage areas and ecological connectivity. These natural systems are important for climate change adaptation as they assist with water infiltration, runoff management, erosion control, habitat provision, local cooling, carbon storage and biodiversity resilience. The development must therefore avoid sensitive ecological areas, retain vegetation where feasible, limit soil disturbance and rehabilitate disturbed areas.

From a built environment perspective, the proposed small scale chalet development can be designed to improve resilience through appropriate siting, low impact foundations where feasible, passive climate responsive design, efficient water and energy systems, responsible wastewater infrastructure and stormwater controls. Structures should be positioned outside areas exposed to flooding, erosion, unstable soils or concentrated runoff. The built form should also avoid unnecessary hard surfacing and should allow natural drainage patterns to continue as far as possible.

The overall impact on climate change adaptation and resilience is considered manageable and potentially acceptable, provided that the final design avoids sensitive areas, reduces resource demand, incorporates sustainable stormwater and wastewater systems, and maintains the ecological functioning of the site.

f) the projected impact of climate change on proposed development; and surrounding environment, and implications for the development.

The proposed development and surrounding environment may be affected by climate change through increased temperature, heat stress, more variable rainfall, more intense storm events, drought periods, increased fire risk, changes in vegetation condition, erosion and pressure on water resources. These risks are relevant to the Kouga Municipality and to rural and coastal influenced landscapes within the broader local area.

Increased temperatures may affect construction workers, operational staff and visitors. This may result in heat stress, increased water demand and increased cooling requirements. The development should therefore incorporate passive cooling, shade, natural ventilation, appropriate orientation and efficient energy use.

More intense rainfall events may increase the risk of stormwater runoff, erosion and sediment movement from disturbed areas. This is particularly relevant during the construction phase when soils may be exposed. The development must therefore include appropriate stormwater controls, erosion protection, silt management and rapid stabilisation of disturbed areas.

Drought and water scarcity may affect operational water availability and landscaping. The development should reduce potable water demand through water efficient fittings, rainwater harvesting where feasible, leak detection, responsible maintenance and the use of locally appropriate indigenous and drought tolerant vegetation.

Climate change may also increase fire risk, particularly during dry and windy conditions. The development should include appropriate fire management measures, including emergency access, safe storage of flammable materials, controlled vegetation management around structures, no uncontrolled burning and staff awareness.

The surrounding natural environment may be affected by climate related stress, including changes in vegetation health, increased alien plant invasion risk, reduced water availability, erosion and changes in habitat condition. The retention of natural vegetation and drainage features will therefore be important to maintain ecological resilience.

The implication for the development is that climate adaptation must be incorporated into the layout, construction method and operational management from the outset. The development should be compact, low impact, resource efficient and positioned away from sensitive or vulnerable areas.

g) Explanation of how the impacts are likely to be exacerbated or minimised as result of climate change and what measures are likely to be implemented to accommodate and manage (adapt to) the anticipated worst scenario where applicable

Climate change may exacerbate certain project impacts if the development is not carefully planned and managed. Higher temperatures may increase heat stress and operational water demand. Drought may place pressure on water supply and landscaping. Intense rainfall may increase erosion, sedimentation and stormwater impacts. Dry and windy conditions may increase fire risk. Ecological stress may increase the vulnerability of vegetation, fauna and drainage systems to disturbance.

These risks can be minimised through avoidance, compact layout planning, low impact construction, resource efficient design and long term operational management. The most important measure is to locate all development within verified lower sensitivity areas and to avoid drainage areas, sensitive vegetation, unstable soils and any areas that may be vulnerable to concentrated runoff or erosion.

The anticipated worst case scenario would include a combination of intense rainfall following construction disturbance, prolonged drought, high temperatures, water supply stress and increased fire risk. Under such a scenario, exposed soils could erode, stormwater could transport sediment, water demand could increase, vegetation rehabilitation could fail, and fire risk could increase around structures.

To accommodate and manage this scenario, the following measures should be implemented:

Climate Related Risk	How the Impact Could be Exacerbated	Required Adaptation and Management Measures
Intense rainfall after clearing	Exposed soils may erode and sediment may move into drainage areas or lower lying receiving environments	Phase clearing, minimise exposed soils, install silt controls, stabilise disturbed areas immediately, provide energy dissipation and maintain stormwater controls
Increased stormwater runoff	Roofs, paths and hardened areas may increase runoff volumes and flow concentration	Use sustainable drainage design, permeable surfaces where feasible, attenuation, dispersal, sediment trapping and no uncontrolled discharge
Drought and water stress	Water demand may exceed available supply and landscaping may fail	Install water efficient fittings, harvest rainwater where feasible, use drought tolerant indigenous planting, avoid high water demand landscaping and maintain leak detection
Heat stress	Workers, staff and visitors may be affected by higher temperatures	Provide shade, drinking water, heat safety procedures, passive cooling, ventilation and shaded outdoor spaces
Fire risk	Dry vegetation and windy conditions may increase fire danger	Maintain responsible fuel management around structures, provide emergency access, prohibit uncontrolled burning, ensure firefighting readiness and train staff
Vegetation disturbance	Climate stressed vegetation may recover more slowly after disturbance	Limit clearing, retain vegetation, rehabilitate immediately, control alien invasive species and monitor establishment
Wastewater failure	Extreme rainfall or poor maintenance may cause overflow or contamination	Install compliant systems, locate infrastructure outside sensitive areas, inspect and maintain regularly, prevent untreated discharge and prepare emergency response procedures
Access and construction disturbance	Wet or dry extremes may damage access routes and increase dust or erosion	Use defined access routes, stabilise disturbed surfaces, manage dust, avoid work during unsuitable conditions and rehabilitate temporary disturbance
Biodiversity resilience	Habitat disturbance may compound climate stress on fauna and vegetation	Retain natural corridors, minimise lighting and noise, avoid sensitive habitats and manage human activity

The preferred alternative will minimise climate related impacts by keeping the development small in scale, reducing the need for heavy machinery, limiting the footprint, retaining natural areas and implementing appropriate stormwater, erosion, water, waste and wastewater management measures.

Overall, while climate change may increase the vulnerability of the development and surrounding environment to heat, drought, stormwater, erosion and fire related risks, these risks can be managed through careful siting, low impact design, construction controls and long term operational management. The development is therefore considered acceptable from a climate change adaptation perspective, provided that the mitigation measures are incorporated into the final design and EMPr.

h) whether, and to what extent, the impacts identified in (a) -(g) can be mitigated.

The climate change impacts identified for the proposed Farm 838 development in the Kouga Municipality can be mitigated to acceptable levels through avoidance, compact siting, low impact construction, resource efficient design, stormwater control, wastewater management, rehabilitation and operational maintenance. The tables below assess the extent to which the key climate related impacts can be reduced during the construction and operational phases.

Impact 1	**Increased stormwater runoff, localised flooding, erosion and sediment movement during intense rainfall events**			
	Construction		**Operational**	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Duration	Short term (1)	Short term (1)	Long term (4)	Long term (4)
Extent	Site specific (1)	Site specific (1)	Local (2)	Site specific (1)
Intensity	High (3)	Low (1)	High (3)	Low (1)
Probability	High (3)	Low (1)	High (3)	Low (1)
Significance	**Very High (18)**	**Low (4)**	**Very High (27)**	**Low (7)**
Mitigation	Avoid drainage lines and low lying flow paths, keep the chalet footprint compact, retain vegetated buffers, install temporary silt controls during construction, use dispersed stormwater outlets, attenuation, energy dissipation and stabilise disturbed areas immediately.			

Impact 2	**Drought, water security and heat stress affecting workers, visitors, vegetation establishment and local services**			
	Construction		**Operational**	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Duration	Short term (1)	Short term (1)	Long term (4)	Long term (4)
Extent	Local (2)	Site specific (1)	Local (2)	Site specific (1)
Intensity	High (3)	Moderate (2)	High (3)	Moderate (2)
Probability	High (3)	Low (1)	High (3)	Low (1)
Significance	**Very High (18)**	**Low (5)**	**Very High (27)**	**Low (7)**
Mitigation	Use water efficient fittings, rainwater harvesting where feasible, drought tolerant locally indigenous landscaping, leak detection, shade for workers and visitors, heat safety procedures, passive cooling, natural ventilation and reduced reliance on energy intensive cooling.			

Impact 3	**Greenhouse gas emissions from transport, material delivery, limited construction machinery and operational energy use**			
	Construction		**Operational**	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Duration	Short term (1)	Short term (1)	Long term (4)	Long term (4)
Extent	Study area (1)	Study area (1)	Study area (1)	Study area (1)
Intensity	Low (1)	Low (1)	Moderate (2)	Low (1)
Probability	May occur (2)	May occur (2)	May occur (2)	May occur (2)
Significance	**Low (4)**	**Low (4)**	**Medium (14)**	**Low (10)**
Mitigation	Keep the development small and clustered, use hand held tools where practical, limit heavy machinery, reduce unnecessary vehicle trips, source materials locally where feasible, use energy efficient appliances and lighting, and incorporate solar or renewable energy where feasible.			

SECTION E. RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES	■
Is an EMPr attached?	YES	■

The EMPr must be attached as Appendix F.

If "NO" ,indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

N/A

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

The following recommended conditions and mitigation measures should be considered for inclusion in any Environmental Authorisation that may be granted by the competent authority for the proposed development on Farm 838. These conditions are based on the impact assessment findings, identified environmental risks, climate change considerations, and the need to ensure that the proposed development remains within acceptable environmental limits.

1. General authorisation conditions

- The holder of the Environmental Authorisation must ensure that the development is undertaken strictly in accordance with the approved site layout plan, approved development footprint, Environmental Management Programme, specialist recommendations and any conditions imposed by the competent authority.
- No activity may commence until the final approved layout has been confirmed to avoid sensitive environmental features, including drainage areas, riparian areas, intact or higher sensitivity vegetation, unstable soils and any areas identified as environmentally unsuitable during site verification.
- The development footprint must be limited to the minimum practical extent required for the proposed small scale tourism accommodation development and associated infrastructure.
- No unauthorised expansion of the development footprint, access roads, service routes, laydown areas or construction working areas may occur without the required environmental approval or written confirmation from the competent authority, where applicable.
- All contractors, subcontractors and staff must be made aware of the Environmental Authorisation, EMPr and environmental controls before commencing work on site.

2. Layout and footprint control

- The final development layout must be positioned within the verified lower sensitivity and historically disturbed portions of Farm 838, as far as practically possible.
- The chalets and associated infrastructure must be clustered and positioned to avoid unnecessary vegetation clearance, habitat fragmentation and encroachment into sensitive environmental areas.
- The development footprint must be clearly demarcated before commencement of construction. Demarcation must remain in place for the duration of construction.
- All areas outside the approved footprint must be treated as no go areas unless specifically required for authorised works.
- No construction materials, vehicles, spoil, waste, cement, fuels, chemicals or equipment may be stored outside approved construction areas.

3. Vegetation clearance and habitat protection

- Vegetation clearance must be restricted to the approved development footprint only.
- No clearing may take place until the development footprint has been demarcated and confirmed by the Environmental Control Officer.
- Where indigenous vegetation is present within or adjacent to the development footprint, clearing must be minimised and vegetation must be retained wherever feasible.
- Any protected or listed plant species identified before or during construction must be managed in accordance with applicable legislation and permit requirements.
- Search and rescue of suitable plant material must be undertaken before clearing, where required by the relevant specialist or EMPr.
- Topsoil from disturbed areas must be stripped, stockpiled separately and reused for rehabilitation where feasible.
- Disturbed areas not required for permanent infrastructure must be rehabilitated as soon as practically possible following completion of construction.
- Only locally appropriate indigenous species may be used for rehabilitation and landscaping.
- Alien invasive plant species must be controlled during construction and operation in accordance with applicable legislation and the EMPr.

4. Riparian, drainage and aquatic protection

- All drainage areas, riparian areas, wetlands, watercourses or sensitive aquatic features identified on or near the site must be avoided, unless specifically authorised.
- No development, spoil placement, stockpiling, refuelling, washing, cement batching or waste storage may occur within sensitive drainage or riparian areas.
- Natural drainage patterns must be retained as far as possible.
- No direct discharge of polluted stormwater, wastewater, greywater, cement water, wash water, fuel contaminated water or sediment laden runoff may enter any drainage feature or downstream receiving environment.
- Buffers identified by the environmental assessment, specialist input or competent authority must be maintained as no go areas, except where authorised access is required.

- Any accidental spill or pollution event must be reported and remediated immediately in accordance with the EMPr.

5. Soil erosion, sedimentation and stormwater management

- A stormwater management plan or stormwater control method statement must be prepared and implemented before commencement of construction.
- Stormwater must be managed through sustainable drainage principles, including attenuation, dispersal, energy dissipation, erosion protection, sediment trapping and the use of permeable surfaces where feasible.
- Construction must be phased to limit the extent and duration of exposed soil.
- Exposed soils must be stabilised as soon as possible to prevent erosion and sediment movement.
- Silt fences, berms, sediment traps or other appropriate controls must be installed where there is a risk of sediment movement from disturbed areas.
- Stormwater must not be concentrated onto unstable soils, steep slopes, drainage areas or sensitive vegetation.
- All erosion features that develop during construction or operation must be repaired immediately and stabilised to prevent recurrence.

6. Construction method and machinery use

- Construction methods must be low impact and appropriate to the small scale nature of the proposed chalet development.
- Hand held tools and light equipment must be used wherever feasible to reduce soil disturbance, noise, emissions and vegetation damage.
- Heavy machinery must be limited to areas where it is required for essential works and must remain within demarcated access and construction areas.
- No unnecessary grading, levelling or bulk earthworks may be undertaken.
- Vehicle movement must be restricted to approved access routes.
- Construction vehicles and equipment must be maintained in good working order to reduce fuel use, emissions, leaks, noise and dust.

7. Waste management

- A waste management system must be implemented during construction and operation.
- All waste must be stored in designated areas and removed from site to a licensed or appropriate waste disposal facility.
- Waste must not be burnt, buried or dumped on site.
- General waste, recyclable waste, construction waste and hazardous waste must be separated where feasible.
- Hazardous waste, including oil containers, chemical containers, contaminated rags, cement bags and fuel contaminated material, must be stored securely and disposed of appropriately.
- Littering must be prohibited and the site must be kept clean at all times.

8. Pollution prevention and hazardous substances

- Fuel, oil, chemicals, cement and hazardous substances must be stored in designated areas with appropriate containment.
- Refuelling and maintenance of machinery must take place in controlled areas away from drainage features, sensitive vegetation and bare soils vulnerable to runoff.
- Spill kits must be available on site during construction.
- Any spill must be contained, cleaned and disposed of in accordance with the EMPr.
- Cement mixing must take place on an impermeable surface or within a controlled area to prevent contamination of soils and runoff.
- No cement wash water may be discharged onto the ground or into any drainage feature.

9. Wastewater and sanitation

- All wastewater and sanitation infrastructure must be designed, installed and maintained in accordance with applicable legal requirements, municipal requirements and any relevant specialist recommendations.
- No untreated wastewater, greywater or sewage may be discharged to the environment.
- Wastewater infrastructure must be located outside sensitive environmental areas and must not pose a pollution risk to soils, groundwater, drainage features or downstream receiving environments.
- Temporary construction sanitation facilities must be provided before construction commences and must be serviced regularly.
- Operational wastewater systems must be inspected and maintained for the life of the development.
- Records of wastewater maintenance must be retained and made available to the competent authority or ECO on request.

10. Water use and water efficiency

- The development must incorporate water efficient fittings and responsible water use measures.
- Rainwater harvesting must be considered where feasible.
- Landscaping must use locally appropriate, indigenous and drought tolerant species.
- High water demand ornamental landscaping must be avoided.
- Irrigation, where required, must be efficient and limited to establishment or essential maintenance.
- Leaks and water wastage must be repaired promptly.

11. Climate change adaptation and resilience

- The development must be designed and managed to reduce vulnerability to heat, drought, intense rainfall, erosion, fire and water scarcity.
- Passive cooling, shading and natural ventilation must be incorporated into the chalet design where feasible.

- Stormwater systems must be designed to accommodate intense rainfall events and must not increase erosion or downstream sedimentation.
- Construction workers must have access to drinking water, shade and heat stress management measures.
- Water conservation, energy efficiency and waste reduction measures must be implemented during operation.
- Sensitive ecological areas, vegetation buffers and natural drainage features must be retained as climate resilience features.

12. Energy efficiency and greenhouse gas reduction

- Energy efficient lighting, appliances and fixtures must be used where feasible.
- Renewable energy options, including solar energy, must be considered during final design.
- Construction related vehicle trips must be minimised where practical.
- Materials should be sourced locally where feasible to reduce transport related emissions.
- Unnecessary idling of vehicles and machinery must be prohibited.
- Vegetation clearance must be minimised to reduce loss of local carbon storage and ecological resilience.

13. Fauna protection

- No fauna may be hunted, trapped, harmed, collected or disturbed.
- Any fauna encountered during construction must be allowed to move away safely or must be relocated by a suitably competent person where necessary.
- Open excavations must be checked daily and must allow for fauna escape where possible.
- Speed limits must be enforced on site access routes.
- Lighting must be designed to minimise disturbance to nocturnal fauna.
- Fencing, where required, must not unnecessarily obstruct faunal movement unless required for safety or operational reasons.

14. Noise, dust and disturbance

- Construction activities must be limited to reasonable working hours as set out in the EMPr or as approved by the competent authority.
- All equipment must be maintained in good working condition to reduce noise.
- Dust must be controlled through appropriate measures, including wetting of exposed surfaces where necessary and practical.
- Construction activities must be managed to minimise nuisance to surrounding land users and fauna.
- No unnecessary disturbance, loud music or uncontrolled movement outside the construction footprint may occur.

15. Visual and landscape mitigation

- The development must be designed to respond sensitively to the rural and natural landscape character of the local area.

- Building colours, materials and finishes must be visually recessive and compatible with the surrounding landscape.
- Existing screening vegetation must be retained where feasible.
- External lighting must be low level, downward directed and limited to what is necessary for safety and operation.
- Disturbed areas around the chalets, access routes and services must be rehabilitated and landscaped with appropriate indigenous vegetation.

16. Access and traffic management

- Existing access routes must be used where feasible to avoid unnecessary disturbance.
- New access routes must be limited in width and extent and must avoid sensitive areas.
- Construction traffic must be managed to avoid unnecessary dust, erosion, noise and safety risks.
- Vehicles must remain on approved routes and may not drive through natural vegetation or no go areas.
- Any damage to access routes, erosion controls or disturbed areas must be repaired promptly.

17. Fire management

- A fire management plan or fire safety procedure must be implemented during construction and operation.
- No uncontrolled burning may occur on site.
- Smoking must be restricted to designated areas during construction.
- Flammable materials must be stored safely.
- Emergency access must be maintained.
- Firefighting equipment appropriate to the scale of the development must be available on site.
- Vegetation around structures must be managed responsibly to reduce fire risk without unnecessary clearing of natural vegetation.

18. Rehabilitation and post construction stabilisation

- All temporary construction areas, laydown areas, disturbed edges, service trenches and exposed soils must be rehabilitated after construction.
- Rehabilitation must include reshaping where required, topsoil replacement, erosion control and revegetation with appropriate indigenous species.
- Rehabilitation must be monitored until vegetation is established and erosion risk has been reduced.
- Alien invasive species must be removed from disturbed areas during and after rehabilitation.
- Any failed rehabilitation must be repaired or replanted.

19. Environmental Control Officer and compliance monitoring

- An independent Environmental Control Officer must be appointed before commencement of construction.
- The ECO must undertake a pre commencement inspection to confirm demarcation, no go areas, access routes and environmental controls.
- The ECO must monitor compliance during construction at intervals appropriate to the scale and risk of the works.
- The ECO must keep records of site inspections, non compliance, corrective actions and rehabilitation progress.
- Any material non compliance must be reported to the holder of the Environmental Authorisation and, where required, to the competent authority.

20. Method statements

- The contractor must prepare and submit method statements to the ECO before undertaking activities with environmental risk.
- Method statements should include, where applicable, vegetation clearing, access establishment, stormwater control, erosion control, wastewater management, cement handling, hazardous substances, waste management, rehabilitation and emergency response.
- No high risk construction activity may commence until the relevant method statement has been reviewed and accepted by the ECO.

21. Environmental awareness and training

- All construction staff must receive environmental induction before commencing work.
- The induction must include no go areas, waste management, spill response, fire prevention, fauna protection, vegetation protection, erosion control and reporting requirements.
- The contractor must ensure that environmental requirements are communicated to all subcontractors and visitors entering the site.

22. Operational environmental management

- The holder of the Environmental Authorisation must ensure that operational phase environmental management measures are implemented for the life of the development.
- Operational measures must include waste management, wastewater maintenance, stormwater maintenance, alien plant control, fire management, lighting control, water efficiency, energy efficiency and protection of sensitive areas.
- Sensitive areas must remain protected and may not be converted to lawns, gardens, storage areas, roads, parking or additional infrastructure unless authorised.

23. Reporting and record keeping

- Copies of the Environmental Authorisation, approved EMPr, approved layout plan, method statements, permits and ECO reports must be kept on site during construction.

- Records of waste disposal, wastewater maintenance, spill incidents, rehabilitation and alien plant control must be retained.
- The competent authority must be notified of commencement and completion of construction within the required timeframes.

24. Recommended authorisation conclusion

Subject to the implementation of the above conditions, the expected environmental impacts associated with the proposed Farm 838 development are considered manageable. The development should only be authorised on the basis that the final footprint remains compact, sensitive areas are avoided, low impact construction methods are used, stormwater and wastewater risks are properly controlled, and effective ECO monitoring and operational environmental management are implemented.

RECOMMENDATIONS OF THE SPECIALISTS

Aquatic Specialist Recommendations and Mitigation Measures

The following recommendations and mitigation measures were provided by the aquatic specialist and must be implemented to ensure that the proposed activities have either minimal or no impact on the aquatic biodiversity and Estuarine Functional Zone of the Kromme Estuary.

Aquatic Specialist Recommendations

- Activities should be located as far from the estuarine environment as possible to minimise disturbance to natural processes.
- The development footprint should remain consolidated within previously disturbed areas as far as practicable, while retaining surrounding natural vegetation and ecological buffer areas.
- Vegetation clearing must be limited to the minimum extent required for development platforms, access routes and service infrastructure.
- Disturbed areas must be rehabilitated and revegetated with indigenous species to improve long-term ecological functioning and reduce erosion risk.
- The riparian habitat adjacent to the main estuary channel must be rehabilitated with indigenous pioneer species.
- The area to the south of the old farm road and outside the proposed development footprint must be rehabilitated to restore the natural functioning of the previously impacted riparian area.
- The proposed boundary fence must not be constructed along the portions of the property adjacent to the estuary bank.
- All proposed structures, excluding the jetty, must be set back at least 30 m from the estuary edge.

- Individual conservancy tanks should be located to the rear of each structure to maximise the distance from the water's edge.
- The main modular wastewater treatment plant should ideally be located at the north-western edge of the property, as far from the estuary as possible.
- Any unpleasant odours or surface moisture around any part of the sewerage system must be investigated and appropriate measures taken to repair any damage.
- The conservancy tanks and wastewater treatment plant must be operated and maintained in accordance with the manufacturer's specifications.
- Frequent inspections of the conservancy tanks, wastewater treatment plant and surrounding areas must be undertaken for leaks and odours.
- Any detected leaks must be dealt with immediately.
- An Environmental Site Officer must be appointed to oversee construction activities, the location of each structure and the jetty components, and the rehabilitation of undeveloped but previously impacted riparian areas.

Construction Phase Mitigation Measures

Hydrocarbon Spills

- No vehicles or machinery may be allowed within 30 m of the estuary edge.
- During construction of the jetty, all machine-related activities must take place away from the building site and materials must be transported to the site manually.
- Small machinery, including generators, must be placed on drip trays containing a layer of fine sand capable of trapping hydrocarbons through adsorption.
- Drip trays must be cleaned out regularly and the contents disposed of at a suitable waste treatment site.
- Spills from larger equipment or vehicles must be covered with sand and manually removed each day to a disposal site.
- Machinery must be regularly inspected and maintained.
- The Environmental Site Officer must conduct regular inspections and must be informed of any uncontained spills.
- In the event of contamination, all affected fauna must be documented.
- Where birds are affected, all efforts must be made to capture and rehabilitate them through the Southern African Foundation for the Conservation of Coastal Birds.

Cement Toxicity

- Cement-based products must be mixed as far from the estuary as practically possible and at least 30 m from the estuary edge.
- This requirement also applies to the construction of the jetty base.
- Cement-based products required at the jetty site must be mixed elsewhere and transported to the site manually.

- Cement mixers must operate on large drip trays to contain any spills.
- Manual cement mixing must take place on a mobile, non-permeable hard surface.
- Cement may not be mixed directly on bare ground.
- All spills onto the ground must be cleaned up by hand and removed from the site.
- Machinery and tools must be washed at an off-site location or in containers that can be emptied off-site.

Erosion and Sediment Runoff

- Except for the jetty, all activities must take place at least 30 m from the estuary edge.
- A sediment screen must be temporarily erected in front of all cleared areas for the duration of construction and until exposed ground has stabilised.

Jetty Construction and Habitat Loss

- The land-based jetty base must be set back at least 5 m from the estuary bank to reduce the risk of destabilisation and erosion.
- A level fixed walkway supported by pylons must extend over the intertidal zone and lead onto an articulated section attached to a floating pontoon.
- The floating pontoon must be positioned beyond the spring low tide mark to prevent smothering of subtidal habitats.
- The length of the level walkway must be kept to the absolute minimum required to enable the safe attachment of the articulated section.
- Input from a structural engineer is required in determining the minimum required length of the level walkway.
- The exact positioning of the jetty components, including the base, walkways, pylons and pontoon, must be determined by the Environmental Site Officer to minimise damage to the habitat.
- The walkway pylons must consist of fibre-reinforced plastic or polymer, or polymer lumber manufactured from recycled plastic, that is inert in water or does not leach harmful chemicals.

Operational Phase Mitigation Measures

Wastewater

- Wastewater must initially be contained within conservancy tanks at each dwelling before being pumped to and treated in the modular wastewater treatment plant.
- The conservancy tanks and wastewater treatment plant must be located more than 30 m from the estuary edge.
- The conservancy tanks and wastewater treatment plant must be maintained in accordance with the manufacturer's specifications.
- The units and surrounding areas must be inspected frequently for leaks and odours.

- Any detected leaks must be dealt with immediately.

Aquatic Specialist Conclusion

The aquatic specialist concluded that, apart from the proposed jetty, the development is not expected to result in impacts on aquatic biodiversity. The construction of the jetty will result in a direct negative impact on riparian and intertidal habitat, although this impact is expected to be Low and of short duration if the recommended mitigation measures are implemented, and the affected habitat is expected to recover. The permanent loss of habitat at the pylon positions is considered a minor impact, while the construction of the jetty is expected to result in a minimal or no overall impact. The management actions detailed by the aquatic specialist must be implemented to ensure that the proposed activities have either minimal or no impact on the aquatic biodiversity and Estuarine Functional Zone of the Kromme Estuary.

Agricultural Specialist Findings and Conclusion

The following findings were provided by the agricultural specialist and should be read together with the Agricultural Compliance Statement attached.

Important Findings

- The DFFE Screening Tool initially identified the property as having Very High agricultural sensitivity.
- This rating was linked to the Moderate-High land capability classification, the historical occurrence of rainfed annual crop cultivation and planted pastures, and the location of the property within the Jeffrey's Bay Protected Agricultural Area.
- Following the site sensitivity verification, the agricultural sensitivity of the proposed development footprint was reduced to Low.
- The property was historically used for dryland annual crop cultivation, although aerial imagery indicates that crops have not been planted since before the 1990s.
- Much of the property now comprises fallow or historically modified land dominated by tall grasses and shrubs.
- No commercial farming or agricultural infrastructure was recorded on the property.
- The soils are predominantly sandy, highly drained and have a low nutrient-retention capacity.
- The farm is considered primarily non-arable or of low agricultural potential.
- Agricultural capability is considered to be restricted more by ecological sensitivity than agricultural yield.
- The proposed development will affect a maximum area of approximately 6 000 m², while the landowner intends to retain the remaining approximately 72 000 m² for low-density agricultural use.

Recommendations and Mitigation Measures

No specific recommendations or mitigation measures were included in the report.

Agricultural Specialist Conclusion

The agricultural specialist concluded that the proposed development of up to approximately 6 000 m² on Farm 838 is expected to result in a Low impact on agricultural land. A full Agricultural Assessment was therefore not considered necessary, and no agricultural mitigation measures were proposed.

Heritage Specialist Findings and Recommendations

The following findings and recommendations were provided in the High-Level Desktop Heritage Report and should be read together with the full heritage report attached as Appendix ##.

Important Findings

- The proposed development triggers Section 38(8) of the National Heritage Resources Act.
- Historical aerial photography shows that no development has occurred on the property since 1961.
- No structures older than 60 years are present on the property, and no impact on built environment heritage is anticipated.
- No archaeological sites are currently recorded within the proposed development area.
- The property has previously been cultivated, which may have affected the preservation of subsurface archaeological material.
- The property has not previously been surveyed for archaeological material.
- Two Grade IIIC shell middens are recorded approximately 150 m east of the study site. These sites are situated across the estuary, and no further damage or impact on these recorded sites is anticipated from the proposed development.
- Due to the property's proximity to the Krom River and the presence of recorded shell middens within the surrounding area, similar deposits may occur on the property. Their presence and condition would need to be verified through a field survey.
- The SAHRIS Palaeosensitivity Map identifies the area proposed for development as having Very High palaeontological sensitivity.
- Most of the development area is underlain by undifferentiated units of the Ceres Subgroup, Bokkeveld Group, Cape Supergroup, while a small eastern portion is underlain by the Nanaga Formation.
- The Ceres Subgroup is identified as having Very High fossil sensitivity and is known for diverse shelly invertebrate biotas, trace fossils, rare fish remains, primitive vascular plants and microfossils.
- The Nanaga Formation falls within the Algoa Group, which is identified as having Very High palaeontological sensitivity due to its marine and estuarine fossil heritage.

Heritage Specialist Recommendations

- A further archaeological assessment is recommended.
- A field-based palaeontological study is recommended.

- Further heritage studies must include an Archaeological Impact Assessment and a Palaeontological Impact Assessment.

Heritage Mitigation Measures

No project-specific heritage mitigation measures were provided at this stage. Mitigation measures would be informed by the findings of the recommended Archaeological Impact Assessment and Palaeontological Impact Assessment.

Heritage Specialist Conclusion

Based on the available information, the heritage specialist concluded that it is likely that the proposed development will impact on significant heritage resources. Further heritage studies, namely an Archaeological Impact Assessment and a Palaeontological Impact Assessment, are therefore recommended.

Recommendations and Mitigation measures of the Terrestrial Specialist

1. Layout planning and avoidance:

- The final layout must prioritize transformed, historically disturbed and lower sensitivity portions of the site.
- Development must remain clustered within the approved development footprint and must avoid unnecessary expansion into surrounding natural or semi-natural areas.
- Creek margins, drainage features, riparian vegetation, remaining indigenous vegetation patches and any areas functionally linked to the Kromme River system must be avoided as far as reasonably practicable.
- Any intact or semi-intact vegetation associated with mapped Endangered or Critically Endangered vegetation units must be avoided.
- The final layout must avoid disturbance of any representative Albany Alluvial Vegetation or Humansdorp Shale Renosterveld should such vegetation be identified during final pegging or pre-construction walkdown.
- Any proposed change to the final layout that may move infrastructure into a higher sensitivity area must be reviewed by the EAP, ECO and terrestrial biodiversity specialist before implementation.
- No development, site camp, laydown area, stockpile, access road, service trench or parking area may be located within a no-go area or sensitive feature unless specifically assessed and authorised.

2. No-go areas and demarcation:

- Sensitive areas must be clearly demarcated before commencement of any site establishment, clearing or earthworks.

- No-go areas must include creek margins, drainage features, riparian vegetation, remaining indigenous vegetation, protected species locations and any intact or semi-intact threatened vegetation remnants.
- No-go demarcation must be maintained for the full duration of construction.
- Construction personnel, contractors, subcontractors and suppliers must be informed of no-go areas during environmental induction.
- No vehicles, machinery, materials, waste, excavated soil or construction personnel may enter demarcated no-go areas.
- Any accidental encroachment into a no-go area must be reported immediately to the ECO and rehabilitated under ECO supervision.

3. Vegetation clearing:

- Vegetation clearing must be limited to the minimum area required for the approved development footprint, access routes, service corridors and associated infrastructure.
- No blanket clearing of vegetation may be undertaken.
- Vegetation clearing must be phased and must only occur immediately before construction in the relevant area.
- The ECO must inspect and approve the pegged clearing areas before clearing commences.
- Clearing must be undertaken in a controlled manner to avoid damage to adjacent vegetation.
- Indigenous vegetation outside the approved footprint must not be cut, pruned, removed, trampled, damaged or disturbed.
- Cleared vegetation may be used for brush packing or rehabilitation where suitable and where it does not contain alien invasive material.

4. Protected species and species of conservation concern:

- A pre-construction walkdown must be undertaken before vegetation clearing to identify any protected trees, provincially protected plants, species of conservation concern or other sensitive flora within the final footprint.
- All protected trees and protected plant species must be avoided wherever possible through micro-siting of infrastructure.
- Where protected trees may be pruned, damaged, removed or disturbed, the required National Forests Act licence must be obtained before disturbance.
- Where provincially protected plants may be removed, disturbed, translocated or destroyed, the required provincial permits must be obtained before disturbance.
- Search and rescue must be undertaken where suitable protected, indigenous or transplantable species occur within the approved disturbance footprint.
- Rescued plant material must be relocated to suitable receptor areas or used in rehabilitation, subject to specialist or ECO guidance.
- No collection, harvesting, cutting or removal of indigenous plants by workers, visitors or contractors may be permitted.

5. Threatened vegetation units:

- The TBA must recognise that the site is mapped in association with Endangered Albany Alluvial Vegetation and Endangered Humansdorp Shale Renosterveld in the broader 2024 VEGMAP and 2025 NBA context.
- Although site verification indicates that intact or representative examples of these vegetation units are largely absent from the proposed development footprint, any remaining intact or semi-intact patches must be treated as high sensitivity.
- Development must not result in the loss of intact representative threatened vegetation.
- Where any intact Endangered or Critically Endangered vegetation is identified during pre-construction verification, the affected area must be avoided and the layout must be adjusted where practicable.
- If avoidance is not possible, the matter must be referred back to the EAP, ECO and specialist for reassessment before any disturbance occurs.

6. Creek margins, riparian areas and drainage features:

- Creek margins, riparian vegetation and drainage features must be treated as high sensitivity areas.
- No clearing, dumping, stockpiling, refuelling, cement batching, wastewater discharge or material storage may occur within these areas.
- Natural drainage patterns must be retained as far as practicable.
- No stormwater may be concentrated into creek margins, drainage features or riparian areas without suitable attenuation, energy dissipation and erosion protection.
- Any work near drainage features or riparian margins must be subject to an approved method statement and ECO supervision.
- Sediment controls must be installed before earthworks commence in areas where runoff may enter sensitive features.
- No contaminated runoff may enter the Kromme River system.

7. Alien invasive plant management:

- Alien invasive plant species must be controlled before, during and after construction.
- Priority areas for alien control include disturbed areas, access routes, service corridors, stockpile areas, creek margins, drainage features, riparian edges and rehabilitation areas.
- Category 1a and 1b alien invasive species must not be allowed to establish, spread or set seed.
- Alien clearing must be undertaken using appropriate mechanical or approved chemical control methods.
- Herbicide use near drainage features, creek margins, riparian vegetation or the Kromme River system must be avoided unless specifically approved and undertaken by competent persons.

- Alien plant material containing seed, fruit or viable vegetative material must be removed from site or disposed of in a manner that prevents spread.
- Follow-up clearing must be undertaken during the rehabilitation and operational phases.

8. Faunal protection:

- No fauna may be hunted, trapped, killed, collected, disturbed, poisoned or intentionally harmed.
- Construction workers must be instructed not to interfere with snakes, birds, mammals, amphibians, reptiles, invertebrates, nests, burrows or other fauna.
- Any fauna encountered during clearing or construction must be allowed to move away safely.
- If fauna cannot move away safely, the ECO or a competent person must be contacted to assist with relocation.
- Speed limits must be enforced on access roads to reduce the risk of collisions with wildlife, livestock and birds.
- Open trenches or excavations must be inspected daily and before backfilling to ensure that trapped fauna are removed safely.
- Trenches left open overnight must include escape ramps where practicable.
- Construction lighting must be minimised and directed away from riparian areas, drainage features and natural vegetation.

9. Avifaunal considerations:

- Disturbance to birds must be minimised through footprint control, reduced noise, controlled access and protection of riparian vegetation.
- No active nests may be disturbed or removed without specialist advice and relevant authorisation where required.
- Vegetation clearing should, where practicable, avoid peak breeding periods for birds.
- Lighting must be low intensity, downward directed and shielded to reduce disturbance to nocturnal fauna and birds.
- Large reflective surfaces and unnecessary glass glare should be minimised through appropriate architectural design.

10. Soil disturbance, erosion and sediment control:

- Earthworks must be limited to the approved development footprint.
- Disturbed soils must be stabilised as soon as practicable.
- Topsoil must be stripped, stockpiled and reused for rehabilitation where suitable.
- Topsoil stockpiles must be kept separate from subsoil and construction waste.
- Stockpiles must be located outside drainage features, creek margins, riparian areas and stormwater flow paths.
- Stockpiles must be stabilised or covered where erosion or windblown dust may occur.

- Erosion control measures must be installed before or during earthworks, especially on sloped or exposed areas.
- Sediment fences, silt socks, berms, mulch, brush packing, stone pitching or other suitable measures must be used where required.
- Erosion damage must be repaired immediately after rainfall events.

11. Stormwater management:

- Stormwater must be managed at source and must not be allowed to concentrate into sensitive areas.
- Roof runoff, road runoff and hard surface runoff must be directed to stable, vegetated or engineered discharge points.
- Stormwater infrastructure must include erosion protection and energy dissipation where required.
- Dirty water and clean stormwater must be kept separate.
- Stormwater must not be routed through fuel storage, waste storage, chemical storage, wastewater, greenhouse or agricultural input areas.
- Drainage infrastructure must be inspected after significant rainfall events.
- Any sediment accumulation in drains, swales, silt traps or stormwater structures must be removed.

12. Wastewater and pollution prevention

- Wastewater treatment systems must be designed, installed and maintained to prevent contamination of soil, groundwater, drainage features, riparian vegetation and the Kromme River system.
- No untreated wastewater, greywater, sewage or contaminated water may be discharged to the environment.
- Treated effluent may only be reused where legally permissible, suitably treated and managed to avoid runoff, seepage, nutrient enrichment or pollution.
- Portable toilets and temporary ablutions must be located outside sensitive areas and must be serviced by an approved service provider.
- Fuel, oil, cement, chemicals, paints, solvents, detergents, fertilisers, pesticides and herbicides must be stored in designated controlled areas.
- Spill kits must be available on site at all times.
- Any spill must be contained, cleaned and reported immediately.
- Contaminated soil must be removed and disposed of at a licensed facility.

13. Agricultural, greenhouse and beekeeping activities

- Greenhouse areas must be located outside sensitive riparian and drainage areas.
- Fertilisers, compost, pesticides, herbicides and other agricultural inputs must be stored in controlled areas.
- No nutrient enriched runoff from greenhouse or agricultural areas may enter drainage features, creek margins, riparian vegetation or the Kromme River system.

- Beekeeping infrastructure must be located in areas that do not require unnecessary vegetation clearing.
- Beekeeping must be managed to reduce risk to workers, guests, livestock and wildlife.
- Agricultural and greenhouse waste must be collected and disposed of responsibly.

14. Boat storage, jetty and river edge controls

- No boat storage, jetty, river access, mooring, launching or estuarine edge works may commence unless all required municipal, ICMA, environmental, landowner and other statutory approvals are in place.
- River edge areas must not be cleared or modified unless specifically assessed and authorised.
- Boat storage areas must be designed to avoid fuel, oil, wash water or contaminated runoff entering the Kromme River system.
- No boat maintenance involving oils, fuels, solvents, antifouling paints or hazardous substances may occur outside a controlled area.
- River access must be controlled to avoid trampling, erosion, informal paths and disturbance to riparian vegetation.

15. Construction access and traffic

- Existing access roads and disturbed routes must be used as far as practicable.
- No new informal tracks may be created.
- Vehicles must remain on approved access routes and parking areas.
- Speed limits must be enforced to reduce dust, erosion, faunal disturbance and risk to livestock.
- Turning, parking, refuelling and material delivery areas must be located outside sensitive areas.
- Access through active farming areas must comply with landowner and biosecurity requirements.

16. Biosecurity

- Access through active cattle and dairy farming areas must be managed in accordance with landowner, farmer, State Veterinarian or agricultural authority requirements.
- Vehicles, machinery and personnel must comply with any applicable Foot and Mouth Disease or communicable animal disease protocols.
- Visitor and contractor access must be controlled and recorded where required.
- No unauthorised movement into livestock areas may occur.
- Biosecurity measures must be included in contractor induction.

17. Rehabilitation

- All disturbed areas not required for permanent infrastructure must be rehabilitated.

- Rehabilitation must be undertaken progressively where possible and not delayed until the end of construction.
- Rehabilitated areas must be stabilised using suitable topsoil, mulch, brush packing, erosion control measures and locally appropriate indigenous vegetation where required.
- Disturbed areas must be monitored until vegetation cover is established and erosion risk is controlled.
- Alien invasive plants must be removed from rehabilitation areas.
- Rehabilitation must aim to stabilise soils, restore vegetation cover, prevent erosion and reduce edge effects on remaining natural vegetation.

18. Operational management

- The operational phase must maintain the approved footprint and prevent incremental expansion into sensitive areas.
- No informal footpaths, vehicle tracks, picnic areas, river access points or storage areas may be created outside approved areas.
- Guests, staff and service providers must be informed of no-go areas and environmental controls.
- Waste, wastewater, stormwater, alien plants, lighting, noise and access must be managed throughout operation.
- Maintenance of roads, stormwater structures, wastewater systems, solar systems, greenhouse areas and river edge infrastructure must be undertaken in a manner that avoids vegetation loss and pollution.

19. Monitoring and auditing

- The ECO must inspect the site before commencement to confirm demarcation, no-go areas, sensitive features and approved work areas.
- Regular ECO inspections must be undertaken during construction.
- Inspections must specifically monitor vegetation clearing, no-go compliance, erosion, sediment control, stormwater, waste, pollution, alien vegetation, fauna incidents and rehabilitation.
- A photographic record must be kept before construction, during construction and after rehabilitation.
- Non-compliance must be recorded and corrected within a specified timeframe.
- Operational monitoring must include alien vegetation, erosion, stormwater, wastewater, riparian protection, access control and rehabilitation success.

20. Reporting and documentation

- The environmental site file must include the Environmental Authorisation, EMPr, approved layout, permits, method statements, induction records, audit reports, incident records, complaints register, waste disposal slips, photographs and rehabilitation records.

- All incidents involving vegetation damage, protected species, fauna, spills, erosion, stormwater failure, wastewater failure or no-go area encroachment must be reported to the ECO.
- Any significant environmental incident must be reported to the relevant authority where required.
- Final close-out must confirm that all disturbed areas have been stabilised, waste removed, alien plants controlled and rehabilitation measures implemented.

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SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Preliminary Activity SDP

- Preliminary Activity SDP

Appendix B: Site Photographs

Appendix C: Preliminary Activity SDP

- Preliminary Activity SDP

Appendix D: Specialist reports

- Site Sensitivity Verification Report
- Agricultural Compliance Statement
- Aquatic Biodiversity Compliance Statement
- High-Level Heritage Desktop Report
- Terrestrial Biodiversity Assessment Report

Appendix E: Public participation process (PPP) & Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

- EMPr

Appendix G: Other information

- Site Sensitivity Verification Report
- Environmental Screening Report