Before Greater Wellington Regional Council

Under	the Resource Management Act 1991
In the matter of	the Proposed Natural Resources Plan for the Wellington Region
And	
In the matter of	Submissions and Further Submissions by **Wellington Water Limited**

STATEMENT OF EVIDENCE OF STEPHEN JOHN HUTCHISON

WASTEWATER

26 January 2018

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INTRODUCTION

1. My full name is Stephen John Hutchison.

Qualifications and Experience

2. I have a Bachelor of Technology degree in Environmental Engineers and am a Member of Engineering New Zealand. I have 21 years professional experience in environmental engineering and more specifically wastewater engineering.

3. I am currently Chief Advisor Wastewater at Wellington Water Limited ("WWL"). I have been employed by WWL in this role since January 2016 and was acting in the role since September 2015. Prior to that I was employed by MWH New Zealand Ltd in Wellington as an Environmental Engineer since 1996. In particular I have been actively involved in the development and management of the Hutt Valley Trunk Wastewater System since 1998.

4. In my current role I oversee the technical excellence of wastewater engineering across all business units within Wellington Water. This includes Strategy & Planning, Development & Delivery and Customer & Operations groups. I am directly involved in several current resource consenting projects which are affected by the PNRP.

Code of Conduct

5. I confirm that I have read the Code of Conduct for expert witnesses in the Environment Court Practice Note 2014 and that I have complied with it when preparing this evidence. Other than when I state that I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

My involvement with the PNRP

6. I have provided input to the PNRP since initially reviewing the Draft NRP in late 2014. While working at MWH I was managing the Hutt Valley Trunk Wastewater System and I assisted in the drafting of a submission for Hutt City Council on the wastewater provisions. I was

also consulted by Wellington Water during the preparation of the Wellington Water submissions.

7. Once the plan was notified I provided further input to the Wellington Water submission. I have since provided comment on the submission from Regional Public Health on the biosolids provisions.

8. There have not been any pre-hearing discussions on the items covered in my evidence.

9. There has not been any expert conferencing to date on the items in my evidence.

Scope of Evidence

10. I have been asked by Wellington Water to prepare this evidence, covering:

    (a) an outline of WWL's existing wastewater infrastructure, and its operation.

    (b) A commentary on key provisions of the PNRP as they apply to the wastewater infrastructure.

    In many instances I identify issues that I consider ought to be addressed by amendments to the provisions, but I have not specified what those amendments should be. That is a matter more appropriately addressed by a planner, and I leave it for Ms Wratt's evidence to address specific changes that could address my concerns.

11. In preparing this evidence, I have taken into account the s42A reports on Water Quality and Wastewater Discharges to Water.

EXECUTIVE SUMMARY

12. The public wastewater systems that WWL maintains and operates are essential public health infrastructure. The wastewater systems also provide environmental protection, however due to their age and intrinsic design are not able to operate without some discharges to the environment.

13. The key issues that the PNRP presents to the wastewater systems are:

    (a) The interaction of wastewater and stormwater systems, particularly with regard to the interpretation of existing wet weather overflows;

    (b) The practicalities of discharge to land in the Wellington metropolitan area.

EXISTING WASTEWATER INFRASTRUCTURE AND DISCHARGES

14. The metropolitan Wellington region that Wellington Water manages includes four separate wastewater catchments. These catchments are largely based on geographical boundaries to convey the wastewater by gravity drainage through a pipe network as much as practicable. There are also a number of pumping stations which combine some of the natural drainage catchments and/or lift the wastewater when gravity drainage becomes impractical. Subject to capacity limitations in wet weather, the wastewater is conveyed to treatment plant sites and then to disposal in the coastal marine area.

15. A total of 2,367km of public wastewater pipes and 168 pumping stations service the four wastewater catchments. These pipes are made of various materials, with many of the original earthernware pipes from the early 1900's still in service in Wellington alongside more modern materials such as high density polyethylene which has been in use since the 1980's.

16. Wellington Water current conveys, treats and disposes an average quantity of approximately 140 million litres of wastewater each day, the majority of which is domestic sewage from residential properties but also includes commercial wastewater from office buildings and schools, industrial wastewater (also known as "trade waste") from sources including factories, restaurants, landfill leachate, public swimming pools etc. Some groundwater that infiltrates cracks and leaks in the wastewater network is also conveyed and some stormwater is also connected to the wastewater networks. Stormwater connections are generally either unlawful or made in error, with very few cases where special dispensation has been made to connect stormwater to the wastewater network.

17. The terms sewage and wastewater can be interchangeably used. The industry has generally adopted the term wastewater to reflect the inclusion of industrial wastewater which has been conveyed along with sewage from domestic and commercial premises since the introduction of trade waste bylaws in the 1970's.

18. Domestic wastewater includes a relatively small volume of human waste. From international literature, about 140 grammes of faeces and 1.3 litres of urine are produced by the average person daily. Combined with the flushing water from sanitary fixtures, this component of wastewater is commonly referred to as "blackwater" and includes the highest concentrations of microbiological contaminants and nutrients. The remainder of the wastewater includes less contaminated water from sinks, showers, dishwashing and laundry fixtures and is commonly referred to as "greywater". New Zealand domestic plumbing practise is to combine greywater and blackwater through the same sanitary plumbing.

19. The historic practise in the Wellington metropolitan area that Wellington Water now manages has been to convey all wastewater to sewer for disposal at coastal outfalls. This is due to a combination of factors, including the generally poor drainage of our natural soils and the assimilative capacity of the high energy coastal waters.

20. Current design standards used by Wellington Water allow for 270 litres of wastewater per person per day for average dry weather flow. Further allowance is made for industrial and commercial wastewater sources in the catchment. A further allowance is made for wet weather peaks, which is generally four times the average dry weather flow although Wellington City has a higher design capacity calculation. I note that the s.32 report quotes a WCC 2011 report suggesting that only 10% of the wastewater network meets standards for flow capacity. That information is contrary to an analysis from Wellington Water modelling staff, which is that only 12% of the WCC network does not meet current design standards for flow capacity.

21. When pipe networks are designed the designer will calculate the "fully developed" area of the catchment. Therefore, there will initially be excess capacity in many parts of the wastewater networks,

however in some cases the extent of the catchment may have been overcome by development of adjacent land not previously anticipated in the trunk network sizing.

22. The primary service goal for wastewater pipes is to protect public health by safely draining wastewater from properties. To achieve this, the wastewater pipes have to be structurally intact and free of major blockages such as tree roots. Emergency overflow structures are required in the event of system failure from blockage, overloading or some other failure such as extended loss of power or major mechanical fault at a pump station. It is not considered a failure if the wastewater pipes have some ingress of groundwater, and the design codes allow for this to some extent as the daily diurnal peak of wastewater flows will only be around twice average daily flow.

23. A secondary goal for the wastewater system is protection of the environment from significant contamination. The main method for protection of the environment is through the treatment of wastewater at the treatment plants sites. Leakage or illegal connection of wastewater to stormwater can cause environmental contamination. Management of this leakage is achieved through a combination of techniques, including routine environmental monitoring and specific investigation to reported instances of contamination. This contamination may be during dry weather or wet weather and the source can be very difficult to determine. In some cases illegal or inadvertent cross connections have been made at private properties from wastewater to stormwater. While building inspections generally ensure that consented plumbing work is undertaken correctly not all such work is undertaken to the necessary standards and can be difficult to detect.

24. Notwithstanding design allowances, during heavy rainfall the amount of wastewater entering the piped network and pumping stations increases significantly due to stormwater directly and indirectly entering the wastewater system. This can happen through inadvertent or illegal connections of stormwater piped directly to the wastewater system, including from roofs, patios and retaining wall drainage. Direct flows of stormwater may be from areas of land which flood or are graded to the gully traps of houses. Indirect

sources are through gaps in pipes or cracks, commonly referred to as "infiltration".

25. Past practise for lateral pipe construction included jointing earthenware pipes with mortar. Lateral pipes are the connection from the house to the Council main. These pipes are privately owned on the property and the private ownership extends to the Council main or private property boundary, varying on Council policy or bylaw. Over time the quality of those mortar seals will degrade and the lateral pipes will not be water tight, allowing infiltration of groundwater. No flow measurement is in place at the connection point of these pipes and in practical terms it is very difficult to accurately measure flows in gravity sewer pipes due to contaminants and open channel flow, compared to relatively straightforward measurement in pressurised drinking water pipes.

26. Wellington Water has programmes of work which measure the flows in key locations in the pipe network and calculate flow relative to rainfall to calculate rainfall derived inflow and infiltration (RDII). Investigations can then be targeted to the sub-catchments with the highest RDII. These investigations are primarily based on closed circuit (CCTV) inspections, and on a catchment level can also include visual inspections of residential properties to look for faults such as direct stormwater connections or low gully traps. Some smoke testing to identify large leaks or cracks may also be undertaken and occasionally pressure testing of drains is used.

27. For example, HCC undertook an investigation in a catchment of approximately 2,400 properties serviced by Malone Road and Hinemoa Street pump stations between August 2005 and October 2009. Of the 11.66 km of public sewer pipe 7.05 km did not pass the CCTV or pressure testing and required replacing at a cost of about $8M.

28. In addition to that substantial investment, the 2,400 lateral pipes were also tested and less than 50% passed. The water-tightness of private lateral pipes is not typically tested however these ageing pipes are known to be a large contributing source of groundwater due to the age and nature of the pipes and wet weather overflows in that

catchment had not been sufficiently reduced by work in the public sewer network. The issue of renewal of these private pipes is a sensitive topic due to the political sensitivity of the high cost to property owners. The laterals are typically only replaced by the property owner when they block repeatedly with tree roots or collapse, or they leak sewage directly onto land and present an objectionable blockage, leak or a health risk.

29. During and immediately after heavy rainfall, the stormwater inflow and infiltration can often overwhelm the capacity of the wastewater system leading to overflows of wastewater to the environment. In a typical year there can be up to 12 rainfall events which result in wet weather overflows. The number of discharges (including blockages) is summarised by month in the **attached** Table 1 for the 2016/17 year.

30. These overflows are generally through constructed "emergency" overflow points, which are typically constructed as a high level pipe within an access chamber (manhole). Approximately 40 of these structures have been installed in Wellington city alone to relieve excess wastewater flows to the stormwater network to prevent contamination of private property or publicly accessible land areas. These constructed overflows are monitored by remote telemetry in many cases however telemetry has not been installed at the sites which are known to operate less frequently. The monitoring data is used to advise GWRC and Regional Public Health officers when overflows are known to occur and to monitor the network performance.

31. Almost all of Wellington Water's 168 wastewater pumping stations also have an emergency overflow constructed to operate in the event of major electrical, mechanical or civil asset failure or prolonged electrical outage. These overflows are connected to stormwater network in some cases, direct to freshwater in some cases and direct to coastal marine area in some cases, depending on the location of the pumping station. These overflows only operate on rare occasion, during extreme flooding or major mechanical or electrical fault and contingency measures such as sucker trucks have not been able to contain the wastewater. In my experience, one or two such discharge may occur each year from either localised wet weather

inundation or plant or network failure. For example, in February 2017 the Moa Point Inlet Pump Station control system failed, resulting in approximately two hours of discharge of all wastewater through the emergency outfall. In mid 2017 a short discharge of wastewater was required to the South Coast to allow a repair to a wastewater rising main to be made.

32. In some parts of the network uncontrolled overflows may occur. The term uncontrolled refers to when the wastewater pipes surcharge and relieve pressure through the access chamber lid. Some photographs are included as **attachments**. In some cases maintenance staff will bolt down manhole lids at sensitive locations such as roads to direct the surcharging wastewater to overflow at a location with a lower risk of public contact. These manhole lids are not monitored by telemetry and our knowledge of the locations is informed by hydraulic modelling, customer call centre complaint records and other operational sources, such as Parks & Reserves staff reporting sewage debris. In the Porirua network there are relatively few constructed overflow points however records have been compiled on a number of uncontrolled manhole locations, refer Figure 7.

33. The consenting, monitoring and reporting of these wet weather overflows has varied between Wellington Water's client councils. Historically, these overflow discharges have generally been viewed as emergency overflows, — i.e. justified for the protection of public health — and have generally not been consented or reported.

34. That practise has changed in recent years, with Hutt City Council consenting their trunk wastewater overflows in 1998 and Wellington City Council consenting their overflows to stormwater in 2010. Upper Hutt does not have any regular overflow sites. Porirua City has no overflow consents but a number of sites which are now know to operate regularly during heavy wet weather. Wellington Water has been reporting known overflows from these and other overflows in the past few years however most of these are currently unconsented.

35. In my opinion as an engineer, the effects of these wet weather wastewater overflows are transitory. This is due to a number of factors: There is high dilution and flushing flows present in the freshwater and

coastal environments during these discharges; monitoring shows the water quality generally returns to background levels within 48 hours of such discharges occurring; and the majority of these discharges are during winter when the amount of contact recreation in the receiving environment is low. Also, the duration between these temporary discharges is significant as there are only up to 12 discharges per year at the most frequent overflow sites. I acknowledge there may be other perspectives from social, cultural and environmental experts.

36. As explained by Mr McKenzie the PNRP would make consenting for these controlled and uncontrolled discharges very difficult as many discharge to freshwater and would therefore be classified as a non-complying activity (R62). Further, the PNRP as notified has created uncertainty in relation to wastewater overflows that enter the stormwater network — specifically whether they fall under the rules governing stormwater (R50 and 51) or the rules governing wastewater (R61 and 62). This has been brought to the fore by the requirement to lodge consent applications under R50 within two years of the PNRP's notification, which Wellington Water has done.

Treatment

37. Treatment plants have been a relatively recent part of the wastewater system development. Seaview and Moa Point introduced fine screening in the 1980's, Porirua built their secondary treatment plant at Titahi Bay in the late 1980's and Moa, Western and Seaview built secondary treatment plants between 1996 and 2002. As the discharges were to the CMA the high energy receiving environment was considered to be acceptable prior to that.

38. Wastewater treatment currently in use by WWL involves three main steps: fine screening, "secondary" treatment and ultra-violet (UV) disinfection.

39. Fine screening is the use of automated screens to remove larger solids and trash which is disposed to the wastewater system, mainly including wet wipes and sanitary products such as tampons which may interfere with downstream treatment process units and of course would be offensive to discharge to the environment. This material is disposed at a controlled landfill site.

40. Secondary treatment is the treatment of organic contaminants to reduce the biochemical and microbiological impact on the environment. This undertaken by Wellington Water's plants by a form of "activated sludge", where aerobic conditions are maintained in a tank by forced aeration and the naturally occurring microbiology in wastewater is concentrated by recycling of some of the settled "sludge". For the purposes of this description secondary treatment may also include primary settling. A significant by-product of secondary treatment is waste sludge.

41. Ultraviolet disinfection involved the use of special ultra-violet lamps, generally focussing energy at the 254nm wavelength to reduce the microbiological contaminants to relatively low levels. Indicator organisms such as Faecal Coliforms are measured to quantify the performance of the UV disinfection treatment process. Currently available laboratory analyses for specific viral contaminants are not yet sufficiently cost effective to be used on a regular basis.

42. In recent years there has been a lot of research into emerging organic contaminants (EOCs). These are chemical compounds which are not effectively treated by most modern wastewater treatment plants and are relatively modern contaminants which in most cases have only recently been able to be measured due to advances in laboratory analytical technologies. Some commonly known categories of EOCs are: flame retardants, phthalate plasticisers, surfactants, antifouling agents, pesticides and endocrine disruptors. The knowledge of the fate and effects of these EOCs is still developing internationally and guidelines are not yet established for most of these compounds. Wellington has a relatively low density and re-use of water and while there is no real evidence of any significant concern over EOC's at this stage this may change in the future.

Impact Of Wastewater Systems On Urban Watercourses

43. Urban water quality is known to be affected by urban run-off, both directly and indirectly. The main impact of wastewater networks on the urban water quality as measured against current standards is through microbiological contamination.

44. As part of our programme to target investment in infrastructure repair Wellington Water has established a network of 68 monitoring locations in locations around the urban stormwater networks. A microbiological indicator (E.coli) is sampled monthly from these sites and assessed against the 2014 National Policy Statement for Freshwater Management (NPSFM) target of median value lower than 1,000 cfu/100mL which is consistent with the PNRP Table 3.2 standard for secondary contact with freshwater. Of these 68 sites, 9were not complying with this target in our December 2017 quarter reporting however it should be noted that Wellington Water currently excludes wet weather sample results from our internal KPI analysis.

THE PNRP

Definitions - Existing discharge and New discharge

45. The definition of "existing" and "new" discharges is excessively narrow when applied to wet weather wastewater overflows in the context of the policies and rules of the PNRP discussed below. The reason for this is that these many overflow locations either operate infrequently, are not monitored or have not been historically consented as they have been considered by local authorities to be "emergency overflows" due to their function in protecting private property from wastewater contamination during heavy rainfall and therefore not requiring consenting.

46. As the PNRP definitions do not provide for these longstanding overflow discharges my submission is that the definitions should be adjusted to reflect the actual existence of these important discharge points. Further, the definition of "new: implies that any change to an existing discharge is such a significant change that it should be considered under the rules for a new application.

Objective O24: Contact Recreation and Maori customary use

47. The requirement in Table 3.3 for "pathogens to be sufficiently low for shellfish to be safe to collect and consume where appropriate" needs clarification. Our monitoring of viral contaminants from temporary discharges from Seaview and Moa Point wastewater treatment plants

has shown that there is an elevated risk of shellfish contamination. Opus (2014)[1] calculated a 5% probability of illness from consumption of bi-valve shellfish on Hue te Taka Peninsula during normal conditions, which elevated to 8% probability during wet weather bypass events. This location is some 1000 metres from the Moa Point treatment plant outfall. MWH (2013)[2] conducted a shellfish quality sampling programme in mid 2013. This sampling was intended to quantify the risk of temporary treated effluent discharges during Main Outfall Pipeline maintenance work however the presence of wet weather network overflows was noted. The MWH survey showed some presence of Norovirus G2 genome in shellfish at West Petone beach (some 4km distant from the outfall) and Lowry Bay (some xkm distance from the outfall) even 10 weeks after the treated effluent discharge.

48. Although it cannot be assumed that all norovirus in shellfish are infectious I understand that it is not possible to determine the proportion that are infectious. Advice from NSFSA (now Ministry of Primary Industries (MPI)) is that a zero tolerance approach should be taken for commercial shellfish. No specific microbiological guideline criteria exist for shellfish gathered for personal consumption however the commercial limits are generally adopted.

49. In metropolitan areas there is a risk of illegal sewer to stormwater cross-connections or of leakage from wastewater to stormwater networks potentially anywhere due to cracks in the respective network pipes and proximity of stormwater pipes to wastewater pipes. General advice from Ministry of Primary Industries[3] is that people should avoid collecting and eating shellfish from areas where pipes or culverts run down to the beach, or sewage or stormwater is discharged.

50. I consider the Shellfish quality criteria wording in Table 3.3 should be amended to reflect this.

[1] Moa Point Wastewater Treatment Plan Wet Weather Bypass Flows. Assessment of Viral Public Health Risk. Opus International Consultants Ltd, March 2014.

[2] Main Outfall Pipeline Condition Assessment – Shellfish Quality Monitoring Report. MWH New Zealand Ltd, October 2013

[3] Food safety for seafood gatherers. Ministry of Primary Industries, June 2013

Objective O50: Discharges of wastewater to fresh water are progressively reduced

51. While the general intent of this objective is understood I note that wastewater is low in salinity and accordingly will mix more effectively with fresh water than coastal marine water. However, coastal water will provide an overall greater dilution due to the larger water body available. This objective should be extended to clarify that relocation of fresh water discharges to coastal water is encouraged.

Policy P62: Promoting discharges to land

52. Discharges to land are possible in some circumstances, but for the metropolitan areas of Wellington the density of the urban area, the soil types and the topography mean that it is generally not practicable to discharge wastewater to land.

53. Wellington Water have commissioned a recent study investigating the feasibility of discharging treated effluent from the Porirua wastewater treatment plant to land[4]. That high level assessment considered available land within a 5km radius of the plant. Allowing for buffer distances to sensitive uses (residential / commercial land and any watercourses) and excluding any land with a slope greater than 10 degrees or subject to flooding in 100 year event and any small parcels of land left relatively few potential sites. Refer Figure 6 for a map of those sites.

54. That study suggested a gross area of between 702 and 780 ha would be required just for current average dry weather flows of 22,800 m^3/day. Note that wet weather flows treated at that plant are currently up to 92,000 m3/day so the excess effluent would need to discharge to coastal waters. Growth of approximately 30% is forecast in this region in the next 35 years and average flows per capita are not expected to reduce significantly.

[4] Porirua WWTP – High-level land application assessment (Draft for consultation). Stantec Ltd, November 2017

55. This example demonstrates the impracticality of directing treated wastewater to land in the geographical context of metropolitan Wellington. Further, there does not appear to be any significant consideration of reverse sensitivity or reduction in potential economic use of land through requiring large areas for land treatment.

56. This policy should have qualifiers included to reflect the limited practicalities of land disposal.

Policy P64: Mixing of waters between catchments

57. The public water supply in Wellington and Porirua is from the Hutt Valley catchments and the wastewater is consequently mixed. Subject to the unstated interpretation of whether there are adverse effects on mana whenua values this policy may not be practicable and could require billions of dollars of investment to implement with regard to the water services that Wellington Water provides.

58. This policy should be amended to reflect the current water supply arrangements.

Policy P67: Minimising effects of discharges

59. Production of domestic wastewater is very difficult to regulate. The main contaminant load is from human waste, which needs to be collected and disposed of in a safe and hygienic manner. Industrial wastewater can be pre-treated on site to some extent and that is required at most significant industrial sites and at smaller sites, with grease traps at fast food restaurants for example.

60. Re-using treated wastewater as non-potable or even potable water is technically possible and is done in some water scarce parts of the world, however is not undertaken on any significant scale in New Zealand. Separate distribution networks are generally required where reclaimed water is supplied and the public health risks of cross-connection require careful management. I do not expect it to be practicable to re-use treated wastewater in the medium term in Wellington.

61. Minimising the amount of contaminant is a primary goal of wastewater treatment and is reasonable to expect however there is a point at which further treatment is uneconomic (diminishing returns) and the existing wastewater treatment plants are generally close to that point.

62. Minimising volume is difficult to achieve in a practical sense as volume is dependent on public water use habits and the water supply to residential properties is not physically limited and water supply demand management relies primarily on education of public.

63. Wastewater can be treated however the large volumes requiring treatment are likely to make land based wetland treatment impractical in the Wellington context. My understanding of land based wetland wastewater treatment in New Zealand is that there has been limited success in terms of treatment efficacy. I rely on Mr Bradley's evidence on this matter.

64. Relief is sought to consider the applicability of this policy to wastewater treatment given the existing investment in minimising the amount of contaminant discharge through the high quality treatment already in place.

Policy P68: Inappropriate discharges to water

65. Wet weather overflows currently occur up to 10 or 12 times per year from some overflow locations and depending on rainfall. The wastewater network flows also exhibit different responses to similar rainfall events depending on the level of ground moisture, so it is often not possible to compare apparently similar storm events. Major investment would be required to reduce the frequency of wet weather overflows to the one or two overflow events that "extreme weather" implies.

66. As an example, Hutt City Council undertook a major programme in the Malone Road and Hinemoa Street wastewater catchments as described in paragraph 27. That work reduced the number of overflows in that catchment from up to 15 per year to a design target of no overflows in summer months for rainfall events up to 5

year return period and for winter months to a 2 year return period. These could be considered "extreme" rainfall events.

67. Extrapolating the $8M Council investment for the 12 km of pipe network in this catchment across to 2,000 km of Wellington Water managed wastewater networks (nominally all pipes greater than 20 years old) this would cost in the order of $1.4B. Also note that the $8M HCC investment excluded the private cost to residents of renewing their private lateral pipes which was several thousand dollars per property. Lateral replacement costs will vary widely and Wellington Water does not hold data on those costs, however at the upper end I note a media report quoting one WCC resident with a property requiring significant traffic management as costing $22,000[5].

68. For all the reasons above, I agree with the s42A report on Water Quality (at [765] and following) that "extreme" weather references in Policy P68 should be changed to "heavy rainfall events".

Policy P81: Minimising and improving wastewater discharges

69. If the policy were to be retained, a number of concerns ought to be addressed

70. First, the policy does not appear to provide for existing discharges from wastewater treatment plants to coastal water. As noted above, land disposal alternatives have been considered and are known to be impractical on a large scale in the Wellington metropolitan area.

71. Second, as explained in my submission on definitions, the definition of existing discharge for wastewater is excessively narrow in that it does not provide for existing wet weather overflows which are not currently consented. As shown in Figure 7, there are many such existing discharges.

72. Third, as mentioned previously, minimising discharges from wastewater treatment plants is inherently difficult as per capita

[5] https://www.stuff.co.nz/life-style/home-property/72172565/homeowners-getting-stung-with-surprise-repair-bills-for-wastewater-pipes

discharge volume is largely outside the control of local authorities. With a growing population the discharges are most likely to increase at a faster rate than any reasonable water consumption efficiency programme can achieve. As evidence of the effect of rainfall on wastewater flows I have included in Figure 1 a graph of how variable wastewater flows have been at Moa Point and Seaview since 2007.

73. Fourth, Policy 81(a) calls for the quality of discharges to be improved and quantity to be reduced. I note that this policy does not recognise the regionally significant infrastructure or the major community investment in some existing assets. Rather than simply seeking to minimise and reduce these discharges an understanding of the effects of these discharges needs to be considered.

74. I understand Ms Wratt proposes significant changes to the Policy that could eliminate or address the issues I have identified, and I defer to her planning evidence on such details.

Policy P83: Avoiding new wastewater discharges to fresh water

75. As explained in my submission on definitions and P81 above, the definition of existing discharge for wastewater is excessively narrow in that it does not provide for existing wet weather overflows which are not currently consented.

76. It is not practicable to avoid discharges of wastewater to freshwater for wet weather overloading of the wastewater system. The alternative of discharging to land is not appropriate given the increased public health risk of higher probability of public contact with wastewater on land and the lack of assimilative capacity of land during such discharges. While mitigation such as storage or reduction of inflow and infiltration can reduce and in some cases eliminate these discharges this will not be affordable or achievable in every case due to competing priorities for limited funding.

Rule R46: Dye or salt tracer

77. Dye tracing is used regularly for the purposes of investigating cross-connections between the stormwater and wastewater networks.

Existing practise is for Wellington Water contractors to advise GWRC pollution hotline by email of any such testing. This is a daily activity and is often reactive, i.e. unplanned. The majority of these dye tests are within wastewater pipes however these pipes are occasionally connected to the stormwater system so Wellington Water currently notify GWRC environmental pollution teams of every dye test.

78. Relief is sought to amend R46(d) to provide an alternative to the administrative burden of written notification at least 24 hours prior to clarify that electronic mail correspondence immediately prior to a dye test is acceptable and alternatively allow for previously registered contractors to provide electronic notification to the Wellington Regional Council pollution response team prior to any discharge."

Rule R61: Existing wastewater – discretionary activity

79. The definition of new discharge includes the qualifier that any increase of alteration of an existing authorised discharge would be a new discharge. That definition needs to be adjusted for this rule to be practicable.

Rule R62: New wastewater to freshwater – non-complying activity

80. As noted above the definition of new is extremely broad and could be interpreted as any currently unconsented discharge or increased or altered discharge.

81. In some situations it may not be practicable to avoid new discharges to freshwater. The wastewater network requires safe overflow locations to minimise public health risk in the event of system failure or hydraulic overloading from stormwater ingress or flooding. The construction of such new discharge points needs to be provided for in this rule.

82. Recent monitoring of two wet weather wastewater overflows in Wainuiomata has shown that measurable contaminants such as E.Coli reduced substantially within 48 hours of an overflow event and were back to around background levels around 72 hours after the overflow. Refer Figures 8 and 9attached. The effects of these

discharges and the public health risk should to be taken in context of the wet weather event, river flooding, background contamination from rural and other sources rather than a blanket non-complying status

STEPHEN JOHN HUTCHISON

26 JANUARY 2018

Wastewater Network Overflows for 2016/17

Ref	Sub Category	Council	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Tota for the year
HCC_WW_114	Consented Overflows - Network	HCC	0	0	0	0	0	0	0	0	0	0	0	0	0
PCC_WW_114	Consented Overflows - Network	PCC	0	0	0	0	0	0	0	0	0	0	0	0	0
UHCC_WW_114	Consented Overflows - Network	UHCC	0	0	0	0	0	0	0	0	0	0	0	0	0
WCC_WW_114	Consented Overflows - Network	WCC	0	0	0	0	0	0	0	0	0	0	0	0	0
HCC_WW_75	Consented Overflows - Trunk Main	HCC	0	5	5	2	11	0	1	4	3	7	0	0	38
			0	**5**	**5**	**2**	**11**	**0**	**1**	**4**	**3**	**7**	**0**	**0**	**38**
HCC_WW_117	Non-consented Overflows - Network	HCC	0	0	0	0	0	0	0	0	0	8	0	0	8
PCC_WW_117	Non-consented Overflows - Network	PCC	10	12	13	1	14	0	0	0	10	13	3	0	76
UHCC_WW_117	Non-consented Overflows - Network	UHCC	0	0		0	0	0	0	0	0	0	0	0	0
WCC_WW_117	Non-consented Overflows - Network	WCC	9	9	15	3	45	5	2	11	13	34	10	6	162
HCC_WW_76	Non-consented Overflows - Trunk Main	HCC	0	0	0	0	2	0	1	0	0	0	0	0	3
			19	**21**	**28**	**4**	**61**	**5**	**3**	**11**	**23**	**55**	**13**	**6**	**249**

Table 1: 2016/17 Wastewater network overflows by existing consent status

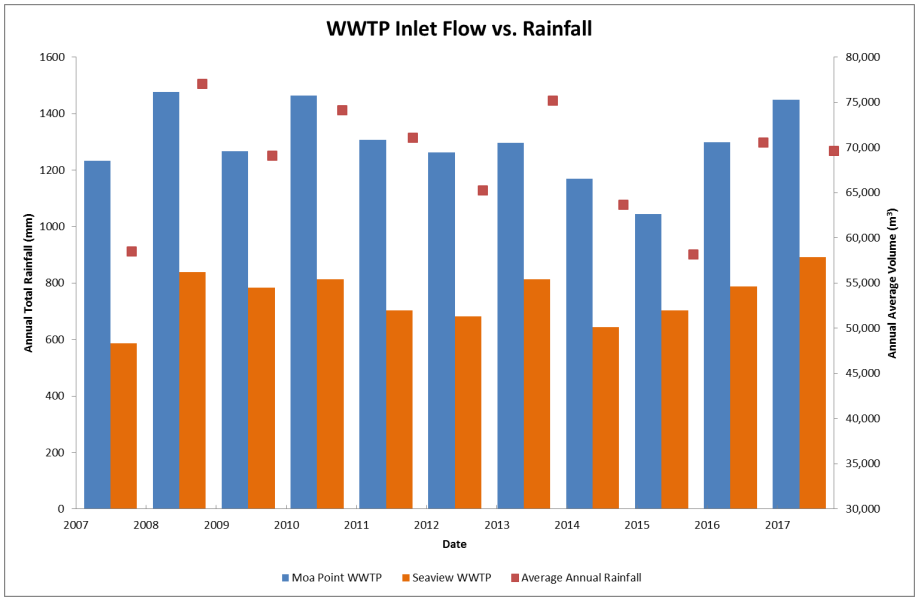

Figure 1: Moa Point and Seaview WWTP average flow since 2007

Figure 2: Surcharging wastewater manhole in Porirua during heavy rainfall

Figure 3: Another example of surcharging wastewater manhole

Figure 4: High level overflow pipe between sewer and stormwater in Wellington city wastewater manhole.

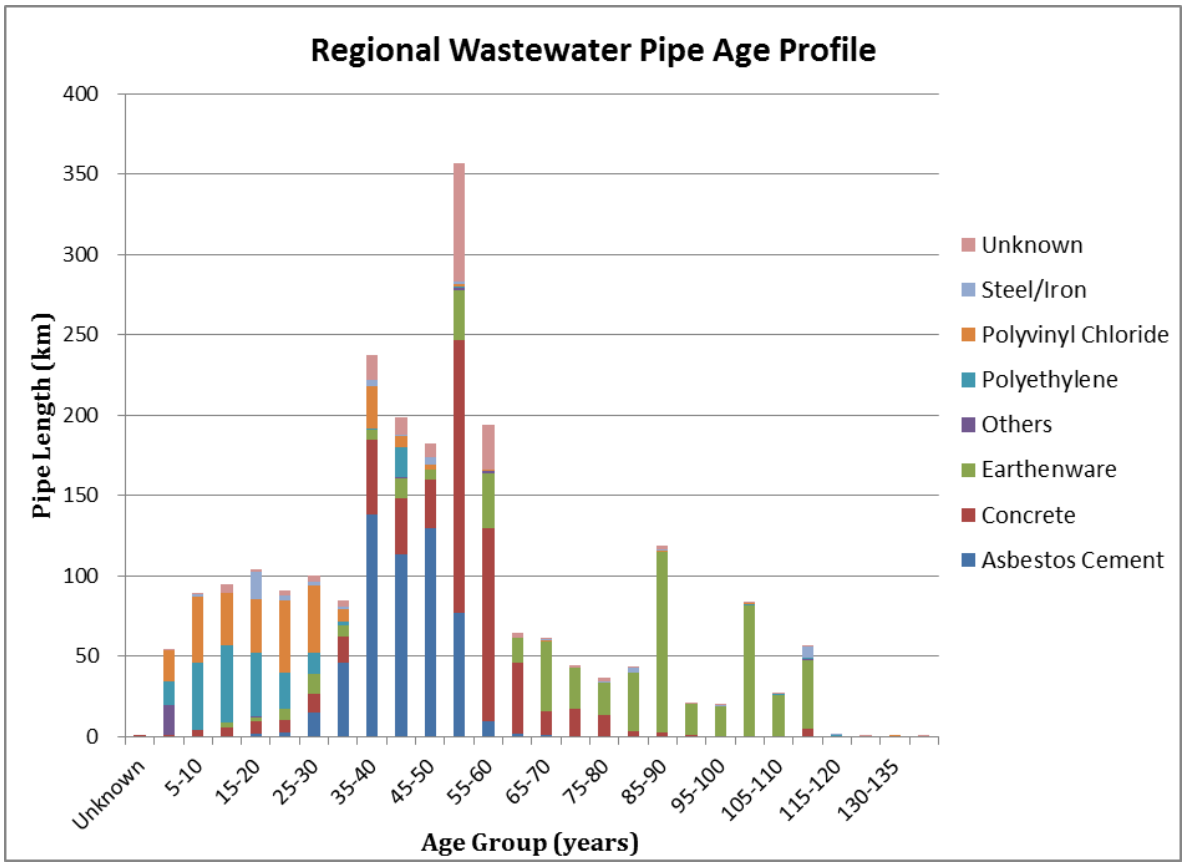

Figure 5: Regional wastewater pipe age profile

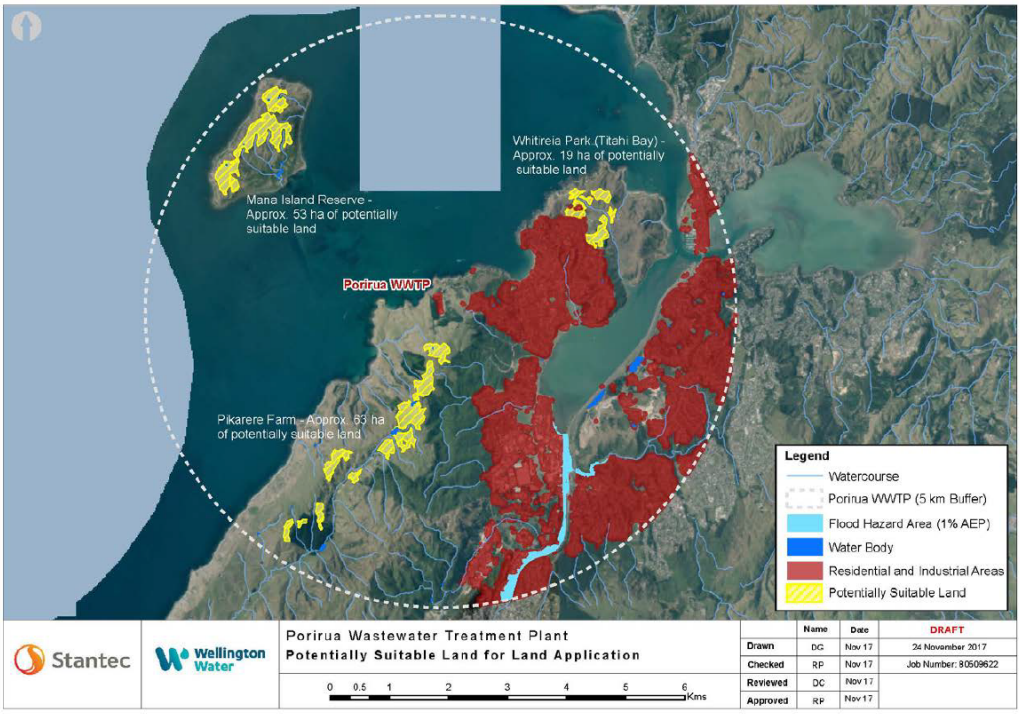

Figure 6: Porirua WWTP potential suitable land for land application

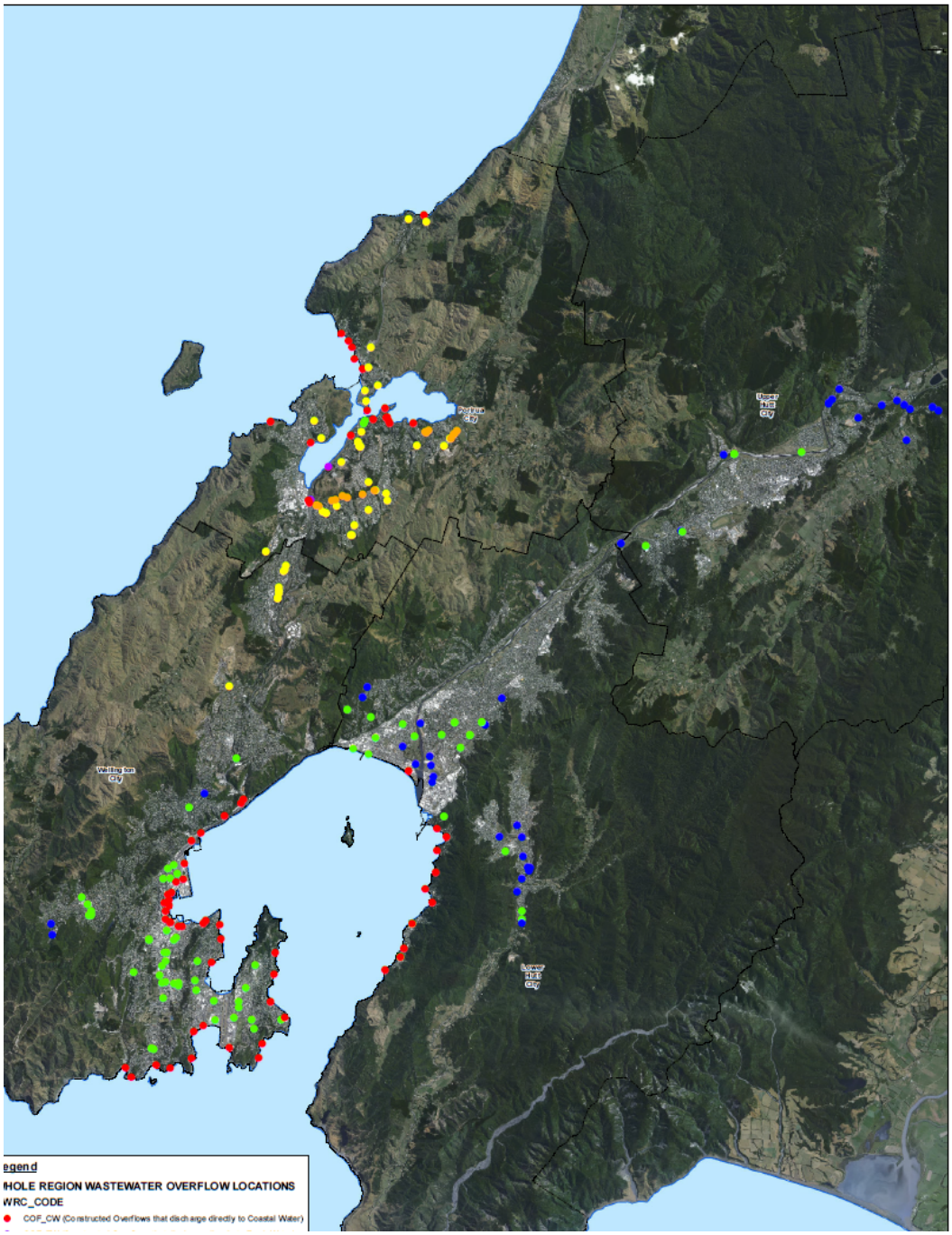

Figure 7: Wellington Water Overflow Location by consented status

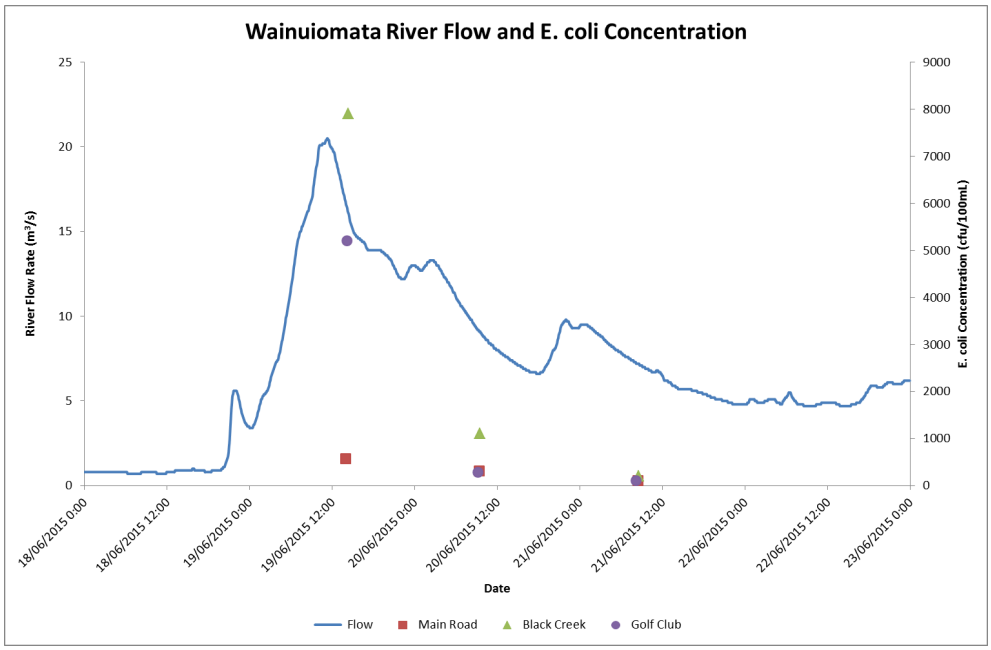

Figure 8: Downstream (Golf Club) and upstream E.Coli samples 24, 48 and 72 hours following a wet weather overflow event June 2015

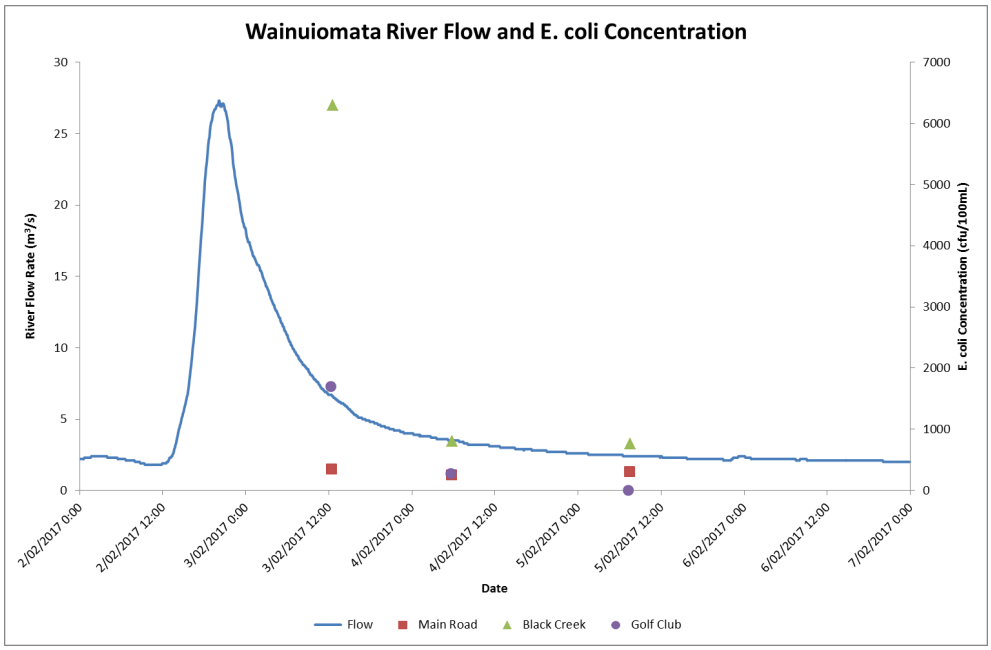

Figure 9: Downstream (Golf Club) and upstream E.Coli samples 24, 48 and 72 hours following a wet weather overflow event February 2017