EXECUTIVE SUMMARY

ACO Associates cc was appointed by Arcus Gibb (Pty) Ltd, on behalf of the client SAGIT, to undertake an Archaeological Impact Assessment of the proposed Wolseley Wind Energy facility. The proposed facility comprising 32 turbines and associated infrastructure will be located on an area of approximately 1 961ha situated to the south of Wolseley and to the east of the R43 in the Worcester Magisterial District, Western Cape Province.

Notice of Intent to Develop (NID) was submitted to Heritage Western Cape in February 2011, and the following Interim Comment received in July 2011: “An HIA is required consisting of an Archaeological study; Palaeontological study, Visual Study with an integrated set of recommendations”.

This Archaeological Impact Assessment considers the Pre-Colonial and Historical Archaeology of the study area. Fieldwork was conducted in January 2011, April 2012 and August 2012.

- Diffuse scatters of Early Stone Age material was identified in ploughed lands. Similar artefacts have been widely reported in the Breede River Valley. They do not appear to be in context and mitigation in the form of surface collections is unlikely to contribute materially to our understanding of the ESA in the Valley. No mitigation is recommended;

- A few stone “cairns” were identified on the edge of ploughed lands in proximity to the artefact scatters. It seems unlikely that they represent burial cairns and it is more likely that these stone cobbles were removed from old agricultural lands. For this reason, no recommendations are proposed for the excavation of the cairns. However, should human remains be uncovered during the construction of the wind farm, then work should stop and Heritage Western Cape should be notified;

- With regard the potential impacts on historical archaeology, no mitigation is proposed. No historical material was identified during the survey. A buffer of 400m is being implemented around the homesteads and this should also protect any below ground historical archaeological material. If any historical material is uncovered during the construction phase of the development then the environmental officer responsible for monitoring the work should inform Heritage Western Cape.

The Archaeological survey supported the proposed facility. If there are any changes to the layout of the facility after submission of the EIA report, then further fieldwork may be required.
ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEA&amp;DP</td>
<td>Department of Environmental Affairs and Development Planning</td>
</tr>
<tr>
<td>ESA</td>
<td>Early Stone Age</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>HIA</td>
<td>Heritage Impact Assessment</td>
</tr>
<tr>
<td>HWC</td>
<td>Heritage Western Cape</td>
</tr>
<tr>
<td>LSA</td>
<td>Late Stone Age</td>
</tr>
<tr>
<td>MSA</td>
<td>Middle Stone Age</td>
</tr>
<tr>
<td>NHRA</td>
<td>National Heritage Resources Act</td>
</tr>
<tr>
<td>SAHRA</td>
<td>South African Heritage Resources Agency</td>
</tr>
</tbody>
</table>

GLOSSARY

Archaeology: Remains resulting from human activities which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

Early Stone Age: The archaeology of the Stone Age between 700 000 and 2500 000 years ago.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.

Late Stone Age: The archaeology of the last 20 000 years associated with fully modern people.

Middle Stone Age: The archaeology of the Stone Age between 20 000-300 000 years ago associated with early modern humans.

Palaeontology: Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Structure (historic): Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.
1. INTRODUCTION

ACO Associates cc was requested by Arcus Gibb (Pty) Ltd, on behalf of the client, South African General Investment and Trust (SAGIT), to undertake a Heritage Impact study to assess the impacts to heritage of a proposed wind farm consisting of approximately 32 wind turbines and associated infrastructure spread across a number of farms in the Breede River Valley, located to the south of Wolseley on the R43 in the Worcester Magisterial District (Figure 1).

The project is expected to generate approximately 50 – 110MW: and will comprise:

- Between 20 and 35 wind turbines with permanent red marker lights;
- The hub height of the turbines will be 90 - 100m and the turbine blade lengths will be approximately 50 – 60m
- Internal access roads of 6m in width from the N1/R43 to the site and turbines;
- Underground cabling between the turbines and to the substation at Romansrivier;
- A control room;
- A temporary camp and lay down areas around each turbine;
- The existing substation of Romansrivier will be used;
- Overhead transmission lines will not be required.

The final placement of the turbines will be confirmed through wind modelling and refined during the micro-siting process.

2. LEGISLATION

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources including palaeontological, prehistoric and historical material (including ruins) more than 100 years old (Section 35), human remains (Section 36) and non-ruined structures older than 60 years (Section 34). Landscapes with cultural significance are also protected under the definition of the National Estate (Section 3 (3.2d)).

Since the project is subject to an Environmental Impact Assessment, Heritage Western Cape (HWC) is required to provide comment on the proposed project in order to facilitate final decision making by the Department of Environmental Affairs and Development Planning (DEA&DP).
Figure 1: The location of the proposed Wolseley wind farm in the Breede River Valley to the south of Wolseley.
3. TERMS OF REFERENCE

This assessment considers the impacts to pre-colonial and historical period archaeology as per the requirements of Interim Comment of Heritage Western Cape (14 July 2011). They have asked for “An HIA is required consisting of an Archaeological study, Palaeontological study, Visual Study with an integrated set of recommendations”.

The assessment includes:

- Site visits and desk top study to determine the archaeological resources on the property and its immediate environs;
- An assessment of the possible impact of the proposed development on the archaeology;
- The rating of significance of the archaeological resources;
- An assessment of whether the proposed development will result in a negative impact on the archaeological resources;
- Recommendations for mitigation if necessary;
- An Archaeological monitoring programme during construction of the facility.

4. ARCHaeOLOGICAL BACKGROUND

4.1 Pre-Colonial Archaeology

Early Stone Age (ESA) artefacts are routinely found in proximity to old river terraces where the cobbles provided a good source of raw material for the manufacture of stone tools. Further downstream of the Breede River valley, near Worcester, low density scatters of ESA artefacts have been reported (Orton 2008). Generally though, little archaeology is found on the fynbos-clad mountain slopes, outside of rare rock shelters. Kaplan (2005; 2006; 2009) found sporadic Early and Middle Stone Age artefacts close to Wolseley. Kaplan (2004) also reported on a few Early Stone Age (ESA) quartzite flakes and split cobbles from the Romansrivier sub-station location. These tools were found in a severely disturbed context and are not considered to be important.

Large numbers of Early Stone Age tools have also been noted by Kaplan (pers comm.) in disturbed farmlands alongside the R301, while he has reported on San rock paintings in a large rock shelter near the source of the Waterval River, a tributary flowing into the Klein Berg River, on the road to Ceres. This is however, a considerable distance from the study area. In his survey for the realignment of the R43/R303 intersection, Orton (2009) reported on Later Stone Age (LSA) artefacts around sandstone outcrops and boulders on the farm Kleineberg.

4.2 Historical Archaeology

Kaplan (2005) observed no historical archaeological material in his surveys of farms in the Wolseley and Tulbagh area. In his assessment of the proposed upgrade of the R43 between the N2 and the R303 and the realignment of the R43/R303 intersection, Orton (2009) reported on historical archaeology in the form of fragments of glass and ceramics, usually in close proximity to labourers’ cottages.
5. METHODOLOGY

The pre-feasibility study comprised a short field trip undertaken in January 2011 and a brief desktop assessment. The desktop review summarised the background historical information on the study area as well as the archaeology of the valley. A further short site visit was undertaken by Jayson Orton of ACO Associates cc in August 2011 to determine if there were any fatal flaws which might impede the development of the wind facility.

This was followed by a more detailed site visit on the 2 April 2012 after a preliminary layout for the proposed turbine locations was made available. During this visit, ACO Associates undertook foot surveys in the fields and against the lower slopes of the mountains and visited farmsteads. They spoke to farm owners about the heritage of the area.

The second field assessment was conducted on the 23 August 2012, after the position of the turbine locations had been finalised, and the positions of the laydown areas, access roads and locations of the underground cabling had been determined.

The positions of the turbines, laydown areas, access roads and underground cabling were loaded onto hand-held GPS receivers (on the WGS84 datum) which enabled us to target the relevant areas. All heritage sites were recorded with the GPS, photographed and their significance rated (Table 1). No archaeological material was removed from the project area, but recorded and photographed in situ.

5.1 Assumptions and Limitations

No Stone Age archaeological research programmes have been conducted in the Valley and the database of information in this area is limited. Background information is restricted to impact assessments which describe the location of sites but provide little additional context.

Since Early Stone Age material has been found elsewhere in the Valley, it is assumed that it will occur around Wolseley as well. However, agriculture has been practised in the valley for at least two hundred years and it is assumed that Stone Age material will no longer be in original context.

There were no significant limitations to the field work. In some cases the turbines and access roads will be placed in agricultural fields and it is therefore not always possible to survey exact locations.

6. ARCHAEOLOGICAL FINDINGS

The combined tracks of the surveys undertaken in April and August 2012 are presented in Figure 2.

A spread of Early Stone Age material was recorded in a few fields in the study area (Table 1). They included a few quartzite stone tools in open space near the covered orchards; an isolated ESA quartzite flake in an old ploughed field; a scatter of ESA quartzite cobbles and flakes and cores found in an old field. A number of handaxes were recorded. The stone implements in the fields appear to have been brought to the surface by ploughing.
Figure 2: The tracks (turquoise) recorded during the surveys conducted on the property and the location of sites (yellow) described in Table 1.
Plate 1: Some flaked stone implements; Plate 2: An ESA handaxe.

Plate 3 & 4: Stone implements identified during the fieldtrips in April and August 2012.

In addition, a number of stone cairns (comprising a loose aggregation of large quartzite cobbles) were recorded in the same fields that contained the stone implements. It is highly likely that these “cairns” are the result of the clearing of fields for agricultural purposes or may also have been piled on top of underground water pipelines to protect them.

Plate 5: Heaps of stone cobbles in rough alignment.

However, the cairns have been recorded in the unlikely event that they may represent graves.

No Historical Archaeological material was recorded during the surveys.
Table 1: List of archaeological findings recorded during the surveys.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>GPS co-ordinates</th>
<th>Description of site</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>S33 28 10.9</td>
<td>Romansrivier family cemetery, containing at least 4 graves.</td>
<td>High</td>
</tr>
<tr>
<td>008</td>
<td>S33 28 40.9</td>
<td>Few quartzite stone flakes in an open space near the orchards.</td>
<td>Low</td>
</tr>
<tr>
<td>010</td>
<td>S33 29 31.3</td>
<td>Isolated quartzite flake, ESA</td>
<td>Low</td>
</tr>
<tr>
<td>011</td>
<td>S33 29 31.1</td>
<td>Quartzite handaxe, ESA</td>
<td>Low</td>
</tr>
<tr>
<td>012</td>
<td>S33 29 31.1</td>
<td>Stone cairn at edge of old lands, near a pine plantation</td>
<td>Low</td>
</tr>
<tr>
<td>013</td>
<td>S33 29 31.0</td>
<td>Stone cairn at edge of old lands, near a pine plantation</td>
<td>Low</td>
</tr>
<tr>
<td>014</td>
<td>S33 29 31.0</td>
<td>Stone cairn at edge of old lands, near a pine plantation</td>
<td>Low</td>
</tr>
<tr>
<td>015</td>
<td>S33 29 30.1</td>
<td>Scatter of ESA quartzite cobbles, cores and flakes distributed across an old field.</td>
<td>Low</td>
</tr>
<tr>
<td>016</td>
<td>S33 29 16.5</td>
<td>A quartzite handaxe in the farm road.</td>
<td>Low</td>
</tr>
<tr>
<td>017</td>
<td>S33 29 38.4</td>
<td>Cairn of quartzite rocks, not a grave</td>
<td>Low</td>
</tr>
<tr>
<td>018</td>
<td>S33 29 40.7</td>
<td>ESA core</td>
<td>Low</td>
</tr>
<tr>
<td>019</td>
<td>S33 29 40.7</td>
<td>ESA core</td>
<td>Low</td>
</tr>
<tr>
<td>020</td>
<td>S33 29 40.7</td>
<td>ESA flake</td>
<td>Low</td>
</tr>
<tr>
<td>021</td>
<td>S33 29 40.7</td>
<td>ESA flake</td>
<td>Low</td>
</tr>
<tr>
<td>022</td>
<td>S33 29 40.7</td>
<td>ESA flake</td>
<td>Low</td>
</tr>
<tr>
<td>023</td>
<td>S33 29 40.1</td>
<td>ESA flake</td>
<td>Low</td>
</tr>
<tr>
<td>024</td>
<td>S33 29 40.5</td>
<td>Handaxe</td>
<td>Low</td>
</tr>
<tr>
<td>025</td>
<td>S33 29 39.7</td>
<td>Handaxe</td>
<td>Low</td>
</tr>
<tr>
<td>026</td>
<td>S33 29 39.2</td>
<td>Isolated ESA</td>
<td>Low</td>
</tr>
</tbody>
</table>

7. IMPACTS IDENTIFICATION AND ASSESSMENT

It is not anticipated that the impacts on the archaeology of the area will be significant. Only one scatter of ESA material was identified on the farm Vaalvlei 324.

The construction of turbines, underground cabling and access roads in these fields will not result in the destruction of the artefacts. The main cause of impacts to archaeological sites is physical disturbance of the material and its context. The heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example, a deep excavation may expose archaeological artefacts, the artefacts are relatively meaningless once removed from the area in which
they are found. Large scale excavations may damage archaeological sites, and construction of roads and laydown areas can also contribute to high levels of impact.

However, the ESA artefacts which have been recorded in the fields are not considered to be in primary context due to the fact that agricultural activities have taken place in this area over many decades. In the case of the proposed wind energy facility, it is expected that impacts on the pre-colonial archaeology will be quite limited (local).

No historical archaeological material was recorded during our survey. Clearly historical archaeological material will be present in the vicinity of buildings and structures which are over 100 years old. However, the material is not likely to be threatened during the construction of the wind farm as a buffer of four hundred (400) metres has been implemented around each farmstead.

7.1 Construction Phase

There is a chance that the excavations for the tower bases could potentially impact buried archaeological material, similarly excavations of cable trenches and clearing of access roads could impact on material that lies buried in the surface soils.

7.2 Operational Phase

There are no anticipated impacts to archaeology during the operational phase of the facility.

7.3 Decommissioning Phase

There are no anticipated impacts to archaeology during the decommissioning phase of the facility

7.4 Cumulative Impacts

There are no plans at present to construct an additional wind facility in the Breede River Valley in the vicinity of Wolseley. However, if such plans were proposed at a future date, then the construction could impact on pre-colonial and historical archaeological sites. The potential visual impact could be high and further assessment would be required at that time.

8. POTENTIAL MITIGATION MEASURES

It is important to observe that the destruction of archaeological sites is irreversible and permanent. Once an archaeological site is destroyed, it cannot be re-created or restored to its original state.

With regard potential impacts on pre-colonial archaeological sites in the study area, no mitigation is proposed. Early Stone Age artefacts scatters have been widely reported in the Breede River Valley. The ESA stone implements consist of ephemeral scatters in old ploughed fields. They do not appear to be in context and it is unlikely that the collection of the stone tools for statistical measurement and analysis will contribute materially to our understanding of the ESA in the Breede River Valley. No mitigation is proposed.

There is very little evidence to suggest that the stone cairns found in proximity to the artefact scatters represent burial cairns and that they cover human remains. It is likely that these cairns are stone cobbles removed from agricultural lands to facilitate ploughing or to the excavation of a ditch to lay an underground pipeline. For this reason, no recommendations are proposed for the excavation of the cairns. However, should human
remains be uncovered during the construction of the wind farm, then work should stop and Heritage Western Cape should be notified.

With regard the potential impacts on historical archaeology, no mitigation is proposed. No historical material was identified during the survey. Historical material is generally located in close proximity to old habitations. While a number of farmsteads with historical structures occur in the study area, none are threatened by the proposed development. A buffer is being implemented around the homesteads and this should also protect any below ground historical archaeological material. If any historical material is uncovered during the construction phase of the development then the environmental officer responsible for monitoring the work should inform Heritage Western Cape.

9. IMPACT ASSESSMENT

9.1 Construction Phase

<table>
<thead>
<tr>
<th>Impact</th>
<th>Nature</th>
<th>Effect</th>
<th>Duration</th>
<th>Intensity</th>
<th>Reversibility</th>
<th>Impact on Irreplaceable Resources</th>
<th>Consequence</th>
<th>Probability</th>
<th>Significance</th>
<th>Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact 1: Pre-Colonial Archaeology</td>
<td>Impact Description: The construction of turbines, underground cabling and access roads will result in scatters of ESA stone implements being moved from their position. This may potentially result in loss of information</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without Mitigation</td>
<td>-</td>
<td>Low</td>
<td>Permanent</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Mitigation Description: No mitigation is required as there is no evidence that the scatters of ESA stone artefacts are in their original context and that excavations would result in the generation of new information. Indicate if mitigation is possible: Mitigation would include the collection of stone tools for statistical analysis or the excavations of archaeological stone tool scatters. However, there is no reason to support this.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With Mitigation</td>
<td>-</td>
<td>Local</td>
<td>Permanent</td>
<td>Negligible</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Improbable</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Cumulative Impact: There is an abundance of ESA artefact scatters in the Breede River Valley and the destruction of a few scatters in a field at Wolseley would not materially impact on our knowledge of the archaeology of the area. Description of impact and significance: Potential loss of information. However, the significance of the stone tool scatters is low.</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

| Impact 2: Historical Archaeology | Impact Description: The construction of turbines, underground cabling and access roads may potentially result in the destruction of below ground historical archaeological material. This may potentially result in loss of information |
| Without Mitigation | - | Local | Permanent | Low | High | Low | Low | Medium | Low | High |
| Mitigation Description: No mitigation is proposed as no historical archaeological material was recorded during the field surveys. Mitigation is therefore not possible prior to the construction phase of the development. |
| With Mitigation | - | Local | Permanent | Negligible | High | Low | Low | Improbable | Low | High |
| Cumulative Impact: The destruction of a number of historical archaeological sites in this area could result in significant loss of information. Description of impact and significance: Since no historical sites have been identified, the impacts are considered low. |

The impacts will not change for the Operational or Decommissioning Phase of the wind farm. Once the infrastructure related to the wind farm has been removed, the status quo will return.

9.2 Impact Assessment – Alternatives

No alternative proposals have been made with regard the construction of the Wolseley Wind Farm
10. PROPOSE AN APPROPRIATE MONITORING PROGRAMME

In view of the low significance rating ascribed to the pre-colonial archaeological material identified in the study area, no monitoring by an archaeologist is required.

However, during the construction phase of the development, significant pre-colonial and historical archaeological material buried below the soil surface, may be uncovered. If they are not adequately dealt with, they may be destroyed. If finds are accidentally uncovered, they must be reported to Heritage Western Cape by the environmental officer or senior person on site.

During the construction phase of the project, buried human remains may be uncovered. If they are not adequately dealt with, they may be accidentally destroyed. Human remains are protected by several sets of legislation which means that certain protocols must be followed in the event of a find.

If human remains are accidentally uncovered:

- Leave remains in place, do not remove anything;
- Cordon off the area;
- Notify the archaeologist at Heritage Western Cape;
- Contact an archaeologist who will indicate whether to inform the SA Police Services;
- If exhumation is required, a permit will have to be obtained from the SAHRA Burials Unit.

11. CONCLUSION

- Diffuse scatters of Early Stone Age material was identified in ploughed lands. Similar artefacts have been widely reported in the Breede River Valley. They do not appear to be in context and mitigation in the form of collections is unlikely to contribute materially to our understanding of the ESA in the Valley. No mitigation is recommended;

- A few stone "cairns" were identified on the edge of ploughed lands in proximity to the artefact scatters. It seems unlikely that they represent burial cairns and it is more likely that these stone cobbles were removed from old agricultural lands. For this reason, no recommendations are proposed for the excavation of the cairns. However, should human remains be uncovered during the construction of the wind farm, then work should stop and Heritage Western Cape should be notified;

- With regard the potential impacts on historical archaeology, no mitigation is proposed. No historical material was identified during the survey. A buffer is being implemented around the homesteads and this should also protect any below ground historical archaeological material. If any historical material is uncovered during the construction phase of the development then the environmental officer responsible for monitoring the work should inform Heritage Western Cape.

The Archaeological survey supported the proposed facility. If there are any changes to the layout of the facility after submission of the EIA report, then further fieldwork may be required.
12. REFERENCES


