SECTION 5.4: DEMOGRAPHY		
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AMENDMENT RECORD			
Rev	**Draft**	**Date**	**Description**
0		April 2015	New chapter. Thyspunt Site Safety Report compiled in support of Eskom's Nuclear Installation Site Licence for the Thyspunt site and submitted to the NNR.
0a		March 2024	Chapter updated to address NNR comments.
0b		January 2025	Chapter updated to address NNR comments.
0c		March 2026	Footer revised to be consistent with other TSSR sections and minor editorial changes.
0d		August 2026	Changes made to Section 5.4.4.2 to include a statement that the Ideal Data Set (2022 municipal data) based on the 2011 census data, used in the preparation of the population demographics in the TSSR, compares well with the macro-level population statistics of the latest census (2022) data.

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EXECUTIVE SUMMARY

This section of this TSSR presents the approach and results of the investigation and characterisation of the current and expected future demographic characteristics in the site vicinity and region and those demographic aspects that affect or have importance for the feasibility of the emergency planning over the projected life of the nuclear installation(s).

Current national normative acts and regulations, specifically relevant to a demographic investigation, were applied. Where there are no national requirements, criteria or limits, international standards and best practice were considered.

The information contained within this section informs evaluations undertaken for the purposes of nuclear safety in ***Chapter 7*** (Potential Radiological Impact on the Public and Environment, PRIPE) and for the purposes of emergency planning in ***Chapter 8*** (Emergency Planning, EP).

Information on existing and projected population distributions in the region, including resident populations and, to the extent possible, transient populations, were collected, analysed, and presented. Special attention was paid to the population living in the immediate vicinity of the nuclear installation(s), to densely populated areas and population centres, and to special population groups and residential institutions such as homes for the aged, schools and hospitals.

The results of the assessment are presented in the form of figures, drawings, and tables in the text below, with the following main findings:

- The largest permanent populations (current and future) are located in Humansdorp/KwaNomzamo (17 km to 26 km north and north-northeast), Jeffreys Bay (24 km to 29 km northeast), Hankey (38 km to 46 km north-northeast) and Patensie (47.5 km to 50 km north and north-northeast).

- The projected maximum permanent population within 50 km of the site is approximately 245 034 persons in 2130 (planned nuclear installation decommissioning).

- Humansdorp/KwaNomzamo (17 km to 26 km north and north-northeast) is the largest settlement within the 50 km zone and is expected to have a maximum permanent population of approximately 94 347 persons in 2130.

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- The town of St. Francis Bay is the largest settlement within the 16 km radius and is estimated to have a maximum permanent population of 12 078 persons by 2130.

- Oyster Bay with a permanent population of approximately 1 145 persons by 2130, is the only settlement located within 6.5 km of the site. Therefore, it is not likely that a population centre of 25 000 or more persons will develop within 6.5 km of the site over the life of the nuclear installation.

- The average permanent population density within the 6.5 km radius is projected to be approximately 26 persons/km² by 2130. One localised sector or settlement (Oyster Bay) is estimated to exceed a density of 200 persons/km² by 2130.

- The maximum number of tourists within the 50 km radius on any one day in the peak month (December) is estimated to be 8 743 persons in 2130.

- The pattern of distribution of special population groups within a radius of 35 km from the site shows that concentrations are closely related to the urban centres within the site region.

- The projected maximum total cumulative population within the 50 km zone is estimated at 253 772 persons by 2130.

- The average total cumulative population density within the 6.5 km radius is projected to be approximately 27 persons/km² by 2130. One localised sector or settlement (Oyster Bay) is estimated to exceed a density of 200 persons/km² by 2130.

- The projected regional activities (which influence population distribution) around the nuclear site are largely determined by the control of land use and spatial planning. Future activities are therefore presented by discussing the relevant strategic spatial planning strategies and policies.

- The Kouga Spatial Development Framework (2021) and the Koukamma Spatial Development Framework (2023) are the most recent applicable spatial planning frameworks for the area surrounding the site.

- Regarding dietary and other habits within the 16 km zone, a habit survey was carried out during 2024 and is reported on in ***Chapter 7*** of the TSSR.

- The section on Emergency Planning Zones (EPZs) presents demographic

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data in terms of the EPZs, with the following findings:

- A permanent population of approximately 238 persons is projected for the 0.0 km to 0.8 km EPZ by 2130 if current trends persist. However, this EPZ falls within the owner-controlled boundary where no permanent population is expected.
- A total cumulative population of approximately 244 persons is projected for the 0.0 km to 0.8 km EPZ by 2130 if current trends persist. However, this EPZ falls within the owner controlled boundary where no permanent population is expected.
- A permanent population of approximately 899 persons is projected for the 0.8 km to 3.0 km EPZ by 2130.
- A total cumulative population of approximately 928 persons is projected for the 0.8 km to 3.0 km EPZ by 2130.
- A permanent population of approximately 201 860 persons is projected for the 3.0 km to 40 km EPZ by 2130.
- A total cumulative population of approximately 209 026 persons is projected for the 3.0 km to 40 km EPZ by 2130.

- Regulatory (National Nuclear Regulator, NNR) control and/or monitoring of development within the EPZs surrounding the nuclear installation(s) are required. This is to ensure that no change of land use occurs within the EPZs which may give rise to activities that may pose an external threat to the nuclear installation(s) (e.g. a restriction on the location of hazardous industries or other activities that may have a detrimental impact on emergency planning). In this regard, the following aspects need to be considered:
  - potential urban expansion of Oyster Bay and Umzamawethu;
  - the extent and scale of services and facilities within the vicinity (16 km zone) of the site;
  - involvement of Eskom in the review of all spatial development frameworks and proposals for rezoning of agricultural land, large residential developments or facilitating institutional uses (i.e. significant land use changes) prior to decisions being made by the

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local, district or provincial authorities - In this regard, it is noted that the current municipal spatial development framework contains proposals to control development in the immediate vicinity of the site and to involve Eskom in decision making regarding such development.

In conclusion, the following can be confirmed:

- The permanent population characteristics in the site region and site vicinity were determined.
- The current and future permanent population distribution in the site region and site vicinity were determined.
- The future total cumulative population in the site region and site vicinity were determined.
- The future permanent and total cumulative population in the Emergency Planning Zones were determined.
- Studies were conducted to an adequate level of detail for the purpose of PRIPE (***Chapter 7***) and EP (***Chapter 8***).
- Appropriate monitoring programmes to provide on-going assurance regarding the viability of the site over its lifecycle can be established.
- This section of this TSSR complies with relevant regulatory requirements.

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CONTENTS

5.4 DEMOGRAPHY 5.4-17

5.4.1 Introduction 5.4-17

5.4.2 Purpose and Scope 5.4-17

5.4.3 Regulatory Framework 5.4-18

5.4.3.1 Legal Requirements 5.4-18

5.4.3.2 Guideline Documents 5.4-18

5.4.4 Approach to the Evaluation 5.4-26

5.4.4.1 Area of Investigation 5.4-27

5.4.4.2 Data Sources 5.4-30

5.4.4.3 Presentation of Data 5.4-30

5.4.5 Current Permanent Population Distribution 5.4-32

5.4.5.1 Current Permanent Population 5.4-33

5.4.5.2 Population Density 5.4-47

5.4.5.3 Population Centres 5.4-52

5.4.6 Current Temporary Population Distribution 5.4-53

5.4.6.1 Recreational Destinations 5.4-54

5.4.6.2 Main Shopping Centres 5.4-64

5.4.6.3 Main Conference Facilities 5.4-64

5.4.6.4 Tourist Population 5.4-65

5.4.7 Special Population Groups 5.4-70

5.4.7.1 Data Sources and Methodology 5.4-70

5.4.7.2 Homes for the Aged 5.4-71

5.4.7.3 Homes for the Disabled 5.4-72

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5.4.7.4 Children's Homes 5.4-72

5.4.7.5 Prisons 5.4-72

5.4.7.6 Hospitals and Clinics 5.4-74

5.4.7.7 Educational Facilities 5.4-75

5.4.7.8 Seasonal Workers 5.4-80

5.4.7.9 Informal Settlements 5.4-80

5.4.8 Projected Population Distribution 5.4-81

5.4.8.1 Permanent Population Projection 5.4-81

5.4.8.2 Population Density 5.4-97

5.4.8.3 Population Centres 5.4-108

5.4.8.4 Tourist Population Projection 5.4-110

5.4.9 Total Cumulative Population Distribution 5.4-114

5.4.9.1 Total Cumulative Population 5.4-114

5.4.9.2 Cumulative Population Density 5.4-126

5.4.9.3 Cumulative Population Centres 5.4-138

5.4.10 Main Regional Activities 5.4-140

5.4.10.1 Current Regional Activities 5.4-140

5.4.10.2 Projected Regional Activities and Measures to Control Development around the Site 5.4-140

5.4.11 Habit Survey 5.4-153

5.4.12 Projected Cumulative Population in the Emergency Planning Zones 5.4-153

5.4.12.1 Population Distribution 5.4-153

5.4.12.2 Special Population Groups 5.4-168

5.4.13 Management of Uncertainties 5.4-172

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PRINTED VERSIONS OF THIS DOCUMENT ARE NOT CONTROLLED

5.4.14 Monitoring 5.4-173

5.4.14.1 Pre-operational Phase.....5.4-174

5.4.14.2 Operational Phase.....5.4-175

5.4.14.3 Post Operational Phase 5.4-176

5.4.15 Management System 5.4-176

5.4.16 Conclusions.....5.4-182

5.4.17 References.....5.4-184

TABLES

Table 5.4.1 Main Settlements in the 50 km Radius (2022).....5.4-46

Table 5.4.2 Permanent Population Density (2022).....5.4-49

Table 5.4.3 Recreational/Residential Resorts within 35 km (2024) 5.4-56

Table 5.4.4 Main Recreational Venues within 35 km (2023) 5.4-59

Table 5.4.5 Main Annual Sport, Religious and Concert Events within 35 km (2023) 5.4-62

Table 5.4.6 Activities and Number of People per Beach within 35 km (2018 and 2024) 5.4-63

Table 5.4.7 Main Shopping Centres within 35 km (2024).....5.4-64

Table 5.4.8 Main Conference Facilities within 35 km (2024).....5.4-65

Table 5.4.9 Homes for the Aged within 35 km (2023) 5.4-72

Table 5.4.10 Hospitals within 50 km (2023) 5.4-74

Table 5.4.11 Community Health Centres/Clinics within 35 km (2023).....5.4-75

Table 5.4.12 Schools per Sector within 50 km (2023).....5.4-77

Table 5.4.13 Learners per Sector within 50 km (2023).....5.4-78

Table 5.4.14 Summary: Early Childhood Development Centres or Day-Care Centres

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per Sector within 35 km (2023) 5.4-79

Table 5.4.15 Summary: Children at Early Childhood Development Centres or Day-Care Centres per Sector within 35 km (2023) 5.4-79

Table 5.4.16 Informal Settlements within 35 km (2023) 5.4-81

Table 5.4.17 Population Growth Rates Applied.....5.4-85

Table 5.4.18 Projected Permanent Population Density (2024, 2036, 2096 and 2130) 5.4-108

Table 5.4.19 Estimated Total Cumulative Population Density (2024, 2036, 2096 and 2130).....5.4-137

Table 5.4.20 Summary of Permanent and Cumulative Population in Emergency Planning Zones in the Site Region (2024, 2036, 2096 and 2130) 5.4-163

Table 5.4.21 Summary of Special Population Groups in EPZ and 35 km Radius…. 5.4-171

Table 5.4.22 Summary of Activities, Links and Quality Requirements 5.4-177

Table 5.4.23 Regulatory Compliance Matrix.....5.4-179

FIGURES

Figure 5.4.1 Illustration of Terms: Segment, Sector, Annulus, Radius and Centroid 5.4-31

Figure 5.4.2 Population Distribution within 5 km Distance Annuli around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022) 5.4-40

Figure 5.4.3 Population Distribution within 5 km Distance Annuli around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022) 5.4-41

Figure 5.4.4 Population Distribution within 2.5 km Distance Annuli around the Thyspunt Site (5º Radial Grid) up to 50 km (2022) 5.4-42

Figure 5.4.5 Population Distribution within 2.5 km Distance Annuli around the Thyspunt Site (5º Radial Grid) up to 50 km (2022) 5.4-43

Figure 5.4.6 Population Distribution within 2.5 km Distance Annuli around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022) 5.4-44

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Figure 5.4.7 Population Distribution within 5 km Distance Annuli around the Thyspunt Site (5º Radial Grid) up to 50 km (2022) 5.4-45

Figure 5.4.8 Vicinity Population Density (2022).....5.4-50

Figure 5.4.9 Regional Population Density (2022).....5.4-51

Figure 5.4.10 Projected Permanent Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024).....5.4-87

Figure 5.4.11 Projected Permanent Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024).....5.4-88

Figure 5.4.12 Projected Permanent Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2024).....5.4-89

Figure 5.4.13 Projected Permanent Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50km (2024).....5.4-90

Figure 5.4.14 Projected Permanent Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2130).....5.4-91

Figure 5.4.15 Projected Permanent Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2130).....5.4-92

Figure 5.4.16 Projected Vicinity Permanent Population Density (2024) 5.4-98

Figure 5.4.17 Projected Regional Permanent Population Density (2024) 5.4-99

Figure 5.4.18 Projected Vicinity Permanent Population Density (2036) 5.4-100

Figure 5.4.19 Projected Regional Permanent Population Density (2036) 5.4-101

Figure 5.4.20 Projected Vicinity Permanent Population Density (2096) 5.4-102

Figure 5.4.21 Projected Regional Permanent Population Density (2096) 5.4-103

Figure 5.4.22 Projected Vicinity Permanent Population Density (2130) 5.4-104

Figure 5.4.23 Projected Regional Permanent Population Density (2130) 5.4-105

Figure 5.4.24 Total Cumulative Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024).....5.4-120

Figure 5.4.25 Total Cumulative Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024).....5.4-121

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Figure 5.4.26 Total Cumulative Population Within 5 km Distance Annuli Around they Thyspunt Site (22.5° Radial Grid) up to 50 km (2024).....5.4-122

Figure 5.4.27 Total Cumulative Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2024).....5.4-123

Figure 5.4.28 Total Cumulative Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2130).....5.4-124

Figure 5.4.29 Total Cumulative Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2130).....5.4-125

Figure 5.4.30 Total Cumulative Vicinity Population Density (2024).....5.4-129

Figure 5.4.31 Total Cumulative Regional Population Density (2024).....5.4-130

Figure 5.4.32 Total Cumulative Vicinity Population Density (2036).....5.4-131

Figure 5.4.33 Total Cumulative Regional Population Density (2036).....5.4-132

Figure 5.4.34 Total Cumulative Vicinity Population Density (2096).....5.4-133

Figure 5.4.35 Total Cumulative Regional Population Density (2096).....5.4-134

Figure 5.4.36 Total Cumulative Vicinity Population Density (2130).....5.4-135

Figure 5.4.37 Total Cumulative Regional Population Density (2130).....5.4-136

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DRAWINGS

Drawing 5.4.1 Area of Investigation – Region 50 km.....5.4-28

Drawing 5.4.2 Area of Investigation – Vicinity 16 km.....5.4-29

Drawing 5.4.3 Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022).....5.4-35

Drawing 5.4.4 Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2022).....5.4-36

Drawing 5.4.5 Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022).....5.4-37

Drawing 5.4.6 Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2022).....5.4-38

Drawing 5.4.7 Population per Suburb within 16 km from the Thyspunt Site (2022) 5.4-39

Drawing 5.4.8 Main Transient Nodes (35 km): Recreational Resorts, Recreational Venues, Annual Sport and Concert Events, Beaches, Shopping Centres and Conference Centres (2023).....5.4-57

Drawing 5.4.9 Tourist Population Distribution Within 2,5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2024).....5.4-68

Drawing 5.4.10 Tourist Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (225º Radial Grid) up to 50 km (2024).....5.4-69

Drawing 5.4.11 Special Population Groups (50 km) Clinics, Early Childhood Development Centres, Homes for the Aged and Informal Settlements (2023).....5.4-73

Drawing 5.4.12 Special Population Groups (50 km): Schools and Hospitals (2023) 5.4-76

Drawing 5.4.13 Projected Permanent Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024) 5.4-93

Drawing 5.4.14 Projected Permanent Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2024) 5.4-94

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Drawing 5.4.15 Projected Permanent Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2130) 5.4-95

Drawing 5.4.16 Projected Permanent Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2130) 5.4-96

Drawing 5.4.17 Tourist Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2130).....5.4-112

Drawing 5.4.18 Tourist Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2130).....5.4-113

Drawing 5.4.19 Total Cumulative Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2036) 5.4-116

Drawing 5.4.20 Total Cumulative Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2036)5.4-117

Drawing 5.4.21 Total Cumulative Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2130) 5.4-118

Drawing 5.4.22 Total Cumulative Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2130)5.4-119

Drawing 5.4.23 Population and Gender per EP Zone (2022) 5.4-155

Drawing 5.4.24 Total Cumulative Population Distribution per EP Zone within 5 km Distance Bands Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2024) 5.4-164

Drawing 5.4.25 Total Cumulative Population Distribution per EP Zone within 5 km Distance Bands Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2036) 5.4-165

Drawing 5.4.26 Total Cumulative Population Distribution per EP Zone within 5 km Distance Bands Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2096) 5.4-166

Drawing 5.4.27 Total Cumulative Population Distribution per EP Zone within 5 km Distance Bands Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2130) 5.4-167

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APPENDICES

Appendix 5.4.A Summary: Schools within 50 km (2023).....5.4-187

Appendix 5.4.B Early Childhood Development Centres or Day-Care Centres within 35 km (2023).....5.4-189

Appendices provided digitally in Excel format:

Appendix 5.4.C Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022)

Appendix 5.4.D Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2022)

Appendix 5.4.E Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022)

Appendix 5.4.F Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2022)

Appendix 5.4.G Population per Suburb Within 50 km from the Thyspunt Site (2022)

Appendix 5.4.H Gender and Age per Suburb Within 16 km from the Thyspunt Site (2022)

Appendix 5.4.I Type of Dwelling per Suburb Within 16 km from the Thyspunt Site (2011)

Appendix 5.4.J Population Density Within Site Vicinity (2022)

Appendix 5.4.K Population Density Within Site Region (2022)

Appendix 5.4.L Tourist Population Distribution within 2.5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2024)

Appendix 5.4.M Tourist Population Distribution within 5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2024)

Appendix 5.4.N Schools within 50 km of the Thyspunt Site (2023)

Appendix 5.4.O Early Childhood Development Centres within 35 km of the Thyspunt Site (2023)

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Appendix 5.4.P Permanent Population Distribution per Sector for 2024, 2036, 2096 and 2130 Around the Thyspunt Site up to 16 km

Appendix 5.4.Q Permanent Population Distribution per Sector for 2024, 2036, 2096 and 2130 Around the Thyspunt Site up to 50 km

Appendix 5.4.R Permanent Population Distribution per Suburb Around the Thyspunt Site up to 50 km (2011 to 2130)

Appendix 5.4.S Total Cumulative Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2024 to 2130)

Appendix 5.4.T Total Cumulative Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2024, 2036, 2096 and 2130)

Appendix 5.4.U Total Cumulative Population Distribution Within 2.5 km Distance Annuli Around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2024 to 2130)

Appendix 5.4.V Total Cumulative Population Distribution Within 5 km Distance Annuli Around the Thyspunt Site (5º Radial Grid) up to 50 km (2024 to 2130)

Appendix 5.4.W Total Cumulative Population Distribution per Suburb Around the Thyspunt Site up to 50 km With Eskom Staff (2024 to 2130)

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5.4 DEMOGRAPHY

5.4.1 Introduction

This report is an update of the Thyspunt Site Safety Report (TSSR) ***Section 5.4*** (Demography), which presents the approach and results of the investigation and characterisation of the current and expected future demographic characteristics in the vicinity and region of the Thyspunt site (hereinafter referred to as 'the site') and those demographic aspects that affect or have importance for the feasibility of the emergency plans over the projected life of the nuclear installation(s).

The report is an update of the TSSR Section 5.4, Rev 0 (Eskom, 2015) and later revisions.

5.4.2 Purpose and Scope

The purpose of the population description is to support the demonstration of the suitability of the site for the development of a nuclear installation(s).

The current and future population data were characterised in order to assess the potential effects of the nuclear installation(s) on the public in the vicinity and region of the site (to be presented in ***Chapter 7***, Potential Radiological Impact on the Public and Environment, PRIPE) and to demonstrate the feasibility of implementing the emergency plans over the projected lifetime of the nuclear installation(s) (to be presented in ***Chapter 8***, Emergency Planning, EP). More specifically, as described in the Technical Specification for Site Safety Reports: Demography (Eskom, 2022), the population distribution and population density around the site and other demographic characteristics are presented in order to assist in the:

- evaluation of the potential radiological impacts of normal radioactive discharges and accidental releases (to be presented in ***Chapter 7***);
- demonstration of the feasibility of implementing the emergency response plans associated with the respective emergency zones (to be presented in ***Chapter 8***);
- development of the Probabilistic Safety Assessment Level 3;
- assurance that existing and planned local and regional developments do not compromise the viability of the site over its lifecycle;

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- implementation of appropriate monitoring programmes to provide ongoing assurance that the viability of the site will not be compromised by possible formal and informal settlement development.

5.4.3 Regulatory Framework

5.4.3.1 Legal Requirements

The legal and regulatory basis that guide the compilation of this TSSR is outlined in ***Chapter 2*** (Legal and Regulatory Basis). The current national regulations specifically relevant to a demographic investigation for site licensing to be taken into account are The Regulations on Licensing of Sites for New Nuclear Installations, R. 927 (Department of Energy, 2011). These require that the TSSR contains:

"*5. A Site Safety Report referred to in Regulation 3(2)(a) must contain the following –*

(3) The characteristics of the site relevant to the design assessment, risk and dose calculations, including inter alia:

(d) population demographics;

(f) projections of the above data commensurate with the design life of the nuclear installation(s)."

5.4.3.2 Guideline Documents

Although not legal requirements, national and international standards and recommendations have also been considered as guideline documents in order to indicate that the characterisation of the site demography is performed and presented in line with best practice. In this regard, the following should be noted:

- National Nuclear Regulator (NNR), RG-0019: Interim Guide on Safety Assessment of Nuclear Facilities (National Nuclear Regulator, 2019) which requires, *inter alia*, Section 7.3.6.1 "*The description of the nuclear facility, site and environs should include all factors relevant to the safety case, including location and factors relevant to external hazards, security risks and public risk including geography, meteorology, hydrology, land use, demographics (present and projected), other industrial undertakings, transport systems and military installations*".

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- National Nuclear Regulator, Regulatory Guide RG-0011, Interim Guidance for the Siting of Nuclear Facilities (National Nuclear Regulator, 2016). This requires:

  - Section 6.1(c), "*Population density and distribution…"*

  - Section 8.5.1, *"The region of interest (henceforth referred to as the region) should include an area immediately surrounding the site of a nuclear facility. It should also include the overall Emergency Planning Zone (EPZ), where applicable, in which population distribution, population density, population growth rate… are considered in relation to the feasibility of implementing emergency measures."*

  - Section 8.5.2, *"The distribution of the population within the region should be determined within 16 sectors of 22.5° each."*

  - Section 8.5.3, *"The most recent census data for the region, or the extrapolation of the data, should be used in obtaining the population distribution."*

  - Section 8.5.4, *"In the absence of reliable data, a special study should be carried out to determine the population in the region."*

  - Section 8.5.7, *"The size of population centres within the low population zone should be limited, in total number and density, so that there is a reasonable probability that appropriate protective measures could be taken in the event of a serious accident."*

  - Section 8.5.8, *"Projected changes in the population should cover the life of the plant and take into account already approved developments and regional plans. Otherwise liaison must take place to have the regional plans changed accordingly."*

  - Section 8.5.9, *"Data on the present population in the region should be obtained from local authorities or by means of special field surveys and these data should be as accurate and as up to date as possible. The term 'present population' includes the two categories of permanent population and temporary population."*

  - Section 8.5.10, *"Information on the permanent population of the region and its distribution should include: …and typical diet of the inhabitants."*

  - Section 8.5.11, "*The information of the temporary population*

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should cover:

(a) The short-term transient population, such as tourists and nomads; and

(b) The long-term transient population, such as seasonal inhabitants and students."

- Section 8.5.12, *"The maximum size of the temporary population and its periods of occupancy in the low population zone should be estimated. Particular types of institutions such as schools, hospitals, prisons… within the zone should be identified for the purposes of emergency planning. In the area outside the zone, estimates of the approximate size of the temporary population together with its periods of occupancy should be made."*

- Section 8.5.13, *"A projection of the present population in the region should be made for:*

  (a) The expected year of commissioning of the plant; and

  (b) Selected years (e.g. every tenth year) over the lifetime of the plant."

- Section 8.5.14, *"Projections should be made on the basis of population growth rate, migration trends and plans for possible development in the region. The projected figures for permanent population and temporary population should be extrapolated separately if data are available."*

- Section 8.5.15, *"Data should be analysed to give both the current and the projected population distribution in terms of direction and distance from the plant."*

- Section 8.5.17, *"The population data collected should be presented in a suitable format and scale to permit correlation with other relevant data, such as data on atmospheric dispersion and on uses of land and water. Additional details should be given for areas closer to the site, especially within the low population zone."*

- International Atomic Energy Agency (IAEA) Safety Standards No. SSR-1, Site Evaluation for Nuclear Installations (International Atomic Energy Agency, 2019) establishes requirements for:

  - Paragraph 1.4(c), *"Analysing the characteristics of the*

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population… to determine whether there would be significant difficulties in implementing emergency response actions effectively [9]."

and requires *inter alia* the following aspects to be addressed:

- Paragraph 4.6(c), *"The population density, population distribution... in the external zone…"*

- Paragraph 4.15, "*The site and the region shall be studied to evaluate the present and foreseeable future characteristics that could have an impact on the safety of the nuclear installation. This includes…, as well as changes in the population distribution in the region… that could affect the safety of the nuclear installation or the feasibility of planning effective emergency response actions."*

- Requirement 26: *Population distribution and public exposure, "The existing and projected population distribution within the region over the lifetime of the nuclear installation shall be determined…"* This requires, *inter alia*:

  - Paragraph 6.8*, "Information on the existing and projected population distribution in the region, including resident populations and (to the extent possible) transient populations, shall be collected and kept up to date over the lifetime of the nuclear installation. Special attention shall be paid to vulnerable populations and residential institutions (e.g. schools, hospitals, nursing homes and prisons) when evaluating the potential impact of radioactive releases and considering the feasibility of implementing protective actions."*

  - Paragraph 6.9, *"The most recent census data for the region, or information obtained by extrapolation of the most recent data on resident populations and transient populations, shall be used in obtaining the population distribution. In the absence of reliable data, a special study shall be carried out."*

  - Paragraph 6.10, *"The data shall be analysed to obtain the population distribution in terms of the direction and distance from the site..."*

- IAEA Safety Guide No. NS-G-3.2, Dispersion of Radioactive Material in Air and Water and Consideration of Population Distribution in Site Evaluation for Nuclear Power Plants (International Atomic Energy Agency, 2002). This requires:

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- Paragraph 5.1, *"The distribution and characteristics of the regional population should be studied in the site evaluation for a nuclear power plant."*

- Paragraph 5.4, *"The term 'present population' includes the two categories of permanent population and temporary population. Data on the present population in the external zone[1] should be obtained from local authorities or by means of special field surveys, and these data should be as accurate and up to date as possible. Similar data should also be collected throughout the region outside the external zone to distances determined in accordance with national practice and regulatory objectives. The data should include the number of people normally present in the area, and the locations of houses, hospitals, prisons and other institutions and recreational facilities such as parks and marinas."*

- Paragraph 5.6, *"The information on the temporary population should cover:*

    - *the short term transient population, such as tourists and nomads; and*

    - *the long term transient population, such as seasonal inhabitants and students."*

- Paragraph 5.7, *"The maximum size of the temporary population and its periods of occupancy in the external zone should be estimated. Particular types of institutions such as schools, hospitals, prisons… within the external zone should be identified for the purposes of emergency planning. In the area outside the external zone, estimates of the approximate size of the temporary population together with its periods of occupancy should be made."*

- Paragraph 5.8, *"A projection of the present population in the region should be made for:*

    - *the expected year of commissioning of the plant;*

    - *selected years (e.g. every tenth year) over the lifetime of the*

[1] The area immediately surrounding a proposed site area in which population distribution and density, and land and water uses, are considered with respect to their impact on planning effective emergency response actions (International Atomic Energy Agency, 2022).

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plant."

- Paragraph 5.9, *"Projections should be made on the basis of population growth rate, migration trends and plans for possible development in the region. The projected figures for the two categories of permanent population and temporary population should be extrapolated separately if data are available."*

- Paragraph 5.10, *"Data should be analysed to give both the current and the projected population distribution in terms of direction and distance from the plant."*

- Paragraph 5.12, *"The population data collected should be presented in a suitable format and scale to permit their correlation with other relevant data, such as data on atmospheric dispersion and on uses of land and water. The two categories of permanent population and temporary population should be clearly indicated. In general, population data should be presented either in tabular form, or graphically, using concentric circles and radial segments with the site as the origin. More details should be given for areas closer to the site, especially within the external zone."*

- United States Nuclear Regulatory Commission (US NRC) Regulatory Guide 4.7, General Site Suitability Criteria for Nuclear Power Stations (U.S. Nuclear Regulatory Commission, 2014). This requires:

  - Section C.5, *"A reactor should be located so that, at the time of initial plant approval within about 5 years thereafter, the population density, including weighted transient population, averaged over any radial distance out to 20 mi (cumulative population at a distance divided by the circular area at that distance), does not exceed 500 persons per square mile. A reactor should not be located at a site where the population density is well in excess of this value."*

  - Section C.5, *"The transient population should be included for those sites where many people (other than those just passing through the area) work, reside part time, or engage in recreational activities but are not permanent residents of the area. The transient population should be considered for site evaluation purposes by weighting the transient population according to the fraction of time that the transients are in the area."*

  - Section C.5, *"Population projections should be considered over the lifetime of the facility… Further population projections should*

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be made by decade for a 40-year period beyond the start of power plant operation…"

- Section C.6, *"Special population groups, such as those in hospitals, prisons, schools, or other facilities, that could have special needs during an emergency should be identified."*

- US NRC NUREG-0800, Standard Review Plan, Section 2.1.3 Population Distribution (U.S. Nuclear Regulatory Commission, 2007). This requires:

  - *"…the staff will review data about the population in the site vicinity, including transient populations. The population information reviewed includes data from the latest census, and the projected population at the year of plant approval and 5 years thereafter."*

  - *"The staff will review information about the population in the exclusion area. Although the exclusion area should not contain any residents, if such residents do exist, they should be subject to ready removal, if necessary."*

- US NRC Title 10 of the Code of Federal Regulations, Part 100, Reactor Site Criteria (U.S. Nuclear Regulatory Commission, 2016). This requires:

  - Section 100.20(a), *"Population density and use characteristics of the site environs, including the exclusion area, the population distribution, and site-related characteristics must be evaluated..."*

  - Section 100.21(a*), "Every site must have an exclusion area and a low population zone…"*

  - Section 100.21(h), *"Reactor sites should be located away from very densely populated centres. Areas of low population density are, generally, preferred..."*

- US NRC Regulatory Guide 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition) (U.S. Nuclear Regulatory Commission, 1978). This requires:

  - Section 2.1.3.1, Population within 10 miles, the population distribution should be presented *"On a map of suitable scale that identifies places of significant population grouping such as cities and towns within a 10-mile radius, concentric circles should be*

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drawn, with the reactor at the centre point, at distances of 1, 2, 3, 4, 5, and 10 miles. The circles should be divided into 22-½-degree segments with each segment centred on one of the 16 compass points (e.g. true north, north-northeast, northeast). A table appropriately keyed to the map should provide the current residential population within each area of the map formed by the concentric circles and radial lines. The same table, or separate table, should be used to provide the projected population within each area for (1) the expected first year of plant operation and (2) by census decade (e.g. 1990) through the projected plant life. The tables should provide population totals for each segment and annular ring, and a total for the 0 to 10 miles enclosed population. The basis for population projections should be described."

- Section 2.1.3.2, Population between 10 and 50 miles, *"A map of suitable scale and appropriately keyed tables should be used in the same manner as described above to describe the population and its distribution at 10-mile intervals between the 10- and 50-mile radii from the reactor."*

- Electric Power Research Institute (EPRI) Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Electric Power Research Institute, 2022). This requires:

  - Section 3.1.2.1, *"...a population centre of about 25,000 or more residents should be no closer than 4 miles (6.4 km) from the reactor because a density of 500 persons per square mile (ppm) (500 persons per 2.6 km²) within this distance would yield a population of 25,000 persons. Similarly, a city of 100,000 or more should be no closer than about 10 miles (16.1 km²); a city of 500,000 or more should be no closer than about 20 miles (32.2 km); and a city of 1,000,000 or more should be no closer than about 30 miles (48.3 km)."*

  - Section 3.1.2.1, *"The transient population should be included in the population figures for those sites where a significant number of people (other than those just passing through) work, reside part-time, or engage in recreational activities and are not permanent residents of the area."*

  - Section 3.1.2.2, *"Special population groups (such as those in hospitals, correctional institutions, or other facilities with special emergency situation needs) should also be taken into account."*

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- IAEA Safety Glossary, Terminology Used in Nuclear Safety and Radiation Protection (International Atomic Energy Agency, 2022) should be used for consistency in the use of terminology.

  Note that where differences occur in the definitions of terminology of the NNR and the IAEA, the NNR definitions shall take precedence.

5.4.4 Approach to the Evaluation

On the basis of the regulatory requirements and criteria and supporting guidance presented above, as well as the Technical Specification for Site Safety Reports: Demography (Eskom, 2022) the characterisation of the demography was performed and presented in this section of the TSSR with a view to:

- determine the population characteristics in the site region and site vicinity;
- determine the current and future population distribution and densities in the site region and site vicinity;
- identify the important demographic parameters such as age, gender and dietary habits in the site vicinity;
- provide input for evaluation of the potential radiological impacts of normal radioactive discharges and accidental releases (to be presented in ***Chapter 7*** of the TSSR);
- provide input for evaluation of the feasibility of the emergency plan (to be presented in ***Chapter 8*** of the TSSR);
- assist in Probabilistic Safety Assessment Level 3;
- identify areas of uncertainties;
- identify critical/important features and characteristics as well as required future actions (e.g. additional monitoring and confirmatory studies).

As per the Technical Specification for Site Safety Reports: Demography (Eskom, 2022) the following two main population groups were analysed:

- permanent population;
- temporary population.

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The main demographic characteristics presented and evaluated include:

- population distribution;
- population centres and density;
- transient population;
- special population groups;
- projected population.

A description of the above characteristics was provided, supported by tables, figures and drawings to illustrate the results and conclusions. The description focuses on population densities relative to distance and direction from the nuclear installation(s).

5.4.4.1 Area of Investigation

The description and characterisation of the population distribution were conducted for an area that complies with NNR requirements for siting (Department of Energy, 2011) and the Technical Specification for Site Safety Reports: Demography (Eskom, 2022).

In summary the following areas were investigated:

- the site region – within a 50 km radius (***Drawing 5.4.1***);
- the site vicinity – within a 16 km radius (***Drawing 5.4.2***).

Population distribution, population density and population growth are considered in more detail in the site vicinity, where appropriate.

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0

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Dr Beyers Naude (LM)

Kou-Kamma (LM)

Kouga (LM)

Sundays River Valley (LM)

50km

40km EPZ

16km

3km EPZ

0,8km EPZ

THYSPUNT SITE

KOUGA DAM

CHURCHILL DAM

IMPOFU DAM

LOERIE DAM

PATENSIE

HANKEY

LOERIE

THORNHILL

CROSSWAYS

GAMTOOS MOUTH

KAREEDOUW

WOODLANDS

CLARKSON

KRUISFONTEIN

HUMANSDORP

JEFFREYS BAY

PELLSRUS

ASTON BAY

PARADYSSTRAND

AMANINZI

OYSTER BAY

ST FRANCIS LINKS

SEA VISTA

CAPE ST FRANCIS

R331

R332

R330

R62

R102

N2

Gamtoos

Kouga

Groot

Klip

Klein

Sand

Geelhoutboom

Doringkraal

Witteklip

Kaapsedrif

Diep

Hol

Gheis

Swart

Seekoei

Kabeljous

Klasies

Tsitsikamma

Klipdrift

Slang

Krom

Legend

- Enveloping Footprint
- EP Zones
- Magisterial Districts (MD)
- Local Municipalities (LM)
- Allotment Townships
- Roads
- Railways
- Rivers
- Major Dams

N

W E

S

0 5 10 20 30

Kilometers

COORDINATE SYSTEM	Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	AREA OF INVESTIGATION -REGION 50 KM	REV BY AUTH BY
PLANNING PARTNERS	SOURCE OF INFORMATION: Eskom & Planning Partners	DWG NO: 5.4.1 / REVISION: 1
COMP NJ 11/11/2024 REV SCALE 1:250 000	RELEASED BY ESKOM NOTE: For proper clarity this drawing must be printed at A3 scale.	

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-40000

Krom

Diep

R102

KRUISFONTEIN

HUMANSDORP

N2

JEFFREYS BAY

16km

Geelkoutboom

Swart

ASTON BAY

IMPOFU DAM

Seekoei

PARADYSSTRAND

Klipdrift

Krom

Krom

AMANINZI

R330

Krom

3km EPZ

Slang

ST FRANCIS LINKS

SEA VISTA

0,8km EPZ

OYSTER BAY

THYSPUNT SITE

CAPE ST FRANCIS

Legend

- Enveloping Footprint
- EP Zones
- Magisterial Districts (MD)
- Local Municipalities (LM)
- Allotment Townships
- Roads
- Railways
- Rivers
- Major Dams

N

W E

S

0 2,5 5 10

Kilometers

-40000

COORDINATE SYSTEM Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			Eskom	SITE SAFETY REPORT FOR THYSPUNT		
PLANNING PARTNERS			AREA OF INVESTIGATION - VICINITY 16 KM		REV BY	
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5.4.4.2 Data Sources

The information presented was obtained from national, regional and local studies and is based on official sources. Where data gaps were identified, primary research and/or surveys were conducted.

Although this update has relied on 2011 Census data and the Ideal Dataset for 2022 (ESRI South Africa and IRL Consulting, 2022) to determine the permanent population in the site region, the data compares well with the macro-level population statistics of the latest census (2022) data.

Data on the current population around the site were obtained from the following main sources:

- Statistics South Africa (Stats SA);
- Ideal Dataset 2022 published by ESRI;
- provincial, district and local authorities;
- desktop studies;
- relevant strategic spatial planning reports;
- specific field surveys, email surveys and telephonic surveys;
- aerial photographic survey;
- Eskom's nuclear sites investigation reports;
- available data about land and water use, adjacent sea use, nearby transportation, industrial and military facilities, exclusion area authority control and EP, presented in other sections and chapters of the TSSR.

Projections were made on the basis of estimated population growth rates and plans for possible development in the region. The projected figures for the two categories of permanent population and temporary population were extrapolated separately according to the data available.

5.4.4.3 Presentation of Data

Where appropriate, demographic data are presented in tabular format, figures and drawings and inform the creation of a Geographical

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Information System (GIS) database that forms part of the baseline for the TSSR (Eskom, 2022).

The demographic data are presented in terms of distance and direction from the nuclear installation(s). Measurements are taken in a straight line from the predefined co-ordinate or site centroid Redacted Redacted that is a constant from which all distances relative to the nuclear installation(s) are presented, unless specifically noted otherwise.

The demographic information is provided in terms of segments, sectors and annuli as illustrated in ***Figure 5.4.1*** (Eskom, 2022).

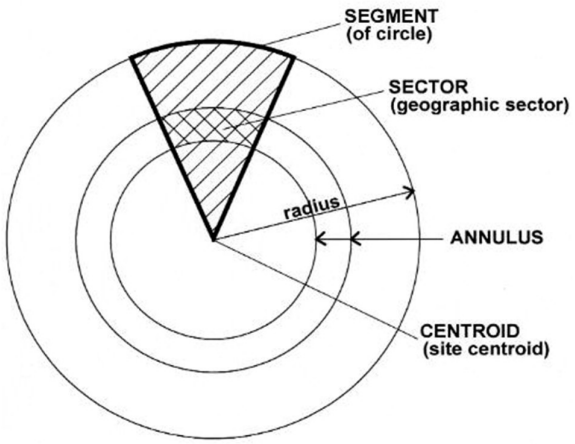


Figure 5.4.1
Illustration of Terms: Segment, Sector, Annulus, Radius and Centroid

The segments, sectors, radii and annuli, within which data were collected, were chosen based on national practices, with account taken of special local situations. In order to align the analysis and presentation of demographic data with complementary data presented in ***Section 5.5*** (Land and Water Use) and ***Section 5.6*** (Adjacent Sea Use), the following was considered (Eskom, 2022):

- a 2.5 km and 5 km radius and a 5° and 22.5° grid for the site region within a 50 km radius;
- a 2 km, 5 km, 6.5 km, 10 km and 16 km radius and a 22.5° grid for the site vicinity, i.e. 16 km radius.

The radii noted above also include the EP zones.

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For the purpose of the evaluation and demonstration of the feasibility of the emergency plan for the site that is presented in ***Chapter 8***, specific attention was paid to the following:

- population distribution and density in the site vicinity and site region;
- distance of the site from population centres;
- special groups of the population who are difficult to evacuate or shelter, such as persons in hospitals and homes for the aged.

Figures are included, which visually illustrate the population data contained in the relevant databases and tables. Where applicable, shading indicates different population numbers or densities, i.e. the darker the shading, the higher or denser the population.

It should also be noted that various sectors contain both land and ocean areas and population figures are centred within a sector, and it may therefore appear that members of the population are allocated to the ocean. Where this is the case, the sector presents the data relevant to that sector over the land area, excluding the ocean area. This principle was applied throughout this section. Where appropriate, population density figures are averaged over the land area of the sector and not the extent of the sector (i.e. excluding ocean areas).

5.4.5 Current Permanent Population Distribution

The Ideal Dataset for the Demographic Universe by ESRI South Africa and IRL Consulting (ESRI South Africa and IRL Consulting, 2022) served as the baseline for population data. This represents the most recent and detailed representation of population data within the site region. The data were investigated to determine and characterise the permanent population for the site region and site vicinity around the nuclear installation(s) for 2022. The estimated population distribution for 2024 to 2130 is presented in ***Subsection 5.4.8*** (Projected Population Distribution).

The methodology for the allocation of population data to specific sectors outlined in the Technical Specification for Site Safety Reports: Demography (Eskom, 2022) was applied.

The assessment of the permanent population distribution in the site region includes the following:

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- the population distribution within 5.0 km distance annuli around the site (22.5º radial grid) up to the boundary of site region (2022);
- the population distribution within 2.5 km distance annuli around the site (5º radial grid) up to the boundary of site region (2022);
- the population distribution within 2.5 km distance annuli around the site (22.5º radial grid) up to the boundary of site region (2022);
- the population distribution within 5.0 km distance annuli around the site (5º radial grid) up to the boundary of site region (2022).

The assessment of the permanent population distribution in the site vicinity includes, in addition to the above, the following:

- the population per suburb (2022);
- the gender distribution per suburb (2022);
- the age distribution per suburb (2022);
- the type of dwelling per suburb (2011).

Population densities and centres were also analysed. The characterisation of the population densities and centres includes the following:

- vicinity population and population density per sector (2022);
- regional population and population density per sector (2022).

5.4.5.1 Current Permanent Population

The 2022 population distribution and characteristics are presented in ***Drawings 5.4.3*** to ***5.4.7***, ***Figures 5.4.2*** to ***5.4.7*** and ***Appendices 5.4.C*** to ***5.4.H***.

The small difference in the total population numbers as presented in ***Appendices 5.4.C*** to ***5.4.F*** is due to a combination of the following:

- the difference in the ‘geographical’ configuration between the SAL utilised by Statistics South Africa and the radial grids and its associated sectors utilised in the TSSR;
- the difference in the ‘geographical’ configuration of the sectors

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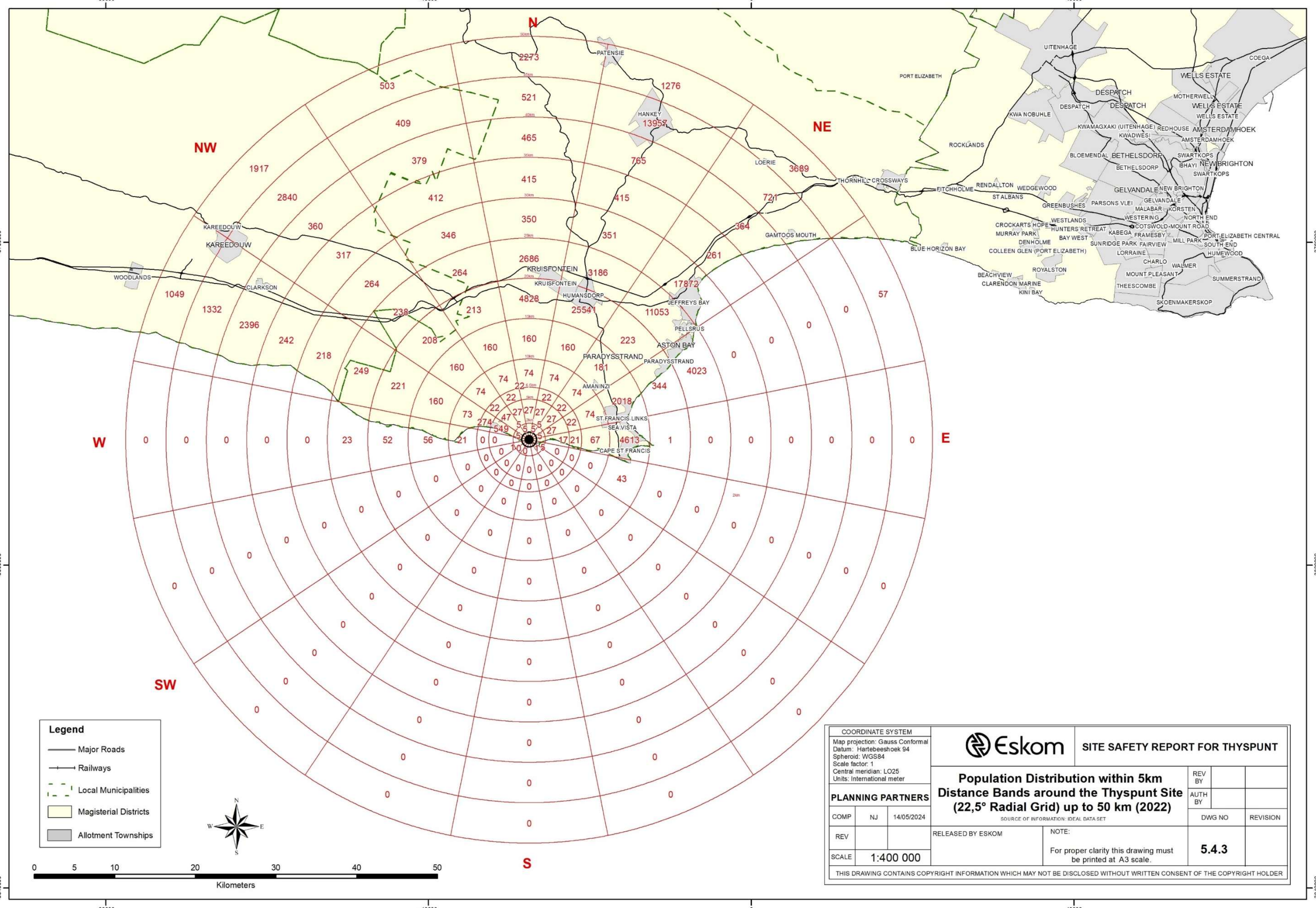
created by the different radial grids utilised in the TSSR;

- the rounding off of numbers, i.e. decimal points are not utilised.

Note that the largest margin of difference or variance is 8 people spread over the 50 km annulus around the site, which represents a variance of approximately 0.006 per cent. This variance is regarded as negligible.

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PLANNING PARTNERS		
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Eskom

SITE SAFETY REPORT FOR THYSPUNT

Population Distribution within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2022)

SOURCE OF INFORMATION: IDEAL DATA SET

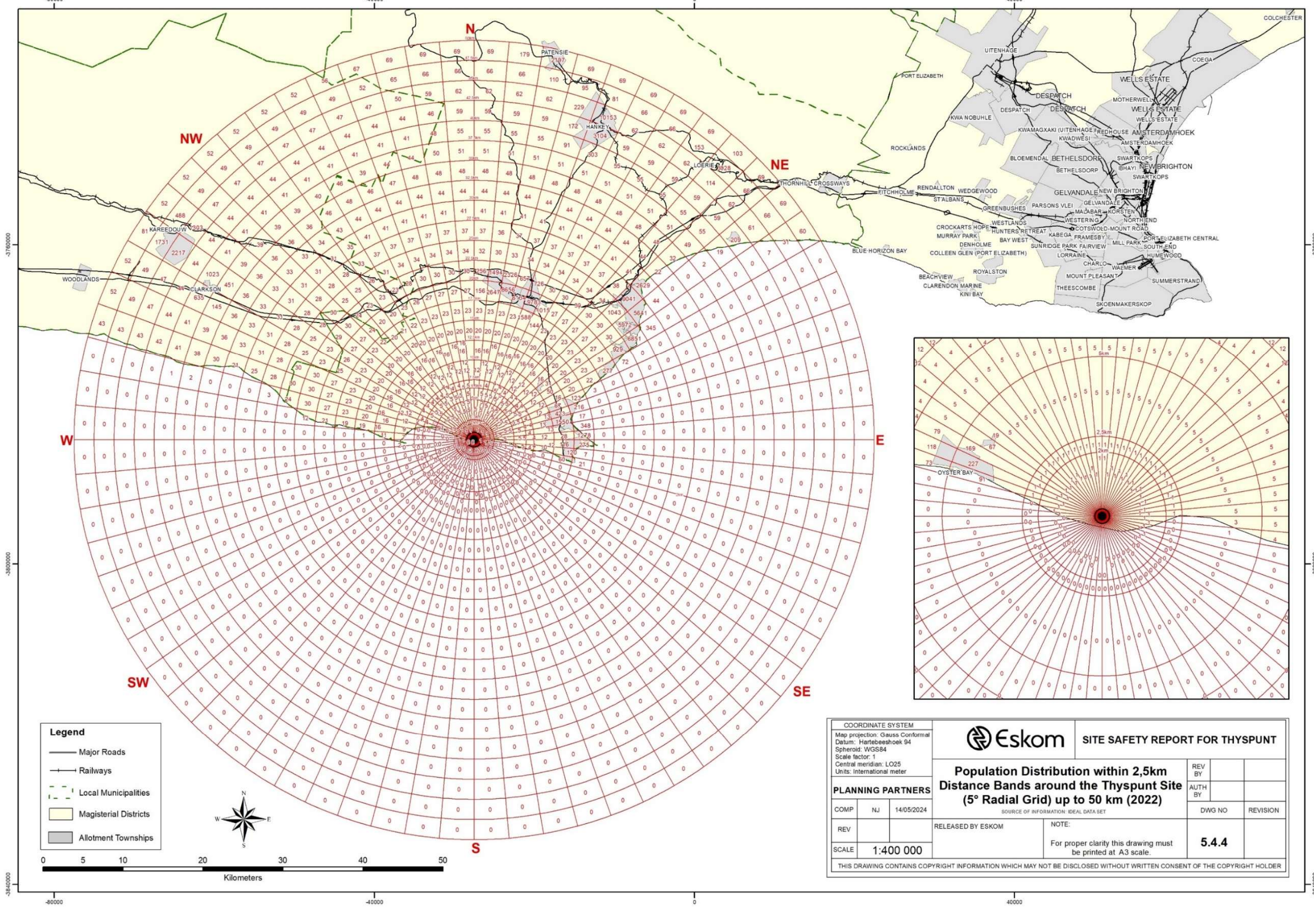
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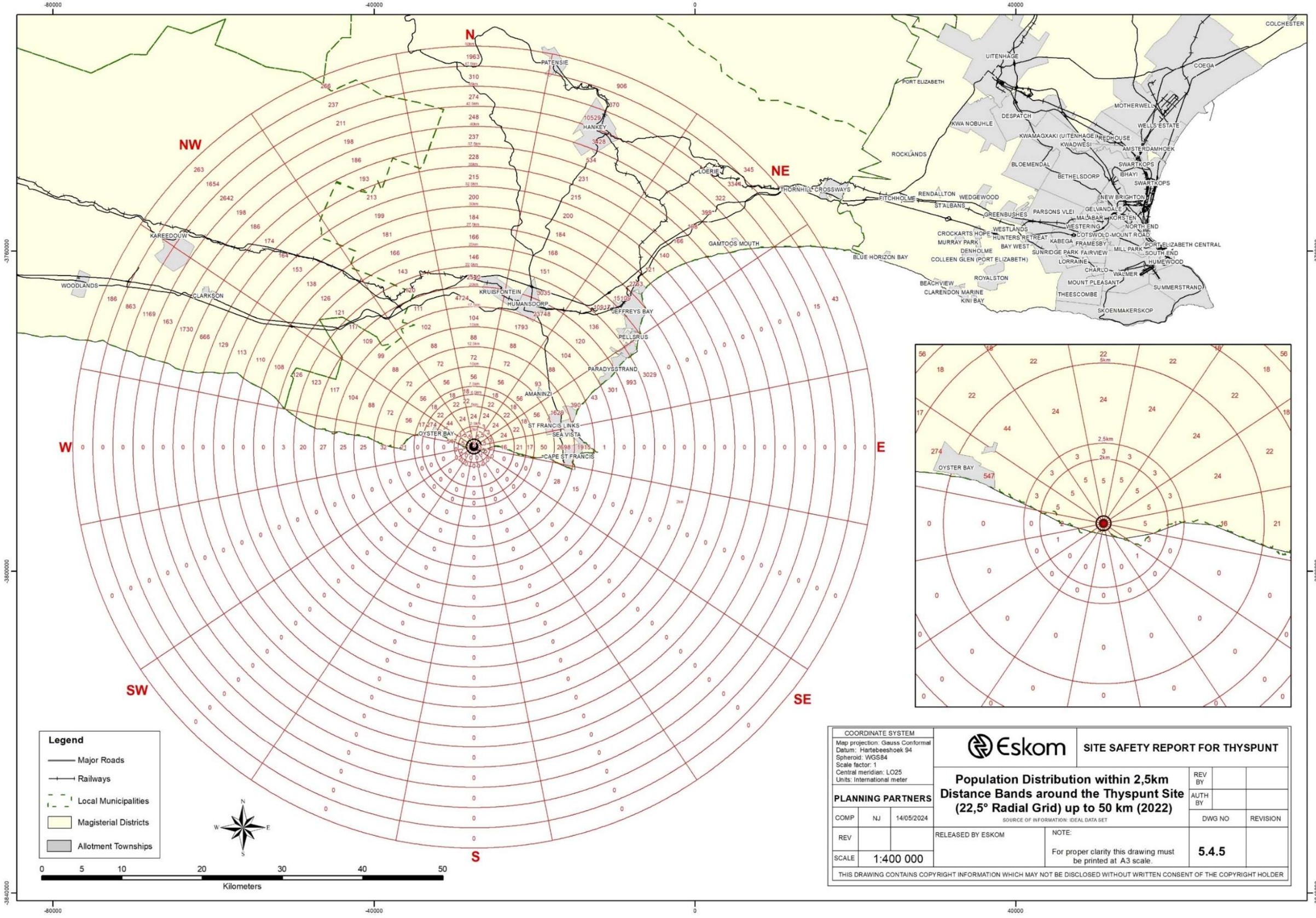
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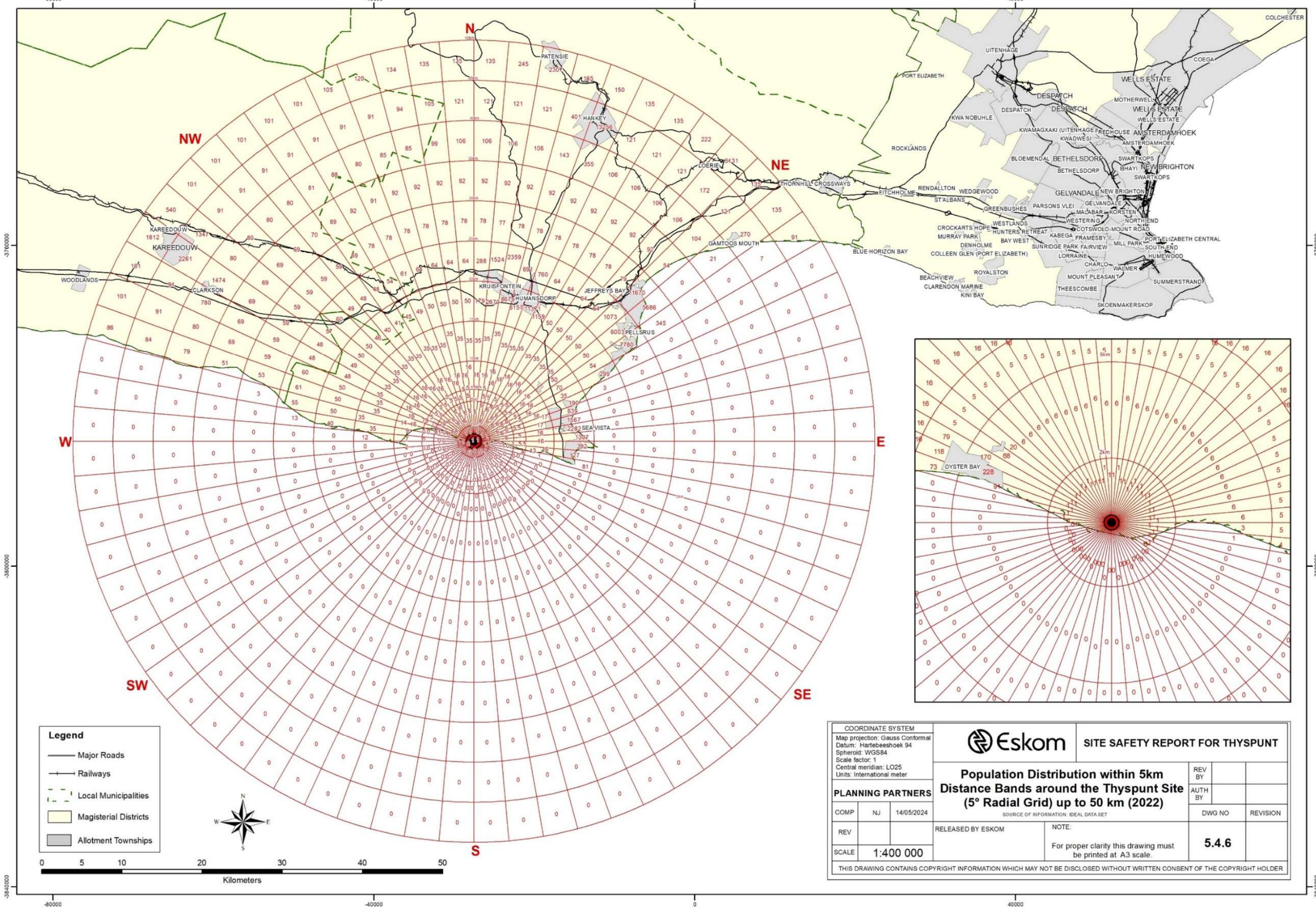
COORDINATE SYSTEM			Eskom	SITE SAFETY REPORT FOR THYSPUNT	
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			**Population Distribution within 2,5km Distance Bands around the Thyspunt Site (5° Radial Grid) up to 50 km (2022)** SOURCE OF INFORMATION: IDEAL DATA SET	REV BY	
PLANNING PARTNERS				AUTH BY	
COMP	NJ	14/05/2024		DWG NO	REVISION
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COORDINATE SYSTEM			Eskom	SITE SAFETY REPORT FOR THYSPUNT	
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			**Population Distribution within 2,5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2022)** SOURCE OF INFORMATION: IDEAL DATA SET	REV BY	
PLANNING PARTNERS				AUTH BY	
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Legend

- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

0 5 10 20 30 40 50
Kilometers

COORDINATE SYSTEM	Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	**Population Distribution within 5km Distance Bands around the Thyspunt Site (5° Radial Grid) up to 50 km (2022)** SOURCE OF INFORMATION: IDEAL DATA SET	REV BY AUTH BY
PLANNING PARTNERS		DWG NO: **5.4.6** / REVISION
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-40000

Kou-Kamma Local Municipality

R102

N2

16 km

Humansdorp

R102

Kouga Local Municipality

Kouga Non - urban

2421

R330

Jeffreys Bay

50

Kromrivier

Sea Vista

488

St Francis Links

30

St Francis Bay

5573

Oyster Bay

818

THYSPUNT SITE

Cape St Francis

422

Legend

- Enveloping Footprint
- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

N
W E
S

0 1 2 4 6 8 10

Kilometers

-40000

COORDINATE SYSTEM Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			Eskom	SITE SAFETY REPORT FOR THYSPUNT		
PLANNING PARTNERS			Population per Suburb within 16km from the Thyspunt Site (2022)		REV BY	
					AUTH BY	
COMP	NJ	03/12/2024	SOURCE OF INFORMATION: IDEAL DATA SET		DWG NO	REVISION
REV			RELEASED BY ESKOM	NOTE: For proper clarity this drawing must be printed at A3 scale.	5.4.7	2
SCALE	1:100 000					

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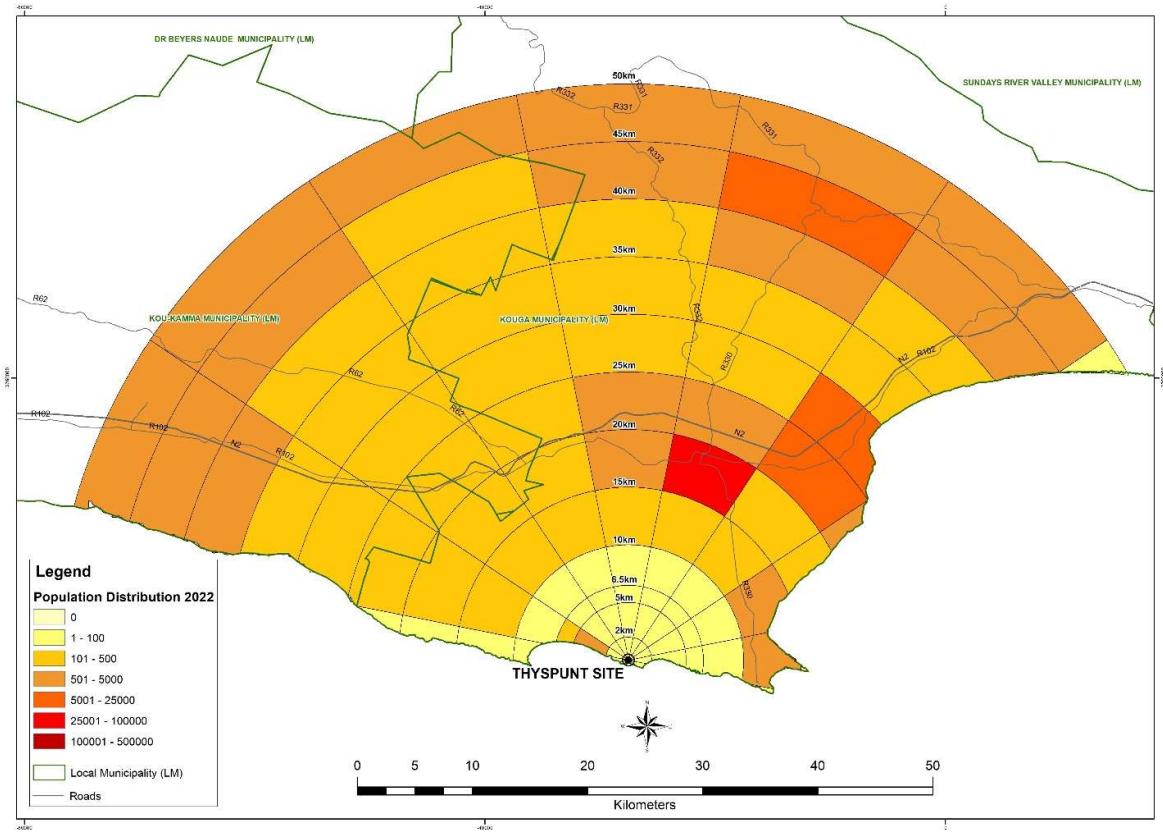


Figure 5.4.2
Population Distribution within 5 km Distance Annuli around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022)

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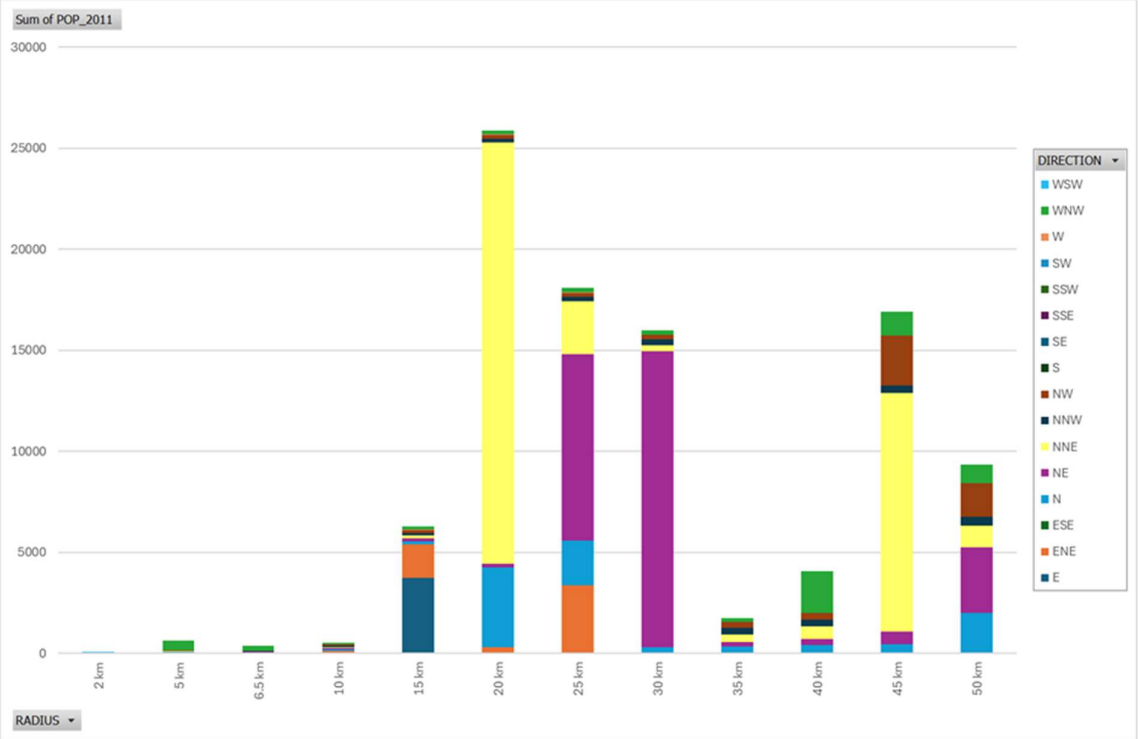


Figure 5.4.3
Population Distribution within 5 km Distance Annuli around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022)

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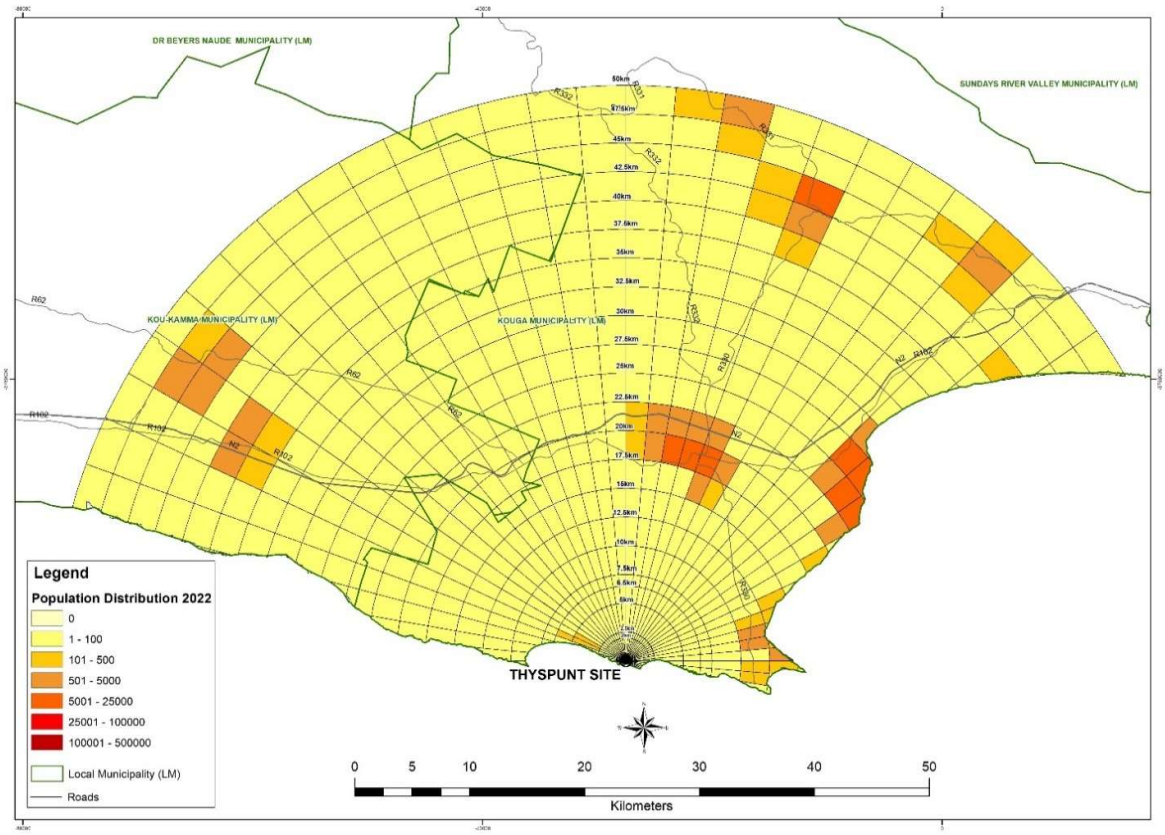


Figure 5.4.4
Population Distribution within 2.5 km Distance Annuli around the Thyspunt Site (5º Radial Grid) up to 50 km (2022)

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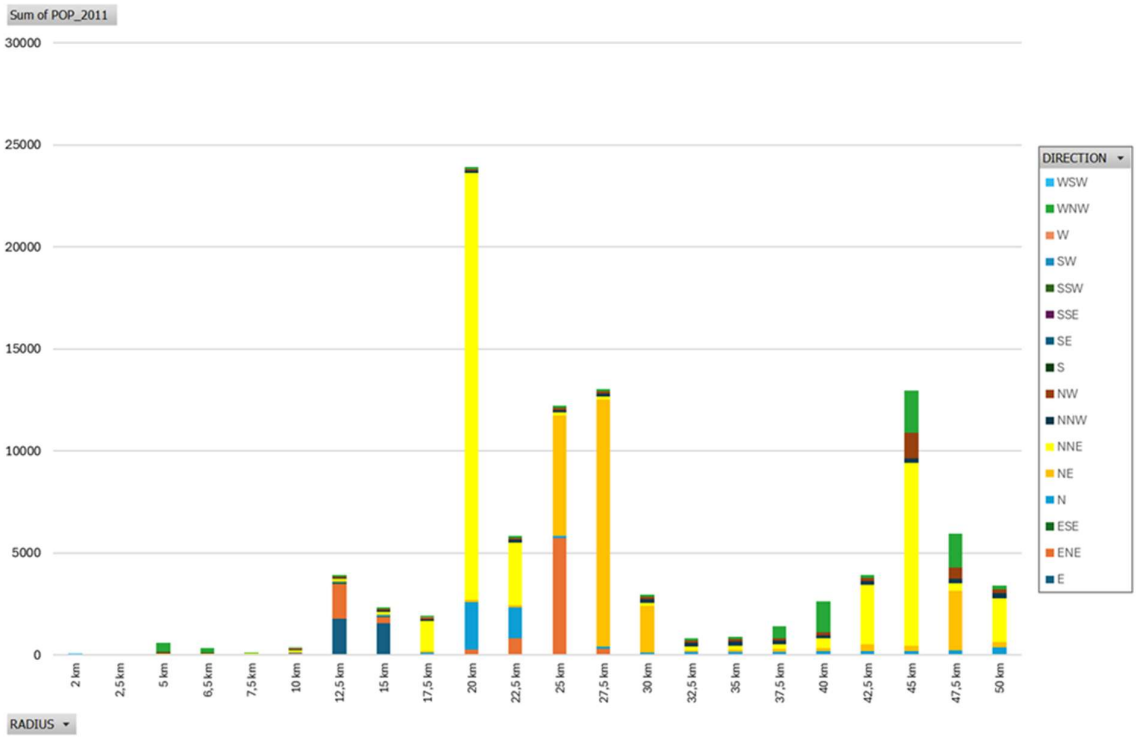


Figure 5.4.5
Population Distribution within 2.5 km Distance Annuli around the Thyspunt Site (5º Radial Grid) up to 50 km (2022)

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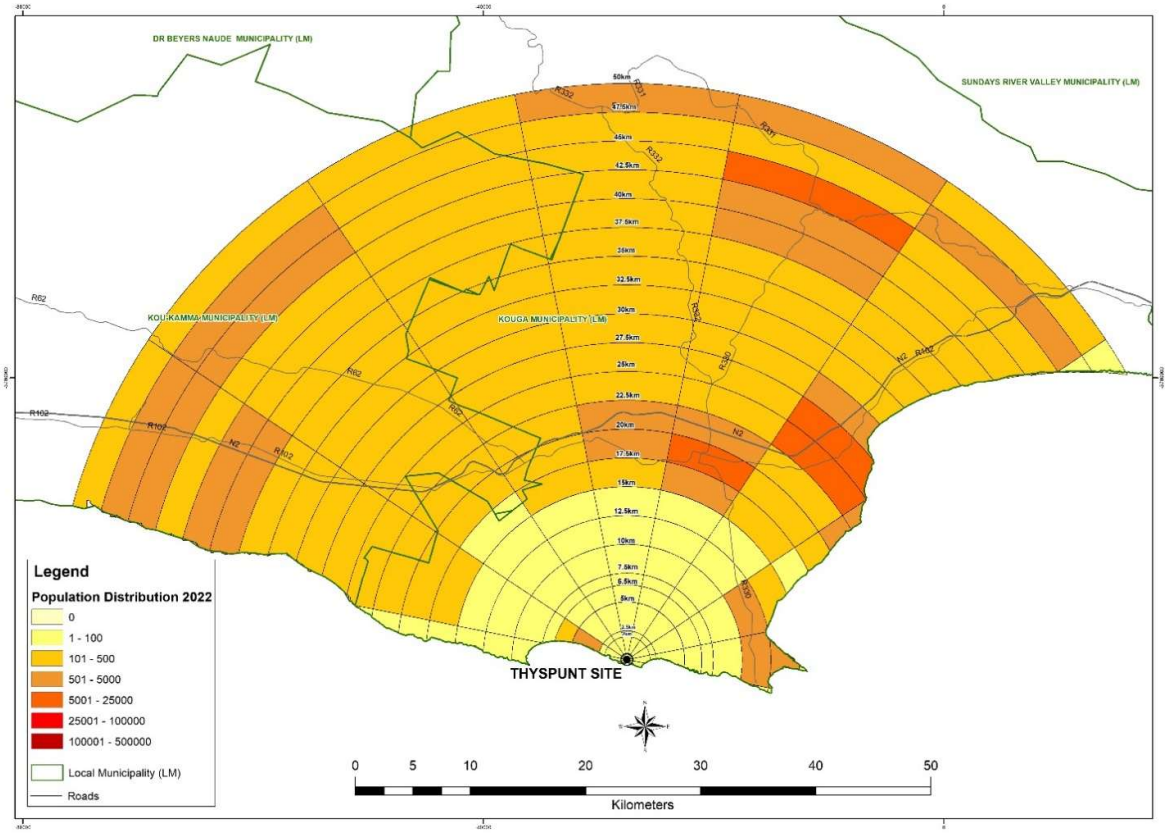


Figure 5.4.6
Population Distribution within 2.5 km Distance Annuli around the Thyspunt Site (22.5º Radial Grid) up to 50 km (2022)

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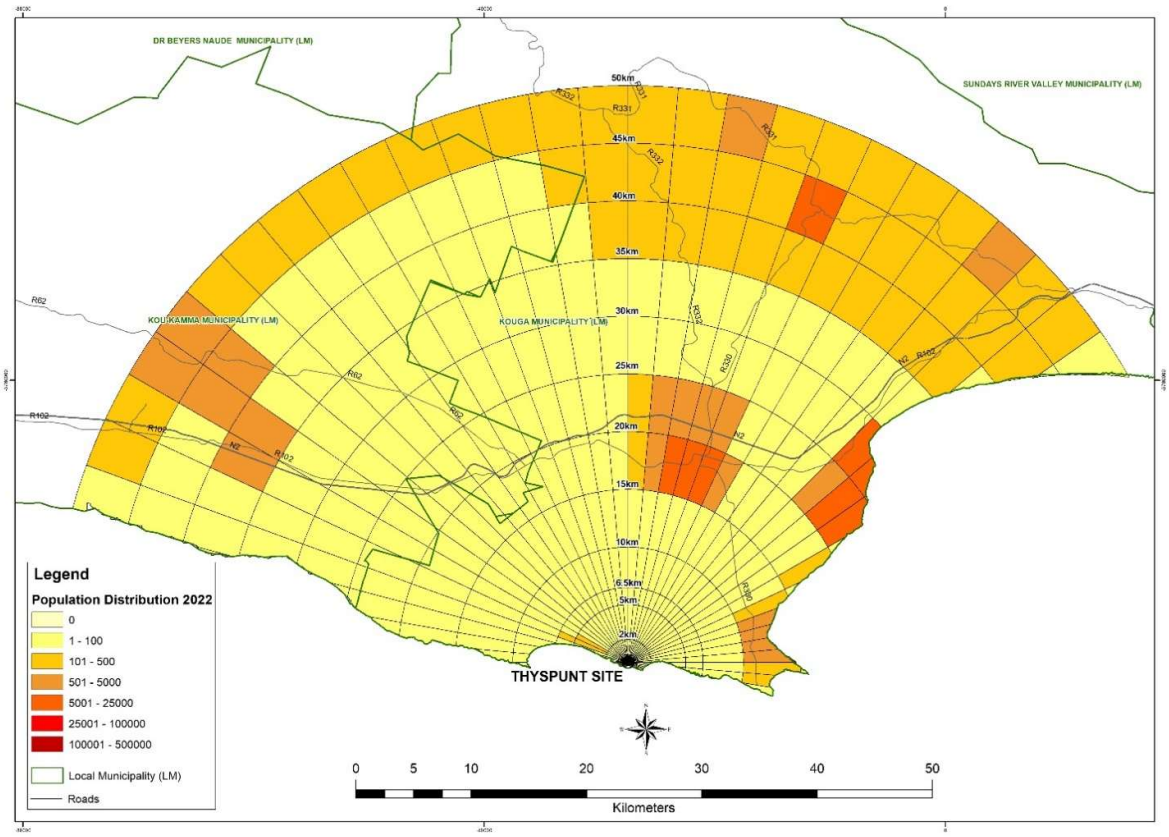


Figure 5.4.7
Population Distribution within 5 km Distance Annuli around the Thyspunt Site (5º Radial Grid) up to 50 km (2022)

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Site Region

The analysis showed that a population of approximately 119 615 persons resided within the site region (50 km radius) of the site in 2022. The analysis contained in the TSSR Section 5.4, Rev 0 (Eskom, 2015) noted that the analysis of the preceding 2001 Census showed that a population of approximately 69 060 persons resided within 50 km of the site in 2001. According to the 2011 Census, a total of 100 062 persons resided within 50 km from the site. This represents an annual population growth rate of 2.65 per cent within 50 km of the site between 2001 and 2022.

The largest population concentrations are located west-northwest, north-northeast (highest), northeast and east of the site, coinciding with urban settlements within the Kouga and Koukamma municipalities. The main settlements with more than 5 000 persons are presented in ***Table 5.4.1*** below.

Table 5.4.1
Main Settlements in the 50 km Radius (2022)

Settlement	Distance (km)	Direction	Approximate Number of Persons
Humansdorp/KwaNomzamo	17 to 26	N/NNE	35 442
Jeffreys Bay	24 to 29	NE	32 762
Hankey	38 to 46	NNE	13 882
St. Francis Bay	10 to 15	E	6 513
Patensie	47.5 to 50	N/NNE	6 071
Kareedouw	42.5 to 47.5	WNW	5 649

Site Vicinity

The assessment of the permanent population distribution in the site vicinity (16 km radius) includes, in addition to the above, the following:

- the population per suburb (2022);
- the gender distribution per suburb (2022);
- the age distribution per suburb (2022);
- the type of dwelling per suburb (2011).

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The results show that approximately 9 802 persons resided within the site vicinity in 2022 (refer to ***Drawing 5.4.7***). The preceding 2011 census showed that a population of approximately 8 020 persons resided within 16 km of the site in 2001. This represents an annual population growth rate of 1.8 per cent within 16 km of the site between 2011 and 2022.

The settlements of Oyster Bay to the west-northwest and St. Francis Bay to the east-northeast contained the highest population numbers, i.e. approximately 818 and 6 513 persons, respectively.

The population gender composition (2022) is relatively evenly distributed, with males having a slightly higher count at approximately 4 954 males (50.5 per cent) against approximately 4 849 females (49.5 per cent) (refer to ***Appendix 5.4.H***).

The majority of the population (2022) within the site vicinity (approximately 62 per cent) is under the age of 25 years (refer to ***Appendix 5.4.H***). The largest age group is between the ages of 20 and 24 years (approximately 15 per cent) and the second largest age group is between 10 and 14 years (approximately 13 per cent).

According to the 2011 data, approximately 2 479 dwellings were found within the site vicinity. The majority of the dwellings (approximately 74 per cent) are of a formal nature (such as houses, townhouses and flats) and approximately 26 per cent of the dwellings are of an informal nature (such as in backyards and informal settlements) (refer to ***Appendix 5.4.I***).

5.4.5.2 Population Density

Population densities were analysed to determine whether they exceed the international guidance provided by the US NRC Regulatory Guide 4.7, General Site Suitability Criteria for Nuclear Power Stations (U.S. Nuclear Regulatory Commission, 2014) and the EPRI Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities (Electric Power Research Institute, 2022) contained in ***Subsection 5.4.3.2*** (Guideline Documents). In this regard, emphasis is placed on the benchmark of a density of approximately 200 persons/km² and not the size of the population centre, as a large portion within the 50 km radius consists of ocean, i.e. does not contain residents. Note that the above two referenced documents act only as a guide and are not an NNR requirement.

The analysis of the population density around the site includes the following:

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- the vicinity population and population density (2022);
- the regional population and population density (2022).

The vicinity population density was analysed for the 2 km, 5 km, 6.5 km, 10 km and 16 km distance annuli and 22.5º radial grids. The results are presented in ***Figure 5.4.8*** and ***Table 5.4.2*** below.

The regional population density is presented for 5 km distance annuli and 22.5º radial grids within 50 km from the site. The results for this analysis are presented in ***Figure 5.4.9*** and ***Table 5.4.2*** below.

The following indicates the population density with respect to various annuli within 50 km from the site centroid as extracted from the results of the analysis (refer to ***Appendix 5.4.J*** and ***5.4.K***):

- **2 km Radius**

  The average population density within the 2 km radius (a land area of approximately 7 km²), is 7 persons/km^2 (2022).

- **5 km Radius**

  The average population density within the 5 km radius (a land area of approximately 38 km^2) is 21 persons/km^2 (2022).

- **6.5 km Radius**

  The average population density within the 6.5 km radius (a land area of approximately 64 km^2) is 19 persons/km^2 (2022).

- **16 km Radius**

  The average population density within the 16 km radius (a land area of approximately 388 km^2) is 39 persons/km^2 (2022).

- **35 km Radius**

  The average population density within the 35 km radius (a land area of approximately 1 494 km^2) is 57 persons/km^2 (2022).

- **50 km Radius**

  The average population density within the 50 km radius (a land area of approximately 2 935 km^2) is 41 persons/km^2 (2022).

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Based on the Ideal Dataset for the Demographic Universe (ESRI South Africa and IRL Consulting, 2022), the site conforms to the above mentioned international guidance for the 6.5 km radius. Isolated sectors do, however, not conform to these guidelines for the 16 km and 35 km radii at the settlements of Humansdorp/Kruisfontein/KwaNomzamo, St. Francis Bay/Sea Vista and Jeffreys Bay/Pellsrus. Note that the referenced documents act only as a guide and are not an NNR requirement.

Table 5.4.2
Permanent Population Density (2022)

	Radius					
	2 km	**5 km**	**6.5 km**	**16 km**	**35 km**	**50 km**
Land Area (km²)	7	38	64	388	1 494	2 935
Number of People	47	795	1 220	15 035	84 350	119 615
Density (people/km²)	**7**	**21**	**19**	**39**	**57**	**41**

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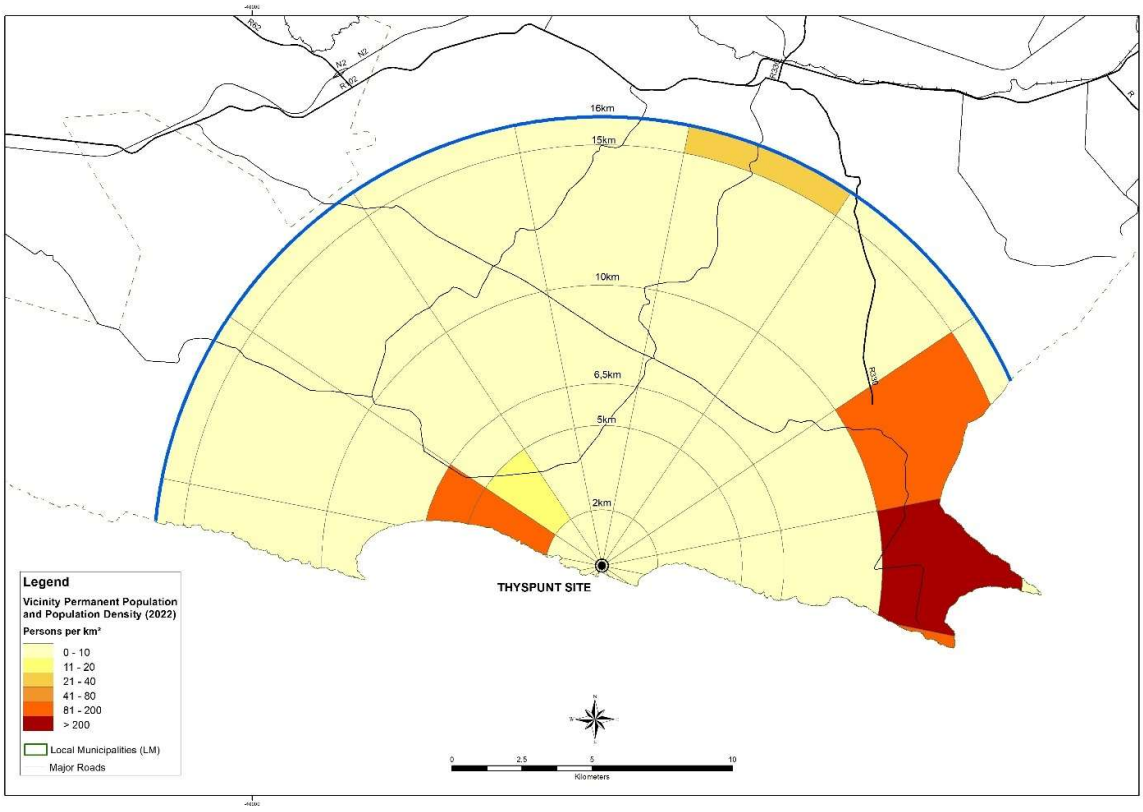


Figure 5.4.8
Vicinity Population Density (2022)

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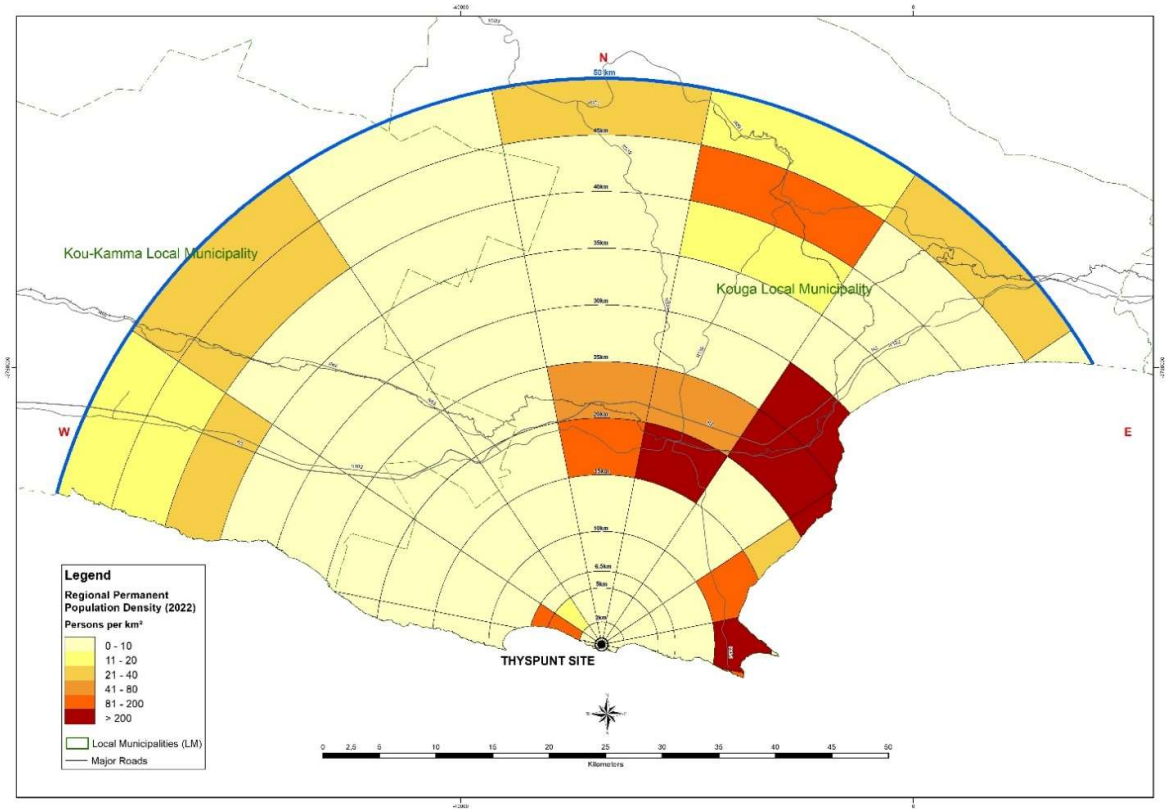


Figure 5.4.9
Regional Population Density (2022)

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5.4.5.3 Population Centres

Population centres were analysed to determine whether they exceed the international guidance provided by the US NRC Regulatory Guide 4.7, General Site Suitability Criteria for Nuclear Power Stations (U.S. Nuclear Regulatory Commission, 2014) and the EPRI Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities (Electric Power Research Institute, 2022) contained in ***Subsection 5.4.3.2*** (Guideline Documents). In this regard, emphasis is placed on the benchmark of a density of approximately 200 persons/km² and not the size of the population centre as a large portion within the 50 km radius consists of ocean, i.e. does not contain residents. Note that the referenced documents act only as a guide and are not an NNR requirement.

The following indicate the population numbers in 2022 with respect to various annuli within 50 km from the site centroid as extracted from the results of the analysis:

- **6.5 km Radius**

  The small coastal settlement of Oyster Bay (3 km to 5.5 km west-northwest) with a population of approximately 818 persons is the only settlement located within 6.5 km of the site (***Appendix 5.4.G*** and ***Drawing 5.4.7***).

  The total population within the 6.5 km radius was approximately 1 220 persons for 2022.

- **16 km Radius**

  The settlements of Oyster Bay (3 km to 5.5 km west-northwest), St. Francis Bay (11 km to 14 km east and east-northeast) and Sea Vista (12.5 km to 13.5 km east-northeast) are the largest populated areas within the 16 km radius, with a combined population of approximately 7 331 for 2022 (***Appendix 5.4.G*** and ***Drawing 5.4.7***).

  The total population within the 16 km radius was approximately 15 035 persons for 2022.

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- **35 km Radius**

  Humansdorp/KwaNomzamo (17 km to 26 km north and north-northeast) and Jeffreys Bay (24 km to 29 km northeast) with a total population of 68 204 persons are the largest settlements within 35 km of the site for 2022 (***Appendix 5.4.G***).

  The total population within the 35 km radius was approximately 84 350 persons for 2022.

- **50 km Radius**

  Humansdorp/KwaNomzamo (17 km to 26 km north and north-northeast), Jeffreys Bay (24 km to 29 km northeast), Hankey (38 km to 46 km north-northeast), St. Francis Bay (10 km to 15 km east), Patensie (47.5 km to 50 km north and north-northeast) and Kareedouw (42.5 km to 47.5 km west-northwest) are the largest settlements within the 50 km radius with a population of approximately 100 319 persons for 2022 (***Appendix 5.4.G***).

  The total population within the 50 km radius was approximately 119 615 persons for 2022.

Based on the 2022 Ideal Data Set (ESRI South Africa and IRL Consulting, 2022) the site conforms to the abovementioned international guidelines for the 6.5 km radius. Isolated sectors do, however, not conform to these guidelines for the 16 km to 35 km radii at the settlements of Humansdorp/Kruisfontein/KwaNomzamo, St. Francis Bay/Sea Vista and Jeffreys Bay/Pellsrus. Note that the referenced documents act only as a guide and are not an NNR requirement.

5.4.6 Current Temporary Population Distribution

The Technical Specification for Site Safety Reports: Demography (Eskom, 2022) requires the TSSR ***Section 5.4*** to report on temporary or transient population groups.

Temporary or transient population groups are those members of the public who reside for a short period of time (days or weeks) in a location (such as a camping ground) that can be identified in advance. This does not include members of the public who may be travelling through the area of investigation (Eskom, 2022).

To this end, data were collected on residential resorts, main recreational venues, main annual sport and concert events, beaches, major shopping

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centres and main conference facilities. The data were analysed in this report within 35 km of the nuclear installation(s). This distance satisfies the distance prescription in the Technical Specification for Site Safety Reports: Demography (Eskom, 2022) that requires information about recreational activities to be collected for up to 20 miles (35 km).

Data on residential resorts, main recreational venues, main annual sporting and concert events, beaches, large shopping centres and main conference facilities were sourced by means of a desktop study and site surveys conducted in 2024. Where data gaps were identified, or where there was a need to verify data, an email survey or telephonic survey was conducted. The existing database presented in the Thyspunt Site Safety Report Rev 0 (Eskom, 2015) was also consulted to identify possible data gaps.

In addition, in order to capture the number of beachgoers and other coastal zone recreational users within a radius of 35 km from the nuclear installation(s), beachgoers per beach or stretch of coastline were recorded on 31 March 2018, i.e. during Easter weekend (Planning Partners, 2024a) and again on 23 September 2024, i.e. during a national holiday (CAD Mapping, 2024) via aerial surveys. On these dates it was anticipated that the coastal usage would be at a high level.

The demographic data pertaining to these main transient nodes and supporting information were presented in terms of distance and direction from the nuclear installation(s), unless specifically noted otherwise.

Where appropriate, demographic data and supporting information were presented in tabular format and inform the creation of a GIS database that forms part of the baseline for the TSSR.

5.4.6.1 Recreational Destinations

Recreational/Residential Resorts

Information regarding recreational/residential resorts is presented in this subsection and summarised in ***Table 5.4.3***. Their locations are illustrated in ***Drawing 5.4.8***. The numbered codes in ***Table 5.4.3*** correspond with the location of the residential resort in ***Drawing 5.4.8*** (Planning Partners, 2024a).

Oyster Bay Resort and Oyster Bay Lodge (8.38 km northwest)

The Oyster Bay Resort and Oyster Bay Lodge is located along the coastline. The resort component accommodates 5 self-catering wooden

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chalets and 44 camping sites. In addition, the lodge component includes 14 bedrooms.

Lombardini Game Farm (17.93 km northeast)

Lombardini Game Farm provides accommodation in a bed-and-breakfast establishment with 14 rooms, self-catering cottages and a wedding venue. The game farm can accommodate 45 guests for overnight stays, which excludes day visitors of conference and wedding events.

Pellsrus Caravan Park (25.49 km northeast)

Pellsrus Caravan Park has 40 camping sites and 6 chalets.

Mentorskraal (25.66 km northeast)

Mentorskraal Country Estate hosts a variety of functions, including weddings, private and corporate events, music concerts and sport events. The country estate comprises of self-catering accommodation, a bed-and-breakfast establishment, dormitory-type accommodation and holiday rentals. There are 3 dormitory structures that can accommodate up to 50 persons each (a total of 150 visitors) that are used to host school groups. This is supplemented by 6 units used by mentors/teachers, bringing the total number of visitor accommodation to 200.

Jeffreys Bay Caravan Park (26.75 km northeast)

Jeffreys Bay Caravan Park has 170 caravan stands. The area can accommodate between 600 to 650 visitors with the highest record of 600 visitors between December and January.

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Table 5.4.3
Recreational/Residential Resorts within 35 km (2024)

Code in Drawing	Name	Distance and Direction	Average Daily Occupancy/ Occupancy Rate	Peak Occupancy Period	Comment
RR1	Oyster Bay Resort	8.38 km WNW	300 persons (85 – 100 %)	Mid-December to mid-January	- 44 grassed caravan - 5 self-catering log cabins
			200 persons (57%)	Easter	
			30 persons (8 – 10%)	weekends*	
			30 persons (8 – 10%)	weekdays*	
RR2	Oyster Bay Lodge	8.38 km WNW	32 persons (70 – 100%)	Mid-December to mid-January	- 4 Cape Dutch suites - 10 guest rooms
			32 persons (70 – 100%)	Easter	
			18 persons (40%)	weekends*	
			15 persons (33%)	weekdays*	
RR3	Lombardini game Farm	17.93 km NE	80 persons (90 – 100%)	Mid-December to Mid-January	Offers a honeymoon suite, luxury lodge suites, medium pool rooms and large pool rooms.
			80 persons (90 – 100%)	Easter	
			50 persons (63%)	Weekends*	
			30 persons (38%)	Weekdays*	
RR4	Pellsrus Caravan Park	25.49 km NE	61 persons (70 – 100%)	Mid-December to mid-January	- 40 camping sites - 3 single room chalets - 3 double room chalets
			32 persons (35 – 40%)	Easter	
			16 persons (18%)	weekends*	
			4 persons (4 %)	weekdays*	
RR5	Mentorskraal	25.66 km NE	120 persons (100%)	Mid-December to mid-January	- 50 double bunk beds - 2 single beds for mentors - 4 single beds for teachers
			80 persons (60 – 70%)	Easter	
			20 persons (15 – 20%)	Weekends*	
			40 persons (30%)	Weekdays*	
RR6	Jeffreys Bay Caravan Park	26.75 km NE	600 persons (100%)	Mid – December to Mid-January	- 170 caravan sites - 2 single beds for mentors - 4 single beds for teachers
			200 persons (30 – 40%)	Easter	
			100 persons (15%)	Weekends*	
			80 persons (10 – 15%)	Weekdays*	

* Figures provided for weekends and weekdays are for off-peak periods.

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-3760000 -3760000

HANKEY

LOERIEHEUWEL

GAMTOOS MOUTH

KAREEDOUW

KOU-KAMMA MUNICIPALITY (LM)

SARAH BAARTMAN DISTRICT MUN DC10

KOUGA MUNICIPALITY (LM)

KRUISFONTEIN

CLARKSON

HUMANSDORP

JEFFREYS BAY

PELLSRUS

ASTON BAY

PARADYSSTRAND

AMANINZI

ST FRANCIS LINKS

SEA VISTA

CAPE ST FRANCIS

OESTERBAAI

35 KM
30KM
25KM
20KM
16 KM
15KM
10KM
6,5KM
5KM
2KM

SE10 RV7 RV4 B11 SE9 B10 RR5 CC4 B9 SC2 SC4 B8 CC2 SE7 SC3 RR6 RV5 RV6 RR4 SE8 B7 RR3 CC3 RV3 B6 B5 SE5 SE4 RV1 B4 RR2 RR1 SE2 SC1 B2 SE1 SE6 RV2 B1 CC1 SE3 B3

THYSPUNT SITE

Legend

- Enveloping Footprint
- Main Recreational Venues (RV)
- Main Shopping Centres (SC)
- Annual Sport and Concert Events (SE)
- Main Conference Centres (CC)
- Recreational Resorts (RR)
- Beaches (B)

N W E S

0 2,5 5 10 15 20

Kilometers

COORDINATE SYSTEM	Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	Main Transient Nodes (35km): Recreational Resorts, Main Recreational Venues, Annual Sport and Concert Events, Beaches, Main Shopping Centres and Main Conference Centres. SOURCE OF INFORMATION: Planning Partners	REV BY AUTH BY
PLANNING PARTNERS		DWG NO: 5.4.8 REVISION: 1
COMP NJ 03/12/2024	RELEASED BY ESKOM	NOTE: For proper clarity this drawing must be printed at A3 scale.
REV		
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Main Recreational Venues

Information regarding main recreational venues is presented in this subsection and summarised in ***Table 5.4.4***. Their locations are illustrated in ***Drawing 5.4.8***. The numbered codes in ***Table 5.4.4*** correspond with the location of the recreational venue in ***Drawing 5.4.8*** (Planning Partners, 2024a).

St. Francis Bay Bowling Club (12.52 km northeast)

The St. Francis Bay Bowling Club is located 12.52 km northeast of the site and has a bar facility and a hall. The hall is available for private functions and has a capacity of 100 people. The club is part of the Eastern Province Bowls Association. As at 2021, the St. Francis Bay Club had 74 members.

Port St. Francis Ski Boat and Yacht Club (15.12 km east)

The Port St. Francis Ski Boat and Yacht Club is located 15.12 km east of the site and hosts weddings, birthday parties and private functions. The club is used for conferences, presentations and meetings for up to 140 visitors.

Happy Hippo (19.15 km northeast)

Happy Hippo (19.15 km northeast) is an event venue located in Paradise Beach on the Seekoei River. The venue hosts regular events including live music and markets, all of which take place all year round. There is also an annual wine festival. The venue can also be booked for private functions such as birthdays and weddings and has a capacity of 500 people.

Zwartenbosch Golf Club (20.30 km north-northeast)

The Zwartenbosch Golf Club is located outside Humansdorp and has a 9-hole golf course. Amenities at the Zwartenbosch Golf Club include a conference facility, a business complex with office suites, health hydro and spa, wedding chapel, restaurants and a shopping complex. There are plans for the sports centre to accommodate squash and tennis courts and an outdoor swimming pool in the future.

Jolly Dolphin (25.90 km northeast)

The Jolly Dolphin (25.90 km northeast) is a popular holiday attraction in

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Jeffreys Bay and can host up to 1 300 people. The venue hosts live shows and music performances.

Dolphin Beach Entertainment and Water Park (25.98 km northeast)

Dolphin Beach Entertainment and Water Park, located 25.98 km northeast of the site, is a water park situated in Jeffreys Bay and known as one of the Eastern Cape's most popular outdoor fun parks. The park features a waterslide, a mini-golf course and a restaurant. The water park hosts a variety of events and school groups with a maximum capacity of 1 500 visitors.

JBay Airsoft (28.97 km northeast)

JBay Airsoft (28.97 km northeast) is located along the Kabeljous River at Smithtown. It is a tactical gaming venue and can accommodate 20 visitors.

Table 5.4.4
Main Recreational Venues within 35 km (2023)

Code in Drawing	Name	Distance and Direction	Capacity (persons)	Maximum/day or Average/day or Average/event (persons)
RV1	St. Francis Bowling Club	12.52 km NE	100	50
RV2	Port St. Francis Ski Boat and Yacht club	15.12 km E	140	140
RV3	Happy Hippo	19.15 km NE	500	200 – 500
RV4	Zwartenbosch Golf Club	20.30 km NNE	60	20
RV5	Jolly Dolphin	25.90 km NE	1 400	1 300
RV6	Dolphin Beach Water Park and Entertainment Park	25.98 km NE	1 500	500
RV7	JBay Airsoft	28.97 km NE	20	8 – 20

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Main Annual Sport, Religious and Music Events

Information regarding the main annual sport, religious and music events are presented in this subsection and summarised in ***Table 5.4.5***. Their locations or starting points are illustrated in ***Drawing 5.4.8***. The numbered codes in ***Table 5.4.5*** correspond with the location of the annual event in ***Drawing 5.4.8*** (Planning Partners, 2024a).

St. Francis Annual Chokka Trail Run (7.97 km east)

The St. Francis Annual Chokka Trail Run, held annually in August, consists of a 10 km, 23 km, 42 km and 62 km trail run. Participants are normally made up of 15 runners in the 10 km trail run, 200 runners for the 23 km trail run, 50 runners in the 42 km trail and 30 runners in the 62 km trail run. Only participants in the 42 km and 62 km trail run may enter the Thyspunt Nature Reserve.

St. Francis Market (11.85 km east-northeast)

The St. Francis Market is a regular market that takes place on the last Saturday of every month. The market has about 95 stalls that offer fresh produce to frozen meals, eats, treats, handmade clothing and jewellery, wooden toys and various décor items.

St. Francis Sport Summer Series (12.06 km east)

The annual St. Francis Sport Summer Series takes place in the St. Francis resort. This annual event includes the St. Francis Sport Custom Construction MTB Challenge, which takes place over 15 km and 20 km dirt roads and grassy jeep tracks through the Eskom Conservation Reserve. Access to this area is only by permission from Eskom.

Billy's Beach Festival (12.48 km east-northeast)

Billy's Beach Festival is an annual 7-day music festival that takes place from 26 December to 2 January. It was recorded that an average maximum of 11 250 visitors attend the festival at any given hour (15 000 visitors per day).

People's Triathlon, St. Francis Bay (12.65 km east-northeast)

The People's Triathlon is an annual event that takes place over the weekend at the end of February at the Quays in St. Francis Bay. The triathlon is directed at novice athletes and involves a 750 m swim, 20 km cycle and a 5 km run and is open to individuals or teams of 2 to 3 people.

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The event is limited to 120 participants.

Annual Tuna Challenge (13.94 km east)

The annual Tuna Challenge takes place at the end of April. The event takes place at the Port St. Francis Ski Boat and Yacht Club and runs for 3 days (Friday to Sunday). The attendance for the event is approximately 200 people. There are 35 boats launched at the event.

Humansdorp Festival (17.72 km north-northeast)

The Humansdorp Festival is hosted at Twisters in Humansdorp over two days, a week before Easter weekend. The festival programme includes live entertainment by various artists. The festival also includes carnival rides, food trucks, five-a-side soccer, a swimming pool and a kid's arena. Approximately 3 000 people attend the event, however the festival can accommodate 6 000 attendees.

Annual Billabong Pro Surfing/Corona J-Bay Open (24.40 km east-northeast)

The Billabong Pro-surfing/Corona J-Bay Open contest started in 1996. The Corona J-Bay Open was an annual World Surf League event, i.e. an international event. Jeffreys Bay has been a fixture on the Championship Tour for the past few years. The event takes place in the middle of July at Supertubes and hosts top international surfers from around the world. The event also includes spinoff events which include a musical festival, shore angling, a mountain bike race and a trail run. It was recorded that approximately 938 visitors attend the festival at any given hour (3 000 visitors per day).

Ride for a Child (25.90 km northeast)

Ride for a child is an annual motor biking event that takes place in the last week of February. The event attracts approximately 4 500 bikers. The event includes live music, food stalls and a beer tent. The Ride for a Child event is a 7 000 km charity motorbike ride around South Africa. In Jeffreys Bay, it starts at Mentors Country Estate on the last Saturday of the month. The bikers start their rides at Jeffreys Bay and travel to George and the N2 all the way to Limpopo province. The event is a 21-day event.

Mighty Men Conference (31.57 km northeast)

The Mighty Men Conference is an annual 3 to 4-day religious gathering

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that takes place over the weekend in the second half of March on the Mooi Uitsig farm. The event attracts approximately 8 000 to 10 000 visitors, who either attend during the day or camp for the weekend. The event is an exclusively male event.

A summary of the above information on main annual sport and concert events within 35 km of the nuclear installation(s) are presented in ***Table 5.4.5***. Their locations or starting points are illustrated in ***Drawing 5.4.8***. The numbered codes in ***Table 5.4.5*** correspond with the location of the annual event in ***Drawing 5.4.8***.

Table 5.4.5
Main Annual Sport, Religious and Concert Events within 35 km (2023)

Code in Drawing	Name	Distance and Direction	Number of Participants or Concertgoers on a Specific Day
SE1	Annual Chocka Trail Run	7.97 km E	295
SE2	St. Francis Market	11.85 km ENE	2 000
SE3	St. Francis Sport Summer Series	12.06 km E	430
SE4	Billy's Beach Festival	12.48 km ENE	15 000
SE5	Annual People's triathlon	13.94 km E	120
SE6	Annual Tuna Competition	15.12 km E	200
SE7	Humansdorp Festival	17.72 km NNE	3 000
SE8	Annual Billabong/Corona J-Bay Surfing	24.40 km ENE	3 000
SE9	Ride for a Child	25.90 km NE	4 500
SE10	Mighty Men Conference	31.57 km NE	10 000

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Popular Beaches/Portions of Coastline

The activities and number of beachgoers per beach or stretch of coastline were recorded at approximately midday on 31 March 2018, i.e. during Easter weekend (Planning Partners, 2024a) and again on 23 September 2024, i.e. during a national holiday (CAD Mapping, 2024). On these dates it was anticipated that the coastal usage would be at a high level. The findings are summarised and presented in ***Table 5.4.6***. The beach or stretch of coastline evaluated is illustrated in ***Drawing 5.4.8***. The numbered codes in ***Table 5.4.6*** correspond with the location of the beach or stretch of coastline in ***Drawing 5.4.8***.

Table 5.4.6
Activities and Number of People per Beach within 35 km (2018 and 2024)

Code in Drawing	Name of Beach or Stretch of Coastline	Distance and Direction	Walking/ Sitting/ Standing/ Sunbathing		Swimming		Surfing		Other		Total Number of Beachgoers	
			2018	2024	2018	2024	2018	2024	2018	2024	2018	2024
B1	Thyspunt Beach	1.61 km N	4	2	0	0	1	0	0	0	5	2
B2	Oyster Bay	4.69 km WNW	30	20	0	0	0	0	0	12	30	32
B3	Cape St. Francis Beach	13.43 km E	45	31	0	3	19	0	0	0	64	34
B4	St. Francis Bay	13.62 km ENE	52	53	2	4	21	0	5	10	80	67
B5	Paradise Beach	20.81 km ENE	43	12	0	0	0	0	0	2	43	14
B6	Aston Bay Beach	23.44 km ENE	64	53	0	13	12	0	0	17	76	83
B7	Dolphin Beach	26.05 km NE	82	251	0	54	9	25	0	22	91	352
B8	Point Beach	27.96 km NE	14	75	0	6	26	7	0	0	40	88
B9	Lower Point Beach	28.00 km NE	6	8	0	3	5	3	0	4	11	18
B10	Albatross Beach	28.38 km NE	7	30	3	3	0	0	0	4	10	37
B11	Kabeljouws Beach	29.97 km NE	62	52	5	3	0	0	0	51	67	106
		Total	**409**	**587**	**10**	**89**	**93**	**35**	**5**	**122**	**517**	**833**

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5.4.6.2 Main Shopping Centres

Data on the latest available foot counts for the main shopping centres within the area of investigation were obtained during a site visit conducted on 19 February 2024 and supplemented with email and telephonic surveys (Planning Partners, 2024a).

The data regarding main shopping centres are presented in ***Table 5.4.7***. Their locations are illustrated in ***Drawing 5.4.8***. The numbered codes in ***Table 5.4.7*** correspond with the location of the shopping centres in ***Drawing 5.4.8***.

Where foot count information was not available from a specific shopping centre, the number of people was estimated based on the Gross Leasable Area (GLA) of shopping centres of a similar size.

Table 5.4.7
Main Shopping Centres within 35 km (2024)

Code in Drawing	Name	GLA (m²)	Distance and Direction	Average Number of Visitors per Day	Number of Visitors per Day during Peak Season (December and January)
SC1	Spar Lifestyle Centre	1 722	12.82 km ENE	1 090	3 271
SC2	Fountains Mall	33 321	24.97 km NE	21 060	666 872
SC3	Equinox Mall	15 086	25.79 km NE	9 540*	22 170*
SC4	Wavecrest Shopping Centre	5 500	27.54 km NE	2 500	3 500

* Estimated number based on the GLA of the shopping centre compared to shopping centres of a similar extent.

5.4.6.3 Main Conference Facilities

Information regarding main conference facilities was obtained from a desktop study (Planning Partners, 2024a).

The information regarding main conference facilities is presented in ***Table 5.4.8***. Their locations are illustrated in ***Drawing 5.4.8***. The numbered codes in ***Table 5.4.8*** correspond with the location of the conference facilities in ***Drawing 5.4.8***.

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Conference facilities often have varying capacities depending on the configuration of the facilities and the type of conference or event (e.g. banquet, cocktail, cinema style, u-shape style, classroom style, boardroom, etc.). ***Table 5.4.8*** presents the total maximum capacity of the conference facilities, which often represents a cocktail or cinema style event, together with all other facility capacities at the specific venue.

Table 5.4.8
Main Conference Facilities within 35 km (2024)

Code in Drawing	Name	Distance and Direction	Total Maximum Capacity
CC1	Cape St. Francis Resort and Conference Centre	13.12 km E	510
CC2	Kouga Conference Centre	17.07 km NNE	500
CC3	Lombardi Game Farm Conference Centre	17.93 km NE	650
CC4	Mentors Country Estate	25.66 km NE	150

5.4.6.4 Tourist Population

Datavision Marketing and Tourism Research Consultants undertook a study to, *inter alia*, estimate the total tourist population during 2024 on any single day during the peak season within the site region (Datavision, 2024).

Data Sourced and Methodology

The target market of the study was a corporate tourism survey, i.e. surveying of accommodation establishments. The sample unit for the study was defined as a 'formal tourist accommodation establishment'. No informal accommodation establishments were considered for the survey, and apartments and one-roomed studios were disqualified due to their size and commercial insignificance. The extent of the study included all accommodation establishments within a given radius of 80 km from the site. Note that this radius is larger than the current site region of 50 km. For the analysis in this subsection, the focus is on data at facilities within the 50 km radius.

A sample frame of 201 tourist accommodation establishments which complied with the inclusion criteria was compiled. A sample size of 100 interviews was decided upon and accommodation establishments was selected by means of a proportionate systematic stratified sample.

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Interviews were conducted with the owner, administration manager or the person in charge of guest bookings from 2 to 11 April 2024. Given the sample of 100 establishments and considering the relatively large sample size (>10 per cent of the sample frame), the margin of error was calculated at approximately 7.0 per cent given a 95 per cent confidence level.

The visitor figures obtained from the 100 establishments were then extrapolated for the 201 selected establishments within 80 km of the site. Of the 100 establishments, 72 per cent are within the 50 km zone from the site.

Tourist Population during the Peak Period

Respondents were probed for the maximum capacity of their establishment. The maximum summative capacity of visitors residing within formal accommodation establishments was estimated between 7 606 and 7 856 visitors per day (averaged at 7 731 visitors). Respondents were also probed which months they considered to be their peak or busiest months of the 2023 year. The high season for the region was established to be from November to April, with January and December being the two busiest peak months. The month of December was the busiest peak month.

The maximum daily averaged monthly peak season number on any given (peak month) day within 80 km from the site was estimated at 6 287 persons per day.

Assumptions

As 72 per cent of the 100 establishments are within the 50 km site region, it is assumed that 72 per cent of 6 287 visitors (i.e. 4 527 persons) were within 50 km from the site.

As the tourism figures were not available per Enumerated Areas, Small Areas or Sub-places, the total tourist population was distributed as a ratio of the permanent population within each of the sectors around the nuclear installation(s) as follows:

> (total tourist population × 2024 permanent population per sector) ÷ 2024 permanent population

The resultant tourist population ratio is 0.0365. The tourist population distribution for 2024 for any one day in the peak month within 50 km from the nuclear installation(s) is presented in ***Appendix 5.4.L*** and ***5.4.M*** and

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Drawings 5.4.9 and ***5.4.10*** below.

It could, however, be expected that certain sectors would have a larger tourist concentration on any given day, as they contain tourism destinations/nodes, and that other sectors (e.g. resident population's residential areas) would have a lower tourist concentration at any one time. Many destinations are also weather dependant, which would impact on visitor numbers on a daily basis.

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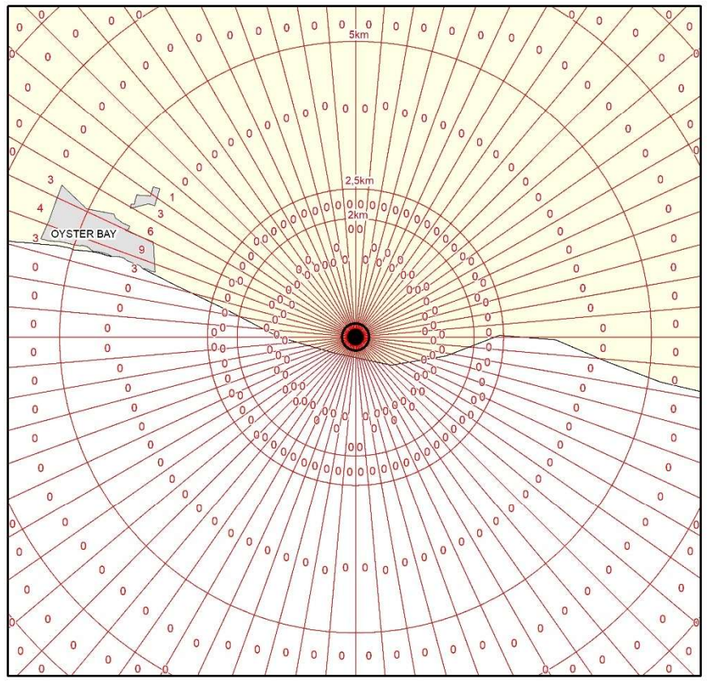
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N NW NE W E SW SE S

PATENSIE 212 HANKEY 385 117 LOERIE 116 THORNHILL CROSSWAYS FITCHHOLME RENDALLTON WEDGEWOOD ST ALBANS GREENBUSHES PARSONS VLEI ROCKLANDS PORT ELIZABETH UITENHAGE COLCHESTER COEGA WELLS ESTATE MOTHERWELL DESPATCH KWA NOBUHLE KWAMAGXAKI (UITENHAGE) REDHOUSE AMSTERDAMHOEK KWADWESI BLOEMENDAL BETHELSDORP SWARTKOPS IBHAYI NEW BRIGHTON GELVANDALE MALABAR KORSTEN WESTERING NORTH END WESTLANDS CROCKARTS HOPE HUNTERS RETREAT COTSWOLD MOUNT ROAD MURRAY PARK BAY WEST KABEGA FRAMESBY PORT ELIZABETH CENTRAL DENHOLME SUNRIDGE PARK FAIRVIEW MILL PARK SOUTH END COLLEEN GLEN (PORT ELIZABETH) LORRAINE HUMEWOOD CHARLO WALMER BLUE HORIZON BAY ROYALSTON BEACHVIEW MOUNT PLEASANT SUMMERSTRAND CLARENDON MARINE THEESCOMBE KINI BAY SKOENMAKERSKOP KAREEDOUW 18 64 82 WOODLANDS CLARKSON 38 17 23 5

50km 47.5km 45km 42.5km 40km 37.5km 35km 32.5km 30km 27.5km 25km 22.5km 20km 17.5km 15km 12.5km 10km 7.5km 5km 2.5km 2km



Legend

- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

N W E S

0 5 10 20 30 40 50

Kilometers

COORDINATE SYSTEM			Eskom	SITE SAFETY REPORT FOR THYSPUNT		
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			**Tourist Population within 2,5km Distance Bands around the Thyspunt Site (5° Radial Grid) up to 50 km (2024)** SOURCE OF INFORMATION: IDEAL DATA SET		REV BY	
PLANNING PARTNERS					AUTH BY	
COMP	NJ	30/05/2024			DWG NO	REVISION
REV			RELEASED BY ESKOM	NOTE: For proper clarity this drawing must be printed at A3 scale.	**5.4.9**	
SCALE	1:400 000					

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N NE E SE S SW W NW

PATENSIE HANKEY LOERIE THORNHILL CROSSWAYS FITCHHOLME RENDALLTON WEDGEWOOD ST ALBANS GREENBUSHES PARSONS VLEI GELVANDALE MALABAR KORSTEN WESTERING NORTH END WESTLANDS CROCKARTS HOPE HUNTERS RETREAT COTSWOLD MOUNT ROAD MURRAY PARK KABEGA FRAMESBY PORT ELIZABETH CENTRAL BAY WEST MILL PARK DENHOLME SUNRIDGE PARK FAIRVIEW SOUTH END COLLEEN GLEN (PORT ELIZABETH) LORRAINE HUMEWOOD BLUE HORIZON BAY CHARLO WALMER ROYALSTON MOUNT PLEASANT SUMMERSTRAND BEACHVIEW THEESCOMBE CLARENDON MARINE KINI BAY SKOENMAKERSKOP

PORT ELIZABETH UITENHAGE COEGA MOTHERWELL DESPATCH WELLS ESTATE KWA NOBUHLE KWAMAGXAKI (UITENHAGE) REDHOUSE KWADWESI AMSTERDAMHOEK ROCKLANDS BLOEMENDAL SWARTKOPS BETHELSDORP IBHAYI SWARTKOPS NEW BRIGHTON

KAREEDOUW WOODLANDS CLARKSON KRUISFONTEIN HUMANSDORP GAMTOOS MOUTH JEFFREYS BAY PELLSRUS PARADYSSTRAND AMANINZI ST FRANCIS LINKS SEA VISTA OYSTER BAY CAPE ST FRANCIS

50km 45km 40km 35km 30km 25km 20km 15km 10km 8.5km 5km 2km

216 46 14 15 12 525 24 13 135 67 101 11 12 22 12 10 10 10 10 7 9 101 119 676 183 978 417 7 36 47 87 7 6 153 12 77 176

0 5 10 20 30 40 50

Kilometers

Legend

- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

COORDINATE SYSTEM	Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	**Tourist Population within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2024)** SOURCE OF INFORMATION: IDEAL DATA SET	REV BY AUTH BY
PLANNING PARTNERS		DWG NO: **5.4.10** / REVISION
COMP: NJ 30/05/2024	RELEASED BY ESKOM	NOTE: For proper clarity this drawing must be printed at A3 scale.
REV		
SCALE: 1:400 000		

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5.4.7 Special Population Groups

The Technical Specification for Site Safety Reports: Demography (Eskom, 2022) requires ***Section 5.4*** to report on special population groups within a radius of 35 km from the nuclear installation(s). This distance satisfies the distance prescription in the Technical Specification for Site Safety Reports: Demography that requires information about special population groups to be collected for up to 20 miles (35 km).

Special population groups are those members of the public who are difficult to evacuate or shelter. To this end, this report focuses on the residents of the following:

- homes for the aged;
- homes for the disabled;
- children's homes;
- prisons;
- hospitals and clinics;
- educational facilities (i.e. universities, schools and day-care facilities/ early childhood development centres);
- seasonal workers;
- informal settlements.

The study area for hospitals, universities and schools was enlarged to the 50 km radius from the site as they represent key infrastructure items in the region that are relevant to emergency planning.

5.4.7.1 Data Sources and Methodology

This investigation is directed at characterising these special population groups, as well as particular types of institutions that need to be identified for emergency planning purposes. The number and distribution of persons associated with these institutions were also recorded.

Data on special population groups were sourced by means of a desktop study. Home for the aged, education facilities, homes for the disabled, children's homes, prisons, hospitals and clinics were identified via a process targeting government departments (Planning Partners, 2024b).

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Where data gaps were identified in the information received from government departments, or where there was a need to verify data, an email survey or telephonic survey was conducted. The existing data presented in the TSSR Section 5.4 (Eskom, 2015) were also consulted to identify possible data gaps.

In addition, a site survey was conducted in February 2024 with the purpose of verifying data source points and sourcing additional information.

The special population data and supporting information were presented in terms of distance and direction from the site, unless specifically noted otherwise.

Where appropriate, demographic data and supporting information were presented in tabular format and informed the creation of a GIS database that will form part of the baseline for the TSSR.

5.4.7.2 Homes for the Aged

The distribution, location and number of residents of homes for the aged are presented in ***Table 5.4.9*** and graphically illustrated in ***Drawing 5.4.11***.

There are 5 homes for the aged within 35 km of the site, with a total of approximately 1 023 residents. Homes for the aged are located in the northeast, north-northeast as well as east-northeast sectors. All homes are located further than 16 km from the site. The nearest home is the Ons Tuiste facility in Humansdorp, which has 170 residents and is located at 17.25 km north-northeast (Planning Partners, 2024b).

It must be noted that Kouga Kares home located 19.26 km east-northeast of the site, provides support services to the elderly in Jeffrey's Bay and surrounds, but does not provide accommodation services.

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Table 5.4.9
Homes for the Aged within 35 km (2023)

Code in Drawing	Name of Home	Number of Residents	Cumulative Residents	Direction	Distance (km)
HA1	Ons Tuiste	170	170	NNE	17.25
HA2	Kouga Kares	0	0	ENE	19.26
HA3	Jeffreysrus Retirement Village	150	320	NE	25.39
HA4	Amala Nursing Home	53	373	NE	26.95
HA5	Eedenglen Retirement Village	650	1 023	NE	27.99

5.4.7.3 Homes for the Disabled

There are no homes for the disabled within 35 km from the site. The nearest home for the disabled is Leonard Cheshire Home and is located in Summerstrand, 130 km to the northeast of the site (Planning Partners, 2024b).

5.4.7.4 Children's Homes

There are no children's homes located within 35 km of the site. The nearest children's home is the SOS Children's Village Port Elizabeth, located 112.1 km to the east of the site with 91 children (Planning Partners, 2024b).

5.4.7.5 Prisons

There are no prisons located within 35 km of the site. The nearest correctional service facility is located at Patensie, 42.68 km north northeast. In addition, the Department of Correctional Service's St. Albans prison is located 90 km northeast of the site (Planning Partners, 2024b).

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HANKEY

LOERIEHEUWEL

GAMTOOS MOUTH

KAREEDOUW

CLARKSON

KOU-KAMMA MUNICIPALITY (LM)

SARAH BAARTMAN DISTRICT MUN DC10

KOUGA MUNICIPALITY (LM)

KRUISFONTEIN

HUMANSDORP

JEFFREYS BAY

PELSRUS

ASTON BAY

PARADYSSTRAND

AMANINZI

ST FRANCIS LINKS

SEA VISTA

OESTERBAAI

CAPE ST FRANCIS

35 KM

30KM

25KM

20KM

16 KM

15KM

10KM

6,5KM

5KM

2KM

THYSPUNT SITE

Legend

- Enveloping Footprint
- Clinics (C)
- Early Childhood Development Centre (ECD)
- Homes for the Aged (HA)
- Informal Settlements (IS)

N W E S

0 2,5 5 10 15 20

Kilometers

COORDINATE SYSTEM Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			Eskom	SITE SAFETY REPORT FOR THYSPUNT	
PLANNING PARTNERS			Special Population Groups (35km): Clinics, Early Childhood Development Centres, Homes for the Aged & Informal Settlements.	REV BY	
				AUTH BY	
COMP	NJ	03/12/2024	SOURCE OF INFORMATION: Planning Partners	DWG NO	REVISION
REV			RELEASED BY ESKOM	5.4.11	1
SCALE	1:180 000		NOTE: For proper clarity this drawing must be printed at A3 scale.		

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5.4.7.6 Hospitals and Clinics

The location of hospitals was determined per sector and the results are presented in ***Table 5.4.10*** and are graphically illustrated in ***Drawing 5.4.12*** (Planning Partners, 2024b). In addition, the location of clinics (or community health centres) was identified and are presented in ***Table 5.4.11*** and graphically illustrated in ***Drawing 5.4.11***.

As hospitals form part of emergency support locations, data relating to hospitals were presented for the site region, i.e. up to 50 km.

There are 4 public and private hospitals located within 50 km of the site. The two nearest hospitals to the site are the P.Z. Meyer TB Hospital (17.44 km north-northeast) with 57 beds and the Life Isivivana Private Hospital (17.59 km north-northeast) with 33 beds. One hospital, the BJ Vorster Hospital, is located further than 35 km from the site. The largest proportion of the four hospitals is located in the north-northeast.

Table 5.4.10
Hospitals within 50 km (2023)

Code in Drawing	Name of Hospital	Capacity (Beds)	Cumulative Beds	Direction	Distance (km)
H1	P.Z. Meyer TB Hospital	57	57	NNE	17.44
H2	Life Isivivana Private Hospital*	33	90	NNE	17.59
H3	Humansdorp Provincial Hospital	80	170	NNE	17.60
H4	BJ Vorster Hospital	45	215	NW	46.81

* Life Isivivana Private Hospital is ending their partnership with Kouga Partnership hospital and is said to be relocated by September 2025. The Private hospital will relocate to Jeffrey's Bay.
* Jeffreys Bay Private Hospital is said to be under construction and is to have an acute 60-bed facility.

A total of 6 clinics or community health facilities are located within 35 km of the site. The Oyster Bay Care Clinic is the nearest clinic to the site (4.3 km northwest). However, it should be noted that the clinic is still undergoing renovation and is currently not in operation. The nearest operational clinics are therefore St. Francis Bay Health Care Clinic (11.7 km east) and the Humansdorp Municipality Clinic (16.91 km north-northeast) in KwaNomzamo, which are located within the site vicinity.

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Table 5.4.11
Community Health Centres/Clinics within 35 km (2023)

Code in Drawing	Name of Clinic	Direction	Distance (km)
C1	Oyster Bay Care Clinic	NW	4.3
C2	St. Francis Bay Health Care Clinic	E	11.70
C3	Humansdorp Municipality Clinic	NNE	16.91
C4	Kruisfontein Clinic	NNE	17.16
C5	Policlinic JBay Medical Clinic	NE	25.17
C6	Pellsrus Clinic	NE	25.51

5.4.7.7 Educational Facilities

Universities

It was found that there are no universities located within the site region (50 km).

There is only one tertiary education facility located within 35 km of the site, namely the Injongo Further Education and Training College. It accommodates 200 students, with 1 educator for every 20 to 30 students and is located 25 km northeast of the site in Jeffreys Bay.

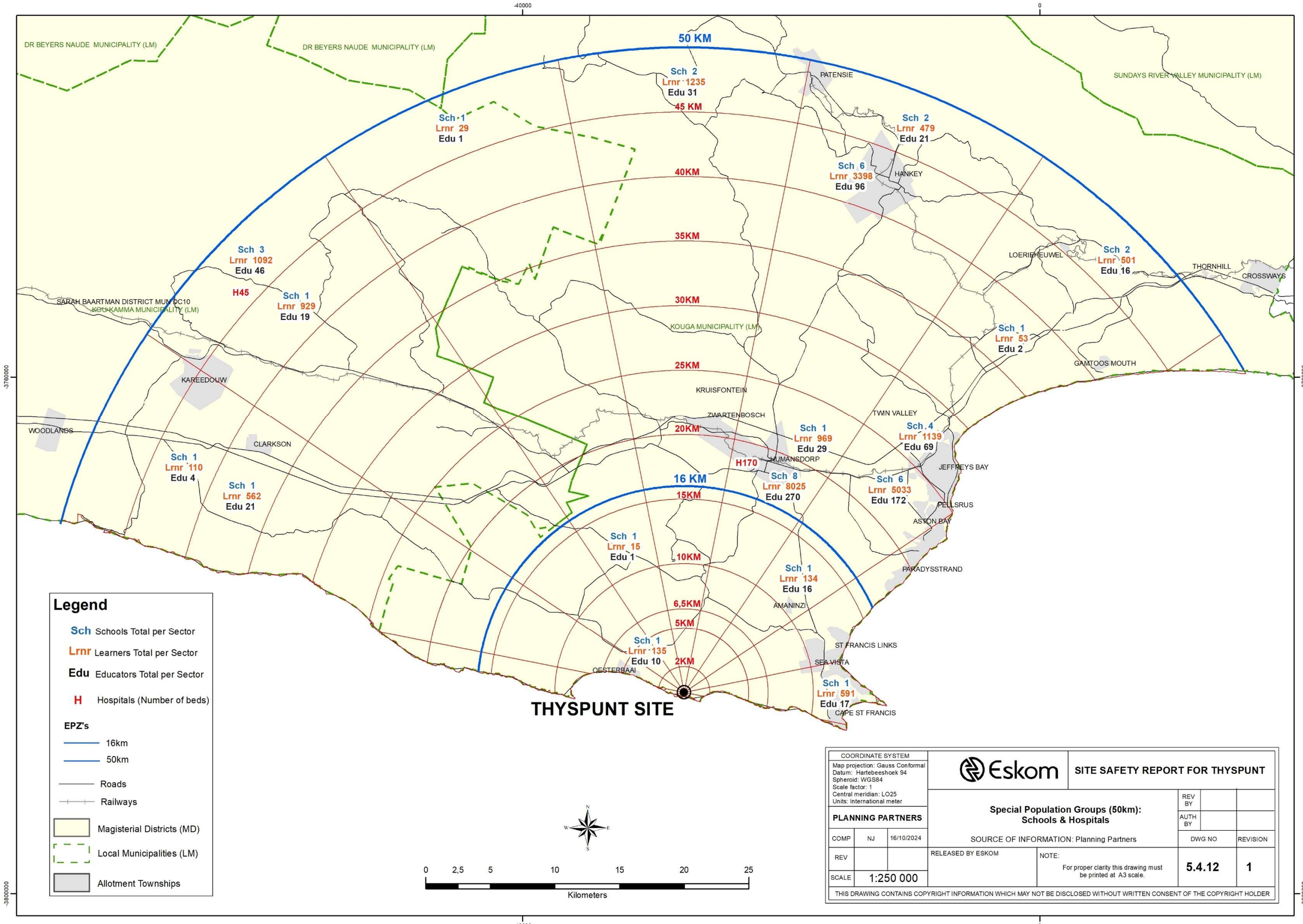
Schools

As schools may form part of emergency support locations, data relating to schools were presented up to 50 km from the site. Details on schools within 50 km of the site are included in ***Appendix 5.4.A*** and ***Appendix 5.4.N***. A summary of the number of schools per sector is shown in ***Table 5.4.12*** and a summary of the number of learners per sector is shown in ***Table 5.4.13***. ***Drawing 5.4.12*** indicates the number of schools and learners per sector. The data presented in this subsection were received from the Eastern Cape Department of Education, as well as from the *Caps* website (Planning Partners, 2024b).

A total of 43 schools are located within 50 km of the site. The 2023 enrolment figures for these schools amounted to a total of approximately 25 193 learners and approximately 841 educators.

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Legend

- **Sch** Schools Total per Sector
- **Lrnr** Learners Total per Sector
- **Edu** Educators Total per Sector
- **H** Hospitals (Number of beds)

EPZ's

- 16km
- 50km
- Roads
- Railways
- Magisterial Districts (MD)
- Local Municipalities (LM)
- Allotment Townships

COORDINATE SYSTEM			Eskom	SITE SAFETY REPORT FOR THYSPUNT		
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter					REV BY	
PLANNING PARTNERS			**Special Population Groups (50km): Schools & Hospitals**		AUTH BY	
COMP	NJ	16/10/2024	SOURCE OF INFORMATION: Planning Partners		DWG NO	REVISION
REV			RELEASED BY ESKOM	NOTE: For proper clarity this drawing must be printed at A3 scale.	**5.4.12**	**1**
SCALE	1:250 000					

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The nearest school to the site is Sandwater Farm School (4.28 km northwest) with 135 learners in 2023. Only 4 per cent of schools in the site region are located within the site vicinity with a recorded combined enrolment of approximately 875 learners in 2023.

The pattern of distribution of schools, and consequently learners, shows that concentrations are closely related to the urban centres within the site region (refer to ***Tables 5.4.12*** and ***5.4.13***). The majority of schools are located within the northwest, northeast and north-northeast sectors, accommodating 22 651 learners (89.9 per cent).

Table 5.4.12
Schools per Sector within 50 km (2023)

Radius (km)	Direction										Total
	NNW	N	NW	NE	NNE	E	WNW	SE	SSE	S	
0 – 5	-	-	1	-	-	-	-	-	-	-	**1**
5 – 10	-	-	-	-	-	-	-	-	-	-	**0**
10 – 16	1	-	-	1	-	1	-	-	-	-	**3**
16 – 20	-	-	-	-	8	-	-	-	-	-	**8**
20 – 25	-	-	-	6	1	-	-	-	-	-	**7**
25 – 30	-	-	-	4	-	-	-	-	-	-	**4**
30 – 35	-	-	-	-	-	-	-	-	-	-	**0**
35 – 40	-	-	-	1	-	-	1	-	-	-	**2**
40 – 45	-	-	2	-	6	-	1	-	-	-	**9**
45 – 50	1	2	2	2	2	-	-	-	-	-	**9**
Total	**2**	**2**	**5**	**14**	**17**	**1**	**2**	**0**	**0**	**0**	**43**

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Table 5.4.13
Learners per Sector within 50 km (2023)

Radius (km)	Direction										Total
	NNW	N	NW	NE	NNE	E	WNW	SE	SSE	S	
0 – 5	-	-	135	-	-	-	-	-	-	-	**135**
5 – 10	-	-	-	-	-	-	-	-	-	-	**0**
10 – 16	15	-	-	134	-	591	-	-	-	-	**740**
16 – 20	-	-	-	-	8 025	-	-	-	-	-	**8 025**
20 – 25	-	-	-	5 033	969	-	-	-	-	-	**6 002**
25 – 30	-	-	-	1 868	-	-	-	-	-	-	**1 868**
30 – 35	-	-	-	-	-	-	-	-	-	-	**0**
35 – 40	-	-	-	53	-	-	562	-	-	-	**615**
40 – 45	-	-	1 585	-	3 346	-	110	-	-	-	**5 041**
45 – 50	29	1 235	471	501	531	-	-	-	-	-	**2 767**
Total	**44**	**1 235**	**2 191**	**7 589**	**12 871**	**591**	**672**	**0**	**0**	**0**	**25 193**

Day-care Facilities/Early Childhood Development Centres

The distribution of day-care facilities or Early Childhood Development Centres (ECDCs) within 35 km of the site is presented in ***Appendix 5.4.B*** and ***Appendix 5.4.O*** and graphically illustrated in ***Drawing 5.4.11***. Data were obtained from the *Caps* website (Planning Partners, 2024b). A summary of the distribution of the ECDCs per sector and a summary of the number of children per sector are shown in ***Tables 5.4.14*** and ***5.4.15***, respectively. Only 11 of the 67 ECDCs are located within the site vicinity, accommodating a combined total of 308 children.

The pattern of distribution of ECDCs shows, as in the case of schools, that concentrations are closely related to the urban centres surrounding the site. These centres contain a total of approximately 2 358 children. The northeast and north-northeast segments contain 78 per cent of the ECDCs. The nearest ECDC to the site is Living Ubuntu Edu-care in Oyster Bay (4.28 km northwest) with 19 children.

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Table 5.4.14
Summary: Early Childhood Development Centres or Day-Care Centres per Sector within 35 km (2023)

Radius (km)	Direction										Total
	NNW	N	NNE	NE	ENE	E	NW	SE	SSE	S	
0 – 5	-	-	-	-	-	-	1	-	1	-	**2**
5 – 10	-	-	-	-	-	-	-	-	-	-	**0**
10 – 16	1	-	-	1	1	5	-	-	1	-	**9**
16 – 20	-	5	23	-	-	-	-	-	-	-	**28**
20 – 25	-	-	-	14	-	-	-	-	-	-	**14**
25 – 30	-	-	-	14	-	-	-	-	-	-	**14**
30 – 35	-	-	-	-	-	-	-	-	-	-	**0**
Total	**1**	**5**	**23**	**29**	**1**	**5**	**1**	**0**	**2**	**0**	**67**

Table 5.4.15
Summary: Children at Early Childhood Development Centres or Day-Care Centres per Sector within 35 km (2023)

Radius (km)	Direction										Total
	NNW	N	NNE	NE	ENE	E	NW	SE	WNW	S	
0 – 5	-	-	-	-	-	-	19	-	20	-	**39**
5 – 10	-	-	-	-	-	-	-	-	-	-	**0**
10 – 16	7	-	-	53	-	200	-	-	9	-	**269**
16 – 20	-	162	736	-	-	-	-	-	-	-	**898**
20 – 25	-	-	-	465	-	-	-	-	-	-	**465**
25 – 30	-	-	-	687	-	-	-	-	-	-	**687**
30 – 35	-	-	-	-	-	-	-	-	-	-	**0**
Total	**7**	**162**	**736**	**1 205**	**0**	**200**	**19**	**0**	**29**	**0**	**2 358**

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5.4.7.8 Seasonal Workers

According to the Citrus Growers' Association of Southern Africa (Citrus Growers' Association of Southern Africa, 2024) a total of approximately 1 800 seasonal workers are employed by the citrus industry within the site region. The workers are concentrated around Hankey and Patensie.

The citrus season stretches from April to October, with the most seasonal workers employed in the peak season around May to August. Most of the workers are South African, with approximately 20 per cent from outside the country. The workers are either pickers (harvesters in orchards) or packers (packing fruit at warehouses).

5.4.7.9 Informal Settlements

A number of informal settlements were identified within 35 km of the site. The location of these settlements and their estimated number of informal housing structures (2023) are presented in ***Table 5.4.16*** and ***Drawing 5.4.11***.

For the purposes of emergency planning, informal settlements should be regarded as a vulnerable population group that would require assistance in the event of a nuclear incident. Data regarding informal settlements were obtained from the Kouga Local Municipality Land and Evaluation Department officials (Planning Partners, 2024b) and is based on satellite survey information conducted by the Municipality.

A total of 18 informal settlements was identified by the Municipality located within 35 km of the nuclear installation(s) in 2023. The approximate total of these informal structures was calculated by using aerial photography from *Google Earth* and counting all the informal dwellings from the list of informal settlements provided by the Kouga Local Municipality.

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Table 5.4.16
Informal Settlements within 35 km (2023)

Code in Drawing	Name of Settlement	Number of Shacks	Direction	Distance (km)
IS1	Umzamowethu - Oyster Bay	179	NW	5.00
IS2	Sea Vista - St. Francis Bay	609	E	13.28
IS3	Golf Course 153 - Humansdorp	347	NNE	21.05
IS4	Beda Street - Humansdorp	55	NNE	21.37
IS5	Golf Course 400 - Humansdorp	209	NNE	21.53
IS6	Bungalows - Humansdorp	267	NNE	21.53
IS7	Polar Park - Humansdorp	425	NNE	21.93
IS8	Polar Park Sewer - Humansdorp	351	NNE	21.96
IS9	Shukushukuma - Humansdorp	94	NNE	22.17
IS10	Mooi Uitsig - Humansdorp	517	NNE	23.50
IS11	Donkerhoek - Humansdorp	320	NNE	23.97
IS12	Hopeville - Humansdorp	121	N	25.32
IS13	Ebumnyameni - Jeffreys Bay	267	NE	28.35
IS14	London - Jeffreys Bay	157	NE	28.67
IS15	New Rest - Jeffreys Bay	301	NE	28.88
IS16	Transit Camp - Jeffreys Bay	147	NE	29.25
IS17	NoTen Rand - Jeffreys Bay	119	NE	29.24
IS18	Chris Hani - Pellsrus	514	NE	29.29
	Total	**4 999**		

5.4.8 Projected Population Distribution

5.4.8.1 Permanent Population Projection

The permanent population was projected within the 50 km radius around the site up to the year 2130, representing the estimated lifetime of the nuclear installation(s).

Population projections for the permanent population were calculated based on existing reputable growth rates that were estimated for the area, spatial planning directives and known growth rates (e.g. comparing

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current census data with previous census data for the area, estimated growth rates as obtained from local authorities and allocation of population numbers to sectors envisaged for future growth and development). A description and motivation of the growth rates applied are presented below, together with the basis for the projections and the methodology and sources used. Assumptions have also been stated and the reasons for such assumptions.

The population was projected in ten-year intervals for the lifetime of the nuclear installation(s).

For spatial planning purposes in South Africa, projections of population numbers and distribution are normally undertaken for a maximum period of 20 years. This constitutes best practice, as various factors influence population data and growth within a particular geographical region. Such factors include, *inter alia*, fertility rates, birth rates, infection rates of HIV/AIDS[2] and tuberculosis, death rates, migration, government policies and spending (e.g. economic policies, spatial policies such as the identification of new development nodes). These factors fluctuate over time and cannot be reliably foreseen over long periods. Subsequently, the reliability of projections of population numbers and distribution decreases over time.

A previous study regarding population projections for the City of Cape Town, conducted by Professor R.E. Dorrington from the University of Cape Town, Centre for Actuarial Research, opened with the following statement (Eskom, 2015):

> "*Estimating and projecting the South African population has never been an easy task because of the paucity of data and the heterogeneous nature of the population. Such work is an order of magnitude more difficult at a regional level where migration is far more significant and not documented at all, and where there may be poorly understood regional deviations in fertility and mortality."*

The projected population figures referred to below need to be read and/or utilised with the abovementioned statement in mind. It can be expected that population growth rates and distribution will fluctuate over time depending on socio-economic conditions and variables.

As population data and growth rates are to a large extent dependent on variable factors, it is essential to update or confirm population distribution

[2] Human immunodeficiency virus (HIV)/Acquired immune deficiency syndrome or acquired immunodeficiency syndrome (AIDS).

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data and projected population data on a regular basis, e.g. shortly after the completion of national censuses and the release of the data.

Notwithstanding the above, to comply with the regulatory requirements and supporting guidance presented in ***Subsection 5.4.3*** (Regulatory Framework), population projections need to be undertaken for the life expectancy of the nuclear installation(s). For this reason, population growth within the 50 km radius around the site was projected up to 2130.

The methodology to estimate the projected population within the 50 km radius around the nuclear installation(s) contained a number of steps. As a base, the population growth rate between 2001 and 2011 was calculated for the area within the 50 km radius by comparing the 2001 Census data and the 2011 Census data (Statistics South Africa, 2011). The results of this analysis are shown in ***Table 5.4.17*** below.

The Ideal Dataset for the Demographic Universe by ESRI South Africa and IRL Consulting (ESRI South Africa and IRL Consulting, 2022) served as baseline population data. This represents the most recent and detailed representation of population data within the site region. The 2022 Demographic Universe figures were used to determine the annual growth rate between 2011 and 2022 for the area within the 50 km radius. The results of this analysis are shown in ***Table 5.4.17*** below.

The Demographic Universe is the population/demographic dataset providing up-to-date metrics on various demographic and socio-economic attributes of a sub-place (suburb, village, small town, etcetera). The attributes include, *inter alia*, the total population per sub-place; the Census 2011 figures and updates for 2011, 2020, 2021 and 2022; age and gender; number of households; percentage of sub-place covered by residential land cover; crime statistics; total visitors to the sub-place on an average day; footfall density; and the net 'in' and 'outflow' of people in a sub-place.

The 2022 estimate of population per sub-place is based on the 2020 and 2021 estimates where a historical District Municipality growth factor was applied. The National Land Cover and School Enrolment datasets were also used to attach confidence scores to each estimate, as an indication of how much confidence may be placed in the estimate. For each sub-place, the ratio of built-up area (residential, industrial, and commercial land use from the National Land Cover) between 2013 and 2020 was compared to the ratio between the recorded population in 2011 and the predicted population in 2020. Additionally, at a main-place level, the ratio of school learners in 2011 and 2020 was compared to the ratio between the recorded population in 2011 and the predicted population in

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2020.

A comparison between the 2011 and 2021 projected population as contained in the TSSR Section 5.4, Rev 0 (Eskom, 2015) and the results of the 2011 census data (Statistics South Africa, 2011) and Ideal Dataset for the Demographic Universe, 2022 (ESRI South Africa and IRL Consulting, 2022) was also undertaken. The results indicate that the 2011 and 2021 permanent population within the 50 km radius was underestimated by approximately 10 per cent in the TSSR Section 5.4, Rev 0 (Eskom, 2015). The underestimation can probably (and partially) be attributed to the impact of the Covid 19 epidemic which, according to anecdotal evidence, resulted in a large proportion of holiday homes along the coast now being permanently occupied.

This underestimation of the 2011 and 2021 projected population figures will also have a knock-on effect on the projected population numbers that had been estimated for subsequent year intervals in the TSSR Section 5.4, Rev 0 (Eskom, 2015).

The population projections and growth rates for urban settlements in the Kouga and Koukamma municipal areas, contained in the 2021 Kouga Spatial Development Framework (Kouga Local Municipality, 2021) and the 2023 Koukamma Spatial Development Framework (Koukamma Local Municipality, 2023) were also considered. These growth rates were compared with the 2001 to 2011, and 2011 to 2022 growth rates to estimate the growth rates for subsequent periods. The projected population within the 50 km radius is based on the growth rates shown in ***Table 5.4.17*** below.

It can be expected that population growth rates will fluctuate over time within the 50 km radius, depending on socio-economic conditions and variables. In the absence of any new substantial growth nodes being established in the immediate area surrounding the site, it is expected that population growth rates will decrease over the next 20 years and more. Expected growth rates within the 50 km radius around the site have therefore been adjusted downwards after 2036. For lack of any other data, this nominal downward trend was applied until 2130.

Adjustments to the distribution of population numbers were made based on the location of current and expected growth areas as proposed in the current municipal spatial development frameworks. Both the Kouga (Kouga Local Municipality, 2021) and Koukamma Spatial Development Frameworks (Koukamma Local Municipality, 2023) promote a transition towards a more compact urban form, which is regarded as more resilient and sustainable. The frameworks do however also provide for the

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development of currently undeveloped land on the fringes of existing settlements. The Kouga Spatial Development Framework notes that farming areas have declined in population between 1996 and 2016. It is expected that the population growth rate for the areas outside existing settlements will continue to decline over the next 20 years, whereafter it should stabilise.

The growth rates applied in the area within 50 km from the site are indicated in ***Table 5.4.17*** *below*.

Table 5.4.17
Population Growth Rates Applied

2001-2011 (Stats SA Data)	2011-2022 (Ideal Dataset)	2022-2024	2024-2036	2036-2096	2096-2130
3.8	1.6	1.8	1.9	0.8	-0.003

A construction staff component of the nuclear installation(s) of 2 452 (i.e. 5 765 persons at an average household size of approximately 3.5 people) was included in the 2026 population.

The permanent staff component of the nuclear installation(s) was also incorporated in the population projections from 2036 onwards. A permanent staff of 1 385 employees was considered, which equate to 4 753 persons at an average household size of 3.5 people per household.

The estimations are based on the following calculations made to determine either the end population or the growth rate for the projected population in each sector (Eskom, 2022):

$$End\ Population = P_1 \times (1 + (g \div 100))^n$$

Where: P_1 *= population at beginning of period;*

g *= growth rate;*

n *= period in years.*

or

$$Growth\ Rate = ((P_2 \div P_1)^{1 \div n} - 1) \times 100$$

Where: P_1 *= population at beginning of period;*

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P_2 = end population;

n = period in years.

The permanent population distribution was projected from 2022 to 2130, in ten-year intervals, for an area up to 16 km and 50 km respectfully from the nuclear installation(s). The results are presented in ***Figures 5.4.10*** to ***5.4.15*** *and* ***Drawings 5.4.13*** to ***5.4.16*** below, and in ***Appendices 5.4.P*** and ***5.4.Q.*** The population projections within the 50 km radius around the nuclear installation(s) indicate, *inter alia*, approximately:

- 123 970 persons in 2024;
- 156 010 persons in 2036;
- 245 320 persons in 2096;
- 245 034 persons in 2130.

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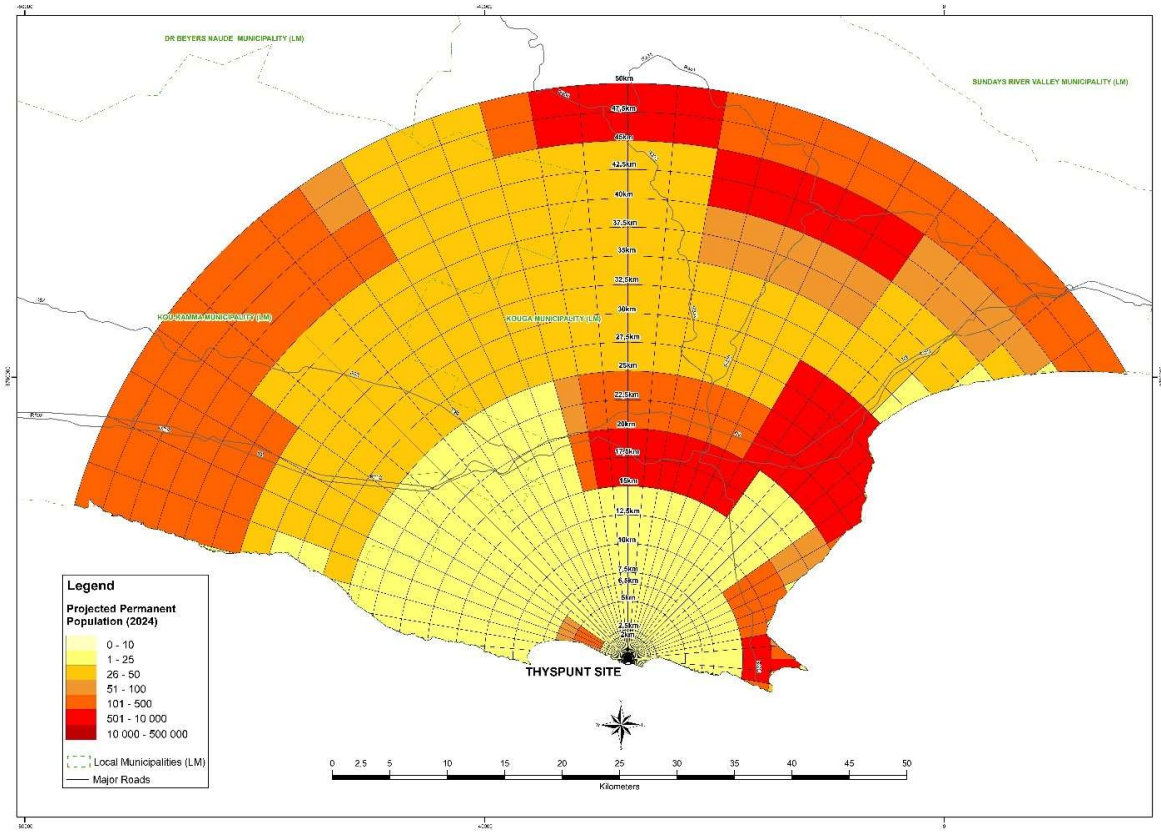


Figure 5.4.10
Projected Permanent Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024)

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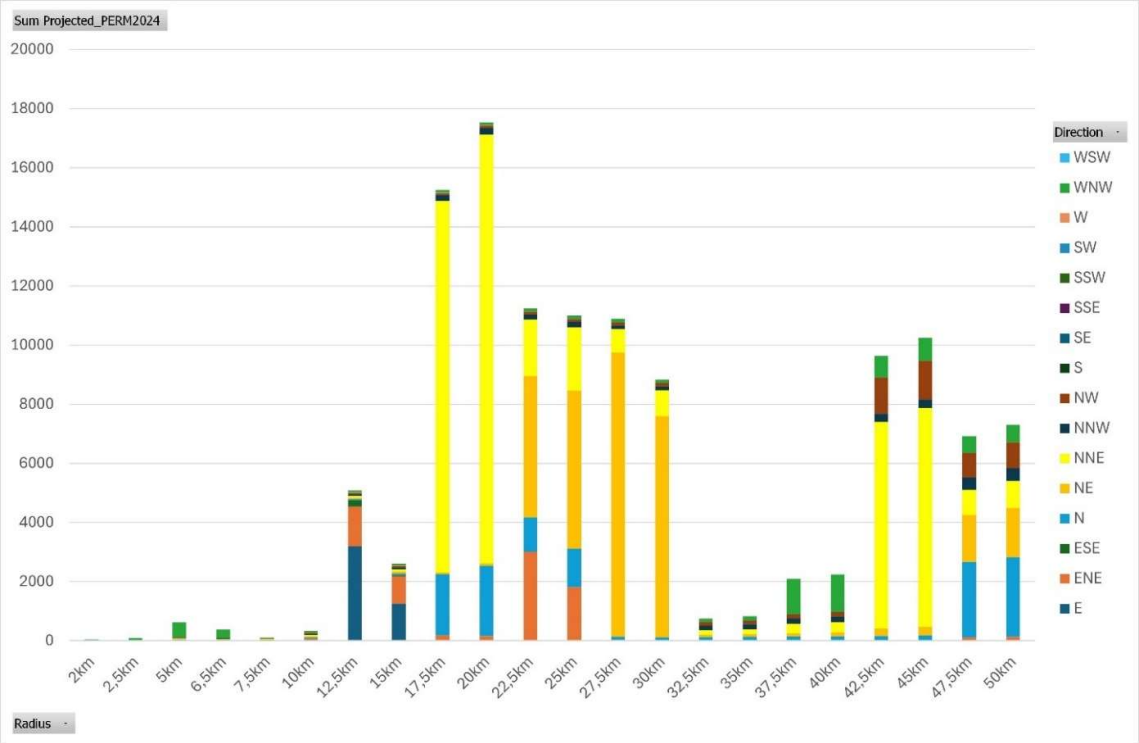


Figure 5.4.11
Projected Permanent Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024)

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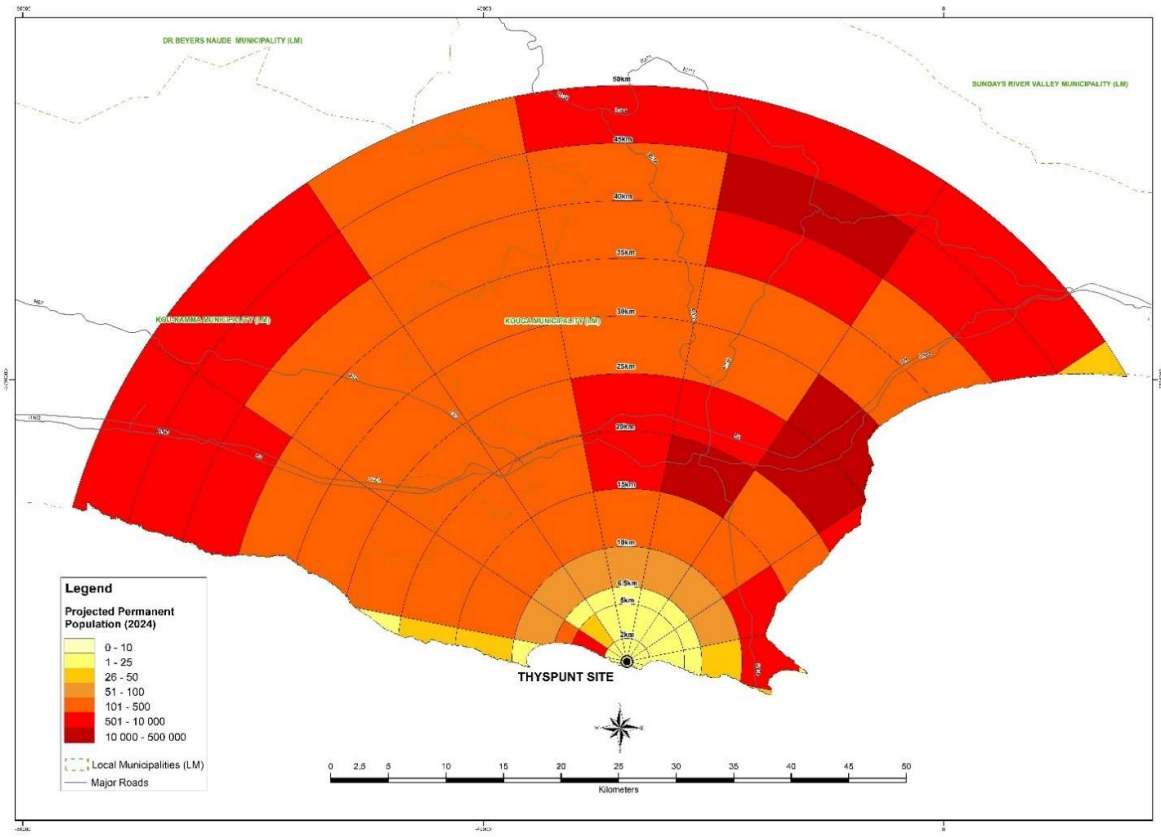


Figure 5.4.12
Projected Permanent Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2024)

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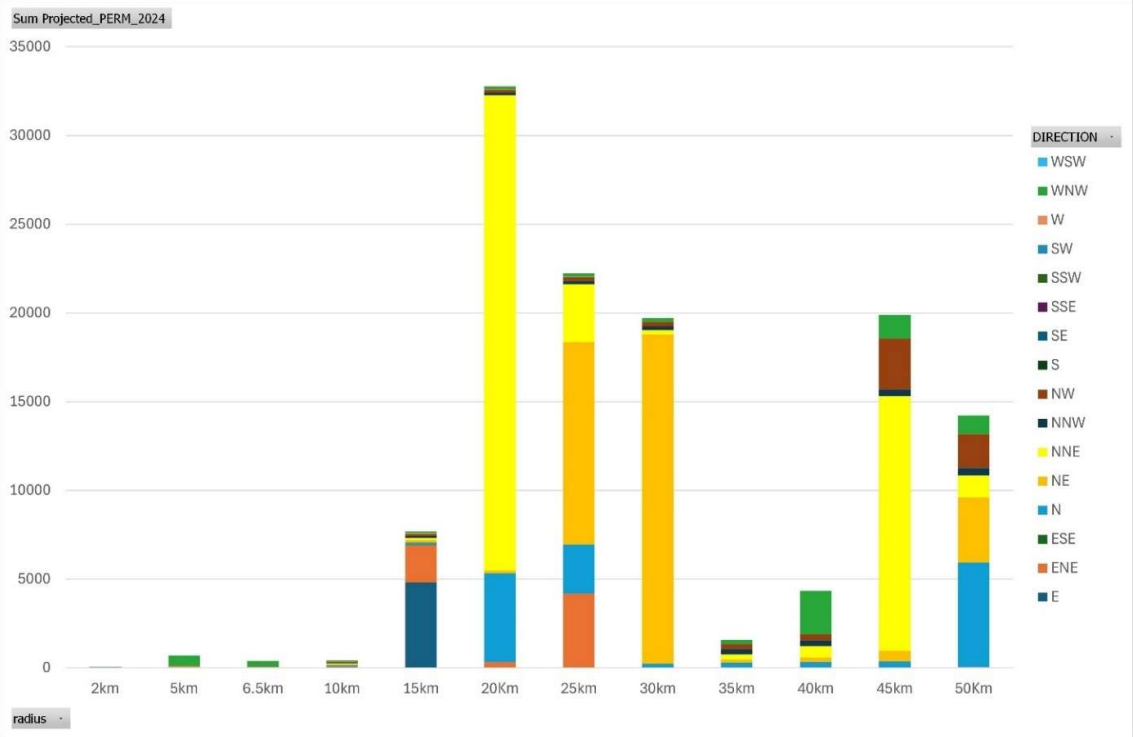


Figure 5.4.13
Projected Permanent Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50km (2024)

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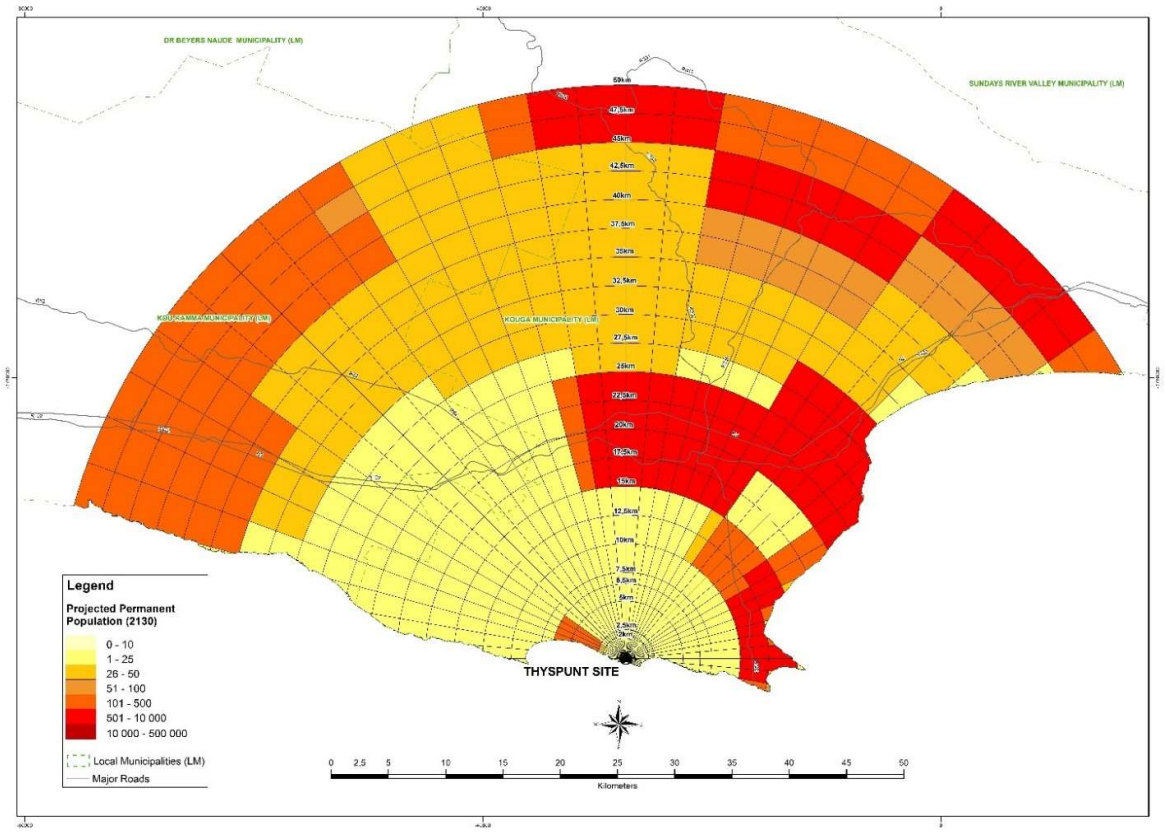


Figure 5.4.14
Projected Permanent Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2130)

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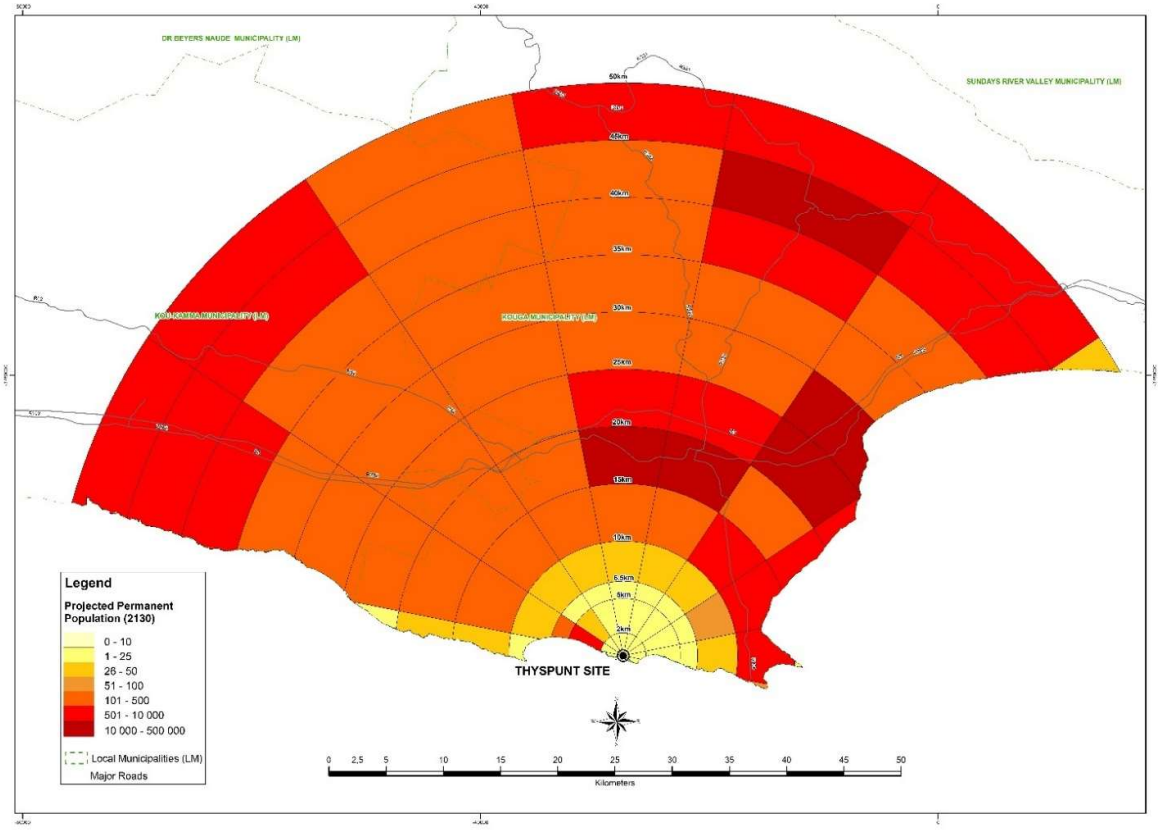
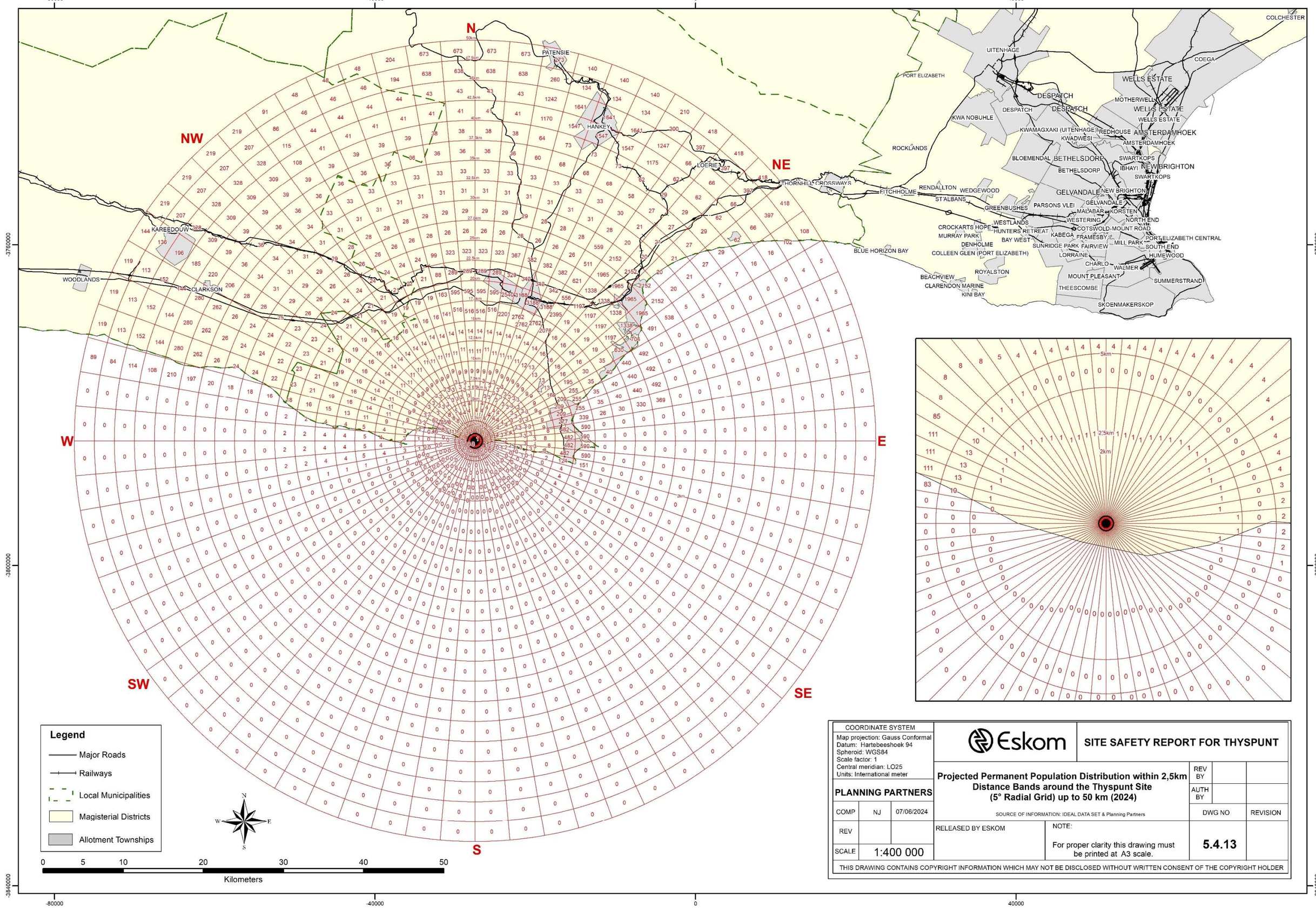


Figure 5.4.15
Projected Permanent Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2130)

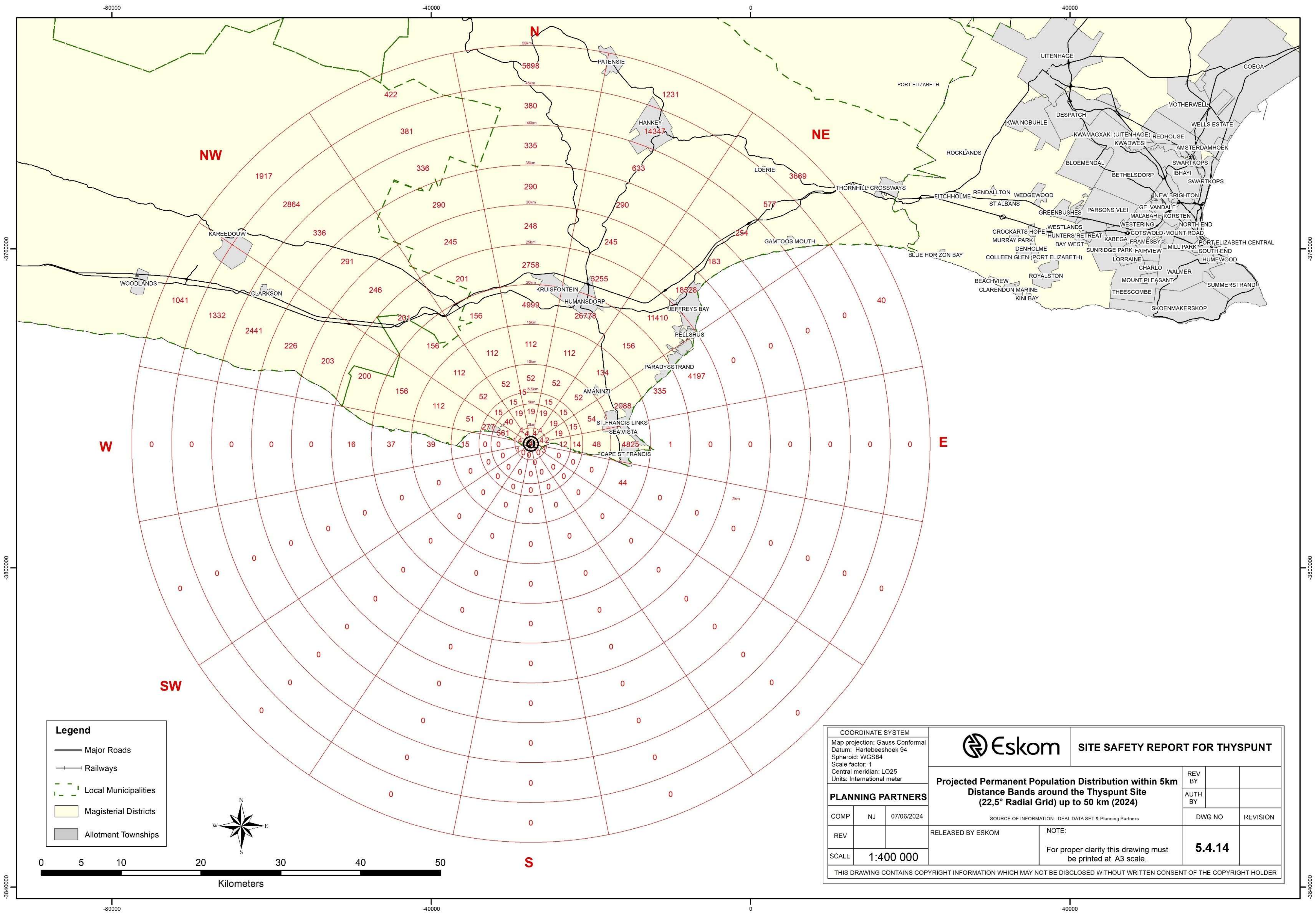
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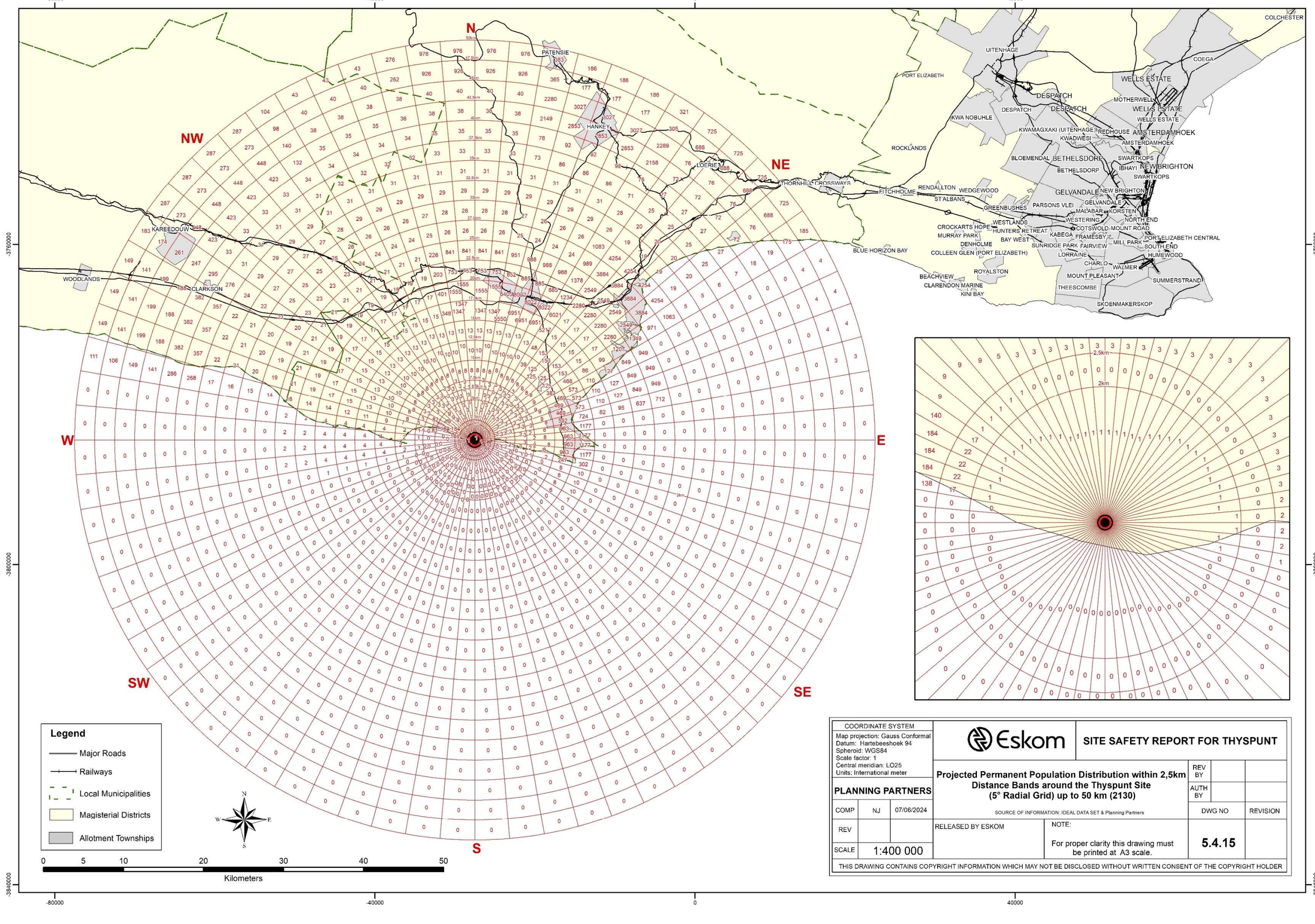
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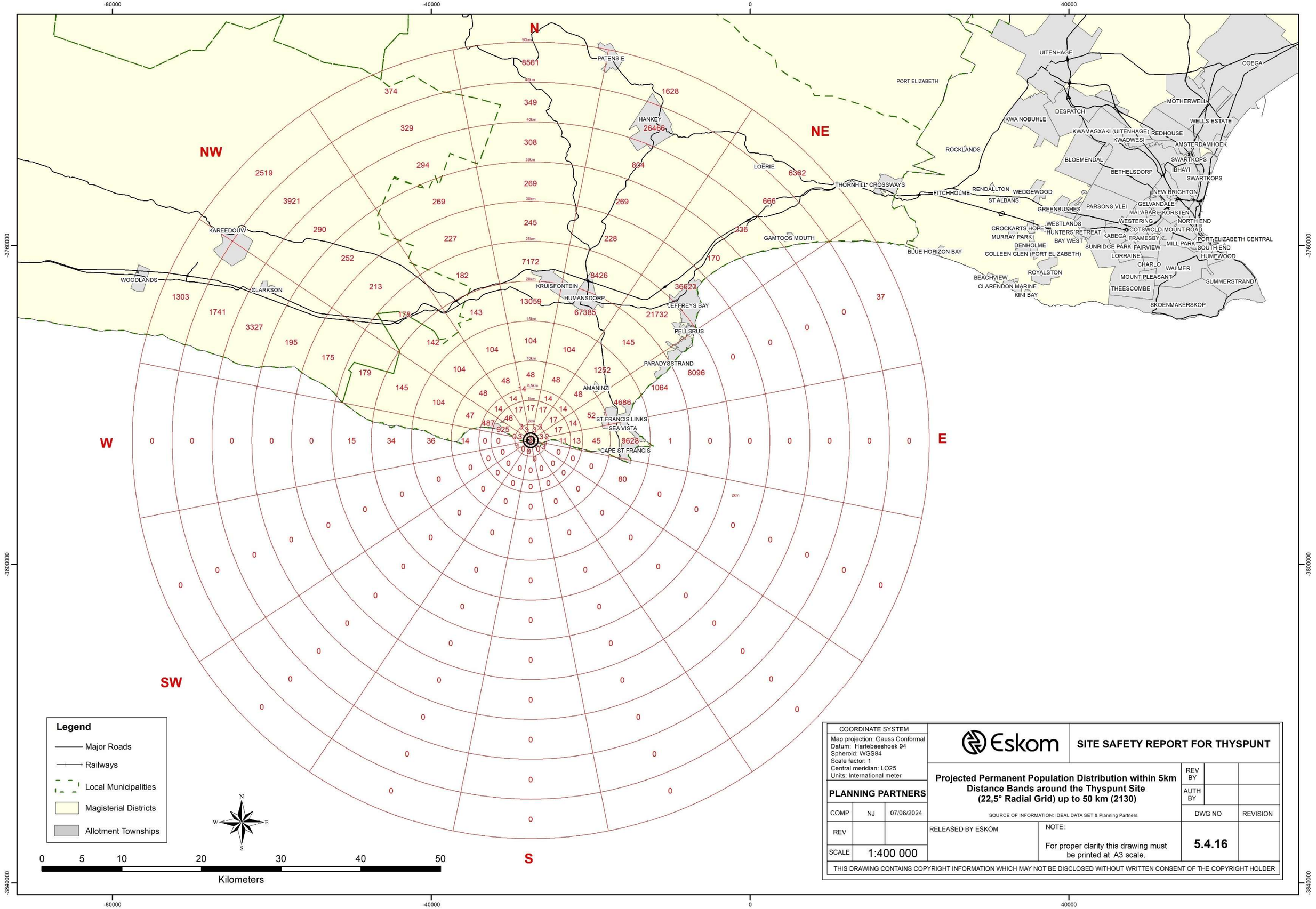
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KRUISFONTEIN
HUMANSDORP
JEFFREYS BAY
PELLSRUS
PARADYSSTRAND
AMANINZI
ST FRANCIS LINKS
SEA VISTA
CAPE ST FRANCIS
PORT ELIZABETH
UITENHAGE
COEGA
BLUE HORIZON BAY
Legend
Major Roads
Railways
Local Municipalities
Magisterial Districts
Allotment Townships
Kilometers
COORDINATE SYSTEM
Map projection: Gauss Conformal
Datum: Hartebeeshoek 94
Spheroid: WGS84
Scale factor: 1
Central meridian: LO25
Units: International meter
PLANNING PARTNERS
COMP NJ 07/06/2024
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SCALE 1:400 000
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SITE SAFETY REPORT FOR THYSPUNT
Projected Permanent Population Distribution within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2024)
SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners
REV BY
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Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			Projected Permanent Population Distribution within 2,5km Distance Bands around the Thyspunt Site (5° Radial Grid) up to 50 km (2130)	REV BY / AUTH BY
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COORDINATE SYSTEM			Eskom	SITE SAFETY REPORT FOR THYSPUNT	
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			Projected Permanent Population Distribution within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2130)	REV BY	
PLANNING PARTNERS			SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners	AUTH BY	
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5.4.8.2 Population Density

Population densities were analysed in order to determine whether they exceed the international guidance provided by the US NRC Regulatory Guide 4.7, General Site Suitability Criteria for Nuclear Power Stations (U.S. Nuclear Regulatory Commission, 2014) and the EPRI Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities (Electric Power Research Institute, 2022) contained in ***Subsection 5.4.3.2*** (Guideline Documents). In this regard, emphasis is placed on the benchmark of a density of approximately 200 persons/km² and not the size of the population centre, as a large portion within the 50 km radius consists of ocean, i.e. does not contain residents. Please note that the referenced documents above act only as a guide and are not NNR requirements.

The analysis of the population and population density around the site includes the following:

- vicinity population and population density per sector (2024);
- regional population and population density per sector (2024);
- vicinity population and population density per sector (2036);
- regional population and population density per sector (2036);
- vicinity population and population density per sector (2096);
- regional population and population density per sector (2096);
- vicinity population and population density per sector (2130);
- regional population and population density per sector (2130).

The vicinity population density was analysed for the 2 km, 5 km, 6.5 km, 10 km and 16 km distance annuli and 22.5º radial grids. The results are presented in ***Figures 5.4.16***, ***5.4.18***, ***5.4.20*** and ***5.4.22*** below.

The regional population density is presented for annuli spaced 5 km apart and 22.5º radial grids within 50 km from the nuclear installation(s). The results for this analysis are presented in ***Figures 5.4.17***, ***5.4.19***, ***5.4.21*** and ***5.4.23***.

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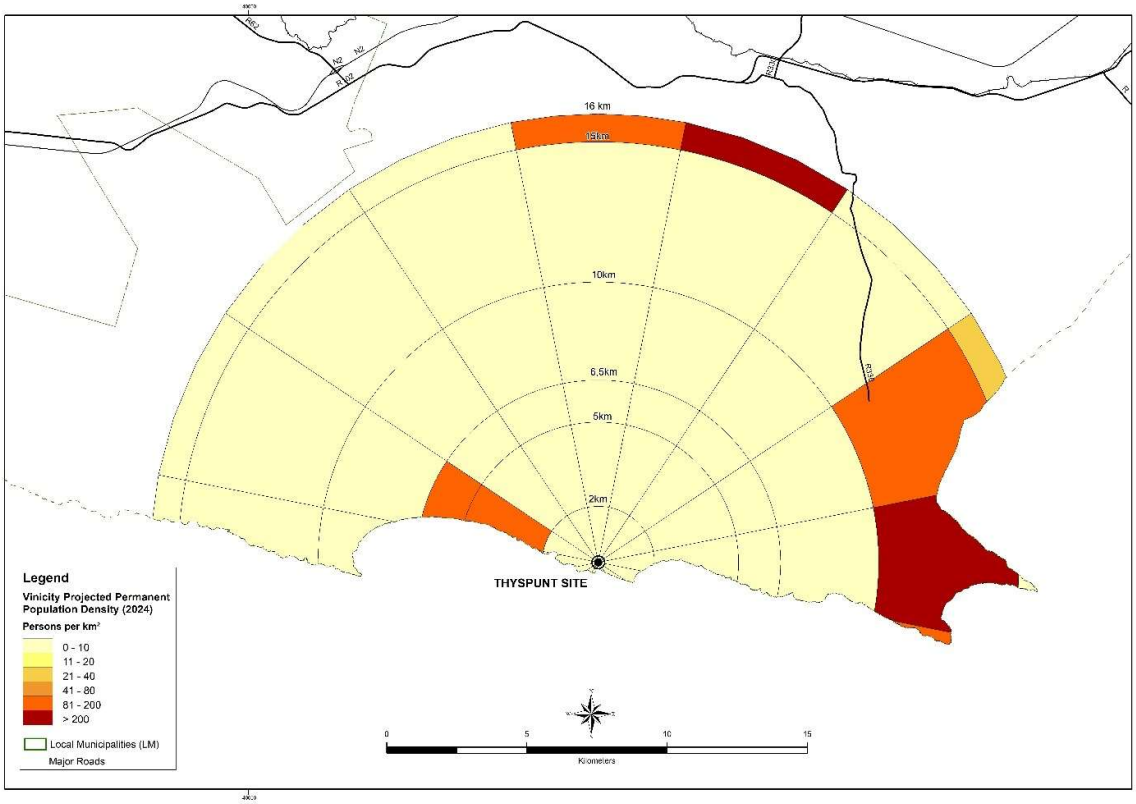


Figure 5.4.16
Projected Vicinity Permanent Population Density (2024)

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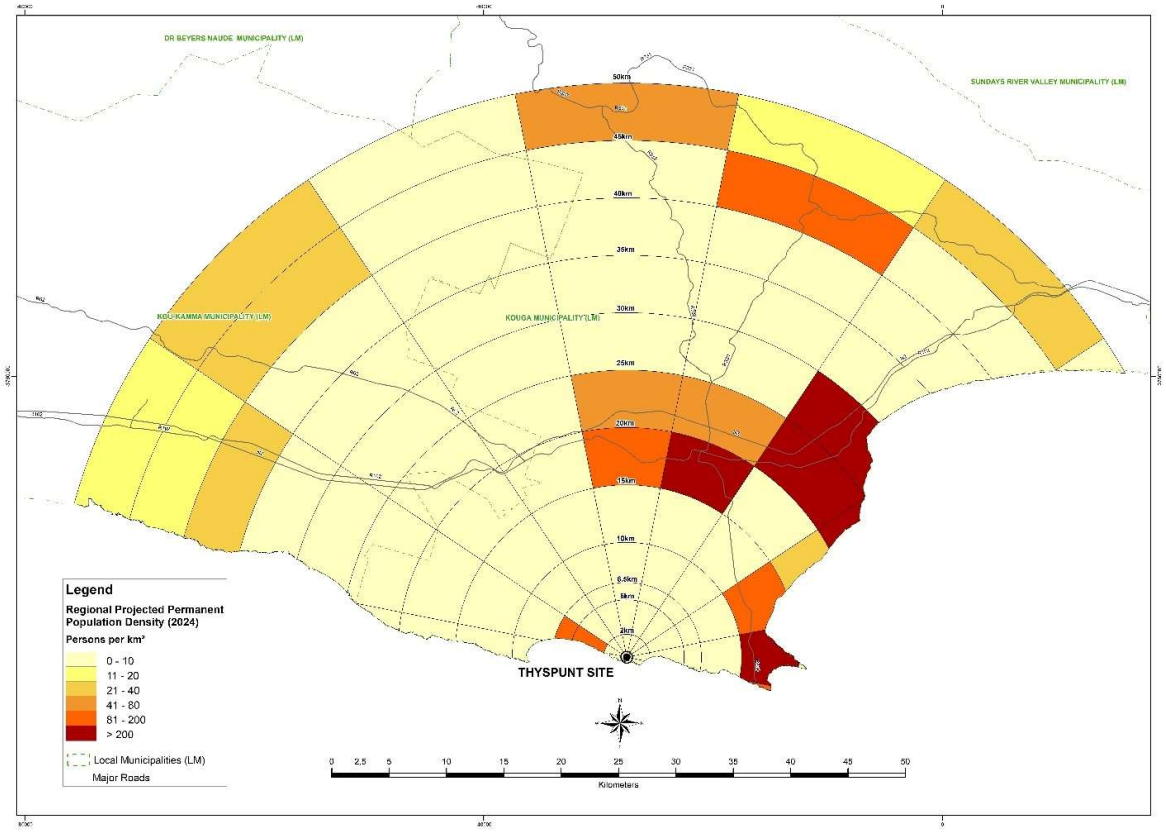


Figure 5.4.17
Projected Regional Permanent Population Density (2024)

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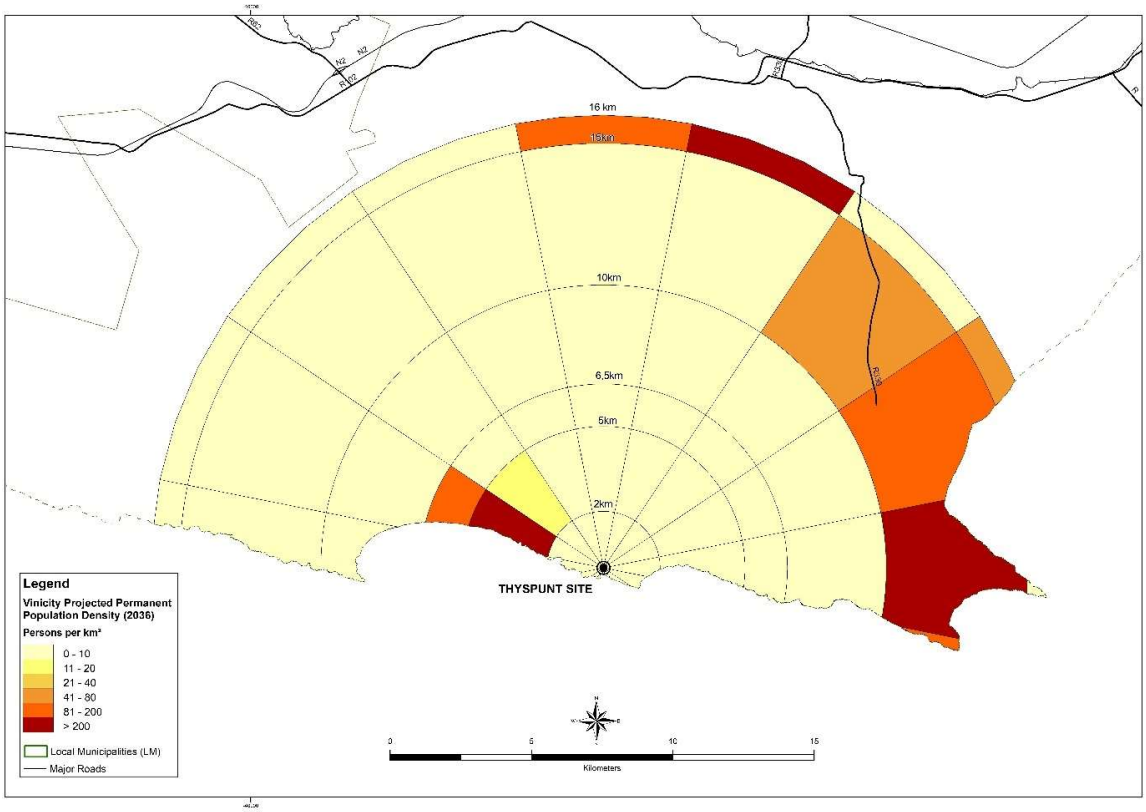


Figure 5.4.18
Projected Vicinity Permanent Population Density (2036)

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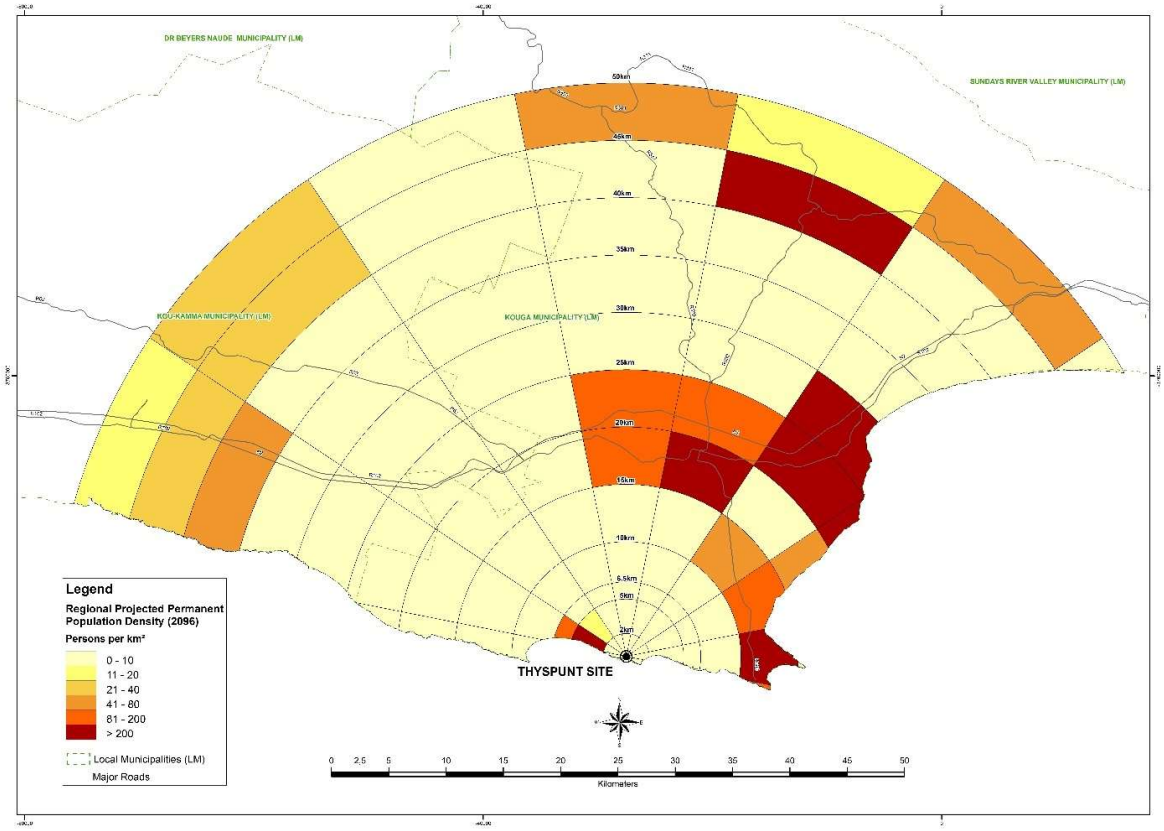


Figure 5.4.19
Projected Regional Permanent Population Density (2036)

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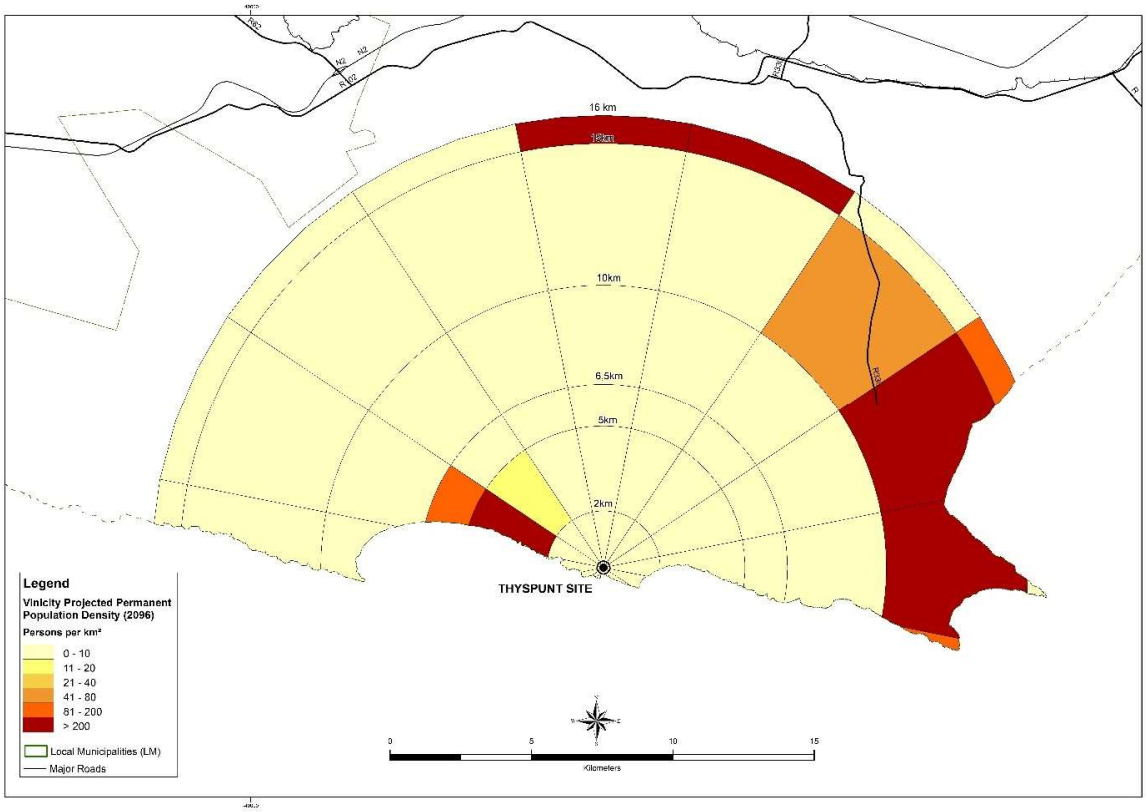


Figure 5.4.20
Projected Vicinity Permanent Population Density (2096)

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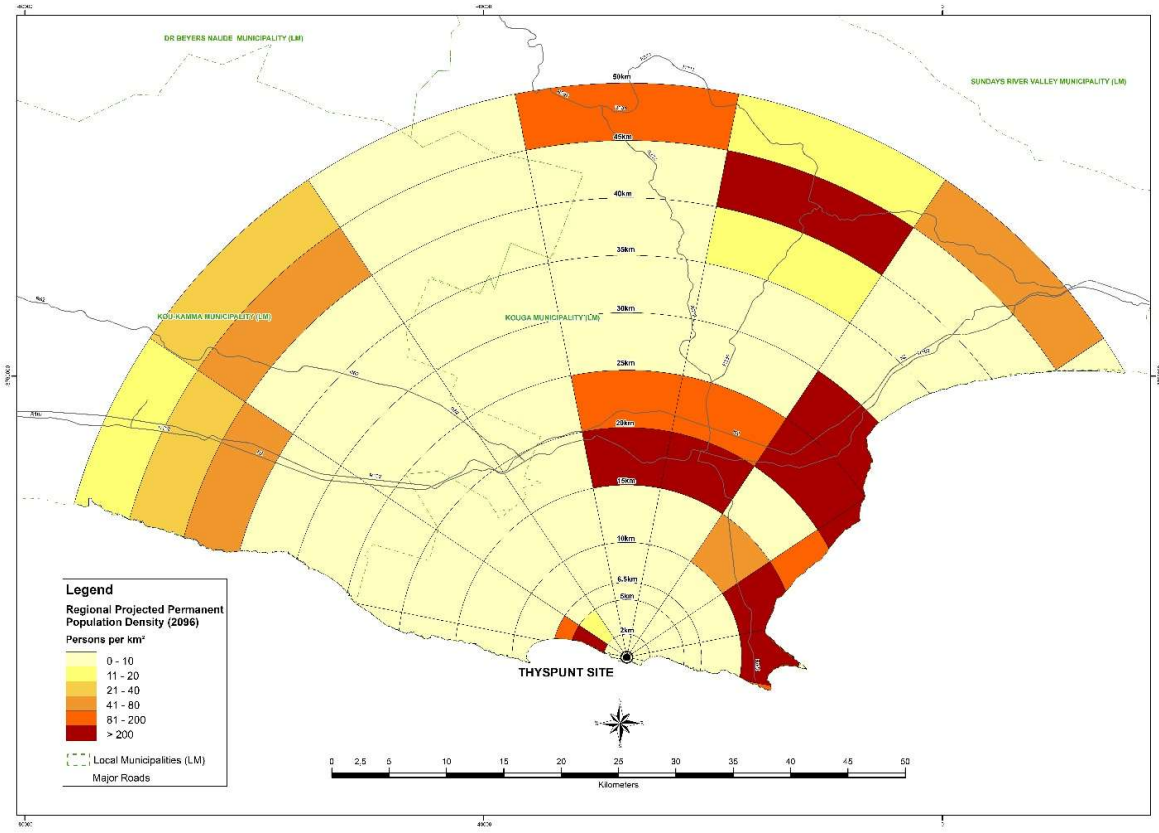


Figure 5.4.21
Projected Regional Permanent Population Density (2096)

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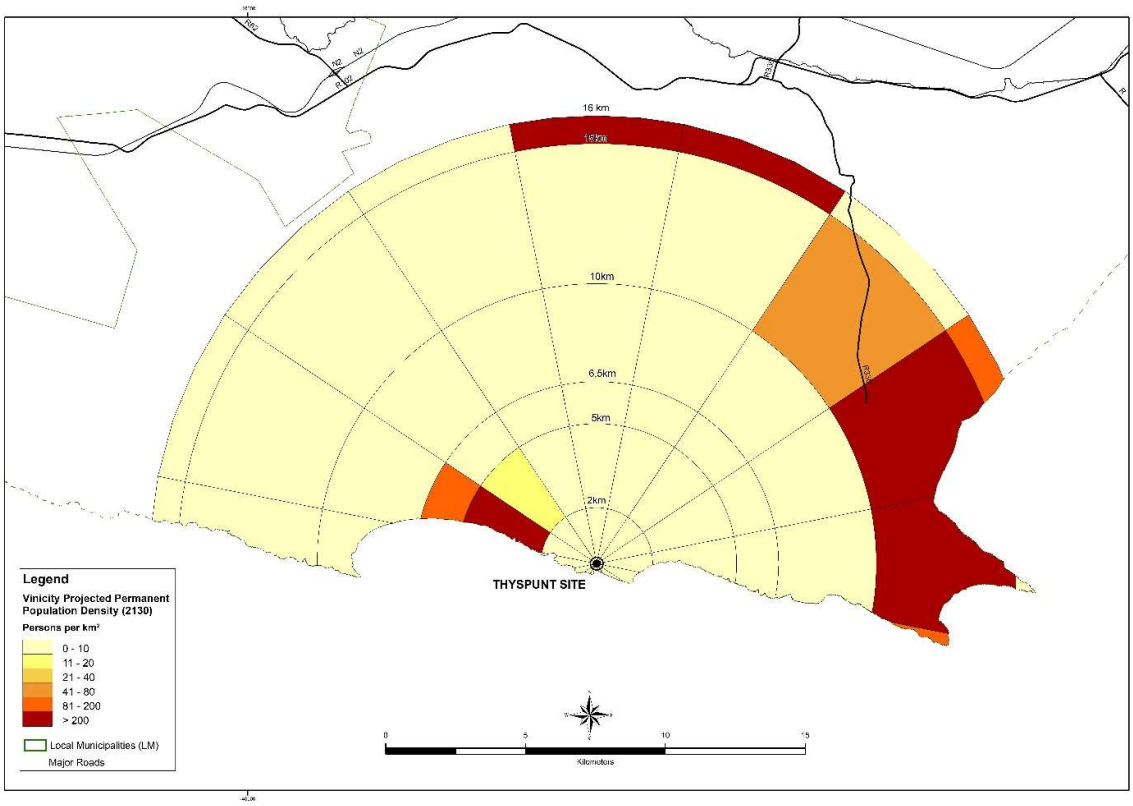


Figure 5.4.22
Projected Vicinity Permanent Population Density (2130)

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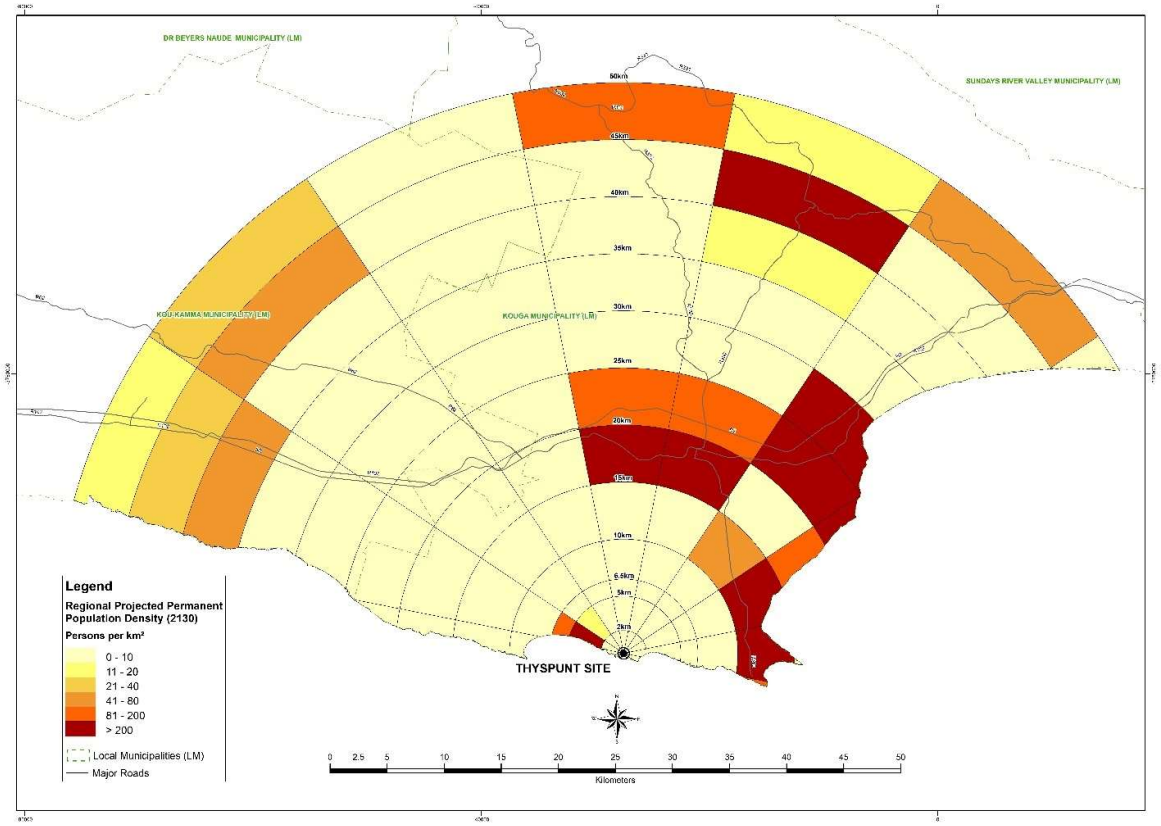


Figure 5.4.23
Projected Regional Permanent Population Density (2130)

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The following indicates the estimated population density with respect to various annuli within 50 km from the site centroid as extracted from the results of the analysis (refer to ***Appendices 5.4.P*** and ***5.4.Q***):

- **2 km Radius**

  The average population density within the 2 km radius (i.e. an area of approximately 7 km²) is projected to be approximately 5 persons/km² in 2024, approximately 4 persons/km² in 2036, approximately 4 persons/km² in 2096 and approximately 4 persons/km² by 2130.

- **5 km Radius**

  The average population density within the 5 km radius (i.e. an area of approximately 38 km^2) is projected to be approximately 19 persons/km^2 in 2024, approximately 25 persons/km^2 in 2036, approximately 30 persons/km^2 in 2096 and approximately 29 persons/km^2 by 2130.

  However, one localised sector or settlement (Oyster Bay, west-northwest) is estimated to exceed 200 persons/km² by 2130.

- **6.5 km Radius**

  The average population density within the 6.5 km radius (i.e. an area of approximately 64 km^2) is projected to be approximately 18 persons/km^2 in 2024, approximately 23 persons/km^2 in 2036, approximately 27 persons/km^2 in 2096 and approximately 26 persons/km^2 by 2130.

  However, one localised sector or settlement (Oyster Bay, west-northwest) is estimated to exceed 200 persons/km² by 2130.

- **16 km Radius**

  The average population density within the 16 km radius (i.e. an area of approximately 388 km^2) is projected to be approximately 32 persons/km^2 in 2024, approximately 45 persons/km^2 in 2036, approximately 70 persons/km^2 in 2096 and approximately 70 persons/km^2 by 2130.

  However, five localised sectors or settlements (Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, and portions of Humansdorp, north and north-northeast) are

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estimated to exceed 200 persons/km² by 2130.

- **35 km Radius**

  The average population density within the 35 km radius (i.e. area of approximately 1 494 km^2) is projected to be approximately 57 persons/km^2 in 2024, approximately 75 persons/km^2 in 2036, approximately 124 persons/km^2 in 2096 and approximately 124 persons/km^2 by 2130.

  However, eight localised sectors or settlements (Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, portions of Humansdorp, north and north-northeast, Jeffreys Bay, Aston Bay Pellsrus and Paradysstrand, northwest/west-northwest) are estimated to exceed 200 persons/km² by 2130.

- **50 km Radius**

  The average population density within the 50 km radius (i.e. approximately 2 935 km^2) is projected to be approximately 42 persons/km^2 in 2024, approximately 53 persons/km^2 in 2036, approximately 84 persons/km^2 in 2096 and approximately 83 persons/km^2 by 2130.

  However, nine localised sectors or settlements (Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, portions of Humansdorp, north and north-northeast, Jeffreys Bay, Aston Bay Pellsrus and Paradysstrand, northwest/west-northwest, and Hankey, north-northwest) are estimated to exceed 200 persons/km² by 2130.

The population projections indicate that the site conforms to the abovementioned international guidance with regard to average populations densities. However, nine localised sectors or settlements are estimated to exceed a density of 200 persons/km² by 2130.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework (Kouga Local Municipality, 2021) to control development around the nuclear installation(s).

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Table 5.4.18
Projected Permanent Population Density (2024, 2036, 2096 and 2130)

	Radius					
	2 km	**5 km**	**6.5 km**	**16 km**	**35 km**	**50 km**
Land Area (km²)	7	38	64	388	1 494	2 935
2024						
Number of People	33	739	1 123	12 247	85 536	123 970
Density (people/km²)	**5**	**19**	**18**	**32**	**57**	**42**
2036						
Number of People	31	949	1 460	17 314	112 224	156 010
Density (people/km²)	**4**	**25**	**23**	**45**	**75**	**53**
2096						
Number of People	31	1 142	1 753	27 305	185 029	245 320
Density (people/km²)	**4**	**30**	**27**	**70**	**124**	**84**
2130						
Number of People	31	1 100	1 686	27 182	185 518	245 034
Density (people/km²)	**4**	**29**	**26**	**70**	**124**	**83**

5.4.8.3 Population Centres

Population centres were analysed in order to determine whether they exceed the international guidance provided by the US NRC Regulatory Guide 4.7, General Site Suitability Criteria for Nuclear Power Stations (U.S. Nuclear Regulatory Commission, 2014) and the EPRI Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities (Electric Power Research Institute, 2022) contained in ***Subsection 5.4.3.2*** (Guideline Documents). In this regard, emphasis is placed on the benchmark of a density of approximately 200 persons/km² and not the size of the population centre as a large portion within the 50 km radius consists of ocean, i.e. does not contain residents. Note that

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The following indicates the estimated population numbers in 2024, 2036, 2096 and 2130 with respect to various annuli within 50 km from the site centroid as extracted from the results of the analysis (refer to ***Appendices 5.4.P*** and ***5.4.Q)***:

- **6.5 km Radius**

  Oyster Bay with a population of approximately 841 persons in 2024, approximately 955 persons in 2036, approximately 1 178 in 2096 and approximately 1 145 persons in 2130, is the only settlement located within 6.5 km of the site.

  The total population within the 6.5 km radius is estimated to be 1 123 persons in 2024, 1 460 persons in 2036, 1 753 persons in 2096 and 1 686 persons by 2130.

- **16 km Radius**

  The town of St. Francis Bay is the largest settlement within the 16 km radius and is estimated to have a population of 6 399 persons in 2024, 8 270 persons in 2036, 12 422 persons in 2096 and 12 078 persons by 2130.

  The total population within the 16 km radius is estimated to be 12 247 persons in 2024, 17 314 persons in 2036, 27 305 persons in 2096 and 27 182 persons by 2130.

- **35 km Radius**

  The towns of Humansdorp/KwaNomzamo and Jeffreys Bay are the largest settlements within the 35 km radius. The population of Humansdorp/KwaNomzamo is estimated to be 37 236 persons in 2024, 48 383 persons in 2036, 91 557 persons in 2096 and 94 347 persons by 2130.

  The population of Jeffreys Bay is estimated to be 34 100 persons in 2024, 42 658 persons in 2036, 66 800 persons in 2096 and 65 576 persons by 2130.

  The total population within the 35 km radius is estimated to be 85 536 persons in 2024, 112 224 persons in 2036, 185 029 persons in 2096 and 185 518 persons by 2130.

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- **50 km Radius**

  The towns of Humansdorp/KwaNomzamo and Jeffreys Bay are the largest settlements within the 50 km radius. Other large settlements within the 50 km radius are Hankey, St. Francis Bay, Patensie and Kareedouw.

  The population of Hankey is estimated to be 14 411 persons in 2024, 17 245 persons in 2036, 26 844 persons in 2096 and 26 800 persons by 2130. The population of Patensie is estimated to be 6 255 persons in 2024, 7 259 persons in 2036, 9 583 persons in 2096 and 9 319 persons by 2130.

  The population of Kareedouw is estimated to be 5 763 persons in 2024, 6 506 persons in 2036, 8 363 persons in 2096 and 8 284 persons by 2130.

  The total population within the 50 km radius is estimated to be 123 970 persons in 2024, 156 010 persons in 2036, 245 320 persons in 2096 and 245 034 persons by 2130.

Based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection), nine localised sectors or settlements may possibly not conform to the density guidelines mentioned above. These sectors/settlements are Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, portions of Humansdorp, north and north-northeast, Jeffreys Bay, Aston Bay Pellsrus and Paradysstrand, northwest/west-northwest, and Hankey, north-northwest, which are estimated to exceed 200 persons/km² by 2130.

As noted previously, these referenced documents act only as a guide and are not NNR requirements.

5.4.8.4 Tourist Population Projection

The tourist population was estimated for 2024, in ten-year intervals from 2026 to 2126 and for 2130. As the tourism figures were not available per Enumerated Area, Small Areas or Sub-places, the total tourist population was distributed within each of the sectors around the nuclear installation(s) as a ratio of the permanent population in that sector as indicated in ***Subsection 5.4.6.4*** (Tourist Population). A tourist population ratio per permanent population of 0.0365 was applied to each sector for a specific year.

The tourist population estimation and distribution for any one day in the

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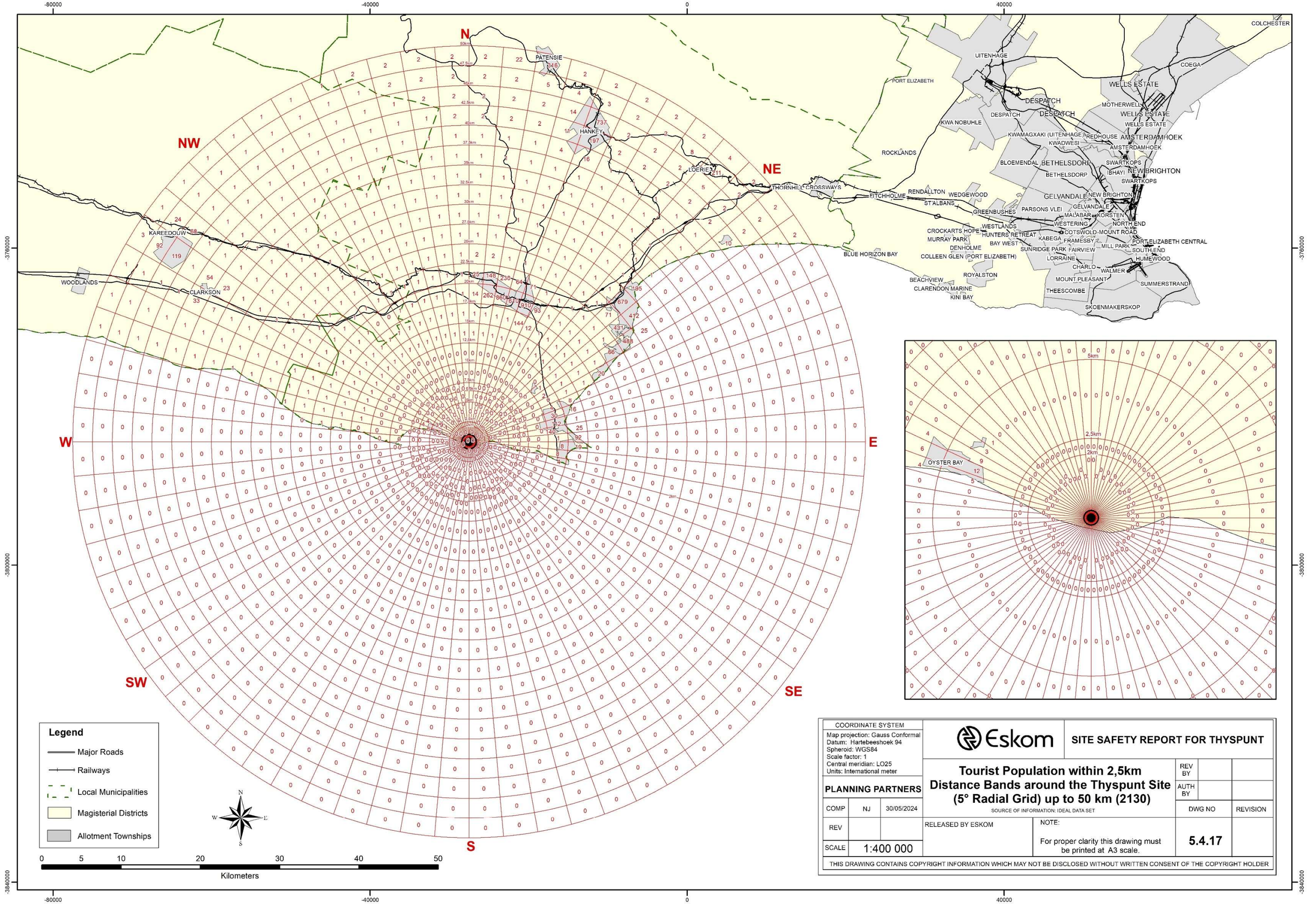
peak month within 50 km from the nuclear installation(s) are presented in ***Appendices 5.4.S***, ***5.4.U*** and ***5.4.V*** up to 2130 and in ***Drawings 5.4.17*** and ***5.4.18*** below.

The total number of tourists within the 50 km radius around the Thyspunt site on any one day in the peak month (i.e. December) was estimated (upper estimate) to be approximately:

- 4 524 tourists in 2024;
- 5 521 tourists in 2036;
- 8 734 tourists in 2096;
- 8 743 tourists in 2130.

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Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	**Tourist Population within 2,5km Distance Bands around the Thyspunt Site (5° Radial Grid) up to 50 km (2130)** SOURCE OF INFORMATION: IDEAL DATA SET	REV BY AUTH BY
PLANNING PARTNERS		DWG NO / REVISION
COMP NJ 30/05/2024	RELEASED BY ESKOM	NOTE: For proper clarity this drawing must be printed at A3 scale.
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N NE E SE S SW W NW

PATENSIE HANKEY KAREEDOUW WOODLANDS CLARKSON KRUISFONTEIN HUMANSDORP LOERIE THORNHILL CROSSWAYS GAMTOOS MOUTH JEFFREYS BAY PELLSRUS PARADYSSTRAND AMANINZI ST FRANCIS LINKS SEA VISTA OYSTER BAY CAPE ST FRANCIS

PORT ELIZABETH UITENHAGE COEGA MOTHERWELL DESPATCH KWA NOBUHLE WELLS ESTATE KWAMAGXAKI (UITENHAGE) REDHOUSE KWADWESI AMSTERDAMHOEK ROCKLANDS BLOEMENDAL SWARTKOPS BETHELSDORP IBHAYI SWARTKOPS FITCHHOLME RENDALLTON WEDGEWOOD ST ALBANS NEW BRIGHTON GELVANDALE PARSONS VLEI MALABAR KORSTEN GREENBUSHES WESTERING NORTH END WESTLANDS COTSWOLD MOUNT ROAD CROCKARTS HOPE HUNTERS RETREAT KABEGA FRAMESBY PORT ELIZABETH CENTRAL MURRAY PARK BAY WEST MILL PARK DENHOLME SUNRIDGE PARK FAIRVIEW SOUTH END BLUE HORIZON BAY COLLEEN GLEN (PORT ELIZABETH) LORRAINE HUMEWOOD CHARLO WALMER ROYALSTON MOUNT PLEASANT BEACHVIEW SUMMERSTRAND CLARENDON MARINE THEESCOMBE KINI BAY SKOENMAKERSKOP

12 10 89 141 9 8 46 62 120 6 5 4 2 1 0 344 13 12 11 10 9 252 299 465 2446 783 283 141 331 60 967 36 234 26 13 81 22 14 28 3

50km 45km 40km 35km 30km 25km 20km 15km 10km 5km 2km

Legend

- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

N W E S

0 5 10 20 30 40 50

Kilometers

COORDINATE SYSTEM		
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter		
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SITE SAFETY REPORT FOR THYSPUNT

Tourist Population within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2130)

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5.4.9 Total Cumulative Population Distribution

The total cumulative population was estimated from 2024 to 2130 and characterised for the site vicinity of 16 km and the site region of 50 km around the nuclear installation(s).

The assessment includes the estimated total cumulative population in ten-year intervals for the lifetime of the nuclear installation(s).

5.4.9.1 Total Cumulative Population

To determine the maximum number of persons within the 50 km radius around the nuclear installation(s), referred to as the total cumulative population, the tourist population on any one day in the peak month needs to be added to the permanent population. Within the 50 km radius:

- the permanent population was estimated to be 123 970 persons in 2024;
- the permanent population is projected to be 156 010 persons by 2036;
- the permanent population is projected to be 245 320 persons by 2096;
- the permanent population is projected to be 245 034 persons by 2130;
- the total tourist population was estimated to be 4 524 persons in 2024 on any one day during the peak tourism month, i.e. December;
- the total tourist population is estimated to be 5 521 persons by 2036 on any one day during the peak tourism month;
- the total tourist population is estimated to be 8 734 persons by 2096 on any one day during the peak tourism month;
- the total tourist population is estimated to be 8 743 persons by 2130 on any one day during the peak tourism month.

On the basis of the abovementioned data, the total cumulative population distribution was estimated in ten-year intervals from 2024 to 2130 within 50 km from the nuclear installation(s). The results are presented in ***Appendices 5.4.S*** to ***5.4.V***, ***Drawings 5.4.19*** to ***5.4.22*** and ***Figures 5.4.24*** to ***5.4.29*** below. The total cumulative population

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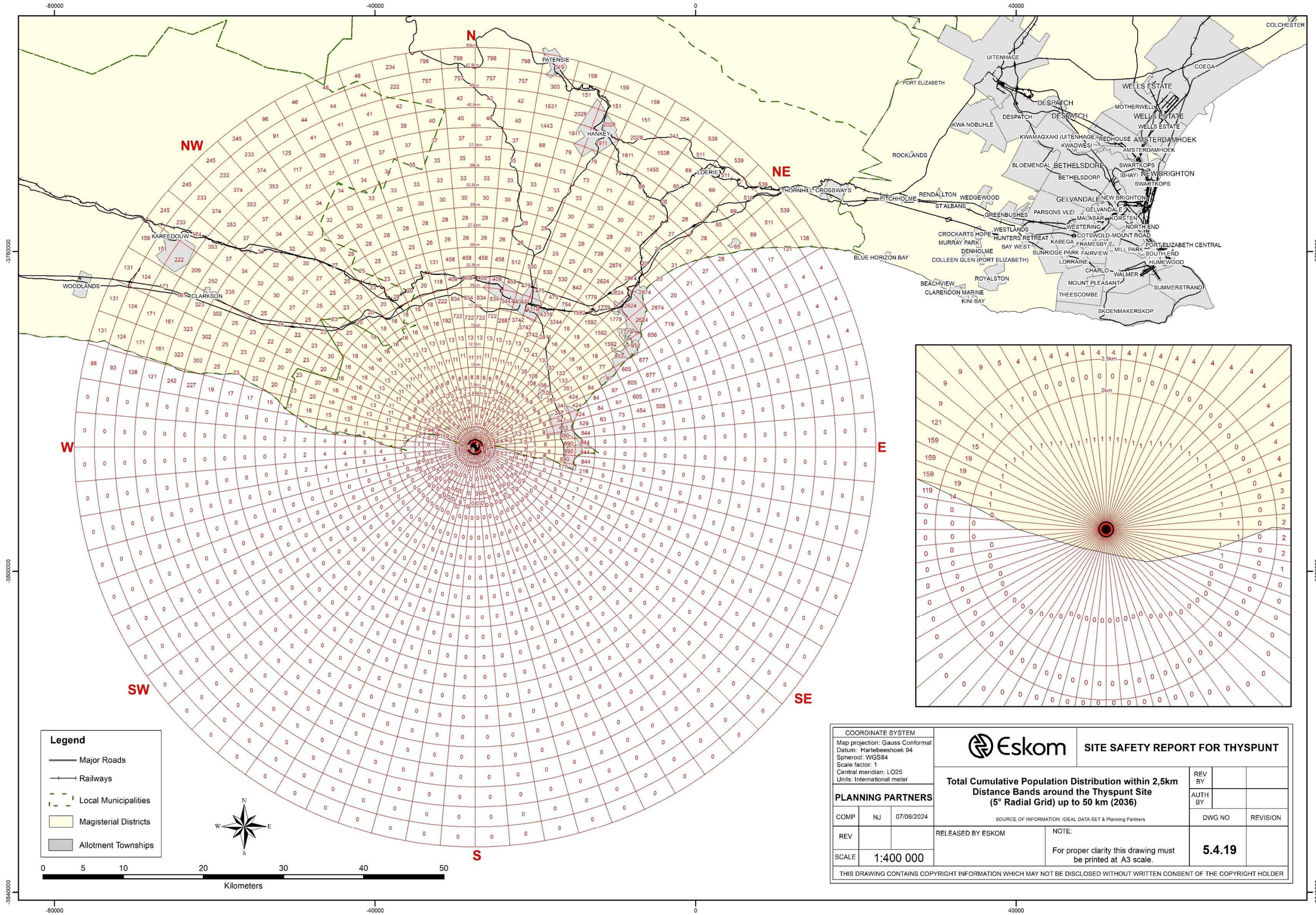
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estimates within the 50 km radius around the nuclear installation(s) indicate, *inter alia,* approximately:

- 128 490 persons in 2024;
- 161 523 persons in 2036;
- 254 042 persons in 2096;
- 253 772 persons by 2130.

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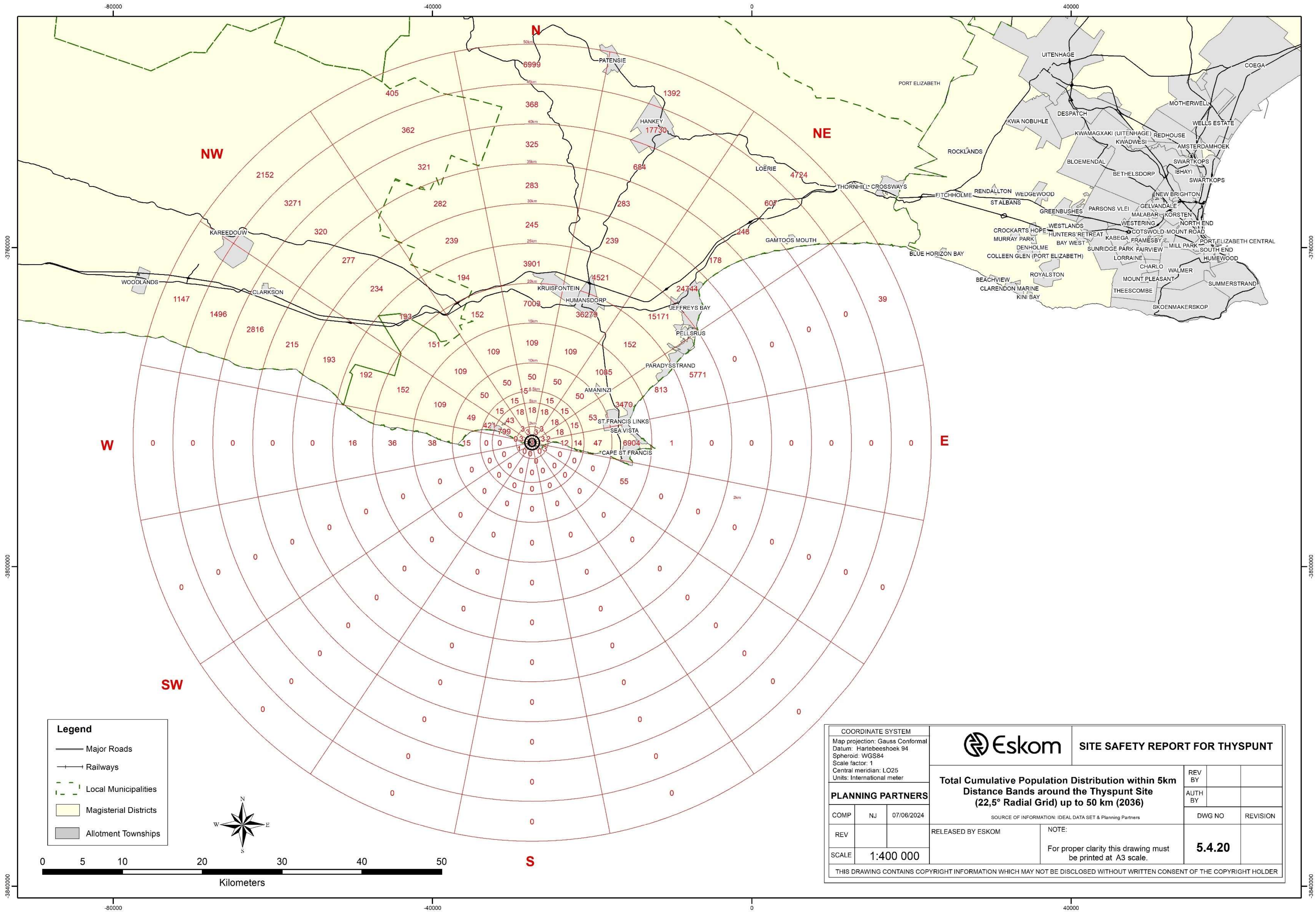


Legend

- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
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Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	Total Cumulative Population Distribution within 2,5km Distance Bands around the Thyspunt Site (5° Radial Grid) up to 50 km (2036)	REV BY / AUTH BY
PLANNING PARTNERS	SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners	DWG NO / REVISION
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SITE SAFETY REPORT FOR THYSPUNT

Total Cumulative Population Distribution within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2036)

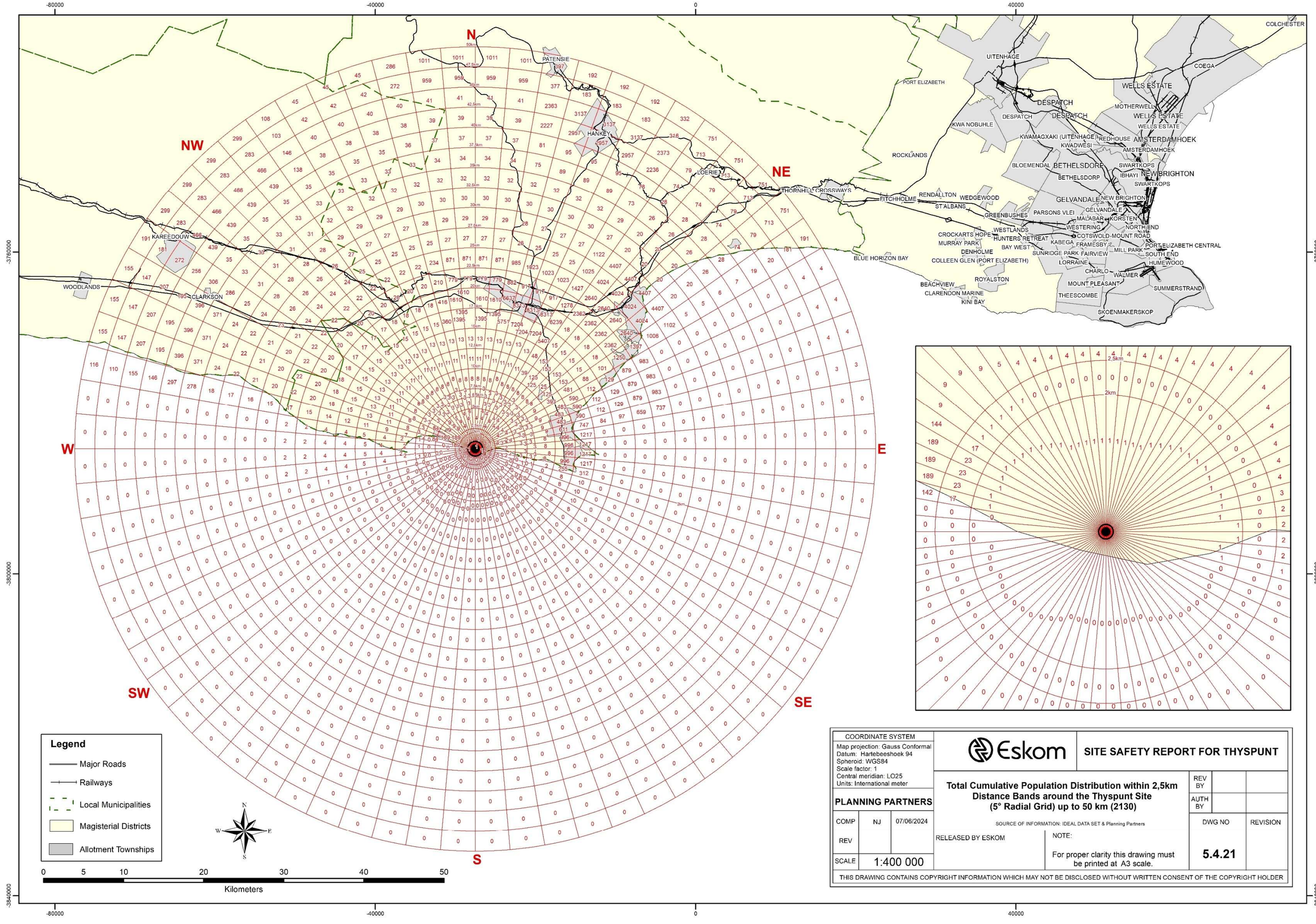
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COORDINATE SYSTEM	Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	Total Cumulative Population Distribution within 2,5km Distance Bands around the Thyspunt Site (5° Radial Grid) up to 50 km (2130)	REV BY / AUTH BY
PLANNING PARTNERS	SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners	DWG NO: 5.4.21
COMP: NJ 07/06/2024 REV:	RELEASED BY ESKOM NOTE: For proper clarity this drawing must be printed at A3 scale.	REVISION
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-3760000 -3800000 -3840000

N NE E SE S SW W NW

PATENSIE HANKEY KAREEDOUW WOODLANDS CLARKSON KRUISFONTEIN HUMANSDORP LOERIE THORNHILL CROSSWAYS GAMTOOS MOUTH JEFFREYS BAY PELLSRUS PARADYSSTRAND AMANINZI ST FRANCIS LINKS SEA VISTA OYSTER BAY CAPE ST FRANCIS BLUE HORIZON BAY

PORT ELIZABETH UITENHAGE COEGA MOTHERWELL DESPATCH KWA NOBUHLE WELLS ESTATE KWAMAGXAKI (UITENHAGE) REDHOUSE KWADWESI AMSTERDAMHOEK ROCKLANDS SWARTKOPS BLOEMENDAL BETHELSDORP IBHAYI SWARTKOPS FITCHHOLME RENDALLTON WEDGEWOOD NEW BRIGHTON ST ALBANS GELVANDALE GREENBUSHES PARSONS VLEI MALABAR KORSTEN WESTERING NORTH END CROCKARTS HOPE WESTLANDS COTSWOLD MOUNT ROAD HUNTERS RETREAT MURRAY PARK KABEGA FRAMESBY PORT ELIZABETH CENTRAL BAY WEST DENHOLME SUNRIDGE PARK FAIRVIEW MILL PARK SOUTH END COLLEEN GLEN (PORT ELIZABETH) LORRAINE HUMEWOOD CHARLO WALMER ROYALSTON BEACHVIEW MOUNT PLEASANT SUMMERSTRAND CLARENDON MARINE THEESCOMBE KINI BAY SKOENMAKERSKOP

8870 391 1684 359 348 318 309 830 277 2618 6590 276 687 4071 252 234 242 307 7424 266 234 174 189 8723 225 3794 1356 13522 1809 69831 22513 186 148 3453 38 206 147 106 185 1255 186 8379 149 1086 4826 53 48 953 9959 83 1 14 47 11 16 35 37 2km

Legend
- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

N W E S

0 5 10 20 30 40 50
Kilometers

COORDINATE SYSTEM	Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	Total Cumulative Population Distribution within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2130) SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners	REV BY AUTH BY
PLANNING PARTNERS		DWG NO: 5.4.22
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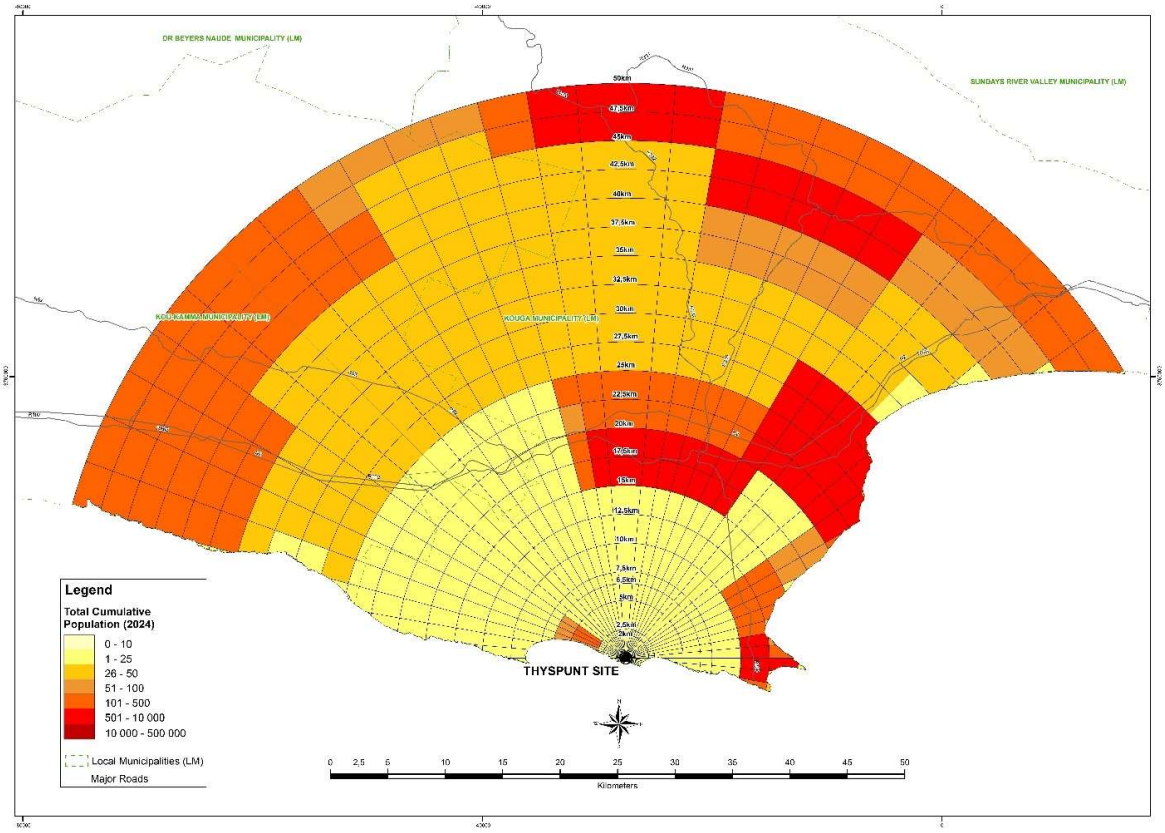


Figure 5.4.24
Total Cumulative Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024)

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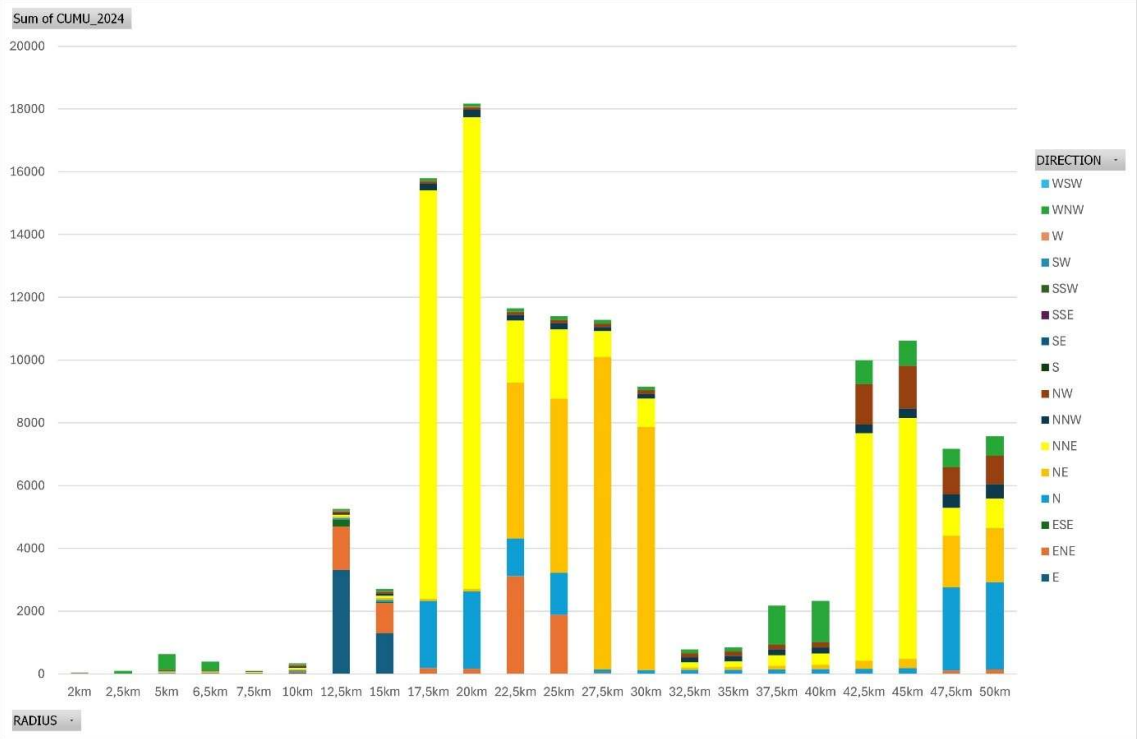


Figure 5.4.25
Total Cumulative Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2024)

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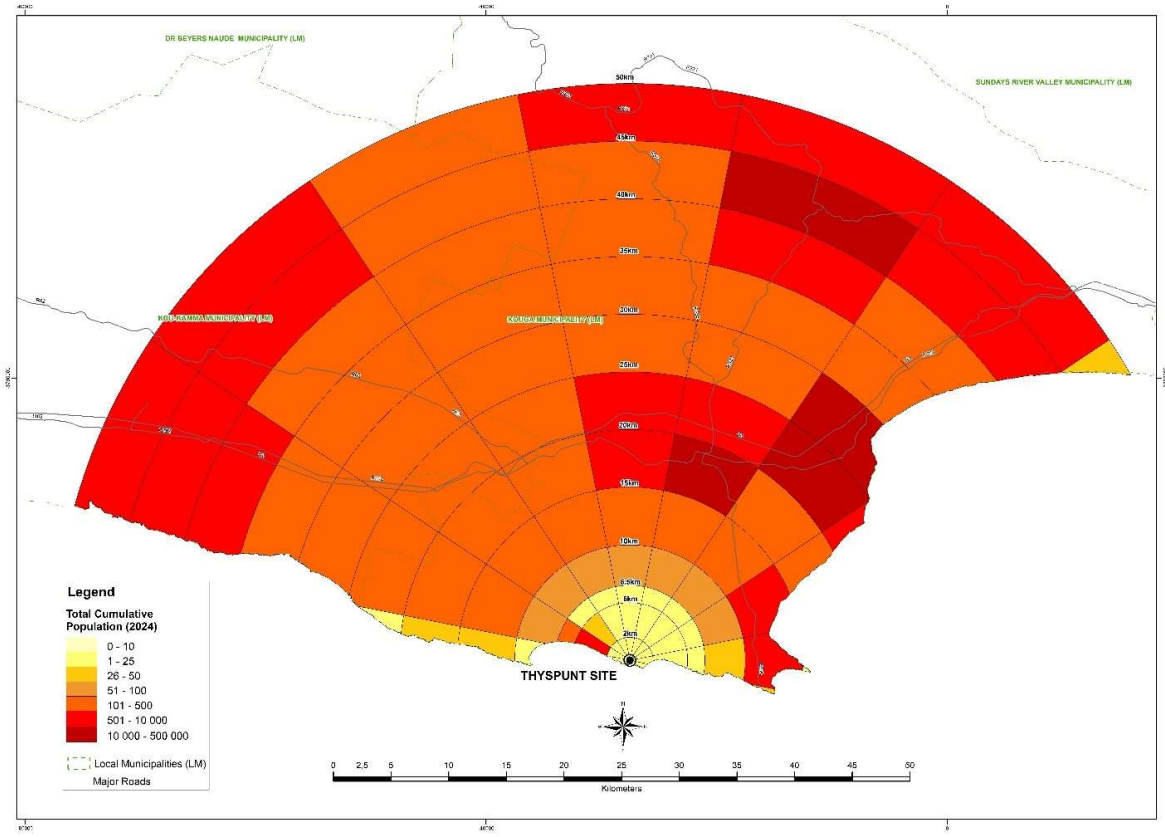


Figure 5.4.26
Total Cumulative Population Within 5 km Distance Annuli Around they Thyspunt Site (22.5° Radial Grid) up to 50 km (2024)

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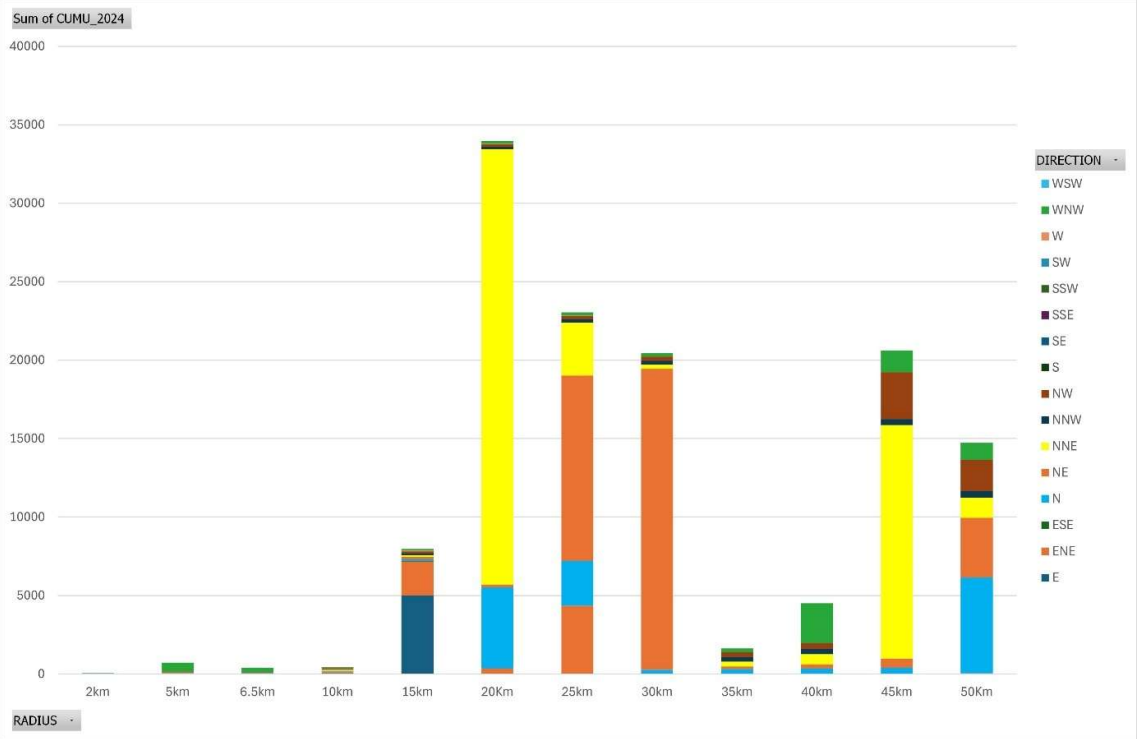


Figure 5.4.27
Total Cumulative Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2024)

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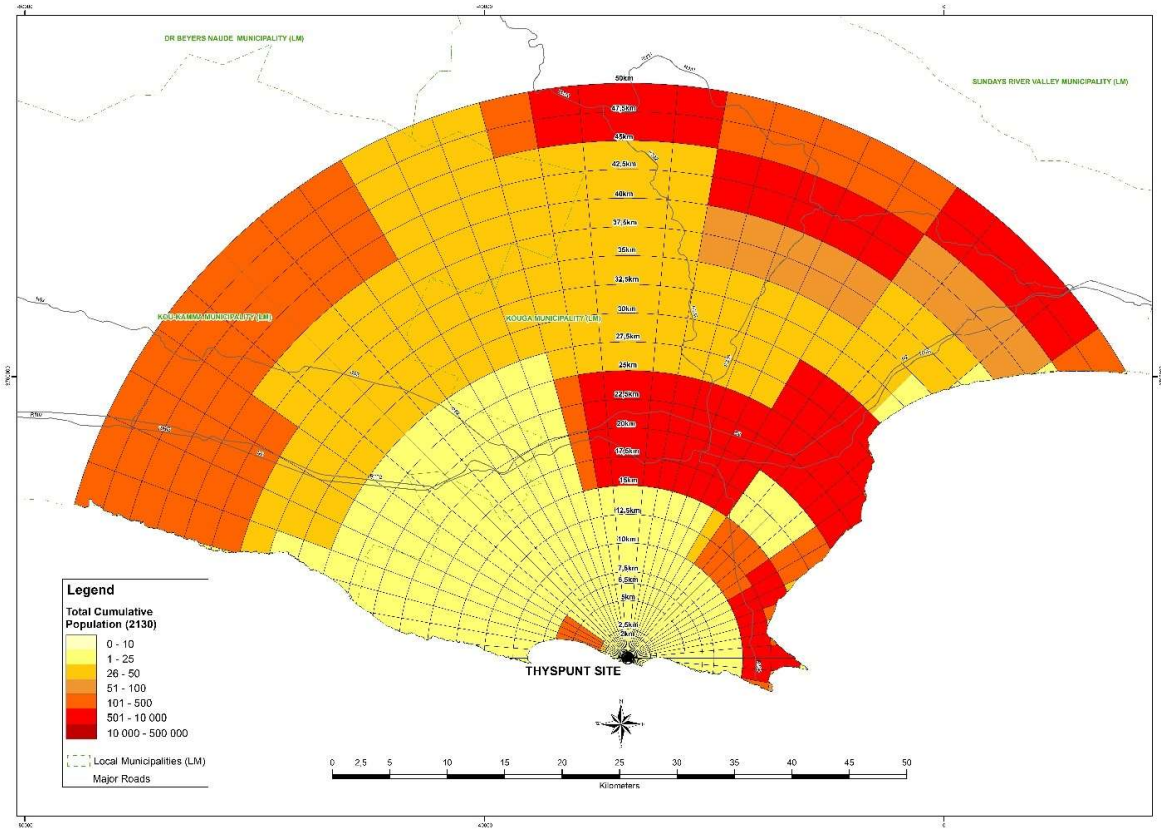


Figure 5.4.28
Total Cumulative Population Within 2.5 km Distance Annuli Around the Thyspunt Site (5° Radial Grid) up to 50 km (2130)

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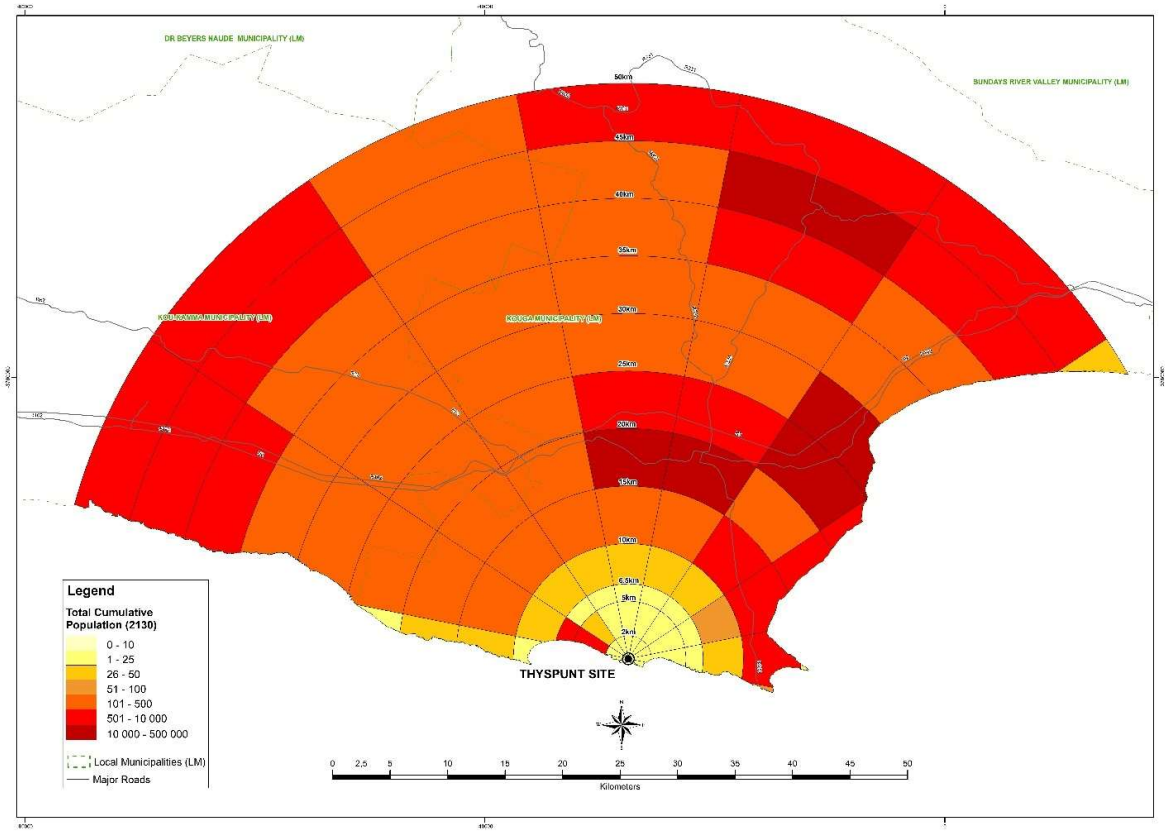


Figure 5.4.29
Total Cumulative Population Within 5 km Distance Annuli Around the Thyspunt Site (22.5° Radial Grid) up to 50 km (2130)

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5.4.9.2 Cumulative Population Density

Total cumulative population densities were analysed in order to determine whether they exceed the international guidance provided by the US NRC Regulatory Guide 4.7, General Site Suitability Criteria for Nuclear Power Stations (U.S. Nuclear Regulatory Commission, 2014) and the EPRI Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities (Electric Power Research Institute, 2022) contained in ***Subsection 5.4.3.2*** (Guideline Documents). In this regard, emphasis is placed on the benchmark of a density of approximately 200 persons/km² and not the size of the population centre as a large portion within the 50 km radius consists of ocean, i.e. does not contain residents. Please note that these referenced documents act only as a guide and are not NNR requirements.

The analysis of the total cumulative population and population density around the site includes the following:

- total cumulative vicinity population and population density per sector (2024);
- total cumulative regional population and population density per sector (2024);
- total cumulative vicinity population and population density per sector (2036);
- total cumulative regional population and population density per sector (2036);
- total cumulative vicinity population and population density per sector (2096);
- total cumulative regional population and population density per sector (2096);
- total cumulative vicinity population and population density per sector (2130);
- total cumulative regional population and population density per sector (2130).

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The total cumulative vicinity population density was analysed relative to 2 km, 5 km, 6.5 km, 10 km and 16 km distance annuli and 22.5º radial grids. The results are presented in ***Figures 5.4.30***, ***5.4.32***, ***5.4.34*** and ***5.4.36*** and ***Table 5.4.19*** below.

The total cumulative regional population density is presented relative to 5 km distance annuli and 22.5º radial grids within 50 km from the nuclear installation(s). The results for this analysis are presented in ***Figures 5.4.31***, ***5.4.33***, ***5.4.35*** and ***5.4.37*** and ***Table 5.4.19*** below.

The following indicates the estimated total cumulative population density with respect to various annuli within 50 km from the site centroid as extracted from the results of the analysis:

- **2 km Radius**

  The average total cumulative population density within the 2 km radius (i.e. an area of approximately 7 km²) is estimated to be 5 persons/km^2 in 2024, 4 persons/km² in 2036, 5 persons/km² in 2096 and 4 persons/km² in 2130.

- **5 km Radius**

  The average total cumulative population density within the 5 km radius (i.e. an area of approximately 38 km^2) is estimated to be 20 persons/km^2 in 2024, 26 persons/km^2 in 2036, 31 persons/km^2 in 2096 and 30 persons/km^2 by 2130.

  However, one localised sector or settlement (Oyster Bay, west-northwest) is estimated to exceed 200 persons/km² by 2130.

- **6.5 km Radius**

  The average total cumulative population density within the 6.5 km radius (i.e. an area of approximately 64 km^2) is estimated to be 18 persons/km^2 in 2024, 23 persons/km^2 in 2036, 28 persons/km^2 in 2096 and 27 persons/km^2 by 2130.

  However, one localised sector or settlement (Oyster Bay, west-northwest) is estimated to exceed 200 persons/km² by 2130.

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- **16 km Radius**

  The average total cumulative population density within the 16 km radius (i.e. an area of approximately 388 km^2) is estimated to be 40 persons/km^2 in 2024, 56 persons/km^2 in 2036, 87 persons/km^2 in 2096 and 87 persons/km^2 by 2130.

  However, five localised sectors or settlements (Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, and portions of Humansdorp, north and north-northeast) are estimated to exceed 200 persons/km² by 2130.

- **35 km Radius**

  The average total cumulative population density within the 35 km radius (i.e. area of approximately 1 494 km^2) is estimated to be 60 persons/km^2 in 2024, 78 persons/km^2 in 2036, 128 persons/km^2 in 2096 and 129 persons/km^2 by 2130.

  However, eight localised sectors or settlements (Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, portions of Humansdorp, north and north-northeast, Jeffreys Bay, Aston Bay Pellsrus and Paradysstrand, northwest/west-northwest) are estimated to exceed 200 persons/km² by 2130.

- **50 km Radius**

  The average cumulative population density within the 50 km radius (i.e. approximately 2 935 km^2) is estimated to be 44 persons/km^2 in 2024, 55 persons/km^2 in 2036, 87 persons/km^2 in 2096 and 87 persons/km^2 by 2130.

  However, nine localised sectors or settlements (Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, portions of Humansdorp, north and north-northeast, Jeffreys Bay, Aston Bay Pellsrus and Paradysstrand, northwest/west-northwest, and Hankey, north-northwest) are estimated to exceed 200 persons/km² by 2130.

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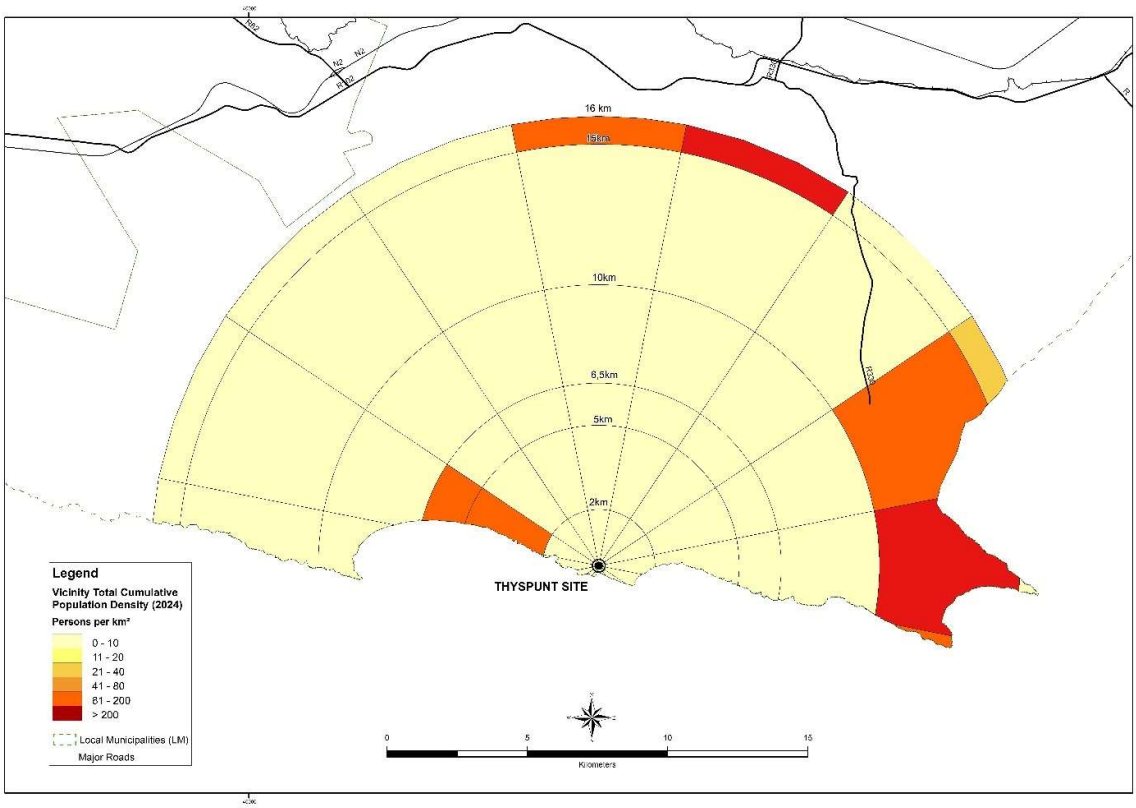


Figure 5.4.30
Total Cumulative Vicinity Population Density (2024)

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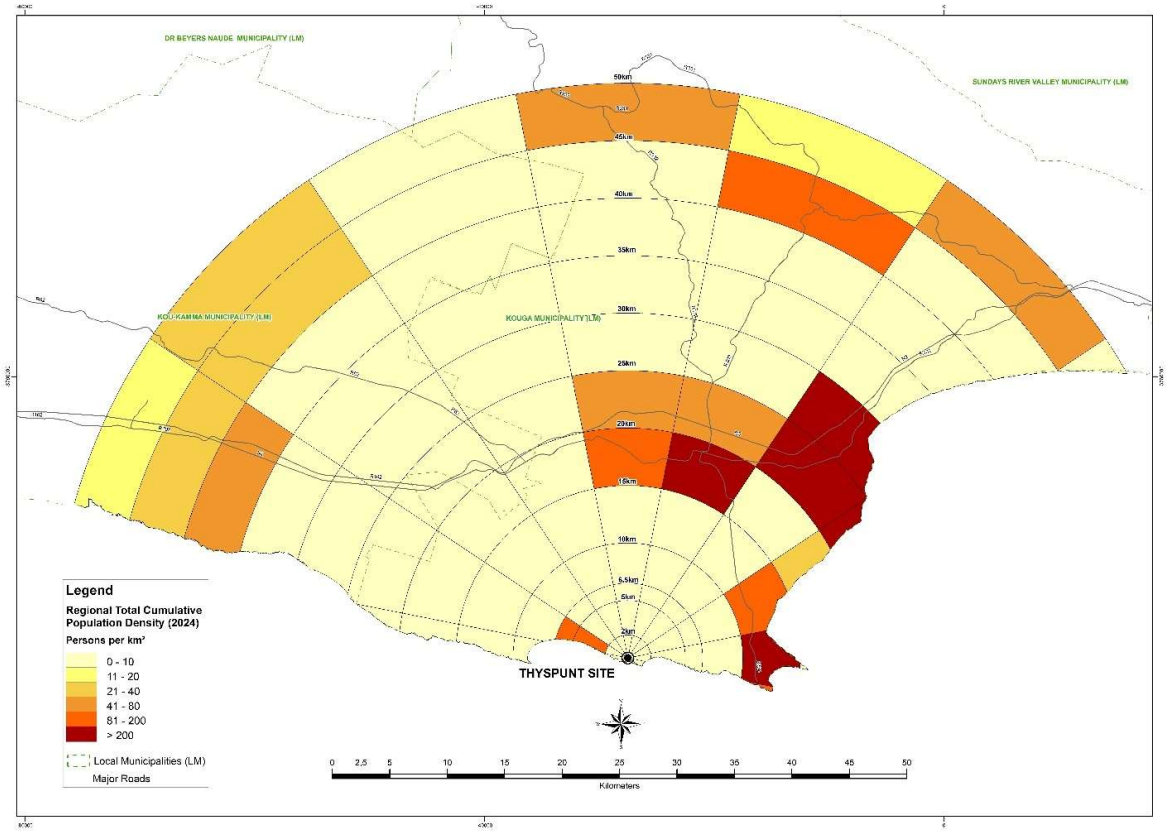


Figure 5.4.31
Total Cumulative Regional Population Density (2024)

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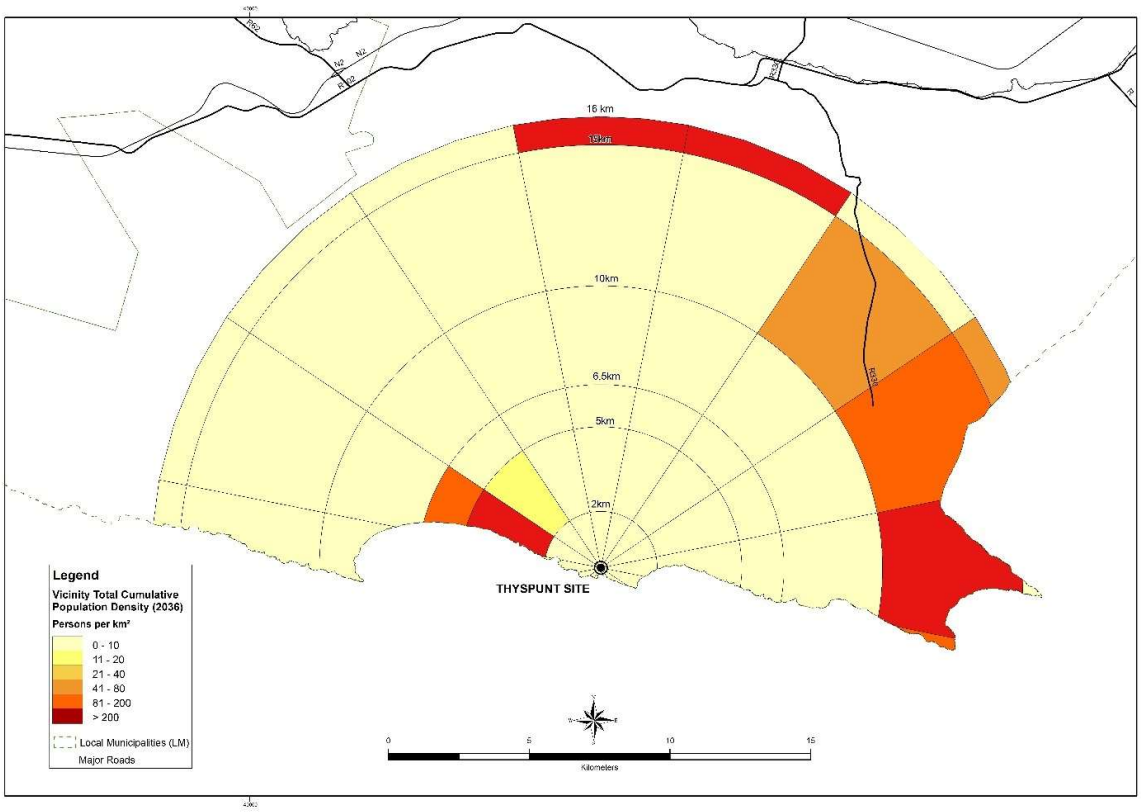


Figure 5.4.32
Total Cumulative Vicinity Population Density (2036)

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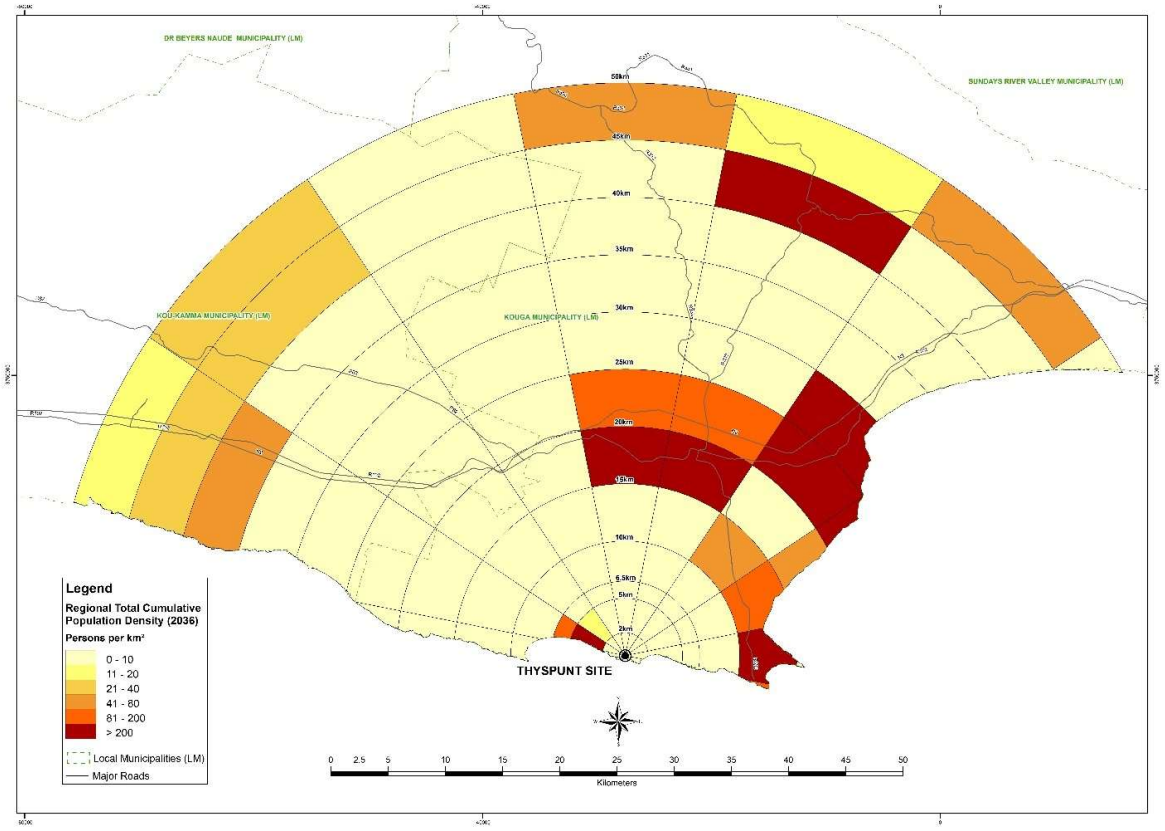


Figure 5.4.33
Total Cumulative Regional Population Density (2036)

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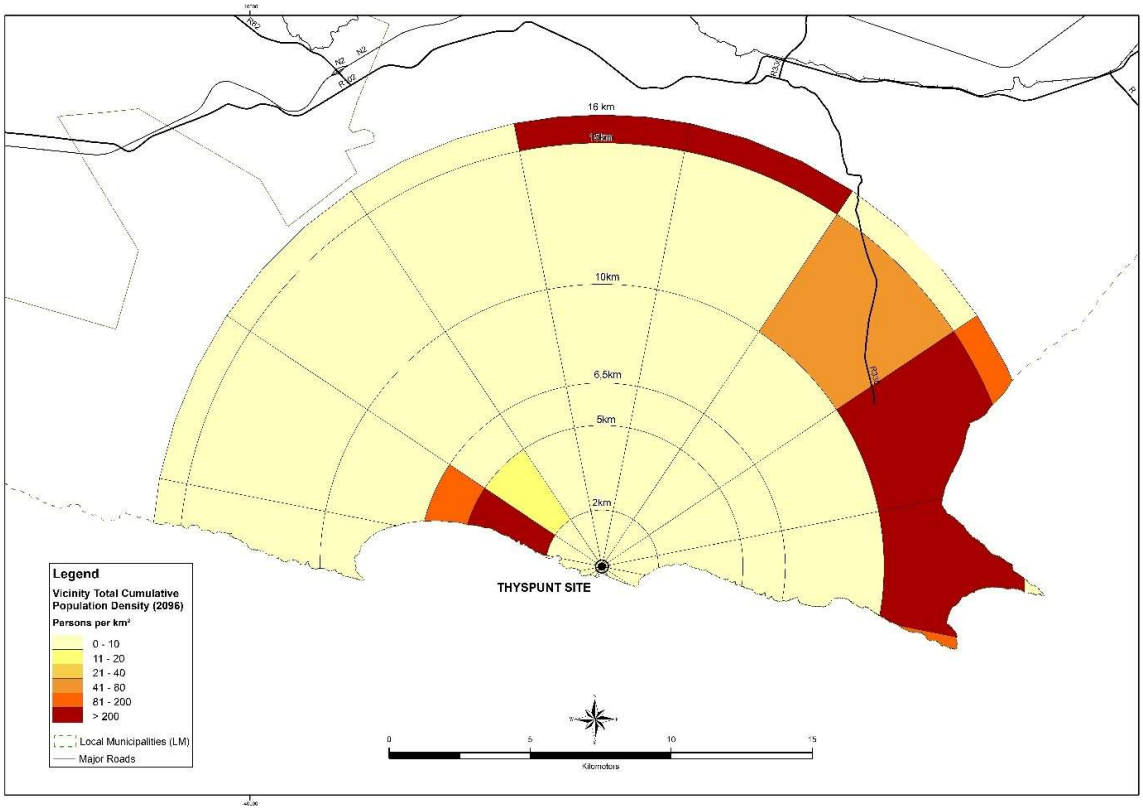


Figure 5.4.34
Total Cumulative Vicinity Population Density (2096)

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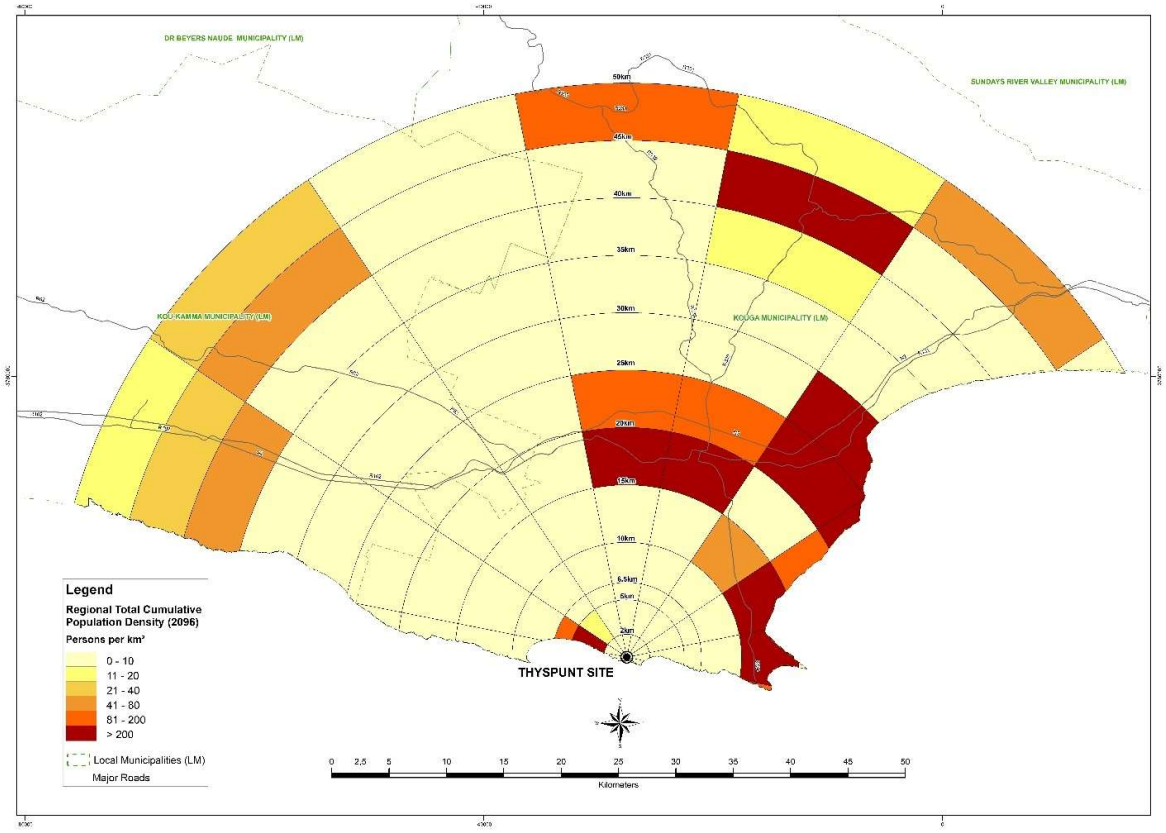


Figure 5.4.35
Total Cumulative Regional Population Density (2096)

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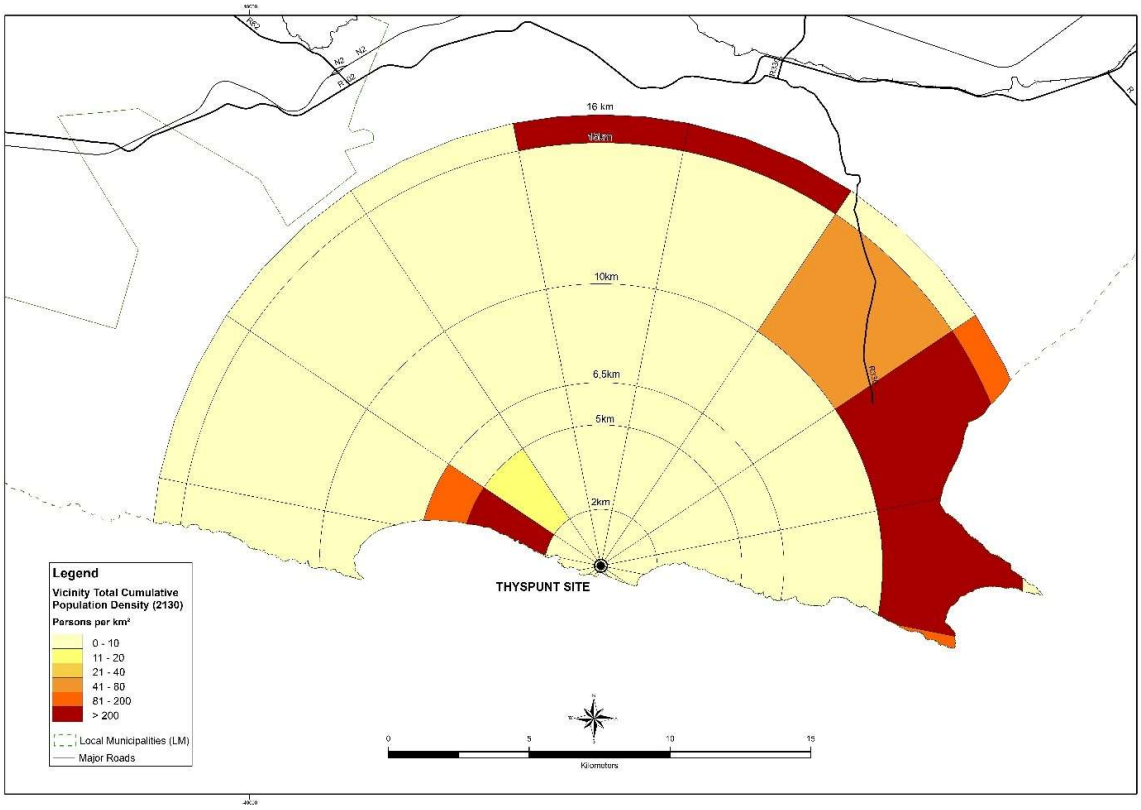


Figure 5.4.36
Total Cumulative Vicinity Population Density (2130)

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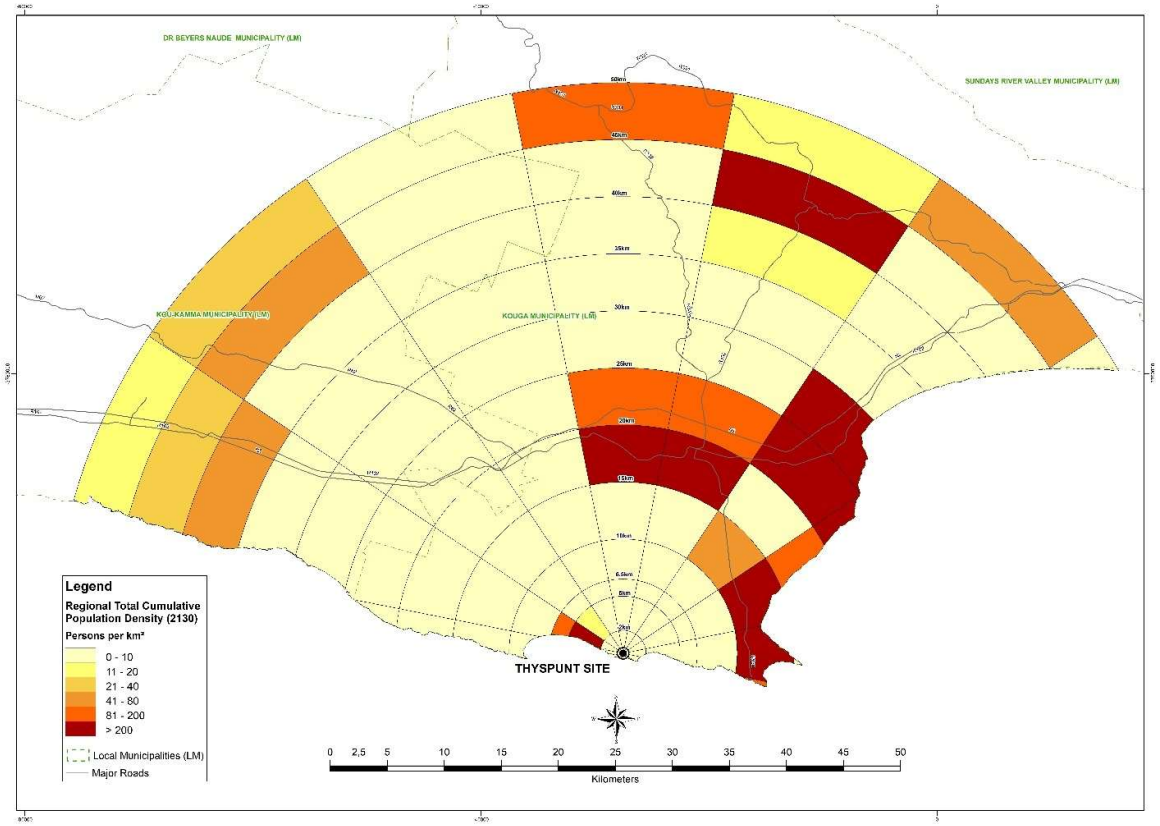


Figure 5.4.37
Total Cumulative Regional Population Density (2130)

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Table 5.4.19
Estimated Total Cumulative Population Density (2024, 2036, 2096 and 2130)

	Radius					
	2 km	**5 km**	**6.5 km**	**16 km**	**35 km**	**50 km**
Land Area (km²)	7	38	64	388	1 494	2 935
2024						
Number of People	34	765	1 162	15 463	88 633	128 490
Density (people/km²)	**5**	**20**	**18**	**40**	**60**	**44**
2036						
Number of People	27	971	1 496	21 803	116 117	161 523
Density (people/km²)	**4**	**26**	**23**	**56**	**78**	**55**
2096						
Number of People	32	1 176	1 803	33 926	191 536	254 042
Density (people/km²)	**5**	**31**	**28**	**87**	**128**	**87**
2130						
Number of People	27	1 128	1 730	33 628	192 058	253 772
Density (people/km²)	**4**	**30**	**27**	**87**	**129**	**87**

Based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection), the total cumulative population estimates indicate that the site conforms to the abovementioned international guidance with regard to average populations densities, However, nine localised sectors or settlements are estimated to exceed a density of 200 persons/km² by 2130.

Note that the referenced documents act only as a guide and are not NNR requirements.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of

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measures were incorporated in the Kouga Spatial Development Framework (Kouga Local Municipality, 2021) to control development around the nuclear installation(s).

5.4.9.3 Cumulative Population Centres

Total cumulative population centres were analysed in order to determine whether they exceed the international guidance provided by the US NRC Regulatory Guide 4.7, General Site Suitability Criteria for Nuclear Power Stations (U.S. Nuclear Regulatory Commission, 2014) and the EPRI Site Selection and Evaluation Criteria for New Nuclear Power Generation Facilities (Electric Power Research Institute, 2022) contained in ***Subsection 5.4.3.2*** (Guideline Documents). In this regard, emphasis is placed on the benchmark of a density of approximately 200 persons/km² and not the size of the population centre as a large portion within the 50 km radius consists of ocean, i.e. does not contain residents. Please note that the referenced documents act only as a guide and are not NNR requirements.

The following indicates the estimated total cumulative population numbers in 2024, 2036, 2096 and 2130 with respect to various annuli within 50 km from the site centroid as extracted from the results of the analysis (refer to ***Appendix 5.4.S*** and ***Table 5.4.19***):

- **6.5 km Radius**

  Oyster Bay with a total cumulative population of approximately 872 persons in 2024, approximately 990 persons in 2036, approximately 1 221 in 2096 and approximately 1 187 persons in 2130, is the only settlement located within 6.5 km of the site.

  The total cumulative population within the 6.5 km radius is estimated to be 1 162 persons in 2024, 1 496 persons in 2036, 1 803 persons in 2096 and 1 730 persons by 2130.

- **16 km Radius**

  The town of St. Francis Bay is the largest settlement within the 16 km radius and is estimated to have a total cumulative population of 6 632 persons in 2024, 8 571 persons in 2036, 12 875 persons in 2096 and 12 519 persons by 2130.

  The total cumulative population within the 16 km radius is estimated to be 15 463 persons in 2024, 21 803 persons in 2036, 33 926 persons in 2096 and 33 628 persons by 2130.

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- **35 km Radius**

  The towns of Humansdorp/KwaNomzamo and Jeffreys Bay are the largest settlements within the 35 km radius. The total cumulative population of Humansdorp/KwaNomzamo is estimated to be 38 594 persons in 2024, 50 149 persons in 2036, 94 899 persons in 2096 and 97 791 persons by 2130.

  The total cumulative population of Jeffreys Bay is estimated to be 35 344 persons in 2024, 44 782 persons in 2036, 69 239 persons in 2096 and 67 972 persons by 2130.

  The total cumulative population within the 35 km radius is estimated to be 88 633 persons in 2024, 116 117 persons in 2036, 191 536 persons in 2096 and 192 058 persons by 2130.

- **50 km Radius**

  The towns of Humansdorp/KwaNomzamo and Jeffreys Bay are the largest settlements within the 50 km radius. Other large settlements within the 50 km radius are Hankey, St. Francis Bay, Patensie and Kareedouw.

  The total cumulative population of Hankey is estimated to be 14 937 persons in 2024, 17 875 persons in 2036, 27 824 persons in 2096 and 27 779 persons by 2130. The total cumulative population of Patensie is estimated to be 6 483 persons in 2024, 7 525 persons in 2036, 9 933 persons in 2096 and 9 659 persons by 2130.

  The total cumulative population of Kareedouw is estimated to be 5 973 persons in 2024, 6 743 persons in 2036, 8 667 persons in 2096 and 8 587 persons by 2130.

  The total cumulative population within the 50 km radius is estimated to be 128 490 persons in 2024, 161 523 persons in 2036, 254 042 persons in 2096 and 253 772 persons by 2130.

Based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection), nine localised sectors or settlements may possibly not conform to the density guidelines mentioned above. These sectors/settlements are Oyster Bay, west-northwest, St. Francis Bay/Sea Vista/St. Francis Links, east, portions of Humansdorp, north and north-northeast, Jeffreys Bay, Aston Bay Pellsrus and Paradysstrand, northwest/west-northwest, and Hankey, north-northwest, which are estimated to exceed 200 persons/km² by 2130. The total

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cumulative population estimates indicate that the site conforms to the abovementioned international guidance for the 6.5 km radius in 2018 and 2026.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

5.4.10 Main Regional Activities

5.4.10.1 Current Regional Activities

The current regional activities are presented in ***Sections 5.5***, ***5.6*** and ***5.7*** (Nearby Transportation, Industrial and Military Facilities).

5.4.10.2 Projected Regional Activities and Measures to Control Development around the Site

Several acts and regulations influence the use of land in the area within the 50 km radius around the site.

The Local Government: Municipal Systems Act, 2000 (Republic of South Africa, 2000) provides for *inter alia* forward planning policies such as structure plans and spatial development frameworks (SDFs) to be adopted in terms of municipal integrated development plans (IDPs).

An SDF forms a component of a local authority's integrated development plan and reflects the vision for the development of the municipal area. It guides and directs future development in the municipality's area of jurisdiction. As such, authorities would evaluate all development proposals against the proposals and policies contained in SDFs. Authorities must regularly review forward planning documents and frameworks (approximately every five years).

The Spatial Planning and Land Use Management Act (Republic of South Africa, 2013) provides a framework for planning and land use management in South Africa. In terms of the Act, every municipality must prepare a municipal spatial development framework. Furthermore, it:

- regulates the relationship between spatial planning, land use management and other kinds of planning;
- ensures that the system of spatial planning and land use management promotes social and economic inclusion;

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- provides for development principles, norms and standards;
- provides for the sustainable and efficient use of land;
- provides for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government;
- redresses the imbalance of the past and ensures equity in the application of spatial planning and land use management systems.

The Spatial Planning and Land Use Management Act prescribes the following development principles:

- Spatial justice: past spatial and other development imbalances must be redressed through improved access to and use of land.
- Spatial sustainability: land development that is within the fiscal, institutional, and administrative means of South Africa must be promoted, prime and unique agricultural land must be protected, development must comply with environmental laws and urban sprawl must be limited.
- Efficiency: land development must optimise the use of existing resources and infrastructure, and decision-making procedures must be designed to minimise negative financial, social, economic or environmental impacts.
- Spatial resilience: there must be flexibility in spatial plans and land use management to ensure sustainable livelihoods.

Various strategic plans and policies were compiled for the broader area within which the site is located. The Kouga Spatial Planning and Land Use Management By-Laws, 2015 (Kouga Local Municipality, 2015) and the Koukamma Spatial Planning and Land Use Management By-Laws, 2016 (Koukamma Local Municipality, 2016) stipulate that a municipal spatial development framework must be drafted for the Kouga municipal area and Koukamma municipal area, respectively.

The projected regional activities (which influence population distribution) around the nuclear installation(s) are to a large extent determined by the control of land use and spatial planning. Future activities are therefore

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presented by discussing the strategic spatial planning strategies and policies adopted by the Kouga and Koukamma municipalities, i.e. the Kouga Spatial Development Framework, 2021 (Kouga SDF) (Kouga Local Municipality, 2021) and the Koukamma Spatial Development Framework, 2023 (Koukamma SDF) (Koukamma Local Municipality, 2023).

The Kouga SDF and the Koukamma SDF are the most recent spatial planning frameworks relevant to the area surrounding the site and are described in more detail below.

a) Kouga Spatial Development Framework (2021)

The site falls within the area of jurisdiction of the Kouga Local Municipality. The Kouga SDF (Kouga Local Municipality, 2021) is a framework that seeks to influence the overall spatial distribution of current and future land use within the municipal area to give effect to the vision, goals and objectives of the IDP. Whereas the IDP is prepared for a five-year period, the SDF has a longer time horizon of 30 years, thereby providing the long-term context for the IDP.

The purpose of the SDP is to ensure that future growth and development do not result in unsustainable, low-density settlement sprawl and the destruction of the ecosystem and agricultural resources on which the municipal economy depends. Unsustainable development will also prevent equitable access to resources and will perpetuate the spatial divisions of the past.

According to the SDF, the vision for the Kouga municipal area is as follows:

> *"Kouga is a municipal area where well-protected natural resources provide economic opportunities and a framework within which a network of well-connected SMART settlements, with a unique town feel, provides social and economic opportunities for all residents."*

The vision is built on the following components:

- a hierarchy of settlements;
- networks for mobility and logistics;

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- protected natural resources and integrated environmental management;

- promotion of agricultural and rural development;

- efficient functioning of settlements.

In accordance with the vision, the SDF sets aside a large portion of the area for the protection and management of natural areas and higher value agricultural land. This will enable the agricultural and tourism sectors to function effectively. Apart from non-consumptive activities and land uses associated with agricultural production and agricultural processing, significant changes to land use in non-urban areas is therefore not foreseen.

The SDF proposes a hierarchy of settlements which range from old forestry stations to the primary urban settlements of Jeffreys Bay and Humansdorp. The settlements are connected by a comprehensive network of transportation routes which serve both a mobility and logistics function. These routes are also significant from a tourism perspective (refer to ***Figure 5.4.38*** below).

The ‘development triangle’ of Jeffreys Bay, Humansdorp and St. Francis Bay where the highest pressure for development is experienced, and the secondary nodes of Hankey and Patensie, are identified for focussed investment in infrastructure and human settlement development. As the Gamtoos agricultural sector is expected to grow significantly, the need for human settlement and its associated facilities in the area will also grow. The SDF identifies Andrieskraal as a potential location for the establishment of a new rural settlement to address these needs.

Urban and rural edges are delineated around all settlements to protect valuable agricultural, natural and cultural resources and to enable development of sustainable settlements.

In support of a nodal strategy, existing primary, secondary and rural nodes should be strengthened through infill and higher-density development. Growth expansion and investment should be focussed on the primary nodes of Jeffreys Bay and Humansdorp. Secondary nodes such as Hankey, Patensie and St. Francis Bay should fulfil the functions of basic service delivery and ports to the rural hinterland. Limited growth and investment are proposed for rural nodes such as Loerie and Oyster Bay. The SDF states that the establishment of new rural nodes should

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be carefully considered. Andrieskraal is identified as a new rural node to accommodate some of the future growth in the Gamtoos Valley. Nodal development should support service delivery, compact urban form, and higher densities to ensure sustainability.

Regarding transportation routes, the SDF proposes that the existing network, with the N2 Freeway as the main corridor, be maintained and strengthened by means of upgrading and regular maintenance to ensure economic development and growth. The integrity of movement corridors should be protected with detailed assessment of access proposals during development applications.

A development corridor is proposed along the R102 Road and N2 Freeway between Jeffreys Bay and Humansdorp. This is intended to accommodate commercial, manufacturing, high tech industry and agricultural-related industries and distribution centres.

The SDF proposes a preliminary node framework plan for Oyster Bay (refer to ***Figure 5.4.39*** below). The framework proposes limited opportunities for tourism and residential accommodation for farm labourers. A number of vacant sites are available for such development. According to the SDF, the rural character and low density should be retained, with an emphasis on the integration of Oyster Bay town and Umzamowethu. An urban edge is demarcated to exclude sensitive coastal and critical biodiversity areas, agricultural land and undevelopable land from development. Future residential development is subject to *"confirmation from Eskom as per the Thyspunt policy".*

Regarding Thyspunt, the SDF states the following:

> *"The Thyspunt site, west of Cape St. Francis has been acquired by ESKOM for possible future power generation purposes. As a result, the Kouga Coast Sub-Regional Structure Plan was prepared based on the need to maintain the viability of the Thyspunt site for possible future nuclear power generation.*

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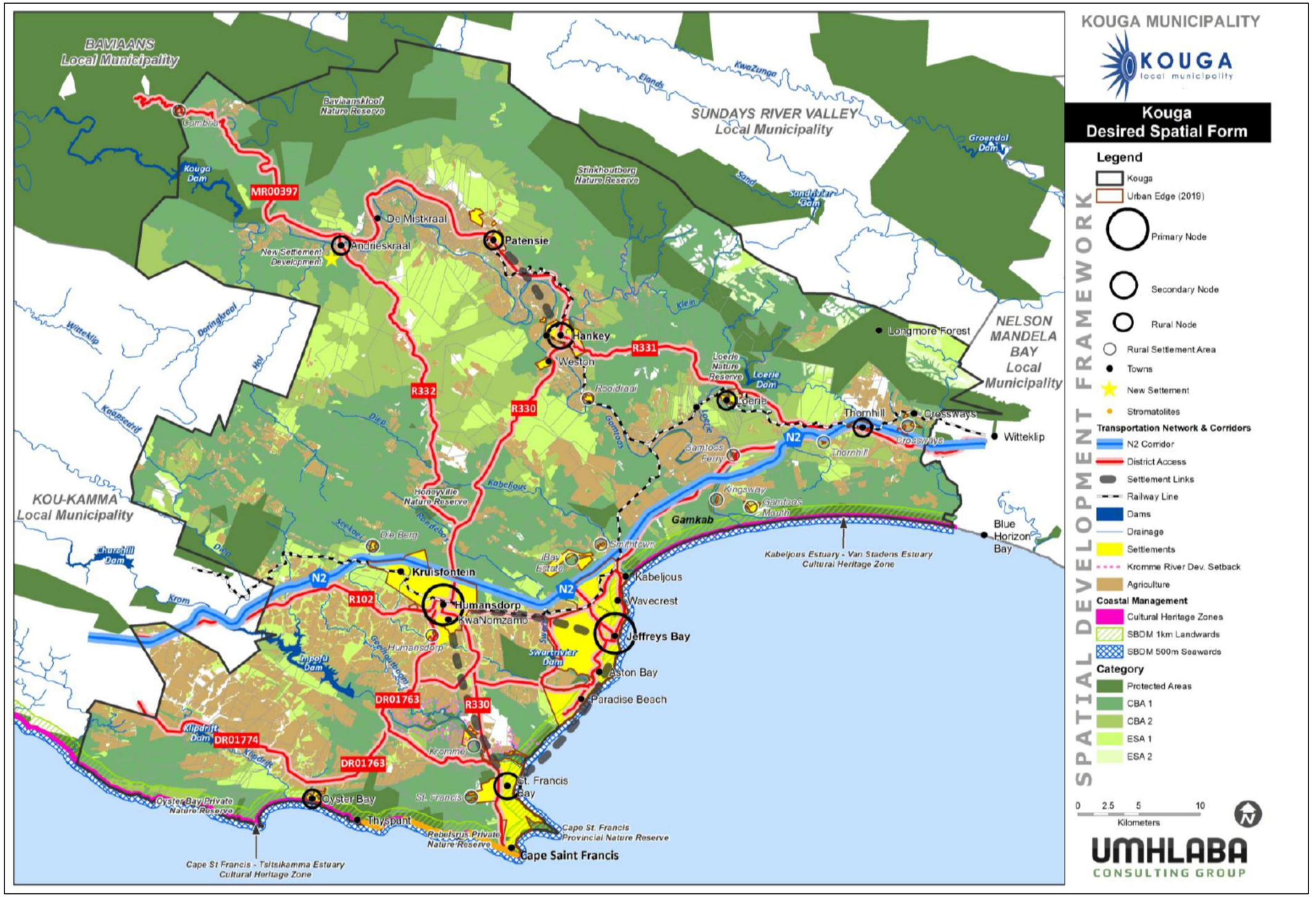


Figure 5.4.38
Kouga Spatial Development Framework

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With respect to the Thyspunt site, the following land use principles apply:

- *To ensure the viability of the Thyspunt site for future possible power generation, development of the surrounding areas must be carefully managed.*

- *Any proposed changes to current land uses in terms of standard rezoning procedures within the 16 km monitoring and emergency zone, must be brought to the attention of Eskom Nuclear Sites Department at Koeberg Nuclear Power Station, for their consideration and comment.*

- *Urban expansion of Oyster Bay and Umzamowethu, which falls within the 0 - 5 km zone should not be permitted.*

- *The provision of a small school (without a hostel) to cater for local children may be supported in Oyster Bay.*

- *Institutional land uses such as prisons, old age homes and hospitals that may result in the concentration of a resident population should not be developed within 16 km of the Thyspunt site, because of potential evacuation difficulties.*

- *No new food processing plants to be allowed to be developed within the 16 km.*

- *Agricultural activities to be monitored within 16 km."*

A minor review of the SDF should be undertaken each year, while a substantial review/redraft should be undertaken every five years. These reviews should be aligned with the IDP and budget planning and approval process.

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Figure 5.4.39
Oyster Bay Framework Plan

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b) Koukamma Spatial Development Framework (2023)

Koukamma Local Municipality is situated in the Sarah Baartman District Municipality. Kareedouw is the administrative centre and accommodates approximately 12 per cent of the municipality's total population.

According to the SDF (Koukamma Local Municipality, 2023), the spatial vision for Koukamma is as follows:

> *"Koukamma is a municipal area that is integrated into the broader national and regional spatial framework and that protects and makes available resources equitably to support social and economic growth and development within the well-connected settlements and rural area."*

The vision is built on the following development objectives:

- a network of connected and efficient settlements;
- a well-protected, accessible and managed natural resource base;
- a well-developed and inclusive rural economy that sustainably utilises resources for the benefit of all the residents.

The provision of adequate housing facilities for the population of the municipal area is one of the key principles and priorities of the SDF. The development of residential areas and the creation of liveable environments is of critical importance for social sustainability and upliftment of the people residing within the municipal area. The focus is to upgrade and formalise existing informal areas and to encourage the eradication of informal housing and/or shacks.

The SDF proposes densification and compaction of existing urban areas in an attempt to direct development pressures towards intensification within existing built-up areas. Existing built-up areas should therefore be used in the most efficient way to accommodate society's needs for further development before consideration is given to the release of greenfield or new urban areas. Proposed urban edges around settlements enable the protection of valuable resources and facilitate compaction for efficient urban form.

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As the municipal economy is dependent on its natural resource base, i.e. extensive areas of significant biodiversity and higher-potential agricultural land, it needs to be utilised in an environmentally sustainable manner. Rural development depends on the natural resource base. Broad-based agrarian transformation leading to sustainable livelihoods, increased rural economic development and improved land reform are therefore encouraged.

The SDF emphasises the economic advantages and prospects of establishing small-scale farming projects. Development of small-scale farming projects is encouraged as it can make a significant contribution to local economic development for rural communities and create opportunities for prospective farmers. Small-scale farming can be established near settlements and along logistics routes.

The character of the unique natural, cultural and working landscape, townscapes and seascapes should be safeguarded to ensure the area remains a well-established tourism and recreation destination. New tourist and resort facilities could be established in the rural area. However, given the economic benefits from tourism-related development, their development and use should be managed to the advantage of retaining natural environments and without destroying agricultural resources.

Appropriate use of the coastline must be ensured, i.e. balancing conservation with development and ensuring that no new coastal developments are undertaken unless these adjoin an existing development.

Existing and potential farming and forestry areas should be safeguarded as productive landscapes, primary economic assets and a food security resource. Limited non-agricultural and service-related industries can be accommodated in the rural area, provided it is entirely self-sufficient, i.e. the extension of the municipal reticulation network is not required.

In general, the provision of community facilities and associated services to rural communities should take place in existing settlements.

The composite spatial framework integrates the various spatial strategies and policies to reflect the spatial intentions of the municipality (refer to ***Figure 5.4.40*** below).

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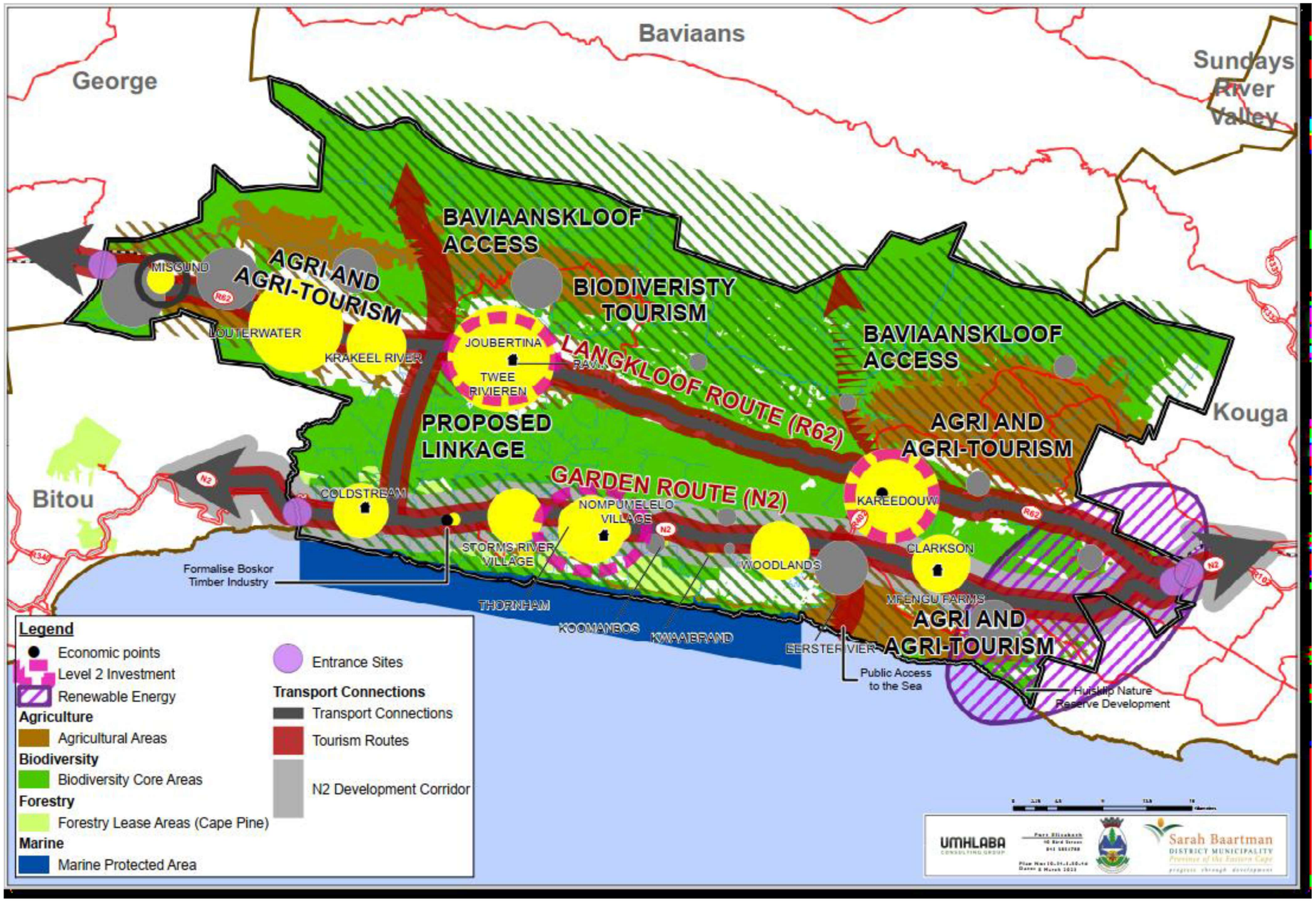


Figure 5.4.40
Koukamma Spatial Development Framework

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Regarding future development in Kareedouw, the SDF proposes limited residential and industrial infill development on vacant and underutilised land situated to the north of the existing urban area (refer to ***Figure 5.4.41***).

c) Measures to Control Development around the Nuclear Installation(s)

Development in the vicinity of the nuclear installation(s) should be controlled and/or monitored in consultation with the relevant provincial and/or local municipal authorities. This is to ensure that no change of land use occurs within the vicinity which may give rise to activities that may pose an external threat to the nuclear installation(s), e.g. a restriction on the location of hazardous industries, or those which may have a detrimental impact on emergency planning. These requirements need to be incorporated into SDFs and strategic planning directives. In this regard, and as highlighted above, a number of measures have already been incorporated into the Kouga SDF.

It is essential to ensure that the requirements and needs of the nuclear installation(s) are considered and accounted for in SDFs. At the drafting of SDFs, Eskom should be involved in the process, before SDFs are approved by the relevant authorities. This should be a requirement for the drafting of all SDFs that include the site.

Furthermore, all proposals to rezone agricultural land or to facilitate institutional uses (i.e. significant land use changes) within the site vicinity should be referred to Eskom for comment prior to decisions being made by the relevant authority.

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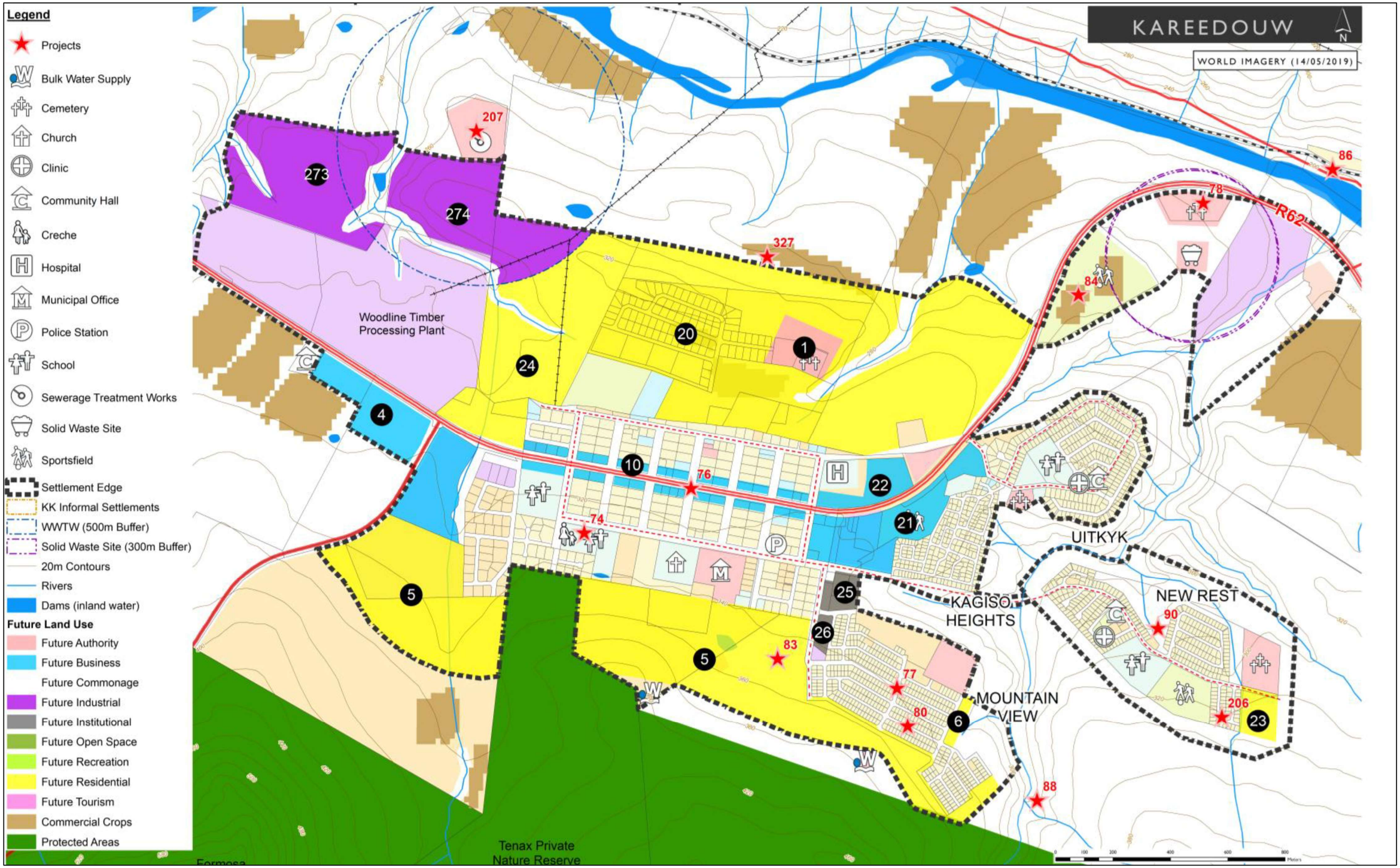


Figure 5.4.41
Kareedouw Framework Plan

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5.4.11 Habit Survey

A habit survey (PSI Risk Consultants, 2024) was carried out during 2024 and is attached hereto as a reference document. The information contained in the survey are reported on in ***Chapter 7***. Elements thereof may also inform other sections, e.g. ***Section 5.5*** (Land and Water Use).

5.4.12 Projected Cumulative Population in the Emergency Planning Zones

5.4.12.1 Population Distribution

This subsection presents demographic data in terms of the emergency planning zones[3] (EP zones) that apply to the site, as defined in ***Chapter 8***.

The purpose of the site characterisation is to inform emergency planning and remedial measures that must be considered to minimise the preliminary estimation of public exposure in case of a potential radiological incident or accident.

Demographic data were presented for the 0.0 km to 0.8 km EPZ, the 0.8 km to 3.0 km EPZ and the 3.0 km to 40 km EPZ (Eskom, 2022).

Note that the EPZ distances are not measured from the site centroid, but from the demarcated enveloping footprint. The exact position of the buildings of the new nuclear installation(s) is currently not known.

Data presented for population distribution inform evacuation, shelter, thyroid blocking, temporary relocation, on-going monitoring and public communication (Eskom, 2022).

Data presented for gender, age and dwelling type inform evacuation, shelter, thyroid blocking and temporary relocation only (Eskom, 2022).

[3] Emergency Planning Zones represent areas in which planning for protective actions must take place. The zones, as well as the required actions in the respective zones, are to be based on the consequences due to possible accidents which should be determined from a hazard assessment and a plant-specific risk analysis where relevant (National Nuclear Regulator, 2012).

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Current Distribution

The permanent population distribution for 2022 is presented in ***Drawing 5.4.23***.

2022

0.0 km to 0.8 km EPZ (Exclusion Zone)

It is estimated that this EP zone had a permanent population (2022) of 185 persons if current trends persist. However, this EPZ falls within the owner controlled boundary where no permanent population is expected.

0.8 km to 3.0 km EPZ

It is estimated that this EP zone had a permanent population (2022) of 629 persons.

The largest portion of this permanent population (approximately 435 persons) is located in the west-northwest sector. This sector corresponds with portions of the Oyster Bay settlement.

3.0 km to 40 km EPZ

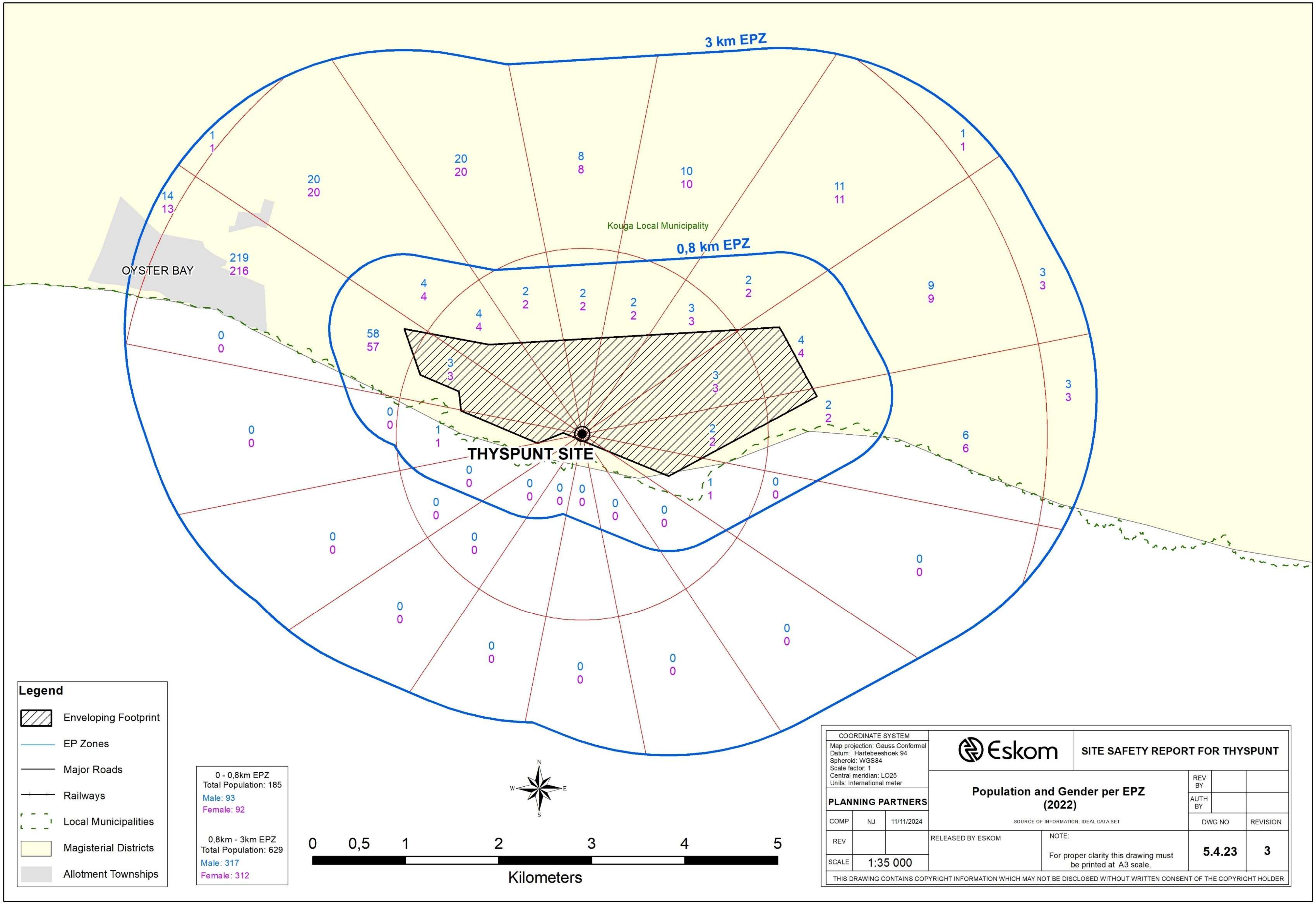
It is estimated that this EP zone had a permanent population (2022) of 95 534 persons.

The largest population concentrations are in a north-northeast direction of the site (approximately 35 463 persons), coinciding with the towns of Humansdorp and Hankey.

Substantial portions of the permanent population of this EP zone are located in a northeastern direction of the site (approximately 30 367 persons), east-northeastern direction of the site (approximately 6 475 persons) and eastern direction of the site (approximately 4 696 persons), coinciding with the town of Jeffreys Bay and St. Francis Bay.

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3 km EPZ
0,8 km EPZ
Kouga Local Municipality
OYSTER BAY
THYSPUNT SITE
Legend
Enveloping Footprint
EP Zones
Major Roads
Railways
Local Municipalities
Magisterial Districts
Allotment Townships
0 - 0,8km EPZ
Total Population: 185
Male: 93
Female: 92
0,8km - 3km EPZ
Total Population: 629
Male: 317
Female: 312
0 0,5 1 2 3 4 5
Kilometers
N S E W
COORDINATE SYSTEM
Map projection: Gauss Conformal
Datum: Hartebeeshoek 94
Spheroid: WGS84
Scale factor: 1
Central meridian: LO25
Units: International meter
PLANNING PARTNERS
COMP NJ 11/11/2024
REV
SCALE 1:35 000
Eskom
SITE SAFETY REPORT FOR THYSPUNT
Population and Gender per EPZ
(2022)
SOURCE OF INFORMATION: IDEAL DATA SET
REV BY
AUTH BY
DWG NO 5.4.23
REVISION 3
RELEASED BY ESKOM
NOTE:
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Projected Distribution

The projected maximum cumulative population distribution for 2024, 2036, 2096 and 2130 is presented in ***Drawings 5.4.24*** to ***5.4.27*** and ***Table 4.5.20***.

2024

0.0 km to 0.8 km EPZ

A permanent population of approximately 170 persons was projected for this EP zone by 2024 if current trends persist. However, this EPZ falls within the owner controlled boundary where no permanent population is expected.

A total cumulative population of approximately 175 persons was projected for this EP zone for 2024 if current trends persist. However, this EPZ falls within the owner controlled boundary where no population is expected.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated within the Kouga Spatial Development Framework to control development around the nuclear installation(s).

0.8 km to 3.0 km EPZ

A permanent population of approximately 595 persons was projected for this EP zone by 2024.

The largest portion of this permanent population (approximately 471 persons) is located in the west-northwest sectors. These sectors correspond with portions of the Oyster Bay settlement.

A total cumulative population of approximately 613 persons was projected for this EP zone by 2024.

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As with the permanent population, the largest portion of this total cumulative population (approximately 488 persons) is located in the west-northwest sectors.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

3.0 km to 40 km EPZ

A permanent population of approximately 96 419 persons was projected for this EP zone by 2024.

The largest population concentrations are in a north-northeast direction of the site (approximately 36 395 persons), coinciding with urban settlements within the site region. In addition, the population distribution shows spikes around other main towns in the site region, towards the northeast, east-northeast and east.

A total cumulative population of approximately 99 925 persons was projected for this EP zone by 2024.

As with the permanent population, total cumulative population concentrations correspond with urban settlements within the site region, northeast, east-northeast and east of the site.

2036

0.0 km to 0.8 km EPZ

A permanent population of approximately 207 persons was projected for this EP zone by 2036 if current trends persist. However, this EPZ falls

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within the owner controlled boundary where no permanent population is expected.

A total cumulative population of approximately 212 persons was projected for this EP zone for 2036 if current trends persist. However, this EPZ falls within the owner controlled boundary where no population is expected.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

0.8 km to 3.0 km EPZ

A permanent population of approximately 775 persons was projected for this EP zone by 2036.

The largest portion of this permanent population (approximately 654 persons) is located in the west-northwest sectors. These sectors correspond with portions of the Oyster Bay settlement.

A total cumulative population of approximately 796 persons was projected for this EP zone by 2036.

As with the permanent population, the largest portion of this total cumulative population (approximately 673 persons) is located in the west-northwest sectors. These sectors correspond with portions of the Oyster Bay settlement.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population

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numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

3.0 km to 40 km EPZ

A permanent population of approximately 124 224 persons was projected for this EP zone by 2036.

The largest population concentrations are in a north-northeast direction of the site (approximately 46 789 persons), coinciding with the towns of Humansdorp and Hankey. In addition, the population distribution shows spikes around the towns of Jeffreys Bay and St. Francis Bay.

A total cumulative population of approximately 128 573 persons was projected for this EP zone by 2036.

As with the permanent population, total cumulative population concentrations correspond with urban settlements towards the north-northeast, northeast, east-northeast and east within the site region.

2096

0.0 km to 0.8 km EPZ

A permanent population of approximately 247 persons was projected for this EP zone by 2096 if current trends persist. However, this EPZ falls within the owner controlled boundary where no permanent population is expected.

A total cumulative population of approximately 253 persons was projected for this EP zone for 2096 if current trends persist. However, this EPZ falls within the owner controlled boundary where no permanent population is expected.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population

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numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

0.8 km to 3.0 km EPZ

A permanent population of approximately 938 persons was projected for this EP zone by 2096.

The largest portion of this permanent population (approximately 713 persons) is located in the west-northwest sectors. These sectors correspond with portions of the Oyster Bay settlement.

A total cumulative population of approximately 964 persons was projected for this EP zone by 2096.

As with the permanent population, the largest portion of this total cumulative population (approximately 836 persons) is located in the west-northwest sectors.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

3.0 km to 40 km EPZ

A permanent population of approximately 201 486 persons was projected for this EP zone by 2096.

The largest population concentrations are in a north-northeast direction of the site, (approximately 85 548 persons), coinciding with the towns of

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Humansdorp and Hankey. In addition, the population distribution shows spikes around the towns of Jeffreys Bay and St. Francis Bay.

A total cumulative population of approximately 208 609 persons was projected for this EP zone by 2096.

As with the permanent population, total cumulative population concentrations correspond with urban settlements towards the north-northeast, northeast, east-northeast and east within the site region.

2130

0.0 km to 0.8 km EPZ

A permanent population of approximately 238 persons was projected for this EP zone by 2130 if current trends persist. However, this EPZ falls within the owner controlled boundary where no permanent population is expected.

A total cumulative population of approximately 244 persons was projected for this EP zone for 2130 if current trends persist. However, this EPZ falls within the owner controlled boundary where no population is expected.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

0.8 km to 3.0 km EPZ

A permanent population of approximately 899 persons was projected for this EP zone by 2130.

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The largest portion of this permanent population (approximately 780 persons) is located in the west-northwest sectors. These sectors correspond with portions of the Oyster Bay settlement.

A total cumulative population of approximately 928 persons was projected for this EP zone by 2130.

As with the permanent population, the largest portion of this total cumulative population (approximately 803 persons) is located in the west-northwest sectors.

The projected number of persons indicated above is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EPZ. This is to ensure that no change of land use occurs within the vicinity of the nuclear installation(s) which may give rise to population numbers or activities that may have a detrimental impact on emergency planning.

As indicated in ***Subsection 5.4.10.2*** (Projected Regional Activities and Measures to Control Development around the Site), a number of measures were incorporated in the Kouga Spatial Development Framework to control development around the nuclear installation(s).

3.0 km to 40 km EPZ

A permanent population of approximately 201 860 persons was projected for this EP zone by 2130.

The largest population concentrations (approximately 86 656 persons) are in a north-northeast direction of the site, coinciding with the towns of Humansdorp and Hankey. In addition, the population distribution shows spikes around the towns of Jeffreys Bay and St. Francis Bay.

A total cumulative population of approximately 209 026 persons was projected for this EP zone by 2130.

As with the permanent population, total cumulative population concentrations correspond with urban settlements towards the north-northeast, northeast, east-northeast and east within the site region.

Table 5.4.20 below provides a summary of the permanent population and the total cumulative population in emergency planning zones for 2024, 2036, 2096 and 2130.

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Table 5.4.20
Summary of Permanent and Cumulative Population in Emergency Planning Zones in the Site Region (2024, 2036, 2096 and 2130)

Year	Population per Emergency Planning Zone		
	EPZ (0.0 km – 0.8 km)*	**EPZ (0.8 km – 3.0 km)**	**EPZ (3.0 km – 40 km)**
Permanent Population			
2024	0 persons	595 persons	96 419 persons
2036	0 persons	775 persons	124 224 persons
2096	0 persons	938 persons	201 486 persons
2130	0 persons	899 persons	201 860 persons
Total Cumulative Population			
2024	0 persons	613 persons	99 925 persons
2036	0 persons	796 persons	128 573 persons
2096	0 persons	964 persons	208 609 persons
2130	0 persons	928 persons	209 026 persons

* Within owner controlled boundary.

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-80000 -40000 0 40000

-3760000 -3800000 -3840000

N NW NE W E SW S

EPZ 40km EPZ 3km EPZ 0,8km

50km 15km 40km 35km 30km 25km 20km 15km 10km 6,5km 5km

PATENSIE HANKEYL LOERIE THORNHILL CROSSWAYS GAMTOOS MOUTH JEFFREYS BAY PELLSRUS PARADYSSTRAND AMANINZI ST FRANCIS LINKS SEA VISTA CAPE ST FRANCIS KRUISFONTEIN HUMANSDORP KAREEDOUW WOODLANDS CLARKSON

COLCHESTER UITENHAGE COEGA PORT ELIZABETH MOTHERWELL DESPATCH WELLS ESTATE KWA NOBUHLE KWAMAGXAKI (UITENHAGE) REDHOUSE KWADWESI AMSTERDAMHOEK ROCKLANDS BLOEMENDAL SWARTKOPS BETHELSDORP IBHAYI SWARTKOPS FITCHHOLME RENDALLTON WEDGEWOOD NEW BRIGHTON ST ALBANS GREENBUSHES PARSONS VLEI GELVANDALE MALABAR KORSTEN NORTH END WESTERING WESTLANDS CROCKARTS HOPE HUNTERS RETREAT COTSWOLD KABEGA FRAMESBY MOUNT ROAD MURRAY PARK BAY WEST PORT ELIZABETH CENTRAL DENHOLME SUNRIDGE PARK FAIRVIEW MILL PARK SOUTH END BLUE HORIZON BAY COLLEEN GLEN (PORT ELIZABETH) LORRAINE HUMEWOOD CHARLO WALMER BEACHVIEW ROYALSTON MOUNT PLEASANT CLARENDON MARINE THEESCOMBE SUMMERSTRAND KINI BAY SKOENMAKERSKOP

OYSTER BAY

Legend

- Enveloping Footprint
- EP Zones
- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

0 5 10 20 30 40 50

Kilometers

COORDINATE SYSTEM			Eskom	SITE SAFETY REPORT FOR THYSPUNT		
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			**Total Cumulative Population Distribution per EPZ within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2024)**		REV BY	
PLANNING PARTNERS					AUTH BY	
COMP	NJ	11/11/2024	SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners		DWG NO	REVISION
REV			RELEASED BY ESKOM	NOTE: For proper clarity this drawing must be printed at A3 scale.	**5.4.24**	**1**
SCALE	1:400 000					

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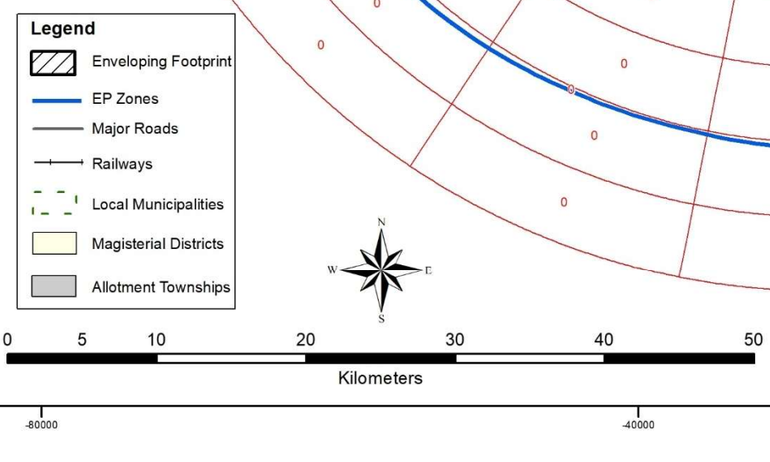
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EPZ 40km EPZ 3km EPZ 0,8km

PATENSIE HANKEY LOERIE THORNHILL CROSSWAYS GAMTOOS MOUTH KAREEDOUW WOODLANDS CLARKSON KRUISFONTEIN HUMANSDORP JEFFREYS BAY PELLSRUS PARADYSSTRAND AMANINZI ST FRANCIS LINKS SEA VISTA CAPE ST FRANCIS

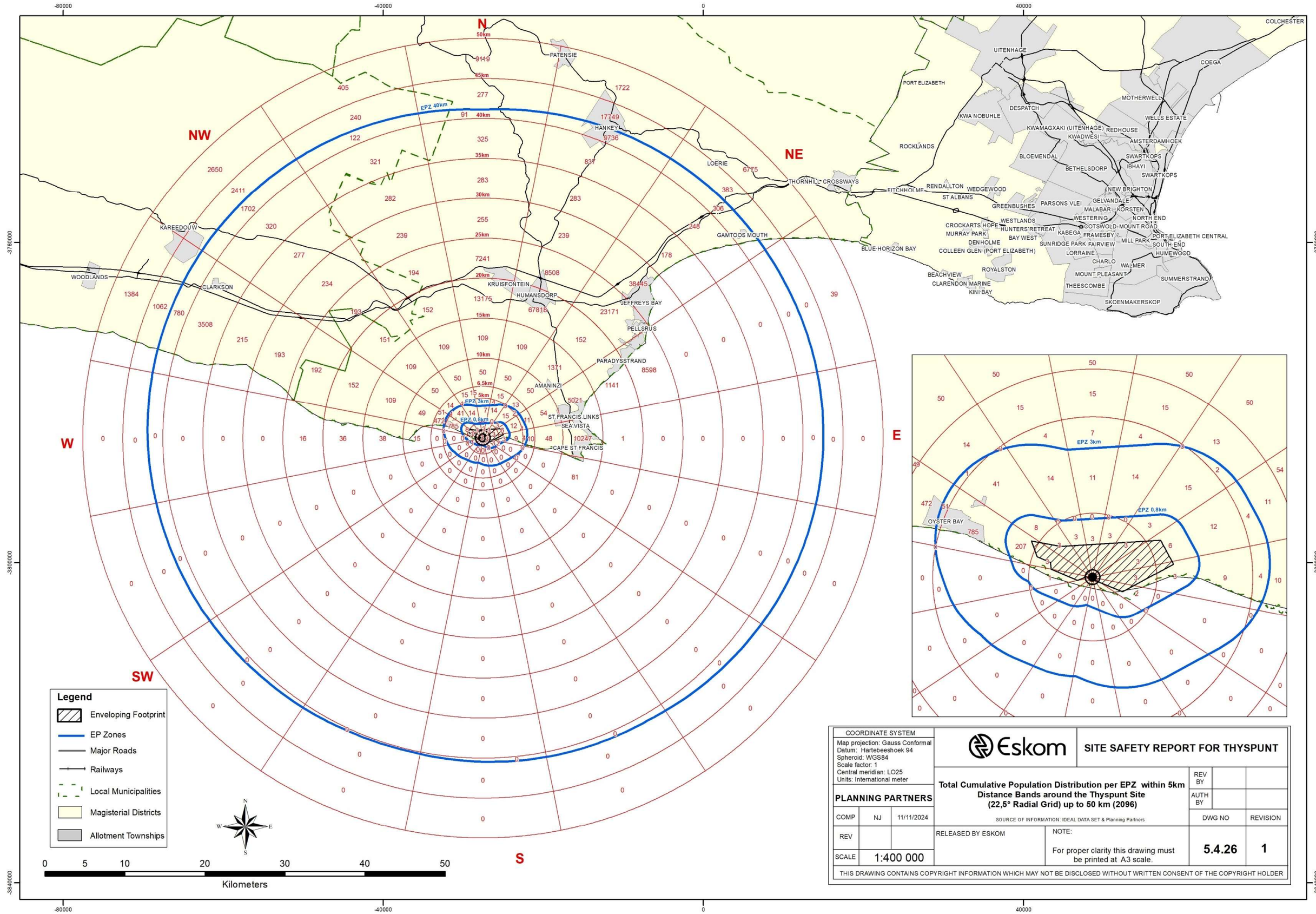
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OYSTER BAY



COORDINATE SYSTEM Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	Eskom	SITE SAFETY REPORT FOR THYSPUNT			
PLANNING PARTNERS	Total Cumulative Population Distribution per EPZ within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2036) SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners		REV BY		
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COMP NJ 11/11/2024			DWG NO	REVISION	
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Legend

- Enveloping Footprint
- EP Zones
- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

0 5 10 20 30 40 50

Kilometers

COORDINATE SYSTEM			Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter			Total Cumulative Population Distribution per EPZ within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2096) SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners	REV BY / AUTH BY
PLANNING PARTNERS				DWG NO / REVISION
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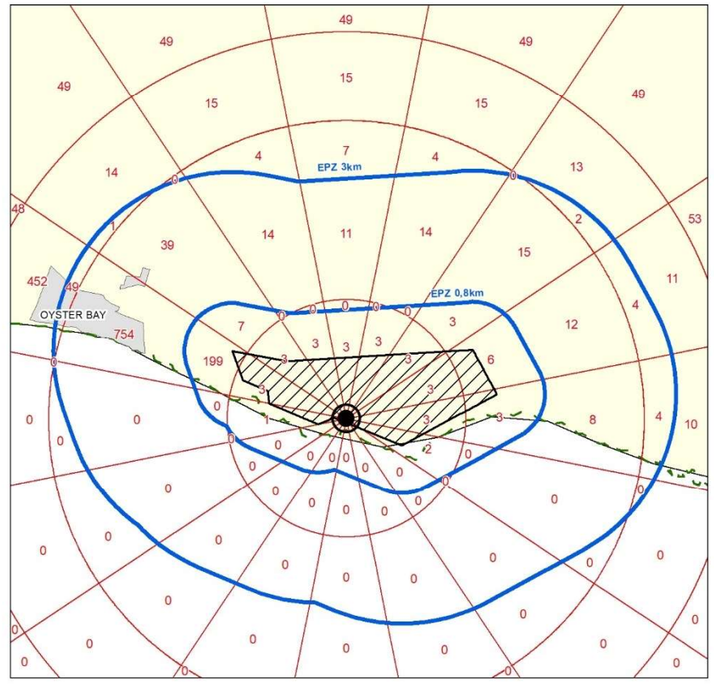
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N NW NE W E SW S

50km 45km 40km 35km 30km 25km 20km 15km 10km 6.5km 5km EPZ 3km EPZ 0,8km EPZ 40km

PATENSIE HANKEY LOERIE THORNHILL CROSSWAYS GAMTOOS MOUTH KAREEDOUW WOODLANDS CLARKSON KRUISFONTEIN HUMANSDORP JEFFREYS BAY PELLSRUS PARADYSSTRAND AMANINZI ST FRANCIS LINKS SEA VISTA CAPE ST FRANCIS BLUE HORIZON BAY

COLCHESTER UITENHAGE COEGA PORT ELIZABETH MOTHERWELL DESPATCH WELLS ESTATE KWA NOBUHLE KWAMAGXAKI (UITENHAGE) REDHOUSE KWADWESI AMSTERDAMHOEK ROCKLANDS BLOEMENDAL SWARTKOPS BETHELSDORP IBHAYI SWARTKOPS FITCHHOLME RENDALLTON WEDGEWOOD NEW BRIGHTON ST ALBANS GELVANDALE GREENBUSHES PARSONS VLEI MALABAR KORSTEN WESTERING NORTH END CROCKARTS HOPE WESTLANDS HUNTERS RETREAT COTSWOLD MOUNT ROAD MURRAY PARK KABEGA FRAMESBY PORT ELIZABETH CENTRAL BAY WEST DENHOLME SUNRIDGE PARK FAIRVIEW MILL PARK SOUTH END COLLEEN GLEN (PORT ELIZABETH) LORRAINE HUMEWOOD CHARLO WALMER ROYALSTON BEACHVIEW MOUNT PLEASANT CLARENDON MARINE SUMMERSTRAND KINI BAY THEESCOMBE SKOENMAKERSKOP



Legend

- Enveloping Footprint
- EP Zones
- Major Roads
- Railways
- Local Municipalities
- Magisterial Districts
- Allotment Townships

0 5 10 20 30 40 50

Kilometers

COORDINATE SYSTEM	Eskom	SITE SAFETY REPORT FOR THYSPUNT
Map projection: Gauss Conformal Datum: Hartebeeshoek 94 Spheroid: WGS84 Scale factor: 1 Central meridian: LO25 Units: International meter	**Total Cumulative Population Distribution per EPZ within 5km Distance Bands around the Thyspunt Site (22,5° Radial Grid) up to 50 km (2130)**	REV BY / AUTH BY
PLANNING PARTNERS	SOURCE OF INFORMATION: IDEAL DATA SET & Planning Partners	DWG NO: **5.4.27** / REVISION: **1**
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Gender

Population characteristics for gender within EP zones in the vicinity of the site (i.e. 16 km radius) are presented below and illustrated in ***Drawing 5.4.23***.

0.0 km to 0.8 km EPZ

Of the approximate 185 persons estimated, if current trends persist, in the 0.0 km to 0.8 km EP zone in 2022, approximately 93 persons (50.2 per cent) are male and 92 persons (49.8 per cent) are female. This distribution is similar to the gender distribution determined for the 16 km radius, which presents 50.5 per cent males and 49.5 per cent females (refer to ***Subsection 5.4.5.1*** (Current Permanent Population)).

However, this EPZ falls within the owner controlled boundary where no permanent population is expected.

0.8 km to 3.0 km EPZ

Of the approximately 629 persons estimated in the 0.8 km to 3.0 km EP zone in 2022, approximately 317 persons (50.4 per cent) are male and 312 persons (49.6 per cent) are female. This distribution is similar to the gender distribution determined for the 16 km radius, which presents 50.5 per cent males and 49.5 per cent females (refer to ***Subsection 5.4.5.1*** (Current Permanent Population)).

5.4.12.2 Special Population Groups

Homes for the Aged

There are no homes for the aged (2023) located in either the 0.0 km to 0.8 km EP zone or the 0.8 km to 3.0 km EP zone.

The nearest home for the aged is Ons Tuiste which has 170 residents and is located at 17.25 km north-northeast (refer to ***Drawing 5.4.11***). There is a total of 5 homes for the aged located within the 35 km radius.

Homes for the Disabled

There are no homes for the disabled (2023) located within any of the EP zones or within 35 km from the site.

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Children's Homes

There are no children's homes (2023) located within any of the EP zones or within 35 km from the site.

Prisons

There are no prisons (2023) located in any of the EP zones or within the 35 km radius. The nearest correctional service facility is located at Patensie, 42.68 km north-northeast of the site.

Hospitals and Clinics

There are no hospitals (2023) located within either the 0.0 km to 0.8 km EP zone or the 0.8 km to 3.0 km EP zone.

Three hospitals are located within the 3.0 km to 40 km EP zone. These are the P.Z. Meyer TB Hospital (17.44 km north-northeast) with 57 beds, the Life Isivivana Private Hospital (17.59 km north-northeast) with 90 beds and the Humansdorp Provincial Hospital (17.6 km north-northeast) with 170 beds (refer to ***Drawing 5.4.12***).

There are no community health centres/clinics (2023) within either the 0.0 km to 0.8 km EP zone or the 0.8 km to 3.0 km EP zone.

There are six community health centres/clinics within 35 km of the site. The closest community health centre/clinic is the Oyster Bay Clinic at 4.3 km NW (refer to ***Drawing 5.4.11***).

Education Facilities

Universities

There are no universities (2023) located within any of the EP zones.

There is one tertiary education facility located within the 3.0 km to 40 km EP zone (refer to ***Drawing 5.4.12***). This is a Further Education and Training (FET) college, the Injongo FET and SETA College (25 km northeast of the site in Jeffreys Bay) with 200 students and approximately 8 educators.

Schools

There are no schools (2023) within either the 0.0 km to 0.8 km EP zone or the 0.8 km to 3.0 km EP zone (refer to ***Drawing 5.4.12***).

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A total of 25 schools are located within the 3.0 km to 40 km EP zone with a total of approximately 16 656 learners. The nearest school to the site is Sandwater Farm School (4.28 km northwest) with 135 learners in 2023.

Day-care Centres/Early Childhood Development Centres

There are no day-care centres (2023) within either the 0.0 km to 0.8 km EP zone or the 0.8 km to 3.0 km EP zone (refer to ***Drawing 5.4.11***).

There is a total of 67 day-care centres within 35 km from the site, with the nearest day-care centre to the site being the Living Ubuntu Edu-care (4.28 km northwest) with 19 children.

Informal Settlements

There are no informal settlements (2023) within either the 0.0 km to 0.8 km EP zone or the 0.8 km to 3.0 km EP zone (refer to ***Drawing 5.4.11***).

A total of 18 informal settlements are located within 35 km of the site. The nearest informal settlement to the site is Umzamowethu – Oyster Bay (5 km NW) with approximately 179 shacks.

Table 5.4.21 below provides a summary of special population groups in the EPZ and 35 km radius.

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Table 5.4.21
Summary of Special Population Groups in EPZ and 35 km Radius

Special Population Group		Number of Facilities, Residents, Children, Beds, Students and Informal Settlements per specified EPZ or Radius				Nearest Facility
		EPZ 0 – 0.8 km	EPZ 0.8 – 3 km	EPZ 3 – 40 km	35 km Radius	
Homes for the Aged (2023)	Facilities	0	0	5	5	Ons Tuiste, 170 residents, 17.25 km north-northeast
	Residents	0	0	1 023	1 023	
Homes for the Disabled (2023)	Facilities	0	0	0	0	Leonard Cheshire Home, 130 km northeast
	Residents	0	0	0	0	
Children's Homes (2023)	Facilities	0	0	0	0	SOS Children's Village, 112.1 km east
	Children	0	0	0	0	
Prisons (2023)	Facilities	0	0	0	0	Patensie Correctional Services, 42.68 km north-northeast
	Prisoners	0	0	0	0	
Clinics (2023)	Facilities	0	0	6	6	Oyster Bay Clinic, 4.3 km northwest
Hospitals (2023)	Facilities	0	0	3	3	P.Z. Meyer TB Hospital, 17.44 km north-northeast
	Beds	0	0	170	170	
Universities (2023)	Facilities	0	0	1	1	Injongo FET and SETA College, 25 km northeast
	Students	0	0	200	200	
Schools (2023)	Facilities	0	0	25	23	Sandwater Farm School, 4.28 km northwest
	Children	0	0	16 656	16 656	
Day-care Centres (2023)	Facilities	0	0	67	67	Living Ubuntu Edu-care, 4.28 km northwest
	Children	0	0	2 358	2 358	
Informal Settlements (2023)	Settlements	0	0	18	18	Umzamowethu – Oyster Bay, 5 km northwest

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5.4.13 Management of Uncertainties

The evaluation of demographic characteristics of the site vicinity and site region involves the following uncertainties:

Population Projections

For spatial planning purposes in South Africa, population projections and its distribution are normally undertaken for a maximum period of 20 years. This constitutes best practice as various factors influence population data and growth within a particular geographical region. Such factors include, *inter alia*, fertility rates, birth rates, infection rates of HIV/AIDS and tuberculosis, death rates, migration, government policies and spending (e.g. economic policies, spatial policies such as the identification of new development nodes). These factors fluctuate over time and cannot be reliably foreseen over long periods. Subsequently, the reliability of population projections and its distribution based on the 2011 Census decreases over time.

As population data and growth rates are to a large extent dependent on variable factors, it is essential to update or confirm population distribution data and projected population data on a regular basis, e.g. shortly after the completion of national censuses.

Tourist Data and Projections

Tourist population numbers and projections should periodically be reviewed and updated throughout the nuclear installation(s) lifetime. This should be carried out at the time of review and update of the permanent population distribution data and projected population data, e.g. shortly after the completion of national censuses.

Transient Nodes and Recreational Destinations

When sourcing data for main transient nodes, not all participants are always willing to participate (e.g. shopping centres). A limited number of gaps in data may therefore be expected from time to time. Tourism in the region is directly linked to coastal facilities, places of natural and historic interest and conservation areas. It is envisaged that these established facilities and places of interest will continue to be the focus of recreational destinations.

It is however, not possible to project with reliable accuracy the number, location and capacity of future/new transient nodes and recreational destinations and venues. Periodic review and update of data will be

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needed during the lifetime of the nuclear installation(s).

Special Population Groups

When sourcing data for special population groups, not all participants are always willing to participate (e.g. homes for the aged, children's homes, ECDCs). A limited number of gaps in data may therefore be expected from time to time. Further, it is not possible to project, with any accuracy, the number and location of future/new special population groups. Periodic review and update of data will be needed during the lifetime of the nuclear installation(s).

Spatial Planning

Authorities must regularly review forward planning documents and frameworks (approximately every five to ten years). As government policies, investment opportunities and community needs may change over time, spatial development frameworks may undergo amendments.

Projected Population within the EPZ

The projected number of persons within the EP zones is based on current growth trends identified in ***Subsection 5.4.8.1*** (Permanent Population Projection). However, development in the vicinity of the nuclear installation(s) must be monitored and controlled, with special mention of the EP zones.

5.4.14 Monitoring

Following legal requirements and guideline documents as contained in ***Subsection 5.4.3*** (Regulatory Framework), information on existing and projected population distributions in the site region, including resident populations and to the extent possible, transient populations, are envisaged to be collected and kept up to date over the life of the nuclear installation(s).

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5.4.14.1 Pre-operational Phase

Population Projections

It is essential to update or confirm population distribution data and projected population figures on a regular basis, e.g. shortly after the completion of national censuses.

Tourist Data and Projections

It is recommended that the tourist population and projections be periodically reviewed and updated. This should be carried out at the time of the review and update of permanent population distribution data and projected population data, e.g. shortly after the completion of national censuses.

Transient Nodes and Recreational Destinations

The number, location and capacity of existing and future transient nodes and recreational destinations and venues should be periodically reviewed and updated. This should be performed at the time of review and update of the permanent population distribution data and projected population data, e.g. shortly after the completion of national censuses.

Special Population Groups

The number and location of existing and future special population groups should periodically be reviewed and updated. This should be carried out at the time of review and update of the permanent population distribution data and projected population data, e.g. shortly after the completion of national censuses.

Spatial Planning

It is essential to ensure that the requirements and needs of the nuclear installation(s) are considered and accounted for by local authorities in strategic planning directives, SDFs and applicable by-laws when these are periodically updated or amended.

Population within the EPZ

Projected populations within the EP zones must be monitored and controlled to ensure change of land use within the site vicinity is evaluated for its potential impact on emergency planning.

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5.4.14.2 Operational Phase

Population Projections

It is essential to update or confirm population distribution estimates and projected population data throughout the nuclear installation(s) lifetime on a regular basis, e.g. shortly after the completion of national censuses.

Tourist Data and Projections

Tourist population numbers and projections should periodically be reviewed and updated throughout the nuclear installation(s) lifetime. This should be carried out at the time of review and update of the permanent population distribution data and projected population data, e.g. shortly after the completion of national censuses.

Transient Nodes and Recreational Destinations

The number, location and capacity of existing and future transient nodes and recreational destinations and venues should be periodically reviewed and updated throughout the nuclear installation(s) lifetime. This should be performed at the time of review and update of the permanent population distribution data and projected population data, e.g. shortly after the completion of national censuses.

Special Population Groups

The development of existing and future special population groups in terms of their number and location should periodically be reviewed and updated throughout the nuclear installation(s) lifetime. This should be performed at the time of review and update of the permanent population distribution data and projected population data, e.g. shortly after the completion of national censuses.

Spatial Planning

It is essential to ensure that the requirements and needs of the nuclear installation(s) are considered and taken into account by local authorities in strategic planning directives, SDFs and applicable by-laws when these are periodically updated or amended.

Population within the EPZ

Projected populations within the EP zones must be monitored and controlled to ensure change of land use within the site vicinity is

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evaluated for its potential impact on emergency planning.

5.4.14.3 Post Operational Phase

As for the operational stage of the nuclear installation(s), the same demographic data should be monitored in the vicinity of the site (e.g. 16 km). The scope and focus of the monitoring will depend on the level of contamination of the site and the end state of decommissioning, e.g. restricted use (e.g. temporary storage of waste) or unrestricted release from regulatory control (e.g. use for farming or residential area).

These and other considerations should be taken into account in strategic planning directives, SDFs and applicable by-laws.

5.4.15 Management System

The assessment of present and future demographic characteristics around the nuclear installation(s) entailed the following components:

- desktop studies;
- site investigations;
- data assessment and reporting;
- use of computer software, in particular excel sheets and GIS, for collating, interpretation and presentation of data;
- mapping and creation of a GIS database.

Table 5.4.22 below summarises the activities that were carried out with their respective links to other TSSR sections/chapters and quality control requirements.

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Table 5.4.22
Summary of Activities, Links and Quality Requirements

Activity	Links		Quality Requirements
	Inputs	Outputs	
Population distribution	***Section 5.1*** (Geography) and ***Chapter 9*** (Physical Protection and Security): Provision of site centroid.	***Chapter 7*** (PRIPE): Information utilised for evaluations. ***Chapter 8*** (EP): Information is utilised as input in EP.	Officially accepted data sources; Drawings and tables illustrating population distribution per sector; Peer review.
Population projections	***Section 5.5*** (Land and Water Use): Land use distribution and SDFs.	***Chapter 7*** (PRIPE): Information utilised for evaluations. ***Chapter 8*** (EP): Information is utilised as input in EP.	Officially accepted data sources; Drawings and tables illustrating population distribution per sector; Peer review.
Transient population	***Section 5.5*** (Land and Water Use), ***Section 5.6*** (Adjacent Sea Use) and ***Section 5.7*** (Nearby Transportation, Industrial and Military Facilities): Identification and information regarding recreational facilities, resorts and other tourist destinations as well as shopping centres.		Tables and drawings illustrating information; Peer review.
Special population groups	***Section 5.5*** (Land and Water Use), ***Section 5.6*** (Adjacent Sea Use) and ***Section 5.7*** (Nearby Transportation, Industrial and Military Facilities): Identification and information regarding special population groups and institutional facilities.	***Chapter 8*** (EP): Information is utilised as input in EP.	Tables and drawings illustrating information; Peer review.
Regional activities	***Section 5.5*** (Land and Water Use), ***Section 5.6*** (Adjacent Sea Use) and ***Section 5.7*** (Nearby Transportation, Industrial and Military Facilities): Identification and	***Chapter 7*** (PRIPE): Identification of activities.	Discussion, tables and drawings illustrating information; Peer review.

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Activity	Links		Quality Requirements
	Inputs	**Outputs**	
	information regarding existing and projected site region activities.		
EP zones	***Chapter 9*** (Physical Protection and Security): Exclusion Area Plant Parameter Envelope		Drawings illustrating demography in emergency planning zones.

A quality assurance programme for demography evaluation was established to control the effectiveness of the execution of the site investigation and data analysis. This conforms to the overall management system for this TSSR (refer to ***Chapter 10***, Management System). It also applies the appropriate NNR grading for safety classification of SSR related activities and processes (National Nuclear Regulator, 2008) and Eskom's safety classification procedure (Eskom, 2021). The characterisation of demography was determined as Safety Level 3 and Quality Level 3.

A regulatory compliance matrix (***Table 5.4.23***) is presented below, which confirms that the regulatory requirements with respect to population demographics and the population projections were met in this section of this TSSR.

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Table 5.4.23
Regulatory Compliance Matrix

Act / Regulation	Regulation	Issue	Section Where Covered
Licensing Regulations (Department of Energy, 2011)	5(3)(d)	Population demographics	***Subsections 5.4.5, 5.4.6, 5.4.7*** and ***5.4.9***
Licensing Regulations (Department of Energy, 2011)	5(3)(f)	Projections for the design life of the nuclear installation(s)	***Subsections 5.4.8*** and ***5.4.9***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	6.1(c)	Population density and distribution	***Subsections 5.4.4, 5.4.5, 5.4.6, 5.4.7, 5.4.8, 5.4.9*** and ***5.4.12***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.1	Region of interest to include the area surrounding the site and the EPZ	***Subsection 5.4.4***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.2	Distribution of the population within the region should be determined within 16 sectors of 22.5° each	***Subsection 5.4.4***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.3	Most recent census data for the region should be used in obtaining population distribution	***Subsections 5.4.4.2*** and ***5.4.5***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.4	In the absence of reliable data, a special study should be carried out to determine the population in the region	***Subsections 5.4.6*** and ***5.4.7***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.7	Size of population centres within the low population zone should be limited so that there is a reasonable probability that appropriate protective measures could be taken in the event of a serious accident	***Chapter 8*** ***Subsection 5.4.10.2***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.8	Projected changes in the population should cover the life of the plant and take into account already approved developments and regional plans	***Subsections 5.4.8, 5.4.9*** and ***5.4.10.2***

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Act / Regulation	Regulation	Issue	Section Where Covered
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.9	Data on the present population in the region should be obtained from local authorities or by means of special field surveys and these data should be as accurate and as up to date as possible. The term 'present population' includes the two categories of permanent population and temporary population	***Subsection 5.4.4***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.10	Information on the permanent population should include typical diet of inhabitants	***Subsection 5.4.11***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.11	Information of the temporary population should cover the short-term transient population, such as tourists, and long-term transient population, such as seasonal inhabitants	***Subsections 5.4.6*** and ***5.4.7***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.12	The maximum size of the temporary population and its periods of occupancy in the low population zone should be estimated. Particular types of institutions such as schools, hospitals and prisons within the zone should be identified for the purposes of emergency planning. In the area outside the zone, estimates of the approximate size of the temporary population together with its periods of occupancy should be made	***Subsections 5.4.6***, ***5.4.7, 5.4.8.4*** and ***5.4.12***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.13	Projection of the present population in the region should be made for the expected year of commissioning of the plant and selected years (e.g. every tenth year) over the lifetime of the plant	***Subsections 5.4.8*** and ***5.4.9***

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Act / Regulation	Regulation	Issue	Section Where Covered
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.14	Projections should be made on the basis of population growth rate, migration trends and plans for possible development in the region. The projected figures for permanent population and temporary population should be extrapolated separately if data are available	***Subsections 5.4.8*** and ***5.4.10***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.15	Data should be analysed to give both the current and the projected population distribution in terms of direction and distance from the plant	***Subsections 5.4.5, 5.4.8*** and ***5.4.9***
Regulatory Guide RG-0011 (National Nuclear Regulator, 2016)	8.5.17	Population data collected should be presented in a suitable format and scale to permit correlation with other relevant data, such as data on atmospheric dispersion and on uses of land and water. Additional details should be given for areas closer to the site, especially within the low population zone	***Subsections 5.4.4.1*** and ***5.4.4.3***

The activities carried out as part of the analysis and evaluation of the demography and the results achieved are presented and described in this section of this TSSR.

The databases are referenced in this section and form part of the GIS database that was developed for this section. The results of the analysis are presented in the tables, appendices and drawings prepared for this section. These include:

- permanent population database and distribution;
- transient population database and distribution;
- special population groups database and distribution;
- population projection database and distribution.

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The consideration of district and regional planning is based on qualified interpretation of broad strategic plans, policy and strategic directives by suitably qualified and experienced professionals, approved by Eskom.

The following documents were compiled by the consultant and approved by Eskom to assist in quality assurance and to present a clear and auditable trail showing how key decisions were made and conclusions reached:

- SRK's Integrated Quality Management System and associated Work Instructions;
- the project-specific Project Quality Plan;
- Method Statement;
- Quality Control Plan;
- Project Process Chart.

The demography characterisation has followed a peer review process to ensure that the work is carried out using standard industry methodologies and approaches. The peer review was carried out by a suitably qualified, independent and experienced professional, approved by Eskom. Quality assurance is therefore demonstrated.

Electronic records are stored in a secure central repository with regular off-site backup procedures and subject to Eskom's approval. The overall quality system complies with ***Chapter 10***. All references cited are saved in the central repository.

5.4.16 Conclusions

This section of this TSSR presented the approach and results of the investigation and characterisation of the current and expected future demographic characteristics in the site vicinity and region and those demographic aspects that affect or have importance for the feasibility of the emergency planning over the projected life of the nuclear installation(s).

Current national normative acts and regulations, specifically relevant to a demographic investigation, were applied. Where there are no national requirements, criteria or limits, international standards and best practice were considered.

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Information on existing and projected population distributions in the region, including resident populations and, to the extent possible, transient populations, were collected, analysed and presented. Special attention was paid to the population living in the immediate vicinity of the nuclear installation(s), to densely populated areas and population centres and to special population groups and residential institutions such as homes for the aged, schools and hospitals.

The results of the assessment were presented in the form of figures, drawings and tables in the text above.

In conclusion, the following can be confirmed:

- the permanent population characteristics in the site region and site vicinity were determined;
- the current and future permanent population distribution in the site region and site vicinity were determined;
- the future total cumulative population in the site region and site vicinity were determined;
- the future permanent and total cumulative population in the Emergency Planning Zones were determined;
- studies were conducted to an adequate level of detail for the purpose of PRIPE (***Chapter 7***) and EP (***Chapter 8***);
- appropriate monitoring programmes to provide on-going assurance regarding the viability of the site over its lifecycle can be established;
- this section of this TSSR complies with relevant regulatory requirements.

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APPENDICES

Appendix 5.4.A
Summary: Schools within 50 km (2023)

ID	Name	Learners	Cumulative Learners	Direction	Distance (km)
S1	Sandwater Farm School	135	135	NW	4.28
S2	Kleinplaas Primary School	15	150	NNW	10.01
S3	Sea Vista Primary School	591	741	E	11.70
S4	St. Francis College	134	875	NE	12.02
S5	Lungiso Public School	982	1 857	NNE	16.58
S6	Humansdorp Senior Secondary School	1 986	3 843	NNE	16.81
S7	Mzingisi Primary School	1 338	5 181	NNE	16.90
S8	Rainbow Centre Primary School	91	5 272	NNE	17.08
S9	St. Patrick's (EC) Primary	684	5 956	NNE	17.09
S10	Graslaagte Full Service School	1 495	7 451	NNE	17.10
S11	Nico Malan Secondary School	905	8 356	NNE	17.53
S12	Stulting Primary School	544	8 900	NNE	17.62
S13	Kruisfontein Primary School	969	9 869	NNE	18.58
S14	Global Leadership Academy	419	10 288	NE	24.54
S15	Kings College School	380	10 668	NE	24.55
S16	Makukhanye Primary School	1 284	11 952	NE	24.93
S17	Jeffreys Bay Comprehensive Secondary School	1 588	13 540	NE	25.38
S18	Pellsrus Junior Secondary School	1 265	14 805	NE	25.39
S19	Pharos Primary School	97	14 902	NE	25.60
S20	Jeffreys Bay Primary School	792	15 694	NE	25.72
S21	JBay Academy Primary School	159	15 853	NE	26.04
S22	JBay Academy Secondary school	188	16 041	NE	26.18
S23	Victory JBay Christian School	729	16 770	NE	26.27
S24	Weston Junior Secondary School	203	16 973	NNE	37.48

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ID	Name	Learners	Cumulative Learners	Direction	Distance (km)
S25	Mondplaas (DRC) Primary School	53	17 026	NE	37.71
S26	Clarkson Junior Secondary School	562	17 588	WNW	39.51
S27	Hankey Senior Secondary School	1 003	18 591	NNE	39.52
S28	Bodker Public School	52	18 643	NNE	39.67
S29	Vukani Junior Secondary School	723	19 366	NNE	39.72
S30	Hankey Primary School	1 195	20 561	NNE	39.82
S31	Hankey Senior Secondary School	222	20 783	NNE	39.84
S32	Chigwell Primary School	288	21 071	NNE	41.52
S33	Gamtoos Valley Primary School	191	21 262	NNE	44.07
S34	Loerieheuwel Junior Secondary School	372	21 634	NE	44.57
S35	Boplaas NGK Primary School	29	21 663	NNW	44.91
S36	Patensie Primary School	638	22 301	N	45.36
S37	Patensie Agricultural School	597	22 898	N	45.40
S38	Phumlile Public School	129	23 027	NE	45.40
S39	Qhayiyalethu Intermediate School	929	23 956	NW	45.55
S40	Kareedouw Junior Secondary School	656	24 612	NW	46.13
S41	CVO Omega Akademie	35	24 647	NW	47.07
S42	Hoërskool Paul Sauer	436	25 083	NW	47.49
S43	Gustav Reichel Primary School	110	25 193	WNW	47.54

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Appendix 5.4.B
Early Childhood Development Centres or Day-Care Centres within 35 km (2023)

Code in Drawing	Name	Children	Cumulative Children	Direction	Distance (km)
ECD1	Living Ubuntu Edu-care	19	19	NW	4.28
ECD2	Kokkewiet Crèche	20	39	WNW	4.52
ECD3	Kleinplaas Primary School	7	46	NNW	10.01
ECD4	Talhado Montessori Pre-school and After-care Centre	80	126	E	11.65
ECD5	Disney Centre	67	193	E	11.71
ECD6	Makhulu's Day-care	18	211	E	11.74
ECD7	Magaba's Day-care	12	223	E	11.77
ECD8	St. Francis College Pre-school	53	276	NE	11.93
ECD9	Mja Day-care	23	299	E	12.30
ECD10	Little Urchins Montessori Culture	0	299	ENE	12.73
ECD11	Sakhingomso Crèche	9	308	WNW	13.89
ECD12	Noluthando Day-care Centre	6	314	NNE	16.26
ECD13	Nkqubela Crèche	39	353	NNE	16.37
ECD14	Simanye Day-care Centre	9	362	NNE	16.53
ECD15	Mickey Mouse Day-care	48	410	NNE	16.54
ECD16	Arise and Shine Edu-care	13	423	NNE	16.57
ECD17	Masikhule Edu-care Centre	39	462	NNE	16.79
ECD18	Nolutho Edu-care Centre	17	479	NNE	16.84
ECD19	Lelethu Ikhaya Day-care	49	528	NNE	16.99
ECD20	Kokkewiet Playschool	42	570	NNE	17.20
ECD21	Kate Van Der Merve	44	614	NNE	17.27
ECD22	Siembamba Early Learning Centre	60	674	N	17.33
ECD23	Little Angels Day and Edu-care	67	741	NNE	17.34
ECD24	Kleuterland	56	797	NNE	17.43
ECD25	Wielie Walie	62	859	NNE	17.51
ECD26	Lynette SC Pienkvoëtjies	8	867	NNE	17.65
ECD27	Wonderland	8	875	NNE	17.69

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Code in Drawing	Name	Children	Cumulative Children	Direction	Distance (km)
ECD28	Kiddie Club House	46	921	NNE	17.74
ECD29	Dienkie Dot Playground	28	1 025	NNE	17.82
ECD30	Grace Kids Academy	76	997	NNE	17.82
ECD31	Kleine Engele Dagsorg	26	1 051	NNE	17.87
ECD32	Angels Day-care	20	1 071	NNE	17.90
ECD33	Haasbekkies Day-care Centre	8	1 079	NNE	18.08
ECD34	Haasbekkies Day-care Centre	20	1 099	NNE	18.09
ECD35	Emmanuel Day-care	5	1 104	NNE	18.19
ECD36	Faith In Action Crèche	20	1 124	N	18.31
ECD37	Chioma Safehaven Day-care	7	1 131	N	18.34
ECD38	Kruisfontein Edu-care	57	1 188	N	18.79
ECD39	Jeugkamp Day-care Centre	18	1 206	N	18.96
ECD40	Nceduluntu Crèche	21	1 227	NE	23.98
ECD41	Sinokhanyo Crèche	21	1 248	NE	24.04
ECD42	New Beggings Day-care	26	1 274	NE	24.28
ECD43	Yandiswa Day-care	16	1 290	NE	24.34
ECD44	Madlamini Crèche	9	1 299	NE	24.39
ECD45	Children of Africa	18	1 317	NE	24.47
ECD46	Joyful Kids Day-care	17	1 334	NE	24.50
ECD47	Luhlumiso Day-care	13	1 347	NE	24.52
ECD48	Little Angel’s Child Minder	8	1 355	NE	24.54
ECD49	Ithemba Crèche	153	1 508	NE	24.58
ECD50	Madiba Bay Crèche	45	1 553	NE	24.63
ECD51	Mummy’s Day-care	56	1 623	NE	24.69
ECD52	Mella Day-care	14	1 567	NE	24.69
ECD53	Tokyo Sexwale Crèche	48	1 671	NE	24.89
ECD54	Shama Kids Academy	55	1 726	NE	25.09
ECD55	Noah’s Ark Playschool	100	1 826	NE	25.14
ECD56	Graceland Academy	30	1 856	NE	25.17
ECD57	Eldrid Groep Crèche	38	1 894	NE	25.21
ECD58	Jeffreys Bay Edu-care Centre	43	1 937	NE	25.50
ECD59	Seemeeu Pre-primary	32	2 042	NE	25.52

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Code in Drawing	Name	Children	Cumulative Children	Direction	Distance (km)
ECD60	Davivo (Pty) Ltd T/A Smiley Kids	73	2 010	NE	25.52
ECD61	Tree Tops Playschool	26	2 068	NE	25.67
ECD62	Kidz@home	47	2 115	NE	25.74
ECD63	Kleuter – Zone Kinder Garden	60	2 175	NE	26.19
ECD64	Kingdom Rise Pre-school	38	2 213	NE	26.30
ECD65	Little Seahorse Montessori	47	2 260	NE	26.44
ECD66	Smart Kids Learn and Play Centre	33	2 293	NE	26.47
ECD67	Whale of a Time Playschool	65	2 358	NE	26.57

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