8. WATER

Director-General's Requirements - the EA must include:

1. an assessment of the potential impacts of the project on water supply, surface flows and groundwater, including:

2. details of the site water demand for the life of the project, and the availability of supply to meet this demand;

3. details of the impacts associated with construction on river crossings, adjacent water users, basic landholder rights and groundwater-dependent systems; and

4. details of any proposed interception of groundwater during construction, including predicted dewatering volumes, drawdown zones, water quality standards and disposal methods.

8.1 SUMMARY OF OBJECTIONS

Water: Flyers Creek Wind Turbine Awareness Group (FCWTAG) objects to the Flyers Creek Wind Farm proposal:

8.1.1 The water studies in the Environmental Assessment are not substantial and there has been little attention to water supply, surface flows and ground water.

8.1.2 Protection of the water via surface flows, in the event of an oil spill or other accident with hazardous material, is not detailed sufficiently.

8.1.3 The site water demand takes no account of water required in the event of fire.

8.1.4 There is no assessment of the leaching of heavy metals, and other components, from the concrete footing over the life span of the wind turbine, or of the decades following.

8.2 WATER SUPPLY, SURFACE FLOWS AND GROUND WATER

8.2.1 Although the Environmental Assessment contains some detail of creeks (ephemeral and permanent) there has been little discussion of ground water. The EA describes

fault lines to the west and the east of the wind turbine site, with minor fault lines within the development area. Yet ground water is significant and very variable throughout this whole area. It would seem that most of information about water has been obtained by desk top review. An idea of groundwater bores and uses would provide additional information on groundwater in the locality.

8.2.2 Local knowledge is informed for instance about the now defunct Browns Creek Mine which pushed through into a significant subsurface source of water unexpectedly resulting in the complete flooding of the mine. As a consequence the mine can not longer be operated and the site is now being rehabilitated by Australian Native Landscapes. There is no prospect of the mine being operational again.

8.2.3 In terms of mapping the area for water resources it would be useful to differentiate on the maps between ephemeral and permanent creeks. This would enable planning for surface works and tracks to be more focused. Knowledge of the springs throughout the area would also be an advantage. Farms in particular rely on springs for water supply and to fill dams.

8.2.4 Cadia Valley Operations, to the west, has a significant impact on subsurface geometry, and has procedures in place to minimise or eliminate any adverse affects of its mining operations on the water table. Nevertheless there are connections between ground water zones and a considerable volume of ground water passing through the development site at various times of the year, particularly in years of high rainfall (such as 2010 and 2011). Contamination of ground water will always be a problem when there industrial activities operating on the surface.

8.2.5 Given that groundwater will eventually find its way into the Belubula River and then the Lachlan River any contamination could have serious consequences. The Lachlan River is the water supply for several towns along its length.

8.2.6 Surface water may potentially result in a problem of contamination if there are soil or industrial product spills. Oil spill containment structures are discussed, but it does not say they will be bunded and constructed of impervious material.

8.2.7 The Environmental Assessment mentions an earth dam as secondary containment, but will it be satisfactory when there is a big storm filling the oil spill containment structure as well as the dam?

8.3 SITE WATER DEMAND

8.3.1 The EA also states that the water requirements will be minimal once the wind turbine complex is operational. Water is to be provided by rain run off for the most part.

There is no mention of water supply in the event of fire, either turbine fires or bush fires. While there is any possibility of such fires the supply of the water required to secure their extinguishment needs to be readily available (See Section 12: Hazards and Risks). This does not appear to be considered in the EA.

8.4 EROSION AND SEDIMENT CONTROLS

8.4.1 The Soil and Water Management Plan is not available for discussion.

8.4.2 Erosion and sediment controls are mentioned but will they be in accordance with the Landcom "Managing Urban Storm Water: Soils and Construction", ("Blue Book" Manual). This manual provides guidance in non-urban areas and is the usual reference for this type of work.

8.4.3 In Section 7.6.3, measures to manage access roads crossing water crossings will be determined "during the design phase of the project". When will the design measures for underground cables crossing watercourses be determined?

8.4.4 In Section 7.6.4, a septic system is discussed. A septic system may not be suitable for the site and will be dependent on soil type, rock, slope etc. This will be determined in an on-site effluent assessment. Other systems available are secondary treatment with irrigation.

8.4.5 In Section 7.6.5, spill response equipment will be maintained on-site, but will there be people on the site who will be able to react to an oil spill or will the site only be occupied sporadically?

8.4.6 If an oil spill was to occur, they feel they could effectively remediate it as it would only impact a relatively small area. But this would be dependent on soil type, moisture, rocks. Also, remediation by excavation may compromise the integrity of the footings of the building.

8.5 THREATS TO WATER QUALITY

8.5.1 The Environmental Assessment states that each wind turbine tower will be secured to a large, reinforced concrete footing with a diameter of up 12 metres and approximately two to three metres thick, requiring about 110 m^3 of concrete. The base of the footing will be about two to three metres below ground level and the footing may either be backfilled with soil or have the top of the footing above ground. The concrete footings are likely to be steel reinforced, tensioned and have rock anchors to bolt the footing to the underlying rock.

8.5.2 There is no mention in the EA of the specifications of the concrete to be used. Over time there will be some leaching of elements from the concrete which will be carried away through the ground water. This could include heavy metals such as mercury[66]. Because the concrete footing will be left in situ after the useful life of the wind turbine and this leaching could continue to occur for decades. There is no discussion in the EA about this and what measures that will be taken to prevent any such leaching.