Appendix C – PPC17 Addendum (Stormwater Review)

Memo

To:	Damien McGahan – Aurecon		
From:	Iain Smith – Beca	**Date:**	26 November 2025
Subject:	Private Plan Change 17 – Te Rapa North Industrial – Addendum Technical Specialist Memorandum		
Technical Area:	Stormwater		
Version:	Final		

Purpose

1. This addendum memo has been prepared to provide further assessment and comment on Private Plan Change 17 (PPC17) following review of the Applicant's and Submitters' evidence in respect to stormwater.

Introduction

2. My name is Iain Smith I am a Stormwater Technical Director with Beca. My qualifications and experience were set out in the PPC17 – Te Rapa North Industrial - Technical Specialist Memorandum – Stormwater (9 September 2025) prepared for the Section 42A Report, which I authored on behalf of Hamilton City Council ('HCC' or 'the Council').

Code of Conduct

3. I reconfirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023 and I agree to comply with it.

Scope

4. This addendum covers the following:

   a. A summary of the key issues and matters raised as part of my Technical Specialist Memorandum – Stormwater prepared for the Section 42A Reporting and updates to these where changed.

   b. Consideration of and analysis of evidence relevant to my area of expertise including:

      - Evidence lodged by the Applicant (Fonterra Limited); and
      - Evidence lodged by submitters; and
      - Rebuttal evidence lodged by the Applicant.

   c. Any remaining technical issues or matters requiring resolution.

d. Recommended amendments to PPC17.

Documents and Further Information Considered

5. The following documents have been considered in the preparation of this addendum as these are relevant to stormwater. Where other evidence or statements do not relate to stormwater then these have not been addressed in this addendum.

    a. Private Plan Change 17 – Te Rapa North Industrial – Technical Specialist Memorandum for Section 42A Reporting, 9 September 2025 (referred to as the "S42A Stormwater Memo" in the below).

    b. The evidence from the Applicant:

        i. Statement of Expert Evidence of Scott Dean King on Behalf of Fonterra Limited, 7 October 2025 (referred to as "Stormwater Evidence" in the below). This includes a revised Infrastructure Assessment report (referred to as the "revised Infrastructure Report" in the below).

        ii. Statement of Expert Evidence of Nicholas Colyn Grala on Behalf of Fonterra Limited, 7 October 2025 (referred to as "Planning Evidence" in the below).

    c. The evidence from Submitters:

        i. Statement of Evidence of Briar Alayne Belgrave on behalf of Empire Corporation Limited and Porter Group,

        ii. Statement of Evidence of Dean John Morris on behalf of Porter Group and Empire Corporation Limited

        iii. Statement of Evidence of Briar Alayne Belgrave on Behalf of Sam And Alisa Coleman, Scott Mathieson, Graeme Boddy, Hayden Porter, Paul and Gloria Stone and Wen Sen Shih & Hsiu-Jung Huang.

    d. Tabled Statement:

        i. Waikato Regional Council Submission to Proposed Plan Change 17 – Te Rapa North Industrial to the Operative Hamilton City District Plan, Waikato Regional Council (WRC), 29 October 2025 (referred to as "WRC's Statement" in the below).

    e. Rebuttal Evidence:

        a. Statement of Rebuttal Evidence of Scott Dean King on Behalf of Fonterra Limited, 20 November 2025 (referred to as "Stormwater Rebuttal Evidence" in the below).

Summary of Section 42A Technical Memorandum

6. The Section 42A Stormwater Memo reviewed the Applicant's proposed stormwater management under the proposed PPC17 and the issues raised by submitters.

7. It concluded there were significant gaps and issues that remained to be confirmed before I could be conclude the proposed stormwater management is appropriate.

8. The most significant issues related to confirming compliance with HCC's Integrated Catchment Management Plan (ICMP); the stream erosion protection works being included in the PPC17 provisions; and the need for an Infrastructure Plan to be retained and expanded on in the provisions.

9. The Section 42A Stormwater Memo noted the technical issues should be addressed in an updated Infrastructure Report.

Review and Analysis of Evidence

Te Rapa Integrated Catchment Management Plan

10. Following the completion of my S42A Stormwater Memo, HCC have completed consultation on their ICMP (including with Fonterra) and submitted the ICMP to WRC for certification on 3 November 2025 as a final version.

Stormwater Evidence

11. Mr King's Stormwater Evidence addresses most of the stormwater technical issues and information gaps raised in the S42A Stormwater Memo. The Stormwater Evidence also includes a revised Infrastructure Assessment Report updated to address these.

12. The Stormwater Evidence and revised Infrastructure Report confirms that the stormwater management will be carried out in accordance with the ICMP.

13. However, there remain some issues that I consider are best addressed by provisions of the PPC17. The principal issue is the Te Rapa Stream erosion resilience works.

14. The issues relating to the amount of financial contribution raised by Mr King in the Stormwater Rebuttal Evidence need to be negotiated between Fonterra and HCC directly as part of a Private Developer Agreement (PDA) separate to the PPC17 process. However, I can comment on the various methods available for considering how the proportion of effects can be assessed for the PPC17 area.

Te Rapa Stream Erosion Resilience Works

15. In summary, the Stormwater Evidence and the revised Infrastructure Report agrees that erosion in the Te Rapa Stream is already an issue; development will result in increased stormwater volumes discharged to the stream; that the most likely effect of the increased volume is stream erosion in the reaches downstream of SH1C; and the volume increase needs to be mitigated in accordance with the ICMP.

16. The Stormwater Evidence and Stormwater Rebuttal Evidence does not raise significant objections to, or present different technical solutions for the in-stream option for the stream erosion resilience works presented in the ICMP. The Applicant's solutions are based on adopting the same solutions.

17. Some additional information has been provided in Appendix 1 of the Infrastructure Report appended to the Stormwater Evidence in support the Applicant's preference for the in-stream works option over the pipeline to the river option (both options are as set out in the ICMP). The additional information is a high-level qualitative assessment of the pro's and con's of each option and concludes the in-stream works option are preferred. This is largely due its perceived ease of staging the works alongside development stages; expected lower costs; and

spreading out the investment over time rather than the up-front cost that the pipe option would require.

18. HCC has stated the in-stream works option could be supported if further engineering assessment and information is provided and provided that an acceptable implementation strategy and funding plan can be agreed. Refer items 11, 12, 15 and the conclusions section of the Strategic Stormwater Servicing Memo attached in Appendix 1 of the S42A Stormwater Memo.

19. In my opinion the additional information provided in the Stormwater Evidence does not fully address these additional information requirements.

20. Given the scale and complexities of implementing the works, as well as the potential costs involved for either option, I consider that the further design is needed for both options along with updated cost estimates. The comparison of which would then form the basis for identifying the preferred option. This would be reviewed and agreed with HCC, Waikato District Council (WDC), Waikato Regional Council (WRC), Mana Whenua and landowners (on whose land the works would be located).

21. I note that the ICMP states that HCC should refine the design, costing and consentability of the pipe option (being the option preferred in the ICMP). This would identify the preferred option however, there is no funding allocated for this in HCC's Long Term Plan (LTP).

22. Similarly, there is currently no funding allocated for the physical works in the LTP.

23. The above is why I consider it is critical that the requirement to prepare an Implementation and Funding Plan be included as a provision in PPC17. This will set the framework for later design development, agreements and responsibilities for the implementation of the works.

Implementation of the Erosion Resilience Works

24. I include a process chart in Figure 1 to assist with illustrating how I see infrastructure being designed and implemented. PPC17 currently sits in what I have termed the "planning" stage. Design would progressively develop through resource consenting, engineering design, construction and finally the infrastructure becomes operational. Implementation, staging and funding plans would be prepared and then updated at each step of this process. For PPC17, the setting of provisions needs to give the framework for this future process.

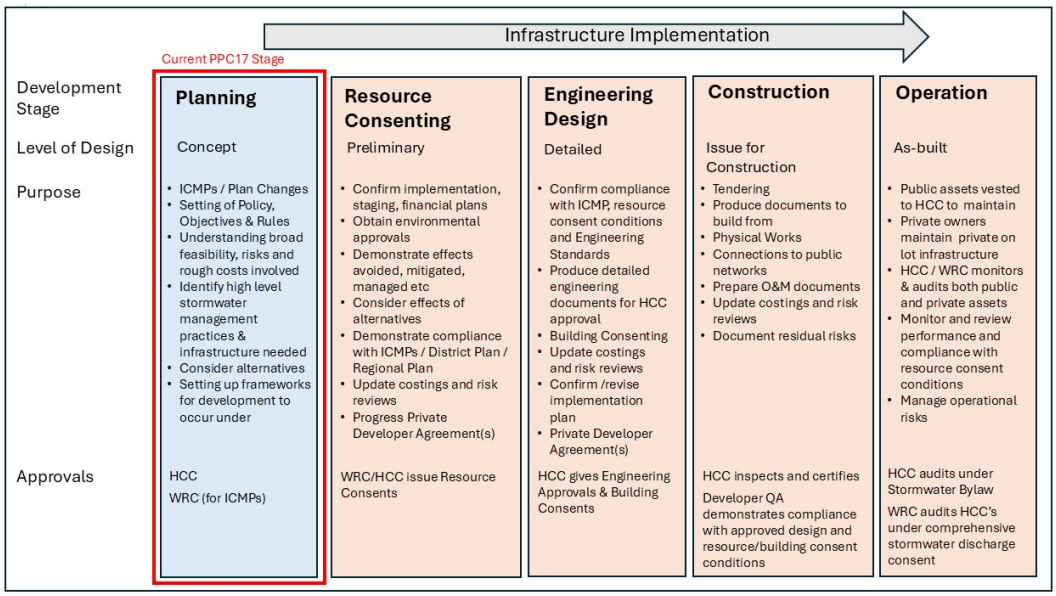

Figure 1 – Infrastructure design and implementation typical process.

25. The developed design and cost estimate noted under item 20 above would be carried out for the stream erosion resilience works under the next stage of development. The requirement for an Implementation and Funding Plan provision was one of the recommendations in the S42A Stormwater Memo and after reviewing the Stormwater Evidence and Stormwater Rebuttal Evidence I consider this is still required. The need for this plan was also a key conclusion of HCC's Strategic Stormwater Servicing Memo.

26. A significant part of a future Implementation and Funding Plan for the stream erosion resilience works will be how much of the stream erosion effects is attributed to PPC17 development.

27. The Planning Evidence states (item 10.30) that the PPC17 area contributes 12% of runoff to the Te Rapa Stream as taken from the outlet at the Waikato River.

28. The Stormwater Rebuttal Evidence notes that in the 2 year storm the runoff volume from the land upstream of SH1C will increase by 14%. This is the change from the current state of the catchment (i.e. the existing development) to the future state of the catchment (i.e. its maximum probable development). This figure is then factored down by area to give a value of 9.3% for the PPC17 extents as taken from the outlet at the Waikato River.

29. The values in items 27 & 28 are calculated using the outlet of the stream into the Waikato River as the reference point. This includes a significant area of the stream catchment in WDC's jurisdiction that HCC does not have control over.

30. However, I consider that the key point of reference should be at SH1C as this addresses the changes and growth within HCC's jurisdiction. It is not then complicated by what may or may not occur in WDC's part of the catchment. It is noted that this will naturally give higher values than those listed under items 27 & 28 (as the catchment area used to determine the percentage is much smaller) and care needs to be taken to acknowledge this when comparing the values.

31. I recognise they are multiple ways to apportion the stream erosion effects to the PPC17 extents relative to the remainder of the catchment in HCC's jurisdiction.

32. HCC has a standard methodology that allocates effects between existing, developed land and areas of future growth (in both brownfield and greenfield parts of the catchment). HCC applies this method as part of its erosion works programme when assessing growth and it has been used in other catchments and it is the method used in the ICMP. It is based on the change in impervious area that comes with development and weights this change across existing development and growth areas. This is the method I consider to be the most appropriate to use.

33. Using this method, growth in the greenfield parts of the catchment (i.e. between SH1C and Ruffell Road) contributes just over half (54%) of the erosion effects.

34. Of this greenfield area, PPC17 makes up approximately half of it (47%). The means that PPC17 will equate to 25% of the total impervious area within HCC's jurisdiction (i.e. upstream of SH1C). I consider this to be the appropriate proportion used when considering the effect of development to the PPC17 extents.

35. I have also carried checks on the 25% figure using results from the flood model under maximum development conditions. The results (27%) are consistent and support the value determined under HCC's methodology (i.e. the 25% noted under item 34).

36. Therefore, when determining the proportion of stream erosion effects allotted to PPC17 land, I am satisfied that:

    a. the key reporting location is at SH1C, and

    b. the proportion to be used is 25% of that allotted to land in HCC's jurisdiction.

37. I also note that the cost estimate information referenced in the Stormwater Rebuttal Evidence (and in the ICMP) are not up to date and have since been revised. The figures used in the Rebuttal Evidence are from the ICMP Appendix C and are in 2020 dollars. There has been significant escalation in construction costs since 2020 (post COVID) and the costs will have increased substantially when considered in 2025 (or later) dollars.

38. Also, as Mr King notes in the Stormwater Rebuttal Evidence, part of the land upstream of Washer Road has been developed including some stream stabilisation works. Although, on inspection I note there are already signs of bank erosion occurring as the toe of the banks were not stabilised. Also, a section of stream has been culverted and so will not need erosion works. Therefore, I agree that an updated stream erosion works design and cost estimate should reflect these changes. However, based on my site observations, it will not be as simple as doing no stream works at all, so it cannot be entirely removed from design and cost considerations for this stream reach.

39. Similarly, the final cost estimates will be significantly influenced by the amount of land purchase needed and the contributions of other stakeholders, such as WDC. These remain to be confirmed.

40. The above issues reinforce why a refined design with an updated, more robust cost estimate is needed as part of an Implementation and Funding Plan. Therefore, a provision for these is needed in PPC17.

Staging of the Stream Erosion Resilience Works

41. The stream erosion resilience works need to be included in the PPC17 provisions and I note these have now been included in the proposed provisions under Table 3.9.3.3 by both Mr

Grala and Mr McGahan but at the time of producing this Memo there remain differences in how these are worded.

42. Regarding the stages listed in Table 3.9.3.3, I point out that from a stormwater perspective, those blocks that drain direct to the Waikato River can be undertaken independently of the stream erosion resilience works.

43. Mr King also comments on potential staging under the Stormwater Evidence and Stormwater Rebuttal Evidence.

44. In my opinion, Mr King's comment (item 7.25b of his Stormwater Evidence) relating to the stream erosion resilience works pipe option needing to be completed all at once to mitigate erosion effects is largely correct. The timing of implementation would be a matter for the various Council's under a resource consent process.

45. Provided the refined options assessment noted in item 20 above shows that the in-stream works are preferred, then this option has potential to be staged as a pragmatic response to the delivery of infrastructure of this kind. Although this would be subject to developing the design, obtaining regional resource consents with stakeholder agreements.

46. I consider that this needs a risk-based approach to be adopted. This would look at costs, effects, stages and how the works are implemented. This would need the agreement of HCC/WDC/WRC/Mana Whenua as it implies that some effects in low-risk areas may be realised but addressed later on in the implementation programme. In my opinion this risk assessment would be carried out up front as part of the design for an enabling stage.

47. In my opinion the in-stream works can be divided up into components that could then be progressively implemented to match risk and an overall development staging plan. The works would focus on the most unstable stream reaches first where the risk and consequence of failure is the most severe. Then within these reaches, first the bed and bottom of banks would be stabilised. I see this being done with a mix of rock rip rap and/or rock grade controls. The remaining measures could then be constructed later to tie in with future development stages.

48. The ICMP identifies the stream reach downstream of Washer Road as being the most unstable, and so the highest erosion risk. This is also where the consequences of bank failure are likely to be the highest as the stream runs along the toe of the AFFCO ponds and beneath an existing pipe bridge. This then would be the reach to focus on first.

49. Addressing staging therefore needs to be included in the Implementation Plan noted under item 40 above.

50. Therefore, I consider that the stream erosion resilience solution needs further design refinement along with costing and confirmation of how the works would be staged alongside development. In my opinion this would be carried out up front as part of the design for the first stage under enabling works.

51. Based on the importance of the stream erosion resilience works, the staging provision in PPC17 (Table 3.9.3.3) needs to include these works. Given a final decision on either of the pipe or in-stream works options has not yet been made by HCC, then the terminology used in the provision needs to be applicable for both the options. This is why I do not consider it appropriate to specifically identify an area of stream in this table.

52. I also note that the staging provisions and figures showing Strategic Stormwater Infrastructure need to identify the culverts in the Te Rapa Stream. These culverts act to control flood flows within the stream corridor and manage flood effects on downstream land. Not all culverts will be needed at once and the overall performance will need to be confirmed as part of flood modelling to support a future resource consent application. If this shows that a particular development stage can manage flooding without the culverts, then these culverts could be deferred until a later stage.

Submitters Evidence

53. The submitter's evidence listed under item 5c above does not raise technical stormwater issues but seeks inclusion of Submitter's land in the PPC17.

54. In my opinion, there is no technical stormwater reason to object to these requests. The PPC17 stormwater infrastructure is designed to accommodate future growth. Therefore, responses to the Submitter's concerns are planning related and I defer to Mr McGahan's Addendum S42A Report for resolution.

Tabled Statement (WRC)

55. This statement is generally supportive of the proposed PPC17 provisions and I have no further comment to make on WRC's statement.

Stormwater Rebuttal Evidence

56. I have read the Stormwater Rebuttal Evidence and I have commented on the percentages presented in it under items 27 to 36 above and the staging aspects under items 41 to 52 above.

57. I also note that the Stormwater Rebuttal Evidence responds to Mr Morris's evidence (for Porter Group and Empire Corporation Limited) regarding future inclusion of additional land into PPC17 and the proposed stormwater infrastructure. I have commented on this issue under item 54 above.

Remaining Technical Issues or Matters Requiring Resolution

58. I note that the Structure Plan UD201 included in the proposed provisions (Figure 2-22) calls up a "5m riparian margin required" in the legend under the permanent watercourses. This should be amended to add the word "minimum" against the 5m or the full line deleted as the riparian margin will vary along the corridor. Some sections will need 10m.

59. There are also some remaining technical issues from the Stormwater Evidence and revised Infrastructure Report. These are all relatively minor issues that are best resolved in future resource consenting and/or engineering approval stages. These are not material to the outcome of the PPC17 but for completeness are recorded as:

    a. Catchment extents. The existing catchments are not correctly shown in Figure 3 of the revised Infrastructure Report.

    b. Hydrological calculations included in Appendix 1 of the revised Infrastructure Report. The pre-development curve numbers are substantially higher than those used for the ICMP and may overestimate the pre-development runoff so underestimate the extent of flood mitigation land that needs to be set aside.

Similarly, the percent impervious assumed in post-development calculations is set to 85% and the District Plan limit is 90%. This will underestimate post development runoff.

c. River outlets. Other than indicative locations, conceptual details of these outlets have not been provided. The locations and details of the outlets will need to be confirmed as part of the Infrastructure Plan included in the proposed provisions.

Proposed Provisions

60. I have been involved in preparing the current provisions as they relate to stormwater, appended to the Addendum S42A Report.

61. I am satisfied these provisions address the stormwater issues raised in the S42A Stormwater Memo and those covered in this Memo. I consider the provisions set out in the Addendum S42A Report present a more comprehensive and fully formed set of provisions for stormwater and so I support these being adopted.

Recommendations

62. In my opinion the technical issues raised in the S42A Stormwater Memo have now been resolved on the basis of the current provisions as appended to the Addendum S42A Report being adopted.

63. I therefore recommend that these provisions be adopted in the PPC17.