

**BEFORE THE HEARING PANEL OF SOUTHLAND REGIONAL COUNCIL**

**In the matter** of sections 88 to 115 of the Resource Management Act 1991

**And**

**In the matter** Applications for resource consents by:

**WORLDWIDE ONE LIMITED & WORLDWIDE TWO LIMITED**

Applicants

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**BRIEF OF EVIDENCE OF CAIN DUNCAN**  
**Addendum – Corrections to Modelling Requested by Commissioners**

**30 September 2019**

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## PURPOSE OF REPORT

- 1 This addendum has been prepared in response to a request by the Commissioners to provide an updated Table 1 located in my Brief of Evidence pertaining to the modelling of the 2018/19 season. The updated is required to correct an error whereby the cultivation of fodder beet was modelled as being direct drilled rather than traditionally cultivated.
- 2 Table 5 in my main Brief of Evidence (19<sup>th</sup> September) has also been updated to show the results of modelling WRL in Overseer Version 6.3.2 rather than 6.3.1.
- 3 The Overseer file for the 2018/19 season has been provided to Environment Southland today via the Overseer FM publication function (this method has been used to supply all recent Overseer files to Environment Southland).

### Table 1 – 2018/19 Modelling – Fodder Beet Cultivation Correction

- 4 The updated Table 1 below shows the modelled changes to total nitrogen loss in the 2018-19 season from correcting the cultivation method of fodder beet from direct drilled to traditional cultivation. The change is too small to impact on per hectare losses of nitrogen and resulted in no change to predicted phosphorus losses.

**Table 1 – 2018/19 OVEESEER<sup>®</sup> modelling results - including updated base file average (13/14-18/19 excluding 17/18) and proposed scenario with % Change.**

	18/19	Average 13/14 – 18/19	Proposed	% Change
<b>Total N Loss (kg)</b>	<del>26589</del> 26632	<del>21922</del> 21932	19378	<del>-11.6</del> 11.7
<b>N Loss/ha (kg)</b>	53	44	39	
<b>Total P Loss (kg)</b>	400	373	358 (344)*	-4.0 (-7.8)*
<b>P Loss/ha (kg)</b>	0.8	0.7	0.7	
<b>Pasture Grown (kg/DM/ha/yr)</b>	17151	15871	15944	

\* Figures in brackets are total phosphorus reductions including mitigations calculated outside of OVERSEER<sup>®</sup>

### Table 5 – Evidence in Chief (16/09/19) – WRL Modelling Updated to OVERSEER<sup>®</sup> Version 6.3.2

- 5 Table 5 below shows the updated predicted nutrient losses for WRL when modelled in OVERSEER<sup>®</sup> version 6.3.2. While there are minor increases in the modelled total and per hectare nitrogen and phosphorus losses these occur across all nutrient budgets and the percentage change between the proposed scenario and the 16/17-17/18 average remains largely unchanged.

Table 5 – Current and Proposed Nutrient Losses Woldwide Runoff

	<b>16/17</b>	<b>17/18</b>	<b>Average</b>	<b>Proposed</b>	<b>% Change</b>
<b>Total N Loss (kg)</b>	<del>26134</del> 26758	<del>19931</del> 20399	<del>23033</del> 23579	<del>22603</del> 23120	-1.9
<b>N Loss/ha (kg)</b>	<del>29</del> 30	<del>22</del> 23	<del>26</del> 27	<del>25</del> 26	
<b>Total P Loss (kg)</b>	<del>500</del> 503	<del>532</del> 534	<del>516</del> 519	<del>489 (454)*</del> 490 (455)*	<del>-5.2 (12)*</del> -5.6 (12)*
<b>P Loss/ha (kg)</b>	0.6	0.6	0.6	0.5	
<b>Pasture Grown (kg/DM/ha/yr)</b>	<del>12639</del> 13135	<del>11024</del> 11353	<del>11832</del> 12244	<del>13282</del> 13361	

\* Figures in brackets are total phosphorus reductions including mitigations calculated outside of OVERSEER®

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Cain Duncan

Dated 30 September 2019