ANNEXURE 18: BIODIVERSITY OFFSET REPORT

MARK BOTHA

CONSERVATION STRATEGY TACTICS & INSIGHT

Cape Winelands Airport – Biodiversity Offset Report



Compiled for: PHS Consulting, Hermanus

Client: Capewinelands Aero (Pty) Ltd.

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Declaration

I, Mark Botha, the appointed independent specialist, hereby declare that I:

• am an independent specialist service provider with experience in spatial biodiversity planning, assessing impacts and designing and negotiating biodiversity offsets for government and corporate clients since 2011 and act as independent specialist in this application;

• perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

• regard the information contained in this report, as it relates to this offset study, to be objective, true and correct within the framework of assumptions and limitations;

• do not have and will not have any business, financial, personal or other interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations 2014, and amendments 2017, NEMA 2020 Procedures for the assessment and minimum requirements for reporting on identified environmental themes in terms of Sections 24(5) (a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation, and any specific environmental management act;

• declare that there are no circumstances that may compromise my objectivity in performing such work;

• have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

• will comply with the Act, Regulations and all other applicable legislation and have no, and will not engage in, conflicting interests in the undertaking of the activity, and undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; or the objectivity of any report, plan or document to be prepared by me for submission to the competent authority;

• all the particulars furnished by us in this form are true and correct; and realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Yours truly,



Pr.Sci.Nat 20 February 2025

Acronyms and Definitions

BioNet	CCT's Biodiversity Network		MFMA	Municipal Finance Management Act
CBA	Critical Biodiversity Area		NEMBA	NEM: Biodiversity Act. Act 10 of 2004
CCT	City of Cape Town		NEMPAA	National Environmental Management: Protected Areas Act (Act 57 of 2003)
CR	Critically Endangered		PA	Protected Area
CREW	Custodians of Rare & Endangered Wildflowers		PBO	Public Benefit Organisation
CWA	Cape Winelands Airport		PFMA	Public Finance Management Act (Act 1 of 1999)
EA	Environmental Authorisation		PHS	Environmental Assessment Practitioner for CWA
EA	Environmental Assessment Practitioner		RESA	Runway End Safety Area
EN	Endangered		SANBI	SA National Biodiversity Institute
IAP	Invasive Alien Plant		SCC	Species of Conservation Concern

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1. Introduction

A consortium plans to build a new airport and associated infrastructure on the old Fisantekraal airfield (see Figure 1) and extending the runway to accommodate larger aircraft and multiple logistics and support operations. Given the size and location, there are inevitable impacts on threatened biodiversity – which already cannot meet their conservation targets. There is almost no greenfield site in the larger Cape metropole that would not impact on Critically Endangered (CR) or Endangered (EN) ecosystems – especially for an impact of this scale.

Impacts on CR ecosystems are difficult to mitigate. South Africa has adopted guidance that explores an "Ecological Compensation" approach – the mitigation of residual impacts on currently protected areas or irreplaceable biodiversity. This aspect of biodiversity offsets policy is not well developed and is best designed on a case-specific basis.

Although offsets generally and ecological compensation specifically are an important but under-utilised mitigation tool in South Africa, they are not to be used lightly. Impacts on critically endangered ecosystems have been strongly discouraged since offsets guidance first emerged in South Africa. Almost all references confirm that offsets (as a last resort mitigation measure) can only be used to attempt to remedy High or Very High significant impacts of a development IF that development is indispensable, required, and/or otherwise socially desirable. The compensation offered should not positively affect the decision to permit the impact in the first place. An inability to locate or implement a suitable offset or effective, acceptable, proportional ecological compensation can, however, have a negative impact on a decision.

However, there is little guidance on the acceptability of ecological compensation for impacts on CR ecosystems or Critical Biodiversity Areas (CBAs) where the impact itself is very small and only assessed as of Medium or Low Negative significance, and the conservation outlook for the impacted system is bleak. While these impacts could be interpreted as fatal flaws, they are also geographically very limited and on sites in rather poor condition. I take no view on the need and desirability of this Cape Winelands Airport (CWA) but assume that it is a necessary and supported development proposal for the region on its own merits.

This report confirms the scope and quantum of the biodiversity impact from the proposed CWA, provides an analysis and prioritises possible offset sites, and explores and proposes required likely implementation arrangements, should the CWA be authorised. It sets out the components of implementation arrangements that should be concluded prior to commencement.

2. Assumptions and limitations

- The direct and indirect impacts are adequately mapped and assessed by the specialists, and that no cryptic species worthy of separate offset measures will be impacted.
- As with most major complex, highly contingent infrastructure projects, there have been numerous changes to layouts and footprints. This includes minor elements (such as perimeter security roads) that may marginally impact on sensitive features. I must assume that the final layout plan and clearing accords with the Spatial Development Plan version 13 as of 22 August 2024 and that no material impacts eventualise. Please note that some maps in this report may be derived from earlier iterations of layouts, although the actual impact figures are accurate.
- There is no realistic chance for restoration of the renosterveld and sand plain fynbos ecosystems adjacent to the runway, the RESA and other operational features of the airport. While some individuals of CR species may persist, the ecosystem that supports their populations in the long term will be lost. This is a risk averse and precautionary approach to offset calculation.
- This study only investigates the terrestrial ecosystem impacts – the wetland impacts and offset are subject to a separate analysis and proposal (FEN 2024). Where possible and prudent, the two offset processes have been developed in cognisance of each other.
- No faunal impacts were assessed or proposed to require offset-type mitigation.
- As with most offset studies, the final choice of site and securing of an implementation partner is out of my control, and subject to multiple contingent factors, including successful authorisation and surviving of any legal challenge. While the site options and implementation arrangements proposed here have already been largely secured and financial arrangements are in process of being concluded, they cannot be guaranteed. For this and other reasons, it is strongly advised that any authorisation include carefully crafted conditions to ensure the ultimate success of offset mitigation – regardless of the proposals herein. Guidance is provided as to what this might look like.

3. Context

The receiving environment is typical of the Cape Lowlands, with highly fragmented remnant ecosystems in various stages of neglect and moderate to poor ecological condition. Offsets are difficult to make work in this context – but the corollary is that the long-term prognosis for effective ecological function and persistence of species of conservation concern is very low without dedicated offset (or other conservation) interventions and budgets.

As the impacted ecosystems are nominally designated as CR (Swartland Silcrete Renosterveld, Swartland Shale Renosterveld or EN (Swartland Granite Renosterveld), the Biodiversity Offset Guideline (DFFE 2022) indicates that the appropriate mitigation is technically 'Ecological Compensation' –

although the modality is identical to a biodiversity offset. These terms will therefore be used interchangeably in this report.

The primary objective of "Ecological Compensation" should be to secure and improve management of the closest analogue to the impacted biodiversity in a way that contributes maximally to the persistence of important biotic features in the landscape. In South Africa, this implies a focus on securing CBA areas within Protected Area (PA) expansion priority focus areas, or other local priorities identified and mapped by specialists and conservation authorities. The CWA is located in the Klipheuwel Corridor of the CCT's BioNet[1]. There is some misalignment between the BioNet's mapping and designation of CBAs and priority remnant habitats and those identified by the Botanical and Freshwater Specialists' report – this report adopts the specialists' recommendations and has ground-truthed the impacted (and offset) sites.

It is not likely to be able to defensibly "trade up" for impacts on two of the most CR ecosystems in South Africa. Other sites 16km to the North do not conserve the same vegetation or SCC component, although have substantial numbers of other SCC and unique and very rare habitats which are demonstrably under greater threat of imminent extirpation. It is conceivable to propose offsets in these sites, but this would require authorities' approval and intricate management and protection arrangements.

Species mitigation for many fynbos species relying on tight mutualisms or specific ecological processes (e.g. suitable return interval and intensity fire regimes) is difficult. Where possible, search and rescue of propagation material for all listed species by trained professionals is encouraged. Where prudent, this material can be reestablished in or near the offset sites on suitably protected and managed portions to improve the species chance of persistence. Offset site selection, design and management regime should incorporate management actions to improve survival of these species.

No faunal impacts were assessed or proposed to require offset-type mitigation.

Wetland impacts were moderate and are the subject of a separate specialist report and offset process. Although coordination and alignment between the terrestrial and wetland specialists has been pursued, it has been agreed with all parties that there is little utility in co-locating these offset measures.

[1] An updated version of the BioNet was released for comment after this report was submitted. There is no fundamental change to the status of the impact and receiving environment and the botanical specialist report findings still hold.

4. Impact & Offset metrics

Two patches of Very High botanical sensitivity were identified in the study area, each of about 1.6ha in extent. The northern one (Swartland Silcrete Renosterveld) is located within the proposed development area (just over 50% of it is within the runway alignment which unfortunately cannot be altered due to civil aviation constraints, the remainder in the Runway End Safety Area (RESA) which must have all rocks and woody plants removed), whilst the southern one (Swartland Shale Renosterveld) is just outside the development area (Helme 2023). It's unclear how much will finally be impacted, so this offset report assumes complete loss given the likely adjacent disturbance associated with airport operations, mowing, lack of burning etc.

The Botanical Impact Assessment Report (Helme March 2024) found: "*any mapped areas of remnant habitat that are lost to development should be offset by formalised conservation of high conservation priority examples of the same habitat in the region, at minimum ratios of 20:1 (for non-pristine habitat) and 30:1 (for better quality examples; as per Dept. of Forestry, Fisheries & Environment offset guidelines, 2022). Preliminary estimates suggest that 1.0ha of Very High sensitivity vegetation (partly degraded; exact extent to be confirmed) will need to be offset at a ratio of at least 20:1, and 2.3ha of Medium sensitivity at a ratio of about 10:1, and the 1.3ha of High sensitivity vegetation at about 15:1. This means that a total offset of at least 63ha (plus ongoing environmental management budget for this) will be required..*"

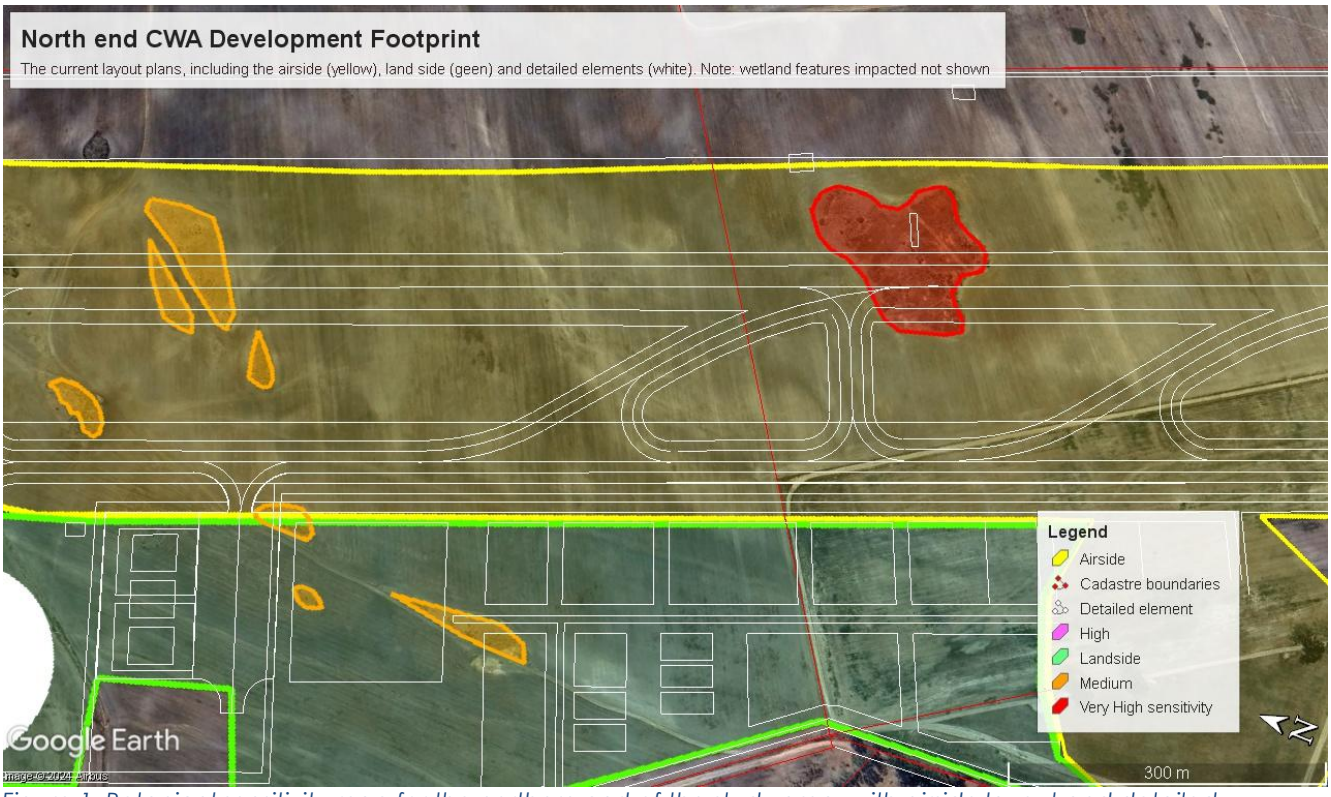


Figure 1. Botanical sensitivity map for the northern part of the study area, with airside layout and detailed elements superimposed. From Helme (2023). New layouts (August 2024) do not affect the major impact calculation metrics. Note North Arrow indicator to the left. The removal of rock and other incompatible material from the RESA is assumed to cause complete loss of biodiversity features in the yellow airside area. Replanting

some of the species of conservation concern within this zone is possible if mowing can be avoided. Rescue to other habitat analogues is likely better, more dependable mitigation.

The impact sites were visited on 4 May 2024, and I concur with the Botanical Specialist's findings. Although some of the northern Silcrete remnant may be left in the RESA, this report assumes its entire loss for offset calculation purposes. The condition of the impacted areas and their likely persistence (even if the CWA development does not proceed) is low, and the offset metrics of impact area, condition, and thus the ultimate offset liability is conservative, cautious and risk aversely calculated. Note that the impacted, highly degraded Renosterveld seep wetland is subject to a separate Specialist Report and Offset Process conducted by FEN (2024).

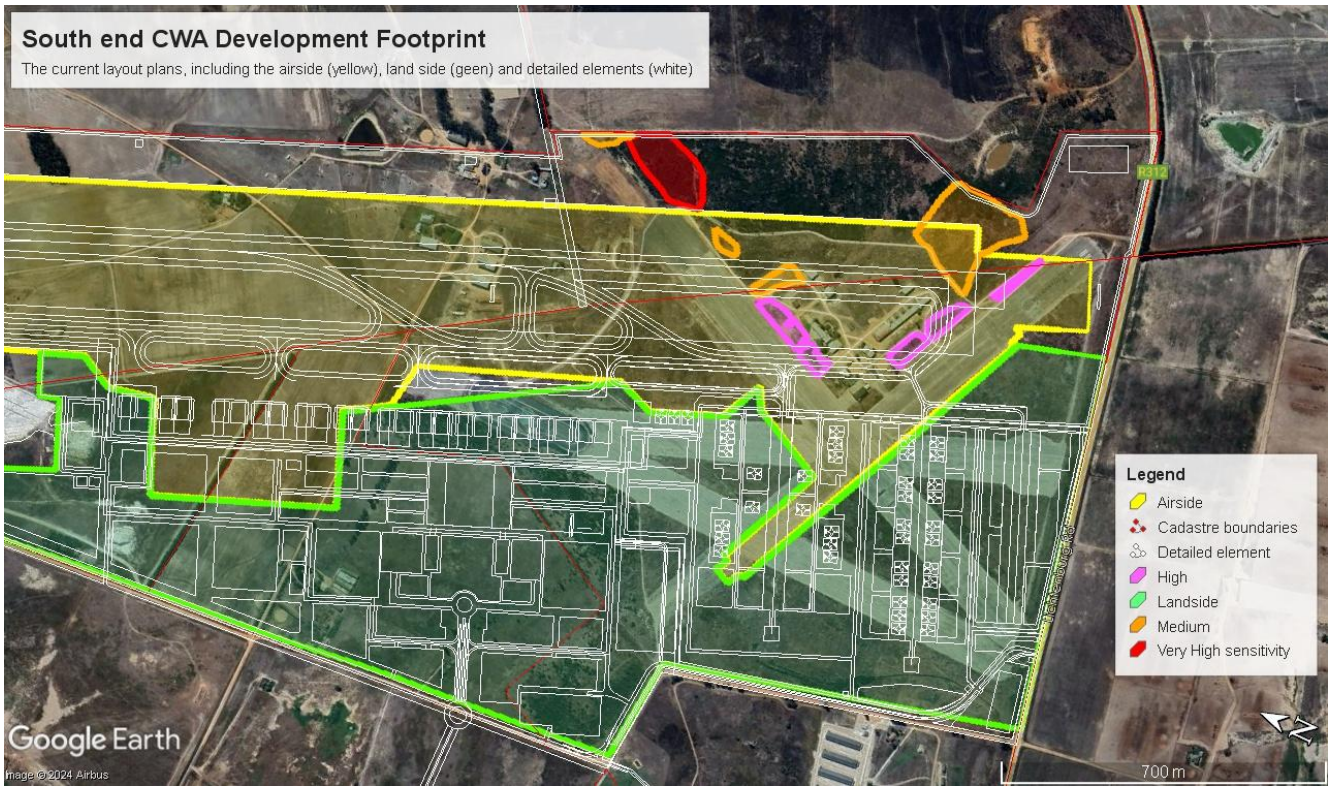


Figure 2. Botanical sensitivity map for the southern part of the study area. All unshaded areas within the study area indicated are of Low sensitivity. From Helme (2023) and layout from Aug 2024. The offset calculation assumes the Very High Botanical Sensitivity area is avoided by all infrastructure, access road and firebreak development. New layouts and site development must ensure that these sensitivities are avoided. Note North Arrow indicator to the left

Given the very fine grain transitions between the underlying ecosystems, veld age and the poor condition of the vegetation it is difficult to accurately ascribe the loss to a specific vegetation type with any precision. Vegetation type mapping is less accurate at mapped scale. However, for the purposes of this offset report, I concur with the botanical specialist that given SCC occurrence and soil observation, Swartland Silcrete Renosterveld and Swartland Shale Renosterveld are the primary types requiring ecological compensation. The High Sensitivity impacted areas adjacent to the existing Fisantekraal airport may, however, have been more closely related to Swartland Granite Renosterveld. Regardless, the primary determinant of candidate offset sites should be representations

of these three types. No other biodiversity priority area or planning features were identified as requiring offsets.

Choice of suitable offset ratios is informed by the underlying Ecosystem Status (in this case all CR, with one (Granite) possibly EN), Protection Level (in this case Not Protected – Skowno et al 2019), and condition of the impacted site. Starting ratios for all impacts must thus be 30:1. This ratio is moderated down by the condition of the impacted sites – according to the table below. The justification for the condition modifiers is predominantly based on either the very poor condition (modified down to 33%) or moderate condition of the impacted sites (modified down by 50%). The Silcrete remnant patch is in moderate condition, although heavily invaded and grazed, and is completely isolated from any substantial surrounding patch – thus the ratio is modified down to 66% of the starting ratio provided for in guidance.

Feature (all in Swartland Silcrete, Shale & possibly Granite Renosterveld)	***Size (ha)***	***Gazette Ratio***	***Condition modifier***	***Final Ratio***	***Offset Required***
Northern Silcrete Remnant. Moderate condition, V high significance	1,7	30:1	66%	20	34
Mown grassy meadows along existing runways, poor to moderate, High significance	1,33	30:1	50%	15	20
Remnant Renosterveld patches within or overlapping airside layout, Medium significance, poor to v poor condition	2,3	30:1	33%	10	23
Total Terrestrial Offset required (ha)					**77**

Table 1. Specific biodiversity features impacted, affected area, starting gazetted ratio, habitat condition modifier, and final offset ratio and area calculation. Note that Helme's (2024) calculations exclude around 0,7 ha of the Northern Silcrete remnant which is outside the runway footprint – this is included in these calculations.

Comprehensive floral species impacts in these CR ecosystems are difficult to quantify given the cryptic nature of some, the absence of primary ecological drivers from the ecosystem which triggers life cycles (especially underlying burning regime) and invasion by woody trees. However, I have no reason to doubt the Botanical specialist's findings and assessment. Search and Rescue type mitigation must be informed by SANBI's guidance for experts in this regard, as well as professional implementation.

My guidance is that the following species mitigation should be incorporated in any ecological compensation type interventions if not catered for in the botanical specialist's recommendations:

Species of Conservation concern	***Status***	***Required Intervention (From Helme 2024; this Report)***

Leucadendron verticillatum; About 60 plants NE of old runway	Critically Endangered	Secure population on site on southern very high sensitivity site, regularly remove all threatening IAP and increase habitat protection and condition offsite for known occurrences
Podalyria microphylla	Critically Endangered	Search & Rescue to a habitat analogue from very high sensitivity area at northern end of runway. If deemed feasible by specialist, replant on ferricrete/silcrete area (even if surface rock removed for RESA), and increase habitat protection and condition offsite for known occurrences
Ficinia sp nov Rare in ferricrete patch in northern area	Not yet assessed	Search & Rescue from northern end of site to habitat analogue. If deemed feasible by specialist, replant on ferricrete/silcrete area (even if surface rock removed for RESA), and increase habitat protection and condition offsite for known occurrences
Babiana odorata; About 10 plants close to entrance gate;	Endangered	increase habitat protection and condition offsite for known occurrences
Leucospermum grandiflorum Two dead plants	Endangered	Granite species. Required mitigation unclear
Restio rigoratus	Endangered	Search & Rescue to habitat analogue. increase habitat protection and condition offsite for known occurrences
Lampranthus leptaleon; Only 3 plants in SE area;	Endangered	Search & Rescue to habitat analogue. increase habitat protection and condition offsite for known occurrences
Drosanthemum hispifolium About 10 plants on northern edge;	Vulnerable	Search & Rescue to habitat analogue. increase habitat protection and condition offsite for known occurrences
Xiphotheca lanceolata	Vulnerable	Increase habitat protection offsite for known occurrences
Metalasia octoflora	Vulnerable	Increase habitat protection offsite for known occurrences
Muraltia macropetala	Vulnerable	Increase habitat protection offsite for known occurrences
Gladiolus watsonius About 30 plants in SE area;	Near Threatened	Search & Rescue to habitat analogue

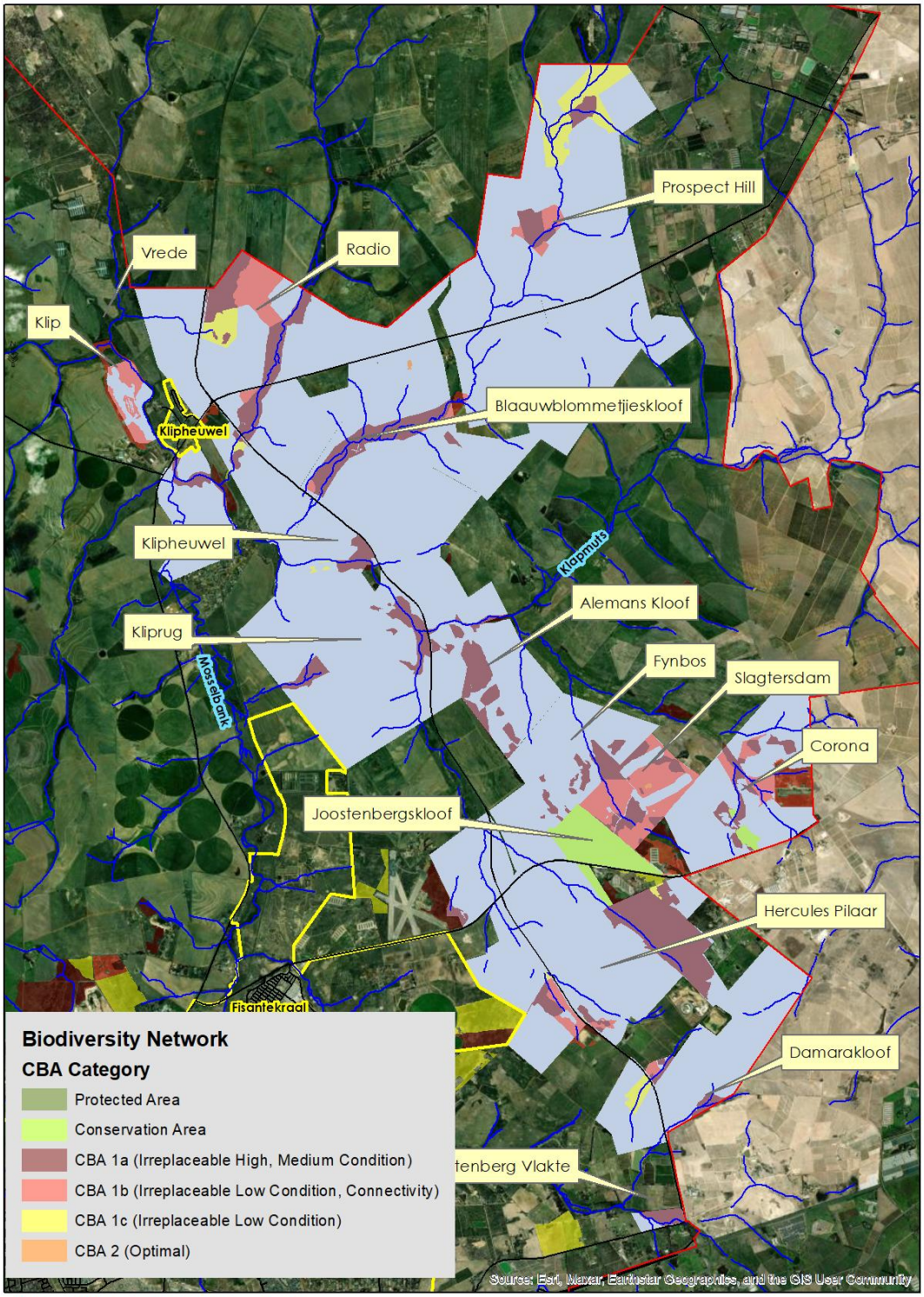
Table 2. Species of conservation concern likely to be impacted, their status and proposed mitigation measures. Adapted from Helme (2024)

Summary of the criteria for the biodiversity offset is that the site(s) need to:

- secure at least 77 ha of Swartland Renosterveld, on shale, or granite or silcrete.
- include options for rehabilitation of degraded ecosystems and be able to receive species from Search and Rescue operations.
- create corridors or expand existing conserved areas where at all possible
- house viable populations of *Leucadendron verticilatum, Podalyria microphylla, Ficinia* sp nov., and preferably as many of the other EN species impacted.
- Be able to be declared as a protected area in perpetuity and be effectively managed.

However, given the geographical layout and biodiversity patterns and noting that many of the otherwise potential offset site landowners may not be willing to consider offsets on their properties, it may be difficult to secure an offset site that meets all the above criteria perfectly.

5. Candidate site selection



Klipheuwel Corridor (June 2023)

Figure 3. The Klipheuwel corridor node of the Biodiversity Network of the City of Cape Town. Stewardship efforts have been active here for decades, with only 1 site (Joostenbergkloof) effectively being secured on the lowest tier. Acquisition attempts for conservation have been unsuccessful. Long term prognosis for many flat sites, especially with accessible resources under them, is not good. Options do exist to secure offset sites >70 ha.

Several sites were assessed for suitability for the CWA offset on recommendation by the proponent, EAP, regional flora specialists, and authorities. These included:

Table 3. A shortlist of possible offset candidate properties, their size and biodiversity features, and sufficiency to offset CWA impacts in the mode of Ecological Compensation.

Site	***Size***	***Comments***	***Suitability***
Renosterkop Nature Reserve 1334 Paarl	158 ha Natural ptn	Boland granite – not analogous, already protected	No
Ruitevallei RE 483 Paarl	<140 ha natural	Boland granite – not analogous. Impacted by trails	No
Woodlands 874 ptn 19 Paardeberg	460 ha	Boland granite – not analogous. Has L. grandiflora	No
Kliprug & Klipheuwel Farms	<50 ha	Interesting vegetation, dissimilar to impact site but contains other SCC. Subject to other Offset	Insufficient by itself but could contribute
Stonehaven "Rockridge" on Zanddam Re/ 479	≈140 ha. Poor condition remnant	Little IAP, but much weedy, grassy invasion. Has SCC and rehabilitation promise	Insufficient by itself but could contribute
Blaauwblommetjieskloof RE of 941	68 ha	Very dissimilar to impact site. Interesting for other reasons	Insufficient by itself
Alemanskloof (RE/ 473) and Fynbos Farm (RE/ 472 and ptn 2/472	64 ha combined all remnants	Closest analogue to impact site. Not big enough. Would need substantial rehabilitation and connectivity to qualify	Insufficient by itself, but an option
Hercules Pilaar (1242)	108 ha (North), 3 ha 15ha(West) remnants	Large enough, opportunity for restoration and connectivity. Main remnant doesn't contain all SCC	Yes, requires remnants for sufficiency

Two additional sites proposed by regional Botanical Specialists (Ismail Ebrahim (SANBI) and Rupert Koopman (Pvt)) were considered but are provisionally rejected unless authorities approve trading up for threat mitigation:

1- "Vlakfontein" - being ptn 1 of 881 (Morganwagt) and the northern and extreme eastern ptn of Woodlands (RE/874). This is a well-known CREW flora site on granitic sands and under pressure from sand mining. Lots of SCC are known and monitored on this site but it remains among the most precarious in the Swartland.

2- "Doornkraal" being the koppies with remnant Swartland Granite Fynbos on Doornkraal RE/832 and Morgenwagt 3/881. These sites are potentially floristically more related to Malmesbury than Fisantekraal. Latter is possibly under less threat than others closer to CWA.

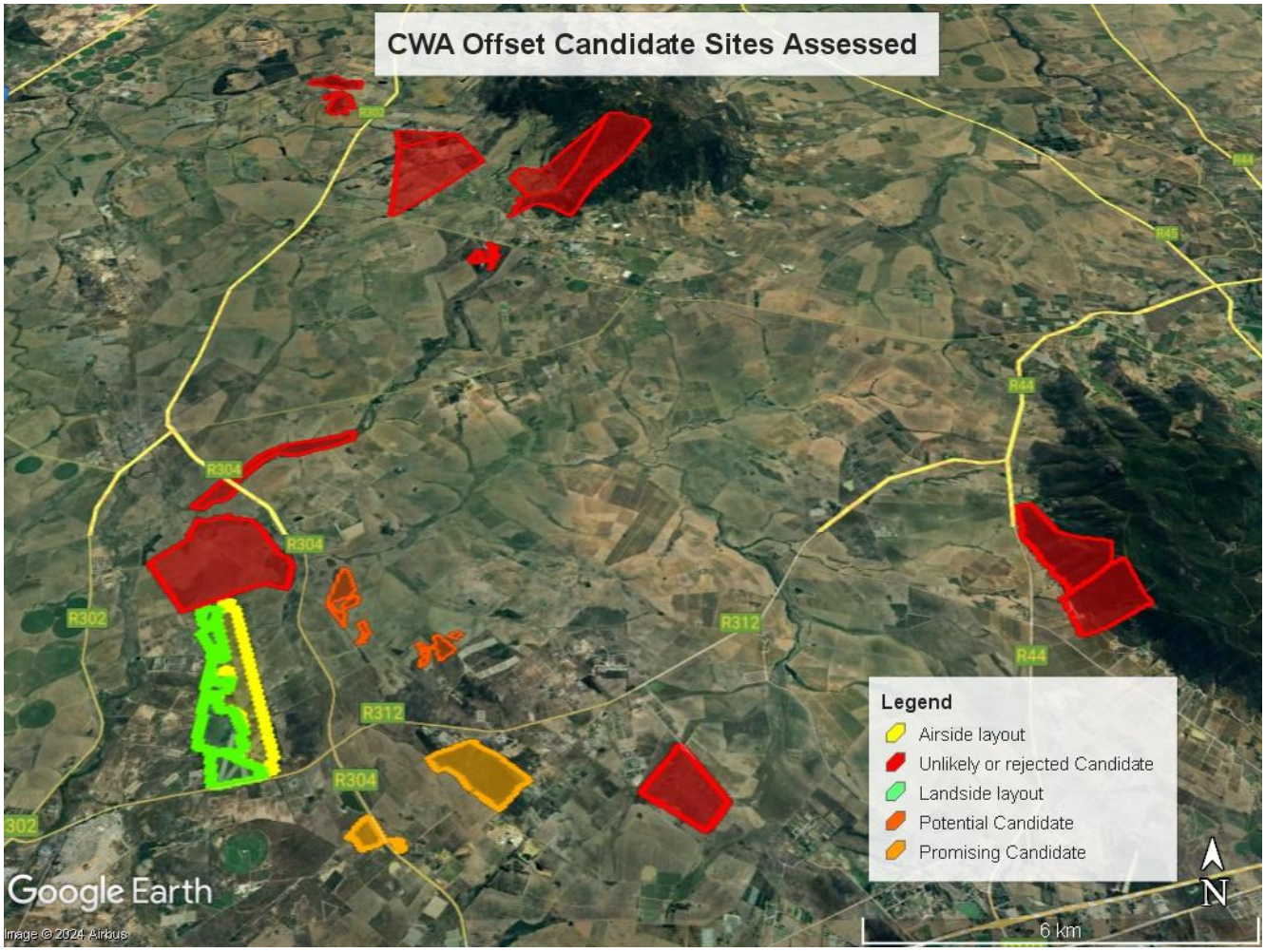


Figure 4. The suite of possible candidate sites assessed to offset the impacts of the CWA. Most were rejected on grounds of floral dissimilarity, some were already deemed to be conserved, or in poor condition with little opportunity for recovery. Two sites remain as priorities for further investigation/development.

6. Prioritising candidate sites

After the initial screening and consultation with authorities, a short list was prepared based on potential biodiversity contribution. These sites were visited to establish the similarity with the impact site, presence of the impacted SCC (or of other CR & EN SCC that require conservation action), as well as a perspective on their possible ecological management outlook and persistence. This removed several of the proposed candidates as they were insufficiently analogous to the CWA site, or suffered from external threats or were already effectively conserved.

A final scan of options, as well as discussions with CCT biodiversity management staff and two local botanical specialists not involved in the CWA assessment yielded two candidates for shortlisting. The prioritisation was based on landowner willingness and implementation feasibility.

The priority candidate site of Hercules Pilaar has sufficient available land with Swartland Renosterveld (primarily shale with some silcrete) and has around 30 ha of degraded Renosterveld which was last ploughed >30 years ago. It would meet all the offset requirements, within reason, provided for in the National Guideline. The site also contains two smaller remnants with significant concentrations of the

impacted CR & EN SCC, excepting the *Ficinia*. The property is under threat from development, especially from neighbouring industrial operations and the expanding urban areas. Conservation Stewardship efforts have been effectively stalled since 2012. The applicant has secured an agreement with the owner to use this site as an offset.

A second candidate site has almost sufficient habitat and supports most of the impacted SCC, with options to restore small patches in between remnants. There is good reason to be confident that if the first candidate site, for some unforeseen reason, cannot be secured, then this one would be an adequate replacement, provided rehabilitation of corridors between the remnants was undertaken. Both candidates would increase the currently conserved area and create ecological corridors for long term species movement and adaption, as well as facilitating improved fire management.

If for some reason these two candidates are not acceptable to CapeNature, CCT and DEA&DP, then further alternatives will need to be proposed by the authorities which would satisfy the 'Ecological Compensation' considerations.

7. Implementation arrangements

The proposed model for offset implementation was developed around current conservation action in the Klipheuwel Corridor in the City's BioNet. Given the extreme threat to the remnant vegetation and the nascent BioNet protection node developing, it appears prudent to pursue outright acquisition and declaration of the site as a Nature Reserve (or possibly Protected Environment) if possible in the long term. A binding Letter of Intent commitment has been concluded between the applicant and the owner of Hercules Pilaar covering a long-term lease agreement/conservation servitude with an accompanying management agreement. This would require the landowner to declare the site as a nature reserve if the listed activities of the CWA are authorised. This is seen as the only mechanism to secure the biodiversity features until acquisition and declaration becomes possible. Agreements have been developed in draft format to execute the intent on receipt of successful authorisation.

Regarding management for the site, the CCT is currently the only active conservation agency managing sites or looking to extend the PA network, and coordination with them is important for synergy and long-term efficacy. However, there are numerous challenges in funding the city team directly. These include: i) the constraints and inflexibility of the MFMA and procurement frameworks to meet the nimble response required in conservation management; and ii) the CCT Biodiversity Branch does not have the capacity or desire to manage site-based endowments.
As management negotiations with landowners are being finalised, it is unclear what roles they would wish to play if they elect to eventually subdivide or sell sections of their properties to be declared. Professional and capacitated service providers are often better placed to handle management of remnants with intricate management (such as prescribed burning regimes and invasive species control) and will need to assist the owners.

The applicant will have a large environmental management responsibility around the airport site – including almost all the kinds of interventions that need to be carried out on the offset site (Fencing and security, controlled burns, invasive plant control, erosion and rehabilitation etc). They have elected to include offset site management under the purview of their environmental management team, and thus the EMPr can be updated to include the relevant offset site interventions and timelines set out in this report. This enables an ECO to asses compliance with offset site management requirements, and to update the site management plan as circumstances dictate.

The EMPr will effectively become the Biodiversity Offset Management Plan for the site, until such time as it is declared a Nature Reserve, and a compliant Management Plan is submitted to the MEC for approval.

The specific management requirements, the level of effort required and return frequency, have been set out in a more detailed budget and are summarised in Table 4). The projected 30 yr costing of this budget was used to determine the Net Present Value of any penalty required to be paid by the applicant to ensure site management for the duration of the liability period. This is calculated in Table 5 in the annex.

As an extra means of security, a PBO (the Endangered Wildlife Trust) has agreed to play the role of site manager in the instance that the applicant fails or is unable to meet its offset obligations. The mechanism to achieve this security is two-fold:

1. By suspending the authorisation for the Airport (as the EA would be valid for a substantial period to cover certain operational aspects of the listed activities)
2. To include as a condition of authorisation, a penalty provision outlining the requirement for the applicant to lodge an endowment with the PBO for this site's management equivalent. This penalty could be equivalent to the Net Present Value of the remaining management costs and would be in addition to any other administrative penalty that the competent authority deems necessary.

The PBO would be required manage this endowment fund efficiently to build a non-sinking fund that can cover management interventions on site or in the adjacent Klipheuwel Corridor post the 30-yr period for the CWA.

A detailed budget has been drawn up for the priority candidate site using accurate and current actual unit costs incurred by the CCT for specific management actions as well as some additional staff capacity to undertake specific tasks. If required, this can then be applied to the second site with minor, non-substantive tweaks to input metrics. The following management interventions are catered for, and were considered to be satisfactory for maintaining and improving site condition. These form the basis for the Biodiversity Offset Management Plan when the site is declared:

Table 4. Proposed management interventions on the priority candidate site, their metrics, costs and frequency

7%	Inflation	length	width				
#	***Intervention***	***Unit / Dist***	***Unit/ Dist***	***Cost/ unit***	Est. 2025 cost	***Repeats in 30yr***	***Assumptions***
1	Firebelt brush cut	3000m	6m	3,8 *R/m²*	R73 188	annually	annual bush-cutter & tractor for accessible portions, Teams & brush cutters for steeper slopes. Team costs = R3,80 sqm
2	Prescribed burn	1150m	800m	R1 957	R192 600	four X	burn half site every 8 years. Assumes CoCT covers 40 -50% costs
3	FPA membership	107 ha			R2 301	annually	required for risk / liability management
4	IAP clearing	108 ha	5%	R200/ha	R23 112	three X	clear large seeding trees, at least every 10 yrs
5	IAP follow up	108 ha	1%	R100/ha	R11 556	15 X	clear seedlings and saplings every other yr
6	Fence Maintenance	4000m		R2/m	R8 560	annually	annual fence fixing
7	Head cut /erosion control	40sqm		R80/sqm	R3 424	three X	decadal check and erosion control, especially at dams / after heavy rain
8	Audit	108 ha		R100/ha	R11 556	annually	required for risk / liability management
9	Field Ranger	2/5time			R160 000		Employed by CWA, report to ECO
10	Management fee	9%			R40 787	annually	If this must be executed by an PBO and not the applicant
11	Contingency	5%			R22 671	annually	
	Total				R516 060		For FY 2025. Each yr differs

The applicant will submit the signed Landowner agreement to secure the priority site with the Final EIR. As executing these agreements is beyond my control and fine scale management responsibilities for the site must still evolve, it is impossible to commit to time frames for final arrangements. Therefore, a suspensive condition of authorisation is proposed binding the applicant to achieve certain outcomes to satisfy the attainment of offset outcomes and thus compliance with the National Guideline. This is proposed below.

8. Offset condition

The following condition of authorisation is proposed for consideration by the competent authority. It is assumed that the EA will have a relatively long validity period (as it covers certain operational aspects of the activity), and thus the offset condition could be enforced relatively easily:

1- Prior to commencement, the applicant must conclude an offset implementation agreement(s) with a suitable person or organisation that secures in perpetuity, through suitable legal protection mechanisms, an area (or areas) meeting the following criteria:

- be within the Klipheuwel Corridor region of the City of Cape Town's Biodiversity Network, or if proof of no such site being available is provided, then another priority area acceptable to the City's Biodiversity Management branch and CapeNature,
- contain in aggregate not less than 77 ha of Swartland Renosterveld (or closely related ecosystems) in good ecological condition,
- host populations of at least 50% of the impacted species of conservation concern, as evidenced by a suitable botanical or protected area site assessment,
- be rezoned to open space for conservation or equivalent zoning
- if not able to be declared as a protected area for any reason, then the site must have a servitude registered over it in favour of the applicant and/or City of Cape Town reserving for them the rights of ownership that may otherwise impact negatively on the persistence of biodiversity on the site.

2- The applicant must include in its EMPr for the listed activities, the required interventions to protect, rehabilitate and manage the biodiversity offset site, including but not limited to the following:

- Management plans and costs for invasive alien plant control, firebelt establishment, prescribed burns, ecological rehabilitation, ecological auditing and other matters that may be necessary for the proper management of the offset site as a nature reserve.
- Oversight responsibility for site management for the entire 30 yr duration of the offset management liability.
- Sufficient provision to ensure that these costs are catered for over a minimum of thirty years, and ideally in perpetuity.

3- Should the applicant fail to execute such an implementation agreement prior to commencement with the activities, or fail to effectively manage the site through compliance with the applicable management plan, then:

- This authorisation is immediately suspended, and the applicant may be liable for administrative penalties and/or other sanction under NEMA in addition to compliance with this offset condition; and
- In addition to any other administrative penalties that may be determined, a sum of R8 million becomes immediately payable to the Endangered Wildlife Trust, to establish a, or augment an existing, fund for the management of the offset site and adjacent priority conserved areas in the Klipheuwel Corridor not currently in City ownership. The priorities for deploying the funds must be determined in consultation with the DEA&DP and CoCT Biodiversity Management Branch.

9. Conclusion

The Cape Winelands Airport has modest impacts on Critically Endangered biodiversity which cannot be effectively mitigated through any means other than a biodiversity offset. This report has explored the terrestrial biodiversity component and is augmented by a parallel process for wetland offsets. Through the onsite delineation provided by the specialist and application of ratios provided in the relevant Guideline, the offset is determined to be not less than 77 hectares of Swartland Renosterveld on Shale, Silcrete/Ferricrete or Granite. Where possible, the offset site should support those impacted species of conservation concern and provide opportunities for restoration and establishment/reinforcement of existing populations of at least the CR species. Site contribution to improved ecosystem function is desirable where design and other constraints allow.

At least two candidate sites were located that substantially satisfy the offset requirements, and negotiations with landowners are concluded for the priority site. Only once the agreement is executed can the ultimate protection mechanism be implemented. However, this report provides minimum requirements that must be met to ensure alignment with good practice and reigning regulatory guidance. A preliminary costing exercise, based on management interventions and likely intervention unit costs, has been developed to inform the requisite implementation arrangements.
At least one PBO has indicated a willingness to host and administer an endowment to manage the site and surrounding priority areas for the minimum 30-year liability period, and to disburse funds to City of Cape Town or other partners to undertake site management.

A proposed condition of authorisation is presented for consideration by the competent authority, which stipulates the offset outcomes to be achieved, indicators or sufficient performance, possible parameters of implementation arrangements, as well as penalties for non-compliance with the offset requirements.

10. References

City of Cape Town (2023). *Spatial Trends & Implementation Tracking.* Dept Urban Planning & Design. Publication 1.0 June 2023. https://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/UPD_Spatial_Trends_Report.pdf

DFFE (2023). *National Biodiversity Offset Guideline*. Government Gazette 23 June 2023. No. 48841.

FEN (2024). *Detailed EIA phase Freshwater Ecological Assessment.* Submitted as part of the EIA and WUL authorisations for the Cape Winelands Airport. Report Reference FEN 20-2156. March 2024

Helme N (2023). *Botanical Scoping Study For Proposed Cape Winelands Airport, Fisantekraal, Western Cape*. Submitted to PHS Consulting, 23 October 2023.

Helme N (2024). *Botanical Impact Assessment For Proposed Cape Winelands Airport, Fisantekraal, Western Cape*. Submitted to PHS Consulting, version of March 2024. (final version not available at time of writing)

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.

11. Record of Consultations and Meetings

- 15 May 2024. CCT Biodiversity Management Branch. On Site – Farm 1242, Klipheuwel Corridor sites
- 24 May 2024. CCT Biodiversity Management Branch. Meeting on Management options for key candidate offset sites.
- 7 June 2024. CapeNature, DEA&DP, CCT. Online meeting to provide an overview of offset process, outcomes to date, landowner and implementation agreements, and next steps prior to Report submission.
- 22 August 2024. CCT, Client, Offset Candidate Landowner. In person meeting to negotiate the terms of a letter of intent to secure (purchase or lease) a prospective offset area, and the required terms of a lease agreement to be concluded.
- Several meetings were held online in July and August 2024 between the Client and various PBO offset management fund service providers. As at time of writing, funding agreements were being drafted.

12. Annex 1. Curriculum Vitae Extract

SELECTED PROJECT SPECIFIC REFERENCES:

1. **Offset Specialist Consultant – UNDP & DFFE BIOFIN Offset Banking Modality for Expansion of PAs. Sept 2022 – Current.** Provide leadership and specialist support to SANParks and other management authorities to set up proactive offset schemes, price offset credits appropriately, provide training and input into the Offset technical community of practice, and policy and operational procedures guidance. Contact: Jeff Manuel SANParks Jeffrey.manuel@sanparks.org.za; Pam Kershaw DFFE PKershaw@dffe.gov.za ; Nokutula Mhene UNDP BIOFIN Project Management nokutula.mhene@undp.org

2. **Offset Specialist – Hermanus CBD Bypass Feb 2021 – Current.** Assess and determine offset requirements for impacts on the protected area, advise and align national, provincial and local government officials on the options and policy principles of offsetting around protected areas. Quantify offset/ecological compensation cost, opportunities to facilitate transfers in line with the PFMA and MFMA, and imperatives for managing offset site in terms of GIAMA, and NEMPA, and related operational matters. Contact: Willem Moolman Willem.Moolman@westerncape.gov.za. Or Dr Coral Birss, CapeNature 087 087 3197

3. **Strategic Biodiversity Offset – Namakwa SEZ, Namaqualand & Richtersveld 2020-22.** Manage specialist consultant, review existing baseline information, liaise with relevant taxa and regional/subject specialists. Compile offset report, present risk analysis and strategic offset implications to NCEDA and partners. Clarify PFMA constraints and opportunities for securing offset site. Contact: Hendrik Louw, Acting CEO NCEDA. 081 3232533

4. **Ecological Compensation advisor – TGME Underground Mine Project, Pilgrims Rest 2019 – 22**. Coordinate various consultants and EAP. Develop Ecological compensation framework and budgets, and present to regulators and I&APs. Compile Compensation Report. Negotiate acceptability of compensation package with DFFE and DWS, MTPA. Contact. Jacques de Triou, TGME COO. 082 9268898.

5. **Offset Specialist – Net Positive Impact Strategy: Anglo Platinum. March 2022 – March 2023.** Quantify Anglo Platinum's mine portfolio residual impact, determine appropriate offset and additional conservation action strategies, identify candidate sites and alternative management implementing entities. Liaison between specialist providers, Anglo Group and Platinum leads. Contact: Jurie Human (Platinum) or Warwick Mostert (Group) Warwick.Mostert@angloamerican.com .

6. **Offset Specialist – Black Rock Mine Operations. May 2021 – Current.** Assess and determine offset requirements for impacts (current and forecast) from BRMO's operations at Hotazel. Locate suitable offset sites, manage the team engaging with landowners. Conclude purchase agreements with landowners and Management arrangements with implementing party. Contact: Wilhemina Ngcobo: Black Rock Mine General Manager. Or Botshelo Moses (Environment Manager) Assmang.

7. **Offset Specialist – Komas/Gromis WEF, Namaqualand 2020 -2021.** Manage offset assessment, compile report, negotiate with DAEARDLR, DFFE, SANParks on suitable parameters, sites etc. Contact: Elsabe Swart – Environmental Research, DAEARDLR, Kimberly: Mercia Grimbeek, Enertrag SA. Mercia.Grimbeek@enertrag.co.za

8. **Lead consultant - Streamlining Biodiversity Offset implementation in the Northern Cape. 2017-2020.** Project for DENC and Wilderness Foundation Africa. Highlighted spatial aggregation possibilities and decision-making support protocols to simplify offsets and improve predictability. Contact: Kerry Purnell Kerry@wfa.africa

9. **Offset Specialist – Kap Vley Wind Farm.** Juwi Energy and DENC. **February 2018 –Feb 2020.** Review offset proposals, confirm adequacy and accuracy of original Offset report. Expert Opinion on alternative implementation mechanisms and additionality. Facilitate negotiations between juwi, DENC, SANParks and WWF-SA, and develop a proactive implementation model to reduce risk for energy developers. Contact Steyn de Vos for Reference. Steyn.devos@juwi.co.za 082 388 4738

10. **Offset Specialist and lead Negotiator –** Zirco Roodeheuwel Mine**. Jan 2016 – Dec 2017**. Review previous specialists' offset studies, submit a professional perspective on their accuracy and veracity. Develop and

conclude an implementation agreement between the parties, implementing agencies and commenting authorities. Contact Mark McKinney for reference. 082 900 5640 or m.mckinney@aeolus-resources.com

11. **Team leader – Biodiversity Offset for the N2 Wild Coast Toll Highway**. CCA and SANRAL **Jan 2014 – May 2016.** Conceptualise the work programme; oversee external specialists, resource economists; Locate and quantify candidate offset sites and attendant rehabilitation and management plans and Budgets; Integrate terrestrial and freshwater/wetland offset requirements. Compile Offset statement and Specialist Report. Lead offset component of the Authorities Reference Group. Lead negotiations and budgeting with implementing agencies, SANRAL and National Treasury. Concluded an implementation plan and offset agreement between the parties. **September 2018- January 2022** appointed as specialist advisor to the implementation team for the Offset. Contact Fuad Fredericks for Reference ffredericks@slrconsulting.com

12. **Team leader – Gamsberg Biodiversity Offset.** Vedanta Zinc International and Black Mountain Mine. **Oct 2012 – Nov 2014 and 2019 - 2020.** Conceptualise the work programme; oversee external specialists, financial specialist; Quantify candidate offset sites and notional management plans and Budgets; Compile Offset statement and Specialist Report. Lead negotiations and budgeting with implementing agencies, DENC and Black Mountain Mine. Concluded an offset agreement between the parties.

13. **Offset Specialist – Booysendal Platinum Mine S24G and additional EMPR activities.** Northam Platinum**. April 2017 – 2020.** Review and understand the full suite of impacts from the mine, including separating historical from current impacts and liabilities. Finalise offset parameters and costs. Understand, align and synthesize various specialists' recommendations into an offset report, and draft appropriate conditions of authorisation. Provide guidance to client and legal specialists on appropriate models for implementation and concluding agreements with authorities. Negotiations between Northam and MTPA on finalising offset agreement and implementation plan.

13. Annex 2. Submitted Plan of Study

Week	Task	Output	Submitted
1	Review draft Impact Assessments, desktop review receiving environment. Review authorities' SR comments and other correspondence.	Plan of Study	25 Apr
2	Site visit, confirm impact areas, remnant vegetation, assess Botanical specialist calculations. Create possible candidate offset site shortlist. Visit two or more candidate sites. Solicit input from CREW project and field staff with local knowledge.	Candidate Site Shortlist	3 May
3	Develop Offset statement, solicit input and further comment/constraints from CN, CCT Biodiversity Branch, DEA&DP (if required). Develop draft Offset Report and prepare for DEIR. Get no objections to min 2 and max 3 candidate sites.	Draft Report	17-30 May
4	Compile minimum requirements for Offset Implementation Agreement for leading candidate sites. Advise client on options and Heads of Implementation Agreement for leading candidates, including potential management arrangements. Anonymise candidate sites if prejudicial to implementation.	Draft Implementation arrangements, Draft Offset Submission EIR	Aim for 14 June
5	Incorporate authorities & I&AP comments.	Final report, input into CRR	13 June – 29 June
6	Finalise Offset Report, and draft condition of Authorisation for consideration. Finalise input into Implementation Agreement – if required	Final Report, Implementation agreement for negotiation	Weeks of 8 – 19 July

14. Determination of management liabilities in succeeding years

Table 5. The yearly forecast management costs, the NPV of the remaining liability period of management costs, in case of failure by the applicant to secure or safeguard the management of the offset site.

Discount rate	8,9%	National Treasury
Inflation	6%	Ave CPIX 2023/4

2024 Baseline

Year	Management costs	NPV remaining fees	Year	Tax Year
2025	R 516 060	R 7 897 362	1	2026
2026	R 311 786	R 8 038 238	2	2027
2027	R 558 176	R 8 414 106	3	2028
2028	R 356 964	R 8 555 107	4	2029
2029	R 399 220	R 8 927 778	5	2030
2030	R 408 688	R 9 287 599	6	2031
2031	R 457 067	R 9 669 134	7	2032
2032	R 467 907	R 10 031 941	8	2033
2033	R 523 296	R 10 415 233	9	2034
2034	R 535 707	R 10 772 319	10	2035
2035	R 655 239	R 11 147 671	11	2036
2036	R 613 331	R 11 426 258	12	2037
2037	R 685 934	R 11 775 278	13	2038
2038	R 702 203	R 12 076 295	14	2039
2039	R 785 326	R 12 386 387	15	2040
2040	R 1 381 920	R 12 633 555	16	2041
2041	R 899 120	R 12 253 030	17	2042
2042	R 920 444	R 12 364 409	18	2043
2043	R 1 737 438	R 12 462 477	19	2044
2044	R 1 053 817	R 11 679 567	20	2045
2045	R 1 288 954	R 11 571 442	21	2046
2046	R 1 206 515	R 11 197 629	22	2047
2047	R 1 349 336	R 10 880 323	23	2048
2048	R 1 381 339	R 10 379 245	24	2049
2049	R 1 544 855	R 9 798 720	25	2050
2050	R 1 581 495	R 8 988 459	26	2051
2051	R 1 768 705	R 8 066 183	27	2052
2052	R 1 810 653	R 6 857 954	28	2053
2053	R 2 024 990	R 5 496 511	29	2054
2054	R 3 780 486	R 7 252 007	30	2055