Ministry for the Environment
Manatū Mō Te Taiao

PO Box 10362, Wellington 6143
Website: www.mfe.govt.nz
Freephone: 0800 499 700

19-D-01602

s 9(2)(a)

Dear s 9(2)(a)

Official information request for documents regarding the Government's Essential Freshwater package

I refer to your Official Information Act 1982 (the Act) request dated 1 August for:

> * *All reports, memorandums, papers, documents, advice, correspondence, notes, emails, text messages, and other official information, between the Ministry for the Environment, DairyNZ, Beef+Lamb New Zealand, Federated Farmers, and Horticulture New Zealand regarding the Government's Essential Freshwater package, since 1 November 2018.*
>
> * *All reports, memorandums, papers, documents, advice, correspondence, notes, emails, text messages, and other official information between the Ministry for the Environment and Regional Councils, regarding the Government's Essential Freshwater package, since 1 April 2019.*

Further to our decision letter of 12 September 2019 please find the second tranche of information found in scope of this request.

Attached is a list of documents being released to you. These documents are primarily emails between staff from the Ministry for the Environment (the Ministry) and staff from regional councils.

One document in scope of your request has been refused under section 18(d) of the Official Information Act as the document is publicly available. You can find a link to this document in the attached list of documents.

In accordance to your clarification provided to the Ministry for the Environment (the Ministry) on 11 August 2019, some information has been withheld as Out of Scope if it is purely administrative in nature or is not in scope of your request.

The Ministry is currently assessing and preparing the remainder of the information for release to you. This information will be provided to you on or before 31 January 2020.

In terms of section 9(1) of the Act, I am satisfied that, in the circumstances, the withholding of this information is not outweighed by other considerations that render it desirable to make the information available in the public interest

You have the right to seek an investigation and review by the Ombudsman of this decision. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

If you wish to discuss this decision with us, please feel free to contact ministerials@mfe.govt.nz.

Yours sincerely

M. Workman

Martin Workman

Director, Water

Document 1

Nick Vincent

From: Irene Parminter
Sent: Tuesday, 16 July 2019 5:05 PM
To: Mike Scarsbrook (waikatoregion.govt.nz)
Subject: RE: Request for assistance

Hi Mike. Here is a map (scroll down) and an explanation of the modelling (very summarised). For the map I used a filter of min catchment size 100 sq km, and a pressure score of 3 or more - I can send maps with different filters if that would be useful (to look at a broader set of potential catchments).

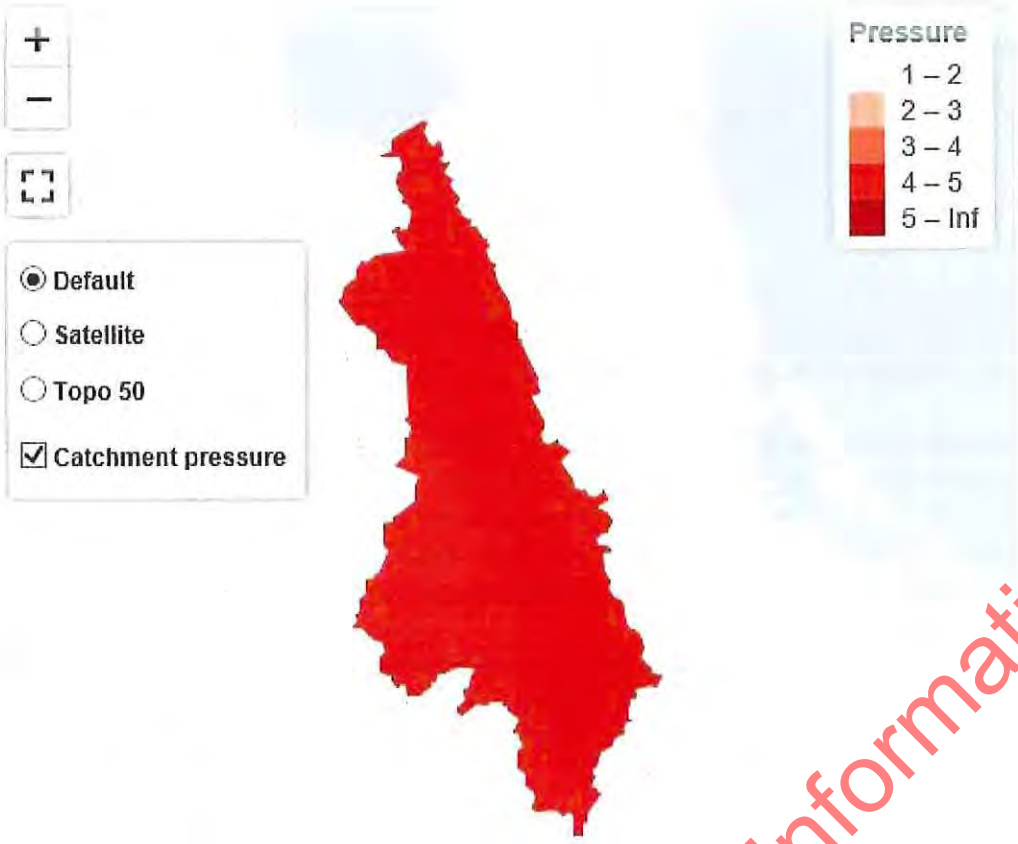
Summary of the modelling approach (carried out by Ton Snelder et al building on OLAW science challenge)

- Estimates of current median concentrations of total nitrogen (TN) and nitrate-nitrogen (NO3-N) for every segment of the river network were provided by predictions made using statistical models fitted to observations of TN and NO3N at 764 and 855 state of environment monitoring sites respectively
- All segments in the network were assessed based on the receiving waters - comparing current load of nitrogen with "maximum allowable load" (MAL)
- The MAL was defined in relation to the bottom lines in the current NOF for lakes and rivers, and for estuaries, the work by Plew et al was used to define bottom lines for chlorophyll-a.
- Catchment pressure is the ratio of the current TN load to the MAL

And this paragraph from Ton's draft paper (which is too draft to send out) is also helpful:
Catchment pressure was defined in three steps. First, the ratio of the current load to MAL was defined for every receiving environment in the drainage network. Second, the digital drainage network representing each individual sea-draining catchment (i.e., defined by the entire drainage path upstream of a terminal segment) was traversed in the upstream direction. Beginning at the most downstream receiving environment, which is defined as a critical point, the ratio of the current load to MAL at each receiving environment is compared with the ratio for next upstream receiving environment. If the ratio at the next upstream receiving environment is greater than that of the downstream critical point, the upstream receiving environment is defined as a critical point and the process continues upstream. Third, having defined the critical points on the drainage network of every sea-draining catchment, the sub-catchments upstream of each critical point are identified and assigned a catchment pressure value equalling the ratio of the current load to MAL of the associated critical point.
Sea-draining catchments can have one critical point (the most downstream receiving environment) or multiple critical points, which include the most downstream receiving environment. Maps of catchment pressure were defined by colouring the sub-catchments upstream of each critical point using a colour scale that reflects their pressure value.

Will ring you tmrw morning

Irene



From: Mike Scarsbrook <Mike.Scarsbrook@waikatoregion.govt.nz>
Sent: Tuesday, 16 July 2019 1:00 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Vaughan Payne <vaughan.payne@waikatoregion.govt.nz>
Subject: RE: Request for assistance

HI Irene

I'm in meetings most of the afternoon, but can I call you between 4:30 and 5?

Mike
021864602

Mike Scarsbrook | MANAGER | Science, Science and Strategy
WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato
Take a look at the work we do
P: +6478592705
M: +6421864602
F: facebook.com/waikatoregion
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

From: Irene Parminter [mailto:Irene.Parminter@mfe.govt.nz]
Sent: Tuesday, 16 July 2019 11:04 AM
To: Mike Scarsbrook <Mike.Scarsbrook@waikatoregion.govt.nz>
Subject: FW: Request for assistance

Hi Mike. Can I give you a call about this request? If so, when would suit (and what is the best number to call you on)?

Thank you

Irene

From: Vaughan Payne <Vaughan.Payne@waikatoregion.govt.nz>
Sent: Tuesday, 16 July 2019 10:27 AM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Mike Scarsbrook (waikatoregion.govt.nz) <Mike.Scarsbrook@waikatoregion.govt.nz>; Tracey May <Tracey.May@waikatoregion.govt.nz>
Subject: Re: Request for assistance

Kia ora Irene

Thanks for your email. Can you please work directly with Mike Scarsbrook who I've copied into this email.

Nga mihi

Vaughan

Sent from my iPhone

Vaughan Payne | CHIEF EXECUTIVE | Office of the Chief Executive
WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato
Take a look at the work we do
P: +6478590595
M: +64212462314
F: facebook.com/waikatoregion
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

On 16/07/2019, at 10:01 AM, Irene Parminter <Irene.Parminter@mfe.govt.nz> wrote:

> Dear Vaughan,
> The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If the proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.
>
> Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchments in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
3046191	NA	Piako River
3058413	Waitakaruru Stream	Piako River

> With your agreement, I would like to discuss these catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 2

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Tuesday, 16 July 2019 11:13 AM
To: Nic Peet <Nic.Peet@horizons.govt.nz>; Jon Roygard <jon.roygard@horizons.govt.nz>
Subject: FW: Request for assistance - Essential Freshwater work

Hi Nick and Jon. Mike McCartney suggested I contact you both about the request I made (below).

If possible, I would like to give you a call to discuss which sub-catchments are under the One Plan (I think all except the Turakina?) and test the results with you. If that is possible, please let me know suitable times and numbers to call you on.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

From: Michael McCartney <michael.mccartney@horizons.govt.nz>
Sent: Tuesday, 16 July 2019 10:28 AM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Subject: Re: Request for assistance - Essential Freshwater work

Thanks Irene - happy for you to discuss the context around these catchments with relevant staff. The two Group Managers you should engage with are Dr Nick Peet (regulatory under One Plan and Dr Jon Roygard (water quality science). Regards M

Sent from my iPad

On 16/07/2019, at 10:18 AM, Irene Parminter <Irene.Parminter@mfe.govt.nz> wrote:

> Dear Michael,
> The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If the proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.
>
> Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchments in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
7229170	Turakina River	Turakina River
7239012	Mangaone Stream	Manawatu River
7238671	Mangaone Stream	Manawatu River
7237913	Mangaone Stream	Manawatu River
7240287	Taonui Stream	Manawatu River
7235776	Makino Stream	Manawatu River

7235250	Makino Stream	Manawatu River
7233102	Tutaenui Stream	Rangitikei River
7235226	Makino Stream	Manawatu River
7232883	Tutaenui Stream	Rangitikei River
7232564	Tutaenui Stream	Rangitikei River
7232372	Tutaenui Stream	Rangitikei River
7232235	Tutaenui Stream	Rangitikei River
7232236	Tutaenui Stream	Rangitikei River
7232085	Tutaenui Stream	Rangitikei River
7231629	Tutaenui Stream	Rangitikei River
7231613	Tutaenui Stream	Rangitikei River

However we are aware that most of these sub-catchments are covered by the One Plan consent requirements, and therefore may be excluded from the proposals. With your agreement, I would like to discuss these sub-catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 3

From: Irene Parminter
To: Vaughan Payne
Cc: Martin Workman; Nicola Scott
Subject: Request for assistance
Date: Tuesday, 16 July 2019 10:00:59 AM

Dear Vaughan,
The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If the proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.

Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchments in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
3046191	NA	Piako River
3058413	Waitakaruru Stream	Piako River

With your agreement, I would like to discuss these catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

From: Fiona McTavish
To: Irene Parminter; Rob Donald; Nicola Green; Julie Bevan
Cc: Martin Workman; Nicola Scott; Nick Martelli
Subject: RE: Request for assistance with Essential Freshwater
Date: Tuesday, 16 July 2019 11:42:53 AM

Kia ora Irene

Yes, Rob Donald would be the best person to talk with and I've cced him to this email.

Kind regards

Fiona

Fiona McTavish
Chief Executive
Bay of Plenty Regional Council Toi Moana

P: 0800 884 880 **DD:** 0800 884 881 x9339
E: Fiona.McTavish@boprc.govt.nz
M: 027 705 3916 **W:** www.boprc.govt.nz
A: PO Box 364, Whakatane 3158, New Zealand

Thriving together – mo te taiao, mo nga tangata

From: Irene Parminter [mailto:Irene.Parminter@mfe.govt.nz]
Sent: Tuesday, 16 July 2019 10:50 a.m.
To: Fiona McTavish
Cc: Martin Workman; Nicola Scott; Nick Martelli
Subject: Request for assistance with Essential Freshwater

Dear Fiona,
The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If the proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.

Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following catchment in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
4076553	Whakatane River	Whakatane River

I would like to discuss this catchment with your staff, to check the modelling result prior to consultation. One of your staff members, Nicola Green, was a member of the Advisory Group that considered the policy earlier in June, and she has already put me in contact with Rob Donald. With your agreement, I will work with Rob to check the modelling. If there are other staff members I should contact instead/as well, please let me know.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 5

From: Irene Parminter
To: Rob Phillips
Cc: Martin Workman; Nicola Scott; Nick Martelli
Subject: Request for assistance with Essential Freshwater work
Date: Tuesday, 16 July 2019 10:34:32 AM

Dear Rob,

The Government's Essential Freshwater programme includes a proposal to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposal as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If these proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.

Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchments in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
15319805	NA	Mataura River
15293344	Waimea Stream	Mataura River
15314740	Waimatuku Stream	Waimatuku Stream
15320150	NA	Waituna Creek
15319658	NA	Titiroa Stream

With your agreement, I would like to discuss these sub-catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene Parminter

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3871 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

Document 6

From: Helli Ward
To: Rob Smith; Bev Clarkson
Subject: RE: wetland delineation protocols
Date: Wednesday, 17 July 2019 6:05:00 PM
Attachments: image005.jpg
image006.png
image007.png
image008.png
image009.png
image010.png
image011.png

Cheers Rob

Yep holding up but badly in need of a holiday
Hope things are going well down there.

Helli

From: Rob Smith <Rob.Smith@tasman.govt.nz>
Sent: Wednesday, 17 July 2019 5:03 PM
To: Helli Ward <Helli.Ward@mfe.govt.nz>; Bev Clarkson <ClarksonB@landcareresearch.co.nz>
Subject: RE: wetland delineation protocols

Kia Ora Korua
Sounds like you are making good progress Helli.
This level of requirement/motivation must be starting to make you smile Bev.
Hope you are both fit and well
Rob

Rob Smith
Environmental Information Manager
DDI 03 543 8480 | **Mobile** 027 231 1053 | Rob.Smith@tasman.govt.nz
Private Bag 4, Richmond 7050, NZ

Logo

From: Helli Ward <Helli.Ward@mfe.govt.nz>
Sent: Wednesday, 17 July 2019 4:48 PM
To: Bev Clarkson <ClarksonB@landcareresearch.co.nz>; Rob Smith <Rob.Smith@tasman.govt.nz>
Subject: RE: wetland delineation protocols

Yes, I think this should be ok as these are referenced in the summary document so people can find them too
Thanks
Helli

From: Bev Clarkson <ClarksonB@landcareresearch.co.nz>

Sent: Wednesday, 17 July 2019 4:40 PM
To: Helli Ward <Helli.Ward@mfe.govt.nz>; Rob.Smith@tasman.govt.nz
Subject: RE: wetland delineation protocols

Hi Helli
Yes – that is the latest report.
Bear in mind it is just the protocols/summary and the detail for the vegetation and hydric soil techniques are in other reports (also on wetlands webpage https://www.landcareresearch.co.nz/science/plants-animals-fungi/ecosystems/wetland-ecosystems).
Cheers
bev

From: Helli Ward <Helli.Ward@mfe.govt.nz>
Sent: Wednesday, 17 July 2019 4:06 PM
To: Bev Clarkson <ClarksonB@landcareresearch.co.nz>; Rob.Smith@tasman.govt.nz
Subject: wetland delineation protocols

Hi both

We are going through the process of drafting policies for the upcoming essential freshwater package consultation.
As you know we intend to use the delineation protocols from the NPS-IB to the NPS-FM to sit alongside some other wetlands policies. We intend to incorporate the protocols by reference. As this is the latest version (to my knowledge) are you ok with us pointing to this document for consultation purposes?

https://www.landcareresearch.co.nz/__data/assets/pdf_file/0003/181353/1903-TSDC148-Wetland-delineation-protocols.pdf

Nga mihi

Helli

Helli Ward – Senior Analyst, Freshwater Policy
Ministry for the Environment – Manatu Mo Te Taiao
Mobile: 022 517 3364 Email: helli.ward@mfe.govt.nz Website: **www.mfe.govt.nz**
23 Kate Sheppard place, PO Box 10362, Wellington 6143

MfE_logo

Document 7

From: Mike Scarsbrook
To: Irene Parminter
Subject: RE: Request for assistance
Date: Wednesday, 17 July 2019 8:45:14 AM
Attachments: image001.png
image002.png
Water-quality-and-sources-of-nitrogen-and-phosphorus-in-the-Hauraki-rivers-2006-15-3773004-.pdf

Hi Irene

I've attached a report on nutrient sources in several Hauraki Plains rivers, including the Piako. Will hopefully be useful background info. Note that the Waitakaruru River in this table is not the same as Waitakaruru Stream (tributary of Piako) identified in you high N impact table in your original email.

Note Table 9 of the report summarises nutrient loads:

Cheers
Mike

Mike Scarsbrook | MANAGER | Science, Science and Strategy
WAIKATO REGIONAL COUNCIL | Te Kaunihera a Rohe o Waikato
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M: +6421864602
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Sent: Tuesday, 16 July 2019 5:05 PM
To: Mike Scarsbrook <Mike.Scarsbrook@waikatoregion.govt.nz>
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Hi Mike. Here is a map (scroll down) and an explanation of the modelling (very summarised). For the map I used a filter of min catchment size 100 sq km, and a pressure score of 3 or more - I can send maps with different filters if that would be useful (to look at a broader set of potential catchments).

Summary of the modelling approach (carried out by Ton Snelder et al building on OLAW science challenge)

- Estimates of current median concentrations of total nitrogen (TN) and nitrate-nitrogen (NO3-N) for every segment of the river network were provided by predictions made using statistical models fitted to observations of TN and NO3N at 764 and 855 state of environment monitoring

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- Catchment pressure is the ratio of the current TN load to the MAL

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Catchment pressure was defined in three steps. First, the ratio of the current load to MAL was defined for every receiving environment in the drainage network. Second, the digital drainage network representing each individual sea-draining catchment (i.e., defined by the entire drainage path upstream of a terminal segment) was traversed in the upstream direction. Beginning at the most downstream receiving environment, which is defined as a critical point, the ratio of the current load to MAL at each receiving environment is compared with the ratio for next upstream receiving environment. If the ratio at the next upstream receiving environment is greater than that of the downstream critical point, the upstream receiving environment is defined as a critical point and the process continues upstream. Third, having defined the critical points on the drainage network of every sea-draining catchment, the sub-catchments upstream of each critical point are identified and assigned a catchment pressure value equalling the ratio of the current load to MAL of the associated critical point.
Sea-draining catchments can have one critical point (the most downstream receiving environment) or multiple critical points, which include the most downstream receiving environment. Maps of catchment pressure were defined by colouring the sub-catchments upstream of each critical point using a colour scale that reflects their pressure value.

Will ring you tmrw morning

Irene

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Cc: Vaughan Payne <vaughan.payne@waikatoregion.govt.nz>
Subject: RE: Request for assistance

HI Irene

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Mike
021864602

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To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Mike Scarsbrook (waikatoregion.govt.nz) <Mike.Scarsbrook@waikatoregion.govt.nz>; Tracey May <Tracey.May@waikatoregion.govt.nz>
Subject: Re: Request for assistance

Kia ora Irene

Thanks for your email. Can you please work directly with Mike Scarsbrook who I've copied into this email.

Nga mihi

Vaughan

Sent from my iPhone

Vaughan Payne | CHIEF EXECUTIVE | Office of the Chief Executive
WAIKATO REGIONAL COUNCIL | Te Kaunihera a Rohe o Waikato
Take a look at the work we do
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F: facebook.com/waikatoregion
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

On 16/07/2019, at 10:01 AM, Irene Parminter <Irene.Parminter@mfe.govt.nz> wrote:

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>
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>
> | NZ segment | River Name | Catchment Name |
> |---|---|---|
> | 3046191 | NA | Piako River |
> | 3058413 | Waitakaruru Stream | Piako River |
>
> With your agreement, I would like to discuss these catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.
>
> Thank you
>
> Irene
>
> **Irene Parminter – Senior Policy Analyst**
> Ministry for the Environment – Manatu Mo Te Taiao
> Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
> Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 8

Nick Vincent

From: Irene Parminter
Sent: Wednesday, 17 July 2019 4:52 PM
To: Andy Hicks; Iain Maxwell (hbrc.govt.nz)
Subject: RE: Request for assistance with Essential Freshwater work

Hi Andy and Iain. Thanks for emailing me back. Completely understand about manic!

Is it OK if we delay to Monday please? - as I will be away from the office on Friday and hard to catch by phone. Also, some different approaches to the modelling are being considered – so delaying our conversation until next week may enable time for that to be advanced.

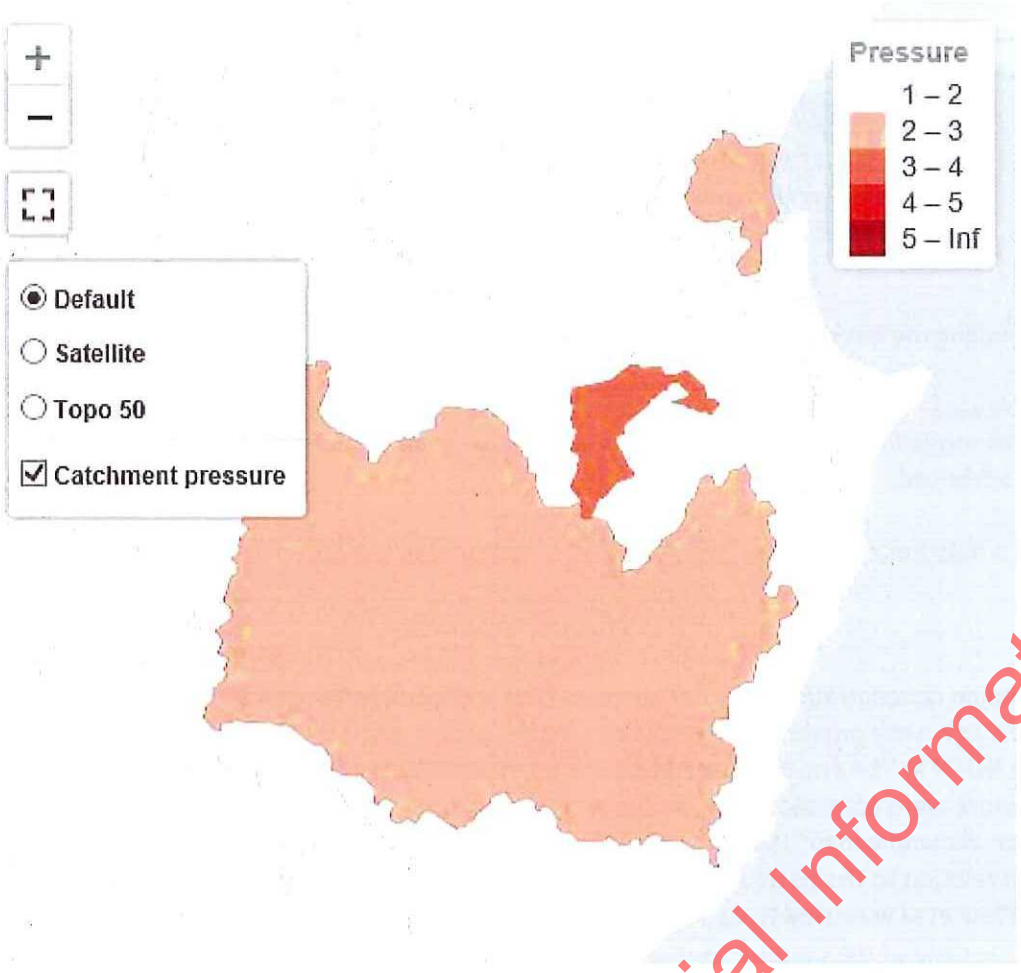
In the meantime, I have pasted a map below that may help, and also a summary of the approach taken to the existing modelling.

Modelling Summary:

- Estimates of current median concentrations of total nitrogen (TN) and nitrate-nitrogen (NO3-N) for every segment of the river network were provided by predictions made using statistical models fitted to observations of TN and NO3N at 764 and 855 state of environment monitoring sites respectively
- All segments in the network were assessed based on the receiving waters - comparing current load of nitrogen with "maximum allowable load" (MAL)
- The MAL was defined in relation to the bottom lines in the current NOF for lakes and rivers, and for estuaries, the work by Plew et al was used to define bottom lines for chlorophyll-a.
- Catchment pressure is the ratio of the current TN load to the MAL

And this paragraph from Ton Snelder's draft paper (which is too draft to send out) is also helpful:
Catchment pressure was defined in three steps. First, the ratio of the current load to MAL was defined for every receiving environment in the drainage network. Second, the digital drainage network representing each individual sea-draining catchment (i.e., defined by the entire drainage path upstream of a terminal segment) was traversed in the upstream direction. Beginning at the most downstream receiving environment, which is defined as a critical point, the ratio of the current load to MAL at each receiving environment is compared with the ratio for next upstream receiving environment. If the ratio at the next upstream receiving environment is greater than that of the downstream critical point, the upstream receiving environment is defined as a critical point and the process continues upstream. Third, having defined the critical points on the drainage network of every sea-draining catchment, the sub-catchments upstream of each critical point are identified and assigned a catchment pressure value equalling the ratio of the current load to MAL of the associated critical point.
Sea-draining catchments can have one critical point (the most downstream receiving environment) or multiple critical points, which include the most downstream receiving environment. Maps of catchment pressure were defined by colouring the sub-catchments upstream of each critical point using a colour scale that reflects their pressure value.

For the map below I have included all the catchments with pressure score over 2 – this filter brings up parts of 3 catchments, Tukituki, Taipo and Karewarewa (in the Ngaruroro catchment). As the Tukituki plan already addresses high nitrogen leaching, it would not be included in the proposal.



Thanks again

Irene

From: Andy Hicks <andy@hbrc.govt.nz>
Sent: Wednesday, 17 July 2019 4:35 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>; Iain Maxwell (hbrc.govt.nz) <iain@hbrc.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Kia ora Irene, Iain and I are both manic at the moment, but can one of us give you a call sometime Friday to follow up?
Cheers,
Andy

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Tuesday, 16 July 2019 1:02 PM
To: Iain Maxwell <iain@hbrc.govt.nz>; Andy Hicks <andy@hbrc.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Hi Andy and Iain. Just following up on my email to James. Can I give you a call please? When would suit, and what numbers should I call you on?

Thank you

Irene

From: James Palmer <james.palmer@hbrc.govt.nz>
Sent: Tuesday, 16 July 2019 12:16 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Nick Martelli <Nick.Martelli@mfe.govt.nz>; Iain Maxwell (hbrc.govt.nz) <iain@hbrc.govt.nz>; Andy Hicks <andy@hbrc.govt.nz>; Tom Skerman <Tom@hbrc.govt.nz>
Subject: Re: Request for assistance with Essential Freshwater work

Hi Irene, please work through Iain Maxwell and Andy Hicks.

Thanks, James

Sent from my iPhone

On 16/07/2019, at 10:39 AM, Irene Parminter <Irene.Parminter@mfe.govt.nz> wrote:

> Dear James,
> The Government's Essential Freshwater programme includes a proposal to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposal as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If these proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.
>
> Initial modelling has developed a set of potential sub-catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchment in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
8213095	Karewarewa Stream	Ngaruroro River

> With your agreement, I would like to discuss this sub-catchment with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.
>
> Thank you
>
> Irene Parminter

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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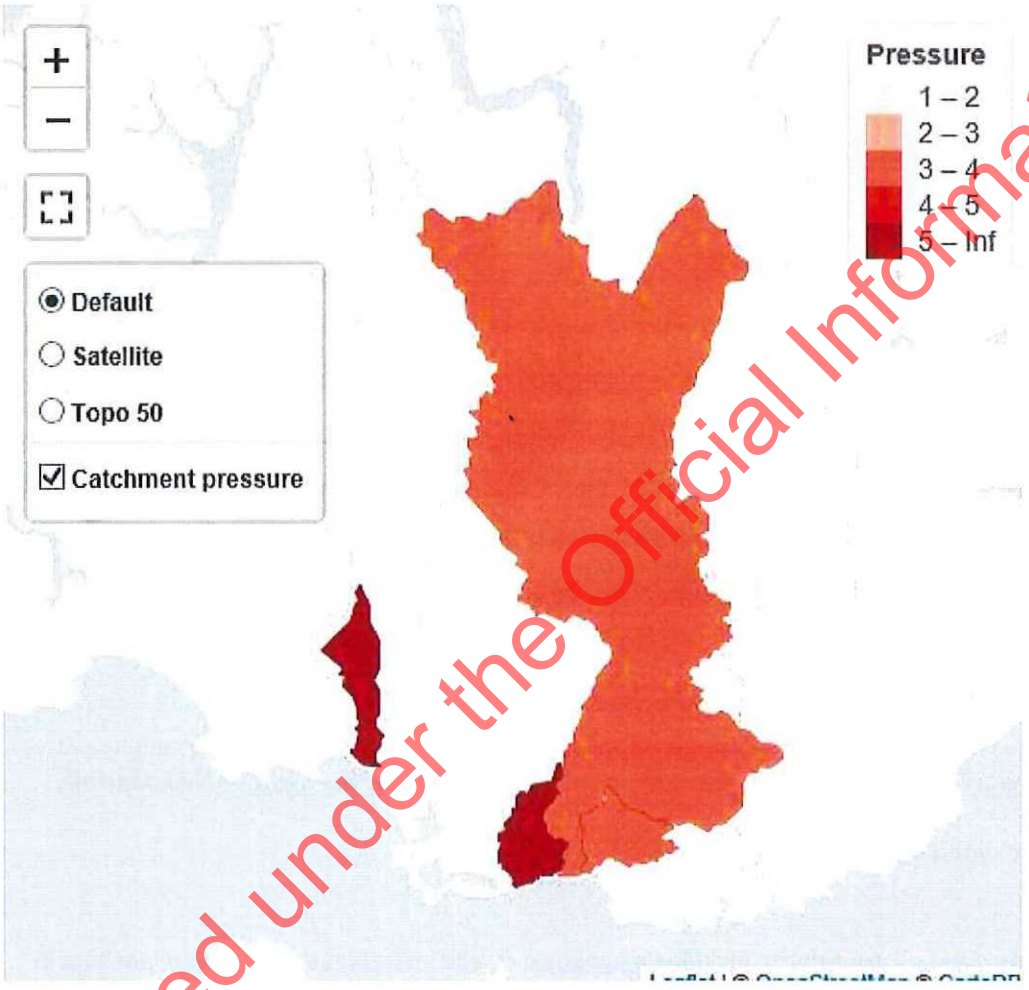
Nick Vincent

From: Irene Parminter
Sent: Thursday, 18 July 2019 2:40 PM
To: Vin Smith
Subject: RE: Request for assistance with Essential Freshwater work

Hi Vin – Rob also replied this afternoon, and suggested I talk to Roger Hodson, but I will ring you first.

The map pasted below may be helpful

Irene



From: Vin Smith <Vin.Smith@es.govt.nz>
Sent: Thursday, 18 July 2019 1:53 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Hi Irene,

Give me a call in the first instance and we can go from there - 0272614844.

Cheers,
Vin

Vin Smith
Director of Policy, Planning & Regulatory Services
Environment Southland *Te Taiao Tonga*

P 03 211 5115
Cnr Price St & North Rd, Private Bag 90116, Invercargill 9840
Vin.Smith@es.govt.nz | www.es.govt.nz | facebook.com/environmentsouthland

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Thursday, 18 July 2019 1:18 PM
To: Rob Phillips <Rob.Phillips@es.govt.nz>; Vin Smith <Vin.Smith@es.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Hi Rob and Vin – I am keen to talk to the appropriate Environment Southland people regarding the N-cap proposal in the Essential Freshwater package, ahead of the discussion document going out later in the year (see my email below). Please could you advise who I should ring to discuss the catchments below?. My conversations with councils so far have indicated that we need to do a bit more work on the modelling, so your feedback would be helpful for that process.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

From: Irene Parminter
Sent: Tuesday, 16 July 2019 10:35 AM
To: rob.phillips@es.govt.nz
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Nick Martelli <Nick.Martelli@mfe.govt.nz>
Subject: Request for assistance with Essential Freshwater work

Dear Rob,
The Government's Essential Freshwater programme includes a proposal to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposal as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If these proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.

Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchments in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
15319805	NA	Mataura River
15293344	Waimea Stream	Mataura River
15314740	Waimatuku Stream	Waimatuku Stream
15320150	NA	Waituna Creek

15319658	NA	Titiroa Stream

With your agreement, I would like to discuss these sub-catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene Parminter

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 10

From: Rob Phillips <Rob.Phillips@es.govt.nz>
Sent: Thursday, 18 July 2019 1:33 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Nick Martelli <Nick.Martelli@mfe.govt.nz>; Roger Hodson <roger.hodson@es.govt.nz>; Ken Swinney (EXTERNAL) <ken.swinney@es.govt.nz>; Owen West <Owen.West@es.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Hi Irene

Thanks for your email
I'm comfortable with you using our data .The contact person is Roger Hodson who I've copied into this email
Regards Rob

Rob Phillips
Chief Executive
Environment Southland *Te Taiao Tonga*

P 03 211 5115 | **DDI** 03 211 5221 | **M** 027 211 2260
Cnr Price St & North Rd, Private Bag 90116, Invercargill 9840
Rob.Phillips@es.govt.nz | www.es.govt.nz | facebook.com/environmentsouthland

From: Irene Parminter [mailto:Irene.Parminter@mfe.govt.nz]
Sent: Tuesday, 16 July 2019 10:35 a.m.
To: Rob Phillips
Cc: Martin Workman; Nicola Scott; Nick Martelli
Subject: Request for assistance with Essential Freshwater work

Dear Rob,
The Government's Essential Freshwater programme includes a proposal to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposal as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If these proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.

Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchments in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
15319805	NA	Mataura River
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15319658	NA	Titiroa Stream

With your agreement, I would like to discuss these sub-catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene Parminter

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Nick Vincent

From: Irene Parminter
Sent: Monday, 22 July 2019 5:01 PM
To: Jon Roygard
Subject: RE: Request for assistance - Essential Freshwater work

Thank you Jon. I have taken it off the list. Interesting to get the richer picture.

Just FYI, the new approach using actual monitoring data is finding much greater agreement from councils, so I do appreciate your advice about taking a different approach.

Kind regards

Irene

From: Jon Roygard <jon.roygard@horizons.govt.nz>
Sent: Monday, 22 July 2019 3:26 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Thanks Irene

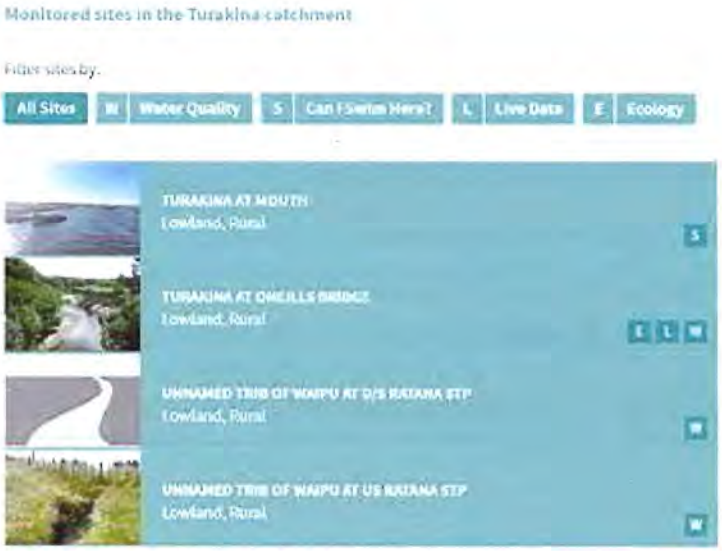
Yes, it appears the sites upstream and downstream of the wastewater treatment ponds are confusing the issue. The TN is about 1.2 upstream of the discharge and 7.6 below in what is a very small tributary (the photos below from LAWA may assist. The main stem of the Turakina has 5 year median TN of 0.7 g/m3 based on the results on LAWA.

In terms of response the discharge is that of the Ratana community (and Rātana Pā, the one the politicians visit annually) into Lake Waipu that is subject to a freshwater improvement fund project about $1.8 million in total in partnership with iwi/hapū, Rangitīkei District Council, MfE and Horizons. The project is seeking to remove the discharge from the lake and fully land apply the wastewater. This project is underway and trying to secure land at present. There is a component of the project that is about further lake restoration.

https://www.lawa.org.nz/explore-data/manawatu-wanganui-region/river-quality/turakina/

Cheers
Jon

Jon Roygard
Group Manager Natural Resources and Partnerships
06 952 2848: 021 227 7152



From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Monday, 22 July 2019 9:24 AM
To: Jon Roygard <jon.roygard@horizons.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Hi Jon. Isaac and I have worked on using water quality monitoring data as an alternative. For the Horizons region, this highlights the Turakina again – the site near the mouth - the TN is 7.6. But I see from the map the monitoring site is near what looks like wastewater treatment ponds, just outside the township. Is that the case? i.e., is the nitrogen level here a function of the ponds?

The other catchments highlighted are all covered under the target catchments in the One Plan so they would not be included.

Thanks

Irene

From: Jon Roygard <jon.roygard@horizons.govt.nz>
Sent: Wednesday, 17 July 2019 3:31 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Thanks Irene
Now would work if it suits for you.
Cheers
Jon

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Wednesday, 17 July 2019 3:29 PM
To: Jon Roygard <jon.roygard@horizons.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Thanks for this Jon. I called Ton and had a conversation as well. Can I ring you please? When would suit?

Irene

From: Jon Roygard <jon.roygard@horizons.govt.nz>
Sent: Wednesday, 17 July 2019 12:02 PM

To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Nic Peet <Nic.Peet@horizons.govt.nz>; Michael McCartney <michael.mccartney@horizons.govt.nz>; Ton Snelder (landwaterpeople.co.nz) <ton@landwaterpeople.co.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Hi Irene

Thanks for the further information re this.

My initial thought re the map is that it isn't intuitively logical that these catchments have been selected as high N catchments in the region based on values or outcomes (periphyton, estuary nutrient sensitivity or nutrient toxicity for ecological health or drinking water). I have provided some further detail on the selected catchments below and welcome further discussion on this. I chatted with Ton last night re the analysis and we can do more to understand why the catchments were selected but will hold off on that until you have had a chance to consider the comments below and then advise as to how you would like to proceed.

In terms of some further detail

- **The Turakina** is more associated with sediment issues and the river substrate is likely unsuitable for periphyton growth in the lower reaches (needs checking). There maybe some spots where it is suitable for periphyton growth and this is likely driving Tons modelling to single this area out. The estuary is not one of the 5 in the region consider moderately to highly vulnerable to nutrient enrichment. Its largely a sheep and beef farming catchment and subject to considerable effort through our Sustainable Land Use Initiative with support from MPI. At first glance, it is unclear how the proposed new policies around high N catchments would provide benefits to ecological health in this catchment, but I am willing to look into this further with your team if you would like.

- **The Tutaenui** is a very small stream that's headwaters are impounded as Marton's water supply and dries up naturally in summer. The Marton treated sewage is disposed of into this stream (and makes up the predominate flow in the summer). We have made several approaches to MfE to assist with a project re full land treatment of Matons effluent to MfE and I discussed this with Martin Workman and the CE of Rangitīkei District Council last Friday. The Tutaenui is within a one plan target zone for nutrient management and dealing with N and P issues in this subcatchment is considered one part of the bigger issue of the nutrient issues in the lower Rangitīkei river.

- **The Mangaone stream** runs past Palmerston north airport and joins the Manawatū river just downstream of Palmerston North Cities Wastewater treatment plant. It flows through parts of Palmerston North. It is very small in the scheme of water quality in the lower Manawatu river. It does have its issues PFAS from the Palmerston North airport, and impacts from the Palmerston North landfill that is in the lower reaches. The landfill has significant ammonia impact on the Mangaone and we are currently doing some planting to assist with mitigating this with co-funding from MfE (that may not fully solve the issue).

- **The Makino stream** runs through parts of Feilding and is another very small stream known to dry up in summer in various locations. It joins the Oroua downstream of the Feilding wastewater discharge and is considered a modest/small part of the water quality story of the Oroua. It does have a fairly active catchment care programme that Horizons (and MFE at times, including currently) support. I do not generally associate the stream with having a periphyton issue and it's not above nitrate toxicity or drinking water standards to my knowledge.

- **The Taonui basin** is an area that I am less familiar with but generally associate with the drainage network and flood management activity of Horizons. In in the lower Manawatu catchment in the vicinity of Palmerston North The area does include intensive land use. The area has a highly modified network of drainage channel that has replaced a considerable amount of the original stream network. The drainage network is maintained with diggers and the network discharges into the Manawatū River. The flow is generally small in the scale of Manawatū catchment. In terms of ecological values there will be fish etc in there but it doesn't immediately spring to mind when considering the areas of the region with high ecological values. The issues are likely more about macrophytes than periphyton and machine cleaning is an

actively applied technique to manage this. This is not an area we have an active water quality monitoring programme.

Cheers
Jon

Jon Roygard
Group Manager Natural Resources and Partnerships
06 952 2848: 021 227 7152

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Tuesday, 16 July 2019 4:25 PM
To: Jon Roygard <jon.roygard@horizons.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

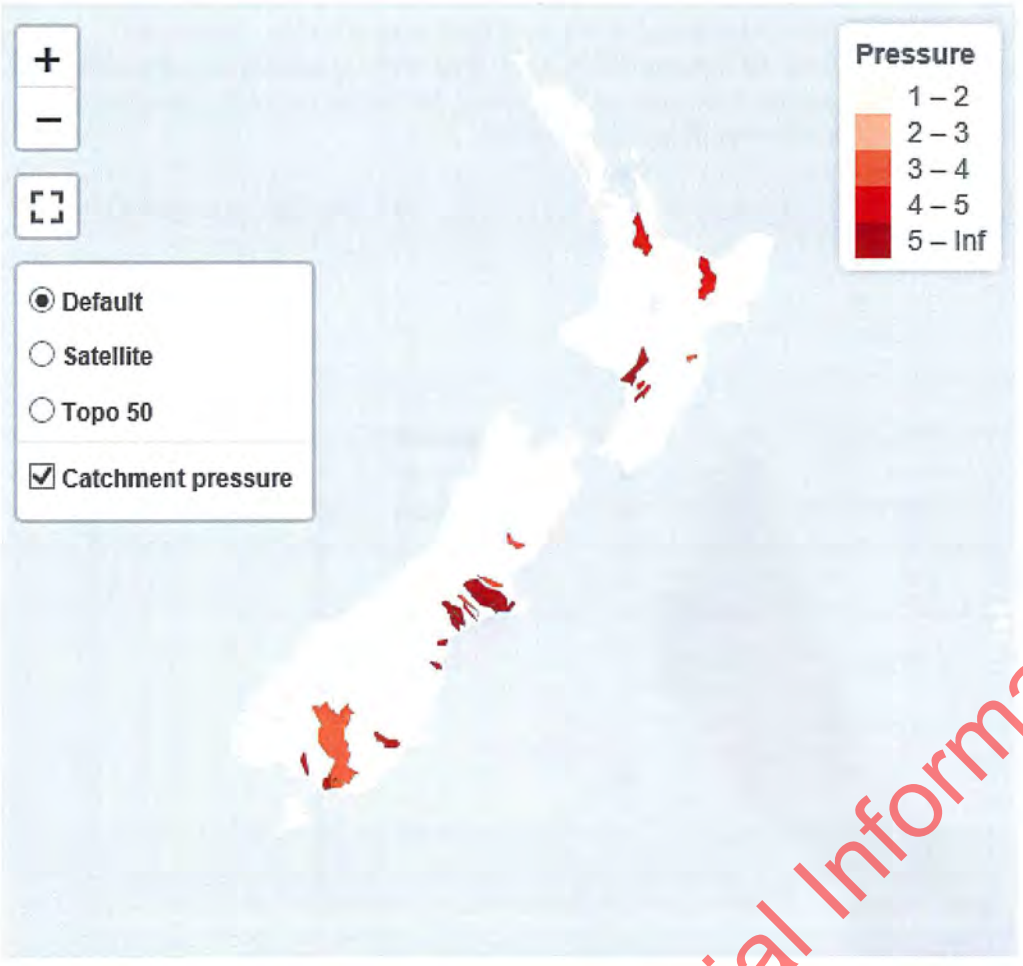
Hi Jon. I will ring tomorrow – and we can discuss calling Ton as well (I will need to check in with him – I am not sure how he is placed at the moment).

Here is the map of the whole country (scroll down) – in confidence. Please do not forward. Thank you.

Ton says my summary below is accurate ☺:

- Estimates of current median concentrations of total nitrogen (TN) and nitrate-nitrogen (NO3-N) for every segment of the river network were provided by predictions made using statistical models fitted to observations of TN and NO3N at 764 and 855 state of environment monitoring sites respectively
- All segments in the network were assessed based on the receiving waters - comparing current load of nitrogen with "maximum allowable load" (MAL)
- The MAL was defined in relation to the bottom lines in the current NOF for lakes and rivers, and for estuaries, the work by Plew et al was used to define bottom lines for chlorophyll-a.
- Catchment pressure is the ratio of the current TN load to the MAL

And this paragraph from Ton's draft paper (which is too draft to send out) is also helpful:
Catchment pressure was defined in three steps. First, the ratio of the current load to MAL was defined for every receiving environment in the drainage network. Second, the digital drainage network representing each individual sea-draining catchment (i.e., defined by the entire drainage path upstream of a terminal segment) was traversed in the upstream direction. Beginning at the most downstream receiving environment, which is defined as a critical point, the ratio of the current load to MAL at each receiving environment is compared with the ratio for next upstream receiving environment. If the ratio at the next upstream receiving environment is greater than that of the downstream critical point, the upstream receiving environment is defined as a critical point and the process continues upstream. Third, having defined the critical points on the drainage network of every sea-draining catchment, the sub-catchments upstream of each critical point are identified and assigned a catchment pressure value equalling the ratio of the current load to MAL of the associated critical point.
Sea-draining catchments can have one critical point (the most downstream receiving environment) or multiple critical points, which include the most downstream receiving environment. Maps of catchment pressure were defined by colouring the sub-catchments upstream of each critical point using a colour scale that reflects their pressure value.



From: Jon Roygard <jon.roygard@horizons.govt.nz>
Sent: Tuesday, 16 July 2019 4:10 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>; Nic Peet <Nic.Peet@horizons.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Thanks Irene
Happy to chat further re this tomorrow. Please give me a call when it suits. There are a few questions that might best be chatted through with Ton. Are you happy for me to chat directly with him.
Also keen to see the broader map of the country if possible as this would help check on the types of catchments being selected.
Cheers
Jon

Jon Roygard
Group Manager Natural Resources and Partnerships
06 952 2848; 021 227 7152

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Tuesday, 16 July 2019 1:42 PM
To: Nic Peet <Nic.Peet@horizons.govt.nz>; Jon Roygard <jon.roygard@horizons.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

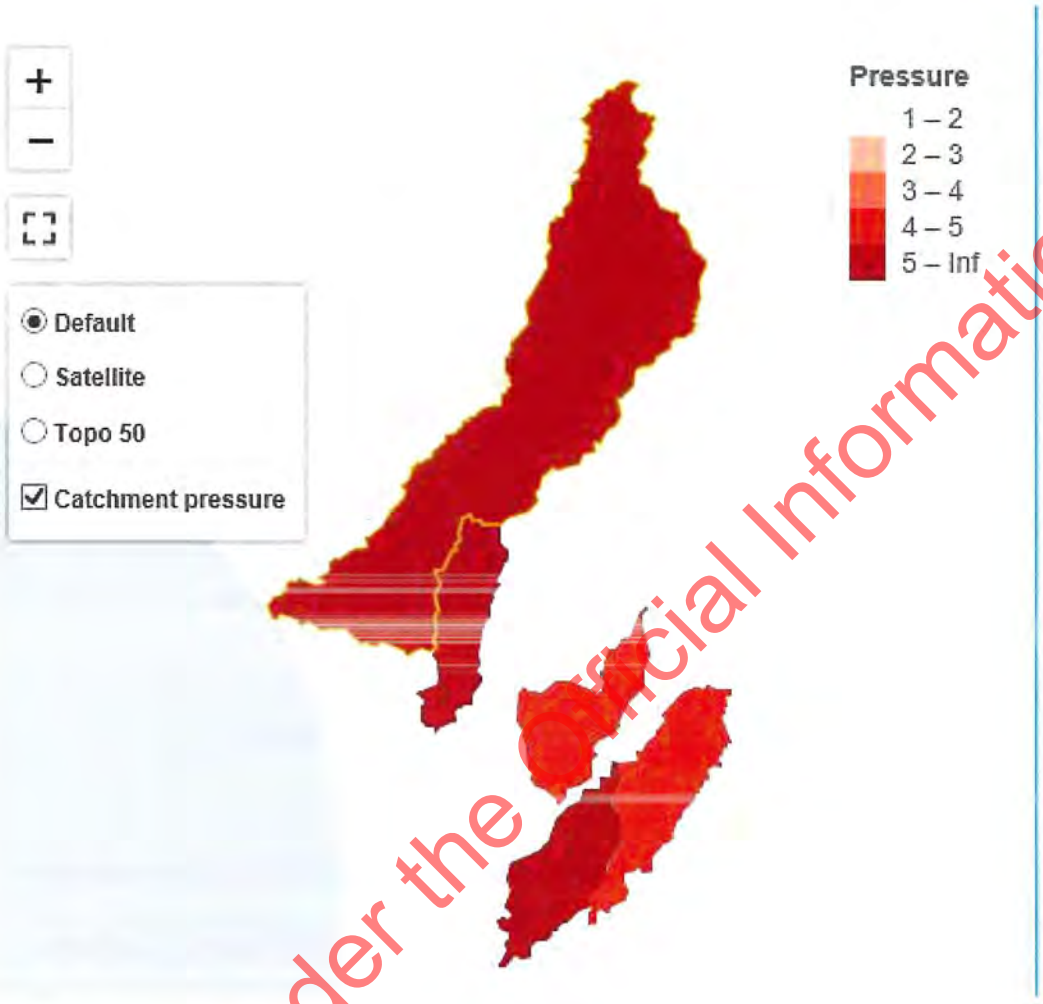
Hi. I have pasted the map below – hope this helps.

In terms of the modelling, the basis for this is the work by Ton Snelder, Amy Whitehead, Scott Larned, Marc Schallenberg; linked to the Our Land and Water science challenge. I have asked Ton for a summary I can send you

explaining the method, but in short, current estimated nitrogen loads were compared with the "maximum allowable load" (MAL). MAL was defined based on the current NOF bottom lines and the estuary chlorophyll-a work by Plews et al. Catchment pressure in the map below is the ratio of the current TN load to the MAL. However Ton has been at pains to say it is modelling and therefore needs ground-truthing.

I applied a couple of filters – only catchments of 100 sq km or more are included, and only segments with a pressure score of 3 and up. I can provide more detail if that would help e.g. all the catchments and all scores over 1.

Irene



From: Nic Peet <Nic.Peet@horizons.govt.nz>
Sent: Tuesday, 16 July 2019 1:00 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>; Jon Roygard <jon.roygard@horizons.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Hi Irene
Jon will give you a call probably tomorrow.

Do you have a map as we have several Mangaone and Taonui streams in the Manawatu catchment.

In the discussion would be useful to understand your criteria for picking these streams which are generally small or like the Turakina don't have a periphyton issue driven by N.

Thanks
Nic

Document 12

From: Irene Parminter
To: Andy Hicks
Subject: RE: when is a good time for me to call you?
Date: Monday, 22 July 2019 11:15:00 AM
Attachments: image001.png

Thanks Andy. Will call after 3.30. I am calling Iain at 11.20.

Irene

From: Andy Hicks <andy@hbrc.govt.nz>
Sent: Monday, 22 July 2019 11:10 AM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>; Iain Maxwell (hbrc.govt.nz) <iain@hbrc.govt.nz>
Subject: RE: when is a good time for me to call you?

Hi Irene, I think that new approach sounds sensible. Simple is often better.

Perhaps give me a call on 027 536 9979 between 3:30 and 5pm today?

Cheers,
Andy

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Monday, 22 July 2019 9:01 AM
To: Andy Hicks <andy@hbrc.govt.nz>; Iain Maxwell <iain@hbrc.govt.nz>
Subject: when is a good time for me to call you?

Hi – just thought I would let you know we have progressed the alternative approach – which is to simply look at monitoring data for Total Nitrogen. On that basis, the catchments highlighted in Hawkes Bay are the Mohaka – the upper part of the catchment near Taupo – and the Tukituki (but that already has a plan change addressing high nitrogen losses so would not be included).

Would be good to get your feedback on both the approaches we have tried, and any fish hooks in the water quality monitoring data e.g. whether they are affected by point source discharges or non-pastoral land uses. When would suit for me to call you?

Irene

From: Andy Hicks <andy@hbrc.govt.nz>
Sent: Thursday, 18 July 2019 4:35 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>; Iain Maxwell (hbrc.govt.nz) <iain@hbrc.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Hi Irene, Monday sounds good – and thanks for the details on the approach taken,

Cheers,
Andy

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Wednesday, 17 July 2019 4:52 PM
To: Andy Hicks <andy@hbrc.govt.nz>; Iain Maxwell <iain@hbrc.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Hi Andy and Iain. Thanks for emailing me back. Completely understand about manic!

Is it OK if we delay to Monday please? - as I will be away from the office on Friday and hard to catch by phone. Also, some different approaches to the modelling are being considered – so delaying our conversation until next week may enable time for that to be advanced.

In the meantime, I have pasted a map below that may help, and also a summary of the approach taken to the existing modelling.

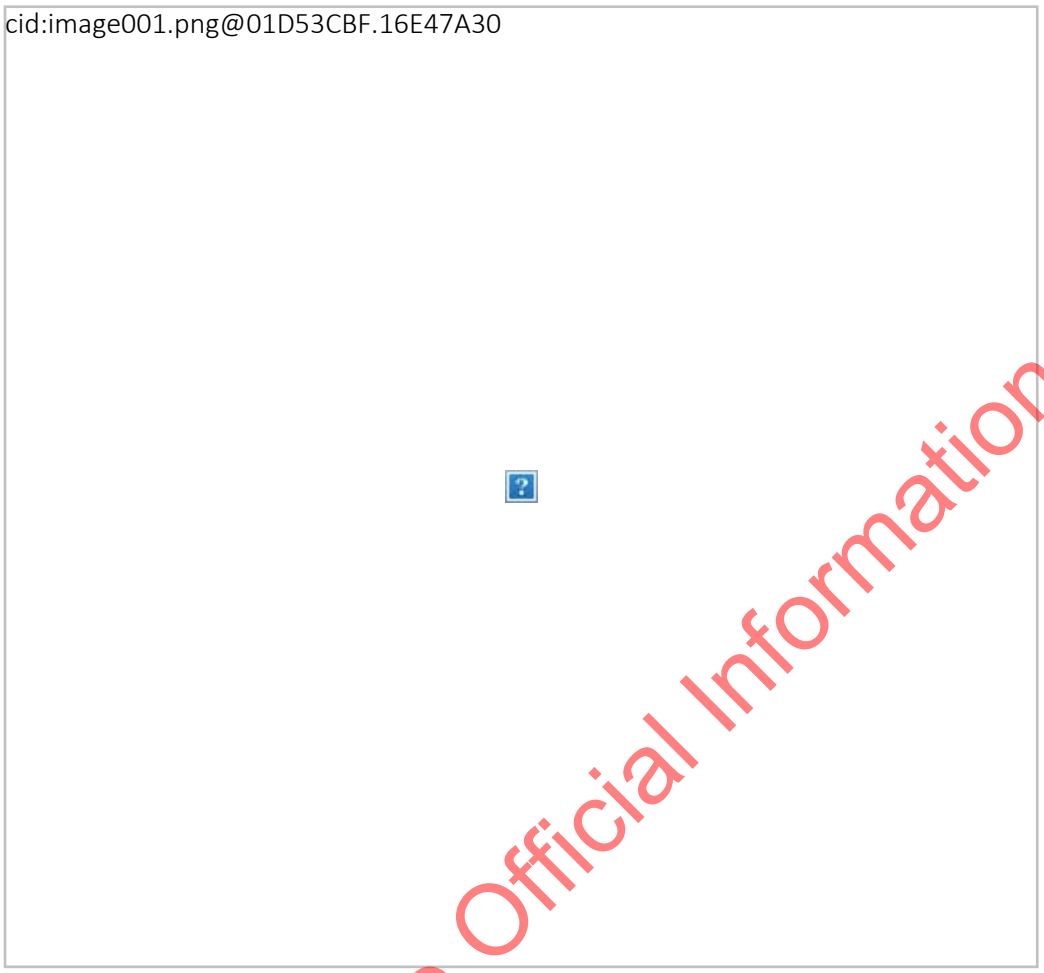
Modelling Summary:

- Estimates of current median concentrations of total nitrogen (TN) and nitrate-nitrogen (NO3-N) for every segment of the river network were provided by predictions made using statistical models fitted to observations of TN and NO3N at 764 and 855 state of environment monitoring sites respectively
- All segments in the network were assessed based on the receiving waters - comparing current load of nitrogen with "maximum allowable load" (MAL)
- The MAL was defined in relation to the bottom lines in the current NOF for lakes and rivers, and for estuaries, the work by Plew et al was used to define bottom lines for chlorophyll-a.
- Catchment pressure is the ratio of the current TN load to the MAL

And this paragraph from Tom Shelder's draft paper (which is too draft to send out) is also helpful:
Catchment pressure was defined in three steps. First, the ratio of the current load to MAL was defined for every receiving environment in the drainage network. Second, the digital drainage network representing each individual sea-draining catchment (i.e., defined by the entire drainage path upstream of a terminal segment) was traversed in the upstream direction. Beginning at the most downstream receiving environment, which is defined as a critical point, the ratio of the current load to MAL at each receiving environment is compared with the ratio for next upstream receiving environment. If the ratio at the next upstream receiving environment is greater than that of the downstream critical point, the upstream receiving environment is defined as a critical point and the process continues upstream. Third, having defined the critical points on the drainage network of every sea-draining catchment, the sub-catchments upstream of each critical point are identified and assigned a catchment pressure value equalling the ratio of the current load to MAL of the associated critical point.
Sea-draining catchments can have one critical point (the most downstream receiving environment) or multiple critical points, which include the most downstream receiving environment. Maps of catchment pressure were defined by colouring the sub-catchments upstream of each critical point using a colour scale that reflects their pressure value.

For the map below I have included all the catchments with pressure score over 2 – this filter

brings up parts of 3 catchments, Tukituki, Taipo and Karewarewa (in the Ngaruroro catchment). As the Tukituki plan already addresses high nitrogen leaching, it would not be included in the proposal.



Thanks again

Irene

From: Andy Hicks <andy@hbrc.govt.nz>
Sent: Wednesday, 17 July 2019 4:35 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>; Iain Maxwell (hbrc.govt.nz) <iain@hbrc.govt.nz>
Subject: RE: Request for assistance with Essential Freshwater work

Kia ora Irene, Iain and I are both manic at the moment, but can one of us give you a call sometime Friday to follow up?
Cheers,
Andy

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Tuesday, 16 July 2019 1:02 PM
To: Iain Maxwell <iain@hbrc.govt.nz>; Andy Hicks <andy@hbrc.govt.nz>

Subject: RE: Request for assistance with Essential Freshwater work

Hi Andy and Iain. Just following up on my email to James. Can I give you a call please? When would suit, and what numbers should I call you on?

Thank you

Irene

From: James Palmer <james.palmer@hbrc.govt.nz>
Sent: Tuesday, 16 July 2019 12:16 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Nick Martelli <Nick.Martelli@mfe.govt.nz>; Iain Maxwell (hbrc.govt.nz) <iain@hbrc.govt.nz>; Andy Hicks <andy@hbrc.govt.nz>; Tom Skerman <Tom@hbrc.govt.nz>
Subject: Re: Request for assistance with Essential Freshwater work

Hi Irene, please work through Iain Maxwell and Andy Hicks.

Thanks, James

Sent from my iPhone

On 16/07/2019, at 10:39 AM, Irene Parminter <Irene.Parminter@mfe.govt.nz> wrote:

> Dear James,
> The Government's Essential Freshwater programme includes a proposal to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposal as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If these proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.
>
> Initial modelling has developed a set of potential sub-catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchment in your region may meet the criteria for high nitrogen impacts:
>
> | NZ segment | River Name | Catchment Name |
> |---|---|---|
> | 8213095 | Karewarewa Stream | Ngaruroro River |
>
> With your agreement, I would like to discuss this sub-catchment with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.
>
> Thank you

Irene Parminter

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 13

Nick Vincent

From: Irene Parminter
Sent: Monday, 22 July 2019 9:48 AM
To: Mike Scarsbrook (waikatoregion.govt.nz)
Subject: Update on the nitrogen proposal

Hi Mike. Thank you for your help last week.

The ground-truthing process has thrown up a lot of problems with the modelling – in many regions, the modelling is not accurate enough at the scale we need. So after some internal discussion, I am testing a new approach that uses actual water quality monitoring data. Under that approach, both the Piako and the Waihou are highlighted. Based on our discussion earlier, I think that's probably reasonable? However, I would like to talk to you again if possible, as there may be more I should know e.g. monitoring data may be affected by point source discharges? And it may be that many sub-catchments in the Waihou are fine based on your description earlier.

Can I give you a call please? When would suit?

Thanks again

Irene

From: Mike Scarsbrook <Mike.Scarsbrook@waikatoregion.govt.nz>
Sent: Wednesday, 17 July 2019 8:45 AM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Subject: RE: Request for assistance

Hi Irene

I've attached a report on nutrient sources in several Hauraki Plains rivers, including the Piako. Will hopefully be useful background info. Note that the Waitakaruru River in this table is not the same as Waitakaruru Stream (tributary of Piako) identified in you high N impact table in your original email.

Note Table 9 of the report summarises nutrient loads:

Table 9: Loads of nitrogen and phosphorus in the lower reaches of four Hauraki rivers during 2006–15. The combined loads from the various moderate-to-large point source discharges are shown, as are estimates of the pre-development or background loads, and the loads resulting from catchment land use (see text). Values are rounded; note that the totals differ from those in the less comprehensive analysis in Table 5.

	Kauaeranga	Piako	Waihou	Waitakaruru	All four rivers
Nitrogen (t/yr)					
Overall	61	1580	2059	32	3731
Point sources	0 (0%)	72 (5%)	165 (8%)	<1 (1%)	236 (6%)
Background	36 (59%)	284 (18%)	438 (21%)	15 (47%)	772 (21%)
Landuse	25 (41%)	1225 (78%)	1456 (71%)	17 (53%)	2723 (73%)
Phosphorus (t/yr)					
Overall	4	70	129	3	206
Point sources	0 (0%)	18 (25%)	27 (21%)	<1 (3%)	45 (22%)
Background	4 (81%)	28 (41%)	44 (34%)	1 (56%)	77 (38%)
Landuse	1 (19%)	24 (34%)	58 (45%)	1 (41%)	84 (41%)

Cheers
Mike

Mike Scarsbrook | MANAGER | Science, Science and Strategy
WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato
Take a look at the work we do
P: +6478592705
M: +6421864602
F: facebook.com/waikatoregion
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

From: Irene Parminter [mailto:Irene.Parminter@mfe.govt.nz]
Sent: Tuesday, 16 July 2019 5:05 PM
To: Mike Scarsbrook <Mike.Scarsbrook@waikatoregion.govt.nz>
Subject: RE: Request for assistance

Hi Mike. Here is a map (scroll down) and an explanation of the modelling (very summarised). For the map I used a filter of min catchment size 100 sq km, and a pressure score of 3 or more - I can send maps with different filters if that would be useful (to look at a broader set of potential catchments).

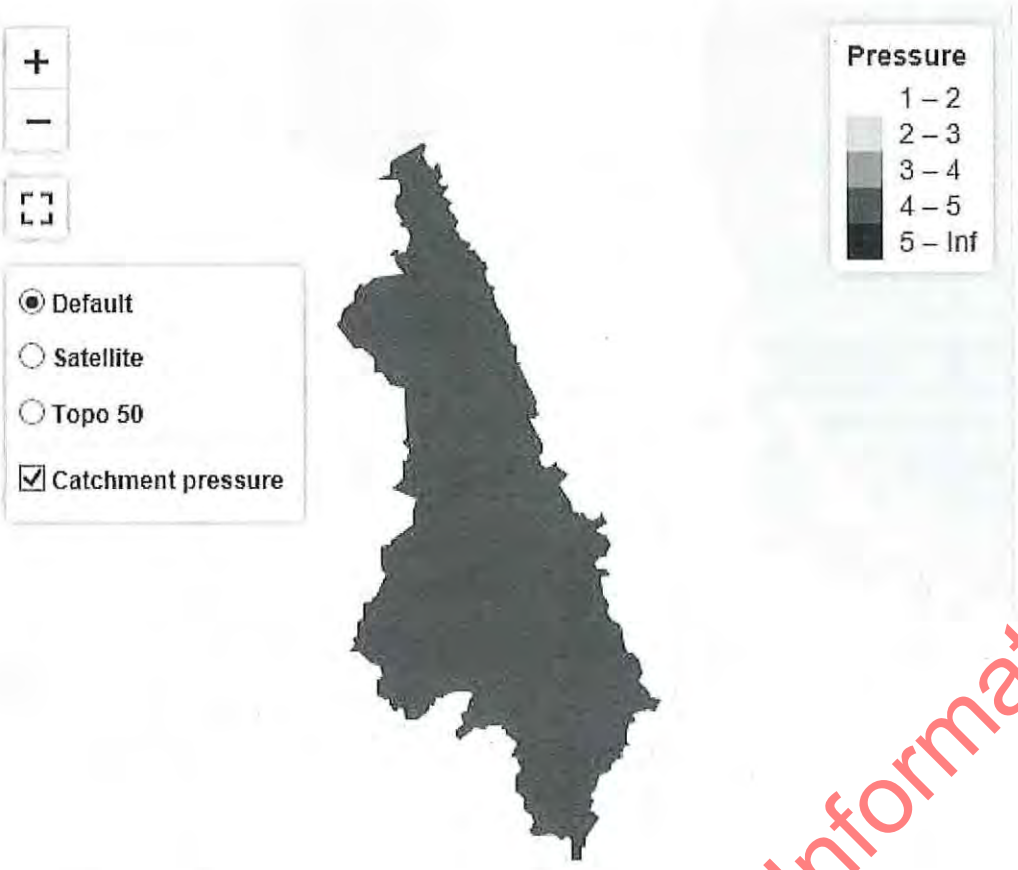
Summary of the modelling approach (carried out by Ton Snelder et al building on OLAW science challenge)

- Estimates of current median concentrations of total nitrogen (TN) and nitrate-nitrogen (NO3-N) for every segment of the river network were provided by predictions made using statistical models fitted to observations of TN and NO3N at 764 and 855 state of environment monitoring sites respectively
- All segments in the network were assessed based on the receiving waters - comparing current load of nitrogen with "maximum allowable load" (MAL)
- The MAL was defined in relation to the bottom lines in the current NOF for lakes and rivers, and for estuaries, the work by Plew et al was used to define bottom lines for chlorophyll-a.
- Catchment pressure is the ratio of the current TN load to the MAL

And this paragraph from Ton's draft paper (which is too draft to send out) is also helpful:
Catchment pressure was defined in three steps. First, the ratio of the current load to MAL was defined for every receiving environment in the drainage network. Second, the digital drainage network representing each individual sea-draining catchment (i.e., defined by the entire drainage path upstream of a terminal segment) was traversed in the upstream direction. Beginning at the most downstream receiving environment, which is defined as a critical point, the ratio of the current load to MAL at each receiving environment is compared with the ratio for next upstream receiving environment. If the ratio at the next upstream receiving environment is greater than that of the downstream critical point, the upstream receiving environment is defined as a critical point and the process continues upstream. Third, having defined the critical points on the drainage network of every sea-draining catchment, the sub-catchments upstream of each critical point are identified and assigned a catchment pressure value equalling the ratio of the current load to MAL of the associated critical point.
Sea-draining catchments can have one critical point (the most downstream receiving environment) or multiple critical points, which include the most downstream receiving environment. Maps of catchment pressure were defined by colouring the sub-catchments upstream of each critical point using a colour scale that reflects their pressure value.

Will ring you tmrw morning

Irene



From: Mike Scarsbrook <Mike.Scarsbrook@waikatoregion.govt.nz>
Sent: Tuesday, 16 July 2019 1:00 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Vaughan Payne <vaughan.payne@waikatoregion.govt.nz>
Subject: RE: Request for assistance

HI Irene

I'm in meetings most of the afternoon, but can I call you between 4:30 and 5?

Mike
021864602

Mike Scarsbrook | MANAGER | Science, Science and Strategy
WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato
Take a look at the work we do
P: +6478592705
M: +6421864602
F: facebook.com/waikatoregion
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

From: Irene Parminter [mailto:Irene.Parminter@mfe.govt.nz]
Sent: Tuesday, 16 July 2019 11:04 AM
To: Mike Scarsbrook <Mike.Scarsbrook@waikatoregion.govt.nz>
Subject: FW: Request for assistance

Hi Mike. Can I give you a call about this request? If so, when would suit (and what is the best number to call you on)?

Thank you

Irene

From: Vaughan Payne <Vaughan.Payne@waikatoregion.govt.nz>
Sent: Tuesday, 16 July 2019 10:27 AM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Mike Scarsbrook (waikatoregion.govt.nz) <Mike.Scarsbrook@waikatoregion.govt.nz>; Tracey May <Tracey.May@waikatoregion.govt.nz>
Subject: Re: Request for assistance

Kia ora Irene

Thanks for your email. Can you please work directly with Mike Scarsbrook who I've copied into this email.

Nga mihi

Vaughan

Sent from my iPhone

Vaughan Payne | CHIEF EXECUTIVE | Office of the Chief Executive
WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato
Take a look at the work we do
P: +6478590595
M: +64212462314
F: facebook.com/waikatoregion
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

On 16/07/2019, at 10:01 AM, Irene Parminter <Irene.Parminter@mfe.govt.nz> wrote:

> Dear Vaughan,
> The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently proposed for August 2019. If the proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.
>
> Initial modelling has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial modelling with councils. The modelling indicates that the following sub-catchments in your region may meet the criteria for high nitrogen impacts:

NZ segment	River Name	Catchment Name
3046191	NA	Piako River
3058413	Waitakaruru Stream	Piako River

> With your agreement, I would like to discuss these catchments with your staff, to check the modelling result prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 14

From: Irene Parminter
To: alistair.cross@gw.govt.nz
Subject: FW: Request for assistance - Essential Freshwater work
Date: Monday, 22 July 2019 1:59:00 PM

Hi Alistair. Sharon Horne suggested I talk to you about this (see below). I would be keen to talk to someone on your staff team about the set of catchments we put in front of Ministers later this week, to inform their deliberations. Can I give you a ring please? Or someone else on your staff?

Many thanks

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

From: Irene Parminter
Sent: Monday, 22 July 2019 10:49 AM
To: greg.campbell@gw.govt.nz
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>
Subject: Request for assistance - Essential Freshwater work

Dear Greg,

The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently scheduled for August/September 2019. If progressed, the proposed set of high-nitrogen catchments will be included in the consultation document.

A set of potential catchments where the policy could apply has been derived from monitoring data. In preparation for consultation, MfE would like to ground-truth this initial set with councils. The monitoring data indicates that parts of the Ruamahanga Catchment and the Waitohu Stream catchment in the Greater Wellington region may meet the criteria for high nitrogen levels.

However I would like to discuss this with appropriate staff from GWRC, to check the monitoring results prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst

Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

From: Irene Parminter
To: Basil Chamberlain
Cc: Martin Workman; Nicola Scott
Subject: Request for assistance
Date: Wednesday, 31 July 2019 1:37:43 PM

Dear Basil,
The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently proposed for late August/early September 2019. If the proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.

An initial review of water quality monitoring sites has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial review with councils. In your region, the Waingongoro Stream in South Taranaki may meet the criteria for high nitrogen impacts.

With your agreement, I would like to discuss this catchment with your staff, to check whether this catchment does in fact meet the criteria, prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

Document 16

From: Irene Parminter
To: Barry Johnson
Subject: RE: Request for assistance
Date: Wednesday, 31 July 2019 4:41:00 PM
Attachments: image001.jpg
image002.png
image003.png

Out of Scope

Barry Johnson
Environmental Policy Manager
DDI 03 543 8975 | **Mobile** 021 376 680 | Barry.Johnson@tasman.govt.nz
Private Bag 4, Richmond 7050, NZ

Sent from my iPhone

On 31/07/2019, at 4:18 PM, Irene Parminter <Irene.Parminter@mfe.govt.nz> wrote:

> Many thanks Janine, I really appreciate your quick reply.
>
> Out of Scope
>
> Kind regards
>
> Irene.

From: Janine Dowding <Janine.Dowding@tasman.govt.nz>
Sent: Wednesday, 31 July 2019 2:38 PM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>; Barry Johnson <Barry.Johnson@tasman.govt.nz>
Subject: RE: Request for assistance

Dear Irene
Your best point of contact is Barry Johnson. Barry is our Environmental Policy Manager and he can involve other staff as appropriate. Barry's contact detail are: ph. 03 543 8975 or 021

376 680 and his email address is Barry.Johnson@tasman.govt.nz
Regards
Janine

Janine Dowding
Chief Executive Officer
DDI 03 543 8444 | Janine.Dowding@tasman.govt.nz
Private Bag 4, Richmond 7050, NZ

  

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Wednesday, 31 July 2019 1:38 PM
To: Janine Dowding Janine.Dowding@tasman.govt.nz
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>
Subject: Request for assistance

Dear Janine,
The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently proposed for late August-early September 2019. If the proposals are progressed, the proposed set of high nitrogen-impact catchments will be included in the consultation document.

An initial review of water quality monitoring sites has developed a set of potential catchments where the policy would apply. In preparation for consultation, MfE would like to ground-truth this initial review with councils. In your region, the Motupipi catchment in Golden Bay may meet the criteria for high nitrogen impacts.

With your agreement, I would like to discuss this catchment with your staff, to check whether this catchment does in fact meet the criteria, prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatu Mo Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

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Document 17

Nick Vincent

From: Irene Parminter
Sent: Wednesday, 31 July 2019 8:34 AM
To: Megan Oliver
Subject: RE: Request for assistance - Essential Freshwater work

Hi Megan – thanks for the link – that's an amazing bit of technology. Can I give you a call sometime today please? I need a bit of local knowledge.

Thanks

Irene

From: Megan Oliver <Megan.Oliver@gw.govt.nz>
Sent: Monday, 29 July 2019 8:55 AM
To: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Subject: RE: Request for assistance - Essential Freshwater work

Hi Irene,
All our data is available at the following link. I suggest you have a look here for the sites you need. We have a Waitohu Stream site and many in the Ruamahanga.

http://graphs.gw.govt.nz/

Let me know if there is anything else you need that you can't find here.

Megan

Dr Megan Oliver
Team Leader | **Kaitaki-a-tīma**
Marine & Freshwater Team
Environmental Science Department | **Te Taiao**
GREATER WELLINGTON REGIONAL COUNCIL | **TE PANE MATUA TAIAO**
Shed 39, 2 Fryatt Quay, Pipitea, Wellington 6011 | PO Box 11646, Manners St, Wellington 6142
DDI: 04 830 4329 | M: +64 21 133 3320
www.gw.govt.nz | www.facebook.com/greaterwellington | www.twitter.com/greaterwgtn

From: Irene Parminter <Irene.Parminter@mfe.govt.nz>
Sent: Thursday, 25 July 2019 4:02 PM
To: Megan Oliver <Megan.Oliver@gw.govt.nz>
Subject: FW: Request for assistance - Essential Freshwater work

Hi Megan – as discussed over the phone (in and out of reception at Cape Palliser – I am very envious!) I would be keen to give you a quick call to check some water quality monitoring data (see email below)

I am not available tomorrow due to a family commitment, and Monday is a bit of a nightmare with meetings, but at some stage next week it would be good to have a brief conversation.

I have spoken to Al Cross and Lucy Baker as well.

Thankyou

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

From: Irene Parminter
Sent: Monday, 22 July 2019 10:49 AM
To: greg.campbell@gw.govt.nz
Cc: Martin Workman <martin.workman@mfe.govt.nz>; Nicola Scott <Nicola.Scott@mfe.govt.nz>
Subject: Request for assistance - Essential Freshwater work

Dear Greg,

The Government's Essential Freshwater programme includes proposals to address excessive nitrogen leaching in catchments with high nitrogen impacts. The Government will likely be consulting on the proposals as part of the larger Essential Freshwater consultation, currently scheduled for August/September 2019. If progressed, the proposed set of high-nitrogen catchments will be included in the consultation document.

A set of potential catchments where the policy could apply has been derived from monitoring data. In preparation for consultation, MfE would like to ground-truth this initial set with councils. The monitoring data indicates that parts of the Ruamahanga Catchment and the Waitohu Stream catchment in the Greater Wellington region may meet the criteria for high nitrogen levels.

However I would like to discuss this with appropriate staff from GWRC, to check the monitoring results prior to consultation. Please could you advise who I should contact, and their contact details as soon as convenient.

Thank you

Irene

Irene Parminter – Senior Policy Analyst
Ministry for the Environment – Manatū Mō Te Taiao
Mob: 022 517 3371 Email: irene.parminter@mfe.govt.nz Website: www.mfe.govt.nz
Environment House, Kate Sheppard Place, PO Box 10362, Wellington 6143

Record of discussions with council staff on target catchments for the N cap in July-August 2019

All emails and phonecalls were sent/made by Irene Parminter.

Note: early conversations with regional council staff in mid-July were based on initial modelling by Ton Snelder that identified high nitrogen-pressure catchments, including consideration of the receiving water sensitivity[1]. These catchments were filtered to remove those in regions/catchments with rules already in place to address high nitrogen discharges. The remaining catchments are listed below.

Table 1: Initial catchment set based on N-pressure modelling

NZ segment	Region	River or reach name	Catchment name
4076553	Bay of Plenty	Whakatane River	Whakatane River
8213095	Hawkes Bay	Karewarewa Stream	Ngaruroro River
7229170	M-W Horizons	Turakina River	Turakina River
14289762	Otago	NA	Taieri River
14305529	Otago	Tokomairiro River	Tokomairiro River
15319805	Southland	NA	Mataura River
15293344	Southland	Waimea Stream	Mataura River
15314740	Southland	Waimatuku Stream	Waimatuku Stream
15320150	Southland	NA	Waituna Creek
15319658	Southland	NA	Titiroa Stream
3046191	Waikato	NA	Piako River
3058413	Waikato	Waitakaruru Stream	Piako River

Initial ground-truthing with a small number of regional council staff found that this modelling was insufficiently accurate for a regulatory instrument, at the catchment scale. The second round of conversations from later in July – early August discussed the sea-draining river catchments that were in the top 10 percent of catchments for nitrate-nitrogen in the MfE database, again filtering out the regions/catchments with rules addressing high nitrogen losses (Table 2 below).

Table 2: Revised set of catchments based on high nitrate-nitrogen levels

Catchment name	Catchment ID	Region	Median nitrate-nitrogen (mg/l)
Rangitaiki River	2898	Bay of Plenty Region	2.335
Mohaka River	2667	Hawke's Bay Region	3.501
Waingongoro Stream	2353	Hawke's Bay Region	1.88
Wairoa River	4161	Northland Region	2.45
Aparima River	847	Southland Region	1.805
Mataura River	848	Southland Region	3.6
Oreti River	1064	Southland Region	2.65
Waimatuku Stream	450	Southland Region	3

[1] Snelder, Whitehead, Larned and Schallenberg: *Environmental nitrogen loads in new Zealand in comparison to regulatory limits: analysis of catchment nitrogen pressure*

Waihopai River	451	Southland Region	1.995
Waingongoro River	2639	Taranaki Region	1.734
Motupipi River	2265	Tasman Region	1.51
Piako River	3096	Waikato Region	2.03
Waihou River	3104	Waikato Region	2.1
Ruamahanga River	2377	Wellington Region	4.8

Council staff were also asked about additional high-nitrate catchments that could be suited for option 3 in the discussion document (early requirement for a freshwater module in a farm plan). These are largely dominated by horticulture or more diverse land uses that would make option 1 difficult to implement: the Waitangi and Whangamaire Streams in the Auckland region and the Mangaone and Waitohu Streams in the Greater Wellington region.

Process used for discussing these rivers with Regional Councils

1. Obtain agreement from Director to contact the relevant regional councils (agreed in email dated 20 June 2019, and located here: 12603933).
2. Contact the CE of the Regional Council (this was recommended by the Regional Sector Advisory Group in their meeting on June 17 2019)
3. Explain at a high level the background to the nitrogen policy and the broad policy option(s)
4. Explain how the initial set of catchments were selected, and the need for ground-truthing by regional council staff. Note the rivers highlighted by the analysis in the region. Ask to be referred to the appropriate staff member. Note that we would appreciate their guidance on other rivers that would be useful to add or substitute.
5. Contact the staff member – provide the relevant data.
6. Key points of the discussion – is this a high-nitrogen catchment? Are there others we should focus on instead/as well? What are the main sources of the nitrogen? Pastoral agriculture, horticulture or urban/industrial? Is there a sub-catchment that any proposal should focus on? Are there existing regional rules in place to address high nitrogen losses?

Notes from Phone calls with Council staff

Waikato

17 July 2019: phone call Mike Scarsbrook. See PDF attached Table 9 (and note the Waitakaruru in Table 9 is not the same as the Waitakaruru tributary to the Piako.)

Water-quality-and-sources-of-nitrogen

Mike noted 2 rivers discharge to Firth of Thames, Waihou and Piako. Based on their report (data from 2006-15), Waihou has a higher N load. But Piako has much higher land use intensity pressures, and from a WRC viewpoint, it makes sense to focus on the Piako. Waihou has high quality tributaries flowing in from the Kaimais. Piako is not covered by PC1.

22 July: follow-up phone call with revised set of catchments – Piako plus Waihou. The Waihou has some problem sub-catchments and some have good water quality. So choice of sub-catchments is important. Noted that the advantage of using Ton Snelder's modelling is taking account of the

receiving environment, and the Firth of Thames is a sensitive receiving environment. Suggested could use yield rather than load or concentration as a more targeted approach.

Manawatu-Whanganui Horizons

17 July phone call Jon Roygard. In short, the modelling has incorrectly identified some streams as gravel-bottom and therefore applied the periphyton bottom-line; and in some cases the high N levels are not related to agriculture but to discharges from wastewater treatment plants.

22 July: Follow-up email exchange with revised set of catchments – only one in Horizons not covered by the One Plan target catchments – the Turakina. Jon noted that the results are largely due to wastewater discharges from Ratana. The main stem of the Turakina has 5 year median TN of 0.7 g/m3.

Environment Bay of Plenty

18 July 2019. Phone call Rob Donald. The modelling does not reflect BoP local knowledge. Whakatane estuary has no signs of N issues – no macrophytes or algal blooms, low residence times. Whereas the problem estuaries are the Waihi and Maketu (Kaituna catchment) which will drive the limits set for water quality on the Kaituna. Whereas highly eutrophic lakes are not indicated as a problem in the modelling – Lakes Rotorua, Okaro and Rotoiti. These lakes also need phosphate management as well as nitrogen. In terms of rivers, many are pumice-bed which are not susceptible to periphyton. However parts of the Rangitaiki, the Whakatane, Waioeka (i.e. the south-eastern end of the region) do have braided gravel beds – but are not breaching bottom-lines.

Follow-up phonecall 22 July re the new approach – highlighted Rangitaiki upper catchment. Agreed this sub-catchment has high nitrate derived mainly from dairy farming on pumice soils.

Environment Southland

19 July 2019. Phone call Roger Hodson, Envt Southland – using both sets of catchments (high-N pressure and high nitrate consentrations).

Titiroa not on ES' radar, small contribution to the Mataura.

Mataura: Waimea and Otaramika tributaries are biggest problems – oxidising physiographic zone – N a particular problem, in GW year round. In the stretch between Gore and Mataura there are a number of point sources – town waste water and abattoirs. Upper catchment has point source from dairy factory source; also some tulip growing.

Waimatuku: physiographic zone high risk for N.

Oreti and Aparima: intensive agricultural catchments, no significant point sources.

Waihopai: very intensive agriculture, no alpine water inputs, monitoring site is above the city. Oxidising soils. Small amount of horticulture. No point sources anymore.

Hawkes Bay:

22 July: Phone call Andy Hicks ph 027 536 9979. Discussed only the new approach. Focused on the Mohaka River – agreed problem is in the upper catchment - noted especially the Taharua sub-catchment. Diluted further downstream. Follow up phone call 7 Aug, Waingongoro Stream

catchment unlikely to have any dairy farms, largely sheep and beef. Waingongoro has a large groundwater influence probably sourced from the area between Maraetotara and the sea.

Greater Wellington

August 1 phone-call: Mark Heath noted that the monitoring network is not sufficient for the task of identifying target catchments for a nitrogen-focused policy. However he also said that, of the pastoral catchments, Parkvale (tributary of the Ruamahanga) is the highest nitrate-concentration river in the region. Waitohu and Mangaone are affected by horticulture and lifestyle block influences. Follow-up phonecall 15 August to discuss the Waitohu and Mangaone (due to insertion of Option 3). Mangaone has horticulture, dairy in lower catchment and many lifestyle blocks – Mark commented lifestyle blocks are probably cumulatively a significant factor. Land has clay pans and areas of peat – complex. In addition some groundwater that feeds the stream is sourced from outside the catchment. The Waitohu is similar, but less horticulture, more mixed land uses.

Northland

24 July, phone call with Jean-Charles Perquin. Main influences are pastoral agriculture. Catchment is very large – 1/3rd of region – so would need to define a target sub-catchment for the policy proposal. The high N monitoring site is on the Waipao stream.

Taranaki

1 August, phone call Gary Bedford re the Waingongoro. Most intensive dairying in Taranaki is in this catchment, meat works at Eltham discharges to land except in very wet conditions. Water from mountain is relatively small, drainage from farms predominates in stream flow. Punehu Stream has no mountain influence at all and has high nitrate. Noted that the river is not high nitrogen *impacted* as periphyton not a big problem.

Tasman

1 August, phone call Barry Johnson and Trevor James re the Motupipi. River discharges into an internationally significant estuary. Sourced from limestone country so nitrate toxicity is not a problem but may have some periphyton. Relatively little water sourced from the mountain – short lowland waterway, slow moving. Some dairy, some lifestyle blocks. Maybe small influence from Takaka township. A little maize cropping. Around nineteen dairy farms. Noted that there are three streams on the Waimea Plains that have much worse nitrate levels - Brock, Neimann, Pearl waterways, all spring-fed. However these are not in the MfE database or LAWA website (potentially lacking 5 years of data for a median to be calculated?), but are included in the Tasman State of the Environment report 2015. [Note: these could be added following consultation if they are raised in submissions].

Auckland

Phone call 14 Aug, 2019, Dave Allen and Laura Buckthought. Whangamaire stream has a combination of circumstances leading to high nitrate levels – highest in NZ – good vegetable growing land, frost-free, overlying a shallow unconfined aquifer that provides the baseflow for the stream. The Waitangi has more mixed land uses, still a lot of vegetable growing. Unclear surface and groundwater interactions. The Council is working with GNS to look at the Franklin and Pukekawa aquifers – report due next month. Long lag times in these catchments mean that actions taken now take many years to be expressed in the stream. Dave emailed me a powerpoint on nitrate in the area and a summary report on the Water Management Model developed in Akl, models 6 different

contaminants and aims to take an integrated view of limit setting so that interactions are taken account of.