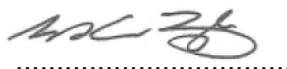


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SECTION 5.1: GEOGRAPHY AND SITE LOCATION

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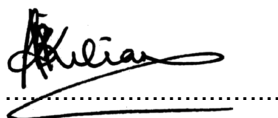
Author declaration: I declare that appropriate diligence and quality assurance was applied in the compilation of this report. As such I am confident in the results here described and the conclusions drawn.



Name: Melvin van Zyl

Date: 2026-03-26

Peer Reviewer: I declare that this report has undergone independent peer review by myself, that comments were addressed to my satisfaction, and that as such, it is considered fit for publication.



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2026-03-31

Date:

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AMENDMENT RECORD			
Rev	Draft	Date	Description
0		2015	New section developed
0a		March 2026	Section updated to reflect the latest information on Geography and Site Locations, and to align the section with the latest template on structure and layout of Site Safety Reports.

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EXECUTIVE SUMMARY

The Thyspunt site (“the site”) falls within the Sarah Baartman District Municipality, which covers an area of almost 60 000 km², in the western portion of the Eastern Cape Province. It is located on the south coast between Oyster Bay and Cape St. Francis, approximately 80 km west of Gqeberha, the largest nearby metropolitan area, known as the Nelson Mandela Bay Metropolitan Municipality (NMBM). It falls within the Kouga Local Municipal area.

The nearest major commercial airport to the site is the Chief Dawid Stuurman International Airport, (formerly known as Port Elizabeth Airport) which is located approximately 85 km to the east-northeast of the site. Only one active civil airfield occurs within 16 km of the site, the St. Francis Airfield located approximately 13.4 km east of the site. The Gqeberha and Ngquru (Coega) Harbours are the largest commercial harbours in the broader region but are located beyond the 80 km radius from the site. The only harbour located within 80 km of the site is Port St. Francis, approximately 13.9 km to the east, a small craft harbour. The N2 highway runs in an east-west direction approximately 22 km to the north of the site. A tarred feeder road leads to Humansdorp and then the main existing access route to the site is by an unsurfaced secondary road in moderate condition to Oyster Bay. An alternative route is via an unsurfaced branch road from the tarred R330 road from Humansdorp to St. Francis Bay.

The site falls within the Fish-Tsitsikamma Water Management Area but large quantities of water are imported from the Gariep Dam in the Upper Orange River Water Management Area via the Sundays River and the Nooitgedacht Water Supply Scheme. The local towns all obtain a portion of their water supply from groundwater sources. Oyster Bay is currently totally reliant on groundwater supply and falls under the Kouga Local Municipality. Three new boreholes were drilled in late 2017 and two more in late 2018 which supply the town with groundwater.

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5.1 GEOGRAPHY AND SITE LOCATION

5.1.1 Introduction

This section of this Site Safety Report (SSR) provides geo-referenced information on the location of the site and the surrounding environment, indicating the site boundaries, exclusion zone, the existing site layout and future developments planned, location of transport routes, topography and major physiographic features.

5.1.2 Regulatory Framework

The description of the site location and geography is based on the up-to-date site-specific information to ensure compliance with the legal and regulatory requirements associated with the siting of nuclear installations. There are no specific Acts, guides or position papers dealing with geography and site location *per se* for nuclear installations.

5.1.3 Approach to Evaluation

The area subject to evaluation and description comprises that within an 80 km radius of a provisional site centroid, a point used for Geographical Information Systems referencing for data requiring sectoral or distance calculations (see **Subsection 5.1.5**). A radius of 80 km is used for this section so that important regional features of interest are included and to put the site into an appropriate regional context. The centroid has been used for analysis at this siting stage; Once the nuclear installation(s) footprint and the design are finalised, the position of the centroid may be re-visited.

Sources of information include published topocadastral, topographic, geological and hydrogeological maps, air photographs and satellite images and the results from the investigations presented in **Sections 5.3 to 5.15** of this SSR. Further information on planned activities at the site is given in **Chapter 3** (Overview of Planned Activities at the Site).

5.1.4 Regional Geography

The site falls within the Sarah Baartman District Municipality, which covers an area of almost 60 000 km², in the western portion of the Eastern Cape Province. It is located on the south coast between Oyster Bay and Cape St. Francis, approximately 80 km west of Gqeberha (previously known as Port Elizabeth), the largest nearby metropolitan area, known as the Nelson Mandela Bay Metropolitan Municipality (NMBM). It falls within the Kouga Local Municipal area. All places and infrastructure discussed below are

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shown in **Drawing D-5.1.1**.

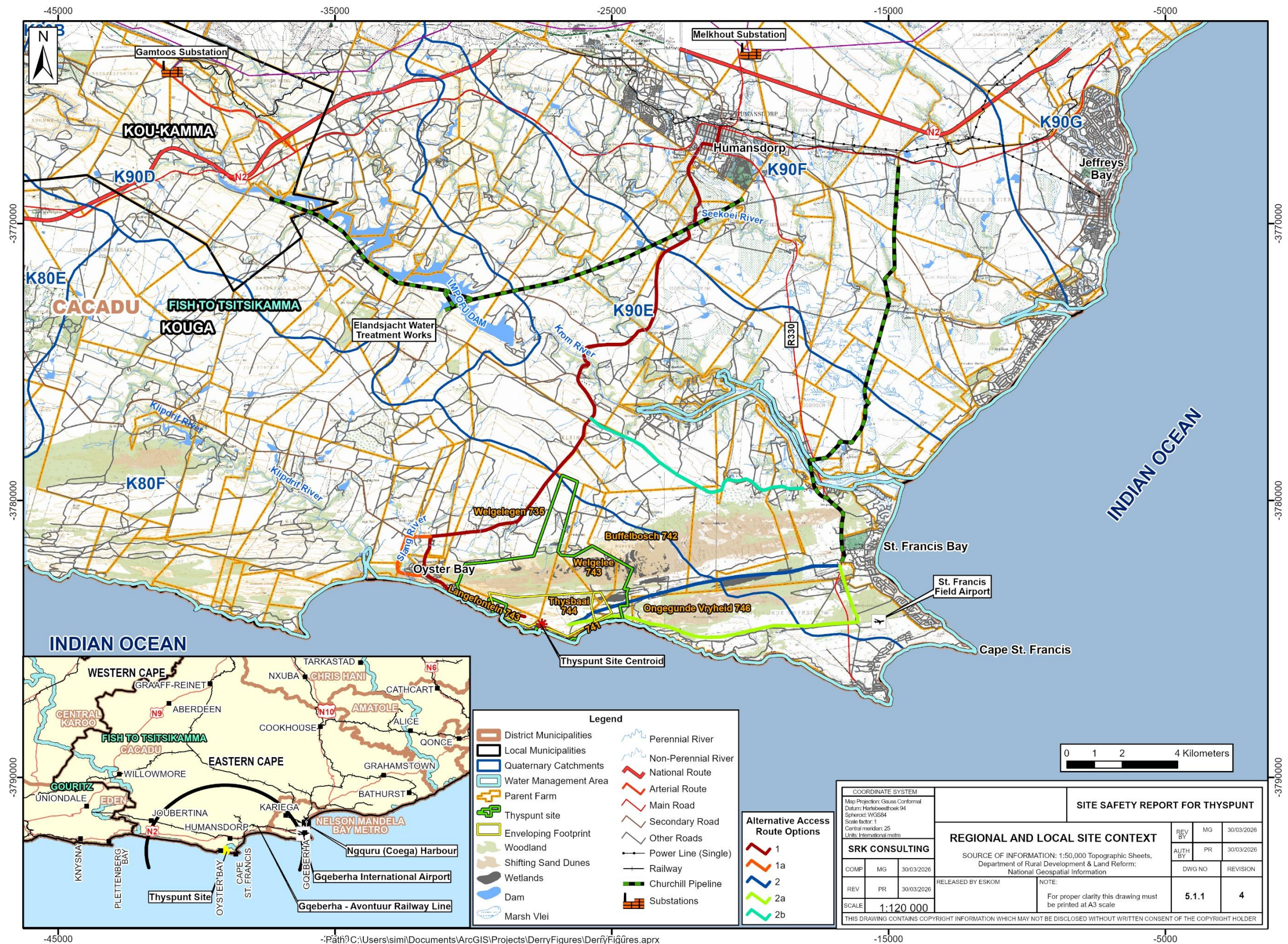
The site is situated approximately 4.0 km east of Oyster Bay, 12.0 km west of St. Francis Bay and 17.3 km south of Humansdorp (distances measured from the site centroid to nearest town boundary). The N2 highway runs in an east-west direction approximately 22 km to the north of the site. A tarred feeder road leads to Humansdorp and then the main existing access route to the site is by an unsurfaced secondary road in moderate condition to Oyster Bay. An alternative route is via an unsurfaced branch road from the tarred R330 road from Humansdorp to St. Francis Bay.

There is extensive agricultural activity in the area, with the closest being dairy pastures within 3 km and centre-pivot irrigated crops at a distance of approximately 5 km from the site centroid (see **Section 5.5**, Land and Water Use). The site is situated between two rivers, i.e. the Krom to the northeast and the Slang to the west in quaternary catchment K80F. There are no rivers on the site itself but there are ecologically important wetlands and springs, the former in the vegetated and mobile dune area and the latter along the coast (see **Sections 5.3**, Ecology and **5.11**, Geohydrology).

The site is bounded to the south by the Indian Ocean. The rocky shoreline is oriented almost west-northwest and east-southeast and comprises a wave-cut platform. The landform inland for a distance of approximately 3 km is comprised of a prominent dune field having crests trending east-northeast as a result of the prevailing winds (see **Section 5.13**, Geology). The coastal dune belt is vegetated while there is a narrow inland belt of non-vegetated, mobile dunes that extends from Oyster Bay towards St. Francis Bay (see also **Section 5.11**, Geohydrology and **Section 5.15**, Geotechnical Characterisation).

The highest portion of the dune field is approximately 2 km from the coastline and has an average elevation of about 100 m, with high points of 111 m and 122 m. The undulating vegetated dunes between this zone and the coastline are approximately 70 to 80 m high dropping to a terrace 20 m above the rocky shore.

Further inland from the dune field the topography rises evenly to a low hill that has its long axis-oriented northwest-southeast with a high point of 170 m. This elongated hill is about 6 km inland.



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The airfields within the region are predominantly small civil airfields and emergency landing strips located on farms. Most are unregistered facilities used for private purposes with no structures or buildings. The nearest commercial airport to the site is Chief Dawid Stuurman International Airport (formerly known as Port Elizabeth Airport), which is located approximately 85 km to the east-northeast of the site. Only one active civil airfield occurs within 16 km of the site, the St. Francis Airfield located about 13.4 km east of the site (see **Section 5.7**, Nearby Transportation, Industrial and Military Facilities).

A section of the Gqeberha-Avontuur narrow gauge railway line which is non-electrified, is located approximately 21,3 km north of the site. Previously rail traffic consisted of about three diesel-electric freight trains per week, hauling pulpwood from Assegaaibosch to Gqeberha. However, the railway line is currently not functional. The line was also used by the Apple Express, a local tourist train. Tourist traffic on this section of the train line consisted of monthly weekend excursions from Gqeberha to Assegaaibosch and back (see **Section 5.7**).

Gqeberha and Ngqura (Coega) Harbours are the largest commercial harbours in the broader region but are located beyond the 80 km radius from the site. The only harbour located within 80 km of the site is Port St. Francis, approximately 13.9 km to the east, a small fishing and recreational harbour.

The site falls within the Fish-Tsitsikamma Water Management Area, but large quantities of water are imported from the Gariep Dam in the Upper Orange River Water Management Area via the Sundays River and the Nooitgedacht Water Supply Scheme. The various water storage and transfer systems that supply the local area and the NMBM are called the Algoa Water Supply System (see **Section 5.12**, Water Supply).

The NMBM supplies water to the population at Humansdorp and St. Francis Bay via the Churchill Pipeline from the Churchill and Impofu (formerly Elandsjacht) dams, with capacities of 26.3 and 32.1 Mm³, respectively. This pipeline runs in an easterly direction to the south of the N2 freeway from these dams to Gqeberha, with an offshoot to St. Francis Bay linking up with the Humansdorp-St. Francis tar road (R330) just before the Krom River bridge.

The local towns all obtain a portion of their water supply from groundwater sources. Oyster Bay is currently totally reliant on groundwater supply and falls under the Kouga Local Municipality. Three new boreholes were drilled in late 2017 and two more in late 2018 which supply the town with

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groundwater.

A 22 kV power line passes close to the site, which can provide a supply of approximately 8 MVA. A new 66 kV line will be required from the St. Francis Bay substation to the site and it is anticipated that this line will follow the planned eastern access road from St. Francis Bay to the site (see **Section 5.7**).

Thereafter, a 132 kV line is required (see **Section 5.7**). The existing line extends up to the Melkhout sub-station (approximately 3 km north of Humansdorp). A new line needs to be provided from this point to the HV yard across the dunes.

From a regional perspective land use change in the site region is expected to be concentrated in and around existing settlements. Any significant growth that would occur will be concentrated in the NMBM and more specifically towards the Coega Industrial Development Zone. The agricultural and irrigation pattern is expected to remain constant. An increased emphasis on conservation and rehabilitation of natural areas is indicated in national and provincial legislation and policy. This approach is also reflected in the respective spatial development frameworks for the region (see **Section 5.5**). Coastal resort towns are expected to grow in keeping with tourism development in the region.

Although some growth is expected to occur within the smaller settlements in the region, the focus is envisaged to be in coastal resort areas, where no significant industrial development, other than the nuclear installation at the site is planned for the future (SETPLAN, 2003). A number of existing wind farms are located within the site vicinity, namely the Red Cap Kouga Wind Farm, the Gibson Bay Wind Farm and the Oyster Bay Wind Farm. The Banna Ba Pifhu Wind Farm development with a planned combined power generation capacity of 30.6 MWe, located south of Humansdorp, is under construction (**Section 5.7**).

5.1.5 Site Location and Description

The site boundaries and possible access routes are shown in **Drawing D-5.1.1**. Existing access roads were discussed in the preceding section. Five new access routes are under consideration (Eskom, 2008).

The site is approximately 3 975.9 ha circa in 2024 (Eskom-owned land), possibly expanding to about 5 478 ha with additional land acquisition to allow for, *inter alia*, access roads.

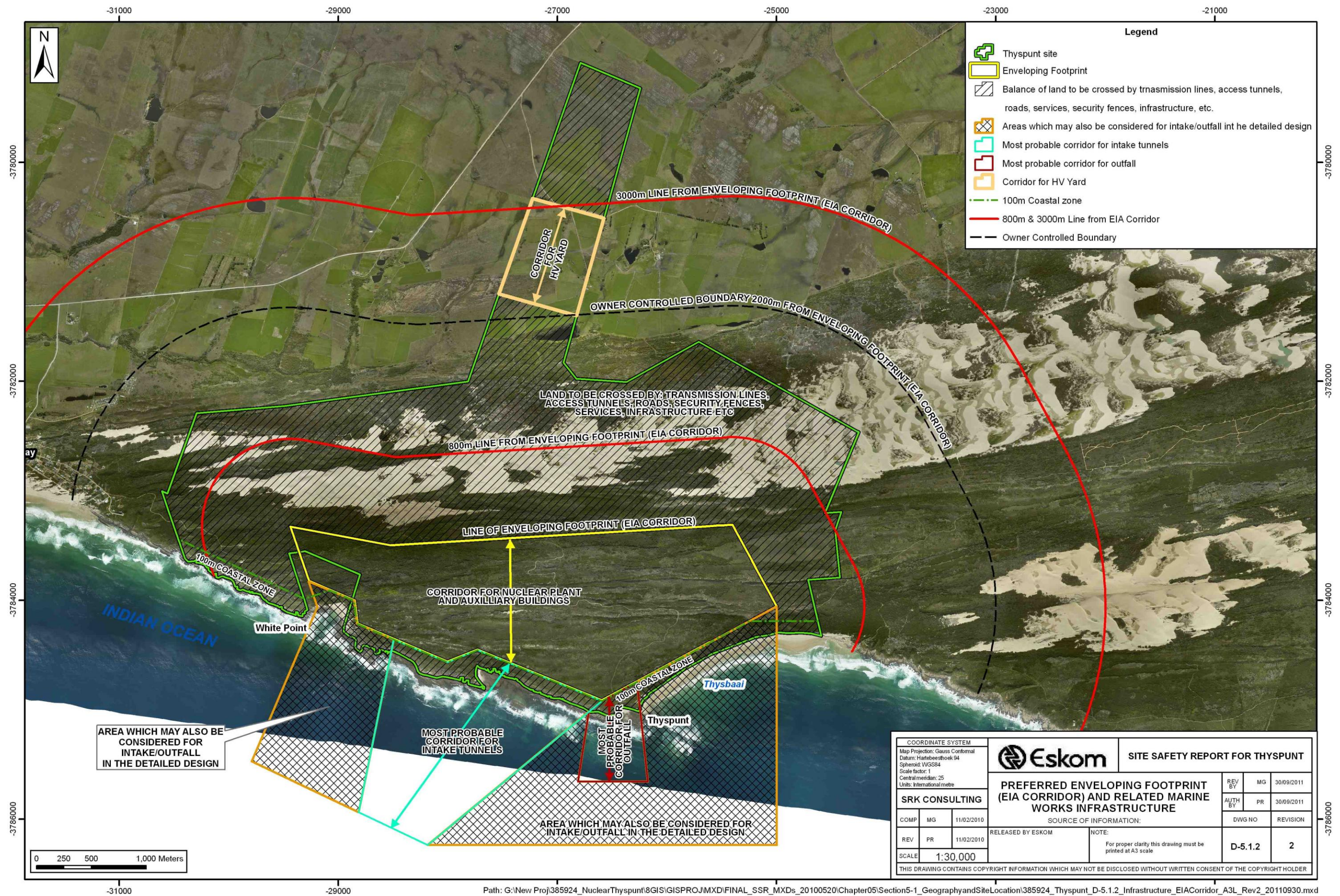
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Details on site security are given in **Chapter 9** (Physical Protection and Security), but the main points related to geography and site location are (see **Drawing D-5.1.1**):

- Eskom will control access to all areas within the owner controlled area.
- There will be an exclusion zone (EZ) with a defined radius from the extremities of the nuclear installation(s) footprint (see **Chapter 8**, Emergency Planning).

Eskom has reviewed the options for site layout and related marine works and the preferred one is shown schematically in **Drawing D-5.1.2**. This includes an enveloping footprint (equivalent to the EIA Corridor) area within which the nuclear installation(s) will be located. This layout is the preferred option as it provides the following advantages:

- allows the nuclear installation(s) to be offset from the beach giving:
 - less corrosion;
 - better security control;
 - less environmental impact on the shoreline;
- lower cooling water temperature;
- no recirculation problems;
- option for additional reactors without interfering with existing infrastructure.
- However, this is merely one option to illustrate a conceptual layout and the final layout is still to be determined once the technology to be built on site is known.



Legend

- Thyspunt site
- Enveloping Footprint
- Balance of land to be crossed by transmission lines, access tunnels, roads, services, security fences, infrastructure, etc.
- Areas which may also be considered for intake/outfall in the detailed design
- Most probable corridor for intake tunnels
- Most probable corridor for outfall
- Corridor for HV Yard
- 100m Coastal zone
- 800m & 3000m Line from EIA Corridor
- Owner Controlled Boundary

COORDINATE SYSTEM Map Projection: Gauss Conformal Datum: Hartbeesthoek 94 Spheroid: VGS84 Scale factor: 1 Central meridian: 25 Units: International metre			Eskom			SITE SAFETY REPORT FOR THYSPUNT		
PREFERRED ENVELOPING FOOTPRINT (EIA CORRIDOR) AND RELATED MARINE WORKS INFRASTRUCTURE						REV BY MG	30/09/2011	
SRK CONSULTING						AUTH BY PR	30/09/2011	
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REV	PR	11/02/2010	RELEASED BY ESKOM		NOTE: For proper clarity this drawing must be printed at A3 scale	D-5.1.2	2	
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5.1.6 References

- 5.1.1) Setplan (2003), **Greater St. Francis Spatial Development Plan**. Port Elizabeth.
- 5.1.2) SRK Consulting (2011), **Hydrology Screening Assessment: Kouga Wind Farm**. Letter report 428438 to Arcus Gibb. Cape Town.
- 5.1.3) Eskom (2008), **Nuclear Newbuild: Main Road Access to Sites**. Doc No Civil 0001. Rev 0. Johannesburg.