

# LAND AIR WATER AOTEAROA



Connecting communities with New Zealand's rivers through sharing water quality data



### **Guiding principles**



### Everything as simple as it can be, but not simpler!

Attributed to Albert Einstein

Explain data well, but never dumb down



### Overview first, zoom and filter, then details on demand

Ben Shneiderman\*

Give the user access to the information they need when they need it; do not overwhelm with information

\*The Eyes Have It: A Task by Data Type Taxonomy for Information Visualizations. In Proceedings of the IEEE Symposium on Visual Languages, 1996

### LAWA will

### by





public, scientists, policymakers and other water users



available for the user at the right time (drilldown)



Have an attractive, user friendly interface, accessible across different devices



Using recreation information, stories, factsheets and events to contextualise, inform and engage















### LAWA connects you with New Zealand's rivers through sharing water quality data

Default text in primary search field



Or explore the national picture



ABOUT LAWA





The Rakaia River



LEARN Check out our factsheets



New domain report from MFE out now lawa.org.nz/factshee t/mfe/domain

#### Latest news and stories >

Improving water quality the focus of resumed deliberations Published 21/05/2013

NZ helps protect lagoon water quality in the Cook Islands Published 21/05/2013

Local water quality 'about perception' Published 21/05/2013

### Upcoming events ▶



Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus



**Planting Day** Friends of the Waikato Bridge Car Park, Hamilton



Submit an event

Public Meeting, Tukituki Dam Project Hawkes Bay Regional Council Council Officers, Napier

Submit a story 🔳

Follow LAWA Share LAWA 🕇 🎔 **Report river observation** CONTACT **EXPLORE DATA** GET INVOLVED Website or general enquiries: National picture News and stories **Explore Regions** info@lawa.org.nz

Facebook Twitter	Search	Submit photo/story/event
For enquiries about monitoring	LEARN	ABOUT
council directly. For council details see About LAWA.	Factsheets Glossary	About the LAWA project
© Copyright LAWA   Privacy   Terms   Site M	ар	



### Homepage

The main landing page for the website. Search box gives direct way for a user to jump to their area, and feature boxes signpost the user to interesting content in each section. Left, popups for social media share and follow. Footer aids navigation and lets users report a river observation direct to councils.

Events





Explore data

### **New Zealand**

New Zealand's freshwater resources are managed by 16 regional councils or unitary authorities. These bodies collect data on the quality of the water in their region.

Regions 16

Sc

National pictu

### Select a region in New Zealand



AUCKLAND 31 catchments



BAY OF PLENTY 31 catchments



CANTERBURY 31 catchments

GISBOURNE





MANAWATU-WANGANUI 31 catchments

Report river observatio		Follow LAWA	Share LAWA <b>f</b>
CONTACT	EXPLORE DATA	GET INVO	DLVED
Website or general enquiries:	National picture	News and	l stories
info@lawa.org.nz	Explore Regions	Events	
Facebook Twitter	Search	Submit p	hoto/story/event

### National level navigation dashboard

This page allows a user to jump to the region they are interested in. The map also acts as a navigational device. Dashboard shows images from each section. Tabs allow the user to view scientific – or 'national picture' – information provided by the Ministry for the Environment (MfE).





🔄 Explore data /

### Manawatu-Wanganui region

The Manawatu-Whanganui region is governed by Horizons Regional Council. It covers a vast area with a diverse landscape. The region covers a large part of the North Island.



### Latest news and stories >

Improving water quality the focus of resumed deliberations Published 21/05/2013

NZ helps protect lagoon water quality in the Cook Islands Published 21/05/2013

Local water quality 'about perception' Published 21/05/2013

### Upcoming events >



Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus



Planting Day

Friends of the Walkato Bridge Car Park, Hamilton



Public Meeting, Tukituki Dam Project Hawkes Bay Regional Council Council Officers, Napier



### **Regional level navigation dashboard**

Selecting a region from the map or national level page takes the user to a region page. This tab shows all the catchments in the region, with thumbnail images. Footer shows news and events relevant to the region. Regional council logo in the footer links to content about the council in question. Introductory content can expand for more detailed information (see next page).





Explore data

### Manawatu-Wanganui region

The Manawatu-Whanganui region is governed by Horizons Regional Council. It covers a vast area with a diverse landscape. The region covers a large part of the North Island.

### Area: 22,215 km2 Largest city: Palmerston North

Proin lobortis euismod ipsum, iaculis gravida sem pharetra ut. Vestibulum enim urna, facilisis quis egestas eu, molestie in risus. Ut interdum ut elit id ultricies. Phasellus ut ullamcorper ligula.

Pellentesque egestas turpis et risus fermentum accumsan. Mauris iaculis eros ut ligula scelerisque, vel facilisis odio dapibus. Maecenas a mattis tellus, sit amet tincidunt enim. Fusce bibendum sapien vitae purus dapibus dignissim. Vestibulum pellentesque luctus sapien, ac egestas orci aliquam commodo. Ut quis laoreet purus.

History	+
Geography	+

Catchments

Scientific indicators

### Catchment areas in this region





# Regional level navigation dashboard (expanded content)

Councils can add detailed information about the region that can be expanded by users.





Explore data /

### Manawatu-Wanganui region

The Manawatu-Whanganui region is governed by Horizons Regional Council. It covers a vast area with a diverse landscape. The region covers a large part of the North Island.

				Read more 🕂
Catchments 📧	Scientific indicators			
Showing inform	ation for upland	• rura	l + sites	
Select a quality indicator b	pelow to view more informat	ion:		
Bacteria	Clarity			
E. Coli	Black disk	2	Turbidity	2
STATE TREN	D STATE	TREND	STATE	TREND
		$\mapsto$		
In the worst No tree	In the worst	No trend	In the worst	No trend
25% of like sites	50% of like sites		50% of like sites	
Nitrogen				
Total Nitrogen	Total Oxidisable	e Nitr <b>?</b>	Ammoniacal N	itrogen 👔
STATE TREN	D STATE	TREND	STATE	TREND
		$\mapsto$		
In the worst No tree	nd In the worst	No trend	in the worst	Significant
2019 OF like Siles	20% OF HKE SITES		DUM OF THE SILES	nchananon
Phosphorus			Other	
Dissolved Reactive P	🗾 Total Phosphor	us 👔	рН	2
STATE TREN	D STATE	TREND	STATE	TREND
		$\mapsto$		$\mapsto$
In the worst No tree	id In the worst	No trend	in the best	No trend
50% of like sites	50% of like sites		25% of like sites	

Latest news and stories >	Upcor	ning events ►
Improving water quality the focus of resumed deliberations Published 21/05/2013	12 FEB	Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus
NZ helps protect lagoon water quality in t Cook Islands Published 21/05/2013	IE 16	<b>Planting Day</b> Friends of the Walkato Bridge Car Park, Hamilton
Local water quality 'about perception'	2	Public Meeting, Tukituki Dam

### Regional level scientific dashboard

Region level data is displayed on a dashboard. Regional Council<br/>state data shows how a region performs nationally, based on<br/>quartiles (top 25%, top 50%, bottom 50%, bottom 25%). Trendsshow if a region is improving over time. These are indicated<br/>with icons. Terms are explained with glossary popups.





All regions / Manawatu-Wanganui region

### Manawatu River

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai i to.



#### Latest news and stories ►

Improving water quality the focus of resumed deliberations Published 21/05/2013

NZ helps protect lagoon water quality in the Cook Islands Published 21/05/2013

Local water quality 'about perception' Published 21/05/2013

### Upcoming events ►



Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus



Planting Day Friends of the Walkato Bridge Car Park, Hamilton



Public Meeting, Tukituki Dam Project Hawkes Bay Regional Council Council Officers, Napier

Submit a story 🔳		Submit an event 🛗
horizons regional council Reg Clic	<b>nawatu-Wanganui gional council</b> k for more info	Related links         In season water quality monitoring II         Water quality at popular swimming spots II         Summary of the Our Manawatu River Leaders' Accord action plan II

### **Catchment level navigation dashboard**

A catchment level page shows a list of sites within that catchment. The map is also a navigation tool allowing a user to choose a site. The list indicates how sites are rated from a recreation grade point of view. The site list can be filtered by recreational activity, or by those sites that have scientific data.





All regions / Manawatu-Wanganui region

A WARNING IN EFFECT Read more

### **Manawatu River**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai i to.

Length: 235km Catchment size: 5898 sq km Starts: Ruahine Ranges Ends: Near Foxton Beach

The Manawatu River catchment covers an area of 5,898 square km. The river itself is 235 km long with a total stream length in the catchment of 9,648 km. The catchment has a number of large tributaries including the Oroua (131 km), Mangatainoka (71 km), Mangahao (86 km), Pohangina (71 km) and Tiraumea (69 km) rivers.

The headwaters of the Manawatu River are situated in the Ruahine Ranges, northwest of Norsewood. The river is unique in that it begins on the eastern side of a main divide and winds its way to the Tasman Sea on the western side of the range at Foxton Beach. This means the river predates the geological formation of the ranges.

History	+
What does the name mean?	+

Sites 8

Scientific indicators





### **Catchment level navigation dashboard** (expanded content)

Councils can add detailed information about the catchment that can be expanded by users.





Latest news and stories ►	Upcoming events >
Improving water quality the focus of resumed deliberations Published 21/05/2013	L2         Water Quality Matters roadshow           FEB         Horizons Regional Council           Palmerston North Massey Campus
NZ helps protect lagoon water quality in the Cook Islands Published 21/05/2013	Planting Day           Friends of the Walkato           Bridge Car Park, Hamilton
Local water quality 'about perception'	Public Meeting, Tukituki Dam

### Catchment level scientific dashboard

Catchment level data is displayed on a dashboard. Regional Council state data shows how a catchment performs nationally, based on quartiles (top 25%, top 50%, bottom 50%, bottom 25%). Trends show if a region is improving over time. These are indicated with icons. Terms are explained with glossary popups.





🔚 Explore data / Manawatu-Wanganui region / Manawatu River

### **Tokomaru River at Horseshoe Bend**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai.

Recreational info	Scientific indicat	Read more +
Recreational water qu	ality	Can I trust this data? ✔
2013 Suitability for Recreation Grade	Site suitable for these activities	The Suitability for Recreation Grade (SFRG) is updated <mark>annuall</mark> y. It provides five grades (very poor to very good) that summarise the potential
		health risk associated with primary recreation

POOR 12 Not always suitable Click an icon for further details

Show past grades +

Horzions Regional Council monitors this site on a weekly basis throughout the summer months.

View a SFRG factsheet > View the Horizons website for in-season monitoring >

#### See this site



Video caption to go with image above Video submitted by Cameron Askin



Send us a photo or video ▶



#### Latest news and stories >

Improving water quality the focus of resumed deliberations Published 21/05/2013

NZ helps protect lagoon water quality in the Cook Islands Published 21/05/2013

Local water quality 'about perception' Published 21/05/2013

#### Upcoming events ▶



Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus



Planting Day Friends of the Walkato Bridge Car Park, Hamilton



Public Meeting, Tukituki Dam Project Hawkes Bay Regional Council Council Officers, Napier





### Site level recreation dashboard

The default landing page for a site shows the suitability for recreation grade (SFRG) for the site (if available). A panel shows which recreation activities can be undertaken at the site. Images and videos from the site are displayed on the page. A 'can I trust this data' link (the 'Cawthron tick') pops up

information about how SFRG is calculated and how robust the analysis is. The map shows the location of the site, plus other sites in the catchment.





🚝 🛛 Explore data / Manawatu-Wanganui region / Manawatu River

### **Tokomaru River at Horseshoe Bend**



**Poor Suitabilility for Recreation** The site is susceptible to faecal pollution and microbial water quality is not always suitable for swimming. During dry weather conditions, ensure that the swimming location is free of signs of pollution, such as discoloured water, odour or debris in the water, and avoid swimming at all times during and for up to three days following rainfall.

#### View a factsheet on all Suitability for Recreation Grades >



to ona tuakana ki te hii ika. Tte hokinga ea e au te haramai.



#### Can I trust this data? 🗸

 Suitability for Recreation Grade (SFRG) is fated annually. It provides five grades (very or to very good) that summarise the potential of the risk associated with primary recreation
 (such as swimming or surfing) at a site. The Horzions Regional Council monitors this site on a weekly basis throughout the summer months.

- View a SFRG factsheet >
- View the Horizons website for in-season monitoring

#### See this site



Video caption to go with image above Video submitted by Cameron Askin



Send us a photo or video 🕨



Photo caption to go with image above Photographer: Cameron Askin

#### Latest news and stories 🕨

Improving water quality the focus of resumed deliberations Published 21/05/2013

NZ helps protect lagoon water quality in the Cook Islands Published 21/05/2013

Local water quality 'about perception' Published 21/05/2013

### Upcoming events ▶



Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus



Planting Day Friends of the Walkato Bridge Car Park, Hamilton



Public Meeting, Tukituki Dam Project Hawkes Bay Regional Council Council Officers, Napier



# Site level recreation dashboard (showing SFRG popup)

Hovering over the SFRG grade brings up a popup explaining what the grade means.





🔚 Explore data / Manawatu-Wanganui region / Manawatu River

### **Tokomaru River at Horseshoe Bend**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai.



#### See this site



Video caption to go with image above Video submitted by Cameron Askin



Send us a photo or video 🕨

⇒



#### Latest news and stories 🕨

Improving water quality the focus of resumed deliberations Published 21/05/2013

NZ helps protect lagoon water quality in the Cook Islands Published 21/05/2013

Local water quality 'about perception' Published 21/05/2013

#### Upcoming events ▶



Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus



Planting Day Friends of the Walkato Bridge Car Park, Hamilton



Public Meeting, Tukituki Dam Project Hawkes Bay Regional Council Council Officers, Napier



# Site level recreation dashboard (Showing recreation popup)

Hovering over the recreation tab shows contextual information provided by the council on each activity (such as dogs are not allowed during lambing season, etc).





Explore data: / Manawatu-Wanganui region / Manawatu River

### **Tokomaru River at Horseshoe Bend**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai.

	_	Read more +.
Recreational info	Scientific indicator	'S LAND USE / ALTITUDE 👔 🔼
ecreational water q	uality	Can I trust this data? 🛩
2013 Suitability for Recreation Grade	Site suitable for these activities	The Suitability for Recreation Grade (SFRG) is updated annually. It provides five grades (very poor to very good) that summarise the potential
POOR	日本	health risk associated with primary recreation (such as swimming or surfing) at a site. The <u>Horzions Regional Council</u> monitors this site on a weekly basis throughout the summer months.
	Click m icon for further details	<ul> <li>View a SFRG factsheet +</li> <li>View the Horizons website for in-season</li> </ul>
Hide SFRG info -	Show past grades +	monitoring >

### Information about SFRG

### 2013 MAC and SIC MICROBIAL ASSESMENT CATEGORY SANITARY INSPECTION CATEGORY MAC SIC D WODERATE RISK

There are two components to calculating a Suitability for Recreation Grade. The two components of the SFRG are a Microbial Assessment Category (MAC), and a Sanitary Inspection Category (SIC).

The Microbial Assessment Category (MAC) is calculated from water samples measuring the indicator bacteria used is Escherichia coli (E. coli) in freshwater. The concentration of the bacteria is converted into a category (A to D).

The Sanitary Inspection Category (SIC) is calculated from a catchment inspection that identifies the risk factors that might make the site susceptible to faecal contamination.SIC is rated in five categories from very low risk to very high risk.

#### View factsheet about MAC and SIC >

#### See this site



Can I trust this data? 🗸





# Site level recreation dashboard (expanded SFRG)

Clicking on the 'Show SFRG info' button expands the content to explain how the grade is calculated and to show more detailed Microbial Assessment

Category (MAC) and Sanitary Inspection Category (SIC) grades. A link to a detailed factsheet on MAC and SIC is available.





Explore data / Manawatu-Wanganui region / Manawatu River

### **Tokomaru River at Horseshoe Bend**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai.



### **Past Suitability for Recreation Grades**

#### Can I trust this data? ✔



#### See this site

iend us a photo or video







Video caption to go with Image above Video submitted by Cameron Askin Photo caption to go with image above Photographer: Cameron Askin Photo captio Photographe

# Site level recreation dashboard (expanded SFRG history)

Clicking on the 'Show past grades' button expands the content to display the grade history of SFRG, MAC and SIC.



#### - INDUGRU DAYA I LEADY I LEY MY DEUDY I ADDUT I 🔊





l lica. I te hekanga Read more



#### The reaction of the starts



Photo caption to go with image above

Photographer: Cameron Askin

ion this site

the state of the base of the





### Site level image lightbox

Clicking on a photo from the site page opens the image gallery as a popup, which a user can scroll through.





🔚 Explore data / Manawatu-Wanganui region / Manawatu River

### **Manuwatu at Teachers College**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai.

Read more +

Recreational info

Scientific indicators Live dat

.

### Scientific data for this site

Can I trust this data? 🗸

V

This dashboard shows information on the data collected by regional councils for nine indicators, analysed as state and trend.

V

### State 🔢

State shows how the median of samples from this site compares to other sites.

This site is a **lowland rural site**. Currently showing state of this site compared to:

all sites in New Zealand

Click on an indicator to view sample history:

### Trend 🔃

Trend shows how the quality of water is changing over time. Depending on the sampling history duration, five and nine year timescales are available:

Showing nine year trend





### Site level scientific indicators dashboard

Site level dashboard shows how the site performs compared to other sites nationally (state) and over time (trend). Display options allow a user to compare the site to all other sites, all other sites in the same land use / elevation category. Where trend detail is available for five and nine years, these are available as option from a dropdown.



The map is showing the state quartile for the current site (shown large), and how other sites in the catchment also perform.



EXPLORE DATA | LEARN | GET INVOLVED | ABOUT | P

**Manuwatu at Teachers College** Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai.

Explore data / Manawatu-Wanganui region / Manawatu River

LAND AIR WATER AOTEARC





### What is this graph showing me?

0.000

### Can I trust this data? 🗸

×

This graph is displaying E Coli samples over the time period chosen from the dropdown menu. These samples form the basis for the state and trend indicators displayed on the dashboard. This data is raw and has not had any methodology applied to it, unlike the state and trend grades.

### Site level scientific indicators dashboard (sample history)

Clicking on an indicator shows the sample history for that indicator. A user can change the timeframe and the graph

generates automatically. Data can also be downloaded as a .csv file. The map shows how the site state compares to other sites by showing which quartile each falls into. A glossary popup shows users what the indicator is, and allows access to a detailed factsheet.





🗧 Explore data / Manawatu-Wanganui region / Manawatu River

### **Manuwatu at Teachers College**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, ka taea e au te haramai.

Recreational info Scientific indicators Live data feeds

#### Automatic 'live data' sampling

Some sites have telemetry monitoring systems in place that can provide up to the minute data. At this site the following live data measurements are available. Click on the data type for more information:





### Useful links

The Environmental Data produced by this pageMonitoring on the Horizons websiteshould be used as a guide only. LAWA takes noRecreational information for this siteresponsibility for the accuracy of informationRecreational information for this site

of others based on this information.

presented, and accepts no liability for actions taken

CONTACT	EXPLORE DATA	GET INVOLVED
Website or general enquiries:	National picture	News and stories
info@lawa.org.nz	Explore Regions	Events
Facebook	Search	Submit photo/story/event
Twitter		
For enquiries about monitoring	LEARN	ABOUT
or sites, please contact the relevant		
council directly. For council details	Factsheets	About the LAWA project
see About LAWA	Glossary	

Disclaimer

### Site level live data feeds dashboard

Where a site has automatic monitoring in place, these are available under the Live data feeds tab. A dashboard shows the most recent result for each indicator.





### **Manuwatu at Teachers College**

			Read more	
Recreational info	Scientific indicators	Live data feeds		

#### Automatic 'live data' sampling

Some sites have telemetry monitoring systems in place that can provide up to the minute data. At this site the following live data measurements are available. Click on the data type for more information:



### Flow (litres per second)

Click and drag over graph range to zoom in on timescale. To reset select a timescale above.



MALF (Mean Annual Low Flow):

×

### What is this graph showing me?

This river level forecast is based on flood forecasting methods which consider the following data

- soil moisture conditions
- actual rainfall within and near the catchment
- flows within the river and its tributaries
- forecast rainfall provided by MetService

Every effort is made to produce a reliable forecast of future river level however, beyond a few hours, the quality of the river level forecast is strongly influenced by the accuracy of the forecast rainfall.

### Site level live data feeds dashboard

Clicking on an indicator will open the live data feed, and a user can select a timeframe and download data.





### Learn

### Search LAWA's learn section for factsheets and glossary entries

Search for a topic

### Featured factsheets

New to LAWA? Lorem ipsum dolar intro to interface <u>Start here</u>



What is water clarity?

**TRENDS** What do the trends on LAWA mean?



Bacteria that occur naturally in the gut of humans and animals... Read more

word of the week: Enterococci SAMPLES

low are samples rocessed?

> Underflow Underground stream

View more factsheets +

#### Glossary Aesthetic / ammenity values Hydrology Reach Algae Hydro generation Recreational water quality Algal bloom Renewable freshwater resource Hydrograph Ammoniacal nitrogen Riparian areas/margin Aquaclulture Riparian planting Inter-tidal Run-off Aquifer Introduced species Invasive species Salinity Bacteria Irrigation Benthic Saltwater intrustion Biochemical oxygen demand Sediment discharge Jetty (BOD5) State Joint spring Soil moisture content Black disc Juvenile water Breach Bryozoan mat Total nitrogen Total oxidisable nitrogen Total Phosphorus Kanat Topsoil logy E. coli (Escherichia coli) is a type of bacteria Trend Turbidity commonly found in the intestines of humans, riscosity warm-blooded mammals and birds. E. coli in Unconfined aquifer water is not usually harmful in itself but high Unconfined groundwater



concentrations are an indicator of the risk of

other more harmful pathogens and the presence of human or animal faecal contamination.

### Learn section landing page

Top level page in the Learn section. Feature boxes signpost to interesting factsheets, or a button to view all factsheets allows for browsing. Search function gives an easy way to explore factsheets for users that know what they are looking for. The glossary list at the bottom of the page lists all the

key terms used across the site. Hovering over or clicking these opens them. Where further information is available, the glossary terms are linked to factsheets.





#### Learn / Factsheets

### **Factsheets**

### All factsheets

Filter	*	0



#### Periphyton (algae) PUBLISHED: 23 SEP 2013

The mix of algae, fungi, and bacteria that grow on the beds of our rivers, lakes and streams is also known as periphyton. Periphyton can take two general forms: microscopic, unicellular algae (i.e., diatoms) or macroalgae that develop as filaments, sheets or mats...



#### How trends are calculated on LAWA

PUBLISHED: CAMERON ASKIN

orem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in...



### Dissolved oxygen

PUBLISHED: 21 OCT 2013

A good balance of oxygen dissolved in water is necessary for good water quality. Fish and other aquatic life require it to breathe. Oxygen is dissolved in water through aeration or movement of water and as a by-product of plant photosynthesis..

#### River of the month: The Tukituki

PUBLISHED: 23 SEP 2013

pH

The TukitukiRiver is located in the Environment Canterbury Waihora / Ellesmere water management zone. The river is one of New Zealand's largest braided rivers, and is highly valued for recreational ...



### PUBLISHED: 21 JAN 2012 pH relates to the acidity of a waterway. The lower the pH, the more acidic the water. Most

natural waters fall within the slightly alkaline range between pH 6.5 to 8.0 and in the absence of contaminants most waters maintain a pH value that varies only a few tenths of...



#### Periphyton (algae)

PUBLISHED: 23 SEP 2013

The mix of algae, fungi, and bacteria that grow on the beds of our rivers, lakes and streams is also known as periphyton. Periphyton can take two general forms: microscopic, unicellular algae (i.e., diatoms) or macroalgae that develop as filaments, sheets or mats...



#### How trends are calculated on LAWA PUBLISHED: CAMERON ASKIN

orem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in...



PUBLISHED: 21 OCT 2013

A good balance of oxygen dissolved in water is necessary for good water quality. Fish and other aquatic life require it to breathe. Oxygen is dissolved in water through aeration or movement of water and as a by-product of plant photosynthesis.

#### River of the month: The Tukituki

PUBLISHED: 23 SEP 2013

The TukitukiRiver is located in the Environment Canterbury Waihora / Ellesmere water management zone. The river is one of New Zealand's largest braided rivers, and is highly valued for recreational ...

	Load more fac	tsheets	
Report river observation		Follow LAWA	Share LAWA <b>f</b> 🌶
CONTACT	EXPLORE DATA	GET INVO	PLVED
Website or general enquiries:	National picture	News and	stories

### **Factsheet list**

Factsheet list can be filtered by category (for instance, data collection, legislation, science, etc).





#### Learn / Factsheets / E.coli

### Factsheet: About E.coli

suвміттео ву Jo Bailey

PUBLISHED DATE 12 Sep 2013 *E. coli* (Escherichia coli) is a type of bacteria commonly found in the intestines of warm-blooded mammals (including people) and birds. E. coli in freshwater is not usually harmful in itself but high concentrations of this bacteria indicates faecal contamination that can be harmful to humans when certain levels are exceeded.. Too much E.coli makes the water unsafe to drink or swim in.

Common sources of *E.coli* bacteria include untreated human wastewater discharges, stormwater runoff and animal waste. Faecal microbial concentrations are also typically higher in pastoral streams, but even near-pristine streams are never totally free of faecal contamination because of faecal deposition by birds and feral mammals in their catchments. *E.coli* is measured in colony forming units (cfu) per 100mL.

### What effects E.coli?

*E.coli* concentration in streams is highly dependent on state of flow with concentrations two or three orders magnitude higher during storm flows than during base flows. It is therefore important to index faecal microbial testing of stream waters to flow when sampled.



Horizons Regional Council collecting water samples.

#### H4 heading, 18px bold

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



### Factsheet

A factsheet content page. Related factsheets and links included in the subfooter.





Get involved

### Stories, news and events from the community

### **Featured stories**



Facebook Twitter	Search	Submit photo/story/event
For enquiries about monitoring	LEARN	ABOUT
council directly. For council details see About LAWA.	Factsheets Glossary	About the LAWA project
© Copyright LAWA   Privacy   Terms   Site N	lap	

### Get Involved landing page

Top level page in the Get Involved section. Feature boxes signpost to interesting content, or buttons to view all stories or all events allows for browsing.





### Get involved

### Stories and news from the community

### Stories





#### H4 River of the month: The Raikia

23 SEP 2013 JO BAILEY

The Rakaia River is located in the Environment Canterbury Waihora / Ellesmere water management zone. The river is one of New Zealand's largest braided rivers, and is highly valued for recreational ...



#### Community planting a success at marae 20 SEP 2013 | CAMERON ASKIN

A marae-based water clean-up project is focused on engaging farmers to improve rivers and see fish numbers increase. Ruahapia Marae's Aki Paipper said Operation Patiki, which aimed to improve the...



Karori Stream volunteers replanting makes a difference 23 SEP 2013 J JO BAILEY

The FROKS (Friends of Karori Stream) group are co-ordinating the restoration of Karori Stream where it runs along the length of South Karori Road. This will involve working in with Greater Wellington's Streams Alive programme to target ...



#### River of the month: The Tukituki

23 SEP 2013 | JO BAILEY

to improve the...

The TukitukiRiver is located in the Environment Canterbury Waihora / Ellesmere water management zone. The river is one of New Zealand's largest braided rivers, and is highly valued for recreational ...



#### Community planting a success at marae 20 5EP 2013 | CAMERON ASKIN

A marae-based water clean-up project is focused on engaging farmers to improve rivers and see fish numbers increase. Ruahapia Marae's Aki Paipper said Operation Patiki, which aimed



#### Karori Stream volunteers replanting makes a difference 23 SEP 2013 | JO BAILEY

The FROKS (Friends of Karori Stream) group are co-ordinating the restoration of Karori Stream where it runs along the length of South Karori Road. This will involve working in with Greater Wellington's Streams Alive programme to target ...





The Rakaia River is located in the Environment Canterbury Waihora / Ellesmere water management zone. The river is one of New Zealand's largest braided rivers, and is highly valued for recreational ...



### Community planting a success at marae

20 SEP 2013 JANNA BROWN, OPEN LAB

A marae-based water clean-up project is focused on engaging farmers to improve rivers and see fish numbers increase. Ruahapia Marae's Aki Paipper said Operation Patiki, which aimed to improve the...



#### New MFE report released

23 JUL 2013 | CAROLINE ROWE, LAWA

The FROKS (Friends of Karori Stream) group are co-ordinating the restoration of Karori Stream where it runs along the length of South Karori Road. This will involve working in with Greater Wellington's Streams Alive programme to target ...



### **Stories list**

List of news stories, can be filtered by category.





### Get involved / Stories

### **River of the month: The Raikaia**

SUBMITTED BY Jo Bailey

PUBLISHED DATE 12 Sep 2013 Intro text. 18px/26px. The Rakaia River is located in the Environment Canterbury Waihora / Ellesmere water management zone. Again it is located in the Environment Canterbury Waihora / Ellesmere water management zone.

is located in the Environment Canterbury Waihora / Ellesmere water management zone.

Default paragraph text. 16px/26px. The Rakaia River is located in the Environment Canterbury Waihora / Ellesmere water management zone. <u>Click here inline link</u> he river is one of New Zealand's **largest** braided rivers, and is highly valued for recreational. The Rakaia River is located in the Environment Canterbury Waihora / Ellesmere water management zone. <u>Click here inline link</u> he river is one of New Zealand's **largest** braided rivers, and is highly valued for recreational.

### H3 heading, 21px bold

Canterbury Waihora / Ellesmere water management zone. <u>Click here inline link</u> he river is one of New Zealand's **largest** braided rivers, and is highly valued for recreational. *The Rakaia River* is located in the Environment Canterbury Waihora / Ellesmere water management zone. <u>Click here inline link</u> he river is one of New Zealand's **largest** braided rivers, and is highly valued for recreational.



The Raikaia River, Te Ara

#### H4 heading, 18px bold

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.



### **Related links**

- Saving water at home factsheetPlanting your garden for
- water conservation factsheet The Raikaia River site page
- Regional Council Raikaia River info 🗗

### Sumbit an event

Got a story or article to share? Submit it to LAWA:



### Story

Example story. Related links in the footer signpost to additional content.





Filter

v 0

### Get involved / events

### **Events from the community**

### **Events**



Community planting day 21 SEP 2013 | HUTT RIVER CAR PARK | GREATER WELLINGTON REGION

Community planting day to plant the eastern bank of the river. Meet at the car park at 9am. Bring gloves and a spade if you have them...



#### Tukituki River talk 20.5EP 2013 | NAPIER TOWN HALL | HAWKES BAY REGION

A talk by the local DOC ranger on the health of the Tukituki...



#### Karori Stream volunteer replanting 23 SEP 2013 | KARORI STREAM| GREATER WELLINGTON REGION

The FROKS (Friends of Karori Stream) group are co-ordinating the restoration of Karori Stream. COme and join them for a replanting session...



### Weekly river walk

23 SEP 2013 | MADEUP RIVER | AUCKLAND REGION Every week the Madeup Stream volunteer group have a nature walk followed by a talk at the RSA. New members welcome...



### Freshwater week

24 - 30 SEP 2013 | MULTIPLE VENUES | NATIONWIDE See www.freshwaterweek.com for more details...



### **International Water Day**

OI OCT 2013 | MULTIPLE VENUES | NATIONWIDE In support of United Nations International Year of Water Cooperation, this year's theme highlights tourism's role in water access and shines a spotlight on the actions currently being taken by the sector in order to contribute to a more sustainable water future...



Monthly river storytime 15 OCT 2013 | BLENHEIM LIBRARY | MARLBOROUGH REGIONAL COUNCIL

Talk for children at the library. Refreshments provided. This week, our speaker will be river scientist Maree Clark.



05

NOV

Wading birds talk

30 OCT 2013 | NELSON VACHT CLUB | NELSON REGION Renowned twitcher Cameron Askin will present a talk on native wading birds. Gold coin donation...



Invitation only event to mark the launch of the freshwater domain report...

Submit an event



#### Load more events

### **Related links**

- Saving water at home factsheet
- Planting your garden for
- water conservation factsheet
- The Raikaia River site page
- 📕 Regional Council Raikaia River info 🖻

### Sumbit an event

Got a story or article to share? Submit it to LAWA:

### Submit an event 🛗

### **Events list**

List of events, can be filtered by category or region.





Get involved / Events

### **Community Planting Day**

12 Dec 2013, 9am - 5pm | Hutt River Car Park | Greater Wellington Region



Add to your calendar

Community planting day to revegitate the east bank of the river upstream of the Hutt River Car Park. View location on google maps.

SUBMITTED BY Wellington Regional Council

Meet at the car park at 9am. Bring rubber gloves and spades. For further details see www.greaterwellington.co.nz/planting.



Hutt River

### **Further details**

Contact	Ranger Cameron Askin
Email	info@gwrc.org.nz
Website	http://creative.massey.ac.nz/about/events/events-calendar/2013/october/peter-turner-me morial-lecture/
Directions	The Hutt River Trail starts at Hikoikoi Reserve on Petone's Marine Parade or you can enter at many points along the Trail from here to Upper Hutt, 27 km away. These points include the

bridges across the river: Hutt Estuary, Ava Rail, Ewen, Melling, Kennedy-Good, Silverstream, Moonshine, Totara Park, Harcourt Park and Birchville bridges.

#### **Related links**

- Saving water at home factsheet 1 Planting your garden for
- water conservation factsheet The Raikaia River site page
- .
- Regional Council Raikaia River info 🖪

### Sumbit an event

Got a story or article to share? Submit it to LAWA:



**Report river observation** 

Follow LAWA

CONTACT	EXPLORE DATA	GET INVOLVED
Website or general enquiries:	National picture	News and stories
info@lawa.org.nz	Explore Regions	Events
Facebook	Search	Submit photo/story/event
Twitter		
For enquiries about monitoring	LEARN	ABOUT
or sites, please contact the relevant		
council directly. For council details	Factsheets	About the LAWA project

### **Event**

Example event. This can be added to online calendars via the 'add to your calendar' button. Users can submit events via the button in the footer.





### About

### LAWA is a collaboration of organiations with a common aim: to tell the story of freshwater

### **About LAWA**

This site is brought to you by the 16 regional councils or unitary authorities, the Cawtrhon Insitute, Massey Univerity, and the Ministry for the Environment. It has been enabled by funding from the Tindal Foundation. This site brings together a wide range of information that we believe will help New Zealanders - regardless of their region - make good choices about using and enjoying the resources we share. Find out more about the partner organisations below.

History of LAWA	+
Where to next for LAWA?	+

### Partners

### **Regional councils and unitary authorities**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, "ka taea e au.te Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, "ka taea e au.te

les of regional councils	gi	re	of	S	role	the	bout	lore
--------------------------	----	----	----	---	------	-----	------	------

### +

### **Cawthron Institute**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, "ka taea e au.te

www.cawthron.co.nz

#### **Ministry for the Environment**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, "ka taea e au.te

www.mfe.govt.nz

### **Massey University**

Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, "ka taea e au.te www.massey.ac.nz

Ministry for the Environment

CAWTHRON

MASSEY UNIVERSITY TE KUNENGA KI PÜREHUROA UNIVERSITY OF NEW ZEALAND

**Open Lab** 



Ko te moemoea a Maui kia haere ngatahi ai ratou ko ona tuakana ki te hii ika. I te hokinga mai o ona tuakana ki tatahi, ka kii atu a Maui, "ka taea e au.te www.openlab.ac.nz

**Regional Councils** Click on a council for more details:







### About section landing page

Information about the LAWA website, and all the partners involved. Clicking on the council opens a council page.





### **Horizons Regional Council**

#### Manawatu-Wanganui Region >

+

+

0800 Horizons contact@horizons.govt.nz www.horizons.govt.nz

The Horizons Region covers a large part of the central to lower North Island and is home to a wide variety of landscapes from mountains and ranges to fertile coastal floodplains. It stretches from just north of Taumarunui to south of Levin on the west coast, and across to the east coast from Cape Turnagain to Owhanga.

#### What are we doing about water quality?

At 22,215 sq km the region (also known as the Manawatu-Wanganui Region) accounts for approximately 8.1% of New Zealand's land area and is home to about 220,000 people.

#### Another subheading

Horizons manages increasing pressure on both surface water and groundwater. Farming, towns and industry require consents to take water out of the rivers and any potential contaminants that could impact on the health of our waterways are closely monitored.

#### **Closed subheading**

**Closed subheading** 

Latest news and stories >

Improving water quality the focus of resumed deliberations

Local water quality 'about perception'

NZ helps protect lagoon water quality in the Cook Islands

### Upcoming events >

Submit an event

12 FEB

Water Quality Matters roadshow Horizons Regional Council Palmerston North Massey Campus



Planting Day Friends of the Walkato Bridge Car Park, Hamilton



#### Public Meeting, Tukituki Dam Project Hawkes Bay Regional Council

Council Officers, Napier

Submit a story 🔳

Published 21/05/2013

Published 21/05/2013

Published 21/05/2013

Follow LAWA Share LAWA 🕇 🎾 **Report river observation** CONTACT **EXPLORE DATA** GET INVOLVED

Website or general enquiries: info@lawa.org.nz Facebook Twitter	National picture Explore Regions Search	News and stories Events Submit photo/story/event	
For enquiries about monitoring	LEARN	ABOUT	
council directly. For council details see About LAWA.	Factsheets Glossary	About the LAWA project	
© Copyright LAWA   Privacy   Terms   Site M	lap		

### **Council profile**

Example council page.

