



**Western Cape
Government**

BETTER TOGETHER.

DELINEATION OF COASTAL SET-BACK LINES AND OVERLAY ZONES IN WEST COAST DISTRICT

I. Bekko
C. George

IAIA Conference

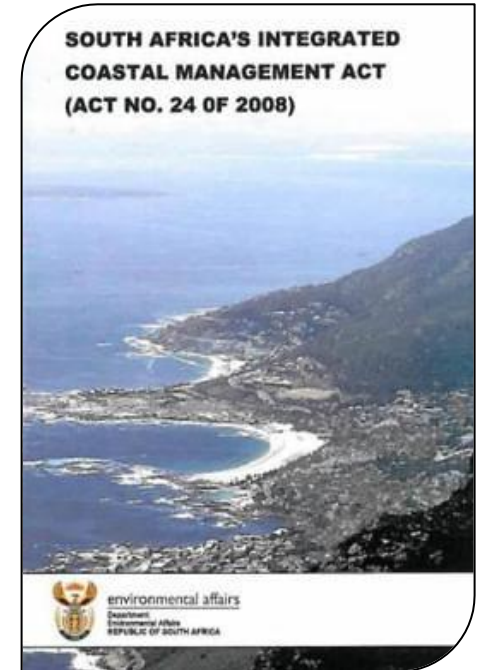
August 2014

Content

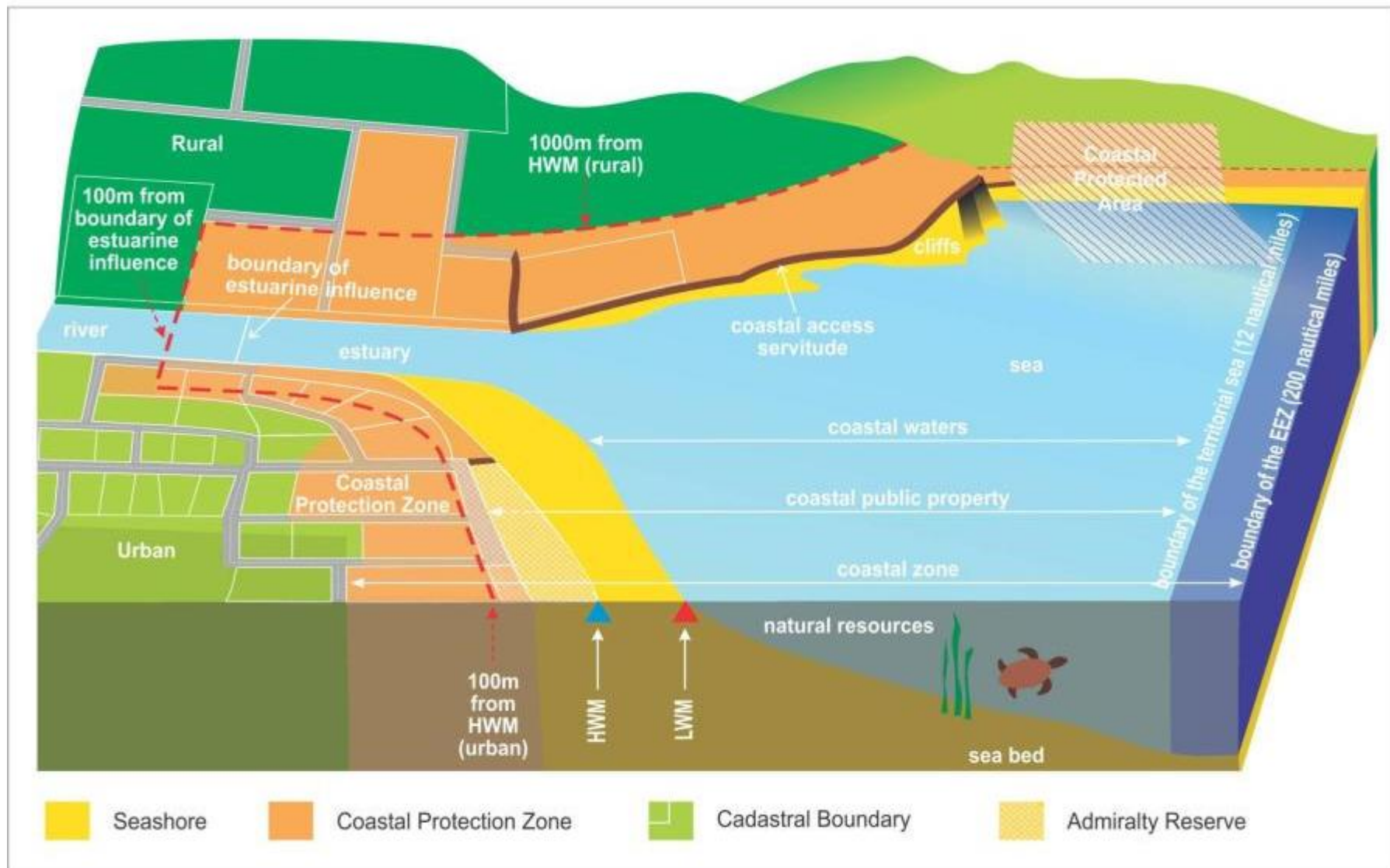
- Background and Context
- Process followed for West Coast District Set-back Line Delineation
- Coastal Risk Projections
- Coastal Set-back Lines and Overlay Zones
- Proposed Development Controls
- Stakeholder Engagement
- Legal Implementation of Overlay Zones
- Application of Coastal Set-back Lines and Overlay Zones

Context & Background

- Global climate change – no longer debated
- Vulnerability of Coastal Ecosystems
- Impacts associated with dynamic processes (erosion and accretion)
- ICM Act provides for specific tools to attain integrated coastal management:
 - Coastal Management Programmes
 - Estuary Management Plans
 - Coastal Planning Schemes
 - **Set-back/Management lines**
- Proactive rather than reactive response to issues



Coastal Zone



Regional Trends in sea level rise

NOAA Image (National Oceanic and Atmospheric Administration)



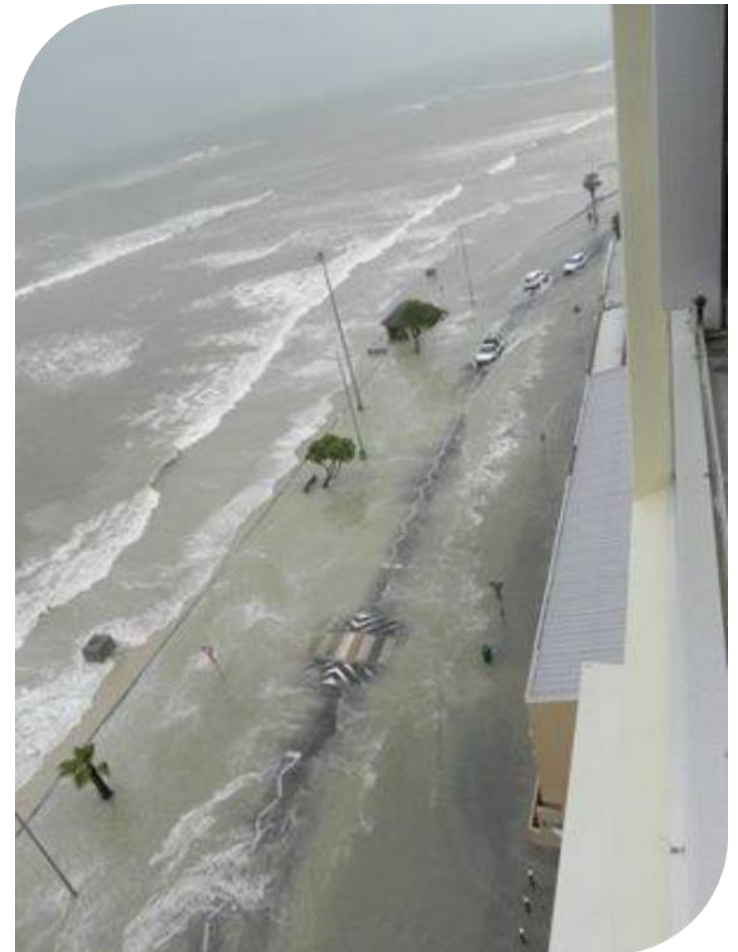
Sea Level Trends
mm/yr (feet/century)



Impact of coastal processes



Strand 2013



Coastal Set-back / Management Lines – Legislation

- “An MEC must...
 - (a) establish or change coastal set-back lines—
 - (i) to protect coastal public property, private property & public safety;
 - (ii) to protect the coastal protection zone;
 - (iii) to preserve the aesthetic values of the coastal zone; or
 - (iv) for any other reason consistent with the objectives of this Act; &
 - (b) prohibit or restrict the building, erection, alteration or extension of structures that are wholly or partially seaward of that coastal setback line.”
- Development set-back lines in the NEMA EIA Regulations

Western Cape Progression

- Western Cape set-back line delineation methodology developed and tested (WSP, 2010):
 - Case studies for Milnerton and Langebaan
- WSP Methodology applied in Overberg District
 - Challenges experienced
 - More pragmatic approach required
- Lessons learnt from all of these processes have been applied in determining the West Coast coastal set-back / management lines



Overberg Set-back line Delineation Process

Lessons learnt

- Presented by Tandi Breetzke at IAIA Conference, 2011
- Insufficient use of local knowledge
- Insufficient stakeholder engagement and transparency
- The need for process amendments wrt Draft Regulations
- Adverse impacts on property rights
- Risk projection not “realistic”



West Coast District Coastal Set-back / Management Lines Project

Refined Methodology

Coastal Risk Projections

- 1:10 (HWM)
- 1:20
- 1:50
- 1:100

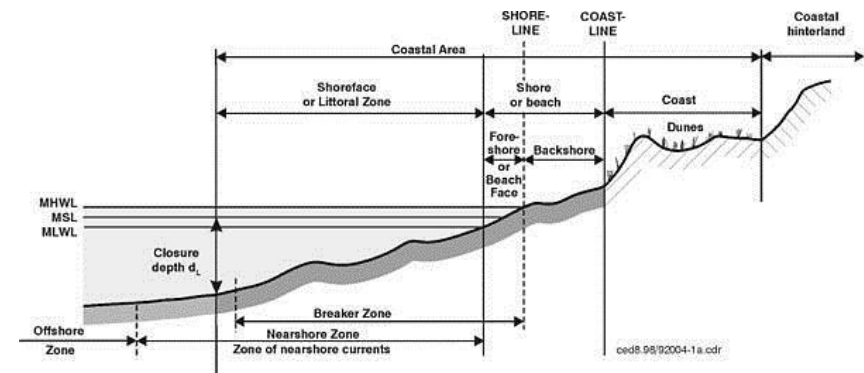
Extensive Public Participation

1st Round Consultation informed public of risk and welcomed public opinion as opposed to imposing already determined set-back lines

- Workshops held along coastline
- Information made readily available
- MCC and EMFs used as platform to convey information

Revisited terminology used

- E.g. “No further development line”



Coastal Risk Projections

Determination of the
Physical Processes /
Hazard Line
(Open coasts)

- Scientific
- Process based
- No scope for subjective assessments

OFF SHORE WAVE HEIGHT
Wave direction & height

1

WAVE RUN UP

Current wave run up (HWM), short, medium & long term wave run up

2

STORM BEACH RETREAT
A fixed distance

3

SLR (BRUUN'S RULE)

The amount of shoreline retreat for short, medium & long term sea level rise

4

LONG TERM BEACH RETREAT
Analysis of old aerial photography

5

Projected risk...

What to do with 3 lines???



Further refinement of methodology

Pragmatic Approach

- **DILEMMA:** Which of 3 risk projections to use as Coastal Setback???
- CoCT conducted their own Setback Line Delineation process
 - Response required to built up nature of coastline
 - Needed pragmatic approach to deal with existing development without infringing on development rights
- Different approach required between Rural and Urban Areas
- Different Approach required between coastline and estuaries
- Testing 5m contour as proxy
- **SOLUTION:** Development of risk based coastal overlay zone
- Risk projections conveyed as risk zones
 - High (1:20)
 - Medium (1:50)
 - Low (1:100)
- Flood determination for Berg River estuary



Coastal Set-back / Management Line & Overlay Zones

Risk-based Overlay Zones

- Objective:

- Use risk projections to inform development decisions
- Integrate coastal risk information into local planning
- Allow regulation on a Local level

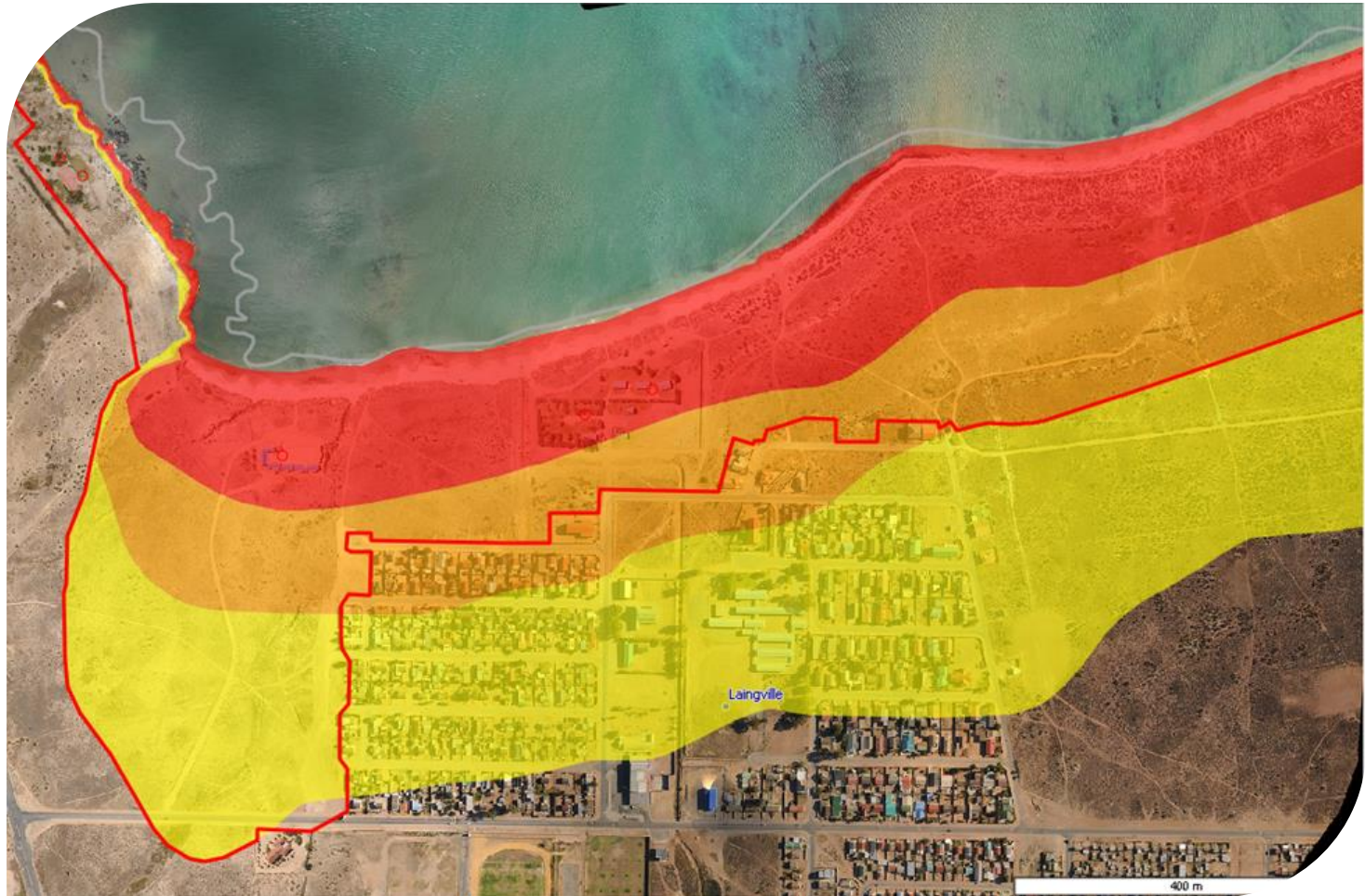
- Mechanism:

- 'Overlay Zones' as a component of town planning & building controls
- "A zone which establishes specific development requirements addressing unique circumstances or situations on a property or group of properties"
- Applies on top of existing zoning or rights



Overlay Zones

Laingville



Criteria for Coastal Set-back / Management Line

In rural areas:

- The CML follows the littoral active zone or 1:100yr projection, whichever is more conservative.
- Where existing development occurs seaward of the 1:100yr projection or littoral active zone (CML) in rural areas those developments are treated as development islands.
- In the case of resorts the island may be delineated around the resort as a whole as it is a functional unit and not individually owned even.

In urban areas:

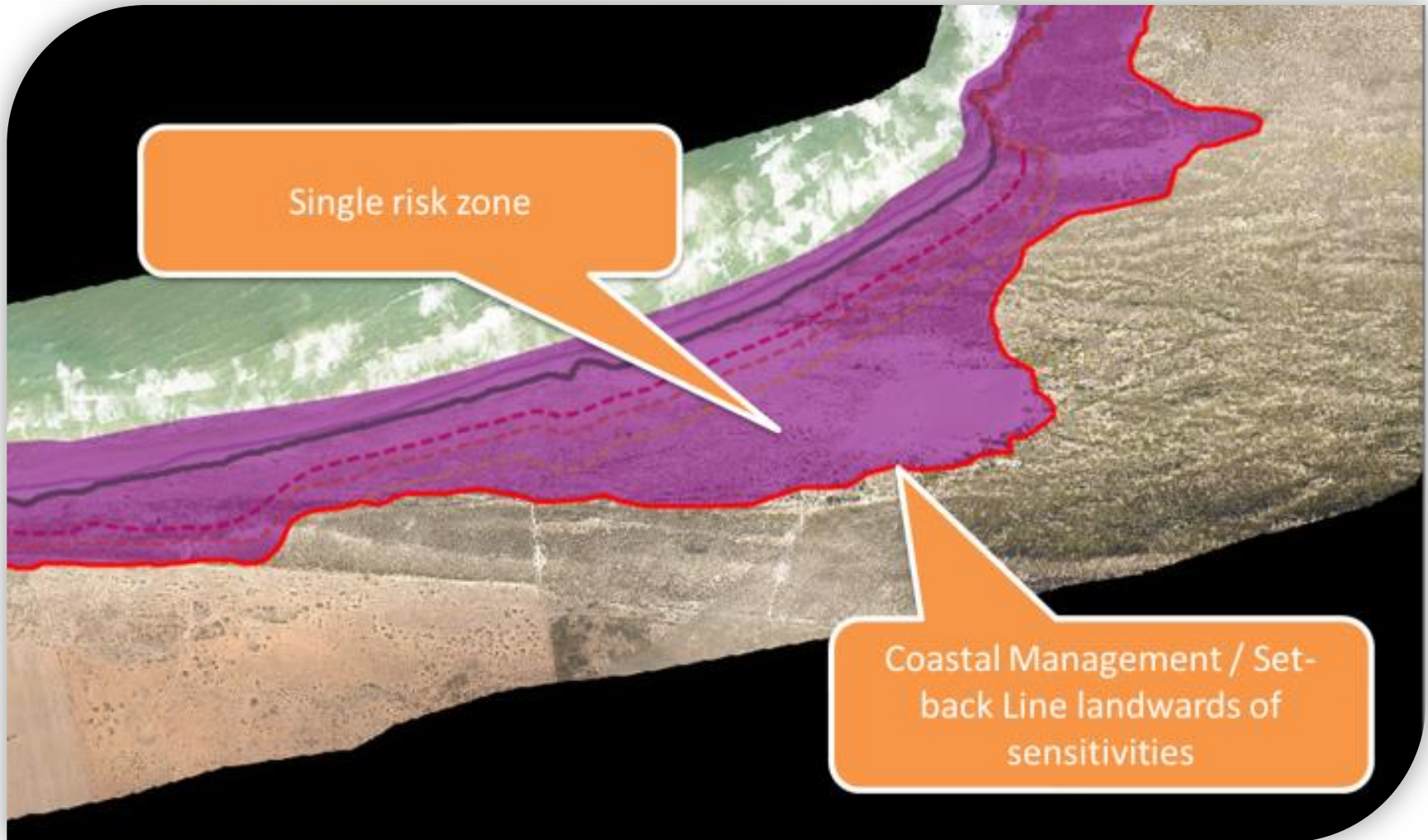
- The CML is delineated along the seaward boundaries of property with existing development rights.
- The CML delineated on landward boundary of Public Open Space with consent from Municipalities
- In estuaries delineated along 5m contour.



Coastal Management Line in relation to risk zones - urban



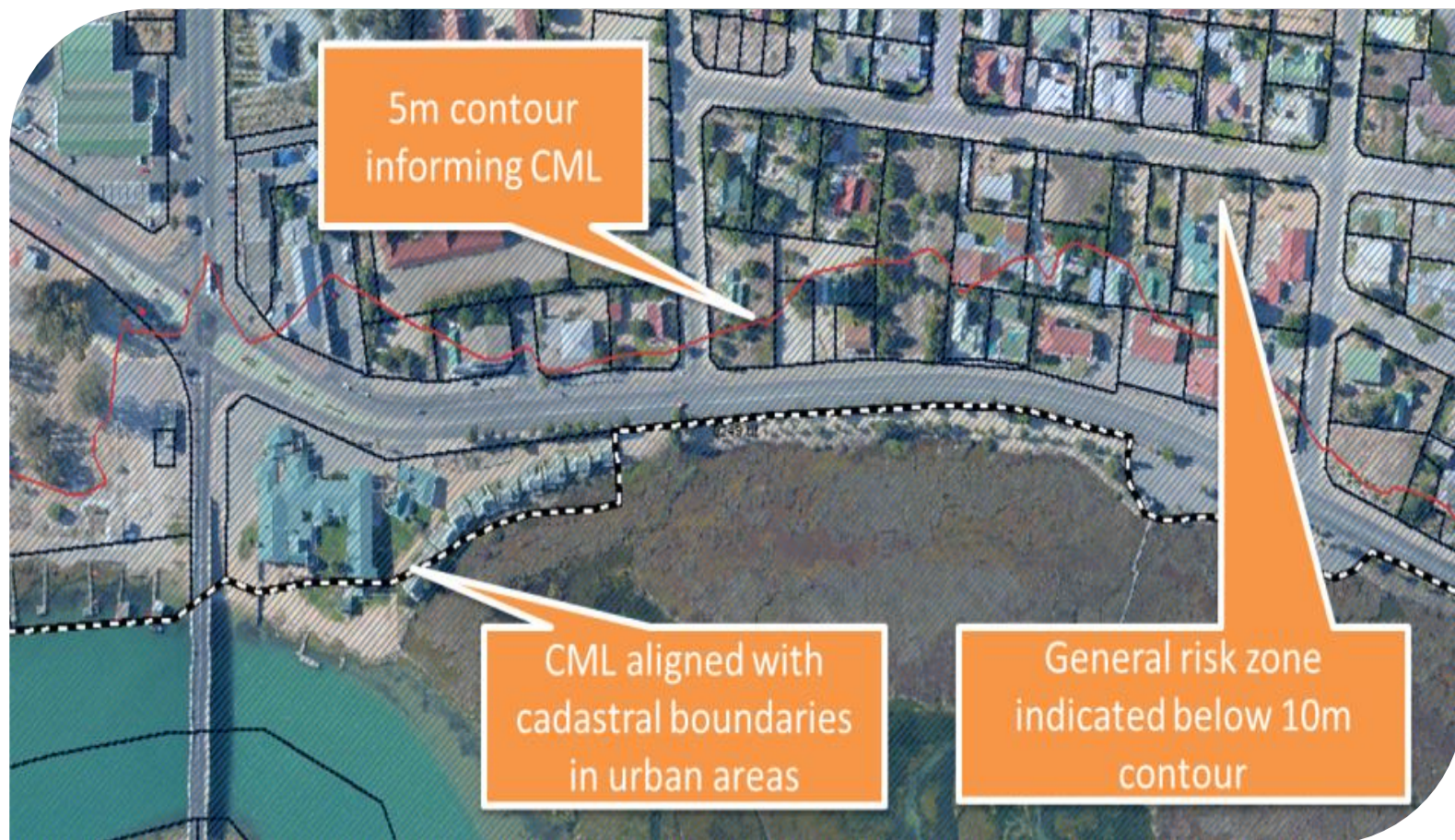
Coastal Management Line in relation to risk zones - rural



CSL/CML with Development Islands

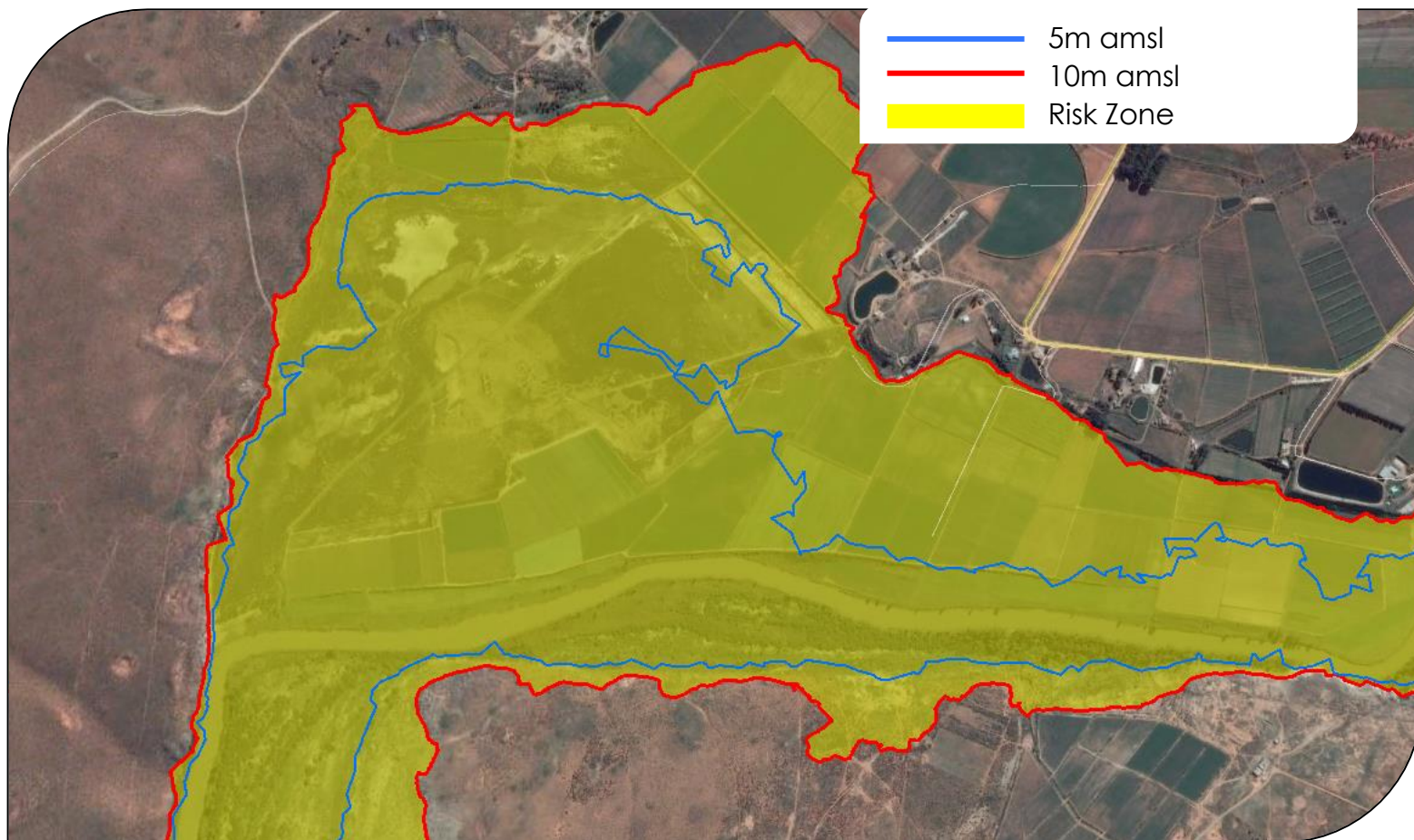


Risk overlay zones for estuaries (urban)



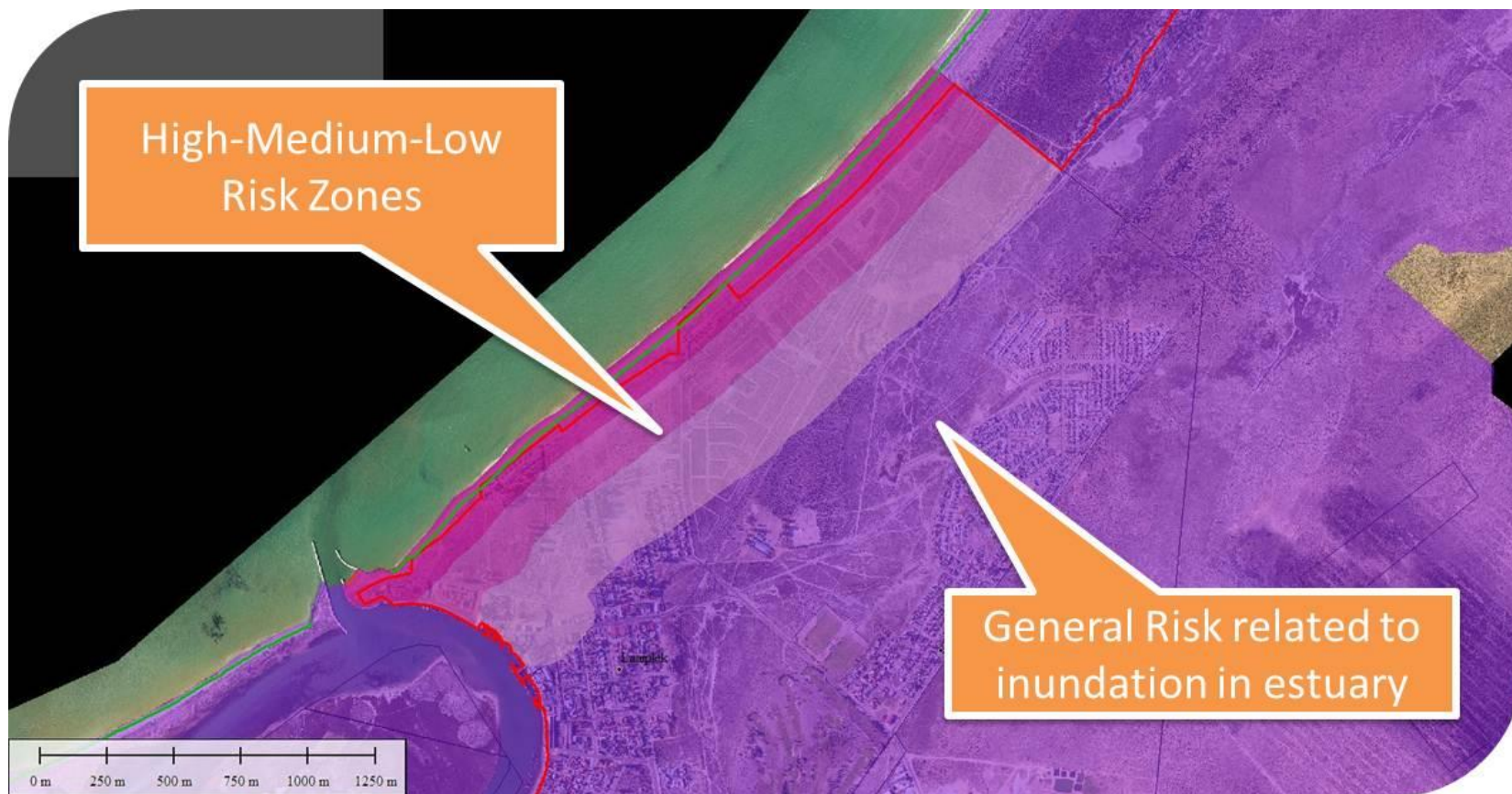
Risk overlay zones for estuaries (rural)

Olifants Estuary



Risk overlay zones for estuaries (combined)

Laaiplek

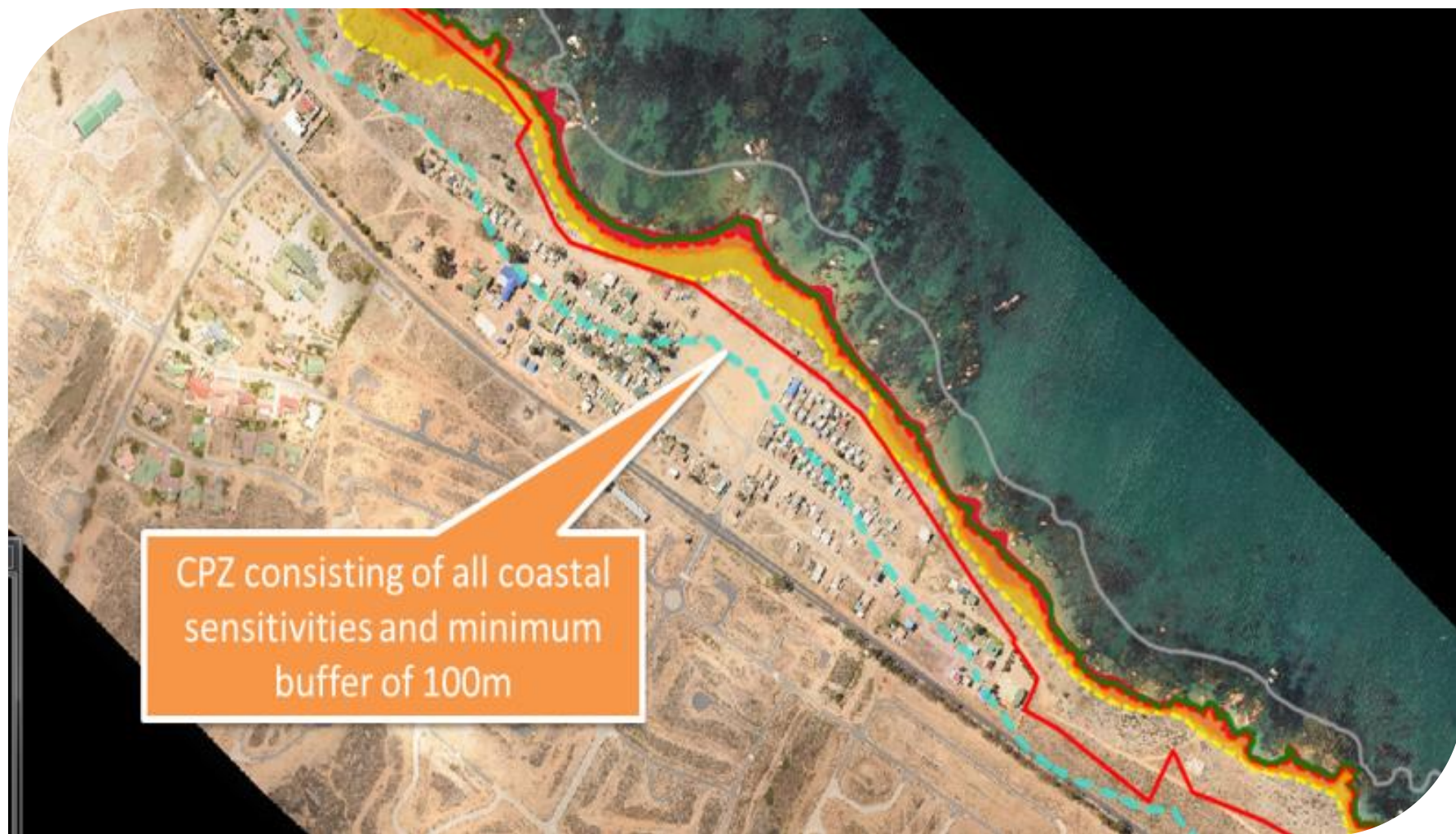


Criteria for Coastal Protection Zone

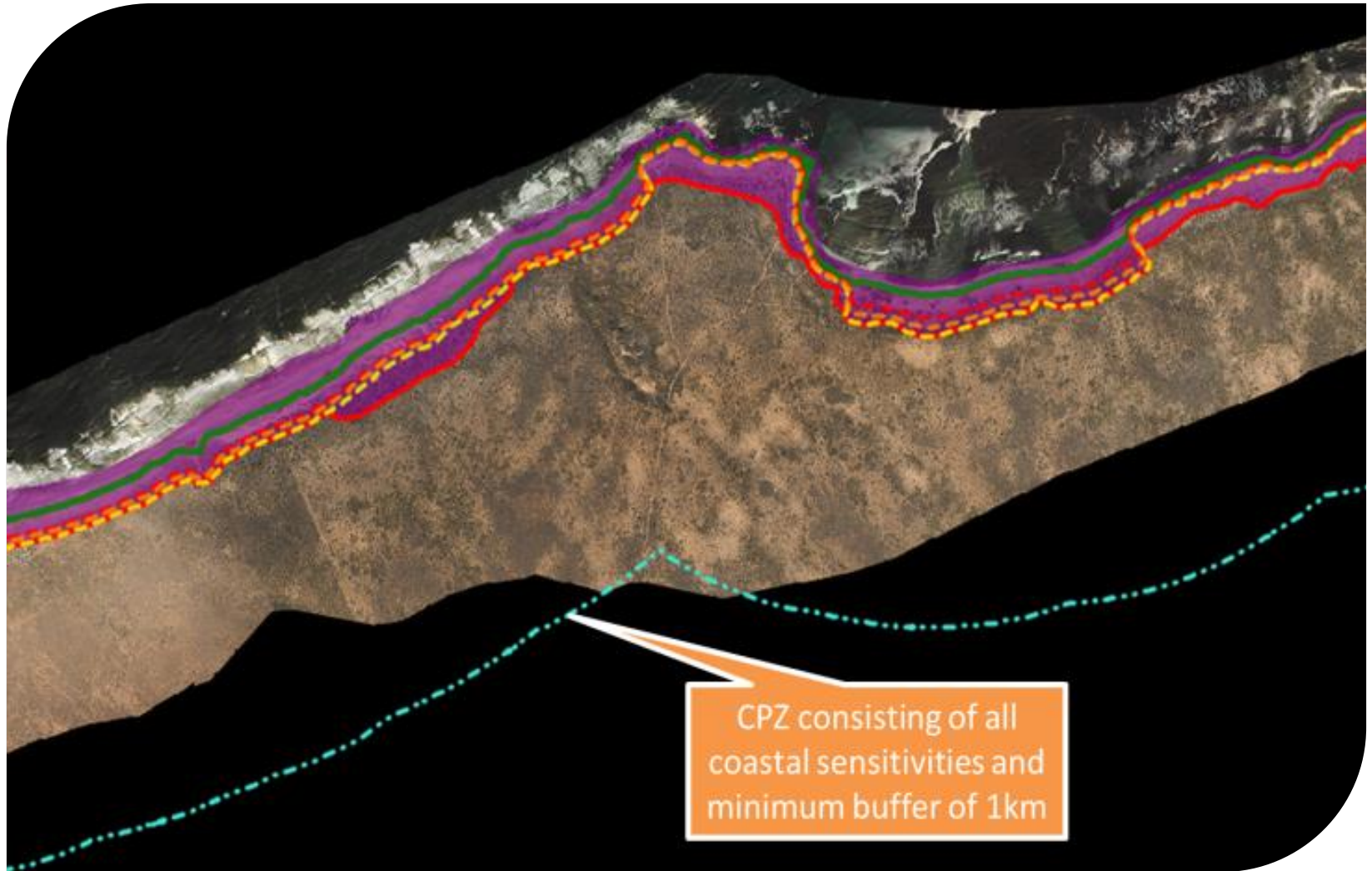
- The long term (100yr) risk projection
- Inclusive of Littoral active zones
- Properties that form part of the Coastal Public Property, e.g. Admiralty Reserve
- Protected Areas
- All ecologically sensitive areas directly linked to the shoreline
- Wetlands, lagoons, etc.
- Heritage sites (i.e. shell middens)
- 10m amsl contour in estuaries
- **In rural areas:** The default CPZ is the 1000m line as specified in ICMA unless the 1:100yr risk projection, littoral active zone or protected areas extend beyond that line. Then the line that is most conservative is applied.
- **In urban areas:** The default CPZ is the 100m line as referred to in ICMA unless the 1:100yr risk projection or littoral active zone extends beyond that line. Then the most conservative line is applied.



Coastal protection zone in urban areas



Coastal Protection Zone in rural areas



Overlay Zones – Proposed Development Controls

Proposed controls

- Controls proposed per overlay / risk zone
- Draft controls developed through consultation between authorities
- Principles:
 - Reduce public liability
 - Reduce risk to human life
 - Prevent intensification of development in risk zone, but allow exercising of existing rights
 - Maintain coastal quality
 - Prevent encroachment that will impact on the integrity of shoreline ecology
 - Inform planned retreat
 - Prevent coastal strip development of rural areas



Examples of Development Controls

- Regulate new development, renovations and repairs
- Structures set back from front boundary
- Piled or buried seawall
- Collective/integrated response by adjacent properties or developments
- Structures elevated on pilings, posts, piers or column foundations
- Dune rehabilitation
- Permeable lower floors of structures
- Relocate mechanical and electrical plants to higher floors
- Reduce hardened surfaces
- Manage stormwater on site
- Barriers that are permeable seawards but not landwards
- Stop seepage into beach zone / coastal buffer / dune system

Examples of Development Controls

- Engineering approval for structures in the risk zones in respect of erosion risk and the ability to withstand wave forces
- No basements
- Protect access to the beach for earth moving machinery
- Defences to comply with relevant legislation
- Indigenous gardens or no gardens
- Flood and erosion proof design and location of septic/conservancy tanks and sewer links.
- Septic/conservancy tanks on landward side of structures
- Limit size of structure / site coverage relative to flood and erosion exposure and potential impact on coastal public property and public interest in case of failure
- Protect the structure from falling over and creating secondary effects

Stakeholder Engagement

Stakeholder engagement

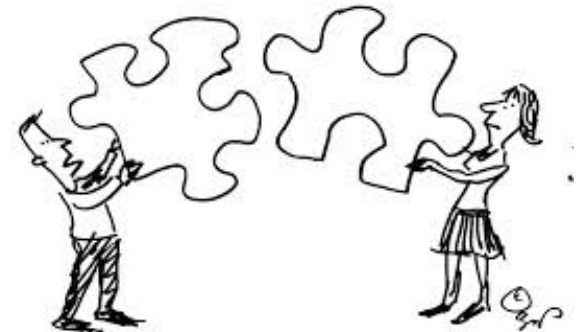
Engagement #1a (initial project notification)	<ul style="list-style-type: none"> • Notification (e.g. adverts, media releases and posters) • Authority notification • Compilation and distribution of background information document • Compilation and maintenance of a stakeholder database
Engagement #1b (public meetings)	<ul style="list-style-type: none"> • Notification (e.g. adverts, media releases and emails) • Public review of draft hazard lines • Compilation and distribution of background information document • 11 public workshops • Authorities consultation • Compilation and maintenance of an Issues & Response table
Engagement #2	<ul style="list-style-type: none"> • Notification (e.g. adverts, media releases and emails) • Public review of draft report
Engagement #3	<ul style="list-style-type: none"> • Notification (e.g. adverts, media releases and emails) • Public review of draft report and draft management/set-back lines • Authorities consultation • 9 public workshops
Engagement #4	<ul style="list-style-type: none"> • Public review of final report and final management/set-back lines

Implementation of Overlay Zones and CSL/CML

Legal Mechanism

Options considered

- ICMA provides for Coastal Set-back Lines but NOT for coastal overlay zones
- CSL/CML must be delineated in Municipal Zoning Schemes
- Overlay zones supports CSL and must be applied together
- ICMA Regulations for setback lines only manage area on seaward side of coastal set-back line
- Legal mechanisms considered
 - Council resolution
 - Coastal Planning Scheme ito ICMA
 - Municipal Zoning Schemes
- The Department is in the process of developing “**Proposed Standard Draft Municipal Zoning Scheme By-law**” in terms of LUPA
- Coastal Overlay Zone is a component of the above
- Implementation of development controls at municipal level through building regulations



Application of Coastal Set-back / Management Lines and Overlay Zones

Decision Support Tool

- Risk based overlay zones inform both placement and design of development and infrastructure
- Some infrastructure by nature must be placed within coastal zone
- NEMLA 2nd Amendment Act of 18 December 2013 make provision for exclusion of activities to obtain environmental authorisation in geographical areas by MEC
 - Overlay zone may be delineated as geographical area
 - Coastal risk = environmental attributes
 - Development controls = environmental standards



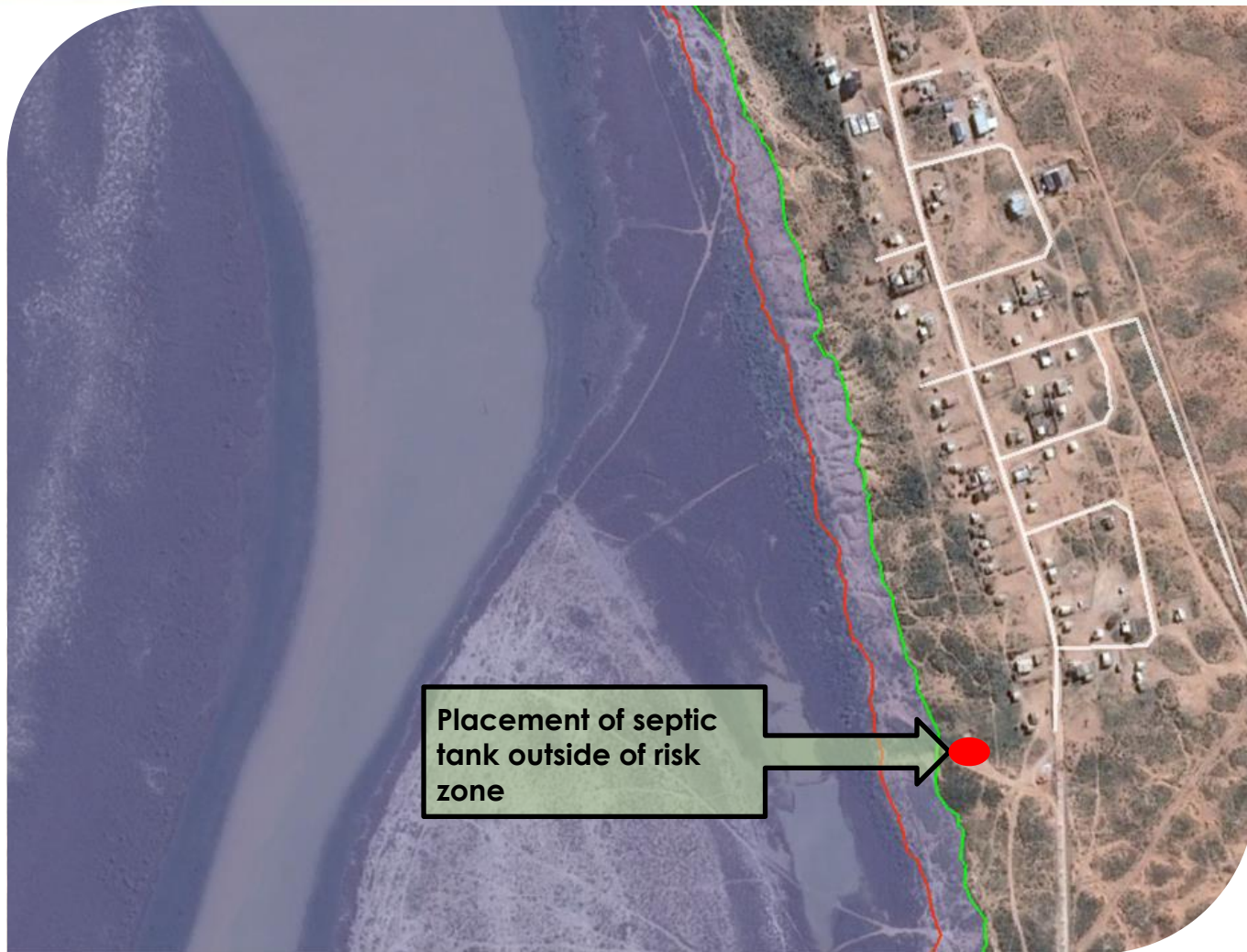
Infrastructure Development



Elands Bay



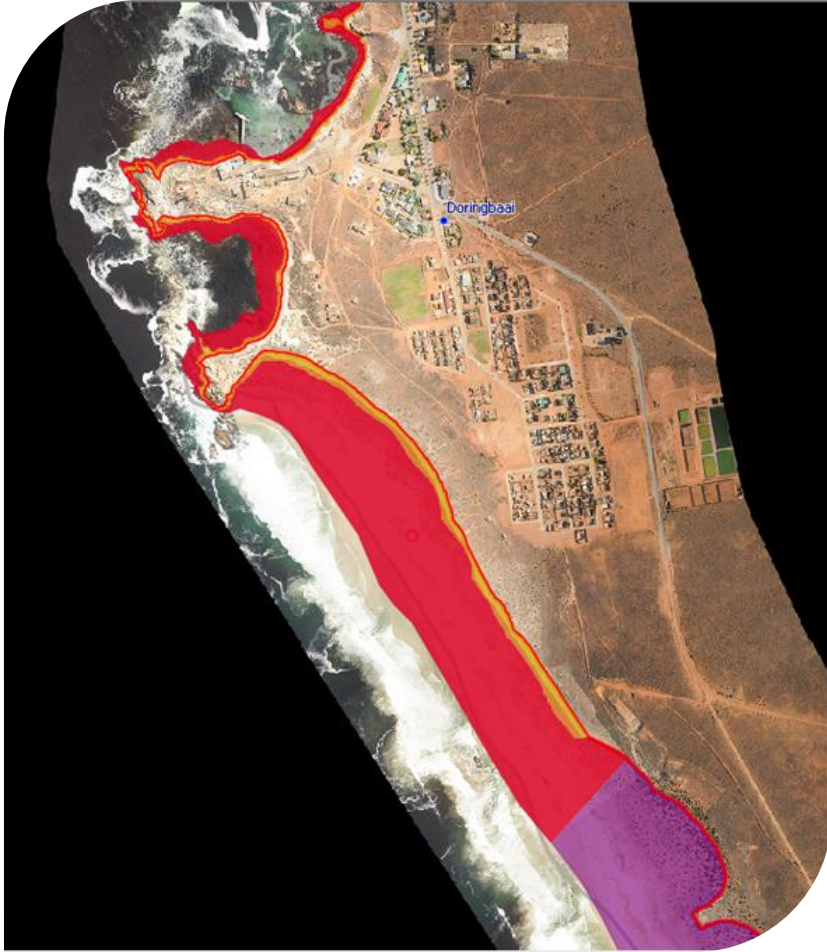
Papendorp (Olifants River estuary)



Placement of septic
tank outside of risk
zone

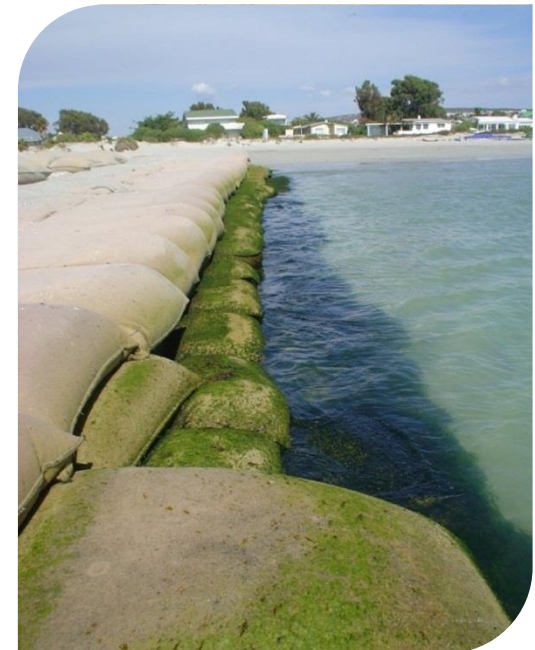
Economic Development

Doringbaai – Aquaculture Development Nodes



Outcomes of Project

- High Water Mark
- Sea-based Risk Projections
 - 1:20 year projection
 - 1:50 year projection
 - 1:100 year projection
- Estuaries risk projection
 - 5m contour around estuaries
 - 10m contour around estuaries
 - Floodline determination for Berg River
- Littoral active zone
- Coastal Protection Zone
- Coastal Risk Overlay Zone
- Developmental Controls
- Coastal Set-back / Management Line
- Municipal Buy-in
- Public Support for initiative
- Preparing CSL/CML for gazetting process into ICMA



Consideration of ecological systems



Benefits of Coastal Set-back / Management Lines

- Better planning and placement of development and service infrastructure
- Better designed structures
- Reduction in maintenance/repair costs
- Reduction in risk to human lives
- Maintenance of ecological infrastructure
- Protection of recreational areas
- Habitat and biodiversity conservation
- Informed decision making







Thank you

Contact Us



Western Cape
Government

BETTER TOGETHER.

Iepfieshaam Bekko; Caren George; Kishan Sankar

Coastal Management Unit

Environmental Affairs and Development Planning

Tel: +27 21 483 3370/2724/3196 **Fax:** +27 21 483 8326

Coastal.enquiries@westerncape.gov.za

www.westerncape.gov.za