Before the Independent Hearing Panel
appointed by Environment Southland and
Gore District Council

Under	the Resource Management Act 1991
In the matter of	an application by Gore District Council for resource consent to establish the Longford Bridge across the Mataura River

Statement of evidence of Matthew Paul Bayliss

2 December 2020

Applicant's solicitors:
Sarah Eveleigh | Jessica Hardman
Anderson Lloyd
Level 3, 70 Gloucester Street, Christchurch 8013
PO Box 13831, Armagh, Christchurch 8141
DX Box WX10009
p + 64 3 379 0037 | f + 64 3 379 0039
sarah.eveleigh@al.nz | jessica.hardman@al.nz

anderson lloyd.

Introduction

1 My full name is Matthew Paul Bayliss.

2 I am the 3 Waters Asset Manager at the Gore District Council (GDC or the Council). I hold a Bachelor in Engineering with Honours specialising in Natural Resources Engineering. I have approximately 10 years post graduate experience in civil and environmental engineering and management of 3 Waters Infrastructure. I have been employed by GDC for approximately 5 years in my current role.

3 In my role I manage GDC's urban water supplies in Gore and Mataura as well as the Otama Rural Water Supply. The water system consists of approximately 570 km of pipework, including gravity and rising mains, transporting water from four water treatment plants. In total these three schemes have an estimated replacement value of approximately $52.5 million

4 In preparing this statement of evidence I have considered the following documents:

(a) Submissions relevant to my evidence;

(b) The section 42A report; and

(c) 20 October 2017 CH2M BECA report - Gore Water Treatment Plant – Preferred Treatment Process.

Scope of evidence

5 This evidence addresses:

(a) A description of the Gore Water Supply;

(b) The Council's obligation to provide Safe Drinking Water;

(c) The reasoning behind the Council's decision to centralise the Gore Water Treatment Plants; and

(d) The reasoning behind the Council's preference to build a bridge over the River.

Description of the Gore Water Supply

6 The Gore drinking water supply is an urban supply which provides water to approximately 7,910 people in the town of Gore. In addition to domestic

usage, the supply also provides water to about 172 industrial and commercial users and includes firefighting capability for the town.

7 The water supply network consists of two raw water supplies, two treatment plants, two bulk treated water storage reservoirs, five pump stations and approximately 117 km of the reticulated pipe network. In 2019, the replacement value of the scheme was estimated to be $29.8 million.

8 On average the Gore water supply uses approximately 3780 cubic meters of water per day with a peak summer demand of 4600 cubic meters per day.

9 Currently, approximately 30% of Gore's water is supplied from the Jacobstown Well field located on the western banks of the Mataura River and treated via the Hilbre Avenue Water Treatment Plant. The remaining 70% of raw water is sourced from the Coopers Well Field located on Eastern banks of the Mataura River and treated via the East Gore Water Treatment Plant. Further details of the locations of the Council's raw water supplies and treatment plants are shown on plan A, attached as **Appendix 1**.

Council's obligation to provide Safe Drinking Water

10 The Council has a legal obligation under the Health Act 1956 to improve, promote, and protect public health within the District. The Health (Drinking Water) Amendment Act 2007 places a further obligation on the Council to comply with the Drinking Water Standards for New Zealand.

11 The Council provides water supply services ostensibly to protect public health through the sustainable collection, treatment and distribution of potable water. It also supports economic development, particularly for water-intensive industries.

12 Ever since the Drinking Water Standards for New Zealand 2005 (the standards) were promulgated, the Council has been considering options to upgrade its water treatment plants to ensure compliance with the standards.

Council's decision to Centralise the Gore Water Treatment Plants

13 The Council's 2015 – 2025 long term plan outlined a plan to undertake extensive upgrades at both the Hilbre Ave and East Gore treatment plants. These proposed upgrades included the replacement of ageing infrastructure that was nearing the end of its useful life and the installation

of an additional treatment process to meet the requirements of the standards.

14 Furthermore, the Council also considered improved treatment to reduce aesthetic issues (customer complaints) in the drinking water supply, potentially due to Manganese and Iron in the raw water sources.

15 Preliminary investigation work on these upgrades completed in 2016 found a number of barriers and challenges associated with upgrading the Hilbre Avenue treatment plant. The most significant of these were the storage of toxic chlorine gas in close vicinity to residential properties and access and space constraints both during constructing and the ongoing operation of the treatment plant. As a result of these challenges, the Council began investigating options to relocate the Hilbre Avenue treatment plant. One of the options considered was centralising its treatment plants at the East Gore site.

16 In August 2016 the Havelock North waterborne disease outbreak resulted in approximately 5,500 of the town's 14,000 residents becoming ill with campylobacteriosis, with 45 people being hospitalised. It is anticipated that the incident has likely contributed to four deaths, and a number continue to suffer health problems.

17 In September 2016 the Government established an inquiry into the outbreak. This inquiry uncovered many systemic issues in the New Zealand approach to ensuring drinking water safety and made several far-reaching recommendations to improve the safety of drinking water supplies in New Zealand.

18 In August 2017 the Council engaged CH2M Beca to undertake a review of the Council's proposed water treatment upgrade strategy due to the initial challenges encountered to upgrade the Council's Gore Water Treatment plants and the findings and recommendations made in the Government Inquiry into the Havelock North outbreak. Of the nine different upgrade options considered for the Gore Water Supply, the review identified the cost-effective and sustainable option being media filtration centralised at the existing East Gore treatment site.

19 Some of the reasoning behind a centralised water treatment plant were as follows:

(a) Operational efficiencies when compared to providing the same level of treatment at two individual sites

(b) The ability to dilute the nitrate levels in raw water from Coopers well with Jacobstown well raw water. This was considered to reduce the future risk of needing to provide nitrate treatment in the future which would require further significant capital investment and increased ongoing operational costs.

(c) The ability to optimise the use of our raw water sources. While the Jacobstown wells are relatively resilient during a sustained dry period and have spare capacity, at times, the Coopers Wells cannot meet demand and/or run dry. Currently, we cannot take additional water from the Jacobstown wells to supplement the Coopers Wells, due to limitations in the Council's existing infrastructure. Connecting the raw water supplies would resolve this issue and provide a long term sustainable solution for water service delivery.

Council's preference to build a bridge over the River

20 In 2017 while the Council was in the process of identifying its preferred water treatment plant upgrade strategy, Mataura Valley Milk (MVM) were in the process of establishing a Nutritional Dairy Plant at McNab (approximately 5 km to the north of Gore).

21 As part of this work, MVM was required to install water, wastewater and power services extending from the Gore Township out to their site at McNab. The preferred route identified by MVM needed these services to cross the Railway Corridor, the Waikaka Stream and the Mataura River.

22 After considering their options, MVM decided that their preferred solution was to use a horizontal directional drill construction methodology to install these services below these critical crossing points. To achieve this MVM engaged specialist directional drilling company Hadlee and Brunton (H&B) to undertake this work. It is my understanding that H&B are one of the most experienced directional drilling companies in New Zealand who specialise in complex and/or large directional drilling jobs.

23 Given the Council was considering options to install a pipeline across or under the Mataura River at the time, the Council took a keen interest in this work. This included undertaking site visits and regular contact with both staffs from MVM and H&B. During this time H&B also gave a presentation to both Council Staff and Councillors regarding the directional drilling process.

24 As a result of my observations and discussions with MVM and/or H&B staff, it is my understanding that:

(a) Prior to beginning the drilling works MVM and H&B undertook extensive geo-technical investigations to identify the most suitable drilling locations and understand potential issues or challenges they may encounter.

(b) The geo-technical investigation work that was completed involved drilling bore holes on the banks of the River. However, due to practical constraints, bore holes could not be drilled directly below the river bed itself.

(c) When the drilling works began, it was found that the geo-technical conditions directly below the river bed varied significantly to what had been found in the bore holes drilled on the river bank.

(d) This variation in geo-technical conditions created significant complications for works causing it to take much longer than anticipated and requiring additional materials and equipment to be sourced from overseas.

(e) These complications resulted in the cost of the work being significantly more than the original estimated price provided by H&B.

25 During the time that H&B were working for MVM in Gore, the Council engaged H&B to undertake Geo-technical investigations at a potential crossing point for the water pipeline.

26 The investigations indicated that directional drilling was achievable with an indicative cost of $986,602, however, this cost did not allow for a number of potential geo-technical risks and complications that were also identified by H&B.

27 H&B recommended a further geo-technical investigation to minimise these risks. However, the "MVM experience" demonstrated that the risks associated with encountering unexpected geo-technical issues directly below the riverbed could not be well understood prior to committing to the drilling works.

28 It is understood that these risks and complications were not uncommon for directional drilling projects. For this reason, H&B's preferred method of engagement was on an "actual costs incurred basis."

29 If they were to be engaged on a fixed price basis, to ensure H&B were appropriately covered for all of the various and significant risks associated with the work, H&B indicated to the Council their fixed price would be much higher than the original indicative price provided.

30 After understanding the various challenges and cost implications that MVM encountered, in February 2018, the Council issued a Registration of Interest (ROI) to install a pipeline crossing of the Mataura River. This ROI was open to following options:

(a) Single span structures: Structures that span the width of the channel with no in-stream support and do not affect the bed of the River.

(b) Span structures with in-stream support: In-stream supports (piers) can be used to increase the crossing width where a single span is not possible or prohibitively expensive. Bank habitat can be maintained under the crossing if abutments are set back. They can be of any forms, from bridges designed for site-specific requirements to panel bridges that come in prefabricated sections with supports.

(c) Pipe crossing under the River: This includes the excavation of trenches and tunnels;

31 Four responses to the ROI were received, two of these proposed a bridge solution and two proposed a directional drilling solution for the pipeline river crossing.

32 The cost estimates provided for a directional drilling solution were between $850,000 and $1,200,000. However critically this was based on "normal" conditions being encountered. Given the recent experiences of MVM, there was a high risk that the actual cost could be significantly higher i.e. two to three times higher than this initial cost estimate.

33 The cost estimates provided received through the ROI process for a pipe bridge were between $1.4 and $1.9 million.

34 After considering the submissions received through the ROI process, on 26 June 2018, the Council resolved

THAT taking into consideration cost, certainty, impact on the environment, aesthetic values and recreational enhancement, the Council approve an overbridge as its preferred option for the construction of a pipeline crossing over the Mataura River as part of the Gore Water Treatment Upgrade Project,

AND THAT the Council note that the proposed location of the overbridge and the route of the new pipeline will be subject of a further report and analysis where a number of options will be evaluated,

AND THAT the Council note that further report on the proposed design of the bridge including any associated cycling and pedestrian track, together

with the prospects of NZTA funding, will be prepared before final decisions are made.

35 At this point, given the potential transportation benefits of the proposed bridge and potential for NZTA funding, the Council's Roading Asset Manager became heavily involved in the development of the project.

36 The evidence provided by Mr Peter Standring, Council's Roading Asset Manager addresses the development of the project following the Councils 26 June 2018 resolution.

Conclusion

37 The Council has legal requirement to provide a reliable and safe drinking water supply to the residents of the Gore Township. To achieve this, a significant upgrade to the Councils existing water treatment plants is required.

38 After undertaking significant investigations and considering a number of different options the Council has identified a preferred strategy of centralising its water treatment plants at its existing East Gore Water Treatment Plant site.

39 Furthermore after taking into consideration cost, certainty, impact on the environment, aesthetic values and recreational enhancement, the Council has identified an overbridge as its preferred option for the construction of a pipeline crossing over the Mataura River as part of the Gore Water Treatment Upgrade Project.

Dated this 2nd day of December 2020

Matthew Paul Bayliss