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28 April 2021

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HIGHLANDS CENTRAL WEF, AMENDMENT APPLICATION: HERITAGE COMMENT
DEFF REF NO.: 14/12/16/3/3/1/1958

Dear Nicole

Thank you for providing the updated project information for the Highlands Central Wind Energy Facility to be located between 19 km and 24 km west of Somerset East and to the south of the R63, Eastern Cape. It is noted that the proposed amendments relate largely to new technology which allows for larger turbines to be installed and battery storage to be incorporated.

The specific proposed changes to the project are as follows:

Component	Approved	Proposed amendment
Number of turbines:	Up to 12	Up to 10
Generation capacity of the WEF	Up to 72 MW	No change
Generation capacity per turbine:	Up to 6 MW	Remove generation capacity per turbine
Rotor / blade diameters:	Maximum of 150 m	Maximum of 175 m
Hub height:	Up to 135 m	Up to 180 m
Tip height:	Up to 200 m	Up to 267.5 m
Foundation Size:	Up to approximately 25 m x 25 m in total and up to 5 m deep per turbine	Up to approximately 35 m x 35 m in total and up to 7 m deep per turbine
Hard Stand area per turbine:	5000 m ²	6000 m ²
Battery Storage	N/A (Not currently included in project description)	Battery Energy Storage System (BESS) adjacent to the substation on the temporary laydown area (footprint approximately 1ha and height approximately 8m).
Length of internal roads	Approximately 50 km	Approximately 45 km

Because of the newly proposed larger turbines, the turbine layout has also been amended to reduce the wake effects and to ensure that no-go areas for birds and bats are avoided. Two turbine locations have also been removed entirely. The road layout has thus also needed to change. As a result of the road changes, the substation yard has been rotated to fit the new road layout.

The following specifications pertain to the BESS being considered as part of the amendment application:

Type of Battery:	BESS comprising Lithium-ion, Sodium-sulphur, Vanadium Redox Flow or an alternative battery technology
Life span:	Assume the same as lifespan of facility
Motivation for inclusion:	Battery storage offers a wide range of advantages to South Africa including renewable energy time shift, renewable capacity firming, electricity supply reliability and quality improvement, voltage regulation, electricity reserve capacity improvement, transmission congestion relief, load following and time of use. In essence, this technology allows renewable energy to enter the base load and peak power generation market and therefore can compete directly with fossil fuel sources of power generation and offer a truly sustainable electricity supply option.
Footprint:	Approximately 1 ha
Connection type:	AC Connection on Grid
System Power:	Up to 870 MWh (The larger project option)
No. of batteries:	Variable, preferably containerized systems
Inverters used:	Specific type will be chosen according to performance requirements of use cases
Height of BESS:	Approximately 8m

The proposed amendments also include the correction of an editorial error in the project title on page 1 of the Environmental Authorisation (EA) and Condition 1 of the EA, where reference is made to 70 MW instead of 72 MW. This amendment however has no implications in terms of heritage impacts.

The original heritage impact assessment was compiled by the present specialist and is as follows:

Orton, J. 2018. Heritage Impact Assessment: Highlands Wind Energy Facility and associated grid connections, Somerset East Magisterial District, Eastern Cape. Unpublished report prepared for Arcus Consultancy Services South Africa (Pty) Ltd. Lakeside: ASHA Consulting (Pty) Ltd.

Almond, J. Palaeontological Heritage: combined desktop & field-based basic assessment. Proposed Highlands Wind Energy Facility and associated Grid Connection, Somerset East District, Eastern Cape. Unpublished report prepared for Arcus Consultancy Services South Africa (Pty) Ltd. Cape Town: Natura Viva cc.

Amendment assessment methodology

Before finalisation of the turbine and road layout presently under consideration, the developer produced several draft layouts which were sent to the specialists for review and comment. Any potential issues were raised and, as appropriate, solved by adjusting the layout. This iterative process ensured that a layout with minimal impacts to known heritage resources was put forward for the amended authorisation. In this way one heritage impact was eliminated along the road between Turbines 22 and 25.

The present opinion letter was compiled from the desktop with no new field research undertaken. It made use of existing data for the project site as compiled during February 2018. The new layout and existing heritage data are mapped below. Location data of significant fossil occurrences were provided by Dr John Almond for inclusion in this letter.

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Heritage considerations

- Turbine size and location

Larger turbines will always result in a greater visual impact to the cultural landscape and to any scenic routes in the vicinity of the site. The R63, which passes some 3.4 km north of the northernmost turbine of the proposed facility, is considered to be a route with aesthetic/scenic value. However, although the potential visual impacts to this scenic route would increase, the total number of turbines would be reduced by two, which reduces visual clutter. Overall, it is thus concluded that the scenic/visual impacts to the landscape will be slightly reduced, since the number of turbines likely affects this assessment more than their size does. The slightly lesser impacts will not affect the impact assessment, however, and all ratings remain valid both before and after mitigation. By comparison, the visual impact assessors note that the reduction in turbines does partially offset their increase in height and state that no change in their assessment ratings is required (Lawson & Oberholzer 2021)¹.

- Hard stands and turbine foundations

The proposed increase in size of these components could theoretically result in a higher likelihood of archaeological and palaeontological impacts occurring. However, it is noted that the original survey found very few significant sites and all of these have been avoided by the amended layout. Although a pre-construction survey is still required because the locations of archaeological and palaeontological sites is not fully predictable, the chances of impacts occurring are really little different to what they were before. All impact assessment ratings for both archaeology and palaeontology remain valid for the amended project. Note that potential impacts to graves were given the same significance ratings and these also remain the same for the amended project.

- Road length

It is noted that the road length is reduced due to the smaller number of turbines proposed. The roads generally have the greatest chance of disturbing archaeological and palaeontological resources because of their large overall footprint. The decreased footprint will serve to offset the increased turbine footprint, but not to the degree that the assessed significance of potential impacts to archaeology and palaeontology would be reduced. The visual impact of the roads to the landscape is minimal because they are low to the ground and the facility is largely lower in elevation than the R63 which further reduces their visibility. The significance ratings thus remain as noted above.

- New infrastructure: BESS

The addition of the BESS to the facility could result in further archaeological and palaeontological impacts as well as increased visual impacts. The significance of potential impacts to archaeology and palaeontology would not change, however, because the BESS is proposed to be located on the temporary laydown area. There would thus not be any new footprint to be disturbed. With regards to visual impacts, the BESS will be placed alongside the substation and operations/office area. This means that there would not be a new area

¹ Lawson, Q. & Oberholzer, B. 2021. Proposed Highlands North, Highlands Central and Highlands South Wind Energy Facilities, Eastern Cape Province. Report for Holland & Associates Environmental Consultants.

with buildings. It is also relevant to note that the BESS would be located some 4.8 km away from that road and is unlikely to be openly visible. The significance ratings thus remain as noted above.

Impact assessment considerations

Due to (1) the relatively minor nature of the proposed changes from the heritage perspective, (2) the nature of the cultural landscape and (3) the nature and distribution (both known and expected) of heritage resources found on site, it is found that all existing impact assessment ratings as shown in Tables 5, 6 and 7 of Orton (2018) and Table 7.1 of Almond (2018) must continue to apply. No changes to any of the impact assessment ratings are needed.


Similarly, because the changes are relatively minor, they do not have any bearing on the expected cumulative impacts which, for all heritage aspects, are still expected to be as shown in Tables 14, 15 and 16 of Orton (2018) and described in Section 7.3 of Almond (2018).

Conclusions

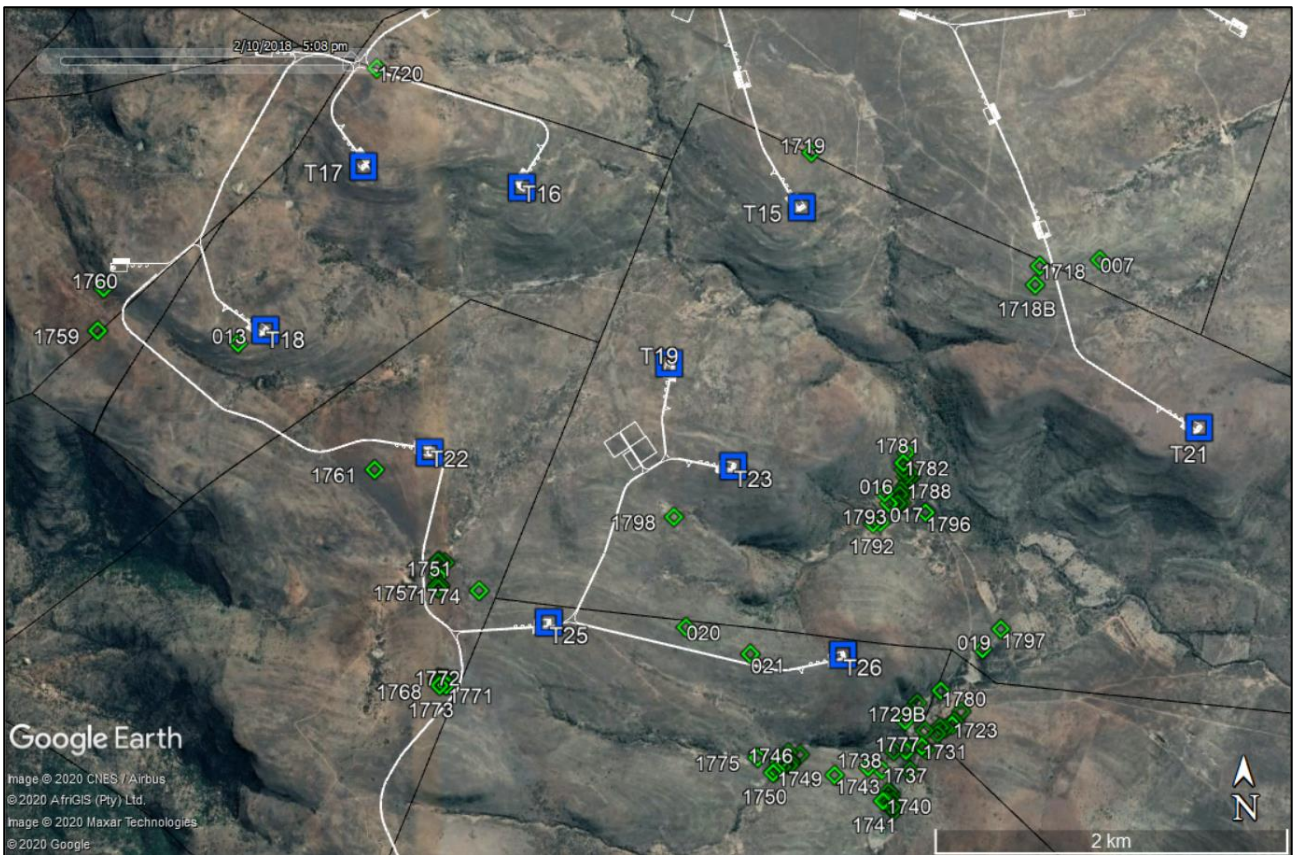
- It is thus the opinion of the heritage specialist that the proposed amendments will not result in any new or increased level of negative impacts to heritage resources and that there will be no change in the nature of impacts.
- There are no disadvantages to the proposed amended layout. In fact, there are two minor benefits in that (1) the overall footprint is decreased which means potentially fewer impacts to archaeological and palaeontological resources and (2) the reduction in turbines will very slightly reduce the visual intrusion of the facility in the cultural landscape.
- No changes to the proposed mitigation measures are required. The existing measures must continue to apply. It is worth emphasising that the archaeological pre-construction survey should be conducted as early as possible in order to facilitate planning of both any required mitigation and the construction phase of the project.

The proposed amended project should, therefore, be authorised in full.

Yours sincerely



Jayson Orton



Aerial view of the proposed Highlands Central WEF showing the following:

- Turbine locations – blue numbered squares
- Facility layout – white lines (note that the adjoining Highlands North WEF is also included but its turbines are not shown)
- Heritage resources (numbered green diamonds – excluding fossils)

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Aerial view of the proposed Highlands Central WEF showing the following:

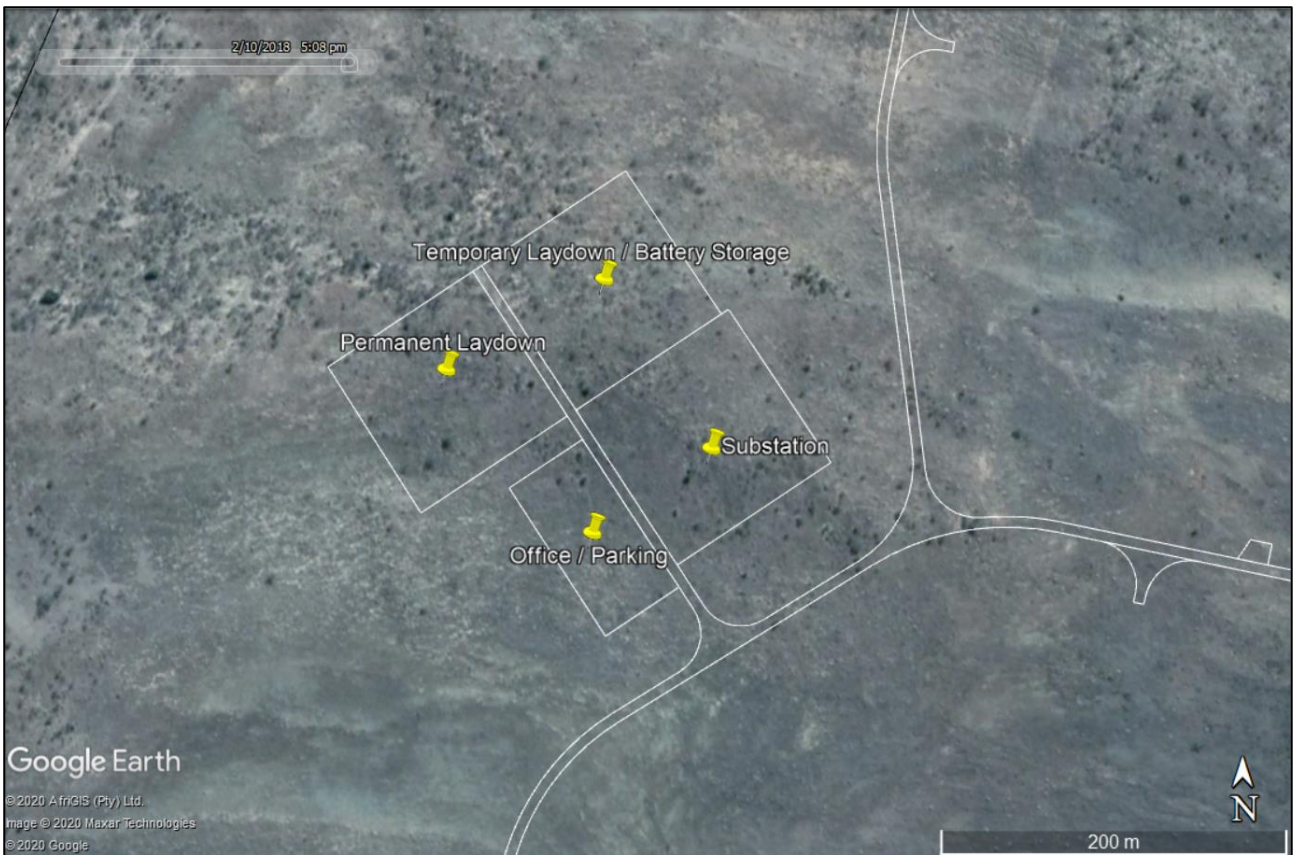
- Turbine locations – blue numbered squares
- Facility layout – white lines (note that the adjoining Highlands North WEF is also included but its turbines are not shown)
- Palaeontological resources (numbered black squares)

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Aerial view of the area in which the substation, offices, laydown areas and BESS would be located.



Aerial view of the one low significance heritage find that will be minorly impacted. Waypoint 1720 is a fence line that incorporates historical stone fence posts. It will only be affected where the road intersection is located.

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The fence line at waypoint 1720.



Aerial view of a heritage resource (northern cluster of waypoints, a small homestead and associated features) that was slightly impacted by an earlier iteration of the layout but which has now been completely avoided. The southern cluster (a stone kraal complex) was always avoided.

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