PO Box 455

Somerset Mall

7137

Cell 082 883 8055
email: toni@bluescience.co.za

27 February 2023

TO WHOM IT MAY CONCERN,

Dear Sir/Madam

EXTENTION OF THE VALIDITY PERIOD OF THE ENVIRONMENTAL AUTHORISTION FOR THE PROPOSED SOLAR POWER GENERATION FACILITIES ON THE REMAINING EXTENT OF THE FARM VETLAAGTE NO. 4, DE AAR, NORTHERN CAPE PROVINCE: AQUATIC BIODIVERSITY IMPACT ASSESSMENT COMMENT

Background

The validity period of the Environmental Authorisations needs to be extended for two authorised solar PV facilities on Portion D and Portion E (and now called the Ukuqala Solar PV facility), within the Vetlaagte Farm (map attached). The EAs were issued in 2013 and will lapse in July 2023. This aquatic biodiversity impact assessment comment is intended to respond to the following requirements for the extension application:

- Undertake a desktop study of the initial baseline study undertaken in 2012 and describe the status (baseline) of the environment that was assessed during the initial assessment.
- Confirm that the current status of the assessed environment has not altered from the original baseline assessment or highlight any changes.
- Undertake Site Verification if needed, or refer to recent site visits undertaken within this area / knowledge of the area if a site investigation is not required.
- Confirm it there are new assessments and/or guidelines which are now relevant which were not undertaken during the initial assessment. If so, please address appropriately in the report or else confirm that this was already addressed during recent studies undertaken in 2021.
- Confirm if cumulative impact will occur - if no cumulative impact, make a statement, or else provide a description and an assessment of the surrounding environment in relation to new developments or changes in land use which might impact on the Mulilo De Aar PV project.
- Confirm if the initial impact rating undertaken during the initial assessment is still valid. If the mitigation measures provided in the initial assessment are still applicable and/or if any new mitigation measures should be added to the Environmental Authorisation if the DFFE decides to extent the commencement period as per the application

Summary of findings of Freshwater Assessment for the project, as included in the Environmental Impact Report dated February 2013

An Ecological Assessment was undertaken for the study by David Hoare Consulting, which included aquatic ecosystems. A summary is provided below:

The greater study area is situated in the primary catchment of the Orange River and in quaternary catchment D62D (Figure 34). The site is traversed by a drainage line, flowing from the south, originating on the farm Hartebeeshoek 31, crossing the farm Wag 'n Bietjie 5 and then crossing the farm Vetlaagte 4 from south to north on the eastern side. This drainage line joins the Brakrivier north west of the project area. The flow is non-perennial, with a weakly developed, wide shallow drainage canal. A smaller drainage line originates on the eastern corner of Vetlaagte 4, flowing mainly parallel to the main drainage line in a northerly direction, with the confluence near to the boundary of the farm (Wetcon 2012). The site falls within the Lower Orange Catchment Management Area.

The Giant Bullfrog is the only amphibian species with a distribution that includes the study area and which could occur on site. However, previous surveys in the area and communication with various landowners and residents in the area indicate that the species is not known to occur in this area.

The sensitivity classification is as follows (shown in Figure 1):
***High:** All of the watercourses on site are classified as having high sensitivity. They are protected according to the National Water Act (Act 36 of 1998). Ecologically, they are areas that provide moderate value ecosystem goods and services. In addition, one protected tree species is likely to occur primarily within these areas.*
***Medium-High:** Drainage areas that are not necessarily watercourses have been classified as having medium-high sensitivity. They are areas vulnerable to erosion and the effects of water-flow and also act as buffers for watercourses.*

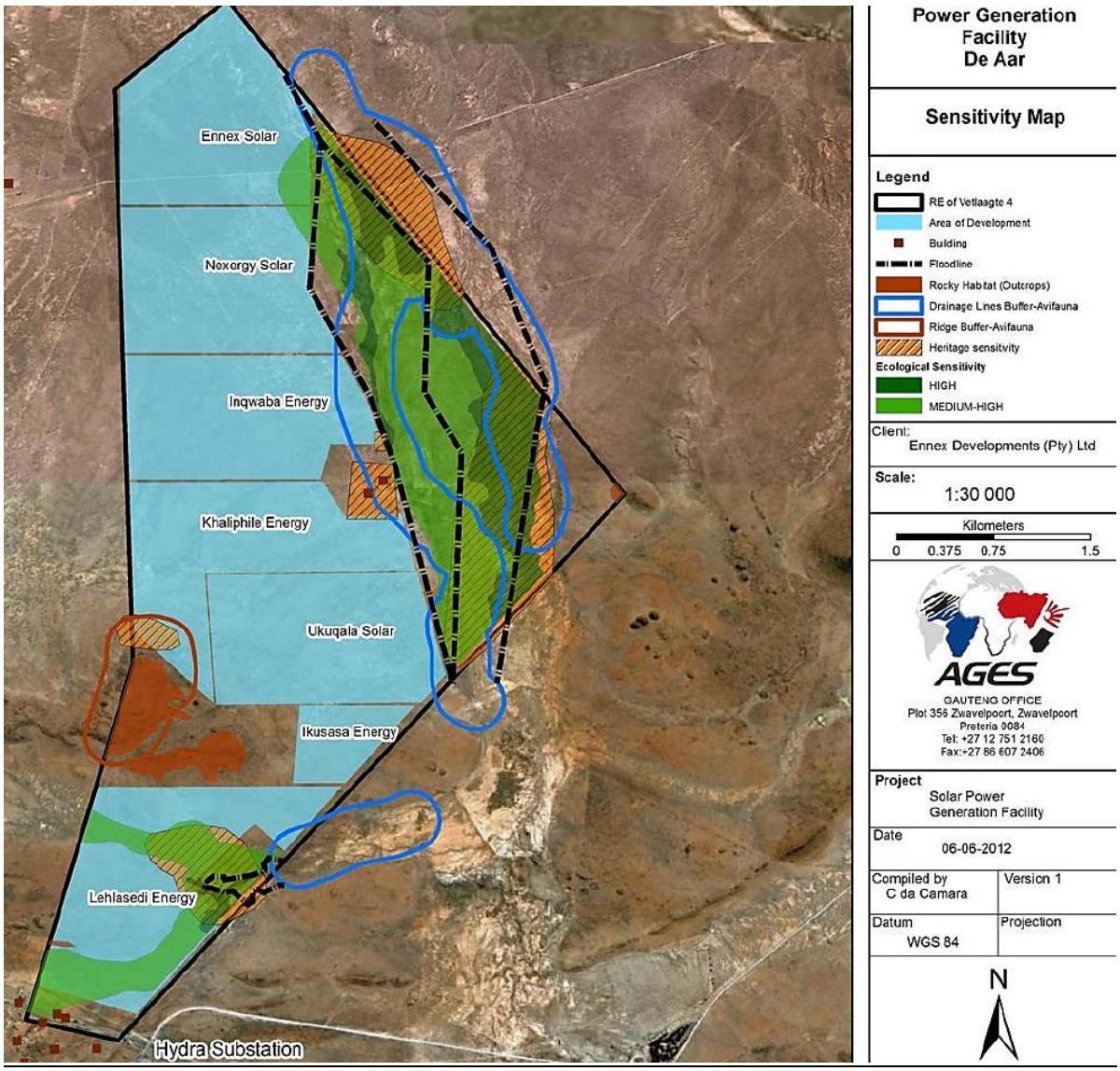

Figure 1. Sensitivity Map for the 2012 Environmental Impact Assessment

Impact assessment: Damage to watercourses

The site is in a very arid area. There are a number of dry stream beds and drainage areas, as well as a small local tributary of the Brak River, a non-perennial, but significant system that occurs to the east of the site. According to the National Water Act, these are classified as wetlands or water resources. Construction, if it was to occur within any of these areas, would lead to direct or indirect loss or damage to some of these areas, or changes to the catchment of these areas. Portion F directly affects a drainage area as well as an ephemeral watercourse. The impact is rated as Moderate without mitigation and Low with mitigation.

Description of Impact	With or without mitigation	Probability		Duration		Scale		Magnitude		Significance			
										Score	WOM		WM
Damage to watercourses	**WOM**	4	Highly Probable	4	Long term	2	Site	6	Medium	**48**	M		
	WM	3	Improbable	3	Medium Term	2	Site	2	Low	**21**			L

Damage to watercourses due to overhead lines: The impact will occur at the site of the proposed power line, but could have downstream impacts. The impact is rated as Moderate without mitigation and Low with mitigation.

Damage to watercourses due to overhead lines	**WOM**	3	Probable	4	Long term	2	SIte	6	Medium	**36**	M	
	WM	3	Improbable	4	Long term	2	Site	2	Low	**24**		L

Establishment and spread of declared weeds and alien invader plants: The shrub, Prosopis glandulosa, is potentially the most problematic. This species invades riverbeds, riverbanks and drainage lines in semi-arid and arid regions and has been recorded near to the site. There is therefore the potential for alien plants to spread or invade following disturbance on site. The impact is rated as Moderate without mitigation and Low with mitigation.

Establishment and spread of declared weeds and alien invader plants	**WOM**	4	Probable	4	Long term	2	Site	3	Low	**36**	M	
	WM	2	Improbable	4	Long term	2	Site	2	Low	**16**		L
Establishment and spread of declared weeds and alien invader plants due to overhead lines	**WOM**	4	Probable	4	Long term	2	Site	3	Low	**36**	M	
	WM	2	Improbable	4	Long term	2	Site	2	Low	**16**		L

Surface Water Impacts: Activities that impact on storm water are clearance of vegetation which could contribute to increased stormwater runoff, siltation, stockpiling of excavated soil, contamination of storm water during construction and operation, and the activities in the construction camp (re-fuelling, handling of chemicals etc.). Construction activities that may result in surface water pollution include spillages from construction vehicles and inappropriate toilet facilities for construction workers. The areas cleared of vegetation and impacted on by excavation must be managed to prevent siltation. During the operation phase the lack of vegetation and the construction of hard surfaces may result in increased surface water runoff which will have a negative impact on the drainage areas if not properly controlled.

Phase	Description of Impact	With or without mitigation	Probability		Duration		Scale		Magnitude		Significance		
											Score	WOM	WM
Construction	Contamination of groundwater due to fuel spillages	**WOM**	4	Probable	3	Medium Term	2	Site	6	Medium	**44**	M	
		WM	3	Probable	3	Medium Term	2	Site	2	Low	**21**		L
	Contamination of surface water by fuel spillages and other sources of pollution	**WOM**	3	Probable	3	Medium Term	2	Site	6	Medium	**33**	L	
		WM	3	Probable	3	Medium Term	2	Site	2	Low	**21**		L
	Increase surface water runoff and siltation of drainage areas	**WOM**	4	Highly Probable	3	Medium Term	2	Site	6	Medium	**44**	M	
		WM	3	Probable	3	Medium Term	2	Site	2	Low	**21**		L
Operation	Increase surface water runoff and siltation of drainage areas	**WOM**	4	Highly Probable	4	Long term	2	Site	6	Medium	**48**	M	
		WM	1	Improbable	4	Long term	2	Site	2	Low	**8**		L

Proposed mitigation:

- *Water courses must be avoided by the proposed development.*
- *Disturbance of indigenous vegetation must be kept to a minimum. Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible. Any alien plants must be immediately controlled to avoid establishment of a soil seed bank. An on-going*

monitoring programme should be implemented to detect and quantify any aliens that may become established and provide information for the management of aliens.

- *Place tower structures a minimum of 50 m from watercourses.*
- *Service roads in the servitude must be properly maintained to avoid erosion impacts.*
- *Drip trays (minimum of 10cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised.*
- *Spill kits must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spill kits must be made up of material/product that is in line with environmental best practice (SUNSORB is a recommended product that is environmentally friendly).*
- *All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material).*
- *The mixing of concrete must only be done at specifically selected sites on mortar boards or similar structures to contain run-off into soils rocky outcrops, streams and natural vegetation.*
- *The visible remains of concrete, either solid, or from washings, must be physically removed immediately and disposed of as waste to a registered landfill site.*
- *Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in bermed areas or under lock and key, as appropriate, in well ventilated areas.*
- *Sufficient care must be taken when handling these materials to prevent pollution. Training on the handling of dangerous and toxic materials must be conducted for all staff prior to the commencement of construction.*
- *Re-fuelling of vehicles must take place off site.*
- *The contractor is responsible for providing all sanitary arrangements for his and the sub-contractors team. A minimum of one chemical toilet must be provided per 15 persons.*
- *Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced; this must be done in consultation with the engineer as well as the Environmental Control Officer (ECO). Storm water, wherever possible, should be allowed to soak into the land in the area on which the water fell e.g. retention ponds*
- *The contractor must ensure that excessive quantities of sand, silt and silt-laden water do not enter the storm water system. Design of the storm water drainage system must ensure that the local and surrounding natural systems are not negatively impacted. Appropriate measures, e.g. erection of silt traps, or drainage retention areas to prevent silt and sand entering drainage or watercourses must be taken. These measures must be reviewed and audited by the ECO.*
- *"NO ENTRY" signs must be strategically placed along natural drainage lines which are in close proximity to the site.*
- *A Storm Water Management Plan must be developed and implemented during the construction and operational phases of the development.*

Cumulative Impacts: Loss of habitat within indigenous natural vegetation

Soil erosion and alien invasions may lead to additional loss of habitat that will exacerbate this impact. Although other PV power plants and wind energy facilities are proposed in the De Aar vicinity, the overall cumulative impact on vegetation is considered small in comparison to the extent of affected vegetation types. The impact can therefore be rated as low.

Description of Impact	With or without mitigation	Probability		Duration		Scale		Magnitude		Significance		
		Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	Magnitude	Score	WOM	WM
Cumulative impacts resulting in a regional loss or fragmentation of indigenous natural vegetation	**WOM**	3	Probable	4	Long term	3	Regional	3	Low	30	L	
	WM	3	Probable	4	Long term	3	Regional	2	Low	27		L

<u>Current status of the assessed environment</u>

Recent assessments of the site have been undertaken of the site in 2021 and 2022 to inform the Mulilo Du Plessis Dam PV, Paarde Valley PV and Mulilo Cluster 1 Substation and the Vetlaagte and Wag 'n Bietjie Main Transmission Substation grid connections. Below is a description of the aquatic features delineated and assessed from these assessments:

The rivers in the wider area comprise unnamed tributaries of the Brak River, a tributary of the Lower Orange River System that joins the river near Prieska. The larger watercourses all mostly drain in a north westerly direction. The rivers can all be characterised as foothill streams within the Nama Karoo Ecoregion. Due to the low level of impact on these watercourses, they tend to be still largely natural to moderately modified and vary in ecological importance from low for the smaller watercourses to moderate for the larger floodplain systems. It is recommended that the larger watercourses, floodplains and wetlands within the site are not allowed to degrade further from their current ecological condition of largely natural to moderately modified.

A buffer of 50m from the delineated edge of the aquatic habitats was recommended.

<u>Site Verification Assessment</u>

The Screening Tool has indicated that the wider area in which the powerline is proposed, is mapped as being of very high Aquatic Biodiversity Combined Sensitivity. The very high sensitivity is linked to the Strategic Water Source Area for groundwater that has been identified in the wider area. The proposed project is unlikely to impact the Strategic Water Source Area.

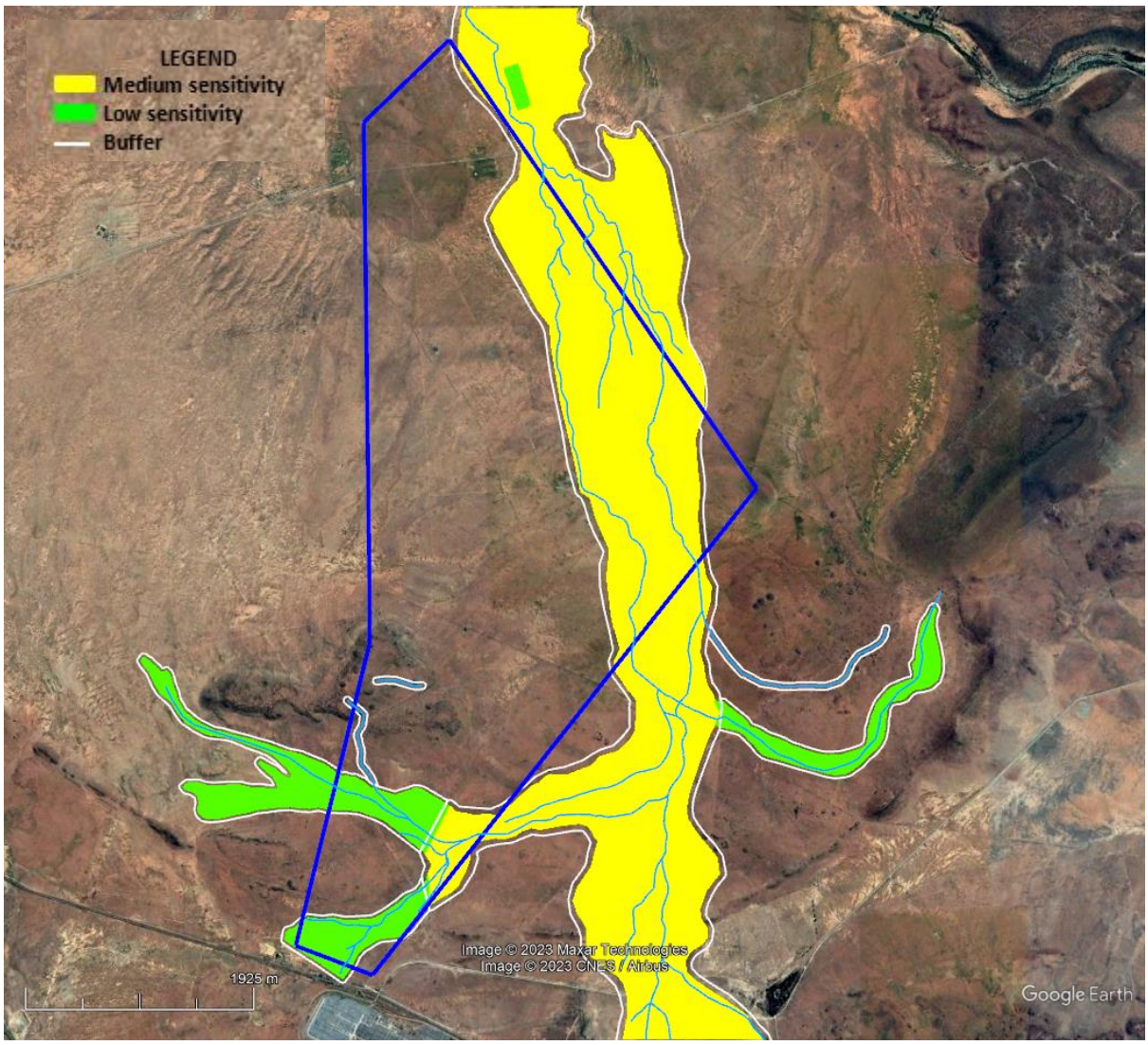

Figure 2. Google Earth image showing the aquatic sensitivity mapping for the site

Specialist review of the initial baseline study findings

While I, Antonia Belcher did not undertake the initial ecological assessment for the approve project, I have taken more recent aquatic biodiversity assessments for the site, that utilised recent techniques and protocols for such assessments. I can confirm that **the findings of these more recent assessments do not alter the findings and recommendations of the original ecological impact assessment**, dated 2012.

Comment on any changes to the aquatic ecosystems within the site

More recent field visits to the farm Vetlaagte No. 4, De Aar, undertaken in 2021 and 2022 indicated that there has not been any significant change to the aquatic features within the site from the original baseline assessment as they tend to be still largely natural to moderately modified ecological condition. **The ecological integrity of the river and wetland habitat at the site appears to be essentially unchanged from the 2012 assessment**.

Comment on the Site Verification and development layout for the site

The assessment has found the larger aquatic features on-site to be of moderate sensitivity and the smaller features to be of low sensitivity. The Very high Aquatic Biodiversity Combined Sensitivity

mapping of the screening tool differs as it is linked to the SWSA for groundwater. **No change to the approved PV layout is thus deemed necessary**.

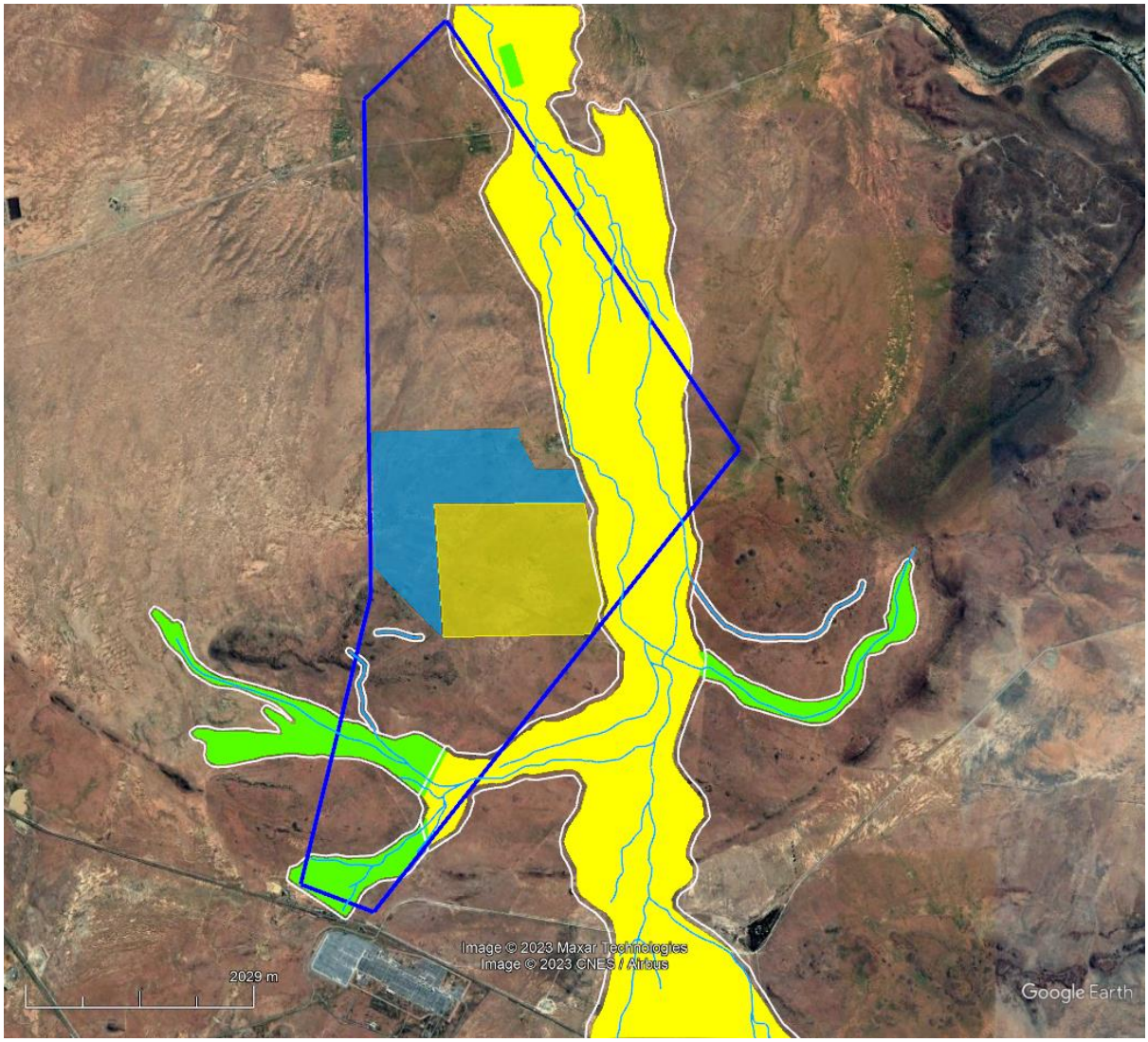

Figure 3. Google Earth image showing the mapped aquatic constraints together with the approved layout

<u>General comment on the change to impact significance</u>

Given the fact that the approved PV site is located outside of the mapped aquatic features and no physical changes are proposed, **the assessed impact ratings (Low with mitigation) are not likely to alter**.

<u>General comment on additional mitigation measures</u>

The mitigation measures stated in the original ecological impact study dated 2012 are deemed to be adequate (particularly considering the approved PV site is located outside of the mapped aquatic features). Thus, **no additional mitigation measures being required**.

Consideration of cumulative impacts

The cumulative impact of the project activities, together with other renewable energy projects and the existing activities in the area, could have the potential to reduce the integrity of the watercourses if not properly mitigated and managed. By implementing suitable buffers along the watercourses (30m for the smaller watercourses and 50m for the larger watercourses) and minimising the works within the river/stream corridors, the impact of the proposed project activities would be low and unlikely to impact the integrity of the aquatic ecosystems. The approved layout is located outside of the recommended buffer, together with the mitigation measures provided for **the approved project are thus deemed to be sufficient to prevent cumulative impacts resulting from the construction and operation of this project**.

Recommendations

The environment in terms of my specialist field has not changed significantly since 2012; therefore, there is **no objection to the extension of the validity of the Environmental Authorisation.**

Please feel free to contact me should you have any questions regarding the above.

Kind regards

Toni Belcher

Aquatic Ecologist