

KiwiRail Holdings – Palmerston North Regional Freight Hub - S92 Requests and Responses – Stormwater

This report has been prepared for the benefit of KiwiRail. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.

Rev. no	Date	Description	Prepared by	Checked by	Reviewed by	Approved by
1	15 Feb 2021	Final	A Leahy	G Lorimer	G Lorimer	

Introduction

This memo responds to the Council's request for further information in relation to stormwater and flooding matters relating to the Palmerston North Regional Freight Hub.

Question 88) (i):

The AEE notes that the proposal has a number of positive effects associated with stormwater (section 9.1.8, section 9.7.1).

- 88) *Further technical Information or justification is required to support some of these statements, specifically:*
- (i) *That there will be improved measures for fish passage resulting from culverting of streams on the site: Please clarify if the AEE is claiming whether upgrades of existing culverts will result in improved fish passage or if extensions of culverts for streams that are not currently culverted will result in improved fish passage. In both cases, please provide any additional justification for this claim*

Question 88) (i) Response:

As set out in the Stormwater and Flooding Technical Assessment (which is reflected in the AEE), both the upgrade of existing culverts and the new culverting of some areas provide opportunities to incorporate specific design measures to facilitate fish passage. These design measures allow for the protection of the upstream habitats of indigenous aquatic fauna by providing permanent access (which we consider is consistent with Policy 9 of the NPS-FM). This reflects our understanding that the existing culverts did not include fish passage specific design considerations and the proposed works provide an ability to ensure the permanent provision of fish passage. Overall, the assessed “improvements” are a reflection of the ability to ensure the permanent provision of fish passage rather than remediating any “present-day” issues.

For further detail on how this can be achieved, please see the response to question 80.

Question 88) (ii):

The AEE notes that the proposal has a number of positive effects associated with stormwater (section 9.1.8, section 9.7.1).

- 88) *Further technical Information or justification is required to support some of these statements, specifically:*
- (ii) *That there will be opportunity to improve the ecological value of streams where retained: This claim should be clarified as to whether it takes into account the overall proportion of stream loss that is projected due to the development. i.e. is the claim that there is an overall net positive effect? If yes, please provide additional justification for this claim.*

Question 88) (ii) Response:

Section 9.1.8 of the AEE relates to section 9.7.1 of the Stormwater and Flooding Technical assessment which provides that:

Opportunity exists to improve the ecological value of streams where these are retained or reconstructed (for stormwater management purposes).

The question seems to misinterpret the statement in the AEE. The statement relates to the current state of the streams within the designation extent, which (as set out in the Assessment of Ecological Values) are of low ecological value, have poor macroinvertebrate community health, are homogenous with limited habitat provision, are unfenced and unshaded. The opportunity to improve those values relates to the ability to create open stream channel(s) along the northern boundary of the site that provide better aquatic habitat and value than currently exists. It is not intended to imply there is an overall net positive gain.

Question 88) (iii):

The AEE notes that the proposal has a number of positive effects associated with stormwater (section 9.1.8, section 9.7.1).

88) *Further technical Information or justification is required to support some of these statements, specifically:*
(iii) *There will be a change from rural to urban land use. Please provide additional technical justification to support the claim that development of the rail hub site is comparable to typical urban land use, including characterisation of industrial rail hub stormwater contamination profiles, and further details on the proposed stormwater quality treatment system*

Q 88) iii) Response:

The AEE states in 9.7.1:

A change from rural to urban land use and the inclusion of stormwater treatment systems will result in a reduction of sediment loads discharged to streams downstream.

It is not suggested that development of the Regional Freight Hub is comparable to a "typical" urban land use. Rather, the Regional Freight Hub landuse is consistent with the type of landuse that is anticipated in the NEIZ.

In terms of a reduction in sediment load there is literature available¹ that shows a reduction in sediment load changing from rural to urban landuses dating back to the 1990's. In this case where runoff treatment is proposed (both on-site and with the treatment wetland) there will be a further reduction in sediment load from the site.

There is no information available to specify the characterisation of runoff from the Regional Freight Hub at this stage. Stormwater runoff quality will be subject to the particular activity at each location on the site and the runoff impact on quality will vary for these activities. However in the Stormwater and Flooding Technical report it was confirmed that the on-site management will focus on the particular activities with a range of methods including (but not limited to) material selection (neutral building cladding materials), isolation (bunding to contain contaminants), on-site treatment (such as oil separation or carpark treatment) and finally the stormwater wetland treatment system. Apart from the final wetland treatment, the land requirements for the on-site systems are small and are anticipated to be included within available land during the detailed design of the site.

The details of the proposed stormwater management system will be the subject of regional resource consent applications. The designation contains land that will accommodate the treatment of stormwater using the agreed design approach (GD01)², through a range of methods, as noted above.

Based on the sizing in GD01, a total stormwater treatment wetland footprint of around 41,000m² will be required to treat the whole of the Regional Freight Hub Site, including the new Perimeter Road and the realigned NIMT. This footprint is based on the conservative assumptions that the contributing catchment is 100% impermeable, with a conservative ponding depth coefficient of 0.5 and no allowance for reduction of the Permanent Water Volume from the provision of live storage. The wetland footprint available in the base of the detention pond systems is in the order of 97,000m², out of a total footprint of 131,000m² that has been set aside (when also including batters and maintenance access requirements). The area allocated for the stormwater detention wetlands sufficiently provides for stormwater detention.

Question 89):

The AEE notes that potential effects from contaminated stormwater are likely to be very low or even positive with suitable treatment (section 9.6.4).

¹ Storm Sediment Yields from Basins with Various Landuses in Auckland Area, July 1994, Prepared for Auckland Regional Council, NIWA

² Auckland Council Guideline Document 2017/001, Stormwater Management Devices in the Auckland Region

- 89) *Please provide further information on the contamination profile of runoff from an industrial rail hub, the type and size of any proposed stormwater quality treatment measures, and the expected treatment effectiveness of the proposed measures for key contaminants of interest*

Question 89) Response:

Section 9.6.4 of the AEE states:

The Boffa Miskell assessment states that with suitable treatment of stormwater runoff from the site, such as the use of treatment wetlands or swales, the potential effects from contaminated stormwater are likely to be very low, and may even be positive due to the reduction in nutrients from the existing farming practices currently entering waterways

This statement refers specifically to a potential improvement in nutrient levels which is a consequence of the change from an agricultural to an urban landuse. With respect to nutrients a positive (net gain) effect is possible (and should be strived for) if treatment allows when weighed against the existing water quality. This assessment would be better made at the resource consenting phase.

Overall, even taking a conservative approach, Boffa Miskell has advised that the overall effect of the proposal would be very low on the aquatic ecology.

The water quality measures are discussed in the response to Q88)iii) above.

Question 90):

It is also not clear that sufficient space has been allocated for effective stormwater quality treatment measures (i.e. section 6.2 in Technical Report G – Stormwater Flooding Assessment).

- 90) *Please identify the area requirements for effective stormwater quality treatment measures, and where they can be located within the NoR.*

Question 90) Response:

Until the details of the final design are known and what specific on-site treatments are required, a qualitative response to this question is appropriate. A qualitative answer is provided in Technical Report G - Stormwater and Flooding Assessment at section 6.2, where the potential different stormwater management and treatment options are discussed and is expanded on in the response to Q88)iii) above.

Question 91):

The AEE notes that a Stormwater Management Report ('SMR') and Stormwater Management and Monitoring Plan ('SMMP') will be prepared (section 9.7.3), which is consistent with the Draft NoR Conditions. However, the Stormwater Management Framework, described as a key document in the Stormwater Flooding Assessment Technical Report, is not a requirement of Draft NoR conditions, and suggests a stormwater approach that does not directly align with the NoR conditions. As well, the Stormwater Flooding Assessment notes several positive effects (section 5.1.1) that will be realised through "active consideration of them during the design and site development phases", and they are not accounted for in the draft NoR conditions.

- 91) *Please clarify whether KiwiRail intends to prepare and provide a Stormwater Management Framework, as identified in Technical Report G - Stormwater Flooding Assessment at Appendix B. Please also identify what level of certainty there is that the potential positive effects identified at section 5.1.1 of the Stormwater Flooding Assessment will materialise, and what is meant by "active consideration"?*

Question 91) Response:

The Technical Assessment referred to a "Stormwater Management Framework" as this was the terminology that was discussed and agreed with PNCC, as included within Appendix A Flooding and Stormwater Assessment Assumptions. The Stormwater Management Framework (SMF) outlines a holistic framework for the management of stormwater and flooding. The proposed NoR conditions capture the parts of the framework that are relevant to the NoR and are appropriately managed through the designation for the Freight Hub. This response incorporates the technical advice as well as planning advice of relevance to the NoR.

The proposed conditions have, however, been reviewed and updated to clarify how these documents relate to the SMF discussed in Technical Report G - Stormwater and Flooding Assessment. For clarification purposes, the terminology in the conditions has been amended as follows:

- references to "Stormwater Design Report" have been amended to "Stormwater Management Report";

- references to the "Stormwater Management and Monitoring Plan" have been retained.

The Stormwater Management Report is intended to address flooding effects only. Its purpose is to confirm that design of the stormwater detention ponds is sufficient to manage flooding effects. This is one part of the information that has been included in the SMF in Appendix A to the Technical Assessment. The Stormwater Management and Monitoring Plan expands on the on-site stormwater management discussed in the SMF to address the design, operation, monitoring and maintenance of the on-site stormwater management systems, including hydraulic neutrality, stormwater treatment and contaminant removal utilising natural systems and appropriate vegetation.

Question 92):

The Stormwater Design Report proposed to be submitted at the detailed design stage appears to be limited to considering the sizing of stormwater ponds to mitigate flood impacts. Usually, a Stormwater Design Report would and should include all elements important to the function of the stormwater system, including quality treatment (type, size, placement) and Water Sensitive Design measures, internal site stormwater conveyance, specific measures for high contaminant risk areas, erosion impacts to the receiving watercourses, fish passage measures for piped watercourses, operations and maintenance requirements for all system components, and any other relevant items.

- 92) *Please clarify the intended scope of the proposed Stormwater Design Report, specifically whether it is intended to address all those matters (identified above) usually found in a professionally prepared Stormwater Design Report?*

Question 92) Response:

The purpose of the Stormwater Management Report is explained in response to question 91 and further detailed in the updated conditions.

Question 93):

The Stormwater Flooding Assessment provides an estimate of stormwater detention required based on pre- and post-development runoff volume differential (section 6.2), which is considered appropriate.

- 93) *Please provide further details on how that estimate was calculated.*

Question 93) Response:

The approximate detention size parameters assessment are as set out in the Stormwater and Flooding Technical Assessment 6.2 and Appendix A to the Assessment. They are also referred to in the response to Q88)iii) above.

Question 94):

The Stormwater Flooding Assessment provides an estimate of stormwater detention required based on pre- and post-development runoff volume differential (section 6.2), which is considered appropriate.

- 94) *Please identify how and at what stage of stormwater system design relevant standards for stormwater design will be considered, including PNCC's Engineering Standards for Land Development, Horizons One Plan, and PNCC's Strategic Direction Goals (i.e., Eco City), NPS FM, NES Freshwater, NZCPS, etc.*

Question 94) Response:

These matters have been considered in the analysis used to assess the land required to be set aside in the designation. However, the detailed consideration of these matters will be included within the detailed design and consenting stages.

Allan Leahy
Principal Technical Specialist - Stormwater
Phone: 64 9 580 4565
Allan.leahy@stantec.com