APPENDIX 42

IMPACT ASSESSMENT SUMMARY

Summary of Significance ratings (negative) for identified impacts Pre and Post mitigation for Alternatives 1, 2, 3 and 4

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
Botanical Impact Assessment								
Construction Phase	Low	Low	**Construction Phase**		Medium to High	Low to Medium	Medium to High	Low to Medium
Operational Phase	Low	Low	**Operational Phase**		Low to Medium	Neutral to Low	Low to Medium	Neutral to Low
Geohydrological Impact Assessment								
Groundwater contamination due to surface runoff	Low	Very Low	**Construction Phase**	**Groundwater contamination due to construction of CWA**	Very Low	Very Low	Very Low	Very Low
Groundwater contamination due to fuel storage and distribution	Medium	Very Low	**Operational Phase – Groundwater Contamination due to**	**Surface runoff**	Medium	Very Low	Medium	Very Low
Groundwater contamination due to atmospheric deposition	Low	Very Low		**Fuel storage & distribution**	Medium	Very Low	Medium	Very Low
Groundwater contamination due to Direct Release	Low	Low		**Atmospheric deposition**	Low	Very Low	Low	Very Low
Groundwater contamination due to Accidental Release	Low	Very Low		**Direct Release**	Low	Low	Low	Low
				Accidental Release	Medium	Low	Medium	Low
				Biodigester	Medium	Very Low	Medium	Very Low
				Solar PV	Low	Very Low	Low	Very Low
			Operational Phase - Groundwater Depletion	**Due to over-abstraction**	Medium	Very Low	Medium	Very Low
			Operational Phase - Groundwater quality deterioration	**Due to over-abstraction**	Medium	Very Low	Medium	Very Low
				Due to wastewater storage	Medium	Very Low	Medium	Very Low
				Due to brine storage	Medium	Very Low	Medium	Very Low
				Due to chemical storage for WWTW	Medium	Very Low	Medium	Very Low
				Due to irrigation with the treated sewage effluent	Medium	Very Low	Medium	Very Low
Freshwater Ecological Impact Assessment								
The proposed 'no-go' Alternative 1 will not result in any additional impacts to the freshwater ecosystems identified			**Construction Phase - Site**	**Impact on hydrological function and water quality**	Moderate	Low	Moderate	Low

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
within the study and investigation area, and as such, has not been included in the impact assessment.			**preparation, removal of topsoil, vegetation & earthworks**					
				Impact on geomorphological processes	Very Low	Very Low	Very Low	Very Low
				Wetland habitat loss (seep wetland 1), altered wetland habitat & impacts to biota	Moderate	Moderate	Moderate	Moderate
			Construction Phase - Earthworks, construction & installation maintenance road & fences	**Impact on hydrological function and water quality**	Low	Very Low	Low	Very Low
				Impact on geomorphological processes	Low	Very Low	Low	Very Low
				Altered wetland habitat & impacts to biota	Low	Very Low	Low	Very Low
			Construction Phase - Potential mixing and casting of concrete/ asphalt within 32m of seep wetland 1	**Impact on hydrological function & water quality**	Low	Very Low	Low	Very Low
				Altered wetland habitat & impacts to biota	Low	Very Low	Low	Very Low
			Construction Phase - Loss (6.74ha) of seep wetland 1 habitat & ecoservices	**Altered wetland habitat & impacts to biota**	High	Moderate	High	Moderate
			Operational Phase: Operation of runway & related infrastructure (including stormwater attenuation ponds)	**Impact on hydrological function and water quality (on seep wetland 1)**	Moderate	Moderate	Moderate	Moderate

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
				Impact on geomorphological processes (on seep wetland 1)	Moderate	Moderate	Moderate	Moderate
				Wetland habitat loss, altered wetland habitat and impacts to biota (on seep wetland 1)	High	Moderate	High	Moderate
				Impact on hydrological function and water quality (on CVB wetlands 2 and 3)	Low	Very Low	Low	Very Low
				Impact on geomorphological processes (on CVB wetlands 2 and 3)	Low	Very Low	Low	Very Low
				Altered wetland habitat and impacts to biota (to CVB wetlands 2 and 3)	Low	Very Low	Low	Very Low
			Operational Phase: Operation of the maintenance road and fences and maintenance of service infrastructure	Impact on hydrological function and water quality	Low	Very Low	Low	Very Low
				Altered wetland habitat and impacts to biota	Low	Very Low	Low	Very Low
			Operational Phase: Operation of the stormwater attenuation ponds & release of hydrocarbons into the wetlands from attenuation ponds and	Impact on hydrological function and water quality	Moderate	Low	Moderate	Low
				Impact on geomorphological processes (sediment balance, erosion and sedimentation)	Moderate	Very Low	Moderate	Very Low
				Altered wetland habitat and impacts to biota	Moderate	Low	Moderate	Low

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
			surrounding landscape					
			Operational Phase: Anthropogenic disturbance incl noise & physical degradation of wetland habitat reducing available feeding, drinking, breeding & migratory habitat to biota associated with CVB wetlands 2 & 3	Altered wetland habitat and impacts to biota	Low	Very Low	Low	Very Low
Faunal Impact Assessment								
The proposed 'no go' Alternative 1 will not result in any additional impacts to faunal species and habitat identified within the study area, and as such, have not been included in the impact assessment.			Construction Phase - Impact on Faunal Habitat and Diversity	Renosterveld Habitat	Medium	Low	Medium	Low
				Freshwater Habitat	Medium	Low	Medium	Low
				Modified Habitat	Medium	Low	Medium	Low
				Artificial Impoundments	Low	Low	Low	Low
				Agricultural Drains	Very Low	Very Low	Very Low	Very Low
			Construction Phase - Impact on Faunal SCC and Their Habitat	Renosterveld Habitat	Low	Very Low	Low	Very Low
				Freshwater Habitat	Very Low	Very Low	Very Low	Very Low
				Modified Habitat	Low	Very Low	Low	Very Low
				Artificial Impoundments	Very Low	Very Low	Very Low	Very Low
				Agricultural Drains	Very Low	Very Low	Very Low	Very Low
			Operational Phase - Impact on Faunal Habitat and Diversity	Renosterveld Habitat	Low	Very Low	Low	Very Low
				Freshwater Habitat	Low	Very Low	Low	Very Low
				Modified Habitat	Low	Very Low	Low	Very Low
				Artificial Impoundments	Low	Very Low	Low	Very Low
				Agricultural Drains	Low	Very Low	Low	Very Low

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
				Noise Impacts	Medium	Medium	Medium	Medium
			Operational Phase - Impact on Faunal SCC and Their Habitat	Renosterveld Habitat	Low	Very Low	Low	Very Low
				Freshwater Habitat	Low	Very Low	Low	Very Low
				Modified Habitat	Low	Very Low	Low	Very Low
				Artificial Impoundments	Low	Very Low	Low	Very Low
				Agricultural Drains	Low	Very Low	Low	Very Low
				Noise Impacts	Medium	Medium	Medium	Medium
Avifaunal Impact Assessment								
The proposed 'no go' Alternative 1 will not result in any additional impacts to faunal species and habitat identified within the study area, and as such, have not been included in the impact assessment			Construction Phase impacts - Impact on Avifaunal Habitat and Diversity	Renosterveld Habitat	Medium	Low	Medium	Low
				Freshwater Habitat	Medium	Low	Medium	Low
				Modified Habitat	Medium	Low	Medium	Low
				Artificial Impoundments	Medium	Low	Medium	Low
				Agricultural Drains	Very Low	Very Low	Very Low	Very Low
			Construction Phase impacts - Impact on Avifaunal SCC and Their Habitat	Renosterveld Habitat	Medium	Very Low	Medium	Very Low
				Freshwater Habitat	Medium	Very Low	Medium	Very Low
				Modified Habitat	Medium	Medium	Medium	Medium
				Artificial Impoundments	Medium	Very Low	Medium	Very Low
				Agricultural Drains	Very Low	Very Low	Very Low	Very Low
			Operational Phase - Impact on Faunal Habitat and Diversity	Renosterveld Habitat	Low	Very Low	Low	Very Low
				Freshwater Habitat	Medium	Low	Medium	Low
				Modified Habitat	Medium	Low	Medium	Low
				Artificial Impoundments	Low	Very Low	Low	Very Low
				Agricultural Drains	Low	Very Low	Low	Very Low
				Noise impacts	Medium	Medium	Medium	Medium
			Operational Phase - Impact on Faunal SCC and Their Habitat	Renosterveld Habitat	Low	Very Low	Low	Very Low
				Freshwater Habitat	Medium	Low	Medium	Low
				Modified Habitat	High	Medium	High	Medium
				Artificial Impoundments	Low	Very Low	Low	Very Low
				Agricultural Drains	Low	Very Low	Low	Very Low
				Noise Impacts	Medium	Medium	Medium	Medium
Heritage Impact Assessment								

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
-			**Construction Phase**	**Demolition of 2 structures older than 60 years**	Low	Low	Low	Low
				Visual Impacts	Refer to Visual Impact Assessment			
			Operational Phase	**Visual Impacts**	Refer to Visual Impact Assessment			
Visual Impact Assessment								
Alternative 1 describes the "Do Nothing" Alternative, in which the current rights of the existing airport would remain in place and no additional development would occur. The current development rights of the CWA restrict the Gross Leasable Area (GLA) to 6000m², which is already utilised in full. The existing runway system (consisting of four crossing runways) will not be resurfaced to allow for increased operations for Code A & B aircraft. This is because the restrictions in GLA would not allow the upgrade of terminal and landside capacities to accommodate the anticipated growth on airside. The overall visual impact significance score for the No-Go Alternative is 0 (No Significance / neutral). The impact does not influence the proposed development or the Receiving Environment.			**Construction Phase**	**Lights 1: Visibility from within Landscape Character Areas 2 & 3**	Low	Very Low	Low	Very Low
				Lights 2: Visibility from within Landscape Character Area 4	Low	Very Low	Low	Very Low
				Lights 3: Visibility from within Landscape Character Area 1	Low	Very Low	Low	Very Low
				Site-Specific 1: Transformation of land use and site character. Total clearance of areas during construction Phase 1 (PAL 1)	Medium	Medium	Medium	Medium
				Scenic Route 1: The R312 Lichtenburg Rd Scenic Route	Low	Very Low	Low	Very Low
				Cultural landscape (incl. Scenic Routes) 1: Potential effect on the landscape character and sense of place of: the Agter-Paarl	Low	Low	Low	Low

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
				Paardeberg Cultural Landscape.				
				Cultural landscape (incl. Scenic Routes) 2: Potential effect on the landscape character and sense of place of: the Durbanville Hills CL and the Koeberg / Swartland Farms CL (both within LCA4).	Low	Low	Low	Low
				Cultural landscape (incl. Scenic Routes) 3: Potential effect on the landscape character and sense of place of: the Joostenberg Vlakte Cultural Landscape also referred to as LCA 2.	Low	Low	Low	Low
			Operational Phase	Lights 1: Visibility from within Landscape Character Areas 2 & 3 (within the Urban Development Edge, and within the Joostenberg Vlakte Cultural landscape)	Medium	Medium	Medium	Medium
				Lights 2: Visibility from within Landscape Character Area 4 (within Joostenberg Vlakte Cultural landscape and the Koeberg / Swartland Farms Cultural landscape)	Medium	Low	Medium	Low
				Lights 3: Visibility from within Landscape Character Area 1 (within the Agter-Paarl Paardeberg Cultural landscape).	Medium	Medium	Medium	Medium

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
				Site-Specific 1: Transformation of land use and site character. Total clearance of the developable areas of the subject site during construction Phase 1 (PAL 1)	Low	Low	Low	Low
				Scenic Route 1: The R312 Lichtenburg Rd Scenic Route (Route 31; SR1: Scenic drive envelope, Gateway Point and view corridors as scenic resources)	Medium	Low	Medium	Low
				Cultural landscape (incl. Scenic Routes) 1: 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 Rd crossing and its intersection with Slent Rd near Klipheuwel) that bisects the subject site, but lies eastward and outside of the portion of	Medium	Low	Medium	Low

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
				the CWA that is earmarked for development				
				Cultural landscape (incl. Scenic Routes) 2: Potential effect on the landscape character and sense of place of: the Durbanville Hills CL 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 Rd.	Low	Low	Low	Low
				Cultural landscape (incl. Scenic Routes) 3: Potential effect on the landscape character and sense of place of: the Joostenberg Vlakte Cultural Landscape also referred to as LCA 2. Potential effect on the scenic amenity of: the R304 (S1: between the N1 and the crossing with the R312 Lichtenburg Rd)	Low	Low	Low	Low
Air Quality Impact Assessment								
Construction Phase	-		**Construction Phase**		Very Low	Insignificant	Very Low	Insignificant
Operational Phase	Low	Not assessed	**Operational Phase**		-		Low	-
Noise Impact Assessment								
Construction Phase	-		**Construction Phase**		Very Low	Insignificant	Very Low	Insignificant
Operational Phase	High	Medium	**Operational Phase**	**Scenario 2**	Low	-	Low	-
				Scenario 3	High	Medium	High	Medium
Socio-economic Impact Assessment								

Impact description		Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
		Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
Construction Phase	Traffic flows along access roads	Refer Transport Impact Assessment		Construction Phase	Traffic flows along access roads	Refer Transport Impact Assessment			
	Nuisance factors (dust & noise)	-	Very Low		Nuisance factors (dust and noise)	-	Low	-	Low
	Influx of jobseekers	-	Low		Influx of jobseekers	-	Medium	-	Medium
	Construction workers – local communities	-	Very Low		Construction workers – local communities	-	Low	-	Low
	Increase in local crime	-	Very Low		Increase in local crime	-	Low	-	Low
Operational Phase	Traffic flows along access roads	Refer Transport Impact Assessment		Operational Phase	Traffic flows along access roads	Refer Transport Impact Assessment			
	Sense of place	-	Very Low		Sense of place	-	Medium	-	Medium
	Increase in local crime	-	Very Low		Increase in local crime	-	Low	-	Low
	Risk of informal settlements	-	Very Low		Risk of informal settlements	-	Low	-	Low
	Nearby farming and business operations	-	Very Low		Nearby farming and business operations	-	Low	-	Low
	Surrounding property values – residential	-	Very Low		Surrounding property values – residential	-	Medium	-	Medium
	Bulk infrastructure requirements	-	Very Low		Bulk infrastructure requirements	-	Low	-	Low
Hydropedological Assessment									
-				Construction Phase	Sealed surfaces alter natural flow of water	Very Low	Very Low	Very Low	Very Low
					Reduced infiltration due to sealed surface	Very Low	Very Low	Very Low	Very Low
					Encroachment on interflow soils disrupt wetland recharge mechanisms	Very Low	Very Low	Very Low	Very Low
					Contribution of interflow soils to downstream watercourses likely limited	Very Low	Very Low	Very Low	Very Low
				Operational Phase	Hydropedological processes and wetland functionality	Unmodified	n/a	Unmodified	n/a
Agro-Ecosystem Impact Assessment									

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
The No Go Alternative refers to the scenario where future development is done within existing development rights. No farmland or land zoned for agriculture will be transformed in this alternative and thus there will be no impact on the agro-ecosystem.			**Construction Phase**	**Change in Productivity**	Not assessed		Negligible	Not assessed
			Operational Phase	**Change in Employment**	Not assessed		Insignificant	Not assessed
				Additional Environmental Impacts	Refer to Freshwater Ecological Impact Assessment			
Transport Impact Assessment								
The No Go Alternative 1 - Most of the study intersections currently operate at an acceptable LOS during peak hours.			**Construction Phase**	**Dust**	Refer to Air Quality Impact Assessment			
				Noise	Refer to Noise Impact Assessment			
				Increased Traffic flow	Low-Medium	Low	Low-Medium	Low
			Operational Phase	**PAL1B (Phase 1)**	-	Low	-	Low
				Phase 2	Low based on amended TIA in future to accommodate changes in intersection upgrades over time			
Poultry Biosecurity Assessment								
It must be noted that there has always been an airfield in the vicinity of the poultry farm and therefore many of the concerns about wild birds, rodents and people are existing biosecurity concerns pertaining to the County Fair breeder farm.			**Construction Phase**	**Dust**	-	Low	-	Low
				Noise	-	Low	-	Low
			Operational Phase	**Visual**	-	Medium	-	Medium
				Flies/ Rodents	-	Low	-	Low
				Aircraft Noise	-	Medium	-	Medium
				Vehicle Noise	-	Low	-	Low
				Light Pollution (vehicles and airport)	-	Low	-	Low
				Water issues	Refer to Geohydrological Impact Assessment			
				Attraction of wild birds	-	Low	-	Low
				Increased human traffic	-	Low	-	Low
				~~**Use of Biodigester (with manure)**~~	~~-~~	~~Medium~~	~~-~~	~~Medium~~
				Use of biodigester (without manure)	-	Low	-	Low
				Ammonia emissions from WWTW	Insignificant	-	Insignificant	-
Climate Change Impact Assessment								
Impact of the project on Climate Change								
			Construction Phase	**Emissions**	Medium	-	Medium	-

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
			Operational Phase	Direct operation Total Scope 1+2 emissions (up to 2050)	Low-Medium	-	Low-Medium	-
				Cape Winelands Expansion Project Total emissions (up to 2050)	Medium	-	Medium	-
				Global anthropogenic climate change	Medium	-	Medium	-
Impact of Climate Change on the project								
-			Operational Phase	Risk of wildfires	High	-	High	-
				Risk of Landslides	Medium	-	Medium	-
				Risk of water scarcity	High	-	High	-
				Risk of extreme heat	Medium	-	Medium	-
				Risk of Flooding Events	Low	-	Low	-
Aviation Glint and Glare Assessment								
-			Construction Phase	-				
			Operational Phase	Impact of solar glint & glare on various aviation receptors	-	Very Low	-	Very Low
Aviation Baseline Assessment Report and Site Sensitivity Verification								
-			Construction Phase	Annex 14 OLS surfaces	Refer to Annex 14 OLS report (Appendix 18)			
				Height restriction on adjacent land	Refer to Development Height OLS (Appendix 20)			
			Operational Phase	Airspace design and operation	Refer to CONOPS (Appendix 19)			
				Noise	Refer to Noise Impact Assessment			
				Ground transportation	Refer to Transport Impact Assessment			
				Socio-economic Impact	Refer to Socio-economic Impact Assessment			
Waste Impact Assessment								
-			Construction Phase	General Waste	Low	Low	Low	Low
				Organic Waste	Low	Very Low	Low	Very Low
				Hazardous & Industrial Waste	Medium	Low	Medium	Low
				Sewage	Low	Very Low	Low	Very Low

Impact description	Alternative 1 (No Go)		Impact description		Alternative 2		Alternatives 3 and 4	
	Significance Pre-Mitigation	Significance Post Mitigation			Significance Pre-Mitigation	Significance Post Mitigation	Significance Pre-Mitigation	Significance Post Mitigation
Operational Phase	Low	Low	**Operational Phase**	**General Solid Waste**	Medium	Low	Medium	Low
				Organic Waste	Low	Very Low	Low	Very Low
				Hazardous & Industrial Waste	Medium	Medium to Low	Medium	Medium to Low
				Sewage	Medium	Low	Medium	Low
				Brine from RO Plant	Low	Very Low	Low	Very Low
				Natural resource contamination	Low	Low	Low	Low
				Generation of atmospheric emissions and odors	Low	Low	Low	Low
				Soil Erosion	Low	Very Low	Low	Very Low
				Generation of dust and noise	Negligible	Negligible	Negligible	Negligible
				Visual impacts	Negligible	Negligible	Negligible	Negligible
				Consumption of resources (water)	Low	Low	Low	Low
				Attraction Birds and Vermin	Refer to Poultry Biosecurity Assessment			
				Leakage of potentially hazardous substances	Low	Very Low	Low	Very Low