Basic Screening Assessment Report

Mercury Solar PV Cluster

2 December 2021

Compiled by

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CHAPTER 1: BACKGROUND

1.1 Background

Landscape Dynamics Environmental Consultants (Pty) Ltd was appointed by Mulilo Renewable Project Developments (Pty) Ltd to apply for Environmental Authorisation for the Mercury Solar PV Cluster, the number of PV farms to be determined.

This desktop Screening Assessment was done to determine the land available for solar related development. Input was obtained from the following specialist:

- Agriculture
- Avifauna
- Aquatic
- Fauna & Flora

The specialists were requested to provide no-go areas and to determine the sensitivity of the area form their different different fields of expertise.

1.2 Gaps and Uncertainties

The following specialists were not involved during this screening assessment:

- Heritage and Palaeontology
- High Level Risk Assessment (fuel storage and BESS)
- RFI Assessment
- Visual Assessment
- Bat Assessment
- Socio-economic Assessment
- Storm water
- Traffic Assessment

It is however not foreseen that these disciplines will impact greatly, or at all, on the selection of available land for development.

1.3 Methodology

A site visit was undertaken on 17 – 19 November 2021 by the following people

- Landscape Dynamics (Susanna Nel & Annelize Grobler)
- Fauna specialists (Leslie Brown)
- Flora specialist (Clayton Cook)
- Agricultural specialist (Johann Lanz)
- Avifauna specialist (Albert Froneman)
- Aquatic specialists (Toni Belcher)
- Mulilo (Christoff Le Grange)

A meeting was held on 17 November to discuss the background to the project, the objectives of the site visit and the required deliverables were confirmed.

It was requested that each specialist provide Landscape Dynamics with a kml/kmz file of the identified no-go areas / sensitivity map together with a supportive statement motivating their findings.

Meetings were held on the 18 November with the following three landowners:

- The Gossayn Family
- Mr Hans Pretorius
- Messrs Peet and Cobus Botha

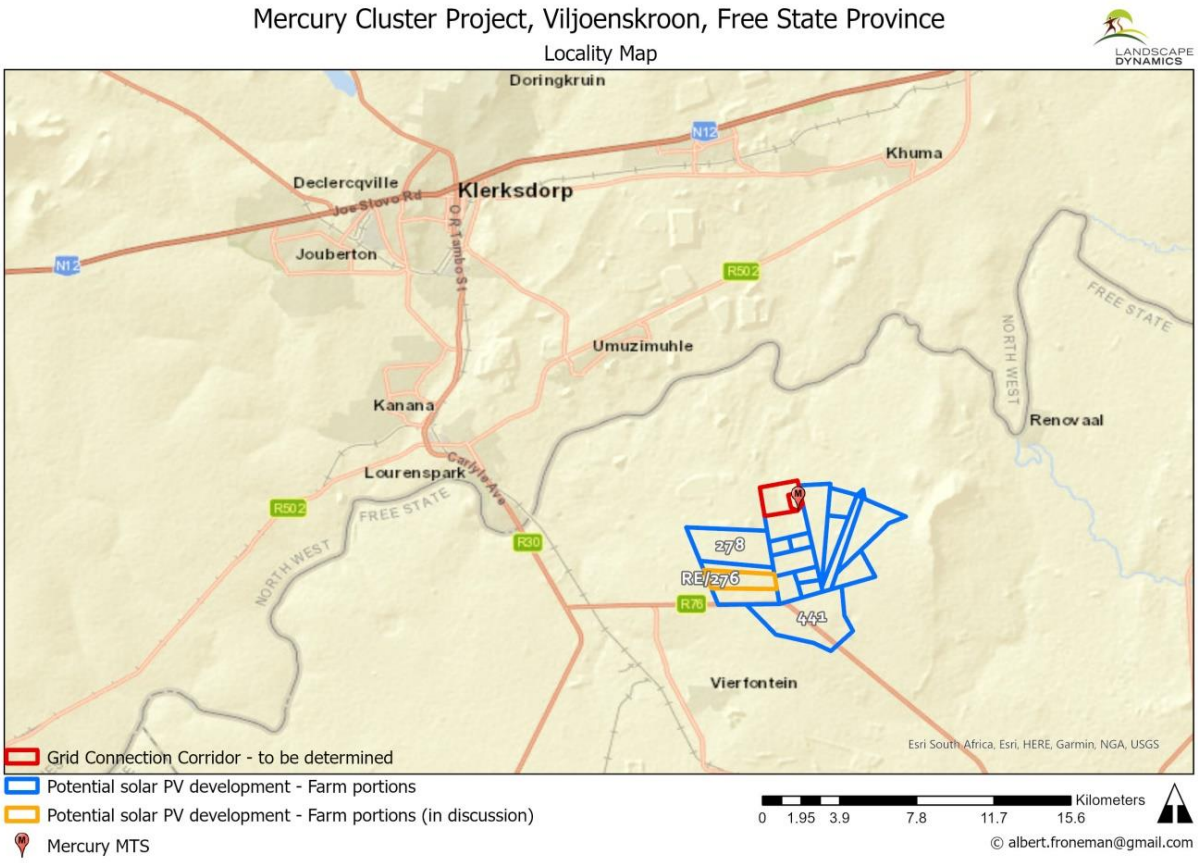
The purpose of these meetings was to obtain landowner input regarding the agricultural potential of their land. The meetings were attended by Landscape Dynamics, Johann Lanz and Christoff Le Grange.

The minutes of these meetings is attached as Appendix C.

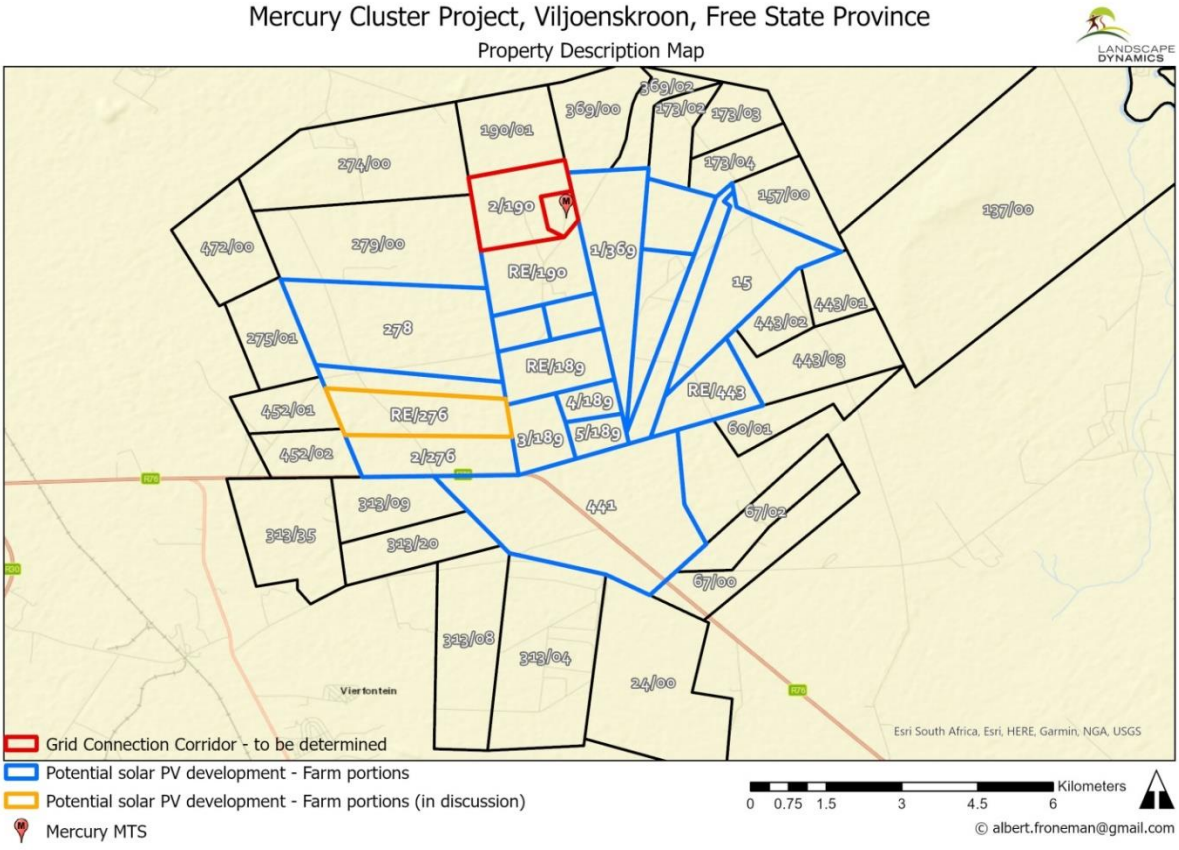
A second meeting was held between Landscape Dynamics and the specialists on 18 November to discuss the findings of the day and a compile a preliminary combined sensitivity map.

1.4 Locality

The sites are situated to the north of Viljoenskroon in the Free State Province.



1.5 Properties



CHAPTER 2: SPECIALISTS' SCREENING ASSESSMENTS

The results of the specialists' screening assessments are provided below. It was agreed between the specialists that the ecological sensitive areas overlap between all the disciplines, with the aquatic features being the main factor that increase the ecological sensitivity throughout the site.

2.1 Aquatic

A Freshwater Screening Assessment was undertaken by BlueScience (Pty) Ltd (Ms Toni Belcher) and is attached under Appendix D. The assessment is summarised and copied below.

Freshwater features

The freshwater feature at the site consists primarily of a small unnamed tributary of the Vaal River and several seep and depression wetland areas. The tributary of the Vaal River arises as two feed streams within the study area and drains northwards to join the Vaal River approximately 6km north of the site.

The tributary is seasonal with flow occurring during the summer rainfall period and for a short period thereafter. Associated with the headwaters of the feeder streams are seep wetland areas (Figures 2 and 4) while valley bottom wetland areas (Figures 3 and 5) occur along the length of the streams within the site. The watercourses and wetland areas are relatively disturbed and are in general surrounded by agricultural activities. However, due to the seasonal wetness of the aquatic features, the agricultural activities have largely avoided these areas and they still comprise mostly of indigenous vegetation with localised invasions of alien plants where there has been more disturbance.

Numerous depression wetlands (Figure 6) are scattered throughout the site, but particularly within the central portion of the site. Many of these depression wetlands or pans have been severely modified or even lost within the agricultural areas but there are still pockets of pans remaining that have also been avoided by agricultural activities due to their seasonal wetness. More significant pans (in terms of size) are located in the southern extent of the study area. The pan areas tend to be dominated by moist grassland vegetation.

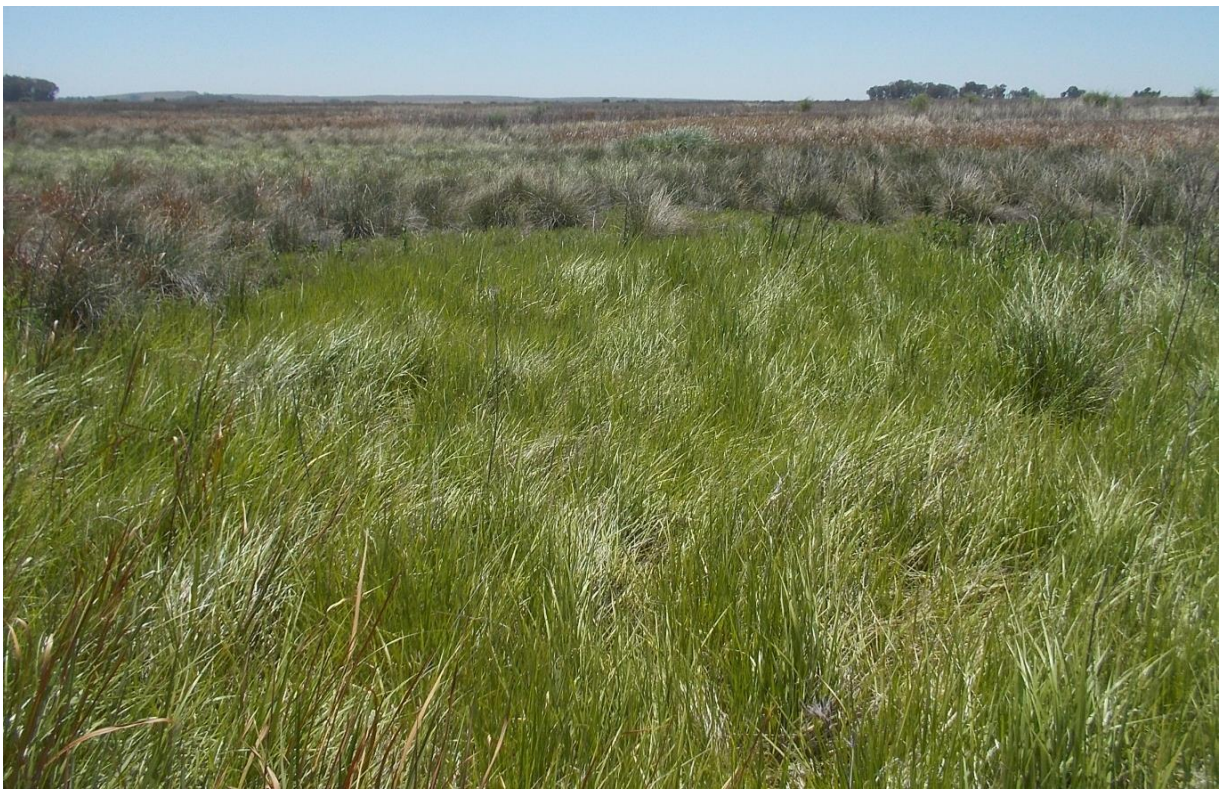


Figure 2: A view of the seep at the headwaters of the tributary within the study site, on the farm Fraai Uitzicht No.189 RE

Figure 3: View of the western feeder stream, downstream (north) of the study area and downstream of the seep shown above

Figure 4: View of the seasonally wet, grassland seep area associated with the eastern feeder stream

Figure 5: View of the eastern feeder stream, downstream (north) of the study area and downstream of the seep shown above

Figure 6. View of the depression wetland cluster that occurs on the farm Ratpan No 441 RE

Freshwater Constraints Mapping

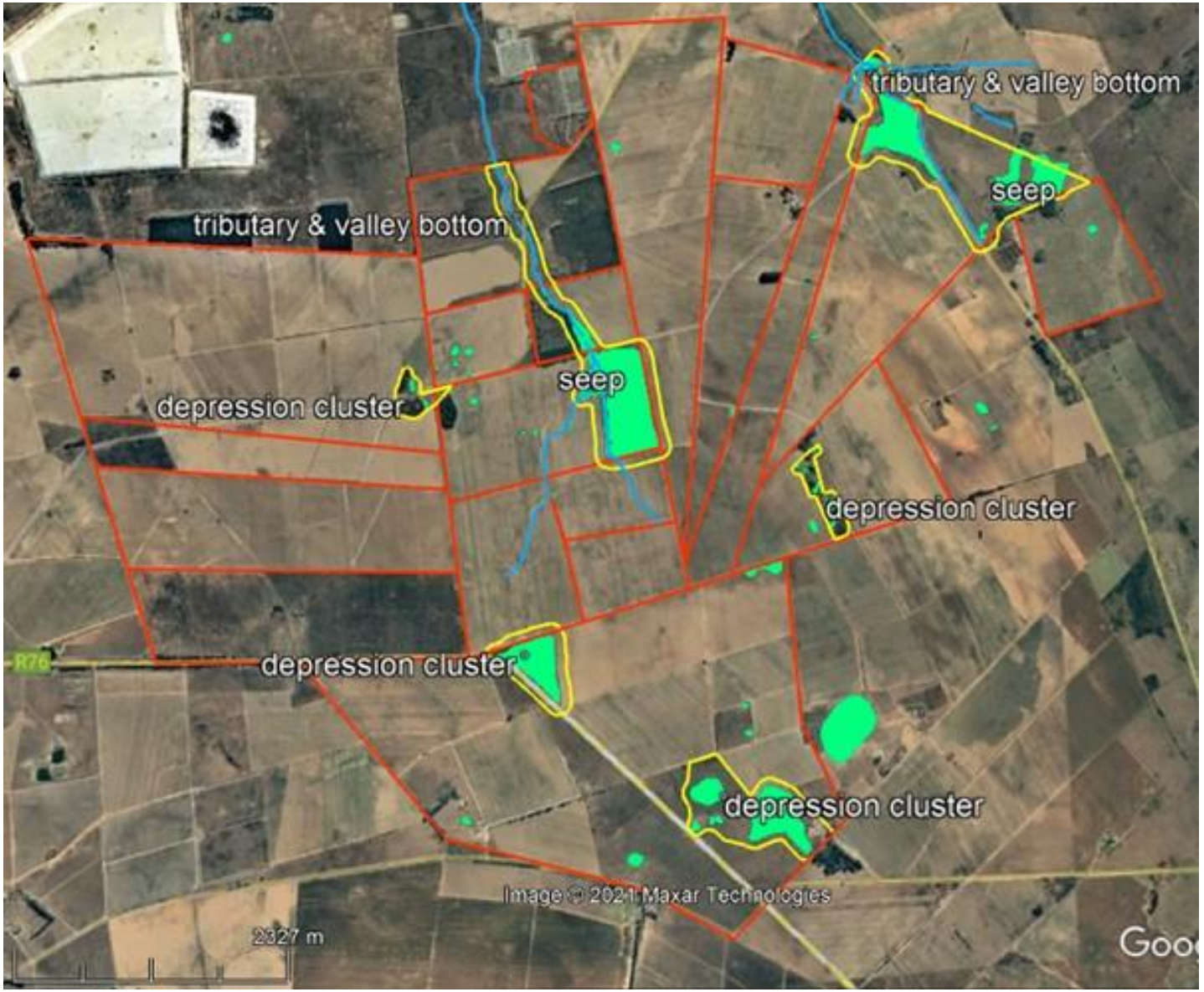
The following features have been mapped

- The two feeder streams of the unnamed tributary of the Vaal River (blue lines);
- The seep and valley bottom wetland areas (indicated in green adjacent to the watercourse channels);
- The depression wetland areas (isolated green polygons throughout the site); and
- The 60 to 100m buffer or aquatic no-go areas. The respective buffers were determined for the different aquatic features using the DWS buffer tool for wetlands.

Key aquatic constraints areas are associated with the watercourse corridors that link the Vaal River with the moist grassland seep areas and for the eastern watercourse the high lying hills. The more significant depression wetland clusters that occur within a less disturbed area have also been delineated as aquatic no-go areas.

Refer to the following page for the Freshwater Constraints Map.

Freshwater Constraints Map



Recommendations

Recommendations with regards to these areas are as follows:

- Activities within the delineated aquatic no go areas should be avoided as far as possible and any disturbed areas should be rehabilitated.
- Stormwater runoff from any adjacent developed areas should not be concentrated and discharged directly into these areas.
- Systematic (and selective) removal of invasive alien trees in the no-go areas adjacent to the development areas should take place. Care should be taken not to remove the patches of indigenous riparian vegetation remaining.
- If the proposed development areas are placed adjacent to the aquatic no go areas, a water use authorisation may likely be required for the proposed development activities.
- A follow-up site assessment is likely to be required that should take place in the wet season (summer) to verify aquatic constraints areas.

2.2 Fauna & Flora

A Broad Ecological Statement was compiled by Enviroguard CC (Prof Leslie Brown) and is attached under Appendix D. The Statement is summarised and copied below.

Vegetation units

Unit 1: Watercourse areas

The Watercourse areas comprise valley bottom wetlands and pans/depressions. These areas were not farmed previously due to the clay soil as well as the high water content especially during the wet season.

Unit 2: Semi-natural areas

The Semi-natural grassland is located in the north-eastern section of the study site. The area has been used for grazing in the past with sections degraded and others bush encroached from a vegetation ecological point. The vegetation is fairly homogeneous but does have some natural species present and is directly linked with a natural ridge area outside the property in the north.

Unit 3: Degraded areas

The Degraded areas consist mostly of old agricultural fields that have been left fallow and *Eucalyptus* plantations, while the section in the north-east has been planted with pasture grasses in the past and does not resemble natural vegetation. The vegetation composition of these areas is mostly pioneer weedy forbs with no natural vegetation remaining.

Although the vegetation is mostly in a degraded condition due to long-term agricultural practices in the area, the *Watercourse* areas and the *Semi-natural grassland* form relatively large corridors that does not only allow faunal movement, but also acts as disperse areas for the remaining natural plant species. These areas (units 1 & 2) would thus not be regarded as suitable for development.

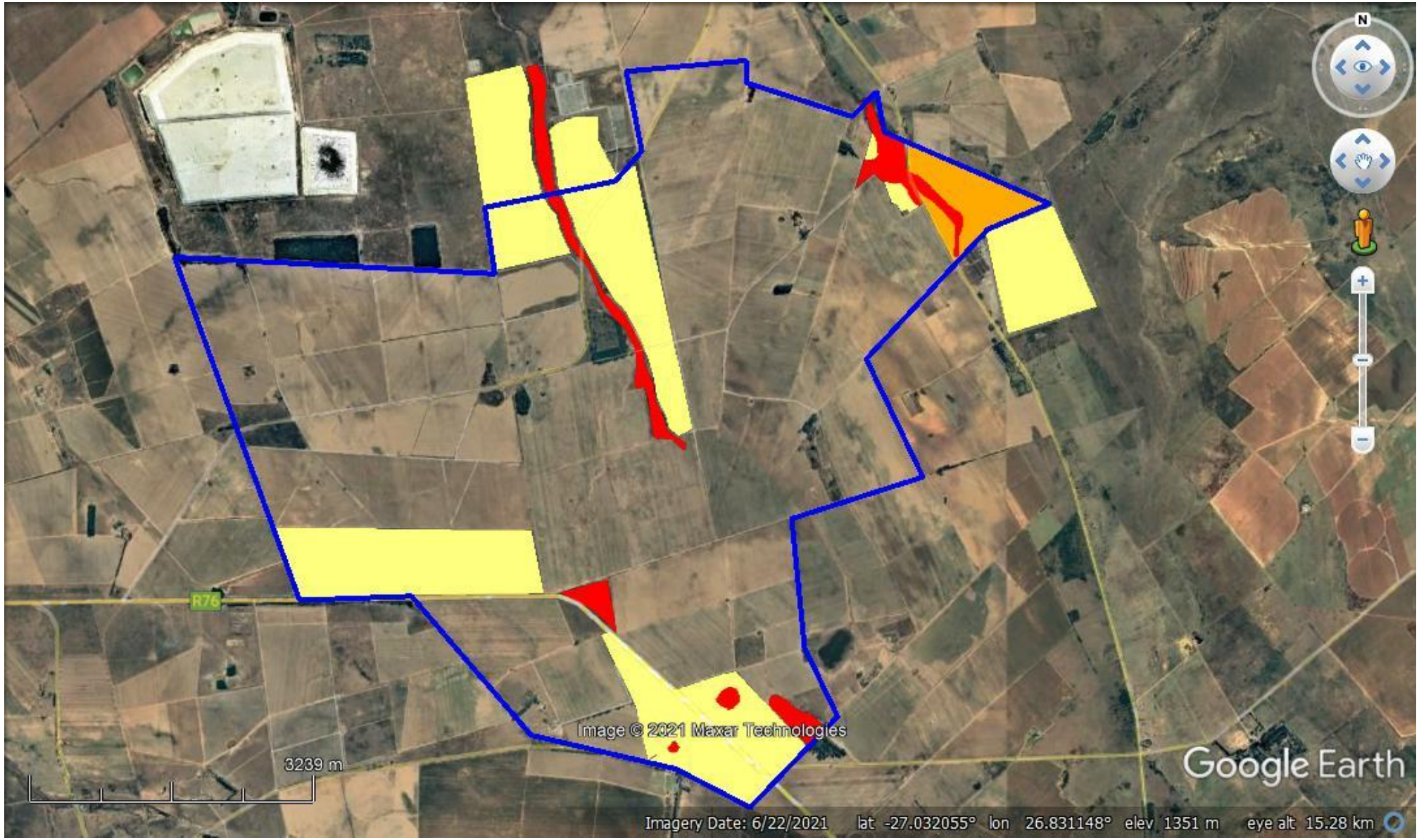
The degraded areas do not support a high diversity of faunal or floral species due to agricultural practices. These areas are regarded suitable for development with minimum negative effect to the natural environment.

Faunal assessment

All the valley bottom wetlands as well as the seasonal pan/depressions situated within open grasslands have the highest biodiversity/faunal value, especially for threatened wetland associated species such as Serval, Vlei Rat (grassland type), African Clawless Otter, Giant Bullfrog. The open mesic grasslands on the North-eastern boundary as well as adjacent low lying Ridge, with moribund termite mounds offers suitable habitats for South African Hedgehog, Coppery Grass Lizard and Striped Harlequin Snake.

Vegetation Sensitivity Map

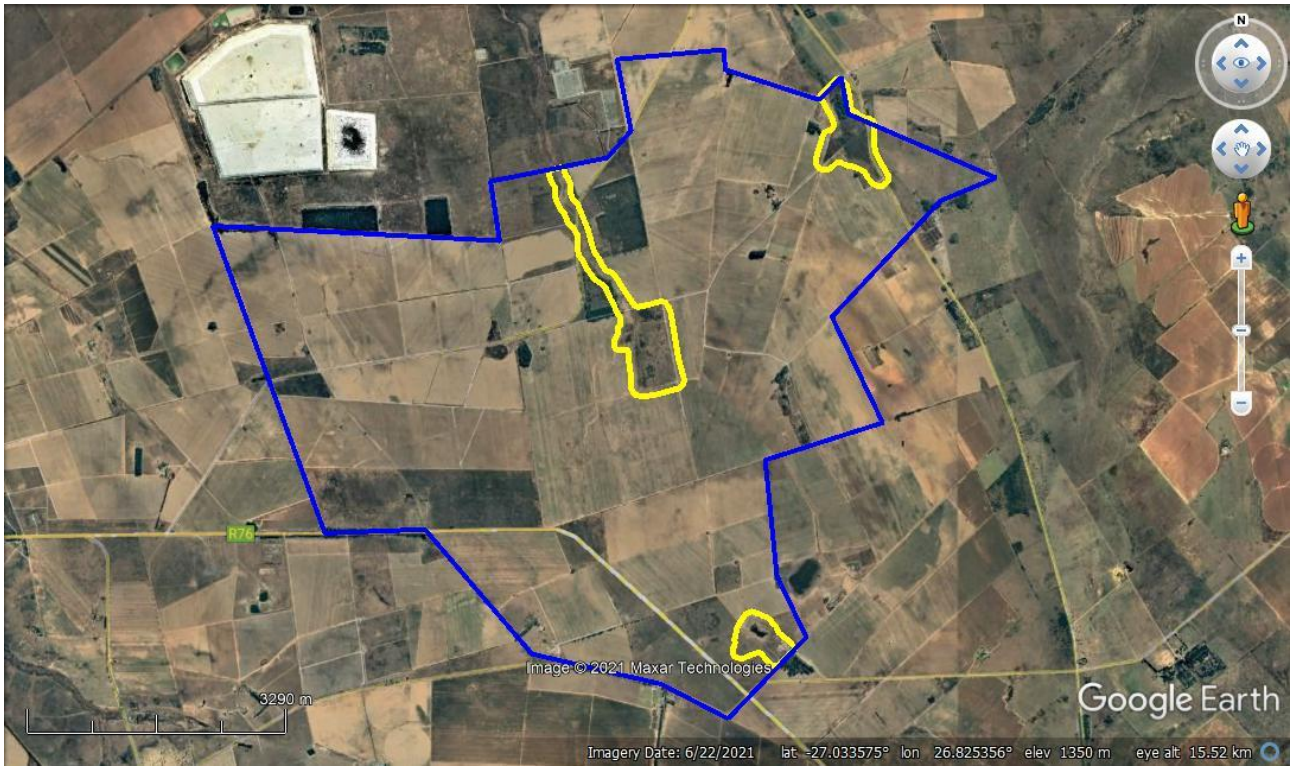
Red = high sensitivity; Orange Medium-high; Yellow = low sensitivity



2.3 Avifauna

The sensitivities / no go areas as shown in the map below are based on the sensitive wetland areas – this habitat type is primarily supported by the likely occurrence of the red list vulnerable African Grass Owl.

Avifauna Sensitivity Map



2.4 Agriculture

The most important aspect of this screening assessment was to determine the agricultural potential of the site. The DFFE Screening Tool rates the entire site as having a high agricultural potential and the Department of Agriculture, Land Reform and Rural Development (DALRRD) will not grant permission for solar development on agricultural land with a high sensitivity. The appointed agricultural specialist was therefore instructed to ground-truth the site and to write a Risk Assessment in order to determine the way forward for the Mercury Solar PV Cluster project.

The Agricultural Scoping Report is copied below and also attached as Appendix D.

Purpose of the scoping

The aim of this scoping assessment is to assess and categorise into different levels, the risk of being denied agricultural approval for solar PV development across the different parts of the available site.

The factors that influence agricultural approval

Allowable development limits for renewable energy on agricultural land are prescribed by NEMA's agricultural protocol. DALRRD's viewpoint, which is the foundation of the agricultural protocol and of the classification of agricultural sensitivity by the Screening Tool, is that land which is suitable for the viable and sustainable production of cultivated crops (arable land), should not be used for solar power generation, but rather conserved for crop production. This is justified by the fact that there is a scarcity of arable production land in South Africa, but there is an abundance of, particularly arid, non-arable land that could be used for solar development.

DALRRD does not necessarily have sympathy for the fact that the arid, non-arable parts of the country are limited for solar development by the available electrical grid capacity. This is because their mandate, in the silo view of government departments, is to preserve arable land, not to ensure electricity provision – that is another department's mandate, and it should not prevent DALRRD carrying out theirs.

The Allowable Development Limits are shown in the table below. *The implications for solar facilities are that they are only allowed on land of allowable footprint Category 6 in the table.*

Allowable development limits for renewable energy facilities on agricultural land as specified in the agricultural protocol

Allowable footprint category	Agricultural sensitivity on screening tool	Allowable footprint (ha/MW)	Definition of category
1	Very high	0.00	Land capability of 11-15; or irrigated land; or dryland horticulture or viticulture

Allowable footprint category	Agricultural sensitivity on screening tool	Allowable footprint (ha/MW)	Definition of category
2	High	0.20	***Land capability of 8-10 on existing fields
3	High	0.25	Land capability of 6-7 on existing fields
4	High	0.30	Land capability of 1-5 on existing fields
5	High	0.35	Land capability of 9-10 outside of existing fields
	Medium		Land capability of 8 outside of existing fields
6	Medium	2.50	Land capability of 6-7 outside of existing fields
	Low		Land capability of 1-5 outside of existing fields

*** The Screening Tool sensitivity categories in terms of land capability are based upon the Department of Agriculture's updated and refined, country-wide land capability mapping, released in 2016. Land capability is defined as the combination of soil, climate and terrain suitability factors for supporting rain fed agricultural production. It is an indication of what level and type of agricultural production can sustainably be achieved on any land. The higher land capability values (≥8 to 15) are likely to be suitable as arable land for the production of cultivated crops, while lower values are only likely to be suitable as non-arable, grazing land, or at the lowest extreme, not even suitable for grazing.

Almost all the land within the Mercury site, even those parts indicated as Risk Category 1 in this assessment, are within the *Allowable Footprint Categories 1 - 5*, which prohibits solar development. Within Categories 1 – 5 only wind energy facilities are feasible and therefore allowed. So in effect the protocol limits solar development to only Allowable Footprint Category 6 land.

Therefore, in order to get agricultural approval for any solar development on the site will require that DALRRD grants an exception to the development limits. To grant an exception it is likely that they will need to be convinced that the land is unsuitable or very marginal for crop production. It should be noted that concern for the conservation of agricultural land is not influenced by the current agricultural production from that land, but by its future potential for agricultural production. So even if no crop production is currently taking place on a piece of land, if it is considered suitable for potential future crop production, then it will be considered by DALRRD to be out of bounds for solar development.

Risk assessment of the likelihood of agricultural approval for the Mercury Solar PV Cluster

Risk Assessment: Grid connections

Grid connection infrastructure has negligible agricultural impact, regardless of the agricultural sensitivity of the site. This is because its direct, permanent, physical footprint that has any potential to interfere with or exclude agriculture, is insignificantly small. All agricultural activities can continue completely unhindered underneath transmission lines. Agricultural approval for gird connections is therefore a non-issue, and there are pretty much no risks for the Mercury project in this regard.

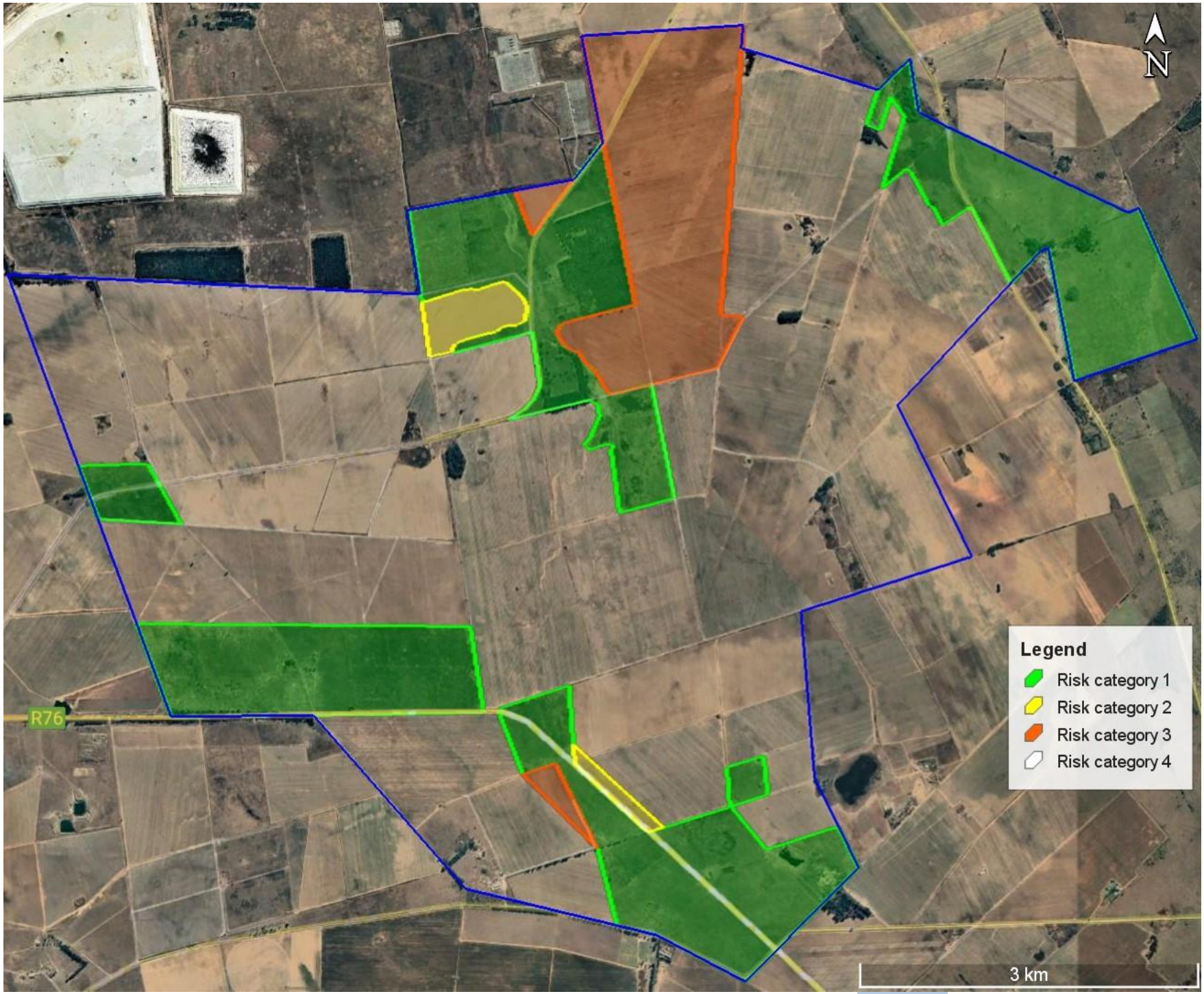
Risk Assessment: Solar facilities

As indicated above, solar is not permissible on almost all of the Mercury site in terms of the allowable development limits. There is therefore a risk associated with achieving agricultural approval for solar development on any part of the site. However, some parts of the site carry a lower risk than other parts of the site. This assessment has categorised the risk into four categories, presented in the table and map below.

Categories of risk associated with achieving agricultural approval across different parts of the Mercury site. It is important to note that none of the categories are without risk

Risk Category	Characteristics of land	Description of risk
1	Land which has not been used for crop production for an extended period of time and should therefore no longer be classified as cultivated land or allocated high agricultural sensitivity because of it. The fact that cultivation has been discontinued or was never done suggests the land has limitations that make it too marginal for economically viable crop production.	DALRRD is fairly likely to grant agricultural approval.
2	Land which is currently producing crop yields that are very marginal for economic viability.	DALRRD may grant agricultural approval
3	Land which is currently producing crop yields that are somewhat marginal for economic viability.	DALRRD may grant agricultural approval
4	Land which is currently producing crop yields that are completely economically viable.	DALRRD is highly unlikely to grant agricultural approval.

There is an additional complicating factor that increases the risk across all parts of the site. This is the so called 10% 'rule' that the land use committee of DALRRD, who are responsible for decision making for agricultural approval, seem to somewhat inconsistently apply to their decisions. This 'rule' states that a renewable energy facility may not result in the exclusion from agricultural use of more than 10% of a farm portion. Any viable solar facility on the Mercury site would fall foul of this rule. This issue is discussed further below.



Categories of risk associated with achieving agricultural approval across different parts of the Mercury site

Challenges with DALRRD decision making

Unfortunately DALRRD decision making is not transparent and seemingly often not backed up by logic. They will make their own decision, regardless of the findings and recommendations of an agricultural assessment, and it may well be in contradiction to the defensible logic that is presented in that assessment. Also unfortunately, they will only respond to an official application. They will not usefully discuss and indicate the likely success of an application, prior to it actually being officially submitted.

They seem to, very inconsistently, apply their 10% rule, even though its value to agriculture can logically be invalidated and it has definite disadvantages in terms of other environmental impacts, infrastructural practicalities and the costs to the country of renewable energy.

DALRRD has recently indicated that they do not think that the allowable development limits support the entirety of their mandate to protect agricultural land and that they therefore do not necessarily follow them and may in fact be more stringent in their decision making than the allowable limits are.

This leaves developers largely in the dark about what to expect in terms of agricultural approval.

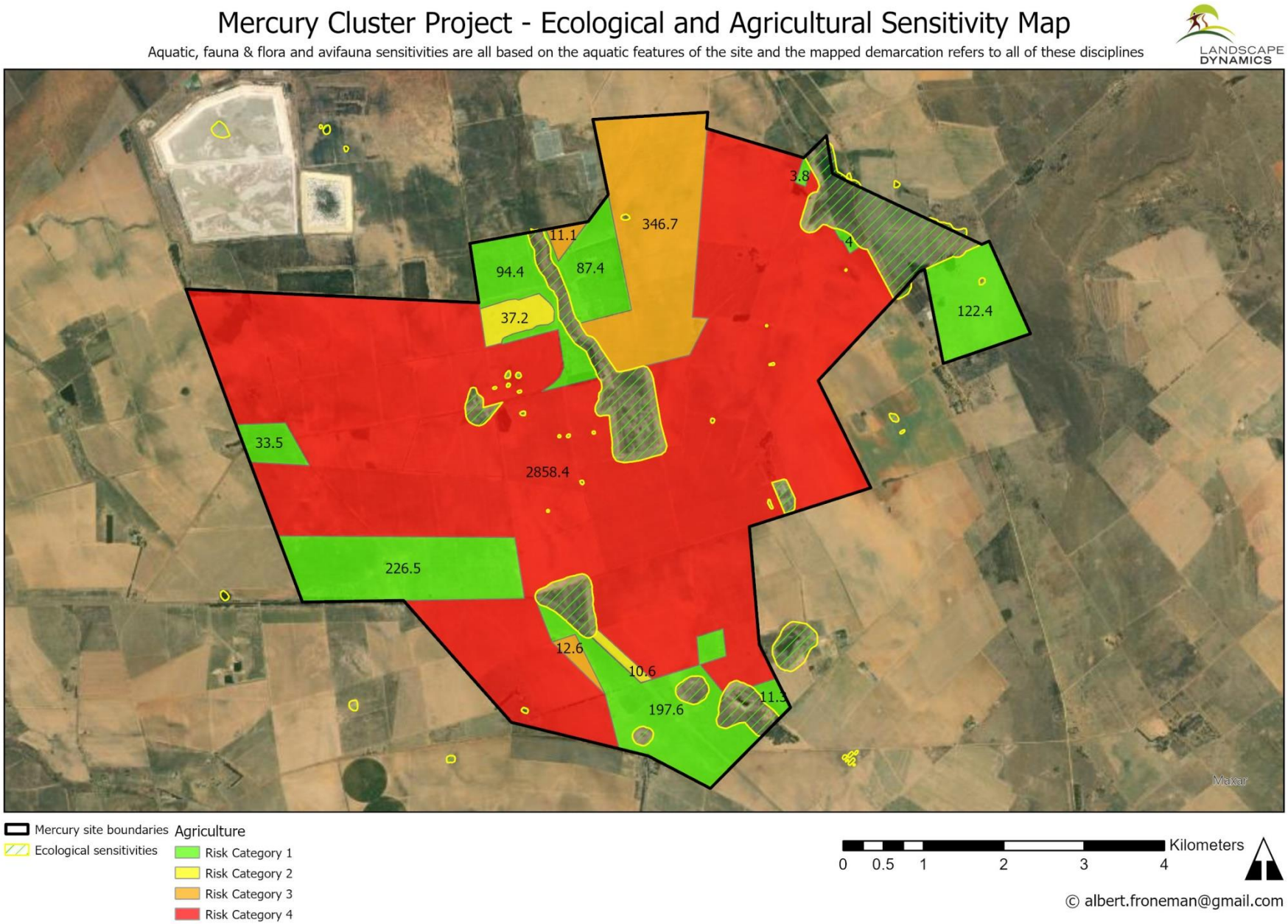
As a result of this, it is recommended, especially if projects exceed the allowable development limits, and possibly the 10% rule as well, that developers try to get a change of land use or SALA approval as soon as possible in the project development process. It would obviously be pointless to incur all the costs of project design and EA approval only to have the project stopped in its tracks by a denial of SALA approval.

Conclusions

Unfortunately no parts of the site are within the Allowable Development Limits, which would guarantee a high chance of achieving agricultural approval. There is therefore a risk associated with achieving agricultural approval for solar development on any part of the site. However, some parts of the site carry a lower risk than other parts of the site. This assessment has categorised the risk into four categories of increasing risk. It is however very difficult to quantify that risk because it is subject to the unpredictability of DALRRD decision making.

It is recommended that the developers try to get a change of land use or SALA approval as soon as possible in the project development process in order to limit the risk of incurring all the costs of project design and EA approval only to have the project stopped in its tracks by a denial of SALA approval.

CHAPTER 3: COMBINED SENSITIVITY MAP



The combined Sensitivity Map clearly indicates the ecological no-go areas combined with the agricultural land which has been identified as Risk Categories 1-4.

Note that DALRRD is fairly likely to grant agricultural approval for Risk Category 1 and *may* grant approval for Risk Categories 2 & 3.

Mercury Cluster Project - Ecological and Agricultural Sensitivity Map

Aquatic, fauna & flora and avifauna sensitivities are all based on the aquatic features of the site and the mapped demarcation refers to all of these disciplines

LANDSCAPE DYNAMICS

Mercury Farm portions
Ecological sensitivities

Agriculture
Risk Category 1
Risk Category 2
Risk Category 3
Risk Category 4

0 0.5 1 2 3 4 Kilometers

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CHAPTER 4: THE WAY FORWARD

4.1 The Way Forward

Based on the information provided in this *Screening Assessment*, Mulilo can now determine the risk in terms of the proposed Mercury Cluster solar developments.

Agricultural approval
Landscape Dynamics cannot comment on the legal issues regarding the applicability of SALA if the whole farm is being leased neither if the DALRRD needs to grant approval for the development. We however concur with Mr Lanz that it is unlikely that the DFFE will authorise the development without a formal approval or formal non-objection from DALRRD.

In the case of the Mercury Cluster this is even more so because the Screening Tool highlights the area as having a high agricultural sensitivity and almost all the land within the Mercury site, even those parts indicated as Risk Category 1, are within the *Allowable Footprint Categories 1 - 5*, which prohibits solar development.

The way forward
Mulilo can now, based on this risk assessment decide on the following:

- Continue with the SALA approval; or
- Continue with the application for Environmental Authorisation for the potentially viable areas; or
- Abandon the project

Landscape Dynamics recommends continuing with the EIA process based on available land in Risk Categories 1, 2 and 3. The worst case scenario is that only Risk Category 1 will be approved, which could still make the project viable for solar farm development.

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