

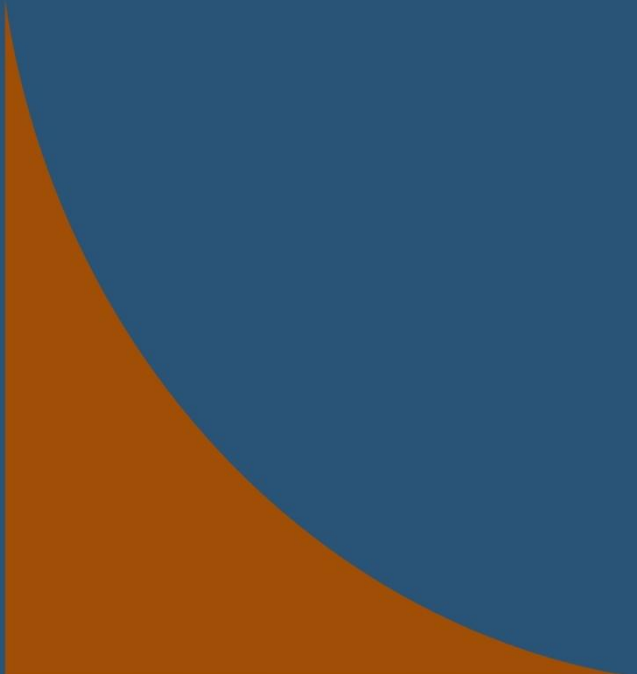


Department of Environmental Affairs and Development  
Planning (DEA&DP) Western Cape:  
DEA&DP EIA Reference number: 16/3/1/2/F4/17/3009/13

Environmental Impact Assessment (EIA) for the proposed construction,  
operation and decommissioning of the Saldanha Regional Marine Outfall  
Project of Frontier Saldanha Utilities (Pty) Ltd. at Danger Bay  
in the Saldanha Bay region

# SECTION A

## FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT



Environmental Impact Assessment (EIA) for the proposed construction,  
operation and decommissioning of the Saldanha Regional Marine Outfall  
Project of Frontier Saldanha Utilities (Pty) Ltd. at Danger Bay  
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## FINAL EIA REPORT

# CHAPTER 1: INTRODUCTION



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## CHAPTER 1. INTRODUCTION

The Council for Scientific and Industrial Research (CSIR) has been appointed by Frontier Saldanha Utilities (Pty) Ltd (Frontier Utilities) as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed construction, operation and decommissioning of a marine outfall pipeline and associated infrastructure in Danger Bay in the Saldanha Bay region. The pipeline transfer system is referred to as the Saldanha Regional Marine Outfall (SRMO) Project. The EIA was undertaken in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA) and its amended Regulations 543, 544, 545 and 546, as promulgated on 18 June 2010.

Paul Lochner of CSIR is the Project Leader of the SRMO Project EIA and is supported by Minnelise Levendal, the Project Manager (their abbreviated CVs are attached as Appendix A1). Paul has signed a letter of declaration (Appendix A2). The project proponent is Frontier Saldanha Utilities (Pty) Ltd (Frontier Utilities), a subsidiary of Frontier Separation (Pty) Ltd (Frontier Separation). The latter is a subsidiary of the main corporate company, Frontier Rare Earths Ltd (Frontier Ltd) which is listed on the Toronto Stock Exchange.

### 1.1 PROJECT OVERVIEW

This section provides an overview of the proposed project, with more detail on the project description provided in Chapter 2 of this report.

It is proposed that the SRMO transfer pipeline will follow to a large extent the same terrestrial corridor as proposed in the EIA for the proposed West Coast District Municipality (WCDM) desalination plant for the potable water pipeline leading to the Besaanskop reservoir. Environmental Authorisation (EA) for the desalination plant and associated linear infrastructure (including this potable water pipeline) was granted by the provincial Department of Environmental Affairs and Development Planning (DEA&DP): Land Management Region 2 (E12/2/4/2-F6/16-3037/11) on 13 August 2013. The CSIR has lodged an application for an EA Amendment on 15 August 2014 to DEA&DP on behalf of the WCDM. An Environmental Decision from DEA&DP is currently pending.

The proposed SRMO transfer system will consist of a pipeline with transfer pump stations located along the pipeline route.

The SRMO Project will discharge approximately 8 - 9 Mega litres per day (Mℓ/day) of treated industrial effluent generated from the following three sources into Danger Bay (see locality and infrastructure plan map in Figure 1.1):



- a Rare Earth Element (REE) Separation Plant [referred to as the Saldanha Separation Plant (SSP)] proposed by Frontier Separation Pty (Ltd) (EIA being undertaken by AGES, Environmental Decision currently pending; Application Ref No. 16/3/1/2/F4/17/3004/13);



- a Chlor-Alkali Production Facility (CAPF) proposed by Chlor-Alkali Holdings Pty (Ltd) (CAH) (EIA being undertaken by MEGA, Application Ref No. 16/3/1/2/F4/17/3053/12); and
- a regional Waste Water Treatment Works (WWTW) proposed by the Saldanha Bay Municipality (SBM) (EIA not yet commissioned).

Table 1.1 includes more details on the EIAs mentioned above.

**Table 1.1: Environmental Impact Assessments that are of interest to Frontier Ltd.**

| PROJECT                                  | LOCATION                     | COMPANY                               | CONSULTANT   |
|--|------------------------------|---------------------------------------|--|
| Saldanha Rare Earths Separation Plant    | Saldanha (Western Cape (WC)) | Frontier Separation (Pty) Ltd         |   |
| Saldanha Regional Marine Outfall Project | Saldanha (WC)                | Frontier Saldanha Utilities (Pty) Ltd |  |

The liquid effluent produced at the proposed facilities (i.e. SSP, CAPF and WWTW) will predominantly be brine *i.e.* a solution of sodium chloride (NaCl) in water, with trace levels of other elements. In the separation process, sodium hydroxide (NaOH) and hydrochloric acid (HCl) will be used for the separation of mixed rare earth elements into individual rare earth elements. These chemicals (HCl and NaOH) will be produced in an adjacent CAPF owned and operated by CAH.



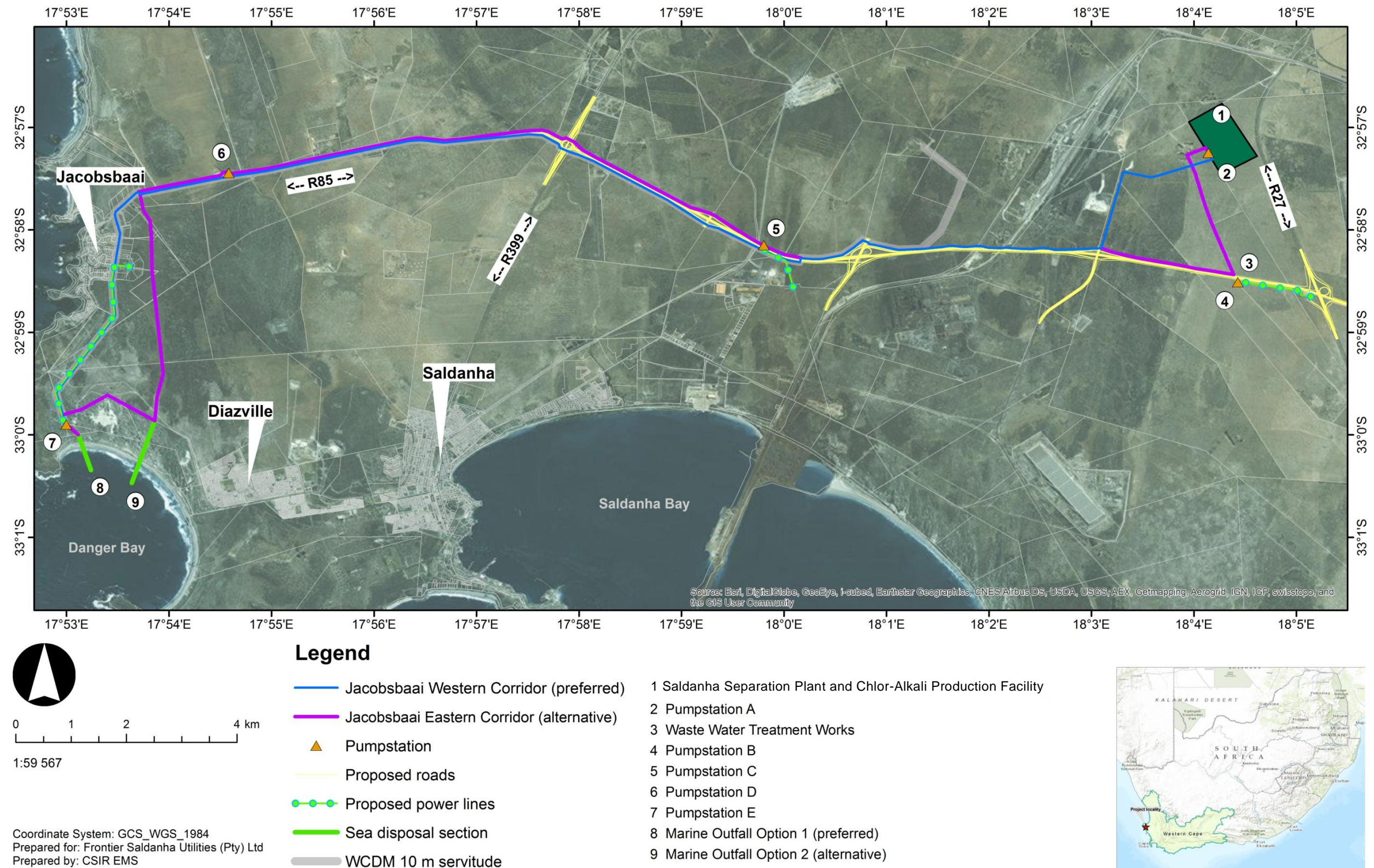


Figure 1.1 Location of the proposed Saldanha Regional Marine Outfall (SRMO) Project



It is currently planned that the effluent will be disposed via the brine return disposal infrastructure of the proposed WCDM seawater reverse osmosis desalination plant, planned to be located at Danger Bay.

However, the possibility exists that the planned construction of the WCDM desalination plant might be delayed. Consequently, this EIA for the proposed SRMO pipeline transfer system will investigate an alternative sea disposal option (Scenario 1) until the WCDM desalination plant is commissioned (Scenario 2).

#### SCENARIOS TO BE CONSIDERED IN THE SRMO EIA

**SCENARIO 1:** *Considers no WCDM desalination plant, with the SRMO effluent to be disposed of at a suitable location identified during the scoping and impact assessment phase of the EIA at/or adjacent to Danger Bay; and*

**SCENARIO 2:** *Considers the completed construction of the WCDM desalination plant, with the SRMO effluent to be disposed of in combination with the brine return from the proposed WCDM desalination plant as per the Environmental Authorisation issued by DEA&DP on 13 August 2013. In this event, an application for an Amendment to the existing WCDM Environmental Authorisation and Coastal Waters Discharge Permit (CWDP) will be made to the DEA&DP and DEA: Oceans and Coasts respectively to accommodate the additional SRMO effluent. However, within the scope of this EIA, the hydrodynamic modelling included and excluded both the proposed effluent and brine discharge of the WCDM desalination and the SRMO Project.*

For the Frontier Utilities marine outfall (Scenario 1), the locality of the marine outfall has been informed by the location of the marine outfall for the WCDM desalination plant to a certain extent. For Scenario 1, three possible marine outfall locations were identified during an initial screening study undertaken by WorleyParsons (Annexure 1 in Volume III of this report). These include Option 1 (pipeline through sandy shoreline in the west of Danger Bay), Option 2 (pipeline through sandy shoreline in the centre of Danger Bay) and Option 3 (pipeline through rocky shoreline on the headland immediately west of Danger Bay (refer to Figure 1.2). Options 1 (preferred) and 2 (alternative) were deemed to be the most feasible options during the Scoping Phase, and were therefore assessed in the Marine Ecological Study (Appendix 1 in Volume II of this report). Marine outfall Option 3 was not deemed feasible, for the reasons given in section 1.4.1 on the marine outfall routing alternatives.

A Marine Modelling and Hydrodynamics technical study was conducted by WorleyParsons (Annexure 2 in Volume III of this report). The modelling was done for Scenarios 1 and 2 as explained above.



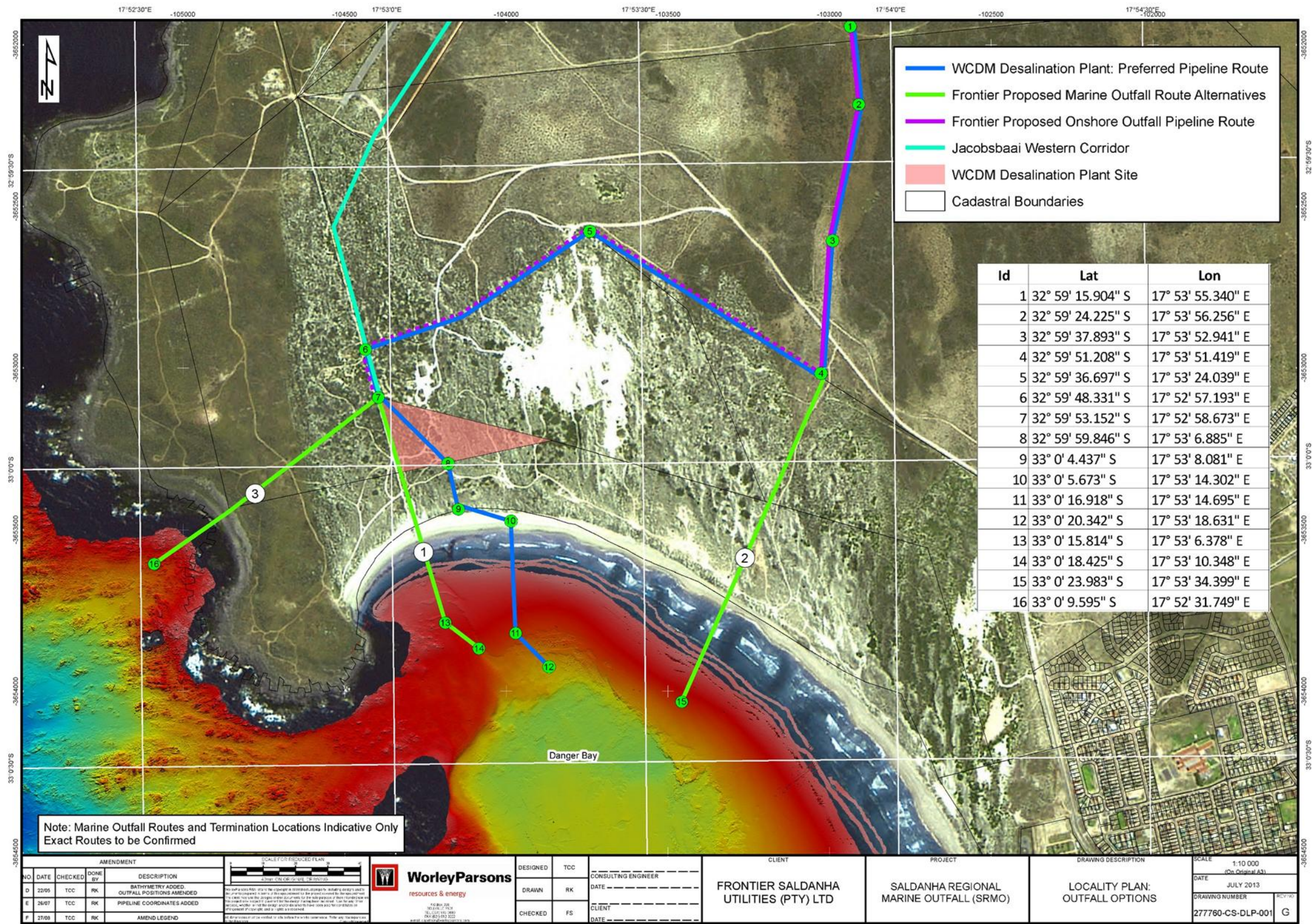


Figure 1.2 Locality map and proposed effluent pipeline and electrical corridor routings for the Saldanha Regional Marine Outfall EIA.

Note: The marine outfall points shown in this figure is merely indicative. Please refer to Figure 2.3 in Chapter 2 for more precise locations of the marine outfalls to be considered as part of this EIA.



For Scenario 1, the potential for recirculation of effluent through the WCDM desalination plant intake pipe has been identified as a potential risk. However, Frontier Utilities has confirmed the intention that once the WCDM's desalination plant is operational the SRMO effluent pipeline will be decommissioned with the effluent co-disposed together with the brine return from the desalination plant, using the WCDM outfall infrastructure. To this effect a Heads of Agreement has been concluded on 20 November 2013 (Appendix B1) with the WCDM for co-disposal into Danger Bay using the brine return infrastructure of the proposed WCDM's desalination plant.

Therefore, as there will be no concurrent operation of the pipelines there will be no risk of recirculation following commissioning of the desalination plant. There may though be a temporary risk of recirculation during the commissioning of the desalination plant before the industrial effluent is diverted and the temporary outfall decommissioned. Additional numerical modelling of the effluent dispersion was undertaken to refine the outfall location to minimise this risk. It has also been indicated by the national Department of Environmental Affairs: Oceans and Coasts (DEA:O&C) that two marine outfalls located within Danger Bay will not be accepted due to cumulative environmental impacts.

The dispersion of the three SRMO effluent streams with the WCDM desalination plants brine return in the marine environment has been modelled either separately or as a combined stream by WorleyParsons (Annexure 2 in Volume III of this report). The hydrodynamics modelling study was used to inform the Marine Ecology specialist study (Appendix A of Volume II) and to inform the project planning and design. The modelling study was independently reviewed by WSP Group Africa (Pty) Ltd (WSP).

The following effluent streams and combinations thereof were modelled by WorleyParsons (see Annexure 2 of Volume III for the full hydrodynamic modelling study and reports):

1. The SSP effluent only at either outfall position 1 or 2;
2. The combined SSP and CAPF effluent at either outfall position 1 or 2;
3. The combined SSP, CAPF and WWTW effluent at either outfall position 1 or 2;
4. The combined SSP, CAPF effluent and the effluent from the proposed WCDM desalination plant via the WCDM desalination plant's brine return system (as explained in Scenario 2); and
5. The combined SSP, CAPF, WWTW effluent and the effluent from the proposed WCDM desalination plant via the WCDM desalination plant's brine return system (as explained in Scenario 2).

## 1.2 PROJECT LOCATION

The proposed SRMO Project will be located near the town of Saldanha, as presented in Figure 1.1. The proposed pipeline will be constructed from the proposed SSP (marked as no. 1 in Figure 1.1) and will align with the Jacobsbaai Road (R85) south-west of the SSP before turning south to the discharge point at Danger Bay. An alternative route was investigated as part of the EIA. The preferred corridor option will be referred to as the Jacobsbaai Western Corridor (blue pipeline routing in Figure 1.1). The alternative route that was assessed in this EIA will be referred to as the Jacobsbaai Eastern Corridor (purple pipeline routing in Figure 1.1). Please note that although the Jacobsbaai Eastern Corridor was assessed in the EIA, it is not deemed feasible. This is due to the fact that one of the affected land owners along the Jacobsbaai Eastern Corridor (Mr Smit of Forellandam (Pty) Ltd) objects to registering a servitude on his land. The Jacobsbaai Western corridor has therefore been selected as the preferred alternative. The pipeline section leading to the discharge point will traverse degraded areas along road verges and farms previously used for agriculture and sand mining activities (along the Jacobsbaai Eastern Corridor) and more sensitive vegetation through the road reserve along the Jacobsbaai Western Corridor. Table 1.2 provides a list of properties that may be traversed by the terrestrial component of the proposed SRMO pipeline and electrical corridor. Figure 1.3 provides a map to illustrate the properties that may be traversed by the SRMO Project.

*Table 1.2/...*



**Table 1.2 Surveyor General (SG) codes and properties that may be affected by the proposed Saldanha Regional Marine Outfall Project considering all alternatives and associated linear infrastructure.**

| PROPERTY NUMBER<br>AND PORTION | SURVEYOR GENERAL CODE | PROPERTY NUMBER<br>AND PORTION | SURVEYOR GENERAL CODE  |
|--------------------------------|-----------------------|--------------------------------|------------------------|
| 188/6                          | C0460000000018800006  | 1112/0                         | C04600000000111200000  |
| 129/3                          | C04600000000012900003 | 129/9                          | C04600000000012900009  |
| 189/3                          | C04600000000018900003 | 187/1                          | C04600000000018700001  |
| 187/9                          | C04600000000018700009 | 11915                          | C04600120001191500000  |
| 325                            | C04600180000032500000 | 195/2                          | C04600000000019500002  |
| 890                            | C04600180000089000000 | 196/0                          | C04600000000019600000  |
| 892                            | C04600180000089200000 | 127/11                         | C04600000000012700011  |
| 108/0                          | C04600000000010800000 | 282/3                          | C04600000000028200003  |
| 108/7                          | C04600000000010800007 | 282/5                          | C04600000000028200005  |
| 108/50                         | C04600000000010800050 | 282/7                          | C04600000000028200007  |
| 109/0                          | C04600000000010900000 | 949/0                          | C04600000000094900000  |
| 109/5                          | C04600000000010900005 | 957/0                          | C04600000000095700000  |
| 109/7                          | C04600000000010900007 | 282/10                         | C04600000000028200010  |
| 109/16                         | C04600000000010900016 | 1112/2                         | C046000000000111200002 |
| 889                            | C04600180000088900000 | 1132/0                         | C046000000000113200000 |
| 109/1                          | C04600000000010900001 | 1135/0                         | C046000000000113500000 |
| 124/0                          | C04600000000012400000 | 1139/0                         | C046000000000113900000 |
| 125/0                          | C04600000000012500000 | 1135/1                         | C046000000000113500001 |
| 127/2                          | C04600000000012700002 | 119/0                          | C04600000000011900000  |
| 127/6                          | C04600000000012700006 | 198/9                          | C04600000000019800009  |
| 127/10                         | C04600000000012700010 | 282/9                          | C04600000000028200009  |
| 127/13                         | C04600000000012700013 | 282/10                         | C04600000000028200010  |
| 957/8                          | C04600000000095700008 | 957/9                          | C04600000000095700009  |
| 108                            | C04600180000010800000 | 127/23                         | C04600000000012700023  |
| 127/39                         | C04600000000012700039 | 109/9                          | C04600000000010900009  |
| 129/0                          | C04600000000012900000 | 282/9                          | C04600000000028200009  |
| 129/2                          | C04600000000012900002 | 124/1                          | C04600180000012400001  |
| 299                            | C04600180000029900000 | 127/36                         | C04600180000012700036  |
| 127/15                         | C04600180000012700015 | 282/13                         | C04600000000028200013  |
| 129/1                          | C04600000000012900001 | 1112/0                         | C046000000000111200000 |
| 282/18                         | C04600000000028200018 | 306                            | C04600180000030600000  |
| 1135/0                         | C04600000000011350000 | 307                            | C04600180000030700000  |

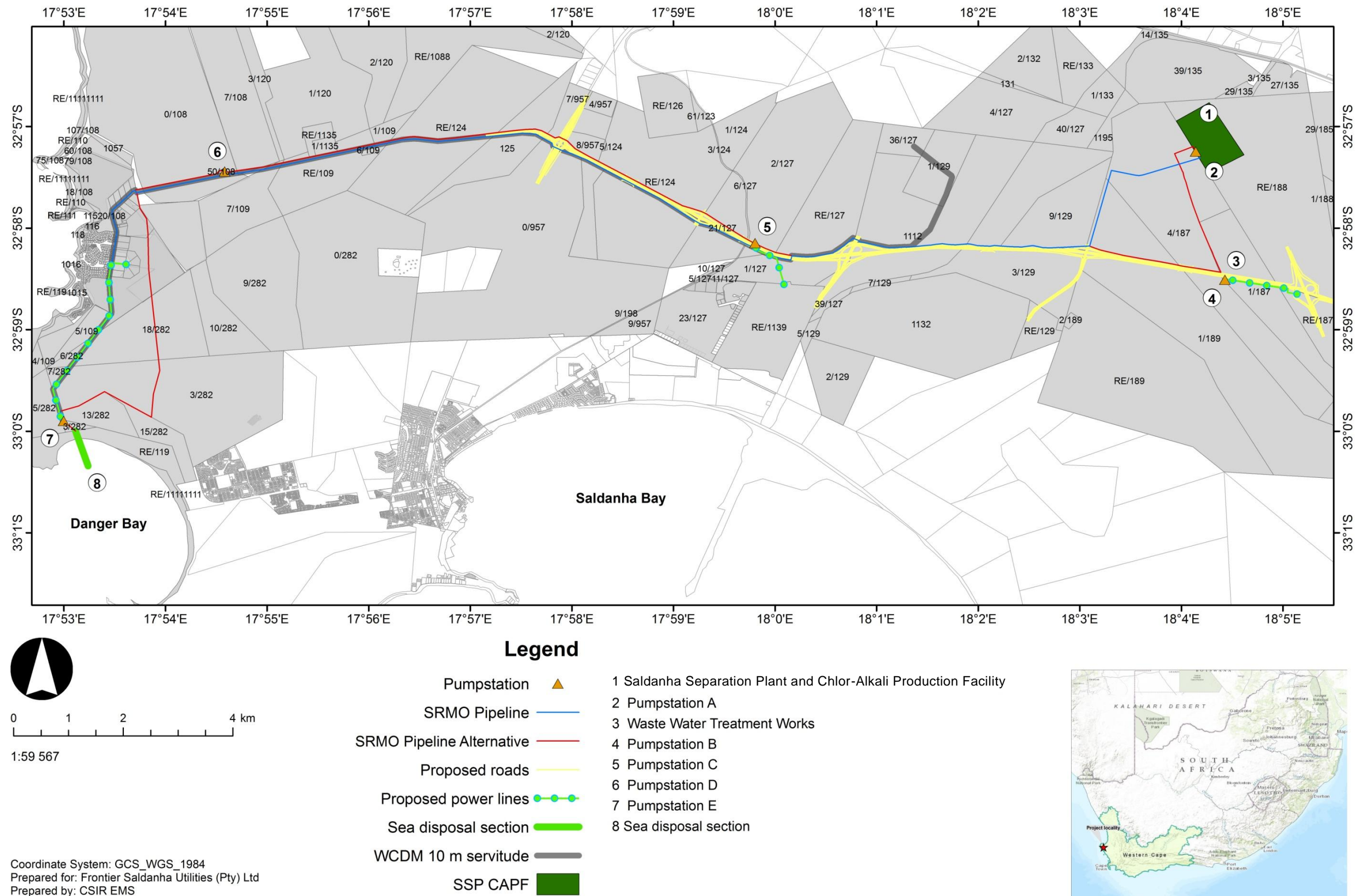


Figure 1.3 Locality plan showing the properties traversed by the proposed site location, pipeline and/or power lines.

### 1.3 PROJECT PROPONENTS AND UPSTREAM ACTIVITIES

The project proponent is Frontier Saldanha Utilities (Pty) Ltd (Frontier Utilities), a subsidiary of Frontier Separation (Pty) Ltd (Frontier Separation). The latter is a subsidiary of the main corporate company, Frontier Rare Earths Ltd (Frontier) which is listed on the Toronto Stock Exchange. Frontier has a company operating in South Africa, namely Frontier Rare Earths South Africa (Pty) Ltd (see Figure 1.4 for the Frontier Rare Earths company structure).

Frontier is a mineral exploration and development company principally focused on the development of rare earths projects in Africa. Frontier's flagship asset is the Zandkopsdrift rare earth mine, which is located near Garies in the Northern Cape Province of South Africa. It is one of the largest, highest grade undeveloped rare earth deposits worldwide.

In March 2012, Frontier filed a Preliminary Economic Assessment (PEA) on the Zandkopsdrift project prepared in accordance with National Instrument 43-101. The results of the PEA indicated that the proposed development of the Zandkopsdrift project is both technically feasible and economically robust, with a low risk profile. In conjunction with the PEA, a mineral resource estimate for Zandkopsdrift confirmed 42.5 million tonnes at an average grade of 2.23% containing approximately 940,000 tonnes total rare earth oxides (applying a 1% cut-off) and with 78% of the mineral resource in the indicated category.

The rare earth salts that will be refined at the SSP in Saldanha will be obtained from the Zandkopsdrift rare earth mine near Garies in the Northern Cape Province of South Africa. A separate EIA is currently being undertaken for the mine on behalf of Sedex Minerals (Pty) Ltd, a subsidiary of Frontier. At the mine, rare earths elements (REEs) will be precipitated in bulk to produce a mixture of REE salts, which will be moderately dried to approximately 10% moisture prior to being trucked in containers to the SSP in Saldanha.

The SSP is intended to produce 20 000 tonnes of refined REE products per annum. The current REEs that are saleable will be separated either as rare earth oxides or carbonates with a purity level equal to or greater than 99.995%. The current non-saleable or non-profitable elements will be precipitated as carbonates and then temporarily stored. More information can be obtained at:

<http://www.frontierrareearths.com/>

It should be noted that any impurities present with the REE salts will form part of the REE Oxides product which will make the product unacceptable (out of spec) for future sales. Impurities (including radioactive materials) will be removed at the Zandkopsdrift mine site, or prior to transportation of material to the SSP.



## Frontier Rare Earths Company Structure

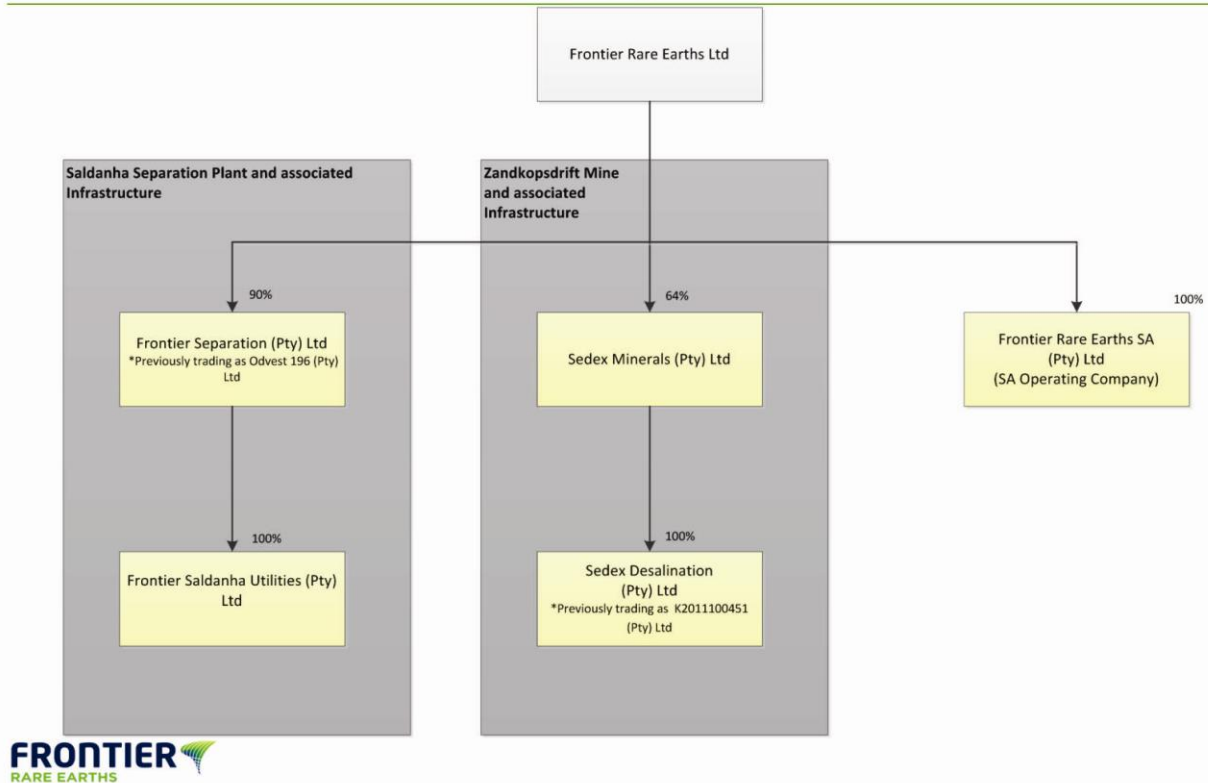


Figure 1.4 Frontier Rare Earths Company Structure

## 1.4 PROJECT ALTERNATIVES

As per the Western Cape Provincial Department of Environmental Affairs & Development Planning *EIA Guideline on Alternatives* (DEA&DP, March 2013), the EIA Regulations require that alternatives to a proposed activity be considered. Alternatives are different means of meeting the general purpose and need of a proposed activity. This may include the assessment of site alternatives, activity alternatives, process or technology alternatives, temporal alternatives and the no-go alternative. The section below provides a summary of the alternatives that will be proposed and assessed in this EIA.

#### **1.4.1 Marine outfall routing alternatives**

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A comprehensive screening study was undertaken by WorleyParsons and CSIR to identify suitable marine pipeline routing alternatives and associated marine discharge points for Scenario 1<sup>1</sup> (Annexure 1 of Volume III). The study aimed to identify specific environmental, technical and financial constraints associated with the alternative pipeline routings and associated marine discharge positions.

Three potential marine outfall routing alternatives were identified *i.e.* Options 1, 2 and 3 (refer to Figure 1.2). It includes Option 1 (pipeline through sandy shoreline in the west of Danger Bay), Option 2 (pipeline through sandy shoreline in the centre of Danger Bay) and Option 3 (pipeline through rocky shoreline on the headland immediately west of Danger Bay (refer to Figure 1.2). Options 1 (preferred) and 2 (alternative) were deemed to be the most feasible options during the Scoping Phase, and were therefore assessed in the Marine Ecological Study (Appendix A in Volume II of this report). Marine outfall Option 3 was not deemed feasible, as the pipeline would need to cross a rocky coast, cobble terrace just above the high water mark and exposed granite east of this. The area has a very high sensitivity for both fauna and flora with low rehabilitation potential. The pipeline would traverse highly sensitive Saldanha Granite Strandveld. The marine outfall Option 3 was thus considered as a “no go” option and therefore not further assessed as part of this study. This option would also have required extensive blasting for the laying of the pipeline over the rocky coast.

More details on the marine outfall routing alternatives and its locations are provided in Section 2.3.2 in Chapter 2.

#### **1.4.2 Pipeline routing alternatives**

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##### **BACKGROUND TO THE WEST COAST DISTRICT MUNICIPALITY DESALINATION PLANT APPLICATION**

It was proposed that the SRMO transfer pipeline would follow, to a large extent, the same terrestrial corridor as that proposed in the EIA for the proposed WCDM desalination plant. In the FEIAR of the WCDM desalination plant, the ‘Jacobsbaai Road Eastern Corridor’<sup>2</sup> alternative was the preferred electrical and pipeline corridor for the development as it followed a sandy, disturbed trench (previously used for agriculture) that would circumnavigate sensitive limestone strandveld mosaics. This corridor was also included as the preferred pipeline routing option in the Draft Scoping Report of this SRMO EIA.

In the WCDM desalination plant EIA the ‘Jacobsbaai Road Western Corridor’ was determined to be a no-go area by the botanical specialist Nick Helme due to its botanical

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<sup>1</sup> WorleyParsons RSA (June 2013). Saldanha Regional Marine Outfall Trade-off Assessment Report. Prepared for Frontier Saldanha Utilities (Pty) Ltd

<sup>2</sup> Please note in the EIA reports of the WCDM Desalination Plant the pipeline corridors are referred to as the ‘Jacobsbaai Road Eastern- and Western Corridors’. In the EIA Reports of the SRMO Project the pipeline corridors are referred to as the Jacobsbaai Eastern- and Western Corridors

sensitivity, as it traverses a surface limestone area which is known to support at least 12 threatened plant species. The Draft Scoping Report of the SRMO Project therefore did not include this corridor as an alternative pipeline routing option.

Subsequent to the EA being issued for the WCDM desalination plant in August 2013, WorleyParsons (on behalf of the WCDM) had discussions with landowners along the 'Jacobsbaai Road Eastern Corridor' to register a servitude along the proposed corridor. During these discussions it was determined that certain land owners along the 'Jacobsbaai Road Eastern Corridor' were not amiable to negotiate the potential for registering a servitude over these properties, in particular Erf 299 owned by Forellendam (Pty) Ltd (Forellendam). Erf 299 currently has approved development rights issued by the SBM for building a residential estate on the property.

Following discussions between the WCDM and botanical specialist, Nick Helme, it was decided that the 'Jacobsbaai Road Western Corridor' should be re-evaluated as a potential alternative as the 'Jacobsbaai Road Eastern Corridor' has proven technically unfeasible (in terms of Erf 299). The CSIR therefore lodged an application for an EA Amendment on 15 August 2014 with DEA&DP on behalf of WCDM for the proposed desalination pipeline. In this Amendment application, the 'Jacobsbaai Road Western Corridor' was re-evaluated and was put forward as the preferred pipeline routing alternative. Currently the 'Jacobsbaai Road Eastern Corridor' is the authorised corridor for the WCDM desalination plant, but no further negotiations between the WCDM and Forellendam have been initiated.

#### **FURTHER NEGOTIATIONS ON ERF 299**

Subsequent to lodging the Application for an EA Amendment, Frontier Saldanha Utilities started negotiating with land owners along the Jacobsbaai Eastern Corridor to register a servitude. A representative of Frontier Saldanha Utilities had a meeting with the affected land owner of Erf 299, Mr HJP Smit of Forellendam, in January 2015 to negotiate the potential for registering the servitude for the SRMO Project. Despite the negotiation efforts, Mr Smit reiterated at the meeting that he will not allow the pipeline to traverse his property as it is planned for residential development, neither will he be amenable towards further negotiations in this regard. Frontier Saldanha Utilities issued a letter dated 25 February 2015 to Mr Smit to formally request Forellendam to indicate whether they would be amenable towards negotiations with regard to the registering of a proposed servitude over Erf 299 (see Appendix B2 (i)). Mr Smit issued a letter of objection dated 18 March 2015 in response (see Appendix B2(ii)). Attached to the letter from Mr Smit is a letter from the Saldanha Bay Municipality granting development rights for erven 299, 892 and 889, which also includes a layout plan (dated April 1994).

Following this interaction, the 'Jacobsbaai Road Eastern Corridor' was identified as not being a viable alternative, and Frontier has reconsidered routing alternatives including the 'Afrisam' and 'Jacobsbaai Road Western Corridors' which were previously considered by the CSIR EIA project team during the WCDM desalination plant EIA.

Discussions between representatives of Frontier Saldanha Utilities and Afrisam revealed that Afrisam object to the pipeline crossing their property (as was noted in initial



discussions with Afrisam during the WCDM desalination EIA process). Frontier Saldanha Utilities received a letter from Afrisam (letter dated 9 February 2015; see Appendix B3)) stating their objection to the proposed SRMO Project. The letter states that traversing of their properties, currently considered for mining limestone, is also a no go option as the proposed route is directly through an area of sensitive granite limestone Strandveld. Apart from the botanical issues it may be necessary for Afrisam to occasionally blast and they are restricted in having any activity within a certain distance of their mining activities. Such a pipeline would therefore prejudice their proposed mining activities.

The 'Jacobsbaai Western Corridor' was thus included as the preferred pipeline routing alternative in the Final Scoping Report and was assessed in the EIA phase of the SRMO Project (see Figure 1.1). The 'Jacobsbaai Western Corridor' was assessed in the Terrestrial Ecological specialist study undertaken by Nick Helme for the SRMO Project (Appendix B of Volume II of this report). The study concluded that both proposed pipeline routes (i.e. the 'Jacobsbaai Western' and 'Eastern Corridors') will have some negative botanical impacts which cannot be avoided or mitigated. Without mitigation the 'Jacobsbaai Western Corridor' will have a HIGH negative botanical impact, which could be reduced to MEDIUM negative with mitigation. The required mitigation includes rerouting a portion of the route (from Pump station C to D) to the northern side of the Jacobsbaai Road, thereby avoiding sensitive wetland areas on the southern side of the Jacobsbaai Road. The Jacobsbaai Western Corridor will have a HIGH negative botanical impact without mitigation, which could be reduced to LOW to MEDIUM with a financial contribution to a biodiversity offset. The 'Jacobsbaai Road Eastern Corridor' will have a MEDIUM negative botanical impact, both before and after mitigation. Thus if rerouting of a portion of the 'Jacobsbaai Road Western Corridor' is undertaken as mentioned above, and all mitigation is sufficiently implemented and executed, then there is no clear routing preference from a botanical perspective evident to the EAP.

## **DISCUSSIONS AROUND BOTANICAL OFFSETS**

A meeting was held at the offices of DEA&DP in Cape Town on 12 March 2015 with representatives of Frontier, DEA&DP, CapeNature, CSIR and the ecological specialist, Mr Nick Helme (see meeting notes and the attendance register included in Appendix I1). The purpose of the meeting was to discuss the challenges associated with the Jacobsbaai Eastern Corridor and to provide motivation why the Jacobsbaai Western Corridor has become the only viable corridor alternative.

Mr Drikus Janse van Rensburg of Frontier Saldanha Utilities explained that the 'Jacobsbaai Eastern Corridor' was initially selected and included as the preferred alternative in the Draft Scoping Report of the SRMO EIA. He noted that this alternative is no longer viable as land owners along the route object to registering a servitude on their property. He explained that the 'Afrisam Corridor' was also investigated, but that it is not viable either as Afrisam objects to registering a servitude on their property as well.

At the meeting, Mr Janse van Rensburg noted that Frontier Saldanha Utilities have received objections from the following land owners to register a servitude on their properties. As mentioned above, in summary they outline that:

- Afrisam submitted a letter of objection dated 9 February 2015 (Appendix B3) - The letter states that the traversing of their property in Saldanha is a no go option as the proposed route is directly through an area of sensitive granite limestone Strandveld. Apart from the botanical issues, it may be necessary for Afrisam to occasionally blast and they are restricted in having any activity within a certain distance of their mining activities. Such a pipeline would therefore prejudice their mining activities.
- Mr Smit of Forellendam reiterated at meetings with Frontier Saldanha Utilities that he objects to the registering of a servitude on his property for the SRMO pipeline.

*Note: After the meeting at DEA&DP, Mr Smit submitted a formal letter of objection dated 18 March 2015 on behalf of Forellendam to Frontier Saldanha Utilities (see Appendix B2 (ii)). Attached to the letter of Mr Smit is a letter from the SBM whereby they grant development rights for erven 299, 892 and 889. The letter from the SBM also includes a layout plan (dated April 1994).*

Ms Alana Duffell-Canham of CapeNature reiterated that the remaining natural vegetation on the Vredenburg Peninsula is very sensitive and of high biodiversity value. She indicated that Afrisam is busy conducting a vegetation offset study. She noted that Frontier could potentially provide an offset which does not involve buying land. Ms Duffell-Canham explained that CapeNature has identified two properties which are not included in the Afrisam offset plans. CapeNature wants to tie in these properties into a consolidated Management Plan. She noted that the offset from Frontier could be in the form of a financial contribution to managing valuable land parcels identified by CapeNature. Frontier indicated that they are amenable to this recommendation and that they are willing to enter into an agreement with CapeNature or an appropriate conservation institution to implement this financial offset. Ms Duffell-Canham indicated that she will discuss the potential for Frontier to provide a financial contribution to the management of the land identified by CapeNature with her colleagues and members of the Stewardship Programme.

## RECOMMENDATIONS BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

- The submission of the FEIAR to DEA&DP, and the comments received on the FEIAR from CapeNature should be used by DEA&DP to guide the conditions of the EA (if applicable). Should an EA be granted, DEA&DP must include a condition wherein Frontier Saldanha Utilities must enter into a shared agreement with CapeNature (or another appropriate institution) regarding the nature and value of the financial contribution to a suitable offset programme in the Vredenburg/Saldanha area.
- In addition to this, as a condition of the EA, Frontier Saldanha Utilities must undertake a plant rehabilitation programme (including a Search and Rescue Programme) as specified by the botanical specialist, Mr Nick Helme in the Ecological study (Appendix B of Volume I) and the EMP of the SRMO Project (Section B of Volume I of the FEIAR).

Frontier Saldanha Utilities is willing to enter into an agreement with CapeNature or another relevant authority or institution (e.g. WWF) to provide an offset in the form of a financial contribution for the conservation and management of valuable land parcels as identified by CapeNature or another authority or institution. It is the opinion of the EAP that this type of

offset is appropriate considering the nature and the scale of the proposed development. It is recommended that it is not necessary for Frontier Saldanha Utilities to conduct a separate botanical offset study, based on the following motivation:

- The proposed pipeline comprises a linear development that will impact on approximately only 2.6 ha of endangered vegetation (over approximately 2000 m). For the section pipeline of approximately 2 000 m traversing through an area with endangered vegetation (within and to the south of Jacobsbaai), the pipeline construction disturbance footprint will be entirely within the road reserve west of the main road, to reduce impacts on sensitive vegetation along the pipeline corridor. Most of the Species of Special Concern are located east of the main road, or outside of the road reserve. This recommendation has been accepted by Frontier Saldanha Utilities;
- For the section pipeline of approximately 2 000 m traversing through an area with endangered vegetation (within and to the south of Jacobsbaai) the proposed pipeline will be buried on the western (seaward) side of the road as this side is more disturbed and hence less sensitive than the eastern side;
- The 'Jacobsbaai Road Western and Eastern Corridors' were assessed in the EIA and both found to have a **MEDIUM negative impact after mitigation**. It is noted in the Ecological specialist study that if rerouting of a portion of the Jacobsbaai Western Corridor is undertaken as mentioned above, and all mitigation is put in place then there is no strongly preferred routing alternative from a botanical perspective.
- A plant rehabilitation programme, including a Search & Rescue Programme (S&R), will be undertaken by Frontier Saldanha Utilities as recommend by Mr Nick Helme in his Ecological specialist study. These recommendations are also included in the EMP of the SRMO Project. The S&R will be undertaken within the development footprint within areas of natural vegetation prior to any construction commencing. The S&R will involve translocation of selected succulents, shrubs and bulbs occurring in the pipeline footprint, with emphasis on any Species of Conservation Concern (SCC). The S&R will be undertaken just after flowering has been completed and not in the dry summer months. All such development footprints will be surveyed and pegged out as soon as possible after the project has commenced. A local horticulturist with S&R experience (such a person could be recommended by the EAP or botanical specialist on the EIA team) will be appointed to do the S&R. The horticulturist should liaise with the botanist. All plant species that were rescued should be bagged (and cuttings taken where appropriate) and kept in the horticulturist's nursery. The plant species will be returned to site once all construction is completed and rehabilitation of disturbed areas is required. Replanting will only occur in autumn or early winter (April – May), once the first rains have fallen, in order to facilitate establishment. The botanical specialist or a suitably qualified Environmental Control Officer (ECO) should confirm in writing that this process has been completed successfully.
- The potential impacts to the sensitive vegetation are therefore not permanent and are reversible as the sensitive plant species can be replanted along the pipeline corridor. The impacts will not constitute an irreplaceable loss of biodiversity.
- Apart from the SRMO Project, at a more strategic level, there is clearly a need to establish a servitude corridor (i.e. for imported gas, desalinated water, waste brines emanating from the IDZ etc.) from Danger Bay to Saldanha Bay considering the range



of development proposals in the area and the realisation of the Saldanha Bay IDZ. This demonstrates the broader need and benefits of this corridor for promoting socio-economic upliftment in the Vredenburg/Saldanha area.

- Frontier Saldanha Utilities and the EAP take cognisance of the offset study which is currently being undertaken by Afrisam. It should be noted that the nature and scale of the potential impacts of the proposed mining operations of Afrisam are at a much larger scale than that of the proposed SRMO Project. It is therefore recommended that an offset in the form of a financial contribution to the management of land parcels identified by CapeNature is sufficient in addressing the biodiversity lost through the construction of the proposed servitude.
- This type of recommendation is in line with the Draft Information Guideline document on Biodiversity Offsets dated October 2011 which was issued by DEA&DP. The Information Document notes that there are different types of biodiversity offsets including offsets to secure habitat for conservation either on the development site or away from the development site. An offset could also be in the form of providing monetary compensation. The document stipulates that monetary compensation may include contributions to an accredited biodiversity conservation fund, revolving Land Trust or a dedicated offsets fund for the purpose of acquiring and managing priority habitat, or provision of finance for the expansion or management of a public protected area. Frontier Saldanha Utilities is willing to provide this type of offset to provide monetary contribution for the management of land parcels identified by CapeNature or another appropriate body. This is considered as sufficient information from which DEA&DP will be able to make a responsible decision regarding the EA and its conditions.

#### ***1.4.3 Technological alternatives for brine disposal***

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A number of different technological alternatives were assessed before identifying that disposal of effluent to sea would be the only option for this project. In this regard, Frontier Utilities appointed independent engineering consultants, Process Projects, to investigate a number of alternatives for the disposal of treated effluent produced by the proposed SSP and the proposed CAPF<sup>3</sup> (Annexure 3 of Volume III of this FEIAR). Process Projects subsequently completed a desktop trade-off study, dated July 2013, in which the following brine effluent disposal options were investigated:

- a) disposal of brine effluent to the Saldanha or Vredenburg existing local waste water treatment works;
- b) the construction of evaporation ponds to generate salt for disposal at a licensed disposal facility;
- c) evaporating and crystallising processes to generate waste salt for disposal at a licensed disposal facility or to be re-used by the CAPF;
- d) evaporating and crystallising processes to generate salt to be re-used as feed by the CAPF; and

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<sup>3</sup> Process Projects, (August, 2013). Desktop Trade Off Study: Saldanha Separation Plant: Effluent Brine Disposal Options Study. Process Projects Document No: PC5155. Prepared for Frontier Separation.

e) marine disposal (*i.e.* disposal to sea) of the effluent.

The criteria used to identify the preferred disposal option are mainly technical and financial, but some environmental criteria were also considered, *e.g.* visual impacts, ground water contamination, land sterilisation, air emission impacts *etc.* This led to the marine disposal alternative being selected as the only option considered feasible at this point.

The following conclusions and recommendations are made in the desktop trade-off study:

- disposal *via* any of the existing WWTWs is not possible due to the high salt concentration of the effluent being detrimental to the WWTW's bacterial breakdown process;
- evaporation ponds will require 45 hectares (ha) of ponds though 60 ha of land will have to be purchased for this option. The size and extent of the ponds will have a high visual impact on the area and ground water contamination will be a concern. Both the evaporation ponds and crystalliser options will produce 57 000 tons/year of waste salt (Phase 1 of the SSP);
- CAH have indicated that they would accept moist salt provided that the heavy metal ions were reduced to <0.05 mg/l. This can be produced, however, it will also produce a salt precipitate requiring licensed disposal which has not been identified; due to Visserhok (the nearest licensed disposal site to Saldanha), not being willing to accept the waste salt (refer to letter dated 14 August 2013 in Appendix A of Annexure 3 of Volume III), the evaporation pond and both crystalliser options are not realistically feasible options;
- disposal by pipeline to a sea outfall is the lowest capital, lowest operating cost and least environmental impact at this stage of the study;
- effluent brine can be processed to precipitate metals to reduce the non-NaCl load on the effluent going to sea provided the precipitated salts can be disposed of in a licenced facility. However, such a facility has not yet been identified;
- it was thus determined that the most feasible solution is to dispose of the brine to sea; and
- in the event that there are objections to the composition of the effluent brine (not falling within the guidelines *e.g.* DWAF 1995; ANZECC 2000 or others that may be applicable), polishing of the brine by metals precipitation should be pursued provided that the precipitated sludge can be disposed of to a licensed disposal facility. Use of lime as the alkali seems possible and should be further investigated.

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#### **1.4.4 Alternative electrical infrastructure options**

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The supply of bulk electrical services to the different pump stations located at various positions along the proposed pipeline and electrical route also represent alternative options for the EIA assessment. Either Medium Voltage (MV) cabling — which will be

buried depending on the width of the pipeline servitude — will be utilised; or, alternatively, Medium Over Head Line (OHL) in traditional Delta A-Frame positions (wooden poles), at a height of 12 m, will be used. The SBM has confirmed in their letter dated 7 July 2014 that they will supply electricity to the 3 x 250 kVA pump stations intended to supply electricity to the proposed desalination plant of the WCDM (Appendix B4). Eskom has also confirmed in their letter dated 27 August 2014 that they will provide electrical supply of 250 kVA from their network to the proposed pump station at Site B at Langebaan. They noted that they have spare capacity at their substation at Langebaan for the pump station (Appendix B5 of Volume I).

#### ***1.4.5 Alternative road infrastructure options***

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Two alternative access roads were evaluated (Figure 1.5):

- Alternative A – 1.44 km west of the TR77\_1/TR85\_1 intersection
- Alternative B – 2.84 km west of the TR77\_1/TR85\_1 intersection

ITS Engineers compiled a conceptual Access Management Plan for the industrial area during 2008, while in 2013 AECOM prepared a Road Network Plan for the Saldanha Municipal Area. Initial planning by ITS for access to the SSP made use of Access Alternative A. However, due to AECOM's planning of the TR85/1 as an abnormal truck route with limited interchange access only, Alternative A were not supported by the Provincial Roads Authority. Based on the above Road Network Plan, Alternative B will be the preferred access.

At the time of completion of the Traffic Impact Assessment study the access position had been confirmed as that of Alternative B. All the intersections of Route Alternative B are currently operating at acceptable Levels-Of-Service (LOS) during all peak periods. Therefore no upgrades are proposed from an intersection capacity point of view. The available Shoulder Sight Distance (SSD) at both access alternatives was evaluated. The TR85/1 is relatively straight and flat and therefore a SSD of more than 300 meters is available. The servitude for the proposed access road will be 25 metres wide, which should be sufficient to accommodate further development on the larger property. Please note that the authorisation of the above access road is subject to a separate Basic Assessment Process (DEADP Reference: E12/2/4/1-F4/22-3001/12).



**Figure 1.5** Aerial photograph showing access roads A and B



## 1.5 NEED AND DESIRABILITY OF THE PROJECT

### 1.5.1 Uses of rare earth metals

Rare earth metals are a set of seventeen chemical elements in the periodic table, specifically the fifteen lanthanides plus scandium and yttrium. Although called “rare”, some are abundant in the earth’s crust (e.g. cerium). However, they tend to occur and are recovered collectively, following which separation is required to produce separate high purity REEs. Each element has a range of distinctive physical properties.

The distinctive physical properties of the rare earth metals allow them to be used in a variety of technological applications including magnetic, optical, electrical, catalytic and metallurgical sectors. REEs underpin the “green” technology economy, and are used in hybrid motor and battery technology, energy efficiency applications, wind power generation, consumer electronics, defence applications; and transport (See Figure 1.6). Most of these elements have no substitutes and are indispensable in many of the applications mentioned.

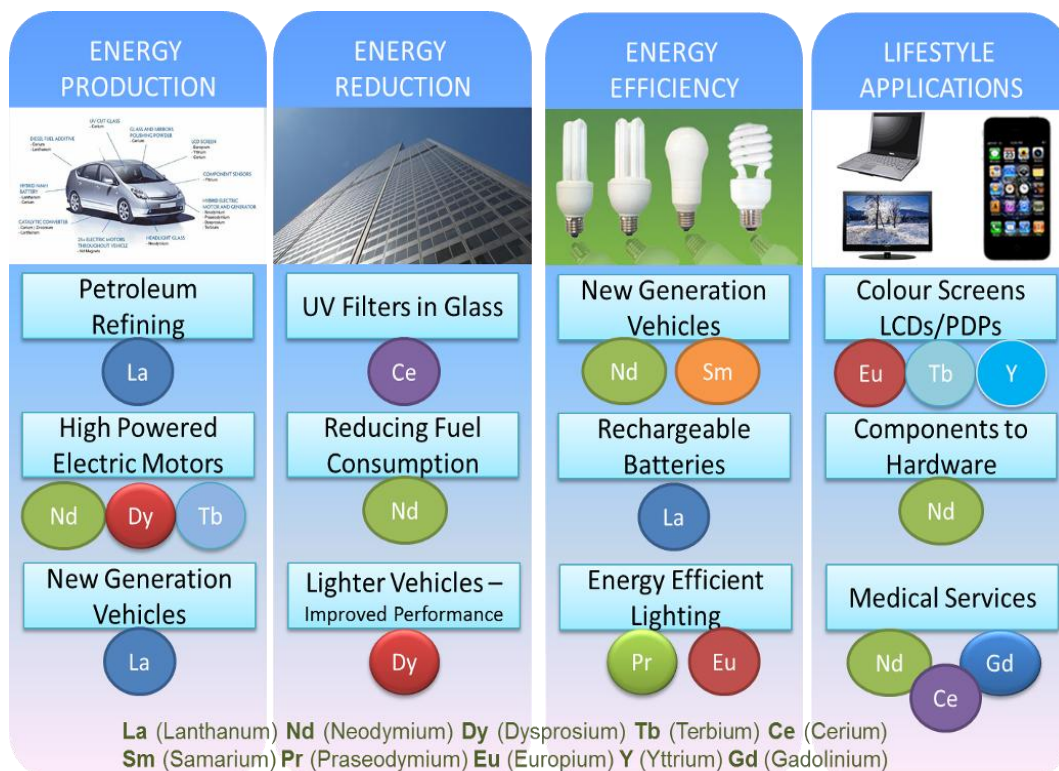


Figure 1.6 Uses of Rare Earth Elements

### ***1.5.2 International need for supply of rare earth metals***

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South Africa has mined rare earth metals since the 1950s. At present, some 90 to 95% of the world's rare earth metals are mined and produced in China, with India and South Africa also producing some rare earth concentrates. The recent growth in worldwide demand, coupled with an announcement by China that it plans to reduce its export quota, has led to a concern that the world may soon face a shortage of the rare earths. There is a widely forecasted supply deficit in REEs worldwide. This presents significant opportunities for new producers of separated rare earth operations outside of China. It is against this background that Frontier has identified a source of rare earths within South Africa and is developing the SSP and associated facilities near Saldanha Bay in order to meet the global need for these minerals.

### ***1.5.3 Promotion of mineral beneficiation within South Africa***

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The Industrial Policy Action Plan (IPAP) published by the Department of Trade and Industry in 2008 constitutes a central tool in the New Growth Path (NGP) employment-creation strategy for South Africa. The publication of the 2012 IPAP: IPAP 2012/2013-14/15 provides an opportunity to take stock of the progress made and challenges experienced since the commencement of the first IPAP. The 2012 IPAP represents the fourth annual iteration of the IPAP.

It has been anticipated that the IPAP (2011/12- 2012/13 period) interventions could lead to 43 000 direct employment opportunities and 86 000 indirect employment opportunities, totalling 129 000 employment opportunities across various sectors as identified within the IPAP.

Downstream minerals beneficiation is identified as one such sector. The Government of South African has identified the need to add value to raw materials mined within South Africa in order to realise the economic opportunities provided by the downstream processing of the raw materials. Through the "*Amendment to the Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry*" (Department of Minerals and Energy, 2010), the South African Government encourages the downstream beneficiation of raw materials, by the mining industry. The more stages of the production process that can be carried out on South African territory, the better the outcome in terms of revenue, added value and employment. It is therefore important that separation is handled in South Africa. Should the project be approved and the South African REE industry be further developed, the potential exists for South Africa to become a regional hub for rare earth ores from other African countries that may not possess the necessary resources to separate ores (Jepson, 2012).

In addition to promoting beneficiation, the proposed SRMO Project forms part of a wider employment creation opportunity starting at the proposed Zandkopsdrift rare earth mine near Garies in the Northern Cape and associated employment creation opportunities at the proposed SSP and the CAH plants at Saldanha Bay.

#### **1.5.4 Support for national planning and strategy**

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The Saldanha Bay region represents a dynamic interface of heavy industry, port related activities, residential zones and critical terrestrial/marine biodiversity areas. The implementation of the Industrial Development Zone (IDZ) and the proposed expansion of the port as well as a multitude of other proposed developments in the region (there are many EIA studies being undertaken) make it an area with enormous growth potential; however, this growth needs to take ecological constraints into consideration.

The National Government of South Africa adopted an Infrastructure Plan that is intended to transform the economic landscape of South Africa, create a significant number of employment opportunities, strengthen the delivery of basic services and support the integration of African communities. For this purpose the Cabinet of South Africa took a decision to establish a body to integrate and coordinate this long term infrastructure development plan namely the Presidential Infrastructure Coordinating Commission (PICC) with its supporting management structures.

The PICC reports back on work to assess the infrastructure gaps through spatial mapping which analyses future population growth, projected economic growth and areas of South Africa not served with sufficient water, electricity, roads, sanitation and communication. Based on this work, seventeen Strategic Integrated Projects (SIPs) have been developed and approved to support economic development and address service delivery in the poorest of the nine provinces in South Africa. Each SIP comprises of a large number of specific infrastructure components and programmes. The work will be aligned with human settlement planning and with skills development as key cross-cutting areas.

SIP 5 comprises the development of the Saldanha-Northern Cape Province linked region in an integrated manner that ensures that the region becomes a value-adding centre rather than simply a transit corridor for iron-ore export from the Sishen area iron-ore mines in the Northern Cape. For Saldanha Bay this entails developing the back of port (which is the only natural deep sea port in South Africa) industrial capacity (including an IDZ) and strengthening maritime support capacity to create economic opportunities for the region.

The Department of Trade and Industry has identified Special Economic Zones (SEZs) as key levers in support of long-term industrial and economic development. The SEZs Programme was specifically developed to promote the creation of a regionally diversified industrial economy by establishing new industrial hubs in underdeveloped regions of the country. Saldanha Bay is one such area which has been identified as the first key milestone in the roll out of the SEZs. The aim is to establish SEZs that can achieve the following:

- Increased foreign and domestic investment;
- Increased beneficiation of mineral and agricultural resources;
- Increased export of beneficiated products;
- World-class infrastructure;
- Increased employment opportunities; and
- Regional industrial development.

Looking to future development trends, in its consideration of areas of economic opportunity, the Provincial Growth and Development Strategy of 2006 (PGDS) identified the Saldanha and Mossel Bay areas as the two 'regional motors' in the province (PGWC, 2006). In this strategy it is envisioned that the emerging industrial port of Saldanha-Vredenburg services key sectors, *i.e.* oil and gas, iron ore exporting and steel processing, etc. Van der Merwe *et al.* (2005) also found Saldanha and Vredenburg to have a very high growth potential in their survey of the growth potential of towns in the Western Cape. According to the Saldanha Bay Integrated Development Plan (IDP) of 2006 the area's economy is in the process of a major diversification away from a dependence on agriculture and fishing toward a greater reliance on manufacturing, other industry and tourism. While the IDP recognises that this holds great potential for economic growth, it also recognises that this restructuring may threaten social cohesion and increase social dislocation since locals do not have the required skill levels to be absorbed by these new sectors (SBM, 2006).

More recently, the growth potential of the Saldanha Bay municipal area with its proximity to Cape Town and natural deep water harbour have resulted in its recognition as a Presidential Development Growth Node. This recognition is supported by the principles contained in the National Spatial Development Perspective (NSDP) and reinforced by the approved Provincial Spatial Development Framework (PSDF), (SBM, 2008).

As with the rest of the country, unemployment is a major challenge in the area. This situation continues to be exacerbated by the current difficult economic climate characterised by relatively low levels of economic growth. Based on Census 2011, the SBM had an increased unemployment rate of approximately 23.4% compared to 21.5% in 2001. This was higher than the rate for the West Coast District (14.6% unemployment) and somewhat lower compared to Saldanha Bay and Vredenburg (approximately 26% unemployment for both) as well as for Diazville (33% unemployment).

The construction and operational phase of the project would both result in spending injections that would lead to increased economic activity best measured in terms of impacts on employment and associated incomes focusing on the local area and region. Construction expenditure would constitute a positive injection of new investment. Preliminary estimates indicate that a total of approximately R113 million would be spent on all aspects of construction over 12 to 18 months.

Given its size and the expenditure associated with it, the project has the potential to have a significant positive impact on commercial activity in the local area during construction. It is likely that between R60 million and R80 million would accrue to contractors within the Saldanha Bay municipal area with the remainder going to other Western Cape contractors.

Approximately 164 temporary construction jobs of 12 to 18 months are expected. Based on the likely availability of labour, training possibilities and experiences in the area, approximately 108 construction jobs should be allocated to residents of Saldanha Bay with the bulk of the remainder going to Western Cape residents. Approximately eight



jobs would be created during the operational phase resulting in a total local salary bill of approximately R1.2 million per year.

The proposed SRMO Project would be a pre-requisite for the development of the SSP as the latter would only be technically feasible if process effluent can be legally disposed of. The benefits associated with the SSP can therefore be viewed as indirect or facilitated benefits of the SRMO Project.

From a municipal service provision perspective, the SRMO Project would facilitate the provision of a wastewater service by the SBM. Frontier Utilities would take the primary financial risks associated with the construction of the project to the ultimate benefit of the SBM. The option of using the facility will then be open to the SBM once the mooted new WWTW proceeds. This would support efforts by the SBM to keep future wastewater services provision costs (and therefore service charges to users) as low as possible.

The Government of South Africa has identified the need to add value to raw materials mined within South Africa in order to realise the economic opportunities provided by the downstream processing of the raw materials. Through the “Amendment to the Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry” (Department of Minerals and Energy, 2010), the South African Government encourages the downstream beneficiation of raw materials, by the mining industry.

The more stages of the production process that can be carried out on South African territory, the better the outcome in terms of revenue, added value and employment. It is therefore important that the REE separation is handled in South Africa. Should the project be approved and the South African REE industry be further developed, the potential exists for South Africa to become a regional hub for rare earth ores from other African countries that may not possess the necessary resources to separate ores (AGES, 2013).

#### ***1.5.5 Role of the SRMO Project for wider projects in Saldanha Industrial Development Zone***

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The main need for the proposed SRMO transfer system is to transport and then dispose of brine and treated industrial effluent from the proposed SSP to the sea at Danger Bay (see Figure 1.1). The brine will be generated following the separation of saleable REEs from RE salts via solvent extraction at the SSP. This process will use hydrochloric acid and sodium hydroxide sourced directly from the proposed adjacent CAPF. The proposed SSP is, however, not solely dependent on HCl and NaOH from the CAPF as these substances can also be imported via an alternative source if necessary.

In addition to disposing of effluent originating from the SSP, the marine outfall is also needed to transport and dispose of effluent originating from the proposed CAPF and from the proposed WWTW planned for the region. It may also be used by other operations or projects within the area which require the use of the proposed SRMO transfer system in future. This may be very applicable to new industries which may be established in the area following the designation of the Saldanha IDZ. The SBM acknowledged in a letter dated 10 February 2015

(Appendix B6) that the project will contribute to the development of the Greater Saldanha industrial and commercial areas. It would be a pre-requisite for the proposed regional WWTW by the SBM that will further assist the development of the SBM Industrial Development Area. The project is seen as vital to ensure economic growth for Saldanha Bay and the surrounding area.

In addition, the SRMO Project offers valuable industrial infrastructure to the Saldanha Bay area and is supported by institutions such as the Saldanha Bay Water Quality Forum Trust (SBWQFT). This is since the project can alleviate future effluent disposal requirements within the Saldanha small bay area. Please refer to Appendix B7 for a letter of support from the SBWQFT.

The SRMO Project is also supported by current industry within Saldanha as future disposal of salt or brine on land needs to be phased out within eight years (initiated 2013, Government Gazette 23 August 2013) as noted in the Waste Disposal restrictions under the Norms and Standards for Waste Disposal to Landfill. Please refer to Appendix B8 for a letter of support from ArcelorMittal.

#### 1.5.6 Need and Desirability Guideline of DEA&DP

Table 1.3 below contains a list of questions from the DEA&DP Guideline (October 2011) to determine the need and desirability of the proposed project.

**Table 1.3 DEA&DP Western Cape list of 14 questions to determine need and desirability including answers relevant to the proposed Saldanha Regional Marine Outfall Project**

|   |  |
|---|--|
| <b>1. Question: Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP?)</b> |  |
| <b>Answer:</b>  | <b>Yes</b>   |
| <b>Justification:</b>   | The proposed SRMO Project will not change the existing land uses of the properties that will be traversed. A large section of the proposed pipeline falls within an Industrial Corridor that will facilitate the development of the proposed Saldanha Bay IDZ. The Western Cape SDF identifies the Saldanha Bay region as having potential for the establishment of 2 Industrial Development Nodes in the future. The section of the pipeline routed south towards the marine discharge point is zoned as "Agriculture", although the Saldanha Bay Local Spatial Context indicates that the area is sensitive vegetation and bearing in mind that the area is defined as a Critical Biodiversity Area (CBA), the imperative of the site will no doubt be conservation as opposed to agriculture. Even so, the approval of this application will not compromise the integrity of any planning strategy for the region due to the nature of the project. |
| <b>2. Question: Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur here at this point in time?</b>   |  |
| <b>Answer:</b>  | <b>Yes</b>   |
| <b>Justification:</b>   | The proposed Industrial Development Corridor and IDZ in the region offer significant opportunity for the development of other industrial related activities that may be proposed for the region. The proposed pipeline may therefore also be utilised by other industries in future.   |
| <b>3. Question: Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate).</b>  |  |

**Answer: Yes**

**Justification:** The 2012/13 IPAP identified SEZs as key levers in support of long-term industrial and economic development. The SEZs Programme was specifically developed to promote the creation of a regionally diversified industrial economy by establishing new industrial hubs in underdeveloped regions of the country. Saldanha is one such area which has been identified as the first key milestone in the roll out of the SEZs. The proposed SRMO Project will create employment opportunities directly through the construction of the pipeline and the associated infrastructure. It will also create employment opportunities indirectly at the proposed SSP and at the Zandkopsdrift rare earth deposit mine near Garies as it will facilitate the operation of these industries.

**4. Question: Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?**

**Answer: No, nevertheless will be provided by applicant**

**Justification:** Basic services including solid waste management and effluent disposal will be provided by the applicant. Electricity for the operation of the pump stations will be provided by the SBM and Eskom (see letters of confirmation from the SBM and Eskom in Appendices 1.4 and 1.5 respectively). The highest voltage required would be 11kV.

**5. Question: Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?**

**Answer: Uncertain**

**Justification:** The implication for infrastructure planning will be minimal considering the nature of the proposed project and the fact that basic services will mostly be provided by the applicant themselves (except for the electricity to be provided by the SBM and Eskom). From a municipal service provision perspective, the SRMO Project would facilitate wastewater service provision by the SBM. Frontier Utilities would take the primary financial risks associated with the construction of the project to the ultimate benefit of the SBM. The option of using the facility will then be open to the SBM once the mooted new WWTW proceeds. This would support efforts by the SBM to keep future wastewater services provision costs (and therefore service charges to users) as low as possible.

**6. Question: Is this project part of a national programme to address an issue of national concern or importance?**

**Answer: Yes**

**Justification:** See response to no 3 above. In addition, the Industrial Policy Action Plan (IPAP 2010 – 2014) constitutes a central tool in the New Growth Path (NGP) employment-creation strategy for South Africa. It has been anticipated that the IPAP (2011/12- 2012/13 period) interventions could lead to 43 000 direct employment opportunities and 86 000 indirect employment opportunities, totalling 129 000 employment opportunities across various sectors as identified within IPAP2. Downstream minerals beneficiation, such as is proposed at the SSP is identified as one such sector. The Government of South African has identified the need to add value to raw materials mined within South Africa in order to realise the economic opportunities provided by the downstream processing of the raw materials. Through the “Amendment to the Broad-Based Socio-Economic Empowerment Charter for the South African Mining Industry” (Department of Minerals and Energy, 2010), the South African Government encourages the downstream beneficiation of raw materials, by the mining industry. The more stages of the production process that can be carried out on South African territory, the better the outcome in terms of revenue, added value and employment. It is therefore important that separation is handled in South Africa. Should the project be approved and the South African REE industry be further developed, the potential exists for South Africa to become a regional hub for rare earth ores from other African countries that may not possess the necessary resources to separate ores (Jepson, 2012).

**7. Question: Is the development the best practicable environmental option for this land/site?**

**Answer: Yes**

**Justification:** It is proposed that the SRMO pipeline will follow to a large extent the same terrestrial corridor as that proposed in the EIA for the proposed WCDM desalination plant’s potable water pipeline leading to the Besaansklip reservoir. The impacts of this proposed pipeline routing have been assessed in

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|  | <p>the EIA to reduce or avoid environmental impacts as far as possible. The proposed SRMO pipeline will traverse an industrial corridor. It will also traverse a section at Danger Bay area that was used historically for sand mining and, while the greater area represents a 'Critical Biodiversity Area', this particular site has been exposed to substantial open-cast sand mining and terrestrial degradation. The disposal options 1 and 2 at Danger Bay proved to be the most feasible options in terms of environmental, technical and financial criteria following a comprehensive screening study that was completed by WorleyParsons. Specialist studies, including the supporting marine hydrodynamic modelling study, were undertaken as part of this EIA to assess potential environmental impacts to inform the outcome of the EIA process. These studies proposed mitigation measures to reduce potential negative impacts and to enhance positive impacts. These mitigations will be implemented as part of the Environmental Management Programme (EMP) of the proposed SRMO Project.</p> |
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**8. Question: Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF as agreed to by the relevant authorities?**

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|-----------------------|---|
| <b>Answer:</b>        | <b>No</b>   |
| <b>Justification:</b> | <p>The proposed SRMO Project will not change the existing land uses of the properties that will be traversed. With regard to specific spatial imperatives affecting the project, the SDF of the SBM is most relevant. The start of the SRMO pipeline would be within the IDZ at the proposed SSP. Its industrial nature would thus be in keeping with the industrial surroundings. The pipeline would then largely use the servitude for the proposed WCDM desalination plant pipeline from the IDZ to the marine outfall point at Danger Bay. It is the intention that both of these projects would essentially use the same routing and associated servitude as well as the same outfall point. This should ensure that infrastructure is grouped and confined to specific and appropriate areas outside of the IDZ.</p> <p>The Jacobsbaai Western Corridor would be slightly preferable to the Eastern Corridor as it would ensure that additional pipeline infrastructure would be confined to the areas near existing linear infrastructure (primarily the Main Road and electrical transmission lines).</p> <p>The section of the pipeline routed south towards the marine discharge point is zoned as "Agriculture", although the Saldanha Bay Local Spatial Context indicates sensitive vegetation and bearing in mind that the area is defined as a CBA, the imperative of the site will no doubt be conservation as opposed to agriculture. Even so, the approval of this application will not compromise the integrity of any planning strategy for the region due to the nature of the project.</p> |

**9. Question: Would the approval of this application compromise the integrity of the existing approved environmental management priorities for the area (e.g. as defined in Environmental Management Frameworks (EMFs), and if so, can it be justified in terms of sustainability considerations?**

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| <b>Answer</b>        | <b>No</b>  |
| <b>Justification</b> | <p>The area does not have an approved EMF in place. A large section of the proposed pipeline is located in an area zoned as 'Industrial III' and will form part of the proposed 'Saldanha Industrial Corridor' and the Saldanha Bay IDZ. The SDF classifies the area leading south towards the marine disposal point as 'Sensitive Vegetation' in the Local Spatial Policy Context. A botanical assessment was undertaken as part of the EIA to avoid sensitive vegetation. It should also be borne in mind that while the greater area represents a CBA this section was historically used for sand mining and has been exposed to substantial open-cast sand mining and terrestrial degradation.</p> |

**10. Question: Do location factors favour this land use (associated with the activity applied for) at this place? (this relates to the contextualisation of the proposed land use on this site within its broader context)**

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| <b>Answer:</b>        | <b>Uncertain</b>  |
| <b>Justification:</b> | <p>The strategic location of Saldanha Bay and the availability of economic infrastructure in the form of a port, railway links and road networks created an opportunity for the development of the IDZ in the area. The Saldanha IDZ creates an opportunity for other industries to be established in the area. These industries may also utilise the proposed SRMO pipeline in future. The disposal option 1 at Danger Bay prove to be the most feasible site in terms of environmental, technical and financial criteria following a comprehensive screening study that was completed by WorleyParsons (Annexure 1 of Volume III). Specialist studies, including the marine hydrodynamic modelling study, were undertaken as part of this EIA to assess potential environmental impacts to inform the</p> |



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|  | outcome of the EIA process. The hydrodynamic modelling study confirms that the proposed marine discharge point will facilitate rapid brine dispersion at the outfall and is therefore unlikely to result in negative impacts on marine ecology and proposed intake of seawater by the proposed WCDM desalination plant. |
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**11. Question: How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?**

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| <b>Answer:</b> | <p>The area from where the proposed pipeline commences, i.e. from the proposed SSP to the intersection of the R85 and R399 is characterised by heavy industry and forms part of a region proposed as a potential industrial corridor (see Figure 1.1). The impact on sensitive natural areas in this area is anticipated to be low. The section of the pipeline corridor routed south towards Danger Bay will traverse an area that was historically used for sand mining and is ecologically degraded. This area is still largely untransformed, and this has been exemplified by the area being determined to be “Sensitive Vegetation” in the Local Spatial Policy Context and a CBA in terms of SANBI spatial data. The impact on sensitive natural areas may be significant; however, given the degradation caused by sand mining in the past, there is scope for the development of a thorough EMP that actually promotes biodiversity conservation. A Terrestrial Ecological assessment was undertaken by Nick Helme of Nick Helme Botanical Surveys and mitigation measures were proposed to avoid or minimise impacts on natural areas (section 8.2 in Chapter 8 and the Terrestrial Ecological Report included in Appendix B of Volume II).</p> <p>The impact of the proposed project on heritage resources were assessed in the archaeological and paleontological specialist studies that were undertaken as part of the Heritage Impact Assessment for this EIA. Palaeontological and archaeological resources may be affected by the proposed development. Palaeontological impacts, in the form of disturbance or destruction of fossil material may occur anywhere along the route with the Velddrif and Prospect Hill Formations being most sensitive. Archaeological impacts to shell scatters and middens will occur in the western part of the study area, closest to the coast. The archaeological sites numbered JB001 and DB022 (see Section 3.6 in Chapter 3 of this report) are of concern and will require mitigation actions. Impacts to unmarked human burials are possible but unlikely. Scenic routes will experience very limited indirect temporary impacts during construction. Mitigation measures are proposed to avoid potential negative visual impacts (see Section 8.5 of Chapter 8 and the Heritage Impact Assessment (Appendix E of Volume II).</p> |
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**12. Question: How will the development impact on people’s health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc)?**

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| Health and Wellbeing | There may be an impact on people's health should the brine discharge contaminate the seawater at Danger Bay and hence affect the quality of the feedwater for the proposed WCDM reverse osmosis Desalination Plant. The modelling study however indicated that this should not be the case. If the various effluent streams contributing to the outfall are regularly checked and stringently controlled to ensure compliance with water quality guidelines, and the state of the receiving environment is monitored, potential health impacts should be avoidable. If any additional effluents from future developments are proposed for the outfall, this should be thoroughly investigated to ensure that the quality of the water and sediments within the bay remain within acceptable limits. |
| Noise                | There will be no noise impacts except during the construction phase. It is expected that noise impacts during construction will not present an immediate threat to the ‘sense of place’ in the region.  |
| Odours               | There should be no odour emissions from the pipeline or brine discharge.  |
| Visual character     | The visual character of the area will not be compromised as the project involves the construction of a pipeline which will be buried. The pipeline will be routed partly within an industrial corridor. A visual assessment has been undertaken by Henry Holland of Mapthis to identify potential sensitive visual receptors and to recommend mitigation measures to avoid potential negative visual impacts (see Section 8.4 of Chapter 8 and the Visual specialist study (Appendix D of Volume II).The visual impacts of the power lines linked to the pump stations were also assessed. The engineering team of Frontier confirmed that the effluent of the proposed SRMO will be colourless and thus no discoloration at the disposal area is expected.   |

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| General Sense of place | There should be little to no effect on one's 'sense of place' as the project involves the construction of a pipeline which will be buried and which will be routed partly within an industrial corridor. This was confirmed in the Visual Specialist study that was undertaken as part of the EIA (Appendix D of Volume II). |
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**13. Question: Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?**

|                |  |
|----------------|--|
| <b>Answer:</b> | <b>Uncertain</b>   |
| Justification: | Should the marine disposal of brine via the proposed SRMO pipeline lead to the contamination of sea water at Danger Bay, there will be opportunity costs associated with the project. However, if the various effluent streams contributing to the outfall are regularly checked and stringently controlled to ensure compliance with water quality guidelines, and the state of the receiving environment is monitored, potential health impacts should be avoidable. If any additional effluents from future developments are proposed for the outfall, this should be thoroughly investigated to ensure that the quality of the water and sediments within the bay remain within acceptable limits. |

**14. Question: Will the proposed land use result in unacceptable cumulative impacts?**

|                |  |
|----------------|--|
| <b>Answer:</b> | <b>Uncertain</b>   |
| Justification: | <p>The proposed pipeline development and routing should not result in unacceptable cumulative environmental impacts. Anthropogenic activities in the coastal zone can result in complex immediate and indirect effects on the natural environment. To define the level of cumulative impact in the intertidal and subtidal environment, it is therefore necessary to look beyond the environmental impacts of the current project and consider also the influence of other past or future developments in the area.</p> <p>Danger Bay is largely undeveloped at present and to the best of our knowledge there are currently no other discharges into the bay other than rainwater runoff. Without knowledge of proposed future developments in the immediate vicinity of the bay, the cumulative impacts over the long term associated with the proposed regional marine outfall itself are difficult to predict. If the various effluent streams contributing to the outfall are regularly checked and stringently controlled to ensure compliance with water quality guidelines, and the state of the receiving environment is monitored, potential cumulative impacts should be avoidable. If any additional effluents from future developments are proposed for the outfall, this should be thoroughly investigated to ensure that the quality of the water and sediments within the bay remain within acceptable limits.</p> |

## 1.6 REQUIREMENTS FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

In terms of the National Environmental Management Act (NEMA, Act no 107 of 1998), as amended, and the EIA Regulations, published in Government Notice R 543, 544, 545 and 546 on 18 June 2010 in Government Gazette 33306 (as amended) and enforced on 2 August 2010, a full Scoping and Environmental Impact Assessment Process is required as the project includes, amongst others, activities listed in GN R 545.

Table 1.4 contains a list of activities contained in GN R544, 545 and 546, which may be triggered by the various project components and thus form part of this Scoping and EIA Process. These listed activities require authorisation from the relevant authority, which in this instance is the DEA&DP. In addition to the above-mentioned listed activities additional activities have also been triggered in terms of the NEMA EIA Regulations which were promulgated on 4 December 2014. The activities listed under the 2010 NEMA EIA Regulations are included in Table 1.4. Table 1.5 contains a list of activities

which are triggered under the new 2014 NEMA EIA Regulations. The latter table also shows the relevant corresponding activity under the 2010 NEMA EIA Regulations. The new listed activities triggered under the 2014 NEMA EIA Regulations have been assessed in this EIA.

The purpose of the EIA is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The environmental assessment therefore needs to show to DEA&DP, and the project proponent, Frontier Utilities, what the consequences of their choices will be in terms of impacts on the biophysical and socio-economic environment and how such positive impacts can be enhanced, and how negative impacts can be avoided, mitigated and/or managed.

In addition to the above, other environmental licenses/permits may also be required. This includes a CWDP to be obtained from DEA: OC. An application for a CWDP dated 10 September 2014 was submitted to DEA: O&C by the CSIR on behalf of Frontier Utilities. DEA: O&C has issued the reference number: "2014/016/Frontier Saldanha" to the SRMO Project. The Application is attached as Annexure 4 in Volume III of this report.

A permit in terms of the Regulations for the control of Vehicles in the Coastal Zone must be obtained from DEA&DP: Coastal Management Unit. A coastal lease of a portion of the sea-shore for the proposed development will need to be obtained by Frontier Utilities from the DEA&DP in terms of Regulation 6 of the Sea-Shore Act (No. 21 of 1935).

A Water Use License Application (WULA) in terms of the National Water Act (Act 36 of 1998) was prepared by AGES Gauteng on behalf of Frontier Utilities. The WULA is included in Annexure 5 of Volume III of this FEIAR. The WULA will be submitted to the national Department of Water Affairs and Sanitation (DWS) for decision-making.

Chapter 4 includes more detail on the relevant legislation and licenses or permits which may be applicable to the proposed SRMO Project.



**Table 1.4 Listed activities that are hereby applied for in terms of GN. R544, GN. R545 and GN.R546 of 2010 NEMA EIA Regulations**

| Government Notice R544 Activity No(s): | Describe the relevant Basic Assessment Activity (ies) in writing as per Listing Notice 1 (GN No. R544)   | Description   |
|--|--|---|
| 9                                      | <p>The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water -</p> <ul style="list-style-type: none"> <li>i. with an internal diameter of 0,36 metres or more; or</li> <li>ii. with a peak throughput of 120 litres per second or more,</li> </ul>  | A terrestrial pipeline of approximately 27 km will be constructed to transport effluent from the proposed SSP to the marine outfall in Danger Bay. The proposed pipeline will have a diameter of approximately 900 mm which will ensure there is sufficient capacity to allow additional industries to connect to it in future (these will be subject to additional environmental authorisations not investigated as part of this EIA). |
| 11                                     | <p>The construction of:</p> <ul style="list-style-type: none"> <li>(i) canals;</li> <li>(ii) channels;</li> <li>(iii) bridges</li> <li>(v) weirs</li> <li>(vi) bulk stormwater outlet structures</li> <li>(vii) marinas</li> <li>(viii) jetties exceeding 50 square metres in size</li> <li>(ix) slipways exceeding 50 square metres in size</li> <li>(x) buildings exceeding 50 square metres in size; or</li> <li>(xi) infrastructure or structures covering 50 square metres or more</li> </ul> <p>where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> | The proposed servitude corridors may be constructed within 32 m from a water course. Example is where the seasonal Bok river is crossed.  |
| 13                                     | The construction of facilities or infrastructure for the storage, or the storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres   | The project may involve the storage and handling of a dangerous good in the form of brine.  |
| 14                                     | <p>The construction of structures in the coastal public property where the development footprint is bigger than 50 square metres, excluding</p> <p>(iii) the construction of temporary structures within the beach zone where such structures will be demolished or disassembled after a period not exceeding 6 weeks.</p>   | <p>A terrestrial pipeline will be constructed in the coastal public property, but the pipeline will be buried.</p> <p>Temporary structures may be erected in the beach zone during the construction phase.</p>  |
| 16                                     | <p>Construction or earth moving activities in the sea, an estuary, or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater, in respect of –</p> <ul style="list-style-type: none"> <li>(iv) rock revetments or stabilising structures including stabilising walls;</li> </ul>  | Construction and earth moving activities will occur within the sea, the littoral zone and 100 metres inland of the high-watermark. Infrastructure associated with the discharge pipeline will cover an  |

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|    | (v) buildings of 50 square metres or more; or<br>(vi) infrastructure covering 50 square metres or more –  | area that exceeds 50 square metres.<br><br>The proposed marine outfall pipeline will be constructed in the sea. The pipeline will be laid at approximately 10 m water depth (10 m below Mean Sea Level (MSL)). The length of the marine pipeline is approximately 458 m and will have a diameter of approximately 900 mm.   |
| 17 | The planting of vegetation or placing of any material on dunes and exposed sand surfaces, within the littoral active zone for the purpose of preventing the free movement of sand, erosion or accretion, excluding where the planting of vegetation or placement of material relates to restoration and maintenance of indigenous coastal vegetation or where such planting of vegetation or placing of material will occur behind a development setback line.              | This may occur during the construction of the pipeline into the sea.  |
| 18 | The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from:<br>(i) a watercourse;<br>(ii) the sea;<br>(iii) the seashore;<br>(iv) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater-                         | Material in excess of 5 cubic metres will be excavated from the sea, the sea-shore, the littoral active zone during the construction phase of the proposed development.   |
| 22 | The construction of a road, outside urban areas,<br>(i) with a reserve wider than 13,5 meters or,<br>(ii) where no reserve exists where the road is wider than 8 metres, or<br>(iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.  | New access roads to pump stations will be built to gain access to the pump stations. It is anticipated that the access roads to the pump station will be 5 m wide and not more than 100 m in length. Where applicable access will be taken from secondary existing access road and where this is not possible, access will be taken directly from the provincial road TR85. The necessary way leaves and approvals will be applied for from the relevant Provincial Roads Department. It is anticipated that the access roads will be gravel roads with concrete edgings with sufficient turning radii to allow maintenance vehicles easy entry and exit from the pump station. |
| 23 | The transformation of undeveloped, vacant or derelict land to –<br>(b) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares;<br>except where such transformation takes place-<br>(i) for linear activities; or<br>(ii) for purposes of agriculture or afforestation, in which case Activity 16 of Notice No. R. 545 applies. | The land to be traversed by the pipeline is currently zoned for "Agriculture" and "Institutional III" in the Saldanha Bay Zoning Scheme. The proposed development footprint may exceed 1 ha.  |

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| 24                                     | The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule or thereafter such land was zoned open space, conservation or had an equivalent zoning.   | The land is currently zoned for "Agriculture" with the Saldanha Local Spatial Policy Context. The proposed development footprint will exceed 1000 square meters and will be for an industrial use.                             |
| 26                                     | Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).   | This activity may be triggered if it involves any species which has been identified by the Minister as "critically endangered species", "endangered species", "vulnerable species" or "protected species (section 56 of NEMBA) |
| 39                                     | <p>The expansion of</p> <ul style="list-style-type: none"> <li>(i) canals;</li> <li>(ii) channels;</li> <li>(iii) bridges;</li> <li>(iv) weirs;</li> <li>(v) bulk storm water outlet structures</li> <li>(vi) marina</li> </ul> <p>within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, where such expansion will result in an increased development footprint but excluding where such expansion will occur behind the development setback line.</p>  | The proposed pipeline may require the expansion of a canal, channel, bridge, weir, bulk storm water outlet structures or a marina within 32 m of a water course.   |
| 40                                     | <p>The expansion of</p> <ul style="list-style-type: none"> <li>(i) jetties by more than 50 square metres</li> <li>(ii) slipways by more than 50 square metres</li> <li>(iii) buildings by more than 50 square metres</li> <li>(iv) infrastructure by more than 50 square metres</li> </ul> <p>within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, but excluding where such expansion will occur behind the development setback line.</p>              | The proposed servitude corridors may require the expansion of these structures by more than 50 m within 32 m of a water course.  |
| 46                                     | <p>The expansion of facilities in the sea, an estuary or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater, for:</p> <ul style="list-style-type: none"> <li>(iv) rock revetments or stabilising structures including stabilising walls;</li> <li>(v) buildings of 50 square metres or more;</li> <li>(vi) infrastructure covering 50 square metres or more –</li> <li>(x) breakwater structures</li> </ul> | The proposed project may require the expansion of facilities in the sea or within the littoral active zone or a distance of 100 m inland of the high-water mark of the sea   |
| 47                                     | <p>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre -</p> <ul style="list-style-type: none"> <li>(i) where the existing reserve is wider than 13,5 meters;</li> <li>or</li> <li>(ii) where no reserve exists, where the existing road is wider than 8 metres –</li> </ul> <p>excluding widening or lengthening occurring inside urban areas.</p>   | The existing roads may be widened by more than 6 m to allow for access to the pump stations.   |
| Government Notice R546 Activity No(s): | Describe the relevant <b>Basic Assessment Activity(ies)</b> in writing as per <b>Listing Notice 3</b> (GN No. R546)   |  |
| 4                                      | <p>The construction of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>(a) In Western Cape:</p>   | New roads will be built to gain access to the pump stations. It is anticipated that the access roads   |



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|    | <p>(ii) All areas outside urban areas;<br/>(iii) In urban areas:<br/>(aa) Areas zoned for use as public open space within urban areas; and<br/>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose.</p>   | <p>to the pump station will be 5m wide and not more than 100m in length. Where applicable access will be taken from secondary existing access road and where this is not possible, access will be taken directly from the provincial road TR85. It is anticipated that the access roads will be gravel roads with concrete edgings with sufficient turning radii to allow maintenance vehicles easy entry and exit from the pump station.</p> |
| 10 | <p>The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.</p> <p>(e) In Western Cape:</p> <p>(ii) All areas outside urban areas;<br/>(iii) Inside urban areas:<br/>(aa) Areas seawards of the development setback line or within 200 metres from the high-water mark of the sea if no such development setback line is determined;<br/>(bb) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.</p>  | <p>The project involves the construction of facilities or infrastructure in which treated effluent will be stored. Treated effluent is regarded as a dangerous good.</p>  |
| 12 | <p>The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</p> <p>(a) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;<br/>(b) Within critical biodiversity areas identified in bioregional plans;<br/>(c) Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on even in urban areas.</p> | <p>300 square metres or more of indigenous vegetation will be cleared along the servitude for the laying of the terrestrial pipeline and the area has been determined to be a Critical Biodiversity Area in line with SDF bioregional planning.</p>   |
| 13 | <p>The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation, except where such removal of vegetation is required for:</p> <p>(1) the undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), in which case the activity is regarded to be excluded from this list.<br/>(2) the undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No. 544 of 2010.</p> <p>(c) In Eastern Cape, Free State, Kwazulu-Natal, Limpopo, Mpumalanga, Northern Cape and Western Cape:</p>              | <p>300 square metres or more of indigenous vegetation will be cleared along the servitude for the laying of the terrestrial pipeline and the area has been determined to be a Critical Biodiversity Area in line with the Saldanha Local Spatial Policy Context indicating that the area is "Sensitive Vegetation".</p>   |

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|    | <p>(ii) Outside urban areas, the following:</p> <p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(dd) Sites or areas identified in terms of an International Convention;</p> <p>(ee) Core areas in biosphere reserves;</p> <p>(ff) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;</p> <p>(gg) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.</p> <p>(iii) In urban areas, the following:</p> <p>(aa) Areas zoned for the use as public open space;</p> <p>(cc) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose;</p> <p>(dd) Areas seaward of the development setback line;</p> <p>(ee) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.</p>  |  |
| 16 | <p>The construction of:</p> <p>(i) jetties exceeding 10 square metres in size;</p> <p>(ii) slipways exceeding 10 square metres in size;</p> <p>(iii) buildings with a footprint exceeding 10 square metres in size; or</p> <p>(iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p> <p>(d) In Western Cape:</p> <p>ii. Outside urban areas, in:</p> <p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(cc) World Heritage Sites;</p> <p>(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</p> <p>(ee) Sites or areas identified in terms of an International Convention;</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>(gg) Core areas in biosphere reserves;</p> <p>(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;</p> <p>(ii) Areas seawards of the development setback line or within 1</p> | <p>The proposed servitude corridors may traverse watercourses/wetlands in the region and infrastructure may be required to accommodate this.</p> |

|  |  |   |
|--|--|---|
|  | kilometre from the high-water mark of the sea if no such development setback line is determined.   |   |
| 19                                     | The widening of a road by more than 4 m or the lengthening of a road by more than 1 km<br>(d) In Western Cape<br>(ii) All areas outside urban areas<br>(ii) In urban areas<br>(aa) Areas zoned for use as public open space within urban areas; and<br>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose.   |   |
| 24                                     | The expansion of: (d) infrastructure where the infrastructure will be expanded by 10m <sup>2</sup> or more where such construction occurs within a watercourse or within 32 m of a water course, excluding where such development will occur behind the development setback line.<br>(d) In Western Cape (ii) All watercourses;<br>(iii) Outside urban areas; (iv) In urban areas:<br>(aa) Areas zoned for use as public open space within urban areas; and<br>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose. |   |
| Government Notice R545 Activity No(s): | Describe the relevant <b>Scoping and EIA Activity(ies)</b> in writing as per <b>Listing Notice 2</b> (GN No. R545)   |   |
| 3                                      | The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.   | Construction of the pump stations that will store treated effluent which is classified as a dangerous good. Each pump station will only have a storage capacity of 15m <sup>3</sup> .   |
| 5                                      | The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case that Act will apply.   | In terms of the Integrated Coastal Management Act (No. 24 of 2008), a Coastal Waters Discharge Permit is required for the discharge of effluent into the sea. An application for a Coastal Waters Discharge Permit dated 10 September 2014 was submitted to DEA: O&C by the CSIR on behalf of Frontier Utilities. DEA:O&C has issued the reference number: "2014/016/Frontier Saldanha" to the SRMO Project. The Application is attached as Annexure 4 in Volume III of this FEIAR. |
| 6                                      | The construction of facilities or infrastructure for the bulk transportation of dangerous goods -<br><br>(ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1000 metres in length, with a throughput capacity more than 50 cubic metres per day; or  | The pipeline will transport dangerous goods in the form of brine. It will exceed 1000 m in length and will have a throughput capacity of more than 50 cubic metres per day.   |
| 14                                     | The construction of an island, anchored platform or any other permanent structure on or along the sea bed excluding construction of facilities, infrastructure or structures for aquaculture purposes.   | The discharge pipeline will be a permanent structure constructed along the sea bed.   |
| 24                                     | Construction or earth moving activities in the sea, an estuary, or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is   | Construction and earth moving activities will occur within the sea, the littoral zone and 100 metres  |

|  |   |   |
|--|---|---|
|  | <p>the greater, in respect of:</p> <ul style="list-style-type: none"> <li>(i) facilities associated with the arrival and departure of vessels and the handling of cargo;</li> <li>(ii) piers;</li> <li>(iii) inter- and sub-tidal structures for entrapment of sand;</li> <li>(iv) breakwater structures;</li> <li>(v) coastal marinas;</li> <li>(vi) coastal harbours or ports;</li> <li>(vii) structures for reclaiming parts of the sea;</li> <li>(viii) tunnels; or</li> <li>(ix) underwater channels;</li> </ul> <p>but excluding —</p> <ul style="list-style-type: none"> <li>(a) activities listed in activity 16 in Notice 544 of 2010,</li> <li>(b) construction or earth moving activities if such construction or earth moving activities will occur behind a development setback line;</li> <li>(c) where such construction or earth moving activities will occur in existing ports or harbours where there will be no increase of the development footprint or throughput capacity of the port or harbour; or</li> <li>(d) where such construction or earth moving activities takes place for maintenance purposes.</li> </ul> | <p>inland of the high-watermark. This will be dependent on the design and technical criteria of the pipeline.</p> |
|--|---|---|

Table 1.5 contains a list of activities which are triggered under the new 2014 NEMA EIA Regulations. The table also shows the corresponding listed activities triggered in the 2010 NEMA EIA Regulations. The listed activities triggered under the 2014 NEMA EIA Regulations were assessed in this EIA.

**Table 1.5 Listed activities triggered in the 2014 NEMA EIA Regulations. The corresponding listed activities triggered in the 2010 NEMA EIA Regulations are also shown.**

| ACTIVITY IN TERMS OF NEMA EIA REGULATIONS 2014  | Equivalent in terms of EIA Regulations 2010 (also shown in Table 1.4) |
|---|---|
| Listing Notice 1 of 2014 EIA Regulations  | Listing Notice 1 of 2010 EIA Regulations 2014                         |
| Activity 9: The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or stormwater (i) with an internal diameter of 0,36m or more; and (ii) with a peak throughput of 120 litres per second or more.  | Activity 9  |
| Activity 10: The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes (i) with and internal diameter of 0,36m or more; and (ii) with a peak throughput of 120 litres per second of more.               | No equivalent   |
| Activity 12: The development of (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a water course; or (b) in front of a development setback  | Activity 11   |
| Activity 15: The development of structures in the coastal public property where the development footprint is bigger than 50 square metres-excluding (iii) the development of temporary structures within the beach zone where such structures will be removed within 6 weeks of the commencement of the development and where indigenous vegetation will not be | Activity 14   |



| ACTIVITY IN TERMS OF NEMA EIA REGULATIONS 2014   | Equivalent in terms of<br>EIA Regulations 2010<br>(also shown in Table<br>1.4) |
|--|--|
| cleared; or (iv) activities listed in activity 14 of Listing Notice 2 of 2014, in which case that activity applies.  |  |
| Activity 17: Development (i) in the sea; (iii) within the littoral active zone; (iv) in front of a development setback;<br><br>(d) rock revetments or stabilising structures including stabilising walls;<br>(e) buildings of 50 square metres or more; or<br>(f) infrastructure with a development footprint of 50 square metres or more –  | Activity 16  |
| Activity 18: The planting of vegetation or placing of any material on dunes or exposed sand surfaces of more than 10 square metres within the littoral active zone   | Activity 17  |
| Activity 19: The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse; (ii) the seashore; or (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is greater  | Activity 18  |
| Activity 24: The development of (ii) a road with a reserve wider than 13,5 metres, or where no reserve exists where the road is wider than 8 metres.   | Activity 22  |
| No direct equivalent, covered by Activity 27: The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity   | Activity 23  |
| No direct equivalent, covered by Activity 27: The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity  | Activity 24  |
| Activity 30: Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)   | Activity 26  |
| Activity 48: The expansion of- .(i) canals where the canal is expanded by 100 square metres or more in size ;(ii) channels where the channel is expanded by 100 square metres or more in size ;(iii) bridges where the bridge is expanded by 100 square metres or more in size;(iv) dams, where the dam, including infrastructure and water surface area, is expanded by 100 square metres or more in size; (v) weirs, where the weir, including infrastructure and water surface area, is expanded by 100 square metres or more in size; (vi) bulk storm water outlet structures where the bulk storm water outlet structure is expanded by 100 square metres or more in size; or<br><br>where such expansion or expansion and related operation occurs-<br><br>(a) within a watercourse;<br><br>(b) in front of a development setback; | Activity 39  |
| Activity 49: The expansion of -(i) jetties by more than 100 square metres; (ii) slipways by more than 100 square metres; (iii) buildings by more than 100 square metres; (iv) boardwalks by more than 100 square metres; or (v) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;<br><br>where such expansion or expansion and related operation occurs-   | Activity 40  |

| ACTIVITY IN TERMS OF NEMA EIA REGULATIONS 2014  | Equivalent in terms of<br>EIA Regulations 2010<br>(also shown in Table<br>1.4) |
|---|--|
| (a) within a watercourse;<br><br>(b) in front of a development setback; or<br><br>excluding-<br><br>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice3 of 2014, in which case that activity applies;<br><br>(ee) where such expansion occurs within existing roads or road reserves. |  |
| Activity 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre  | Activity 47  |
| Listing Notice 2 of 2014  | Listing Notice 2 of 2010   |
| Activity 4: The development of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.  | Activity 3   |
| Activity 6: The development of facilities or infrastructure for any process or activity which required a permit or licence in terms of national or provincial legislations governing the generation or release of emissions, pollution or effluent.   | Activity 5   |
| Activity 7: The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods-<br><br>(ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1000 metres in length, with a throughput capacity of more than 50 cubic metres per day;                       | Activity 6   |
| Activity 14: The development and related operation of (i) an island; (ii) anchored platform; or (iii) any other structure or infrastructure on, below or along the sea bed.   | Activity 14  |
| Activity 26: Development--(i) in the sea; (ii) in an estuary; (iii) within the littoral active zone; (iv) in front of a development setback; in respect of<br><br>(c) inter- and sub-tidal structures for entrapment of sand; (d) breakwater structures;(g) tunnels; or (h) underwater channels.                                      | Activity 24  |
| Listing Notice 3 of 2014  | Listing Notice 3 of 2010   |
| Activity 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres.<br>(f) (i) Areas outside urban areas; (aa) Areas containing indigenous vegetation.  | Activity 4   |
| Activity 10: The development of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. (g) In the Western Cape (i) All areas outside urban areas                                       | Activity 10  |
| Activity 12: The clearance of an area of 300 square metres or more of vegetation (ii) within critical biodiversity areas; (iii) within the littoral active zone or 100 metres inland from the high-water mark of the sea.   | Activity 12  |
| No equivalent (covered by Activity 12)  | Activity 13  |
| Activity 14: The development of infrastructure or structures with a physical footprint of 10 square metres or more (a) within a watercourse; (b) in front of a development setback; (f) In  | Activity 16  |

| ACTIVITY IN TERMS OF NEMA EIA REGULATIONS 2014  | Equivalent in terms of<br>EIA Regulations 2010<br>(also shown in Table<br>1.4) |
|---|--|
| Western Cape (i) Outside urban areas  |  |
| Activity 18: The widening of a road by more than 4 metres; or the lengthening of a road by more than 1 kilometre. (f) In Western Cape (i) All areas outside urban areas: (aa) Areas containing indigenous vegetation  | Activity 19 Note: activity 19 was not previously listed                        |
| Activity 23: The expansion of (xii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such development occurs (a) within a water course; (b) in front of a development setback adopted in a prescribed | Activity 24 Note: activity 24 was not previously listed                        |

## 1.7 DETAILS AND EXPERTISE OF THE CSIR PROJECT TEAM

### 1.7.1 CSIR management team

**Project Leader:** Paul Lochner is the Manager of the Environmental Management Services (EMS) group of the CSIR and is the Project Leader for the proposed project. Paul has 23 years of experience in environmental assessment and management studies, primarily in the leadership and integration functions. He has been a certified Environmental Assessment Practitioner (EAP) for South Africa, since July 2003. He has a degree in Civil Engineering (UCT, 1990) and a Masters degree in Environmental Science (UCT, 1992). He commenced work at CSIR in 1992, where he initially focused on coastal engineering. With the growth of environmental assessment, he focused increasingly on Strategic Environmental Assessments (SEAs), EIAs and EMPs. In recent years, his work included industrial-related EIAs, particularly within the Coega IDZ near Port Elizabeth, and renewable energy EIAs and SEAs in South Africa.

In South Africa, in recognition of his role as a leader in the field of environmental assessment and management, he has been appointed by national and provincial government to author various environmental guidelines. For example, he was lead author of the "Overview of Integrated Environmental Management (IEM)" information document published in 2004 by the South African national DEAT as part of the IEM Series; as well as being author of the "Guideline for EMPs" published by the Western Cape government in 2005.

Paul was the lead EAP for the Final EIA for the Proposed Construction, Operation and Decommissioning of a Seawater Reverse Osmosis Plant and Associated Infrastructure in the Saldanha Bay Region, Western Cape that was undertaken for the WDCM. Environmental Authorisation for this project was granted by the DEA&DP on 13 August 2013. This bears particular reference for the SRMO Project EIA as the majority of the proposed pipeline route was surveyed and assessed as part of the WCDM desalination EIA. He was also the project leader for the EIA for the NAMWATER Desalination Plant north of Swakopmund, Namibia in 2009. Within the Coega IDZ, he managed a study that

investigated the potential for using seawater reverse osmosis to provide industrial quality water for a proposed aluminium smelter at Coega.

**Project Manager:** Minnelise Levendal is the EIA project manager for the SRMO Project. She holds a BSc Honours degree from the University of the Western Cape (1994) and a Masters of Science degree (Botany) from the University of Stellenbosch (1998). Minnelise has nine years' experience in managing EIAs and Basic Assessments (BAs). She was formerly employed at DEA&DP from 1999-2004 where she assessed EIAs, BAs and EMPs. She therefore has a good understanding of the requirements of the EIA process. She initially joined the Biodiversity section at CSIR in 2004 and then joined the EMS Group in 2006. Since then she has been managing numerous integrative environmental assessment and management studies (EIAs, BAs and Environmental Screening Studies). She is currently managing various large-scale renewable wind energy EIAs in South Africa. She was the project manager for the BAs undertaken for ten wind masts as part of the national wind atlas project for the Department of Energy. The EIAs she has been involved in required extensive stakeholder engagement, and the coordination and integration of specialist studies across the spheres of the biophysical, social and economic components of the environment.

The CSIR EIA team has extensive knowledge of environmental conditions in the Saldanha Bay area, where the CSIR has completed numerous environmental assessment studies and a SEA for the planned expansion of the Port of Saldanha.

Table 1.6 provides a summary of Paul Lochner's relevant project experience for the purposes of the Saldanha Regional Marine Outfall Project EIA. The CVs for Paul Lochner and Minnelise Levendal are included in Appendix A of Volume I of this FEIAR.

**Table 1.6 Summary of Paul Lochner's relevant project experience for the purposes of the Saldanha Regional Marine Outfall Project EIA.**

| PROJECT TITLE AND LOCATION  | CLIENT                                | DATE        |
|---|---------------------------------------|-------------|
| <i>EIA and EMP for a desalination plant in the Saldanha Bay area</i>  | West Coast District Municipality      | 2012 - 2013 |
| <i>Environmental Screening Study for a desalination plant for the City of Cape Town</i>   | City of Cape Town & WorleyParsons     | 2013 - 2014 |
| <i>EIA and EMP for a desalination plant at Mile 6 near Swakopmund</i>   | Namwater                              | 2008 - 2009 |
| <i>EIA and EMP for the proposed Manganese export terminal at the Port of Ngqura, Coega</i>  | Transnet/NPA                          | 2013 - 2014 |
| <i>EIA for the proposed Jacobsbaai Tortoise Reserve eco-development, near Saldanha</i>  | Jacobsbaai Tortoise Reserve (Pty) Ltd | 2007-2010   |
| <i>EIA for the proposed Coega LNG-to-Power Project at the Port of Ngqura, Coega</i>   | Eskom and iGas                        | 2007        |
| <i>EIA for the expansion of the container terminal and construction of the administration craft basin at the Port of Ngqura, Coega, RSA</i> | Transnet/NPA                          | 2006 – 2007 |
| <i>EIA and EMP for the Coega Aluminium Smelter, near Port Elizabeth, RSA</i>  | Pechiney (France) and Alcan (Canada)  | 2002 – 2007 |



| PROJECT TITLE AND LOCATION  | CLIENT   | DATE |
|---|--|------|
| <i>Guideline for Environmental Management Plans (EMPs) for the Western Cape province</i>                                    | Dept of Environmental Affairs and Development Planning, Western Cape | 2005 |
| <i>Environmental Due Diligence (EDD) for four of the SFF Association's strategic oil storage facilities in South Africa</i> | SFF Association  | 2001 |

### 1.7.2 Public participation

Public participation forms an integral part of the EIA Process and assists in identifying issues and possible alternatives to be considered during the EIA Process. The CSIR has therefore appointed Sustainable Futures to manage the Public Participation component of this EIA. The public participation practitioner is Mr Shawn Johnston. Mr Johnston has extensive experience in managing public participation processes for large-scale EIAs and has good conflict resolution skills. He is familiar with the local stakeholder dynamics and the Saldanha Bay area in general. He will therefore draw on existing data bases and references as background to conduct the public participation process for this project.

### 1.7.3 EIA specialist team

Details of the EIA project team including the specialist team are included in Table 1.7. All the specialists are familiar with the project area and have been involved in other environmental studies undertaken on the west coast of Southern Africa. This includes being part of the CSIR team for the EIA for the proposed desalination plant for the WCDM.

**Table 1.7 CSIR Project team for the Frontier Saldanha Regional Marine Outfall Project EIA**

| TEAM MEMBER AND AFFILIATION  | ROLE IN THIS EIA     | RELEVANT EXPERIENCE   |
|--|----------------------|---|
| <b>EIA MANAGEMENT TEAM</b>   |                      |   |
| Paul Lochner<br><b>CSIR</b>  | Project Leader       | B.Sc. Civil Eng, Masters in Environmental Science, registered EAPSA, with 23 years of experience in leading EIAs and EMPs, particularly for coastal and industrial projects.  |
| Minnelise Levendal<br><b>CSIR</b>                                    | Project Manager      | MSc Botany (US) and BSc (Hons) Botany (UWC) with nine years' experience in managing Environmental Impact Assessments and Basic Assessments.   |
| <b>PUBLIC PARTICIPATION PROCESS</b>                                  |                      |   |
| Shawn Johnston<br><b>Sustainable Futures ZA (SFZA)</b>               | Public Participation | B Tech and National Diploma in Horticulture and Environmental Management degree from the Cape Peninsula University of Technology in Cape Town. He has extensive experience in running Public Participation Processes for EIAs and in mediation and capacity building.   |
| <b>EIA SPECIALIST TEAM</b>   |                      |   |
| Dr Andrea Pulfrich<br><b>Pisces Environmental Services (Pty) Ltd</b> | Marine Ecology       | Ph.D. Fisheries Biology. She is a member of the South African Council for Natural Scientific Professions. She has 28 years of experience in marine ecology and has been party to a number of specialist studies including desalination plants (e.g. the WCDM desalination plant in Danger Bay and NamWater and Areva, Namibia). |

| TEAM MEMBER AND AFFILIATION   | ROLE IN THIS EIA                   | RELEVANT EXPERIENCE   |
|---|------------------------------------|---|
| Nick Helme<br><b>Nick Helme Botanical Surveys</b>   | Terrestrial Ecology                | B.Sc. Botany and registered with the South African Council for Natural Scientific Professions. Nick has undertaken over 30 different botanical assessments within the West Coast District Municipality and the Saldanha Bay region in the last eight years. This includes the Terrestrial Ecological assessment of the proposed WCDM desalination plant EIA.  |
| John Pether<br><b>University of Cape Town</b>   | Palaeontology                      | M.Sc. Earth Science. John is registered with the South African Council for Natural Scientific Professions. He has extensive experience with working on the west coast of South Africa. This includes the Palaeontological assessment of the proposed WCDM desalination plant EIA.   |
| Dr Jayson Orton<br><b>ASHA Consulting</b>   | Archaeology                        | D.Phil. Archaeology (Oxon). ASAPA professional accreditation. Jayson has been actively involved in a wide range projects spanning the west coast region. This includes the Archaeological assessment of the proposed WCDM desalination plant EIA.   |
| Dr Hugo van Zyl<br><b>Independent Economic Researchers</b>  | Socio-economic and Planning        | Ph.D. Economics. Hugo has been involved in over 50 appraisals of infrastructure projects, industrial developments, land use changes, conservation projects and eco-tourism initiatives throughout Southern Africa. He has undertaken the Economics specialist study of the proposed WCDM desalination plant EIA.  |
| Henry Holland<br><b>MapThis (Pty) Ltd</b>   | Visual                             | M.Sc. Geology. Henry is a visual specialist who has done visual studies for several industrial developments, utilising GIS and computer simulation skills in his work. Mr Holland has undertaken the visual impact assessment for the proposed WCDM desalination plant EIA.   |
| Luanita van der Walt<br><b>CSIR</b>   | Wetlands                           | M.Sc. Environmental Sciences. Her M.Sc focussed on the biogeochemical landscape functionality, plant species diversity, and plant functional diversity of fragmented grasslands. Luanita extracted the relevant findings from the Freshwater Ecological study that was prepared by Dr Liz Day of <i>The Freshwater Group</i> for the proposed WCDM desalination plant EIA (Day, 2014), for the purposes of the SRMO Project EIA.  |
| <b>SUPPORTING TECHNICAL STUDIES</b>   |                                    |   |
| Francois Smit<br><b>WorleyParsons RSA</b><br><br>Independent Review by<br><b>WSP Group Africa (Pty) Ltd</b> | Marine Modelling/<br>Hydrodynamics | <p>MEng (Civil), University of Stellenbosch, 1991. Francois Smit is a Coastal Engineer with twenty years' experience in coastal engineering, including three with WorleyParsons. Experience includes coastal zone management, coastal monitoring, coastal processes modelling and waterfront and coastal structures design. Specific expertise includes coastal measurement and monitoring, including ADCP, coastal imaging (video) and laser (LIDAR) technologies; wave climate and design condition assessments; harbour/marina/waterfront planning and design; shoreline stability assessment; coastal asset condition surveys; temporary and/or innovative coastal protection methods, including artificial surf reefs and geo-containers; computational and physical modelling of coastal processes, including surf zone turbulence and suspended sediment transport, wave and wind-induced hydrodynamics, coastal response and marine water quality.</p> <p>The Hydrodynamic Modelling study was independently reviewed by WSP.</p> |

## 1.8 INDEPENDENCE OF THE EAP AND SPECIALISTS

Regulation 17(a) of the EIA Regulations (published in GN R543 of 18 June 2010 and effective from 2 August 2010) provides that “[a]n EAP or person compiling a specialist report or undertaking a specialised process, appointed in terms of regulation 16(1) must be independent.” In the context of an EIA process, this means (1) that an EAP and/or specialist must have no business, financial, personal or other interest in an application in respect of which they are appointed in terms of the EIA Regulations (other than fair remuneration for work performed in connection with such application), and (2) that there are no circumstances that may compromise the EAP and/ or specialist(s) objectivity in the context of such application process.

CSIR confirms in this regard that the EAP for this EIA process (Mr Paul Lochner), has no business, financial or other interest in the application for environmental authorisation for the proposed SRMO Project (other than fair remuneration for work performed in connection with the application). There are furthermore no circumstances that may compromise the objectivity of the EAP in conducting this EIA process in accordance with the EIA Regulations. This is also evident from the Declaration of Independence signed by Mr Lochner (Appendix A2), which was submitted to DEA&DP in July 2013, together with the Application for Environmental Authorisation.

Similarly, the specialists and/or peer reviewers who form part of the EIA team (refer to Table 1.5 above) (whether employed by CSIR or contracted as external specialists) also meet the requirements for independence outlined in the EIA Regulations, and furthermore signed a Declaration of Independence (which is included Appendix A2 and in their respective specialist studies; Appendices A-F of Volume II of this FEIAR) before commencing any substantive work in connection with this EIA process.

## 1.9 OBJECTIVES OF THE FINAL EIA REPORT

This EIA Report was preceded by a comprehensive scoping process that led to the submission of a Final Scoping Report and Plan of study for the EIA to DEA&DP. Acceptance of the Final Scoping Report was received on 26 June 2014 which marked the end of the Scoping phase (Appendix 1.6), after which the EIA process moved into the impact assessment and reporting phase.

The primary objective of this FEIAR is to present the competent authority and I&APs with an overview of the predicted impacts and associated management actions required to avoid or mitigate the negative impacts; or to enhance the benefits of the proposed project.

In terms of legal requirements, a crucial objective of the EIA Report is to satisfy the requirements of Regulations 31, 32 and 33 of the NEMA EIA Regulations of 18 June 2010 which came into effect on 2 August 2010. These regulations determine/prescribe the content of the EIA Report and specify the type of supporting information that must

accompany the submission of the report to the authorities. An overview of where the requirements are addressed in this report is presented in Table 1-8.

This process is also designed to satisfy the requirements of Regulations 55, 56 and 57 of the NEMA 2010 EIA Regulations relating to the public participation process and, specifically, the registration of I&APs and recording their submissions. All I&APs on the current database for this EIA have been informed of the release of the Draft EIA Report for a 40-day commenting period. All comments received on the Draft EIA Report are included in Appendix G and addressed in the Issues and Responses Trail (Chapter 6) of this FEIAR.

The FEIAR will be circulated for a 30-day commenting period. All comments on the FEIAR will be sent to Mr Shawn Johnston of *Sustainable Futures* ZA. The comments will then be submitted to DEA&DP together with the FEIAR for decision-making.

The draft Environmental Management Plan (EMP) that is required as part of the EIA process (Regulation 33) is provided as an Annexure in Section B of Volume 1 of the FEIAR.

**Table 1.8 Summary of where requirements of a EIA Report (in terms of Section 31 of the 2010 NEMA EIA Regulations) are provided in this report**

| SECTION       | REQUIREMENT FOR EIA REPORT   | WHERE THIS IS PROVIDED IN THIS EIA REPORT       |
|---------------|--|---|
| (2) (a) (i)   | <i>The EAP who compiled the report</i>   | Chapter 1, Appendix A1                          |
| (2) (a) (ii)  | <i>The expertise of the EAP to carry out an environmental impact assessment</i>  | Chapter 1, Appendix A1                          |
| (2) (b)       | <i>A detailed description of the proposed activity</i>   | Chapter 1 and Chapter 2                         |
| (2) (c)       | <i>A description of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is:</i>  | Chapter 1, 2, 3 and Appendices A-F of Volume II |
| (2) (c) (i)   | <i>A linear activity, a description of the route of the activity</i>   | Chapter 2                                       |
| (2) (c) (ii)  | <i>An ocean-based activity, the coordinates where the activity is to be undertaken</i>   | Chapter 2                                       |
| (2) (d)       | <i>A description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity</i> | Chapter 3 and Appendices A-F of Volume II       |
| (2) (e)       | <i>Details of the public participation process conducted in terms of sub-regulation (1), including:</i>  | Chapter 5 and Chapter 7                         |
| (2) (e) (i)   | <i>Steps undertaken in accordance with the plan of study</i>   | Chapter 7                                       |
| (2) (e) (ii)  | <i>A list of persons, organisations and organs of state that were registered as interested and affected parties</i>  | Appendix D                                      |
| (2) (e) (iii) | <i>A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments</i>                    | Chapter 6                                       |
| (2) (e) (iv)  | <i>Copies of any representation, objections and comments received from registered interested and affected parties</i>  | Appendix G                                      |



| SECTION       | REQUIREMENT FOR EIA REPORT   | WHERE THIS IS PROVIDED IN THIS EIA REPORT  |
|---------------|--|--|
| (2) (f)       | <i>A description of the need and desirability of the proposed activity</i>   | Chapter 1  |
| (2) (g)       | <i>A description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity</i>                               | Chapter 1, 2, and 9;<br>Appendices A-F in Volume II of the FEIAR                                       |
| (2) (h)       | <i>An indication of the methodology used in determining the significance of potential environmental impacts</i>  | Chapter 7  |
| (2) (i)       | <i>A description and comparative assessment of all alternatives identified during the environmental impact assessment process</i>  | Chapter 1, 8 and Appendices A-F in Volume II of the FEIAR  |
| (2) (j)       | <i>A summary of the findings and recommendations of any specialist report or report on a specialised process</i>   | Summary; Chapters 8 and 9;<br>Specialist studies included in Appendices A-F in Volume II of the FEIAR. |
| (2) (k)       | <i>A description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures</i> | Appendices A-F in Volume II of the FEIAR; Chapters 8 and 9   |
| (2) (l)       | <i>An assessment of each identified potentially significant impact, including:</i>   | Appendices A-F in Volume II  |
| (2) (l) (i)   | <i>Cumulative impacts</i>  | Appendices A-F; Chapter 9  |
| (2) (l) (ii)  | <i>The nature of the impact</i>  | Appendices A-F; Chapter 8  |
| (2) (l) (iii) | <i>The extent and duration of the impact</i>   | Appendices A-F; Chapter 8  |
| (2) (l) (iv)  | <i>The probability of the impact occurring</i>   | Appendices A-F; Chapter 8  |
| (2) (l) (v)   | <i>The degree to which the impact can be reversed</i>  | Appendices A-F; Chapter 8  |
| (2) (l) (vi)  | <i>The degree to which the impact may cause irreplaceable loss of resources</i>  | Appendices A-F; Chapter 8  |
| (2) (l) (vii) | <i>The degree to which the impact can be mitigated</i>   | Appendices A-F; Chapter 8  |
| (2) (m)       | <i>A description of any assumptions, uncertainties and gaps in knowledge</i>   | Appendices A-F; Chapter 9  |
| (2) (n)       | <i>A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation</i>   | Chapter 9  |
| (2) (o)       | <i>An environmental impact statement which contains</i>  | Chapter 9  |
| (2) (o) (i)   | <i>A summary of the key findings of the environmental impact assessment</i>  | Chapter 8 and 9  |
| (2) (o) (ii)  | <i>A comparative assessment of the positive and negative implications of the proposed activity</i>   | Chapter 8 and 9  |
| (2) (p)       | <i>A draft environmental management programme containing the aspects contemplated in regulation 33</i>   | Section B of Volume I  |
| (2) (q)       | <i>Copies of any specialist reports and reports on specialised processes complying with regulation 32</i>  | Appendices A-F of Volume II and Annexures 1-3 of Volume III  |
| (2) (r)       | <i>Any specific information that may be required by the competent authority</i>  | N/A  |
| (2) (s)       | <i>Any other matters required in terms of sections 24 (4) (a) and (b) of the Act</i>   | N/A  |