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:

WOLDWIDE ONE LIMITED, WOLDWIDE TWO LIMITED,
Applicants

BRIEF OF EVIDENCE OF NESSA LEGG

16 September 2019

QUALIFICATIONS AND EXPERIENCE

1 My full name is Nessa Helena Legg. I work as a consultant planner at Dairy Green Ltd, an agricultural engineering firm based in Southland.

2 I hold an honours science degree (BA.mod. Zoology) and master's degree (MSc. Molecular Medicine), both from the University of Dublin, Trinity College.

3 I hold a Diploma in Adult Education and Training from the Southern Institute of Technology (SIT) and have completed the Intermediate Sustainable Nutrient Management Course at Massey University. I have completed tertiary papers in statistics and information systems.

4 Since 2000, I have worked as an associate research scientist (genomics), IANZ accredited laboratory technician, tertiary tutor (Bachelor of Environmental Management course) until commencing work for Dairy Green Ltd in 2015. In conjunction with other work, I have been farming since 2008. I am a director of a sheep, beef and deer enterprise in Western Southland.

5 I am chairperson of the Waiau Liaison Committee and a member of the Waiau Rivercare Group.

6 I do not hold a formal planning qualification. My expertise in planning arises from work experience both as a tutor of environmental management at SIT and as a consultant planner at Dairy Green Ltd. Most of my work for Dairy Green Ltd relates to the dairy industry in Southland. This includes preparing applications for resource consent for clients and providing advice to clients on resource management issues, generally in Southland. I have prepared similar applications for resource consent on behalf of other clients.

7 I am an associate member of the New Zealand Planning Institute.

8 I am familiar with the application for resource consent subject to this hearing and have visited the site. I personally prepared the application and Assessment of Environmental Effects.

9 This evidence has been prepared in relation to an application seeking recourse consent by Woldwide One Limited and Woldwide Two Limited (WW1&2) to use land for farming that did not exist as of June 2016, to discharge farm dairy effluent to land, to take and use groundwater and for the use of land for two feed pad/lots at Hundred Line Road.

SCOPE OF EVIDENCE

10 This evidence addresses the following issues:

10.1 Background and proposal

10.2 Application summary

10.3 Existing environment

10.4 Comment on Environment Southland position

10.5 Statutory planning matters

10.6 Conclusion

10.7 Matters raised by submitters

11 I have read, and agree to comply with, the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2014. Other than where I state that I am relying on the evidence of another person, I confirm that the issues addressed in this evidence are within my area of expertise. I have not omitted to consider material facts known to me that alter or detract from the opinions that I express.

Other sources of information

12 I have also obtained and viewed the following information:

12.1 The Hears Report by Ms Grant and Mr Erceg

12.2 Dr Freeman's WW water quality report and brief of evidence

12.3 Brief of evidence from Dr Roberts

12.4 Brief of evidence from Mr Duncan

12.5 Brief of evidence from Mr Scandrett

BACKGROUND

Blocks

13 Woldwide One Limited (WW1) and Woldwide Two Limited (WW2) operate two adjoining dairy platforms (458 ha) situated at Heddon Bush, Central Southland. They seek a suite of resource consents required to enable the increased efficiencies that will facilitate improved environmental mitigation.

14 The site was first operated as a dairy platform by the applicants in 1992 and has also been used for dairy support activities..Additional land (44 ha) was authorised for dairy farming on a 2017 LUC granted to WW2 (AUTH-20181278-03). For the sake of clarity, I have termed the additional land "A." Block A has been used for activities including IWG on fodder crops and cut and carry in recent years. It has been converted for use under dairy platform in the 2018/19 season.

15 The Horner Block is a 160-hectare block used in recent years for cut and carry at Heddon Bush to supply grass to various WW dairy farms. It receives slurry effluent from WW1 and Woldwide Three (WW3) dairy farm. WW3's effluent receiving area is mutually exclusive from WW1's area at the Horner Block.

16 Woldwide Runoff (WRO) grazes dry stock from WW1 and WW2, as well as other WW dairy farms (WW3, WW4, WW5). WRO comprises the Merrivale (507 ha) and Merriburn (385 ha) blocks in the

Merrivale/Western Southland area. WRO has significant areas under forestry. All farming activities at WRO are currently operated as permitted activities.

Background to the application process

17 In 2017, WW1 and WW2 submitted two separate applications for resource consent for expanded dairy farming under the pSWLP (2016).

18 WW2 was granted consent for dairy farming in 2017. This authorised the addition of new land previously used for dairy support (Block A) into the milking platform. Some land was removed from WW2's milking platform to be added to WW1's milking platform. WW2 cow numbers did not increase as part of the dairy expansion. New discharge permit and water permits were also granted to WW2.

19 WW1's 2017 application for expanded dairy farming was publicly notified in accordance with S95A. During the notification process, the decisions version of the pSWLP (2018) was released. WW1's application was placed on hold when it was discovered that the grant of WW2's 2017 consent was based on incorrect assumptions regarding the proposed operations of both platforms. Following discussion with Environment Southland on how best to model land use, WW1 and WW2 jointly submitted an application seeking consent for farming in August 2018, as per rules, policies and objectives in the pSWLP (2018). The WW1&2 application was accepted with extensive information provided under s92(1), at meetings and a site visit. WW1 and WW2 jointly submitted applications for effluent discharge and groundwater take.

20 WW1&2's 2018 application for resource consent was publicly notified in accordance with S95A. An error was made during the notification process, which made the notification illegal. In view of this and following collaborative discussions with ES, the application was withdrawn and a new application seeking resource consent was prepared aiming resolve issues identified in the S95 report. WW1 and WW2 jointly submitted an application seeking resource consent for farming on 23 March 2019. This application is the subject of this hearing.

Proposal

21 A full description of the proposal is described in the application. I have provided an overview of the proposal at each site WW1&2, Horner Block and WRO below. I have clarified minor changes made to the proposal since its submission in paragraph 31.

22 I adopt Dr Freeman's WW water quality report and evidence and parts of application relating to soils for a description of the site and receiving environment.

Dairy platform

23 The proposed dairy platform comprises a 502-hectare dairy platform (WW1&2), which has two units (WW1, WW2). Each unit has its own dairy shed, wintering barn and effluent management system.

24 Land proposed to be in the dairy platform includes land areas in WW1 and WW2 dairy platforms on 3 June 2016 and additional land "A" previously used for dairy support. Block A was authorised for dairy farming on a 2017 LUC granted to WW2 (AUTH-20181278-03) but for reasons explained in the section on the Receiving Environment, is not considered to form part of the existing environment as dairy platform.

25 A maximum of 1,500 cows will be milked up to twice daily for seasonal supply at WW1&2. This represents an increase of 160 cows (11%). The herd of 1,500 cows will be split into 700 cows (WW1) and 800 cows (WW2). Additional cows will be added to the WW1 herd.

26 Land previously used for activities such as fodder cropping/IWG, silage productions, has been freed up by the removal of these practices and is available to graze milking cows. An overall stocking rate of 3.1 cows/hectare will be maintained as well as individually at both WW1 and WW2 units. To achieve this, WW2 cows will no longer graze some mid-farm paddocks but will graze block A north of Wreys Bush Highway instead. No increase in stocking rate will occur at the WW1 side of the platform because WW1 cows will graze paddocks no longer grazed by WW2 cows. No changes to paddock layout or construction of new lane systems will occur.

27 A maximum of 1,250 cattle (MA cows and in-calf R2s) will be housed in two existing wintering barns throughout June and July. Barns will be used to varying degrees to house cows during April, May, August and September. Barn and effluent system capacities have already been upgraded to cater for additional cows and effluent.

28 Both WW1 and WW2 units have large storage ponds that store dairy shed and winter barn effluent. WW2 pond also stores silage leachate. Sufficient storage is available for the proposal according to the Massey DESC. WW1's pond was upgraded in 2018 to install a synthetic liner, a leak detection system and increase its capacity. Dairy shed effluent will be irrigated to land at low depth via low rate travelling irrigator. Low rate systems (pods and raingun) are included to future proof the irrigation system.

29 The material in the ponds is a slurry due to the contribution of winter barn effluent, which has high dry matter consent. Slurry will be applied to land at very low depth using a slurry tanker with a trailing shoe or umbilical system.

30 The effluent disposal field includes the majority of the dairy platform (and 97 hectares of the Horner Block).

31 Minor changes made to the proposal since its submission in March are:

31.1 Additional use of the winter barns as feed pad/stand-off pad in April.

31.2 Minor change to WW1 and WW2 Massey DESC reports to allow for barn use in April.

31.3 Measures proposed to mitigate P loss. These are detailed in P loss Mitigation Plan section in the FEMP.

32 FEMPs have been reviewed and updated in accordance with Appendix N. A separate Effluent Management Plan has been prepared for WW1&2.

33 Although not part of this proposal, I note that the applicants propose to install a synthetic liner and leak detection drains in WW2's pond during the 2019/20 season. An application seeking consent for this activity has been submitted to Environment Southland. It has been accepted under s88 and is progressing through a s92 RFI response at the time of writing.

34 I adopt Dr Freeman's WW water quality report, evidence and parts of application relating to soils for a description of the site and receiving environment.

Horner Block

35 The Horner Block is not owned or operated by either applicant. It is owned and operated by Woldwide Farm Ltd ("WWF"), which will operate it as a cut-and-carry block supplying various WW dairy farms including WW1&2. No stock will be grazed there.

36 The fertiliser requirements for WWF's cut and carry operation will be met in part by slurry obtained from WW1&2. 97 hectares will receive pond slurry from WW1&2 at a loading not exceeding 250 kg N/hectare/year applied at very low depth using the slurry tanker with the trailing shoe and umbilical system. The remaining area will receive slurry from WW3, noting that areas will be mutually exclusive and is not part of this proposal.

WRO

37 WRO is a dry stock farm owned by Woldwide Runoff Ltd "WROL". It provides dairy support services by providing grazing for dry stock associated with existing farms, including WW1&2, as well as other farms owned by separate companies, which share common directors and shareholders ("WW farms"). Under the current proposal WW1&2 propose to obtain support services from WRO. It is located 20 km to the west of Otautau, on the western side of the Longwood Ranges and has 160 hectares in commercial pine forestry and native beech.

38 WRO is comprised of two separate blocks: the Merrivale Block (507 ha, 322 ha effective) and the Merriburn block (385 ha, 338 ha effective).

39 From all WW farms, WRO will graze a total of 1,265 R1s and 1,265 R2s, with R2 numbers dropping to 1,165 in March. WRO will also graze carryover cows (37) and bulls (70).

40 WRO will IWG a maximum of 1,265 R1s and 450 R2s, with the balance of R2s (715) proposed to be wintered in barns at WW1&2, WW4 and WW5. 78 hectares of kale crop is proposed for IWG supplemented by 1,332 bales of baleage.

41 Surplus grass will be harvested and stored as silage and baleage.

42 Minor changes made to the proposal since its submission in March are:

42.1 A reduction in area proposed for IWG to 78 hectares (from 100 ha).

42.2 12 hectares will be planted in trees.

42.3 Measures proposed to mitigate P loss. These are detailed in P loss Mitigation Plan section in the FEMP.

43 FEMPs have been reviewed and updated in accordance with Appendix N. An additional nutrient budget was provided for the 2016/17 year.

APPLICATION SUMMARY

44 An application was prepared seeking resource consents for the following activities, noting that the applicants have not sought consent for any other activities relating to this proposal.

- -Land use consent - to use land for a farming activity

  This application seeks consent to use land for a farming activity that did not exist on 3 June 2016. The proposal seeks to add 160 cows. The dairy platform includes land used for dairy platform on 3 June 2016 and an adjoining 44-hectare block "A" used for dairy support in recent years, noting that block A was authorised for dairy farming on a LUC for dairy farming granted in 2017.

- Discharge permit

  This application seeks consent for the discharge to land at the dairy platform of dairy shed effluent from a maximum of 1,500 cows, wintering barn effluent from a maximum of 1,250 cows, underpass effluent and silage pad effluent to land via travelling irrigator, slurry tanker with a trailing shoe, low rate pods, low rate rain-gun system and umbilical system.

- Discharge permit

  This application seeks consent to discharge slurry effluent from the dairy platform at nearby support block (Horner Block). Slurry is a mixture of dairy shed effluent, wintering barn effluent and silage pad effluent. The proposal seeks consent for the discharge to land of slurry effluent via slurry tanker with a trailing shoe and umbilical system.

- Water permit

  This application seeks consent to abstract a maximum of 180 cubic metres per day of groundwater for stock and dairy shed purposes at the dairy platform.

- Land use consents – to use land for two existing feed pad/lots

  This application seeks to authorise the use of land for two existing wintering barns. Each barn will house a maximum of 625 cows at any given time.

45 Based on the application's history, the applicants requested that the consent authority publicly notify the application in accordance with section 95A.

46 The applicants provided a response on 15/8/19 to a s92 RFI issued by the consent authority regarding the proposed water take at the dairy platform.

47 The applicants upgraded a bore (E45/0622) to comply with NZS 4411:2001 standards. A report showing photographic evidence is included in the Addendum.

Land Use Consent for a Farming Activity

48 A land use consent is sought for the proposed farming activity which I have determined to include all activities located on the subject landholding directly linked to the applicants' dairy farming operation. I

note that Environment Southland hold the view all WW dairy farms and support blocks form a single landholding. The applicants disagree with this view (as do I) and consider it is fundamentally a matter of legal interpretation. Based on a letter provided to the processing officer by Duncan Cotterill, I consider the landholding to be the proposed 502-hectare WW1&2 dairy platform, which includes block A.

49 The farming activity will include the milking of a maximum of 1,500 cows twice daily for seasonal supply and the housing of a maximum of 1,250 cows in barns between April and September. Liquid effluent and slurry will be applied to land at the dairy platform with irrigation deferred when required. No sowing of fodder crops will occur. I refer to table 9.3 of Mr Duncan's nutrient budget analysis report for farm system inputs for the proposed system, which for clarity I have included in the addendum.

Overseer modelling

50 Overseer modelling has been used to model four baseline years (2013/14 – 2016/17) at the proposed dairy platform that will operate if consent is granted. OverseerFM version 6.3.2 has since been released and nutrient budgets have been re-run in this version. This approach has been used in order to provide data that is as close as possible to the type of format with which Environment Southland staff are familiar. It should, however, be noted that for fully discretionary activities under Rule 20(e), no baseline information is prescribed. Mr Duncan explains in evidence that very minor corrections were made to the baseline files to correct an error in slurry application. A summary of Overseer outputs for the dairy platform, Horner Block and WRO is detailed in the below tables (Dr Freeman's brief of evidence).

Woldwide One & Two			
	Current Farm System	Proposed Farm system	Reduction
N (kg/yr)	20,756	19,378	-6.6%
P (kg/yr)	366	344*	-6.0%

* Includes non OverseerFM modelling of P loss mitigation. Refer to Cain Duncan evidence

Horner Block			
	Current Total Farm System	Proposed Total Farm system	Reduction
N (kg/yr)	3,155	3,107	-1.5%
P (kg/yr)	24	22	-8.3%

Combined Woldwide One & Two & Horner Block			
	Current Total Farm System	Proposed Total Farm system	Reduction
N (kg/yr)	23,911	22,485	-6.0%
P (kg/yr)	390	366	-6.1%

Woldwide Five Current & Final Proposed			
	Current Farm System	Proposed Farm system	Reduction
N (kg/yr)	23,033	22,603	-1.9%
P (kg/yr)	516	454	-12%

* Includes non OverseerFM modelling of P loss mitigation. Refer to Cain Duncan evidence

51 Overseer modelling of the proposed farming system at the dairy platform indicates that nitrogen losses are predicted to reduce by -6.6% compared to the baseline combined model. Phosphorus losses are estimated by Overseer to reduce by -6.0% compared to the baseline combined model and additional P mitigations detailed in the FEMP/P Mitigation Report.

52 Overseer nutrient budgets were also prepared for the Horner Block and WRO, , noting that I consider activities at respective landholdings do not require consent for farming due to additional dairy farming of cows at the dairy platform. I consider, however, that Overseer modelling at WRO and the Horner Block is useful in determining and assessing consequential effects. Examination of Overseer outputs show that nutrient discharge is predicted to decrease from these sites also.

Discharge permit

53 A discharge permit is sought to authorise the discharge of agricultural effluent at the WW1&2 landholding. The proposed discharge area includes the majority of the dairy platform. Both WW1 and WW2 units have their own effluent system.

54 Deferred storage of WW1's dairy shed effluent and wintering barn effluent is provided in an existing effluent storage pond. WW1's effluent pond is synthetically lined and underlain by a leak detection system with an associated inspection well. Its reconstruction was authorised by a land use consent granted in 2017. Ancillary structures that contain effluent at WW1 include a dairy shed pump sump and wintering barn concrete collection pit. The volume of deferred storage available in WW1's pond is sufficient to meet requirements of the Massey Dairy Effluent Storage Calculator.

55 Deferred storage of WW2's dairy shed effluent, wintering barn effluent and silage pad effluent is provided in an existing effluent storage pond. WW2's effluent pond is clay-lined and does not have a leak detection system. It was lawfully constructed without a land use consent in 2005. It is the subject of an application for resource consent for reconstruction to allow for the installation of a synthetic liner and leak detection system during the 2019/20 construction season. Ancillary structures that contain effluent at WW2 include a dairy shed pump sump, wintering barn concrete collection pit and silage pad concrete sump. The volume of deferred storage available in WW2's pond is sufficient to meet requirements of the Massey Dairy Effluent Storage Calculator.

56 Effluent from both dairy sheds will be discharged to land via a travelling irrigator system when soil moisture conditions are suitable for irrigation. Otherwise, dairy shed effluent will be diverted to respective ponds. Effluent from wintering barn pits is pumped to respective storage ponds.

57 Slurry from ponds will be discharged to land at depths not exceeding 2.5 mm per application using a slurry tanker with a trailing shoe and at depths not exceeding 3 mm per application with the umbilical system. Dairy shed effluent will be discharged at a maximum application depth of 15 mm to Category A land and 10 mm per application to Category E and D land.

58 Low rate irrigation of dairy shed effluent is proposed to future proof the operation. If and where a low rate pod or raingun system is installed, it will apply dairy shed effluent to land at rates not exceeding 10 mm/hour and at depths aligned with recommended depths for category A (15 mm per application), D and E soils (10 mm per application) respectively.

59 Irrigation of agricultural effluent will be avoided where soils (Braxton types) show evidence of cracking.

Discharge permit

60 A discharge permit is sought to authorise the discharge of agricultural effluent from WW1&2 to 97 hectares at the Horner Block. The permit will authorise the discharge of pond slurry (containing wintering barn effluent, dairy shed effluent and silage pad effluent) at very low depth using a slurry tanker with a trailing shoe or umbilical system. The application depth will not exceed 2.5 mm per application.

61 The Horner Block has no structures that store, contain or treat effluent.

62 Irrigation of agricultural effluent will be avoided where soils (Braxton types) show evidence of cracking.

Water Permit

63 A water permit is sought to allow for the abstraction of groundwater from three bores at WW1&2 (E45/0083, E45/0727, E45/0071) for the purpose of stock drinking water and dairy shed use. A maximum of 180 metres cubed per day and 55,296 meters cubed per year will be abstracted. Bore ID E45/0071 supplies the WW1 dairy unit. Bore IDs E45/0083 and E45/0071 supply the WW2 dairy unit. An allocation of 120 litres per cow per day is allowed for.

Land use consent X2 – feed pad/lot

64 Two consents for the use of land for existing wintering barns at WW1&2 are sought. Both barns will house a maximum of 625 cows per day 24 hours per day throughout June and July and will house cows to varying extents during April, May, August, September. Barns will be used to stand off cows during severe adverse weather during the season to protect soils.

65 Each barn has its own effluent collection system (scrapers and concrete collection pit) from where effluent is pumped to respective storage ponds for storage. The discharge to land of barn effluent is covered under discharge permits for WW1&2 and the Horner Block respectively.

Existing Environment

66 The Court or Appeal on existing environment in *Hawthorn Estate*[1] is binding and determines that the existing environment includes anything plausible and foreseeable in the future to occur under consents held and permitted activity rules. In the context of this application, a key comparison is "what will activities (and losses and effects) be if consent is granted" versus "what will activities (and loss and effects) be if consent is not granted?"

67 As the processing officer rightly points out, WW2 has not surrendered its 2011 discharge and water permits (AUTH-300626-V2, AUTH-300627-01). Conditions 1 of WW2's 2017 discharge and water permits (AUTH-20171278-01, AUTH-20171278-01) both state they cannot be exercised until 2011 consents have been surrendered or expired. Condition 2 of LUC for dairy farming (AUTH-20171278-03) states it must be exercised in conjunction with discharge permit AUTH-20171278-01 and water permit AUTH-20171278-02. Therefore, I acknowledge that the application was incorrect to state that the

[1] QLDC v Hawthorne Estates, Court of Appeal decision [2006] NZRMA 424

applicants are relying on the 2017 consents (AUTH-20171278-01, AUTH-20171278-02, AUTH-20171278-03) as this cannot be the case. I confirm the error in the application arose due to a miscommunication.

68 WW2's LUC for farming (AUTH-20171278-03) authorised some additional land north of Wreys Bush Highway previously used for support for dairy farming. The intent of the 2017 suite of applications was for WW2 to use the additional land for dairy platform thereby freeing up an equivalent area of WW2 dairy platform (adjoining WW1 platform) to become part of WW1 platform. As explained in paragraphs xxx, WW2 was granted consent and the WW1 application stalled. WW2 holds a LUC for farming (AUTH-20171278-03), which was considered to form part of the existing environment in both the application and S42A report. For reasons explained in the following paragraph, this consideration is incorrect as I understand it was based on an error of law, which will be explained in more detail in the applicants' opening legal submissions.

69 Briefly, since WW2 has not surrendered its 2011 discharge and water permits, it is currently relying on them. Until and unless the 2011 discharge and water consents are surrendered, the new consents (AUTH-20171278-01, AUTH-20171278-02, AUTH-20171278-03) cannot form part of the existing environment because their exercise would be illegal.

70 Further, if WW2 was to surrender the 2011 consents allowing LUC AUTH-20171278-03 to be exercised, the applicants would be left with a large area at the centre of WW1&2 close to WW2 dairy shed that would be outside WW2 dairy platform. Neither will WW1 be able to utilise the same area for dairy platform as despite it also being within WW1's boundary on its Appendix 1 Discharge Map, it does not have additional cows to graze the area. This would be a highly impractical and detrimental situation for WW2 to find itself in. WW2 is therefore very unlikely to ever rely on the 2017 consents where doing so would lead to this situation. To avoid this situation, WW2 will continue to rely on its 2011 discharge and water permits.

71 I acknowledge that the additional land A authorised for dairy farming on LUC AUTH-20171278-03 does not form part of the existing environment. Accordingly, land A been assessed in isolation to demonstrate that both nutrient discharge and effects will decrease under use as dairy platform. Mitigations that the processing officer deemed were already "offered up" implicitly by the consent form part of the existing environment, i.e. removal of fodder cropping at WW2, and can be considered as valid mitigations. I consider the existing environment at proposed WW1&2 dairy platform to be current consents activities and Permitted Activities.

72 In relying on WW2's 2011 consents, the Horner Block is not authorised to receive slurry from WW2 to a dedicated area. This authorisation is only provided on the 2017 consents. Figure 3.3.9 of staff report is shown below for clarity. The WW2 area at the Horner Block was removed from WW3's discharge permit through a variation in August 2017 when it was allocated to WW2 and authorised on WW2's 2017 discharge permit. However, for the reasons explained above, none of the 2017 suite of consents have been given effect, including this variation.

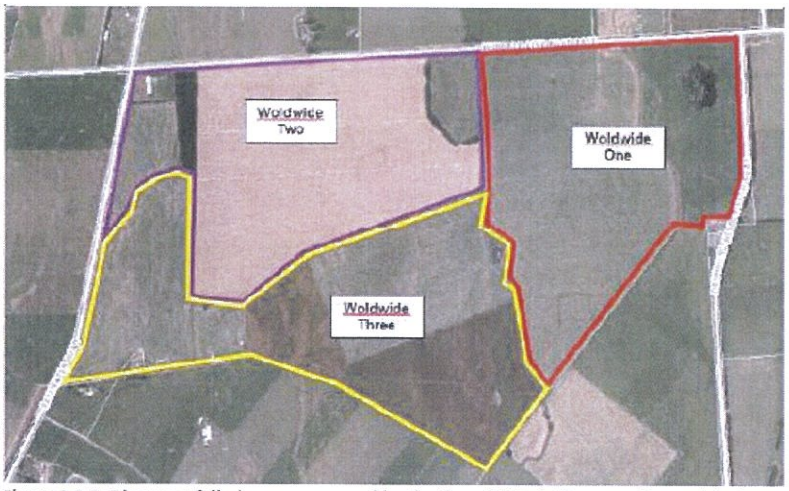


Figure 3.3.9: Diagram of discharge areas used by the three WW platforms on Horner block

73 Since WW3's variation date, the applicants confirm slurry has been applied r to the WW2 area (see figure 3.9.9) from WW3 platform, consistent with the non-exercise of the variation. If the variation had been given effect, discharge of slurry to this area would not form part of the existing environment currently.

74 As explained by Mr Duncan, I conclude having solely used the 2017/18 year was a conservative approach to modelling current land use at the Horner Block but acknowledge this was the information provided in the application. I consider, however, that a history of activities is relevant, especially in the planning context where I consider the Horner Block does not require consent for farming due to additional cows at the dairy platform and therefore does not necessarily require a modelling approach.

Years	Summary of activities at Horner Block
2010/11	IWG on brassicas (40 ha), grass wintering R1s, slurry application
2011/12	IWG on brassicas (40 ha), grass wintering R1s, slurry application
2012/13 2013/14	IWG on brassicas (20 ha), grass wintering R1s, slurry application
2014/15	4 cuts silage, grass wintering R1s, slurry application
2015/16 onwards	4 cuts silage, cut fresh grass to cart to barns, slurry application

75 I consider that in relying on the WW2 2011 discharge permit, there is no restriction placed on Horner Block regarding the grazing of dry stock. The Horner Block minus dry stock grazing does not form part of the existing environment. Neither does the Horner Block, only as an effluent disposal and cut and carry block, form part of the existing environment. I consider activities at the Horner Block that form part of the existing environment are consented (WW1, WW3 discharge permits) and other permitted activity land use activities such a cut and carry, dry stock grazing on grass and IWG/fodder cropping.

76 I consider the existing environment at WRO to include permitted activities relating to farming and forestry.

COMMENTS ON REPORTING OFFICER POSITION

77 I have read the s42A planning report prepared by Ms Grant and Mr Erceg who have recommended the application is declined. The processing officer identifies many key issues leading to the conclusion that should consent be granted, contaminant losses will increase, adverse effects on waterbodies will not be avoided or mitigated, water quality will not improve where standards are not met and best practice will not be observed in the maintenance and operation of the effluent system. I disagree with the processing officer's views and adopt evidence from expert witnesses Mr Duncan, Mr Scandrett, Dr Freeman and Dr Roberts, and Dr Freeman's water quality analysis report in coming to my consideration.

78 Key issues relating to the actual and potential effects from the proposal, including the potential for adverse effects on groundwater and surfacewater, are identified by the processing officer:

78.1 Effects arising from an increase in cow numbers on the dairy platforms and support blocks, in particular from the operational block of WW1 dairy platform;

78.2 Effects on drinking water supplies;

78.3 Effects on soils;

78.4 Cumulative effects;

78.5 Uncertainty around the relevance and accuracy of modelled losses shown by Overseer, particularly for the Central Plains physiographic zone;

78.6 Uncertainty regarding the appropriateness and effectiveness of the proposed GMPs and mitigation measures;

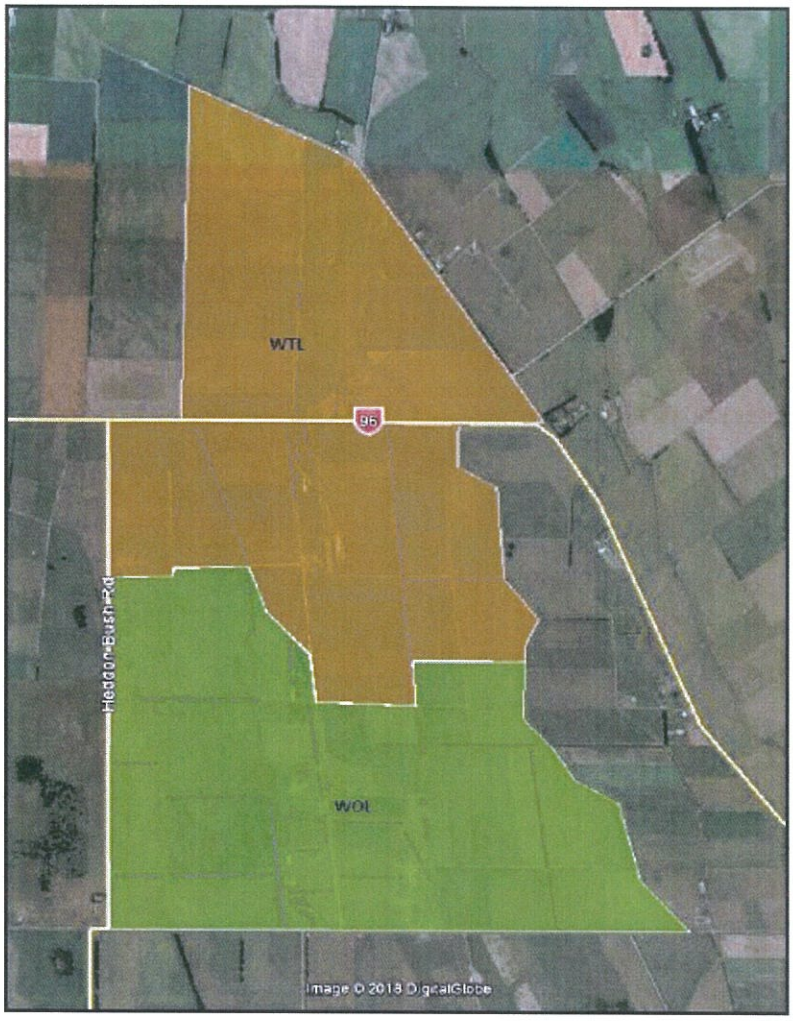
78.7 The unsuitability of the effluent storage system as a mitigation for the discharge of effluent to WW2;

78.8 What forms the landholding for the proposal;

78.9 Consistency of the proposal and effects arising from it with Council's policies and objectives;

79 I only provide comment on key issues where I consider it will complement evidence provided by expert witnesses for the application.

80 I disagree with the processing officer's view that effects arising from an increase in cow numbers, particularly the operational block of WW1 dairy platform, will increase. I refer to evidence of Mr Duncan, Dr Freeman, and Dr Freeman's WW water quality report to conclude this is unlikely to be the case. I consider the processing officer's contention that effects will increase from the operational block the WW1 side of the platform is unfounded. There will be no increase in stocking rate at WW1 platform. Rather, the stocking rate will be as was proposed in the application and as has been modelled in Overseer. I do not consider this could raise a scope issue since this is no more nor no less than what was applied for. For clarity I insert the dairy platform map from section 8 of Mr Duncan's nutrient budget analysis report as was submitted as part of the application.



81 Evidence from Dr Roberts and Mr Duncan both explain that applying slurry at a maximum loading of 250 kg N/hectare/year does not breach best practice for a cut and carry block, and in fact provides benefits such as increasing soil organic matter. I consider Dr Robert's explanation to be particularly helpful. He strongly rejects the assertion that the "cumulative (fertiliser & FDE) N loading rates 450 and 459 kg N/ha/yr on the management blocks would likely surpass plant requirements and would be at risk of leaching" and concludes that "the application of 250 kg N/ha as FDE on the cut and carry block is not in conflict with good practice." I consider this to be highly relevant in the context of proposed use of the Horner Block, nutrient discharge and effects.

82 Evidence from Dr Roberts, Mr Duncan and Dr Freeman addresses the accuracy and validity of Overseer modelling, which I consider to be critical to the validity of the proposal in its entirety. They conclude that when used in the context of comparing an existing and new farming system (using the analogy of comparing "apples with apples") Overseer is a valid tool for modelling nutrient discharge. Dr Roberts succinctly explains that "the quantitative difference between the existing and new scenarios can be treated with confidence." This is despite the inability of Overseer to account for localised short-term effects such as cracked soils and by-pass flow.

83 Regarding concerns raised by the processing officer about the suitability of WW2 pond as a mitigation for the effluent discharge activity, I confirm the applicants have recognised the need for maintenance of

the clay liner and accepted professional advice to install a synthetic liner and leak detection system in accordance with industry standards (IPENZ Practice Note 21) and consent conditions. I rely on the evidence of Mr Scandrett regarding the matter and consider that WW2 pond is a suitable mitigation for the proposed effluent discharge activity.

84 I consider that key issues relating to effects from the proposal, i.e. effects on drinking water supplies particularly Heddon Bush School, effects on soils and cumulative effects, have been assessed by Dr Freeman in evidence and his WW water quality report. I conclude it is very unlikely there will be an increase in the before-mentioned effects if the proposal is implemented and in fact, a reduction in effects is highly likely. I agree with the processing officer's view that the receiving environment (both groundwater and surfacewater) is degraded to varying degrees but do not consider this is grounds to decline the application as implementing the proposal will reduce nutrient discharge and adverse effects, including cumulatively.

85 The processing officer points to the high risk to soil structure and surface water from IWG, which will continue to occur (and increase) at WRO as a key issue. I note that proposed IWG activities like all other activities at WRO meet permitted activity rules, which indicates that effects are likely to be less than minor if GMP is implemented. I clarify that the IWG area at WRO will not increase compared to the recent past, as shown in modelling data from two years (2016/17 and 2017/18); there will in fact be a reduction to 78 hectares (from 100 ha as was proposed). Data from 2016/17 has been provided to better reflect activities at WRO in prior years. I acknowledge this information was provided to Environment Southland after the application was submitted but consider that providing two year's data is more valuable than a single year. I consider that WRO is a suitable site for IWG where it occurs according to GMP. Although not part of this application, I note that a large proportion of R2s from other WW dairy farms are proposed to be wintered in proposed barns at other WW dairy platforms rather than being IWG in the Heddon Bush area or at WRO.

86 The processing officer considers that the removal of fodder crop rotation from WW1 and WW2 dairy platforms cannot be implemented as a mitigation since there are no crops in the existing environment to remove. I disagree and consider the removal of fodder cropping/IWG from are genuine mitigations that are critical to the proposal and refer to my description of the existing environment by way of explanation. I also rely on evidence from Mr Duncan and Dr Freeman in my conclusion that the removal of these activities from the dairy platform are effective and appropriate mitigations.

87 Neither does the processing officer accept that limiting the application depth of slurry applied with the slurry tanker with the trailing show to 2.5 mm per application is a mitigation or even GMP. I consider that regardless of the annual N loading, limiting the application depth to 2.5 mm per application is a mitigation. The standard application depth per application limit placed on discharge activities using this method is 5 mm per application. The applicants are proposing to reduce this by half to mitigate the risk of overloading soils with N from slurry.

88 The proposing officer raises concern about the lane adjacent to WW1 winter barn and waterway. The applicants have committed to the implementation of a P mitigation Plan, which will address this issue and will include planting of the bank adjacent to the waterway and lane in native grasses, as well as related upgrade work. On balance I consider what is proposed is meaningful mitigation. I note that the wider site has been included in the P Mitigation Plan, with several mitigations included such as

permanent refencing around CSAs and native planting to be implemented. I conclude that if consent is granted for the proposal, implementation of the P Mitigation Plan will provide meaningful mitigation.

89 At the time of writing, the processing officer states the mitigation plan for WRO block had been withdrawn entirely so was unable to consider mitigations and GMPs for WRO. I note that the finalised mitigation plan for WRO block was provided to Environment Southland on September 5 and the staff report was released on September 9 at 5 pm. I confirm that the finalised FEMP, which contains a P mitigation plan for WRO, as submitted on September 5, was prepared in agreement with the owners of the Merriburn block. I consider the GMPs and mitigations proposed for WRO to provide appropriate level of certainty regarding activities at WRO, their effectiveness and appropriateness.

90 I consider the consistency of the proposal and effects arising from it with Council's policies and objectives in the Planning Section of my evidence.

91 The processing officer raises "what forms the landholding for the proposal" as a key issue and provides an extensive assessment on the matter. I have also read a letter provided to the processing officer by Duncan Cotterill on the landholding matter and consider the processing officer's view to be incorrect. I consider, however, that the landholding matter is fundamentally one of legal interpretation and do not consider it appropriate for me to address it. I note that regardless of "what forms a landholding", effects from the proposal, including consequential effects, have been appropriately described and assessed.

STATUTORY PLANNING MATTERS

92 Section 7 of the staff report details an extensive planning assessment. I have avoided duplicating material where possible. I do, however, list key policies where I consider it is beneficial they are read as-a-whole.

93 A detailed planning and rule framework assessment was provided in the application. In my evidence I have commented on key policies and clarified where I disagree with the processing officer's assessment.

Part 2 of the RMA

94 I agree with the processing officer that it is appropriate to refer to Part 2 of the RMA when considering this proposal. Part 2 of the RMA defines the purpose of the Act as promoting the sustainable management of natural and physical resources. The meaning given to 'sustainable management' is the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being while meeting the functions of Section 5(2); sustainment of natural and physical resources to meet the needs of future generations; safeguarding the life-supporting capacity of air, water, soil and ecosystems; and avoiding, remedying or mitigating any adverse effects of activities on the environment.

95 Contrary to the consents officer, I consider the proposal is consistent with Part 2 of the RMA. It seeks to enable the applicants to utilise their land for farming in a way that provides for their social and economic well-being, that of their staff, families and whanua and the rural economy, while also enabling them to reduce their environmental footprint in a manner that will achieve Section 5(2) functions. The land resource has been productive farmland for many years, is suited to farming and has been invested in by

the applicants for this purpose. The proposal is simply the result of the applicants seeking to sustainably manage their farmland into the future and has been carefully planned to ensure that section 5(2) functions of sustainable management will be achieved.

96 The applicants acknowledge and respect the long history and relationship Tangata Whenua have with the area. Noting that TAMI have opposed the proposal, I consider that implementation of the proposal will not adversely affect Tangata Whenua values, traditions or taonga.

National Policy Statement on Freshwater Management (2014), amended 2017

97 I consider the proposal is consistent with the NPSFM, including policy A4 and policies relating to water quality, quantity and Tangata Whenua interests. I highlight objective A2 as being particularly relevant at the present time since it guides that water quality must be maintained or improved in FMUs. I rely on the validity and appropriateness of Dr Freeman, Dr Roberts and Mr Duncan's evidence to conclude that implementation of the proposal will see a reduction in contaminant loss to water and effects compared to recent years. Importantly, it will do so compared to the future if consent is not granted (notwithstanding other requirements such a limit setting that are not relevant at the present time). I consider that implementation of the proposal will help to achieve an improvement in groundwater and surfacewater quality in FMUs, which will benefit ecosystem health and human health noting that these are two compulsory values identified by the NPSFM. The proposal inherently recognises the values and connections of Te Mana o te Wai as set out in the NPS.

98 Additional information was provided to the Consent Authority in response to a s92(1) RFI, which assessed the effects of the proposed increase in water take. The RFI response is appended to Dr Freeman's evidence for completion. Based on the assessment provided in the RFI response, I consider the proposed water take to be consistent with the objectives and policies relating to water quantity in the NPSFM.

RELEVANT PLAN PROVISIONS

99 As set out in Section 104 of the Act, I have assessed relevant provisions of the Regional Water Plan (RWP) and proposed Southland Water and Land Plan (pSWLP), as well as relevant provisions of the Southland Regional Policy Statement (RPS).

Southland Regional Policy Statement (2017)

100 Under the RMA, regional plans give effect to regional policy statements and therefore an assessment against the policies in a regional plan give effect to a higher order statutory document. The water quality and quantity policies within the pSWLP reflect the principles within respective water quality and quantity policies in the RPS.

101 I consider the proposal is consistent with the RPS and highlight policies Rural.1 (social, economic and cultural wellbeing) and Rural.5 (effects of rural land development) as key policies met by the proposal. Fundamentally, the proposal aims to allow the applicants to farm in an environmentally sustainably way

whilst enhancing the productive capacity of their land and providing for their economic and social well-being. It is therefore consistent with policy Rural.1.

102 Policy Rural.5 encourages land management practices that safeguard soil properties, minimise effects such as erosion, compaction, nutrient and sediment loss, soil disturbance, and maintain or improve water quality. The applicants are seeking to achieve such positive environmental outcomes through the implementation of their proposal, primarily through the expansion and increase in use of winter barns and cessation of IWG and fodder cropping activities at the dairy platform in conjunction with other mitigations.

Operative Plan

103 I agree with the processing officer's view that RWP merits less weight than the pSWLP as it predates and does not give effect to the NPSFM or the current RPS.

104 I do not agree with the processing officer's consideration that the proposal is inconsistent with policies 3, 4 and 25. I consider evidence provided by Mr Duncan, Dr Freeman and Dr Roberts confirms the proposal is consistent with these policies and that adverse effects on water quality will not increase due to additional cows and more effluent being generated, in fact they will decrease.

105 I consider the proposed water take is consistent with policies 29 and 30(e). These were assessed in a s92(1) RFI response that was submitted to Environment Southland in August 2019, which is appended to Dr Freeman's evidence for clarity. I clarify the proposed water take is in line with reasonable and efficient use of water, with an allocation allowed for of 120 l/cow/day for seasonal supply.

106 The processing officer considers the proposed effluent discharge activity at the Horner Block is not consistent with policy 42. I agree, however, I adopt Dr Roberts and Mr Duncan's evidence that this is not a breach of best practice due to the proposed cut and carry land use at the Horner Block.

Proposed Plan

107 I agree with the processing officer's view that since the pSWLP gives effect to the NPSFM and the RPS, better reflects Part 2 imperatives, it merits more weight being placed on it.

108 I consider Policy 13(1) to be relevant to the proposal. I conclude that by not considering it in any detail in the staff report, the processing officer places little importance on it. Policy 13(1) recognises that the use of Southland's water and land resources enables people to provide for their socioeconomic and cultural wellbeing. It explicitly recognises the use of resources for primary production. The proposal meets this by enabling the applicants to continue to provide for their economic and social wellbeing and that of the staff and contractors they employ. The applicants' farming operation generates positive effects for the immediate small Southland community of Heddon Bush, as well as the wider regional economy of Southland and will be enabled to continue to do so through implementation of the proposal.

Policy 13 – Management of land use activities and discharges

1. Recognise that the use and development of Southland's land and water resources, including for primary production, enables people and communities to provide for their social, economic and cultural wellbeing.

2. Manage land use activities and discharges (point source and non-point source) to enable the achievement of Policies 15A, 15B and 15C.

109 In relation to water quality, I provide commentary on policies 5, 10, 15B and 16, which I consider to be the most relevant policies regarding the effects of diffuse discharges on water quality from farming. I consider policies 15B and 17 are relevant to the applications seeking resource consent for the discharge of agricultural effluent.

Policy 5 – Central Plains

In the Central Plains physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:
1. requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via artificial drainage and deep drainage;
2. having particular regard to adverse effects on water quality from contaminants transported via artificial drainage and deep drainage when assessing resource consent applications and preparing or considering Farm Environmental Management Plans; and
3. decision makers generally not granting resource consents for additional dairy farming of cows or additional intensive winter grazing where contaminant losses will increase as a result of the proposed activity.

Policy 10 – Oxidising
In the Oxidising physiographic zone, avoid, remedy, or mitigate adverse effects on water quality from contaminants, by:
1. requiring implementation of good management practices to manage adverse effects on water quality from contaminants transported via deep drainage, and overland flow and artificial drainage where relevant;
2. having particular regard to adverse effects on water quality from contaminants transported via deep drainage, and overland flow and artificial drainage where relevant when assessing resource consent applications and preparing or considering Farm Environmental Management Plans; and
3. decision makers generally not granting resource consents for additional dairy farming of cows or additional intensive winter grazing where contaminant losses will increase as a result of the proposed activity.

110 I consider that the proposal is consistent with clauses 1 and 2 of both policies 6 and 10 respectively. Clauses 3 of policies 6 and 10 direct that in both the Central Plains and Oxidising PZs, decision makers generally (my emphasis) do not grant resource consent for additional dairy farming of cows or additional intensive winter grazing where contaminant losses will increase as a result of the proposed activity. The proposal is for the additional dairy farming of cows but as explained in expert witness evidence from the applicants, it will see a reduction in contaminant losses from Central Plains and Oxidising zoned land

compared to the pre-intensification situation. Although not expressly directed by the policy, it will realise a reduction compared to the future situation if consent is not granted. Since no increase in contaminant loss will occur on Central Plains and Oxidising zoned land due to the proposal, I consider clauses 3 of both policies 6 and 10 not to be relevant.

111 I regard consideration of clauses 3 of both policies 6 and 10 relevant to the proposed dairy platform since this is where additional dairy farming of cows will occur. However, if the panel deem that consideration of the Horner Block and WRO under clauses 3 is required due to additional dairy farming of cows at the dairy platform, I consider there will be no increase in contaminant losses on Oxidising or Central Plains zoned land at either site if the proposal is implemented. I primarily base my conclusion on the types of land use at the Horner Block over prior ten recent years (paragraph 74), which includes stock grazing activities. I understand from Mr Duncan's evidence that stock grazing activities on respective soils have higher nutrient loss from the same soils under cut and carry. Further, it is important to appreciate that clause 3 allows for exceptions with the use of the phrase "generally not grant."

112 Policy 15B directs that where existing water quality standards are not met, water quality must be improved and refers to the avoiding, remedying or mitigating any adverse effects of new discharges to achieve this. Similarly, it requires that proposals to replace discharge permits to improve water quality to assist with meeting those standards. From policy 13(2) "discharges" include point source and diffuse discharges so is taken to include diffuse discharges from dairy farming. I am guided by Dr Freeman's water quality report and evidence to consider that existing water quality standards are not fully met in all receiving waterbodies and in general lowland waterways in Southland are degraded to varying degrees. Therefore, to meet policy 15B, the proposal must enable water quality in receiving waterbodies to be improved.

> *Policy 15B – Improve water quality where standards are not met*
> *Where existing water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet the Appendix C ANZECC sediment guidelines, improve water quality including by:*
> *1. avoiding where practicable and otherwise remedying or mitigating any adverse effects of new discharges on water quality or sediment quality that would exacerbate the exceedance of those standards or sediment guidelines beyond the zone of reasonable mixing; and*
> *2. requiring any application for replacement of an expiring discharge permit to demonstrate how and by when adverse effects will be avoided where practicable and otherwise remedied or mitigated, so that beyond the zone of reasonable mixing water quality will be improved to assist with meeting those standards or sediment guidelines.*

113 I consider that granting the application for additional dairy farming of cows at the dairy platform will allow water quality to improve, thereby meeting policy 15B clause 1. My conclusion is based on expert witness evidence that nutrient and contaminant discharge to respective receiving waters will reduce is the proposal is implemented. This is also the case when the additional land (A) at the dairy platform is assessed in isolation. As explained by Dr Freeman, the effect of a reduction in nutrient loss from a single farm in a large catchment (i.e. the improvement in water quality) will be immeasurable at a catchment scale.

114 I only consider the proposal as has been placed before the panel by the applicants and make no comment on the processing officer's view regarding Rule 24 and the need for a new discharge permit.

115 I consider policy 15B clause 2 is relevant to the proposed discharge activities at both the dairy platform and Horner Block. I conclude that despite additional effluent being discharged beyond what is currently covered on permits, improved water quality will be achieved if the proposal is implemented, notwithstanding Dr Freeman's point in paragraph 113 about the measurability of improvement at a catchment scale. I highlight the availability of a large effluent disposal field, upgrading of effluent management systems (completed in 2018 at WW1 and proposed for WW2 in 2019/20) and use of the slurry tanker with the trailing shoe to apply slurry at very low depth as examples of how adverse effects from the discharge of effluent will be mitigated. Additional effluent will essentially be used as a biological fertiliser with a reduction in chemical fertiliser to occur to allow for it. I note Dr Roberts' conclusion that applying effluent at a maximum loading of 250 kg N/ha/year at the Horner Block is not in breach of best practice given the proposed use of the block for cut and carry only. By proposing to restrict the use the Horner Block to cut and carry, adverse effects from the discharge of effluent will be mitigated allowing water quality to be improved.

116 While it is my view that policy 15B is largely intended for surface receiving waterbodies, it may be applied to groundwater that recharges receiving surface waterbodies where Appendix E Standards are not met. Where groundwater recharges surface water, policy 15B may be more broadly applicable, directing that groundwater quality must be improved where Appendix E Surface Water Standards are not met. I consider nutrient discharge will be reduced if the proposal is implemented, including to groundwater. This can be expected to lead to a minor improvement in receiving waters due to groundwater discharge to surface waters, thereby meeting policy 15B.

117 I regard policy 16.1 clause b to be highly relevant to the proposal. Its intent (relevant to the proposal) is to generally avoid further intensification of existing dairy farming of cows under circumstances where adverse effects, including cumulatively, cannot be avoided or mitigated, where water quality is degraded to the point of being over-allocated, or where Appendix E Water Quality Standards are not met.

> *Policy 16 – Farming activities that affect water quality*
> *1. Minimising the adverse environmental effects (including on the quality of water in lakes, rivers, artificial watercourses, modified watercourses, wetlands, tidal estuaries and salt marshes, and groundwater) from farming activities by:*
> *(a) discouraging the establishment of new dairy farming of cows or new intensive winter grazing activities in close proximity to Regionally Significant Wetlands and Sensitive Waterbodies identified in Appendix A; and*
> *(b) ensuring that, in the interim period prior to the development of freshwater objectives under Freshwater Management Unit processes, applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities will generally not be granted where:*
> *(i) the adverse effects, including cumulatively, on the quality of groundwater, or water in lakes, rivers, artificial watercourses, modified watercourses, wetlands, tidal estuaries and salt marshes cannot be avoided or mitigated; or*
> *(ii) existing water quality is already degraded to the point of being overallocated; or*

(iii) water quality does not meet the Appendix E Water Quality Standards or bed sediments do not meet the Appendix C ANZECC sediment guidelines; and
(c) ensuring that, after the development of freshwater objectives under Freshwater Management Unit processes, applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities:
(i) will generally not be granted where freshwater objectives are not being met; and
(ii) where freshwater objectives are being met, will generally not be granted unless the proposed activity (allowing for any offsetting effects) will maintain the overall quality of groundwater and water in lakes, rivers, artificial watercourses, modified watercourses, wetlands, tidal estuaries and salt marshes.

(c) ensuring that, after the development of freshwater objectives under Freshwater Management Unit processes, applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities:
(i) will generally not be granted where freshwater objectives are not being met; and
(ii) where freshwater objectives are being met, will generally not be granted unless the proposed activity (allowing for any offsetting effects) will maintain the overall quality of groundwater and water in lakes, rivers, artificial watercourses, modified watercourses, wetlands, tidal estuaries and salt marshes.

2. Requiring all farming activities, including existing activities, to:
(a) implement a Farm Environmental Management Plan, as set out in Appendix N; and
(b) actively manage sediment run-off risk from farming and hill country development by identifying critical source areas and implementing practices including setbacks from waterbodies, sediment traps, riparian planting, limits on areas or duration of exposed soils and the prevention of stock entering the beds of surface waterbodies; and
(c) manage collected and diffuse run-off and leaching of nutrients, microbial contaminants and sediment through the identification and management of critical source areas within individual properties.

3. When considering a resource consent application for farming activities, consideration should be given to the following matters:
(a) whether multiple farming activities (such as cultivation, riparian setbacks, and winter grazing) can be addressed in a single resource consent; and
(b) granting a consent duration of at least 5 years.

118 I consider policy 16.1 (a) not to be relevant.

119 I rely on evidence from expert witnesses for the applicant to conclude that the adverse effects of the proposal will be less than the current and consented land use and consider that policy 16.1(b)(i) is not relevant. I do not agree with the processing officer's view that the applicants have relied on rectifying unlawful practices to demonstrate effects are being avoided or fully mitigated. Rather they are relying on moving to what they consider to be a more sustainable model for their farming system, for example by removing fodder crop/IWG at WW1&2, increasing the capacity and use of winter barns and implementing

a more efficient fertiliser programme. These activities have not been occurring unlawfully causing benefit to the applicants through their removal. I do not consider that policy 16.1.(b) says anything about not allowing "transferring or balancing" of effects across an annual cycle. Following this approach to its conclusion would effectively prevent all mitigation in practice, which in my view is not the intent of the policy.

120 Contrary to the processing officer's opinion, without allocated water quality limits in place I consider it cannot clearly be decided if existing water quality is degraded to the point of being over-allocated. As such, I do not consider that policy 16.1(b)(ii) can clearly be decided at this time.

121 Policy 16.1(b)(iii) directs that applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities will generally not be granted where water quality does not meet the Appendix E Water Quality Standards. Dr Freeman's water quality report concludes that Standards are not fully met in each of the catchments, with the Waimatuku most degraded in terms of the Standards, the Orauea/Waiau least degraded and the Oreti and Aparima in between. I consider the use of the term "generally" in the policy allows for exceptions based on the merits of a proposal. The proposal will see a reduction in nutrient losses to water with a significant reduction to the Waimatuku catchment from WW1&2 dairy platform. In considering consequential effects, I consider effects are not being transferred elsewhere to achieve this. As such, it achieves the primary aim of the pSWLP and higher documents to maintain or improve water quality where water quality is degraded. Since Water Quality Standards are not fully met in respective catchments, I consider the proposal is inconsistent with clause (b)(iii). Due to achieving a reduction in contaminant discharge, however, I believe it falls within the exception to the rule and the intent of the policy (to generally not grant application to further intensify existing dairy farming of cows).

122 I note policy 16.1(b) refers to "applications to establish new, or further intensify existing, dairy farming of cows or intensive winter grazing activities." I consider there are significant environmental gains that will only occur if consent is granted, that will demonstrate that the proposal fits within the exception provided for by the word "generally" in Policy 16, even when it is applied to the Horner Block. Based on the applicable rules and policies, I consider that Rule 15B to be more relevant to the Horner Block. I accept that this is a legal interpretation issue and am aware it will be covered in the Applicants' legal submissions.

123 I consider policy 16.1(b) does not directly apply to WRO as it is not a dairy farm. Policy 16.2 is clearly applicable to WRO and has been met. If the panel decide that policy 16.1(b) applies to WRO due to the proposed further intensification of existing dairy farming of cows at the dairy platform, I consider that since nutrient discharge will reduce, the proposal there fits the exception provided by the word "generally" in the policy.

124 Policy 17 is to manage agricultural effluent systems and is clearly applicable to the Horner Block and dairy platform.

> *Policy 17 – Agricultural effluent management*
> *1. Avoid significant adverse effects on water quality, and avoid, remedy, or mitigate other adverse effects of the operation of, and discharges from, agricultural effluent management systems.*

2. Manage agricultural effluent systems and discharges from them by:
(a) designing, constructing and locating systems appropriately and in accordance with best practice; and
(b) maintaining and operating effluent systems in accordance with best practice guidelines; and
(c) avoiding any surface run-off or overland flow, ponding or contamination of water, including via sub-surface drainage, resulting from the application of agricultural effluent to pasture; and
(d) avoiding the discharge of untreated agricultural effluent to water.
***Note:** Examples of best practice referred to in Policy 17(2)(a) for agricultural effluent include IPENZ Practice Note 21: Farm Dairy Effluent Pond Design and Construction and IPENZ Practice Note 27: Dairy Farm Infrastructure.*
***Note:** Examples of best practice guidelines referred to in Policy 17(2)(b) for agricultural effluent include DairyNZ's guidelines A Farmer's Guide to Managing Farm Dairy Effluent*

125 Contrary to the staff report, I consider the proposal is consistent with policy 17. I agree that the N loading from effluent (slurry) is higher than the N load limit set out in policy 42 of the RWP but do not agree that this is in breach of best practice. I adopt the evidence of Dr Roberts and Mr Duncan to conclude the proposed N loading to the Horner Block is not in breach of best practice and therefore meets the intent of policy 17. Similarly, I adopt the same evidence and that of Dr Freeman in my conclusion that I do not agree with the processing officer's view that in generating additional effluent volumes, inevitably increased losses will occur.

126 Evidence that the clay-lined pond is structurally sound and not leaking has been provided to Environment Southland but they do not accept it. I adopt the evidence of Mr Scandrett in this matter. I note that an application to install a synthetic liner in the pond has been submitted to Environment Southland and is undergoing a s92(1) RFI process at the time of writing. The application for consent has been lodged even though for reasons that will be explained in the applicants' opening legal submissions, I consider that the proposed work is "maintenance", which is a permitted activity under the Rule.

127 The applicability of Policy 39 of the pSWLP will be commented on in the legal submission. My only comment is that all adverse effects from the proposal have been considered as this appears to be the intent of the policy.

128 Tangata Whenua values have been considered in developing the proposal to meet policies 1, 2 and 3 of the proposed plan. The principles of protection of the mauri of the water and mana of the land while minimising adverse effects on mahinga kai will continue to be recognised and have regard to in the exercise of the consents (if granted) and the operation of the dairying activity.

Rule Framework

129 I agree the overall activity status when bundled is discretionary, therefore, consent can be granted in accordance with Section 104B of the Resource Management Act. I note that the farming proposal is a discretionary activity under Rule 20(e), which does not mention a baseline (unlike (d)). I clarify that four years of data was provided for the modelling of the proposed dairy platform area. If decision-makers consider the landholding is made up the dairy platforms minus the Horner Block and WRO, the activity status would remain discretionary.

Term

130 Should consent be granted, the applicants have applied for a term of 15 years. The processing officer considers some inconsistency with policy 40 of the pSWLP and recommends a term of five years. I note that policy 40 lists seven factors to be considered when determining the term of a resource consent. The applicants recognise that compliance needs to improve. They proffer a consent condition to ensure this improves to the required standard (paragraph 136). I consider that the consents if granted can be made subject to S128 of the Act, thereby providing the Consent Authority with the opportunity to review condition as necessary. I consider a term of five years does not reasonably recognise the permanence and socioeconomic investment of the investment being made by the applicants nor the duration they have sought and reasons why.

Draft consent conditions

131 I note the processing officer has not yet recommended draft consent conditions but is likely to do so before the hearing commences.

CONCLUSION

132 Environment Southland have recommended decline for this application. Fundamentally, they do not believe that implementing the proposal will result in an improvement for a receiving environment that we agree is degraded. The central basis for their view is that they do not trust Overseer modelling and refer to the such issues as Braxton soils and the inclusion of unlawful activities in the modelling. Other issues are raised such as difficulty in quantifying GMPs. The do not accept the assessment of effects is founded on valid and accurate information. In a nutshell, they view that granting consent would be contrary to intent of the proposed plan and higher documents.

133 A central difference between my view and that of Environment Southand is that I trust the Overseer modelling, both in terms of its appropriateness generally and in the context used in this proposal. I fully accept the applicants' exert witness evidence on the matter. Further, my own technical background allows me some understanding of the nature, limitations and benefits of models, so long as they are appropriately used. In this case, I believe that the proposal is founded on appropriate and valid modelling that can be relied upon to determine reasonable estimates for nutrient discharge both in the past and if the proposal is implemented. The assessment of effects' conclusion that implementation of the proposal will allow for a small but meaningful improvement in water quality is founded on valid and accurate information and can safely be relied on.

134 If consent is granted thereby allowing the proposal to be implemented, nutrient discharge will reduce resulting in an improvement for water quality compared to the past and importantly, compared to the situation if consent if not granted (being current consents held for WW1, WW2 and PA activities). In the context of this application, the intent of the proposed plan and higher documents is to improve water quality in the receiving environment. My view is that overall and at each site (dairy platform and support blocks) this will only be achieved by implementing the proposal.

135 The landholding issue has been a point of contention throughout the history and processing of the application and I believe is fundamentally a matter of legal interpretation. That aside, you can't get more than you applied for. This means that the applicants are effectively signing up to operate all sites as applied for in the proposal, regardless of whether some/all blocks are tangled up in a single LUC for farming or not. This secures the proposal's implementation at all sites and provides certainty on the matter. In doing so it secures the intent of the proposed plan and higher documents to improve water quality where it is degraded.

136 The applicants proffer the following condition in relation to ensuring a high level of compliance is achieved in the future.

Condition: The applicants will, by 30 June of each year, provide to the Manager Compliance, Environment Southland, an audit report produced by a person suitably qualified in rural environmental compliance, outlining the manner in which the conditions of this consent and all applicable LWRP permitted activity rule conditions have been complied with in the preceding season.

137 So far, it has been a long, difficult and costly process for them with the "goal posts" changing repeatedly throughout the time. As members of and major employers in the Heddon Bush area, where they live and farm, I believe the personal stake they have in the proposal is very high.

138 The applicants are currently able to operate their farm with restrictions related only to the discharge of effluent at WW1 and WW2. In entering the consenting process, they are effectively signing up their farming operation to restrictions relating to nutrient losses for the landholding. This provides Environment Southland with a measure of certainty regarding nutrient discharge that will not otherwise be there. A flow of effect from this will be positive effects in the receiving environment, as determined by the AEE, compared to the current situation.

MATTER RAISED BY SUBMITTERS

139 The application for resource consent was publicly notified. Submissions were received from seven parties. Further comment has been provided on submissions below.

Party	Position
Ivan Lines	Support
Lindsay Youngman	Support
Mid Aparima Catchment Group	Support
Joanne Flett and Susan Flett	Neutral
Te Ao Marama Inc. on behalf of Te Runanga o Oraka Aparima	Oppose
Public Health South on behalf of Southern District Health Board	Oppose
Ministry of Education	Oppose

140 Supporting submissions recognise the applicants as being environmental leaders in the dairy industry in Southland. They describe actions strategically taken by the applicants to reduce their environmental

footprint, which submitters believe yield benefits to soils and water in the catchment. Supporting submitters recognise the applicants to have a high level of commitment and investment (financial, social and environmental) in their farming life and to the local community in Southland.

141 A neutral submission was made by the owners of the Merriburn block (part of WR) Joanne and Susan Flett. The Fletts recognise that the applicants implement sound environmental practices at the Merriburn Block. They confirm that the lease has no right of renewal and ends in October 2021. While they will honour the terms and conditions of the lease agreement, they do not agree to jeopardise their position in the future and wish the Merriburn Block to be excluded from the landholding.

142 Te Ao Marama Inc (TAMI) have submitted in opposition to the application with concerns about the current state of water quality in the region and identify that water quality needs to be maintained and/or improved. Te Rūnanga o Ōraka Aparima are opposed because of the potential risks to the environment (including groundwater and surface water) and Ngāi Tahu values that it poses, the current degraded state and the need to avoid the risk of further deterioration to the environment and Ngai Tahu values and cultural wellbeing.

143 An opposing submission by the Ministry for Education raised concerns about potential adverse effects due to the discharge of nutrients and water take on the Heddon Bush School bore, which supplies drinking water to the school. The school is located approximately 2.3 km due south & downgradient of WW1&2. The Ministry seeks that application is refused unless:

- It is established that water quality of the Heddon Bush School bore is not adversely affected by the discharge of contaminants (including Nitrogen and *E.coli*) from the proposed operation.
- If a monitoring bore is proposed, the proposed location, proposed depth and frequency of sampling and testing and the proposed trigger levels need to be specified.

144 Public Health South on behalf of the Southland District Health Board oppose the application. They consider while the application includes mitigation of effects, including agricultural management practices, their overall assessment is that the application does not contribute to meeting required targets and objectives.

9 September 2019

Nessa Legg

Attachment 1

Existing consents for WW1, WW2 and WW3

environment SOUTHLAND

Consent No: 301664

Cnr North Road and Price Street
(Private Bag 90116)
Invercargill

Telephone (03) 211 5115
Fax No. (03) 211 5252
Southland Freephone No. 0800 76 88 45

Water Permit

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council (the "Council") to **Woldwide One Ltd** (the "consent holder") of **C/- A and J J de Wolde, 104 Shaws Trees Road, Heddon Bush, R D 3, Winton 9783** from **9 November 2012.**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:		To take groundwater for a dairy operation
Location	- site locality	Hundred Line, Heddon Bush
	- map reference	E45:350-507
	- groundwater zone	Waimatuku
	- catchment	Waimatuku Stream
Legal description of land at the site:		Part Lot 18 DP 942
Expiry date:		9 November 2027

Schedule of Conditions

1. This consent is granted for a period of 15 years and shall commence on the surrender or expiry of Resource Consent 202560.

   (Note: Pursuant to Sections 123 and 124 of the Resource Management Act 1991, a new consent will be required at the expiration of this consent. The application will be considered in accordance with the plans in effect at that time, and the adverse effects of the proposed activity).

2. This consent authorises the abstraction of water from bore/well E45/0071 at about NZMS 260 E45:350-507.

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3. The rate of abstraction shall not exceed 60,000 litres per day.

4. The consent holder shall install a backflow prevention device or take other appropriate measures to ensure water and/or contaminants cannot return to the water source.

5. The consent holder shall monitor water usage to ensure compliance with condition 3 of this consent, as follows:

   (a) by installing a flow meter prior to commencement of the abstraction:
   - (i) able to continuously measure the amount of water taken;
   - (ii) capable of accuracy to within 5% of the true flow rate, on each abstraction;
   - (iii) that shall record volumes in litres;
   - (iv) in accordance with the manufacturer's instructions;
   - (v) that is sealed and as tamper proof as practicable;
   - (vi) in a location that measures all water taken;
   - (vii) that is suited to the qualities of the water it is measuring (such as temperature, algae content and sediment content);

   (b) by recording the volume of abstraction, at or about the same time each month when the consent is being exercised.

   A copy of this record is to be provided to the Council's Compliance Manager by 31 May each year (escompliance@es.govt.nz).

6. The consent holder shall pay an administration and monitoring charge to the Southland Regional Council collected in accordance with Section 36 of the Resource Management Act, payable in advance on the first day of July each year.

7. The Council may, in accordance with section 128 and 129 of the Act, serve notice, during the period 1 February to 30 September each year, of its intention to review conditions for the purpose of:

   (a) dealing with any adverse effects on the environment which may arise from the exercise of this consent;
   (b) requiring monitoring of the rate of, or the effects of, the abstraction;
   (c) requiring efficiency of water use; and/or
   (d) complying with the requirements of a regional plan.

for the **Southland Regional Council**

Ken Swinney
Policy and Planning Manager

environment SOUTHLAND

Consent No: 301663

Cnr North Road and Price Street
(Private Bag 90116)
Invercargill

Telephone (03) 211 5115
Fax No. (03) 211 5252
Southland Freephone No. 0800 76 88 45

Discharge Permit

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council (the "Council") to **Woldwide One Ltd** (the "consent holder") of **C/- A and J J de Wolde, 104 Shaws Trees Road, Heddon Bush, R D 3, Winton 9783** from **9 November 2012.**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:		To discharge dairy shed effluent to land
Location	- site locality	Hundred Line, Heddon Bush
	- map reference	E45:350-504
	- receiving environment	Land
	- catchment	Waimatuku
Legal description of land at the site:		Lot 4 DP 399915, Parts Lot 18 DP 942, Lot 1 DP 10885, and Section 420 Taringatura Survey District
Expiry date:		9 November 2027

Schedule of Conditions

These conditions should be read in conjunction with the best practice recommendations that are appended. These will reduce the risk of non-compliance with the consent conditions.

1. This consent is granted for a period of 15 years and shall commence on the surrender or expiry of resource consent 202559.

   (Note: Pursuant to Sections 123 and 124 of the Resource Management Act 1991, a new consent will be required at the expiration of this consent. The application will be considered in accordance with the plans in effect at that time, and the adverse effects of the proposed activity.)

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2. This consent authorises the discharge of dairy shed effluent and herd home slurry onto land, via a land disposal system, as described in the application, on land known as Lot 4 DP 399915, Parts Lot 18 DP 942, Lot 1 DP 10885, and Section 420 Taringatura Survey District.

   (Note: The effluent/slurry disposal area shown in Appendix 1 can be altered and/or extended, subject to the approval of the Director of Environmental Management, if the consent holder submits a new plan showing the new effluent disposal area, and providing the written approval(s) of any person whose property boundary will be closer to that area. In the event that written approval cannot be obtained, the effluent disposal area can only be amended by way of limited notification.)

3. (a) No dairy shed effluent/slurry shall be discharged to any surface watercourse by overland flow, run-off, or via a pipe, nor shall there be any surface run-off/overland flow, ponding or contamination of water resulting from the exercise of this consent. *See Best Practice Notes 1, 2 & 3*

   (b) The land disposal system shall be operated and maintained to ensure that there is no odour or spray drift to the extent that it causes an adverse effect beyond the property boundary.

   (c) The consent holder shall install and maintain an alarm and automatic switch-off system as a contingency measure in the event of a system failure such as a sudden pressure drop, irrigator stoppage or breakdown of the travelling irrigator. *See Best Practice Note 4*

4. (a) Subject to condition 3(a), the land disposal system is limited to the following:

      (i) a maximum depth of application of 10 mm for each individual application. Where the slurry is applied by the trailing shoe system, the depth of application shall be averaged across the width of the applicators on the tanker.
      Note: The application depth needs to be less than the soil-water deficit (i.e. the depths above are maximum depths and as soil moisture levels approach field capacity, smaller depths will be necessary to avoid losses of contaminants from the root zone. When soil moisture levels reach field capacity, irrigation will need to cease completely to prevent these losses.)

      (ii) the maximum loading rate of nitrogen onto any land area shall not exceed 150 kg of nitrogen per hectare per year from the effluent/slurry; *See Best Practice Note 5*

   (b) (i) within six months of commencement of this resource consent he consent holder shall measure the application rate of the irrigator as installed to confirm the operating conditions required to ensure compliance with condition 4(a);

      (ii) within one month of commencing use of the trailing shoe-type tanker, the consent holder shall measure the application rate of the tanker to confirm compliance with condition 4(a);

      (iii) the consent holder shall notify the Council's Compliance Manager in advance of each measurement (escompliance@es.govt.nz);

      (iv) the Council may audit the measurement of the application rate to ensure accuracy. The consent holder shall pay the costs of auditing the measurement in accordance with Section 36 of the Resource Management Act.

The result of each measurement shall be forwarded to the Council's Compliance Manager; (escompliance@es.govt.nz) within 10 working days of the measurement being completed.

5. Effluent/slurry may be applied to the land as described in the application and generally as shown in Appendix 1, but the following specific buffers shall be observed:

   (a) there shall be no application of effluent and/or slurry within:

      (i) 20 metres of any surface watercourse;
      (ii) 100 metres of any potable water abstraction point;
      (iii) 100 metres of any residential dwelling other than residential dwellings on the property;

   (b) dairy shed effluent shall not be applied to land by travelling irrigator within 20 metres of a property boundary.

   (Note: this does not prevent discharge within 20 metres of the property boundary of effluent and/or slurry applied by trailing shoe-type tanker.)

   Where there is conflict between Appendix 1 and these specified buffers, the latter shall apply.

6. (a) The amount of dairy shed effluent disposed of onto land shall not exceed that from 540 cows.

   (b) The amount of herd home slurry disposed of onto land shall not exceed that from 400 cows.

7. The consent holder shall have at least 3,000 m^3 of effluent/slurry storage for the purpose of:

   (a) avoiding irrigation of effluent/slurry when soils are at or above field capacity; *see Best Practice Note 8*
   (b) providing a contingency measure when the irrigation system is inoperative; and/or
   (c) for primary treatment when it is necessary for the proper operation of the effluent disposal system.

8. (a) The consent holder shall notify the Council, by 31 March 2013, of the person who is in charge of the operation of the effluent/slurry disposal system. If the person in charge of the effluent system changes during the term of this consent, the consent holder shall notify the Council of the new operator no later than five working days after that person takes responsibility. *See Best Practice Notes 6 & 7*
   (Note: The person identified by condition 8(a) will be the primary contact for Council staff for monitoring purposes and/or in the event of an incident. Nothing in this condition removes or limits the consent holder's liability to ensure compliance with the consent and its conditions.)

   (b) The consent holder shall notify the Council's Compliance Manager (escompliance@es.govt.nz or ph 03 211 5115) prior to the commencement of the discharge of slurry/effluent from the storage pond each year.

9. The Southland Regional Council may serve notice of its intention to review the conditions of this consent, in accordance with the conditions of this resource consent and Sections 128 and 129 of the Resource Management Act 1991, during the period 1 February to 30 September

each year, or within two calendar months of the completion of any enforcement action (prosecution or infringement notice), for the purposes of:

(a) dealing with any adverse or cumulative effects, including the adverse effects of high stocking rates, on the environment which may arise from the exercise of this consent;
(b) considering any changes to information on the effects of land disposal of dairy shed effluent/slurry;
(c) complying with the requirements of a regional plan;
(d) amending monitoring requirements; or
(e) imposing a notification requirement for potential effects on registered drinking water supplies.

10. The consent holder shall pay an annual administration and monitoring charge to the Southland Regional Council, collected in accordance with Section 36 of the Resource Management Act. This charge may include the costs of inspecting the site three times each year (or otherwise as set by the Council's Annual Plan), and of monitoring the effects of the discharge on groundwater by taking representative samples of the bore water, from Bore E45/0622 once every six months and analysing for:

- electrical conductivity;
- nitrate nitrogen concentration;
- Total Nitrogen concentration;
- Dissolved oxygen concentration – field measurement;
- *E. coli* concentration;
- bromine concentration;
- chloride concentration.

Except that the first sample shall also be analysed for Dissolved Iron concentration.

(Note: The Administration Charges are payable for the costs of the Council's administration, monitoring and supervision of this resource consent. For new conversions, the first monitoring inspection by the Council, in accordance with the Council's Annual Plan, of the exercise of the resource consent shall be carried out following installation of the effluent disposal system.)

11. If an event (such as effluent/slurry overflow to water, significant over-application on a free-draining area or pond collapse) occurs that may have significant adverse effect on water quality at the abstraction point of a registered drinking-water supply, the consent holder shall notify, as soon as reasonably practicable, the following:

- Environment Southland's Compliance Manager (ph 03 211 5115 or 03 211 5225 after hours);
- Southland District Council (ph 0800 732 732).

(Note: The consent holder is advised to contact Environment Southland's Compliance Manager in the event of any unexpected event that may result in non-compliance with the conditions of this resource consent or the rules of a regional plan.)

for the **Southland Regional Council**

Ken Swinney
Policy and Planning Manager

Best Practice and Explanatory Notes

1. Dairy shed effluent should not be discharged onto any land area that has been grazed within the previous 5-10 days. Where there has been significant damage to soil during grazing, it is recommended that effluent not be applied until that damage has been repaired.

2. To avoid contaminating water directly or indirectly, the consent holder should not apply effluent to land when the soils are at or above field capacity. Moisture content is to be determined by either actual monitoring on site or by reference to the appropriate Council monitoring site. The Council's soil moisture monitoring sites can be viewed at *http://www.es.govt.nz* and following the "Farming", "Dairy Advisor" and "Soil Moisture Map" links.

3. For the purposes of this condition, ponding is the accumulation of effluent on the soil surface resulting from the application of effluent to saturated soils, or the application of effluent inducing saturated soil conditions. It does not refer to the temporary accumulation of effluent on the soil surface resulting from the application of effluent at a rate that exceeds the soil infiltration rate.

4. Where the effluent reticulation system is installed in such a way that effluent can be siphoned when pumping ceases, the consent holder should install and maintain an anti-siphon device in the effluent pipe line.

5. A loading of 150 kg N/ha/year is approximately equivalent to a loading of dairy shed effluent to land of 4 ha/100 cows. However, there are significant benefits to having a larger effluent disposal area in terms of managing potassium. Further, scientific research has highlighted decreased nitrogen use efficiency and increased nitrogen leaching losses at annual nitrogen loading rates (from combined fertiliser and effluent N) greater than 150 kg/N/ha/yr. Extreme caution should therefore be taken when applying nitrogen fertiliser to the effluent disposal area. It is recommended that a nutrient budget is used to check that nitrogen and potassium application rates to the effluent disposal area are not excessive.

6. The consent holder should prepare and comply with a Farm Environmental Management Plan. The plan should:

   - specify and implement a nutrient budgeting system for the property;
   - provide for the management of effluent disposal to avoid applications when soils are at or above field capacity;
   - identify, as far as is practicable, the drains in the effluent disposal area, so that appropriate management procedures can be taken to avoid contamination of the drains by effluent;
   - if relevant, provide for the operation and management of any feedlot and/or wintering pad;
   - include the provision for monitoring application rates to ensure the consent requirements are being met;
   - include the monitoring requirements specified in this consent; and
   - address ancillary matters such as protecting well-head(s) from contamination; preventing leachate from any silage pits entering water, including groundwater; preventing soil damage; controlling run-off from lanes; and preventing stock access to and maintaining the riparian margins of any watercourses on the property.

   A template may be viewed at:

http://www.es.govt.nz/media/4831/dairy-farm-plan-consent-template.pdf

7. The consent holder should display, in a prominent place in the dairy shed, a copy of the resource consent and relevant limits about the operation of the effluent disposal system that must be complied with. The material to be displayed will be provided by the Council on laminated sheets suitable for display purposes.

8. Storage ponds should be operated at low levels when conditions for effluent disposal are suitable in order to maintain storage for wet weather periods. In particular, storage ponds should be emptied in late summer/early autumn to ensure sufficient storage capacity for the following late winter/early spring period.

9. Storage ponds should not, for practical purposes, leak. This resource consent does not authorise the discharge of contaminants due to leaks or failure of the storage ponds. If an existing storage pond is modified (such as by increasing the embankment height to increase storage), the modification will require resource consent.

Environment Southland*

(03) 211 5115

Toll Free 0800 76 88 45 (Southland only)

or

Emergency After Hours (03) 211 5225

if you have an effluent or pollution problem, call us

environment SOUTHLAND

Held by: Woldwide One Ltd

- the total milking herd cannot exceed 540 cows.
- the amount of herd home slurry disposed of onto land shall not exceed that from 400 cows.
- effluent may only be applied within the area shown on the attached map, as detailed in the application for the Consent.
- effluent cannot be applied within 20 metres of the property boundary.
- if there are waterways within the approved area, effluent cannot be applied within 20 metres of the waterways and ditches.
- a maximum depth of application of 10 mm for each individual application. Where the slurry is applied by the trailing shoe system, the depth of application shall be averaged across the width of the applicators on the tanker.
- the contingency plan consists of:

  - Ability to defer the effluent discharge by storing effluent in a 3,300 m^3 storage pond during adverse conditions.

(the above is a synopsis. You should ensure you understand the full consent. If you do not have a copy, contact Environment Southland')

Problem Solving

• the number of cows intended to be milked exceeds the consent limit	**Contact Environment Southland for a Variation to the Consent**

If you have any effluent or pollution problems, please contact Environment Southland at the following numbers: Environment Southland: (03) 211 5115 or 0800 76 88 45 during office hours or 03 211 5225 (emergency response) after hours.

Appendix 1

Dairyshed Effluent

Farm Boundaries

N

1:25,000

environment SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga

While every effort has been made to ensure the content is correct, Environment Southland cannot guarantee the accuracy of the data. This information should not be reused in any manner without consultation.

DATA SOURCE: EG GIS 2018

AUTH-300627-V1

environment SOUTHLAND

Cnr North Road and Price Street
(Private Bag 90116)
Invercargill

Telephone (03) 211 5115
Fax No. (03) 211 5252
Southland Freephone No. 0800 76 88 45

Water Permit

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council (the "Council") to **Woldwide Two Ltd** (the "consent holder") **C/- A & J J de Wolde, 104 Shaws Trees Road, RD 3, Heddon Bush, Winton 9683** from **2 December 2011.**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:		To take groundwater for a dairy operation.
Location	- site locality	State Highway 99, Heddon Bush, Winton
	- map reference	E45:348-516
	- groundwater zone	Waimatuku
	- catchment	Middle Creek and Terrace Creek
Legal description of land at the site:		Part Lot 2 DP 4092
Expiry date:		2 December 2021

Consent Amended

Conditions amended on 4 August 2014 as follows:

Schedule of Conditions

1. This consent is granted for a period of 10 years and shall commence on the surrender or expiry of Resource Consent 200906.

   (Note: Pursuant to Sections 123 and 124 of the Resource Management Act 1991, a new consent will be required at the expiration of this consent. The application will be considered in accordance with the plans in effect at that time, and the adverse effects of the proposed activity).

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2. This consent authorises the abstraction of water from bore/well Bore E45/0083 at about NZMS 260 E45: 348-516.

3. The rate of abstraction shall not exceed 80,000 litres per day.

4. The consent holder shall install a backflow prevention device or take other appropriate measures to ensure water and/or contaminants cannot return to the water source.

5. The consent holder shall monitor water usage to ensure compliance with Condition 3 of this consent, as follows:

   (a) by installing flow meters:
      (i) capable of accuracy to within 5% of the true flow rate, on each abstraction;
      (ii) the meters shall be installed in accordance with the manufacturer's instructions;
      (iii) the water meters shall record volumes in litres or cubic metres; and

   (b) by recording the volume of abstraction, at or about the same time each month when the consent is being exercised.

   A copy of this record is to be provided to the Council's Compliance Manager by 31 May each year (escompliance@es.govt.nz).

6. The consent holder shall pay an administration and monitoring charge to the Southland Regional Council collected in accordance with Section 36 of the Resource Management Act, payable in advance on the first day of July each year.

7. The Council may, in accordance with section 128 and 129 of the Act, serve notice, during the period 1 February to 30 September each year, of its intention to review conditions for the purpose of:

   (a) Dealing with any adverse effects on the environment which may arise from the exercise of this consent; and/or
   (b) Requiring monitoring of the rate of, or the effects of, the abstraction; and/or
   (c) Requiring efficiency of water use; and/or
   (d) Complying with the requirements of a regional plan.

for the **Southland Regional Council**

Vin Smith
Director of Policy, Planning and Regulatory Services

AUTH-300626-V2

environment SOUTHLAND

Cnr North Road and Price Street
(Private Bag 90116)
Invercargill

Telephone (03) 211 5115
Fax No. (03) 211 5252
Southland Freephone No. 0800 76 88 45

Discharge Permit

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council (the "Council") to **Woldwide Two Ltd** (the "consent holder") **C/- A & J J de Wolde, 104 Shaws Trees Road, RD 3, Heddon Bush, Winton 9683** from **2 December 2011.**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:		To discharge dairy shed and wintering barn effluent to land.
Location	- site locality	State Highway 99, Heddon Bush, Winton
	- map reference	E45:349-516
	- receiving environment	Land
	- catchment	Middle Creek and Terrace Creek
Legal description of land at the site:		Lot 1 DP 14660, Lot 1 DP 9925, Lot 1 DP 10885, Pt Lot 1 DP 4092, Pt Lot 2 DP 4092, Pt Lot 18 DP 942, Lot 1 DP 5610, Lot 3 DP 5610, Pt Section 417 Taringatura SD and Section 419 Taringatura SD
Expiry date:		2 December 2021

Consent Amended

Conditions amended on 4 August 2014 as follows:

Schedule of Conditions

These conditions should be read in conjunction with the best practice recommendations that are appended. These will reduce the risk of non-compliance with the consent conditions.

1. This consent is granted for a period of 10 years and shall commence on the surrender or expiry of Resource Consent 200870.

Environment Southland is the brand name of the Southland Regional Council

Note: *Pursuant to Sections 123 and 124 of the Resource Management Act 1991, a new consent will be required at the expiration of this consent. The application will be considered in accordance with the plans in effect at that time, and the adverse effects of the proposed activity.*

2. This consent authorises the discharge of dairy shed and wintering barn effluent onto land, via a land disposal system, as described in the application, on land known as Lot 1 DP 14660, Lot 1 DP 9925, Lot 1 DP 10885, Pt Lot 1 DP 4092, Pt Lot 2 DP 4092, Pt Lot 18 DP 942, Lot 1 DP 5610, Lot 3 DP 5610, Part Section 417 Taringatura SD, Section 419 Taringatura SD and Lot 1 DP 14661.

Note: *The effluent disposal area shown in Appendix 1 can be altered and/or extended, subject to the approval of the Director of Environmental Management, if the consent holder submits a new plan showing the new effluent disposal area, and providing the written approval(s) of any person whose property boundary will be closer to that area. In the event that written approval cannot be obtained, the effluent disposal area can only be amended by way of limited notification.*

3. (a) No dairy shed or wintering barn effluent shall be discharged to any surface watercourse by overland flow, run-off, or via a pipe, nor shall there be any surface run-off/over land flow, ponding or contamination of water resulting from the exercise of this consent. ***See Best Practice Notes 1, 2 & 3.***

(b) The land disposal system shall be operated and maintained to ensure that there is no offensive or objectionable odour beyond the property boundary, or any spray drift into or beyond the buffer zones specified in Condition 5.

(c) The consent holder shall install and maintain an alarm and automatic switch-off system as a contingency measure in the event of an effluent system failure such as a sudden pressure drop, irrigator stoppage or breakdown. ***See Best Practice Note 4.***

4. (a) Subject to Condition 3(a), the land disposal system is limited to the following:

(i) a maximum depth of application of 10 mm for each individual application;

Note: The application depth needs to be less than the soil-water deficit (i.e. the depths above are maximum depths and as soil moisture levels approach field capacity, smaller depths will be necessary to avoid losses of contaminants from the root zone. When soil moisture levels reach field capacity, irrigation will need to cease completely to prevent these losses.)

(ii) the maximum loading rate of nitrogen onto any land area shall not exceed 150 kg of nitrogen per hectare per year from dairy shed and wintering barn effluent. **See Best Practice Note 5.**

(b) Before this consent is exercised, the consent holder shall measure the application rate of the irrigator as installed to confirm the operating conditions required to ensure compliance with condition 4(a).

(i) the consent holder shall notify the Council's Compliance Manager in advance of the measurement; (escompliance@es.govt.nz);

(ii) the Council may audit the measurement of the application rate to ensure accuracy. The consent holder shall pay the costs of auditing the measurement in accordance with Section 36 of the Resource Management Act.

The result of the measurement shall be forwarded to the Council's Compliance Manager; (escompliance@es.govt.nz) within 10 working days of the measurement being completed.

5. Effluent may be applied to the land as described in the application and generally as shown in Appendix 1, but the following specific buffers shall be observed:

   (a) 20 metres of any surface watercourse;
   (b) 100 metres of any potable water abstraction point;
   (c) 20 metres of any property boundary (unless the adjoining landowner's consent is obtained to do otherwise); and
   (d) 100 metres of any residential dwelling other than residential dwellings on the property.

   Where there is conflict between Appendix 1 and these specified buffers, the latter shall apply.

6. (a) The amount of dairy shed effluent disposed of onto land shall not exceed that from 800 cows.

   (b) The amount of wintering barn effluent disposed of onto land shall not exceed that from 600 cows.

7. Prior to exercising this consent the consent holder shall provide at least 3,282 m^3 of effluent storage for the purpose of:

   (a) avoiding irrigation of effluent when soils are at or above field capacity – **see Best Practice Note 8**;
   (b) providing a contingency measure when the irrigation system is inoperative; and/or
   (c) for primary treatment when it is necessary for the proper operation of the effluent disposal system.

   Note: *The storage volume is equivalent to 90 days of effluent based on 50 litres/cow/day.*

8. The consent holder shall notify the Council, by 1 February 2012, of the person who is in charge of the operation of the effluent disposal system. If the person in charge of the effluent system changes during the term of this consent, the consent holder shall notify the Council of the new operator no later than five working days after that person takes responsibility. ***See Best Practice Notes 6 & 7***

   Note: *The person identified by condition 8 will be the primary contact for Council staff for monitoring purposes and/or in the event of an incident. Nothing in this condition removes or limits the consent holder's liability to ensure compliance with the consent and its conditions.*

9. By 31 January 2015 the consent holder shall drill or access a bore (or well) for the purposes of monitoring groundwater quality. Unless otherwise agreed in writing by Environment Southland's Compliance Manager the bore shall conform with the following requirements:

   (a) the bore shall be located within the south eastern corner of the effluent disposal field, at least 500 m from the dairy shed and 200 m from the south eastern farm boundary.

   (b) the depth of the bore shall be between 2 and 4 metres below the static groundwater level, and no more than 12 metres deep in total;

(c) the internal diameter of the bore shall be between 50 and 100 mm;

(d) the bore is to be used solely for monitoring purposes. This may include abstraction to take samples or to flush the bore prior to sampling, but excludes abstraction of water for domestic or farm supply.

Note 1: *Construction of a bore will require a separate land use consent. However the land use consent is a controlled activity and should not pose an impediment to the exercise of the discharge permit. A guideline on monitoring bore construction is available*

Note 2: *If a bore cannot be established in accordance with this condition, the consent holder may seek the Compliance Manager's agreement for an alternative monitoring bore, or may seek amendment to the resource consent.*

Note 3: *If it is necessary to draw water supply from the monitoring bore it may be necessary to install a new monitoring bore.*

10. The Southland Regional Council may serve notice of its intention to review the conditions of this consent, in accordance with the conditions of this resource consent and Sections 128 and 129 of the Resource Management Act 1991, during the period 1 February to 30 September each year, or within two calendar months of the completion of any enforcement action (prosecution or infringement notice), for the purposes of:

(a) dealing with any adverse or cumulative effects, including the adverse effects of high stocking rates, on the environment which may arise from the exercise of this consent;
(b) considering any changes to information on the effects of land disposal of dairy shed or wintering barn effluent; or
(c) complying with the requirements of a regional plan; or
(d) amending monitoring requirements; or
(e) imposing a notification requirement for potential effects on registered drinking water supplies.

11. The consent holder shall pay an annual administration and monitoring charge to the Southland Regional Council, collected in accordance with Section 36 of the Resource Management Act. This charge may include the costs of inspecting the site three times each year (or otherwise as set by the Council's Annual Plan), and:

(a) from 1 February 2015 monitoring the effects of the discharge on groundwater by taking representative samples from the monitoring bore or well to be established under Condition 9 once every six months and analysing for:

- chloride;
- electrical conductivity;
- nitrate nitrogen concentration;
- *E. coli* concentration;

except that the first sample shall also be analysed for Dissolved Iron concentration.

(b) monitoring the effects of the discharge on surface water, as follows:

(i) monitoring of watercourses may be undertaken up to three times each year;

(ii) representative samples will be taken from the watercourse near the effluent disposal field, upstream and downstream of the discharge area, at points approved by the Council's Compliance Manager.

(iii) the samples will be analysed for:

- pH
- electrical conductivity
- ammoniacal nitrogen concentration
- nitrate nitrogen concentration
- dissolved reactive phosphorous concentration
- *E. coli* concentration

for the **Southland Regional Council**

Vin Smith
Director of Policy, Planning and Regulatory Services

Best Practice and Explanatory Notes

1. Dairy shed or wintering barn effluent should not be discharged onto any land area that has been grazed within the previous 5-10 days. Where there has been significant damage to soil during grazing, it is recommended that effluent not be applied until that damage has been repaired.

2. To avoid contaminating water directly or indirectly, the consent holder should not apply effluent to land when the soils are at or above field capacity. Moisture content is to be determined by either actual monitoring on site or by reference to the appropriate Council monitoring site. The Council's soil moisture monitoring sites can be viewed at *http://www.es.govt.nz* and following the "Farming", "Dairy Advisor" and "Soil Moisture Map" links.

3. For the purposes of this condition, ponding is the accumulation of effluent on the soil surface resulting from the application of effluent to saturated soils, or the application of effluent inducing saturated soil conditions. It does not refer to the temporary accumulation of effluent on the soil surface resulting from the application of effluent at a rate that exceeds the soil infiltration rate.

4. Where the effluent reticulation system is installed in such a way that effluent can be siphoned when pumping ceases, the consent holder should install and maintain an anti-siphon device in the effluent pipe line.

5. A loading of 150 kg N/ha/year is approximately equivalent to a loading of dairy shed and wintering barn effluent to land of 4 ha/100 cows. However, there are significant benefits to having a larger effluent disposal area in terms of managing potassium. Further, scientific research has highlighted decreased nitrogen use efficiency and increased nitrogen leaching losses at annual nitrogen loading rates (from combined fertiliser and effluent N) greater than 150 kg/N/ha/yr. Extreme caution should therefore be taken when applying nitrogen fertiliser to the effluent disposal area. It is recommended that a nutrient budget is used to check that nitrogen and potassium application rates to the effluent disposal area are not excessive.

6. The consent holder should prepare and comply with a Farm Environmental Management Plan. The plan should:

   - specify and implement a nutrient budgeting system for the property;
   - provide for the management of effluent disposal to avoid applications when soils are at or above field capacity;
   - identify, as far as is practicable, the drains in the effluent disposal area, so that appropriate management procedures can be taken to avoid contamination of the drains by effluent;
   - if relevant, provide for the operation and management of any feedlot and/or wintering pad;
   - include the provision for monitoring application rates to ensure the consent requirements are being met;
   - include the monitoring requirements specified in this consent; and
   - address ancillary matters such as protecting well-head(s) from contamination; preventing leachate from any silage pits entering water, including groundwater; preventing soil damage; controlling runoff from lanes; and preventing stock access to and maintaining the riparian margins of any watercourses on the property.

A template may be viewed at:
http://www.es.govt.nz/media/4831/dairy-farm-plan-consent-template.pdf

7. The consent holder should display, in a prominent place in the dairy shed, a copy of the resource consent and relevant limits about the operation of the effluent disposal system that must be complied with. The material to be displayed will be provided by the Council on laminated sheets suitable for display purposes.

8. Storage ponds should be operated at low levels when conditions for effluent disposal are suitable in order to maintain storage for wet weather periods. In particular, storage ponds should be emptied in late summer/early autumn to ensure sufficient storage capacity for the following late winter/early spring period.

9. Storage ponds should not, for practical purposes, leak. This resource consent does not authorise the discharge of contaminants due to leaks or failure of the storage ponds. If an existing storage pond is modified (such as by increasing the embankment height to increase storage), the modification will require resource consent.

Environment Southland*

(03) 211 5115

Toll Free 0800 76 88 45 (Southland only)

or

Emergency After Hours (03) 211 5225

if you have an effluent or pollution problem, call us

environment SOUTHLAND

Held by: Woldwide Two Ltd

- The amount of dairy shed effluent disposed of onto land shall not exceed that from 800 cows.
- The amount of wintering barn effluent disposed of onto land shall not exceed that from 600 cows.
- Effluent may only be applied within the area shown on the attached map, as detailed in the application for the Consent.
- Effluent cannot be applied within 20 metres of the property boundary.
- If there are waterways within the approved area, effluent cannot be applied within 20 metres of the waterways and ditches.
- The maximum depth of application of 10 mm for each individual application.

  Note: The application depth needs to be less than the soil-water deficit (i.e. the depths above are maximum depths and as soil moisture levels approach field capacity, smaller depths will be necessary to avoid losses of contaminants from the root zone. When soil moisture levels reach field capacity, irrigation will need to cease completely to prevent these losses.)

- The contingency plan consists of:

  - effluent storage for deferred irrigation

(the above is a synopsis. You should ensure you understand the full consent. If you do not have a copy, contact Environment Southland*)

Problem Solving

• the application is leaving a heavy residue or smothering the grass	**Speed up the irrigator**
• the irrigator is stalling and over-applying	**Minimise the amount of hose being pulled by looping the hose ahead of the irrigator**
• the number of cows intended to be milked exceeds the consent limit	**Contact Environment Southland for a Variation to the Consent**

If you have any effluent or pollution problems, please contact Environment Southland at the following numbers: Environment Southland: (03) 211 5115 or 0800 76 88 45 during office hours or 03 211 5225 (emergency response) after hours.

environment SOUTHLAND

Appendix 1
Woldwide Two Ltd
APP-300626-V2

N

1:12,000

Cadastral information derived from Land Information New Zealand. CROWN COPYRIGHT RESERVED
Aerial Photography dated 5/2/2007 to 14/03/2008.
Copyright Terralink International Limited

DISCLAIMER: Environment Southland cannot guarantee that the information shown is 100% accurate and should not be reused in any manner without proper consultation.

AUTH-20171278-01

environment SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga

Cnr North Road and Price Street
(Private Bag 90116
DX YX 20175)
Invercargill

Telephone (03) 211 5115
Fax No. (03) 211 5252
Southland Freephone No. 0800 76 88 45

Discharge Permit

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council to **Woldwide Two Limited** of **C/-A & J J de Wolde, 104 Shaws Trees Road, RD 3, Winton 9783** from **18 October 2017**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:		To discharge agricultural effluent to land for the purpose of disposing of dairy shed and wintering barn effluent
Location	- site locality	State Highway 99, Winton
	- map reference	NZTM2000 1224991, 4890014
	- groundwater zone	Central Plains & Waimatuku
	- FMU	Waimatuku & Oreti
	- physiographic zones	Central Plains & Oxidising
	- catchment	Middle Creek & Terrace Creek
Legal description of land at the site:		Lot 1 DP 14661, Lot 1 DP 14660, Lot 1 DP 451158, Lot 1 DP 13077, Part Lot 1 & 2 DP 4092, Lot 1 DP 5610, Lot 1 DP 10885, Lot 4 DP 399915
Expiry date:		**18 October 2027**

Schedule of Conditions

1. This consent shall not be exercised until Discharge Permit AUTH-300626-V2 is surrendered or has expired.

2.
   (a) This consent authorises the discharge of dairy shed and wintering barn effluent onto land, via a land disposal system, as described in the application for resource consent dated 24

May 2017, and further information dated 19 June 2017, 3 July 2017, and 19 September 2017. The scope of the activity is described in the application as being, amongst other things:

(i) the discharge to land of dairy shed effluent generated from milking of up to 800 cows up to twice per day;
(ii) the discharge to land of wintering barn effluent generated from wintering up to 640 cows in a purpose built barn;
(iii) the discharge of farm dairy effluent to land via travelling irrigator and slurry tanker with trailing shoe system;
(iv) the discharge of effluent to a discharge area of no more than 194 hectares as per the plan attached as Appendix 1;
(v) the discharge of effluent slurry to an area of no more that 42 hectares, on the southern block known as the 'Horner Block';
(vi) the 'Horner Block' shall be used for effluent discharge and cut and carry only, no dairy cows shall be grazed on this block;
(vii) the discharge of effluent from a 1,200 m^2 silage pad; and
(viii) the discharge of effluent from a 200 m^2 underpass.

(b) This consent excludes the discharge of effluent from winter milking (winter milking refers to cows milked to supply a winter milking contract), or from any feed pad/calving pad/structure not listed in condition 2(a).

3. This consent shall be exercised in conjunction with Land Use Consent AUTH-20171278-03.

4. The discharge authorised by this consent shall not exceed the following rates at any time:

(a) For the travelling irrigator: A maximum depth of application of 10 millimetres for each individual application;

(b) For the slurry tanker with trailing shoe and umbilical: A maximum depth of application of 5 millimetres for each individual application; and

(c) The maximum loading rate of nitrogen from effluent onto any land area as a result of the exercise of this consent shall not exceed :
(i) 150 kilograms of nitrogen per hectare per year on the dairy platform; and
(ii) 200 kilograms of nitrogen per hectare per year on the Horner Block (Lot 4 DP 399915).

5. The minimum return period for the discharge of effluent to land shall be no less than 28 days.

6. Effluent shall not be discharged within:

(a) 20 metres of any surface watercourse;
(b) 100 metres of any water abstraction point;
(c) 200 metres of any place of assembly or dwelling not on the subject property, except for on land known as Lot 3 DP 237;
(d) 100 metres of any place of assembly or dwelling on land known as Lot 3 DP 237; and
(e) 20 metres from any property boundaries.

Where there is inconsistency between the plan attached as Appendix 1 and the conditions of this consent, the conditions of this consent shall prevail.

7. The application of effluent to land shall not occur when:

(a) the moisture content of the soils is at or above field capacity,
(b) soils within the discharge area are 'cracked';
(c) during wind conditions that may result in odour or spray drift beyond the property boundary.

8. Prior to exercising this consent, the consent holder shall install and maintain a wind speed and direction sensor on the property, and inform the Consent Authority of its location.

9. Between 1 January 2022 and 31 March 2022, the consent holder shall measure the application depth of the travelling irrigator as installed to demonstrate compliance with condition 4(a) of this consent. The consent holder shall provide the results of the measurement to the Consent Authority within 10 working days of the measurement being completed.

10. For the travelling irrigator:

(a) The consent holder shall have and maintain an alarm and automatic switch-off system as a contingency measure in the event of an effluent system failure, such as a sudden pressure drop, irrigator stoppage or breakdown.

(b) Where the effluent reticulation system is installed in such a way that effluent can be siphoned when pumping ceases, the consent holder shall install and maintain an anti-siphon device in the effluent pipeline.

11. The consent holder shall have and maintain at least 4,605 cubic metres of effluent storage capacity for the purpose of avoiding irrigation of effluent when soils are at or above field capacity.

12. By 30 April 2018 a new synthetic liner shall be installed in the existing effluent storage pond. The consent holder shall take photographs of the installation process and the completed installation, and forward these to the Consent Authority within 5 working days of completion (escompliance@es.govt.nz).

13. If Condition 12 above is not able to be complied with by 30 April 2018, the consent holder shall demonstrate whether or not the existing effluent storage pond is leaking by:

(a) obtaining written confirmation regarding the ongoing performance of the pond from a suitably qualified engineer; and/or
(b) engaging a suitably qualified engineer to undertake the necessary testing to demonstrate the ongoing performance of the pond; and
(c) providing the confirmation or a report of the test results to the Consent Authority.

14. No effluent shall be discharged to any surface watercourse directly or by overland flow, run-off, or via a pipe, nor shall there be any surface runoff/overland flow, ponding or contamination of water resulting from the exercise of this consent.

15. There shall be no odour or spray drift beyond the boundary of the site as a result of the exercise of this consent that is offensive or objectionable to the extent that it causes an adverse effect in the opinion of an authorised officer of the Consent Authority.

16.

(a) The consent holder shall have and maintain a Collected Agricultural Effluent Management Plan based on the initial plan dated 12 October 2017. The purpose of the

plan is to provide direction to the consent holder's staff about the operation of the effluent system, including identification of environmental risks, to ensure compliance with the conditions of this consent. The plan shall be a concise document that is easy to use by all farm staff and shall include:

(i) A plan of how to identify when soils are exhibiting shrink/swell characteristics, are at or above field capacity, or during adverse weather conditions; and how effluent will be managed when this occurs;
(ii) A maintenance schedule for effluent disposal infrastructure (maintenance of irrigators, checking anti-siphon/switch-off systems, desludging the storage system etc);
(iii) Identification of drains, surface waterways, sub-surface drainage and critical source areas in the effluent disposal area so that the risk of effluent entering water can be avoided;
(iv) A plan of how effluent application rates and soil temperature will be monitored to ensure the consent requirements are being met; and
(v) A nutrient budget based on soil nutrient tests prepared by a Certified Nutrient Advisor using OVERSEER in accordance with OVERSEER Best Practice Data Input Standards, or an equivalent model approved by the Chief Executive of Southland Regional Council.

(b) The Collected Agricultural Effluent Management shall be reviewed at least on an annual basis to check that it still accurately reflects on-site activities and whether any improvements to management procedures need to be made. The results of the review shall be reported to the Consent Authority within one month of the review being undertaken.

(c) If/when the plan is amended, a copy of the amended version, (or amended sections) shall be sent to the Consent Authority as soon as practicable following amendment.

(d) This permit shall be exercised in accordance with the Collected Agricultural Effluent Management at all times. Where there is inconsistency between the Collected Agricultural Effluent Management Plan and the conditions of this consent, the conditions of this consent shall prevail.

(e) The Collected Agricultural Effluent Management Plan required by condition 14 (a) can also be part of the Management Plan required under Land Use Consent AUTH-20171278-03.

17. Prior to the first exercise of this consent, the consent holder shall notify the Consent Authority of the identity of the person in charge of the effluent disposal system. If a new operator is appointed, the consent holder shall notify the Consent Authority within five working days.

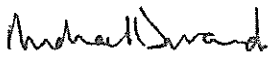
18. In the event of the failure or mismanagement of the effluent disposal system, or any other event that may result in a discharge of effluent that may have significant adverse effect on water quality, particularly in the region of the abstraction point of a registered drinking-water supply, or air quality, the consent holder shall notify, as soon as reasonably practicable, the following:

(a) the Consent Authority (ph 03 211 5115 or 03 211 5225 after hours); and
(b) the Southland District Council (ph 0800 732 732); and
(c) Public Health South (03 211 0900).

19. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the consent holder of its intention to review the conditions of this consent during the period 1 February to 30 September each year, or within two months of any enforcement action being taken by the Consent Authority in relation to the exercise of this consent, or on receiving monitoring results, for the purposes of:

    (a) determining whether the conditions of this permit are adequate to deal with any adverse effect on the environment, including cumulative effects, which may arise from the exercise of the permit, and which it is appropriate to deal with at a later stage, or which become evident after the date of commencement of the permit;
    (b) ensuring the conditions of this consent are consistent with any National Environmental Standards Regulations, relevant plans and/or the Environment Southland Regional Policy Statement;
    (c) amending the monitoring programme to be undertaken;
    (d) adding or adjusting compliance limits;
    (e) Ensuring the Waimatuku & Oreti Freshwater Management Units meet the freshwater objectives and freshwater quality limits set in an operative regional plan pursuant to Policy A1 of the National Policy Statement for Freshwater Management; and
    (f) requiring the consent holder to adopt the best practicable option to remove or reduce any adverse effect on the environment arising as a result of the exercise of this permit.

for the **Southland Regional Council**



Michael Durand
Consents Manager

Notes

1. The consent holder shall pay an annual administration and monitoring charge to the Consent Authority, collected in accordance with Section 36 of the Resource Management Act, 1991. This charge may include the costs of inspecting the site up to three times each year (or otherwise as set by the Consent Authority's Annual Plan).

2. In accordance with Section 125(1)(a) of the Resource Management Act, this consent shall lapse after a period of five years after the date of commencement unless it is given effect to or an application is made to extend the lapse period before the consent lapses.

3. If you require a replacement permit upon the expiry date of this permit, any new application should be lodged at least six months prior to the expiry date of this permit. Applying at least 6 months before the expiry date may enable you to continue to exercise this permit until a decision is made, and any appeals are resolved, on the replacement application.

4. Dairy shed effluent should not be discharged onto any land area that has been grazed within the previous 5-10 days. Where there has been significant damage to soil during grazing, it is recommended that effluent not be applied until that damage has been repaired.

5. Measuring the moisture content of the soil to determine when the soils are at or above field capacity is to be done by either actual monitoring on site or by reference to the appropriate Council monitoring site. The Council's soil moisture monitoring sites can be viewed at *http://www.es.govt.nz* and following the "Farming", "Dairy Advisor" and "Soil Moisture Map" links.

6. Ponding is the accumulation of effluent on the soil surface resulting from the application of effluent to saturated soils, or the application of effluent inducing saturated soil conditions. It does not refer to the temporary accumulation of effluent on the soil surface resulting from the application of effluent at a rate that exceeds the soil infiltration rate.

7. Extreme caution should be taken when applying nitrogen fertiliser to the effluent disposal area. It is recommended that a nutrient budget is used to check that nitrogen and potassium application rates to the effluent disposal area are not excessive.

8. The consent holder should display, in a prominent place in the dairy shed, a copy of the resource consent and relevant limits about the operation of the effluent disposal system that must be complied with.

9. Storage systems should be operated at low levels when conditions for effluent disposal are suitable in order to maintain storage for wet weather periods. In particular, storage systems should be emptied in late summer/early autumn to ensure sufficient storage capacity for the following late winter/early spring period.

10. The Proposed Southland Water and Land Plan (pSWLP) was notified by Environment Southland on 3 June 2016. Rules within the pSWLP have immediate legal effect, including rules relating to the on-going use of land for dairy farming. Under Rule 21 of the pSWLP, a Management Plan will need to be prepared and developed in accordance with Appendix N of the pSWLP. This plan is to be provided to the Consent Authority upon request.

AUTH-20171278-02

environment SOUTHLAND
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Te Taiao Tonga

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Invercargill

Telephone (03) 211 5115
Fax No. (03) 211 5252
Southland Freephone No. 0800 76 88 45

Water Permit

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council to **Woldwide Two Limited** of **C/-A & J J de Wolde, 104 Shaws Trees Road, RD 3, Winton 9783** from 18 **October 2017**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:		To take and use groundwater for the purpose of stock drinking water and dairy shed washdown
Location	- site locality	State Highway 99, Winton
	- map reference	E45/0083: NZTM2000 1225011, 4889693 E45/0727: NZTM2000 1225014, 4890268
	- groundwater zone	Central Plains & Waimatuku
	- FMU	Waimatuku & Oreti
	- physiographic zones	Central Plains & Oxidising
	- catchment	Middle Creek & Terrace Creek
	- well number	E45/0083 & E45/0727
Legal description of land at the site:		Part Lot 2 DP 4092
Expiry date:		**18 October 2027**

Schedule of Conditions

1. This consent shall not be exercised until Water Permit AUTH-300627-V1 is surrendered or has expired.

2. The permit authorises the taking of groundwater at the locations specified above. The combined rate of abstraction from both bores shall not exceed:

   (a) 2 litres per second;
   (b) 96 cubic metres per day; and

(c) 30,672 cubic metres per year.

3. Prior to the first exercise of this consent, the Consent Holder shall install backflow prevention devices or take other appropriate measures to ensure water and/or contaminants cannot return to the water source.

4.

(a) Prior to the first exercise of this consent, the Consent Holder shall install a water meter to record the water take, within an error accuracy range of +/-5% over the meter's nominal flow range. The Consent Holder shall forward a copy of the installation certificate to the Consent Authority within one month of installing the water meter.

(b) The water meter shall be installed in a straight length of pipe, before any diversion of water occurs. The straight length of pipe shall be part of the pump outlet plumbing, easily accessible, have no fittings and obstructions in it. There shall be a straight length of pipe on either side of the water meter, on the upstream side there shall be a distance that is 10 times the diameter of the pipe and on the downstream side there shall be a distance of 5 times the diameter of the pipe.

(c) The Consent Holder shall ensure the full operation of the water meter at all times during the exercise of this consent. All malfunctions of the water meter during the exercise of this consent shall be reported to the Consent Authority within five working days of observation and appropriate repairs shall be performed within five working days. Once the malfunction has been remedied, a Water Measuring Device Verification Form completed with photographic evidence must be submitted to the Consent Authority within five working days of the completion of repairs.

(d)

(i) If a mechanical insert water meter is installed it shall be verified for accuracy each and every year from the first exercise of this consent.
(ii) Any electromagnetic or ultrasonic flow meter shall be verified for accuracy every five years from the first exercise of this consent.
(iii) Each verification shall be undertaken by a Consent Authority approved operator and a Water Measuring Device Verification Form shall be completed and supplied to the Consent Authority. These shall be supplied within five working days of the verification, and at any time upon request.

(e) The Consent Holder shall provide maintain a record of the total volume of water abstracted from both bores each week. The Consent Holder shall provide this record to the Consent Authority by 31 May each year and at any other time on request.

5. Prior to the exercise of this consent, the Consent Holder shall notify the Consent Authority of the person who is in charge of the operation this consent. If the person in charge changes during the term of this consent, the Consent Holder shall notify the Consent Authority of the new operator no later than five working days after that person takes responsibility.

6. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period 1 February to 30 September each year, or within two months of any enforcement action being taken by the Consent Authority in relation to the exercise of this consent, or on receiving monitoring results, for the purposes of:

(a) Adjusting the consented rate or volume of water under Condition 2, should monitoring under Condition 4 or future changes in water use indicate that the consented rate or volume is not able to be fully utilised;

(b) Determining whether the conditions of this consent are adequate to deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage;

(c) Ensuring the conditions of this consent are consistent with any National Environmental Standards Regulations, relevant plans and/or the Environment Southland Regional Policy Statement; or

(d) Adjusting or altering the method of water take data recording and transmission.

for the **Southland Regional Council**

M Durand
Consents Manager

Notes:

1. *In accordance with Section 125(1)(a) of the Resource Management Act, this consent shall lapse after a period of five years after the date of commencement unless it is given effect to or an application is made to extend the lapse period before the consent lapses.*
2. *Section 126 of the Resource Management Act provides for this resource consent to be cancelled if the consent has been exercised in the past but has not been exercised during the preceding five years.*
3. *If you require a replacement permit upon the expiry date of this permit, any new application should be lodged at least six months prior to the expiry date of this permit. Applying at least six months before the expiry date may enable you to continue to exercise this permit until a decision is made, and any appeals are resolved, on the replacement application.*
4. *The Consent Holder shall pay an administration and monitoring charge to the Consent Authority collected in accordance with Section 36 of the Resource Management Act, payable in advance on 1 July each year.*

AUTH-20171278-03

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Land Use Consent

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council to **Woldwide Two Limited** of **C/-A & J J de Wolde, 104 Shaws Trees Road, RD 3, Winton 9783** from **18 October 2017**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Consent

Purpose for which permit is granted:		Use of land for dairy farming
Location	- site locality	State Highway 99, Winton
	- map reference	NZTM2000 1224991, 4890014
	- groundwater zone	Central Plains & Waimatuku
	- FMU	Waimatuku & Oreti
	- physiographic zones	Central Plains & Oxidising
	- catchment	Middle Creek & Terrace Creek
Legal description of land at the site:		Lot 1 DP 14661, Lot 1 DP 14660, Lot 1 DP 451158, Lot 1 DP 13077, Part Lot 1 & 2 DP 4092, Lot 1 DP 5610, Lot 1 DP 10885, Lot 4 DP 399915, Lot 1 DP 9925
Expiry date:		**18 October 2027**

Schedule of Conditions

1.

(a) This consent authorises the use of the subject land for dairy farming as described in the application for resource consent dated 24 May 2017, and further information dated 19 June 2017, 3 July 2017, and 19 September 2017.

(b) The scope of the activity is described in the application as being, amongst other things:
(i) the discharge to land of dairy shed effluent generated from milking of up to 800 cows up to twice per day;

(ii) the discharge to land of wintering barn effluent generated from wintering up to 640 cows in a purpose built barn;
(iii) the discharge of farm dairy effluent to land via travelling irrigator and slurry tanker with trailing shoe system;
(iv) the discharge of effluent to a discharge area of no more than 194 hectares as per the plan attached as Appendix 1;
(v) the discharge of effluent slurry to an area of no more that 42 hectares, on the southern block known as the 'Horner Block';
(vi) the 'Horner Block' shall be used for effluent discharge and cut and carry only, no dairy cows shall be grazed on this block;
(vii) the discharge of effluent from a 1,200 m^2 silage pad; and
(viii) the discharge of effluent from a 200 m^2 underpass.

2. This consent shall be exercised in conjunction with Discharge Permit AUTH-20171278-01, Water Permit AUTH-20171278-02, or any subsequent permits.

3. (a) The Consent Holder shall have and maintain a Management Plan for the subject site. This management plan shall be based on the Farm Environmental Management Plan dated 24 May 2017 submitted with the application for consent.

(a) This management plan shall be prepared in accordance with Appendix N of the notified version of the Proposed Regional Water and Land Plan and shall be a concise document which shall include, but not be limited to:

(i) A site map showing the location of critical source areas; physiographic zones; permanent or intermittent rivers, streams, lake, drains, ponds or wetlands; where known the location and depth of any subsurface drainage systems including outlets, riparian vegetation and fences adjacent to waterways and stock access points across waterways.
(ii) A nutrient budget based on soil nutrient tests prepared by a Certified Nutrient Advisor using OVERSEER in accordance with OVERSEER Best Practice Data Input Standards, or an equivalent model approved by the Chief Executive of Southland Regional Council.
(iii) Records of the input data used to prepare the nutrient budgets.
(iv) Good management practices for the site which will be undertaken on the farm over the period of 1 June to 31 May each year.
(v) A riparian management plan.
(vi) A cultivation map showing waterbodies, where cultivation is planned for the proceeding 1 June to 30 May and any proposed good management practices.
(vii) A collected agricultural effluent plan.

(b) The first management plan prepared under condition 3(a) shall be provided to the Consent Authority prior to exercising this consent.

(c) This permit shall be exercised in accordance with this Management Plan at all times. Where there is inconsistency between the Management Plan and the conditions of this consent, the conditions of this consent shall prevail.

4.

(a) The management plan required under condition 3 shall be reviewed once every twelve months. The results of the review and a copy of the reviewed version of the plan shall be supplied to the Consent Authority for certification (escompliance@es.govt.nz) within one month of the review being undertaken.

(b) The review shall include, but not be limited to:

(i) Updating any maps;
(ii) The suitability of the Overseer budget and the records of the input data;
(iii) The good management practices undertaken on the site over the previous 12 months, the effectiveness of the GMP's and those proposed for the next twelve months; and
(iv) The riparian management plan, agricultural effluent management plan and any irrigation management information.

(c) If changes are made to the management plan, or changes are recommended as part of the review required by condition 4(a), the Consent Holder shall explain to the Consent Authority in writing why the changes are required and how they ensure the continued use of land for dairy farming in accordance with good management practices.

5. (a) Where a material change[1] in the land use associated with the farming activity does not occur, the Consent Holder shall, once every three years, submit to the Consent Authority a nutrient budget prepared by a Certified Nutrient Advisor using OVERSEER in accordance with OVERSEER Best Practice Data Input Standards, or an equivalent model approved by the Chief Executive of Southland Regional Council.

(b) Where a material change in land use associated with the farming activity occurs a nutrient budget shall be prepared using OVERSEER in accordance with OVERSEER Best Practice Data Input Standards, or an equivalent model approved by the Chief Executive of Southland Regional Council at the end of the year in which the change occurs and three years after the change occurs. This budget shall be supplied to the Consent Authority as soon as practicable following amendment.

(c) The nutrient budget required by conditions 5(a) and 5(b) shall be accompanied by a review of the input data to ensure that the nutrient budget reflects the farming system.

6. The consent holder shall pay an annual administration and monitoring charge to the Consent Authority, collected in accordance with Section 36 of the Resource Management Act, 1991. This charge may include the costs of inspecting the site up to three times each year (or otherwise as set by the Consent Authority's Annual Plan), and monitoring the effects of the discharge on groundwater by taking representative samples from bore E45/0665 once every six months and analysing the samples for:

(a) electrical conductivity (µs/cm)
(b) chloride concentration (g/m^3)
(c) nitrate nitrogen concentration (g/m^3)
(d) Total oxidised nitrogen (nitrate + nitrite) concentration (g/m^3)
(e) Total nitrogen concentration (g/m^3)
(f) E. coli concentration (MPN/100ml)
(g) Dissolved oxygen concentration (g/m^3) – field measurement
(h) bromine concentration (g/m^3)

Except that the first sample shall also be analysed for Dissolved Iron concentration (g/m^3).

[1] Material Change is defined as a change exceeding that resulting from normal crop rotations or variations in climatic or market conditions

7. In the event that groundwater sampling under condition 6 results in: nitrate nitrogen concentrations of 10 mg/L or higher, or *Escherichia coli* concentrations of 1 MPN or higher; the consent holder shall:

   (a) Within one week of obtaining this sample result the consent holder shall arrange for a suitably qualified person to repeat the groundwater sampling under condition 6,and forward the results to the Consent Authority without undue delay;

   (b) If the second sample results in nitrate nitrogen concentrations of 10 mg/L or higher, or *Escherichia coli* concentrations of 1 MPN or higher, notify without undue delay, the following:
   (i) the Southland District Council (ph 0800 732 732); and
   (ii) Public Health South (03 211 0900).

   (c) Undertake an investigation which shall include, but not be limited to:
   (i) well head protection,
   (ii) on farm effluent management,
   (iii) an assessment of potential remedies (including new mitigation measures), and
   (iv) proposed implementation dates for the selected remedies.

   (d) Complete a report on the investigation. This report shall be completed to the Consent Authority's satisfaction, and submitted to the Consent Authority within 20 working days of the limit being breached.

8. The Consent Authority may, in accordance with Sections 128 and 129 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions of this consent during the period 1 February to 30 September each year, or within two months of any enforcement action being taken by the Consent Authority in relation to the exercise of this consent, or on receiving monitoring results, for the purposes of:

   (a) Determining whether the conditions of this permit are adequate to deal with any adverse effect on the environment, including cumulative effects, which may arise from the exercise of the permit, and which it is appropriate to deal with at a later stage, or which become evident after the date of commencement of the permit; or

   (b) Ensuring the conditions of this consent are consistent with any National Environmental Standards Regulations, relevant plans and/or the Environment Southland Regional Policy Statement.

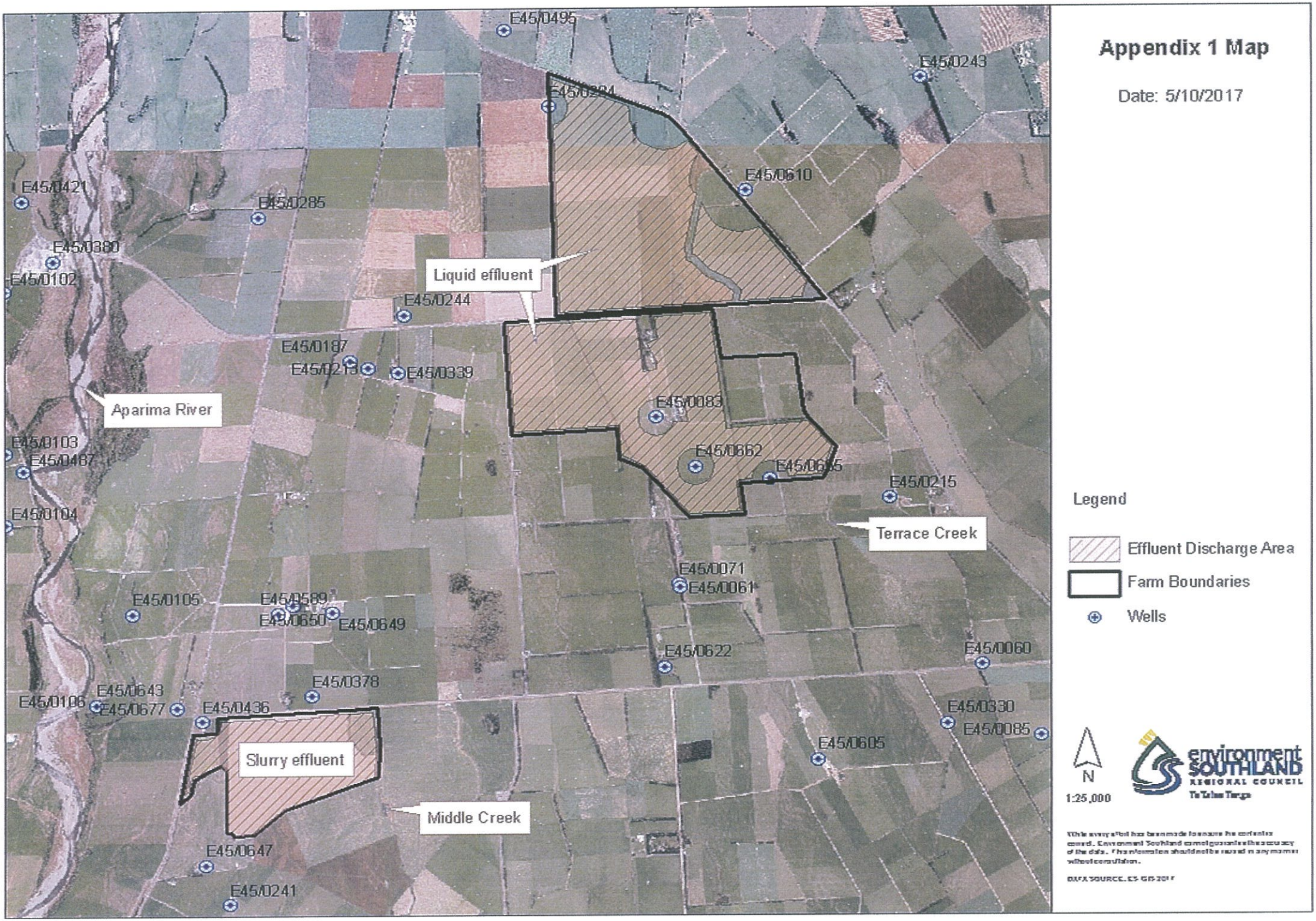
   (c) Ensuring the Waimatuku & Oreti Freshwater Management Unit meets the freshwater objectives and freshwater quality limits set in an operative regional plan pursuant to Policy A1 of the National Policy Statement for Freshwater Management.

for the **Southland Regional Council**

Michael Durand
Consents Manager

Notes

1. *In accordance with Section 125(1)(a) of the Resource Management Act, this consent shall lapse after a period of five years after the date of commencement unless it is given effect to or an application is made to extend the lapse period before the consent lapses.*


E45/0495
E45/0243
E45/0610
E45/0421
E45/0285
E45/0380
E45/0102
Liquid effluent
E45/0244
E45/0187
E45/0213
E45/0339
Aparima River
E45/0083
E45/0662
E45/0103
E45/0467
E45/0104
E45/0215
Terrace Creek
E45/0071
E45/0061
E45/0105
E45/0589
E45/0650
E45/0649
E45/0622
E45/0060
E45/0643
E45/0106
E45/0677
E45/0436
E45/0378
E45/0330
E45/0085
Slurry effluent
E45/0605
Middle Creek
E45/0647
E45/0241
Appendix 1 Map
Date: 5/10/2017
Legend
Effluent Discharge Area
Farm Boundaries
Wells
N
1:25,000
environment SOUTHLAND
REGIONAL COUNCIL

AUTH: 301665-V2

environment SOUTHLAND

Cnr North Road and Price Street
(Private Bag 90116)
Invercargill

Telephone (03) 211 5115
Fax No. (03) 211 5252
Southland Freephone No. 0800 76 88 45

Discharge Permit

Pursuant to Section 104B of the Resource Management Act 1991, a resource consent is hereby granted by the Southland Regional Council (the "Council") to **Woldwide Three Ltd** (the "consent holder") C/- **A and J J de Wolde, 104 Shaws Trees Road, R D 3, Winton 9783** from **9 November 2012**

Please read this Consent carefully, and ensure that any staff or contractors carrying out activities under this Consent on your behalf are aware of all the conditions of the Consent.

Details of Permit

Purpose for which permit is granted:		To discharge dairy shed effluent to land
Location	- site locality	Shaws Trees Road, Heddon Bush
	- map reference	E45:320-471
	- receiving environment	Land
	- catchment	Middle Creek and Terrace Creek
Legal description of land at the site:		Lot 4 DP 399915, Lots 5 & 6 DP 238, Lots 1 & 2 DP 11822, Lot 4 DP 152, Lot 1 DP 13292, Lot 1 DP 4262 Pt Lot 12 DP 238, Lot 1 DP 12253, Lots 2 & 3 DP 478843
Expiry date:		9 November 2027

History of amendents and transfers

Conditions amended 7 August 2014 and 30 August 2017.

Schedule of Conditions

These conditions should be read in conjunction with the best practice recommendations that are appended. These will reduce the risk of non-compliance with the consent conditions.

1. This consent is granted for a period of 15 years and shall commence on the surrender or expiry of Resource Consent 201725.

Environment Southland is the brand name of the Southland Regional Council

*(**Note:** Pursuant to Sections 123 and 124 of the Resource Management Act 1991, a new consent will be required at the expiration of this consent. The application will be considered in accordance with the plans in effect at that time, and the adverse effects of the proposed activity.)*

2. This consent authorises the discharge of dairy shed effluent and herd home slurry onto land, via a land disposal system, as described in the application, on land known as Lot 4 DP 399915, Lots 5 and 6 DP 238, Lots 1 and 2 DP 11822, Lot 4 DP 152, Lot 1 DP 13292, Lot 1 DP 4262, Part Lot 12 DP 238, Lot 1 DP 12253, Lots 2 and 3 DP 478843

3. (a) No dairy shed effluent/slurry shall be discharged to any surface watercourse by overland flow, run-off, or via a pipe, nor shall there be any surface run-off/overland flow, ponding or contamination of water resulting from the exercise of this consent. ***See Best Practice Notes 1, 2 & 3***

   (b) The land disposal system shall be operated and maintained to ensure that there is no odour or spray drift to the extent that it causes an adverse effect beyond the property boundary.

   (c) The consent holder shall install and maintain an alarm and automatic switch-off system as a contingency measure in the event of a system failure such as a sudden pressure drop, irrigator stoppage or breakdown of the travelling irrigator. ***See Best Practice Note 4***

4. (a) Subject to condition 3(a), the land disposal system is limited to the following:

      (i) a maximum depth of application of 10 mm for each individual application. Where the slurry is applied by the trailing shoe system, the depth of application shall be averaged across the width of the applicators on the tanker.

      *(**Note:** The application depth needs to be less than the soil-water deficit (i.e. the depths above are maximum depths and as soil moisture levels approach field capacity, smaller depths will be necessary to avoid losses of contaminants from the root zone. When soil moisture levels reach field capacity, irrigation will need to cease completely to prevent these losses.)*

      (ii) the maximum loading rate of nitrogen onto any land area shall not exceed 150 kg of nitrogen per hectare per year from the effluent/slurry; ***See Best Practice Note 5***

   (b) (i) within six months of commencement of this resource consent the consent holder shall measure the application rate of the irrigator as installed to confirm the operating conditions required to ensure compliance with condition 4(a);

(ii) within one month of commencing use of the trailing shoe-type tanker, the consent holder shall measure the application rate of the tanker to confirm compliance with condition 4(a);

(iii) the consent holder shall notify the Council's Compliance Manager in advance of each measurement (escompliance@es.govt.nz);

(iv) the Council may audit the measurement of the application rate to ensure accuracy. The consent holder shall pay the costs of auditing the measurement in accordance with Section 36 of the Resource Management Act.

The result of each measurement shall be forwarded to the Council's Compliance Manager; (escompliance@es.govt.nz) within 10 working days of the measurement being completed.

5. Effluent/slurry may be applied to the land as described in the application and generally as shown in Appendix 1, but the following specific buffers shall be observed:

(a) there shall be no application of effluent and/or slurry within:

(i) 20 metres of any surface watercourse;
(ii) 100 metres of any potable water abstraction point;
(iii) 100 metres of any residential dwelling other than residential dwellings on the property.

(b) dairy shed effluent shall not be applied to land by travelling irrigator within 20 metres of a property boundary.

*(**Note**: this does not prevent discharge within 20 metres of the property boundary of effluent and/or slurry applied by trailing shoe-type tanker.)*

Where there is conflict between Appendix 1 and these specified buffers, the latter shall apply.

6. (a) The amount of dairy shed effluent disposed of onto land shall not exceed that from 1,000 cows.

(b) The amount of herd home slurry disposed of onto land shall not exceed that from 700 cows.

7. The consent holder shall have at least 5,600 m^3 of effluent/slurry storage for the purpose of:

(a) avoiding irrigation of effluent/slurry when soils are at or above field capacity; ***see Best Practice Note 8***
(b) providing a contingency measure when the irrigation system is inoperative; and/or
(c) for primary treatment when it is necessary for the proper operation of the effluent disposal system.

8. (a) The consent holder shall notify the Council, by 31 March 2013, of the person who is in charge of the operation of the effluent/slurry disposal system. If the person in charge of the effluent system changes during the term of this consent, the consent

holder shall notify the Council of the new operator no later than five working days after that person takes responsibility. ***See Best Practice Notes 6 & 7.***

*(**Note:** The person identified by condition 8(a) will be the primary contact for Council staff for monitoring purposes and/or in the event of an incident. Nothing in this condition removes or limits the consent holder's liability to ensure compliance with the consent and its conditions.)*

(b) The consent holder shall notify the Council's Compliance Manager (escompliance@es.govt.nz or ph 03 211 5115) prior to the commencement of the discharge of slurry/effluent from the storage pond each year.

9. The Southland Regional Council may serve notice of its intention to review the conditions of this consent, in accordance with the conditions of this resource consent and Sections 128 and 129 of the Resource Management Act 1991, during the period 1 February to 30 September each year, or within two calendar months of the completion of any enforcement action (prosecution or infringement notice), for the purposes of:

(a) dealing with any adverse or cumulative effects, including the adverse effects of high stocking rates, on the environment which may arise from the exercise of this consent;
(b) considering any changes to information on the effects of land disposal of dairy shed effluent/slurry;
(c) complying with the requirements of a regional plan;
(d) amending monitoring requirements; or
(e) imposing a notification requirement for potential effects on registered drinking water supplies.

10. The consent holder shall pay an annual administration and monitoring charge to the Southland Regional Council, collected in accordance with Section 36 of the Resource Management Act. This charge may include the costs of inspecting the site three times each year (or otherwise as set by the Council's Annual Plan), and of monitoring the effects of the discharge on groundwater by taking representative samples of the bore water, from Bore E45/0432 once every six months and analysing for:

- electrical conductivity;
- nitrate nitrogen concentration;
- Total Nitrogen concentration;
- Dissolved oxygen concentration – field measurement;
- *E. coli* concentration;
- bromine concentration;
- chloride concentration.

Except that the first sample shall also be analysed for Dissolved Iron concentration.

*(**Note:** The Administration Charges are payable for the costs of the Council's administration, monitoring and supervision of this resource consent. For new conversions, the first monitoring inspection by the Council, in accordance with the Council's Annual Plan, of the exercise of the resource consent shall be carried out following installation of the effluent disposal system.)*

11. If an event (such as effluent/slurry overflow to water, significant over-application on a free-draining area or pond collapse) occurs that may have significant adverse effect on water quality at the abstraction point of a registered drinking-water supply, the consent holder shall notify, as soon as reasonably practicable, the following:

    - Environment Southland's Compliance Manager (ph 03 211 5115 or 03 211 5225 after hours)
    - Southland District Council (ph 0800 732 732).

    *(**Note**: the consent holder is advised to contact Environment Southland's Compliance Manager in the event of any unexpected event that may result in non-compliance with the conditions of this resource consent or the rules of a regional plan.)*

for the **Southland Regional Council**

Michael Durand
Consents Manager

Best Practice and Explanatory Notes

1. Dairy shed effluent should not be discharged onto any land area that has been grazed within the previous 5-10 days. Where there has been significant damage to soil during grazing, it is recommended that effluent not be applied until that damage has been repaired.

2. To avoid contaminating water directly or indirectly, the consent holder should not apply effluent to land when the soils are at or above field capacity. Moisture content is to be determined by either actual monitoring on site or by reference to the appropriate Council monitoring site. The Council's soil moisture monitoring sites can be viewed at http://www.es.govt.nz and following the "Farming", "Dairy Advisor" and "Soil Moisture Map" links.

3. For the purposes of this condition, ponding is the accumulation of effluent on the soil surface resulting from the application of effluent to saturated soils, or the application of effluent inducing saturated soil conditions. It does not refer to the temporary accumulation of effluent on the soil surface resulting from the application of effluent at a rate that exceeds the soil infiltration rate.

4. Where the effluent reticulation system is installed in such a way that effluent can be siphoned when pumping ceases, the consent holder should install and maintain an anti-siphon device in the effluent pipe line.

5. A loading of 150 kg N/ha/year is approximately equivalent to a loading of dairy shed effluent to land of 4 ha/100 cows. However, there are significant benefits to having a larger effluent disposal area in terms of managing potassium. Further, scientific research has highlighted decreased nitrogen use efficiency and increased nitrogen leaching losses at annual nitrogen loading rates (from combined fertiliser and effluent N) greater than 150 kg/N/ha/yr. Extreme caution should therefore be taken when applying nitrogen fertiliser to the effluent disposal area. It is recommended that a nutrient budget is used to check that nitrogen and potassium application rates to the effluent disposal area are not excessive.

6. The consent holder should prepare and comply with a Farm Environmental Management Plan. The plan should:

   - specify and implement a nutrient budgeting system for the property;
   - provide for the management of effluent disposal to avoid applications when soils are at or above field capacity;
   - identify, as far as is practicable, the drains in the effluent disposal area, so that appropriate management procedures can be taken to avoid contamination of the drains by effluent;
   - if relevant, provide for the operation and management of any feedlot and/or wintering pad;
   - include the provision for monitoring application rates to ensure the consent requirements are being met;
   - include the monitoring requirements specified in this consent; and
   - address ancillary matters such as protecting well-head(s) from contamination; preventing leachate from any silage pits entering water, including groundwater; preventing soil damage; controlling runoff from lanes; and preventing stock access to and maintaining the riparian margins of any watercourses on the property.

A template may be viewed at:
http://www.es.govt.nz/media/4831/dairy-farm-plan-consent-template.pdf

7. The consent holder should display, in a prominent place in the dairy shed, a copy of the resource consent and relevant limits about the operation of the effluent disposal system that must be complied with. The material to be displayed will be provided by the Council on laminated sheets suitable for display purposes.

8. Storage ponds should be operated at low levels when conditions for effluent disposal are suitable in order to maintain storage for wet weather periods. In particular, storage ponds should be emptied in late summer/early autumn to ensure sufficient storage capacity for the following late winter/early spring period.

9. Storage ponds should not, for practical purposes, leak. This resource consent does not authorise the discharge of contaminants due to leaks or failure of the storage ponds. If an existing storage pond is modified (such as by increasing the embankment height to increase storage), the modification will require resource consent.

Environment Southland*

(03) 211 5115

Toll Free 0800 76 88 45 (Southland only)

or

Emergency After Hours (03) 211 5225

if you have an effluent or pollution problem, call us

environment SOUTHLAND

Held by: Woldwide Three Ltd

- the total milking herd cannot exceed 1,000 cows.
- the amount of herd home slurry disposed of onto land shall not exceed that from 700 cows.
- effluent may only be applied within the area shown on the attached map, as detailed in the application for the Consent.
- effluent cannot be applied within 20 metres of the property boundary.
- if there are waterways within the approved area, effluent cannot be applied within 20 metres of the waterways and ditches.
- a maximum depth of application of 10 mm for each individual application. Where the slurry is applied by the trailing shoe system, the depth of application shall be averaged across the width of the applicators on the tanker.

  (Note: The application depth needs to be less than the soil-water deficit (i.e. the depths above are maximum depths and as soil moisture levels approach field capacity, smaller depths will be necessary to avoid losses of contaminants from the root zone. When soil moisture levels reach field capacity, irrigation will need to cease completely to prevent these losses.)

- the contingency plan consists of:

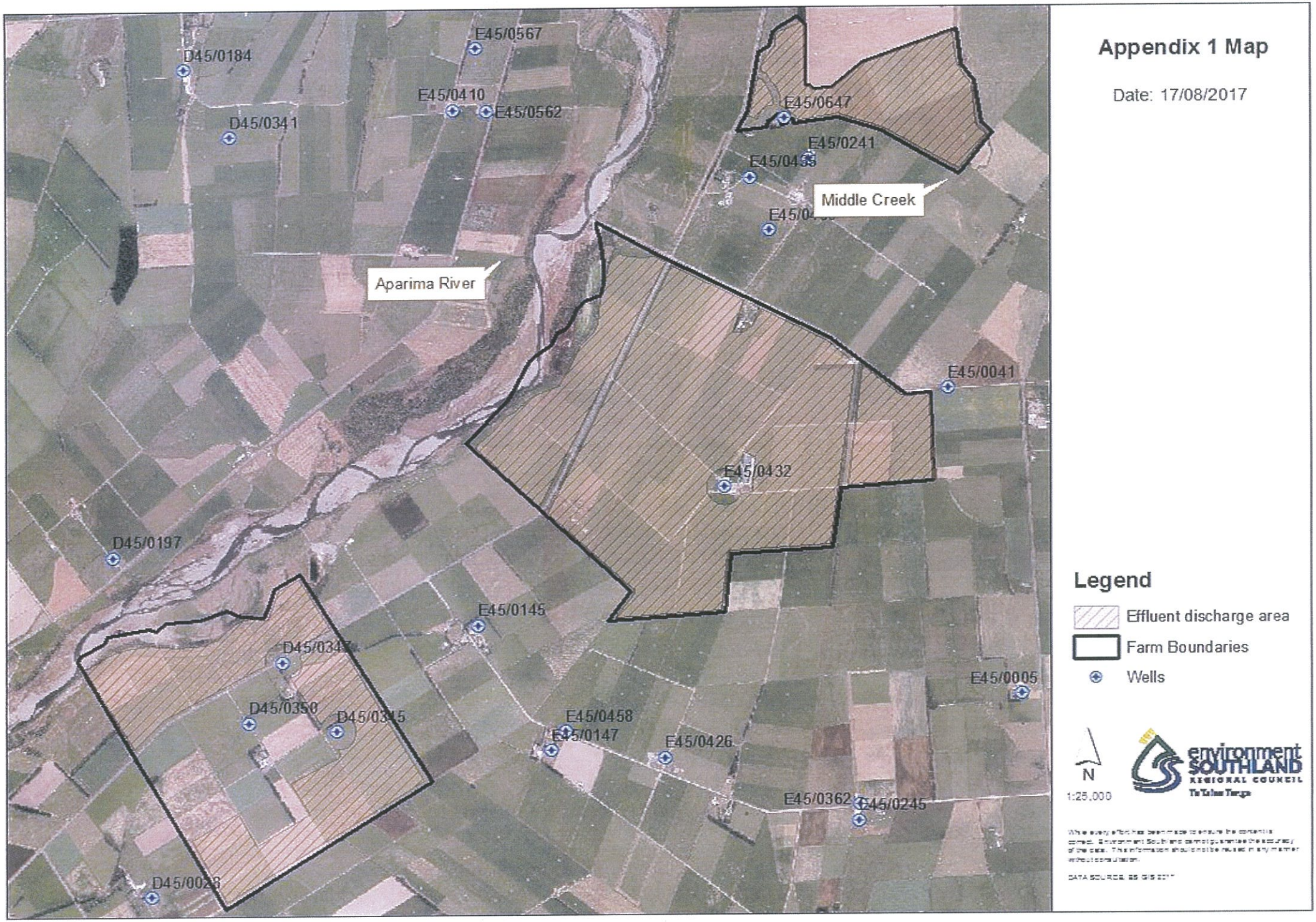
  - Ability to defer the effluent discharge by storing effluent in a 5,600 m^3 storage pond during adverse conditions

(the above is a synopsis. You should ensure you understand the full consent. If you do not have a copy, contact Environment Southland*)

Problem Solving

• the number of cows intended to be milked exceeds the consent limit	**Contact Environment Southland for a Variation to the Consent**

If you have any effluent or pollution problems, please contact Environment Southland at the following numbers: Environment Southland: (03) 211 5115 or 0800 76 88 45 during office hours or 03 211 5225 (emergency response) after hours.


Appendix 1 Map
Date: 17/08/2017
E45/0567
D45/0184
E45/0410
E45/0562
D45/0341
E45/0647
E45/0241
Middle Creek
Aparima River
E45/0041
E45/0432
D45/0197
E45/0145
E45/0005
D45/0350
D45/0345
E45/0458
E45/0147
E45/0426
E45/0362
E45/0245
D45/0023
Legend
Effluent discharge area
Farm Boundaries
Wells
N
1:25,000
environment SOUTHLAND
REGIONAL COUNCIL

Attachment 2

Report for bore (E45/0622)

Dairy Green Ltd

Practical Engineering Solutions

Consents, Effluent, Stock water, Irrigation

Design through to Installation

Irrigation NZ Accredited Designer

Reference: APP-20191052

RE: Bore E45/0622 upgrade

To whom it concerns,

Evidence is hereby provided to show that a concrete apron has been installed on bore D45/0622 to comply with NZS 4411:2001.

We were advised on the 2nd September 2019 that a concrete apron has been installed on bore D45/0622 by South Drill. Photo evidence of this is shown below.

Nessa Legg

Consultant for Woldwide One Limited and Woldwide Two Limited

10 Kinloch Street, PO Box 5003, Waikiwi, Invercargill 9843

Phone 03 215 4381, Fax 03 215 4391

Email: scandrettrural@xtra.co.nz

Bore E45/0622

10 Kinloch Street, PO Box 5003, Waikiwi, Invercargill 9843

Phone 03 215 4381, Fax 03 215 4391

Email: scandrettrural@xtra.co.nz

Attachment 3

Table 9.3 from Nutrient Budget Analysis Report (C. Duncan)

9.2 *Climate Data*

- Location setting = Southland
- Climate station tool used for block climate data
  - 1002mm of rainfall
  - 9.8°C mean annual temperature
  - 731-1450mm daily rainfall pattern. Low variation.
  - 711mm mean annual PET

9.3 *Farm System Inputs*

Description	13/14	14/15	15/16	16/17	Proposed
Milk Solids Production	591,715 kg/MS	618,196 kg/MS	626,623 kg/MS	675,392 kg/MS	840,000 kg/MS
Median Calving Date	20th August	20th August	20th August	20th August	20th August
Drying Off Date	15th June	15th June	15th June	15th June	15th June
Cows on Farm (Generated from Peak Cow Numbers)	Friesian July – 900 Aug – 1189 Sep – 1128 Oct – 1128 Nov – 1128 Dec – 1128 Jan – 1060 Feb – 1060 Mar – 1060 Apr – 981 May – 913 Jun – 900 11 Bulls Dec-Feb	Friesian July – 900 Aug – 1285 Sep – 1222 Oct – 1222 Nov – 1222 Dec – 1222 Jan – 1149 Feb – 1149 Mar – 1149 Apr – 1063 May – 990 Jun – 900 12 Bulls Dec-Feb	Friesian July – 900 Aug – 1281 Sep – 1213 Oct – 1213 Nov – 1213 Dec – 1213 Jan – 1140 Feb – 1140 Mar – 1140 Apr – 1055 May – 982 Jun – 900 12 Bulls Dec-Feb	Friesian July – 900 Aug – 1249 Sep – 1206 Oct – 1206 Nov – 1206 Dec – 1206 Jan – 1174 Feb – 1174 Mar – 1174 Apr – 1049 May – 977 Jun – 900 12 Bulls Dec-Feb	Friesian July – 1250 Aug – 1500 Sep – 1500 Oct – 1500 Nov – 1500 Dec – 1500 Jan – 1410 Feb – 1410 Mar – 1410 Apr – 1305 May – 1215 Jun – 1250 15 Bulls Dec-Feb
Milking Shed Feeding	August to May	August to May	August to May	August to May	August to May
Dairy Replacements	Calves Aug – 88 Sep – 248 Oct – 248 R1's Jun – 750 Jul - 750	Calves Aug – 95 Sep – 269 Oct – 269 R1's Jun – 551 Jul - 551	Calves Aug – 95 Sep – 267 Oct – 267 R1's Jun – 745 Jul - 745	Calves Aug – 98 Sep – 275 Oct – 275 R1's Jun – 0 Jul - 0	Calves Aug – 220 Sep – 417 Oct – 417 R1's Jun – 0 Jul - 0
Dairy Cow Wintering	Mixed Age Jun – 420	Mixed Age Jun – 1070	Mixed Age Jun – 1100	Mixed Age Jun – 1130	Mixed Age Jun – 0

Description	13/14	14/15	15/16	16/17	Proposed
	Jul - 420	Jul - 1070	Jul - 1100	Jul - 1130	Jul – 0
Wintering Barn	Mth/Cows/Hr May - 900 - 12 Jun – 900 - 24 Jul – 900 – 24 Aug –535 – 23 Effluent – All Exported *(imported as a fertiliser at block level)*	Mth/Cows/Hr May - 900 - 12 Jun – 900 - 24 Jul – 900 – 24 Aug –578 – 23 Effluent – All Exported *(imported as a fertiliser at block level)*	Mth/Cows/Hr May - 900 - 12 Jun – 900 - 24 Jul – 900 – 24 Aug –576 – 23 Effluent – All Exported *(imported as a fertiliser at block level)*	Mth/Cows/Hr May - 900 - 12 Jun – 900 - 24 Jul – 900 – 24 Aug –562 – 23 Effluent – All Exported *(imported as a fertiliser at block level)*	Mth/Cows/Hr Apr – 326 - 2 May- 1250-14 Jun -1250 - 24 Jul -1250 – 24 Aug -750 – 23 Sep -150 - 24 Effluent – All Exported *(imported as a fertiliser at block level)*
Crop Area & Inputs	14ha Swedes 13T/DM/ha Conventional Cultivation November 270kg/ha Cropmaster 15 at sowing 160kg/ha Urea – Jan Grazed 24 hrs day Jun & Jul by mixed age cows. 15.8ha Sum Turnips 9T/DM/ha Conventional Cultivation November 240kg/ha Cropmaster DAP at sowing 100kg/ha Urea – Dec 100kg/ha Urea – Apr for pasture renewal	29.9ha Kale 12T/DM/ha Conventional Cultivation November 450kg/ha Superten & 70kg/ha Urea at sowing. 150kg/ha Urea – Dec 100kg/ha Urea – Feb 250kg/ha Pot Super – Oct for Pasture Renewal. Grazed 24 hrs day Jun & Jul by mixed age cows. 10ha Fodder Beet 25T/DM/ha Conventional Cultivation October 400kg /ha Cropzeal 16N at sowing 200kg/ha	22ha Fodder Beet 25T/DM/ha Conventional Cultivation October 160kg/ha Ammo36, 280 kg/ha Super, 120kg/ha Cropmaster15 & 150kg/ha Pot Chloride at sowing. 250kg/ha Pot Super – Sep for Pasture Renewal. Grazed 24hrs day by mixed age cows. 14.5ha Sum Turnips 8T/DM/ha 240kg/ha DAP at sowing 100kg/ha Urea – Nov 250kg/ha Pot Super – Oct for Pasture Renewal.	22.5ha Fodder Beet 25T/DM/ha Conventional Cultivation October 425kg/ha Cropmaster 15, 110kg/ha Pot Chloride at sowing. 160kg/ha Urea & 75kg/ha Pot Chloride – Dec 250kg/ha Pot Super – Sep for Pasture Renewal. Grazed 24hrs day by mixed age cows.	None

Description	13/14	14/15	15/16	16/17	Proposed
	Grazed 2hrs day Feb & Mar by dairy cows	Sustain 20K – Dec 100kg/ha Sustain 20K – Feb 250kg/ha Pot Super – Sep for Pasture Renewal. Grazed 24hrs day Jun & Jul by mixed age cows <u>14ha Sum Turnips</u> Conventional Cultivation October 250kg/ha Cropzeal Boron Boost at sowing 150kg/ha Urea – Nov 250kg/ha Pot Super – Mar for Pasture Renewal. Grazed 2hrs day Jan & Feb by dairy cows.	Grazed 2hrs day Jan & Feb by dairy cows		
Silage/Barley Blocks & Inputs	<u>Barley+Silage + WGYS – 26ha</u> Barley under sown with annual ryegrass in October 251kg/N/ha, 101kg/P/ha & 139kg/K/ha	<u>Silage+WGYS+ Barn Eff – 50.7ha</u> 406kg/N/ha, 34kg/P/ha & 125kg/K/ha applied as fertiliser 166kg/N/ha, 42kg/P/ha & 228kg/K/ha applied as	<u>SH96 Silage + WGYS+ Barn Eff – 40ha</u> 406kg/N/ha, 34kg/P/ha & 125kg/K/ha applied as fertiliser 166kg/N/ha, 42kg/P/ha & 228kg/K/ha applied as	<u>SH96 Silage + WGYS+ Barn Eff – 40ha</u> 258kg/N/ha, 53kg/P/ha & 64kg/K/ha applied as fertiliser 166kg/N/ha, 42kg/P/ha & 228kg/K/ha applied as	<u>None</u>

Description	13/14	14/15	15/16	16/17	Proposed
	applied as fertiliser 8T/ha of Cereal Silage & 5T/ha grass silage. All grass winter grazing Jun & Jul with R1's <u>Silage+WGYS+ Barn Eff – 29.5ha</u> 304kg/N/ha, 59kg/P/ha & 150kg/K/ha applied as fertiliser. 166kg/N/ha, 41kg/P/ha and 228kg/K/ha applied as wintering barn effluent. 15T/ha grass silage cut. All grass winter grazing Jun & Jul with R1's	wintering barn effluent. 15T/ha grass silage cut. All grass winter grazing Jun & Jul with R1's <u>Marcel Silage + WGYS – 14ha</u> 397kg/N/ha, 94kg/P/ha & 176kg/K/ha applied as fertiliser. 15T/ha grass silage cut. All grass winter grazing Jun & Jul with R1's	wintering barn effluent. 15T/ha grass silage cut All grass winter grazing with Jun & Jul R1's <u>Marcel Silage+ WGYS – 29ha</u> 267kg/N/ha, 70kg/P/ha & 142kg/K/ha applied as fertiliser 15T/ha grass silage cut All grass winter grazing Jun & Jul with R1's	wintering barn effluent. 17T/ha grass silage cut <u>Marcel Silage – 28.5ha</u> 440kg/N/ha, 89kg/P/ha & 167kg/K/ha applied as fertiliser 17T/ha grass silage cut	
	<u>Marcel Silage + WGYS – 14ha</u> 399kg/N/ha, 94kg/P/ha & 178kg/K/ha applied as fertiliser. 15T/ha grass silage cut.				

Description	13/14	14/15	15/16	16/17	Proposed
	All grass winter grazing Jun & Jul with R1's				
Supplements	Utilised (DM) 830T Barley Grain, 233T Molasses & 425T PKE fed in dairy shed 726T Silage (fed on dairy platform paddocks) 1000T Silage fed in wintering barn 168T Baleage fed on Swede Crop Made on Farm (DM) 51T Silage – to storage.	Utilised (DM) 845T Barley Grain, 148T Molasses & 524T PKE fed in dairy shed 595T Silage (fed on dairy platform paddocks) 1000T Silage fed in wintering barn 300T Baleage fed on Kale & Fodder Beet Crop	Utilised (DM) 1092T Barley Grain, 92T Molasses & 600T PKE fed in dairy shed 619T Silage (fed on dairy platform paddocks) 950T Silage fed in wintering barn 240T Baleage fed on Fodder Beet Crop Made on Farm (DM) 77T Silage – to storage.	Utilised (DM) 953T Barley Grain, 129T Molasses & 580T PKE fed in dairy shed 818T Silage (fed on dairy platform paddocks) 1000T Silage fed in wintering barn 252T Baleage fed on Fodder Beet Crop Made on Farm (DM) 38T Silage – to storage.	Utilised (DM) 1120T Barley Grain, 208T Molasses & 765T PKE fed in dairy shed 1000T Silage (fed on dairy platform paddocks) 1400T Silage fed in wintering barn

Description	13/14	14/15	15/16	16/17	Proposed
Fertiliser	WOL Effluent 97kg/N/ha (split Aug-Mar) 25kg/P/ha 0kg/K/ha WOL Non-Effluent 189kg/N/ha (split Aug-Apr) 37kg/P/ha 18kg/K/ha WTL Effluent 147kg/N/ha (split Aug-Mar) 26kg/P/ha 0kg/K/ha WTL Non-Effluent 239kg/N/ha (split Aug-Apr) 39kg/P/ha 20kg/K/ha	WOL Effluent 140kg/N/ha (split Aug-Apr) 30kg/P/ha 0kg/K/ha WOL Non-Effluent 225kg/N/ha (split Aug-May) 46kg/P/ha 45kg/K/ha WTL Effluent 168kg/N/ha (split Aug-Apr) 30kg/P/ha 0kg/K/ha WTL Non-Effluent 225kg/N/ha (split Aug-May) 44kg/P/ha 30kg/K/ha	WOL Effluent 165kg/N/ha (split Aug-Mar) 32kg/P/ha 0kg/K/ha WOL Non-Effluent 203kg/N/ha (split Aug-Mar) 32kg/P/ha 24kg/K/ha WTL Effluent 156kg/N/ha (split Aug-Mar) 12kg/P/ha 0kg/K/ha WTL Non-Effluent 237kg/N/ha (split Aug-Mar) 19kg/P/ha 15kg/K/ha	WOL Effluent 165kg/N/ha (split Aug-Feb) 19kg/P/ha 0kg/K/ha WOL Non-Effluent 236kg/N/ha (split Aug-Apr) 20kg/P/ha 26kg/K/ha WTL Effluent 147kg/N/ha (split Aug-Mar) 14kg/P/ha 0kg/K/ha WTL Non-Effluent 241kg/N/ha (split Aug-Apr) 14kg/P/ha 0kg/K/ha	Effluent 139kg/N/ha (split Aug – Mar) 25kg/P/ha 0kg/K/ha Non-Effluent 209kg/N/ha (split Aug-Apr) 34kg/P/ha 28kg/K/ha Barn Slurry 173kg/N/ha (split Aug-Apr) 22kg/P/ha 0kg/K/ha 36kg/N/ha 9kg/P/ha 50kg/K/ha Applied as wintering barn effluent.
Effluent	Holding Pond Effluent applied at <12mm	Holding Pond Effluent applied at <12mm	Holding Pond Effluent applied at <12mm	Holding Pond Effluent applied at <12mm	Holding Pond Effluent applied at <12mm

Description	13/14	14/15	15/16	16/17	Proposed
	Wintering barn & pond solids exported as these are partly applied on land not covered in this nutrient budget. Where barn/pond effluent is applied on the support block this has been added under the fertiliser tab.	*Wintering barn & pond solids exported as these are partly applied on land not covered in this nutrient budget. Where barn/pond effluent is applied on the support block this has been added under the fertiliser tab.*	*Wintering barn & pond solids exported as these are partly applied on land not covered in this nutrient budget. Where barn/pond effluent is applied on the support block this has been added under the fertiliser tab.*	*Wintering barn & pond solids exported as these are partly applied on land not covered in this nutrient budget. Where barn/pond effluent is applied on the support block this has been added under the fertiliser tab.*	*Wintering barn & pond solids exported as these are partly applied on land not covered in this nutrient budget. Where barn/pond effluent is applied on the barn slurry block this has been added under the fertiliser tab.*

10.0 Modelling Results

10.1 *Pre-Expansion Results*

	13/14*	14/15	15/16	16/17	Average
Total N Loss (kg)	19489	23347	19440	20747	20756
N Loss/ha (kg)	41 (15)	47	38	41	42
Total P Loss (kg)	352	381	368	363	366
P Loss/ha (kg)	0.7 (0.2)	0.8	0.7	0.7	0.7
Pasture Grown Kg/DM/ha/yr (Dairy Platforms)	15,207	15,700	15212	16,801	15,550

* 13/14 results include an estimate of losses from the 38ha of land that wasn't part of Woldwide Farms in 2013/14 but forms part of the property from 14/15 onwards and is part of the expanded dairy farming application. A conservative estimate of 15kg/N/ha and 0.2kg/P/ha has been used to estimate total losses – See Section 7.1 for further details.