

Before Hearing Commissioners

under: the Resource Management Act 1991

in the matter of: notices of requirement and resource consent applications by the NZ Transport Agency and Hamilton City Council for the Southern Links Project

Rebuttal evidence of Christopher Allington Hardy (operational stormwater management, drainage design and flooding) on behalf of the
NZ Transport Agency and Hamilton City Council

Dated: 8 July 2014

Hearing date: 21 July 2014

REFERENCE: Theresa Le Bas (tlebas@tomwake.co.nz)
Katia Fraser (kfraser@tomwake.co.nz)

Chapman Tripp
T: +64 9 357 9000
F: +64 9 357 9099

23 Albert Street
PO Box 2206, Auckland 1140
New Zealand

www.chapmantripp.com
Auckland, Wellington,
Christchurch



Tompkins Wake
T: +64 7 839 4771
F: +64 7 839 4855

Westpac House
430 Victoria Street
PO Box 258, DX GP20031
Hamilton 3240
New Zealand

www.tomwake.com



**REBUTTAL EVIDENCE OF CHRISTOPHER ALLINGTON HARDY ON
BEHALF OF THE NZ TRANSPORT AGENCY AND HAMILTON CITY
COUNCIL**

INTRODUCTION	1
RESPONSE TO EXPERT EVIDENCE OF SUBMITTERS	2
Ian Johnson (Alan Tsai et al.)	2
Kevin Collier (Mangakotukutuku Stream Care Group Incorporated)	2
Dave Sergeant (Adare Company Limited)	4
SECTION 42A REPORT RESPONSE CLARIFICATIONS	5
CONCLUSIONS	6

**REBUTTAL EVIDENCE OF CHRISTOPHER ALLINGTON HARDY ON
BEHALF OF THE NZ TRANSPORT AGENCY AND HAMILTON CITY
COUNCIL**

INTRODUCTION

- 1 My full name is Christopher Allington Hardy.
- 2 I have the qualifications and experience set out in paragraphs 2 and 3 of my statement of evidence-in-chief (*EIC*) dated 12 June 2014.
- 3 My rebuttal evidence is given in support of notices of requirement (*NORs*) and applications for resource consents lodged by the NZ Transport Agency (*the Transport Agency*) and Hamilton City Council (*HCC*) on 9 August 2013 in relation to the construction, operation and maintenance of the Southern Links Project (*Project*).
- 4 I repeat the confirmation given in my *EIC* that I have read and agree to comply with the 'Code of Conduct for Expert Witnesses' contained in the Environment Court Practice Note 2011.
- 5 In this statement of rebuttal evidence, I respond to the relevant sections of evidence of the following:
 - 5.1 Ian Johnson (Environmental Consultant), on behalf of Alan Tsai et al. (16).
 - 5.2 Kevin Collier (Stream Ecologist), on behalf of the Mangakotukutuku Stream Care Group Incorporated (45).
 - 5.3 Dave Sergeant (Environmental Planner), on behalf of Adare Company Limited (52).
- 6 In this statement I will also clarify some points I made in my *EIC* which were raised in response to the section 42A Report prepared by MWH (30 May 2014).
- 7 The fact that this rebuttal statement does not respond to every matter raised in the evidence of submitter witnesses within my area of expertise should not be taken as acceptance of the matters raised. Rather, I rely on my earlier technical report (Concept Drainage Design Report, June 2012), my *EIC* and this rebuttal statement to set out my opinion on what I consider to be the key operational stormwater management, drainage design and flooding matters for this hearing.

RESPONSE TO EXPERT EVIDENCE OF SUBMITTERS

Ian Johnson (Alan Tsai et al.)

- 8 Mr Johnson states that it remains unclear whether the size of Stormwater Pond 6-2 is based on the type and intensity of development anticipated by the Hamilton Operative and Proposed District Plans. Mr Johnson goes on to state that a lack of capacity in the pond will necessitate the provision of additional infrastructure, including detention ponds, in an area where integrated management and efficient use of land is important¹.
- 9 In response, I note that the preliminary areal extent of wetland 6-2 is based on the anticipated runoff from the land type identified in the Peacocke Structure Plan and Peacocke Character Zone under the Proposed District Plan, averaged across the wetland sub catchment.
- 10 In response to Mr Johnson's statement that if the wetland is too small, additional infrastructure (including detention ponds) may be required, I note the following:
- 10.1 HCC's preference is for a single central wetland to be constructed in each sub catchment. This is likely to be reflected in the Mangakotukutuku Integrated Catchment Management Plan (*ICMP*) when it is developed (it is currently scheduled for completion in about 2016). Additional detention ponds are not likely to be permitted.
- 10.2 The ICMP is likely to require a treatment train approach which means that additional infrastructure will be required upstream of each proposed wetland. This infrastructure would normally be incorporated into individual developer's detailed planning and design to meet the requirements of the ICMP.
- 10.3 The estimated wetland size for the purpose of the designation does not account for the positive effect of upstream treatment devices. For this reason I do not believe the proposed wetland area will be too small. The ICMP is likely to provide further detail in regard to treatment train requirements and the designated wetland areas.
- 11 I note that Mr Johnson supports the discharge location of wetland 6-2 along the proposed road corridor².

Kevin Collier (Mangakotukutuku Stream Care Group Incorporated)

- 12 Mr Collier notes that some of the projected losses in wetlands appear to be due to the installation of ponds for stormwater treatment. He

¹ Evidence of Mr Ian Johnson, paragraphs 4.1 to 4.4.

² Evidence of Mr Ian Johnson, paragraph 5.1.

also states that the Stream Care Group is opposed to any online treatment of stormwater because of the associated inputs of contaminants, and because the ponds used to treat stormwater cause elevated downstream water temperatures in summer and can provide habitat for pest fish species³.

- 13 In response, I note that ponds are not preferred by HCC and Waikato Regional Council (*WRC*). Wetlands are preferred because they have superior treatment and aesthetics and have a significantly lower volume of permanent water which benefits temperature and restrict habitat for pest fish. Wetlands are likely to be a requirement of the ICMP.
- 14 Mr Collier notes that WRC has developed a guideline document for stormwater treatment in the Peacocke area which recommends that a treatment train approach is utilised incorporating low impact design, and that a 20 m offset is retained from the point of stormwater discharge to the watercourse/perennial gully head being discharged to⁴.
- 15 In response, I note that a treatment train approach is already part of the Draft Peacocke Catchment Management Plan (*CMP*) and this requirement is likely to be part of the full catchment ICMP. I am aware of the preference for discharges to be set back from ecologically significant gullies. However, my understanding is that modified gully heads can be used for stormwater treatment wetlands designed to integrate with the gully system and improve habitat. Wetlands in the head of modified gullies are currently part of the Draft Peacocke CMP.
- 16 Mr Collier notes that the Draft Peacocke CMP requires removal of 85% of sediment from stormwater discharging to the Mangakotukutuku Stream, and that the roading development should be subject to the same requirements⁵.
- 17 In response, I note that the Draft Peacocke CMP area is a sub catchment of the Mangakotukutuku ICMP catchment. The requirement for 85% sediment removal via a treatment train is likely to be included in the ICMP and would apply to all development, including roading, within the Mangakotukutuku catchment. I understand that WRC expect the standards adopted in the Peacocke CMP to be included in the ICMP.

³ Evidence of Mr Kevin Collier, paragraph 3.6.

⁴ Evidence of Mr Kevin Collier, paragraph 3.7.

⁵ Evidence of Mr Kevin Collier, paragraph 3.8 and 4.4.

- 18 Mr Collier states that the Mangakotukutuku Stream Care Group considers that assessment of the effects of the Project should be conducted prior to designation⁶.
- 19 In response, my opinion is that the effect of stormwater discharges cannot be assessed until the treatment and control system has been designed. The effect of treatment devices upstream of the final wetland stage will have an effect on the wetland design and will determine the final discharge quality and effect. Upstream devices may be capable of disposal to soakage, treatment and attenuation with the final wetland stage providing the remaining treatment to mitigate effects as far as practical.
- 20 I note that the issues raised by Mr Collier do not directly relate to the NOR and will be addressed in the ICMP and in more detail at the resource consenting stage. The ICMP is likely to be in place when consents are sought and its requirements will also need to be met. My responses are preliminary in this regard.
- 21 The ICMP should address the effects of development in a wider context. In conjunction with the information in the ICMP, it is appropriate to assess the effects of the Project at the resource consent stage when more information becomes available as the catchment develops.
- 22 No resource consents for stormwater discharge have been sought yet because detailed design is required to do so. Detailed design is not proposed to occur until closer to construction which is expected to start in about 15 years.
- Dave Sergeant (Adare Company Limited)**
- 23 Mr Sergeant notes that the Adare land, at least, is likely to incorporate Low Impact Design for stormwater systems, including localised attenuation and treatment, reuse of stormwater etc. He states that there will be less reliance on the 'end-of-pipe' solutions being provided for in the designation⁷ (i.e. the proposed wetland areas).
- 24 In response, I note that his first statement is consistent with my expectation that stormwater solutions for the catchment will be required to adopt a treatment train approach. In regard to his second statement, although upstream devices can result in lesser requirements downstream, wetlands are still likely to be required because they are the preferred final stage for stormwater treatment in Hamilton City and for reasons of ecology and biodiversity. As such, the final wetlands designs may not be limited to engineering

⁶ Evidence of Mr Kevin Collier, paragraph 3.9.

⁷ Evidence of Mr Dave Sergeant, paragraph 37.

design factors and could also include things such as planting or habitat creation to offset the effects of development.

- 25 Mr Sergeant states that the detailed design may lead to the area designated being reduced⁸. From an engineering design point of view, the wetland areas could end up being smaller than currently indicated, however I note the following:

25.1 The final extent and operation of the wetland areas cannot be determined until the stormwater systems have been designed and assessed against the future ICMP, resource consent and maintenance requirements for both the road and development as a whole.

25.2 The designated wetland areas are proposed to be used for construction sediment control. I do not recommend that the designation is amended (i.e. reduced) until after all construction has completed within the sub catchment (roads and subdivision).

25.3 The final extent and character of the wetland areas could also be affected by the resource consent process, particularly in relation to the nature of submissions received (roads and subdivision).

SECTION 42A REPORT RESPONSE CLARIFICATIONS

- 26 With reference to the "outstanding matters" listed in Section 18.6 (a) to (e) and Section 28 of the s42A Report, the following clarifications are provided.

26.1 I do not believe the effects of stormwater discharges need to be determined at this stage. Stormwater discharge effects cannot be assessed until design is undertaken and the overall efficiency of the stormwater treatment train can be determined. In the meantime I am confident that sufficient area has been allowed for in the designation footprint, to accommodate a wetland designed in accordance with Auckland Council Technical Publication 10 (TP10)⁹.

26.2 Potential effects of the Project on flooding do not need to be assessed at this stage because a key design requirement for the Project is to have no effect on existing flood extents or levels. The assessment and mitigation of potential flood effects will therefore take place as part of the detailed design phase of the Project and its associated consenting process. An assessment of adverse effects in terms of flooding is therefore

⁸ Evidence of Mr Frederick Sergeant, paragraph 38.

⁹ Section 42A Report, paragraph 18.6 (a).

of no benefit at this stage and detailed design would otherwise be required to demonstrate the effect. Flooding effects from the Project could be mitigated through attenuation and existing flood flow capacity can be maintained by adequate sizing of cross culverts¹⁰.

26.3 As stated in paragraph 9 above, the wetlands allow for upstream development within the Peacocke Structure Plan area¹¹.

26.4 Treatment devices for the Project will incorporate the Peacocke Structure Plan requirements for low impact design. At this stage, wetland areas have been identified as the final stage of treatment for both the road and adjacent development. Upstream treatment devices, which form part of the treatment train, will be designed to meet the requirements for low impact design and will discharge via the proposed wetlands¹².

CONCLUSIONS

- 27 I have read the statements of expert evidence provided by submitters relevant to my area of expertise, and confirm that this evidence has not caused me to depart from the opinions expressed in my EIC.
- 28 I reconfirm the conclusions reached in my EIC and offer the following additional conclusions.
- 29 The actual effects of the Project in terms of stormwater discharge and flooding cannot be assessed based on the concept design presented for the NOR and land use consent purposes. Detailed design will allow the determination of the final effects and mitigation required at the time of application for stormwater discharge consent.
- 30 The wetland areas identified within Hamilton City include an allowance for development of the type identified in the Peacocke Structure Plan. The Project will incorporate the Peacocke Structure Plan requirements for low impact design, where practical. This will be undertaken via a treatment train approach with the proposed wetlands as a final stage.
- 31 The final design of upstream treatment devices could affect the extent and operation of the wetlands. The final extent of the wetlands and associated mitigation works, in relation to the designation footprint, cannot be determined until design, consenting

¹⁰ Section 42A Report, paragraph 18.6 (b) and (e).

¹¹ Section 42A Report, paragraph 18.6 (c).

¹² Section 42A Report, paragraph 18.6 (d).

and construction has been completed within each wetland catchment for both roading and subdivision development.

Christopher Hardy

8 July 2014