

Before Kaipara District Council

In the Matter of the Resource Management Act 1991 (**RMA**)

And

In the Matter of an application for Private Plan Change 82 (**PC82**) by **MOONLIGHT HEIGHTS LIMITED** to rezone 39.2 ha of land at Awakino Road, Dargaville from Rural Zone to Residential Zone

Evidence of Nathaniel Jull on behalf of Moonlight Heights Limited

(Civil Engineering – Three Waters)

Dated 21 July 2023

Introduction

1. My full name is Nathaniel John Jull. I am a Civil Engineer and Northland Regional Manager at Chester Consultants Limited. I hold a Bachelor of Engineering Technology (Civil).
2. I have 13 years' experience as a Civil Engineer working throughout New Zealand and the wider Pacific, with the last 5 years concentrated on work in the Northland Region. My work focuses on 3-waters infrastructure in the land development space. I lead a civil engineering team providing consultancy services to support Land Development projects. I have experience working for both private developers and council providing technical input for resource consent and plan change applications.
3. Chester Consultants Limited was engaged by Moonlight Heights Limited in March 2022 as the consulting engineers to address the civil engineering matters relevant to PC82. The specific matters were Earthworks, Water Supply, Wastewater, Stormwater including Flooding and Utilities.
4. I authored the report titled "Land Development Report" that is Appendix 3 of the submitted request for PC82. I am familiar with the area to which PC82 relates. I have visited the site and surrounds on 2 specific occasions, most recently on 4th July 2023.
5. Although this is not a hearing before the Environment Court, I record that I have read and agree to and abide by the Environment Court's Code of Conduct for Expert Witnesses as specified in the Environment Court's Practice Note 2023. This evidence is within my area of expertise, except where I state that I rely upon the evidence of other expert witnesses as presented to this hearing. I have not omitted to consider any material facts known to me that might alter or detract from the opinions expressed.

Scope of Evidence

6. My evidence will:
 - a. Summarise the key findings of the Land Development Report.

- b. Address the Section 42A report matters on Three Water Servicing in the following order:
 - i. Potable Water
 - ii. Wastewater
 - iii. Stormwater
 - iv. Flood Susceptibility Mapping
- c. Address submissions relevant to my area of expertise in the following order:
 - i. Stormwater
 - 1. Awakino Road Formation
 - 2. Phoenix Place Formation
 - 3. Awakino Floodplain
 - ii. Water Supply
 - 1. Network Capacity
 - 2. Treatment
 - 3. Raw Water Supply
 - 4. Fire and Emergency New Zealand
 - iii. Wastewater
- d. Conclude.

Key Findings

- 7. Since submission of PC82, work has continued, and the Land Development Report has been revised to include further detail. The revised report, revision 1 with tracked changes is included in my evidence as Attachment A.

8. The key findings from the report are:

Flooding

9. The PC82 area is not subject to any known Flooding Risk. I note that points 34 to 36 of my evidence talk further to Flood Susceptibility Mapping in response to the Section 42A Report.

Earthworks

10. The site lends itself to residential development, as the land formation is conducive to an urban land formation without the need for substantial earthworks or alterations to the land formation to realise the urban form.
11. The proposed provisions ensure best practice erosion and sediment control measures will be implemented at development stage to manage potential construction effects associated with earthworks.

Water Supply

12. Engineering solutions exist to reticulate the PC82 area with sufficient flow and pressure to achieve residential levels of service and firefighting water supplies.
13. Dargaville's raw water supply is known to have seasonal shortages. There are options available to minimise effects by reducing the water demand from PC82.
14. Although they are not preferred, there are alternate non-reticulated options to service the PC82 area for water supply, which are not uncommon in the region and are allowed for in the Operative District Plan.

Stormwater

15. Engineering solutions exist to manage the effects of increased impermeable coverage from PC82, and the proposed provisions align those solutions to current best practice and give regard to the relevant higher-level statutory

requirements for fresh water. The higher-level statutory documents considered relevant are:

- a. New Zealand Coastal Policy Statement.
- b. National Policy Statement for Freshwater Management 2020.
- c. National Environmental Standard for Freshwater 2020.

16. It is important to note that these documents are more recent than the current district plan and it is for this reason that specific provisions have been considered necessary in this instance as this zoning application is proceeding Council District Plan updates.

Wastewater

17. Engineering solutions exist to extend Dargaville's wastewater network and provide the PC82 area with a reticulated connection. The existing reticulation network has capacity to take some flows from PC82, but upgrades will be required to accommodate the full demand. Timing and development lag can occur to ensure upgrades happen ahead of demand. The proposed provisions give council control to ensure this happens.

18. Improvement works are required at the Dargaville Wastewater Treatment Plant to receive additional wastewater flows and council have confirmed a commitment to implement these.

19. Although they are not preferred, there are alternate options to service the PC82 area for wastewater disposal that do not rely on connection to the council network.

Utilities

20. It is feasible to service the PC82 area with both power and telecommunication services. The servicing has been confirmed by both Northpower and Chorus.

Response to Section 42A Report

21. The Section 42A Report matters relevant to my area of expertise are largely aligned with my view. I will not go on to repeat points of alignment here but rather provide response to the points of misalignment or clarification.

Three Waters Servicing

Potable Water

22. The Section 42A report recommends an amendment to rule 13.14.4 which makes sub clause 2 not applicable to the Awakino Precinct. This removes the ability for a controlled subdivision in the Awakino Precinct to utilise options such as on-site water tanks as its sole potable water source if connection to public water supply is not available.
23. In my view there is no engineering basis for the amendment and note that the Section 42A report references Urban Character and Density as reasons. This provision is currently contained within the Operative Plan and a change for PC82 would be more restrictive than the status quo in the wider region.
24. This matter is further discussed in points 66 to 70 of my evidence in response to a submission from Fire and Emergency New Zealand.

Wastewater

25. The Section 42A report recommends an amendment to rule 13.14.6 which makes sub clause 3 not applicable to the Awakino Precinct. This removes the ability for a controlled subdivision in the Awakino Precinct to utilise individual lot on-site wastewater disposal where no council reticulated wastewater system is available.
26. In my view there is no engineering basis for the amendment and note that the 42A report references Urban Character and Density as reasons. This provision is currently contained within the Operative Plan and a change for PC82 would be more restrictive than the status quo in the wider region.

Nevertheless, I understand that this amendment has been adopted in the updated provisions.

Stormwater

27. The Section 42A report highlights uncertainty about downstream flooding affects and recommends inclusion of an additional stormwater information requirement and subdivision matter of discretion in the Awakino Precinct provisions that development: *“will not exacerbate downstream flooding”*.
28. The Section 42A report also casts doubt as to the technical basis for the proposed stormwater quality and quantity provisions.
29. Specifically, from the following points from Mr Usmar’s (Infrastructure Planner at KDC) technical memorandum attached to the Section 42 report:
 - a. *“It is currently unclear how the development enabled under the proposed plan change with increased permitted impervious surfaces will adequately mitigate downstream effects. This includes within the current drainage infrastructure and land between the proposed plan change site and the Awakino River. However, there is sufficient space to implement a wide range of possible stormwater solutions to address downstream effects”*.
 - b. *“The stormwater quality and quantity provisions proposed under PPC82 provide acceptable mitigation of effects but do not have site-specific technical basis to ensure fit for purpose and cost-effective assets are vested in Council at development stage”*.
30. I understand that Mr Usmar’s comments stem from a technical review council engaged AWA Environmental Ltd (AWA) to complete on the Stormwater Management Plan submitted with PC82.
31. Council has shared the technical review memo completed by AWA with us; and in my view, the AWA memo has focused largely on matters that are typically dealt with at land use / subdivision stage. Nevertheless, Chester

has completed a response to the AWA memo. Chester's response and the AWA memo is included in this evidence as Attachment B.

32. In my opinion, there is a site-specific technical basis for the proposed stormwater quality and quantity provisions as outlined in Attachment B.

33. Regarding the proposal to insert; *'will not exacerbate downstream flooding'* into the proposed provisions as an information requirement, in my view this insertion is not necessary as this matter is dealt with already by the matter of discretion: *'ii) The effects of increased stormwater flows downstream'* within the same rule.

Flood Susceptibility Mapping

34. The Section 42A Report has identified the PC82 area as being an *'Area Susceptible to Flooding'*. This is based on the Flood Hazards Overlay mapping of the Operative Kaipara District Plan and shown in point 30 (Figure 10) of the Section 42A report.

35. The mapping referenced in the Section 42A Report is from the Operative Kaipara District Plan Appendix C and uses flood data provided by the Northland Regional Council (NRC) in 2008. Since then, further flood modelling has been completed by the NRC and the mapping refined. Figure 1 below shows the PC82 area against the latest NRC flood mapping.

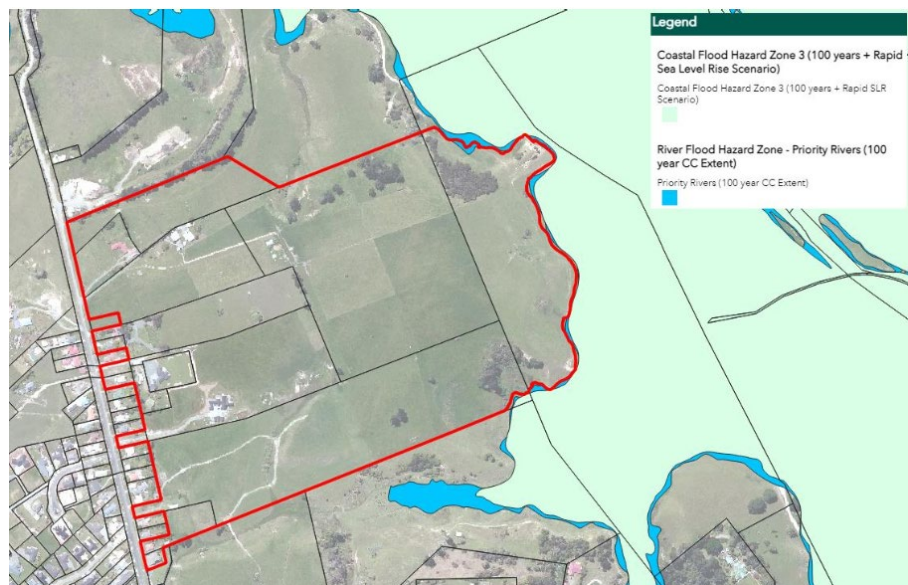


Figure 1: Flood Susceptibility Map Based on Current NRC Flood Data

36. As shown in Figure 1 above the site is outside the area identified as being susceptible to River and Coastal Flooding.

Response to Submitters

37. I have read the submissions and provide the following as response to submissions within my area of expertise. I have not responded to each submission point for point, but rather, identified themes and provided a grouped response to each theme.

38. I note that the council's Section 42A report largely addresses submission points relevant to my area of expertise with responses that I agree with. Rather than repeating those responses here I'll reference the Section 42A report.

Stormwater

Awakino Road Formation

39. Submitters have expressed concerns with the existing formation of Awakino Road and its open stormwater drains. Specifically, submission points 3.5 & 5.1.

40. Only a relatively small area (7%) of the PC82 catchment area (referred to as the 'western catchment' in the stormwater management plan submitted with the application) drains to Awakino Road where the concern has been raised. The balance of the area drains elsewhere.

41. The proposed provisions will ensure stormwater effects from the 'western catchment' are managed which will likely see drainage upgrades where the western catchment bounds Awakino Road.

42. The proposed traffic provisions trigger the need for upgrades to Awakino Road. Standard upgrades for an urban road as set out in the KDC Engineering Standards include the formation of kerb and channel and the removal of open channel drains.

43. In my opinion, the provisions as proposed ensure that the stormwater situation on Awakino Road will be appropriately addressed at development stage.

Phoenix Place Formation

44. Submitters have expressed concerns with the formation of Phoenix Place as an example of 'councils failed' stormwater drainage planning. Specifically, submission points 15.2 & 20.1.

45. Phoenix Place has a concrete formation with no kerb and channel and utilises shallow swales in the front berm to capture and partially treat stormwater before collection in grated lid manholes and pipe conveyance to a dry detention basin. Falls are flat and restricted.

46. A stormwater management approach like above is not prevented by the proposed PC82 provisions but is far less likely to be utilised.

47. Phoenix Place is constrained by being a flat area surrounded by existing development that did not specifically allow for upstream development. PC82 does not share this constraint as it has good fall away to its extremities with no downstream development.

48. The proposed provisions give regard to the KDS ES which require the use of Kerb and Channel in Dargaville unless specific stormwater design criteria require discretion on this matter.

49. The proposed provisions require 'retention' of run-off from road areas. The devices required to achieve this lend themselves to kerb and channel on roads.

50. In my opinion, Phoenix Place does not represent the likely development outcomes of PC82 with respect to drainage.

Awakino Floodplain

51. Submission points 19.4 & 19.22 suggest PC82 identifies *"the area surrounding the Awakino River as a possible site to locate alternative*

infrastructure, including wastewater treatment” and that PC82 suggests “it will defer the stormwater solution to other property within the applicant’s ownership”.

52. An indicative pipe alignment to convey wastewater from PC82 to the Dargaville WWTP has been identified through the area surrounding the Awakino River but no other alternate infrastructure has been suggested in this location.
53. The effects of any infrastructure placed within, or discharge of stormwater to, the Awakino floodplain, will, in my opinion be addressed sufficiently at the development stage by the proposed provisions.
54. PC82 does not rely on infrastructure being situated within the Awakino Floodplain.

Water Supply

55. Submitters have expressed concerned with the capacity of the public water supply network and its ability to service PC82 and existing properties as well as who is responsible for upgrades of the Local Network. Specifically, submission points 1.1, 1.2, 19.21, & 20.4.
56. Public Water Supply is generally split into 3 sub-categories; Network Capacity, which the ability for pipes to deliver water to properties from the treatment source with adequate flow and pressure; Treatment, which is the ability to treat and store enough water to meet the day to day demand of the network, and Raw Water Supply, which is the ability to collect enough water to meet the overall demand of the network. Below I provide comment under each sub-category in response to the submission points.

Network Capacity

57. The water supply network along Awakino Road is restricted and will require upgrades to achieve sufficient levels of service throughout PC82 and along Awakino Road.

58. To provide context as to what those upgrades may be, Chester has completed a preliminary investigation and identified that replacement of the old 100 mm diameter main in Awakino Road with a larger diameter pipe and inclusion of a booster pump is a likely solution. The upgrade would connect to the 250 mm diameter principal main (in front of the hospital) and be run through to the transfer station. For further details please refer to the Land Development Report in Attachment A.
59. Local infrastructure upgrades such as that highlighted above are typical of development that PC82 would enable. It would result in some wider benefit to the community through installation of new infrastructure. Dependent on what proportion of land is being developed, and when, the upgrades can be financed solely by the developer, or alternatively, council can become financially involved and seek financial contributions from developers under section 22 of the district plan.

Treatment

60. I am not aware of any constraints limiting the water treatment plant's ability to service PC82 and have no further comment to the Section 42A report.

Raw Water Supply

61. I provide the following comments in addition to the Section 42A report.
62. There are known seasonal raw water supply constraints in Dargaville.
63. Given these issues are known, action can be taken at resource consent stage to reduce the effect development has. Options for PC82 include supplementary water supply by capturing roof run-off for re-use and water reduction fixtures being used in housing.
64. Stormwater provisions for the Awakino Precinct require retention of roof run-off to be provided which will likely be achieved using rainwater re-use tanks. This goes hand in hand with the options identified above.
65. Because sites in PC82 will likely have water tanks in addition to a public water connection, they will have the ability to store their own water

meaning they will be more resilient to seasonal water restrictions. In my view, this can contribute to improve the overall resilience of Dargaville because their contribution towards a raw water solution via development contributions and on-going rates versus their demand will have a better ratio.

Fire and Emergency NZ

66. FENZ requires adequate water supply and water pressure be available for firefighting activities. FENZ have submitted expressing concern with the network's ability to provide firefighting water supplies and that 'Practice Note 8' is removed as matter of control by the proposed provisions. Specifically, submission points 17.1, 17.2, 17,3 & 17.5.
67. Network upgrades are possible to ensure sufficient firefighting flow and pressure is achieved from a public network extension throughout the PC82 area.
68. The Section 42A report has responded to the FENZ submission recommending 'Practice Note 8' is included in the Rule 13.13A Awakino Precinct Subdivision – Matters of discretion.
69. I support this inclusion but note that it is only relevant in an application when a subdivision is not reticulated by the public network. This is because firefighting water supplies is a requirement of the KDC Engineering Standards which are given regard to in terms of water supply under rule 13.14.4. Meaning, if you are extending the public water supply network to service a subdivision, you must ensure adequate firefighting water supplies are achieved.
70. To the point above, the inclusion of 'Practice Note 8' is in my opinion contrary to removal of sub clause 2 from rule 13.14.4 as proposed in the Section 42A report.

Wastewater

71. Submitters have expressed concern for the wastewater network's ability to service PC82 and a lack of committed funding for upgrades to the wastewater treatment plant. Specifically, submissions 19.20 & 20.3.
72. The Section 42A report addresses these matters. I generally agree with the approach adopted.

Conclusion

73. I have read the submissions and council Section 42 report and provided responses to areas of concern relevant to my area of expertise.
74. As illustrated in my evidence, I am of the opinion that there are no engineering limitations within my area of expertise that prevent future development of PC82 in accordance with the proposed provisions and zoning.

Nathaniel Jull

Dated 21 / 07 / 2023

Attachment A

Land Development Report, Revision 1, Dated 10/07/2023, by Chester.

Attachment B

**Memo - Response to AWA Technical Review of Stormwater Management, Dated
10/07/2023, by Chester.**
