

pSWLP - Oral presentation of Mark Laurenson for the Oil Companies, 5 September 2017

1. I have provided both evidence in chief (**EIC**) and supplementary evidence. I understand evidence is to be taken as read but I would be pleased to answer questions.
2. To assist the Panel, I intend to use some of the time I am afforded today to explain the Oil Companies' dewatering activities in more detail. This reflects Mr McCallum-Clark's acknowledgement in his planning summary that construction dewatering may not be adequately provided for under the pSWLP and that this is a matter that could be further improved. I agree with Mr McCallum-Clark and will endeavour to provide more information around the importance of these dewatering activities.
3. I will also briefly address the evidence provided on behalf of Fonterra in relation to non-consumptive takes.
4. I have this morning provided hard copies of this document for your information and will also circulate an electronic version.

Dewatering

Need

5. Underground petroleum storage systems (**UPSS**) are fundamental to the Oil Companies' activities. The replacement of tanks at existing sites is an important maintenance activity undertaken if a tank is approaching the end of its life cycle, is suspected to be leaking, or if a site is being upgraded. Replacement of aging equipment should be enabled to promote sustainable management and ensure acceptable levels of environmental risk. This is particularly important for owner operator sites which may have limited resources. In each case, the replacement of an existing tank will require an environmental assessment under the National Environmental Standard for Contaminated Soils.
6. Dewatering is also necessary for many other infrastructure maintenance and construction activities and should be provided for.
7. In areas where seasonal groundwater is closer than 5 metres to the surface, dewatering of tank pits may be required to enable the safe and appropriate installation of tanks in accordance with HSNOCOP44, the relevant code of practice for the design and installation of below ground petroleum tanks.¹ In particular, dewatering enables contractors to safely access the base of the tank pit to anchor tanks to beams to prevent tanks from shifting out of position. Typical tank and forecourt layouts are illustrated in Figures 1 to 3.

Submitter No: 895

Submitter Name:

Oil Companies

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¹ Environmental Protection Authority, Below ground stationary container systems for petroleum – design and installation, HSNOCOP44, Version 1, June 2013

The image contains two technical cross-section diagrams of double-walled fiberglass storage tanks, labeled 'DOUBLE WALLED FIBREGLASS STORAGE TANK'.

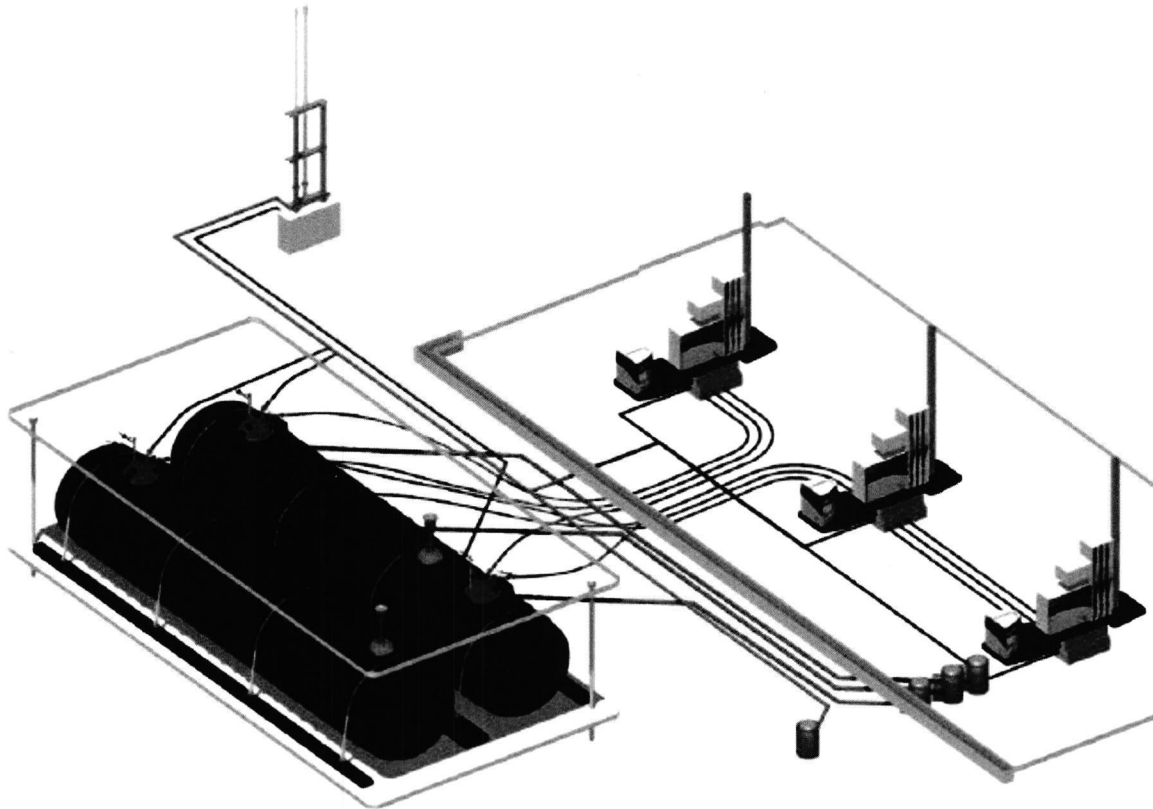
Top Diagram (Vertical Tanks):

- DOUBLE WALLED FIBREGLASS STORAGE TANK:** Two vertical cylindrical tanks are shown side-by-side.
- GRAVEL BACKFILL:** A layer of gravel is shown between the two tanks and around the base of each tank.
- VENTILATION SYSTEM:** A system of pipes and valves is shown at the top of each tank, labeled 'VENTILATION SYSTEM'.
- DOUBLE WALLED FIBREGLASS STORAGE TANK:** The label is repeated for the second tank.

Bottom Diagram (Horizontal Tanks):

- DOUBLE WALLED FIBREGLASS STORAGE TANK:** Two horizontal cylindrical tanks are shown side-by-side.
- GRAVEL BACKFILL:** A layer of gravel is shown between the two tanks and around the base of each tank.
- VENTILATION SYSTEM:** A system of pipes and valves is shown at the top of each tank, labeled 'VENTILATION SYSTEM'.
- DOUBLE WALLED FIBREGLASS STORAGE TANK:** The label is repeated for the second tank.

Figure 3 – Schematic drawing showing a tank insitu



Process - Take

8. The general approach to dewatering is relatively standard between the Oil Companies and has been successfully employed across the country. The exact methodology for dewatering will vary depending on the ground conditions (for example, different treatment trains may be employed depending on the ground conditions) and, to some extent, the contractors undertaking the work.
9. Dewatering for tank installation typically involves sheet piling to a depth of approximately 6 to 8 metres to retain the walls of the tank pit and restrict water ingress from a horizontal plane. The tank pit is then usually excavated to a depth of 4.5 to 5 metres. Water is typically pumped from a low point in the tank pit via a submersible pump located within the pit. One such example is illustrated in the photo at Figure 4.

Figure 4 – Sheet piled excavation and submersible pump



10. To accommodate worst case scenarios, the maximum rate of abstraction generally sought is 40 litres per second (l/s). Typically the maximum rate of pumping occurs in the initial draw down phase. Maintenance rates are usually governed by the permeability of the soils and typically yield substantially lower rates due to the presence of sheet piling and the level of permeability in the base of the pit.
11. The duration of dewatering takes is the time taken to excavate below the existing water table, prepare the tank base, install the tank, and backfill appropriately. This is approximately 3-5 days pumping but contingency is typically sought for up to 10 days in the event of unforeseen circumstances. While dewatering is generally undertaken on consecutive days, in unusual circumstances this may not be the case, for example if works are stopped during unexpected bad weather or during technical malfunctions.
12. Treatment of dewatering water is a fundamental part of the dewatering operation as is monitoring of the take and discharge. Dewatering water is typically treated and discharged to the reticulated stormwater network. Where no connection to the reticulated stormwater network is available, discharge to ground or water may occur. In some instances the reticulated wastewater network may have capacity to receive dewatering water, however this is not a common practice.
13. Under the operative plan, the Council does not require discharge permits for discharges to the reticulated stormwater network but rather focuses appropriately on discharges from these systems. Through section 7 of my EIC, I have supported the Oil Companies

submission requesting a note to plan users clarifying that discharges to the reticulated stormwater network will continue to be addressed in this manner under the pSWLP.

Recommendation

14. While dewatering a tank pit may in a technical sense be considered a form of abstraction, it is the result of the interception of ground water during earthworks to facilitate tank installation works rather than any desire to take water. Further, where there is a need to take water, significant measures are in fact taken to minimise the volume of water taken.
15. Dewatering abstractions for tanks are also shallow, short term and are most often discharged within the same catchment, typically to the reticulated stormwater network. However, the potential rates and volumes of water required to be removed are typically greater than permitted activity allowances.
16. In my opinion, it would be appropriate to recognise the limited potential for effects of temporary dewatering takes on water allocation, even in over allocated or fully allocated catchments. Unlike most water takes, dewatering for tank installations are temporary activities undertaken for a limited duration approximately once every 20 to 25 years at a given site. Takes are not from depth but rather at approximately 5 metres below the ground surface and as such would not normally be expected to influence levels in nearby groundwater wells, if any. Physical prevention measures are taken to actively avoid the need to take water which, if encountered, can be costly to treat and discharge. Dewatering a tank pit provides no water use benefit to the consent holder, aside from helping facilitate a tank installation, and insofar as the water taken is then, following treatment and with minimal delay, discharged.
17. Furthermore, service stations in particular are often located in urban areas served by reticulated water supply where groundwater and surface water takes are less frequent and potential effects on existing users reduced.
18. In my experience, temporary construction dewatering takes will not necessarily be considered non-consumptive by all regulators. However, they are short term, infrequent and essential construction activities. In my opinion, they should be provided for as a permitted activity subject to conditions reflecting their limited potential for adverse effects.
19. My EIC includes relief sought to provide appropriately for construction dewatering, including amendments to Policy 21, Rule 54, and the definition of total groundwater allocation (these are appended at **Appendix 1** to this statement). The relief sought draws on experience in other regions, as highlighted in my EIC, and seeks to provide for temporary dewatering takes whether they are considered non-consumptive or otherwise.
20. These changes would similarly provide for important short term takes associated with any temporary construction activities, including work to install and maintain network utilities.

Evidence prepared on behalf of Fonterra

21. Evidence prepared on behalf of Fonterra addresses non-consumptive water takes. Mr Callander, at Section 7 of his evidence, supports amendments that seek to provide for non-consumptive takes not to be considered in the allocation of water resources. It would appear from Section 3 of Mr Callander's evidence that Fonterra has a particular interest in non-consumptive groundwater takes and discharges as they relate to the Fonterra Edendale milk processing plant.
22. The definition of non-consumptive proposed by Mr Callander at paragraph 7.7 of his EIC is as follows:

Any take of fresh water where the associated use and/or discharge of that water substantially returns water to the same location; and does not adversely affect the spatial or temporal availability, or the physical, chemical or biological quality for users of the water resources into which the water is discharged.

23. The definition, in my view, may not provide for temporary construction dewatering activities which may be discharged to reticulated networks. Further the definition introduces water quality outcomes and requires discretion regarding the level of effect. In my opinion, quality is more appropriately left to the discharge provisions rather than consideration in a definition of non-consumptive which should be focussed on water quantity.
24. I consider the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 provides more appropriate flexibility in interpretation of non-consumptive takes as they relate to water quantity, stating that:

*..... the regulations do not apply to a water permit if the taking of water under the permit is non-consumptive in that –
(a) the same amount of water is returned to the same water body at or near the location from which it was taken; and
(b) there is no significant delay between the taking and returning of that water.*

25. A similar interpretation in the pSWLP would enable consideration of a range of takes to be non-consumptive with assessment on a case by case basis. In my EIC I have proposed amendments to Rule 54(b) to more appropriately provide for temporary dewatering takes which are non-consumptive. I have also proposed a new clause to Rule 54 to enable temporary construction dewatering activities to occur at a higher rate, subject to conditions.

Conclusion

26. I would be pleased to answer any questions in relation to this oral statement or to address questions the panel may have with regard to my EIC or supplementary evidence.

Appendix 1 – Relief sought re temporary construction dewatering (as set out in EIC)

Changes proposed to officer s42A recommendations are shaded **grey**:

Policy 21 – Allocation of water

Manage the allocation of surface water and groundwater by:

1. determining the primary allocation of determining the primary allocation for confined aquifers not identified in Appendix L.5, following the methodology established in Appendix L.6;
2. determining that a waterbody is fully allocated when the total volume of water allocated through current resource consents and permitted activities is equal to either:
(a) the maximum amount that may be allocated under the rules of this Plan, or
(b) the provisions of any water conservation order;
3. Enabling secondary allocation of surface water and groundwater subject to appropriate surface water environmental flow regimes, minimum lake and wetland water levels, minimum groundwater level cut-offs and/or seasonal recovery triggers, to ensure:
(a) long-term aquifer storage volumes are maintained; and
(b) the reliability of supply for existing groundwater users (including those with existing resource consents for groundwater take that have not yet been implemented) is not adversely affected.
4. When considering levels of abstraction, recognise the need to enable temporary construction dewatering activities and exclude takes for non-consumptive uses that return the same amount (or more) water to the same aquifer or a hydraulically connected surface waterbody.

Rule 54 Abstraction and use of groundwater

.....

(b) The non-consumptive take and use of groundwater is a permitted activity provided the following conditions are met:

- (i) the rate and volume of take does not exceed:
 - (1) a maximum rate of 10 litres per second;
 - (2) a maximum daily volume of 750 cubic metres;
 - ~~(3) if the degree of hydraulic connection, calculated in accordance with Appendix L.2 is not Riparian, Direct or High, the relevant surface water minimum flows and allocation limits are met;~~
- ~~(ii)~~(4) any interference effects are “acceptable” in accordance with Appendix L.3;
- ~~(iii)~~(ii) the same amount of water is returned to the same waterbody or aquifer ~~within 250 metres of the point~~ at or near the location from which it was taken;
- ~~(iv)~~(iii) there is no significant delay between the taking and returning of the water.

.....

(x) The take of groundwater for temporary construction dewatering activities is a permitted activity provided the following conditions are met:

- (i) Environment Southland must be notified at least three days prior to dewatering commencing;
- (ii) the rate of take does not exceed 40 litres per second;

- (iii) the duration of pumping does not exceed 10 consecutive days;*
- (iv) the point of abstraction is not within 50 metres of an existing lawfully established groundwater take;*
- (v) the groundwater level must not be reduced by more than 2m on the boundary of any adjoining site;*
- (vi) the distance to any existing building or structure (excluding fences and small structures on the boundary) on an adjoining site from the edge of any trench or open excavation that extends below groundwater level must be at least equal to the depth of the excavation;*
- (vii) records of the rate and duration of pumping are taken and are provided to Environment Southland within three months.*

Definition - Total groundwater allocation

The total volume of water allocated at the date a resource consent application for a new take is lodged. This includes the water that is allocated through current resource consents, the water that is proposed to be taken under consent applications that have been lodged and the additional water proposed to be taken by the consent applicant. It excludes non-consumptive takes and the stream depletion effect of each groundwater take greater than 2 litres per second with a direct, high or moderate degree of hydraulic connection in accordance with Policy 23 "Stream Depletion Effects".