Before the Selwyn District Council

under: the Resource Management Act 1991

in the matter of: Proposed Private Plan Change 80 to the Operative District Plan

and: **Two Chain Road Limited**
Applicant

Evidence of Tim McLeod (infrastructure and servicing)

Dated: 5 October 2022

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EVIDENCE OF TIM MCLEOD

INTRODUCTION

1 My full name is Timothy Douglas McLeod and I am a Senior Civil Engineer at Inovo Projects Limited.

2 I hold a Bachelor of Natural Resources Engineering Degree from Canterbury University (BE[NatRes]), and am a Chartered Member of Engineering New Zealand (CMEngNZ) and Chartered Professional Engineer (CPEng).

3 I have over twenty-five years' experience as a Civil Engineer working on a range of infrastructure and land development projects in New Zealand, Australia, the United Kingdom and Guinea, West Africa.

4 I am familiar with private plan change 80 (*PC80*). I prepared the Infrastructure Report attached to the application.

CODE OF CONDUCT

5 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

6 My evidence covers the following:

6.1 Infrastructure requirements for the proposed plan change;

6.2 Stormwater and flood risk; and

6.3 Earthworks construction.

7 In preparing my evidence I have reviewed:

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

7.2 The evidence of **Mr Victor Mthamo** prepared in support of the proposed plan changes on behalf of the Applicants;

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

SUMMARY OF EVIDENCE

8 In my view it will be practicable to develop the site in accordance with the proposed rezoning. Water supply to the site can be provided by extending the SDC network along Two Chain Road, although upsizing of water mains in Izone Drive will be required to ensure adequate network supply for firefighting. Wastewater reticulation can be provided by extending the Council gravity network along Two Chain Road, with low pressure sewer or gravity reticulation and lift station within the plan change area. Existing electricity and fibre broadband networks neighbouring the site can be extended to service the proposed plan change area. Primary stormwater can be managed on-site and discharged directly to ground via soakpits or drainage trenches.

EXISTING SITE

9 The PC80 site totals approximately 98 Ha and is located to the southwest of the Rolleston Industrial Area. The site is bordered by Two Chain Road, Walkers Road, and the Main South and Midland Lines (railways). State Highway 1 (*SH1*) is located to the southeast of the site beyond the Main South Line railway. The site is predominantly flat and is currently used for a mixture of grazing and rural-residential properties. The site has been used for farming purposes for at least the last 80 years and is currently covered in a variety of pasture and shelter belts.

10 The site is typically gently sloping (1:180 to 1:200 gradient) from northwest to southeast towards SH1. The ground surface is slightly undulating with shallow flood channels crossing the site, as is typical of the Canterbury Plains.

11 Soils generally consist of silts with some gravels to approximately 1m depth, underlain by river alluvium (sandy gravels). Groundwater is encountered between 15 and 20m below ground level.

WATER RACES

12 A branch section (lateral) of the Paparua Stockwater Race network crosses the site from north to south, entering the site via a culvert under Two Chain Road approximately 275m northeast of Walkers Road, and exiting via a culvert under the Main South Line railway and Main South Road (SH1). This branch would be maintained as open channel with piped sections (e.g. under roads) across the site to maintain supply to downstream users, including ornamental use within the Stonebrook residential subdivision.

13 A second minor lateral enters the site at two locations further east along Two Chain Road at No. 15 and No. 25 Two Chain Road, terminating in soakpits within the site.

14 There are options to either terminate the two minor laterals at the upstream boundary to the site or further upstream of Two Chain Road, or even close off the water race laterals altogether if no longer required by downstream users.

15 A section of main channel of the Paparua Stockwater Race network (Railway Road branch) curves around the eastern boundary of the site outside the site boundary before passing through a culvert under the Main South Line and the Main South Road (SH1). This water race would be unaffected by the proposed development.

WATER SUPPLY

16 Water supply to the site can be provided by extending the existing SDC reticulated water supply network from Jones Road to the northwest and along Two Chain Road.

17 Analysis of network demand carried out by WSP demonstrated that sufficient pipe capacity is available for the proposed rezoning from Jones Road once network upgrades (install new or upsizing of pipes) in IZone Drive near the IZone water supply headworks are completed.

18 Basic industry requirements for cleaning and sanitation is 50 L/worker/day. The average water consumption for light industrial estates with no high water consuming industries ranges from 250-500 L/worker/day (consumptive use including minor irrigation). Allowing for up to 25 warehousing or light industrial businesses across the 98 ha (excluding internal roads) with up to 80 staff each (total 2,000 workers) and a consumptive use of 50 to 250 L/worker/day, then the estimated daily water demand ranges from 100 to 500 m^3/day (36,500 to 182,500 m^3/year). This represents 1.1 to 5.5% of the current maximum supply demand for Rolleston of 3,300,000 m^3/year.

19 High water use or "wet" industries may need to develop their own on-site water supply to meet water demand (separate consent required) or agree to specific conditions in order to take process water from the Council reticulated network. Mr England has confirmed in his report that this can be managed in the future through the Selwyn District Council Water Supply Bylaw 2008 (amended 2018), and I concur.

20 Water supply demands for firefighting based on the SNZ PAS 4509:2008 FW4 classification for buildings can be provided to the site. Where the fire water classification exceeds FW4 (for example

storage warehousing requiring sprinklers) then additional on-site tank storage for firefighting water supply will need to be provided by building owners as is normal for large warehousing in the Rolleston Industrial area.

WASTEWATER

21 Existing wastewater system within the Rolleston township and industrial area is principally via gravity reticulation to catchment pump stations. All flows are then ultimately pumped to the Pines Wastewater Treatment Plant (Pines WWTP) in Rolleston. There are existing wastewater gravity mains) in Jones Road to the northeast (across the Midland Line railway) and running past the site in Walkers Road to the southwest.

22 Wastewater reticulation can be provided to the site by extending the existing gravity network in Jones Road under the Midland Line railway and westwards along Two Chain Road. Two thirds of the site would require either low pressure sewer or a lift station to pump-up to this gravity network extension. The existing gravity network in Jones Road discharges to the George Holmes Pump Station which then pumps directly to Pines Wastewater Treatment Plant. Assessment by WSP concluded that the George Holmes Pump Station has sufficient capacity to cater for the additional flow from the development.

23 The existing gravity main in Walkers Road has potential to service the entire site by gravity reticulation. However, this part of the SDC network also receives wastewater pumped from West Melton. Capacity constraints in the pipe network downstream of Walkers Road could result in surcharging during dry weather flows and flooding during wet weather flows if the entire site were to connect to this gravity line.

24 Final configuration of the sewer network, including use of low pressure sewer, lift stations, and outfall to either the existing Jones Road or Walkers Road gravity lines would be determined at the subdivision design stage in consultation with SDC. There may be some limitations placed on peak flows or timing of discharges if certain types of 'wet industries' were developed.

25 In his s.42A report Mr England notes that although the Pines Wastewater Treatment Plant (WWTP) is currently at or near capacity, upgrades are currently underway and additional upgrades are planned and budgeted for. The additional load from the proposed plan change to industrial use is within the scope of projected growth for the WWTP.

STORMWATER

26 The Site is underlain with free-draining gravels and discharge of stormwater to ground is common practice within the Rolleston area. Groundwater beneath the site is found at depths between 15 and 20m below ground level, therefore there is ample opportunity to utilise the disposal of stormwater to ground via soak pits and appropriate treatment devices where required.

27 On-site stormwater disposal from rooves is typically directed to soakpits via sealed pipe systems. Runoff from the roading network and hardstand areas will also be to ground via soak pit, with pre-treatment systems as required where predicted contaminant levels require a minimum level of treatment. Best practice systems for treatment and disposal of stormwater from unsealed roads typically includes grassed swales before discharge via soakpit. Hardstand areas such as concrete or paved surfaces for vehicle parking or maintenance facilities may require a higher level of pre-treatment using raingardens or engineered hydraulic structures to separate and remove gross-pollutants and contaminants prior to discharge to ground.

28 A site-specific resource consent for stormwater discharge will be required from Environment Canterbury to authorise the discharge of operational-phase stormwater from the site before any subdivision consent can be approved.

FLOOD RISK

29 Flood modelling maps for the Selwyn region showing the extent and depth of potential flooding during a 200-year ARI or 0.5% AEP rainfall event are available to view on SDC's website. The predicted floodwater depths for the site is generally less than 0.5m except where existing borrow pits or soak holes or water ponds up against the Main South Line railway embankment indicate ponding depths of 1.5m to 3m. It is noted that the SDC flood model does not take into account infiltration or discharge to ground via soakpits.

30 The Main South Railway along the southeast boundary forms a barrier to overland flood flows. With the exception of the two water race culverts, no evidence has been found of any drainage culverts passing under the Main South Railway line (any culverts, if they do exist, have become overgrown and blocked due to lack of use). Old borrow pits excavated immediately west and up-slope of the railway line serve as a means of discharge of excess stormwater runoff to ground.

31 In general, ground levels for development lots will be set above internal road levels so the roads act as secondary flow paths to safely convey floodwaters to the downslope side of the site. A more

detailed flood risk assessment will be carried out at subdivision consent application stage as required by Section 106 of the Resource Management Act 1991.

POWER AND TELECOMMUNICATIONS

32 Existing electricity and fibre broadband networks neighbouring the site can be extended to service the proposed plan change area. Electricity and telecommunications can be provided to all new allotments to utility company and industry standards.

33 Orion New Zealand Ltd have advised that planning has already started for network upgrades and associated distribution reinforcement to service the residential and commercial development in Rolleston, including a new Zone Substation at Burnham. Proposed network upgrades are expected to be completed before development of the site gets underway.

EARTHWORKS CONSTRUCTION

34 Construction on the site will include bulk earthworks to level and re-shape lots (cut-to-fill), borrow pit excavation to source gravels for pavement construction and backfilling of borrow pits to bury silty materials, trench excavation for installation of services, and construction of roads and pavements.

35 The effects resulting from construction can be appropriately managed through subdivision consent conditions relating to the construction phase and through existing control mechanisms, such ensuring compliance with NZS 6803:1999 *Acoustics – Construction Noise*, and management of dust and sediment runoff through requirements under the Canterbury Air Regional Plan rule 7.32.

RESPONSE TO SUBMISSIONS

36 In their submission to PC80 Fire and Emergency New Zealand (FENZ) supports the proposal to upgrade the water supply network along Two Chain Road, and recommended that the extension or installation of a new Ø300mm main throughout the proposed subdivision would be needed in accordance with the New Zealand Fire Service Fire Fighting Water Supplies Code of Practice (SNZ PAS 4509:2008).

37 Final sizing of the watermains would be determined at subdivision design stage in consultation with SDC and FENZ, and would depend on the layout of internal roads, the water reticulation network, and expected fire hazard category of the largest buildings. There are also alternative means of providing sufficient water supply to comply with SNZ PAS 4509:2008 including alternative water sources such as static storage tanks or on-site water supply bores.

38 Jason Horne in his submission to PC80 (objecting in full) noted the increased pressure placed on the water supply [in Rolleston] when it is already [insufficient] especially in the summer. The actual water demand for industrial use such as warehousing and logistics is small and will have minimal effect on water supply pressure within the residential areas.

RESPONSE TO OFFICER'S REPORT

39 I agree with the conclusions made in the s42A officers report (Liz White, 28th September 2022) and **Ms White's** opinion on **Mr England's** comments relating to water supply. Paragraph 88 of Ms White's report notes that "*The Site is outside of the RSP area he states that should the plan change be approved, consented water needs to be made available for this plan change area to be developed. Mr England also notes that "high water use industries" will require specific agreement with Council to take water from the reticulated network, noting that this is managed through the Selwyn District Council Water Supply Bylaw 2008.53"*.

40 The volume of water required for the expected industry types is relatively small, estimated to be in the range of 36,500 to 182,500 m^3/year. **Mr Mthamo's** evidence demonstrates that this volume of water could be transferred from existing resource consents associated with Plan Change Area 69 (PC69) that the applicant has control over. I also understand the Applicant has proffered a rule restricting subdivision of the site until potable water supply is available capable of servicing the site, as set out in the evidence of **Ms Seaton**.

41 I also agree with the conclusions made in the s42A officers report relating to wastewater. Paragraph 90 of **Ms White's** report observes "*that Mr England notes that the options identified by the applicant to convey wastewater to the WWTP are feasible and that there are capacity upgrades planned and budgeted for in relation to the WWTP which would be sufficient to generally accommodate the wastewater generated by development of the Site. However, he does note that depending on type of industry proposed to be established, flow limitations may need to be imposed or in some instances declined, which is managed through the Selwyn District Council Trade Waste Bylaw 2016.*"

42 The majority of business expected to be established within the plan change area are expected freight-logistics or light industry with relatively low water use. Any high water use industries can be considered on a case-by-case basis if required.

CONCLUSION

43 In my view it will be practicable to develop the site in accordance with the proposed rezoning as summarised below ;

43.1 Potable water reticulation can be provided by extending the existing SDC network along Two Chain Road. Upsizing of water mains in Izone Drive will be required to ensure adequate supply for firefighting.

43.2 Wastewater discharge from the site can be connected by extending the SDC network in Jones Road along Two Chain Road and providing low pressure sewer or a lift station to discharge into the gravity network.

43.3 Existing electricity and fibre broadband networks neighbouring the site can be extended to service the proposed plan change area.

43.4 Primary stormwater can be managed on site and discharged directly to ground via soakpits or drainage trenches.

44 The branch section of the Paparua Stockwater Race that crosses the site can be left in place or piped under internal roads as required without affecting operation of the water race. Other races that currently terminate within the plan change site can be closed or terminated further upstream.

45 Potential effects resulting from earthworks construction can be appropriately managed through subdivision consent conditions and the Canterbury Air Regional Plan rule 7.32.

46 Overall, I am of the view that there are viable means of providing the infrastructure required to support PC80.

Dated: 5 October 2022

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Tim McLeod