Before the Selwyn District Council

under: the Resource Management Act 1991

in the matter of: Proposed Private Plan Changes 81 and 82 to the Operative District Plan: Dunns Crossing Road, Rolleston

and: **Rolleston Industrial Developments Limited** and **Brookside Road Residential Limited**
Applicant

Statement of Evidence of Victor Mthamo (Water Supply & Versatile Soils)

Dated: 26 August 2022

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STATEMENT OF EVIDENCE OF VICTOR MTHAMO

INTRODUCTION

1 My full name is Victor Mkurutsi Mthamo and I am a Principal Consultant for the environmental science, engineering and project management consultancy Reeftide Environmental and Projects Limited (Reeftide). I have been in this role for almost 9 years. Prior to this I was a Senior Associate with the surveying, environmental science and engineering, and resource management consulting firm CPG New Zealand Limited (now rebranded to Calibre Consulting Limited), where I was also the South Island Environmental Sciences Manager. I have worked in the area of environmental science and engineering for over 27 years.

2 I have the following qualifications:

2.1 Bachelor of Agricultural Engineering (Honours) with a major in Soil Science and Water Resources (University of Zimbabwe); Master of Engineering Science in Water Resources (University of Melbourne in Victoria, Australia); Master of Business Administration (University of Zimbabwe). I hold an Advanced Certificate in Overseer Nutrient Management modelling qualification. I am a member of Engineering New Zealand (MEngNZ) and am a Chartered Professional Engineer (CPEng) and an International Professional Engineer (IntPE). I am a past National Technical Committee Member of (i) Water New Zealand and (ii) New Zealand Land Treatment Collective (NZLTC).

3 My general experience and expertise include:

3.1 The design and implementation of numerous on-farm irrigation schemes, soil investigations, land use assessments in New Zealand. Prior to this I was involved in irrigation scheme development projects and water resource investigations in most southern African countries and parts of Asia. As a Consultant for the Food and Agricultural Organisation (FAO), I have worked on land use projects in Papua New Guinea and The Maldives. I was also involved in the preparation of an irrigation design and management manual for FAO. While working as a Senior Consultant for the audit and consulting firm PricewaterhouseCoopers (Harare Office), I was involved in the preparation of feasibility studies for large scale irrigation/land use projects, conceptual and detailed designs, environmental impact assessments, capacity building, cost-benefit analyses and providing sustainable management expertise to the beneficiary communities. Some of the infrastructure development projects and assessment of environmental effects/environmental impact assessments, I

have been involved in New Zealand include Hunter Downs Irrigation Scheme, North Bank Hydro Project, Mararoa-Waiau Rivers Irrigation Feasibility Study, North Canterbury Lower Waiau Irrigation Feasibility Assessment.

4 My experience in Three Waters assessments as relevant to my evidence includes:

4.1 Water, wastewater stormwater planning, catchment hydraulic and hydrological modelling and design. I am also regularly engaged by Christchurch City Council (CCC) as a Three Waters Planning Engineer. In this role I review water supply, wastewater and stormwater designs and modelling by engineers from various consulting firms. I peer review their reports (concepts, calculations and detailed designs) and provide them with the required guidance for solutions that are acceptable to the CCC; and

4.2 Consulting for various Councils that include Selwyn District Council, Hurunui District Council, Horowhenua District. In this role my consultancy covered stormwater, water supply, flooding and wastewater, risk and criticality assessment for Council Three Waters Assets.

5 My experience and expertise as regards to soils include:

5.1 Assessment of large subdivisions in relation to stormwater management, earthworks and the associated actual and potential impacts on soils, groundwater and surface waterways and how to effectively use erosion and management control plans to mitigate the potential impacts that may occur during the construction works. This work is relevant to my input in this hearing as it demonstrates the ability to assess and present soil mitigation strategies associated with earthworks and rehabilitation of sites post development.

6 More recently I was the expert witness on quarry rehabilitation for:

6.1 The extension of the Road Metals Quarry on West Coast Road in Templeton. The proposed rehabilitation works involved topsoiling the extraction area to produce a minimum rehabilitated site that was at least 1.3 m above the highest groundwater level. In this work, I assessed the effectiveness of adopting a 300 mm topsoil layer and whether or not this was sufficient for (i) plant growth and (ii) providing contaminant attenuation, treatment and removal to protect the underlying groundwater. I also assessed the proposed quarrying operations, the rehabilitation using cleanfill materials and the possible land uses post development.

6.2 The proposed Roydon Quarry in Templeton. Fulton Hogan's proposal was for the establishment of a quarry and extraction aggregate and rehabilitation of the quarry to a minimum finished floor level of 1.3 m (made up of a minimum topsoil of 300 mm) above highest recorded ground water levels in the vicinity of the site. I provided an assessment of the soils' versatility and how the proposal would be able to maintain the soil versatility.

6.3 The proposed Fulton Hogan Miners Quarry extension. I provided an assessment of the soils, their versatility and productivity potential with and without mitigation post quarrying.

7 I am familiar with:

7.1 The plan change application by Rolleston Industrial Developments Limited to rezone approximately 28 hectares of rural land in Rolleston to Living MD (*PC81*); and

7.2 The plan change application by Brookside Road Residential Limited to rezone approximately 110 hectares of rural land in Rolleston to Living MD and Business 1 (*PC82*).

7.3 Together the *Proposed Plan Changes*, and Rolleston Industrial Developments Limited and Brookside Road Residential Limited together the *Applicants*.

CODE OF CONDUCT

8 Although this is not an Environment Court hearing, I note that in preparing my evidence I have reviewed the Code of Conduct for Expert Witnesses contained in Part 7 of the Environment Court Practice Note 2014. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where relying on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

9 My evidence will deal with the following:

9.1 Water Supply – I provide a discussion in support of **Mr Tim McLeod**'s evidence by looking at the:

(a) Water supply requirements for the proposed plan change area.

(b) Existing water supply availability.

(c) Proposed solutions to meet the Plan Change 81 and 82 water supply requirements.

9.2 Versatile soils-

I provide commentary on versatile soils in response to a submission by Christchurch City Council.

10 In preparing my evidence I have reviewed:

10.1 Selwyn District Council Rolleston Master Plan 2017-2048 which outlines the proposed future upgrades;

10.2 SDC Water Supplies Activity Management Plan Volume 2. 2018;

10.3 The Rolleston Structure Plan (RSP);

10.4 Liaised with **Mr Murray England**, the Selwyn District Council Asset Manager – Water Services.

10.5 The evidence of **Mr Tim McLeod** prepared in support of the proposed plan changes on behalf of the Applicants;

10.6 Section 42A report prepared by the Selwyn District Council officers including that of **Ms Elizabeth White** and **Mr Murray England**; and

10.7 Submissions on the proposed plan change relevant to my area of expertise.

SUMMARY OF EVIDENCE

11 The PC81 and PC82 areas are able to be supplied with water using existing consents referenced in **Mr McLeod's** evidence. There is enough annual volume from the combined consents to meet the annual demand.

12 I estimated the minimum instantaneous flows at:

12.1 23.1-26.4 L/s for the PC81 area; and

12.2 87.1-99.7 L/s for the PC82 area.

13 I also assessed the existing consents and I found that:

13.1 The consented takes have a combined maximum flow of 45.7 L/s.

13.2 The available annual volume is 1,084,572 m^3.

14 Using various SDC references I also estimated the required annual demand volume across the PC81 and PC82 area. This ranged from 420,590 m^3 and 609,550 m^3.

15 I conclude that there is enough available consented water to meet the annual demand for the proposed plan change areas.

16 I also note that the combined instantaneous flows are greater than the maximum consented flow rate of 45.7 L/s. This would require amendment to the existing consents to increase the combined consented flow rate.

17 I do not see this as an issue as the applicant can apply for replacement consent(s) or variations to the existing consents to get higher flow rates to match the required instantaneous flows. These consents should be able to be granted:

17.1 Provided the assessment of effects demonstrate that the drawdown effects on neighbouring wells is less than minor.

17.2 As the water supply bores to be drilled in replacement of the existing ones would likely be deep (>100 m), I expect the effects on the neighbouring (within 2 km) shallow wells to be less than minor.

18 Firefighting requirements can be met from the potable supply allocation.

19 Currently SDC has a total consented volume for the Rolleston scheme of 7,183,440 m^3/year. Over the last three years the average annual use has been 3,300,000 m^3/year. The difference between the consented volume and the demand is 3.88 Mm^3/year, which is a significant existing surplus.

20 I have suggested the option to use some of the Council's existing surplus water as a short-term measure. This appears to me to be an efficient use of the available supplies. The applicant would likely need to enter into a binding agreement with the Council to provide their share of the water at an agreed time.

21 In her Section 42A report, **Ms White** recommends a rule that will restrict subdivision until a water supply is provided. Given my opinion that potable water can be provided to the PC81 and PC82 areas, I do not see the need for the proposed rule. The Applicant should just be able to demonstrate at the subdivision stage that each stage submitted for subdivision consent can be supplied with potable water to meet the requirements.

22 I have also assessed the issue of versatile soils in response to the submission by Christchurch City Council and I concluded that there are no versatile soils in the proposed plan change areas.

23 In summary, I do not see why the proposal should not proceed on account of water supplies or soils.

BRIEF DESCRIPTION OF THE SITE AND THE PROPOSED PLAN CHANGE

24 The PC81 site comprises an approximately 28.4 hectares located on the northwest corner of the intersection of Dunns Crossing, Selwyn and Goulds Roads. It has frontage to both Dunns Crossing and Selwyn Roads.

25 The PC82 site is located on the southwest corner of the intersection of Dunns Crossing and Brookside Roads, extending west to the intersection with Edwards Road. It has frontage to Dunns Crossing, Brookside and Edwards Roads. The site is approximately 109.8 hectares.

26 The Applicant's proposed plan changes seek to go from rural zoning to residential and, if granted, are expected yield:

26.1 350 lots within the PC81 area; and

26.2 1,320 lots within the PC82 area.

WATER SUPPLY

Peak Flow Water Supply Demands

27 Part 7 of the Selwyn District Council's Engineering Code of Practice (COP) outlines the peak living zone design flow rates based on the number of connections. **Attachment 1** is an extract of Figure 1 from the COP.

28 Using the unit peak flow rates in Figure 1 of the COP (**Attachment 1**):

28.1 The 350 lots expected from the PC81 area will have a peak design flow rate of approximately 0.125 L/s/connection. The total peak design flow rate required is 43.75 L/s.

28.2 For the 1,320 lots expected in PC82, the peak design flow rate is approximately 0.11 L/s/connection. The total peak design flow rate is 145.2 L/s.

28.3 I should note that these peak flows rates are instantaneous rates and usually required for short periods during the peak

demand periods. The average daily demand is much lower than this.

29 In Paragraph 7 of **Mr England**'s Officer's Report, the maximum instantaneous flow rate for all of Rolleston is noted as 573 L/s. This leads me to conclude that the peak living zone design flow rates of 0.125 L/s/connection and 0.11 L/s/connection (in Paragraph 28.1-28.2 above) from the COP are on the high side. To confirm this I have tried to estimate the current population in Rolleston:

29.1 Paragraph 155 of **Ms White's** s42A report notes that "*…350 additional dwellings by the proposed Plan Change represents up to 4.5% of the existing dwellings in Rolleston*". A quick calculation puts the number of existing dwellings at approximately 7,777. Assuming the 573 L/s is the peak demand for this population then:

(a) The peak demand for the PC81 block would be 25.8 L/s.

(b) The peak demand for the PC82 block would be 97.2 L/s.

29.2 In January this year I contacted SDC to confirm the number of connections in order to adjust or rationalise the peak living zone design flow to match the peak demand in the township:

(a) I was advised that "*as at February 2020 there were 7,587 connections to the network with a population of 18,550 – since then approximately 1100 new houses have been connected to the water network*".[1]

(b) Applying 7,587 connections to the 573 L/s instantaneous flow yields a peak flow of 26.4 L/s for the PC81 block and 99.7 L/s for the PC82 block.

(c) Applying 8,687 (7,587 + 1,100) connections to the 573 L/s instantaneous flow yields a peak flow of 23.1 L/s for the PC81 block and 87.1 L/s for the PC82 block.

29.3 Therefore, I conclude that the more accurate peak design flows are likely to be:

(a) 23.1-26.4 L/s for the PC81 area; and

(b) 87.1-99.7 L/s for the PC82 area.

[1] *Ms Marcia Jones. Selwyn District Council Water Engineer". Personal Communication. 19 January 2022.*

Water Demands As Estimated from Other Council Documents

30 The SDC Water Conservation and Demand Strategy notes that "*..on average, a Selwyn urban household uses 1,400 litres per day*[2]".

31 SDC Development Contribution Policy is based on 545 L/day[3] per HUE[4].

32 The 2021/21 Annual Report[5] states a target water use rate of 500 L /day/person with an actual achieved rate of 425 L/day/person. This is, however, calculated not just including potable supplies but supplies such as parks and reserves[6].

33 In preparing this evidence I liaised with **Mr Murray England** who suggested I use a water use rate of 690 L/property/day.

34 I have estimated the range of likely daily and annual demand over the PC81 and PC82 areas in Tables 1 and 2 below respectively using:

34.1 The 690 L/property/day suggested by **Mr England;** and,

34.2 A higher value of 1,000 L/property/day to represent what I consider might be the extreme case or stress test.

35 Table 3 provides the combined demands for the PC81 and PC82 areas based on the 690 L/property/day and 1,000 L/property/day.

Table 1 – Likely PC81 Water Demands

Source	**Demand**	**Total PC81 Daily Water Use (m^3/day)**	**Total PC81 Annual Water Use (m^3/day)**
SDC Recommendation (average residential connection)	690L/day/property	241.5	88,148
SDC Recommendation (conservative overall properties average)	1000 L/day/property	350	127,750

[2] https://www.selwyn.govt.nz/__data/assets/pdf_file/0005/194270/Water-Conservation-and-Demand-Management-Plan.pdf.
[3] Long-Term-Plan-2021-2031_Document_WEB.pdf (selwyn.govt.nz) Page 254
[4] *The unit of demand by which the Council assesses the Impact of growth is a HUE being a normal residential household of 2.9 persons based on the community average. Reference SDC LTP.*
[5] https://www.selwyn.govt.nz/__data/assets/pdf_file/0003/628554/SDC-Annual-Report-2021-Doc_WEB.PDF *(Page 77).*
[6] SDC-Annual-Report-2021-Doc_WEB.PDF (selwyn.govt.nz)

Table 2 – Likely PC82 Water Demands

Source	Demand	Total PC82 Daily Water Use (m^3/day)	Total PC82 Annual Water Use (m^3/day)
SDC Recommendation (average residential connection)	690 L/day/property	910.8	332,442
SDC Recommendation (conservative overall properties average)	1000 L/day/property	1,320	481,800

Table 3 – Combined PC81 and PC82 Water Demands

Source	Demand	Total PC81 & PC82 Daily Water Use (m^3/day)	Total PC81 & PC82 Annual Water Use (m^3/day)
SDC Recommendation (average residential connection)	690 L/day/property	1,152.3	420,590
SDC Recommendation (conservative overall properties average)	1000 L/day/property	1,670	609,550

Firefighting Water Requirements

36 Part 7 of the Selwyn District Council's Engineering Code of Practice also outlines the design basis for fire-fighting supplies. The Code states:

36.1 *The water supply reticulation should comply with the Fire Service Code of Practice.*

36.2 *In particular, the reticulation must meet the requirements for firefighting flows, residual fire pressure and the spacing of hydrants. Location of hydrants shall comply with SNZ PAS 4509: 2008 with minimum hydrants spacing of 135 metres. Blue RRPM"s (cat eyes) shall be installed to offset from the road centreline adjacent to all hydrants. Hydrant Marker posts are to be installed to comply with Section G3.4 of the NZ Fire Service Code of Practice.*

37 In compliance with the SDC Engineering Code of Practice, I estimated the fire requirements using the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice (SNZ PAS4509:2008).

37.1 The firefighting classification will be FW2. This recommends either an on-demand flow of 12.5 L/s within 135 m of a hydrant and 25 L/s within 270 m of two hydrants.

37.2 It is my conclusion that this firefighting capacity can be accommodated within the potable peak flows I discussed in Paragraph 29.

Availability of Water Supplies to Service the PC81 and 82 Areas

38 In Paragraph 14 of his evidence **Mr England** writes:

38.1 *I confirm that this plan change area is outside of the Rolleston Structure Plan area and therefore, should the plan change be approved in whole or in part, consented water needs to be made available for this plan change area to be developed. The infrastructure servicing report was prepared after the initial meeting held with SDC*.

39 This means that the potable water demands in Table 1 will need to be sought by the applicant or made available for the plan change area.

Options to Address the Demand-Supply Gap

40 To address the potable water supply requirements, I looked at a number of options. These are:

40.1 Efficiency improvements in the existing and planned Rolleston network with the view to reducing the water use per property from the Council's targeted 690 L/day/property and then use the efficiency gains to meet some or all of the PC81 and PC82 demands;

40.2 Use of rainwater harvesting tanks and using the harvested water for potable and non-potable uses; and

40.3 New bores or new water supply sources to meet the demands in Tables 1, 2 and 3.

41 I discounted the first two options on the following basis:

41.1 The only way the first option would really work was if the network supply was changed from an on-demand water supply system (existing Rolleston system) to a restricted supply system (where each property as allocated a small amount a day). This would not be in keeping with an urban development. Restricted supplies are for rural supplies. The option would also not be palatable to the existing and future residents or the Council.

41.2 The second option would not be reliable and depends considerably on rainfall. Furthermore, roof water is susceptible to contamination from birds etc. Where this option is used in an urban setting it is for stormwater

attenuation but with full potable supplies coming from the Council mains.

42 Therefore, the provision of bore water would be the only acceptable and viable solution. I discuss this preferred option in more detail below.

Preferred and Recommended Option

43 With this option the Applicant would:

43.1 Use any existing consented water takes referenced in **Mr McLeod's** evidence within the plan changes areas to meet the demands in Tables 1, 2 and 3; and/or

43.2 Seek, buy and transfer a consent or consents to take water and use groundwater with sufficient volumes to meet the demands in Tables 1, 2 and 3.

44 The water associated with the existing and/or new consents can be taken either from existing Council wells and/or new wells. These wells could be near the plan change areas or, indeed, anywhere within Rolleston. This decision would be made in consultation with the Council. The important thing is that the applicants makes available sufficient volumes to meet the demands in Tables 1, 2 and 3 above.

45 I note that **Mr England** is agreeable to this proposal as summarised in Paragraph 19 of his evidence. I, however, do not think a deferment rule as proposed by **Mr England** is necessary as the water supply is or can be made available at the subdivision stage as I discuss further in paragraph 80 of my evidence.

Consideration and Possible Use of Existing Consents

46 The applicant will have control over a number of consents within the plan change areas.

47 Table 4 lists the consents, the location, the associated well numbers, the consented rate and the estimated annual volumes.

48 These could be used and transferred to Council to form part of the community water supply.

Table 4 – Existing Consents the Applicant Will Have Control Over

Consent #	Location	Well Numbers	Consented Rate (L/s)	Consented Volume/Cycle	Annual Volume (m^3)
CRC96175	PC82	M36/2047	9.35	8,100 m3/21 days	140,786

Consent #	Location	Well Numbers	Consented Rate (L/s)	Consented Volume/Cycle	Annual Volume (m^3)
CRC961383	PC82	M36/5022	9.35	8,100/21days	140,786
CRC021647	PC82	M36/7225	27	2,200 m3/day	803,000
Total			**45.7**		**1,084,572**

49 Table 4 shows that:

49.1 The maximum consented flow rate is 45.7 L/s.

49.2 The available annual volume is 1,084,572 m^3.

50 Table 3 showed that:

50.1 The required annual volume across the PC81 and PC82 area ranges from 420,590 m^3 and 609,550 m^3.

51 I conclude that there is enough available consented water to meet the annual demand for the proposed plan change areas.

52 In Paragraph 29 I discussed the instantaneous flows and concluded that 23.1-26.4 L/s was required for the PC81 area and 87.1-99.7 L/s for the PC82 area.

53 The combined instantaneous flows are greater than the maximum consented flow rate of 45.7 L/s.

54 I do not see this as an issue as the Applicant can apply for replacement consent(s) or variations to the existing consents to get higher flow rates to match the required instantaneous flows. These consents should be able to be granted:

54.1 Provided the assessment of effects demonstrate that the drawdown effects on neighbouring wells is less than minor.

54.2 As the new consents will be town supply consents, I expect these to be deeper (>100 m) than the existing consents. The increased depths will reduce the effects on neighbouring bores if not the rates of take in the various wells can be reduced but ensuring that the combined take rates across the wells meets the plan change requirements.

Statutory Feasibility of Purchasing and Transferring Consents

55 While I have concluded that there should be sufficient water to meet the PC81 and PC82 areas for completeness I also discuss the option to purchase and transfer water take consents should the need arise.

56 The Canterbury Land and Water Regional Plan (*CLWRP*) has policies, objectives and rules relating to new community water supplies or the transfer of consents from one site to another.

57 Rule 5.115 governs the taking of water for community supply and requires that a water demand strategy be submitted when an application for a new community water supply is submitted.

58 Rules 11.5.38-11.5.41 address the transfer of water permits within the Selwyn-Waihora Zone.

59 While Rule 11.5.38 requires a 50% reduction in allocation volume during transfers for most uses, transfers for community water supplies are not subject to a volume reduction (Rule 11.5.38(4)(a)).

60 I, therefore, conclude that:

60.1 A consent for a new community water supply can be sought from Canterbury Regional Council as a restricted discretionary activity under rule 5.115.

Option to Use the "Surplus" Water

61 Paragraph 7 of **Mr England's** report states the total consented volume for the scheme is 7,183,440 m^3/year. Paragraph 8 states over the last three years the average annual use has been 3,300,000 m^3/year. The difference between the consented volume and the demand is 3.88 Mm^3/year.

62 At first glance there appears to be a surplus capacity of 3.88 Mm^3/year which would be more than enough to meet the demands in Tables 1-3 above required for the PC81 and PC82 areas.

63 I have previously had discussions with **Mr England** regarding the "surplus" water. **Mr England** advised as he notes in Paragraph 10-14 of his evidence that this capacity is reserved for future growth. The reserved water (3.88 Mm^3) would be utilised over time – possibly in the next 5-10 years.

64 In my opinion it would not be unreasonable for the applicant to discuss with the council and enter into a commercial agreement with SDC to take and use some of the "surplus" (3.88 Mm^3/year) for the first stages of the subdivisions in the PC81/PC82 areas depending on the timing of those stages.

64.1 This would allow parts of the plan change areas to be developed without constraints.

64.2 At the same time the applicant will be going through the process of formalising the existing consents as I discussed in Paragraphs 54-60.

64.3 In my view, this would be an efficient use of the surplus water.

65 Discussions with the SDC would be necessary to ensure an equitable arrangement for the Council.

66 I only propose the above process as an option otherwise I do not see any reason why the developments would be hindered by water supply since there are existing consents that can be used.

67 From the foregoing discussion, it is clear that the proposed Plan Changes 81 and 82 are able to be supplied with adequate water supply to meet the development's and council's requirements.

VERSATILE SOILS

Introduction

68 I have also been asked to provide comments on the productive potential of the soils.

New Zealand Land Use Inventory

69 The Land Use Capability (*LUC*) classification system is described by Lynn et al. (2009).[7] It is a general purpose, qualitative evaluation system which has been widely applied in New Zealand for land use planning, especially for management and conservation.

70 According to the LUC Class system:

70.1 Land can be divided into 'classes' depending on its suitability for different land uses. The LUC assessment ranks land according to its long-term productive ability. Class 1 land is highly suitable for agriculture, while Class 7 or 8 land is better suited for conservation; and

70.2 Versatile soils are defined as Class 1, 2, or 3.

[7] *Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF 2009. Land Use Capability survey handbook: a New Zealand handbook for the classification of land, 3 rd ed. Hamilton, Agresearch; Lincoln, Landcare Research; Lower Hutt, GNS Science. 163 p.*

Proposed National Policy Statement for Highly Productive Land (pNPS-HPL)

71 The proposed NPS-HPL also proposes a definition of highly productive land. This is land that falls into Land Use Classes 1, 2 and 3.

72 The proposed NPS-HPL considers land that is in LUC classes 1-3 as highly productive land or versatile soils by default until such a time Councils are better able to decide on what other factors should be considered to define the productive potential of specific pieces of land.

73 While the proposed NPS-HPL is still at the consultation stage, it is likely to come into effect in 2022.

74 It is unlikely that even in its final form the definition of highly productive land will extend beyond LUC Class 1-3 soils.

Summary of the Productive Potential of the PC81 and PC82 Land

75 I have looked at the Land Resource Inventory and NZLRI LUC Classes 1 - 3 layers on Canterbury Maps. The soils for both PC81 and PC82 are in LUC Class 4.

76 Therefore, the proposed plan change areas are not on highly productive land as they fall in LUC Class 4 and the definition of highly productive land extends to LUC Class 1-3 soils.

77 In summary, there will be no loss of highly productive land as a result of the proposed plan changes.

RESPONSE TO SUBMISSIONS

78 I have read the submission by Christchurch City Council. It reads in Paragraph 15 that "..*detailed assessment of how the proposed plan change would impact the enduring economic and natural resource value of versatile soils as required*". I have discussed the issue of versatile soils in Paragraphs 68-77 above and concluded that there are no versatile soils on the site.

79 The submission by Malcolm and Jan Douglas expresses concern at the potential impact of the PC81 development on existing users level of service. The submission notes that "..*if you live in any of the new current subdivision in Rolleston to the west of the township you will be well aware of the existing water supply and low pressures*".

79.1 In response to the concerns raised I have noted in Paragraphs 27, 36 and 37 that the water supply will be designed in compliance with the Selwyn District Council's 'Engineering Code of Practice'.

79.2 Paragraph 17 of **Mr England's** evidence also states the need for the water supplies to meet the Selwyn District Council's 'Engineering Code of Practice'.

79.3 I can confirm that the minimum Council standards or level of service will be met for the proposed development area. These should ensure that the developments do not adversely affect the existing water supply network.

79.4 I would also add that the new water supplies within the PC81 area will improve the water supply in the area that Mr & Mrs Douglas are concerned about since the new wells will be near the development area and their area reducing the pressure losses to the existing areas.

79.5 Detailed water network modelling will be carried out as part of the subdivision to ensure adequate pressures and flow supplies.

RESPONSE TO OFFICER'S REPORT

80 I have read **Ms White's** s42A report. Many of the comments relate to the evidence and report prepared by **Mr England**. I have discussed **Mr England's** report in various parts of my evidence above. Below I comment on any remaining issues in **Ms White's** report.

81 In Paragraph 75 Ms White states that unless the site is able to be supplied with potable water rezoning of the sites will not be able to appropriately serviced with water supply. Ms White also writes "*I consider that this can be addressed by including a new rule that restricts subdivision of the northern part of the Site until a potable water supply is available which is capable of serving any lots within the subdivision that are outside the RSP area (and for completeness, including a related note in the ODP text); provided the applicant is able to demonstrate that such provision is likely to be feasible"*

81.1 I have demonstrated in the preceding sections that there is sufficient water available for the plan change. However, the applicant will need to amalgamate the existing consents and in the process increase the rate of take from 45.7 L/s.

81.2 The 45.7 L/s is sufficient to meet the first stages of the development. For example, all of the PC81 area, or part of PC82 could be developed as the total instantaneous flows required are less than 45.7 L/s.

82 In any case, I understand the Applicant (as per **Mr Phillip's** evidence) has accepted **Ms White's** recommended rule relating to potable water supply.

CONCLUSION

83 The PC81 and PC82 areas are able to be supplied with water using the existing consents. There is enough annual volume from the combined consents to meet the annual demand.

84 The consented takes have a combined maximum flow of 45.7 L/s. The minimum instantaneous flows are:

84.1 23.1-26.4 L/s for the PC81 area; and

84.2 87.1-99.7 L/s for the PC82 area.

85 Therefore, the consents will likely need to be changed to increase the instantaneous flows to meet the development requirements.

86 Firefighting requirements can be met from the potable supply allocation.

87 I have suggested the option to use some of the Council's existing surplus water as a short-term measure. This appears to me to be an efficient use of the available supplies. The applicant would likely need to enter into a binding agreement with the Council to provide their share of the water at an agreed time.

88 In her Section 42A report, **Ms White** recommends a rule that will restrict subdivision until a water supply is provided. Given my opinion that potable water can be provided to the PC81 and PC82 areas, I do not see the need for the proposed rule. The Applicant should just be able to demonstrate at the subdivision stage that each stage submitted for subdivision consent can be supplied with potable water to meet the requirements.

89 I have also assessed the issue of versatile soils in response to the submission by Christchurch City Council and I concluded that there are no versatile soils in the proposed plan change areas.

90 In summary, I do not see why the proposal should not proceed on account of water supplies or soils.

Dated: 26 August 2022

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Victor Mthamo

ATTACHMENT 1 – WATER SUPPLY PEAK FLOW RATES

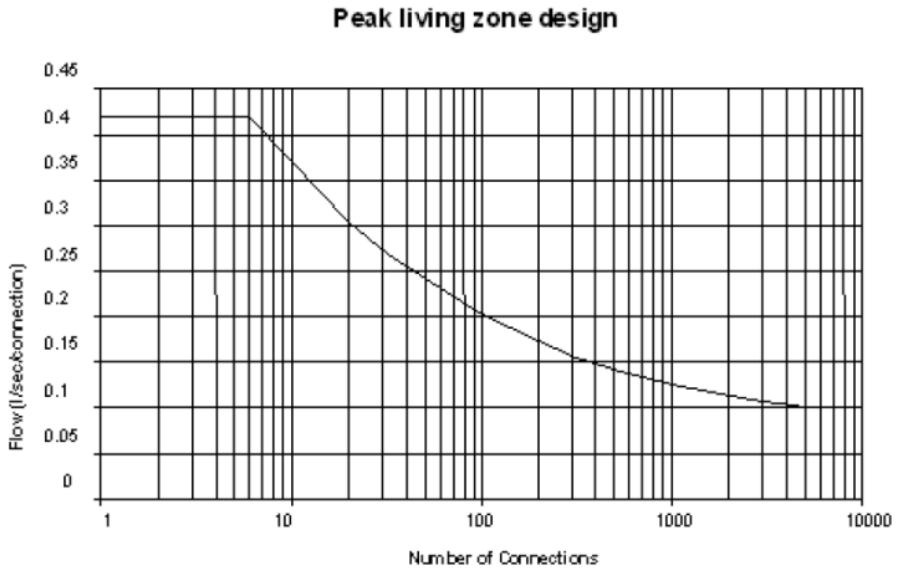

Figure 1 - peak living zone design flow rates