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BIODIVERSITY COMPLIANCE STATEMENT,

AMSA PHASE 1, SALDANHA STEEL,

SALDANHA, WESTERN CAPE.

Submitted to: Golder Associates Africa (Pty) Ltd

Client: Arcelor Mittal South Africa

3 Feb 2023

DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 specialists involved in Impact Assessment processes must declare their independence and include an abbreviated Curriculum Vitae.

I, N.A. Helme, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own, notwithstanding the fact that I have received fair remuneration from the client for preparation of this report.

Mallen

NA Helme

Abridged CV:

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Since 1997 I have been based in Cape Town, and have been working as a specialist botanical consultant, specialising in the diverse flora of the great Cape Floristic Region. Since the end of 2001 I have been working on my own and trade as Nick Helme Botanical Surveys.

A selection of previous work undertaken is indicated below:

- Botanical assessment of proposed new infrastructure at Bokbaai, Western Cape (Doug Jeffery Environmental 2022)
- Botanical assessment of proposed fender storage area, Saldanha Port (Transnet 2021)
- Botanical assessment of proposed new cultivation on Ptn 10 of Farm Wittewater 93, Kapteinskloof, Piketberg (Cederberg Environmental Practise 2021)
- Botanical assessment of proposed cultivation on Droogerivier farm, Leipoldtville (Footprint Environmental 2020)

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- Botanical assessment of proposed new cultivation and dam on Ptn 5 of Farm Bovenvlei 151, Malmesbury (Cornerstone Environmental 2020)
- Terrestrial Ecology impact assessment of proposed Zandheuvel phosphate mine, Saldanha (Exigo3 2020)
- Botanical assessment of proposed new cultivation on Welbedacht farm, Tra Tra Mountains (Footprint Environmental 2020)
- Botanical assessment of Ptn 8 of Bottelfontein 11, Redelinghuys (Cape Nordic Corporation 2019)
- Botanical assessment of proposed new cultivation on Portion of Wittewater 148, Piketberg (Cornerstone Environmental 2019)
- Botanical assessment of Portion 15 of Bottelfontein 11, Redelinghuys (Cederberg Environmental 2018)
- Botanical assessment of Ptn of Wittewater, Piketberg (Footprint Environmental 2018)
- Botanical assessment of Rietvlei, Koue Bokkeveld (Footprint Environmental 2018)
- Botanical assessment of Sebulon farm, Redelinghuys (Footprint Environmental 2018)
- Botanical assessment of Draaihoek farm, Leipoldtville (Footprint Environmental 2018)
- Botanical and ecological overview of Bokbaai farm (The Mapula Trust 2017)
- Ecological assessment of proposed new KIPTS and decommissioning of existing KIPTS, Koeberg Nuclear Power Station (Landscape Dynamics 2017)
- Botanical site screening for proposed Sasol power station, Saldanha (ERM 2015)
- Botanical site screening for proposed Globeleq power station, Saldanha (ERM 2015)
- Botanical site screening for proposed Arcelor Mittal power station, Saldanha (ERM 2015)
- Botanical assessment of Langebaan transfer station and landfill area (AECOM 2015)
- Botanical assessment of proposed overnight facilities at Klein Mooimaak, West Coast National Park (SANParks 2015)
- Botanical assessment of proposed cultivation on Rem. Andriesgrond 204, Clanwilliam (Cederberg Environmental Assessment Practise 2015)

- Botanical assessment of proposed dam on Modderfontein farm, Citrusdal (Cederberg Environmental Assessment Practise 2015)
- Ecological Assessment for proposed Frontier Minerals Separation Plant, Saldanha (Sedex 2014)
- Botanical assessment of proposed Elandsfontein phosphate mine east of Langebaan (Braaf Environmental 2014)
- Botanical assessment for proposed LNG terminal, Saldanha (PetroSA 2014)
- Botanical Scoping study for proposed Saldanha Municipality Desalination Project (CSIR 2012)

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1. INTRODUCTION

This biodiversity compliance statement was commissioned as part of the environmental authorisation process being followed for the proposed expansion of a bulk storage facility in the area west of the existing Saldanha Steel plant, Saldanha, Western Cape. The study area is about 31.5ha in extent, and is located south of the railway line and west of a current bulk storage area (see Figure 1).

The site was screened using the national web-based Environmental Screening Tool. The output generated indicated that the site has a "high sensitivity" for the Animal Species theme, based on the potential presence of three threatened faunal species - African Marsh Harrier, Black Harrier and a Bladder Grasshopper. The Screening Tool showed a "medium sensitivity" for plant species, and "very high sensitivity" for terrestrial biodiversity, the latter being driven by the presence of threatened ecosystems (vegetation types), Critical Biodiversity Area 1, and Ecological Support Area 1.



Figure 1: Satellite image showing the study area.

2. TERMS OF REFERENCE

The terms of reference for this study were as follows:

- Undertake a desktop Compliance Statement for the vegetation and fauna in the designated study area
- Identify and describe the vegetation and fauna in the study area and place it in a regional context, including its status in terms of the relevant provincial Spatial Biodiversity Plans (CBA/ESA/ONA, etc), IDZ planning, etc.
- Identify any (likely) plant and animal Species of Conservation Concern in the study area, based on observation, literature and iNaturalist website review
- Provide an overview and map (as Google Earth kmz files) of the botanical and faunal conservation significance (sensitivity) of the study area
- Assess the direct, indirect and cumulative impacts of the proposed development and the No Go (No development) alternative, using standard EIA methodology
- Provide feasible mitigation measures (if necessary) to avoid or reduce impacts to below the limits of acceptable change.

3. LIMITATIONS, ASSUMPTIONS AND METHODOLOGY

No site visit was undertaken for this study, but the author has previously undertaken at least five such surveys in similar habitat within 1km of the study area (*e.g.* Helme 2011, Helme 2015, Helme 2019, Helme 2020), and thus has a good idea of the biodiversity of the area. The author was provided with colour site photographs taken on 12 January 2023, which were used to confirm the vegetation type and patterns on site. Given the absence of a specialist site visit the presence of some plant Species of Conservation Concern in the study area cannot be ruled out, but their presence is deemed unlikely in this relatively degraded area, and this is informed by detailed study of similar, nearby habitat in the appropriate seasons (see above references). The author believes that sufficient information was available to make an accurate assessment of the vegetation and fauna and its significance, and the confidence level in the accuracy of the findings is high.

The GIS based South African National Biodiversity Institute (SANBI) vegetation map for South Africa (Mucina & Rutherford 2012 and online updates) was consulted, along with the National Spatial Biodiversity Assessment (NSBA; Rouget *et al* 2004, Government of South Africa 2022), the National List of Threatened Ecosystems (DEA 2011), and the CapeNature Biodiversity Spatial Plan 2017 (Pence 2017). Conclusions were drawn based on this and other documentation mentioned in the report, and based on 25 years of professional experience in the area and the region.

Google Earth aerial imagery dated May 2022 (and earlier) was used to verify vegetation patterns on site.

Botanical sensitivity (also known as conservation value) is understood to be a product of species diversity, rarity of habitat, rarity of species, ecological viability and connectivity, vulnerability to impacts, and reversibility of threats (ease of rehabilitation).

It is assumed that all mitigation recommendations made in this report will be included as Conditions of Authorisation in any positive Environmental Authorisation, and that they will be adequately and timeously implemented. It is also assumed that the entire site (about 31.5ha) will eventually be utilised for the proposed development.

The No Go alternative is assumed to be a continuation of the *status quo*, *i.e.* no additional infrastructure development in this area.

4. STUDY AREA AND REGIONAL CONTEXT

The study area is considered to be part of the West Strandveld bioregion (Mucina & Rutherford 2006), which is part of the Fynbos biome, located within what is now known as the Core Region of the Greater Cape Floristic Region (GCFR; Manning & Goldblatt 2012). The GCFR is one of only six Floristic Regions in the world, and is the only one largely confined to a single country (the Succulent Karoo component extends into southern Namibia). It is also by far the smallest floristic region, occupying only 0.2% of the world's land surface, and supporting about 11500 plant species, over half of all the plant species in South Africa (on 12% of the land area). At least 70% of all the species in the Cape region do not occur elsewhere, and many have very small home ranges (these are known as narrow endemics). Many of the lowland habitats are under pressure from agriculture, urbanisation and alien plants, and thus many of the range restricted species are also under severe threat of extinction, as habitat is reduced to extremely small fragments. Data from the nationwide plant Red Listing project indicate that 67% of the threatened plant species in the country occur only in the southwestern Cape, and these total over

1800 species (Raimondo *et al* 2009)! It should thus be clear that the southwestern Cape is a major national and global conservation priority, and is quite unlike anywhere else in the country in terms of the number of threatened plant species.

The West Strandveld bioregion is characterised by relatively high winter rainfall, summer drought and nutrient poor sandy soils. The bioregion extends from False Bay north to Lambert's Bay, and is restricted to recent, alkaline sands of coastal origin. The sandy soils are typically slightly richer than those of the fynbos further inland, and the dry summers are partly ameliorated by the proximity to the sea and the prevailing onshore winds. Species diversity is often substantially lower than in the adjacent Fynbos areas, and there are typically fewer local endemics and threatened plant species.

The towns of Vredenburg, Saldanha, Langebaan and Yzerfontein, as well as a large part of Cape Town fall within this biome, and thus not surprisingly the primary source of habitat loss in this bioregion is urbanisation and all its associated impacts. Agriculture and alien plant invasion are also significant causes of habitat degradation in the area. Due to this combination of factors the loss of natural vegetation in this bioregion has been moderate to severe (40-75% of original extent lost within most of the region), and the bioregion has a fairly high number of threatened plant species, due also to the fact that many species are naturally restricted to small areas of habitat within this region (Raimondo *et al* 2009).

The CapeNature Biodiversity Spatial Plan 2017 (Pence 2017) indicates that most of the study area is mapped as terrestrial Ecological Support Area 1 (ESA1; 60% of site), with about 30% being mapped as ESA1 (aquatic). A very small area (5% of site) is mapped as terrestrial Critical Biodiversity Area 1 (CBA1).

The primary reasons for the mapping of CBAs in this area are 1) that the area supports a Threatened vegetation type, 2) that the area is part of an identified climate adaptation and coastal corridor, 3) that the area supports ecological processes and 4) that the area (although not necessarily this site) supports threatened plant species. The main reasons for the ESA are that is part of a designated climate adaptation and ecological corridor, but it is recognised that is a previously disturbed area (and hence not a CBA).

There is no evidence to suggest that the small area mapped as CBA1 in the east of the study area is in fact worthy of this status, being essentially just a patch of common

Lycium ferocissimum shrubs, more easily evident (than the other, lower vegetation) in the imagery used to generate this mapping (see Plate 2).



Figure 2: Extract of the CapeNature Biodiversity Spatial Plan 2017. Areas mapped as CBA1 (Critical Biodiversity Area) are of higher priority than the areas mapped as ESA1 (Ecological Support Area). There is no evidence to suggest that the small area mapped as CBA1 is in fact worthy of this status, being essentially just a patch of common *Lycium ferocissimum* shrubs, more easily evident (than the other, lower vegetation) in the imagery used to generate this mapping.

5. DESCRIPTION OF THE VEGETATION

The SA vegetation map (Mucina & Rutherford 2018) indicates that the original natural vegetation in the study area is best categorised as **Saldanha Flats Strandveld,** and this author supports this classification.

<u>Saldanha Flats Strandveld</u> is gazetted as an <u>Endangered</u> vegetation type on a national basis (DEA 2011), and the latest study supports this classification (Government of South Africa 2022). As of 2018 the unit had less than 36% of its original total extent remaining, only 10% was conserved (in West Coast National Park), and it had a conservation target of 24% of its original extent (Rouget et al 2004). This unit is typically found on deep, sandy soils with some underlying calcrete, and is restricted to the area from Vredenburg to Yzerfontein. The unit is species rich and is home to a high number of threatened and very localised plant species. The entire study area can be considered previously disturbed, probably by cultivation more than forty years ago, and this observation is supported by the presence of old piles of calcrete in parts of the site. The area may also have been subject to long periods of heavy grazing and trampling, and thus all the plant species present are essentially secondary vegetation that has re-established over the last four decades since the cessation of disturbance. Indigenous plant cover is about 70%, and is moderately diverse.

Typical plant species include Searsia glauca, Euphorbia burmanii, Pteronia divaricata, Roepera fulva, R. morgsana, Asparagus capensis, Helichrysum niveum, Muraltia spinosa, Crassula expansa, Stachys ballota, Melolobium adenodes, Foveolina tenella, Lycium cinereum, L. ferocissimum, L. tetrandrum, Aizoon fruticosa, A. africana, A. sarcophyllum, Dimorphotheca pluvialis, Viscum capense, Manochlamys albicans, Septulina glauca, Pelargonium senecioides, P. capitatum, Trachyandra divaricata, T. falcata, Osteospermum incanum, O. moniliferum, Conicosia pugioniformis, Oxalis flava, Brunsvigia bosmaniae, Othonna cylindrica, Albuca canadense, Mesembryanthemum crystallinum, M. junceum, Oncosiphon suffruticosum, Tetragonia fruticosa, Phyllobolus canaliculatus, and Arctotheca calendula.

Various annual alien grasses are also present, including *Bromus pectinatus, Bromus diandrus* (ripgut brome), *Lolium sp.* (ryegrass), *Avena* sp. (wild oats) and *Vulpia myuros* (ratstail fescue), plus the alien herbs *Erodium moschatum* (cranesbill), *Echium plantagineum* (Pattersons's curse), *Raphanus rapistrum* (wildemostert) and *Brassica tournefortii*.

A single plant Species of Conservation Concern (SoCC) was recorded in the site photographs provided, and may be the only SOCC on site, although it should be noted that numerous SoCC are present on the less disturbed nearby areas (pers. obs.), including *Cephalophyllum rostellum* (Endangered), *Daubenya zeyheri* (Endangered), *Limonium acuminatum* (Vulnerable), *Drosanthemum marinum* (Near Threatened), *Felicia elongata* (Vulnerable) and *Lampranthus vernalis* (Near Threatened).

The only SoCC recorded on site is likely to be *Ruschia langebaanensis* (Vulnerable), which is likely to have a viable and quite extensive subpopulation on site (>20 plants), although the subpopulation would be less than 0.5% of the

total regional population, which is found from St. Helena Bay to just south of Langebaan.

The rare, locally endemic bulb *Romulea elliptica* (Endangered) has been recorded about 2km west of the current study area (pers.obs.), but it is unlikely to be present in the study area due to high level of previous disturbance.



Plate 1: View of the vegetation on site. Note the patches of piled up calcrete at centre left.



Plate 2: The vygie *Mesembryanthemum junceum* dominant in the foreground, with shrubby green *Lycium ferocissimum* in the background.

5.1 Botanical Sensitivity

The botanical conservation value of a site (usually known as botanical sensitivity; this terminology is followed in the mapping) is a product of plant species diversity, plant community composition, rarity of habitat, degree of habitat degradation, rarity of species, ecological viability and connectivity, vulnerability to impacts, restoration potential and reversibility of threats.

The proposed project area has a <u>Low to Medium botanical</u> sensitivity, and no map of this is provided as it adds no value. The whole area has been heavily disturbed in the past, has low to moderate levels of botanical diversity and structure, and supports only a single plant Species of Conservation Concern (SCC).

6. FAUNA

The study area probably supports a fairly typical assemblage of west coast Sandveld fauna, with the largest mammals being Common duiker (*Sylvicapra grimmia*), Grysbok (*Raphicerus melanotis*), Cape grey mongoose (*Galerella pulverulenta*) and Lynx (*Caracal caracal*). Cape gerbils (*Gerbillurus afra*) are common on the old lands, and various other rodents are likely to be common, notably Striped Fieldmouse (*Rhabdomys pumilio*). No threatened mammals are likely on site.

Bird diversity is moderate and typical of the area. Three bird SoCC could potentially occur occasionally in low numbers on the site, but are certainly not resident: Ludwig's Bustard (*Neotis ludwigii*), Southern Black Korhaan (*Eupodotis afra*) - both Redlisted as Vulnerable (Taylor *et al* 2015), and Black Harrier (*Circus maurus*), which is Redlisted as Endangered (Taylor *et al* 2015). The African Marsh Harrier (*Circus ranivorus*) is also listed highlighted on the Screening Tool as potentially in the area, but this is very unlikely as there is none of its favoured marshy habitat on site.

Due to the absence of wetlands the only frogs on site are likely to be *Breviceps rosei* ssp. *roseii* (Rose's rain frog) and *Breviceps namaquensis* (Namaqua rain frog), which live independently of standing water, and have been heard calling nearby after rain (pers. obs.). No threatened frogs are likely on site (Measey *et al* 2014).

No threatened reptiles are likely on site (Bates *et al* 2014), although there is likely to be a fair diversity of common snakes (molesnakes, cobras, puffadders,

grass snakes, etc.). A small population of Angulate tortoise (*Chersina angulata*) is probably resident in the area, and some individuals were observed on site.

Insect diversity is probably fairly high on site, with thousands of Cape honeybees (*Apis mellifera capensis*) visiting flowers in spring. No threatened butterflies are likely to occur in this area (Mecenero *et al* 2013). The screening tool list *Bullacris obliqua* (Bladder Grasshopper; Vulnerable) as potentially on site, and could well occur here, as there are three records on iNaturalist within about 10km of the site.

The proposed project area has a <u>Low to Medium faunal</u> sensitivity, and no map of this is provided as it adds no value. The whole area has been heavily disturbed in the past, has low to moderate levels of faunal diversity, but may support at least one insect Species of Conservation Concern (SCC; *Bullacris obliqua*), and may occasionally support itinerant specimens of as many as three bird SCC.

IMPACT ASSESSMENT

6.1. Identification and assessment of likely ecological impacts

Ecological impacts associated with the development of an area may be both direct and indirect, with the former occurring mostly at the construction stage and the latter mostly at the operational stage. Some impacts will be temporary to long term and other will be permanent, and most would be negative. No positive ecological impacts are expected.

Construction Phase Impacts

In the case of this project the primary construction phase impact is the permanent loss and degradation of the existing partly disturbed vegetation and faunal habitat and species within the development footprint, which could eventually lead to loss of almost all the vegetation and fauna on the entire site (31ha).

At least one plant Species of Conservation Concern (*Ruschia langebaanensis*; Vulnerable) is known from the proposed development footprint.

The proposed project area has a <u>Low to Medium faunal</u> sensitivity, with low to moderate levels of faunal diversity, but may support at least one insect Species of Conservation Concern (*Bullacris obliqua*; Vulnerable), and may occasionally support foraging specimens of as many as three bird SCC (Black Harrier, Endangered; Southern Black Korhaan, Vulnerable; and Ludwig's Bustard, Vulnerable). The construction phase should not cause loss of the more mobile animals (mammals, birds, most reptiles) but may result in loss of some of the less mobile or burrowing animals (snails, fossorial reptiles and *Breviceps* frogs, etc.). It is not known how the project would impact directly on the Vulnerable bladder grasshopper (*Bullacris obliqua*), if present, and whether or not individuals that might be present would be able to move and survive elsewhere, but habitat loss would certainly be a negative factor for them.

All development will be located in areas of Low - Medium botanical and faunal sensitivity, and the overall construction phase ecological impact of this component is likely to be of **Medium negative significance**, and cannot be mitigated in any meaningful way (hence Medium negative after mitigation as well).

The vegetation type to be impacted is classified as Saldanha Flats Strandveld, which is gazetted as an Endangered habitat (Government of South Africa 2022). However, given the previous heavy disturbance of this site there is no undisturbed example of this vegetation on site, all vegetation on site being secondary (re-established since cessation of disturbance).

The proposed development will result in loss of a very small area of mapped CBA (about 5% of site), and relatively large areas of ESA1 (wetland and terrestrial; about 90% of site).

Development area	Extent of impact	Duration of impact	Intensity	Probability of occurrence	Degree of confidence	Significance before mitigation	Significance after mitigation
31ha site footprint	Local and regional	Permanent	High	Definite	High	Medium negative	Medium negative
No Go	Local	Ongoing; variable	Variable; generally low	Very Low	Medium	Neutral	Neutral

Table 1: Summary table for construction phase ecological impacts (loss anddegradation of natural vegetation and faunal habitat and species) associated withthe proposed development footprint.

Operational Phase Impacts

Operational phase ecological impacts include notably increased habitat fragmentation and loss of current terrestrial ecological connectivity across the currently partly natural study area. No other indirect botanical impacts are likely.

Operational phase faunal impacts include displacement of existing animal populations into adjacent areas (possibly including the Vulnerable *Bullacris obliqua*), placing resource pressure (competition) on these adjacent areas and their existing animal populations.

Loss of ecological connectivity and the associated habitat fragmentation is likely to be of medium regional significance, as patches of similar habitat are present in the greater area, although nearly all of this is under ongoing development pressure, being part of the IDZ.

Overall operational phase ecological impacts are likely to be Medium negative before and after mitigation.

Development area	Extent of impact	Duration of impact	Intensity	Probability of occurrence	Degree of confidence	Significance before mitigation	Significance after mitigation
31ha site	Local and regional	Permanent	Medium	Definite	High	Medium negative	Medium negative
	Local	Ongoing;	Variable;	Very Low	Medium	Neutral	Neutral
No Go		variable	generally low				

Table 2: Summary table for operational phase ecological impacts (loss ofecological connectivity & associated habitat fragmentation) associated with theproposed development area.

6.2 The No Go Alternative

The No Go alternative implies no further development of the study area, and this is likely to have no more than a Neutral ecological impact. However, long-term confidence in this assessment is low, as it could at any time be subject to some sort of future development application.

6.3 Cumulative Impacts

The cumulative botanical impacts are understood to be equivalent to the regional botanical impacts, in that the vegetation type and faunal habitats and species likely to be impacted by the proposed development have been, and will continue to be, impacted by agricultural and urbanization developments (notably IDZ related development) and other factors (the cumulative impacts) within the region.

Saldanha Flats Strandveld is a threatened and poorly conserved vegetation type and continues to lose habitat to both authorised and unauthorised development.

Overall cumulative botanical impacts of the proposed development are likely to be Low negative before and after mitigation, due mostly to the relatively small extent of the site, the location of the site next to various heavy industries and railways, and the previous heavy disturbance of the site.

7. REQUIRED MITIGATION

The following is regarded as feasible and reasonable mitigation and is factored into the assessment, and is thus all regarded as essential:

- Prior to any loss of natural habitat in the approved development footprint a plant Search and Rescue program must be undertaken by a competent and experienced contractor. They should collect seed and bulbs/rhizomes of all possible species over a one year period (to cover all seasons), and collections should include all *Ruschia langebaanensis* plants within the development footprint. The collected material should be used to rehabilitate disturbed Saldanha Flats Strandveld that is in need of rehabilitation, ideally within the West Coast National Park, or otherwise in some other informally conserved area, such as the grounds of the West Coast Fossil Park. Translocation receiving areas for live material should be negotiated beforehand, and all costs relating to this process must be borne by the applicant.
- A Search and Rescue program for the Vulnerable bladder grasshopper Bullacris obliqua should also be undertaken on site prior to any habitat loss. Any captured live specimens should be released into the West Coast National Park, in suitable habitat. An experienced entomologist should undertake this work, in the appropriate season (early summer).

8. CONCLUSIONS AND RECOMMENDATIONS

- The vegetation in the proposed project area is classified as Saldanha Flats Strandveld (gazetted as Endangered on a national basis), but has been previously disturbed and is all of Medium sensitivity, with only one recorded plant Species of Conservation Concern.
- The overall ecological impact of the proposed development is likely to be Medium negative before and after mitigation. The proposed mitigation is regarded as feasible and easily achievable, and is factored into the assessment. The proposed biodiversity offset (see below) is not factored into the assessment as it has not yet been finalised or agreed to by all parties, and may not materialise.
- A biodiversity offset would be appropriate in these circumstances, with a Medium negative residual ecological impact and unavoidable loss of habitat (National Biodiversity Offset Guideline 2022). Given that it is an Endangered vegetation type a minimum ratio of 10:1 is relevant, but the Medium sensitivity and previous site disturbance needs to be taken into account, and thus one could reduce the ratio to 5:1. The obvious beneficiary for biodiversity offsets in this area is the nearby West Coast National Park, and in this case the target areas for park expansion would be the intact but unconserved Saldanha Flats Strandveld southeast of the current park boundaries (Farm Zwartberg Valley 447, etc). The applicant must appoint a biodiversity offset specialist to guide this process, must be responsible for all costs incurred, and must finalise the offset process within one year of any project authorisation.
- Successful implementation of the proposed biodiversity offset would have a balancing effect on the overall assessed Medium negative impact of the proposed project, and could result in the overall ecological impact being reduced to a more acceptable Low negative impact.

9. **REFERENCES**

Bates, M., Branch, W., Bauer, A., Burger, M., Marais, J., Alexander, G. & deVilliers, M (eds). 2014. Atlas and Red List of the Reptiles of South Africa,Lesotho and Swaziland. *Suricata* 1. South African National Biodiversity Institute,Pretoria.

DEA. 2011. Threatened Terrestrial Ecosystems in South Africa. *Government Gazette* Vol. 1002: No. 34809. National Printer, Pretoria.

Government of South Africa. 2022. South African Red List of Terrestrial Ecosystems: assessment details and ecosystem descriptions. Government Notice 2747, Gazette 4526. Technical Report #7664, SANBI Pretoria, South Africa.

Helme, N. 2011. Botanical inputs into proposed Saldanha IDZ. Unpublished report for Saldanha IDZ and MEGA, Cape Town. Nick Helme Botanical Surveys, Scarborough.

Helme, N. 2015. Botanical screening study of proposed Saldanha Steel power station sites and pipeline routes. Unpublished report for ERM and Arcelor Mittal. Nick Helme Botanical Surveys, Scarborough.

Helme, N. 2019. Botanical assessment of proposed Pindulo VDM expansion area, Saldanha. Unpublished report for SLR Consulting and Pindulo VDM. Nick Helme Botanical Surveys, Scarborough.

Helme, N. 2020. Botanical assessment of proposed Vortum 132kV powerline to Blouwaterbaai Substation, Saldanha. Unpublished report for AGES Consulting and Vortum Energy. Nick Helme Botanical Surveys, Scarborough.

Helme, N. and A. Rebelo. 2016. Coastal Ecosystems – Strandveld. <u>In:</u> Cadman, A (ed.). *Ecosystem Guidelines for Environmental Assessment in the Western Cape, Ed*.2 Fynbos Forum, Fish Hoek, South Africa.

Helme, N., P. Holmes & A. Rebelo. 2016. Lowland Fynbos Ecosystems. <u>In:</u> Cadman, A (ed.). *Ecosystem Guidelines for Environmental Assessment in the Western Cape, Ed.*2 Fynbos Forum, Fish Hoek, South Africa.

Manning, J. and P. Goldblatt. 2012. Plants of the Greater Cape Floristic Region 1: The Core Cape flora. *Strelitzia 29*. South African National Biodiversity Institute, Pretoria.

Measey, G.J. (ed.) 2011. Ensuring a future for South Africa's frogs: a strategy for conservation research. *SANBI Biodiversity Series* 19. South African National Biodiversity Institute, Pretoria.

Mecenero, S; Ball, J.B.; Edge, D.A.; Hamer, M.L.; Henning, G.A.; Kruger, M.; Pringle, E.L.; Terblanche, R.F.; Williams, M.C. (Eds). 2013. Conservation

Assessment of Butterflies of South Africa, Lesotho and Swaziland: Red List and Atlas. Saftronics (Pty) Ltd & Avian Demography Unit, UCT.

Mucina, L. and M. Rutherford. *Eds.* 2018 Online Update. Vegetation map of South Africa, Lesotho, and Swaziland. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

National Biodiversity Offset Guideline. 2022. Government Gazette 25 March 2022. No. 46088. Government Printer, Pretoria.

Taylor, M., F. Peacock and R. Wanless (eds). 2015. The 2015 Eskom red data Book of Birds of South Africa, Lesotho and Swaziland. BirdLife SA, Johannesburg.

Pence, G. 2017. Western Cape Biodiversity Spatial Plan. CapeNature, Cape Town, South Africa.

Raimondo, D., Von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A., and Manyama, P.A. (eds.) 2009 and online updates at redlist.sanbi.org. Red List of South African Plants 2009. *Strelitzia 25*. South African National Biodiversity Institute, Pretoria.

Rouget, M., Reyers, B., Jonas, Z., Desmet, P., Driver, A., Maze, K., Egoh, B. & Cowling, R.M. 2004. *South African National Spatial Biodiversity Assessment 2004: Technical Report. Volume 1: Terrestrial Component.* Pretoria: South African National Biodiversity Institute.

Skowno, A.L., Raimondo, D.C., Poole, C.J., Fizzotti, B. & Slingsby, J.A. (eds.). 2019. *South African National Biodiversity Assessment 2018 Technical Report Volume 1: Terrestrial Realm*. South African National Biodiversity Institute, Pretoria.

Taylor, M., F. Peacock and R. Wanless (eds). 2015. The 2015 Eskom red data Book of Birds of South Africa, Lesotho and Swaziland. BirdLife SA, Johannesburg.

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