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Department of Water and Environmental Regulation

Input to DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DWERME/CEO No:	DWERME1870/19	**MLU DUE DATE:**	25/6/19

LEAD FUNCTIONAL AREA:	AIR QUALITY SERVICES

IN LIAISON WITH:	

INPUT / COMMENT

(MANDATORY – Please provide the information in format suitable for direct inclusion in response, briefing note etc**.)**

The Department of Water and Environmental Regulation (DWER) has reviewed the peer review comments by Talis (peer review) of DWER's Mandogalup monitoring report (DWER report).

The comments by the Director Kwinana Industries Council, Mr Chris Oughton, that the peer review stated that "the DWER report was methodologically inadequate and scientifically unable to make the recommendation it did" is incorrect. The peer review did not state either of these.

The peer review incorrectly identified that the purpose of DWER's monitoring study was to establish the potential impact of dust on the health and amenity of proposed residential housing in areas of Mandogalup. The actual stated purpose of the DWER study was to determine sources and levels of dust over the dustiest time of the year as per the EPA advice report which stated that "There is a need for further investigation to be done to determine the principle sources of dust contributing to the exceedances of the National Environment Protection Measures (NEPM) dust standard in the area to the north and north-east of the RDA and for corrective measures to be undertaken if practicable." This was achieved.

DWER's report supplied data that may be used to compare with other similar land use areas around Perth.

On the remaining major point by the peer review, the recommendation of further monitoring of PM2.5 is baseless since there are no major combustion sources nearby, and the only impact by PM2.5 would be from regional fires events that are monitored at nearby regional monitoring stations. Minor localised sources such as woodheaters and vehicle emissions are not considered significant in this area. The EPA Sec 16 advice stated "Residue dust studies have shown that there is a very low PM2.5 fraction in residue dust, indicating that any PM2.5 particles from the RDA are unlikely to contribute to health impacts in the area."

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Each of the points raised in the peer review are addressed below.

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Comments re KIC letter

The peer review, carried out by an independent environmental science consultant found the DWER report to be methodologically inadequate and scientifically unable to make the recommendation it did.	DWER's report presented the results of the Mandogalup campaign and made no specific recommendations. The report did note that "*Results from LiDAR studies will contribute to decision making under Part V of the Environmental Protection Act 1986*". The Talis report made some claims to dispute the positioning of particle instruments and the analysis and interpretation of some data. It does not indicate the study was "*methodologically inadequate*" and in section 3 indicated "*Whilst this review ultimately agreed with many of its findings, the following table identifies areas of concern and/or deficiency*". These areas of concern have been addressed in the tables below.
The peer review report has independently come to conclusions that are similar to the criticisms industry has been expressing about the shortcomings of the original DWER dust monitoring report.	These criticisms by industry have not been communicated to DWER.

Talis assessed risk as HIGH

The Assessment does not appear to specifically address the requirements of the EPA advice where the Assessment was intended to determine the health and amenity impacts downwind of the dust sources, specifically the RDAs, where the north and north-east downwind locales appear to have exceeded the revised NEPM goal for air quality based on the EPA's previous assessment;	The objective was to determine the origins and movement of dust contributing to impacts experienced in and around Mandogalup over the 2017–18 summer by using a LiDAR.
The Assessment considers health in its report, but does not determine if health impacts are likely based on the Assessment in isolation; and	The EPA S16 advice report stated that "There is a need for further investigation to be done to determine the principle sources of dust contributing to the exceedances of the NEPM dust standard in the area to the north and north-east of the RDA and for corrective measures to be undertaken if practicable." Consequently, the objective of the DWER study was to determine the origins and movement of dust contributing to impacts experienced in and around Mandogalup over the 2017–18 summer by using a LiDAR. While this objective was satisfied, no comments on health impacts were made in the report and any health assessments will need to be undertaken by the WA Health department. The

	report does however provide information to assist with any such assessment.
The Assessment does not address the impacts on amenity, nor the potential for amenity impacts.	There are no specific amenity criteria to allow any assessment to be made. Amenity is subjective with different meanings depending on the person. Total Suspended Particulates (TSP) was measured as part of the study.
The Assessment determines PM10 levels in ambient air and compares those measured concentrations to the NEPM Ambient Air Quality Standard; however the Assessment did not measure PM2.5, finer particles, and therefore is less informed as to the risk of health impacts from finer dust particles.	It is likely that the majority of particles from the RDA will be of the TSP or PM10 size fraction. PM2.5 particles are mainly the result of combustion processes for which there are no major localised sources and consequently are not as relevant in this study. The EPA advice noted: *"However, air quality to the north and north-east of the RDA does not appear to meet the current NEPM goal for particulates smaller than 10 microns (PM10) which was adopted in February 2016. There appears to be a number of sources of dust affecting this area, both within and outside the area, including dust from the RDA." and also* *"*Residue dust studies have shown that there is a very low PM2.5 fraction in residue dust, indicating that any PM2.5 particles from the RDA are unlikely to contribute to health impacts in the area."
The Assessment reported a range of 24-hour PM10 values from the four monitoring sites of 34 - 46µm/m3, with the NEPM air quality limit being 50µm/m3; The high end of the range is near to the NEPM PM10 limit; however, there is no investigation as to the concentration of PM2.5 in ambient air which is an important marker for health impacts. The NEPM PM2.5 limit over 24-hours is 25µm/m3.	As above.
The Assessment reported that the Norkett site is likely to have been impeded by local topographical features meaning that the direct measure of PM10 may be understated; The Central and Norkett sites were within approximately 200 metres of one another with some variability shown in TSP readings further suggesting that at least one of the sites (Central and Norkett) may have been influenced by local topography which in turn may have understated measured concentration results for the locations east, north-east of the RDAs.	The data from both sites were used in the study.

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Talis assessed risk as MEDIUM

LiDAR on its own is not appropriate to make a health determination and suggests that the use of LiDAR is best-suited for determining origins of plumes and tracking plume movements.	Agreed. The report did not state that it could.
Whilst the use of LiDAR in determining the sources of dust impacts and plume movements would provide insight into the potential for health and amenity impacts from dust emissions, it is suggested that the direct measure of the concentrations of particulate matter within the Mandogalup locale is extended over a longer assessment period and should include PM2.5.	The summer months are considered the driest and the most likely to cause dust in the area as well as the winds are generally from the south-west. (see five-year wind roses for December to March below). The EPA advice noted: *"The air quality modelling for the RDA indicates that, because of the predominance of stronger south-westerly winds during the summer months when the residue disposal beds are dryer, the frequency and magnitude of dust events from the RDA to the north and north-east is high, presenting considerable potential to cause amenity impacts."* PM2.5 is generally combustion caused and not as relevant in this study.

Talis assessed risk as LOW

Where an extension of the study is to be completed, the Norkett site, and potentially the Central site should be re-assessed by a repositioning of the reference monitors away from any topographical interferences.	Impossible to do in all cases as there are practical considerations such as land owner permission, power issues, security etc. The locations chosen were the best available based on the above considerations.
It would appear that the north-east areas downwind of the RDAs are the most likely to be redeveloped for urban land uses. In this case, the Risk of health and amenity on these locales east of the RDAs must be further determined.	No comment.
The Assessment cannot be used to determine a 'no-risk' health outcome based on its findings, and using LiDAR in isolation; For this to occur, the Assessment duration should be extended, amendments made to the siting of the reference instruments, and incorporate the measurement of PM2.5.	A "*no-risk*" scenario is impossible to achieve when it comes to particles, no matter the extent of monitoring performed.

Approved by Director General

Date: 3.7.19