

PALING YARDS WIND FARM GEOTECHNICAL & HYDROLOGY

GEOTECHNICAL

PURPOSE

URS Australia Pty Ltd (URS) was commissioned by UFWA in order to assess the potential geotechnical impacts in relation to the project.

The assessment has been prepared in order to:

- provide a preliminary understanding of the geological setting and its potential impact on footing type and size for turbines, monitoring towers, substations and transmission towers;
- consider groundwater and slope stability issues and their implications for footing types, trenching and access tracks;
- make a preliminary assessment of geotechnical constraints that could affect the construction of access roads, hardstand and lay down areas including the use of locally sourced materials;
- provide preliminary indication regarding electrical resistivity and thermal conductivity of site soils; and consider the potential for soil erosion and/or soil/groundwater contamination.

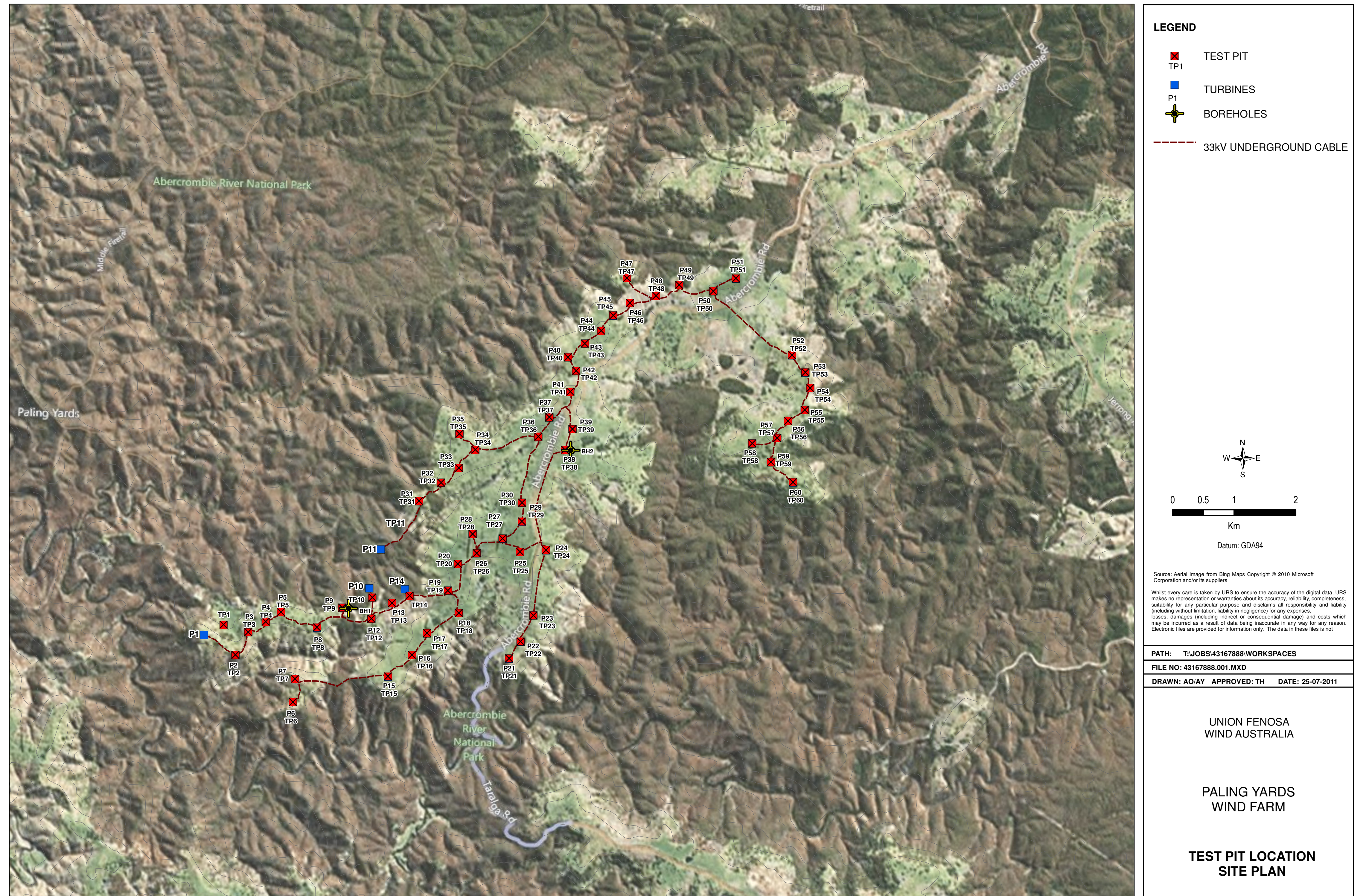


FIGURE 59 Geotechnical Investigations Test Pit Locations

KEY FINDINGS & IMPACTS

The report revealed that from the investigations carried out, there are no major geological issues that would prevent the construction of the proposed development, provided the recommendations of this study are followed and further investigation is undertaken at a later stage where warranted.

RESPONSE TO FINDINGS

Based on the preliminary investigations on site, the report outlined the following recommendations and measures to mitigate any adverse geotechnical impacts:

- further detailed subsurface geotechnical investigation and analysis be conducted to provide information for the detailed design of footings, access road, slope stability, and other associated infrastructure.
- access roads should be designed to stay on the ridge crests and remain clear of potential land slips.
- if crossing a potential land slip is required then the road formation should be designed to remove any potentially unstable material and found on stable bedrock.
- site works, including excavation and filling, be planned accordingly to reduce the risk of high concentrated surface water runoff.
- a Soil Erosion Management Plan be prepared as part of the Construction Environmental Management Plan.

HYDROLOGY

PURPOSE

Environmental Resources Management Australia (ERM) Pty Ltd was commissioned by UFWA to assess the potential hydrological impacts in relation to the project. A wind farm in a rural area can potentially impact on the hydrology of the area, notably on streams, drainage lines, dams and water catchments.

This hydrological assessment identifies potential water-related risks and appropriate management and mitigation measures to ensure that construction and operation of the project would not result in any unacceptable hydrological impacts.

KEY FINDINGS & IMPACTS

As identified in the Environmental Assessment, potential water-related impacts are primarily associated with the construction stage of the project. Once operational, the water usage requirements and potential impacts on water due to the project will be minimal.

Impacts On Water

ERM note that the potential soil and water impacts of the project relate mainly to:

- construction activities such as road and turbine construction;
- trenching for service installation;
- production and delivery of concrete (and managing concrete wastes);
- storage and handling, or incidental spills, of fuels, oils, concrete wastes and other
- hazardous substances; and
- inadequate management of the site compound facility's waste water and sewage runoff.

The installation of wind turbine infrastructure is focused on high elevation areas, avoiding drainage lines. All disturbance areas associated with turbine construction would be located greater than 20 metres from all watercourses and would be significantly further away from third order and higher order watercourses.

There are no instances where proposed access tracks are required to cross significant watercourses that would require construction of bridges or culverts. Further, there are no crossings over third order or higher watercourses. Similarly, the Northern Transmission Line route does not cross any third order or higher watercourses.

Water Requirements of Construction

ERM estimates that the total water demand over the 12 month construction period will be approximately 30 megalitres. ERM assessed that the overall impact on water resources is expected to be negligible.

The total amount of water required for the project will depend on the time of year for construction, moisture present in the ground, final foundation design, and final road design. Water use during the operation of the project is negligible.

A number of water supply options have been identified for the water required during construction, the key options being:

- surface water collection from existing (or new) dams;
- groundwater pumping from existing (or new) bores;
- water abstraction from a nearby permanent water source (i.e. Abercrombie River); and
- tankering water to site.

UFWA will consult with the NSW Office of Water in determining the preferred water supply option for the project and to ensure that all regulatory requirements are addressed and all required water access licences are obtained.

RESPONSE TO FINDINGS

Through appropriate management of construction activities, such as erosion and sediment control, hazardous material storage and handling, and spill emergency response and clean-up procedures, ERM note that potential water-related impacts could be contained on site and prevented from impacting watercourses. These measures will be outlined in a detailed Soil and Water Management Plan (SWMP) to be prepared prior to construction. ERM specifies a detailed list of management and mitigation measures to address potential soil and water impacts in the Environmental Assessment.



PHOTO Abercrombie Road (south) (Proposed View)