APPENDIX 43A

EMPR

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DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE EXPANSION OF THE CAPE WINELANDS AIRPORT

(P10 OF FARM 724, RE OF FARM 724, P23 OF FARM 724, P7 OF FARM 942, RE OF FARM 474, P3 OF FARM 474 AND P4 OF FARM 474)

OCTOBER 2024

DRAFT REPORT FOR COMMENT

PREPARED FOR
CAPEWINELANDS AERO (PTY) LTD

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Please refer to our CVs: **Annexure 1**.

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GLOSSARY OF TERMS:

Activity - An activity or operation carried out as part of the construction or operation of the runway and associated infrastructure

Airside - The part of the airport used for the take-off, landing and taxiing of aircraft, consisting of runways, taxiways and aprons, as well as adjacent terrain and buildings or portions thereof, to which access is controlled. Usually consists of high traffic with few physical barriers and wide-open space.

Apron - The airside area assigned for aircraft and aircraft handling equipment operations and parking.

Applicant– The person or legal entity that has made application to the competent authority for environmental authorizations and who will have the overall responsibility to adhere to the relevant legislation and comply with the environmental authorization.

Construction Phase - The stage of project development comprising site preparation as well as all construction activities associated with the development.

Contractor–

(i) the main or specialised contractors as engaged by the Applicant for the execution of the works, including all sub-contractors appointed by the main contractor of his own volition for the execution of parts of the works.

(ii) any other contractor from time to time engaged by the Applicant directly in connection with any part of the works which is not a nominated subcontractor or a subcontractor to the main contractor.

(iii) the main or specialised operator as engaged by the Applicant from time to time for the execution of day to day operation.

(iv) Any company appointed by the Applicant to undertake construction or related activities on site, and will include the main Contractor, as well as any Sub-Contractors.

Council – the local municipal authority that operates or is responsible in said area.

dB(A) - A unit of sound level - a weighted sound pressure level.

Days – the days of the week excluding Sundays and legal public holidays.

Ecosystem - The interconnected assemblage of all species populations that occupy a given area and the physical environment with which they interact.

Environmental Authorisation - The authorisation by a competent authority of a listed activity or specified activity in terms of NEMA.

Environmental Management Programme (EMPr) – this document as amended or varied from time to time, to control the implementation of the works on the site in such a way as to ensure that they do not result in undue or reasonably adverse impacts on the environment.

Environmental Control Officer (ECO) – a suitably qualified individual or site manager to be appointed by the Applicant, and his successor/s should he cease to hold such appointment for any reason, to oversee the implementation of the EMPr and environmental agreement until the completion of works on the site.

Flight paths - Aircraft take-off (departure) and landing (approach) routes. Also referred to as flight tracks.

Hazardous substance - A substance (including materials and waste) that can have a deleterious (harmful) effect on the environment and those substances declared hazardous substances in terms of the Hazardous Substances Act 15 of 1973.

Land Surveyor - (LS)

Landside - The area outside an airport terminal building where road and pedestrian movements take place. It includes the road infrastructure, car rental facilities, parking, office blocks and various other services. This area is freely accessible to the public.

Method Statement - A mandatory written submission by the Contractor to the ECO setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity.

Mitigation Measures - Design or management measures that are intended to avoid and/or minimise or enhance an impact, depending on the desired effect.

Operational Phase - The stage of the project following the Construction Phase, during which the proposed development will function or be used as anticipated in the Environmental Authorisation.

Resident Engineer (RE) – the representative Engineer present on site for the works undertaken during the Construction Phase.

Site Manager – the employee of the main contractor or Applicant responsible for the day-to-day control of all activities and operation on site.

Solid waste - All solid waste including construction debris, chemical waste, broken / redundant equipment, oil filters, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Sub-Contractors - A Sub-Contractor is any individual or Contractor appointed by the main Contractor, to undertake a specific task on site.

Taxiway - A defined path, on a land aero- route to be followed by taxying aircraft, connecting the runway to parking aprons.

Terminal Building - The building in which passenger processing associated with arrivals and departures takes place.

Works – the construction operations, all related and incidental works such as, but not limited to, site works, fencing, earthworks, roads, services, buildings etc.

LIST OF ACRONYMS:

AGL	Airfield ground lighting
AIP	Alien Invasive Plant
amsl	Above mean sea level
ARFF	aircraft rescue and firefighting
ATC	Air Traffic Control
ATM	Air Traffic Movements
ATNS	Air Traffic and Navigational Services
CA	Competent Authority
CARA	Conservation Of Agricultural Resources Act 43 of 1983
CBA	Critical Biodiversity Area
CMA	Catchment Management Agency
CoCT	City of Cape Town
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CONOPS	Concept of Operations
CTIA	Cape Town International Airport
CV	Curriculum Vitae
CWA	Cape Winelands Airport
dB	Decibels
DCP	Drop-weight cone penetrometer
DEA&DP	Department of Environmental Affairs and Development Planning
DMRE	Department of Mineral Resources and Energy
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECA	Environmental Conservation Act, Act 73 of 1989
EIA	Environmental Impact Assessment
ELU	Existing Lawful Use
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
ESA	Early Stone Age
FAFK	Fisantekraal Airfield (ICAO identifier)
FATO	Final Approach and Take-off
FAWN	Cape Winelands Airport (ICAO identifier)
FBO	Fixed Base Operations
FT	feet
GA	General Authorisation
GCFR	Greater Cape Floristic Region
GEOSS	Geohydrological and Spatial Solutions International (Pty) Ltd
GG	Government Gazette
GN	Government Notice
GSE	ground support equipment

GHG	Greenhouse Gas
GVA	Gross Value Added
ha	Hectares
HWC	Heritage Western Cape
ICAO	International Civil Aviation Organization
HDPE	High-density polyethylene
ILS	Instrument Landing System
IWRM	Integrated Water Resource Management
LCA	Landscape Character Areas
LED	Local Economic Development
LAeq	Equivalent A-weighted sound level
Leq	Equivalent continuous sound level
LReq.d	Maximum average ambient daytime (noise)
LReq.n	Maximum average ambient night-time (noise)
LReq,T	Equivalent continuous rating level
MARS	Multiple Aircraft Ramp System
µg/m^3	Micrograms per cubic metre
mg/m^2/day	Milligrams per square metre per day
MPPA	million passengers per annum
MPRDA	Minerals and Petroleum Resources Development Act
MRO	maintenance, repair, and overhaul
NATMAP	National Transport Master Plan
NCAP	National Civil Aviation Policy
NDCR	National Dust Control Regulations
NDP	National Development Plan
NEM: BA	National Environmental Management: Biodiversity Act
NEMA	National Environmental Management Act
NEM: AQA	National Environmental Management: Air Quality Act
NEM: WA	National Environmental Management: Waste Act
NHRA	National Heritage Resources Act
NM	Nautical Miles
NO_2	Nitrogen Dioxide
NTP	National Transport Policy
NWA	National Water Act
OECD	Organisation for Economic Co-ordination and Development
OIS	Obstacle Identification Surfaces
OLS	Obstacle Limitation Surface
PBB	Passenger Boarding Bridges
PES	Present Ecological State
ppb	Parts per billion
PTB	Passenger Terminal Building
PV	Photo Voltaic
SABS	South African Bureau of Standards
SACAA	South African Civil Aviation Authority
SAHRA	South African Heritage Resources Act

SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SDP	Site Development Plan
SO_2	Sulphur Dioxide
SPLUMA	Spatial Planning and Land Use Management Act 16 of 2013
TIA	Traffic Impact Assessment
TMA	Terminal Manoeuvring Area
UST	Underground Storage Tank
VFR	Visual flight rules
VOR	VHF Omnidirectional Range
WAM	Wide Area Multilateration
WCPSDF	Western Cape Provincial Spatial Development Framework
WHO	World Health Organisation
WULA	Water Use License Application
WWTP/WWTW	Wastewater Treatment Plant / Works

SECTION 1: INTRODUCTION & OVERVIEW

1.1 PROJECT BACKGROUND:

An Environmental Management Plan (EMPr) describes mitigation measures in detail, and is prescriptive, identifying specific individuals or organizations responsible for undertaking specific tasks to ensure that impacts on the environment are minimized during construction, operational and related activities. As an open – ended document, information gained during on-going monitoring of procedures on site could lead to changes in the recommendations and specifications of this document. This document forms an agreement between the Department of Environmental Affairs and Development Planning (DEA&DP) and the Applicant that the environmentally sensitive features on the site will be suitably protected during the lifespan of the activity through the implementation of the applicable mitigation measures.

This document is intended to guide and manage the construction, operation and maintenance phase of the Cape Winelands Airport. Cape Winelands Airport (CWA) with International Civil Aviation Organization (ICAO) location identifier "FAWN", was formerly known as Fisantekraal Airfield (FAFK), and was acquired in November 2020 by a group of private businessmen, who since established Cape Winelands Airport Ltd. The site is located approximately 10.5km northeast of Durbanville and 25km northeast of Cape Town International Airport (CTIA), and the current airport site is 150ha in size.

The site is bordered by the R312 and Garden Cities urban development in the South, with several agricultural activities towards the East and North. North-West is a Corobrik mine in process of closure and the Fisantekraal Wastewater Treatment Works. The Bella Riva urban development and the County Fair Laying Farms are directly West of the CWA. Further West are Dirt & Dust recreational tracks, and Braam's Voerkrale. Southwest of the site is the Fisantekraal residential area, which links with the Greenville Garden Cities development. Table 1 and Figure 1 indicates the land parcels that form part of the site with Table 2 providing a summary of the land uses.

Please refer to **Annexure 2: Locality Plan**.

Table 1: Summary of the land parcels forming part of the site.

FARM NR	Surveyor General Code																				Area (Ha)
P10 of Farm 724	C	0	5	5	0	0	0	0	0	0	0	0	0	7	2	4	0	0	0	1	0	114.1516
RE of Farm 724	C	0	5	5	0	0	0	0	0	0	0	0	0	7	2	4	0	0	0	0	0	43.6026
P23 of Farm 724	C	0	5	5	0	0	0	0	0	0	0	0	0	7	2	4	0	0	0	2	3	30.8711
P7 of Farm 942	C	0	4	6	0	0	0	0	0	0	0	0	0	9	4	2	0	0	0	0	7	256.9596
RE of Farm 474	C	0	5	5	0	0	0	0	0	0	0	0	0	4	7	4	0	0	0	0	0	397.9304
P3 of Farm 474	C	0	5	5	0	0	0	0	0	0	0	0	0	4	7	4	0	0	0	0	3	0.982
P4 of Farm 474	C	0	5	5	0	0	0	0	0	0	0	0	0	4	7	4	0	0	0	0	4	36.1295

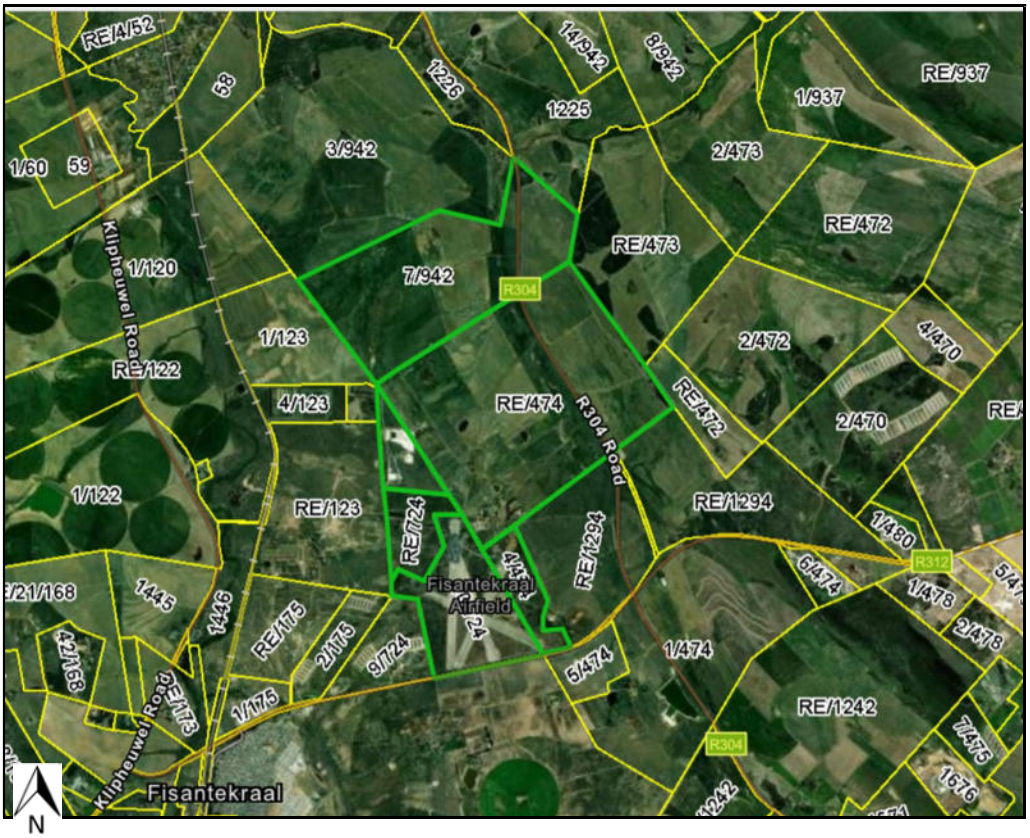

Figure 1: The site (green parcels) and adjacent land parcels (yellow) (PHS Consulting, CFM, March 2024).

Table 2: Summary of existing land uses on adjacent land parcels (Refer Figure 1).

Land portion	Description of landuse
RE/473	Agricultural – dryland wheat cultivation; some natural areas
RE/472	Agricultural – dryland wheat cultivation; some natural areas
RE/1294	Agricultural – dryland wheat cultivation; some natural areas
5/474	Agriculture; borrow area
ERF 4	Agriculture (feedlots, cultivation) and housing (Future Garden Cities)
9/724	County Fair chicken laying and rearing
RE/123	Agriculture (feedlots and cultivation) (Future Bela Riva)
RE/2/123	Feedlots (Future Bela Riva)
1/123	Agriculture cultivation
3/942	Agricultural – dryland wheat cultivation; some natural areas
1226	Agriculture cultivation
1225	Agriculture cultivation

Cape Winelands Airport has the following vision "*To be a fresh, unique, 'first of its kind' development that blends technical aviation requirements with strong commercial property development principles. The aim is to be a true catalytic legacy project, and it is envisaged to be one of the single most impactful economic drivers the region will see in decades, creating value for all stakeholders*".

The airport aims to develop into an international commercial airport and multimodal logistics hub, with excellent rail, road, and air connectivity. The airport upgrades associated with the development will deliver an airport capacity of 5,2 million passengers per annum (MPPA).

Infrastructure and facilities' sizing was appropriately matched with CWA's traffic forecast and ambitions to facilitate general aviation, domestic scheduled operations, international scheduled operations as well as positioning itself as the full reliever airport to Cape Town International Airport. The proposed development ensures that CWA can accommodate any aircraft type currently flying into Cape Town, including Code F aircraft, should airlines have to divert. The Site Development Plan (SDP) for the proposed development is provided in **Annexure 3A**.

1.2 ENVIRONMENTAL ATTRIBUTES:

1.2.1 Geology, Topography, Geohydrology and Geotechnical conditions

1.2.1.1 Topography

The **topography** of the site and surrounds is characterised by typical grass-covered low-relief rolling hills with a typical on-site elevation between 90 - 130m above mean sea level (mamsl). In this region, there is a low drainage density (Stapelberg, 2009) as natural slope surfaces rarely exceed 12°. Drainage channels and small tributaries occupy the lower-lying areas between the low-relief hills.

The current CWA site is characterised by generally flat terrain with little undulation, while the northern extent of the proposed expansion area is characterised by undulous terrain with rolling hills.

1.2.1.2 Geology

The **geology** of the proposed CWA consists of shale of the Tygerberg Formation (Nt), which forms part of the Malmesbury Group and constitutes the basement rock of the area. Regionally the Malmesbury Group is overlain by different quaternary formations.

The bedrock in the region is shown to be predominantly Malmesbury Group (Nt) rocks; these are often associated with overlying ferricrete gravels/nodules. The Malmesbury Group rocks typically dip steeply to the northwest. Rapid transitions occur within this unit between easy-weathering siltstone/phyllite to more competent greywacke/sandstone. This can lead to large differences in depth of weathering/depth and development of the soil profile over relatively short distances.

Although intrusions of the Cape Granite Suite are not indicated, indications of minor intrusive, or fault-bounded bodies of granite occur in this region. These are considered extensions/satellite intrusions of the Kuilsriver–Helderberg pluton.

A regional fault system (the Colenso Fault) is mapped along the northeastern boundary of the CWA. This fault structure extends from Klapmuts in the Winelands to Langebaan on the West Coast.

1.2.1.3 Geohydrology

The **geohydrological** of the site is underlain by alluvium, colluvium, and weathered bedrock of the Malmesbury Group and Cape Granite Suite (GEOSS, 2022b). The aquifer in the area is classified as a "fractured" aquifer with potential borehole yields between 0.5 – 5.0L/s. The groundwater quality of the area, based on one laboratory sample, hydrocensus data and the NGA data indicate that the EC ranges from 19.7mS/m to 632mS/m which means the groundwater quality ranges from "ideal" to "poor" (in terms of EC). During the hydrocensus it was found that there are other existing groundwater users in the surrounding area, and that most of the users abstract groundwater from the fractured aquifer. The water levels range from shallow to deep (from 1.24mbgl to 71mbgl).

The site has a low to low/medium vulnerability classification, which means that the susceptibility of the aquifer to contamination from anthropogenic activities is low to medium. This classification is because the Malmesbury Group rock weathers to a clay. Clays are typically associated with lower permeability, retarding the migration of potential contaminants, and offering protection to potentially underlying aquifers. The clay found underlying the site, does provide some degree of protection to the underlying fractured rock aquifer.

Aquifer vulnerability increases to the north-east where the Colenso Fault system is located. This area should be considered as a sensitive area in terms of groundwater.

1.2.1.4 Geotechnical conditions

The **geotechnical conditions** of the region were mapped at 1:50 000 scale by the Council for Geoscience (CGS) in 2006 (3318DC Bellville - Geotechnical Series), refer Figure . The geotechnical series provides an indication of the likely soil conditions and construction constraints at a particular location, for example, the soil beneath the site has been classified (according to the CGS) as 'M8', indicating that "*some precautionary measures needed to overcome engineering-geological problems*". Potential problems/conditions that may be experienced with subsoils of this classification are shown in Table .

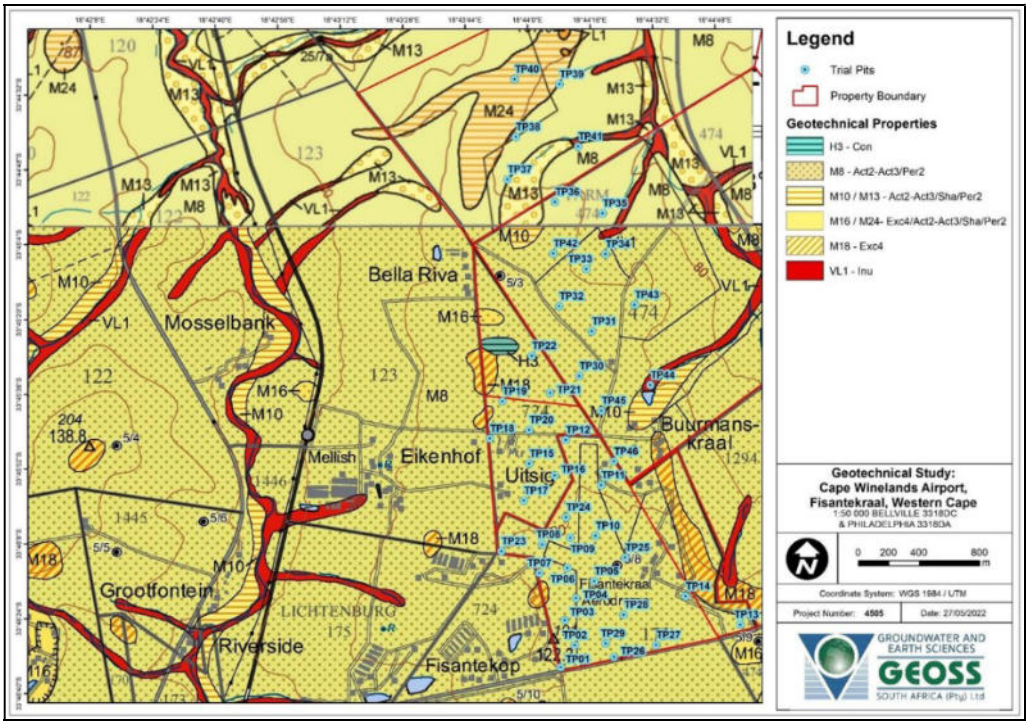

Figure 2: Large scale Geotechnical conditions of the site and surrounds showing the positions of the trial pits (3318DC – Bellville, GCS 2008) (GEOSS, Geotechnical Report, Sept 2023).

Table 3: Potential geotechnical constraints in the region of the site (after CGS, 2009) (GEOSS, Geotechnical Report, Sept 2023).

Geotechnical Condition/ Property	Description	Severity Class / Resulting Cost Implication
Permeability (Map Code: Per)	Permeability measures the flow of water through saturated soil. This is determined by the grain size and shape and the degree of compaction of the soil.	Low permeability (< 3 x 10cm/s)
Shallow water table (Map Code: Sha)	Water table occurring at shallow depth - often seasonal.	Moderate
Loose sand (consolidation) (Map Code: Con)	Material susceptible to excessive consolidation when used as foundation horizon. Non cohesive sands.	Low
Active clay (Map Code: Act2-Act3)	The degree of expansion experienced when dry clayey soils are moistened to full saturation. In addition to the activity, the clay horizon depth and thickness contribute towards determining the amount of surface movement (expansion/contraction).	The residual soils of the Tygerberg Formation may exhibit low to medium expansiveness. Medium cost implications may be incurred due to this type of material

A total of forty-six (46) trial pits were excavated and thirty-five (35) drop-weight cone penetrometer (DCP) tests were performed across the proposed CWA expansion site. Five Geotechnical Zones were delineated based on the investigation results (Figure 3):

A – Residual materials derived from granitoid sources.

B – Residual Materials derived from pelitic sources.

C – Area falling within Zones A and B with residual soils exhibiting characteristics of potentially expansive materials, and/or soils that are prone to settlement.

D - Areas of relatively deep/thick transported aeolian sand.

E – Areas of surficial ferricrete and/or silcrete.

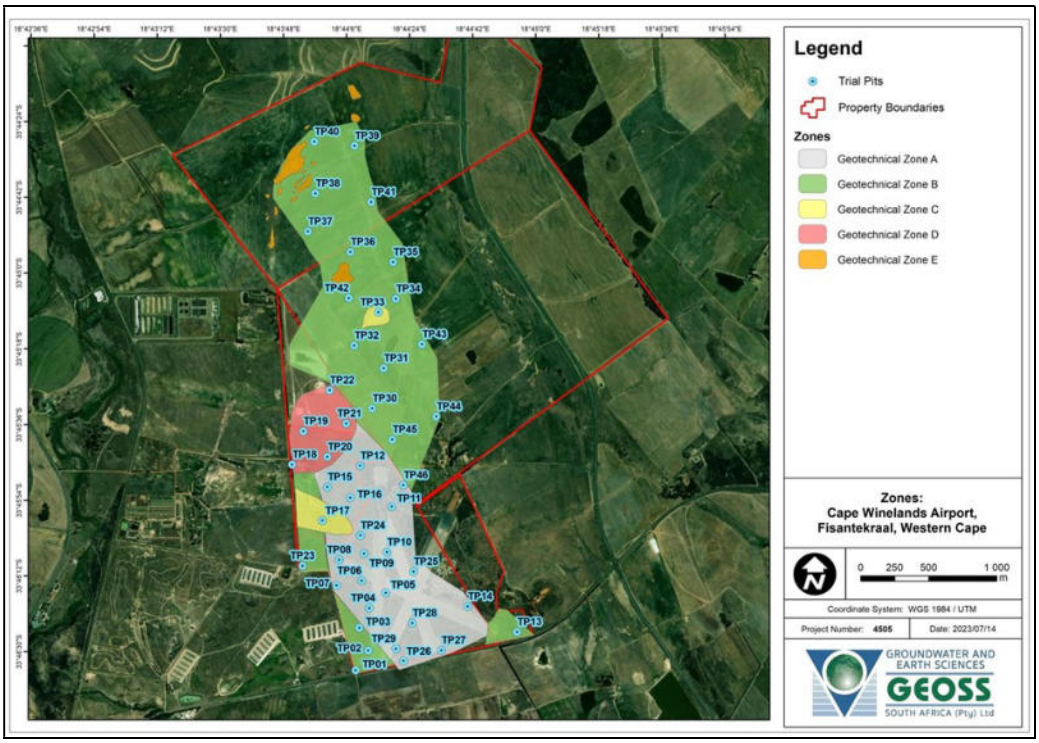

Figure 3: Aerial imagery showing interpreted Geotechnical Zone boundaries (GEOSS, Geotechnical Report, Sept 2023).

1.2.1.5 Mining

The Uitsig quarry (described as Uitsig Clay Pit) with **Mining** Licence ML17/2001 is located on P23/724 and a portion of RE/474 and has been operational since 2003. The land and the mining right/ permit is owned Corobrik (Pty) Ltd, and as part of the planned acquisition of the land for the proposed CWA expansion, a mine closure application has been lodged with DMRE by Corobrik (Pty) Ltd.

1.2.2 Climate, Ambient Air Quality and Baseline Noise

1.2.2.1 Climate

The Fisantekraal area experiences a Mediterranean **Climate** with mild wet winters and warm dry summers. Figure shows the monthly average air temperature and Figure shows the monthly median rainfall and evaporation distribution for the Fisantekraal area (Schulze, 2009). The long term (1950 – 2000) mean annual precipitation for the Fisantekraal area is approximately 532mm/annum. The rainfall typically exceeds evaporation rates in the winter months between May and August, and mists are common in winter.

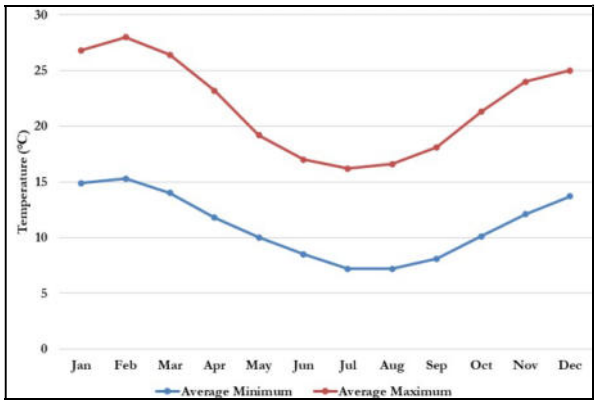

Figure 4: Monthly average air temperature for the Fisantekraal area (Schulze, 2009) (GEOSS, Geohydrological Scoping Report, Sept 2023).

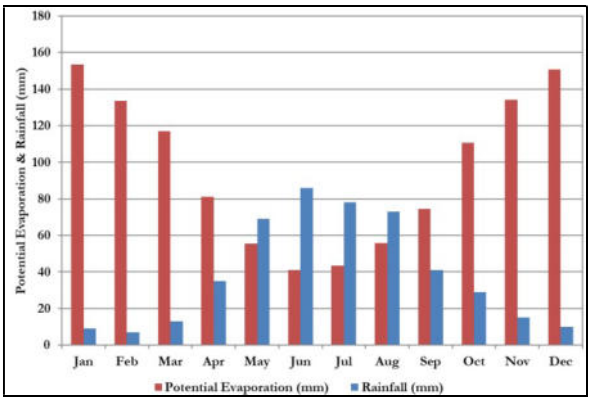

Figure 5: Monthly average air temperature for the Fisantekraal area (Schulze, 2009) (GEOSS, Geohydrological Scoping Report, Sept 2023).

At an elevation of only ±120m amsl and about 25km from the Atlantic coastline the climate is marginally maritime, i.e., mean temperature difference between hottest and coldest month is <10°C. The average annual rainfall is 532mm, of which only 94mm (<20%) is summer rain between October to March. Four years (2016-2019) of hourly local meteorological data from the CTIA weather station was obtained. The full four-year data was used for the establishment of the local wind field.

The wind characteristics are illustrated with the aid of wind roses and wind speed frequency distribution charts. The wind rose is a diagram that illustrates the frequency of the wind speeds and directions. Wind roses were generated for 16 cardinal wind directions. The wind directions are shown as from where the wind blows; the wind classes are indicated by the coloured bars; the frequencies of occurrence of the wind are indicated by the dashed circles.

Predominant winds are from the southerly direction, for both daytime and night-time. Moderate winds dominate during the daytime and light to moderate winds prevail at night-time, with average wind speeds at 6.28m/s and 4.58m/s for daytime and night-time respectively. Northerly and north-westerly winds predominate in winter, while in summer, southerly winds prevail. The wind speeds in summer are higher than that in winter - averaged wind speeds are 6.58m/s and 4.54m/s for summer and winter respectively.

1.2.2.2 Ambient Air Quality

The Western Cape Province and the City of Cape Town operate several ambient **air quality** monitoring stations in the region. The stations closest to the project site include:

- The Wallacedene Station, located in Kraaifontein, approximately 10km South of the CWA;
- The Paarl Station, which is approximately 21km East of the CWA; and
- The Stellenbosch Station, which is approximately 22km to the southeast of the CWA.

Four air pollutants are monitored at the Wallacedene Station, i.e., SO_2, NO_2, O_3 and PM_{10}. The data availabilities range from 4.8% for NO_2 to 34.6% for SO_2. The measured average concentrations were below their respective National Air Quality Standards, except for SO_2, which exceeded the hourly standard at 5 instances. This, however, is within the 88 annual allowed exceedances of the hourly Air Quality Standard.

The Paarl Station is equipped to measure the ambient concentrations of SO_2, NO_2, NO, NOx, and CO. Based on the measured results, the ambient air quality in the Paarl area is good. The measured ambient concentrations were within the National Air Quality Standards, except for NO_2 and CO, which exceeded their guidelines but within the allowable annual number.

The station in Stellenbosch monitors 7 air pollutants, i.e., SO_2, NO_2, NO, NOx, O_3, $PM_{2.5}$ and PM_{10}. The measured average concentrations were below their respective National Air Quality Standards. The hourly and daily averaged levels for SO_2 were elevated at this station, but the number of exceedances were with the allowable annual number.

Existing emissions sources:

The CWA project site is located on the outskirt of the Cape Town Metropolitan. It is surrounded by farmlands. The main land uses in the area include agriculture and poultry farming, i.e., the County Fair

Poultry Farm, which is located on the western border of the CWA. The existing emission sources within the study area may be grouped into three categories:

1) Industrial Sources:

Industrial emissions mainly due to combustion installations contribute to the ambient levels of the primary pollutants, e.g., SO_2, NO_2, PM_{10} and CO. Based on a desktop review of the area, the following plants / factories within 5km of the project area were identified:

- Fisantekraal Wastewater Treatment Works, which is less than 1km away from the project site to the northwest;
- County Fair Primary Processing Plant is located approximately 2km South of the CWA;
- Claytile brick factory is located approximately 4km from the CWA to the southeast; and
- Clay Industry brick factory is located approximately 5km southwest of the CWA.

The existing operations at the CWA and the onsite GA fuel tank have a very small contribution on the air pollution emissions in the area and are considered insignificant.

2) Residential Sources:

Household fuel burning, mainly used for heating and cooking in informal areas, constitutes a source of emission. The common fuels used are coal, wood, and paraffin. The main pollutants emitted are the primary pollutants, such as sulphur dioxide, carbon monoxide nitrogen oxides, particulate matter, as well as hydrocarbons and volatile organic compounds. In addition to the above-mentioned air pollutants, coal burning emits heavy metals.

The main community in the project area is Fisantekraal, which is located approximately 2.5km to the southwest of the CWA. Local dwellings and farmhouses are sparsely located in the study area.

3) Vehicular Traffic

Vehicular traffic is also a source of air pollutant emissions. These emissions include primary pollutants from the vehicle exhausts, such as carbon monoxide, sulphur oxides, nitrogen oxides, as well as hydrocarbons. Fugitive dust emissions may also occur because of vehicle-entrained dust from road surfaces. The major routes in the area include R302, R304, R312 and the local road network. Currently the existing traffic volumes on the main roads and the local road network are very small and are not expected to have a significant impact on the local air quality.

The sensitive receptors around the CWA include the local dwellings/farmhouses, the Klipheuwel community situated to the north of the airport and the Fisantekraal community towards the southwest. The Fisantekraal high school is located northeast of Fisantekraal, next to the R312 road. There are also various poultry farms around the project site. Some of the identified sensitive receptors are shown in Figure below.

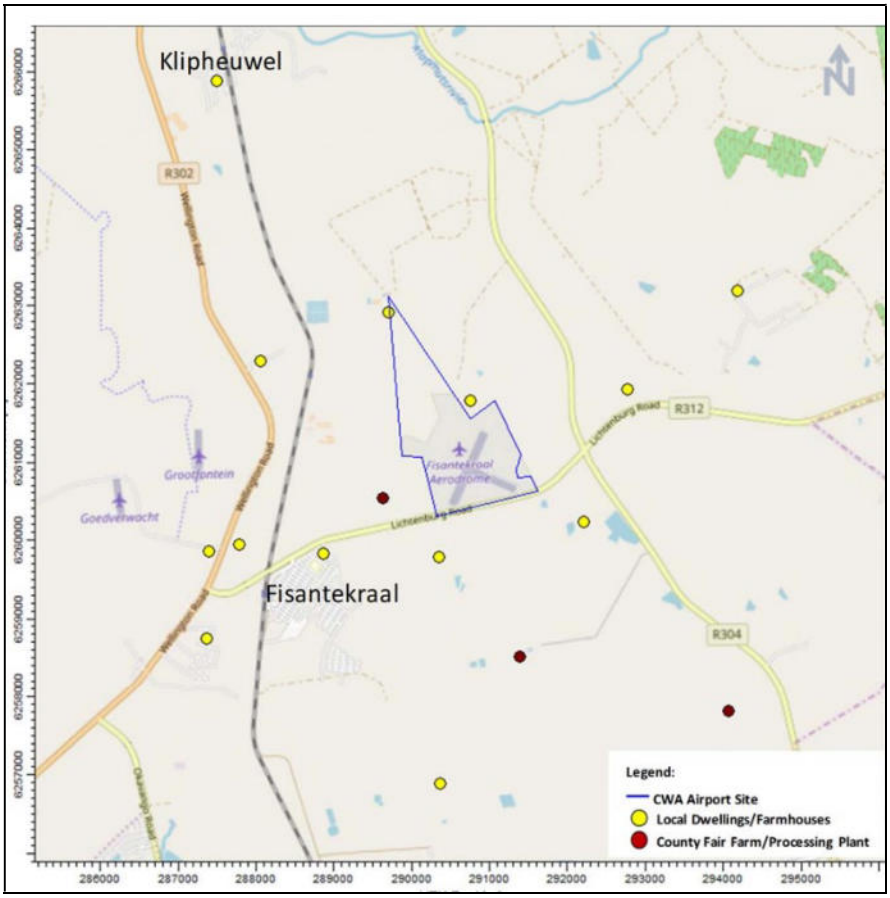

Figure 6: Sensitive Receptors identified around the CWA site (DDA, Baseline Air Quality Report, Oct 2023).

1.2.2.3 Baseline Noise

Baseline measurements were performed using two 01DB DUO sound level meters (SLM) at five selected measurement points (MP). One SLM was placed within the Fisantekraal community (MP04) and a continuous measurement was carried out from the 14th to the 22nd of April 2022. The second SLM was used to measure intermittently the **noise** levels at the remaining four locations, i.e., at MP01, MP02, MP03 and MP05. The locations of the monitoring points can be seen in Figure .

MP01 was located within the current CWA site, while MP02 was situated outside the County Fair Poultry Farm, which is about 1km West of MP01. Point MP03 was placed outside the Fisantekraal High School and point MP05 at the Klipheuwel community, approximately 6.3km North of the airport site.

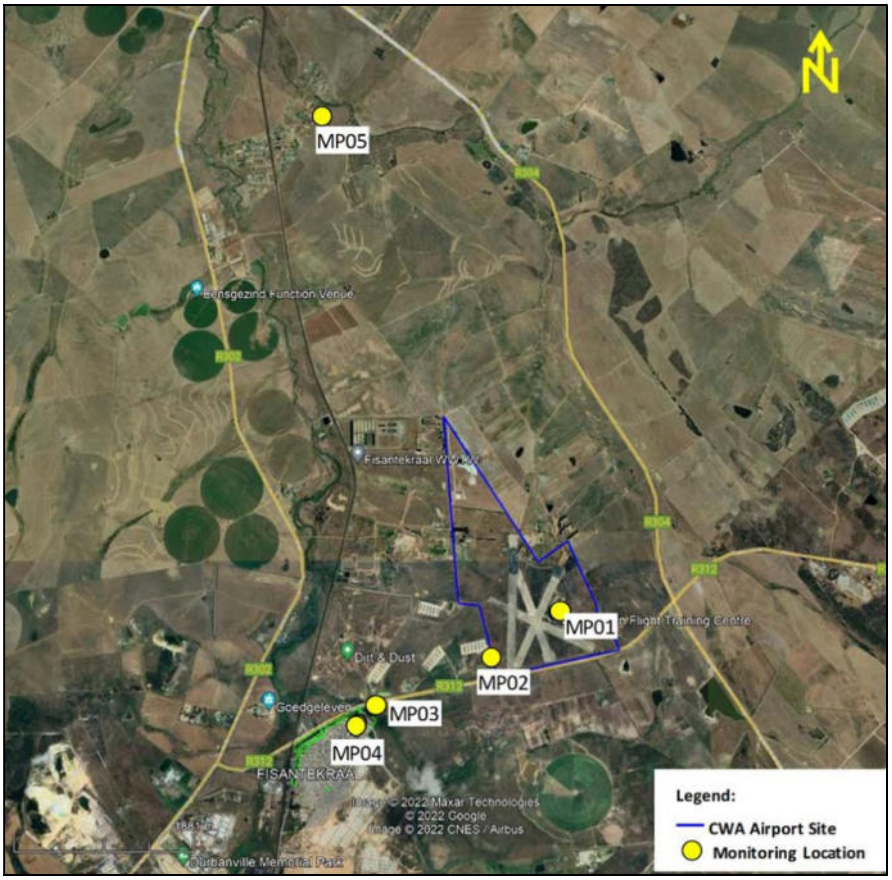

Figure 7: Noise Measurement Locations (DDA, Baseline Noise Report, Oct 2023).

Baseline noise monitoring established the following:

The closest residential noise-sensitive receptors to the Cape Winelands Airport operations are the two residential communities of Fisantekraal, towards the West, and Klipheuwel, towards the North.

The current noise levels at the Fisantekraal residential area exceed the SANS guideline levels for Urban Districts, with the main noise sources being human activities and vehicular traffic on the local road network. The daytime noise level was around 58dB(A) and the night-time 49dB(A).

The current noise levels at the Klipheuwel residential area only reached 41dB(A) and 38dB(A) during the day- and night-time respectively, which are well below the guideline levels for Suburban Districts with little road traffic. The main noise sources there are dogs barking and human activities.

The current noise levels at the Fisantekraal High School, primarily due to the vehicular traffic on the R312, are currently equal to the guideline of 55dB(A) for Urban Districts.

The County Fair Poultry Farm is experiencing 54dB(A) and 39dB(A) during day- and night-time respectively on its boundary.

1.2.3 Natural Systems and Biodiversity

Baseline investigations on Terrestrial and Aquatic Ecology identified development constraints which inform the proposed development and the required authorisation processes. These biophysical constraints are illustrated in Figure 8.

Please refer to **Annexure 3B**, which includes a map showing the proposed activity components and associated infrastructure on the environmental sensitivities of the site including no-go areas for development.

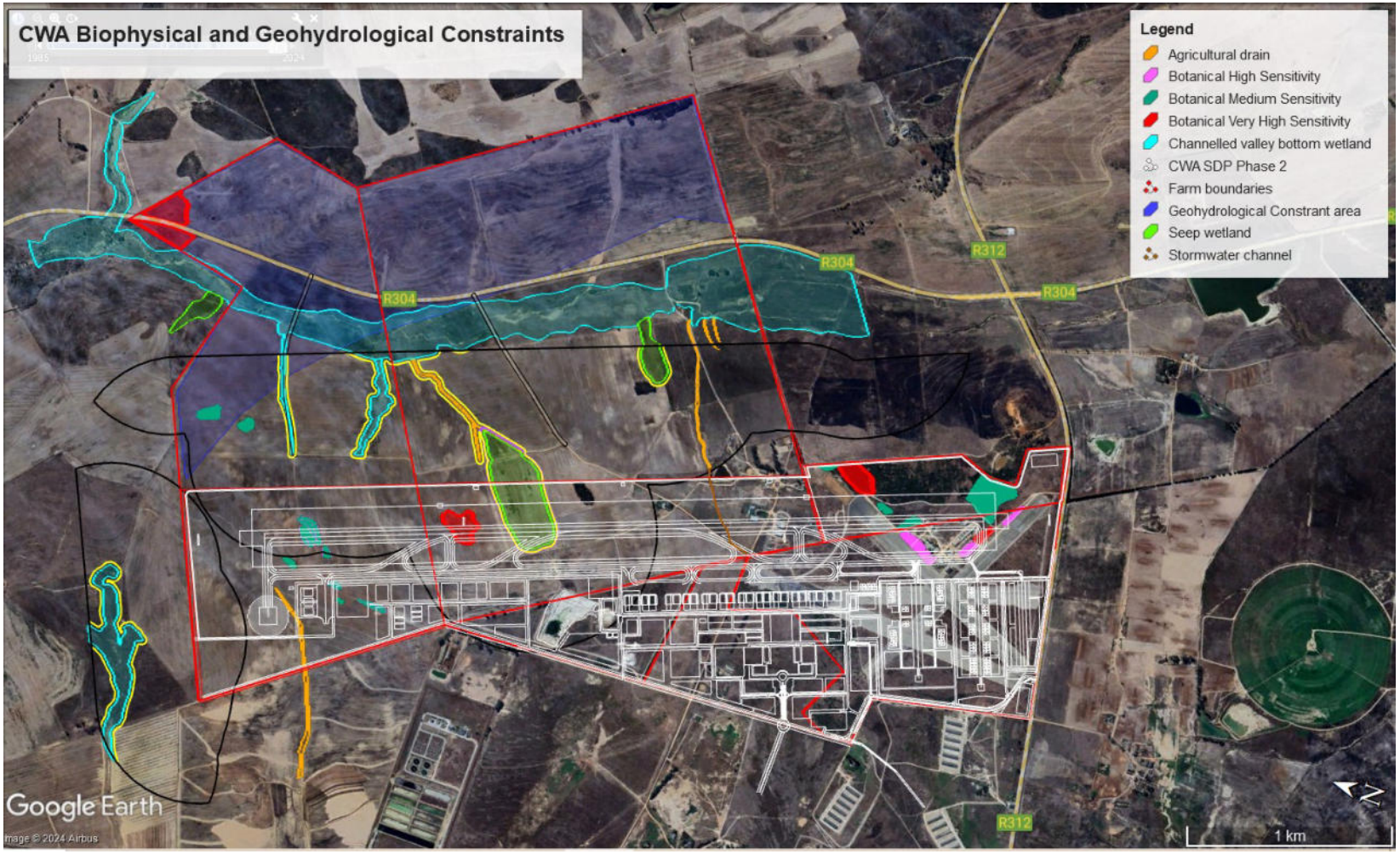

Figure 8: CWA Biophysical and Geohydrological Constraints: 15m construction and operational wetland buffer indicated by yellow outline; 500m ZoR indicated by black outline; 16m operational phase conservation buffer around seep wetland indicated by purple outline (PHS Consulting, October 2024) (Annexure 3B).

1.2.3.1 Botanical

The study area is part of the West Coast Renosterveld bioregion (Mucina & Rutherford 2006), and 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. It is also by far the smallest floristic region, occupying only 0.2% of the world's land surface, and supporting about 11 500 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.

According to the SA Vegetation Map three different vegetation types would have occurred in the study area before human disturbance (see

Figure), although one of these (Cape Flats Sand Fynbos) would barely have been present on site.

Further to this **"Swartland Shale Renosterveld** would have covered most of the site and is regarded as **Critically Endangered** on a national (DEA 2011; Skowno et al 2019) and regional basis (Holmes et al 2008). Less than 9% of its total original extent remains intact, less than 1% is conserved, and the national conservation target is 26% (Rouget et al 2004). The unit is known to support a very large number of plant Species of Conservation Concern (Raimondo et al 2009), many of them being bulbs (geophytes) or succulents and occurs on fertile shale derived soils in the lowland region from Piketberg to Somerset West. This vegetation type needs regular fire for optimal ecological functioning (Helme & Rebelo et al 2016).

Swartland Silcrete Renosterveld would have covered about 15% of the greater study area and is also regarded as **Critically Endangered** on a national basis (DEA 2011; Skowno et al 2019) and regional basis (Holmes et al 2008). Less than 10% of its total original extent remains intact, less than 1% is conserved, and the national conservation target is 26% (Rouget et al 2004). The unit is small in total extent (even prior to human influence) and is also known to support many plant Species of Conservation Concern (Raimondo et al 2009), and occurs on ferricrete (koffieklip) and silcrete outcrops in the lowland region from Piketberg to Somerset West. This vegetation type also needs regular fire for optimal ecological functioning (Helme & Rebelo et al 2016).

Cape Flats Sand Fynbos was barely present on site originally but is also regarded as **Critically Endangered** on a national (DEA 2011; Skowno et al 2019) and regional basis (Holmes et al 2008). Less

than 19% of its total original extent remains intact, less than 1% is conserved, and the national conservation target is 30% (Mucina & Rutherford 2006). The unit is also known to support a very large number of plant Species of Conservation Concern (Raimondo et al 2009) and occurs on acid sands on the lowlands between Atlantis and False Bay.

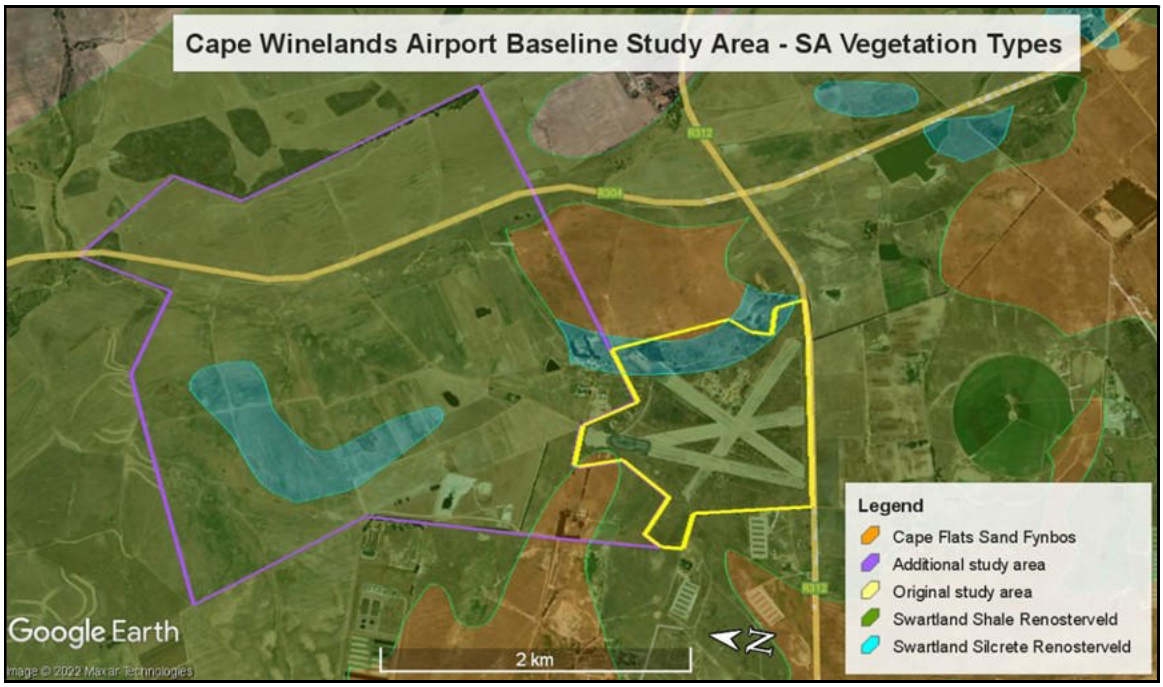

Figure 9: Extract of the SA Vegetation Map showing that three different vegetation types would originally have occurred in the study area, with Swartland Shale Renosterveld making up the bulk of the site (Nick Helme Botanical Surveys, Botanical Baseline report, August 2020).

There was (and still is, in the form of seedlings) a high to very high density of woody alien invasive vegetation in most of the original study area, comprising mostly *Acacia saligna* (Port Jackson), but also with occasional *Leptospermum laevigatum* (Australian myrtle), *Pinus* sp. (Pines) and *Eucalyptus* sp. (gums). Total woody alien invasive vegetation cover ranged from 50% to 100%, with an average overall of about 75%, prior to clearance of most of the original study area in late 2020 and early 2021. The biocontrol fungus has infected most of the Port Jackson and is reducing seed set and even killing some of the plants, but even if all above ground specimens are removed there is likely to be a massive seedbank that would germinate after fire or similar clearing (which has proven to be the case). Nearly all the dense woody alien invasive cover is a response to previous soil disturbance, which may have included cultivation, followed by ferricrete quarrying in places, and extensive disturbance associated with development and maintenance of the airport. Even the small areas seemingly not disturbed by any of the above have been invaded by aliens, simply because of seed dispersal.

As expected in such a disturbed area the understorey is also often dominated by alien invasive herbs and grasses, such as *Plantago lanceolata* (ribwort plantain), *Echium* spp. (Pattersons curse), *Erodium* spp. (cranesbill), *Lolium* spp. (ryegrass) and *Avena* (oats).

Surprisingly, most of the site has not been burnt in the last 14-25 years (as judged by the vegetation on site, and by historic satellite imagery going back to 2004), and much of the indigenous vegetation can thus be considered due or overdue for a fire, as Renosterveld is a fire driven vegetation type (Helme & Rebelo 2016), requiring fire once every 8-12 years for optimal ecological functioning. In the absence of fire for more than 15 or 20 years evident (above ground) plant species diversity can be expected to drop off quickly but can bounce back quite dramatically after a fire (from soil stored seedbanks).

There is no indigenous plant cover in the large, cultivated areas, comprising about 80% of the total study area.

Indigenous plant diversity is very low in the most disturbed parts of the original study area, and is low overall, compared to pristine Renosterveld, which would have at least 250 species in a site of this size (if pristine). However, the least disturbed areas of Medium, High and Very High sensitivity have increasingly high levels of indigenous plant diversity, with an overall total of about 50 species recorded in the original study area. An additional 30 plant species were recorded in the additional study area in March 2022, taking the site total up to about 80 plant species. Refer to Figure 10 below.

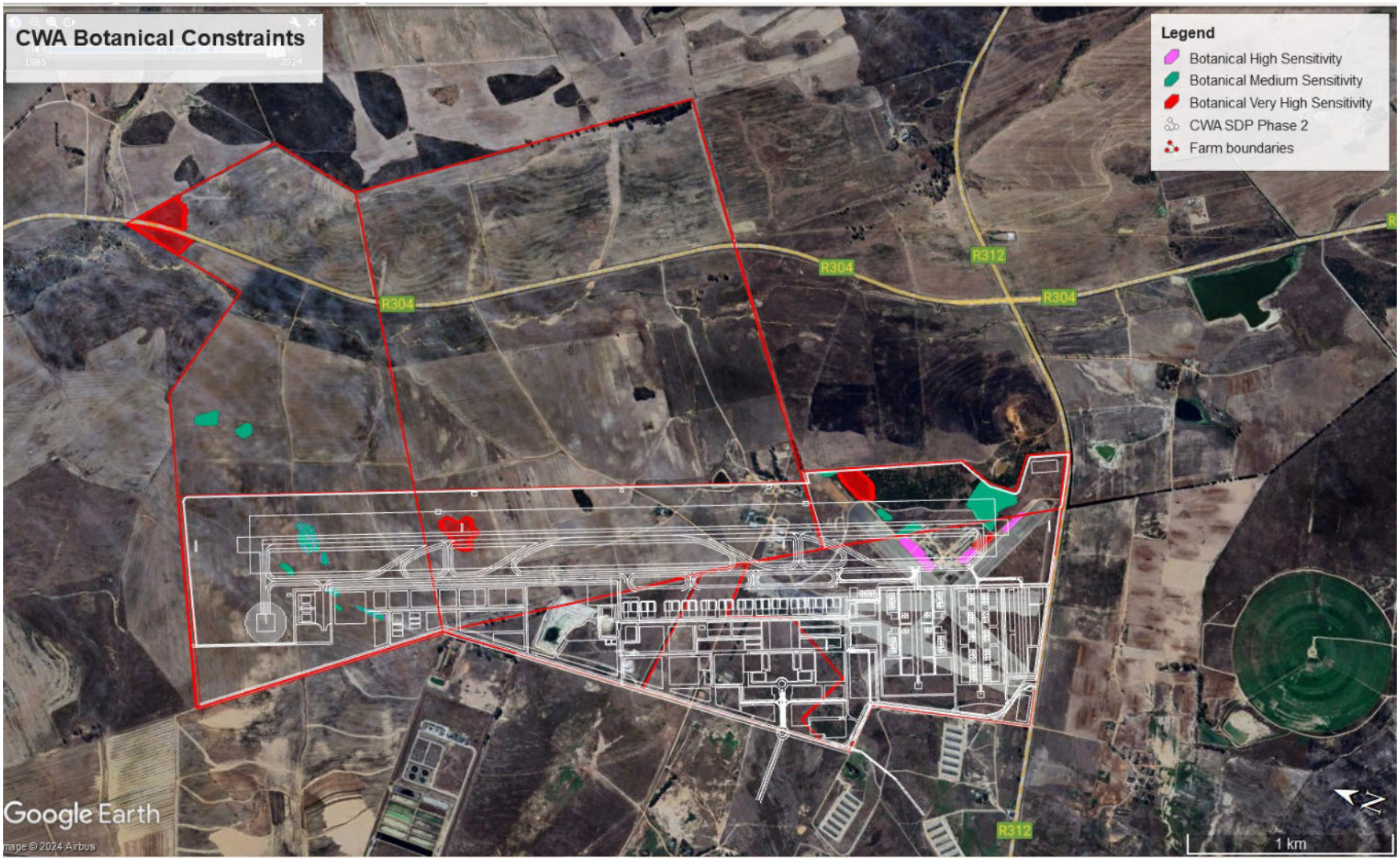

Figure 1: Botanical sensitivity map: All areas not shaded green, red or pink within the study area are of Low botanical sensitivity (PHS Consulting, October 2024).

1.2.3.2 Watercourses and Wetlands

The CWA site is located within Quaternary Catchment G21E in the Berg Water Management Area. The Mosselbank River is located West of the study area, and the Klapmutsrivier North of the site. Both rivers are considered largely modified. Refer to Figure 11 below.

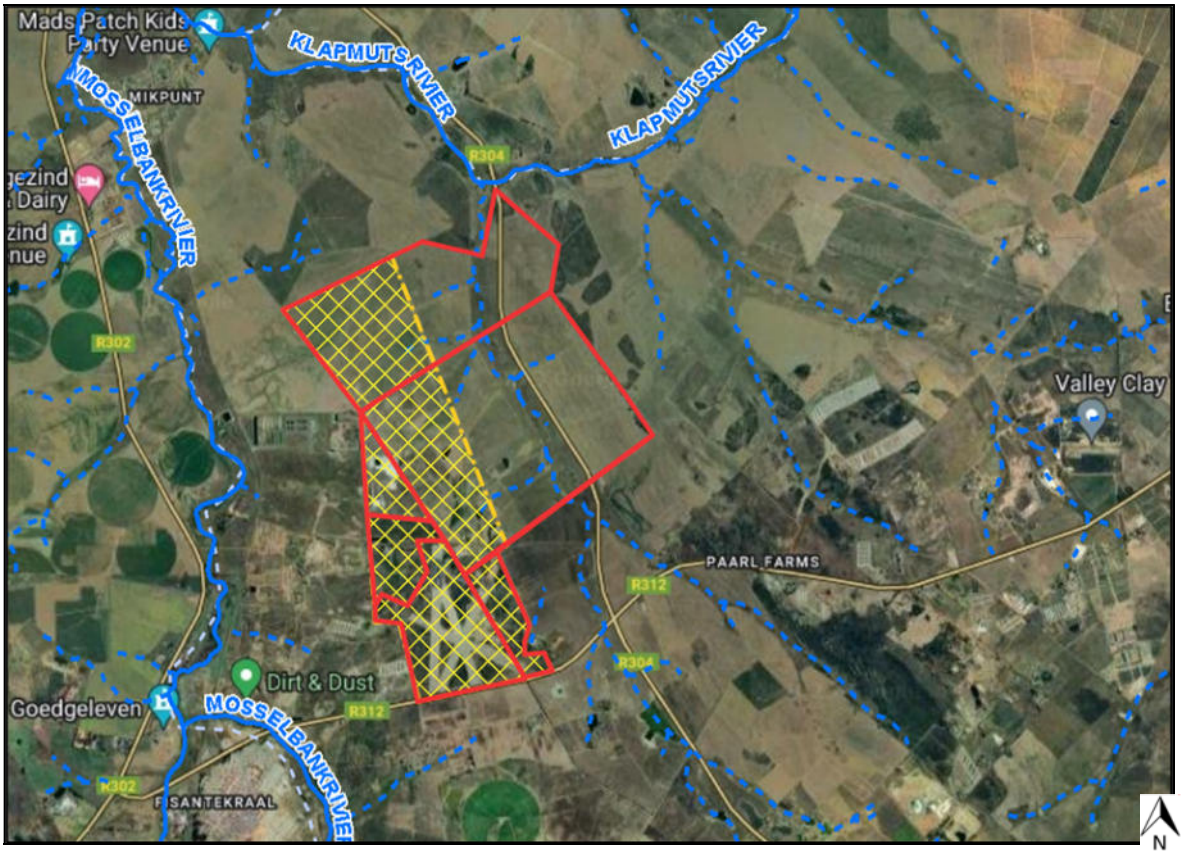

Figure 11: Development area (hatched yellow) and cadastrals (red outline) in relation to identified rivers and drainage lines in the area (PHS Consulting, CapeFarmMapper, Oct 2023).

A freshwater ecological site verification was undertaken for the site in 2022, and identified the following (Figure 12 below):

- A channelled valley bottom (CVB) wetland (hereafter referred to as CVB wetland 1) associated with the unnamed tributary of the Klapmuts River was identified bisecting the eastern portion of the study area, west of the R304;
- Two CVB wetlands (CVB wetlands 2 and 3) were identified within the northern portion of the study area and are linked to CVB wetland 1. The upper reach/western portions of the two CVB wetlands were also identified to encroach into the focus area;
- Another CVB wetland (CVB wetland 4) was identified North of the study area.

- Two seep wetlands were identified within the central western portion of the study area. One of these seep wetlands is directly linked to CVB wetland 1, while the other is indirectly linked via an agricultural drain;
- Several stormwater channels (some with concrete channels and others with excavated earth channels) and agricultural drains (usually with excavated earth channels) that convey surface water runoff (predominantly from the cultivated areas) into the identified freshwater systems, including into CVB wetland 1. It is possible that some of these agricultural drains may have functioned as natural watercourses in the past, but due to the high degree of land use transformation, agricultural activities and historical mining activities they now only function as drainage channels.
- Two artificial impoundments, one isolated and relic and the other connected to CVB wetland 1 via a stormwater channel and agricultural drain, and a quarry associated with historical open-pit clay mining activities were identified.

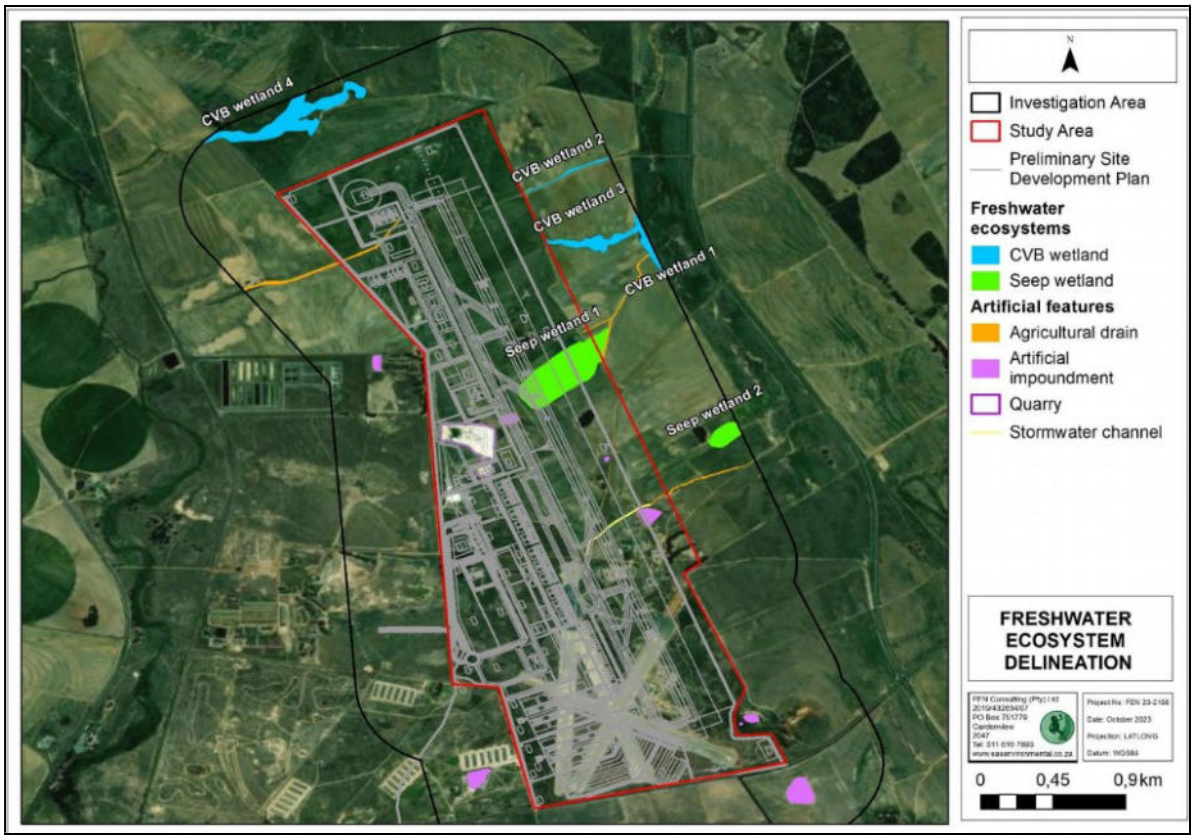

Figure 12: The delineated extent of the watercourses and artificial features associated with the study area and SDP (FEN, Freshwater Ecological Scoping Report, Sept 2023).

1.2.3.3 Hydropedology

The proposed development area is associated with a seep wetland as well as several additional watercourses which are located in close proximity to the proposed development footprint. The activities associated with the CWA development could potentially intercept subsurface flows and thus affect watercourse recharge. The proposed development site was found to be primarily underlain by soils with secondary accumulations of powdery gypsum and layers cemented by silica. These soils are usually found in very dry conditions with high evaporation rates and are often associated with calcareous soils. In these soils, water does not drain deeply but easily infiltrates the sandy surface layers. As a result, water moves upward due to evapotranspiration, leading to a very slow recharge rate. Several dominant soil types were found to coincide with the proposed development site. The dominant soil types identified within the proposed development site were grouped according to their hydropedological responses as summarised below and illustrated in Figure :

Stagnating/Recharge (Slow) Soils: These soils exhibit rapid drainage and percolation of water in the topsoil. However, the presence of cemented layers leads to stagnation and shallow water tables. The primary flow path is slow vertical movement, with excess water rarely reaching the bottom of the soil profile, making upward flux for transpiration dominant.

Responsive (Shallow) Soils: These soils have limited depth and small storage capacity. They respond quickly to rain, generating overland flow when rainfall exceeds their storage capacity.

Interflow (Soil/Bedrock) Soils: These soils have hydromorphic features which indicate occasional water accumulation at the soil/bedrock interface with slow lateral water movement. Drainage could be limited by a shallow layer of impermeable rock.

Responsive saturated (Artificial impoundments): The identified saturated features were manmade water features.

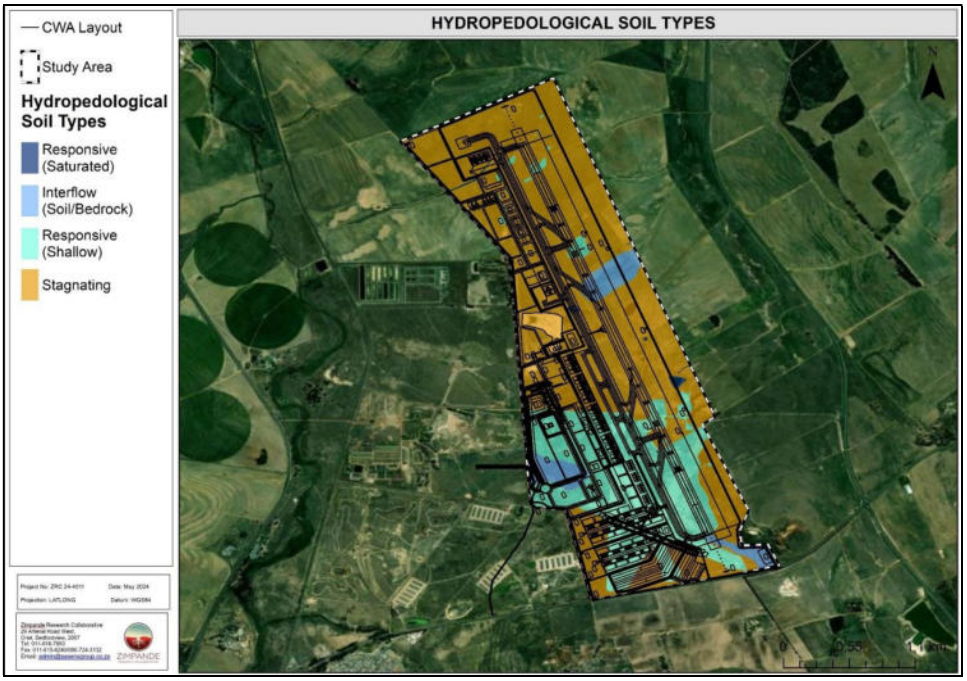

Figure 13: Map depicting hydropedological soil types associated with the study area overlain by the proposed layout outline. (Zimpande Research Collaborative, Hydropedological Assessment, June 2024).

1.2.3.4 Faunal and Avifaunal

Large portions of the proposed CWA development area fall within Endangered Swartland Granite Renosterveld, while small western and eastern portions fall within the Critically Endangered Cape Flats Sand Fynbos and a small southern portion falls within the Critically Endangered Swartland Shale Renosterveld. According to the Red List of Ecosystems dataset (2022), the southern and western portions of the study area is located within a threatened ecosystem - the Swartland Granite Renosterveld with an endangered threat status. Small, isolated patches of the study area is located within threatened ecosystems: Cape Flats Sand Fynbos (CFSF) and Swartland Shale Renosterveld (SSR), both of which are considered critically endangered.

Three broad floral habitat units were identified for the study area (Figure 14):

1) Renosterveld Habitat: Alien Invasive Plant (AIP) infestation and edge effects have reduced the habitat potential for many fauna types, but remaining fragments are still offer habitat of varied structure and floral diversity suitable for many fauna due to its floral richness.

2) Freshwater Habitat: Consists of modified wetlands, artificial impoundments, a canalised watercourse and other ephemeral drainage features, plays an important role in supporting water dependant species, provides more opportunities in terms of foraging for many fauna and is an important corridor within the largely modified landscape.

3) Modified Habitat: Includes areas where vegetation is significantly degraded or entirely absent because of agriculture, households, and mining. Some pockets of severely invaded portions (by Port Jackson) provide valuable shelter for fauna, and some areas particularly abundant in avifauna. Forage potential for fauna and avifauna is anticipated to be intermittent within the habitat because of monoculture cultivation and the homogeneity of the remaining unit.

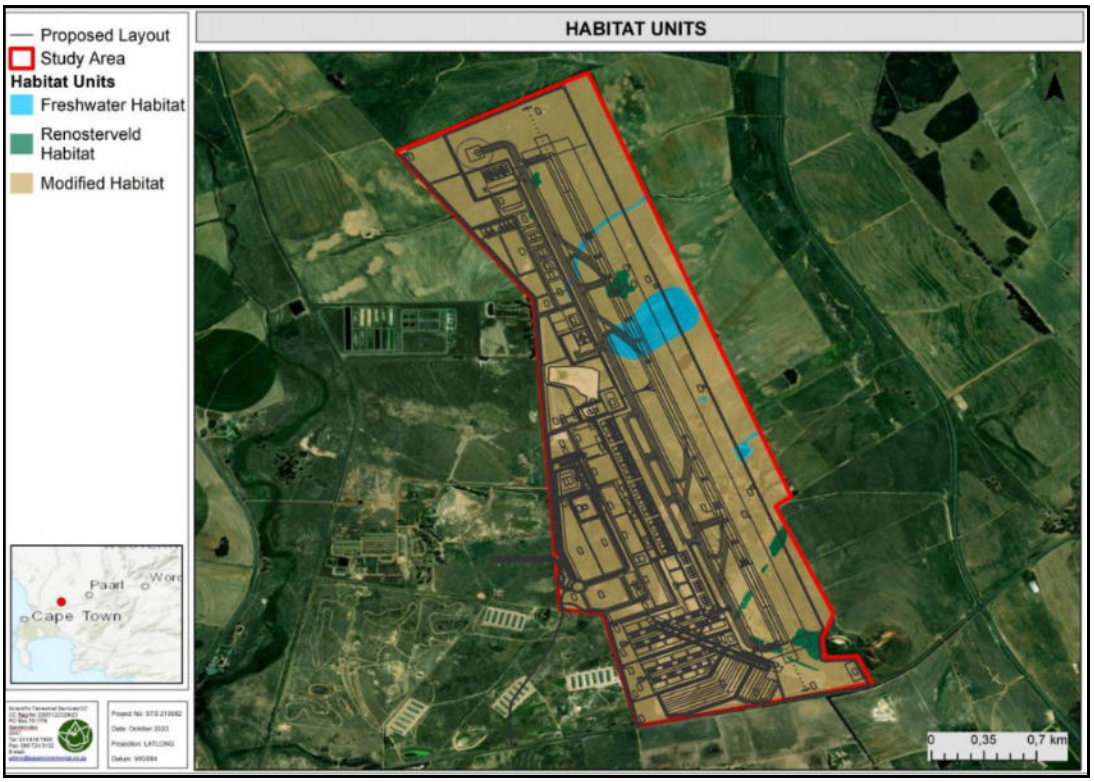

Figure 14: Habitat units encountered within the study and focus area (STS, Faunal and Avifaunal Scoping report, Oct 2023).

The following protected areas are located within 10km of the study area:

- Joostenbergskloof Conservation area,
- Joostenberg Hill Conservation area,
- Botterblom Nature Reserve,
- Durbanville Nature Reserve,
- Uitkamp Wetlad Nature Reserve,
- Joostenberg Private Nature Reserve (Informal),
- JN Briers Louw Nature Reserve (formal), and

- Cape Winelands Biosphere Reserve.

In terms of species diversity and habitat integrity mostly commonly occurring species were observed for the mammal, herpetofauna, invertebrate and avian assessment, and only SCC, *Grus paradiseus* (Blue crane) was observed. The study area is largely cultivated land with reduced primary productivity and floral richness, and most secretive and rare fauna have emigrated to areas with more suitable natural vegetation. This results in a largely intermediate to moderately low diversity of mammals, invertebrates, herpetofauna and avifauna.

The remaining portions of Renosterveld habitat provided habitat for breeding and foraging for most common fauna and is the most valuable from a faunal perspective and considered of intermediate sensitivity. The Freshwater habitat provides valuable habitat to water dependant species, and at the same time maintains ecological functions and faunal movement corridors, so is considered of intermediate sensitivity. The Modified Habitat is considered of moderately low sensitivity, however, as it makes up largest part of the site it is anticipated to be utilized for foraging by most faunal species. Refer to Figure 15 below.

According to SAS the artificial impoundments and agricultural drains mapped by FEN "*are not considered to be natural features, though the artificial impoundments will likely provide seasonal breeding localities for amphibians as well as a source of drinking water for other faunal species in the study area. The agricultural drains may be used by smaller species as movement corridors, though they are not considered of increased importance or sensitivity from a faunal perspective.*"

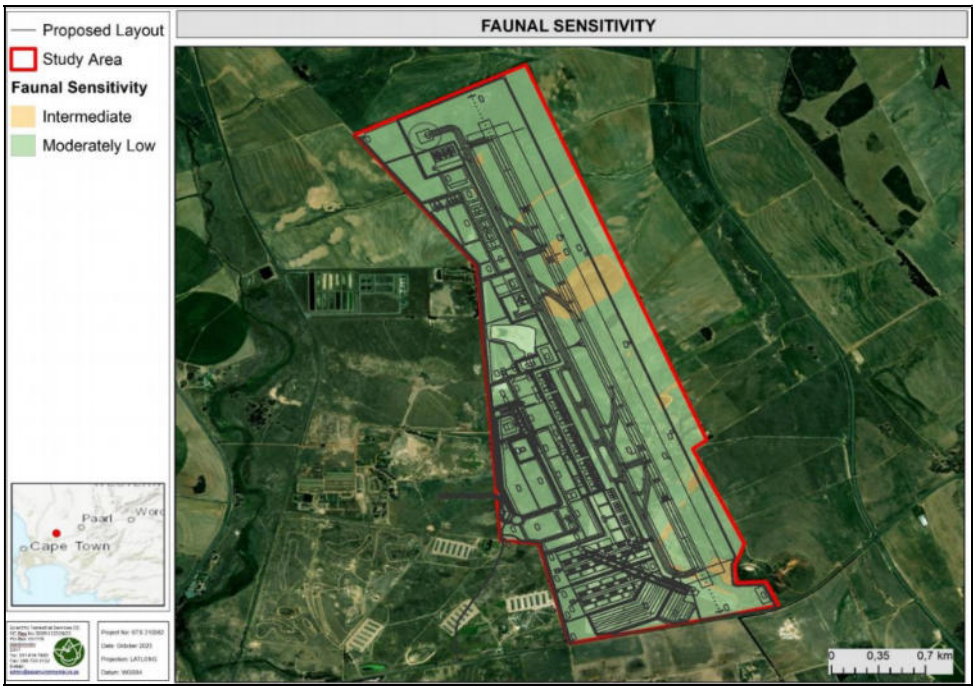

Figure 15: Faunal habitat sensitivity map for the study area (STS, Faunal and Avifaunal Scoping report, Part B, Oct 2023).

1.2.4 Socio-Economics

The CWA is in a rural area within the City of Cape Town Metro, which is the capital city of the Western Cape Province, and acts as legislative capital for South Africa. The CoCT consists of 116 wards, of which CWA is located within the Northern District's Ward 105.

1.2.4.1 Socio-Economic Overview of the City of Cape Town Municipality

The CoCT economy contributed approximately 72% to the economy of the Western Cape Province in 2020. In terms of absolute numbers, the CoCT economy generated R268 048 million in GVA at constant prices relative to R372 308 million recorded for the Western Cape Province. The GVA contribution of the CoCT economy to the Western Cape Province decreased from 72,98% in 2005 to 72% in 2020. The CoCT economy grew off a solid base by 1,65% per annum from 2005 to 2020, or 27,89% over the 15 years despite the impact of the COVID-19 pandemic.

The largest sector of the CoCT economy was Finance, Insurance, Real Estate and Business Services sector, followed by Wholesale and Retail and Manufacturing. Combined, these three sectors contributed almost 64,20% of the total GVA generated by the CoCT economy in 2020, an increase of 0,65% from 2005. The Finance, Insurance, Real Estate and Business Service sector has remained the largest contributor to the CoCT GVA over the 15 years of the analysis. The Manufacturing sector's contribution decreased from 17,26% in 2005 to 14,09% in 2020, whereas Finance, Insurance, Real Estate and Business Services increased their contribution to GVA from 30,21% in 2005 to 35,05% in 2020.

To understand whether sectors are contracting or growing, it is useful to consider the overall and annual growth rates and to compare those to the Western Cape Province within which the CoCT economy functions. The Western Cape Province and CoCT economies grew in nominal terms by 1,75% and 1,65% per annum respectively, from 2005 to 2020. The Agriculture, Hunting, Forestry and Fishing, and Community, Social and Personal Services sectors in the CoCT economy achieved higher growth rates than the province over the period 2005 to 2020.

The Agriculture, Hunting, Forestry and Fishing, Finance, Insurance, Real Estate and Business Services, and General Government sectors demonstrated the highest annual growth rates for the CoCT over the period 2005 to 2020. Although the Manufacturing sector grew only by 0,28% per annum between 2005 and 2020, its contribution to GVA declined by 18,41% from 2005 to 2020.

1.2.4.2 Sector analysis of GVA contributions

An assessment of the larger sectors suggests that the contribution of several of the sectors (such as Wholesale and Retail and Transport, Storage and Communication) declined slightly in the CoCT economy from 2005 to 2020 in favour of Finance, Insurance, Real Estate and Business Services, which increased its contribution to GVA of the CoCT economy by 16.02% over the period, and Community, Social and Personal Services, which increased its contribution by 20.69%. The Manufacturing sector showed a decline in its contribution to GVA, i.e., 17,26% (2005) compared to 14,09% (2020). The contribution of the sectors to GVA in the CoCT and the Western Cape Province remained more or less in the same proportions

whether the sector contribution increased or declined. This is to be expected since the CoCT contributes 72% to the GVA of the Western Cape Province.

A synopsis of the data suggests that three sectors increased their contribution to GVA of the CoCT economy, while seven sectors indicated a declining contribution. The trend emerging across the province is similar with only two sectors increasing their GVA contribution to the provincial economy, i.e., Finance, insurance, real estate and business services and Community, social and personal services. The concern with this trend is the reduced employment levels within the more labour-intensive sectors of the economy. A greater focus on sectors with a service orientation has emerged over the 15 years of the analysis, which are invariably low employment creators compared to construction and manufacturing.

The GVA sector contributions to the CoCT together with the annual and period growth rates for 2005 and 2020 were assessed. Among the 10 classified sectors, eight sectors indicated an annual increase in economic activity with the minor economic sectors of Mining and Quarrying and Electricity, Gas and Water Supply indicating a year-on-year decline from 2005 to 2020. The declining trend in the contribution of the Manufacturing sector to GVA (14,09% in 2020 versus 17,26% in 2005) is concerning due to the labour-intensive nature of the industries that generally form part of this sector. The analysis also demonstrates that the Manufacturing sector is declining in favour of increases in Finance, Insurance, Real Estate and Business Services and Community, Social and Personal Services, which alludes to a greater focus on service orientation.

The **primary sector** of the CoCT economy includes Agriculture, Hunting, Forestry and Fishing activity and Mining and Quarrying. The primary sector contributed 1,66% to the GVA of the CoCT economy in 2020, which is slightly up from 1,64% in 2005. Agriculture is the largest contributor to the GVA of the Primary sector with a sector contribution of 81,81% in 2005, increasing to 88,89% in 2020.

The **secondary sector** of the CoCT economy includes Manufacturing, Construction and Electricity, Gas and Water Supply. The secondary sector contributed 23,44% to the GVA of the CoCT economy in 2005, while the contribution to GVA decreased to 19,99% in 2020. The contribution of the Manufacturing sector to the secondary sector GVA decreased from 73,64% in 2005 to 73,39% in 2020.

The **tertiary sector** of the CoCT economy includes Trade, Repairs and Hospitality, Financial Institutions, Real Estate and Business Services; Community, Social and Personal Services; and Government Services. The tertiary sector contributed 74,92% to the GVA of the CoCT economy in 2005; this increased to 79,14% in 2020.

Government Services are included as part of the tertiary sector for the analysis. The analysis suggests that the contribution of Government Services to the GVA of the tertiary sector increased from 13,48% in 2005 to 15,39% in 2020.

1.2.4.3 General employment trends:

A comparison of total employment indicates that the CoCT contributed 62,58% to total employment of the Western Cape Province in 2020, while overall employment increased by 33,01% between 2001 to 2020 in the CoCT economy.

The primary, secondary and tertiary sectors contributed 2,73%, 16,81% and 80,46% to total employment in the CoCT economy respectively, in 2020, while the Western Cape Province saw employment contributions of 10,08%, 15,54% and 74,39% from the primary, secondary and tertiary sectors, respectively.

The strong growth in the tertiary sector was offset by negative and low growth in employment in the primary and secondary sectors of the CoCT economy respectively. Strong employment growth was recorded in the tertiary sector with an increase of 44,93% over the period 2001 to 2020, or an annual compounded growth of 1,97% per annum. The Western Cape Province experienced similar trends, with a decline of 27,55% recorded for the primary sector and increases of 5,56% and 52,90% for the secondary and tertiary sectors, respectively.

In terms of employment growth by sector in the CoCT and specified periods pre-2008, 2008 - 2011 and post-2011, the tertiary sector shed the fewest number of jobs with a decline of 0,39% from 2008 to 2011. The secondary sector and primary sector of the economy shed jobs with declines of 16,21% and 9,01%, respectively, over the period 2008 to 2011. Post-2011, all three sectors clawed back all or some of the lost employment in the previous period, achieving an increase in employment of 13,89%, and 8,95% over the period 2012 to 2020 for the primary and tertiary sector, respectively. However, the secondary sector had not recovered all the employment lost during the recessionary period by 2020, which is a concern as stated previously, with specific reference to the labour-intensive industries.

The CWA development will specifically benefit the secondary and tertiary sectors of the Western Cape economy. However, all economic activities associated with the development during construction and operations impact the primary, secondary and tertiary sectors of the economy with a requirement for raw materials (e.g., sand mining), construction activity (e.g., bricks, cement, etc) and business services (e.g., professional services).

1.2.5 Heritage (Cultural, Archaeological and Visual)

1.2.5.1 Cultural:

The South African Air Force established the Fisantekraal airfield in 1943, and it was used by Lockheed Ventura bombers for anti-shipping and anti-submarine search and attack. This use continued until the war ended in 1945. After that period, it operated as an airfield under state control with facilities leased for private pilot training, until it was transferred into private ownership in 1993.

There are only four old structures at the northern end of the site which were built during WWII as part of the airport's defences and which have some interest as such (three are disused and derelict, one of which

is no longer roofed; and the one building still in use was converted into two workers' dwellings some years ago). It appears that these four buildings and the landing-strips are all that remains from the initial WWII construction; these four and just one other, a large hangar at the centre of the site (removed before 1968), appear on the 1953 aerial photograph.

It was concluded that the airfield is an interesting relic of war-time need and the urgency of providing for defence of the coastline. He stated that the war-time airfield is incomplete, and the site includes only four structures and the landing-strips of that defensive infrastructure. Further, the four structures are derelict and unused; and, more importantly have no special significance or meaning; and, this historical interest apart, the landing-strips have functional significance only.

Two homesteads on the remainder of Farm 474 and on the remainder of Farm 724 was already in existence in 1953 (refer Figure).

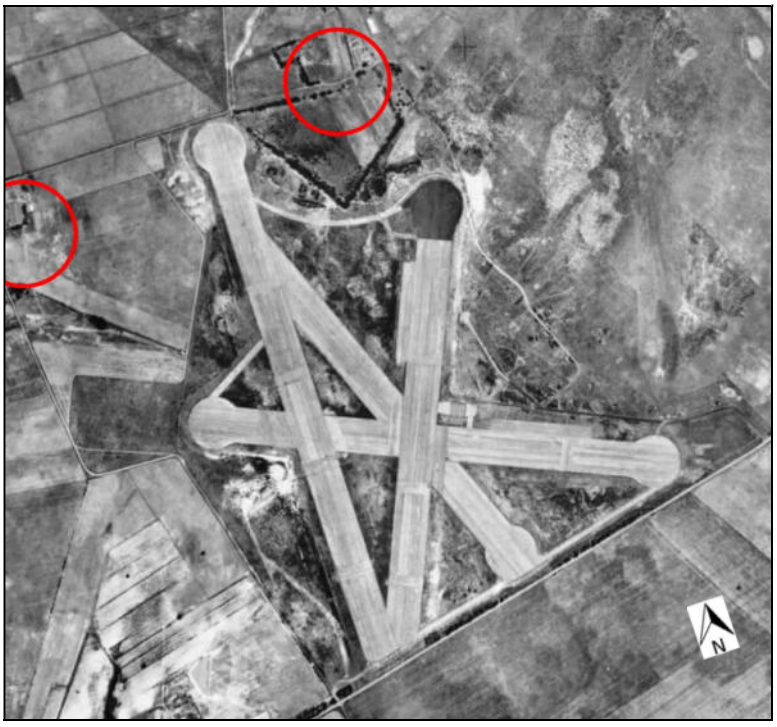

Figure 16: 1953 aerial photograph showing the two farmsteads to the north of the airfield (Aikman Associates, Heritage Baseline Study, Oct 2023).

1.2.5.2 Archaeological:

Early Stone Age (ESA), Middle Stone Age (MSA) and Later Stone Age (LSA) resources have all been recorded in the Klipheuwel, Durbanville and Joostenburg area (Halkett & Hine; Kaplan 2019, 2018, 2012, 2006a, b, 2005, 2003a, b, 2004, 2002, 2001, 2000, 1999,). The Cultural Landscape is dominated by implements assigned to the ESA (handaxes, Large Cutting Tools (LCT), angular chunks, cleavers, choppers, cores and flakes made almost exclusively on round quartzite cobbles). In some areas very few/no archaeological remains have been found (Kaplan 2003b, 2001, c, d, e, 2002b). Most surveys have been

undertaken in previously disturbed farmland and transformed landscape, within and on the edges of rapidly developing urban areas and gated estates. In every study conducted the remains have been graded as having low (Grade lllC) archaeological significance due to the isolated, disturbed and transformed context in which they have been found.

Therefore, the area identified for upgrading and development of the Cape Winelands Airfield does not constitute a sensitive archaeological landscape. Apart from the existing CWA, almost the entire surrounding farms, including the recently acquired properties, have been fundamentally transformed by agriculture and its associated infrastructure.

1.2.5.3 Visual:

The area considered as the receiving environment was delineated as approximately 8km around the proposed development site, as the receiving environment further than 8km will be negligibly affected by the proposed development in terms of visual and aesthetic considerations. The topography of the study area is characterized by shallow river valleys and gently rolling hills, most of which are under cultivation, giving way to agri-industrial land uses further south and ultimately predominantly suburban areas within the urban edge of Durbanville. Topographic relief generally increases westward towards the Durbanville hills and decreases eastward into the sloping flats of the greater Mosselbank river valley and the Agterpaarl / Paardeberg Cultural Landscape.

The receiving environment generally enjoys long views towards Paardenberg (northeast), Paarl Mountain (east), Simonsberg (southeast) and the Boland Cape Fold range running from Somerset West northward in the distance. The southern portions of the receiving environment also enjoy distant views towards Table Mountain.

The are several bulk infrastructure features present in the study area - a few Eskom servitudes containing overhead powerlines, distribution lines, sub-stations and telecommunication infrastructure. These and other infrastructural, industrial, and semi-industrial features contribute to visual clutter and discordant elements visible in the landscape, such as the masts of the Goedverwacht Radio Station, the Fisantekraal WWTW, various poultry batteries in the area (concentrated around Joostenbergkloof), the Durbanville Industrial Park, and mining-related land uses such as Apollo Bricks, industries such as Namchar and the local feedlots. These are generally concentrated along the parallel railway line and Klipheuwel road with Fisantekraal's expanding residential areas being the nearest in proximity to the subject site.

The predominant land use is agricultural, with areas of agri-industrial, peri-urban / industrial (concentrated along the Klipheuwel corridor) and urban/residential in the south (within the Fisantekraal settlement and the Durbanville urban edge). The land use mix is typical of areas at the outskirts of the Cape Town Metro and associated with the Cape Winelands landscape.

Land uses within 5km of the project site includes the following:

- Agricultural activities surrounding the site, with areas that are more exclusively under cultivation located in the hinterland and within cultural landscape areas. Vineyards and wine estates are

located on the slopes of the Durbanville Hills and foothills, while grazing and grain dominate the open fields to the west, east and north.

- Schools and community facilities are located within Fisantekraal.
- To the south and east of the subject site is the Joostenberg Vlakte, a semi-agricultural area that is characterized by large plots and smallholdings, equestrian farms, various guest houses and strong landscape and settlement patterns created by tree avenues.
- Along the Klipheuwel corridor, there are industrial, agri-industrial and mining activities.

In general land use intensifies and densifies southward and southwestward, with pockets of development within the agricultural landscape (such as the Durbanville industrial park and Fisantekraal residential area).

The landscape to the north and east of the subject site is more agricultural and rural (except for a concentration of agri-industry in the Joostenbergkloof area), while areas to the west tend to be more mixed. The study area receiving environment can be described as rural agricultural, containing isolated areas with land uses of mixed density and nature, and a band of peri-urban agricultural and industrial activity in the southwestern portions of the study area that have been earmarked for extensive future development.

Natural vegetation in the area has been modified and transformed completely through cultivation of the land and urban development. Remnant natural vegetation, if any, would typically be associated with the river valley bottoms in the study area. Local vegetation patterns are not uniform throughout the study area, given the wide range of land uses. Within the agricultural areas, vineyards and paddocks are sometimes framed by avenues of mature trees (typically beefwood, pines and Eucalyptus species). These avenues are often isolated and associated with farmsteads and yards/werf areas, or entrance roads.

The proposed development must be seen within the context of an area which is currently and will in future undergo significant development, which is most likely to intensify in the short, medium, and long term and supported and/or championed by the provincial, municipal and district policy frameworks.

According to the Northern District Plan, the study area forms part of the urban periphery of CoCT where extensive low-density development is expanding the residential "hinterland". This trend has been an increasing feature in the study area for several years, with the most rapid development happening over the past 10 years.

The Northern District plan also identifies the extension of the emerging industrial area at Fisantekraal as a major opportunity in the district to reinforce service industrial areas that are in proximity to activity routes and development routes, and to respond to the urgent need for centres of employment. Future development plans include extensive urban infill within the Northeastern Growth Corridor in Sub- district 3, which is located to the southwest and south of the subject site.

The vision is to establish a growth corridor along the Malmesbury rail line which is primarily focused on higher density integrated and inclusionary housing development, where adequate employment opportunities are identified as well as the required public infrastructure being developed simultaneously.

Figure 17 shows the proposed CWA expansion site in the context of approved future developments within the study area and immediate vicinity. The proposed Bella Riva development, the Fisantekraal industrial node, the high-density residential development within the urban edge and the Greenville Garden City development across the R312 will erode the rural agricultural landscape character within these parts of the receiving environment, and impact significantly on visual quality and coherence of the scenic routes and peripheral areas of the surrounding cultural landscapes.

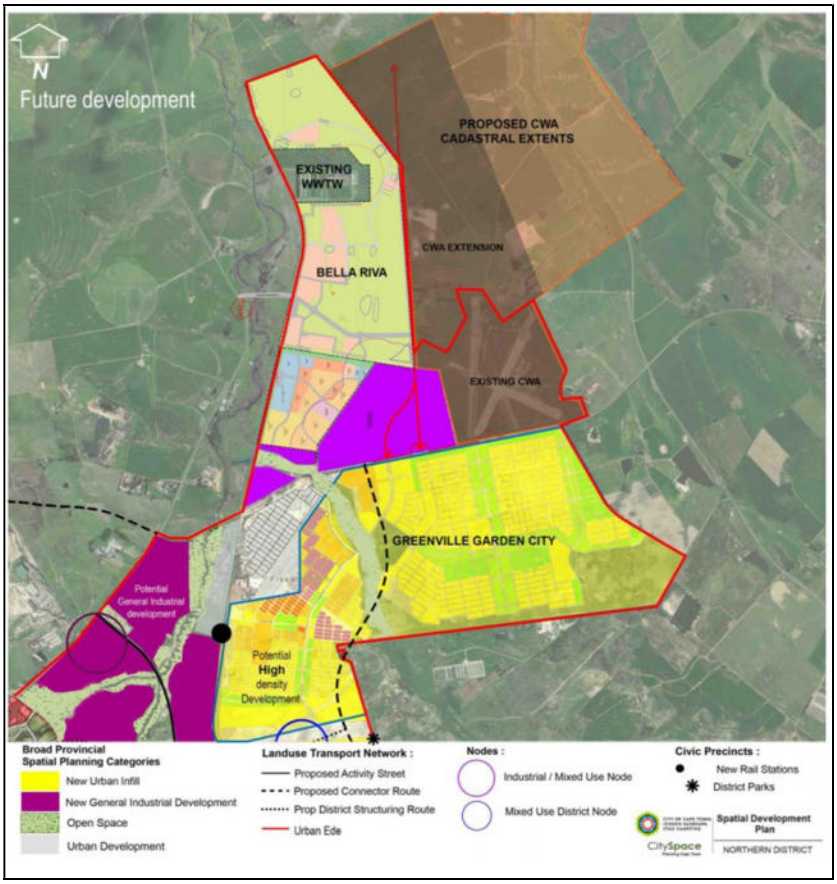

Figure 17: Map showing proposed future development in the study area (Filia Visual, Visual Scoping Report, Sept 2023).

Figure indicates the possible subsequent changes to the extents and boundaries of the cultural landscapes, based on cumulative development and conurbation (merging of suburb areas) that will result in the transformation of these landscapes.

Their delineation on a map should therefore follow along the new urban edge to portray the reality on the ground more accurately. These observations place additional emphasis on the imperative for the CWA

development to demonstrate a sensitive response to the visual resources and sensitive viewers outside of the urban edge within the (reduced) Cultural Landscape areas.

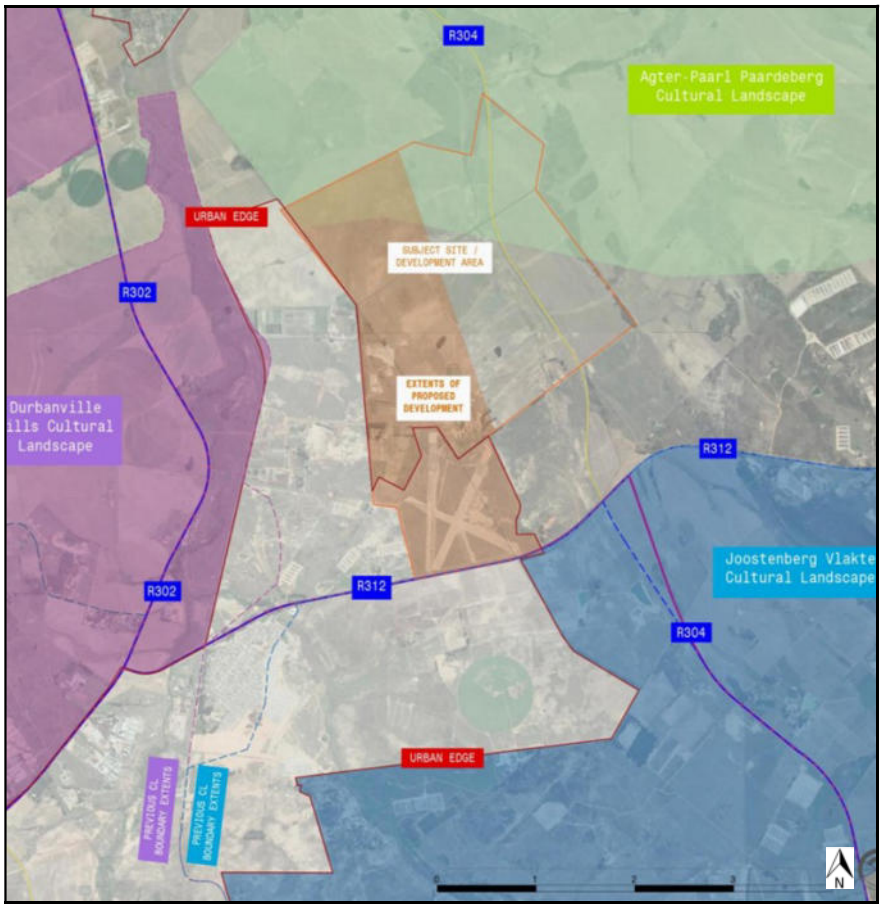

Figure 18: Possible effect of future developments on the extents of the cultural landscape layout in the study area (Filia Visual, Visual Scoping Report, Sept 2023).

Evaluation of the Visual resource in terms of Aesthetic value

Four areas were identified within the study area as areas that can be described together as **Landscape Character areas (LCA**). This was based on topography, vegetation pattern (agriculture) and land use as primary informants, along with fieldwork observations and the existing classifications of relevant policy and planning documents. Refer to Figure 19 below.

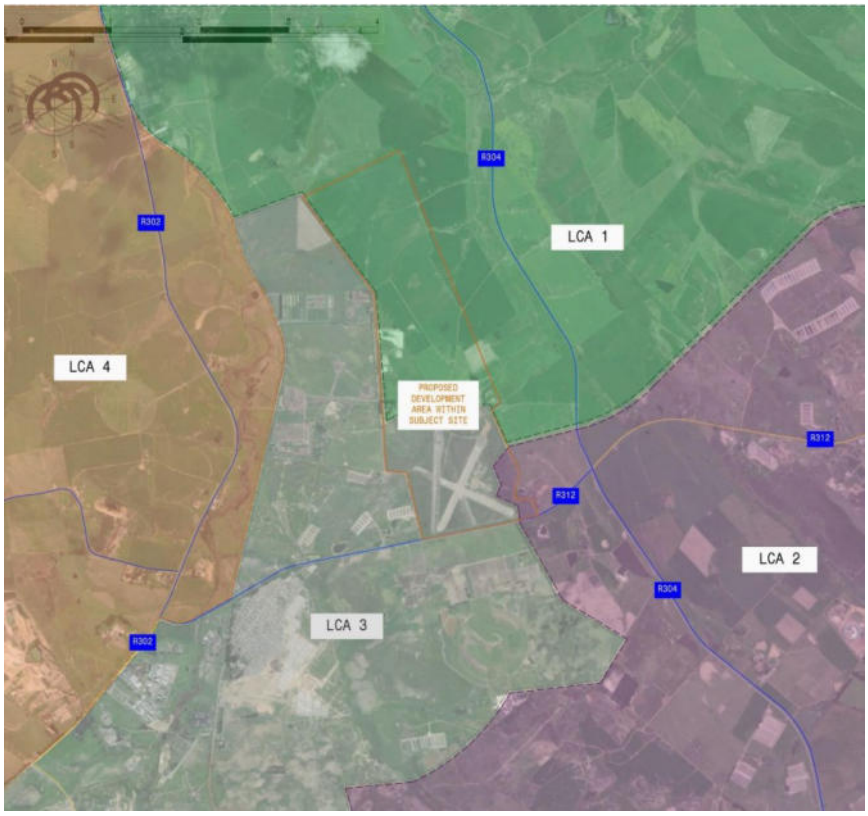

Figure 19: Graphic illustrating the Landscape Character areas in the receiving environment (Filia Visual, Visual Scoping Report, Sept 2023).

LCA 1: Landscape Character area 1 is situated to the north of the subject site and consists of a predominantly rural agricultural landscape of grazing and grain fields containing very few built elements and sparsely interspersed landscape elements (tree avenues associated with farm werf areas, property boundaries and limited copses of natural vegetation along river courses). Topographically, the LCA is comprised of low rolling hills and gently undulating fields, with long views towards the encircling mountains to the east. This LCA has a strong sense of place, being identified as the AgterPaarl/Paardeberg Cultural Landscape according to the Northern District plan.

LCA 2: The Joostenberg Vlakte Landscape character area is a semi-agricultural area characterized by large plots and smallholdings, equestrian farms, various guest houses and strong landscape and settlement patterns created by tree avenues. It is gently sloping, but generally flat topographically, with some intensification of topographical variance in the northeastern parts. Although not densely developed, views within the smallholding areas are typically near and generally limited to the foreground because of the amount of existing vegetation, buildings, and other visual obstructions. In the agricultural areas, topography becomes more variable, and elevated areas along the R304 and towards the east of the LCA open to long, dramatic vistas of the Simonsberg and Stellenbosch mountains in the south and the Peninsula Mountain range in the southwest. This LCA has a strong sense of place, being identified as a Cultural Landscape according to the Northern District plan.

LCA 3: Urban and suburban residential areas, peri-urban industrial areas (the Durbanville Industrial Park and local brick manufacturing plants), future high and medium density formal and informal residential areas and large tracts of undeveloped land are found within Landscape Character area 3. The visual quality of these areas is generally low, due to large portions being either environmentally degraded or because of the presence of discordant elements in the field of vision (including the local WWTW, Eskom transmission power line and substation infrastructure, developments under construction and industrial/semi-industrial activities along the Klipheuwel corridor and railway line).

LCA 4: Landscape Character area 4 contains the rural agricultural areas outside of the urban edge from the Groot Phesantekraal wine estate and upwards towards Spes Bona and extending to the areas east of Klipheuwel. This landscape comprises mostly of the Durbanville Hills Cultural Landscape. This area enjoys peripheral views onto the residential and industrial areas alongside in its southern parts but maintains long views over vineyards and the patchwork of crops towards the Boland Mountain range as a rule throughout. Dominated by agricultural land uses, the scenic quality of this area is notable, with pastoral agricultural scenes and an ever-changing seasonal colour palette, moving from an agricultural landscape dominated by viticulture in the south, to one of predominantly wheat and pasture in the north. Topography in this area consists of gently rolling hills and small shallow river valleys.

The study area and receiving environment can be described as having a mixed landscape character and sense of place, which are generally identifiable as consistent with the boundaries of the LCA's.

- LCA 1, 2 and 4 retain predominantly rural and agricultural characteristics,
- LCA 3 is dominated by suburban and industrial developments and other land uses that generally erode scenic quality within the context of the Cape Winelands region's peri-urban areas.

1.2.6 Agriculture

The CWA site is bordered by the R312, with several agricultural activities towards the East and North. The entire study area is situated within Land Type Db 41 with prismacutanic, pedocutanic and/or gleycutanic diagnostic horizon dominant and the B horizons normally non-red. These are soils where the non-red B-horizon (subsoil) has a strong to very strongly developed structure, usually also with a high clay content, making the soil mostly imperfectly to poorly drained and the strong structure in the subsoil places a restriction on root development. Because most of these soils have a sandier topsoil on a clay subsoil, they are usually sensitive to erosion due to poor management practices are applied (vegetation cover removed through overgrazing of natural veld or by cultivation).

According to the Land Type memoirs the distribution of soil forms per terrain unit for Land Type Db41 varies between 1, 3, 4 and 5 (refer Figure).

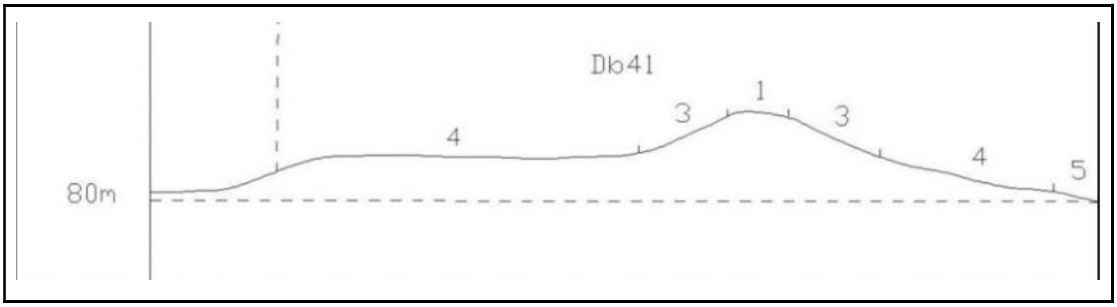

Figure 20: Typical terrain form of Land Type Db41 showing terrain units present (Agri-Informatics; Agro-Ecological Scoping Report, Sept 2023).

The reconnaissance soil survey that was conducted as part of this study (refer Figure), correlate with the Land Type information. Prismacutanic, pedocutanic and/or gleycutanic diagnostic horizons are dominant in large sections of the study area, with deep bleached or marginally yellow apedal sand also common in places.

The climate (temperate dry, hot summer; marginally maritime; average annual rainfall is 532mm) amounts to crop evaporation of 1178mm/annum (818mm during the summer months) which indicates a rainfall deficit in summer and implies that, for most perennial tree crops, irrigation of at least 5000m^3/ha will be required during summer. Wine grapes will require approximately 3 000m^3/ha.

The winter rainfall of 438mm is regarded as adequate for dry land (non-irrigated) winter cereal production, provided that the soil properties are sufficient to retain groundwater between rainfall events. The study area has very limited access to water that can be used for irrigation with most irrigation water coming from borehole supply.

The study area is situated in the southeastern corner of the Homogeneous Farming Area (HFA) known as the "High Rainfall Sowing Area" of the Swartland with a landscape almost fully converted to agriculture. Agricultural activity is mostly small grain production in combination with sheep and/or cattle farming, with no irrigation cultivation due to the limited irrigation water available in the area. Other farming activities in the vicinity includes Braam's feedlot and County Fair chicken farms.

Figure 22 illustrates the extent of the cultivated areas and other features within the study area.

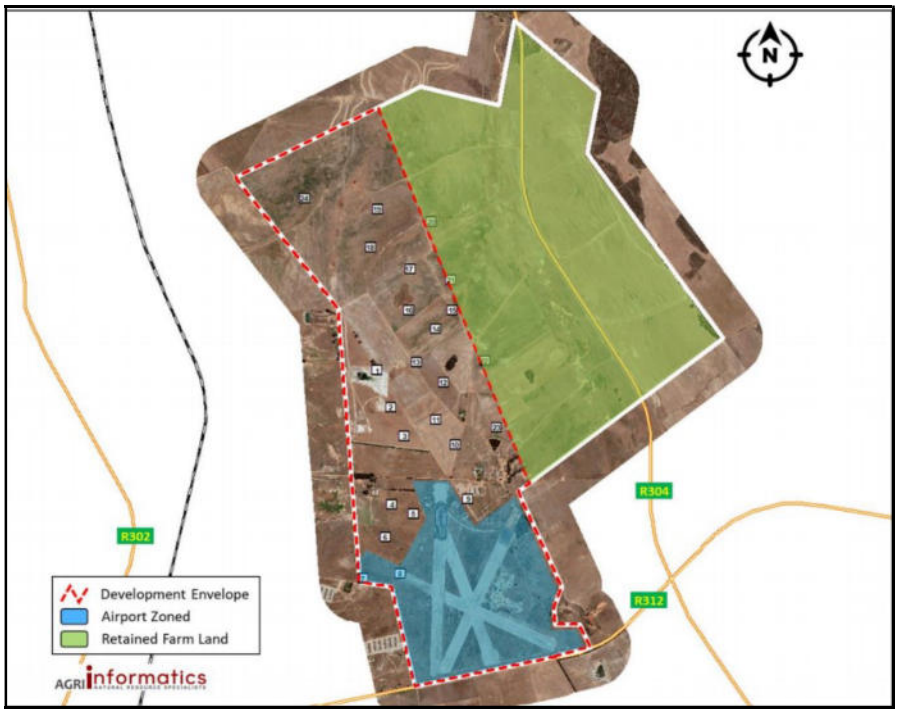

Figure 21: Soil profile pit positions used during the soil survey (Agri-Informatics; Agro-Ecological Scoping Report, Sept 2023). Note the green area will remain Agriculture.

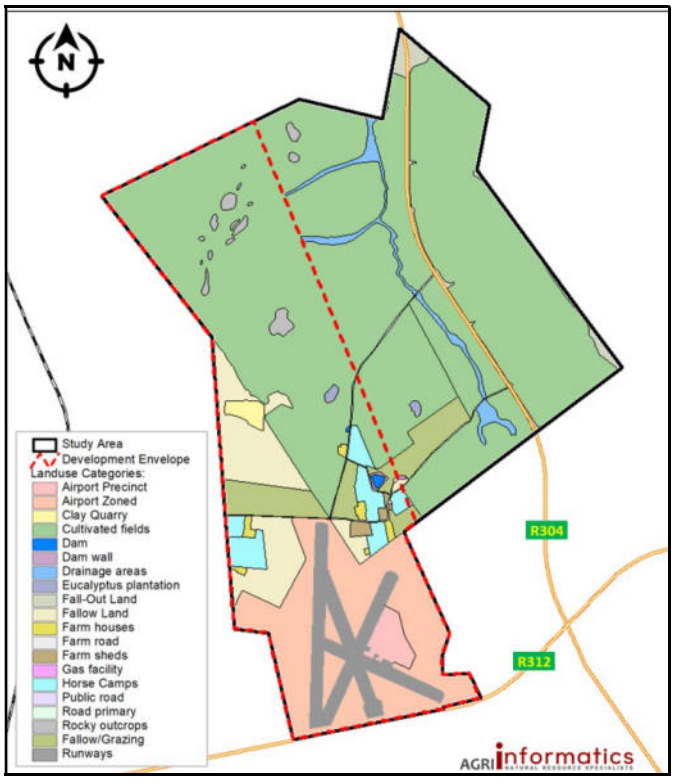

Figure 22: Land use classes of the study area (Agri-Informatics; Agro-Ecological Scoping Report, Sept 2023).

1.2.7 Civil Aviation

Current aviation activity at the airport consists of flight school operations and other unscheduled general aviation flights. These includes private owner-pilots and limited charter operations in light fixed-wing aircraft, as well as helicopters, gyrocopters, and microlights. All flights operate under visual flight rules (VFR) and make use of the runway 05-23 and 14-32 depending on wind conditions. Flight activity at the airport averages approximately 100 air traffic movements (ATM; take-offs and landings) per day, varying with weather conditions, seasons, and day of the week.

Other aviation-related activities taking place at the airport include the rental of hangar space for privately-owned aircraft and the sale of aviation gasoline (Avgas 100LL). There are currently 34 hangars on the site that are in use by various private aircraft owners, two flight schools (Cape Town Flight Training Centre and Aerosport) and small aircraft operators, such as a crop sprayer and aerial advertising firm. There are no military/defence-related activities taking place at the airport.

1.2.7.1 Meteorological conditions related to aviation

According to the Civil Aviation Report *for the purposes of airport planning and design, the aerodrome reference temperature is defined by IACO as the monthly mean of the daily maximum for the hottest month of the year, where the hottest month is the month with the highest mean temperature. Based on this the aerodrome reference temperature was calculated to be 24.1 °C*. Rainfall data was based on 13 months ending March 2022, which illustrated that the overall rainfall trend at the site is relatively like the public domain data, with May, June, July, and August being the wettest months of the year.

Wind direction and speed play an important role in the design of the runway orientation and the usability of the runway should be not less than 95%. Cross winds of a certain speeds as specified in the standards, will make the runway unusable for certain aircraft depending on their size. According to available information for the site and within the area a more common wind speed of 5 to 10m/s is experienced in the Southeast direction and slightly stronger winds in the Northwest direction on less common occasions.

1.2.7.2 Aerodromes

Most of the airstrips located within the area suggest the usage of local farmers and / or wine producers in the area. The following 24 airports/helistops/airstrips have been noted in a 20nm (+/- 37 km) radius from Cape Winelands Airport:

Table 4: Aerodromes within 20 nautical miles radius from CWA (NACO & ATNS; Civil Aviation Scoping Report, Sept 2023).

#	Airport/Airstrip/Helistop	Distance from CWA	Surface, facilities and usage	Map Identifier
1.	Grootfontein	+/- 2nm	1 x Gravel/Hanger/Local Farmer	R 021
2.	Unknown airstrip (33°50'52.23"S 18°47'54.99"E)	+/- 5nm	2 x Gravel/Building/ Local Farmer	unknown

3.	Altona	+/- 6nm	1 x Gravel/No Facilities/ Local Farmer	Altona
4.	Coutermanskloof	+/- 8nm	1 x Gravel/No Facilities/ Local Business	R 022
5.	Wintervogel Flight Park	+/- 9nm	2 x Gravel/Frequency, Hangers & Buildings/ Local Farmers & Training	R 074
6.	Morningstar (WCMC Club)	+/- 9.6nm	1 x Asphalt/Frequency, Hangers & Buildings/ Local & Training	R 020
7.	De Waal	+/- 11nm	1 x Gravel/No Facilities/ Local Farmer	De Waal
8.	Klipvlei Airfield Park	+/- 12nm	1 x Gravel/No Facilities/ Local Farmer	Klipvlei Airfield Park
9.	Good Hope INTL	+/- 12.8nm	1 x Gravel/No Facilities/ Local Farmer	Good Hope INTL
10.	Stellenbosch	+/- 13 nm	1 x Asphalt/Frequency, Hangers & Buildings/ General Aviation & Training	FASH
11.	Netcare Blaauwberg Hospital Helistop	+/- 13nm	Helipad/No Facilities/Emergency Helicopters Only	298
12.	Air Force Base Ysterplaat	+/- 14nm	1 x Asphalt/Military Facilities/Military & State usage	FAYP
13.	Cape Town International Airport – ACSA	+/- 14nm	2 x Asphalt/All Commercial Facilities/ Commercial International usage	FACT
14.	Diemerskraal	+/- 14.7nm	1 x Gravel/Hangers & Buildings/Local Farmers & Training	R 039
15.	Paarl	+/- 14.8nm	1 x Gravel/No Facilities/ Local Farmers	FAPU
16.	Delta 2000	+/- 15nm	1 x Asphalt/Hangers/ Local Farmers	FADX
17.	Black River Helistop	+/- 15nm	Helipad/No Facilities/ Local Business use	394
18.	Paardeberg	+/- 16nm	1 x Gravel/No Facilities/ Local Farmers	Paardeberg
19.	WP OES	+/- 17nm	1 x Asphalt/Hangers/ Local Farmers	WP OES
20.	V&A Waterfront Helistop	+/- 17.5nm	Helipad/No Facilities/ Local Business use	225

21.	Robben Island Airstrip	+/- 18.9nm	Airstrip is closed	
22.	Vogel	+/- 19nm	1 x Gravel/No Facilities/ Local Farmers	Vogel
23.	Craigcor	+/- 20nm	1 x Gravel/No Facilities/ Local Farmers	Craigcor
24.	Swartdam	+/- 23nm	1 x Gravel/No Facilities/ Local Farmers	Swartdam

1.2.7.3 Other civil aviation installations

Other civil aviation installations nearby the airport site include the following navigational aids and surveillance equipment. Most of these installations are located at or close to CTIA.

Table 5: Communication, Navigational and Surveillance Equipment nearby the Cape Winelands Airport site (NACO & ATNS; Civil Aviation Scoping Report, Sept 2023).

#	Communication/Navigation/Surveillance Equipment	Distance from CWA	Map Identifier	Civilian (C) or Military (M)	Source of data
1.	Navigational Aid - NDB	+/- 10.4 nm	CB	C	SA-AIP
2.	Surveillance (Radar) - Cape Town S-Band 1 MSSR (+ PSR)	+/- 13 nm	SSR_1	C	ATNS
3.	Communication – 13 x Transmitters	+/-13.1 nm	FACT TX	C	ATNS
4.	Navigational Aid - VOR/DME	+/- 13.8 nm	CTV	C	SA-AIP
5.	Surveillance (Radar) - Cape Town S-Band 2 MSSR (+ PSR)	+/- 14 nm	SSR_2	C	ATNS
6.	Communication – 13 x Receivers	+/- 14.1 nm	FACT RX	C	ATNS
7.	Communication – 6 x Local Transceivers	+/- 14.2 nm	FACT SSS	C	ATNS
8.	Communication – 7 x Local Transceivers	+/- 14.3 nm	FACT TWR	C	ATNS
9.	Surveillance - Various Multilateration sites at CTIA	13 – 14.7 nm	FACT MLAT	C	ATNS
10.	Navigational Aid - VOR/DME	+/- 18.8 nm	RIV	M	SA-AIP

Note: RIV (10) and CB (1) navigational aids have been decommissioned.

In addition to the existing installations listed in Table , the following Wide Area Multilateration (WAM) antenna sites are planned to be implemented in the near future: (GS04) Cape Town Old Radar Site; (GS05) Tygerberg; (GS07) Simonsberg; (GS08) Kanonkop; and (GS09) Hawequas.

1.3 ACTIVITY DESCRIPTION:

A detailed breakdown of the proposed development and its associated infrastructure for each of the four Precincts and Phases (Phase 1 or 2) of the development is described below:

1.3.1 Airside Precinct Development

In Phase 1, the airport will comprise of one runway, which will be at an orientation of 01-19 and a length of 3.5km and will be constructed to serve up to Code 4F instrument operations.

This runway will be shared by all operators, including scheduled commercial as well as general aviation, where intersection take-off points will be introduced on the runway to improve efficiency for general aviation operations.

The airside runway development in Phase 1 will also include, but not be limited to, airside systems such as CAT III Instrument Landing System (ILS), Precision Approach Path Indicator, Glidepath Antennas, Meteorological Systems, Airfield Ground Lighting (AGL) and Remote Digital Control Tower Systems.

The following additional developments are proposed as part of Phase 1 & 2 of the Airside Precinct:

Aircraft Parking Aprons: Passenger terminal apron; General aviation and FBO aprons; Isolation pad; Cargo apron (Phase 2); MRO apron (Phase 2).

Aircraft parking stands range from ICAO Code B up to ICAO Code F stands. As part of the Development, 11 MARS stands (21 code C equivalent stands) is foreseen. Some of these will be contact MARS stands and will be equipped with passenger boarding bridges (PBBs) and will be able to accommodate up to Code F aircraft. The other stands will be remote stands, to which passengers are bussed or can walk. In addition to this, 1 Code E cargo aircraft parking stand and 2 Code E MRO aircraft parking stands have been included.

Airside service roads will be constructed to provide access to airport assets for vehicles such as buses, ground service equipment and maintenance vehicles. An airport security fence will be erected in line with aviation security standards.

The bulk electricity supply will terminate within the CWA site in a position at a connection point comprising an Eskom local substation (final overhead pole, overhead drop-out line-fuses, medium voltage 3-core cable connection to metering substation fitted with dual outgoing feeder connections) housed in a fenced or secure enclosure (likely 5000mm by 4000mm).

1.3.2. Landside Precinct Development

The following developments are proposed as part of Phase 1 & Phase 2 of the Land Side Precinct:

Passenger Terminal Building (Phase 1): The PTB (Passenger Terminal Building) serves as the nexus of the airport's operations, connecting airside and landside areas, facilitating passenger and baggage movements, while adhering to rigorous national and international regulations. It has been designed in

accordance with the latest ICAO Annexes and the IATA Airport Development Reference Manual (12th edition, May 2022), ensuring compliance with aviation standards. The location and approximate size of the PTB have been predetermined in the airport master plan. The PTB will be a double level building with a handling capacity of 5.2MPPA and the terminal has been designed to process both domestic and international passengers.

Facilities will be designed specifically for the intended user groups and will be compliant with the relevant standards and recommended practices. These facilities will include specialised equipment and areas to facilitate check-in and bag-drop, security screening, and, in the case of international traffic, customs and emigration / immigration.

The VIP processing facility will have direct access to the airside. Government officials, VIPs and CIPs (Commercial Important Person) will be processed through the facility.

Included in the Development for Phases 1 & 2 are commercial developments, with approximately 350 000m^2 of lettable area provided for. The terminal precinct encompasses a terminal plaza with landmark hotels, and an aviation museum. Included in the aeronautical hub functions are hangars, aviation clubs, an aviation training centre, workshops, light manufacturing, logistics, warehousing, and food processing.

Additional developments proposed as part of Phase 1 & Phase 2 of the Land Side Precinct development: Petrol Service Station; Hotel; Access, egress and an internal vehicular road system; Drop and go facilities which will allow passengers to drop passengers off close to the passenger terminal building; Car rental facilities; Vehicular parking (multi-storey parking, at-grade parking); Pedestrian walkways; Substations; Billboards (indoor and outdoor, static and electronic); Droneport and vertiports; Gardens; Public transport facilities (Phase 2); Carpark/VTOL (Phase 2).

1.3.3. General Aviation Precinct

The general aviation area for Phase 1 & 2, including business aviation, is located on the south of the airport site. The FBO (Fixed Base Operators) facilities are located along a dedicated taxi lane that provides direct access to/from the main runway via the parallel taxiway. A GA (General Aviation) kerbside refuelling station for AV-gas will be developed at the furthest southern corner of the GA site. A GA clubhouse with airside views will be developed, with adjacent grass parking areas for visiting GA aircraft. The helicopter operations will be from dedicated FATOs (Final Approach and Take-off areas).

The following developments are proposed as part of Phase 1 & Phase 2 of the General Aviation Precinct: Fixed Base Operators Hangars; General Aviation Hangars; Clubhouse Area; Final Approach & Take-Off Infrastructure; AVGAS Station; Substation; Remote Digital Control Tower.

1.3.4. Services Precinct

The key airport support facilities are the aircraft rescue and firefighting (ARFF) services, airport maintenance, ground support equipment (GSE) maintenance and staging, cargo, aircraft maintenance, repair and overhaul (MRO), aircraft fuel facilities and an airport operations centre. Also included is

provision for solar PV, wind energy and a biodigester. Most of these facilities are located on the western side of the airport. All facilities are accessible from the secondary landside road system, accessed from the western entrance road into the airport site.

The following developments are proposed as part of Phase 1 & Phase 2 of the Services Precinct:

The fuel facilities (Phase 1) consist of a bulk fuel depot, a general aviation kerbside refuelling station and a commercial/retail service station. An underground fuel line from the bulk fuel depot to the aprons is also provided for in Phase 2.

Aircraft Rescue and Fire Fighting (Phase 1) - The airport will be equipped to provide a level of protection corresponding with Category 9 to meet the ICAO standards. The location of the rescue and firefighting station has been positioned close to the middle of the runway and complies with the ICAO requirements considering the response times of two minutes and not exceeding three minutes, to any point of the operational runway and any other part of the movement area.

Cargo Facility (Phase 1) - The cargo facility is planned for the handling of general and specialized cargo in a dedicated facility on airside. The cargo facility is expected to handle both belly cargo (on passenger aircraft) and full freighter aircraft and is, therefore, located close to the passenger terminal building. Initially, full freighter aircraft can make use of the main apron, as aircraft stand demand is limited during off-peak hours. A single dedicated freighter aircraft stand will be provided when passenger peak traffic starts to spread out.

The airport maintenance facilities (Phase 1) are planned in the services precinct, with access on both airside and landside.

GSE staging areas (Phase 1) are included close to the main apron. Two areas have been reserved for GSE parking adjacent to the main apron.

The location of the proposed MRO facility (Phase 1), including apron and taxiway, is in the North of the airport site. This includes one widebody aircraft parking position and associated hangar. Moreover, additional space for several additional aircraft is available on the site.

Catering Building (Phase 2) - located in the northern area of the airport, with direct airside access and landside access via the northern service entrance to the airport.

Solar PV, Biodigester and wind energy (Phase 1 & Phase 2) - Included in the Development is provision for solar PV and a biodigester as renewable energy sources. Wind energy (roof based and land based) is also being considered as an alternative.

Airport Operations Centre (Phase 1) - A dedicated Airport Operations Centre will provide space for several key airport support services such as airport offices, remote/digital air traffic control facilities, police services, clinic, airport staff facilities and emergency facilities, among other functions. Housed in this facility will also be a central facility for all government department officiating at the airport. It is envisaged

that this Operations Centre is a multi-storey building with 5 floors with access to both landside and airside on the ground floor.

Air Traffic Control Centre (Phase 1) - The upper levels of the Airport Operations Centre will also contain an entire floor dedicated to the remote air traffic control centre.

Additional developments proposed as part of Phase 1 & Phase 2 of the Services Precinct development: Potable Water Reservoir; Groundwater Treatment Infrastructure; Potable Water Pump Station; Non-potable Water Storage; Solid Waste Storage; WWTW; Substation; Cargo Apron (Phase 2).

The Site Development Plan (SDP) for the proposed development is shown in Figure 23 and 24. The SDPs and detailed plans showing the four precincts separately are included in **Annexure 3A**.

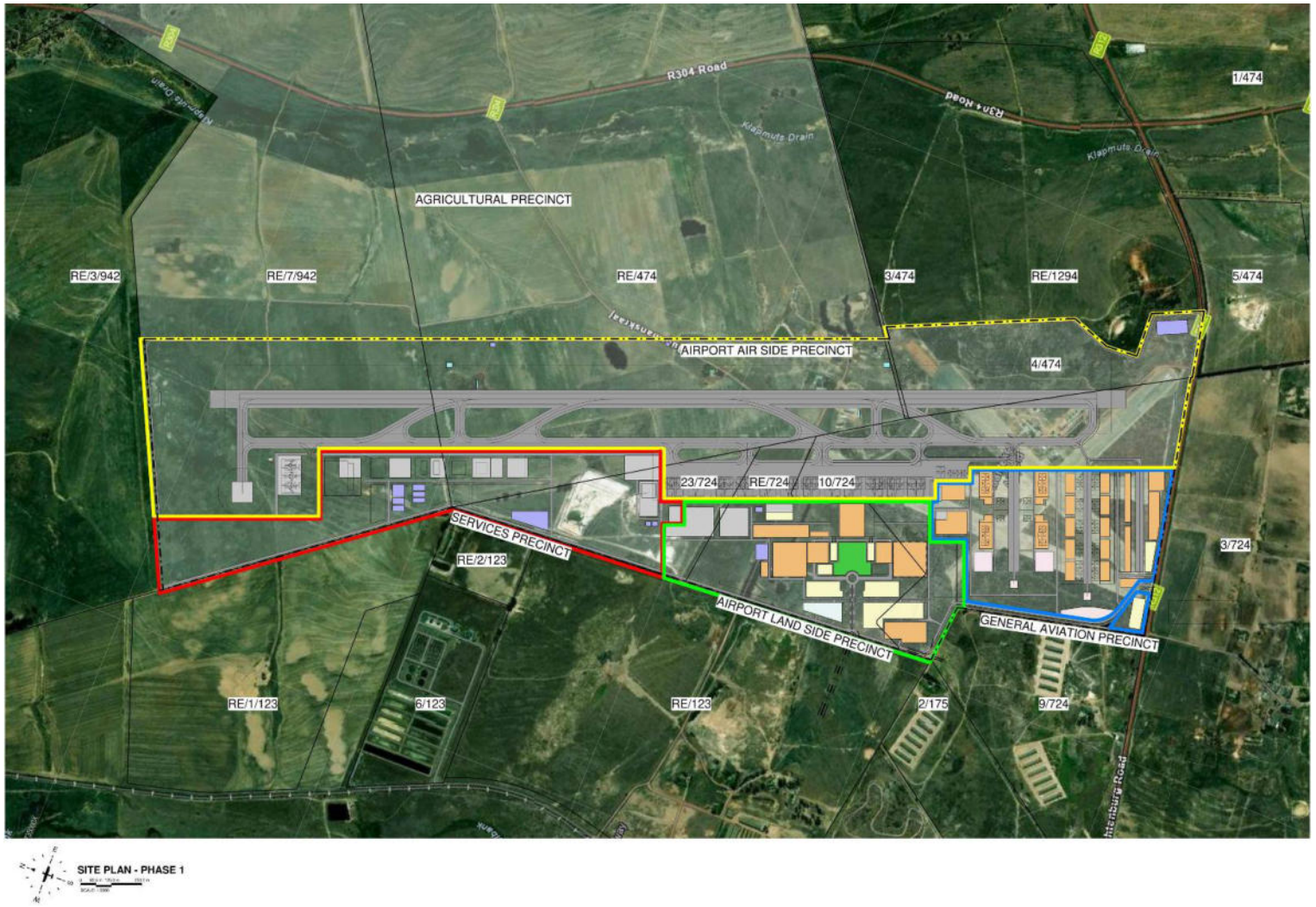

Figure 23: Proposed SDP Phase 1 (Capewinelands Aero (Pty) Ltd, August 2024).

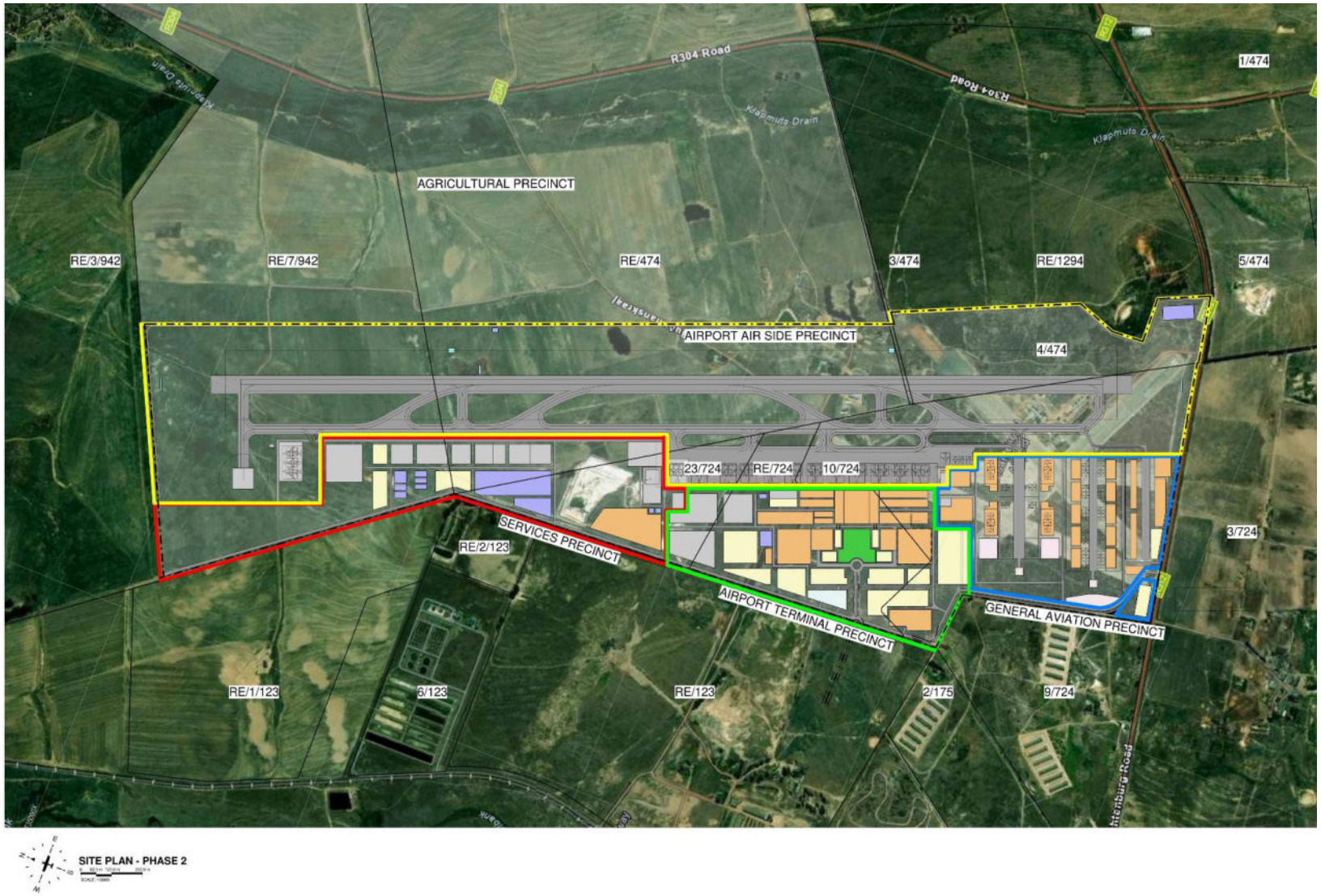

Figure 24: Proposed SDP Phase 2 (Capewinelands Aero (Pty) Ltd, August 2024).

1.4 ENVIRONMENTAL LEGISLATION:

NEMA defines the principles of sustainability and integrated environmental management forming the basis of the environmental legal framework. Various supplementary acts under the themes of land-use planning and development, resource conservation and utilisation, and waste management and pollution control add to this legal framework, and includes policies, acts, and associated regulations applicable at a National, Provincial and Local (municipal) level.

There are several regulatory requirements at local, provincial, and national level with which the proposed project must adhere to. These include:

- The Constitution of the Republic of South Africa Act 108 of 1996,
- The National Environmental Management Act 107 of 1998, as amended, and EIA Regulations,
- National Environmental Management: Air Quality Act 39 of 2004 (NEM: AQA) as amended and the South African National Air Quality Standards,
- National Water Act 36 of 1998 (NWA),
- National Environmental Management: Waste Act (NEM: WA), Act 59 of 2008 as amended,
- Environmental Conservation Act (ECA) Act 73 of 1989,
- National Environmental Management: Biodiversity (NEM: BA) Act 10 of 2004,
- National Heritage Resources Act (NHRA) No. 25 of 1999,
- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA),
- Conservation Of Agricultural Resources Act 43 of 1983 (CARA),
- Spatial Planning and Land Use Management (SPLUMA) Act 16 of 2013,
- Western Cape Land Use Planning Act (LUPA) Act 3 of 2014
- National Development Plan 2030 (NDP 2012),
- Western Cape Provincial Spatial Development Framework (WCPSDF) 2014,
- Western Cape Biodiversity Spatial Plan (WCBSP), 2017,
- City of Cape Town Integrated Development Plan (2022-2027),
- City of Cape Town Economic Growth Strategy (2013),
- City of Cape Town Municipal Spatial Development Framework (2023),
- City of Cape Town Municipal Planning bylaw (2015 as amended in 2019)

- Northern District Plan (2023),
- Civil Aviation Act 13 of 2009 and Regulations,
- White Paper on National Civil Aviation Policy, 2017 (NCAP),
- National Airports Development Plan, 2015 (NDAP),
- White Paper on National Transport Policy, 2021 (NTP),
- National Transport Master Plan (NATMAP) 2050, 2011,
- City of Cape Town Outdoor Advertising and Signage By-Law No. 10518 of 2001, First Amendment By-Law 2013,
- City of Cape Town: Treated Effluent By-Law, 28 October 2009, promulgated 30 June 2010,
- City of Cape Town: Environmental Health By-Law, 30 June 2003,
- City of Cape Town: Water bylaw (2010) and City of Cape Town: Water Amendment bylaw (2018),
- City of Cape Town: Environmental Management Framework (EMF),
- Climate Change Policy (National and Provincial),
- National Water Resources Management Strategy (NWRMS).

Note the summary provided is not intended to be definitive or exhaustive and serves only to highlight key environmental and planning legislation and obligations. In addition to the above Acts, policies, guidelines, and other planning / framework documents applicable to the proposed development are discussed in the ensuing sections

1.4.1 National Environmental Management Act, 1998 (Act 107 of 1998), as amended ("NEMA")

NEMA makes provision for the identification and assessment of activities that are potentially detrimental to the environment, and which require authorisation from the competent authority based on the findings of an Environmental Impact Assessment (EIA). NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). In the Western Cape, these powers are delegated to the Department of Environmental Affairs & Development Planning (DEA&DP). According to the list of activities identified under the EIA Regulations, by Listing Notice 1 (GN. R. 327), Listing Notice 2 (GN. R. 325), and Listing Notice 3 (GN. R. 324), published in Gazette No. 40772 on the 07 April 2017, the following activities are triggered and require environmental authorisation:

Table 6: Listed Activities triggered in terms of NEMA.

Listing Notice 1 (Regulation 327, GG40772 - 7 April 2017)	
Activity	**Description**
9	*The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water—* *(i) with an internal diameter of 0,36 metres or more; or* *(ii) with a peak throughput of 120 litres per second or more;* *excluding where—* *(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or* *(b) where such development will occur within an urban area.*
10	*The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes –* *(i) with an internal diameter of 0,36 metres or more; or* *(ii) with a peak throughput of 120 litres per second or more;* *excluding where—* *(a) such infrastructure is for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or* *(b) where such development will occur within an urban area*
12	*The development of—* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs—* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding—* *(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such development occurs within an urban area;* *(ee) where such development occurs within existing roads, road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*
13	*The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 16 in Listing Notice 2 of 2014.*
16	*The development and related operation of facilities for the desalination of water with a design capacity to produce more than 100 cubic metres of treated water per day.*
19	*The infilling or depositing of any material of more than 10 cubic metres into, or the*

	dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; *but excluding where such infilling, depositing, dredging, excavation, removal or moving—* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;* *(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.*
24	*The development of a road—* *(i) 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 Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road—* *(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;* *(b) where the entire road falls within an urban area; or* *(c) which is 1 kilometre or shorter.*
25	*The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.*
26	*Residential, retail, recreational, tourism, commercial or institutional developments of 100m^2 or more, on land previously used for mining or heavy industrial purposes; -* *Excluding –* *(i) where such land has been remediated in terms of part 8 of the NEMA: WA (Act no59 of 2008) in which case the NEM:WA , 2008 applies; or* *(ii) where an environmental authorisation has been obtained for the decommissioning of such a mine or industry in terms of this Notice or any previous NEMA notice; or* *(iii) where a closure certificate has been issued in terms of section 43 of the Mineral and Petroleum resources Development Act, 2002 (Act no 28 of 2002) for such land.*
28	*Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.*
48	*The expansion of—* *(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or* *(ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more;* *where such expansion occurs—* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding—*

	(aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; *(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such expansion occurs within an urban area; or* *(ee) where such expansion occurs within existing roads, road reserves or railway line reserves.*
56	*The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—* *(i) where the existing reserve is wider than 13,5 meters; or* *(ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.*
61	*The expansion of airports where the development footprint will be increased.*
Listing Notice 2 (Regulation 325, GG40772 - 7 April 2017)	
Activity	**Description**
1	*The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs-* *(a) within an urban area; or* *(b) on existing infrastructure.*
4	*The development and related operation 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.*
7	*The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods—* *(i) in gas form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 700 tons per day;* *(ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day; or* *(iii) in solid form, outside an industrial complex, using funiculars or conveyors with a throughput capacity of more than 50 tons per day.*
15	*The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for —* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.*
27	*The development of a road—* *(i) with a reserve wider than 30 metres; or* *(ii) catering for more than one lane of traffic in both directions;* *but excluding a road—* *(a) 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 Government Notice 545 of 2010, in which case activity 24 in Listing Notice 1 of 2014 applies;* *(b) which is 1 kilometre or shorter; or* *(c) where the entire road falls within an urban area.*

Listing Notice 3 (Regulation 324, GG40772 - 7 April 2017)	
Activity	**Description**
1	*The development of billboards exceeding 18 square metres in size outside urban areas, mining areas or industrial complexes.* *(i) Western Cape - All areas outside urban areas, mining areas or industrial complexes.*
2	*The development of reservoirs, excluding dams, with the capacity of more than 250 cubic metres.* *i. Western Cape* *i. A protected area identified in terms of NEMPAA, excluding conservancies;* *ii. In areas containing indigenous vegetation; or* *iii. Inside urban areas:* *(aa) Areas zoned for use as public open space; or* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose.*
3	*The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower –* *a) is to be placed on a site not previously sued for this purpose; and* *b) will exceed 15m in height –* *but excluding attachments to existing buildings and masts on rooftops.* ***i Western Cape*** *i. All areas outside urban areas* *ii. Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, or zoned for a conservation purpose, within urban areas: or* *iii. Areas zoned for use as public open space or equivalent zoning within urban areas.*
4	*The development of a road wider than 4 metres with a reserve less than 13,5 metres.* *i. Western Cape* *i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or* *iii. Inside urban areas:* *(aa) Areas zoned for conservation use; or* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.*
12	*The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* *Western Cape* *i. 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;* *ii. Within critical biodiversity areas identified in bioregional plans;* *iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas;* *iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open*

	space, conservation or had an equivalent zoning; or *v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.*
18	*The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.* *Western Cape* *i. Areas zoned for use as public open space or equivalent zoning;* *ii. All areas outside urban areas:* *(aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or* *iii. Inside urban areas:* *(aa) Areas zoned for conservation use; or* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.*
19	*The expansion of runways or aircraft landing strips where the expanded runways or aircraft landing strips will be longer than 1,4 kilometres in length.* *Western Cape* *i. All areas outside urban areas.*

1.4.2 National Environmental Management: Air Quality Act 39 of 2004 (NEM: AQA) as amended and the South African National Air Quality Standards:

The NEM: AQA reformed legislation in terms of air quality by providing reasonable measures for the prevention of pollution, ecological degradation and to secure ecologically sustainable development while promoting justifiable economic and social development. It provides for national norms and standards regulating air quality monitoring, management, and control.

The proposed project includes a fuel storage facility which requires authorisation to obtain an Atmospheric Emission Licence (EAL) in terms of the NEM: AQA due to Category 2 and specifically Subcategory 2.4: Storage and Handling of Petroleum Products being triggered.

The Act outlines in Schedule 2 the South African air quality standards, and includes margins of tolerance, compliance time frames and permissible frequencies by which the standards may be exceeded.

With specific reference to air quality emissions - the South African National Standard 1929 of 2009, Ambient Air Quality – Limits for Common Pollutants.

An Air Emissions Licence Is Required for the Bulk Fuel Storage on site when the constructed storge volume exceeds 1000 m3. The phasing of the storage and handling facility relate to the developed capacity to exceed this threshold only in 2038. Therefore, an application for the AEL will only take place in 2037.-

Category 2: Petroleum Industry, the production of gaseous and liquid fuels as well as petrochemicals from crude oil, coal, gas or biomass:

Subcategory 2.4: Storage and Handling of Petroleum Products

Description: Petroleum products storage tanks and product transfer facilities

Application: All permanent immobile liquid storage tanks larger than 1 000m^3 cumulative tankage capacity at a site.

1.4.2.1 The South African National Standard 1929 of 2009, Ambient Air Quality – Limits for Common Pollutants:

The South African National Ambient Air Quality Standards were published in GG32816 on the 24th of December 2009. These standards are based on international best practices and indicate safe exposure levels for most of the population. The South African National Ambient Air Quality Standards are given in:

- The South African National Ambient Air Quality Standards (24 December 2009); and
- The National Ambient Air Quality Standard for Particulate Matter with Aerodynamic Diameter Less Than 2.5 Micron Meters (PM2.5) (29 June 2012).

1.4.2.2 Dust Fallout Guidelines:

On 1 November 2013, the Government Notice 827 - National Dust Control Regulations (NDCR) was published in terms of section 53 (O) of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004). The Regulations prescribe general measures for the control of dust in all areas, including residential and non-residential areas. The acceptable dust fall rates are set out in the Regulations for residential and non-residential areas.

The South African Bureau of Standards (SABS) has published dust deposition standards that are based on the cumulative dust fall levels in the South African National Standard (SANS) 1929:2011. Four bands have been developed against which dust fallout can be evaluated.

1.4.3 National Water Act (NWA) Act 36 of 1998:

The National Water Act (NWA) (Act 36 of 1998) provides the legal basis for water management in South Africa and must ensure ecological integrity, stimulate economic growth, and promote social equity when managing and using water. It is based on Integrated Water Resource Management (IWRM), which includes water quality, water quantity, pollution prevention, resource protection and protection and promotion of aquatic ecosystem quality (aquatic biota and in-stream and riparian habitat).

The overall Resource Protection and Waste Management Policy sets out the interpretation of policy and legal principles as well as functional and organisational arrangements for resource protection and waste management in South Africa. Operational policies describe the rules applicable to different categories and aspects relating to waste discharge and disposal activities.

The registration of water use authorizations is required in terms of section 26 (1) (c) and 34(2) of the National Water Act, 36 of 1998 (NWA).

A General Authorisation (GA) is an authorisation to use water without a licence, provided that the water use is within certain limits and complies with conditions set out in the Gazetted GA. This authorisation requires a registration with the Department of Water and Sanitation prior to exercising the water use(s).

The S21(a) GA has a cap of 40 000m^3/annum regardless of the size of the property based on Regulation 538 of 2016. The S21(b) GA is capped at surface storage volume of 2000m^3. In terms of S21(c) and (i) water uses the process is determined by the risk rating (L, M, H) completed by a Freshwater Ecologist. If the risk rating is LOW, it can be generally authorised. If the rating is MEDIUM or HIGH a WULA will be required. In the case of boreholes there is an exclusion in Regulation 538 of 2016 – any borehole within 500m of a wetland automatically requires a WULA even though the volume could be within the ambit of a GA.

Existing Lawful Water Use (ELU) means the use of water authorised by or under any law that took place at any time for a period of two years before the commencement of the National Water Act 1998. The qualifying period is between 1998 and 2000.

A Schedule 1 use is a water use permissible in terms of Schedule 1 of the NWA, and allows a landowner, or legal occupier of the land, a right to reasonable use of surface or groundwater on that property This '*reasonable use'* is defined as:

- '*reasonable domestic use in that person's household*';
- '*small gardening not for commercial purposes*';
- '*the watering of animals (excluding feedlots) which graze on that land within the grazing capacity of that land*'.

Schedule 1 water uses do not require any permission or registration and is over and above the other abstraction volumes on site. Water uses exceeding the provisions of a GA, that cannot be classified as a Schedule 1 use, or that does not fall under ELU, will have to be authorised through a Water Use Licence (WULA). Section 21 of the National Water 36 of 1998 identifies the water uses to be authorised in terms of the act:

(a) taking water from a water resource;

(b) storing water;

(c) impeding or diverting the flow of water in a watercourse;

(d) engaging in a streamflow reduction activity contemplated in Section 36 of the Act;

(e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);

(f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;

(g) disposing of waste in a manner which may detrimentally impact on a water resource;

(h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;

(i) altering the bed, banks, course or characteristics of a watercourse;

(j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people;

(k) using water for recreational purposes.

CWA has a responsibility to implement measures to prevent pollution of any water resources during construction and operational activities. Since construction is proposed within the regulated area of water course or other freshwater feature, and water for the site will be abstracted from boreholes on site, an application for an integrated water use licence (WUL) is required. A WULA (WU33620) has been initiated with DWS through the e-wulaa system and will run concurrent with the other authorisation processes as part of the "One Environmental System".

1.4.4 National Environmental Management: Waste Act 59 of 2008 (NEM: WA) as amended:

The NEM: WA aims to reform waste management to protect health and the environment. It provides reasonable measures for the prevention of pollution and ecological degradation and to enable ecologically sustainable development; provides for institutional arrangements and planning matters; national norms and standards for regulating the management of waste by all spheres of government; specific waste management measures; the licensing and control of waste management activities; the remediation of contaminated land; the national waste information system; compliance and enforcement; and matters connected therewith.

The proposed activities on site require the following in terms of the NEM: WA:

Category C:

(1) The storage of general waste at a facility that has the capacity to store in excess of 100m^3 of general waste at any one time, excluding the storage of waste in lagoons or temporary storage of such waste.

(6) The sorting, shredding, grinding, crushing, screening or baling of general waste at a waste facility that has an operational area that is 1 000m^2 and more.

A Norms & Standards registration in terms of the NEM: WA (Act 59 of 2008 as amended, is required for applicable waste activities pertaining to the proposed development. The following Norms and Standards are applicable to the project:

- National Norms and Standards for the Storage of Waste (GN 37088, 29 November 2013).

- National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening or Bailing of General Waste (GN 41175, 11 October 2017).
- National Norms and Standards for the Treatment of Organic Waste (GN 1984, 1 April 2022).
- National Norms and Standards for Organic Waste Composting" (GN.561 of 25 June 2021).

1.4.5 Environmental Conservation Act 73 of 1989 (ECA) & Noise Regulations:

Section 25 of the Environmental Conservation Act (ECA) Act 73 of 1989 promotes the development of Noise Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992). The administration of the noise control regulations was devolved to provincial and local authorities, so in Western Cape, noise is regulated by the New Noise Control Regulations put forward in June 2013 (Provincial Gazette Number 7141 of 20 June 2013).

''Disturbing noise'' means a noise, excluding the unamplified human voice, which—

a) exceeds the rating level by 7dB(A);

b) exceeds the residual noise level where the residual noise level is higher than the rating level;

c) exceeds the residual noise level by 3dB(A) where the residual noise level is lower than the rating level; or

d) in the case of low-frequency noise, exceeds the level specified in Annex B of SANS 10103;

''Noise nuisance'' means any sound which impairs or may impair the convenience or peace of a reasonable person.

In Schedule 2 of the Noise Control Regulations, 2013, it is stipulated that a person may not:

a) cause a disturbing noise; or

b) allow a disturbing noise to be caused by any person, animal, machine, device, apparatus, vehicle, vessel or model aircraft, or any combination thereof.

In Schedule 3, regarding causing a noise nuisance, a person may not:*build, make, construct, repair, rebuild, modify, operate or test a vehicle, vessel, aircraft, model aircraft or any other object, or allow it to be built, made, constructed, repaired, rebuilt, modified, operated or tested, in or near a residential area*.

In terms of Schedule 4 (1) of the Noise Control Regulations:

The local authority, or any other authority responsible for considering an application for a building plan approval, business license approval, planning approval or environmental authorization, may instruct the applicant to conduct and submit, as part of the application, a noise impact assessment in accordance with SANS 10328 to establish whether the noise impact rating of the proposed land use or activity exceeds the appropriate rating level for a particular district as indicated in SANS 10103, or where the

noise level measurements cannot be determined, an assessment, to the satisfaction of the local authority, of the noise level of the proposed land use or activity.

In terms of Schedule 4 (3) of the Noise Control Regulations:

Where the results of an assessment undertaken in terms of sub-regulation (1) indicate that the applicable noise rating levels referred to in that sub-regulation will likely be exceeded, or will not be exceeded but will likely exceed the existing residual noise levels by 5 dB(A) or more, the applicant must provide a noise management plan, clearly specifying appropriate mitigation measures to the satisfaction of the local authority, before the application is decided; and implementation of those mitigation measures may be imposed as a condition of approval of the application.

In terms of Clause 4(4) of the Noise Control Regulations:

Where an applicant has not implemented the noise management plan as contemplated in sub-regulation (3), the local authority may instruct the applicant in writing to cease any activity that does not comply with that plan or reduce the noise levels to an acceptable level to the satisfaction of the local authority.

The World Health Organisation (WHO), together with the Organisation for Economic Co-ordination and Development (OECD) have developed their assessments on the effects of exposure to environmental noise resulting in several guideline values for different time periods and situations.

The WHO recommends a standard guideline value for average outdoor noise levels of 55dB(A) be applied during normal daytime, to prevent significant interference with the normal activities of local communities. The relevant night-time noise level is 45dB(A). In addition, the WHO recommends that during the night, the maximum level of any single event should not exceed 60dB(A) to protect against sleep disruption.

Ambient noise levels have also been specified for various environments.

Table 7: WHO Guidelines for Ambient Sound Levels (Noise Scoping report, DDA, Sept 2023).

Environments	Ambient Sound Level LAeq (dB(A))			
	Daytime		Nighttime	
	Indoor	Outdoor	Indoor	Outdoor
Dwellings	50	55		
Bedrooms			30	45
Schools	35	55		

The OECD supports the levels recommended by the WHO, and in addition they suggest the following environmentally sustainable transport noise levels based on the (noise) receiving community (Refer Table).

Table 8: OECD Guidelines for Ambient Sound Levels (Noise Scoping report, DDA, Sept 2023).

Land Areas	Max allowable ambient noise level	
	Daytime	Nighttime
Urban	55	45
Rural	50	40

The SANS 10103 Code of Practice provides typical ambient noise rating levels (LReq,T) in various districts (refer Table 9 according to Table 2 in SANS 10103).

Table 9: Typical Rating Levels for Ambient Noise (Noise Scoping report, DDA, Sept 2023).

Type of district	Equivalent continuous rating level ($L_{Req,T}$) for noise (dB(A))					
	Outdoors			Indoors, with open windows		
	Day-Night *L*R,dn1)	Day-time *L*Req,d2)	Night-time *L*Req,n2)	Day-Night *L*R,dn1)	Day-time *L*Req,d2)	Nighttime *L*Req,n2)
a) Rural districts	45	45	35	35	35	25
b) Suburban districts with little road traffic	50	50	40	40	40	30
c) Urban districts	55	55	45	45	45	35
d) Urban districts with one or more of the following: workshops; business premises; and main roads	60	60	50	50	50	40
e) Central business districts	65	65	55	55	55	45
f) Industrial districts	70	70	60	60	60	50

Note: Daytime: 06:00 to 22:00, Night-time: 22:00 to 06:00.

1) Equivalent continuous rating levels that include corrections for tonal character and impulsiveness of the noise and the time of day.

2) Equivalent continuous rating levels that include corrections for tonal character and impulsiveness of the noise.

The applicable SANS District for both the examined sensitive receptors is that of a Suburban Residential area with little road traffic, which has a guideline of 50dB(A) for day and 40dB(A) for night-time respectively.

1.4.6 National Environmental Management: Biodiversity Act 10 of 2004 (NEM: BA):

The Act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological

resources; the establishment and functions of a South African National Biodiversity Institute (SANBI); and for matters connected therewith.

1.4.7 National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA")

The NHRA, provides for the management of national heritage resources, to set norms and maintain national standards for the management of heritage resources in South Africa, and to protect heritage resources of national significance, so that heritage resources may be bequeathed to future generations.

Section 38 (1) stipulates that subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

b) the construction of a bridge or similar structure exceeding 50m in length;

c) any development or other activity which will change the character of a site--

i) exceeding 5 000m^2 in extent; or

ii) involving three or more existing erven or subdivisions thereof; or

iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

d) the re-zoning of a site exceeding 10 000m^2 in extent; or

e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Final Comment is to be obtained from Heritage Western Cape (HWC) who is regarded as a commenting authority in this case.

1.4.8 Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA) as amended:

The MPRDA came into effect on 1st May 2004 and governs the acquisition, use and disposal of mineral rights within South Africa. The Uitsig quarry (described as Uitsig Clay Pit) with Mining Licence ML17/2001 on P23 of Farm 724 has an existing Mining Licence (ML17/2001) from the Department of Minerals Resources and Energy (DMRE). A mine closure application has been lodged by Corobrik (Pty) Ltd, the current holder of the Mining Licence, in terms of Section 43 of the MPRDA. The mine will be

closed before the development is approved and the closure objectives is in line with the development objectives.

1.4.9 Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) ("CARA")

The objective of this Act is to provide for the conservation of the natural agricultural resources by the maintenance of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants.

The National Agriculture Department is responsible for implementing CARA, which stipulates, among other things, that:

- You can't cultivate virgin soil without written permission.
- You can't cultivate any land with a slope of more than 12% without written permission.
- You must protect cultivated land effectively against water and wind erosion.
- The veld on the farm must be effectively protected against deterioration and destruction.

The proposed expansion project entails rezoning of agricultural land for use in aviation, which will require comment from Western Cape Department of Agriculture: Land Use Planning.

1.5 THE EMPr DOCUMENT

An Environmental Management Plan (EMPr) can be defined as "*an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced*". EMPr's are therefore important tools for ensuring that the management actions arising from

EIA processes are clearly defined and implemented through all phases of the project life cycle.

The EMPr forms part of the contract identifying and specifying the procedures to be followed by the Applicant in order to eliminate or reduce adverse impacts during the construction and operational phase. Should the owner or employee persistently fail to observe provisions of the EMPr, the Environmental Control Officer (ECO) should notify the relevant authority for a compliance audit, and possibly the prosecution of an individual or the removal of the individual from site.

The Environmental Contract ascribes legal status to the EMPr and any subsequent amendments thereto. The EMPr includes all relevant documentation within this report and/or referred to within it. The National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), and the respective Regulations are pertinent to this development. All activities on site must adhere and comply with the provisions of these Acts.

In general, the EMPr can consist of the following phases: ***planning & design***; ***pre-construction activities***; ***construction activities***; ***rehabilitation &/or decommissioning***; and lastly ***operational activities***. However, the need to include all the above phases is dependent on the scale and scope of each individual project. For the purposes of this application the following three categories are largely defined:

- **Planning, Design & Pre-construction Phase**: These measures relate to the detailed layout, planning and design of the Cape Winelands Airport and associated infrastructure and will largely be implemented by the planning and development team, prior to the commencement of any physical site activities. This section also relates to the demarcating of the proposed activity footprint areas versus conservation and no-go areas.

- **Construction Phase**: This section is applicable during site preparation and construction on the site for the proposed project and must be implemented by the relevant contractors and sub-contractors. This relates to the construction of services, infrastructure, buildings, associated infrastructure, runways, landscaping etc.

- **Operational Phase**: This section is intended to guide the operation and maintenance aspects associated with the Cape Winelands Airport relating to the proposed project, in line with relevant legislative requirements and the recommendations made by the specialist consultant (s).

Please note: The first two phases can overlap and are generally also referred to collectively as the CEMP (Construction Environmental Management Plan). The final phase can also be referred to as the OEMP (Operation Environmental Management Plan).

The EMPr will be reviewed by the ECO on an ongoing basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site. Any such changes or updates will be registered in the ECO's monthly record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties on site.

The following content is required in the EMPr in accordance with Annexure 4 of the EIA Regulations:

Table 10: EMPr requirements in terms of Annexure 4 of the EIA Regulations.

(1) An EMPr must comply with Section 24N of the act and include -	**Section in EMPr:**
a) details of– *(i) the EAP who prepared the EMPr; and* *(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;*	Page 3 & Annexure 1.
b) a detailed description of the aspects of the activity that are covered by and as identified by the project description;	Section 1.3.

c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 8 & Annexure 3B
d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including— *(i) planning and design;* *(ii) pre-construction activities;* *(iii) construction activities;* *(iv) rehabilitation of the environment after construction and where applicable post closure;&* *(v) where relevant, operation activities;*	Section 2 and 4
e) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — *(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;* *(i) comply with any prescribed environmental management standards or practices;* *(ii) comply with any applicable provisions of the Act regarding closure, where applicable; &* *(iii) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;*	Section 2 and 4
f) the method of monitoring the implementation of the impact management actions contemplated in paragraph (e);	Section 4 and 5
g) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (e);	Section 4 and 5
h) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 3 and 4
i) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 4 and 5

j) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (e);	Section 4 and 5
k) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 4 and 5
l) an environmental awareness plan describing the manner in which— *(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and* *(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and*	Section 4.2.2 & Annexure 15
m) any specific information that may be required by the competent authority.	Awaiting comment on Draft EMPr.

SECTION 2: ENVIRONMENTAL IMPACTS

2.1 IMPACTS:

2.1.1 Geohydrological Impacts:

Construction Phase

- Potential Impact on groundwater quality deterioration because of contamination by construction of the facility.
- Potential Impact on groundwater quality deterioration because of surface runoff.

Operational Phase:

- Potential impact on groundwater quality deterioration because of leaks from fuel storage and distribution.
- Potential impact on groundwater quality deterioration because of atmospheric deposition.
- Potential impact on groundwater quality deterioration because of direct release.
- Potential impact on groundwater quality deterioration because of Accidental Release.
- Potential impact on groundwater quality deterioration because of bio-digester facilities for energy generation.
- Potential impact on groundwater quality deterioration because of the operation of photovoltaic solar facilities.
- Potential impact due to the depletion of groundwater resource as a result of over-abstraction.
- Potential impact on groundwater quality as a result of over-abstraction.
- Potential impact on groundwater quality deterioration as a result wastewater storage before treatment.

2.1.2 Air Quality Impacts:

Construction Phase:

During construction, the main air pollutant of concern is dust. Dust will be generated during the land clearing, site preparations and levelling, bulk earthworks, such as cut and fill operations to the east of the existing runways, material loading and hauling, travelling on unpaved roads and wind erosion from exposed areas.

The dust is expected to settle to the ground near the sources due to gravity in a matter of a few hours and can cause a nuisance to the receptors in close proximity to the sources. The effects of dust include visual soiling of clean surfaces, such as cars, window sills and household washing. The airborne dust can also have an effect on visibility in the immediate vicinity of the source, which may affect potential aircraft operations during the construction phase.

The sensitivity in the immediate vicinity of the site is considered low, since there are no existing residential areas bordering the CWA airport site. The closest community is that of Fisantekraal, which is situated more than 1,000 m away, towards the south-west.

The exhaust emissions from the truck movements and equipment at the site are expected to marginally increase air pollution concentrations, primarily within the site. At the existing communities around the airport site, these increases are expected to be negligible. Therefore, the expected impact of the vehicle and equipment exhaust emissions during construction is considered to be insignificant.

During construction the dust deposition is expected to increase in close proximity to the various construction activites, i.e. within 300 m from the working face. Therefore, the extent of the impact was considered to be contained primarily within the site boundaries and set to local (1). The duration of the main construction ac vi es may take up to 2 years, and as such was set to short-term (1). The total dust deposition beyond a 200m zone from the airport site is expected to be well below the DEA guideline of 600 mg/m2/day for residential areas, such that the intensity rating was considered to be medium (2). The significance of the unmitigated impact is anticipated to be VERY LOW.

Even though, under hot and windy summer conditions the generated dust may blow off site, it is unlikely to create nuisance at Fisantekraal. With the implementation of the mitigation measures, the impact is expected to be INSIGNIFICANT.

Operational Phase:

The resulting air pollution levels around the Cape Winelands Airport due to the airport operations were simulated with the use of the US FAA's AEDT model, which utilises the USEPA AERMOD model for the for the dispersion calculations. The resulting air pollution contours and air quality impacts were estimated for the following scenarios:

Scenario 1: Existing runway setup under full utilisation (No-Go Alternative);

Based on the modelling results for the existing situation under full capacity (Scenario 1), the ground-level concentrations of all pollutants are expected to exceed their respective guidelines outside the CWA airport site boundaries.

It should be noted that the highest maximum 1-hr NO_2 concentrations at some small areas around the site exceeded the 1-hr guideline value. However, the frequency of exceedances was below 3 per year, which is well below the 88 times per annum permissible by the South African legislation.

Currently, the sensitivity of the area in the immediate vicinity of the site is considered low, due to the fact that the closest community, Fisantekraal, is situated more than 1,000 m away.

However, as indicted in previous sections, in the near future two residential areas are planned to be developed immediately south and towards the west of the airport. Once these communities are established, the sensitivity of the area would be considered moderate, assuming appropriate buffer zones will be established, primarily due to noise impact concerns.

Based on the modelling results for Scenario 1, the existing air pollution intensity due the airport's operations is considered to be low. The extent of the impact is mostly limited to the airport site, with two small areas extending towards the west and south of the site. The overall impact rating for Scenario 1 was found to be of VERY LOW significance.

Scenario 2: Operations on the new runway 01/19 in the operational year;

With the introduction of the new runway, the air quality impact zones during the operational year will be reduced in size, compared to Scenario 1. In addition, these zones will also follow a more north-westerly and south-easterly direction, in line with the new runway.

All of the air pollutant levels outside the airport site boundaries were found to be very low. The air pollution concentrations due to the airport operations at the Fisantekraal community, but also at the new developments west and south of the airport, are expected to be very low and well within the air quality standards.

The overall air quality impact for Scenario 2 is of VERY LOW significance.

Scenario 3: Operations on the new runway 01/19 at full capacity.

The air quality impact zones for the new runway at full capacity will extend beyond the airport site boundaries in a north-westerly and south-easterly direction. The air pollutant levels, however, will be within their respective air quality standards, except for the highest maximum 1-hr NO2 concentrations within small areas north and south of the runway.

Even though the maximum 1-hr NO2 concentrations exceeded the 1-hr standard, the frequency of exceedances was below 10 per year, which is within the allowed number of exceedances of 88 times, as specified by the South African legislation.

The air pollutant levels at the identified community receptors, including at Fisantekraal and Klipheuwel were found to be well within the standards.

The overall air quality impact for Scenario 3 is of LOW significance.

2.1.3 Noise Impacts:

Construction Phase

During construction the noise levels at the closest community receptors are not expected to exceed the SANS guidelines for Urban Residential areas.

No specific noise mitigation measures are necessary for the construction operations, other than ensuring that the equipment is in good working order and properly maintained, as well as providing training to the personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy events.

The significance of the unmitigated impact is anticipated to be VERY LOW. It should be noted that for a short duration, when the working face is closest to the Fisantekraal community towards the western boundary of the site, this impact may be LOW, albeit for a limited time.

With mitigation measures, the noise impact during construction is anticipated to be INSIGNIFICANT.

Operational Phase

The resulting noise levels from the Cape Winelands Airport aircraft operations were simulated with the use of the US FAA's AEDT model. Based on the noise modelling methodology and input data, the resulting noise contour levels were estimated for three (3) scenarios. The busy day operations are expected to reach 301 by the time the current runway system reaches its operational capacity (Scenario 1). For Scenario 2, the expected busy day aircraft operations per day with the new runway 01/19 will be reduced to 29. When the new airport operates at capacity the busy day operations will reach 208. Based on the modelling results in the previous sections, the impacts for the operational phase of the project are summarised below.

Scenario 1: Existing Runway System at Full Utilisation (No-Go Alternative)

For Scenario 1, the day-night noise rating level LRdn noise contour of 55 dB(A) will encompass a total area of 2.47 km^2 around the airport. A small portion of this contour extends beyond the R312 towards the south, within the Greenville Garden City and covers a zone of approximately 0.44 km^2. Within this zone it would not be recommended to establish residences, without providing additional noise mitigation measures.

The LRdn 60 dB(A) zone is completely contained within the airport site for Scenario 1.

From the day-night N70 contours, which indicate the number of aircraft movements that exceed 70 dB(A) LAmax at a given location, it was found that the 30 and above events area is 8.6 km^2, and a portion of this zone extends beyond the airport site boundaries into the Bella Riva development and primarily into the Greenville Garden City. The area affected in the later development is 1.6 km^2. This is considered significant, and mitigation measures in terms of appropriate land use planning should be implemented for this zone.

No night-time aircraft operations are planned for the night-time period for this scenario.

Based on the resulting noise contours, it is evident that the existing residential areas of Fisantekraal and Klipheuwel fall outside of the above-mentioned impact zones.

In addition, the fact that the proposed residential developments of Bella Riva and the Greenville Garden City are in the design phase could provide an opportunity to consider and implement appropriate mitigation measures, taking into account the areas of impact in each development.

Based on the above, the overall impact rating without mitigation for Scenario 1 was found to be of HIGH significance. With the implementation of the mitigation measures, primarily in terms of land use planning for the proposed residential areas adjacent to the airport, the overall impact rating was found to be of MODERATE significance.

Scenario 2: New Runway 01/19 in Operational Year

With the introduction of the new runway, the noise impact zones during the operational year will be greatly reduced compared to the ones resulting from the current runway system at full capacity.

The area with LRdn 55 dB(A) during the operational year will only be 1.44 km^2 and will not extend into the proposed residential areas west and south of the airport and will be contained within the development area of the airport site.

The aircraft operations that will cause 5-10 events per day exceeding the 70 dB(A) LAmax, will extend outside air airport's site boundary towards the south. However, this zone is very small, and the number of events is considered of low significance.

Based on the above, the overall impact rating for Scenario 2 was found to be of LOW significance without mitigation.

Additional noise abatement procedures for the aircraft operations are not required for the operational year of the new runway. However, consideration of such measures and operations should be initiated before the full capacity of the new runway is reached, based on the noise monitoring around the airport and noise modelling of the applicable mitigation measures.

Scenario 3: New Runway 01/19 at Full Capacity

By the time that the new airport and runway 01/19 reaches its capacity, the length of the LRdn 55 dB(A) impact zone will reach 4 km north of its northern site boundary. The Klipheuwel residential area will be outside this impact zone. The noise level on the south-eastern part of Klipheuwel community is expected to reach 49 dB(A), which is in accordance with the SANS 10103 guideline for Urban Districts with little road traffic.

Towards the south, the 55 dB(A) noise contour will extend less, reaching a distance of 3.3 km. This zone will overlap the Greenville Garden City development and cover an area of approximately 1.02 km^2.

It should be noted that immediately south of the runway, there will also be a small zone of 0.11 km^2 within the Greenville Garden City area, where the LRdn reaches between 60 dB(A) and 63 dB(A).

Towards the Bella Riva area, the LRdn 55 dB(A) contour will extend approximately 300m from its eastern further most point of this development. The area that is covered by this contour within the Bella Riva development is 0.38 km^2.

From the N70 day-night contours it is evident that there is an area within the Greenville Garden City that will experience more than 30 events of 70 dB(A) LAmax. This is considered significant, and mitigation measures in terms of appropriate land use planning should be implemented for this zone, which is approximately 1.2 km^2.

It should be noted that the above-mentioned zone that should be considered for appropriate land use planning is smaller than the relevant one for Scenario 1, which is 1.6 km^2.

The Klipheuwel residential area was found to fall within the 5-10 events contour but outside the 20-30 events.

The number of events that exceed the 70 dB(A) LAmax during night-time, i.e. between 22h00 and 06h00, are expected to be only 3, and their contour is contained around the northern section of the new runway, within the airport development site.

Similarly, the number of events that exceed the 60 dB(A) LAmax during night- me is 3, and its contour is primarily around the northern section of the new runway. This contour marginally extends beyond the airport site boundaries and covers a small portion of the northern Bella Riva development area. However, this is considered of low significance, since it only refers to 3 events and will take place before 11h00.

The investigation of noise abatement operational procedures should be initiated before the full capacity of the new runway is reached, taking into account the recommended noise monitoring around the airport and noise modelling of the applicable mitigation measures.

Based on the above, the unmitigated overall impact rating for Scenario 3 was found to be of HIGH significance. With the implementation of appropriate land use planning for the proposed adjacent residential areas, the overall impact rating for Scenario 3 was found to be of MEDIUM significance.

2.1.4 Botanical Impacts:

Construction Phase:

The main construction phase botanical impact of the proposed development is loss and degradation of the remaining natural and partly natural vegetation in some of the development footprints. It is likely that about 1.0ha of the 1.6ha patch of Very High sensitivity in the North will be lost, along with the two associated plant Species of Conservation Concern in this area. About 1.3ha of High sensitivity vegetation will be lost, and about 2.7ha of Medium sensitivity vegetation will be lost. Thus, a total of about 5ha of vegetation of some sensitivity will be lost, with all the rest being of Low sensitivity (generally heavily

disturbed or cultivated). Only three of the 25 recorded plant Species of Conservation Concern in the study (and Agricultural Precinct) area will be lost to the proposed development footprint, one of which already seems to be extinct on the site (*Leucospermum grandiflorum).*

Operational Phase:

Operational phase impacts include reduction of the current low - moderate levels of ecological connectivity across the study area, and associated habitat fragmentation.

The airside open space areas will need to be brushcut and mown to various heights (from 200mm to 700mm), to comply with safety regulations, and also to minimise potential bird-strikes. This regular mowing will obviously have a negative physical effect on the plants, but most of them should survive, although they will remain stunted, and may not flower or set seed, depending on the timing of the mowing.

The Landscape Concept Plan indicates that a suitably low growing (depending on location) mix of indigenous annuals, vygies, herbs and low shrubs will be hydroseeded and planted in most of the airside open areas. If this is even partly successful it could actually enhance the current low indigenous plant diversity in these areas.

Some fire related changes are likely, but assessing these is difficult, as the No Go implies very infrequent fires, which may also be the case going forward, unless managed and mitigated (in the conservation worthy areas at least).

Alien invasive vegetation management already undertaken on site has had a minor positive impact and will continue. If the required environmental management of the natural areas on site is properly implemented, and if the required biodiversity offset is secured, then the proposed development could have a notable positive botanical impact on a regional scale, even taking into account the loss of patches of sensitive habitat on site.

2.1.5 Freshwater Ecological Impacts:

Construction Phase:

Modification of the seep wetland 1 and CVB wetland 2 and 3's hydrological functioning and water quality:

- Site preparation prior to construction activities, involving vehicular movement (transportation of construction materials) and associated disturbances to soil.
- Removal of topsoil and vegetation and creation of topsoil stockpiles, and increased likelihood of dust generation due to exposed soil.
- Movement of construction equipment and personnel within the seep wetland 1 and potentially CVB wetland 3.

- Earthworks involving removal of topsoil and creation of soil stockpiles for the construction of activities related to the runway and related infrastructure and service infrastructure within 32m of the delineated extent of the wetlands.
- Groundbreaking including excavation and stockpiling of soil for the construction of stormwater infrastructure within 32m of the seep wetland 1 and potentially CVB wetland 3.
- Groundbreaking: installation of service infrastructure within the 32m NEMA ZoR of the seep wetland 1 and potentially CVB wetland 2 and 3.
- Potential mixing and casting of concrete/ asphalt for runway within the 32m NEMA ZoR of the seep wetland 1.
- Construction of maintenance road and fences through the wetlands.

Changes to the geomorphological processes (sediment balance, erosion and sedimentation):

- Site preparation prior to construction activities, involving vehicular movement (transportation of construction materials) and associated disturbances to soil.
- Removal of vegetation within the development footprint and seep wetland 1 resulting in increased sediment loads into the seep and CVB wetlands and potential for headcut erosion and smothering of wetland habitat.
- Earth works involving excavation and creation of soil stockpiles for the construction service infrastructure, stormwater attenuation ponds, runway and maintenance road and fences within the 32m NEMA ZoR of the seep wetland 1 and CVB wetlands 2 and 3.

Wetland habitat loss, altered wetland habitat and impacts to biota:

- Site preparation prior to construction activities, involving vehicular movement (transportation of construction materials) and associated disturbances to soil.
- Removal of topsoil and creation of topsoil stockpiles.
- Earthworks involving excavation and creation of soil stockpiles for the construction of the runway, service infrastructure, stormwater attenuation ponds, maintenance road and fences within the 32m NEMA ZoR of the seep wetland 1 and potentially CVB wetland 3.
- Potential mixing and casting of asphalt and concrete for the runway associated with the proposed CWA development within the 32m NEMA ZoR of the seep wetland 1.
- Loss (6.74ha) of seep wetland 1 habitat and ecoservices as a result of the construction of the proposed CWA development.

Operational Phase:

- Modification of the seep wetland 1 and CVB wetland 2 and 3's hydrological functioning and water quality:
- Operation of stormwater attenuation ponds and discharge of attenuated stormwater from the proposed CWA development into the seep wetland 1 and CVB wetland 3 via stormwater attenuation ponds within the study area.
- Operation of the runway and service infrastructure potentially releasing hydrocarbons from the internal road network and runway entering the wetlands through stormwater run-off.
- Operation of the maintenance road and fences through the seep wetland 1 and CVB wetlands 2 and 3.
- Potential indiscriminate movement of vehicles within the wetlands for inspections/ maintenance.

Changes to the geomorphological processes (sediment balance, erosion and sedimentation):

- Operation of the stormwater attenuation ponds responsible for the alteration of the sediment load as a result of water and sediment release into the wetlands via stormwater releases. Hardened surfaces and diffuse stormwater runoff may also affect sediment balance in the landscape.
- Potential indiscriminate movement of vehicles within the wetlands for inspections/ maintenance.

Wetland habitat loss, altered wetland habitat and impacts to biota:

- Operation of the proposed CWA development including the related infrastructure, stormwater attenuation ponds, roads, service infrastructure and associated open space areas.
- Anthropogenic disturbance including noise and physical degradation of wetland habitat reducing available feeding, drinking, breeding and migratory habitat to biota associated with the CVB wetlands 2 and 3.
- Potential hydrocarbons from the hangars, workshops, internal road network and runway entering the wetlands through stormwater run-off.

2.1.6 Hydropedological Impacts:

Construction Phase:

The potential impacts from the proposed CWA development will likely pertain to the impacts experienced once the land is excavated during the construction of foundations for the proposed development:

- Sealed surfaces post-construction could alter the natural flow of water in the study area, potentially leading to increased erosion and sedimentation in lower-lying areas if not managed properly.
- Reduced infiltration due to sealed surfaces may necessitate the channelisation of water into stormwater structures and discharge into downstream watercourses or lower lying areas in the landscapes.
- Encroachment on interflow soils may disrupt wetland recharge mechanisms, affecting subsurface processes and ecological state.
- Downstream streams are ephemeral and likely recharged mainly by overland flow and direct precipitation over short periods. As such the contribution of interflow soils to these downstream watercourses is likely limited.

Operational Phase:

Overall, the hydropedological processes are predicted to remain largely unmodified in the post development scenario, and the functionality of the wetlands identified within the catchment area will likely remain unchanged if stormwater is managed effectively.

2.1.7 Terrestrial Ecological Impacts:

Construction Phase:

Faunal Impacts

- Loss of habitat due to vegetation clearance activities;
- Displacement of species from the footprint areas during construction activities;
- Potential increased mortalities due to human – wildlife conflict as well as faunal species collisions with construction vehicles;
- Potential poaching/snaring by staff/construction personnel;
- Loss of habitat connectivity and movement corridors within the landscape;
- Increased noise pollution from machinery during the construction phase; and
- Increased light pollution

Avifaunal Impacts

- Direct loss of avifaunal habitat;
- Decreased avifaunal abundances and species richness;

- Increased anthropogenic movement;
- Altered avifaunal movement patterns;
- Loss of avifaunal SCC habitat and possible SCC occurrence both within the study area and in the surrounding habitats;
- Altered biotic integrity and disturbance to ecosystem function; and
- Altered water quality.

Operational Phase:

Faunal Impacts

- Potential increased mortalities due to human – wildlife conflict as well as faunal species collisions with operational vehicles;
- Potential poaching/snaring by staff;
- Loss of habitat connectivity and movement corridors within the landscape;
- Increased noise pollution from aircraft during the operational phase; and
- Increased light pollution, notably during the operational phase of the airport.

Avifaunal Impacts:

- Direct loss of avifaunal habitat;
- Decreased avifaunal abundances and species richness;
- Increased anthropogenic movement;
- Potential for bird strikes;
- Altered avifaunal movement patterns;
- Loss of avifaunal SCC habitat and possible SCC occurrence both within the study area and in the surrounding habitats;
- Altered biotic integrity and disturbance to ecosystem function; and
- Altered water quality.

The presence and abundance of high-risk bird species are primarily associated with agricultural land use and water bodies within the primary bird hazard zone surrounding the proposed CWA. The movement of birds between these habitats warrants attention.

2.1.8 Socio-economic Impacts:

Potential positive socio-economic impacts:

1. *Provision of transport infrastructure:* The proposed CWA will serve as a "reliever" airport for the CTIA in a complementary role within South Africa's network of airports and airfields. It would alleviate congestion at CTIA and make land available for future expansions at the CTIA. It would also increase the available hangarage facilities in the market and unlock the Western Cape GA market, which is currently severely constrained.

2. *Employment opportunities:* The findings of the employment analysis indicate that the project could sustain about 32 433 (direct, indirect and induced) employment opportunities during construction, including ongoing capital expenditure requirements over 22 years of initial and ongoing construction. As a result of the job opportunities created through the proposed interventions, household incomes from job opportunities could increase by R3,8 billion over the total 22 years of initial and ongoing construction.

During the initial 20 years of operations, the project could sustain about 102 732 direct, indirect and induced employment opportunities, adding R17,7 billion in household income.

3. *Economic income:* The initial capital investment of an estimated R8,9 billion could generate R23,2 billion in new business sales during construction, referred to as the production (or output) that creates demand for business activity over the construction period. The increase in production output could add R8,8 billion (net of the import leakage) to the GGP of the CMA during construction. During an initial 20-year operational period, which includes a substantial component of maintenance expenditure, an estimated at R36,1 billion in nominal terms could generate R76,1 billion in new business sales.

4. *New business development:* The preferred alternative development plan earmarks 350 000 m^2 of GLA for commercial and general business. This will provide numerous opportunities for transport-related businesses like public transport, car hire, fuelling, and parking will attract commercial passenger traffic at the airport. Commercial developments such as retail, food & beverage, and even offices can support business traffic by providing complementary and convenient services.

5. *Revenue accruing to the local authorities:* The development of the CWA could contribute R3,9 billion to central government coffers over 22 years in current terms, while the City of Cape Town could obtain R2,.1 billion from rates and services based on the applied assumptions in current terms.

6. *Surrounding property values:* Properties adjacent to the site may be in demand for commercial and/or industrial developments, thus increasing the perceived value of those properties.

Potential negative socio-economic impacts:

1. *Impact on traffic flows:* A significant increase in traffic along the access routes can be expected during construction and operations, which will negatively impact surrounding land users in particular. A number of road upgrades have been recommended by the Traffic Impact Assessment; many of these are directed at background traffic related to other developments in the area.

2. *The influx of job seekers:* An influx of job seekers (mainly from the Northern District) during construction will lead to competition among local (Fisantekraal) residents for employment opportunities. Workers stranded in the area after the construction phase could also increase the demand for housing and social services over the longer term.

3. *Dust and noise (construction):* Site preparation and the introduction of services will create dust and noise that would affect nearby receptors, in particular the residents of Fisantekraal to the southwest.

4. *Construction workers* may seek the local community for leisure and social activities. This could lead to social ills impacting local families and their social structures.

5. *Increase in crime levels:* On-site activities could attract criminals, but this could be mitigated with effective security measures and access control. Crime could include on-site petty theft, theft of building material, on-selling of security information, or burglary and theft at nearby properties.

6. *Sense of place (operations):* A large airport will affect neighbouring land users who may enjoy a more rural character, with their sense of place negatively affected by the potential visual impact, aircraft noise, air pollution and increased traffic along the access routes.

7. *Nearby farming and business operations:* Noise and air pollution may negatively impact nearby farming operations and businesses in the area.

8. *Surrounding property values:* Property owners in nearby neighbourhoods may be negatively affected due to a change in the sense of place, mainly those along the flight pathway.

9. *Bulk infrastructure requirements* relate to the provision of bulk infrastructure for sewerage, water and electrical supply, solid waste disposal and stormwater management. The developer is responsible for the provision of these services, but the local municipality requires sufficient capacity to meet the additional demand. The engineering reports indicate that the required services are available in the area, and that there is sufficient capacity to accommodate the proposed CWA development if the Developer provides the necessary infrastructure and network connections.

2.1.9 Heritage Impacts (Cultural, Archaeological and Visual) Impacts:

Construction and Operational Phase

Archaeological Impacts:

The project does not pose a significant threat to local **archaeological heritage resources** and that the proposed development area is not a sensitive or threatened archaeological landscape.

Visual Impacts:

- Potential effect and/or intrusion on protected landscapes or scenic resources; and potential effect of change to the visual character of the area: Visibility of sources of light at night (for sensitive

receptors) within LCA 2 & 3 (inside Urban Edge, and within Joostenburg Vlakte Cultural Landscape (CL)).

- Potential effect and/or intrusion on protected landscapes or scenic resources; and potential effect of change to the visual character of the area: Visibility of sources of light at night (for sensitive receptors) within LCA 4 (within the Durbanville Hills CL and the Koeberg/ Swartland Farms CL).
- Potential effect and/or intrusion on protected landscapes or scenic resources: and potential effect of change to the visual character of the area: Visibility of sources of light at night (for sensitive receptors) within the LCA 1 (within the Agter-Paarl Paardeberg CL).
- Potential effect and/or intrusion on protected landscapes or scenic resources and potential effect of change to the visual character of the area: Transformation of land use and site character: New buildings, structures and service infrastructure visible within previously predominantly rural agricultural landscape. Transformation of land uses within the site boundaries from an existing airfield and farmland (mostly undeveloped) into a regional airport including a commercial component (mostly developed). Total clearance of the developable areas of the subject site during construction phase (bulk earthworks).
- Potential effect on the visual amenity of Scenic routes: The R312 Lichtenburg Road Scenic Route (Route 31; SR1: Scenic drive envelope, Gateway Point and view corridors as scenic resources).
- Potential effect on the landscape character and sense of place of: the Agter-Paarl Paardeberg Cultural Landscape (LCA 1 – areas not within the property boundary). Potential effect on the scenic amenity of: the portion of the R304 Provincial Scenic Route (between the R312 Lichtenburg Road crossing and its intersection with Slent Road near Klipheuwel) that bisects the subject site, but lies eastward and outside of the portion of the CWA that is earmarked for development.
- Potential effect on the landscape character and sense of place of: The Durbanville Hills CL (extents of the Cultural Landscape as modified in Figure 18) and the Koeberg/Swartland Farms CL (both within LCA4). Potential effect on the scenic amenity of: R302 Klipheuwel road Scenic Route (Route 30b; SR1) and the Spes Bona Road.
- Potential effect on the landscape character and sense of place of: The Joostenberg Vlakte Cultural Landscape (extents of the Cultural Landscape as modified in Figure 18) also referred to as LCA 2. Potential effect on the scenic amenity of: R304 (S1: between the N1 and the crossing with the R312 Lichtenburg Road).

Cultural Impacts:

Although two of the structures in the study area are older than 60 years neither of them is of aesthetic significance nor conservation worthy. The proposed expanded airport will have an impact on the landscape character which is of some significance (Low).

The NHRA specifically refers to social and economic development. In addition, Section 38(3)(d) of the NHRA requires that the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development should be evaluated.

Capital investment in the airport expansion is estimated to be of the order of R7-Billion. The proposed passenger terminal is designed to accommodate 5.2million passengers per year. The developers have stated that their aim is for the airport to be more than just an aviation hub. It will be used as a driver of regional economic development and local community inclusion.

Other developments on this site include cargo terminals, aircraft hangars, a hotel, heliport, ware housing and logistics facilities. It will reduce airline fuel costs and emissions, improve the business case for air travel, and drive economic growth in the region. It will also provide additional capacity, improve redundancy, reduce inefficiencies at Cape Town International Airport, and make air travel more affordable and accessible.

Its proximity offers airlines a more viable alternate airport for diversion planning, alleviating the need to carry an excessive amount of fuel for long-haul flights. By reducing the fuel burden by up to 10,000kg per flight, the airport will reduce fuel consumption and carbon emissions. Independent estimates suggest that the airport will collectively save airlines millions of kilograms of fuel and boost cargo-carrying capabilities, demonstrating its immense potential to promote a more environmentally responsible aviation sector. The City of Cape Town's rates income will be dramatically increased.

Given that the impact on heritage resources will be low and that the sustainable social and economic benefits will be immense it is recommended that HWC supports the development proposals.

Only mitigation regarding Visual Impacts is therefore provided in Section 2.2 below.

2.1.10 Agro-Ecosystem Impacts:

Construction and Operational Phase:

- Change in Productivity;
- Loss of productive land;
- Impact on Food Security;
- Loss of farming infrastructure;
- Change in Employment;
- A capital injection into the remainder of the farm; and
- Improved security in the area.
- Possible soil degradation by wind and/or water erosion;

- Impact on vleis, marshes, water sponges and water courses;
- Impact on the flow pattern of run-off water.

2.1.11 Civil Aviation Impacts:

The main areas of impact related to the civil aviation activities:

i. Obstacle Limitation Surfaces

ATNS Survey Team has conducted a full WGS84 Obstacle survey in and around Cape Winelands Airport to a 10km radius. The survey team consists of a professional land surveyors and registered obstacle evaluator recognized by the SACAA.

ii. Airspace

There are several (minor) civil aviation aerodromes located within 20nm of the CWA site, as well as the AFB Ysterplaat. Moreover, Cape Town International Airport and its Terminal Manoeuvring Area (TMA) are also in close proximity to the site. The proposed increase of flight activity at CWA, and particular the introduction of scheduled commercial operations, will likely affect the flight operations at the nearby aerodromes.

In order to ensure safety of operations, it is important that airspace at the airport is suitably configured, and that feasible departure and arrival procedures are put in place at the airport. Therefore, an airspace study should be conducted by aviation specialists, suitably qualified in the field of Procedures for Air Navigation Services and Aircraft Operations (PANS-OPS), to determine safe and efficient ways of operating flights in and out of CWA in relation to CTIA and other aerodromes. This study should address the need for navigational and visual aids at the airport and identify possible impact this may have on existing (and planned) civil aviation installations in the vicinity.

***NACO* have undertaken a study on the "*Development of an Airspace Concept of Operations for the Cape Winelands Airport*" which can be seen as a master plan or scheme of the intended airspace and its operation.**

iii. Noise

Aircraft noise is generally recognized as one of the most significant negative impacts of airport development on its environment. The noise footprint of an airport depends on its airside infrastructure configuration, flight procedures, mode and time of operations, frequency of flights and aircraft types operating at the airport, amongst other factors. The impact this noise has on the airport environment further depends on prevailing weather conditions, topography, and surrounding land use, as well as socio-economic and cultural factors.

It is essential that the impact of aircraft noise associated with the proposed development is studied in detail by suitably qualified experts in noise measurement, modelling and analysis. The following ICAO

documents provide the relevant frameworks for such assessments and for managing the impacts identified.

DDA Environmental Engineers **has undertaken a complete Noise Impact Assessment. Refer to Noise Impacts and Mitigation.**

iv. Ground transportation

The envisaged increase in aviation activity at the CWA will likely result in increased ground traffic to and from the airport. Passengers, visitors, airport staff, tenants, concessionaires and related businesses will all use road access to the airport site. Currently, the main access to the airport site is off the R312 and traffic on this road is likely to increase due to the proposed development. However, other roads in the vicinity, such as the R304, R302 and even the N1, may also be affected.

In order to ensure the impact of increased ground transportation activity is managed appropriately, an assessment should be conducted that takes into account the various modes of transport and infrastructure available around the site. Such assessment should be conducted by a suitably qualified transport engineer in line with relevant national, provincial and municipal regulations and guidance material.

ITS Consulting Engineers **has undertaken a complete Traffic Impact Assessment. Refer to Traffic Impacts and Mitigation.**

Socio-economic impact

Through the proposed development and the envisioned increase in aviation activity, the CWA will likely have a material socio-economic impact on its direct environment, the wider region and the aviation industry. The construction and development of the planned airport infrastructure and facilities will attract significant investment. This will result in substantial revenue and job creation for the local construction industry and associated trades. Once operational, the airport itself, as well as the multitude of businesses it will support and facilitate, will present permanent employment opportunities. The connectivity the airport will enable, will support the growth and development of both trade and tourism. All this will likely encourage and attract further investment into the Fisantekraal area, and the entire growth corridor from Durbanville to Wellington and Paarl.

It is well documented that airports have a large, positive impact on employment and economic development. Benefits can be direct, indirect and catalytic and extend from the immediate local environment to the national and even international level. Further assessment by transport economists and aviation specialists can qualify and quantify the expected socio-economic impact of the CWA development in more detail.

Multi-Purpose Business Solutions **has undertaken a complete Socio-Economic Impact Assessment. Refer to Socio-Economic Impacts and Mitigation.**

2.1.12 Traffic Impacts:

The following potential impacts have been identified as part of the required design and operational reconfiguration of the proposed CWA:

- Reconfiguration of road network for access through one of three options - Option 1: Access via Melish Road / Lichtenberg Road (R312), Option 2: Access via Melish Road / Klipheuwel Road (R302), Option 3: Access via Lucullus Road extension.
- Increase in vehicles and passengers and amendment to road infrastructure.
- Amendment to public transport system in the area to link to the CWA.
- Design of public roads to accommodate increased pedestrian and bicycle movements.
- Possible linking of cargo movement to the rail infrastructure and required upgrade of rail system to accommodate this.

2.1.13 Climate Change Impacts:

2.1.13.1 Impact of Climate Change on the Project:

Risk of Wildfires:

Impact: Health and safety

- Fires may lead to injuries/hospitalisations/loss of life.
- Increased smoke and ember storms may lead to injuries and hospitalisations.
- Compromised food (i.e., due to crop loss) and water supplies may affect the nutrition and wellbeing of personnel.
- Wildfires can impact air quality by increasing emissions of particulate matter and ozone precursors, posing a risk to human health.

Impact: Operational and value chain

- Damage and/or loss of property and infrastructure due to fire, strong winds and/or lifted debris.
- Smoke from wildfires can travel long distances, and reduced visibility may impact the efficiency of air traffic operations, that could lead to economic losses.
- Electricity generation may be disrupted, which could halt operations. It should be noted that while the site is currently supplied by Eskom, sustainable energy sources including a bio-digestor plant and photo-voltaic power supplies (solar PV) are being considered. It is intended that the site will be powered by off-the-grid energy sources, with Eskom supply serving as a back-up. The

accessibility of the airport may be reduced impacting goods and service delivery, arrival of staff/personnel and passengers. This could halt/delay operations leading to economic losses.

Risk of Landslides:

Impact: Health and safety

- Landslides may lead to injuries/hospitalisations/loss of life in affected areas.
- Compromised food (i.e., due to crop loss) and water supplies in affected areas may impact the nutrition and wellbeing of staff/personnel.

Impact: Operational and Value Chain

- Landslides may lead to damage and/or loss of property and infrastructure in affected areas.
- The accessibility of the airport may be reduced impacting goods and service delivery, arrival of staff/personnel and passengers. This could halt/delay operations leading to economic losses.

Risk of water scarcity

Impact: Health and safety

- Water scarcity may lead to reduced water quantity and quality on site and in adjacent areas which could create human health risks
- Drought conditions can impact food security, leading to the malnutrition of staff/personnel.

Impact: Operational and Value Chain

- Airports rely on water during construction, in daily operations, on the airfield and in terminals. Reduced water supply may impact the functioning of airport facilities, and halt/delay operations that could lead to economic losses.
- Increases in operational costs may be experienced, if the cost of water increases which may result in reduced profits.

Risk of extreme heat:

Impact: Health and safety

- Heat stress may cause staff/personnel to experience heat related illnesses, dehydration and fatigue, which consequently could impact operations on site.
- Compromised food (i.e., due to crop failure) and water supplies due to heat waves may impact the nutrition and wellbeing of staff/personnel.

- Heat waves can lead to poor air quality, as increased temperatures can lead to increased ozone concentrations (a key component of smog). Poor air quality poses a risk to human health.

Operational and Value Chain

- Heat stress may impact the health of the workforce leading to operational delays, that could result in economic losses.
- Extreme heat events may lead to equipment failures/malfunctions that could halt/delay operations.
- Heat wave can also negatively influence road and rail infrastructure causing transportation delays, that may impact goods and service delivery, arrival of staff/personnel and passengers.

Risk of flooding events:

Impact: Health and safety

- Workplace injuries and potentially loss of life
- Compromised food (i.e., due to crop failure) and water supplies due to flooding may impact the nutrition and wellbeing of staff/personnel.

Impact: Operational and Value Chain

- Flooding may result in infrastructure and property damage.
- Flooding may result is road closures, causing transportation delays, that may impact goods and service delivery, arrival of staff/personnel and passengers.

2.1.13.2 Impact of the Project on Climate Change:

The Greenhouse Gas (GHG) emissions resulting from the construction and operation of the CWA will contribute to global anthropogenic climate change. However, the expected changes in global climate cannot be specifically linked to the GHG emissions of a specific emission source or individual emitter. Direct emissions resulting from fuel combustion and wastewater treatment are expected. There are specific indirect emissions associated with the operation/value chain of the airport such as waste generation, employee commute, passenger commute and aviation. The emissions taken into consideration are those which occur within the boundaries of South Africa (i.e., international aviation is excluded). The estimated emission from the airport is estimated to be 3.68 million tCO2e, approximately 0.097% of the South African budget of 3 380 MtCO2e. The value of 3.68 million is high to the national budget.

2.1.14 Aviation Glint and Glare Impacts:

The modelling results indicate that the Air Traffic Control Tower will be exposed to green and yellow glare. The aircraft on the approach paths will not be affected by the PV panels.

2.1.15 Major Hazard Impacts:

The study found that the proposed CWA facilities would be classified as a Low Hazard Establishment Major Hazard Installation, resulting in the risks to the general public being considered acceptable.

Bulk Fuel Tank Farm

Pool fires and flash fires from a loss of containment at the storage and offloading installations of Jet A-1 and Avgas and subsequent fires were simulated. Tank explosions from Avgas were also simulated.

The 1% fatality for Avgas and Jet A-1 from fires, could extend a short distance over the tank farm boundary. However, these impacts would not extend to areas occupied by the general public or to the runway and airplanes.

Risks greater than 1x10-4 fatalities per person per year, are considered tolerable for industrial areas, but excessive for residential areas. The 1x10-4 fatalities per person per year did not extend into areas occupied by the general public on the proposed CWA site.

The risk of 3x10-7 fatalities per person per year isopleth indicates the extent for land-use that would be suitable for vulnerable populations, such as hospitals, retirement homes, nursery schools, prisons, large gatherings in the open, and so forth. As the risks did not extend into areas occupied by the general public, no land planning would be required. The risk from the installations after Phase 3 would be considered acceptable.

Avgas Kerbside Filling

The kerbside filling will consist of a $9m^3$ Avgas tank with an offloading area. Pool fires form a loss of containment would extend beyond the secondary containment but would not extend to the area occupied by the general public.

Risks greater than 1x10-4 fatalities per person per year, are considered tolerable for industrial areas, but excessive for residential areas. The 1x10-4 fatalities per person per year did not extend into areas occupied by the general public on the proposed CWA site.

The risk of 3x10-7fatalities per person per year isopleth indicates the extent for land-use that would be suitable for vulnerable populations, such as hospitals, retirement homes, nursery schools, prisons, large gatherings in the open, and so forth. As the risks did not extend into areas occupied by the general public, no land planning would be required. The risk from the kerbside filling would be considered acceptable.

Apron Pipeline

The apron pipeline is expected to be constructed during Phase 3. The pipeline would be located in a chamber. Thus, a loss of containment will firstly fill the chamber and then overflow. For this study, the maximum area from a pool formed from a loss of containment was limited to 300m^2.

The 1% fatality from the apron pipeline could extend 41m from the pipeline. However, the risks from the apron pipeline failure would be considered acceptable.

Impacts onto Neighbouring Properties, Residential Areas and Major Hazard Installations

Impacts from Jet A-1 and Avgas would not extend into areas occupied by the general public.

Major Hazard Installation

The expected MHI hazard tier for each phase of the fuel storage project is LOW.

2.1.16 Poultry Impacts:

Increased activity, dust and noise will affect poultry.

Flies and rodents associated with improper waste management can transmit diseases.

Light pollution as the result of road usage at night and lighting of the airport near the poultry farm may interfere with the circadian rhythm of breeder and layer birds.

Loud noises (aircraft and vehicles) can disturb and stress the birds as well as decrease production.

Increase air pollution can cause respiratory issues in poultry.

Contamination of ground water as a result of run-off of water used for cleaning and accidental spills.

The influx of people into the area may act as fomites and transmit poultry diseases.

Wild birds attracted to the area may transmit diseases if they come into contact with poultry.

The use of poultry manure to fuel methane production will result in impacts within the poultry farm. Manure is wet and may contaminate the roads and attract flies, it is odiferous, it carries many diseases as it is a product of layer birds in cages.

International waste poses a risk for disease outbreaks.

2.2 IMPACT MITIGATION:

2.2.1 Geohydrological Mitigation:

Construction Phase:

- Vehicles must be maintained regularly and kept in a good working order, and park on hardstand areas with appropriate drainage and catchment systems, where possible.
- Dirty water should be captured, to be re-used where possible. No dirty water is allowed to be discharged into the surrounding environment.
- Implement monthly groundwater quality monitoring during construction phase.
- Drip trays to be used under stationary vehicles and machinery where possible.
- A dewatering plan to be developed prior to construction (where required). Should this be required, the dewatering plan could be devised by a professional. It is important that if the water is to be released back into the environment, it should be done under the guidance of relevant regulations and supervised/monitored by an appropriately qualified professional.

Surface runoff:

- Installation of appropriate stormwater systems with catch pits to isolate fuel and other contaminants.
- A stormwater management plan and system should address potential water quality concerns and associated water treatment. The water quality must meet relevant standards prior to discharge into the receiving environment; further the regulations indicated in the Water Act (as well as amendments) will need to be adhered to.
- An appropriate monitoring system within the stormwater reticulation could be considered, where applicable and possible, e.g. within separation/first flush chambers.
- Petrol interceptors might be considered to mitigate the risks of contaminants draining into the environment.

<u>Operational Phase:</u>

Leaks from fuel storage and distribution:

- Tanks must be double walled / "jacketed" i.e., possessing secondary containment to prevent tank content to release into surrounding soil and groundwater. The underground storage tank must have an internal leak detection monitoring system between the two walls to monitor for product leakage;
- Fuel lines and sumps must be secondary contained where lines are joined.
- The filling station must include the following design measures:

Fuel Containment Area

- The containment slab must be graded to drain a catch-pit that is connected to discharge to the stormwater system via an oil separator while the surrounding paved surface areas must be graded to ensure rainwater runoff to the stormwater system. No washing in this area is allowed

Forecourt Area

- The forecourt area must be provided with its own set of catch pits that is connected to discharge to the sewer via a separate oil separator. Please note that the aforesaid areas (1 & 2 above) cannot be interconnected. The surface area of the forecourt must be graded to the abovementioned catch pits while the surrounding surface area graded to drain rainwater to the stormwater system. Washing of the forecourt surface is allowed in this instance.

- Additionally, the following mitigation is required which is associated with petrol filling station Underground Storage Tank (UST) and pipework installations (applicable for the construction and operation phase):

National Standards

- All containment manholes must be regularly inspected as part of the normal management procedures at the service station.

- The installation of Underground Storage Tanks (UST's) and associated pipework must be implemented in accordance with the relevant South African National Standards (SANS), specifically (not exclusive to) the following standards:

a) SANS 10089-3 (2010): The petroleum industry Part 3: The installation, modification, and decommissioning of underground storage tanks, pumps/dispensers and pipework at service stations and consumer installations.

b) SANS 10 400TT (Fire Protection) 53 Sections 1-6 (The application of the National Building Regulations-Installation of Liquid Fuel Dispensing Pumps and Tanks);

c) SANS 10087-3 (2008): The handling, storage, distribution and maintenance of liquefied petroleum gas in domestic, commercial, and industrial installations Part 3: Liquefied petroleum gas installations involving storage vessels of individual water capacity exceeding 500L.

- The installation of the UST's and associated pipework must comply with the National Building Regulations and Standards Act No. 103 of 1977;

- The installation must comply with local authority bylaws and all procedures and equipment used must be in accordance with the Occupational Health & Safety Act (No. 85 of 1993);

- Upon completion of the UST installation, an engineer is to inspect and verify that the tanks and the associated infrastructure have been installed as per the design criteria described in the final IAR and to all required SABS/SANS standards and applicable legislation. A report thereafter, based on the engineer's findings, is to be submitted to the DEA&DP Land Management and Pollution Directorates for inspection and the City of Cape Town Municipality.
- Any repair work required is to be conducted according to SABS 1535 (Glass-reinforced polyester-coated steel tanks, including jacketed tanks, for the underground storage of hydrocarbons and oxygenated solvents and intended for burial horizontally).

Installation of Underground Storage Tanks

- The USTs must be reliable in the event of heavy rains and flooding. UST manholes shall be impermeable and resistant to fuel, they shall consist of a heavy-duty cast-iron cover, which shall prevent damage from surface traffic;
- Construction of a reinforced concrete slab over the USTs, its thickness and strength are to be determined by a qualified Engineer;
- The filler point and tank must be fitted with overfill protection. The critical level should be such that a space remains in the tank to accommodate the delivery hose volume (2%). Earthing and snap tight quick coupling is
- The USTs are to be fitted with a tank containment sump, fitted on top of the tank and a dispenser containment to be provided for loading of materials into tanks to minimise the risk of fires and prevent spillage and loss of materials; and sump must be provided, fitted underneath the dispenser as containment. A Filler spill containment must also be provided for remote filler containment purposes;
- The excavation must be protected against the ingress of surface run off water, and is to be kept reasonably free of sub-surface water by pumping out if necessary;
- The excavation must be lined with a HDPE liner or a suitable layer to prevent infiltration of product to the groundwater should a spill or leak occur (an impermeable liner);
- The UST is to be inspected before installation for damage, including factures or damage to coating work.
- Leak and pressure tests must be conducted on tanks and pipelines to ensure integrity prior to operation and the inspection authority must issue pressure test certificates.
- The UST must be buried 750mm below finished ground level in accordance with SANS 10089-3;
- The local Fire Department must be informed two (2) working days before installation commences and to be called for inspection at the following stages:

- Installation of tank on clean sand bed before backfilling
- Witness pressure test (delivery lines 1000kPa, tank 35kPa); and
- Inspection of slab over tank before concreting.

Pipework

- Installation of associated pipe work. This shall include the installation of internationally approved non-corrosive pipework systems. All underground piping is to be Petrotechniks UPP Extra piping (nylon lined, 10 bar rated). Nextube Kableflex sleeving (oil industry green with a smooth internal bore) to be used as secondary containment. This is to limit the possibility of pipe failure due to corrosion; this being the most common cause of pipe failure before this system was introduced to South Africa.
- All pipeline connections are to be housed within impermeable containment chambers. A leak detector on all submersible pumps that automatically checks the integrity of the pipework on the pressure side of the pump must be provided. Pipelines must not retain product after use and no joints are to be made underground. An emergency shut-off valve must be supplied between the supply pipeline and dispenser inlet. All pipes (vent, filler and delivery) are to slope back to the USTs so that fuel does not remain in the pipes;
- Vent pipes to be fitted with "Fulcrum" vertical vent roses, or an approved equally equivalent market product replacement, that conforms to these standards. Confirmation of filler point and vent position to be made by an approved Engineer for safety distances required;
- Vent pipes above ground are to be galvanised mild steel and are to be at least 1000mm above the roof height and away from any doors, windows, chimney openings and other sources of ignition; and the tank product lines must be pressure tested prior to commissioning;

Leak detection and monitoring required

- It is required to undertake integrity testing on Underground Storage Tanks (UST's) and underground pipe integrity testing. The frequency of integrity testing should be as follows as outlined here. Tank and pipe integrity testing shall be carried out in the following instances:
- Following installation of a new UST and associated underground pipework or following repair, maintenance or upgrade of an existing UST or underground pipework (or both). Testing shall be carried out prior to burial of the installation;
- When ownership of the UST and associated underground pipework changes;
- When leak detection monitoring methods that may be in place, such as Stock Inventory Reconciliation Analysis, Automatic Tank Gauging (with a reconciliation facility) or interstitial vapour or liquid monitoring of double-walled or jacketed steel tanks, indicate the possibility of a

leak. In this instance, an investigation into the possible leak, including integrity testing in the final stages of the investigation, shall be used to track the reasons for a failure to reconcile;

- Where continuous leak detection monitoring, such as Stock Inventory Reconciliation (SIR), is not carried out at a site. In this instance, UST and associated underground pipe integrity testing should be carried out every 2 years. If USTs and underground pipes do not operate with a continuous leak detection system, but do have cathodic protection installed, then this period may be extended to 10-year intervals.
- USTs are to be fitted with a monitoring tube to allow for the monitoring of leaks through the tank surface;
- Leak detectors are to be installed to the submersible pumps within UST manholes to ensure that there are no line leaks;
- A relatively inexpensive soil vapour monitoring installation must be installed which can be monitored on a frequent basis (monthly intervals) using a Photo Ionisation Detector (PID) e.g., Mini RAE 2000.
- The installation of Soil Vapour Sampling Points will require the placement of a permeable coarse clean sand layer beneath the storage tanks for a vertical depth of approximately 0.5m to 1m in order to locate the vents in the 16mm diameter monitoring pipe over portion of this depth
- The Groundwater Monitoring Action Plan must be included as an Annexure to the approved EMPr.
- Observation wells must be installed in the sand fill surrounding the underground storage tanks for regular monitoring purposes
- All containment manholes must be regularly inspected as part of the normal management procedures at the service station
- Continuous electronic monitoring (CEM) of product must be carried out. Should discrepancies occur an alarm will be triggered and site management will review the finding and take appropriate action to rectify the situation as required.
- Should a leak be found or should the groundwater in the monitoring wells be found to be contaminated with hydrocarbons, a baseline Phase 1 Contamination Assessment should be undertaken and the site remediated in consultation with a contamination remediation consultant and the Authorities.

Forecourt Dispensing Area

- Installation of pump islands in the forecourt area. The pumps are to be fitted with a Spill Containment Chamber;

- Construction of a concrete bunded reinforced graded slab over the forecourt area, with positive falls towards a centrally located catch-pit/sump. The slabs thickness and strength are to be determined by a qualified Engineer. The centrally located catch-pit/sump shall drain into a pollution containment chamber i.e., an approved oil/water separator system. Once the wash water has passed through the system, the separated oil must be collected regularly by an approved waste contractor and removed to an approved hazardous waste disposal facility.

Atmospheric deposition:

Where vehicles are required for airport operation, make use of electrical vehicles as opposed to conventional combustion engine powered vehicles. Reduce/minimise traffic requirements/ground support vehicles for aircraft operations where possible.

Direct Release:

- For routine burns and training purposes, make use of biodegradable fuels, which once burn minimise the impact on the groundwater.
- Erect bunds on which training can take place to contain the waste from the fire residue as well as the extinguishing agents.
- The discharge generated by training exercises will need to be monitored and analysed for several chemical parameters (to be established once the composition of the extinguishing agents used on site are known) and will need to be disposed of or stored appropriately in accordance with the National Water Act (DWS, 1998) (and relevant amendments).
- It is likely that disposal and/or storage of the waste from training will give rise to the need for a Water Use License (WUL), depending on the waste composition, frequency of training and planned disposal of training residue.

Accidental Release:

- Devise and design appropriate bunding for storage of chemical substances that are to be stored on site, as well as erecting the electrical infrastructure (where risk of contamination exists, i.e. substations) on appropriate bunding.
- Implement appropriate monitoring infrastructure, e.g. borehole monitoring around the sites where electrical infrastructure and chemicals are stored, to identify leakages and spillages from chemical storage facilities and electrical infrastructure.

Biodigester facilities for energy generation:

- Proper management and design of digestate application (i.e. use as fertiliser) to areas on the property and/or surrounding areas.

- Monitoring of the impacts on the groundwater will need to be implemented should this biproduct of the facility be used in this way.
- Ensure design of facility is appropriate, e.g. include bunding in high-risk areas or where applicable, instate appropriate monitoring around facility and along relevant points through the system.

Photovoltaic solar facilities:

Make use of biodegradable cleaning agents to ensure little to no impact on the quality of the groundwater is experienced.

Over-abstraction of groundwater:

- Groundwater abstraction volumes must be monitored.
- Water levels must be monitored and should not drop below the critical water level (as per yield testing reports).
- Monitoring information must be assessed regularly (suggested monthly). If the water level in the boreholes drops below the dynamic water level. i.e. 72mbgl for CWA_BH001. and 40mbgl for CWA_BH002 abstraction will immediately be reduced by 10%. This would be for normal rainfall events. If a hydrological drought persists for more than two years, the water level can drop to above the critical water level i.e. 85mgbl for CWA_BH001 and 61mbgl for CWA_BH002. Monitoring will persist for 30 days. In the event of lowered levels persisting after the initial 10% reduction, further reductions in excess of 10% must be implemented and if the low levels persist for more than 60 days, abstraction must cease until the levels have been recovered. This process will continue until the water level in the borehole is stable.
- A formal groundwater management plan needs to be designed and implemented.

Groundwater quality deterioration because of wastewater storage:

- Spillages or leakages from the WWTW could contaminate the surrounding non-perennial freshwater systems and groundwater in the area. Therefore, the effluent containment ponds should be appropriately lined to avoid discharge into the subsurface, and potentially groundwater.
- Solid waste should be stored on concrete bunded or lined surfaces and water drainage from the solid waste should be captured and returned to the WWTW.
- It is recommended that Groundwater Management Plan be implemented to ensure the groundwater quality is not affected by the operations of the WWTW.
- Monitoring of the WWTW infrastructure is required to ensure that there is no loss of water in the system; flow meters measuring influent and effluent must be installed, monitored and recorded.

- Regular internal and external inspections and auditing of the facility must take place to ensure the infrastructure is in good working order.

Groundwater quality deterioration because of brine storage:

- Spillages or leakages from the brine ponds could contaminate the groundwater in the area. Therefore, the brine containment ponds should be appropriately lined with additional bunding structures to avoid discharge into the subsurface, and potentially groundwater.
- It is recommended that Groundwater Management Plan be implemented to ensure the groundwater quality is not affected by the operations of the brine ponds.
- Regular internal and external inspections and auditing of the facility must take place to ensure the infrastructure is in good working order.

Groundwater quality deterioration because of chemical storage associated with WWTW:

- The chemical storage areas should be appropriately lined with additional bunding structures to avoid discharge into the subsurface, and potentially groundwater.
- It is recommended that Groundwater Management Plan be implemented to ensure the groundwater quality is not affected by the operations of the WWTW.
- Monitoring of the WWTW infrastructure is required to ensure that there is no loss of water in the system; flow meters measuring influent and effluent must be installed, monitored and recorded.
- Regular internal and external inspections and auditing of the facility must take place to ensure the infrastructure is in good working order.

Groundwater quality deterioration because of result of irrigation with the treated sewage effluent:

- Contaminated water used to irrigate the demarcated fields could contaminate the groundwater in the area. The WWTW needs to ensure that the water released into the environment is within the limits of the GA.
- Monthly monitoring of the quality of the treated effluent must take place to ensure that quality objectives are reached.
- It is recommended that a Groundwater Management Plan be implemented to ensure the groundwater quality is not negatively affected by the irrigation with treated effluent

<u>Additional:</u>

- Due to the proximity of the Colenso Fault to the CWA, a no-go area for specific high-risk activities is proposed to the northeastern section of the study area. The precise location of the Colenso Fault is uncertain and therefore, the no-go area was drawn 500m from the closest geologically

mapped fault. The 1: 250 000 (Cape Town, 3318) and the 1: 50 000 (Paarl, 3318DB) geological maps were used, and both of these maps delineate the closest fault in the same area. This no-go area does not have to apply to all activities, but only to certain high-risk activities such as the aviation fuel farm, bulk fuel storage, retail service station or other activities that are considered high risk.

- The site development should only proceed on condition that no contamination of the underlying aquifer takes place. This will require the appropriate protection, mitigation and monitoring measures, including those indicated in this report.
- In situations where it is not possible to avoid pollution because of higher operational priorities for example, the need to protect people, take all reasonably practical steps to mitigate the effects of such pollution.
- A groundwater monitoring network will be required, and will require the following:

- Regional monitoring boreholes: To monitor the regional groundwater quality, e.g. of the fractured bedrock aquifer. These boreholes should ideally be monitored prior to the commencement of construction to establish baseline conditions.
- Local monitoring boreholes: These boreholes are required specifically to monitor the groundwater surrounding high-risk facilities (e.g. firefighting training areas, fuel farms, chemical storage facilities etc). The design and position of these boreholes will need to be established once the positions of the high-risk facilities are finalised and the final site development plan is made available. Importantly, any planned development of groundwater production boreholes could be appropriately designed to serve for both groundwater production and monitoring purposes.

- The groundwater impact assessment should be updated if the final site development plan/area changes and once intricate details of the activities for each component of the facilities are known and available.
- It is recommended that all mitigation measures given in this report are to be adhered to in order to minimise the potential impacts of the development on the environment.

2.2.2 Air Quality Mitigation:

Construction Phase:

Dust suppression measures are recommended in order to reduce any possible impacts. "Good practice" dust suppression measures will be adopted, such as:

• Apply wet suppression on the main site roads.

• Implement a speed limit of 30km/hour on unpaved roads on site.

• Give preference to routes away from the western site boundary.

• Reduce the frequency of disturbance of stockpiles.

Dust monitoring along the western, southern and northern boundaries of the site is recommended to be conducted on a monthly basis during construction and to be reported quarterly to the authorities.

Operational Phase:

Scenario 1: Existing runway setup under full utilisation (No-Go Alternative);

In line with the ICAO emission reduction action plans and best practices with respect to airport-related air quality, the following "best practice" emission mitigation measures could be investigated for implementation for Scenario 1:

- Implementation of measures to decrease the queuing lines.
- Minimisation of the waiting time for parking.
- Examination of permitting aircraft taxiing at higher speeds.
- Limitation of the length of the course of taxiing.
- Utilisation of aircraft-serving equipment with "cleaner" technology.

Scenario 2: Operations on the new runway 01/19 in the operational year;

However, the most suitable and cost-effective mitigation measures should be investigated, and an acceptable implementation timeframe should be established before the new runway reaches its capacity.

Scenario 3: Operations on the new runway 01/19 at full capacity.

For Scenario 3, a number of mitigation measures should be considered for implementation in consultation with the various stakeholders associated with all the airport operations. In addition, in line with the noise impact recommendations, the airport-compatible land-use planning immediately south of the new runway would be recommended. As such, the identified potential mitigation measures are:

- Encourage airport-compatible land-use planning.
- Implement measures to decrease the queuing lines.
- Limit the length of the course of taxiing.
- Shutting down as many engines as possible when idling and taxiing.
- Reduce reverse thrust use during landing.
- Utilise aircraft-serving equipment with "cleaner" technology.

- Investigate the provision of electricity at terminal gates, so as to minimise use of the APUs and GSE as much as possible.

Assuming that some of the above-mentioned mitigation measures will be implemented before the airport capacity is reached, the resulting overall impact with mitigation for Scenario 3 would be expected to be slightly lower than the unmitigated one. However, the overall significance rating would not change.

It is recommended that a continuous air quality monitoring station is established at the northern CWA site boundary. The air pollutants to be monitored are SO2, NOx, PM10 and Benzene. The monitoring results should be reported to the authorities on a biannual basis.

2.2.3 Noise Mitigation:

Construction Phase

No specific noise mitigation measures are necessary for the construction operations, other than:

- Ensuring that the equipment is in good working order and properly maintained;
- Providing training to the personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy events;
- Limit night-time construction activities; and
- Avoid night-time construction activities on the property to the west of the airport boundary (earthworks), which are closer to the Fisantekraal residential area.

Construction Monitoring Network and Monitoring Plan:

Noise monitoring should be conducted during the construction phase of the new airport and runway. This monitoring is to be carried out in accordance with the methods stipulated in the SANS 10103:2008 Code of Practice and the current Western Cape Noise Control Regulations.

Two points should be used for the noise monitoring locations, positioned on the inside of the airport boundary. These locations should cover the area close to the entry point of the trucks to the site and the community closest to the construction activities. These locations should be finalised once the construction plan and schedule are determined.

The monitoring should be conducted every three months during construction and on a monthly basis during the period when night-time construction will be taking place.

Three-monthly reports should be submitted to the authorities, including a brief assessment indicating if any construction-specific noise exceedances above baseline and SANS district guidelines are taking place. In the event of exceeding noise guidelines, appropriate site- and operation-specific noise mitigation measures should be investigated and implemented.

Operational Phase

The following actions can be considered, in order to minimise the noise impacts around the Cape Winelands Airport.

- Encourage airport compatible land-use planning via:
    - establishing compatible land use (such as industrial and commercial) to be located around airport facilities.
    - directing incompatible land use (such as houses and schools) away from the airport environs and the runway alignments;
- Provide incentives for airlines to obtain aircraft with the latest available noise reduction technology, through for example noise-related landing charges.
- Consider the use of specific take-off or approach procedures (such as Continuous Descent Operations, or steeper landing trajectories) to minimise and optimize the distribution of noise on the ground.
- Use noise preferential routes to assist aircraft in avoiding noise-sensitive areas, such as Klipheuwel, on departure and arrival, and the use of turns to direct aircraft away from noise-sensitive areas.
- Consider approaches at slightly steeper angles. A small increase in the glide-path angle to 3.2°, rather than the standard 3.0°, may be feasible and offer scope for noise reduction.
- Establish and maintain effective communication channels with the affected public and provide real-time information on incoming and outgoing flights and their evolving noise footprints.
- Consider noise-related operating restrictions for night-time. These can be imposed on a voluntary basis by the airport, or by the Government.

In conjunction with the above-mentioned noise abatement measures, the introduction of 'passive' mitigation measures, such as noise insulation on existing residential dwellings and noise-sensitive buildings (schools, hospitals, etc.) may be considered.

Operational Monitoring Network and Monitoring Plan:

Three permanent noise monitoring terminals should be established before or by the operational year of the new airport and runway.

The first of these terminals should be established at the Klipheuwel area, preferably close to its south-eastern boundary. The second should be positioned within the Greenville Garden City Development, in line with the new runway 01/19 and the third on the eastern side of the Bella Riva development.

A summary of the noise monitoring results should be reported on a quarterly basis to the appropriate authorities. These reports should contain, but not be limited to the:

- 24-hour equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$;
- equivalent continuous day-night rating level, L_{Rdn};
- equivalent continuous day and night rating levels, L_{Rd} and L_{Rn};
- maximum A-weighted level, L_{Amax};
- percentile levels L_n;
- number of exceedances above 70 dB(A) and 60 dB(A) of the L_{Amax} and SEL.

A noise complaints registry should be established and connected with the noise monitoring system, in order to provide the capability for correlation of the complaints with the actual measured levels, as well as the aircraft-related operational data. The complaints and relevant aircraft-related operational data should be included in the quarterly report to the authorities.

2.2.4 Botanical Mitigation:

- All Very High, High and Medium sensitivity areas (Refer Figure 10 above) that do not fall within the authorised development (construction) footprint should be conserved as part of any redevelopment of this site (no development and no infrastructure through these areas), and ideally, they would also all be ecologically connected via rehabilitated Low sensitivity areas. From a botanical perspective most of these areas would be ecologically viable, especially if connected by ecological corridors. Key ecological management interventions required are ongoing alien invasive vegetation management (pre and post burn) and management burns in the appropriate autumn season (once every 8-12 years).
- Two of the Very High sensitivity areas are within the Agricultural Precinct, as is a significant part of the one (that supports the CR *Leucadendron verticillatum*) just East of the main runway.
- All authorised hard infrastructure bordering on any of the mapped areas of Very High, High and Medium sensitivity botanical areas must be surveyed and fenced off prior to any site preparation, clearing or construction. These sensitive areas may not be disturbed in any way during the construction process. Fences should be marked with signage every 15m indicating that these are No Go areas, and all contractors must be made aware of such, starting with and including in their contract quotation requests.
- No perimeter service road may cross or disturb the mapped area of Very High sensitivity East of the main runway.

- An EMPr (THIS DOCUMENT) for the remaining conservation worthy areas on site (all remaining areas of Very High, High and Medium botanical sensitivity, including all such areas within the Agricultural Precinct, refer Figure 10 above) should be drawn up, with input from the botanist.
- All invasive alien vegetation in the conservation areas on site must be removed within one year of any project approval, using appropriate methodology (see Martens *et al* 2021), by qualified personnel. Ongoing annual alien vegetation removal must be undertaken.
- No spraying of herbicide should be undertaken in any conservation areas.
- Once all alien invasive vegetation has been removed from the conservation areas all these areas must be subject to planned (controlled) burn regimes, as this vegetation needs fire for optimal ecological functioning. The two Very High sensitivity areas are the priority areas for ecological burns, which must be undertaken in the period February to March. These burns should be professionally managed.
- Prior to the controlled burn, firebreaks should be brushcut by hand around the perimeter of the sensitive areas (not within them) using handheld brushcutters.
- The botanically sensitive areas will need to be burnt every 8-12 years for optimum ecological functioning.
- The Very High sensitivity areas falling within the Agricultural Precinct must be fenced off and excluded from grazing and trampling by livestock (especially cattle). This must be done within 60 days of authorisation, or sooner if possible (subject to landowner negotiation).
- The condition of all Very High, High and Medium sensitivity areas (Agricultural Precinct and on site) should be monitored every year by a suitably competent botanist (or CoCT Environmental Management Dept.), and they should make recommendations for any management changes or actions (alien clearing, lack of fire, etc.) that are needed in order to achieve optimal ecological functioning in these areas.
- Most of the low and medium significance occurrences of plant SoCC within the proposed development footprint (as well as some of the high significance species) can be successfully translocated, and this should thus be done by experienced Search and Rescue contractors prior to any site development, with the assumption that the receiving areas will be properly managed in perpetuity as plant conservation areas. This must be done in consultation with the botanical specialist and can proceed prior to any authorisation (provided all necessary permits and permissions are obtained).
- A plant Search and Rescue plan should be prepared by the appointed S&R contractor, the EAP and the botanist, and should outline who needs to do the work, when seed, sods and cuttings need to be collected, how they should be stored, how much should be collected, how receiving

sites should be identified and prepared, and how and when the planting out should be undertaken. Guidelines on ongoing maintenance of these areas must also be included.

- Large scale Search and Rescue of plant material from all Medium, High and Very High sensitivity areas within the development and clearing footprints must be undertaken prior to any development or disturbance of these areas and outlined as part of an EMPr for the site. Receiving areas should ideally be located within the greater study area (provided that land tenure and funding for conservation is secure in these areas) and should be areas that support some natural vegetation remnants, but that require rehabilitation intervention. This must be overseen by the botanical consultant.

- Given the Endangered and Critically Endangered status of the underlying habitats, and the level of impact (Medium – High negative before mitigation) it is required that 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 the appropriate ratios (as per Dept. of Forestry, Fisheries & Environment offset guidelines, 2022). A specialist terrestrial biodiversity offset report has been completed (M. Botha 2024) and found that a terrestrial biodiversity offset of at least 77ha is required (plus ongoing environmental management budget for this).

- The applicant, or their appointed management authority, must provide all necessary funding for all required ecological management of the site (airport site and conservation areas in Agricultural Precinct), and for the chosen and agreed biodiversity offset, in perpetuity.

- The botanist must provide input into the Landscaping Plan for the site, which must include a significant indigenous Sand Fynbos and Renosterveld appropriate plant component, in an attempt to maximise biodiversity rehabilitation, whilst adhering to the required airport safety guidelines. Areas that will not be hardened surfaces and that would benefit from rehabilitation should be hydroseeded with appropriate seed mixes, at the appropriate time (late autumn).

2.2.5 Freshwater Ecological Mitigation:

Construction Phase:

- Construction work, particularly of works within the 15m construction conservation buffer of the wetlands, must as far as possible be restricted to the dry, summer season. CVB wetlands 2 and 3 and the remainder of seep wetland 1 where development will not occur, and the wetlands' 15m construction phase conservation buffers must be marked as a no-go area during the construction phase of the proposed development;

- Sediment trapping devices must be utilised downgradient of where works are to be undertaken within seep wetland 1 and upgradient of CVB wetland 3;

- Under no circumstances must linear infrastructure be trenched within the CVB wetlands 2 and 3 or their conservation buffer;
- Any fences that are to traverse the CVB wetlands 2 and 3 must be installed in such a way that hydropedological processes are not impeded within these systems. It is recommended that the erection of fence posts within the CVB wetlands 2 and 3 are avoided;
- Stormwater attenuation ponds must be designed and landscaped in accordance with the Concept Stormwater Management Plan with input from a Landscape and Open Space Planning consultant and freshwater ecologist and all stormwater infrastructure are to be incorporated into the final Stormwater Management Plan. The stormwater infrastructure is to be maintained in accordance with the management plan as described in the Concept Stormwater Management Plan;
- For the construction of the maintenance road along the eastern boundary of the study area, culverts must be installed to allow the passage of water from the upgradient portions of the CVB wetlands 2 and 3 to the downgradient portions. Any disturbed areas within these wetlands must be rehabilitated on completion of construction of the road. Cobbles are to be placed downgradient of the maintenance road to trap sediment and reduce flow velocity of surface water entering the wetlands. The maintenance road should ideally avoid seep wetland 1 and circumvent it to avoid further fragmentation of the wetland. Should this not be possible, the road must be designed in such a manner as to allow hydraulic and hydropedological process connectivity in the landscape while also allowing fauna to traverse the roadway;
- Disturbed areas, particularly associated with the CVB wetlands 2 and 3 with regards to the maintenance road and fences that will traverse these wetlands must be rehabilitated once construction activities have ceased;
- Control measures related to trenching and stockpiling activities must be strictly implemented;
- Access to the site must be from existing access roads as far as feasible to avoid indiscriminate driving through the freshwater ecosystems;
- The 15m construction conservation buffer around the freshwater ecosystems must be implemented for the duration of the construction works where development will not occur to mitigate edge effects. The freshwater ecosystems and the respective conservation buffers must be clearly demarcated using a suitable barrier or material by an Environmental Control Officer (ECO) and marked as 'no-go' areas. Only authorised construction personnel may be permitted to enter these 'no-go' areas as part of the clearing activities, where required, to prevent excessive compaction of the soil within the freshwater ecosystems;

Figure 25: Example of a barrier fence used to demarcate the no -go area around the freshwater ecosystems and the 15 m construction conservation buffer.

Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the respective conservation buffers of the freshwater ecosystems and preferably the 32m NEMA ZoR. A designated contractor laydown area must be approved by an independent ECO prior to use;

- Stockpiles must be placed outside the delineated freshwater ecosystems and 32m thereof;
- Site clearing activities (including for contractor laydown areas) are to remain within the authorised footprint and vegetation clearing is to be limited to what is absolutely essential within that active footprint;
- Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with the freshwater ecosystems or the surrounding terrestrial area;
- Retain as much indigenous vegetation as possible (wetland and terrestrial);
- Dust suppression measures must be implemented throughout construction to prevent excessive dust which may smother freshwater vegetation;
- No indiscriminate movement of vehicles through the freshwater ecosystems may be permitted.
- All vehicles must remain outside the conservation buffers, unless required as part of a specific construction activity for a short period of time. This should also be limited to the drier summer season, where possible;
- Control alien vegetation, specifically invasive and pioneer species which may find a niche to encroach disturbed areas. Ensure AIP species are managed post construction until suitable basal cover is achieved;
- Once all vegetation clearing is completed all vegetation and any removed excess material must be disposed of at a licensed refuse facility and may not be mulched or burned on site; and

- In all events all machinery and vehicles used during construction must be maintained to prevent oil leaks. If breakdowns occur these must be towed offsite site to the designated areas/workshops. The proposed will ensure that incidental oil spills and leakage are minimised onsite and thus limit any opportunities of water contamination and water quality deterioration.
- All construction personnel, vehicles and construction work must be confined to the boundaries of the development footprint and no edge effects must occur. This is of particular importance at seep wetland 1;
- During the excavation and trenching activities, any soil/sediment or silt removed from the freshwater ecosystems may be temporarily stockpiled outside the freshwater ecosystems if construction activities are confined to the dry summer months;
- Excavated materials may not be contaminated (with hydrocarbons, fuel, etc.). It must be ensured that the minimum surface area is taken up, and the stockpiles may not exceed 2m in height;
- Mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later usage as backfill material;
- All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation;
- Any AIPs within the study area (including the linear infrastructure footprints) must ideally be removed prior to soil stripping to reduce seed loads within the topsoil (which will be used to revegetate post construction). This will assist in reducing the long-term AIP management requirements;
- Dust suppression techniques must be implemented throughout the construction phase to ensure dust does not impact the CVB or seep wetlands, which could affect turbidity of the water and impact on wetland vegetation;
- With the exception of the infrastructure as described in this report (the potable water and stormwater infrastructure along the eastern boundary of the runway), no pipelines may traverse any of the freshwater ecosystems. Should additional freshwater ecosystem crossings be considered, the DWS Risk Assessment must be updated to account for these activities.
- Water and stormwater pipelines to be trenched in the freshwater ecosystems must be installed during the drier summer months to prevent water quality impacts to the freshwater ecosystems;
- Unused excavated soil/sediment must be utilised as part of the open space areas (if applicable) or be removed from site to a registered landfill;
- The soil surrounding the linear infrastructure, particularly within 15 m of the freshwater ecosystems must be suitably loosened on completion of construction activities and revegetated to prevent erosion;

- In addition to the above, with regards to excavation and soil compaction activities regarding trenching for the linear infrastructure within the 15 m construction conservation buffer of the freshwater ecosystems
- Stockpiling of removed materials may only be temporary (i.e. may only be stockpiled during the period of construction at a particular site) and must be disposed of at a registered waste disposal facility. Soil must be stockpiled on the upgradient side of the trench to avoid sedimentation of the downgradient areas;

Figure 26: Excavation for trenching with stockpiles alongside.

- Trenches must be backfilled as soon as the infrastructure has been installed in any given section to reduce potential erosion of exposed soil;
- Material used as bedding material (at the bottom of the excavated trench) must be stockpiled outside of the freshwater ecosystems. Once the trench has been excavated, the bedding material must directly be placed within the trench rather than stockpiling it alongside the trench;
- No stormwater generated during construction may be directly released into the freshwater environment;
- It is considered imperative that all excavation activities be undertaken during the drier summer months to limit surface water contamination and the need for any surface water diversion during the construction works (diverting the flow of water through a pipe was not included as part of this risk assessment);
- Construction activities are only allowed in the development footprint. As far as possible, physical movement in the freshwater ecosystems by personnel must be limited; and
- Under no circumstances must linear infrastructure be trenched within the CVB wetlands 2 and 3 or their conservation buffer. Updated design plans (Zutari, 2024a) indicate that the layout of the linear infrastructure avoids wetlands.

- A 5m RoW for linear developments is considered as part of the RAM. This is of particular relevance to the installation of the water pipeline, fences and maintenance road along the eastern boundary of the study area;

Control measures specific to asphalt / concrete works:

- Asphalt, concrete and cement-related mortars can be toxic to aquatic life. Proper handling and disposal should minimise or eliminate discharges into the wetlands. High alkalinity associated with cement can dramatically affect and contaminate both soil and ground water. The following measures must be adhered to:

- Fresh asphalt, concrete and cement mortar must not be mixed near the wetlands' habitat. Mixing of cement may be done within the construction camp, on an impervious surface only, and must be within a lined, bound or bunded portable mixer. Consideration must be given to the use of ready mix concrete;

- No mixed concrete maybe deposited directly onto the ground within the wetlands or associated wetland habitat, outside of the designated area (i.e. fence traversing the seep wetland 1 and CVB wetlands 2 and 3). Any areas that require manual application of cement require that mixed cement be placed on a batter board or other suitable platform/mixing tray until it is deposited;

- A washout area must be designated outside of the wetlands, and wash water must be treated on-site or discharged to a suitable sanitation system;

- At no point may batter boards/mixing trays or cement trucks be rinsed off on site and runoff water be allowed into the freshwater ecosystems;

- Cement bags (if any) must be disposed of in the demarcated hazardous waste receptacles and the used bags must be disposed of through the hazardous substance waste stream; and

- Spilled or excess concrete must be disposed of at a suitable landfill site. Chain of custody documentation must be provided.

Control measures specific to the construction of stormwater infrastructure:

- All attenuation facilities must be constructed through excavation of the in-situ material, sloped to a ratio not steeper than 3:1 and lined with rocks and cobbles to assist with energy dissipation and prevent sedimentation and erosion as well as improve the aesthetic appeal of the attenuation ponds;

- Attenuation ponds must be vegetated with indigenous obligate and facultative species suitable for seasonal saturation with input from a suitably qualified avifaunal specialist. Given the nature of the development, vegetating the dry attenuation ponds may not be possible. This will assist with energy dissipation and prevent sedimentation and erosion as well as improve habitat provision;

Figure 27: Examples of swales utilised for conveyance of stormwater.

- Cobbles must be placed on all outlet structures and indigenous vegetation established to bind the soil of the bed, to prevent erosion and assist with energy dissipation. This will also promote diffuse flow and decrease the velocity of water released downgradient towards seep wetland 1 and CVB wetland 3. The Stormwater Management Plan compiled by Zutari (2024b) is to be updated to include input from a Landscape and Open Space Planning consultant and freshwater ecologist to determine the system characteristics required to prevent excessive erosion of the downgradient seep and CVB wetland whilst also limiting the creation of habitat for birds which provide a safety risk for aircraft. The design and operation must prevent erosion and/or gully formation as this will have an impact on the water dispersal into and across the seep wetland 1 and CVB wetland, which could potentially reduce the extent and functionality of the wetland systems in the long-term;
- All materials used to construct the attenuation ponds must not generate toxic leachates or lead to significant changes in pH or dissolved salt concentrations;
- No plastic lining may be used as part of the attenuation pond construction as this has various ecological impacts;
- It is recommended that the attenuation ponds be vegetated with indigenous wetland and / or riparian vegetation (with input from a suitably qualified avifaunal specialist) to assist with water polishing, trapping nutrients and hydrocarbons from the proposed CWA development before this is released into the surrounding environment;
- With regards to concrete works for the outlet structures (including concrete aprons, reno mattresses, gabions, headwalls, etc., as applicable), see control measures related to concrete works. These must ideally be constructed during the drier summer months to reduce the impact on water quality of the seep wetland 1;
- Litter traps must be installed at all the outlet structures to prevent any litter from entering the freshwater ecosystems;

- Sediment trapping devices must be utilised downgradient of where works are to be undertaken within seep wetland 1 and upgradient of the CVB wetland 3;
- All soil compacted within the wetlands as a result of construction equipment must be loosened prior to revegetation with suitable indigenous species;
- Suitable dust management practices must be implemented for the duration of construction;
- It is highly recommended that construction work for the linear infrastructure is undertaken in the drier, summer period to avoid excess sediment entering the receiving freshwater ecosystems;
- Careful planning of all construction equipment must be undertaken beforehand to ensure that the minimum impact on the freshwater ecosystems occur;
- Any fences that are to traverse the CVB wetlands 2 and 3 (if applicable) must be installed in such a way that hydropedological processes are not impeded within these systems. It is recommended that the erection of fence posts within the CVB wetlands 2 and 3 are avoided;and
- For the construction of the maintenance road along the eastern boundary of the study area, culverts must be installed to allow the passage of water from the upgradient portions of the CVB wetlands 2 and 3 to the downgradient portions. Any disturbed areas within these wetlands must be rehabilitated on completion of construction of the road. The maintenance road should ideally avoid seep wetland 1 and circumvent it to avoid further fragmentation of the wetland. Should this not be possible, the road must be designed in such a manner as to allow hydraulic and hydropedological process connectivity in the landscape while also allowing fauna to traverse the roadway;
- It is also highly recommended that cobbles be placed downgradient of the road to trap sediment and reduce flow velocity of surface water entering the wetlands.

Development footprint

- All development footprint areas should remain as small as possible and should only encroach into the freshwater ecosystem if considered absolutely essential;
- The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled;
- Planning of temporary roads and access routes should avoid freshwater ecosystem areas and be restricted to existing or pre-approved access roads and should not traverse the freshwater ecosystem;
- Appropriate sanitary facilities must be provided for the life of the repair and maintenance phase and all waste removed to an appropriate waste facility;

- All hazardous chemicals as well as stockpiles should be stored on bunded surfaces and have facilities constructed to control runoff from these areas;
- It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage;
- No fires should be permitted in or near the construction area; and
- Ensuring that an adequate number of waste and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills.

Vehicle access

- All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into the topsoil;
- In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practised near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss; and
- All spills should they occur, should be immediately cleaned up and treated accordingly.

Vegetation

- Proliferation of alien and invasive species is expected within any disturbed areas. Whilst not considered severe at this time, the vegetation component within the freshwater ecosystem environment is already transformed. However, alien invasive species are opportunistic, and where disturbances do occur, they will promulgate; therefore, these species should be eradicated and controlled to prevent their spread beyond the project footprint. Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, has to be controlled;
- Removal of the alien and weed species encountered within the freshwater ecosystem must take place in order to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and Section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998); and
- Species-specific and area-specific eradication recommendations:
    - Footprint areas should be kept as small as possible when removing alien plant species; and
    - No vehicles should be allowed to drive through designated sensitive freshwater ecosystems areas during the eradication of alien and weed species.

Operation of the borehole

- Abstraction volumes must be monitored and recorded at suitable intervals (e.g. monthly) to ensure that the abstraction volume (from what is approved by the DWS) is not exceeded;
- Groundwater abstraction must not drop below the critical water level (still to be determined). The management objective should be to maintain the groundwater level at or near the dynamic water level (still to be determined) to avoid the development of a cone of depression in the local landscape and significant impacts to the freshwater ecosystems within the study and investigation areas;
- Should it be observed that abstraction have dropped below the critical water level or if a water quality change has been observed, the relevant DWS compliance officer should be informed to discuss and develop a new abstraction plan that can sustain the aquifer; and
- During maintenance activities, particular care should be taken with regards to vehicle and spill management.

Solar PV facilities:

- Maintenance activities associated with the PV facility must be confined to the developed footprint of the PV facility and development footprint;
- Under no circumstances may waste (including grey water from the washing of the PV panels) be discarded in the surrounding environment. Suitable waste management practices must be implemented;
- BESS infrastructure (if any) must be regularly inspected and must be operated in line with applicable SANS standards (e.g. SANS 56005:2022 Ed 1 and SANS 62133-2:2022 Ed 1 as issued in Schedule B1 of GN 1427 of 18 November 2022, as issued in terms of section 24(1)(a) of the Standards Act (act 8 of 2008)); and
- Monitoring for the establishment for AIP species must be undertaken, specifically in the PV panel array footprint in the south-eastern portion of the study area. Should AIP species be identified, they must be removed and disposed of at a licenced waste management facility.

Soils

- Sheet runoff from compacted areas should be slowed down by the strategic placement of berms;
- It is considered ideal that activities occur within the current season (low rainfall) to minimise impacts of sedimentation;
- As much vegetation growth as possible (of indigenous floral species) should be encouraged to protect soils;

- Temporary stockpiling of excavated material from trenches can be retained alongside trenches, as required for backfilling. Any soil to be stockpiled for longer than a month should be moved to a designated stockpile area, as approved by the Environmental Control Officer (ECO);
- All soils compacted during the repair and maintenance phase should be ripped and profiled; and
- A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision.

Rehabilitation

- Construction rubble must be collected and disposed of at a suitable landfill site; and
- All alien vegetation in the footprint area, as well as the immediate vicinity of the proposed work area, should be removed.

Operational Phase:

- Implement a monitoring programme to detect and prevent the pollution of soils, surface water and groundwater;
- Monitor wetlands that will potentially be impacted by the proposed CWA development to ensure that the PES drivers and receptors are maintained, and where possible improved, in accordance with the REC and RMO.
- A Service Infrastructure Management Plan should be compiled which details the frequency in which service infrastructure, particularly the sewer and water treatment plants, bio-digester and sewer conveyance infrastructure must be serviced. For example, it is recommended that the integrity of the sewer infrastructure and treatment plants be tested at least once every five years or more often should there be any sign of a leak.
- An emergency plan must be compiled to ensure a quick response and attendance to the matter in case of a leakage or bursting of a pipeline or overtopping of sewage at the treatment plant and/or bio-digester.
- Jet fuel and other potential hazardous chemicals must be stored in a manner that reduces the potential for spills.
- An emergency spill protocol must be compiled and is to be maintained for the CWA, especially for potential spills on the runways, aprons, roads, etc. to prevent the pollutants from being transported via stormwater infrastructure into the downgradient wetlands.
- Regular inspection of the stormwater outlet structures must be undertaken (specifically after large storm events) to monitor the occurrence of erosion. If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation, where applicable.

- All pipelines and attenuation ponds must be regularly cleaned, and all outlet structures (if any) checked to ensure there is no debris/blockages.
- The likelihood of erosion at the discharge points can be reduced provided that a higher surface roughness is implemented in the area from the discharge points down to the delineated freshwater ecosystems, allowing for water to enter the seep wetland 1, CVB wetland 3 and the surrounding environment at a lower velocity. This can be achieved through the placement of cobbles and ensuring that the area surrounding each discharge point is suitably vegetated.
- No development within the 15m and 16m operational phase conservation buffer of the CVB wetlands 2 and 3 and seep wetland 1, respectively, may be undertaken.
- The proposed stormwater infrastructure must be incorporated into a suitable and site-specific Stormwater Management Plan (e.g. as compiled by Zutari, 2024b) and the stormwater infrastructure are to be maintained as per the requirements of the Concept Stormwater Management Plan (Zutari, 2024b).
- It must be ensured that regular maintenance takes place to prevent failure of any infrastructure associated with the proposed CWA development.
- Only existing roadways should be utilised during maintenance and repairs to avoid indiscriminate movement of vehicles within the wetlands.
- Should repair of the sewer infrastructure be required to address a leak, control measures relating to trenching and stockpiling must be implemented depending upon the location of the leak.
- With regards to maintenance activities for roads, fences and service infrastructure refer to applicable measures in Construction Phase control measures.
- No vehicles are permitted to enter the freshwater ecosystems. Any maintenance works must be undertaken by foot, or the relevant authorisations obtained beforehand.
- The **Wetland Offset Study and Implementation Plan (Annexure 7B)** needs to be implemented.

Monitoring:

- A monitoring programme must be implemented to detect and prevent the pollution of soils, surface water and groundwater. This has been compiled by GEOSS.
- Monitoring of the implementation and management of the Freshwater offset plan.
- Monitor wetlands that will potentially be impacted by the proposed CWA development to ensure that the PES drivers and receptors are maintained, and where possible improved, in accordance with the REC and RMO.

- Monitoring for the establishment for AIP species must be undertaken, specifically in the PV panel array footprint in the south-eastern portion of the study area.
- A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision.
- Regular inspection of the stormwater outlet structures must be undertaken (specifically after large storm events) to monitor the occurrence of erosion. If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation, where applicable.

2.2.6 Hydropedological Mitigation:

- All development footprint areas should remain within the demarcated areas as far as possible, and disturbance of soil profiles must be limited to what is essential with a compact footprint.
- Subsurface lateral flow of water through the landscape (under seep wetlands and interflow soils) must be taken into account and buildings/structures should accommodate waterproofing and water management structures to divert laterally seeping water away from foundations into the gardens or storm water structures.
- Increased surface sealing as a result of the proposed development will result in decreased infiltration as bulk of the stormwater from sealed or paved surfaces are generally discharged in stormwater systems. The exception to this is where runoff is localised and directed to unsealed surfaces or adjacent watercourses in an attenuated manner.
- Water from clean water diversion structures should be discharged back into the adjacent wetland features in an attenuated manner.
- Implementation of strict erosion control measures to limit loss of soil and sedimentation of the watercourse within the proposed development footprint.
- Only the designated access routes are to be used to reduce any unnecessary compaction.

2.2.7 Terrestrial Ecological Mitigation:

<u>Construction Phase:</u>

Faunal Mitigation Measures

- The development footprint should be demarcated, and it should be ensured that no development related activities take place outside of the demarcated footprint;
- Faunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways as per the Bird and Wildlife Hazard Management Plan for the airport;

- Site clearance activities should take place in a phase manner, starting from the south moving northwards, or centrally moving outwards, so that faunal species can flee ahead of clearance activities into adjacent habitat and not get trapped in centralised, remnant patches;
- Construction personnel are to be educated about the various faunal species in the area, particularly about venomous spiders, snakes and scorpions. None of these or other species are to be killed or injured by construction personnel. Should any of these species be encountered, these species are to be safely and carefully relocated to the surrounding natural habitat adjacent the development site, should they not move off on their own;
- The contact details of a suitably qualified snake handler be made available to construction teams should a venomous snake be encountered that needs removal. Alternatively, it is recommended that a member of the construction team be trained to handle and remove snakes through a recognised snake handling course;
- Sound environmental management practices should be adhered to at all times;
- Alien plant species should be suitably managed and no further spread of alien plants should be allowed;
- No illicit fires must be allowed during the construction phase;
- External lighting should be kept to a minimum with downward and inward facing lights being used. Yellow or red fluorescent lights are preferable, while the use of bright white or LED lights should be avoided. Lighting used must be kept to minimum, but in allowance with the required health and safety requirement for nighttime operations;
- Noise must be kept to acceptable levels as per the environmental norms and standards for noise mitigation as stipulated within the noise specialist report;
- No hunting, trapping or collecting of faunal species is to be allowed, other than for rescue and relocation purposes. Setting of snares by personnel is to be prohibited; and
- Suitable measures must be put in place to ensure that no sediment runoff from cleared areas enters any downstream/downslope habitat units which may lead to altered habitat conditions.

Avifaunal Mitigation Measures:

- The development footprint should be demarcated, and it should be ensured that no development related activities take place outside of the demarcated footprint;
- Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways;

- Site clearance activities should take place in a phased manner, starting from the south moving northwards, or centrally moving outwards, so that avifaunal species can flee ahead of clearance activities into adjacent habitat and not get trapped in centralised, remnant patches;
- Sound environmental management practices should be adhered to at all times;
- Alien plant species should be suitably managed and no further spread of alien plants should be allowed;
- No illicit fires must be allowed during the construction phase;
- Stormwater/attenuation pond surfaces should be closed off to prevent avifauna from congregating to these areas, notably waterfowl and larger bird species which pose a risk to aircraft;
- As far as possible, vegetation clearance should take place during the winter months, outside of the breeding/nesting periods of avifaunal species;
- Noise must be kept to acceptable levels as per the environmental norms and standards for noise mitigation as stipulated within the noise specialist report; and
- No hunting, trapping or collecting of avifaunal species is to be allowed. Setting of snares by personnel for ground dwelling birds is to be prohibited;

Operational Phase:

Faunal Mitigation Measures

- No further development related activities are to take place outside of the demarcated footprint unless duly authorised by the competent authority;
- Faunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways as per the Bird and Wildlife Hazard Management Plan for the airport;
- Operational personnel are to be educated about the various faunal species in the area, particularly about venomous spiders, snakes and scorpions. None of these or other species are to be killed or injured by personnel. Should any of these species be encountered, these species are to be safely and carefully relocated to the surrounding natural habitat adjacent the development site, should they not move off on their own;
- The contact details of a suitably qualified snake handler be made available to construction teams should a venomous snake be encountered that needs removal. Alternatively, it is recommended that a member of the operational team be trained to handle and remove snakes through a recognised snake handling course;

- Sound environmental management practices should be adhered to at all times;
- Alien plant species should be suitably managed and no further spread of alien plants should be allowed;
- Whilst it is accepted that there will likely be significant external lighting during the operational phase, it is still recommended that the amount of light be minimised as far as possible (notably outward shining/emitted light), and that downward and inward facing lights be used wherever possible, but within legislated operational health and safety guidelines/requirements. Yellow or red fluorescent lights are preferable for building and perimeter lighting, whilst the use of bright white or LED lights should only be used as and where necessary for apron lighting (or as required by operational health and safety for airport operations). Lighting used must be kept to minimum, but in allowance with the required health and safety requirement for airport operations;
- Noise levels must be suitably managed in line with the norms and standards for airports operations. It is however acknowledged that the larger aircraft will generate noise levels beyond the recommended health and safety guidelines, and that these unfortunately cannot, at this point in time, be reduced due to the nature of turbine jet engines;
- Stormwater is to be suitably controlled and discharge points monitored for erosion; and
- No hunting, trapping, or setting of snares by personnel is to be allowed. Suitable fines/disciplinary actions for such must be made known and implemented.

<u>Avifaunal Mitigation Measures</u>

- No further development related activities are to take place outside of the demarcated footprint unless duly authorised by the competent authority;
- Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways and as per the Bird and Wildlife Hazard Management Plan for the airport;
- Sound environmental management practices should be adhered to at all times;
- Stormwater /attenuation ponds must be monitored and covers/screens of these features repaired if damaged. If leaks appear or ponding at the outlets is evident, this must be rectified to avoid attracting waterfowl or larger avifauna such as herons etc which pose a risk to aircraft
- Noise levels must be suitably managed in line with the norms and standards for airports operations. It is however acknowledged that the larger aircraft will generate noise levels beyond the recommended health and safety guidelines, and that these unfortunately cannot, at this point in time, be reduced due to the nature of turbine jet engines;

- Reactive control measures should be investigated and where needed implemented to manage birds and other wildlife at the airport. Such includes dispersal measures (sirens, lasers, pyrotechnics, and Border Collies) and removal measures (live capture, nest removal etc) as and where feasible/needed; and

- Buildings, structures and landscaped gardens may provide artificial nesting/habitat for avifaunal species and increases their potential activity around the airport. Methods to reduce available shelter include: 1) Exclusion measures such as spikes, netting, panelling on ledges and holes around buildings to assist in prevention of birds taking residence, 2) Nest removal and 3) Cutting / mowing of vegetation where needed (this may however attract a different assemblage of avifauna which selects for such areas). As such, vegetation clearance should be done in line with the recommendations as per the **Bird and Wildlife Hazard Management Plan** (Annexure 11) for the airport.

- The presence and abundance of high-risk bird species are primarily associated with agricultural land use and water bodies within the primary bird hazard zone surrounding the proposed CWA. The movement of birds between these habitats warrants attention.

- Specific attention should be given to managing the Fisantekraal wastewater treatment works (WWTW), its expansion, and the surrounding livestock feedlots and lawn cultivation areas.

- Additionally, the large open water body to the southeast of the airfield requires careful oversight.

- Effective management will necessitate engagement with landowners in the vicinity to mitigate the attractiveness of agricultural and farming activities to birds.

- Notably, given that most high-risk bird species are drawn to grasslands, establishing grassed areas directly on the airfield and adjacent to manoeuvring zones is not advisable.

- The **Bird and Wildlife Hazard Management (Landscape and Open Space Planning Guidelines) (Annexure 11)** for the proposed CWA should be considered where appropriate.

2.2.8 Socio-economic Mitigation:

Many potential impacts could be mitigated by introducing the measures proposed by various specialists; these must be considered and implemented by the developer. Monitoring and evaluating socio-economic impacts and continuously assessing the outcomes would further inform the social and economic fabric and the impact on surrounding land users. The following mitigation measures related to the socio-economic context are proposed and should be consolidated into an Implementation Plan as part of the Construction Environmental Management Plan (CEMP) and/or Operational Environmental Management Plan (OEMP).

<u>Pre-construction Phase:</u>

Procurement Strategy that includes the following and applies to the project:

- Initiate the activity during the first phase of the development;
- The strategy is the responsibility of the contractor(s) collectively under the guidance of the Municipality;
- Focus on opportunities for local labour in the surrounding areas and businesses as a priority. Contractors are required to indicate the geographical location of sub-contractors (businesses) and local labour; and
- Local contractors invited to tender for work in the context of the terms and conditions included in RFP documentation, which would include skills development, on-site training, gender equality, etc.

Pre-construction & Construction Phase:

Communication Protocols that address directly and indirectly affected residents and surrounding landowners, with specific reference to activities, timelines and intended impacts related to the construction phase and all related activities associated with the implementation of the project (i.e. during the operational phase).

- Objectives
  - To orientate, generate awareness and gain positive attitudes among stakeholders as far as possible; and
  - To engage and inform stakeholders of progress regarding all phases of construction.
- Target audience
  - Property owners and users of the land portions directly surrounding the proposed activity; and
  - Other stakeholders and property owners that may be affected.
- Major types of messages
  - Inform directly affected residents on the periphery of the development site and others that would frequent the area;
  - The commencement date for construction activities related to the project;
  - Duration and extent of the construction activities and details of individual construction activities;
  - Progress updates, including any delays in a construction-related activity; and
  - Introduce appropriate signage to warn persons frequenting the area and those residing adjacent to the development area.

Construction Phase:

Nuisance factors (dust and noise) - Dust and noise emissions during the construction period should be minimised through a Construction Environmental Management Plan (CEMP).

Influx of job seekers, impact on local communities - Contractors need to employ people from the immediate area whenever possible.

Increase in local crime - Co-operation between the Developer and contractors is essential to ensure that the area around the proposed development remains secured during construction. On-site security measures, such as perimeter fencing, controlled access and security guards and patrols will minimise the risk.

Operational phase:

Sense of place, residential property values - Implement recommendations by relevant specialists to mitigate negative impacts related to visual, traffic, noise, air pollution.

Local crime - Co-operation between Developers and contractors and on-site security measures.

Informal settlements - Formal housing could address the area's housing needs, eliminating the need for informal structures. Private landowners should ensure that unauthorised land settlements are dealt with by the authorities.

Nearby farming and business operations - Refer to mitigating measures relevant specialists proposed (in particular agro-ecosystem, noise and air pollution).

2.2.9 Heritage (Visual) Mitigation:

2.2.9.1 Design Phase

Master Plans and Guidelines required for the overall development (refer to Section 4.1.1 below):

It is recommended that the first Site Development Plan (SDP) to be submitted to the City of Cape Town Municipality for approval must trigger the requirement for the following to be submitted for approval at the same time:

1) A detailed Master Architectural Guidelines document to govern all architectural development within the CWA throughout all future phases.

2) A detailed Master Landscape Plan (that supersedes the current Draft Overall Landscape Concept Plan (PAL 4)) to show all landscape architectural development within the CWA throughout all future phases.

3) A detailed Master Landscape Guidelines document to provide a standard and framework for and govern all landscape architectural development within the CWA throughout all future phases.

Plans and Guidelines required to accompany all future Site Development Plans (refer to Section 4.1.2 below)

All future Site Development Plans within the CWA development that are to be submitted to the Municipality for approval must contain / be accompanied by the following:

1) A Detailed Landscape Plan and (SDP-level appropriate) Landscape Architectural Guidelines document prepared by a suitably qualified Landscape Architect.

2) A detailed Fencing proposal.

3) A detailed Signage Proposal where signage is proposed.

4) A detailed Lighting Proposal

Plans and Guidelines required to accompany particular Site Development Plans (refer to Section 4.1.3 below)

Certain areas within the CWA development require particular attention in response to contextual informants or must be accompanied by additional information or further visual specialist input at a later stage of design development:

1) Any SDP that includes development in areas within the Scenic Drive/route Envelope of the R312 (i.e., any areas adjacent to the R312 scenic Route or within the 100m signage buffer area).

2) Any SDP that includes development in areas within the Airport Airside Precinct.

3) Any SDP that includes development in areas within Zone 1 (the Services Precinct).

Miscellaneous Conditions of Approval

The ECO must conduct a lighting audit at the end of each Construction phase, to ensure that the mitigation measures set out in this report (as well as future Visual Statements or CA inputs) are adhered to and successfully implemented.

The Final Completion of the landscape installation should be made a condition for final occupancy certificates to be issued during the Construction phase. This is to ensure that the landscape installation accompanies (and is completed during) the construction phase of its associated building/s, precinct, erven etc.

The SDP architectural plans must show the substation and the Solar Panel arrays in the layout.

Local policy dictates that visual cluttering of the landscape by non-agricultural development must be managed. The following applies to buildings (and associated structures such as the ATCT) facing and/or visible from the R304 and the Agter-Paarl Paardeberg Cultural Landscape:

- Building facades and the surfaces of structures may not be illuminated; may not have any signage, lettering, logos or advertising (illuminated or otherwise) mounted upon them.

- Buildings and structures must be designed to be visually recessive in materials/finishes, colour, form and massing.
- Buildings and structures must be designed to be sympathetic to the rural Agricultural landscape character in their design and architectural expression.

Visual impacts along Scenic routes are generally managed using visual buffer zones with setbacks and height restrictions. The following development parameters are recommended at Conditions of Approval:

- Apply a 30m visual buffer zone offset from the R312 Lichtenburg Road scenic Route within which no buildings may be placed.
- Enforce a 100m Signage "buffer zone" along the R312 Scenic Route. No 1st Party signage, 3rd Party signage, billboards, outdoor advertising and (specifically) no illuminated or digital signage should be permitted within 100m of the property boundary adjacent to the R312.
    - Standard Provincial road signage within the road verge indicating the location of the entrance to the Cape Winelands Airport is acceptable.
    - One 1st Party Sign may be permitted at the entrance to the CWA
- Apply a 9m Height control restriction along the R312 Scenic Route. This height restriction must extend 100m into the subject site to include a large enough part of the Scenic Route Envelope to have the desired effect of maintaining long views through this newly urbanizing area

Regarding wind energy infrastructure:

- If wind turbines (either mounted on roofs or land-based) are proposed during the SDP phase for any building, precinct, erven etc., this should trigger the input of a visual specialist to provide a Visual Statement that includes simulations to determine the extent and significance of direct and cumulative visual impacts of the proposed wind power generating infrastructure.

The Agricultural Precinct must be considered a "No-Go" area. No further development should be allowed within the Agricultural Precinct.

Existing landscape patterns are important to conserving landscape character, sense of place and maintaining the inherent VAC of the subject site.

- No further removal of existing vegetation (with the exception of alien invasive species) should be permitted within the Agricultural Precinct.
- The Tree Survey and Tree Plan must motivate for the removal of existing trees within Zone 1-3, and existing trees should be retained wherever possible (especially those that contribute to the characteristic landscape patterns of the surrounding Cultural landscapes). This is to ensure that windbreaks, avenues, copses and place-defining or gateway planting is not needlessly destroyed by new development.

Outdoor Signage

The subject site is located within and alongside areas of maximum control in terms of the Outdoor Advertising and Signage Policy of the City of Cape Town, 2013; and the Outdoor Advertising and Signage By Law (No. 10518, 2001). Enforcement of the By Law and Policy guidelines are especially important to reduce the impact of possibly inappropriate signage along the Scenic Drive. According to the Policy, the City will encourage creative locality bound signs which are sensitive to natural and Cultural Landscapes in non-urban settings.

In general, the development proposal (including all future SDP plans to be submitted) must comply with the Outdoor Advertising and Signage Policy and By-law in all respects.

Specifically, the development proposal (including all future SDP plans to be submitted) must demonstrate that all outdoor advertising signs and other signage (external advertising, direction signs and/or outdoor display) do not impact negatively on visual corridors, Cultural Landscapes and Scenic Routes.

No signage, lettering or outdoor advertising (within the proposed development or on the perimeter) may be installed higher than the average building height, or the overall height restriction for the development, whichever is the lesser. The illuminated 1st party logo sign proposed to be mounted on the ATC tower is not supported.

Outdoor signage and (especially) outdoor advertising must be kept to a minimum throughout the development. This is especially important to protect the R312 Scenic Route's view corridor, the remnant Landscape Character of the Receiving Environment, and the views of sensitive viewers within the Cultural Landscapes and travelling on the scenic Routes surrounding the subject site.

- The 1st Party Sign at the entrance to the Cape Winelands Airport must adhere to the Principles and Placement contained in the CWA Outdoor Advertising Guidelines for 1st Party Signage (which are generally supported form a Visual Impact management point of view).
- 3rd Party Outdoor Advertising Signage should be restricted along the perimeter of the property boundaries, and should not be permitted if visible from within the surrounding Cultural Landscapes or from Scenic Routes.
- No outdoor signage or 3rd Party Outdoor Advertising Signage should be allowed to be erected along any of the edges of the Airport Airside Precinct, or anywhere within the Agricultural Precinct (i.e., within view of the R304 or the R312).
- No outdoor signage or 3rd Party Outdoor Advertising Signage (including freestanding outdoor billboards and digital screens) should be allowed within the 30m Visual buffer zone or within the 100m Signage buffer zone.
- No 3rd Part advertising signage should be visible from the R312 Gateway point.

Signage on building facades must be sensitively placed and sized to cater for views within the proposed development.

- No 3rd Party Outdoor Advertising Signage should be allowed on building facades visible from the R312 or R304.
- No signage or lettering on building facades should be legible to viewers located outside of the Foreground Distance zone of the sign (i.e., signage should not be particularly noticeable for viewers located more than +-800m away.).

Fencing, Walls and Boundary interfaces

The proposed development must comply with the Boundary Walls and Fences Policy of the City of Cape Town, 2009 in all respects. Other policy relating to fencing and boundary treatment are the Heritage and Scenic Resource: Inventory and Policy Framework for the Western Cape (Respect the landscape setting and gateway qualities of scenic routes by ensuring appropriate design of road verges and fences); and the Western Cape Land Use Planning Guidelines for Rural Areas, 2019.

- The plan, typical details and sections should show height of wall/fencing, material & construction method, any accessories (such as lights, security apparatus, wildlife bridges, signage etc.) and distances from roads and road verges.
- Boundary walls, fencing and gateways should be in keeping generally with a visually neutral architectural character, designed simply, and remain visually permeable as far as possible.
- High, solid or palisade-type walling, and any form of precast panel type fencing is inappropriate and should be avoided.
- Low walling where used should be plastered /painted with earth tones, in line with the approved general materials and finishes recommendations contained in the Architectural Guidelines.
- Where security fencing is required, it should be screened with trees or hedging.

Lighting – General, Outdoor and Sources of Light

In principle, lighting in the development should:

- ✓ Only be on when needed for active use;
- ✓ Only light the area that needs it;
- ✓ Be no brighter than necessary;
- ✓ Minimize blue light emissions;
- ✓ Be fully shielded (pointing downward) as far as possible.

Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the light source, including interior or undercover lighting sources;

Façade lighting to be limited to accents and features, avoiding large parts of the exterior of buildings to be lit from any side, but especially not the facades facing the R312 scenic route, nearby homes and any of the Cultural Landscapes surrounding.

Pedestrian pathways, parking areas and vehicular roads should be lit with low level 'bollard' type lights or post lights (maximum 3m tall) that are fully shielded (pointing downward). Fully shielded fixtures minimize skyglow, glare and light trespass.

No "always-on" security flood lights, naked or exposed peripheral/boundary lighting or uncovered luminaires of any kind should be visible from public roads, the Scenic route, surrounding residential areas or the Cultural Landscapes that surround the site.

Security lighting should be activated on movement as far as possible.

The 6m perimeter lighting proposed to encircle the development periphery is not supported. Future SDP plans must include a lighting proposal.

Light emitting diodes ("LEDs") are appropriate for outdoor lighting. If it is necessary to use white light, low-colour-temperature LED lighting should be used on the condition that the brightness can be dimmed when they aren't needed for active use (for example: to light empty parking lots etc.)

Because blue light brightens the night sky more than any other color of light (International Dark Sky Association, 2021), it's important to minimize the amount emitted. The proposed development should use warm light sources (lower color temperatures) for outdoor lighting: a maximum of 3000 Kelvins is recommended.

It may not be possible for parts of the proposed development to adhere to the above mitigation measures in every part of the development, given the specialized lighting that would be necessary at an airport.

- This risk can be managed through the submission of the detailed Lighting proposal at SDP stage. This will allow the CA and/or the visual specialist to be provided with sufficient information during the future approvals process so that visual impacts associated with the direct and indirect visibility of lighting can be avoided, reduced or mitigated wherever possible when this detailed information is available.

- In the absence of specific South African or municipal guidelines, compliance with the International Dark Sky Association (IDA) Criteria for Community-Friendly Outdoor Lighting is called for. It may therefore be necessary for an Overall Lighting Report to be called for at the Land Use Planning Approval stage, to be prepared by a suitably qualified electrical engineer.

- The purpose of this report would be to provide a demonstration sketch of the illumination conditions generated by the various light sources within the CWA development.
- The proposed CWA development does not exist in a vacuum, but within a complex "transitional" receiving environment that has a lot of variability in terms of light sources and overall lighting conditions at night along its different edges. The CA may therefore require some kind of simulation overlaying contextual graphics (site photographs, 3D model or aerial imagery), which is not within the visual specialist's expertise to generate.

Materials and Finishes

Roof and facade materials must be neither bright nor light. The appropriate colour range is achieved by increasing the shade (black) and tone (grey) of the desired colour palette. This darkens the original hue while making the chosen color appear more subtle and less intense.

- All roof material finishes should be located on the cool colour spectrum (e.g. the hues of blue, charcoal, grey, green etc.) and should be visually recessive.
- All façade material finishes should be visually recessive, and contrast minimally with roof material finishes.
- White, cream, beige and similarly light colours are not appropriate for roofs and facades.

The use of a range of colours within an approved palette (to be determined as part of the Architectural Guidelines) is recommended for roof and facade materials and finishes. This prevents the development from appearing as a solid and/or overly uniform roofscape typical of newly established developments, especially from views at a higher elevation.

Where tenants or future potential developers within the various precincts of the CWA require the specification of bright colours in line with their branding (which are often on the warm colour spectrum) on exterior portions of buildings, the following:

- These areas must not cover more than 25% of the building façade.
- The placement of these portions of allowable colour must be located sensitively so as not to negatively affect views from the surrounding cultural Landscapes and scenic routes.
- Roof colour should always conform to the overall material palette of the rest of the development, to ensure that views from higher elevations experience a measure of uniformity in the roofscape, within a range of appropriate colours.

Landscape

If 10% or more of the total number of trees proposed in the Landscape Concept Plan are removed from the proposal, this should be considered a substantial change, and the input of a suitably qualified visual specialist must be sought out (in the form of a Visual statement).

Tree avenues are an appropriate screening and scaling tool to be used within the proposed development, and the Landscape Architect/s must select a variety of species carefully to ensure that there is a measure of continuity within the soft landscaping of the proposed development with the planting patterns of the receiving environment.

Establish new tree avenues with suitable species to enhance cultural landscape features lost through the development to reinforce or replace traditional patterns of planting where appropriate with suitable species.

Screening with trees and soft landscaping (especially on public road verges) should include areas of higher density (where it is necessary to break up the bulk and mass or horizontality of the buildings, limit the visual impact of signage, or screen views into parking lots and back of house areas), as well as areas where tree planting may be less dense (to allow view corridors and glimpses into the proposed development).

The timing of landscape installation:

- The soft landscaping along all public road verges (and especially trees that play a role in screening the development from the R312) must be specified in the phase 1 SDP, and implemented along with the first phase of the development, and as early in the construction process as possible or feasible.
- All other trees must be planted along with their associated phases, and as early in the construction process as possible. This phased tree planting strategy is the substance of the Tree planting plan.
    - The implication of the above recommendation is that the irrigation system design, supply, powering and storage of irrigation water must be developed and functional to the point that it will be able to supply sufficient irrigation water to the newly installed trees at the time of their installation (during Phase 1 and/or whenever a new phase of the proposed development is implemented along with its landscape and trees).
    - The design team (Landscape Architect and/or Engineer) must therefore provide the CA with sufficient detail to demonstrate that the irrigation requirements for proposed trees will be met through rainwater harvesting, borehole supply or similar; and storage capacity must be indicated on the appropriate Landscape Plans. Ideally, the stormwater attenuation ponds should be integrated into the system of rainwater storage and re-use for irrigation purposes.

Correct management and specification are key to ensuring successful mitigation that depends on screening visible elements of a development with trees. The key to the successfully establishment of trees for screening (at least in the Western Cape) is not their size or maturity at installation, rather it is the provision of ideal growing conditions from the point of installation onward – with specific reference to soil conditioning and irrigation supply. The following Tree specification and irrigation design guidelines must be adopted and displayed on all future Landscape Plans:

- The landscape establishment phase (i.e., the time period after which a Landscape Contractor is employed to maintain and monitor a newly installed landscape after practical completion) must not be less than 24 months in duration.
- The irrigation supply of trees should be maintained consistently throughout the year (i.e.; during the establishment period, as well as on a permanent basis after establishment, and during the operational phase of the development).
- Soil moisture content in the root ball must be consistent, i.e., trees may not be allowed to dry out during the Western Cape summer months or become waterlogged during the wet winter months. This requires rainfall responsive irrigation source and supply design, as well as adjustable irrigation supply management technologies.
- Irrigation design must provide dedicated lines for the irrigation of trees, and these dedicated lines must be programmed to supply water to trees on their own regime.
- Slower, more frequent soaking watering regimes should be preferred for trees over large quantities infrequently over short periods of time.
- The recommended guideline for watering trees is a minimum of 40 – 50L per week.
- A very important aspect of the watering regime is consistency. Once planted, the irrigation cycle should not be allowed to cease (in the summer months especially), and the irrigation regime must maintain a +-7-day cycle at the least.
- Soil samples must be taken prior to the specification and design of the irrigation system and the tree holes to ensure that soil conditioning is responsive to site-specific conditions.
- If the soil is at all sandy, it is strongly recommended that Zeoplant moisture retention granules or a similar product is specified to reduce fluctuations in the soil moisture content of the root balls of trees.
- The root balls of trees must also receive adequate aeration, and compaction of root zones must be avoided.
- Trees in the parking lots will experience far more extreme growing conditions than those on the road verges, and cannot be expected to offer significant screening functionality. Nevertheless,

they must receive the same treatment as that of the trees on road verges or within the open landscape.

- The Landscape Architect must therefore ensure that trees in parking lots are given adequate space, irrigation, aeration and soil conditioning to ensure their survival and successful establishment.

The CA should not allow any further development to encroach on the Agricultural Areas of Significance or the Agter-Paarl Paardeberg Cultural Landscape East or North of the subject site. The preservation and enhancement of the remainder of the subject site as untransformed farmland will serve to offset the visual intrusion along this eastern edge somewhat by maintaining the landscape as a container for the proposed development. It is recommended that the remainder of the Agricultural Precinct retains its agricultural land uses, and should be actively farmed, if possible, to maintain its Agricultural character.

2.2.9.2 Construction phase

Soil disturbance and revegetation

Areas disturbed (for any reason) must be revegetated (or planted as per the approved Landscape Master Plan) within a maximum of 1 year after the disturbance occurs. The ECO must report on disturbed areas and revegetation. The only circumstances under which delay may be tolerated are:

- If the area to be revegetated/planted is still an active construction site;
- If the revegetation/planting must happen during a particular season to await optimal planting conditions. In these cases, revegetation/planting must occur in the first of such season after the delay.

All embankments must be appropriately stabilized and revegetated to match the existing/surrounding natural vegetation.

Rehabilitation/revegetation must be handled in accordance with the recommendations of the botanist or other suitably qualified specialist, and under the supervision of the ECO.

During excavation activities, topsoil must be stockpiled separately from other material. The mixture of the lower and upper layers of the excavated soil must be kept to a minimum, so as for later use as backfill or rehabilitation material after construction has commenced.

Exposed soils must be protected from wind and water erosion (using tarpaulins or a suitable geotextile) for the duration of the construction phase.

Ongoing monitoring for the establishment of alien and invasive vegetation species must be undertaken periodically (during construction, and at least once a year thereafter) within and around the subject site. Should alien and invasive plant species be identified, they must be removed and disposed of as per the

development's alien and invasive species control plan (and/or the relevant legislation and guidance from a suitably qualified specialist).

General

A suitably qualified Environmental Control Officer (ECO) must be appointed in order to ensure that all visual related aspects are adequately mitigated and monitored for the duration of the construction phase. The ECO officer must be qualified to monitor and enforce visual impact related management and mitigation measures.

The ECO must monitor use of light and levels of light pollution by means of regular spot-checks, to be included in monthly compliance reporting.

At the end of a construction phase, a lighting audit must be undertaken by the ECO to ensure that conditions regarding the management of lighting impacts at night have been met.

In order to minimise the probability of negative community responses, a competent staff member should be appointed at the beginning of the operational phase, to be responsible for handling any complaints or concerns received by any I&AP's (and any other affected neighbours).

All construction site offices, lay down areas, storage areas and active construction activities must be screened from public view by appropriate hoarding and/or screening.

Construction fencing/hoarding and signage must adhere to local policy relating to signage and ensure that no views to scenic routes are impacted by large or numerous construction signage.

All contractors and sub-contractors on site must submit a Temporary fencing, hoarding and screening protocol for active construction sites to the ECO for monitoring. iv. All contractors and sub-contractors on site must submit a dust and mud control protocol for active construction sites to the ECO for monitoring.

Site offices, storage and lay down areas, loading areas and similar temporary infrastructure should be situated centrally on the subject site and avoid any areas visible from the Scenic route.

- Construction site offices, lay down areas and storage areas must be placed at least 500m away from the R312, and at least 100m away from all other property edges.
- Appropriate fencing must be erected along the Scenic route to screen the construction site from commuters on the R312.
- These visual screens must be maintained so that they do not become the source of the visual impact.

It is inevitable that waste will be generated during construction. The following is recommended:

- The applicant must ensure that sufficient on-site waste management measures are in place to prevent any escape of waste, litter and packaging materials etc. into the surrounding landscape.

- A weekly litter patrol must be included in the Construction activities on site and monitored for compliance by the ECO.

No construction phase activities may be undertaken within the Agricultural Precinct.

Construction activities must be limited to daylight hours to prevent visual impact of lights at night. Construction activities should not be undertaken at night unless unavoidable.

Dust management, waste management, the placement of screens and hoarding, as well as the location and management of access points to the site must be proactively managed to reduce visual clutter and limit visual impacts associated with construction activity before, during and after each phase of the construction process (demolition, excavation, project execution, close-out etc., establishment, etc.)

All site operatives must receive training in awareness of the issues of fires, litter, and contaminants. No fires are to be allowed on site; no litter and no contaminants to be allowed to enter the surrounding environment by any means. These substances may include amongst other things, diesel, curing compounds, shutter oil and cement. Utilization of such substances should be controlled on site, especially in close proximity to the riverine environment, and guidelines should be included in the EMPr.

For the duration of the civils contract, the contract time should be kept to a minimum.

No construction activities should be allowed to be undertaken at night, so as to manage the duration and visual impact of construction lights' visibility at night. If construction during the night-time hours is unavoidable, the following should apply:

- No floodlights should be permitted.
- Only the construction activity should be lit- not the entire construction area.
- Construction lighting should not be "always-on" – and should be turned off when active construction activity is not being undertaken.
- The management of construction light impacts at night must be monitored by the ECO and included in compliance reporting.

Public road junctions should have good sightlines, traffic control measures, wayfinding signage, and dust control measures in place.

The construction project management team must enforce dust and mud control measures and protocols at construction site entrances. This is especially important for construction entrances that deliver construction vehicle traffic onto the R312 Scenic Route, where poor management of dust and mud will have a negative impact on the visual amenity of the scenic route.

Ensure that no views from R312 or R304 are negatively impacted by large or numerous construction signage, fencing or hoarding.

Dust and debris control must also be implemented to minimize the impacts on the local roads, residents and neighbouring properties. Where necessary, access routes and the site itself should have an effective dust suppression management programme applied, such as the use of non-polluting chemicals that will retain moisture in the exposed site surfaces.

2.2.10 Agro-Ecological Mitigation:

- The loss of productive farmland is regarded as inevitable but further loss of productive farmland should be prevented, by clear demarcation of the development envelope during the construction phase, while no vehicle or other activity should be allowed outside of the demarcated area.
- Soil erosion by wind, during construction, should be mitigated by minimizing bare soil surfaces without adequate protection, either by applying a mulch cover or wetting the surface or similar action.
- Suitable run-off and soil erosion control measures and infrastructure should be designed and implemented to limit and restrict the loss or degradation of soil.
- The release of run-off water into existing streams should be controlled to minimize impact on vleis, marshes, water sponges and water courses. This activity may include a permitting application to the DWS.

2.2.11 Civil Aviation Mitigation:

The mitigation measures for the impacts associated with Civil Aviation have been addressed through the Noise, Transport and Socio-Economic mitigation measures.

2.2.12 Traffic Mitigation:

<u>Construction:</u>

If it is assumed that all earthworks for the CWA construction will be sourced from existing quarries, mostly located west of the site, initial estimates indicate that approximately 875 000 m^3 of earthworks will be required for construction (worst-case scenario). With a truck capacity of 15 m^3, this equates to approximately 58 167 truckloads. However, most of the earthworks will be done onsite to balance cut and fill areas.

The quarries can be accessed either via the existing surfaced road network or the gravel road network. Due to the poor condition of the gravel roads and the heavy loads expected, it is recommended that trucks use the surfaced road network. A detailed construction management plan must be developed for the CWA, ensuring that deliveries are scheduled outside peak hours to prevent congestion during peak periods. This will be done once a suitable contractor has been appointed.

Design & Operation:

- Based on the estimated trip generation and multiple access points, single-lane roads with dedicated turning lanes should be able to accommodate the vehicle demand. However, it is suggested that multi-lane roads be constructed for the main public circulation route for more ideal vehicular flow. The planning of road reserve will make allowance for dualling when necessary.

- Public transport services should be scoped to link the CWA with planned and existing services. Bus stops should be provided near the terminal buildings. Once the Fisantekraal commuter rail service is in operation, a shuttle service between the CWA and the rail station should be established. Such service will be demand driven and phased with the future development of the CWA. The details of public transport facilities for the CWA will be finalised at a later stage. However, provision for these facilities must be included in the finalisation of the SDP.

- All public roads need to be designed to accommodate pedestrian and bicycle movements. Detailed of which can only be more refined upon development and finalisation of a refined master plan SDP.

- There is the possibility of linking the cargo to the rail. However, this will depend on the regional freight movement along the rail network/infrastructure and the type of cargo and its destinations. These discussions will continue with the refinement of the layouts.

- In concept, the site will be separated by primary and secondary roads. A separate one-way system for drop and go's and access to the parkades are envisioned. These routes also need to be linked with dedicated public transport services. Separate access points and circulation will be identified for the supplemental uses.

- The main internal roads would ultimately have 2 lanes per direction. However, construction could be phased and only a single lane per direction would be required if vehicle demand does not warrant dual carriageways or significant turning movements. Controlled access points to restricted areas need to be identified. Space for U-turns in from of any controlled access points should be provided.

- The main road circulating adjacent to the terminals and parking area should include dedicated public transport, e-hailing and passenger vehicle stop and go zones. Details of this can be finalised with refined of the SDP and terminal layout requirements.

- The parking provision for any future phases of the CWA can established based on actual parking demand based on the 2032 scenario. Provision of parking within the FBO and hanger restricted areas can be based on the projected number of employees, number of hanger spaces and specific tenant requirements.

- The following upgrades are recommended Phase 1 (PAL 1B) of the CWA:

  Lichtenburg Road/Mellish Road:

  - Southbound – Construct two dedicated right-turn lanes and a dedicated left-turn lane.

  - Eastbound – Construct a dedicated left-turn lane.
  - Westbound – Construct an additional through lane and a dedicated right-turn lane.
  - Intersection control – Install a traffic signal.

  East-West Link/CWA Access:

  - Intersection control – Construct a dual-lane roundabout.

- Based on the 2032 (Phase 1) capacity analysis results, the priority-controlled intersections along Klipheuwel Road and Lichtenburg Road will continue to experience capacity constraints. However, alternative routes are available via the signalised Darwin Road and Dulah Omar Street intersections.
- The Klipheuwel Road/Olifantsrivier Avenue intersection is also expected to operate at capacity during the PM peak hour according to the 2032 capacity analysis. However, these vehicles can be redistributed as there is still sufficient capacity available at the Klipheuwel Road/Okavango Road intersection.
- The results of the 2032 capacity analysis indicate that the proposed upgrades for the 2032 Total Traffic Conditions scenario will be sufficient to accommodate Phase 1 (PAL 1B) of the CWA.
- The 2050 (Phase 2) capacity EMME model results showed that the future road network will be capable of supporting future developments in the area, including Phase 2 (PAL 4) of the CWA. It is, however, recommended that an updated TIA be prepared after 2032 for each PAL once new SDPs are available and the latest traffic conditions can be assessed closer to the time.
- Development charges (DCs) were estimated for the CWA and future developments in the area to determine the available funds for the proposed upgrading of the road network for the 2050 scenario. When comparing the cost of the road upgrades with the available DCs, there is a shortfall of R42 900 000. This shortfall can be covered by further future developments in the area, such as the Darwin Housing or Lucullus Gardens developments, which are already in the application process. The costs of upgrading the road network should be divided and phased among the various developments to ensure that the road network can accommodate their development as they progress.

2024 Existing Traffic Conditions

Upgrades are recommended for Klipheuwel Road/Lichtenburg Road, including the installation of a traffic signal and additional turn lanes, which are expected to improve the LOS to B. Planned future developments and access management plans (AMPs) for Lichtenburg Road (MR213) and Klipheuwel Road (MR188) include changes to intersection configurations and realignments, which are expected to reduce demand at some constrained intersections. Given these future plans, no further upgrades are recommended for the remaining intersections.

2032 Background Traffic Conditions

This increase in traffic will trigger the need for road upgrades, especially along Klipheuwel and Lichtenburg Roads. The proposed upgrades include the dualling of Klipheuwel Road between Brackenfell Boulevard and Lichtenburg Road, the installation of traffic signals at several intersections, and the construction of additional turning lanes. The Klipheuwel Road/Arum Lily Street intersection will be converted to a left-in, left-out (LILO) configuration as part of their access management plan (AMP). With proposed upgrades in place, capacity constraints are expected at some priority-controlled intersections. However, alternative routes via signalised intersections such as Klipheuwel Road/Darwin Road and Lichtenburg Road/Dulah Omar Street will help alleviate traffic congestion.

Proposed Access Phasing:

1. Mellish Road will be the initial connection from Lichtenburg.
2. The East-West link to Klipheuwel Road when Bella Riva constructs this. CWA to engage with Bella Riva landowner/developer to establish if feasible to build Lucullus Road extension and/or the East-West Class 3 road. The East-West Class 3 at this stage is the most likely to come first.
3. The ultimate link will be via the northern extension of Lucullus Road once the EIA approval has been completed by the City of Cape Town. The alignment and road reserve requirements of Lucullus Road bordering the west edge of the site must be confirmed.

2032 Total Traffic Conditions

This scenario assessed the impact of Phase 1 (PAL 1B) of the CWA the realigned Mellish Road access and the East-West link from Bella Riva as a secondary access. The proposed upgrades include the installation of a traffic signal at Lichtenburg Road/Mellish Road and the construction of a dual-lane roundabout at the East-West Link/CWA Access intersection. As with the 2032 Background Traffic Conditions, capacity constraints are expected to continue at the priority-controlled intersections along Klipheuwel and Lichtenburg Roads. However, alternative routes via signalised intersections on Klipheuwel Road/Darwin Road and Lichtenburg Road/Dulah Omar Street will help alleviate congestion.

Additionally, the Klipheuwel Road/Olifantsrivier Avenue intersection is expected to reach capacity during the PM peak hour. This traffic can be redistributed to the Klipheuwel Road/Okavango Road intersection, which has sufficient capacity.

2032 Sensitivity Analysis

A sensitivity analysis was conducted to evaluate the impact of using only the Mellish Road/Lichtenburg Road access for Phase 1 (PAL 1B) of the CWA. The capacity analysis results show that the proposed upgrades in the 2032 Total Traffic Conditions scenario will be sufficient to accommodate the traffic generated by Phase 1 (PAL 1B). Mellish Road is therefore the only access required to accommodate the CWA Phase 1 (PAL 1B) traffic.

It is, however, recommended that the East-West link across Bella Riva Phase 1 be extended to the airport by CWA when the road reserve is available.

2050 Capacity Analysis

The City's EMME model was updated to evaluate the impact of Phase 2 (PAL 4) of the CWA for the 2050 scenario. This update included the total extent of the future developments in the area and assessed the R300 northern extension along with several new road links, including the Darwin Road extension, and the extensions of Lucullus Road and the East-West links. The results indicated that the future road network will be sufficient to accommodate the future developments, including Phase 2 (PAL 4) of the CWA.

The future developments will require several upgrades to be implemented as more than 8 000 peak-hour trips will be added to the road network. The construction of the R300 northern extension, along with new road links such as the Darwin Road extension and extensions of Lucullus Road and the East-West links, is expected to reduce the demand at some of the study intersections. Therefore, it is recommended that the construction of these road links be fast-tracked to ensure that the intersection upgrades are not abortive in the future.

Based on this assessment, it is evident that the impact of the CWA will be relatively low compared to the other future developments in the area. Hence, it is recommended that Phase 1 (PAL 1B) of the CWA be approved from a transport point of view, and that an updated TIA be prepared for the future phases of the CWA.

2.2.13 Climate Change Mitigation:

Wildfires

- Identify infrastructure and areas on site that are vulnerable to wildfire risks.
- Consider wildfire risks in site design and layout planning and fuel management procedures.
- Construct firebreaks in areas vulnerable to wildfires.
- To ensure health and safety of employees, site evacuation and emergency response plans for wildfire events should be implemented.
- Ensure backup power systems are available, should energy supply be disrupted.

Landslides

- Avoid building near steep slopes, close to cliffs or near stream channels and drainage ways.
- Plant ground cover on slopes.
- If the area is prone to landslides, seek professional evaluation of the site as construction plans may need to consider structures for debris flow diversion or retention.

- Ensure multiple transportation routes of entry to and exit from the site in case roadways are damaged.

Water Scarcity

- A water scarcity management plan should be developed to mitigate water scarcity risks.
- The CWA should increase water storage, reduce water use and improve water consumption efficiencies.
- Ensure that multiple potable water sources are available for the site to alternate between should it be required.
- Investigate monitoring and forecasting systems to help predict future periods of drought and enhance preparedness.
- Monitor water consumption during drought periods to prevent compromising water availability.

Extreme Heat

- Keep facilities/buildings cool with efficient use of air-conditioning.
- Consider building designs appropriate for local climate that are conducive to cooling in summer i.e., consider building orientation, natural shading, and ventilation.
- Ensure that equipment and vehicles purchased for use on site can operate under increased ambient temperatures to avoid downtime.
- Investigate early warning/monitoring systems to inform the site of expected heat wave occurrences.
- Ensure health and safety of employees by regularly monitoring hydration levels, avoiding work hours during the hottest part of the day and providing medical attention/resources to those who are vulnerable.

Urban and Riverine Floods

- Ensure that drainage infrastructure is well maintained.
- Ensure infrastructure built on site is resilient to projected flood levels, and that site design and layout planning considers the potential for flooding event on site
- To ensure health and safety of employees, site evacuation and emergency response plans for flooding events should be implemented.
- Ensure backup power systems are available, should energy supply be disrupted.

The project design already includes several mitigation strategies. The CWA aims to be self-sustainable in meeting its energy needs by implementing renewable energy solutions such as Solar PV and a biodigester system. These measures are important for reducing the project's carbon footprint and enhancing sustainability. Further mitigation actions identified in the Climate Change Impact Assessment for consideration are:

- Collaboration with airline partners to facilitate the development and use of sustainable aviation fuels. The airport operation should also support and promote the development and of sustainable aviation fuel and strive for operational efficiencies such as reduced aircraft idling times on runways and taxiways.
- Collaboration with local authorities to optimise public transport to and from the airport. In employee and passenger, the project should promote the use of electric vehicles (electric busses or shuttle services) and collaborate with the government and the transport sector to improve public transportation links to and from the airport. For business travel, the project should prioritise sustainable travel options and implement carbon offset programs for unavoidable business travel to neutralise the carbon footprint.
- Feeding of excess renewable electricity to the grid
- Designing green buildings with materials of low embedded GHGs, incorporating designs that reduce the need for external heating and cooling
- A waste management system focusing on recycling and/or composting. When developing the waste reduction and management plan, the project developer should consider implementing comprehensive recycling programs for items such as paper, plastic, glass, and metal. Additionally, on-site composting facilities for organic waste disposal should be established, creating job opportunities and promoting sustainability.
- Incorporating mitigation measures, appropriate to the chosen design of the wastewater treatment plant: The design of the wastewater treatment plant should consider best practises for mitigation depending on the technology chosen. i.e., a standard wastewater treatment plant using anaerobic digestion should consider capturing methane generated and use it to provide some of the energy requirements.

2.2.14 Aviation Glint and Glare Mitigation:

It is recommended that the South portion of the Services Precinct (see Figure 28 below) be excluded from the installation of the Solar PV panels to eliminate the exposure to the Air Traffic Control Tower.

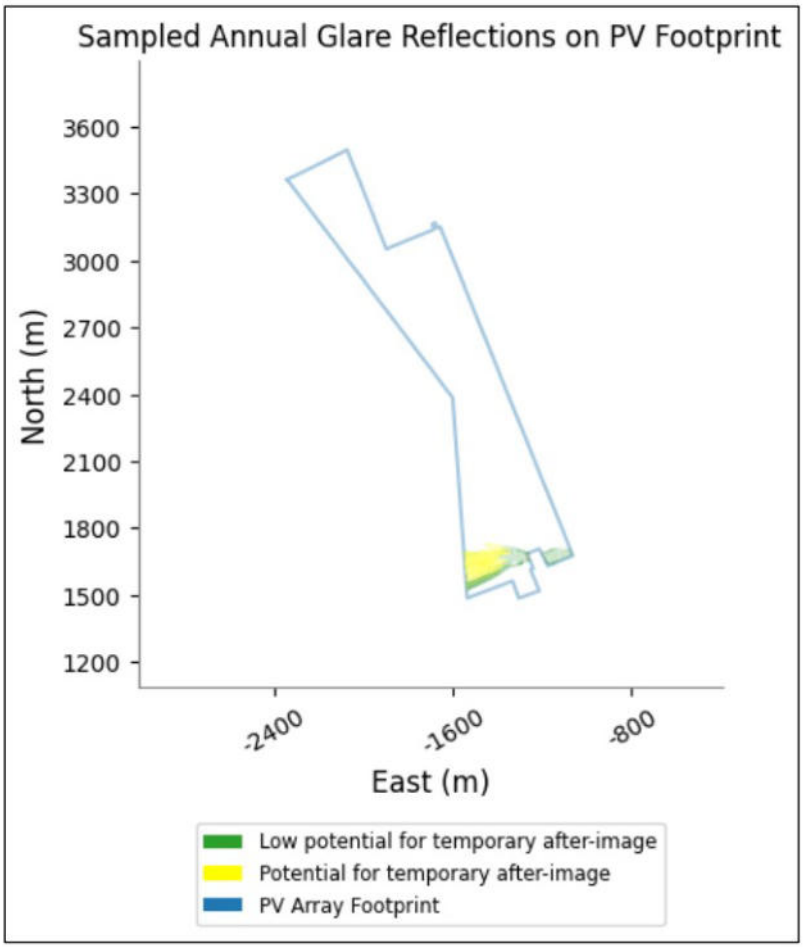

Figure 28: Reflection Areas (Future Impact Pty Ltd, Sept 2024).

2.2.15 Major Hazard Mitigation:

Regarding the secondary containment for the storage and offloading / loading of road tankers, pooling of fuels below the road tankers, from a loss of containment, should be prevented

Regarding the overfilling instrumentation, compliance with IEC61511 should be contemplated.

Hazardous areas should be reviewed by using a detailed Process Hazard Analysis (PHA)1such as a HAZOP study that should be completed to identify potential hazards and suggest further mitigation for safer operations. Due to the seriousness of the hazardous material stored, transported and produced on site, it is suggested that a detailed PHA / HAZOP study should be completed by an independent chairman, who is registered with the Engineering Council of South Africa. Furthermore, any instruments used should incorporate the findings of a SIL assessment defined in IEC 61511.

Ignition sources near the depot must be minimised as far as possible. This is particularly relevant with the fuel storage area.

A hazardous area classification as per SANS 10108 must be developed for all flammable materials. Only suitable instrumentation and electrical equipment should be installed in accordance with the requirement of the code.

The fast detection of a loss of containment with appropriate shut-down action to limit the amount of Jet A-1 and Avgas released, will assist in the reduction of the site risks.

Applicable international best practice production and guidelines or equivalent international recognised codes of good design and practice of installations, must be incorporated in the designs. This implies that best practices would be applied to the design and operation of the proposed site.

IEC 61508/61511 (Safety Instrumented Systems) are codes specifically related to the instrumentation requirements for adequate protection from hazards in chemical plants and applicable for the life cycle of the plant. These codes are aimed at reducing risks to surrounding populations to acceptable levels. Demonstrating compliance with the IEC 61508/11 can be achieved only once full-detailed designs have been completed and is thus premature at this stage in the project.

General:

- Compliance with all statutory requirements, i.e., pressure vessel designs.
- Compliance with applicable SANS codes, i.e., SANS 10087, SANS 10089, SANS 10108, etc.
- Incorporation of applicable guidelines or equivalent international recognised codes of good design and practice into the designs.
- Completion of a recognised process hazard analysis (such as a HAZOP study, FMEA, etc.) on the proposed facility prior to construction to ensure that the design and operational hazards have been identified and adequate mitigation are put in place.
- Full compliance with IEC 61511 (Safety Instrument Systems) standards or equivalent to ensure that adequate protective instrumentation is included in the design and would remain valid for the full life cycle of the tank farm: This is particularly relevant to the overfilling of the storage tanks and applicable shutdown systems. Including demonstration from the designer that sufficient and reliable instrumentation would be specified and installed at the facility.
- Preparation and issuing of a safety document detailing safety and design features reducing the impacts from fires, explosions and flammable atmospheres to the MHI assessment body at the time of the MHI assessment:
    - Including compliance to statutory laws, applicable codes and standards and world's best practice;
    - Including the listing of statutory and non-statutory inspections, giving frequency of inspections;

  - Including the auditing of the built facility against the safety document; and
  - Noting that codes such as IEC 61511 can be used to achieve these requirements.

- Demonstration by CWA or their contractor that the final designs would reduce the risks posed by the installation to internationally acceptable guidelines.
- Signature of all terminal designs by a professional engineer registered in South Africa in accordance with the Professional Engineers Act, who takes responsibility for suitable designs.
- Completion of an emergency preparedness and response document for on-site and off-site scenarios prior to initiating the MHI risk assessment (with input from the local authorities).
- Permission not being granted for increases to the product list or product inventories without redoing part of or the full EIA.
- Final acceptance of the facility risks with an MHI risk assessment that must be completed in accordance with the MHI regulations. Basing such a risk assessment on the final design and including engineering mitigation.

2.2.16 Poultry Mitigation:

- Planting of fast-growing vegetation that does not attract wild birds, and/or a solid wall to screen the section of the poultry farm closest to the construction. Furthermore, implement the dust mitigation measures during the construction phase: i.e. use of water to settle dust, enforcement of 30km /h speed limits, rerouting traffic away from the farm.
- Adherence to good housekeeping and municipal by laws to address pests.
- Light mitigation: design the road so that light does not shine into poultry sheds, signs requiring that car lights are dipped on the affected section of road, diversion of traffic to an alternative road, barriers that prevent light going into the sheds erected on farms, hood the sources of light, erection of a facility wall which will block some of the light and the use of minimal lighting in the car park area.
- Noise mitigation: Plant fast growing vegetation that does not attract birds (to muffle noise), construction of facility wall to muffle sound, schedule arrivals during the daytime, avoid runways closest to the farm (phase 1).
- Implement Air Quality Mitigation Measures.
- Implement Hydrogeological Mitigation Measures.
- Isolate the people from the farm and do not allow people access to the farm.

- Avoid creating stagnant pools of water by treating wastewater in closed systems, handle waste according to municipal by laws.
- Place any biodigester dependent on manure off site and in an isolated area
- Handling and disposal of international galley waste must be done in a safe way and with regard to legislation.

2.2.17 General Mitigation and Management Plans:

Implementation of the following Plans and Guidelines:

- VeldFire Management Plan (Annexure 5)
- Alien Vegetation Management Plan (Annexure 6)
- Wetland Offset Management Plan (Annexure 7)
- Waste Management Plan (Annexure 8)
- Landscaping Plan (Annexure 9)
- Stormwater Management Plan (Annexure 10)
- Bird & Wildlife Hazard Management Landscape & Open Space Planning Guidelines (Annexure 11)
- Emergency Preparedness and Response Plan (Annexure 12)
- Architectural Design Guidelines (Annexure 13)
- CWA Outdoor Advertising Guidelines (Annexure 14)
- Maintenance Management Plan (Annexure 16)

Refer to Annexure 3B: Environmental Sensitivities Map.

SECTION 3: KEY STAKEHOLDERS

The successful implementation of this EMPr is a collective effort and responsibility of the key stakeholders who perform different functions but with a common goal. Below is a diagrammatic representation of the organisational structure showing the relationships among the key stakeholders. Descriptions of the key individuals with environmental responsibilities are described in the following paragraphs. The role players include:

- Regulatory Authority (s) e.g. DEA&DP, DEA&DP: Waste Management, CoCT, DWS etc.
- The Applicant: Capewinelands Aero (Pty) Ltd
- The CWA Environmental Management Division (EMD) & Environmental Manager (EM)
- Environmental Control Officer (ECO)
- Resident Engineer (RE)
- Contractor (s) (Sub-contractors & Service Providers)
- Specialist Support
- Environmental Auditor

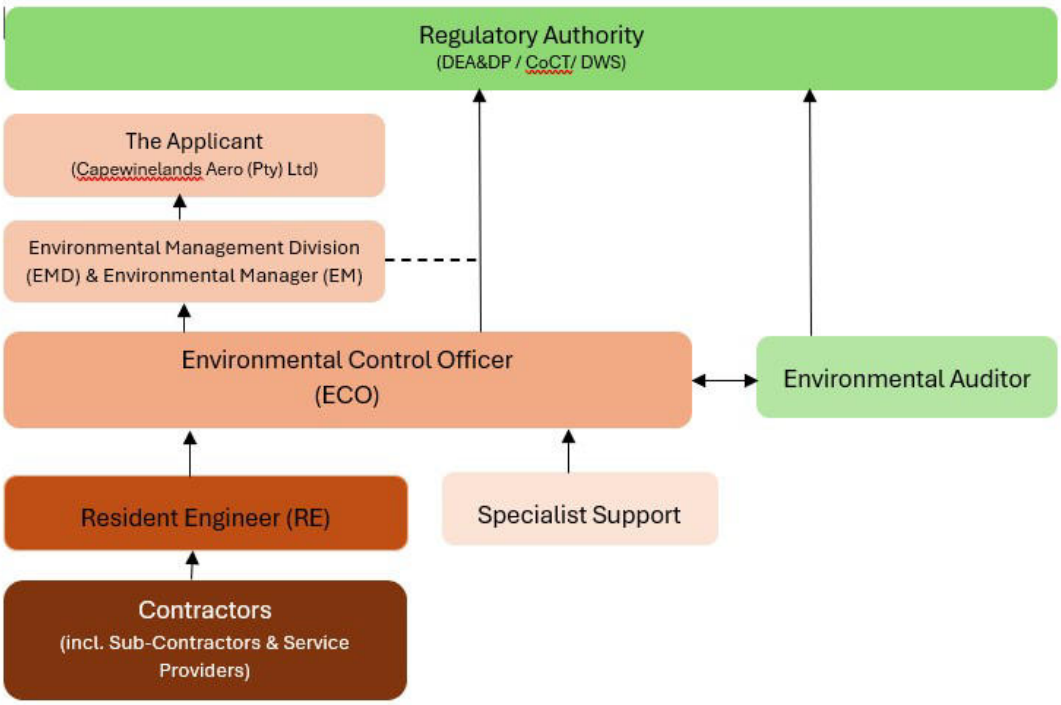

Figure 29: Diagram of the Key-Stakeholders.

3.1 Regulatory Authority

DEA&DP is the competent or lead authority in this instance. This Directorate has overall responsibility for ensuring that the Applicant complies with the conditions of its EA as well as this EMPr once approved. During the construction and operational phases of the EMPr the regulatory authorities will have the following roles to play:

- The authorities may perform random controls to check compliance.
- Review Monitoring and Audit reports, if required.
- Whenever necessary, the authorities are to aid in understanding and meeting the specified requirements.
- Recommend suitable corrective measures are undertaken by the Applicant where non-compliance has been reported.
- Enforcing compliance by the Applicant.

Various other Authorities would be involved to monitor the compliance to the Environmental Authorisation, Licenses, and Permits issued i.e. BOCMA (Breede-Olifants CMA) is the competent authority, which is administered by DWS, in terms of the WUL. The CoCT will be the competent authority in terms of the Atmospheric Emission Licence (AEL) when the AEL is applied for in approx. 2037.

3.2 The Applicant: Capewinelands Aero (Pty) Ltd

The Holder of the EA (e.g. the Applicant) is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts, both in the construction and operational phases. The Applicant therefore has overall and total environmental responsibility to ensure that the EMPr is implemented and that both the EMPr and the EA are complied with, at all times. The Applicant is also responsible for ensuring that all other environmental related legislation is complied with (i.e. NWA, NHRA, NEM: WA, NEM: AQA etc). The Applicant is responsible for the development and implementation of the conditions of the EA in terms of the planning and design of the development and construction thereof.

Amongst the general responsibilities above the Applicant is also responsible for:

- Appointing an Environmental Manager (EM).
- Appointing an ECO (externally during construction and inhouse during operations), and where required an environmental auditor.
- Take the necessary action in terms of non-compliances.
- Ensuring that all the Applicant's, staff, representatives, contractors, consultants and any other agent operating under the employ of the Applicant comply with the EA.

- Considering the ECO's observations and recommendations and acting where required.

3.3 The CWA Environmental Management Division (EMD) & Environmental Manager (EM)

The CWA **Environmental Management Division (EMD)** will be established at the start of construction to ensure environmental compliance throughout the project. The CWA EMD will appoint an **Environmental Manager (EM)** to oversee all aspects of the Environmental Management on site. The EM is responsible for ensuring that the organisation meets its environmental policy commitments and improves its environmental performance. Not only do they monitor performance and ensure compliance with relevant laws and regulatory requirements, but they are also proactive in identifying and promoting opportunities to reduce the environmental impact of the organisation's activities, products and services. All decisions regarding environmental procedures and protocol must be approved by the Environmental Manager, who also has the authority to stop any construction activity in contravention of the EMPr.

Led by an Environmental Manager, the CWA EMD will consist of several teams e.g. landscaping, waste management, alien species control, fire management etc. During operations these teams will be managed on the ground by the inhouse ECO. During the initial phases it could be one multitask team to be split as the tasks increase. Each team will have a Team Leader reporting directly to the inhouse ECO during operations, and EM during construction. The Environmental Manager will oversee the implementation of EMPr compliance with regulations, day-to-day environmental management of the site, managing the necessary applications, and overseeing external service providers such as the appointed Environmental Control Officer (ECO) during construction. Responsibilities also include internal audits and developing strategies for waste minimization and emissions reduction.

The EM needs to adhere to the following:

- Support the ECO in the monitoring and execution of the Contractors or Sub-contractors' Method Statements by maintaining a permanent presence on site.
- Inspect the site as required to ensure adherence to the management actions of the EMPr and the Method Statements.
- Provide inputs to the regular (eg. monthly) environmental reports to be prepared by the ECO.
- Liaise with the construction team on issues related to implementation of, and compliance with, the EMPr.
- Maintain a record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken, for submission to the Applicant.
- Maintain public complaints register in which all complaints are recorded, as well as action taken, for submission to the Applicant.

3.4 Environmental Control Officer (ECO)

A suitably qualified individual will be designated to fulfil the role of Environmental Control Officer (ECO). The ECO is responsible for overseeing and verifying the proper execution of the EMPr during the construction and operational phase. This includes ensuring that various contractors working on-site comply with the EMPr within their designated areas. During the construction phase, an independent Environmental Assessment Practitioner (EAP) firm must be appointed to serve as the ECO who will work alongside the EM. Once the project transitions fully into the operational phase, this function can be managed by an in-house ECO within the CWA Environmental Management Division who will report to the EM. During the construction, monthly ECO reports must be prepared and submitted to the Department of Environmental Affairs and Development Planning (DEADP) and to the EM during operations.

The role of the ECO is essentially seen as an interactive one which commences on the day the construction phase starts and will last for the duration of the construction phase. During construction the ECO will be expected to be on site once a week during bulk earthworks thereafter every second week during construction. During operations the in house ECO will be a permanent appointment. The ECO should have appropriate training and experience in the implementation of environmental management specifications.

The responsibilities of the ECO during the construction and operational phase of the project will include:

- To environmentally educate and raise the awareness of the Contractors and their staff as to the sensitivity of the site and to target responsible individuals as key players for environmental education, to facilitate the spread of the correct environmental attitude during the contract work.
- To review method statements and to determine the most environmentally sensitive options of modus operandi for the development tasks.
- To oversee the implementation of environmental procedures set out in this document.
- To attend site contractor's and report on environmental issues.
- To maintain an open and direct channel of communication with the RE, who will be immediately aware of the actions of the ECO at all times, especially as they relate to implementation policy and corrective actions as detailed in this document.
- To take immediate action on site where clearly defined no-go areas are violated, or in danger of being violated.
- To keep an up-to-date record of works on site, as they relate to environmental issues.
- To be contactable by the public regarding matters of environmental concern as they relate to the development.

- Liaison with teams in terms of Alien Clearing, Fire Management, Wetland and Biodiversity Rehabilitation, Waste Management etc. established in terms of the EMD.
- Liaison with Specialist Support teams in case of emergency.
- Report to the regulating authority of any major incidents.
- Liaison between the Applicant/ EM, Contractors, authorities and other lead stakeholders on all environmental concerns.
- Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective.
- Monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the EMPr and associated Method Statements.
- Checking the EMs record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken.
- Checking the EMs public complaints register in which all complaints are recorded, as well as action taken.
- Issuing of site instructions to the Contractor for corrective actions required.
- Assisting in the resolution of conflicts.
- Maintenance, update and review of the EMPr. Communication of all modifications to the EMPs to the relevant stakeholders.
- Conducting regular audits to ensure that the system for implementing the EMPr is operating effectively.

3.5 Resident Engineer (RE)

The engineers, where applicable, are responsible for physically carrying certain development and maintenance activities. The responsibilities of the engineers and contractors include but are not limited to the following:

- Be conversant with the EMPr, any relevant Environmental Authorisation, WUL or any other legally binding documentation;
- Have a responsibility to adhere to any conditions and recommendations laid out in above mentioned documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident;

- Review and amend any construction activities to align with the EMPr and Best Practice Principles; and
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations.

3.6 Contractors (Sub-Contractors & Service Providers)

The Contractors, where applicable, are responsible for physically carrying out certain development and maintenance activities. The Contractor or Sub-contractors will be required, where specified, to provide Method Statements setting out in detail how the management actions contained in an EMPr will be implemented in order to ensure that the environmental management objectives are achieved. If separate Method Statements are provided by different Sub-contractors, these may need to be consolidated by the Contractor in order to ensure consistency and optimize overall environmental performance and use of resources. The Method Statements must be reviewed and approved by the EM / ECO.

The responsibilities of the contractors (or sub-contractors) include but are not limited to the following:

- Be conversant with the EMPr, any relevant Environmental Authorisation, WUL or any other legally binding documentation;
- Have a responsibility to adhere to any conditions and recommendations laid out in above mentioned documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident;
- Review and amend any construction activities to align with the EMPr and Best Practice Principles;
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations;
- Develop and improve Method Statements other specialist procedures;
- Ensure all sub-contractors are sensitised regarding their environmental obligations;
- Monitor compliance of the sub-contractors to the EMPr; and
- Liaison with the EM, ECO and Resident Engineer.

3.7 Specialist Support

The EM / ECO will liaison with a number of Specialist Support teams internally to manage aspects such as Alien Clearing, Fire Management, Wetland and Biodiversity Rehabilitation, Waste Management etc. However, Specialist support can also be external in the form of required auditing or emergency specialists as and when required. They would:

- Attend to any major spills or environmental incidents that may occur on site;

- Assist with specialist input regarding the Sensitive Areas etc; and
- Keep records of all incidents attended to on file etc.

3.8 Environmental Auditor

Where required by the EA an environmental auditor will be appointed by the Applicant. The auditor will be an independent environmental consultant. The auditor will carry out a compliance audit based on the EA and of all of the activities being undertaken.

Audits are to be undertaken biannually during the construction phase.

Audits are to be undertaken annually during the operational phase.

SECTION 4: IMPACT MANAGEMENT OUTCOMES AND ACTIONS

This section includes a description of proposed impact management actions, identifying the manner in which the impact management outcomes will be achieved and, where applicable, include actions to avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation & comply with any prescribed environmental management standards or practices.

4.1 Design Management Plan

4.1.1 Master Plans and Guidelines required for the overall development

It is recommended that the first Site Development Plan (SDP) to be submitted to the City of Cape Town Municipality for approval must trigger the requirement for the following to be submitted for approval at the same time:

A detailed Master Architectural/ Development Guidelines document, to govern all architectural development within the CWA throughout all future phases, needs to be compiled as follows:

It must include all standard chapters appropriate to the scale and complexity of the CWA development, including the applicable legal frameworks relating to compliance, and the internal hierarchy of communication between stakeholders, including property owners, architects, developers, and local authorities.

It must include Urban Design Guidelines and the Landscape Architectural Guidelines as sub-sections.

It must establish (or designate) an HOA (or equivalent) body to oversee the enforcement and maintenance of the Architectural or Development guidelines.

The CWA must establish an Architectural Review Committee (that includes a suitably Qualified Landscape Architect) to internally review, adjudicate and approve future development applications within the CWA development (which will include Landscape Plans).

It should include the following aspects (which should provide detailed textual and image-based precedent or examples of both inclusions and exclusions to clarify design intent):

- Signage guidelines;
- Guidelines for Fencing, Walls, Entrances and Boundary interfaces;
- Lighting guidelines; and
- Materials and finishes guidelines.

A *detailed Master Landscape Plan to show all landscape architectural development within the CWA throughout all future phases. This plan must include:*

A Tree Survey (quantitative and qualitative) of all existing trees on site showing trees to be retained or removed. The tree Survey and Plan must be approved by the relevant CoCT before construction (i.e. the removal of existing trees) may commence.

A Tree plan (which includes a site-wide, phased tree planting strategy.

A detailed Irrigation Proposal/Plan.

- It must demonstrate integration with the approved Stormwater management plan.
- It must show all relevant high-level design decision making regarding the provision of irrigation water to soft landscaping and trees.

A Fencing, Walls, Entrances and Boundary interface plan for the various portions of the development perimeter.

A Master Landscape phasing plan and strategy, showing the connection between the phased development of the overall development and the development of the landscape.

- This plan and strategy must link all proposed landscaping to the development of roads, buildings, precincts, erven or zones; to ensure that the proposed landscaping is implemented concurrently to the development of said roads, buildings, precincts, erven or zones.
- This plan and strategy must also explicitly indicate where the proposed landscaping is the responsibility of the CWA/overall developer to establish and maintain; and where the proposed landscaping is the responsibility of private entities/future tenants etc. to establish and maintain.

A detailed **Master Landscape Guidelines** document to provide a standard and framework for, and govern all landscape architectural development within the CWA throughout all future phases. This must include:

A Landscape Architectural motivation section, with emphasis on explaining the Landscape Architect's approach to ensuring responsiveness to the scenic and landscape context of the subject site within the Receiving Environment (sense of fit, protection of and contribution to landscape character, sensitive receptors, screening at key points, enhancement of views etc.).

A diagram or plan showing the areas that are the responsibility of the CWA/overall developer to establish and maintain vs. the areas that are the responsibility of private landowners/tenants/partner developers etc. to establish and maintain.

Soft and hard landscaping guidelines and specifications (incl. species, materials inclusions and exclusions etc.).

A detailed Irrigation Proposal and strategy.

- The Irrigation strategy must demonstrate integration with the approved Stormwater management plan (especially with regards to SUDS and the dual use of Stormwater attenuation / detention / retention facilities for irrigation collection / storage).
- It must in particular demonstrate that the establishment of the proposed landscape (especially screening trees proposed) will be possible and feasible given the high irrigation demands of establishing a landscape at the scale proposed by the Concept Plan/future Master Landscape Plan.

Detailed Irrigation guidelines must be included.

Tree planting guidelines and specifications must be included.

Visual & aesthetic sensitivities vary depending on the development edge, as do design informants such as access control, security and lighting needs, distance of buildings from property boundary and the like.

- The Master Landscape Guidelines document must include a set of typical section details for the various development edges illustrating architectural responses to the various different site and interface conditions, as well as contextual (visual) informants. Particular attention is required for areas abutting natural, agricultural, and rural areas or Cultural Landscapes, as well as those that have a public interface (such as the southern and western property boundaries. Valuable view corridors and existing vistas should be enhanced and celebrated by any development proposal.
- The section details should provide further detail regarding fencing/boundary treatment, pedestrian and other NMT routes, proposed planting, lighting and signage where relevant and NGL interaction with SUDS structures etc.
- The section details should also demonstrate the feasibility of the proposed tree lines along fences and roads in terms of the location of irrigation, fencing and underground services.

A Tree Management Strategy for the management of existing trees to be retained.

Existing landscape patterns are important to conserving landscape character, sense of place and maintaining the inherent VAC of the subject site. The project team is therefore strongly advised to avoid removing any additional vegetation (especially tree avenues and mature copses).

A Landscape management and maintenance strategy and guidelines for implemented landscapes and for areas not earmarked for development (i.e. areas within the Agricultural Precinct, and undeveloped areas within the Airport Airside Precinct). This should include (but are not limited to):

- Rehabilitation and Revegetation Guidelines; and

- Hydroseeding Guidelines and protocols for the planting of embankments to stabilize soil.

4.1.2 Plans and Guidelines required to accompany all future Site Development Plans

All future Site Development Plans within the CWA development that are to be submitted to the Municipality for approval must contain / be accompanied by the following:

A Detailed Landscape Plan and (SDP-level appropriate) Landscape Architectural Guidelines document prepared by a suitably qualified Landscape Architect.

The Landscape Plan and its accompanying Guidelines document must be prepared in alignment with the Master Landscape Plan, the Master Landscape Architectural Guidelines, and the recommendations of this report.

Additionally, it must demonstrate adherence to the Tree planting specifications and Irrigation guidelines, as well as the Master documents' guidelines and strategies relating to interface conditions and boundary treatment and any other relevant guidelines and strategies.

These mitigation measures are particularly important given the crucial role that provision of water plays in the successful establishment and ongoing maintenance of trees and screening planting.

The Landscape Plan must Indicate trees that function as screening and softening, especially from views within cultural landscapes (e.g. Agter-Paarl Paardeberg CL).

A detailed **Fencing** proposal

To ensure appropriate design of road verges, stormwater structures, fences etc. which should be in character with the natural or rural surroundings (as per the Heritage and Scenic Resource: Inventory and Policy Framework, 2003).

This requirement is for boundary fencing and public interfaces specifically - internal fencing is not a concern from a visual impact management point of view.

A detailed **Signage** proposal, where signage is proposed.

The signage proposal must demonstrate that signage has been designed in such a way that the sensitivities of the adjacent Cultural Landscape and the relevant Scenic Routes have been (a) taken into consideration, and (b) that design responses have been included in the design proposal in a positive way. The signage proposal should include:

- Graphic renderings or 3D models showing the location in context, height, mounting details and proposed content of all proposed signage.
- Please note that signage in this case includes branding, logos and lettering on building facades.

- SDP applications should not be approved without input from the appropriate CA that the signage proposal is acceptable in terms of the relevant Outdoor Advertising and Signage Policy and By-law.

A detailed **Lighting** proposal

For all outdoor lighting, façade lighting (if any), street lighting and security lighting – i.e., all light sources that would be visible from within the Receiving Environment. The lighting proposal must demonstrate that lighting design has been undertaken in such a way that the sensitivities of the adjacent Cultural Landscape and the relevant Scenic Routes have been (a) taken into consideration, and (b) that design responses have been included in the design proposal in a positive way. The lighting proposal should include:

- A consolidated lighting layout showing the location of all sources of light.
- The lighting proposal should include basic technical/specification details for all sources of light.
- The information provided should enable:
    - the visual specialist to properly scope and model/simulate visible light sources (if necessary); and
    - the CA and/or the visual specialist to make an informed decision regarding the acceptability of light impacts at night.

4.1.3 Plans and Guidelines required to accompany particular Site Development Plans

Certain areas within the CWA development require particular attention in response to contextual informants or must be accompanied by additional information or further visual specialist input at a later stage of design development.

Any SDP that includes development in areas within the Scenic Drive/route Envelope of the R312 (i.e., any areas adjacent to the R312 scenic Route or within the 100m signage buffer area) must be accompanied by:

Further detail regarding the articulation and design of buildings proposed on the southern property boundary:

- This should include sections and plans that illustrate building massing, form, fenestration / glazing / curtain walls, roof design and materials / finishes.
- Any associated visible elements such as masts, solar panels, wind turbines, chimneys, antennae etc.
- This should include a reasoned motivation from an architectural, landscape architectural and urban design perspective, explaining the ways in which the proposal is responsive to the visual / scenic informants along this interface and the visual sensitivities of this part of the receiving Environment.

Detailed Landscape Plans at SDP level must include the entire scenic route envelope of the R312 Lichtenburg road verge, as well as the 30m buffer zone.

The guidelines and policies of the City of Cape Town's MSDF must be consulted, as well as the Scenic Drive Network Management Policy, the Heritage and Scenic Resource: Inventory and Policy Framework for the Western Cape, Urban Design Policy, Outdoor Advertising Bylaw and all relevant considerations within the Northern District SDF Development Guidelines for further guidance.

A Visual Statement prepared by a suitably qualified specialist consultant:

- This is called for to ensure that visual impact management mitigation measures are applied, visual impacts are managed as priority in the detailed design development in future planning & approval phases; and to determine if the impact assessment findings of this report are affected.
- The Visual statement should focus on: fencing, boundary treatment and public road interface, lighting, signage and compliance with material recommendations. Also to address appearance of development edges visible from the roadway.
- The Visual statement should include detailed simulations from key views.
- The SDP must be accompanied by detailed renderings by the project architects from the relevant viewpoints identified in this report, and/or viewpoints identified by the visual specialist undertaking the visual statement.

Any SDP that includes development in areas within the Airport Airside Precinct must be accompanied by:

- A Visual Statement prepared by a suitably qualified specialist.
- The SDP must be accompanied by detailed renderings by the project architects.

Any SDP that includes development in areas within Zone 1 (the Services Precinct) must be accompanied by:

- A Visual Statement (VS) prepared by a suitably qualified specialist. This VS must provide comment on the acceptability of building and infrastructure visibility from the R304 Scenic route and the Agter-Paarl Paardeberg Cultural Landscape and provide additional mitigation measures if necessary.
- The SDP must be accompanied by detailed renderings by the project architects.

4.1.4 Lighting (General, Outdoor and Sources of Light)

Light pollution should be kept to an absolute minimum throughout the development, and exterior lighting must be limited to areas where this is necessary for utility, safety and security.

In principle, lighting in the development should:

- ✓ Only be on when needed for active use;
- ✓ Only light the area that needs it;
- ✓ Be no brighter than necessary;
- ✓ Minimize blue light emissions;
- ✓ Be fully shielded (pointing downward) as far as possible.

Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the light source, including interior or undercover lighting sources.

Façade lighting to be limited to accents and features, avoiding large parts of the exterior of buildings to be lit from any side, but especially not the facades facing the R312 scenic route, nearby homes and any of the Cultural Landscapes surrounding.

Pedestrian pathways, parking areas and vehicular roads should be lit with low level 'bollard' type lights or post lights (maximum 3m tall) that are fully shielded (pointing downward). Fully shielded fixtures minimize skyglow, glare and light trespass.

No "always-on" security flood lights, naked or exposed peripheral/boundary lighting or uncovered luminaires of any kind should be visible from public roads, the Scenic route, surrounding residential areas or the Cultural Landscapes that surround the site.

Security lighting should be activated on movement as far as possible.

The 6m perimeter lighting proposed to encircle the development periphery is not supported. Future SDP plans must include a lighting proposal.

Light emitting diodes ("LEDs") are appropriate for outdoor lighting. If it is necessary to use white light, low-color-temperature LED lighting should be used on the condition that the brightness can be dimmed when they aren't needed for active use (for example: to light empty parking lots etc.)

Because blue light brightens the night sky more than any other color of light (International Dark Sky Association, 2021), it's important to minimize the amount emitted. The proposed development should use warm light sources (lower color temperatures) for outdoor lighting: a maximum of 3000 Kelvins is recommended.

It may not be possible for parts of the proposed development to adhere to the above mitigation measures in every part of the development, given the specialized lighting that would be necessary at an airport.

This risk can be managed through the submission of the detailed Lighting proposal at SDP stage. This will allow the CA and/or the visual specialist to be provided with sufficient information during the future

approvals process so that visual impacts associated with the direct and indirect visibility of lighting can be avoided, reduced or mitigated wherever possible when this detailed information is available.

In the absence of specific South African or municipal guidelines, compliance with the International Dark Sky Association (IDA) Criteria for Community-Friendly Outdoor Lighting is called for. It may therefore be necessary for an Overall Lighting Report to be called for at the Land Use Planning Approval stage, to be prepared by a suitably qualified electrical engineer.

4.1.5 Materials and Finishes

Roof and facade materials must be neither bright nor light. The appropriate colour range is achieved by increasing the shade (black) and tone (grey) of the desired colour palette. This darkens the original hue while making the chosen color appear more subtle and less intense.

- All roof material finishes should be located on the cool colour spectrum (e.g. the hues of blue, charcoal, grey, green etc.) and should be visually recessive.
- All façade material finishes should be visually recessive, and contrast minimally with roof material finishes.
- White, cream, beige and similarly light colours are not appropriate for roofs and facades.

The use of a range of colours within an approved palette (to be determined as part of the Architectural Guidelines) is recommended for roof and facade materials and finishes. This prevents the development from appearing as a solid and/or overly uniform roofscape typical of newly established developments, especially from views at a higher elevation.

Where tenants or future potential developers within the various precincts of the CWA require the specification of bright colours in line with their branding (which are often on the warm colour spectrum) on exterior portions of buildings, the following:

- These areas must not cover more than 25% of the building façade.
- The placement of these portions of allowable colour must be located sensitively so as not to negatively affect views from the surrounding cultural Landscapes and scenic routes.
- Roof colour should always conform to the overall material palette of the rest of the development, to ensure that views from higher elevations experience a measure of uniformity in the roofscape, within a range of appropriate colours.

4.1.6 Landscape

If 10% or more of the total number of trees proposed in the Landscape Concept Plan are removed from the proposal, this should be considered a substantial change, and the input of a suitably qualified visual specialist must be sought out (in the form of a Visual statement).

Tree avenues are an appropriate screening and scaling tool to be used within the proposed development, and the Landscape Architect/s must select a variety of species carefully to ensure that there is a measure of continuity within the soft landscaping of the proposed development with the planting patterns of the receiving environment.

Establish new tree avenues with suitable species to enhance cultural landscape features lost through the development to reinforce or replace traditional patterns of planting where appropriate with suitable species.

Screening with trees and soft landscaping (especially on public road verges) should include areas of higher density (where it is necessary to break up the bulk and mass or horizontality of the buildings, limit the visual impact of signage, or screen views into parking lots and back of house areas), as well as areas where tree planting may be less dense (to allow view corridors and glimpses into the proposed development).

The timing of landscape installation:

- The soft landscaping along all public road verges (and especially trees that play a role in screening the development from the R312) must be specified in the phase 1 SDP, and implemented along with the first phase of the development, and as early in the construction process as possible or feasible.
- All other trees must be planted along with their associated phases, and as early in the construction process as possible. This phased tree planting strategy is the substance of the Tree planting plan.
    - The implication of the above recommendation is that the irrigation system design, supply, powering and storage of irrigation water must be developed and functional to the point that it will be able to supply sufficient irrigation water to the newly installed trees at the time of their installation (during Phase 1 and/or whenever a new phase of the proposed development is implemented along with its landscape and trees).
    - The design team (Landscape Architect and/or Engineer) must therefore provide the CA with sufficient detail to demonstrate that the irrigation requirements for proposed trees will be met through rainwater harvesting, borehole supply or similar; and storage capacity must be indicated on the appropriate Landscape Plans. Ideally, the stormwater attenuation ponds should be integrated into the system of rainwater storage and re-use for irrigation purposes.

Correct management and specification are key to ensuring successful mitigation that depends on screening visible elements of a development with trees. The key to the successfully establishment of trees for screening (at least in the Western Cape) is not their size or maturity at installation, rather it is the provision of ideal growing conditions from the point of installation onward – with specific reference to soil conditioning and irrigation supply. The following Tree specification and irrigation design guidelines must be adopted and displayed on all future Landscape Plans:

- The landscape establishment phase (i.e., the time period after which a Landscape Contractor is employed to maintain and monitor a newly installed landscape after practical completion) must not be less than 24 months in duration.
- The irrigation supply of trees should be maintained consistently throughout the year (i.e.; during the establishment period, as well as on a permanent basis after establishment, and during the operational phase of the development).
- Soil moisture content in the root ball must be consistent, i.e., trees may not be allowed to dry out during the Western Cape summer months or become waterlogged during the wet winter months. This requires rainfall responsive irrigation source and supply design, as well as adjustable irrigation supply management technologies.
- Irrigation design must provide dedicated lines for the irrigation of trees, and these dedicated lines must be programmed to supply water to trees on their own regime.
- Slower, more frequent soaking watering regimes should be preferred for trees over large quantities infrequently over short periods of time.
- The recommended guideline for watering trees is a minimum of 40 – 50L per week.
- A very important aspect of the watering regime is consistency. Once planted, the irrigation cycle should not be allowed to cease (in the summer months especially), and the irrigation regime must maintain a +-7-day cycle at the least.
- Soil samples must be taken prior to the specification and design of the irrigation system and the tree holes to ensure that soil conditioning is responsive to site-specific conditions.
- If the soil is at all sandy, it is strongly recommended that Zeoplant moisture retention granules or a similar product is specified to reduce fluctuations in the soil moisture content of the root balls of trees.
- The root balls of trees must also receive adequate aeration, and compaction of root zones must be avoided.
- Trees in the parking lots will experience far more extreme growing conditions than those on the road verges, and cannot be expected to offer significant screening functionality. Nevertheless, they must receive the same treatment as that of the trees on road verges or within the open landscape.
- The Landscape Architect must therefore ensure that trees in parking lots are given adequate space, irrigation, aeration and soil conditioning to ensure their survival and successful establishment.

The CA should not allow any further development to encroach on the Agricultural Areas of Significance or the Agter-Paarl Paardeberg Cultural Landscape east or north of the subject site. The preservation and enhancement of the remainder of the subject site as untransformed farmland will serve to offset the visual intrusion along this eastern edge somewhat by maintaining the landscape as a container for the proposed development.

It is recommended that the remainder of the Agricultural Precinct retains its agricultural land uses, and should be actively farmed, if possible, to maintain its agricultural character.

4.1.7 Fencing, Walls and Boundary interfaces

The proposed development must comply with the Boundary Walls and Fences Policy of the City of Cape Town, 2009 in all respects. Other policy relating to fencing and boundary treatment are the Heritage and Scenic Resource: Inventory and Policy Framework for the Western Cape (Respect the landscape setting and gateway qualities of scenic routes by ensuring appropriate design of road verges and fences); and the Western Cape Land Use Planning Guidelines for Rural Areas, 2019.

- The plan, typical details and sections should show height of wall/fencing, material & construction method, any accessories (such as lights, security apparatus, wildlife bridges, signage etc.) and distances from roads and road verges.
- Boundary walls, fencing and gateways should be in keeping generally with a visually neutral architectural character, designed simply, and remain visually permeable as far as possible.
- High, solid or palisade-type walling, and any form of precast panel type fencing is inappropriate and should be avoided.
- Low walling where used should be plastered /painted with earth tones, in line with the approved general materials and finishes recommendations contained in the Architectural Guidelines.
- Where security fencing is required, it should be screened with trees or hedging.

4.1.8 Outdoor Signage

The subject site is located within and alongside areas of maximum control in terms of the Outdoor Advertising and Signage Policy of the City of Cape Town, 2013; and the Outdoor Advertising and Signage By Law (No. 10518, 2001). Enforcement of the By Law and Policy guidelines are especially important to reduce the impact of possibly inappropriate signage along the Scenic Drive. According to the Policy, the City will encourage creative locality bound signs which are sensitive to natural and Cultural Landscapes in non-urban settings.

In general, the development proposal (including all future SDP plans to be submitted) must comply with the Outdoor Advertising and Signage Policy and By-law in all respects.

Specifically, the development proposal (including all future SDP plans to be submitted) must demonstrate that all outdoor advertising signs and other signage (external advertising, direction signs and/or outdoor display) do not impact negatively on visual corridors, Cultural Landscapes and Scenic Routes.

No signage, lettering or outdoor advertising (within the proposed development or on the perimeter) may be installed higher than the average building height, or the overall height restriction for the development, whichever is the lesser. The illuminated 1st party logo sign proposed to be mounted on the ATC tower is not supported.

Outdoor signage and (especially) outdoor advertising must be kept to a minimum throughout the development. This is especially important to protect the R312 Scenic Route's view corridor, the remnant Landscape Character of the Receiving Environment, and the views of sensitive viewers within the Cultural Landscapes and travelling on the scenic Routes surrounding the subject site.

- The 1st Party Sign at the entrance to the Cape Winelands Airport must adhere to the Principles and Placement contained in the CWA Outdoor Advertising Guidelines for 1st Party Signage (which are generally supported form a Visual Impact management point of view).
- 3rd Party Outdoor Advertising Signage should be restricted along the perimeter of the property boundaries, and should not be permitted if visible from within the surrounding Cultural Landscapes or from Scenic Routes.
- No outdoor signage or 3rd Party Outdoor Advertising Signage should be allowed to be erected along any of the edges of the Airport Airside Precinct, or anywhere within the Agricultural Precinct (i.e., within view of the R304 or the R312).
- No outdoor signage or 3rd Party Outdoor Advertising Signage (including freestanding outdoor billboards and digital screens) should be allowed within the 30m Visual buffer zone or within the 100m Signage buffer zone.
- No 3rd Part advertising signage should be visible from the R312 Gateway point.

Signage on building facades must be sensitively placed and sized to cater for views within the proposed development.

- No 3rd Party Outdoor Advertising Signage should be allowed on building facades visible from the R312 or R304.
- No signage or lettering on building facades should be legible to viewers located outside of the Foreground Distance zone of the sign (i.e., signage should not be particularly noticeable for viewers located more than +-800m away.).

4.1.9 General Building Design Conditions

The following applies to buildings (and associated structures such as the ATCT) facing and/or visible from the R304 and the Agter-Paarl Paardeberg Cultural Landscape:

- Building facades and the surfaces of structures may not be illuminated; may not have any signage, lettering, logos or advertising (illuminated or otherwise) mounted upon them.
- Buildings and structures must be designed to be visually recessive in materials/finishes, colour, form and massing.
- Buildings and structures must be designed to be sympathetic to the rural Agricultural landscape character in their design and architectural expression.

Visual impacts along Scenic routes are generally managed using visual buffer zones with setbacks and height restrictions. The following development parameters are recommended at Conditions of Approval:

- Apply a 30m visual buffer zone offset from the R312 Lichtenburg Road scenic Route within which no buildings may be placed.
- Enforce a 100m Signage "buffer zone" along the R312 Scenic Route. No 1st Party signage, 3rd Party signage, billboards, outdoor advertising and (specifically) no illuminated or digital signage should be permitted within 100m of the property boundary adjacent to the R312.
    - Standard provincial road signage within the road verge indicating the location of the entrance to the Cape Winelands Airport is acceptable.
    - One 1st Party Sign may be permitted at the entrance to the CWA
- Apply a 9m Height control restriction along the R312 Scenic Route. This height restriction must extend 100m into the subject site to include a large enough part of the Scenic Route Envelope to have the desired effect of maintaining long views through this newly urbanizing area

Regarding wind energy infrastructure:

If Wind turbines (either mounted on roofs or land-based) are proposed during the SDP phase for any building, precinct, erven etc., this should trigger the input of a visual specialist to provide a Visual Statement that includes simulations to determine the extent and significance of direct and cumulative visual impacts of the proposed wind power generating infrastructure.

The Agricultural Precinct must be considered a "No-Go" area. No further development should be allowed within the Agricultural Precinct.

- No further removal of existing vegetation (with the exception of alien invasive species) should be permitted within the Agricultural Precinct.

- The Tree Survey and Tree Plan must motivate for the removal of existing trees within Zone 1-3, and existing trees should be retained wherever possible (especially those that contribute to the characteristic landscape patterns of the surrounding Cultural landscapes). This is to ensure that windbreaks, avenues, copses and place-defining or gateway planting is not needlessly destroyed by new development.

4.1.10 Fuel Storage and Distribution:

Tanks must be double walled / "jacketed" i.e., possessing secondary containment to prevent tank content to release into surrounding soil and groundwater. The underground storage tank must have an internal leak detection monitoring system between the two walls to monitor for product leakage.

Fuel lines and sumps must be secondary contained where lines are joined.

The filling station must include the following design measures:

Fuel Containment Area

The containment slab must be graded to drain a catch-pit that is connected to discharge to the stormwater system via an oil separator while the surrounding paved surface areas must be graded to ensure rainwater runoff to the stormwater system. No washing in this area is allowed.

Forecourt Area

The forecourt area must be provided with its own set of catch pits that is connected to discharge to the sewer via a separate oil separator, the underground storage tanks and the fuel lines cannot be interconnected. The surface area of the forecourt must be graded to the abovementioned catch pits while the surrounding surface area graded to drain rainwater to the stormwater system. Washing of the forecourt surface is allowed in this instance.

Additionally, the following mitigation is required which is associated with petrol filling station Underground Storage Tank (UST) and pipework installations (applicable for the construction and operation phase):

National Standards

All containment manholes must be regularly inspected as part of the normal management procedures at the service station.

The installation of Underground Storage Tanks (UST's) and associated pipework must be implemented in accordance with the relevant South African National Standards (SANS), specifically (not exclusive to) the following standards:

a) SANS 10089-3 (2010) (English): The petroleum industry Part 3: The installation, modification, and decommissioning of underground storage tanks, pumps/dispensers and pipework at service

b) stations and consumer installations.

c) SANS 10 400TT (Fire Protection) 53 Sections 1-6 (The application of the National Building Regulations-Installation of Liquid Fuel Dispensing Pumps and Tanks);

d) SANS 10087-3 (2008) (English): The handling, storage, distribution and maintenance of liquefied petroleum gas in domestic, commercial, and industrial installations Part 3: Liquefied petroleum gas installations involving storage vessels of individual water capacity exceeding 500L.

The installation of the UST's and associated pipework must comply with the National Building Regulations and Standards Act No. 103 of 1977.

The installation must comply with local authority bylaws and all procedures and equipment used must be in accordance with the Occupational Health & Safety Act (No. 85 of 1993).

Upon completion of the UST installation, an engineer is to inspect and verify that the tanks and the associated infrastructure have been installed as per the [approved] design criteria and to all required SABS/SANS standards and applicable legislation. A report thereafter, based on the engineer's findings, is to be submitted to the DEA&DP Land Management and Pollution Directorates for inspection and the City of Cape Town Municipality.

Any repair work required is to be conducted according to SABS 1535 (Glass-reinforced polyester-coated steel tanks, including jacketed tanks, for the underground storage of hydrocarbons and oxygenated solvents and intended for burial horizontally).

Installation of Underground Storage Tanks

The USTs must be reliable in the event of heavy rains and flooding. UST manholes shall be impermeable and resistant to fuel, they shall consist of a heavy-duty cast-iron cover, which shall prevent damage from surface traffic.

Construction of a reinforced concrete slab over the USTs, its thickness and strength are to be determined by a qualified Engineer.

The filler point and tank must be fitted with overfill protection. The critical level should be such that a space remains in the tank to accommodate the delivery hose volume (2%). Earthing and snap tight quick coupling is to be provided for loading of materials into tanks to minimise the risk of fires and prevent spillage and loss of materials.

The USTs are to be fitted with a tank containment sump, fitted on top of the tank and a dispenser containment to be provided for loading of materials into tanks to minimise the risk of fires and prevent spillage and loss of materials; and sump must be provided, fitted underneath the dispenser as containment. A Filler spill containment must also be provided for remote filler containment purposes.

The excavation must be protected against the ingress of surface run off water and is to be kept reasonably free of sub-surface water by pumping out if necessary.

The excavation must be lined with a HDPE liner or a suitable layer to prevent infiltration of product to the groundwater should a spill or leak occur (an impermeable liner).

The UST is to be inspected before installation for damage, including factures or damage to coating work.

Leak and pressure tests must be conducted on tanks and pipelines to ensure integrity prior to operation and the inspection authority must issue pressure test certificates.

The UST must be buried 750mm below finished ground level in accordance with SANS 10089-3.

The local Fire Department must be informed two (2) working days before installation commences and to be called for inspection at the following stages:

a) Installation of tank on clean sand bed before backfilling

b) Witness pressure test (delivery lines 1000kPa, tank 35kPa); and

c) Inspection of slab over tank before concreting.

Pipework

Installation of associated pipe work. This shall include the installation of internationally approved non-corrosive pipework systems. All underground piping is to be Petrotechniks UPP Extra piping (nylon lined, 10 bar rated). Nextube Kableflex sleeving (oil industry green with a smooth internal bore) to be used as secondary containment. This is to limit the possibility of pipe failure due to corrosion; this being the most common cause of pipe failure before this system was introduced to South Africa.

All pipeline connections are to be housed within impermeable containment chambers. A leak detector on all submersible pumps that automatically checks the integrity of the pipework on the pressure side of the pump must be provided. Pipelines must not retain product after use and no joints are to be made underground. An emergency shut-off valve must be supplied between the supply pipeline and dispenser inlet. All pipes (vent, filler and delivery) are to slope back to the USTs so that fuel does not remain in the pipes.

Vent pipes to be fitted with "Fulcrum" vertical vent roses, or an approved equally equivalent market product replacement, that conforms to these standards. Confirmation of filler point and vent position to be made by an approved Engineer for safety distances required.

Vent pipes above ground are to be galvanised mild steel and are to be at least 1000mm above the roof height and away from any doors, windows, chimney openings and other sources of ignition; and the tank product lines must be pressure tested prior to commissioning.

Forecourt Dispensing Area

Installation of pump islands in the forecourt area. The pumps are to be fitted with a Spill Containment Chamber.

Construction of a concrete bunded reinforced graded slab over the forecourt area, with positive falls towards a centrally located catch-pit/sump. The slabs thickness and strength are to be determined by a qualified Engineer. The centrally located catch-pit/sump shall drain into a pollution containment chamber i.e., an approved oil/water separator system. Once the wash water has passed through the system, the separated oil must be collected regularly by an approved waste contractor and removed to an approved hazardous waste disposal facility.

4.1.11 Major Hazard Installations:

- Secondary containment for the storage and offloading / loading of road tankers has been described. However, pooling of fuels below the road tankers, from a loss of containment, should be prevented
- Overfilling instrumentation has been described. However, compliance with IEC61511 should be contemplated.
- Hazardous areas should be reviewed by using a detailed Process Hazard Analysis (PHA)1such as a HAZOP study that should be completed to identify potential hazards and suggest further mitigation for safer operations. Due to the seriousness of the hazardous material stored, transported and produced on site, it is suggested that a detailed PHA / HAZOP study should be completed by an independent chairman, who is registered with the Engineering Council of South Africa. Furthermore, any instruments used should incorporate the findings of a SIL assessment defined in IEC 61511.
- Ignition sources near the depot must be minimised as far as possible. This is particularly relevant with the fuel storage area.
- A hazardous area classification as per SANS 10108 must be developed for all flammable materials. Only suitable instrumentation and electrical equipment should be installed in accordance with the requirement of the code.
- The fast detection of a loss of containment with appropriate shut-down action to limit the amount of Jet A-1 and Avgas released, will assist in the reduction of the site risks.
- Applicable international best practice production and guidelines or equivalent international recognised codes of good design and practice of installations, must be incorporated in the designs. This implies that best practices would be applied to the design and operation of the proposed site.

- IEC 61508/61511 (Safety Instrumented Systems) are codes specifically related to the instrumentation requirements for adequate protection from hazards in chemical plants and applicable for the life cycle of the plant. These codes are aimed at reducing risks to surrounding populations to acceptable levels. Demonstrating compliance with the IEC 61508/11 can be achieved only once full-detailed designs have been completed and is thus premature at this stage in the project.
- Compliance with all statutory requirements, i.e., pressure vessel designs.
- Compliance with applicable SANS codes, i.e., SANS 10087, SANS 10089, SANS 10108, etc.
- Incorporation of applicable guidelines or equivalent international recognised codes of good design and practice into the designs.
- Completion of a recognised process hazard analysis (such as a HAZOP study, FMEA, etc.) on the proposed facility prior to construction to ensure that the design and operational hazards have been identified and adequate mitigation are put in place.
- Full compliance with IEC 61511 (Safety Instrument Systems) standards or equivalent to ensure that adequate protective instrumentation is included in the design and would remain valid for the full life cycle of the tank farm: This is particularly relevant to the overfilling of the storage tanks and applicable shutdown systems. Including demonstration from the designer that sufficient and reliable instrumentation would be specified and installed at the facility.
- Preparation and issuing of a safety document detailing safety and design features reducing the impacts from fires, explosions and flammable atmospheres to the MHI assessment body at the time of the MHI assessment:
    - Including compliance to statutory laws, applicable codes and standards and world's best practice;
    - Including the listing of statutory and non-statutory inspections, giving frequency of inspections;
    - Including the auditing of the built facility against the safety document; and
    - Noting that codes such as IEC 61511 can be used to achieve these requirements.
- Demonstration by CWA or their contractor that the final designs would reduce the risks posed by the installation to internationally acceptable guidelines;
- Signature of all terminal designs by a professional engineer registered in South Africa in accordance with the Professional Engineers Act, who takes responsibility for suitable designs;
- Completion of an emergency preparedness and response document for on-site and off-site scenarios prior to initiating the MHI risk assessment (with input from the local authorities);

- Permission not being granted for increases to the product list or product inventories without redoing part of or the full EIA.
- Final acceptance of the facility risks with an MHI risk assessment that must be completed in accordance with the MHI regulations:
    - Basing such a risk assessment on the final design and including engineering mitigation.

4.1.12 Glint and Glare (Solar PV Panels):

It is recommended that the South portion of the Services Precinct (see Figure 28 above) be excluded from the installation of the Solar PV panels to eliminate the exposure to the Air Traffic Control Tower.

4.1.13 Traffic:

Based on the estimated trip generation and multiple access points, single-lane roads with dedicated turning lanes should be able to accommodate the vehicle demand. However, it is suggested that multi-lane roads be constructed for the main public circulation route for more ideal vehicular flow. The planning of road reserve will make allowance for dualling when necessary.

Public transport services should be scoped to link the CWA with planned and existing services. Bus stops should be provided near the terminal buildings. Once the Fisantekraal commuter rail service is in operation, a shuttle service between the CWA and the rail station should be established. Such service will be demand driven and phased with the future development of the CWA. The details of public transport facilities for the CWA will be finalised at a later stage. However, provision for these facilities must be included in the finalisation of the SDP.

All public roads need to be designed to accommodate pedestrian and bicycle movements. Detailed of which can only be more refined upon development and finalisation of a refined master plan SDP.

There is the possibility of linking the cargo to the rail. However, this will depend on the regional freight movement along the rail network/infrastructure and the type of cargo and its destinations. These discussions will continue with the refinement of the layouts.

In concept, the site will be separated by primary and secondary roads. A separate one-way system for drop and go's and access to the parkades are envisioned. These routes also need to be linked with dedicated public transport services. Separate access points and circulation will be identified for the supplemental uses.

The main internal roads would ultimately have 2 lanes per direction. However, construction could be phased and only a single lane per direction would be required if vehicle demand does not warrant dual carriageways or significant turning movements. Controlled access points to restricted areas need to be identified. Space for U-turns in from of any controlled access points should be provided.

The main road circulating adjacent to the terminals and parking area should include dedicated public transport, e-hailing and passenger vehicle stop and go zones. Details of this can be finalised with refined of the SDP and terminal layout requirements.

The parking provision for any future phases of the CWA can established based on actual parking demand based on the 2032 scenario. Provision of parking within the FBO and hanger restricted areas can be based on the projected number of employees, number of hanger spaces and specific tenant requirements.

The following upgrades are recommended Phase 1 (PAL 1B) of the CWA:

Lichtenburg Road/Mellish Road:

- Southbound – Construct two dedicated right-turn lanes and a dedicated left-turn lane.
- Eastbound – Construct a dedicated left-turn lane.
- Westbound – Construct an additional through lane and a dedicated right-turn lane.
- Intersection control – Install a traffic signal.

East-West Link/CWA Access:

- Intersection control – Construct a dual-lane roundabout.

Based on the 2032 (Phase 1) capacity analysis results, the priority-controlled intersections along Klipheuwel Road and Lichtenburg Road will continue to experience capacity constraints. However, alternative routes are available via the signalised Darwin Road and Dulah Omar Street intersections.

The Klipheuwel Road/Olifantsrivier Avenue intersection is also expected to operate at capacity during the PM peak hour according to the 2032 capacity analysis. However, these vehicles can be redistributed as there is still sufficient capacity available at the Klipheuwel Road/Okavango Road intersection.

The results of the 2032 capacity analysis indicate that the proposed upgrades for the 2032 Total Traffic Conditions scenario will be sufficient to accommodate Phase 1 (PAL 1B) of the CWA.

The 2050 (Phase 2) capacity EMME model results showed that the future road network will be capable of supporting future developments in the area, including Phase 2 (PAL 4) of the CWA. It is, however, recommended that an updated TIA be prepared after 2032 for each PAL once new SDPs are available and the latest traffic conditions can be assessed closer to the time.

2024 Existing Traffic Conditions

Upgrades are recommended for Klipheuwel Road/Lichtenburg Road, including the installation of a traffic signal and additional turn lanes, which are expected to improve the LOS to B. Planned future developments and access management plans (AMPs) for Lichtenburg Road (MR213) and Klipheuwel Road (MR188) include changes to intersection configurations and realignments, which are expected to reduce

demand at some constrained intersections. Given these future plans, no further upgrades are recommended for the remaining intersections.

2032 Background Traffic Conditions

This increase in traffic will trigger the need for road upgrades, especially along Klipheuwel and Lichtenburg Roads. The proposed upgrades include the dualling of Klipheuwel Road between Brackenfell Boulevard and Lichtenburg Road, the installation of traffic signals at several intersections, and the construction of additional turning lanes. The Klipheuwel Road/Arum Lily Street intersection will be converted to a left-in, left-out (LILO) configuration as part of their access management plan (AMP). With proposed upgrades in place, capacity constraints are expected at some priority-controlled intersections. However, alternative routes via signalised intersections such as Klipheuwel Road/Darwin Road and Lichtenburg Road/Dulah Omar Street will help alleviate traffic congestion.

Proposed Access Phasing:

4. Mellish Road will be the initial connection from Lichtenburg.
5. The East-West link to Klipheuwel Road when Bella Riva constructs this. CWA to engage with Bella Riva landowner/developer to establish if feasible to build Lucullus Road extension and/or the East-West Class 3 road. The East-West Class 3 at this stage is the most likely to come first.
6. The ultimate link will be via the northern extension of Lucullus Road once the EIA approval has been completed by the City of Cape Town. The alignment and road reserve requirements of Lucullus Road bordering the west edge of the site must be confirmed.

2032 Total Traffic Conditions

This scenario assessed the impact of Phase 1 (PAL 1B) of the CWA the realigned Mellish Road access and the East-West link from Bella Riva as a secondary access. The proposed upgrades include the installation of a traffic signal at Lichtenburg Road/Mellish Road and the construction of a dual-lane roundabout at the East-West Link/CWA Access intersection. As with the 2032 Background Traffic Conditions, capacity constraints are expected to continue at the priority-controlled intersections along Klipheuwel and Lichtenburg Roads. However, alternative routes via signalised intersections on Klipheuwel Road/Darwin Road and Lichtenburg Road/Dulah Omar Street will help alleviate congestion.

Additionally, the Klipheuwel Road/Olifantsrivier Avenue intersection is expected to reach capacity during the PM peak hour. This traffic can be redistributed to the Klipheuwel Road/Okavango Road intersection, which has sufficient capacity.

2032 Sensitivity Analysis

A sensitivity analysis was conducted to evaluate the impact of using only the Mellish Road/Lichtenburg Road access for Phase 1 (PAL 1B) of the CWA. The capacity analysis results show that the proposed upgrades in the 2032 Total Traffic Conditions scenario will be sufficient to accommodate the traffic

generated by Phase 1 (PAL 1B). Mellish Road is therefore the only access required to accommodate the CWA Phase 1 (PAL 1B) traffic.

It is, however, recommended that the East-West link across Bella Riva Phase 1 be extended to the airport by CWA when the road reserve is available.

2050 Capacity Analysis

The City's EMME model was updated to evaluate the impact of Phase 2 (PAL 4) of the CWA for the 2050 scenario. This update included the total extent of the future developments in the area and assessed the R300 northern extension along with several new road links, including the Darwin Road extension, and the extensions of Lucullus Road and the East-West links. The results indicated that the future road network will be sufficient to accommodate the future developments, including Phase 2 (PAL 4) of the CWA.

The future developments will require several upgrades to be implemented as more than 8 000 peak-hour trips will be added to the road network. The construction of the R300 northern extension, along with new road links such as the Darwin Road extension and extensions of Lucullus Road and the East-West links, is expected to reduce the demand at some of the study intersections. Therefore, it is recommended that the construction of these road links be fast-tracked to ensure that the intersection upgrades are not abortive in the future.

4.1.14 Waste, Water & Energy Guidelines

During the lifespan of human habitation people generally waste on a daily basis. Examples of additional wastage are excessive electricity consumption for lighting and air-conditioning and excessive water usage.

A. Water Measures

The following Water Efficiency Measures will be implemented:

- Ensure that only water efficient devices such as low-flow taps, low-flow showerheads, washing machines and dishwashers are used.
- Ensure that all toilets are low volume (9.5litres or less), with dual-flush or multi-flush.
- Ensure that outbuildings and outside taps and showers are fitted with metering tap buttons, which have set timers to prevent taps being left on or dripping.
- Design the layout of the plumbing system to avoid long pipe runs between the geyser and supply points.
- Reduce hard surfacing to encourage rainwater to seep back into the ground.
- Design paved areas so that water run-off is slowed down and where possible use soak-aways and permeable paving that allows water to filter into the ground.

- Ensure that the optimum pipe size and water pressure is used. A pressure reducing valve can be installed at a point nearest to where the supply enters the building to ensure that all water supplies in the building are balanced.
- Ensure all buildings are harvesting rainwater and encourage the re-use of grey water where appropriate. However, ensure that the local ecological system is not polluted and that it is managed correctly.
- To keep the volume of polluted water to be disposed of to a minimum, stormwater should not be mixed with greywater (e.g. from showers, sinks, washing machines etc.).
- Ensure the use of indigenous planting and efficient irrigation methods, such as drip irrigation.

B. Energy Efficiency

Reducing the energy consumption of a building not only saves the environment but will also save on the running costs of the building. By designing energy efficient or renewable energy options into a building, the demand for electricity during peak consumption times is reduced. The following Energy Efficiency Measures will be implemented:

- All buildings are to be built in accordance with the "*NHBRC Guidelines for Building an Energy Efficient Home*".
- Install properly insulated ceilings.
- Place and size windows to make optimal use of natural light, winter heating and ventilation without creating draughts, or gaining too much heat in summer or losing heat in winter.
- Use air conditioners with a seasonal energy efficiency ratio of 10 or more (ratio of the seasonal energy output to the seasonal energy input).
- Ensure that the building is constructed so as to be tightly sealed, to prevent unwanted air flows. Doors and windows must be appropriately sized and fitted with seals.
- Energy efficient electrical installations must be used.
- Ensure that artificial lighting is designed so that light is focused where necessary, such as brighter areas where tasks are being performed and more ambient light elsewhere.
- Avoid the use of outdoor 'up-lighting' to reduce light pollution.
- Ensure that energy efficient light bulbs, such as CFLs or LEDs, are used.
- Reduce the electrical energy used to heat water by installation of solar water heaters, or at least geyser blankets, pipe insulation and a geyser timer.

The Design Philosophy for all electrical services is described and defined as follows:

1. The site and facilities housed should be self-sustaining in terms of renewable energy sources and resources.

2. All designs to provide for energy efficient systems and solutions using minimum amount of electrical energy consumption. This will be completed in consultation and coordination with the Project Architects and Mechanical Engineering teams. The systems and solutions employed will be in accordance with Green Star SA (or International Equivalent if required) in accordance with recommended Best Practice/Lowest Emissions. This will routinely deliver energy savings more than 40% in total consumption.

3. Notwithstanding the above, given the critical/aircraft safety/site-security requirements of the airport and supporting aircraft management systems, the electrical systems must include multiple redundant sources of power, including diesel generator plant and uninterruptible-power-supplies.

4. The integration of the various power sources and loads onto a localized micro-grid- system is required to ensure maximum utilization of renewable sources, minimum diesel fuel consumption, and minimum overall electrical energy consumption, especially for non-renewable sources.

5. Lighting systems to include latest generation, high-efficacy LED lighting using ambient light and occupancy sensing to minimize lights-ON time.

6. The inclusion and incorporation of electric vehicle and aircraft charging to be integrated (in future) with bulk mains sustainable and non-sustainable electrical supply sources and systems.

7. The design of all electrical systems and services to be completed in accordance with best-practice, latest generation Green Building Standards Green Star Certifications.

C. Waste

Methods to reduce, reuse and recycle waste need to be encouraged through all aspects of the development:

- Aim for and promote Zero Waste in the planning, operation, management and maintenance of a building. Zero Waste emulates the closed loop processes found in nature, taking a 'cradle –to – cradle' approach to designing products and buildings.

- Separation@Source (S@S) is key! S@S generally refers to the practice of setting aside post-consumer waste materials at household, commercial and industrial level, from a generally mixed waste stream through the use of a split bag system (e.g. a wet/dry two-bag system (recyclable /non-recyclable). In the case of the Airport, S@S would relate to separate bins provided at each waste source which would then be collected and transported to the Waste Management Facility.

- Build waste avoidance into the process at a design phase, by specifying products and materials that have less wasteful production processes and don't create wasteful emissions during construction and maintenance of a building.
- If waste is created, consider how this can firstly be re-used and then recycled to recover the value invested in these materials, rather than losing this value when the resource is dumped in a landfill or incinerated.
- Facilitate the separation of waste at the source for composting, re-use and recycling when designing waste management systems. People should be encouraged to recycle their household waste.
- Material used during construction or in the life-cycle of the project should be focused on renewable and recyclable elements:
  - Select building materials for durability to minimise maintenance or replacement;
  - Use standard materials to increase the potential for re-use and re-cycling;
  - Materials should be sourced locally where possible; and
  - Use recycled material where possible.

The **Waste Management Plan (Annexure 8)** must be strictly adhered too.

4.1.15 Noise Design Considerations:

Encourage airport compatible land-use planning via:

- establishing compatible land use (such as industrial and commercial) to be located around airport facilities; and
- directing incompatible land use (such as houses and schools) away from the airport environs and the runway alignments.

4.1.16 Poultry Biosecurity Design Considerations:

Plant fast-growing vegetation (that does not attract wild birds) and/or erect a solid wall to screen the section of the poultry farm closest to the construction area.

Lighting: design the road so that light does not shine into poultry sheds, erect signs requiring that car lights are dipped on the affected section of road, barriers that prevent light from going into the sheds can be erected on farms, hood the sources of light, erection of a facility wall which will block some of the light and the use of minimal lighting in the car park area.

Place any biodigester dependent on manure off site and in an isolated area.

4.2 Pre-Construction Management Plan

The pre-construction or planning management plan is to be used as a guide during the planning, design and detailing of the development activity.

4.2.1 General Requirements:

A. Contractual Communication Procedures on Site

One book will be kept on site for the purposes of recording on-site instructions and as a general record of environmental issues. The book will consist of three sections:

Environmental Site Instruction Section

The Environmental Site Instruction Section will be used for the recording of general site instructions relating to the protection of environmentally sensitive or potentially impacted areas or features on the site, by the ECO.

Site Diary Section

The purpose of this section will be to record the comments of the ECO as they relate to activities on the site, any problems encountered, or comments or complaints received from the public about works from the site.

Monitoring Section

The purpose of this section will be to record the comments of the ECO during Construction (and Maintenance) during the life cycle of project.

This book is to remain on site at all times and is to be made available for monitoring purposes by the competent / local authority as required.

B. Communication/Contractual Network

There is to be continual communication between the Applicant/ Site Manager, Engineers, Contractors/ Sub-Contractors, and the ECO. The ECO will advise all on factors relating to the EMPr and all environmental matters on site.

The ECO is empowered to order the Contractor immediately to cease any activities or operations that are required to be stopped as a matter of urgency to prevent serious adverse environmental impacts or potential impacts on the site or any of the adjacent properties or areas outside the boundaries of the site. The ECO shall without delay report any such actions to the Competent Authority. The suspension will be enforced until corrective action has been taken, with no extension of time for such delays. In such a case, all costs are to be borne by the Contractor.

Communication Protocols that address directly and indirectly affected residents and surrounding landowners, with specific reference to activities, timelines and intended impacts related to the

construction phase and all related activities associated with the implementation of the project (i.e. during the operational phase).

Objectives: To orientate, generate awareness and gain positive attitudes among stakeholders as far as possible; and to engage and inform stakeholders of progress regarding all phases of construction.

Target audience: Property owners and users of the land portions directly surrounding the proposed activity; and other stakeholders and property owners that may be affected.

Major types of messages:

- Inform directly affected residents on the periphery of the development site and others that would frequent the area;
- The commencement date for construction activities related to the project;
- Duration and extent of the construction activities and details of individual construction activities;
- Progress updates, including any delays in a construction-related activity; and
- Introduce appropriate signage to warn persons frequenting the area and those residing adjacent to the development area.

C. Method Statement Format

For any activity the Contractor is requested to submit a method statement (MS) for comment by the ECO/Site Manager. The method statement must provide a step-by-step plan (which may include a schematic diagram etc.) to inform the responsible person (s) on the process and actions to take in a sequential and logical manner, which aims to reduce the impact of undertaking the activity within a reasonable timeframe and cost. The format should clearly indicate the following:

- **What:** a brief description of the work to be undertaken;
- **How:** a detailed description of the process of work, methods and materials;
- **Where:** a description/sketch map of the locality of work; and
- **When:** the sequencing of actions with due commencement dates and completion date estimates.

The Contractor must submit the method statement to the ECO prior to the start of any construction activity. Work may not commence until the comments of the environmental site manager (EM)/waste (environmental) control officer ECO have been received and taken into consideration, and the EM and ECO approved the method statement for implementation on site.

D. Programming of Construction Events

The ECO must be supplied with a detailed program of all construction events to allow for proper monitoring and planning on site. Any amendments to the program of construction events for any reason must be forwarded to the ECO.

E. Bylaws and Regulations

All national and provincial laws and regulations, as well as all local authority bylaws and regulations which apply to the development of this site are to be adhered to.

Heritage:

Application to HWC will need to be made for the demolition of the two heritage buildings falling within the footprint of the proposed development (Figure 16 above).

Signage:

The subject site is located within and alongside areas of maximum control in terms of the Outdoor Advertising and Signage Policy of the City of Cape Town, 2013; and the Outdoor Advertising and Signage By Law (No. 10518, 2001). In general, the development proposal (including all future SDP plans to be submitted) must comply with the Outdoor Advertising and Signage Policy and By-law in all respects.

Specifically, the development proposal (including all future SDP plans to be submitted) must demonstrate that all outdoor advertising signs and other signage (external advertising, direction signs and/or outdoor display) do not impact negatively on visual corridors, Cultural Landscapes and Scenic Routes.

No signage, lettering or outdoor advertising (within the proposed development or on the perimeter) may be installed higher than the average building height, or the overall height restriction for the development, whichever is the lesser.

Outdoor signage and (especially) outdoor advertising must be kept to a minimum throughout the development. This is especially important to protect the R312 Scenic Route's view corridor, the remnant Landscape Character of the Receiving Environment, and the views of sensitive viewers within the Cultural Landscapes and travelling on the scenic Routes surrounding the subject site.

Refer to Section 4.1 above for additional Outdoor Signage Guidelines.

Waste:

The CWA Waste Facility will have to register and adhere to the following Norms & Standards:

- "National Norms and Standards for the Storage of Waste" (GN926 of 29 November 2013) should the facility have the capacity to store more than 80m^3 for hazardous waste and/or 100m^3 for general waste at any one time and for a period exceeding 90 days.

- "National Norms and Standards for Sorting, Shredding, Grinding, Crushing, Screening, Chipping or Baling of General Waste" (GN1093 of 11 October 2017) if general waste is sorted, shredded, grinded, crushed, screened, chipped or baled in an operational area at the facility exceeding 1000m^2.
- "National Norms and Standards for Organic Waste Treatment" (GN.1984 of 1 April 2022) with regard to the biodigester/ facilities that have the capacity to process more than 10 tonnes of organic waste per day.
- "National Norms and Standards for Organic Waste Composting" (GN.561 of 25 June 2021). Organic waste composting facilities that have the capacity to process compostable organic waste, in excess of 10 tonnes per day.
- "National Norms and Standards for Domestic Waste and Sanitation Services", published as GN No. 982 of 8 September 2017.

Botanical & Freshwater Offsets:

Prior to commencement, the applicant must conclude the offset implementation agreements with a suitable person or organisation that secures in perpetuity, through suitable legal protection mechanisms, the area recommended for the Botanical and Freshwater Offsets as per **Annexure 7**. The applicant must conclude an Offset funding agreement/endowment through a suitably experienced and registered Public Benefit Organisation in accordance with the Wetland and Botanical Offsets proposed.

Should the applicant fail to conclude such an implementation agreement or fail to capitalise an endowment through a public benefit organisation, prior to commencement with the activities, then the EA 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.

F. Protection of sensitive features (Search & Rescue)

Vegetation

All Very High, High and Medium sensitivity areas (Refer Figure 10) that do not fall within the authorised development (construction) footprint should be conserved as part of any redevelopment of this site (no development and no infrastructure through these areas). Two of the Very High sensitivity areas are within the Agricultural Precinct, as is a significant part of the one (that supports the CR *Leucadendron verticillatum*) just east of the main runway.

No perimeter service road may cross or disturb the mapped area of Very High sensitivity east of the main runway.

All protected elements/areas located on the site, will be clearly marked, and care should be taken by the ECO to ensure that they are not unnecessarily disturbed during construction works on site. All alien vegetation must be removed in accordance with the **Alien Clearing Management Plan (Annexure 6)**.

Apart from the vegetation identified by the project team for removal from the site prior, no indigenous vegetation is to be removed without the written permission of the ECO. Damage to the indigenous vegetation anywhere on the site (outside of the approved area) will be subject to penalties.

Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with wetland habitats or the surrounding terrestrial area. Retain as much indigenous vegetation as possible (wetland and terrestrial).

Search & Rescue:

Most of the low and medium significance occurrences of plant SoCC within the proposed development footprint (as well as some of the high significance species) can be successfully translocated, and this will be done by experienced Search and Rescue contractors prior to any site development (pre-construction phase), with the assumption that the receiving areas will be properly managed in perpetuity as plant conservation areas. This must be done in consultation with the botanical specialist and can proceed prior to any authorisation (provided all necessary permits and permissions are obtained).

A plant Search and Rescue plan should be prepared by the appointed S&R contractor, the ECO and the botanist, and should outline who needs to do the work, when seed, sods and cuttings need to be collected, how they should be stored, how much should be collected, how receiving sites should be identified and prepared, and how and when the planting out should be undertaken. Guidelines on ongoing maintenance of these areas must also be included.

Large scale Search and Rescue of plant material from all Medium, High and Very High sensitivity areas within the development and clearing footprints must be undertaken prior to any development or disturbance of these areas. Receiving areas should ideally be located within the greater study area (provided that land tenure and funding for conservation is secure in these areas) and should be areas that support some natural vegetation remnants, but that require rehabilitation intervention. This must be overseen by the botanical consultant.

<u>Rivers, Riparian Habitat & Wetlands</u>

Construction work, particularly of works within the 15m construction conservation buffer of the wetlands, must as far as possible be restricted to the dry, summer season. CVB wetlands 2 and 3 and the remainder of seep wetland 1 where development will not occur, and the wetlands' 15m construction phase conservation buffers must be marked as a no-go area during the construction phase of the proposed development.

Sediment trapping devices must be utilised downgradient of where works are to be undertaken within seep wetland 1 and upgradient of CVB wetland 3.

Under no circumstances must linear infrastructure be trenched within the CVB wetlands 2 and 3 or their conservation buffer.

All construction personnel, vehicles and construction work must be confined to the boundaries of the development footprint and no edge effects must occur. This is of particular importance at seep wetland 1.

Disturbed areas, particularly associated with the CVB wetlands 2 and 3 with regards to the maintenance road and fences that will traverse these wetlands must be rehabilitated once construction activities have ceased. Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with the freshwater ecosystems or the surrounding terrestrial area.

Careful planning of all construction equipment must be undertaken beforehand to ensure that the minimum impact on the freshwater ecosystems occur.

Reptiles, birdlife and mammals

Construction personnel are to be educated about the various faunal species in the area, particularly about venomous spiders, snakes and scorpions. None of these or other species are to be killed or injured by construction personnel. Should any of these species be encountered, these species are to be safely and carefully relocated to the surrounding natural habitat adjacent the development site, should they not move off on their own.

The contact details of a suitably qualified snake handler be made available to construction teams should a venomous snake be encountered that needs removal. Alternatively, it is recommended that a member of the construction team be trained to handle and remove snakes through a recognised snake handling course.

No hunting, trapping or collecting of faunal and avifaunal species is to be allowed, other than for rescue and relocation purposes. Setting of snares by personnel is to be prohibited.

Archaeological remains (**Annexure 4: Fossil Finds**)

If any heritage remains are found Heritage Western Cape (HWC) needs to be informed. If heritage remains are disturbed it should be left and demarcated for inspection by HWC. If any archaeological remains (including but not limited to fossil bones and shells, coins, ceramics, antique, marine shell heaps, stone artefacts and bone remains) are discovered HWC need to be notified. If any graves or human remains are discovered HWC need to be notified.

Agricultural Precinct

No construction phase activities may be undertaken within the Agricultural Precinct.

G. Visual Impacts

All contractors and sub-contractors on site must submit a Temporary fencing, hoarding and screening protocol for active construction sites to the ECO for monitoring.

All contractors and sub-contractors on site must submit a dust and mud control protocol for active construction sites to the ECO for monitoring.

Dust management, waste management, the placement of screens and hoarding, as well as the location and management of access points to the site must be proactively managed to reduce visual clutter and limit visual impacts associated with construction activity before, during and after each phase of the construction process (demolition, excavation, project execution, close-out etc., establishment, etc.).

Light pollution should be kept to an absolute minimum throughout the development, and exterior lighting must be limited to areas where this is necessary for utility, safety and security.

The goal should be to keep the ambient light levels within the immediate Receiving Environment low, given the proposed development's proximity to a rural landscape that is a protected area, and the surrounding Cultural Landscapes. Exterior lighting (and therefore any visible light sources) must be carefully directed away from sensitive receptors (Scenic routes, and viewers within the Cultural Landscape and nearby residential areas/homesteads). Refer to Section 4.1.4 ("Lighting") above.

Construction activities must be limited to daylight hours to prevent visual impact of lights at night. If construction during the night-time hours is unavoidable, the following should apply:

- No floodlights should be permitted.
- Only the construction activity should be lit- not the entire construction area.
- Construction lighting should not be "always-on" – and should be turned off when active construction activity is not being undertaken.
- The management of construction light impacts at night must be monitored by the ECO and included in compliance reporting.

H. Noise Impacts

The contractor must take appropriate measures to limit the impact of unreasonable noise from construction activities on the neighbouring land users by providing training to the personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy events.

Ensuring that equipment is in good working order and properly maintained.

Limit night-time construction activities and avoid night-time construction activities on the property to the west of the airport boundary (earthworks), which are closer to the Fisantekraal residential area.

I. Safety & Security

The Contractor is to appoint a safety steward, who will be responsible for safety of the labour force, construction activities and handling emergency situations on site during construction hours.

Co-operation between the Developer and contractors is essential to ensure that the area around the proposed development remains secured during construction. On-site security measures, such as perimeter fencing, controlled access and security guards and patrols will minimise the risk.

J. Fire Control

The contractor must take appropriate measures to guard against accidental fire, and it will be presumed that any bush fire which starts on the site, or within 100m thereof during the construction period would be the responsibility of the applicant.

No illicit fires are allowed on site.

Fire beaters and "bakkie sakkie" are to be kept on site, and easily accessible at all times, and not locked away. No open fires may be lit anywhere on the construction site, except at locations approved by the ECO and Site Manager. The burning of refuse or vegetation material on site as a means of disposal will not be allowed unless a permit for burning is issued by the competent authority.

The **VeldFire Management Plan** in **Annexure 5** must be implemented.

K. Emergency

All accidents and emergency situations are to be reported to the ECO and Site Manager and full details included in the monthly environmental report.

Fire

In the case of a fire occurring on site, the Applicant and Site Manager (safety steward) are to be notified immediately. If fairly localised and effort should be made to extinguish the fire immediately and if required, the assistance of the local fire department should be sought by the safety steward.

The **VeldFire Management Plan** in **Annexure 5** must be implemented.

The **Emergency Preparedness and Response Plan (Annexure 12)** must be implemented.

First Aid

The Contractor must provide and maintain a suitable first aid kit on site, with a member of staff suitable qualified in first aid on site during working hours, in accordance with the Occupational Health and Safety Act.

L. Public Complaints

All public complaints received are to be registered by the ECO or Site Manager and addressed immediately. Public complaints and responses are to be recorded in the Site Diary and included in the monthly environmental report by the ECO.

M. Procurement Strategy

Initiate the activity during the first phase of the development. The strategy is the responsibility of the contractor(s) collectively under the guidance of the Municipality. Focus on opportunities for local labour in the surrounding areas and businesses as a priority. Contractors are required to indicate the

geographical location of sub-contractors (businesses) and local labour. Local contractors invited to tender for work in the context of the terms and conditions included in RFP documentation, which would include skills development, on-site training, gender equality, etc.

Contractors need to employ people from the immediate area whenever possible.

4.2.2 Site Establishment Requirements

A. Environmental Awareness Training for Site Personnel

All contractors/ sub-contractors involved in work on the development are to be briefed on their obligations towards the environmental controls and methodologies. The briefing will usually take the form of an on-site talk and demonstration by the ECO. The education program should be aimed at all levels of management within the Contractor team.

The environmental awareness education program should commence with entry onto the site, prior to any construction activities taking place by each team and is likely to be an ongoing process. All personnel are to be made aware of the details of the EMPr which will be applicable to them, in the languages of the site staff. Contractor teams must also be aware of penalties issued by the ECO in terms of environmental conduct on site, as well as safety and emergency procedures to be followed.

An initial environmental induction must occur to all sub-contractors and associated workers on environmental awareness, including minimisation of disturbance to areas of increased ecological sensitivity (i.e. freshwater ecosystems), as well as fauna and flora with a no poaching policy, management of waste, prevention of water pollution, fires, litter and contaminants.

A regularly updated record is to be kept of all personnel attending the Environmental Awareness training sessions.

Refer to the **Environmental Awareness Plan – Annexure 15**.

B. Site Definition and Demarcation

All development footprint areas should remain within the demarcated areas as far as possible, and disturbance of soil profiles must be limited to what is essential with a compact footprint.

All 'fencing' is to be erected prior to construction works commencing on site and are to remain in position and in good repair for the duration of the construction phase. Once this has been done, all works, including stockpiling of construction materials are to be strictly confined to the demarcated area.

All footprint areas must remain as small as possible, vegetation clearing to be limited to the approved development footprint and should only encroach into the freshwater ecosystem if considered essential. The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled.

Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways.

For the construction of the maintenance road along the eastern boundary of the study area, culverts must be installed to allow the passage of water from the upgradient portions of the CVB wetlands 2 and 3 to the downgradient portions. Any disturbed areas within these wetlands must be rehabilitated on completion of construction of the road. The maintenance road should ideally avoid seep wetland 1 and circumvent it to avoid further fragmentation of the wetland. Should this not be possible, the road must be designed in such a manner as to allow hydraulic and hydropedological process connectivity in the landscape while also allowing fauna to traverse the roadway. It is also highly recommended that cobbles be placed downgradient of the road to trap sediment and reduce flow velocity of surface water entering the wetlands.

C. Contractor's Camp

All construction site offices, lay down areas, storage areas and active construction activities must be screened from public view by appropriate hoarding and/or screening.

Construction fencing/hoarding and signage must adhere to local policy relating to signage and ensure that no views to scenic routes are impacted by large or numerous construction signage.

All contractors and sub-contractors on site must submit a Temporary fencing, hoarding and screening protocol for active construction sites to the ECO for monitoring. iv. All contractors and sub-contractors on site must submit a dust and mud control protocol for active construction sites to the ECO for monitoring.

Site offices, storage and lay down areas, loading areas and similar temporary infrastructure should be situated centrally on the subject site and avoid any areas visible from the Scenic route.

- Construction site offices, lay down areas and storage areas must be placed at least 500m away from the R312, and at least 100m away from all other property edges.
- Appropriate fencing must be erected along the Scenic route to screen the construction site from commuters on the R312.
- These visual screens must be maintained so that they do not become the source of the visual impact.

D. Toilet Facilities

Suitable sanitary facilities must be provided by the contractor for all staff on site. The Contractor should ensure that ablutions are restricted to the sanitary facilities. Where chemical toilets are provided, the Contractor should ensure that they are kept in hygienic condition and emptied on a regular basis. Waste from the toilets should be disposed of to the satisfaction of the ECO.

Care must be taken that no spillage occurs when chemical toilets are cleaned, and their contents are properly stored and removed off site. A contingency plan for spills must be supplied by the contractor and approved by the ECO. Toilets should be located where their use would result in minimal impact on the surrounding environment and may not be in areas of running or standing water during winter and must be secured to prevent them from blowing over.

E. Sensitive Features (No- Go Areas)

Please also refer to Section 4.1.1 (F) above. The no-go areas for development, as indicated on the Environmental Sensitivities Map (Annexure 3B), are as follows:

Botanical:

All authorised hard infrastructure bordering on any of the mapped areas of Very High, High and Medium sensitivity botanical areas must be surveyed and fenced off prior to any site preparation, clearing or construction. These sensitive areas may not be disturbed in any way during the construction process. Fences should be marked with signage every 15m indicating that these are "No Go Areas". Areas beyond the fencing are to be considered **no-go areas**. All areas outside the boundary of the property are naturally considered no-go areas and boundary fencing is to be secured in areas where work is to take place.

The Very High sensitivity areas falling within the Agricultural Precinct must be fenced off and excluded from grazing and trampling by livestock (especially cattle). This must be done within 60 days of authorisation, or sooner if possible (subject to landowner negotiation).

Aquatic:

The 15m construction conservation buffer around the freshwater ecosystems must be implemented for the duration of the construction works where development will not occur to mitigate edge effects. The freshwater ecosystems and the respective conservation buffers must be clearly demarcated using a suitable barrier or material by an Environmental Control Officer (ECO) and marked as 'no-go' areas. Only authorised construction personnel may be permitted to enter these 'no-go' areas as part of the clearing activities, where required, to prevent excessive compaction of the soil within the freshwater ecosystems.

Figure 25 above refers to an example of a barrier fence used to demarcate the no -go area around the freshwater ecosystems and the 15m construction conservation buffer.

Any fences that are to traverse the CVB wetlands 2 and 3 must be installed in such a way that hydropedological processes are not impeded within these systems. It is recommended that the erection of fence posts within the CVB wetlands 2 and 3 are avoided.

All 'fencing' is to be erected prior to construction works commencing on site and is to remain in position and in good repair for the duration of the works. No materials, rubble or equipment is to be stored or

stockpiled within the Environmental Sensitive Areas. Any deviations from these specifications are subject to the approval of the ECO.

Geohydrological:

Due to the proximity of the Colenso Fault to the CWA, a no-go area for specific high-risk activities is proposed to the northeastern section of the study area. The precise location of the Colenso Fault is uncertain and therefore, the no-go area was drawn 500 m from the closest geologically mapped fault. This no-go area does not have to apply to all activities, but only to certain high-risk activities such as the aviation fuel farm, bulk fuel storage, retail service station or other activities that are considered high risk. However, as this area falls within the Agricultural Area it is already considered a no-go area in terms of construction.

Agricultural Area:

The Agricultural Precinct must be considered a "No-Go" area with no further development/ construction activities to be allowed within the Agricultural Precinct.

F. Vegetation Clearance

As far as possible, vegetation clearance should take place during the winter months, outside of the breeding/nesting periods of avifaunal species.

Vegetation to be removed from the site to facilitate development needs to be identified by the ECO, indicated on a site plan and clearly marked prior to any other works on site. Retain as much indigenous vegetation as possible (wetland and terrestrial). Alien vegetation directly adjacent or in close proximity to the construction area should be removed in line with alien clearing methods.

Faunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways as per the **Bird and Wildlife Hazard Management Plan (Annexure 11)** for the airport. Site clearance activities should take place in a phase manner, starting from the South moving northwards, or centrally moving outwards, so that faunal species can flee ahead of clearance activities into adjacent habitat and not get trapped in centralised, remnant patches.

Due to the potential fire risk in the area, no vegetation may be removed using fires, and no excess vegetation material may be burned on site. No natural vegetation outside of the site may be removed without approval of the ECO, apart from invasive plant species which are to be removed according to a controlled program.

Once all vegetation clearing is complete, all vegetation and any removed excess material must be disposed of at a licensed refuse facility and may not be mulched or burned on site (unless all approvals have been obtained).

G. Monitoring Requirements:

G1. Groundwater Monitoring Network/ Monitoring Plan

A groundwater monitoring network will be required and will require regional monitoring boreholes to monitor the regional groundwater quality, e.g. of the fractured bedrock aquifer. These boreholes should ideally be monitored prior to the commencement of construction to establish baseline conditions.

Implement the construction specifications and monthly groundwater quality monitoring during the construction phase in accordance with the "*Proposed Groundwater Monitoring Plan (GEOSS, Sept 2024*)" highlighted below:

It is recommended that a number of groundwater sites should be monitored at the proposed site during the construction and development phases on site. This will allow for monitoring of the groundwater quality and groundwater levels across the site. Monitoring sites need to be strategically placed, typically in the vicinity and downgradient of high-risk activities.

Groundwater flow in the area generally mimics the topography, flowing towards topographical lows. It is recommended that a number of local monitoring sites be located across the site to identify any potential impact of the proposed land uses. The additional suggested monitoring sites are presented in Table 10 and illustrated in Figure 31.

Table 11: Details for the proposed monitoring sites.

Site_ID	Latitude (DD, WGS84)	Longitude (DD, WGS84)	Location	Depth (mbgl)
CWA_BH001	-33.76452	18.73271	Existing borehole	100.0
CWA_BH002	-33.76876	18.732067	Existing borehole	100.4
MBH1	-33.748832	18.727907	Proximal to the WWTW	Until the clay layer/bedrock is reached
MBH2	-33.751598	18.729944	Proximal to the Biogas plant and fuel farm	Until the clay layer/bedrock is reached
MBH3	-33.753503	18.732373	Proximal to the Biogas plant and fuel farm	Until the clay layer/bedrock is reached
MBH4	-33.755629	18.730166	Proximal to the stormwater retention pond (quarry)	Until the clay layer/bedrock is reached
MBH5	-33.755713	18.736537	Airside activities	Until the clay layer/bedrock is reached
MBH6	-33.760356	18.734556	Airside activities	Until the clay layer/bedrock is reached
MBH7	-33.761442	18.730469	Proximal to the Energy Centre	Until the clay layer/bedrock is reached
MBH8	-33.764807	18.730847	Proximal to the retail service station	Until the clay layer/bedrock is reached
MBH9	-33.769336	18.731523	Boundary of the CWA, to screen potential contaminants upgradient of neighbour	Until the clay layer/bedrock is reached
MBH10	-33.773944	18.735199	Boundary of the CWA, to screen potential contaminants upgradient of neighbour	Until the clay layer/bedrock is reached
MBH11	-33.772721	18.747079	Airside activities	Until the clay layer/bedrock is reached
MBH12	-33.763444	18.742089	Airside activities	Until the clay layer/bedrock is reached

Construction Specifications

The drilling of boreholes should be supervised by a hydrogeologist and drill samples should be collected every 1 metre and logged. Additional information should also be collected such as the depth of water strikes, associated water strike yields and groundwater quality. This is crucial information for the optimal design of the boreholes. The driller should be supervised to ensure all site requirements are met. A graphical representation of a proposed borehole construction is presented in Figure 30; the exact construction will, however, be unique for the borehole.

The boreholes are to be drilled by means of rotary drilling until the clay layer or bedrock is reached. A gravel pack should be installed with an annulus of about 12mm. The boreholes should be developed with compressed air for at least two hours upon completion along with an airlift test to estimate the yield of the borehole. Each borehole must be protected with a concrete block or a protected manhole if there is traffic in the area. Each borehole also needs a permanent plate glued to the lid containing the details pertaining to the borehole. A bentonite plug of at least 500mm needs to be installed at the top of the hole to prevent ingress of surface water.

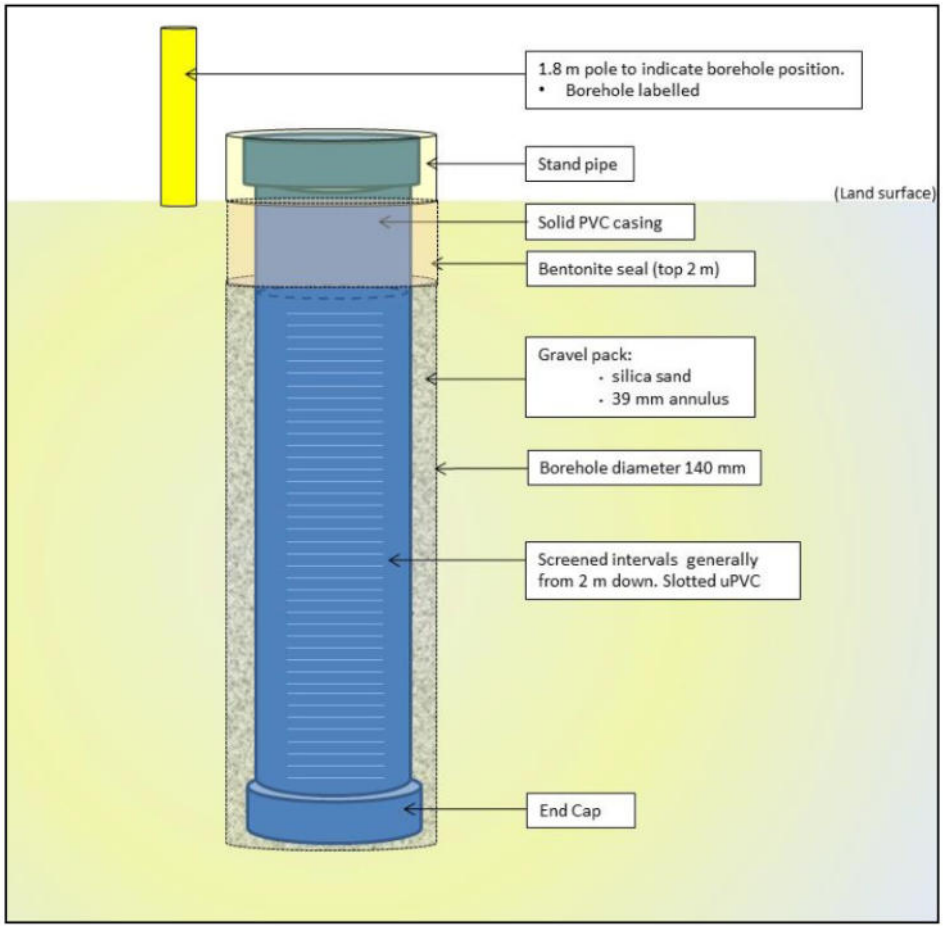

Figure 30: Schematic representation of the proposed general borehole construction.

Groundwater Level Monitoring

Groundwater level measurements are recommended for the monitoring points at the study site. A dip meter can be used to measure the water level below the top of the borehole collar/casing height (mbch).

The height of the collar/casing height must then also be measured (m). The water level (metres below ground level (mbgl)) can then be calculated by subtracting the collar/casing height from the water level (mbch). The value must be recorded along with the date and time of measurement.

Groundwater Quality Monitoring

It is recommended that the monitoring wells be purged prior to sampling. A low volume sampling pump can be used or the site can be bailed and allowed to recover prior to sample collection. When using a low volume sampling pump, the groundwater should be pumped through a flow-through cell until field chemistry parameters have stabilised.

Sample Collection, Preservation and Submission

Sample bottles must be labelled with the site name, borehole name and date. At the time of sampling, field chemistry parameters must be measured and recorded. These include electrical conductivity (EC), oxidation reduction potential (ORP), pH, temperature and dissolved oxygen (DO). During sampling, disposable nitrile gloves should be worn to minimise the transfer of any potential contaminants. Nitrile gloves should be dedicated to a sampling location and disposed of after use. Samples must be collected in an appropriate sampling container and preserved in the correct manner prior to submission to an accredited laboratory for the analysis parameters. The sample method and preservation must be discussed with the laboratory prior to sampling.

Monitoring Frequency and Parameter Analysis

In order to best understand and monitor the site, it is recommended that monthly water level measurements be taken to determine seasonal fluctuation. It is further recommended that the water quality on site is monitored on a quarterly basis for the first year, after which the frequency can be reduced based on the first year's monitoring results.

Groundwater monitoring needs to target the risk of the activity, i.e. organic and microbiological parameters need to be monitored in close proximity to the solid waste storage, WWTW and the biodigestor; BTEX, TPH and GROs need to be monitored in close proximity to fuel storage and dispensing operations, etc. Once the site is developed and the intricate details of the services are made available, a more detailed, standalone monitoring programme report will need to be developed. Table 11 indicates the potential parameters for ongoing monitoring, this will be revised upon approval and development of the CWA.

Table 12: Proposed groundwater monitoring parameters and their recommended frequency.

Parameter	Frequency*
Groundwater Level	Monthly
pH	Quarterly
Electrical conductivity (EC)	Quarterly
Total Dissolved Solids (TDS)	Quarterly
Inorganic parameters: K, Cl, NO_3, NH_4, P, Na, Ca, HCO_3	Quarterly
Metals: Fe, Mn, Al, Ti, Cr, Cd, Pb, Ni	Quarterly
Total Organic Carbon (TOC)	Quarterly
Biological Oxygen Demand (BOD)	Quarterly
Chemical Oxygen Demand (COD)	Quarterly
Heterotrophic Plate Count	Quarterly
Total Coliforms	Quarterly
E. coli	Quarterly
BTEX	Quarterly
Gasoline Range Organics (GROs)	Quarterly
Total Petroleum Hydrocarbons (TPH)	Quarterly

** Frequency of chemistry sampling may be revised after one year of data has been collected but level monitoring should continue on a monthly basis.*

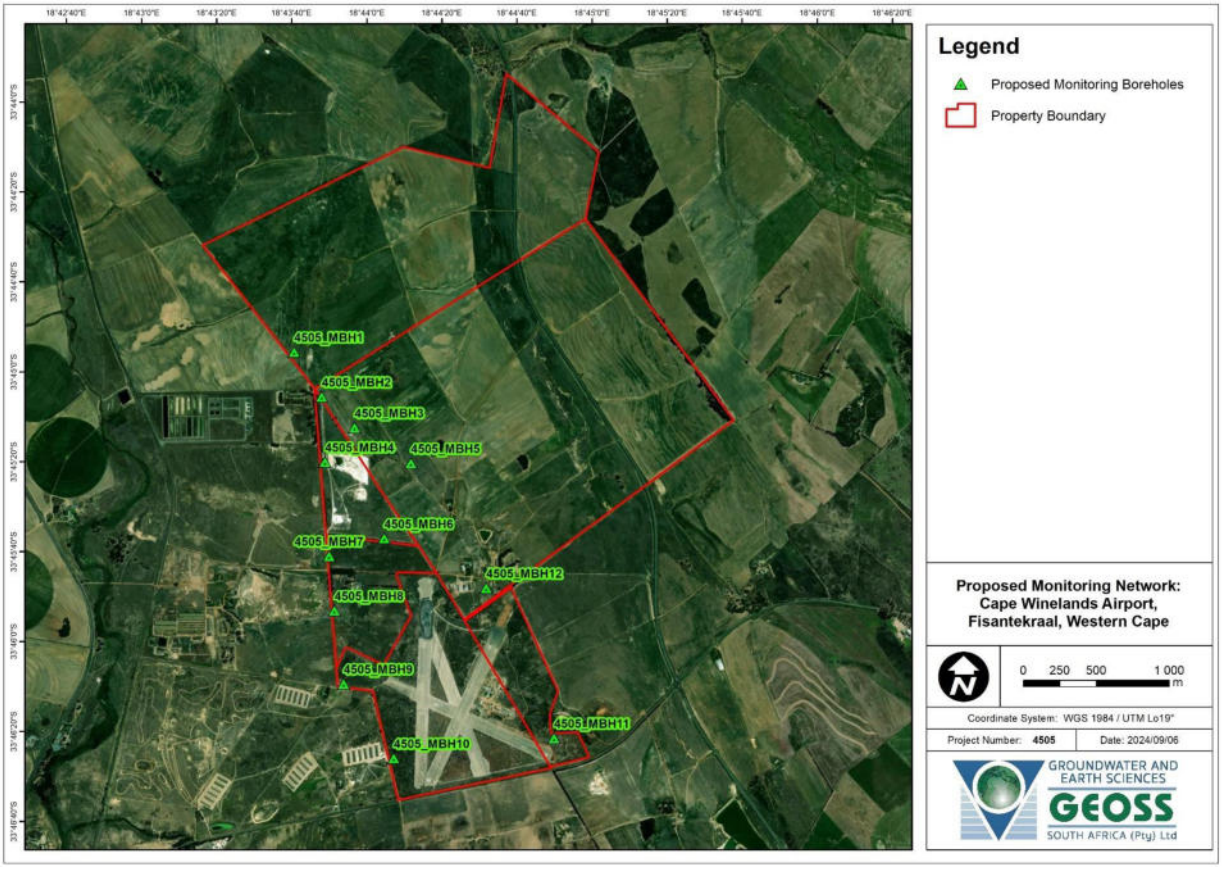

Figure 31: Proposed groundwater monitoring locations across the Cape Winelands Airport development.

G2. Noise Monitoring Network/ Monitoring Plan:

Noise monitoring should be conducted during the construction phase of the new airport and runway. This monitoring is to be carried out in accordance with the methods stipulated in the SANS 10103:2008 Code of Practice and the current Western Cape Noise Control Regulations.

Two points should be used for the noise monitoring locations, positioned on the inside of the airport boundary. These locations should cover the area close to the entry point of the trucks to the site and the community closest to the construction activities. These locations should be finalised once the construction plan and schedule are determined.

The monitoring should be conducted every three months during construction and on a monthly basis during the period when night-time construction will be taking place.

Three-monthly reports should be submitted to the authorities, including a brief assessment indicating if any construction-specific noise exceedances above baseline and SANS district guidelines are taking place. In the event of exceeding noise guidelines, appropriate site- and operation-specific noise mitigation measures should be investigated and implemented.

4.3 Construction Management Plan

Sound environmental management practices should be adhered to at all times.

4.3.1 Material handling and storage

Fuels and flammable materials are to be stored in suitably equipped storage areas. These areas shall comply with general fire safety requirements. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site.

Bulk fuel depots are to be placed within hardened bunded areas. Bunds are to have a holding capacity equal to 110% of the largest fuel container. The Contractor is to ensure that he is aware of the effects of all substances on staff and the environment, with the correct action to take in the case of any incident involving these materials.

Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the respective conservation buffers of the freshwater ecosystems and preferably the 32m NEMA ZoR. A designated contractor laydown area must be approved by an independent ECO prior to use. Stockpiles must be placed outside the delineated freshwater ecosystems and 32m thereof.

All hazardous chemicals as well as stockpiles should be stored on bunded surfaces and have facilities constructed to control runoff from these areas. It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage.

4.3.2 Asphalt / Concrete Works:

Asphalt, concrete and cement-related mortars can be toxic to aquatic life. Proper handling and disposal should minimise or eliminate discharges into the wetlands. High alkalinity associated with cement can dramatically affect and contaminate both soil and ground water. The following measures must be adhered to:

- Fresh asphalt, concrete and cement mortar must not be mixed near the wetlands' habitat. Mixing of cement may be done within the construction camp, on an impervious surface only, and must be within a lined, bound or bunded portable mixer. Consideration must be given to the use of ready-mix concrete.
- No mixed concrete maybe deposited directly onto the ground within the wetlands or associated wetland habitat, outside of the designated area (i.e. fence traversing the seep wetland 1 and CVB wetlands 2 and 3). Any areas that require manual application of cement require that mixed cement be placed on a batter board or other suitable platform/mixing tray until it is deposited.
- A washout area must be designated outside of the wetlands, and wash water must be treated on-site or discharged to a suitable sanitation system.

- At no point may batter boards/mixing trays or cement trucks be rinsed off on site and runoff water be allowed into the freshwater ecosystems.
- Cement bags (if any) must be disposed of in the demarcated hazardous waste receptacles and the used bags must be disposed of through the hazardous substance waste stream.
- Spilled or excess concrete must be disposed of at a suitable landfill site. Chain of custody documentation must be provided.

4.3.3 Soil disturbance and revegetation:

It is considered imperative that all excavation activities be undertaken during the drier summer months to limit surface water contamination and the need for any surface water diversion during the construction works.

Sheet runoff from compacted areas should be slowed down by the strategic placement of berms. It is considered ideal that activities occur within the current season (low rainfall) to minimise impacts of sedimentation. As much vegetation growth as possible (of indigenous floral species) should be encouraged to protect soils. Temporary stockpiling of excavated material from trenches can be retained alongside trenches, as required for backfilling. Any soil to be stockpiled for longer than a month should be moved to a designated stockpile area, as approved by the Environmental Control Officer (ECO). All soils compacted during the repair and maintenance phase should be ripped and profiled. All soil compacted within the wetlands as a result of construction equipment must be loosened prior to revegetation with suitable indigenous species. A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision.

Areas disturbed (for any reason) must be revegetated (or planted as per the approved Landscape Master Plan) within a maximum of 1 year after the disturbance occurs.

- The only circumstances under which delay may be tolerated are:
    - If the area to be revegetated/planted is still an active construction site;
    - If the revegetation/planting must happen during a particular season to await optimal planting conditions. In these cases, revegetation/planting must occur in the first of such season after the delay.
- The ECO must report on disturbed areas and revegetation.

All embankments must be appropriately stabilized and revegetated to match the existing/surrounding natural vegetation.

Rehabilitation/revegetation must be handled in accordance with the recommendations of the botanist or other suitably qualified specialist, and under the supervision of the ECO.

During excavation activities, topsoil must be stockpiled separately from other material. The mixture of the lower and upper layers of the excavated soil must be kept to a minimum, so as for later use as backfill or rehabilitation material after construction has commenced.

Exposed soils must be protected from wind and water erosion (using tarpaulins or a suitable geotextile) for the duration of the construction phase.

4.3.4 Trenching and Stockpiling Activities:

Any AIPs within the study area (including the linear infrastructure footprints) must ideally be removed prior to soil stripping to reduce seed loads within the topsoil (which will be used to revegetate post construction). This will assist in reducing the long-term AIP management requirements.

During the excavation and trenching activities, any soil/sediment or silt removed from the freshwater ecosystems may be temporarily stockpiled outside the freshwater ecosystems if construction activities are confined to the dry summer months. Excavated materials may not be contaminated (with hydrocarbons, fuel, etc.). It must be ensured that the minimum surface area is taken up, and the stockpiles may not exceed 2m in height. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later usage as backfill material.

With the exception of the infrastructure as described in this report (the potable water and stormwater infrastructure along the eastern boundary of the runway), no pipelines may traverse any of the freshwater ecosystems. Should additional freshwater ecosystem crossings be considered, the DWS Risk Assessment must be updated to account for these activities. Water and stormwater pipelines to be trenched in the freshwater ecosystems must be installed during the drier summer months to prevent water quality impacts to the freshwater ecosystems. Unused excavated soil/sediment must be utilised as part of the open space areas (if applicable) or be removed from site to a registered landfill.

The soil surrounding the linear infrastructure, particularly within 15m of the freshwater ecosystems must be suitably loosened on completion of construction activities and revegetated to prevent erosion.

In addition to the above, with regards to excavation and soil compaction activities regarding trenching for the linear infrastructure within the 15m construction conservation buffer of the freshwater ecosystems, stockpiling of removed materials may only be temporary (i.e. may only be stockpiled during the period of construction at a particular site) and must be disposed of at a registered waste disposal facility. Soil must be stockpiled on the upgradient side of the trench to avoid sedimentation of the downgradient areas. Figure 26 above shows excavation for trenching with stockpiles alongside.

Trenches must be backfilled as soon as the infrastructure has been installed in any given section to reduce potential erosion of exposed soil. Material used as bedding material (at the bottom of the excavated trench) must be stockpiled outside of the freshwater ecosystems. Once the trench has been excavated, the bedding material must directly be placed within the trench rather than stockpiling it alongside the trench.

Under no circumstances must linear infrastructure be trenched within the CVB wetlands 2 and 3 or their conservation buffer. The SDP Indicates that the layout of the linear infrastructure avoids wetlands. A 5m RoW for linear developments is considered as part of the RAM. This is of particular relevance to the installation of the water pipeline, fences and maintenance road along the eastern boundary of the study area. It is highly recommended that construction work for the linear infrastructure is undertaken in the drier, summer period to avoid excess sediment entering the receiving freshwater ecosystems.

4.3.5 Effluent and Waste Management

General Wastes

Waste management during the construction phase is the responsibility of the Contractor. The Contractor must establish a system acceptable to the ECO for control during execution of the works. Refuse generated during the execution phase should be managed according to the guidelines for waste management and recycling adopted for the life-cycle of the project.

- Waste must be identified and analysed for reduction, re-use and recycling opportunities;
- Arrange for storage and transportation/collection of various wastes to their final destination or use areas on-site;
- Staff must be trained in waste management.

Refuse should be stored in an appropriate area on site, protected against wind dispersion and removed on a regular basis for disposal of at a permitted disposal site. No burning or burying of refuse on site should be allowed. Refuse bins must be watertight and wind-proof.

Ensuring that an adequate number of waste and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills.

The applicant must ensure that sufficient on-site waste management measures are in place to prevent any escape of waste, litter and packaging materials etc. into the surrounding landscape.

A weekly litter patrol must be included in the Construction activities on site and monitored for compliance by the ECO.

Pollution:

Pollution of the development footprints (either through the leaking of chemicals such as oil and fuel, or through discarding of waste), as well as any areas adjacent to these footprints, should be monitored and avoided.

Dirty water should be captured, to be re-used where possible. No dirty water is allowed to be discharged into the surrounding environment. A dewatering plan to be developed prior to construction (where required). Should this be required, the dewatering plan could be devised by a professional. It is important

that if the water is to be released back into the environment, it should be done under the guidance of relevant regulations and supervised/monitored by an appropriately qualified professional.

Eating areas

Contractor shall remove waste from the site on a daily basis.

The **Waste Management Plan (Annexure 8)** needs to be implemented.

4.3.6 Maintenance of equipment

All mechanical equipment and work vehicles which may be kept on site are to be stored, serviced and refuelled only at designated areas within the Contractor's Camp. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting are to be used to prevent contamination of the ground in any way.

In all events all machinery and vehicles used during construction must be maintained to prevent oil leaks. If breakdowns occur these must be towed offsite site to the designated areas/workshops. The proposed will ensure that incidental oil spills and leakage are minimised onsite and thus limit any opportunities of water contamination and water quality deterioration.

The Applicant or ECO may order the removal of equipment that is causing continual environmental damage by leaking oil or diesel for example, until such equipment has been repaired.

4.3.7 Stormwater and Erosion Control/Management

Soil erosion by wind, during construction, should be mitigated by minimizing bare soil surfaces without adequate protection, either by applying a mulch cover or wetting the surface or similar action.

Suitable run-off and soil erosion control measures and infrastructure should be designed and implemented to limit and restrict the loss or degradation of soil.

The release of run-off water into existing streams should be controlled to minimize impact on vleis, marshes, water sponges and water courses. This activity may include a permitting application to the DWS.

Implementation of strict erosion control measures to limit loss of soil and sedimentation of the watercourse within the proposed development footprint. No stormwater generated during construction may be directly released into the freshwater environment.

Increased surface sealing as a result of the proposed development will result in decreased infiltration as bulk of the stormwater from sealed or paved surfaces are generally discharged in stormwater systems. The exception to this is where runoff is localised and directed to unsealed surfaces or adjacent watercourses in an attenuated manner.

Water from clean water diversion structures should be discharged back into the adjacent wetland features in an attenuated manner.

Subsurface lateral flow of water through the landscape (under seep wetlands and interflow soils) must be taken into account and buildings/structures should accommodate waterproofing and water management structures to divert laterally seeping water away from foundations into the gardens or storm water structures.

The **Stormwater Management Plan (Annexure 10)** needs to be implemented which includes the Freshwater Consultants input.

Installation of appropriate stormwater systems with catch pits to isolate fuel and other contaminants. Petrol interceptors might be considered to mitigate the risks of contaminants draining into the environment. Silt traps must be installed at any stormwater release areas and energy dissipating structures to ensure that erosion of the area does not occur.

All attenuation facilities must be constructed through excavation of the in-situ material, sloped to a ratio not steeper than 3:1 and lined with rocks and cobbles to assist with energy dissipation and prevent sedimentation and erosion as well as improve the aesthetic appeal of the attenuation ponds. Attenuation ponds must be vegetated with indigenous obligate and facultative species suitable for seasonal saturation with input from a suitably qualified avifaunal specialist. Given the nature of the development, vegetating the dry attenuation ponds may not be possible. This will assist with energy dissipation and prevent sedimentation and erosion as well as improve habitat provision. Figure 27 above shows examples of swales utilised for conveyance of stormwater.

Cobbles must be placed on all outlet structures and indigenous vegetation established to bind the soil of the bed, to prevent erosion and assist with energy dissipation. This will also promote diffuse flow and decrease the velocity of water released downgradient towards seep wetland 1 and CVB wetland 3. The Stormwater Management Plan compiled by Zutari (2024b) is to be updated to include input from a Landscape and Open Space Planning consultant and freshwater ecologist to determine the system characteristics required to prevent excessive erosion of the downgradient seep and CVB wetland whilst also limiting the creation of habitat for birds which provide a safety risk for aircraft. The design and operation must prevent erosion and/or gully formation as this will have an impact on the water dispersal into and across the seep wetland 1 and CVB wetland, which could potentially reduce the extent and functionality of the wetland systems in the long-term.

All materials used to construct the attenuation ponds must not generate toxic leachates or lead to significant changes in pH or dissolved salt concentrations. No plastic lining may be used as part of the attenuation pond construction as this has various ecological impacts.

It is recommended that the attenuation ponds be vegetated with indigenous wetland and / or riparian vegetation (with input from a suitably qualified avifaunal specialist) to assist with water polishing, trapping nutrients and hydrocarbons from the proposed CWA development before this is released into the surrounding environment.

Stormwater/attenuation pond surfaces should be closed off to prevent avifauna from congregating to these areas, notably waterfowl and larger bird species which pose a risk to aircraft. The **Bird and Wildlife Hazard Management (Landscape and Open Space Planning Guidelines) (Annexure 11)** needs to be implemented which addresses aspects associated with open water bodies.

With regards to concrete works for the outlet structures (including concrete aprons, reno mattresses, gabions, headwalls, etc., as applicable), see control measures related to concrete works. These must ideally be constructed during the drier summer months to reduce the impact on water quality of the seep wetland 1. Litter traps must be installed at all the outlet structures to prevent any litter from entering the freshwater ecosystems. Sediment trapping devices must be utilised downgradient of where works are to be undertaken within seep wetland 1 and upgradient of the CVB wetland 3.

All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation.

Care must be taken at all times to prevent erosion of soils on the construction site. Suitable measures must be put in place to ensure that no sediment runoff from cleared areas enters any downstream/downslope habitat units which may lead to altered habitat conditions. Should any erosion be detected on site, the ECO, RE or Site Manager must identify the cause of such erosion and ensure that the most appropriate method of mitigation or stabilisation is employed as soon as possible.

4.3.8 Dust Control

"Good practice" dust suppression measures must be implemented, such as:

- Apply wet suppression on the main site roads.
- Implement a speed limit of 30km/hour on unpaved roads on site.
- Give preference to routes away from the western site boundary.
- Reduce the frequency of disturbance of stockpiles.

Dust monitoring along the western, southern and northern boundaries of the site is recommended to be conducted on a monthly basis during construction and to be reported quarterly to the authorities.

Dust suppression techniques must be implemented throughout the construction phase to ensure dust does not impact the CVB or seep wetlands, which could affect turbidity of the water and impact on wetland vegetation.

All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geotextile or hessian sheeting) to prevent dust generation that could potentially result in vegetation smothering. Timing of bulk earthworks is important to avoid large open areas exposed during the December holidays. Mulch generated on site from vegetation chipping, strawbales, hardening and compaction soon after clearing and the application of Dustex is some of the most effective methods to be

applied. Watering down large areas partly effective but the use of large volumes of potable water is discouraged. None-potable sources need to be sourced and used.

Dust and debris control must also be implemented to minimize the impacts on the local roads, residents and neighbouring properties. Where necessary, access routes and the site itself should have an effective dust suppression management programme applied, such as the use of non-polluting chemicals that will retain moisture in the exposed site surfaces.

4.3.9 Construction Traffic Management

Movement of all construction vehicles on site is to be strictly limited to existing haul and access routes at all times (to reduce any unnecessary compaction). Should deviation from these routes be necessary for any reason, this is to be with approval of the ECO who is to ensure that no significant environmental damage results. Rerouting of construction traffic away from the Poultry Farm, where possible.

No indiscriminate movement of vehicles through the freshwater ecosystems may be permitted. Planning of temporary roads and access routes should avoid freshwater ecosystem areas and be restricted to existing or pre-approved access roads and should not traverse the freshwater ecosystem.

All vehicles must remain outside the conservation buffers, unless required as part of a specific construction activity for a short period of time. This should also be limited to the drier summer season, where possible.

Quarries can be accessed from the CWA either via the existing surfaced road network or the gravel road network. Due to the poor condition of the gravel roads and the heavy loads expected, it is recommended that trucks use the surfaced road network. All deliveries are to be scheduled outside peak hours to prevent congestion during peak periods. A detailed construction traffic management plan must be developed for the CWA, ensuring that deliveries are scheduled outside peak hours to prevent congestion during peak periods etc. This will be done once a suitable contractor has been appointed.

Vehicles must be maintained regularly and kept in a good working order, and park on hardstand areas with appropriate drainage and catchment systems, where possible. Drip trays to be used under stationary vehicles and machinery where possible.

In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practised near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss. All spills should they occur, should be immediately cleaned up and treated accordingly. Dedicated parking area for construction vehicles must be located away from sensitive areas, and drip trays must be located beneath any leaking equipment and lubricant/fuel absorbing media (moss/peat type products) within drip trays must be used to contain spilled material.

Public road junctions should have good sightlines, traffic control measures, wayfinding signage, and dust control measures in place. The construction project management team must enforce dust and mud control measures and protocols at construction site entrances. This is especially important for

construction entrances that deliver construction vehicle traffic onto the R312 Scenic Route, where poor management of dust and mud will have a negative impact on the visual amenity of the scenic route. Ensure that no views from R312 or R304 are negatively impacted by large or numerous construction signage, fencing or hoarding.

4.3.10 Site Clean Up

The Contractor must ensure that all structures, equipment materials and facilities used on site are removed once the project has been completed. The construction site shall be cleared and cleaned to the satisfaction of the ECO.

Disturbed areas, particularly associated with the CVB wetlands 2 and 3 with regards to the maintenance road and fences that will traverse these wetlands must be rehabilitated once construction activities have ceased. The **Wetland Offset Study and Implementation Plan (Annexure 7B)** needs to be adhered too in terms of the rehabilitation of wetlands.

The on-site no-go areas will be managed in terms of this EMPr and in accordance with the Alien Vegetation Management Plan, Veldfire Management Plan and Landscape Plan. These areas will further be fenced during construction.

The Final Completion of the landscape installation should be made a condition for final occupancy certificates to be issued during the Construction phase. This is to ensure that the landscape installation accompanies (and is completed during) the construction phase of its associated building/s, precinct, erven etc.

The botanist must provide input into the Landscaping Plan for the site, which must include a significant indigenous Sand Fynbos and Renosterveld appropriate plant component, in an attempt to maximise biodiversity rehabilitation, whilst adhering to the required airport safety guidelines. Areas that will not be hardened surfaces and that would benefit from rehabilitation should be hydroseeded with appropriate seed mixes, at the appropriate time (late autumn).

4.3.11 Alien Clearing

All invasive alien vegetation in the conservation areas on site must be removed within one year of any project approval, using appropriate methodology (see Martens et al 2021), by qualified personnel. Ongoing annual alien vegetation removal must be undertaken.

Proliferation of alien and invasive species is expected within any disturbed areas. Whilst not considered severe at this time, the vegetation component within the freshwater ecosystem environment is already transformed. However, alien invasive species are opportunistic, and where disturbances do occur, they will promulgate; therefore, these species should be eradicated and controlled to prevent their spread beyond the project footprint. Alien plant seed dispersal within the top layers of the soil within footprint areas, that will have an impact on future rehabilitation, has to be controlled.

Removal of the alien and weed species encountered within the freshwater ecosystem must take place in order to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) and Section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

Species-specific and area-specific eradication recommendations:

- Footprint areas should be kept as small as possible when removing alien plant species; and
- No vehicles should be allowed to drive through designated sensitive freshwater ecosystems areas during the eradication of alien and weed species.

An Alien Vegetation Management Plan has been compiled for the Construction and Operational Phase of the Development. The Alien Vegetation Management Plan outlines a comprehensive strategy for the complete eradication of alien invasive plants and the long-term maintenance of the site in an alien-free condition. This plan aims to ensure compliance with airport safety standards, restore ecological functioning, and improve habitat quality, particularly in areas of botanical sensitivity and ecological importance.

To achieve these goals, the plan focuses on meeting the following objectives:

- Identify and confirm areas for alien vegetation clearing.
- Establish methods for effective alien clearing, including necessary follow-up actions.
- Provide a realistic program with clear targets for the clearing process.
- Promote the conservation of indigenous plant species within the property.
- Support job creation and skills development in local communities.
- Ensure the sustainable reuse of cleared biomass to maximize environmental benefits.

Ongoing monitoring for the establishment of alien and invasive vegetation species must be undertaken periodically within and around the subject site.

The **Alien Clearing Management Plan (Annexure 6)** needs to be implemented.

4.3.12 Fire Prevention/ Management

The Contractor shall ensure that basic fire-fighting equipment is available at all 'construction' areas and facilities. The workforce should be appropriately trained in the use of all equipment. Fire beaters and "bakkie sakkie" are to be kept on site, and easily accessible at all times, and not locked away.

Smoking shall not be permitted in areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas and areas where the vegetation or other material may promote the rapid spread of

an initial flame. A fire extinguisher of the appropriate type must be present when welding or other "hot" activities are undertaken.

Any work that requires the use of fire or open flame may only take place at a designated area approved by the ECO and must be supervised at all times. Serviced fire-fighting equipment shall be available.

No fires should be permitted in or near the construction area.

The **Veld Fire Management Plan (Annexure 5)** needs to be implemented in accordance with firebreaks, controlled burns and the general management of VeldFires.

4.3.13 Construction Monitoring Requirements:

The management of construction light impacts at night must be monitored by the ECO and included in compliance reporting. The ECO must monitor use of light and levels of light pollution by means of regular spot-checks, to be included in monthly compliance reporting.

The ECO must conduct a lighting audit at the end of each Construction phase, to ensure that conditions regarding the management of lighting impacts at night have been met.

Refer to '*Section 4.2.2 Site Establishment Requirements*', Point G, above with regard Groundwater and Noise Monitoring Networks/ Plan.

Dust monitoring along the western, southern and northern boundaries of the site is recommended to be conducted on a monthly basis during construction and to be reported quarterly to the authorities.

Continuous and periodic monitoring and evaluation are required to ensure the achievement of milestones and the overall success of achieving the socio-economic objectives envisaged for the Project. Please refer to Section 4: Goal 17 (Page 279).

4.3.14 Environmental Control Sheets

A. Communications

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site Diary and Site Instruction Book	To be updated on a regular basis	ECO
Public complaints	To be recorded, along with records of responses to them in the Site Diary	ECO
Environmental Awareness/ Education	Each contractor team to attend a training session prior to commencing work on site Record of members attending training sessions to be kept and updated regularly	ECO
Method Statements	- Method statements to indicate: What, How, Where and When activities are to take place. - Method statements for each relevant activity to be submitted to ECO prior to the start of that activity on site. - Work is not to commence until method statement approved by ECO and Site Manager if necessary.	Contractor/ ECO
Bylaws and Regulations	All national and provincial laws and regulations, as well as all local authority bylaws and regulations which apply to the development of this site are to be adhered to.	Contractor/ ECO/ EM

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		Details of Transgression	Responsible Party	Action Taken	Date
Yes	No				

B. Site Preparation

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Site demarcation & definition in terms of Sensitive features: Botanical	<u>Vegetation:</u> - All authorised hard infrastructure bordering on any of the mapped areas of Very High, High and Medium sensitivity botanical areas must be surveyed and fenced off prior to any site preparation, clearing or construction. These sensitive areas may not be disturbed in any way during the construction process. Fences should be marked with signage every 15m indicating that these are "No Go Areas". Areas beyond the fencing are to be considered no-go areas. All areas outside the boundary of the property are naturally considered no-go areas and boundary fencing is to be secured in areas where work is to take place. - The Very High sensitivity areas falling within the Agricultural Precinct must be fenced off and excluded from grazing and trampling by livestock (especially cattle). This must be done within 60 days of authorisation, or sooner if possible (subject to landowner negotiation). - All Very High, High and Medium sensitivity areas that do not fall within the authorised development (construction) footprint should be conserved as part of any redevelopment of this site (no development and no infrastructure through these areas). Two of the Very High sensitivity areas are within the Agricultural Precinct, as is a significant part of the one (that supports the CR *Leucadendron verticillatum*) just east of the main runway. - No perimeter service road may cross or disturb the mapped area of Very High sensitivity east of the main runway. - All protected elements/areas located on the site, will be clearly marked, and care should be taken by the ECO to ensure that they are not unnecessarily disturbed during construction works on site. All alien vegetation must be removed in accordance with the **Alien Clearing Management Plan (Annexure 6)**. - Apart from the vegetation identified by the project team for removal from the site prior, no indigenous vegetation is to be removed without the written permission of the ECO. Damage to the indigenous vegetation anywhere on the site (outside of the approved area) will be subject to penalties. - Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with wetland habitats or the surrounding terrestrial area. Retain as much indigenous vegetation as possible (wetland and terrestrial). *Plant Search and Rescue* - Most of the low and medium significance occurrences of plant SoCC within the proposed development footprint (as well as some of the high	Surveyor/Contractor/ ECO/ EM Contractor/ ECO Contractor/ ECO Contractor/ ECO Contractor/ ECO

Plant Search and Rescue	significance species) can be successfully translocated, and this will be done by experienced Search and Rescue contractors prior to any site development (pre-construction phase), with the assumption that the receiving areas will be properly managed in perpetuity as plant conservation areas. This must be done in consultation with the botanical specialist and can proceed prior to any authorisation (provided all necessary permits and permissions are obtained).	ECO/EM
	- A plant Search and Rescue plan should be prepared by the appointed S&R contractor, the ECO and the botanist, and should outline who needs to do the work, when seed, sods and cuttings need to be collected, how they should be stored, how much should be collected, how receiving sites should be identified and prepared, and how and when the planting out should be undertaken. Guidelines on ongoing maintenance of these areas must also be included.	ECO/EM
	- Large scale Search and Rescue of plant material from all Medium, High and Very High sensitivity areas within the development and clearing footprints must be undertaken prior to any development or disturbance of these areas. Receiving areas should ideally be located within the greater study area (provided that land tenure and funding for conservation is secure in these areas) and should be areas that support some natural vegetation remnants, but that require rehabilitation intervention. This must be overseen by the botanical consultant.	ECO
Freshwater Ecosystems	<u>Rivers, Riparian Habitat & Wetlands</u> - The 15m construction conservation buffer around the freshwater ecosystems must be implemented for the duration of the construction works where development will not occur to mitigate edge effects. The freshwater ecosystems and the respective conservation buffers must be clearly demarcated using a suitable barrier or material by an Environmental Control Officer (ECO) and marked as 'no-go' areas. Only authorised construction personnel may be permitted to enter these 'no-go' areas as part of the clearing activities, where required, to prevent excessive compaction of the soil within the freshwater ecosystems. (refer to Figure 25) - Any fences that are to traverse the CVB wetlands 2 and 3 must be installed in such a way that hydropedological processes are not impeded within these systems. It is recommended that the erection of fence posts within the CVB wetlands 2 and 3 are avoided. - All 'fencing' is to be erected prior to construction works commencing on site and is to remain in position and in good repair for the duration of the works. No materials, rubble or equipment is to be stored or stockpiled within the Environmental Sensitive Areas. Any deviations from these specifications are subject to the approval of the ECO.	ECO/EM/Contractor ECO/EM/Contractor

	- Construction work, particularly of works within the 15m construction conservation buffer of the wetlands, must as far as possible be restricted to the dry, summer season. CVB wetlands 2 and 3 and the remainder of seep wetland 1 where development will not occur, and the wetlands' 15m construction phase conservation buffers must be marked as a no-go area during the construction phase of the proposed development. - Sediment trapping devices must be utilised downgradient of where works are to be undertaken within seep wetland 1 and upgradient of CVB wetland 3. - Under no circumstances must linear infrastructure be trenched within the CVB wetlands 2 and 3 or their conservation buffer. - All construction personnel, vehicles and construction work must be confined to the boundaries of the development footprint and no edge effects must occur. This is of particular importance at seep wetland 1. - Disturbed areas, particularly associated with the CVB wetlands 2 and 3 with regards to the maintenance road and fences that will traverse these wetlands must be rehabilitated once construction activities have ceased. Avoid unnecessary trampling of vegetation irrespective of the vegetation being associated with the freshwater ecosystems or the surrounding terrestrial area. - Careful planning of all construction equipment must be undertaken beforehand to ensure that the minimum impact on the freshwater ecosystems occur.	
Faunal Monitoring	<u>Reptiles, birdlife and mammals</u> - Construction personnel are to be educated about the various faunal species in the area, particularly about venomous spiders, snakes and scorpions. None of these or other species are to be killed or injured by construction personnel. Should any of these species be encountered, these species are to be safely and carefully relocated to the surrounding natural habitat adjacent the development site, should they not move off on their own. - The contact details of a suitably qualified snake handler be made available to construction teams should a venomous snake be encountered that needs removal. Alternatively, it is recommended that a member of the construction team be trained to handle and remove snakes through a recognised snake handling course. - No hunting, trapping or collecting of faunal and avifaunal species is to be allowed, other than for rescue and relocation purposes. Setting of snares by personnel is to be prohibited.	ECO/EM/Contractor
Fossil Finds (refer to Annexure 4)	<u>Archaeological remains</u> If any heritage remains are found Heritage Western Cape (HWC) needs to be informed. If heritage remains are disturbed it should be left and demarcated for inspection by HWC. If any archaeological remains (including but not	ECO/EM/Contractor

	limited to fossil bones and shells, coins, ceramics, antique, marine shell heaps, stone artefacts and bone remains) are discovered HWC need to be notified. If any graves or human remains are discovered HWC need to be notified.	
Agricultural Precinct	<u>Agricultural Precinct</u> No construction phase activities may be undertaken within the Agricultural Precinct.	ECO/Contractor
Geohydrological	<u>Geohydrological</u> Due to the proximity of the Colenso Fault to the CWA, a no-go area for specific high-risk activities is proposed to the northeastern section of the study area. This no-go area does not have to apply to all activities, but only to certain high-risk activities such as the aviation fuel farm, bulk fuel storage, retail service station or other activities that are considered high risk. However, as this area falls within the Agricultural Area it is already considered a no-go area in terms of construction.	ECO/EM/Contractor
Site Definition and Demarcation	- All development footprint areas should remain within the demarcated areas as far as possible, and disturbance of soil profiles must be limited to what is essential with a compact footprint. - All 'fencing' is to be erected prior to construction works commencing on site and are to remain in position and in good repair for the duration of the construction phase. Once this has been done, all works, including stockpiling of construction materials are to be strictly confined to the demarcated area. - All footprint areas must remain as small as possible, vegetation clearing to be limited to the approved development footprint and should only encroach into the freshwater ecosystem if considered essential. The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled. - Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways. - For the construction of the maintenance road along the eastern boundary of the study area, culverts must be installed to allow the passage of water from the upgradient portions of the CVB wetlands 2 and 3 to the downgradient portions. Any disturbed areas within these wetlands must be rehabilitated on completion of construction of the road. The maintenance road should ideally avoid seep wetland 1 and circumvent it to avoid further fragmentation of the wetland. Should this not be possible, the road must be designed in such a manner as to allow hydraulic and hydropedological process connectivity in the landscape while also allowing fauna to traverse the roadway. It is also highly recommended that cobbles be placed	Surveyor/Contractor/ ECO/EM ECO/Contractor ECO/Contractor

Vegetation Clearance	downgradient of the road to trap sediment and reduce flow velocity of surface water entering the wetlands. <u>Vegetation Clearance</u> - As far as possible, vegetation clearance should take place during the winter months, outside of the breeding/nesting periods of avifaunal species. - Vegetation to be removed from the site to facilitate development needs to be identified by the ECO, indicated on a site plan and clearly marked prior to any other works on site. Retain as much indigenous vegetation as possible (wetland and terrestrial). Alien vegetation directly adjacent or in close proximity to the construction area should be removed in line with alien clearing methods. - Faunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways as per the Bird and Wildlife Hazard Management Plan (Annexure 11) for the airport. Site clearance activities should take place in a phase manner, starting from the South moving northwards, or centrally moving outwards, so that faunal species can flee ahead of clearance activities into adjacent habitat and not get trapped in centralised, remnant patches. - Due to the potential fire risk in the area, no vegetation may be removed using fires, and no excess vegetation material may be burned on site. No natural vegetation outside of the site may be removed without approval of the ECO, apart from invasive plant species which are to be removed according to a controlled program. - Once all vegetation clearing is complete, all vegetation and any removed excess material must be disposed of at a licensed refuse facility and may not be mulched or burned on site (unless all approvals have been obtained).	ECO/Contractor
Visual	<u>Visual</u> - All contractors and sub-contractors on site must submit a Temporary fencing, hoarding and screening protocol for active construction sites to the ECO for monitoring. - All contractors and sub-contractors on site must submit a dust and mud control protocol for active construction sites to the ECO for monitoring. - Dust management, waste management, the placement of screens and hoarding, as well as the location and management of access points to the site must be proactively managed to reduce visual clutter and limit visual impacts associated with construction activity before, during and after each phase of the construction process (demolition, excavation, project execution, close-out etc., establishment, etc.). - Light pollution should be kept to an absolute minimum throughout the development, and exterior lighting must be limited to areas where this is necessary for utility, safety and security. - The goal should be to keep the ambient light levels within the immediate	ECO/Contractor ECO/Contractor

	Receiving Environment low, given the proposed development's proximity to a rural landscape that is a protected area, and the surrounding Cultural Landscapes. Exterior lighting (and therefore any visible light sources) must be carefully directed away from sensitive receptors (Scenic routes, and viewers within the Cultural Landscape and nearby residential areas/homesteads). *Refer to Section 4.1.4 ("Lighting") above*. - Construction activities must be limited to daylight hours to prevent visual impact of lights at night. If construction during the night-time hours is unavoidable, the following should apply: • No floodlights. • Only the construction activity should be lit. • Construction lighting should be turned off when active construction activity is not being undertaken.	ECO
Monitoring Requirements: Groundwater & Noise	Implement the construction specifications and monthly groundwater quality monitoring during the construction phase in accordance with the "Proposed Groundwater Monitoring Plan (GEOSS, Sept 2024)" summarized in the EMPr: *4.2.2 Site Establishment Requirements: G. Monitoring requirements.*	EM/ECO

COMMENTS/ UPDATE

RECORD OF PERFORMANCE

Acceptable		Details of Transgression	Responsible Party	Action Taken	Date
Yes	**No**				

C. Site Procedures

TASK	MITIGATION AND ENVIRONMENTAL CONTROLS	ACTION
Noise	The contractor must take appropriate measures to limit the impact of unreasonable noise from construction activities on the neighbouring land users by providing training to the personnel to adhere to operational procedures that reduce the occurrence and magnitude of individual noisy events. Ensuring that equipment is in good working order and properly maintained. Limit night-time construction activities and avoid night-time construction activities on the property to the west of the airport boundary (earthworks), which are closer to the Fisantekraal residential area.	Contractor
Safety	- The Contractor is to appoint a safety steward, who will be responsible for safety of the labour force, construction activities and handling emergency situations on site during construction hours. - The Contractor must provide and maintain a suitable first aid kit on site, with a member of staff suitable qualified in first aid on site during working hours, in accordance with the Occupational Health and Safety Act.	Contractor
Fire control	- The contractor must take appropriate measures to guard against accidental fire, and it will be presumed that any bush fire which starts on the site, or within 100m thereof during the construction period would be the responsibility of the applicant. - No illicit fires are allowed on site. - Fire beaters and "bakkie sakkie" are to be kept on site, and easily accessible at all times, and not locked away. No open fires may be lit anywhere on the construction site, except at locations approved by the ECO and Site Manager. The burning of refuse or vegetation material on site as a means of disposal will not be allowed unless a permit for burning is issued by the competent authority. - The **VeldFire Management Plan** in **Annexure 5** must be implemented.	Contractor/ EM/ECO
Toilet facilities	- Suitable sanitary facilities must be provided by the contractor for all staff on site. The Contractor should ensure that ablutions are restricted to the sanitary facilities. - Where chemical toilets are provided, the Contractor should ensure that they are kept in hygienic condition and emptied on a regular basis. Waste from the toilets should be disposed of to the satisfaction of the ECO. - Care must be taken that no spillage occurs when chemical toilets are cleaned, and their contents are properly stored and removed off site. A contingency plan for spills must be supplied by the contractor and approved by the ECO. - Toilets should be located where their use would result in minimal impact on the surrounding environment and may not be in areas of running or standing water during winter and must be secured to prevent them from blowing over.	Contractor/ECO
	- All construction site offices, lay down areas, storage areas and active	

Contractor's Camp	construction activities must be screened from public view by appropriate hoarding and/or screening. - Construction fencing/hoarding and signage must adhere to local policy relating to signage and ensure that no views to scenic routes are impacted by large or numerous construction signage. - All contractors and sub-contractors on site must submit a Temporary fencing, hoarding and screening protocol for active construction sites to the ECO for monitoring. iv. All contractors and sub-contractors on site must submit a dust and mud control protocol for active construction sites to the ECO for monitoring. - Site offices, storage and lay down areas, loading areas and similar temporary infrastructure should be situated centrally on the subject site and avoid any areas visible from the Scenic route.	Contractor/ECO
Material handling and storage	- Fuels and flammable materials are to be stored in suitably equipped storage areas. These areas shall comply with general fire safety requirements. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site. - Bulk fuel depots are to be placed within hardened bunded areas. Bunds are to have a holding capacity equal to 110% of the largest fuel container. The Contractor is to ensure that he is aware of the effects of all substances on staff and the environment, with the correct action to take in the case of any incident involving these materials. - Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the respective conservation buffers of the freshwater ecosystems and preferably the 32m NEMA ZoR. A designated contractor laydown area must be approved by an independent ECO prior to use. Stockpiles must be placed outside the delineated freshwater ecosystems and 32m thereof. - All hazardous chemicals as well as stockpiles should be stored on bunded surfaces and have facilities constructed to control runoff from these areas. It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage.	Contractor Contractor Contractor/ ECO
Asphalt / Concrete Works	- Fresh asphalt, concrete and cement mortar must not be mixed near the wetlands' habitat. Mixing of cement may be done within the construction camp, on an impervious surface only, and must be within a lined, bound or bunded portable mixer. Consideration must be given to the use of ready-mix concrete. - No mixed concrete maybe deposited directly onto the ground within the wetlands or associated wetland habitat, outside of the designated area (i.e. fence traversing the seep wetland 1 and CVB wetlands 2 and 3). Any areas that require manual application of cement require that mixed cement be placed on a batter board or other suitable platform/mixing tray until it is deposited. - A washout area must be designated outside of the wetlands, and wash water must be treated on-site or discharged to a suitable sanitation system.	Contractor/ ECO

Soil disturbance and revegetation	- At no point may batter boards/mixing trays or cement trucks be rinsed off on site and runoff water be allowed into the freshwater ecosystems. - Cement bags (if any) must be disposed of in the demarcated hazardous waste receptacles and the used bags must be disposed of through the hazardous substance waste stream. - Spilled or excess concrete must be disposed of at a suitable landfill site. Chain of custody documentation must be provided. - It is considered imperative that all excavation activities be undertaken during the drier summer months to limit surface water contamination and the need for any surface water diversion during the construction works. - Sheet runoff from compacted areas should be slowed down by the strategic placement of berms. It is considered ideal that activities occur within the current season (low rainfall) to minimise impacts of sedimentation. As much vegetation growth as possible (of indigenous floral species) should be encouraged to protect soils. Temporary stockpiling of excavated material from trenches can be retained alongside trenches, as required for backfilling. Any soil to be stockpiled for longer than a month should be moved to a designated stockpile area, as approved by the Environmental Control Officer (ECO). All soils compacted during the repair and maintenance phase should be ripped and profiled. All soil compacted within the wetlands as a result of construction equipment must be loosened prior to revegetation with suitable indigenous species. A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision. - Areas disturbed (for any reason) must be revegetated (or planted as per the approved Landscape Master Plan) within a maximum of 1 year after the disturbance occurs. • The only circumstances under which delay may be tolerated are a) If the area to be revegetated/planted is still an active construction site; and b) If the revegetation/planting must happen during a particular season to await optimal planting conditions. In these cases, revegetation/planting must occur in the first of such season after the delay. • The ECO must report on disturbed areas and revegetation. - All embankments must be appropriately stabilized and revegetated to match the existing/surrounding natural vegetation. - Rehabilitation/revegetation must be handled in accordance with the recommendations of the botanist or other suitably qualified specialist, and under the supervision of the ECO. - During excavation activities, topsoil must be stockpiled separately from other material. The mixture of the lower and upper layers of the excavated soil must be kept to a minimum, so as for later use as backfill or rehabilitation material after construction has commenced. - Exposed soils must be protected from wind and water erosion (using tarpaulins or a suitable geotextile) for the duration of the construction phase.	Contractor/ECO/ EM

Trenching and Stockpiling Activities	- Any AIPs within the study area (including the linear infrastructure footprints) must ideally be removed prior to soil stripping to reduce seed loads within the topsoil (which will be used to revegetate post construction). This will assist in reducing the long-term AIP management requirements. - Any soil/sediment or silt removed from the freshwater ecosystems may be temporarily stockpiled outside the freshwater ecosystems if construction activities are confined to the dry summer months. Excavated materials may not be contaminated (with hydrocarbons, fuel, etc.). It must be ensured that the minimum surface area is taken up, and the stockpiles may not exceed 2m in height. Mixture of the lower and upper layers of the excavated soil should be kept to a minimum, so as for later usage as backfill material.	Contractor/ECO
Trenching and Stockpiling Activities	- With the exception of the infrastructure as described in this report (the potable water and stormwater infrastructure along the eastern boundary of the runway), no pipelines may traverse any of the freshwater ecosystems. Should additional freshwater ecosystem crossings be considered, the DWS Risk Assessment must be updated to account for these activities. Water and stormwater pipelines to be trenched in the freshwater ecosystems must be installed during the drier summer months to prevent water quality impacts to the freshwater ecosystems. Unused excavated soil/sediment must be utilised as part of the open space areas (if applicable) or be removed from site to a registered landfill. - The soil surrounding the linear infrastructure, particularly within 15m of the freshwater ecosystems must be suitably loosened on completion of construction activities and revegetated to prevent erosion. - In addition to the above, with regards to excavation and soil compaction activities regarding trenching for the linear infrastructure within the 15m construction conservation buffer of the freshwater ecosystems, stockpiling of removed materials may only be temporary (i.e. may only be stockpiled during the period of construction at a particular site) and must be disposed of at a registered waste disposal facility. Soil must be stockpiled on the upgradient side of the trench to avoid sedimentation of the downgradient areas. Figure 26 above shows excavation for trenching with stockpiles alongside. - Trenches must be backfilled as soon as the infrastructure has been installed in any given section to reduce potential erosion of exposed soil. Material used as bedding material (at the bottom of the excavated trench) must be stockpiled outside of the freshwater ecosystems. Once the trench has been excavated, the bedding material must directly be placed within the trench rather than stockpiling it alongside the trench. - Under no circumstances must linear infrastructure be trenched within the CVB wetlands 2 and 3 or their conservation buffer. The SDP Indicates that the layout of the linear infrastructure avoids wetlands. A 5m RoW for linear developments is considered as part of the RAM. This is of particular relevance to the installation of the water pipeline, fences and maintenance road along the eastern boundary of the study area. It is highly recommended that construction work for the linear infrastructure is undertaken in the drier, summer period to avoid excess sediment entering the receiving freshwater ecosystems.	Contractor/ECO

Waste Management	General Waste - Waste management during the construction phase is the responsibility of the Contractor. The Contractor must establish a system acceptable to the ECO for control during execution of the works. Refuse generated during the execution phase should be managed according to the guidelines for waste management and recycling adopted for the life-cycle of the project. - Waste must be identified and analysed for reduction, re-use and recycling opportunities; - Arrange for storage and transportation/collection of various wastes to their final destination or use areas on-site; - Staff must be trained in waste management. - Refuse should be stored in an appropriate area on site, protected against wind dispersion and removed on a regular basis for disposal of at a permitted disposal site. No burning or burying of refuse on site should be allowed. Refuse bins must be watertight and wind-proof. - Ensuring that an adequate number of waste and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills. - The applicant must ensure that sufficient on-site waste management measures are in place to prevent any escape of waste, litter and packaging materials etc. into the surrounding landscape. - A weekly litter patrol must be included in the Construction activities on site and monitored for compliance by the ECO. Pollution - Pollution of the development footprints (either through the leaking of chemicals such as oil and fuel, or through discarding of waste), as well as any areas adjacent to these footprints, should be monitored and avoided. - Dirty water should be captured, to be re-used where possible. No dirty water is allowed to be discharged into the surrounding environment. A dewatering plan to be developed prior to construction (where required). Should this be required, the dewatering plan could be devised by a professional. It is important that if the water is to be released back into the environment, it should be done under the guidance of relevant regulations and supervised/monitored by an appropriately qualified professional. Eating areas - Contractor shall remove waste from the site on a daily basis. The **Waste Management Plan (Annexure 8)** needs to be implemented.	Contractor/ECO/ EM
Maintenance of equipment	- All mechanical equipment and work vehicles which may be kept on site are to be stored, serviced and refuelled only at designated areas within the Contractor's Camp. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting are to be used to prevent contamination of the ground in any way. - In all events all machinery and vehicles used during construction must be maintained to prevent oil leaks. If breakdowns occur these must be towed offsite site to the designated areas/workshops. The proposed will ensure that incidental oil spills and leakage are minimised onsite and thus limit any opportunities of water contamination and water quality deterioration. - The Applicant or ECO may order the removal of equipment that is causing continual environmental damage by leaking oil or diesel for example, until such equipment has been repaired.	Contractor/ECO

Stormwater and Erosion Control/ management	- Soil erosion by wind, during construction, should be mitigated by minimizing bare soil surfaces without adequate protection, either by applying a mulch cover or wetting the surface or similar action. - Suitable run-off and soil erosion control measures and infrastructure should be designed and implemented to limit and restrict the loss or degradation of soil. - The release of run-off water into existing streams should be controlled to minimize impact on vleis, marshes, water sponges and water courses. This activity may include a permitting application to the DWS. - Implementation of strict erosion control measures to limit loss of soil and sedimentation of the watercourse within the proposed development footprint. No stormwater generated during construction may be directly released into the freshwater environment. - Increased surface sealing as a result of the proposed development will result in decreased infiltration as bulk of the stormwater from sealed or paved surfaces are generally discharged in stormwater systems. The exception to this is where runoff is localised and directed to unsealed surfaces or adjacent watercourses in an attenuated manner.	Contractor/ ECO/EM
Stormwater and Erosion Control/ management	- Water from clean water diversion structures should be discharged back into the adjacent wetland features in an attenuated manner. - Subsurface lateral flow of water through the landscape (under seep wetlands and interflow soils) must be taken into account and buildings/structures should accommodate waterproofing and water management structures to divert laterally seeping water away from foundations into the gardens or storm water structures. - The **Stormwater Management Plan (Annexure 10)** needs to be implemented which includes the Freshwater Consultants input. - Installation of appropriate stormwater systems with catch pits to isolate fuel and other contaminants. Petrol interceptors might be considered to mitigate the risks of contaminants draining into the environment. Silt traps must be installed at any stormwater release areas and energy dissipating structures to ensure that erosion of the area does not occur. - All attenuation facilities must be constructed through excavation of the in-situ material, sloped to a ratio not steeper than 3:1 and lined with rocks and cobbles to assist with energy dissipation and prevent sedimentation and erosion as well as improve the aesthetic appeal of the attenuation ponds. Attenuation ponds must be vegetated with indigenous obligate and facultative species suitable for seasonal saturation with input from a suitably qualified avifaunal specialist. Given the nature of the development, vegetating the dry attenuation ponds may not be possible. This will assist with energy dissipation and prevent sedimentation and erosion as well as improve habitat provision. Figure 27 above shows examples of swales utilised for conveyance of stormwater. - Cobbles must be placed on all outlet structures and indigenous vegetation established to bind the soil of the bed, to prevent erosion and assist with energy dissipation. This will also promote diffuse flow and decrease the velocity of water released downgradient towards seep wetland 1 and CVB wetland 3. The Stormwater Management Plan needs to be adhered too. - All materials used to construct the attenuation ponds must not generate toxic leachates or lead to significant changes in pH or dissolved salt	Contractor/ ECO/EM Contractor/ ECO
Stormwater and Erosion		

Control/ management	concentrations. No plastic lining may be used as part of the attenuation pond construction as this has various ecological impacts. - It is recommended that the attenuation ponds be vegetated with indigenous wetland and / or riparian vegetation (with input from a suitably qualified avifaunal specialist) to assist with water polishing, trapping nutrients and hydrocarbons from the proposed CWA development before this is released into the surrounding environment. - Stormwater/attenuation pond surfaces should be closed off to prevent avifauna from congregating to these areas, notably waterfowl and larger bird species which pose a risk to aircraft. The Bird and Wildlife Hazard Management (Landscape and Open Space Planning Guidelines) (Annexure 11) needs to be implemented which addresses aspects associated with open water bodies. - With regards to concrete works for the outlet structures (including concrete aprons, reno mattresses, gabions, headwalls, etc., as applicable), see control measures related to concrete works. These must ideally be constructed during the drier summer months to reduce the impact on water quality of the seep wetland 1. Litter traps must be installed at all the outlet structures to prevent any litter from entering the freshwater ecosystems. Sediment trapping devices must be utilised downgradient of where works are to be undertaken within seep wetland 1 and upgradient of the CVB wetland 3. - All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation. - Care must be taken at all times to prevent erosion of soils on the construction site. Suitable measures must be put in place to ensure that no sediment runoff from cleared areas enters any downstream/downslope habitat units which may lead to altered habitat conditions. Should any erosion be detected on site, the ECO, RE or Site Manager must identify the cause of such erosion and ensure that the most appropriate method of mitigation or stabilisation is employed as soon as possible.	
Dust control	- "Good practice" dust suppression measures must be implemented, such as: • Apply wet suppression on the main site roads. • Implement a speed limit of 30km/hour on unpaved roads on site. • Give preference to routes away from the western site boundary. • Reduce the frequency of disturbance of stockpiles. - Dust monitoring along the western, southern and northern boundaries of the site is recommended to be conducted on a monthly basis during construction and to be reported quarterly to the authorities. - Dust suppression techniques must be implemented throughout the construction phase to ensure dust does not impact the CVB or seep wetlands, which could affect turbidity of the water and impact on wetland vegetation. - All exposed soils must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geotextile or hessian sheeting) to prevent dust generation that could potentially result in vegetation smothering. Timing of bulk earthworks is important to avoid large open areas exposed during the December holidays. Mulch generated on site from vegetation chipping, strawbales, hardening and compaction soon	Contractor/ ECO

Construction traffic management	after clearing and the application of Dustex is some of the most effective methods to be applied. Watering down large areas partly effective but the use of large volumes of potable water is discouraged. None-potable sources need to be sourced and used. - Dust and debris control must also be implemented to minimize the impacts on the local roads, residents and neighbouring properties. Where necessary, access routes and the site itself should have an effective dust suppression management programme applied, such as the use of non-polluting chemicals that will retain moisture in the exposed site surfaces. - Movement of all construction vehicles on site is to be strictly limited to existing haul and access routes at all times (to reduce any unnecessary compaction). Should deviation from these routes be necessary for any reason, this is to be with approval of the ECO who is to ensure that no significant environmental damage results. No indiscriminate movement of vehicles through the freshwater ecosystems may be permitted. Planning of temporary roads and access routes should avoid freshwater ecosystem areas and be restricted to existing or pre-approved access roads and should not traverse the freshwater ecosystem. All vehicles must remain outside the conservation buffers, unless required as part of a specific construction activity for a short period of time. This should also be limited to the drier summer season, where possible. - Vehicles must be maintained regularly and kept in a good working order, and park on hardstand areas with appropriate drainage and catchment systems, where possible. Drip trays to be used under stationary vehicles and machinery where possible. - In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practised near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss. All spills should they occur, should be immediately cleaned up and treated accordingly. Dedicated parking area for construction vehicles must be located away from sensitive areas, and drip trays must be located beneath any leaking equipment and lubricant/fuel absorbing media (moss/peat type products) within drip trays must be used to contain spilled material. - Public road junctions should have good sightlines, traffic control measures, wayfinding signage, and dust control measures in place. The construction project management team must enforce dust and mud control measures and protocols at construction site entrances. This is especially important for construction entrances that deliver construction vehicle traffic onto the R312 Scenic Route, where poor management of dust and mud will have a negative impact on the visual amenity of the scenic route. Ensure that no views from R312 or R304 are negatively impacted by large or numerous construction signage, fencing or hoarding. - Quarries can be accessed from the CWA either via the existing surfaced road network or the gravel road network. Due to the poor condition of the gravel roads and the heavy loads expected, it is recommended that trucks use the surfaced road network. All deliveries are to be scheduled outside peak hours to prevent congestion during peak periods. - A detailed construction traffic management plan must be developed for the CWA, ensuring that deliveries are scheduled outside peak hours to prevent congestion during peak periods etc. This will be done once a	Contractor/ ECO

	suitable contractor has been appointed.	
Site Clean up	- The Contractor must ensure that all structures, equipment materials and facilities used on site are removed once the project has been completed. The construction site shall be cleared and cleaned to the satisfaction of the ECO. - Disturbed areas, particularly associated with the CVB wetlands 2 and 3 with regards to the maintenance road and fences that will traverse these wetlands must be rehabilitated once construction activities have ceased. The **Wetland Offset Study and Implementation Plan (Annexure 7B)** needs to be adhered too in terms of the rehabilitation of wetlands.	Contractor/ ECO
Site Clean up	- The on-site no-go areas will be managed in terms of this EMPr and in accordance with the Alien Vegetation Management Plan, Veldfire Management Plan and Landscape Plan. These areas will further be fenced during construction. - The Final Completion of the landscape installation should be made a condition for final occupancy certificates to be issued during the Construction phase. This is to ensure that the landscape installation accompanies (and is completed during) the construction phase of its associated building/s, precinct, erven etc. - The botanist must provide input into the Landscaping Plan for the site, which must include a significant indigenous Sand Fynbos and Renosterveld appropriate plant component, in an attempt to maximise biodiversity rehabilitation, whilst adhering to the required airport safety guidelines. Areas that will not be hardened surfaces and that would benefit from rehabilitation should be hydroseeded with appropriate seed mixes, at the appropriate time (late autumn).	Contractor/ ECO/EM
Alien Clearing	The **Alien Clearing Management Plan (Annexure 6)** needs to be implemented.	Contractor/ ECO/EM
Fire Prevention/ Management	The **Veld Fire Management Plan (Annexure 5)** needs to be implemented.	Contractor/ ECO/EM
Construction Monitoring Requirements	- The management of construction light impacts at night must be monitored by the ECO and included in compliance reporting. The ECO must monitor use of light and levels of light pollution by means of regular spot-checks, to be included in monthly compliance reporting. - The ECO must conduct a lighting audit at the end of each Construction phase, to ensure that conditions regarding the management of lighting impacts at night have been met. - Refer to the groundwater and noise monitoring under the '*B. Site Preparation'* table above. - Dust monitoring along the western, southern and northern boundaries of the site is recommended to be conducted on a monthly basis during construction and to be reported quarterly to the authorities.	ECO/EM

<table>
<tr><td colspan="2">TASK</td><td colspan="3">MITIGATION AND ENVIRONMENTAL CONTROLS</td><td>ACTION</td></tr>
<tr><td colspan="6">COMMENTS/ UPDATE</td></tr>
<tr><td colspan="6">RECORD OF PERFORMANCE</td></tr>
<tr><td colspan="2">Acceptable</td><td rowspan="2">Details of Transgression</td><td rowspan="2">Responsible Party</td><td rowspan="2">Action Taken</td><td rowspan="2">Date</td></tr>
<tr><td>Yes</td><td>No</td></tr>
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4.4 Operational Management Plan (incl. Maintenance and Rehabilitation)

4.4.1 Components of Operational Management

- Goals: The key environmental goals are set for the operation of the development
- Objectives: These are set to meet the goals.
- Risk: If the goal is not achieved.
- Actions: Measures put in place to achieve objectives.
- Monitoring: To check if the objectives are achieved.
- Targets: Indicators of the effectiveness of the programme.
- Remedial Action: If targets are not met.

4.4.2 Goals (Operational Management Outcomes and Actions):

GOAL 1: SAFEGUARD GEOHYDROLOGICAL FEATURES		
Objective	**Effective containment, distribution and storage of fuel and other chemical substances.**	
Risk	**Actions & Monitoring:**	**Targets**
Potential impact on groundwater quality deterioration because of leaks from fuel storage and distribution.	Tank (USTs) and pipe integrity testing shall be carried out in the following instances: Following installation of a new UST and associated underground pipework or following repair, maintenance or upgrade of an existing UST or underground pipework (or both). Testing shall be carried out prior to burial of the installation. When ownership of the UST and associated underground pipework changes. When leak detection monitoring methods that may be in place, such as Stock Inventory Reconciliation Analysis, Automatic Tank Gauging (with a reconciliation facility) or interstitial vapour or liquid monitoring of double-walled or jacketed steel tanks, indicate the possibility of a leak. In this instance, an investigation into the possible leak, including integrity testing in the final stages of the investigation, shall be used to track the reasons for a failure to reconcile. Where continuous leak detection monitoring, such as Stock Inventory Reconciliation (SIR), is not carried out at a site. In this	Enforcement of the Groundwater Monitoring Action Plan. No leaks or groundwater contamination.

	instance, UST and associated underground pipe integrity testing should be carried out every 2 years. If USTs and underground pipes do not operate with a continuous leak detection system, but do have cathodic protection installed, then this period may be extended to 10-year intervals. USTs are to be fitted with a monitoring tube to allow for the monitoring of leaks through the tank surface. Leak detectors are to be installed to the submersible pumps within UST manholes to ensure that there are no line leaks. A relatively inexpensive soil vapour monitoring installation must be installed which can be monitored on a frequent basis (monthly intervals) using a Photo Ionisation Detector (PID) e.g., Mini RAE 2000. The installation of Soil Vapour Sampling Points will require the placement of a permeable coarse clean sand layer beneath the storage tanks for a vertical depth of approximately 0.5m to 1m in order to locate the vents in the 16mm diameter monitoring pipe over portion of this depth. Observation wells must be installed in the sand fill surrounding the underground storage tanks for regular monitoring purposes. Continuous electronic monitoring (CEM) of product must be carried out. Should discrepancies occur an alarm will be triggered and site management will review the finding and take appropriate action to rectify the situation as required. <u>Fuel Containment Area</u> No washing in this area is allowed. <u>Petrol filling station Underground Storage Tank (UST) and pipework installations:</u> All containment manholes must be regularly inspected as part of the normal management procedures at the service station. Any repair work required is to be conducted according to SABS 1535 (Glass-reinforced polyester-coated steel tanks, including jacketed tanks, for the underground storage of hydrocarbons and oxygenated solvents and intended for burial horizontally). <u>Forecourt Dispensing Area:</u> Once the wash water has passed through the system, the separated oil must be collected regularly by an approved waste contractor and removed to an approved hazardous waste disposal facility.	
Remedial Action	Should a leak be found or should the groundwater in the monitoring wells be found to be contaminated with hydrocarbons, a baseline Phase 1 Contamination Assessment should be undertaken and the site remediated in consultation with a contamination remediation consultant and the Authorities.	

Objective	**Efficient Aircraft operations (engine starting, run-ups, testing, ground manoeuvring, take-off, and landing), handling vehicles and equipment, and heating and/or cooling systems.**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact on groundwater quality deterioration because of atmospheric deposition.	Where vehicles are required for airport operation, make use of electrical vehicles as opposed to conventional combustion engine powered vehicles. Reduce/minimise traffic requirements/ground support vehicles for aircraft operations where possible. Also refer to **Goal 12: Air Quality Control** below.	Implement the Groundwater Monitoring Plan below.	Reduce carbon emissions.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets.		
Objective	**Prevention of groundwater quality deterioration:** **Direct surface release of contaminants to the soil is that of airport rescue and firefighting (ARFF) training. During such training fires are started using oils, and other fuels (including metal, wood and other raw materials), to allow for emergency training of the fire and rescue staff to take place. Further, other than the fuels used to create fires for simulation purposes, the agents used to extinguish the fires consist primarily of foams with other additives to stabilise, ensure readiness, and allow for longevity of extinguishing agents. These additives contain perfluorochemicals (PFCs) that remain stable for long durations of time in the environment. The practises, protocols and equipment required for the safe and successful emergency operation of the facility will depend on the type of aircraft used at the airport and the scale of the airport.** **The origins of accidental releases of contaminants to the environment are electrical infrastructure (substations) and spillages by chemical storage facilities (Nunes, 2011).**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact on groundwater quality deterioration because of direct and/ or accidental release.	For routine burns and training purposes, make use of biodegradable fuels, which once burn minimise the impact on the groundwater. Erect bunds on which training can take place to contain the waste from the fire residue as well as the extinguishing agents. Devise and design appropriate bunding for storage of chemical substances that are to be stored on site, as well as erecting the electrical infrastructure (where risk of contamination exists, i.e. substations) on appropriate bunding.	The discharge generated by training exercises will need to be monitored and analysed for several chemical parameters (to be established once the composition of the extinguishing agents used on site are known). Implement appropriate	Disposal or storage must be done appropriately in accordance with the National Water Act (DWS, 1998) (and relevant amendments).

		monitoring infrastructure, e.g. borehole monitoring around the sites where electrical infrastructure and chemicals are stored, to identify leakages and spillages from chemical storage facilities and electrical infrastructure.	
Remedial Action	It is likely that disposal and/or storage of the waste from training will give rise to the need for a Water Use License (WUL), depending on the waste composition, frequency of training and planned disposal of training residue.		
Objective	**Prevention of groundwater quality deterioration:** **Digestate leakage/leaching from facility and potential accumulation of contaminants from application of digestate to land as fertiliser. Leakages of digestate from the facility itself.** **Use of cleaning agents to ensure maximal power generation from solar panels.**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact on groundwater quality deterioration because of bio-digestor facilities for energy generation. and/ or operation of photovoltaic solar facilities.	Proper management and design of digestate application (i.e. use as fertiliser) to areas on the property and/or surrounding areas. Monitoring of the impacts on the groundwater will need to be implemented should this biproduct of the facility be used in this way. Ensure design of facility is appropriate, e.g. include bunding in high-risk areas or where applicable, instate appropriate monitoring around facility and along relevant points through the system. Make use of biodegradable cleaning agents (solar facility) to ensure little to no impact on the quality of the groundwater is experienced.	Implement the Groundwater Monitoring Plan.	Maintain or improve baseline groundwater quality values.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets.		

Objective	**Prevent the over-abstraction from the borehole dropping below the regional groundwater level.**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact due to the depletion of groundwater resources as a result of over-abstraction.	Groundwater abstraction volumes must be monitored. Water levels must be monitored and should not drop below the critical water level (refer to yield testing reports). Monitoring information must be assessed regularly (suggested monthly). If the water level in the boreholes drops below the dynamic water level. i.e. 72mbgl for CWA_BH001. and 40mbgl for CWA_BH002 abstraction will immediately be reduced by 10%. This would be for normal rainfall events. If a hydrological drought persists for more than two years, the water level can drop to above the critical water level i.e. 85mgbl for CWA_BH001 and 61mbgl for CWA_BH002. Monitoring will persist for 30 days. In the event of lowered levels persisting after the initial 10% reduction, further reductions in excess of 10% must be implemented and if the low levels persist for more than 60 days, abstraction must cease until the levels have been recovered. This process will continue until the water level in the borehole is stable.	Implement the Groundwater Monitoring Plan.	Sustainable abstraction of groundwater. Implementation of best practice methods.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets.		

Objective	**Prevent the exposure and oxidation of minerals through the lowering of the water table.**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact on groundwater quality deterioration as a result of over-abstraction.	Groundwater abstraction volumes must be monitored. Water levels must be monitored. Monitoring information must be assessed regularly (suggested quarterly). If an increase of 25% in electrical conductivity is observed, abstraction will immediately be reduced by 10%. Monitoring will persist after 30 days if the water quality of the borehole does not recover. In the event of poor quality persisting after the initial 10% reduction, further reductions in excess of 10% must be implemented and if quality continues to deteriorate for more than 60 days, abstraction must cease until the water quality has stabilised.	Implement the Groundwater Monitoring Plan.	Sustainable abstraction of groundwater. Implementation of best practice methods.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets.		

Objective	**Prevent the contamination of groundwater due to the cracking, leaking or overflow of the concrete ponds and/or pipelines (allowing the seepage of contaminants into the groundwater):** **a) within the WWTW and to and from inflow and outflow points;** **b) pipelines containing brine from treated potable water.**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact on groundwater quality deterioration as a result wastewater storage before treatment and/ or brine storage.	Spillages or leakages from the WWTW and/or brine ponds could contaminate the surrounding non-perennial freshwater systems and groundwater in the area. Therefore, the effluent containment ponds should be appropriately lined to avoid discharge into the subsurface, and potentially groundwater. Solid waste should be stored on concrete bunded or lined surfaces and water drainage from the solid waste should be captured and returned to the WWTW. It is recommended that Groundwater Management Plan be implemented to ensure the groundwater quality is not affected by the operations of the WWTW or brine ponds. Monitoring of the WWTW infrastructure is required to ensure that there is no loss of water in the system; flow meters measuring influent and effluent must be installed, monitored and recorded. Regular internal and external inspections and auditing of the facility must take place to ensure the infrastructure is in good working order.	Implement the Groundwater Monitoring Plan and Emergency Preparedness Plan.	Regular internal and external inspections and auditing of the facility must take place to ensure the infrastructure is in good working order.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets.		
Objective	**Contamination of groundwater due to:** **a) the leaking or spilling of containers storing chemicals associated with the WWTW, allowing the seepage of contaminants into the groundwater;** **b) irrigation with poorly treated waste water effluent (TSE)**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact on groundwater quality deterioration	Spillages or leakages from the WWTW chemical storage areas could contaminate the groundwater in the area. Therefore, the chemical storage areas should be appropriately lined with additional bunding structures to avoid discharge into the subsurface, and potentially groundwater. It is recommended that Groundwater Management Plan be implemented to ensure the groundwater quality is not affected by the operations of the WWTW, brine ponds or irrigation with	Implement the Groundwater Monitoring Plan and Emergency Preparedness Plan.	Regular internal and external inspections and auditing of the facility must take place to ensure the

as a result irrigation and/ or chemical storage associated with the WWTW.	treated effluent. Monitoring of the WWTW infrastructure is required to ensure that there is no loss of water in the system; flow meters measuring influent and effluent must be installed, monitored and recorded. Contaminated water used to irrigate the demarcated fields could contaminate the groundwater in the area. The WWTW needs to ensure that the water released into the environment is within the limits of the General Authorisation. Monthly monitoring of the quality of the treated effluent must take place to ensure that quality objectives are reached.		infrastructure is in good working order.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets.		

Groundwater Monitoring Plan (GEOSS, Sept 2024):

A number of groundwater sites should be monitored at the proposed site during the construction and development phases on site. This will allow for monitoring of the groundwater quality and groundwater levels across the site. Monitoring sites need to be strategically placed, typically in the vicinity and downgradient of high-risk activities. Groundwater flow in the area generally mimics the topography, flowing towards topographical lows. A number of local monitoring sites must be located across the site to identify any potential impact of the proposed land uses. The additional monitoring sites are presented in Table 10 and illustrated in Figure 31 above to be constructed prior to the construction phase.

Groundwater Level Monitoring

Groundwater level measurements are recommended for the monitoring points at the study site. A dip meter can be used to measure the water level below the top of the borehole collar/casing height (mbch). The height of the collar/casing height must then also be measured (m). The water level (metres below ground level (mbgl)) can then be calculated by subtracting the collar/casing height from the water level (mbch). The value must be recorded along with the date and time of measurement.

Groundwater Quality Monitoring

It is recommended that the monitoring wells be purged prior to sampling. A low volume sampling pump can be used or the site can be bailed and allowed to recover prior to sample collection. When using a low volume sampling pump, the groundwater should be pumped through a flow-through cell until field chemistry parameters have stabilised.

Sample Collection, Preservation and Submission

Sample bottles must be labelled with the site name, borehole name and date. At the time of sampling, field chemistry parameters must be measured and recorded. These include electrical conductivity (EC), oxidation reduction potential (ORP), pH, temperature and dissolved oxygen (DO). During sampling, disposable nitrile gloves should be worn to minimise the transfer of any potential contaminants. Nitrile gloves should be dedicated to a sampling location and disposed of after use. Samples must be collected in an appropriate sampling container and preserved in the correct manner prior to submission to an accredited laboratory for the analysis parameters. The sample method and preservation must be discussed with the laboratory prior to sampling.

Monitoring Frequency and Parameter Analysis

In order to best understand and monitor the site, it is recommended that monthly water level measurements be taken to determine seasonal fluctuation. It is further recommended that the water quality on site is monitored on a quarterly basis for the first year, after which the frequency can be reduced based on the first year's monitoring results.

Groundwater monitoring needs to target the risk of the activity, i.e. organic and microbiological parameters need to be monitored in close proximity to the solid waste storage, WWTW and the biodigestor; BTEX, TPH and GROs need to be monitored in close proximity to fuel storage and dispensing operations, etc. Once the site is developed and the intricate details of the services are made available, a more detailed, standalone monitoring programme report will need to be developed. Table 11 above indicates the potential parameters for ongoing monitoring, this will be revised upon approval and development of the CWA.

PERFORMANCE

Date	Details of Transgression	Responsible Party	Action Taken

GOAL 2: SAFEGUARD BOTANICAL FEATURES			
Objective	**All Very High, High and Medium sensitivity areas that do not fall within the authorised development (construction) footprint should be conserved as part of any redevelopment of this site (no development and no infrastructure through these areas), and ideally, they would also all be ecologically connected via rehabilitated Low sensitivity areas.**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact/ loss of Very High, High and Medium sensitivity botanical areas.	Key ecological management interventions required are ongoing alien invasive vegetation management (pre and post burn) and management burns in the appropriate autumn season. An EMPr (THIS DOCUMENT) for the remaining conservation worthy areas on site (all remaining areas of Very High, High and Medium botanical sensitivity, including all such areas within the Agricultural Precinct, refer Figure 10) must be implemented, with input from the botanist where applicable, and management of these areas could be outsourced to the CoCT Environmental Management Department, provided that the applicant covers all ongoing management costs. Guidelines on ongoing maintenance of these areas within which S&R plants have been established must also be included. No spraying of herbicide should be undertaken in any conservation areas. Once all alien invasive vegetation has been removed from the conservation areas all these areas must be subject to planned (controlled) burn regimes, as this vegetation needs fire for optimal ecological functioning. The two Very High sensitivity areas are the priority areas for ecological burns, which must be undertaken in the period February to March. These burns should be professionally managed. Prior to the controlled burn firebreaks should be brushcut by hand around the perimeter of the sensitive areas (not within them) using handheld brushcutters. The botanically sensitive areas will need to be burnt every 8-12 years for optimum ecological functioning. Fire management within the site must be done according to the **Veldfire Management Plan (VFMP) in Annexure 5**. Alien invasive vegetation management within the site must be done according to the **Alien Clearing Management Plan in Annexure 6**.	The condition of all Very High, High and Medium sensitivity areas (Agricultural Precinct and on site) will be monitored every year by a suitably competent botanist (or CoCT Environmental Management Dept.), and they will make recommendations for any management changes or actions (alien clearing, lack of fire, etc.) that are needed.	Achieve optimal ecological functioning in these areas.
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets. The condition of Botanical sensitivity areas will be monitored every year by a suitably competent botanist, and they will make recommendations for any management changes or actions (alien clearing, lack of fire, etc.) that are needed.		
Objective	**Biodiversity Offset**		

Risk	Actions	Monitoring	Targets
Permanent loss of Conservation worthy vegetation with no compensation.	Given the Endangered and Critically Endangered status of the underlying habitats, and the level of impact (Medium – High negative before mitigation) it is required that 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 the appropriate ratios (as per Dept. of Forestry, Fisheries & Environment offset guidelines, 2022). The applicant, or their appointed management authority, must provide all necessary funding for all required ecological management of the site (airport site and conservation areas in Agricultural Precinct), and for the chosen and agreed biodiversity offset, in perpetuity.	Monitoring requirements must be undertaken in accordance with the **Biodiversity Offset Management Plan**.	A terrestrial biodiversity offset of at least 77ha is required (plus ongoing environmental management budget for this).
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Should the applicant fail to conclude such an implementation agreement or fail to capitalise an endowment through a public benefit organisation, prior to commencement with the activities, then: v. The environmental 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 vi. The sum of R6 million becomes immediately payable to the City Of Cape Town, to establish or augment a fund for the management of all priority protected or conservation areas in the Klipheuwel Corridor not in City ownership.		

PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 3: SAFEGUARD FRESHWATER ECOLOGICAL FEATURES			
Objective	**Protection of the Freshwater Ecosystems.**		
Risk	**Actions**	**Monitoring**	**Targets**
Increased risk of pollution of surface water potentially affecting the downgradient freshwater ecosystems, leading to impaired water quality and salination of soils. Increased risk of sediment transport in surface runoff leading to altered water quality, smothering of biota and altered vegetation community composition. Increased risk of erosion. Potential	A Service Infrastructure Management Plan should be compiled (once the construction of operational activities has been completed) which details the frequency in which service infrastructure, particularly the sewer and water treatment plants, bio-digester and sewer conveyance infrastructure must be serviced. For example, it is recommended that the integrity of the sewer infrastructure and treatment plants be tested at least once every five years or more often should there be any sign of a leak. An emergency plan must be compiled to ensure a quick response and attendance to the matter in case of a leakage or bursting of a pipeline or overtopping of sewage at the treatment plant and/or bio-digester. The **Emergency Preparedness and Response Plan (Annexure 12)** needs to be implemented. Jet fuel and other potential hazardous chemicals must be stored in a manner that reduces the potential for spills. An emergency spill protocol must be compiled and is to be maintained for the CWA, especially for potential spills on the runways, aprons, roads, etc. to prevent the pollutants from being transported via stormwater infrastructure into the downgradient wetlands. Regular inspection of the stormwater outlet structures must be undertaken (specifically after large storm events) to monitor the occurrence of erosion. If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation, where applicable. All pipelines and attenuation ponds must be regularly cleaned, and all outlet structures (if any) checked to ensure there is no debris/blockages. The likelihood of erosion at the discharge points can be reduced provided that a higher surface roughness is implemented in the area from the discharge points down to the delineated freshwater ecosystems, allowing for water to enter the seep wetland 1, CVB wetland 3 and the surrounding environment at a lower velocity. This can be achieved through the placement of cobbles and ensuring that the area surrounding each discharge point is suitably vegetated. No development within the 15m and 16m operational phase conservation buffer of the CVB wetlands 2 and 3 and seep wetland 1, respectively, may be undertaken. The **Stormwater Management Plan (Annexure 10)** needs to be adhered too. It must be ensured	Implement a monitoring programme to detect and prevent the pollution of soils, surface water and groundwater. Monitor wetlands that will potentially be impacted by the proposed CWA development to ensure that the PES drivers and receptors are maintained, and where possible improved, in accordance with the REC and RMO. The **Wetland Offset Management Plan (Annexure 7)** needs to be implemented. Monitoring of the implementation and management of the Freshwater offset plan. Monitoring for the establishment for AIP species must be undertaken, specifically in the PV panel array	Achieve optimal ecological functioning in these areas.

eutrophication of water. Potential fragmentation of the freshwater ecosystems. Potential loss of indigenous vegetation.	that regular maintenance takes place to prevent failure of any infrastructure associated with the proposed CWA development. Only existing roadways should be utilised during maintenance and repairs to avoid indiscriminate movement of vehicles within the wetlands. Should repair of the sewer infrastructure be required to address a leak, control measures relating to trenching and stockpiling must be implemented depending upon the location of the leak. With regards to maintenance activities for roads, fences and service infrastructure refer to applicable measures in Construction Phase control measures. No vehicles are permitted to enter the freshwater ecosystems. Any maintenance works must be undertaken by foot, or the relevant authorisations obtained beforehand. The **Wetland Offset Management Plan (Annexure 7)** needs to be implemented. Adhere to the **Maintenance Management Plan (Annexure 16)** for all maintenance aspects undertaken within the vicinity of Freshwater Ecosystems.	footprint in the south-eastern portion of the study area. A monitoring plan for the development and the immediate zone of influence should be implemented to prevent erosion and incision. Regular inspection of the stormwater outlet structures must be undertaken (specifically after large storm events) to monitor the occurrence of erosion.	
Remedial Action	If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation, where applicable. **The Wetland Offset Study and Implementation Plan (Annexure 7) needs to be implemented.** Adhere to the **Maintenance Management Plan (Annexure 16)** for all maintenance aspects undertaken within the vicinity of Freshwater Ecosystems.		
Objective	**Optimal functioning of the sustainability of the borehole (s)**		
Risk	**Actions**	**Monitoring**	**Targets**
A cone of depression in the local landscape and significant impacts to the freshwater ecosystems.	Groundwater abstraction must not drop below the critical water level (still to be determined). The management objective should be to maintain the groundwater level at or near the dynamic water level (still to be determined). During maintenance activities, particular care should be taken with regards to vehicle and spill management.	Abstraction volumes must be monitored and recorded at suitable intervals (e.g. monthly).	Ensure that abstraction volumes (from what is approved by the DWS) is not exceeded.
Remedial Action	Should it be observed that abstraction has dropped below the critical water level or if a water quality change has been observed, the relevant DWS compliance officer should be informed to discuss and develop a new abstraction plan that can sustain the aquifer.		

Objective	**Optimal management of the Solar PV facilities:**		
Risk	**Actions**	**Monitoring**	**Targets**
Pollution of Freshwater Ecosystems.	Maintenance activities associated with the PV facility must be confined to the developed footprint of the PV facility. Under no circumstances may waste (including grey water from the washing of the PV panels) be discarded in the surrounding environment. Suitable waste management practices must be implemented. BESS infrastructure (if any) must be regularly inspected and must be operated in line with applicable SANS standards (e.g. SANS 56005:2022 Ed 1 and SANS 62133-2:2022 Ed 1 as issued in Schedule B1 of GN 1427 of 18 November 2022, as issued in terms of section 24(1)(a) of the Standards Act (act 8 of 2008)).	Monitoring for the establishment for AIP species must be undertaken, specifically in the PV panel array footprint in the south-eastern portion of the study area.	Optimal management of the Solar PV Facilities to ensure no environmental pollution occurs.
Remedial Action	Alien invasive vegetation management within the site must be done according to the **Alien Vegetation Management Plan in Annexure 6**. Waste management within the site must be undertaken according to the **Waste Management Plan in Annexure 8.**		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 4: SAFEGUARD TERRESTRIAL (FAUNA & AVIFAUNA) ECOLOGICAL FEATURES			
Objective	**Protect all Fauna and Avifauna.**		
Risk	**Actions**	**Monitoring**	**Targets**
Reduction in Fauna and/or Avifauna habitat and increased mortalities.	No further development related activities are to take place outside of the demarcated footprint unless duly authorised by the competent authority. Faunal and Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways as per the **Bird and Wildlife Hazard Management Plan** (**Annexure 11**) for the airport. Operational personnel are to be educated about the various faunal species in the area, particularly about venomous spiders, snakes and scorpions. None of these or other species are to be killed or injured by personnel. Should any of these species be encountered, these species are to be safely and carefully relocated to the surrounding natural habitat adjacent the development site, should they not move off on their own. The contact details of a suitably qualified snake handler be made available to construction teams should a venomous snake be encountered that needs removal. Alternatively, it is recommended that a member of the operational team be trained to handle and remove snakes through a recognised snake handling course. Sound environmental management practices should be adhered to at all times. Alien plant species should be suitably managed and no further spread of alien plants should be allowed (**refer to Goal 6**). Whilst it is accepted that there will likely be significant external lighting during the operational phase, it is still recommended that the amount of light be minimised as far as possible (notably outward shining/emitted light), and that downward and inward facing lights be used wherever possible, but within legislated operational health and safety guidelines/requirements. Yellow or red fluorescent lights are preferable for building and perimeter lighting, whilst the use of bright white or LED lights should only be used as and where necessary for apron lighting (or as required by operational health and safety for airport operations). Lighting used must be kept to minimum, but in allowance with the required health and safety requirement for airport operations. Noise levels must be suitably managed in line with the norms and standards for airports	Implement monitoring in accordance with the **Bird and Wildlife Hazard Management Plan** - **Annexure 11**.	Achieve the targets set in the **Bird and Wildlife Hazard Management Plan - Annexure 11**.

	operations. It is however acknowledged that the larger aircraft will generate noise levels beyond the recommended health and safety guidelines, and that these unfortunately cannot, at this point in time, be reduced due to the nature of turbine jet engines. Stormwater is to be suitably controlled and discharge points monitored for erosion (**refer to Goal 7**). Stormwater /attenuation ponds must be monitored and covers/screens of these features repaired if damaged. If leaks appear or ponding at the outlets is evident, this must be rectified to avoid attracting waterfowl or larger avifauna such as herons etc which pose a risk to aircraft. No hunting, trapping, or setting of snares by personnel is to be allowed. Suitable fines/disciplinary actions for such must be made known and implemented. With regards to maintenance activities for roads, fences and service infrastructure refer to applicable measures in Construction Phase control measures. Reactive control measures should be investigated and where needed implemented to manage birds and other wildlife at the airport. Such includes dispersal measures (sirens, lasers, pyrotechnics, and Border Collies) and removal measures (live capture, nest removal etc) as and where feasible/needed; and Buildings, structures and landscaped gardens may provide artificial nesting/habitat for avifaunal species and increases their potential activity around the airport. Methods to reduce available shelter include: 1) Exclusion measures such as spikes, netting, panelling on ledges and holes around buildings to assist in prevention of birds taking residence, 2) Nest removal and 3) Cutting / mowing of vegetation where needed (this may however attract a different assemblage of avifauna which selects for such areas). As such, vegetation clearance and stormwater management undertaken must be in line with the recommendations as per the **Bird and Wildlife Hazard Management Plan in Annexure 11**. Standard Operating Procedures (SOPs) for Bird and Wildlife Management needs to be compiled.		
Remedial Action	Implementation of the **Bird and Wildlife Hazard Management Plan in Annexure 11**. Non-compliance to be reported to Applicant and the Competent Authority.		

PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 5: VELDFIRE MANAGEMENT			
Objective	**The prevention and management of Veldfires on and around the site.**		
Risk	**Actions**	**Monitoring**	**Targets**
Impact on natural Fire Cycles Liability	Smoking shall not be permitted in areas where it is a fire hazard. Such areas shall include any workshop and fuel storage areas and areas where the vegetation or other material may promote the rapid spread of an initial flame. A fire extinguisher of the appropriate type must be present when welding or other "hot" activities are undertaken. Any work that requires the use of fire or open flame may only take place at a designated areas approved by the ECO and must be supervised at all times. Fire management within the site must be done according to the **Veldfire Management Plan (VFMP) in Annexure 5**. The purpose of this VFMP is to ensure the safety of personnel and infrastructure, minimize environmental impact and ensure uninterrupted airport operations. To achieve these goals, the plan focuses on meeting the following objectives: • Protect Human Life: Ensure the safety of all individuals, including staff and tenants, firefighters, and the public. • Safeguard Property and Assets: Protect infrastructure and assets from veldfire damage. • Minimize Physical and Environmental Impact: Reduce the adverse effects of veldfires and fire suppression techniques on both physical structures and the environment. • Promote Sustainable and Cost-Effective Protection: Implement veldfire protection measures in an environmentally responsible and financially efficient manner. • Maintain Appropriate Fire Regimes: Preserve environmental values by managing fire regimes that are suitable and necessary for conservation purposes.	Be part of the Fire Protection Association programme	Effective implementation of the VeldFire Management Plan. Zero liability
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority. Contractor to ensure Fire Fighting Equipment are in place and serviced regularly. **VeldFire Management Plan (Annexure 5)** to be implemented.		

PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

<table>
<tr><th colspan="4">GOAL 6: ALIEN CLEARING MANAGEMENT</th></tr>
<tr><td>Objective</td><td colspan="3">Continued Alien Clearing Management of the site with the aim of zero Alien vegetation on site.</td></tr>
<tr><td>Risk</td><td>Actions</td><td>Monitoring</td><td>Targets</td></tr>
<tr><td>Loss of biodiversity

Alien Vegetation infestation

Fire Risk</td><td>Alien invasive vegetation management within the site must be done according to the Alien Vegetation Management Plan in Annexure 6.

The purpose of this Alien Vegetation Management Plan is to outline a comprehensive strategy for the complete eradication of alien invasive plants and the long-term maintenance of the site in an alien-free condition. This plan aims to ensure compliance with airport safety standards, restore ecological functioning, and improve habitat quality, particularly in areas of botanical sensitivity and ecological importance.

To achieve these goals, the plan focuses on meeting the following objectives:
• Identify and confirm areas for alien vegetation clearing.
• Establish methods for effective alien clearing, including necessary follow-up actions.
• Provide a realistic program with clear targets for the clearing process.
• Promote the conservation of indigenous plant species within the property.
• Support job creation and skills development in local communities.
• Ensure the sustainable reuse of cleared biomass to maximize environmental benefits.

Standard Operating Procedures (SOPs) can be compiled for Alien vegetation and invasive plants.</td><td>Monitor natural vegetation for Alien Invasives.

Ensure that no fire hazards are created by stockpiling alien vegetation which has been removed.</td><td>Preservation of indigenous vegetation and zero Alien Vegetation on site.</td></tr>
<tr><td>Remedial Action</td><td colspan="3">Non-compliance to be reported to Applicant and the Competent Authority.
Implementation of the Alien Clearing Management Plan in Annexure 6.</td></tr>
<tr><td colspan="4">PERFORMANCE</td></tr>
<tr><td>Date</td><td>Details of Transgression</td><td>Responsible Party</td><td>Action Taken</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="4">GOAL 7: STORM WATER MANAGEMENT</th></tr>
<tr><td>Objective</td><td colspan="3">Successful implementation of the Stormwater Management Plan.</td></tr>
<tr><td>Risk</td><td>Actions</td><td>Monitoring</td><td>Targets</td></tr>
<tr><td>Incorrect Stormwater Management on site resulting in flooding, pollution and damages.</td><td colspan="2">a. <u>Typical Operating and Maintenance activities for Dry Attenuation Ponds:</u>
<table>
<tr><th>Maintenance schedule</th><th>Required action</th><th>Typical frequency</th></tr>
<tr><td rowspan="6">Regular maintenance</td><td>Remove litter and debris</td><td>Monthly</td></tr>
<tr><td>Manage vegetation</td><td>Monthly</td></tr>
<tr><td>Inspect inlets, outlets, and overflows for blockages</td><td>Monthly</td></tr>
<tr><td>Inspect inlets and basin for sediment accumulation. Determine appropriate frequencies.</td><td>Monthly, then as required</td></tr>
<tr><td>Tidy dead vegetation before growth season</td><td>Annually</td></tr>
<tr><td>Manage wetland plants in pools – where provided</td><td>Annually</td></tr>
<tr><td rowspan="3">Occasional maintenance</td><td>Reseed or replant in dilapidated areas</td><td>As required</td></tr>
<tr><td>Prune and trim plants where necessary and remove cuttings</td><td>Every 2 years or as required</td></tr>
<tr><td>Remove sediment from inlets, outlets and forebays</td><td>Annually, or as required</td></tr>
<tr><td rowspan="4">Remedial actions</td><td>Repair erosion or other damage</td><td>As required</td></tr>
<tr><td>Repair or rehabilitate inlets, outlets, and overflows</td><td>As required</td></tr>
<tr><td>Relevel uneven surfaces and reinstate design levels</td><td>As required</td></tr>
<tr><td>Realign riprap, gabions, and/or Reno mattresses</td><td>As required</td></tr>
</table>
<u>Additional:</u>
Litter clearing: A litter clean-up is to take place monthly or as required.
Cleaning of kerbs and channels: Sand, litter and refuse should be removed from kerbs and channels monthly or as required.
Cleaning of pipes: Refuse should be removed from pipes monthly. Sand and silt should also be removed by using high pressure jetting.
Cleaning of covers and frames: The covers and frames should be inspected monthly and need to be replaced, repositioned, or repaired where necessary.
Earth embankment inspection: Embankments should be inspected monthly or after each rain. If the embankment is</td><td>Successful Stormwater Management on site.</td></tr>
</table>

compromised, it should be reshaped to tie in with the original slope.

Headwalls inspection: The headwalls should be inspected monthly or after each rain. Any blockage should be removed, and the natural vegetation trimmed to allow free drainage of water

b. <u>Typical Operating and Maintenance activities for Swales:</u>

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly
	Manage vegetation, retain vegetation to design levels	Monthly
	Inspect inlets, outlets, and overflows for blockages	Monthly
	Inspect inlets and basin for sediment accumulation. Determine appropriate frequencies.	Monthly, then as required
	Tidy dead vegetation before growth season	Annually
	Manage wetland plants in pools – where provided	Annually
Occasional maintenance	Reseed or replant in dilapidated areas	As required
	Prune and trim plants where necessary and remove cuttings	Every 2 years or as required
	Remove sediment from inlets, outlets and forebays	Annually, or as required
Remedial actions	Repair erosion or other damage	As required
	Repair or rehabilitate inlets, outlets, and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Realign Riprap, gabions, and/or Reno mattresses	As required

<u>Additional:</u>

Litter clearing: A litter clean-up is to take place monthly or as required.

Embankment inspection: Embankments should be inspected monthly or after each rain. If the embankment is compromised, it should be reshaped to tie in with the original slope.

Cleaning of headwalls: Refuse should be removed from headwalls within the dry swale monthly. Sand and silt should also be removed by using high pressure jetting.

Headwalls inspection: The headwalls should be inspected monthly or after each rain. Any blockage should be removed, and the natural vegetation trimmed to allow free drainage of water.

c. Typical Operating and Maintenance activities for Detention Basins:

Activity	Typical frequency
Remove litter and debris from Inlet and outlet structures	Monthly
Mow vegetation (Side slopes)	Monthly
Inspect inlets, outlets, and overflows for blockages	Monthly
Inspect inlet and forebay for sediment accumulation	Semi-Annually
Inspect for invasive vegetation	Semi-Annually
Manage wetland plants in pools – where provided	Annually
Check for signs of Hydrocarbon buildup and remove appropriately	Inspection
Prune and trim plants where necessary and remove cuttings	Every 2 years or as required
Remove sediment from inlets, outlets and forebays	Annually, or as required
Inspect for damage paying attention to the variable outlet control structure	Annually
Remove sediment from forebay	5 to 7 years or when 50% of forebay capacity is lost
Repair undercut or eroded areas	As required
Realign riprap, gabions, and/or Reno mattresses	As required

Additional:

Irrigation system: It will take some time for the vegetation in the pond to be fully established. As such, it is proposed that an irrigation system or procedure be put in place to ensure the vegetation survive the initial dry seasons. Suitable inspections to identify potential faulty elements should be conducted on the irrigation system to ensure its proper functioning.

Litter clearing: A litter clean-up is to take place monthly or as required.

Alien and problem vegetation: It is proposed that the pond must be inspected for invasive alien vegetation routinely by the appointed landscaper. As far as possible all alien vegetation should be manually removed. Where manual removal is not possible, alien vegetation should be treated with an appropriate herbicide using the correct application method and to the manufacturer's directions and specifications. Herbicides should not be applied when conditions are windy, so as to avoid spray drift. No herbicides should be applied when rain is forecast within 2 days. Colour dyes should be used with the herbicides to clearly mark areas that have been treated, taking exceptional care when working near water. It must be recognized that under certain conditions some indigenous vegetation may become problematic and may require intervention.

Cleaning of silt traps: The sedimentation forebay as well as the apron of the outlet headwalls must be inspected every six months, with one of the inspections taking place just before the first seasonal rains. These must be inspected for build-up of

	silt, dirt, mud, and similar material. All silt and other material must be removed and disposed of at a suitable landfill site. Care must be taken to ensure that no silt enters the stormwater system during the cleaning process. The **Stormwater Management Plan (Annexure 10)** needs to be adhered too.	
Remedial Action	If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation, where applicable.	

PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 8: ADDITIONAL MANAGEMENT FOR AGRICULTURAL AREAS.			
Objective	**Agricultural Best Practice**		
Risk	**Actions**	**Monitoring**	**Targets**
Fire Risks Pollution Visibility	Standard Operating Procedures (SOPs) will be established for the following agricultural practices: • Planned burning of the wheatfields by farmers on agricultural land; and • Crop spraying during winter. Both these aspects must be managed via SOP engagements between the CWA and the Farmers Association in the area. All farmers must belong to a Fire Association and Burning Permits must be obtained from the CoCT prior to any burning undertaken. Burning takes place during the months of March and April only. Furthermore, no burning is allowed to take place on days that have been identified by the CoCT as "red" or "yellow" days. Burning may only take place on "green" days. The Fire Department as well as the CWA representative needs to be notified in advance of agreed upon burn days. All efforts must be made to reduce the practice of burning fields, where possible.	Monitor the effectiveness of burning and crop spraying methods used.	Efficient management and control of agricultural practices.
Remedial Action	Refer non- compliance to the Contractor. Liaise with the Farmers Association on a continual basis to ensure agricultural practices and airport operations are symbiotic.		

Objective	**Management & Control of Soil Erosion (water).**		
Risk	**Actions**	**Monitoring**	**Targets**
Soil erosion	According to Regulation 4 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Every land user shall by means of as many of the following measures as are necessary in his situation, protect the cultivated land on his farm unit effectively against excessive soil loss: • *A suitable soil conservation work shall be constructed and thereafter be maintained in order to divert run-off water from other land or to restrict the run-off speed of run-off water;* • *The land concerned shall be cultivated in accordance with such method or be laid out in such a manner that the run-off speed of run-off water is restricted;* • *The land concerned shall be utilised in accordance with a crop rotation system;* • *Alternate strips on which a cover crop occurs shall be left undisturbed annually;* • *Crop residues and other plant material shall be left on the land concerned, or shall be utilised as grazing or otherwise be removed only to such an extent that the remaining portion thereof will be sufficient to form a mulch; and/or* • *A suitable grazing crop shall be established on the land concerned, whereafter it shall be permanently withdrawn from cultivation.* *According to Regulation 7 (2) of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Every land user shall remove the vegetation in a water course on his farm unit to such an extent that will not constitute an obstruction during a flood that could cause excessive soil loss as a result of erosion through the action of water.*	Monitor the effectiveness of soil erosion methods used.	Efficient management and control of soil erosion
Remedial Action	Refer non- compliance to the Contractor.		
Objective	**Management & Control of Soil Erosion (wind).**		
Risk	**Actions**	**Monitoring**	**Targets**
Soil erosion	According to Regulation 5 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Every land user shall by means of as many of the following measures as are necessary in his situation, protect the cultivated land on his farm unit effectively against excessive soil loss:	Monitor the effectiveness of soil erosion methods used.	Efficient management and control of soil erosion

	• *The land concerned shall be cultivated in accordance with such method or be laid out in such manner that the surface movement of soil particles through the action of wind is restricted.* • *Strips of natural vegetation shall be left at right angles to the prevailing wind direction, a suitable wind break shall be constructed or suitable vegetation shall be established to serve as a wind break.* • *The land concerned shall be utilised in accordance with a crop rotation system.* • *Alternate strips on which a cover crop occurs shall be left undisturbed annually.* • *The land concerned shall not be left fallow.* • *The cultivation and grazing of the land concerned during periods of high winds shall be avoided.* • *The establishing of crops of which the harvesting causes the disturbance of the topsoil shall be avoided.* • *Crop residues and other plant material shall be left on the land concerned, or shall be utilised as grazing or otherwise be removed only to such extent that the remaining portions thereof will be sufficient to form mulch.* • *A suitable grazing crop shall be established on the land concerned, where after it shall be permanently withdrawn from cultivation.* • *A suitable soil conservation work shall be constructed and thereafter be maintained in order to restrict the surface movement of soil particles through the action of wind.* Any rehabilitation and remedial action concerning soil erosion, in the event it does occur, needs to be per Regulation 14 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).		
Remedial Action	Refer non- compliance to the Contractor.		
Objective	**Management & Control of Soil Erosion (wind).**		
Risk	**Actions**	**Monitoring**	**Targets**
Waterlog-ging & Salination	According to Regulation 6 of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Regulations: Every land user should implement measures as required to protect the irrigated land on his farm unit effectively against waterlogging and salination. Measures that may be applicable include implementing a run-off control plan or draining plan (suitable soil preparation) before the	Monitor the effectiveness of methods used.	Efficient management and control of waterlogging.

	establishment of the vineyards and maintaining such works to draw off excess surface and subterranean water and to dispose of it safely to prevent waterlogging and salination of lower lying land.		
Remedial Action	Refer non- compliance to the Contractor.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 9: POULTRY MANAGEMENT			
Objective	**Poultry Biosecurity and prevention of transmission of poultry diseases.**		
Risk	**Actions**	**Monitoring**	**Targets**
Compromised biosecurity Poultry Diseases Production losses	Light mitigation: Erect signs requiring that car lights are dipped on the affected section of road, barriers that prevent light going into the sheds can be erected on farms, hood the sources of light disturbance, erection of a facility wall which will block some of the light and the use of minimal lighting in the car park area. Mitigation related to private property can be negotiated with landowners and only undertaken upon agreement with landowners. Implement the Noise Mitigation Measures addressed in Goal 10: Noise Management. In addition, schedule Arrivals during the daytime and avoid runways closest to the poultry farm during Phase 1. Implement the Air Quality Mitigation Measures addressed in Goal 12: Air Quality Control. Avoid creating stagnant pools of water by treating wastewater in closed systems, handle waste according to municipal by laws. This is addressed in the **Stormwater Management Plan (Annexure 10)** in consultation with the **Bird and Wildlife Hazard Management Landscape & Open Space Planning Guidelines (Annexure 10)**. Refer to Goal 7: Storm Water Management. Adherence to good housekeeping and municipal by laws to address pests. Handling and disposal of international galley waste must be done in a safe way and with regard to legislation. This is addressed in the **Waste Management Plan** (**Annexure 8**) which will be implemented on site. Refer to Goal 15: Waste Management.	Noise Monitoring to be undertaken in accordance with Goal 10 below. Air Quality Monitoring to be undertaken in accordance with Goal 12 below. Waste Monitoring to be undertaken in accordance with Goal 15. Storm water Monitoring to be undertaken in accordance with Goal 7 and the SWMP (Annexure 10). Bird and Wildlife Monitoring to be undertaken in accordance with Annexure 10.	Poultry Biosecurity
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority.		

PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 10: NOISE MANAGEMENT			
Objective	**Keeping noise levels and disturbance within acceptable limits.**		
Risk	**Actions**	**Monitoring**	**Targets**
Noise Disturbance	Provide incentives for airlines to obtain aircraft with the latest available noise reduction technology, through for example noise-related landing charges. Consider the use of specific take-off or approach procedures (such as Continuous Descent Operations, or steeper landing trajectories) to minimise and optimize the distribution of noise on the ground. Use noise preferential routes to assist aircraft in avoiding noise-sensitive areas, such as Klipheuwel, on departure and arrival, and the use of turns to direct aircraft away from noise-sensitive areas. Consider approaches at slightly steeper angles. A small increase in the glide-path angle to 3.2°, rather than the standard 3.0°, may be feasible and offer scope for noise reduction. Establish and maintain effective communication channels with the affected public and provide real-time information on incoming and outgoing flights and their evolving noise footprints. Consider noise-related operating restrictions for night-time. These can be imposed on a voluntary basis by the airport, or by the Government. In conjunction with the above-mentioned noise abatement measures, the introduction of 'passive' mitigation measures, such as noise insulation on existing residential dwellings and noise-sensitive buildings (schools, hospitals, etc.) may be considered, upon negotiations and agreements with applicable parties. **Standard Operating Procedures (SOPs)** are to be compiled for each of the following: • Noise abatement procedures for aircraft – landing and take-off; and • Noise and emissions control on apron – APU usage, GSE equipment. **<u>Noise Monitoring Network and Plan:</u>** Three permanent noise monitoring terminals should be established before or by the operational year of the new airport and runway. The first of these terminals should be established at the Klipheuwel area, preferably close to its south-eastern boundary. The second should be positioned within the Greenville Garden City	The Noise Monitoring Plan needs to be implemented.	Limited noise complaints.

	Development, in line with the new runway 01/19 and the third on the eastern side of the Bella Riva development. A summary of the noise monitoring results should be reported on a quarterly basis to the appropriate authorities. These reports should contain, but not be limited to the: • 24-hour equivalent continuous A-weighted sound pressure level, LAeq,T; • equivalent continuous day-night rating level, LRdn; • equivalent continuous day and night rating levels, LRd and LRn; • maximum A-weighted level, LAmax; • percentile levels Ln; • number of exceedances above 70 dB(A) and 60 dB(A) of the LAmax and SEL. A noise complaints registry should be established and connected with the noise monitoring system, in order to provide the capability for correlation of the complaints with the actual measured levels, as well as the aircraft-related operational data. The complaints and relevant aircraft-related operational data should be included in the quarterly report to the authorities.		
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority. The Noise Monitoring Plan needs to be implemented, and the results will determine whether remedial action is necessary.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 11: EMERGENCY PREPARDNESS AND RESPONSE MANAGEMENT.			
Objective	**Emergency Preparedness**		
Risk	**Actions**	**Monitoring**	**Targets**
Liability Death Destruction of natural habitat	It is essential that the CWA develop an **Emergency Preparedness and Response Plan (Annexure 12)** to provide for emergency procedures during operational phase. **Standard Operating Procedures (SOPs)** are to be compiled for each of the following: • Off-loading of fuel into depot; • Filling of fuel bowsers; • Filling of aircraft with fuel; • Operational spillages – clean-up procedures; • Minimizing of fuel vapours in fuel depot; • Procedures for engine run-up; • Maintenance workshops – oil separators; and • Aircraft wash bays – oil separators. The emergency plan must be compiled to ensure a quick response and attendance to the matter in case of a leakage or bursting of a pipeline or overtopping of sewage at the treatment plant and/or bio-digester. An emergency spill protocol must be included and is to be maintained for the CWA, especially for potential spills on the runways, aprons, roads, etc. to prevent the pollutants from being transported via stormwater infrastructure into the downgradient wetlands. Private landowners, as well as the CWA Landowners, should ensure that unauthorised land settlements are dealt with by the authorities.	The **Emergency Preparedness and Response Plan (Annexure 12)** needs to be implemented and adhered too.	Minimal damages associated with Emergency situations.
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority. The **Emergency Preparedness and Response Plan (Annexure 12)** needs to be implemented and adhered too.		

PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 12: AIR QUALITY CONTROL			
Objective	**Reduce Air Emissions to ensure Air Quality is within acceptable limits.**		
Risk	**Actions**	**Monitoring**	**Targets**
Air Pollution	*Scenario 1: Existing runway setup under full utilisation* In line with the ICAO emission reduction action plans and best practices with respect to airport-related air quality, the following "best practice" emission mitigation measures could be investigated for implementation for Scenario 1: • Implementation of measures to decrease the queuing lines. • Minimisation of the waiting time for parking. • Examination of permitting aircraft taxiing at higher speeds. • Limitation of the length of the course of taxiing. • Utilisation of aircraft-serving equipment with "cleaner" technology. *Scenario 2: Operations on the new runway 01/19 in the operational year* However, the most suitable and cost-effective mitigation measures should be investigated, and an acceptable implementation timeframe should be established before the new runway reaches its capacity. *Scenario 3: Operations on the new runway 01/19 at full capacity* For Scenario 3, a number of mitigation measures should be considered for implementation in consultation with the various stakeholders associated with all the airport operations. In addition, in line with the noise impact recommendations, the airport-compatible land-use planning immediately south of the new runway would be recommended. As such, the identified potential mitigation measures are: • Encourage airport-compatible land-use planning. • Implement measures to decrease the queuing lines. • Limit the length of the course of taxiing. • Shutting down as many engines as possible when idling and taxiing. • Reduce reverse thrust use during landing.	It is recommended that a continuous air quality monitoring station is established at the northern CWA site boundary. The air pollutants to be monitored are SO_2, NO_x, PM_{10} and Benzene. The monitoring results should be reported to the authorities on a biannual basis.	Acceptable Air Quality Standards.

	• Utilise aircraft-serving equipment with "cleaner" technology. • Investigate the provision of electricity at terminal gates, so as to minimise use of the APUs and GSE as much as possible.		
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority. The monitoring results should be reported to the authorities on a biannual basis.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 13: CONSERVATION MANAGEMENT OF ON-SITE SENSITIVE AREAS			
Objective	**The ongoing rehabilitation, maintenance and management of identified Sensitive Areas (No-Go Areas) within the site boundaries.**		
Risk	**Actions**	**Monitoring**	**Targets**
Potential impact/ loss of Very High, High and Medium sensitivity botanical areas. Potential fragmentation and associated impacts on the freshwater ecosystems. Reduction in Fauna and/or Avifauna habitat and increased mortalities.	The sensitive areas within the site are identified in Figure 8 above (**Annexure 3B**). These areas, including the entire Agricultural Precinct, are important from a Botanical, Freshwater, Faunal, Avifaunal and Visual perspective. No development within the 15m operational phase conservation buffer of the CVB wetlands 2 and 3 and the 16m operational phase conservation buffer seep wetland 1, respectively, may be undertaken. The botanical sensitive areas falling inside the development footprint but within landscaped areas will be conserved – as indicated on the **Landscaping Plan (Annexure 9)**. No spraying of herbicide should be undertaken in any conservation areas. No further development related activities are to take place outside of the demarcated footprint unless duly authorised by the competent authority. No vehicles are permitted to enter the freshwater ecosystems. Any maintenance works must be undertaken by foot, or the relevant authorisations obtained beforehand. Operational personnel are to be educated about the various faunal species in the area, particularly about venomous spiders, snakes and scorpions. None of these or other species are to be killed or injured by personnel. Should any of these species be encountered, these species are to be safely and carefully relocated to the surrounding natural habitat adjacent the development site, should they not move off on their own. The contact details of a suitably qualified snake handler be made available to construction teams should a venomous snake be encountered that needs removal. Alternatively, it is recommended that a member of the operational team be trained to handle and remove snakes through a recognised snake handling course. No hunting, trapping, or setting of snares by personnel is to be allowed. Suitable fines/disciplinary actions for such must be made known and implemented. With regards to maintenance activities for roads, fences and service infrastructure refer to applicable measures in Construction Phase control measures. Fire management (firebreaks, controlled burns etc.) within these areas must be undertaken in accordance with the **Veldfire Management Plan (VFMP) in Annexure 5**. Alien invasive vegetation management within these areas must be done according to the **Alien**	The condition of all Very High, High and Medium sensitivity areas (Agricultural Precinct and on site) will be monitored every year by a suitably competent botanist (or CoCT Environmental Management Dept.), and they will make recommendations for any management changes or actions (alien clearing, lack of fire, etc.) that are needed. Monitor wetlands that will potentially be impacted by the proposed CWA development to ensure that the PES drivers and receptors are maintained, and where possible improved, in accordance with the REC and RMO. The Wetland Offset Study and Implementation Plan (Annexure 7) needs to be implemented.	Achieve optimal ecological functioning in these areas. Sound environmental management practices should be adhered to at all times.

	Clearing Management Plan in Annexure 6. The **Wetland Offset Management Plan (Annexure 7)** needs to be implemented. Adhere to the **Maintenance Management Plan (Annexure 16)** for all maintenance aspects undertaken within the vicinity of Freshwater Ecosystems. Faunal and Avifaunal habitat beyond the demarcated area should not be cleared or altered, except as needed for safety reasons around taxiways and runways as per the **Bird and Wildlife Hazard Management Plan** (**Annexure 11**) for the airport.	Implement monitoring in accordance with the Bird and Wildlife Hazard Management Plan - Annexure 11.	
Remedial Action	Non-compliance to be reported to the Applicant and the Competent Authority. Penalise individuals who deviate from the targets. The condition of Botanical sensitivity areas will be monitored every year by a suitably competent botanist, and they will make recommendations for any management changes or actions (alien clearing, lack of fire, etc.) that are needed. Guidelines on ongoing maintenance of these areas within which S&R plants have been established must also be included. If erosion has occurred, it must immediately be rehabilitated through stabilisation of the embankments and revegetation, where applicable. **The Wetland Offset Study and Implementation Plan (Annexure 7) needs to be implemented.** Implementation of the **Bird and Wildlife Hazard Management Plan in Annexure 11**. Adhere to the **Maintenance Management Plan (Annexure 16)** for all maintenance aspects undertaken within the vicinity of Freshwater Ecosystems.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 14: ADAPTION TO CLIMATE CHANGE			
Objective	**Reduce the risks associated with Climate Change.**		
Risk	**Actions**	**Monitoring**	**Targets**
Health & Safety and Operational & Value Chain Impacts associated with Wildfires, Landslides, Water Scarcity, Extreme Heat, Urban & Riverine Floods.	<u>Wildfires</u> • Identify infrastructure and areas on site that are vulnerable to wildfire risks. • Consider wildfire risks in site design and layout planning and fuel management procedures. • Construct firebreaks in areas vulnerable to wildfires. • To ensure health and safety of employees, site evacuation and emergency response plans for wildfire events should be implemented. • Ensure backup power systems are available, should energy supply be disrupted. Veld Fire management within the site must be undertaken in accordance with the **Veld Fire Management Plan - Annexure 5**. It is essential that the CWA develop an **Emergency Preparedness and Response Plan** to provide for emergency procedures during operational phase. <u>Water Scarcity</u> • A water scarcity management plan should be developed to mitigate water scarcity risks. • The CWA should increase water storage, reduce water use and improve water consumption efficiencies. • Ensure that multiple potable water sources are available for the site to alternate between should it be required. • Investigate monitoring and forecasting systems to help predict future periods of drought and enhance preparedness. • Monitor water consumption during drought periods to prevent compromising water availability. <u>Extreme Heat</u> • Keep facilities/buildings cool with efficient use of air-conditioning. • Consider building designs appropriate for local climate that are conducive to cooling in summer i.e., consider building orientation, natural shading, and ventilation. • Ensure that equipment and vehicles purchased for use on site can operate under increased ambient temperatures to avoid downtime. • Investigate early warning/monitoring systems to inform the site of expected heat wave	Waste management within the site must be undertaken in accordance with the **Waste Management Plan - Annexure 8**. Veld Fire management within the site must be undertaken in accordance with the **Veld Fire Management Plan - Annexure 5**. Design Principles must be undertaken in accordance with the **Architectural Design Guidelines for the Cape Winelands Airport Development (Annexure 13)** and in Accordance with the **Landscaping Plan (Annexure 9).** The CWA **Stormwater Management Plan (Annexure 10)** needs to be adhered too.	Reducing the project's carbon footprint and enhancing sustainability.

	occurrences. • Ensure health and safety of employees by regularly monitoring hydration levels, avoiding work hours during the hottest part of the day and providing medical attention/resources to those who are vulnerable. Design Principles must be undertaken in accordance with the **Architectural Design Guidelines** for the Cape Winelands Airport Development **(Annexure 13)** and in Accordance with the **Landscaping Plan (Annexure 9)**. <u>Urban and Riverine Floods</u> • Ensure that drainage infrastructure is well maintained. • Ensure infrastructure built on site is resilient to projected flood levels, and that site design and layout planning considers the potential for flooding event on site • To ensure health and safety of employees, site evacuation and emergency response plans for flooding events should be implemented. • Ensure backup power systems are available, should energy supply be disrupted. The CWA **Stormwater Management Plan (Annexure 10)** needs to be adhered too. The CWA aims to be self-sustainable in meeting its energy needs by implementing renewable energy solutions such as Solar PV and a biodigester system. These measures are important for reducing the project's carbon footprint and enhancing sustainability. Further mitigation actions identified in the Climate Change Impact Assessment for consideration are: 1. Collaboration with airline partners to facilitate the development and use of sustainable aviation fuels. The airport operation should also support and promote the development and of sustainable aviation fuel and strive for operational efficiencies such as reduced aircraft idling times on runways and taxiways. 2. Collaboration with local authorities to optimise public transport to and from the airport. In employee and passenger, the project should promote the use of electric vehicles (electric busses or shuttle services) and collaborate with the government and the transport sector to improve public transportation links to and from the airport. For business travel, the project should prioritise sustainable travel options and implement carbon offset programs for unavoidable business travel to neutralise the carbon footprint. 3. Designing green buildings with materials of low embedded GHGs, incorporating designs that reduce the need for external heating and cooling.		

	4. A waste management system focusing on recycling and/or composting. The project developer should consider implementing comprehensive recycling programs for items such as paper, plastic, glass, and metal. Additionally, on-site composting facilities for organic waste disposal should be established, creating job opportunities and promoting sustainability. 5. Incorporating mitigation measures, appropriate to the chosen design of the wastewater treatment plant: The design of the wastewater treatment plant should consider best practises for mitigation depending on the technology chosen. i.e., a standard wastewater treatment plant using anaerobic digestion should consider capturing methane generated and use it to provide some of the energy requirements. Waste management within the site must be undertaken in accordance with the **Waste Management Plan - Annexure 8**.		
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 15: WASTE MANAGEMENT			
Objective	**Effective Waste Management**		
Risk	**Actions**	**Monitoring**	**Targets**
Litter Wasteful use of resources Attraction of Birds and Vermin. Pollution	Waste management within the site must be undertaken in accordance with the **Waste Management Plan in Annexure 8**. The purpose of the Waste Management Plan (WMP) is to describe the principles, procedures and management of the waste generated by Cape Winelands Airport and to ensure waste is reduced, reused and recycled wherever possible. The Waste Management Plan outlines measures to manage and mitigate waste generation and resource consumption during the construction and operation of the development. The Waste Management Plan is therefore designed to support an ecological based management approach underpinned by adaptive management principles through the entirety of the project life cycle. The following national Norms & Standards also need to apply to the Waste Facility proposed on site and need to be adhered too: • "National Norms and Standards for the Storage of Waste" (GN926 of 29 November 2013) should the facility have the capacity to store more than 80m^3 for hazardous waste and/or 100m^3 for general waste at any one time and for a period exceeding 90 days. • "National Norms and Standards for Sorting, Shredding, Grinding, Crushing, Screening, Chipping or Baling of General Waste" (GN1093 of 11 October 2017) if general waste is sorted, shredded, grinded, crushed, screened, chipped or baled in an operational area at the facility exceeding 1000m2. If the operational area does not exceed 1000m2, the facility needs to register in terms of GN1093 only and adhere to section 28 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and sections 16(1) and 16(3) of the NEM: WA. • "National Norms and Standards for Organic Waste Treatment" (GN.1984 of 1 April 2022) with regard to the biodigester which no longer requires an application for a waste management licence. Facilities that have the capacity to process more than 10 tonnes of organic waste per day need to register in terms of these 'Norms and Standards' and adhere to GN1984. • "National Norms and Standards for Organic Waste Composting" (GN.561 of 25 June 2021). Organic waste composting facilities that have the capacity to process compostable organic	Waste management within the site must be undertaken in accordance with the WMP in Annexure 8. Monitoring Measures have been set out therein.	Reduce, Reuse, Recycle.

	waste, in excess of 10 tonnes per day. • "National Norms and Standards for Domestic Waste and Sanitation Services", published as GN No. 982 of 8 September 2017. GN No. 1984 does not apply to any infectious animal waste, raw sewage or sewage sludge that does not meet the minimum quality standards for sludge as determined by the Department of Waste and Sanitation in their Norms and Standards (No. 982 of 8 September 2017). Please note the requirement for the submission of **Standard Operating Procedures (SOPs)** in accordance with section 6.2 of GN No. 1984.		
Remedial Action	Waste management within the site must be undertaken in accordance with the **Waste Management Plan in Annexure 8**. Remedial Action has been included in the WMP.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 16: TRAFFIC MANAGEMENT			
Objective	**Effective Traffic Management**		
Risk	**Actions**	**Monitoring**	**Targets**
Traffic congestion on and off the site.	The 2050 (Phase 2) capacity EMME model results showed that the future road network will be capable of supporting future developments in the area, including Phase 2 (PAL 4) of the CWA. **However, an updated TIA needs to be prepared after 2032 for each PAL once new SDPs are available and the latest traffic conditions can be assessed closer to the time.** <u>2024 Existing Traffic Conditions</u> Upgrades are recommended for Klipheuwel Road/Lichtenburg Road, including the installation of a traffic signal and additional turn lanes, which are expected to improve the LOS to B. Planned future developments and access management plans (AMPs) for Lichtenburg Road (MR213) and Klipheuwel Road (MR188) include changes to intersection configurations and realignments, which are expected to reduce demand at some constrained intersections. Given these future plans, no further upgrades are recommended for the remaining intersections. <u>2032 Background Traffic Conditions</u> This increase in traffic will trigger the need for road upgrades, especially along Klipheuwel and Lichtenburg Roads. The proposed upgrades include the dualling of Klipheuwel Road between Brackenfell Boulevard and Lichtenburg Road, the installation of traffic signals at several intersections, and the construction of additional turning lanes. The Klipheuwel Road/Arum Lily Street intersection will be converted to a left-in, left-out (LILO) configuration as part of their access management plan (AMP). With proposed upgrades in place, capacity constraints are expected at some priority-controlled intersections. However, alternative routes via signalised intersections such as Klipheuwel Road/Darwin Road and Lichtenburg Road/Dulah Omar Street will help alleviate traffic congestion. <u>Proposed Access Phasing:</u> Mellish Road will be the initial connection from Lichtenburg. The East-West link to Klipheuwel Road when Bella Riva constructs this. CWA to engage with Bella Riva landowner/developer to establish if feasible to build Lucullus Road extension and/or the East-West Class 3 road. The East-West Class 3 at this stage is the most likely to come first. The ultimate link will be via the northern extension of Lucullus Road once the EIA approval has been completed by the City of Cape Town. The alignment and road reserve requirements of	An updated TIA needs to be prepared after 2032 for each PAL once new SDPs are available and the latest traffic conditions can be assessed closer to the time.	Effective Traffic Management

	Lucullus Road bordering the west edge of the site must be confirmed. 2032 Total Traffic Conditions This scenario assessed the impact of Phase 1 (PAL 1B) of the CWA the realigned Mellish Road access and the East-West link from Bella Riva as a secondary access. The proposed upgrades include the installation of a traffic signal at Lichtenburg Road/Mellish Road and the construction of a dual-lane roundabout at the East-West Link/CWA Access intersection. As with the 2032 Background Traffic Conditions, capacity constraints are expected to continue at the priority-controlled intersections along Klipheuwel and Lichtenburg Roads. However, alternative routes via signalised intersections on Klipheuwel Road/Darwin Road and Lichtenburg Road/Dulah Omar Street will help alleviate congestion. Additionally, the Klipheuwel Road/Olifantsrivier Avenue intersection is expected to reach capacity during the PM peak hour. This traffic can be redistributed to the Klipheuwel Road/Okavango Road intersection, which has sufficient capacity. 2032 Sensitivity Analysis A sensitivity analysis was conducted to evaluate the impact of using only the Mellish Road/Lichtenburg Road access for Phase 1 (PAL 1B) of the CWA. The capacity analysis results show that the proposed upgrades in the 2032 Total Traffic Conditions scenario will be sufficient to accommodate the traffic generated by Phase 1 (PAL 1B). Mellish Road is therefore the only access required to accommodate the CWA Phase 1 (PAL 1B) traffic. It is, however, recommended that the East-West link across Bella Riva Phase 1 be extended to the airport by CWA when the road reserve is available. 2050 Capacity Analysis The City's EMME model was updated to evaluate the impact of Phase 2 (PAL 4) of the CWA for the 2050 scenario. This update included the total extent of the future developments in the area and assessed the R300 northern extension along with several new road links, including the Darwin Road extension, and the extensions of Lucullus Road and the East-West links. The results indicated that the future road network will be sufficient to accommodate the future developments, including Phase 2 (PAL 4) of the CWA. The future developments will require several upgrades to be implemented as more than 8 000 peak-hour trips will be added to the road network. The construction of the R300 northern extension, along with new road links such as the Darwin Road extension and extensions of Lucullus Road and the East-West links, is expected to reduce the demand at some of the study intersections. Therefore, it is recommended that the construction of these road links be fast-		

	tracked to ensure that the intersection upgrades are not abortive in the future. Therefore, it is recommended that the construction of these road links be fast-tracked to ensure that the intersection upgrades are not abortive in the future. According to the traffic assessment it is evident that the impact of the CWA will be relatively low compared to the other future developments in the area. Hence, it is recommended that Phase 1 (PAL 1B) of the CWA be approved from a transport point of view. **However, an updated TIA must be prepared for the future phases of the CWA.**		
Remedial Action	An updated TIA must be prepared for the future phases of the CWA.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

GOAL 17: SOCIO-ECONOMIC BENEFITS			
Objective	**Ensuring the socio-economic benefits of the project are achieved.**		
Risk	**Actions**	**Monitoring**	**Targets**
Unsuccessful socio-economic objectives.	Continuous and periodic monitoring and evaluation are required to ensure the achievement of milestones and the overall success of achieving the socio-economic objectives envisaged for the Project. The following activities are geared towards achieving acceptable and ongoing monitoring standards: 1. Regular field visits to the project and stakeholders benefiting from the project 2. A review after the first six months after implementation to assess the overall progress and achievement of the objectives and milestones related to the specified targets of employment, skills development, small business development and capacity building. To monitor the performance related to the achievement of the socio-economic development obligations, the contractor should record and report progress with agreed socio-economic obligations. Typical reporting information should include: • Actual total expenditure on Total Procurement; • Actual total expenditure on Procurement of Materials; • Actual total expenditure on Sub-contracting; • Actual total employment categorised according to standard Occupational Categories; and • Actual total payroll. The successful implementation and development of the proposed project will ultimately be assessed on the contribution the project makes during construction and operations to the social development and economic goals of employment creation, skills development and training, small business development and capacity building in the area. The following Key Performance Areas are outcomes based on the scope of social engagement activities: • Procurement from, or sub-contracting to local enterprises; • Procurement from, or sub-contracting to enterprises from outside the local area; • Procurement of local materials/resources;	Continuous and periodic monitoring as per this Goal.	Achieving the socio-economic objectives envisaged for the Project.

	• Procurement of materials from outside the CMA; • Recruitment process that promotes gender equality		
Remedial Action	Non-compliance to be reported to Applicant and the Competent Authority.		
PERFORMANCE			
Date	**Details of Transgression**	**Responsible Party**	**Action Taken**

SECTION 5: COMPLIANCE AND MONITORING

5.1 Monitoring

The monitoring of works on site is necessary to demonstrate compliance with the specifications of the EMPr and to allow for problems or issues of non- conformance to be identified and appropriate corrective measures to minimise environmental damage to be implemented.

Monitoring should include visual checks by the ECO on a daily basis, checks on particular requirements for site activities by the ECO, as well as a review of site documentation. The ECO or suitable person shall complete the performance record at the end of each table, as a record of transgressions or problems experienced on site and how they were dealt with.

Monitoring of activities on site by the ECO should be done as follows:

Prior to construction commencing the Applicant will establish an Environmental Management Division to be lead by an Environmental Manager.

During the Construction Phase an external ECO will be appointed for the duration of the construction phase who is to be on site daily. The ECO is to liase and report their findings to the Environmental Manager. Monthly ECO reports are to be compiled and submitted to the EM and DEA&DP.

During the Operational Phase a permanent internal ECO will be appointed for the duration of the operational phase undertaking daily environmental tasks. The ECO is to liase and report their findings to the Environmental Manager. Monthly ECO reports are to be compiled and submitted to the EM and DEA&DP.

A number of specialist support teams are to be appointed (from the onset of the construction and throughout the operational phases - depending on the level of activities being undertaken) who will report to the ECO/ EM. These teams will address aspects such as Alien Management, Waste management, Fire Management, Wetland/ Botanical Rehabilitation etc. Specialists must also be appointed ad-hoc to address aspects such as spills or emergency incidents.

Monitoring in terms of Specialist Mitigation Measures is addressed throughout the report, where applicable.

5.2 Penalties and Incentives

Transgressions relate to actions by the Contractor and team members whereby damage or harm is inflicted upon the environment or any feature thereof and where any of the conditions or specifications of the EMPr are infringed upon.

In the instance of environmental damage, the damage is where possible to be repaired and rehabilitated using appropriate measures, as specified and undertaken by appropriate specialists for the account of the Applicant or other guilty party.

Where infringement of the specifications or conditions of the EMPr is registered, appropriate remedial action or measures are to be implemented for the account of the Applicant. Where non-repairable damage is inflicted upon the environment or non-compliance with any of the EMPr obligations is registered then the Contractor may face a monetary penalty to an amount specified by the ECO. The ECO reserves the right to implement a first offence warning.

Transgressions are most likely to occur with respect to litter on site, damage to trees on site, disturbance of sensitive areas. The following penalties are suggested for the above-mentioned transgressions:

- Waste: In the case of excessive waste, the ECO is to allow the Contractor 24 hours in which to remove the litter or face a monetary penalty at the ECO's discretion.
- Damage of River System or conservation area: A monetary penalty to the maximum of R5000 is to be paid for each waste act within a River System or the Conservation Area.
- Erosion: Erosion resulting from any work on site is to be rectified at the cost of the operator.

If excessive infringement with regard to any of the specifications is registered, the Applicant reserves the right to terminate the Contractor's contract.

The above-mentioned controls are to be identified and enforced by the ECO. Issues of non-compliance noted by the ECO are to be communicated to the site manager, who holds the responsibility of ensuring that the relevant parties are made aware of the lack of compliance with EMPr specifications and that appropriate action is taken to rectify the situation. The ECO will advise on appropriate corrective actions when necessary.

5.3 Site record

Minutes of the Contractors or Operators meetings on site must reflect:

- environmental queries and complaints;
- actions agreed upon;
- dates of eventual compliance;
- must form part of the official environmental site record; and
- along with the Environmental Site Book and Site Diary.

In additions to the summary report, the ECO shall keep a monthly photographic record of progress on site at the start of the construction phase and an ad hoc record of incidents or events on site, especially in the case of transgressions from EMPr specifications.

5.4 Review of EMPr

The EMPr will be reviewed by the ECO on an ongoing basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site.

Any such changes or updates will be registered in the ECO's monthly record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties on site.

5.5 Environmental Audits

A suitably qualified Environmental Auditor is to be appointed, to undertake audits of compliance with the EMPr. An audit should be undertaken biannually (every 6 months) during the construction phase and annually during the operational phase. Objectives should be to audit compliances with the key components of the EMPr, to identify main areas requiring attention and recommend priority actions. The audit should cover a cross section of issues, including implementation of environmental controls, environmental management, and environmental monitoring.

Results of the audits should inform changes required to the specifications of the EMPr, or additional specifications to deal with any environmental issues which arise on site and have not been dealt with in the current document.