



LAGOON & RIVER MOUTH

LOCATIONS, ACCESS & OPENING INSTRUCTIONS

HAWKE'S BAY



Original version: c.1999, by [REDACTED]

Revised: Thursday, 15 July 2021 by: [REDACTED], Officer Schemes

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General Introduction

HBRC Protocol

1. Hawke's Bay river mouths are monitored by HBRC staff including:
 - a. Engineering Officer Schemes.
 - b. Ranger
 - c. Engineering Cadet (Wairoa)
 Monitoring frequency increases in adverse conditions or when adverse conditions are predicted.
2. **Rationale: HBRC open river mouths for flood protection, or if there is a threat to life, property, or critical infrastructure (such as roads and services).** Generally, not for crops and orchards.
3. Ideally all openings should be undertaken at low tide with a relatively flat sea however judgement should be used when severe flooding is likely to occur (may be opened in high seas or any time of tide).

Relevant Information

1. Conditions affecting river mouth states are low flows, sea swell, tide height and river fresh's. These can act independently or in unison.
2. HBRC River Levels & Flows information: <https://www.hbrc.govt.nz/environment/river-levels>
3. A 1.9m high tide is equivalent to approx. 10.87m datum (and that is subject to further sea level rise).
4. Data from Hawke's Bay Regional Council's surface water network of automatic river level recording stations throughout the region. Also links to data on river flows and low flows and irrigation bans. HydroTel information: <https://data.hbrc.govt.nz/hydrotel/cgi-bin/hydwebserver.cgi/points/details?point=3474>
5. Wairoa does not have stop banks – there is an expectation for river mouth opening instead.
6. HBRC Project Codes:

261000	River & Lagoon Openings
261001	Nuhaka
261002	Waihoratuna
261003	Whakaki
261004	Wairoa
261005	Waihuia
261006	Te Ngaru
261007	Esk
261008	Tukituki
261009	Maraetotara
261010	Ngaruroro
261011	Pourere Stream Mouth Relocation
261012	Opoutama Stream
261013	Mohaka River
261014	Mangakuri
261015	Waipatiki
261019	Management General

Relevant Legislation

River mouth openings for the purpose of flood mitigation are permitted under Rule 70 of the Regional Resource Management Plan (RRMP)¹. The powers, functions and duties of a local authority include 'river mouth openings for the purpose of flood mitigation'.

¹ Hawke's Bay Regional Resource Management Plan (1 October 2015). Part 6.8.3 River Control & Drainage Works & Structures. Page 187. <https://www.hbrc.govt.nz/assets/Document-Library/Plans/Regional-Resource-Management-Plan/View-RRMP/New-Chapter-6.pdf>

Under the RRMP, the Councils level of service is around public health and safety, protecting civil road networks and habitable buildings. This does not include short-term flooding of low-lying orchards and farmland.

6.8.3 RIVER CONTROL & DRAINAGE WORKS & STRUCTURES

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	No
70 River control & drainage works & structures Refer POL 79	<p>Any activity, as described in the Hawke's Bay Regional Council Environmental Code of Practice for River Control and Drainage Works (1999), that is carried out by a local authority exercising its powers, functions and duties under the Soil Conservation and Rivers Control Act 1941, the Land Drainage Act 1908, or the Local Government Act 1974, in relation to flood control and drainage, including:</p> <ul style="list-style-type: none"> • edge protection works • planting • river protection maintenance works • irrigation intake maintenance • weed and vegetation control (excluding spraying) • drain maintenance, and drainage outlet maintenance • drain crossings • river mouth openings for the purpose of flood mitigation • river management and drainage for the maintenance of surface water quality • channel diversions within a river bed or drain, ancillary to the above activities <p>that would otherwise contravene:</p> <ul style="list-style-type: none"> • section 13 or section 14 of the RMA, or • section 15 of the RMA in relation to the discharge of sediment. 	Permitted ¹⁵⁴	<p>a. The activity or structure shall be undertaken in a manner that continues to provide for the existing passage of fish past the structure.</p> <p>b. The appropriate Fish and Game Council, iwi and Department of Conservation office, shall be notified at least 5 working days before any channel diversion is undertaken.</p> <p>c. There shall be no discharge of contaminants, other than sediment, arising from the use of machinery in the bed of any river or lake.</p> <p>d. The activity shall not adversely affect any wetland.¹⁵⁵</p> <p>e. All activities shall be undertaken in accordance with the Hawke's Bay Regional Council Environmental Code of Practice for River Control and Drainage Works, 1999.</p>		

Rivers Control Act 1941 or the LGA legislation may also cover this. The Ecological Management and Enhancement Plan² includes the following:

5.2 Management of the coastal gravel beach

5.2.1 Disturbance from machinery access for river mouth opening

5.2.1.1 Objective

Avoid unnecessary disturbance to the gravel beach habitat, flora and fauna, in particular to breeding black-billed gulls and white fronted terns, and also banded dotterel by machinery entering the gravel beach for river mouth opening.

5.2.1.2 Methods

Access to the gravel beach for river mouth opening in accordance with the coastal beach management zone rules: access to the beach for this purpose shall be carried out in accordance with the coastal beach management zone rules (below).

Information supplied to key staff and operators: provide key HBRC staff and contractors with information and any other required training on identification of these birds, their nesting habits and some background information on their current threatened status.

² Ngaruroro River Flood Protection and Drainage Scheme Ecological Management and Enhancement Plan. Chapter 3 - Page 19, Part 5.2.1 <https://www.hbrc.govt.nz/assets/Document-Library/Publications-Database/4276-AM11-04-Ngaruroro-Ecological-Management-Plan.pdf>

Coastal beach management zone.

Access for river mouth opening:

- a) Vehicles accessing the gravel beach for river mouth opening purposes shall adhere to a single path for their return trip and will avoid areas which are (at the time of the visit) suspected to be used by the following birds for breeding:



banded dotterel



black-billed gull



white fronted tern

To help with compliance with 'a)' above, breeding occurs during the following periods for each species:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Banded dotterel												
Black-billed gull												
White fronted tern												

Note: shading denotes months where breeding of the respective bird species is likely to occur.

Indicative extent of coastal beach management zone:



Note that the actual river mouth location varies considerably over time.

Climate Change

Rivers at their headwaters are very dynamic, energy exchanging systems. Reductions in riverine flow coupled with intensified wave action and tidal elevation can cause river mouths to close. Currents, swell direction, spring tides and discharge rates are all accumulative influences to river mouths meander and migration.

Climate change predictions for the region indicate sea level will rise, rain-fall runoff events will increase in intensity, average rainfall and mean flows will decrease, and swell conditions may intensify slightly. There is uncertainty in the how much these changes will be. Bearing in mind that these are long-term average changes. There are also cyclic inter-annual and inter-decadal climate cycles that also create changes in the climate.

The period and amplitude of these cycles can be so long and intense that can be perceived as the anticipated arrival of climate change. However, it is evident climate change will produce an increase in the frequency and effort required in the operations related to river mouth openings (Jose Beya, Luke Davis, 2020).

Sea level rise

Beach crests and gravel barriers will naturally adapt, no significant changes will be adopted for opening operations. Sea level rise may also create the flattening of the beach crest slopes in the lower reaches and a backwater effect that may increase flooding in those reaches. This may cause more frequent openings to reduce the risk of flooding near river mouth headwaters. There will be a point in time, when the sea level may flood low lying properties (i.e. at every high tide) due to the filtration of seawater through the mouth beach crest and along the river or when a high tide is combined with a minor rainfall-runoff event that today does not cause flooding. This problem is beyond the river mouth opening operation and requires a deeper and more comprehensive climate change adaptation strategy (Jose Beya, Luke Davis, 2020).

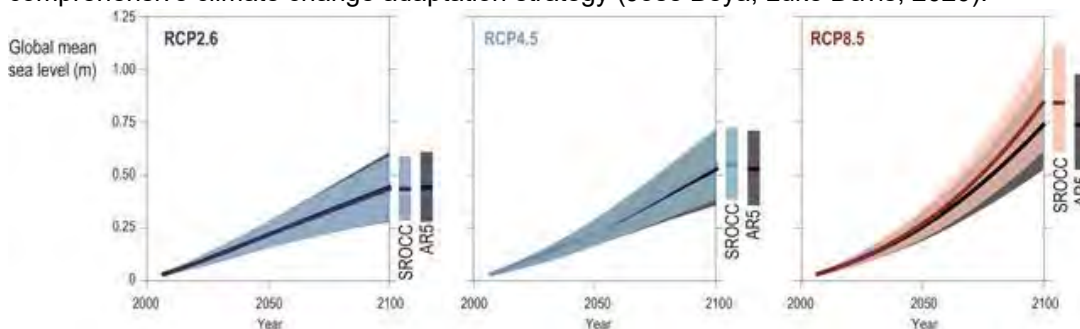


Table 1: Presents an analysis of sea level rise over the next century.

Swell

Intensification of wave conditions will mean that opening operations may be more difficult, especially during the dry season with low flow rates. It may also mean that the beach and gravel barrier crests are higher so the opening operation may take longer and be more costly. Swell greater than 1.5 meters may postpone opening times of the region’s river mouths, in these conditions, mouths are susceptible to closing upon high tide. Wave intensities are gauged by height (in meters) and period times (in seconds) between waves (refer to image 1).



Image 1: 3m swell with wave a period of 16 seconds observed at Whirinaki, Esk River (24 May 2021).

Tides

The term 'spring tide' is easily confused with the season of spring, but is derived from the concept of the tide 'springing forth'. Spring tides or more commonly known as 'king tides' can occur up to three to four times a year (or twice each lunar month), it is when the moon's alignment with the sun and earth causes a tidal bulge where high tides are a few centimeters greater than normal high tides. A spring tide coupled with wave action can increase sediment transfer along the coast, reduce flow rates of river mouths and cause them to close. Responses to best manage this phenomenon may require faster responses, and potentially more frequent openings (Jose Beya, Luke Davis, 2020).

Rainfall

Intense seasonal rainfall events are expected to occur more frequently with greater more widespread flooding near low-lying regions. Increased evapotranspiration rates coupled with higher mean annual temperatures during the dry season may cause heavy and sometimes unpredictable convectional rainfall to occur in catchment areas. Frontal (or cyclonic) rainfall events may persist with extended intensities which may widen the breadth and depth of river channels. In a conservative view, increases in the intensity of rainfall-runoff events may require faster responses and maybe more frequent openings (Jose Beya, Luke Davis, 2020).

Drought

Opening blocked river mouths during the dry season may drain estuaries and produce a loss of habitat. More frequent monitoring is required due to low flows and the sensitivity of marine ecology with lower oxygenation levels at river mouth headwaters (Jose Beya, Luke Davis, 2020).

Seasonal variations

Rising mean annual temperatures (or global warming) is directly linked to seasonal disparities, rising sea levels, and shifting climate zones globally. Global average temperature increase will result in a shift of seasonal crop production areas, shorter winters and longer summers. The frequency of mechanically opening closed river mouths may increase during summer months, low flows combined with large swell and tidal events will outcompete headwater discharge rates. Responses may include more frequent monitoring of river mouth statuses and strategic planning for forecast swell and tidal events. (Jose Beya, Luke Davis, 2020).

Methodology

It is the Officer of the Council's responsibility to monitor swell, tide, and rainfall forecasts prior to conducting a visual inspection of river mouths on a weekly basis. Including more frequent monitoring in response to coastal and weather events. Upon an inspection, an Officer of the Council must report the channel stats, monitoring status, water levels, height of beach crest, tidal and swell conditions to Asset Management's 'Surveillance and Field Reports' channel on Microsoft Teams. An inspection report must include the following.

1. Channel status: Open/closed/straight/dogleg/etc.
2. Monitoring status: No concerns (open), monitor (closed – water levels nearing trigger point), requires opening (closed – water level exceeding trigger point)
3. Water levels in estuary: ideally from staff gauge or fixed reference (i.e. bridge).
4. Height of beach crest (in meters): above estuary/lagoon water level.
5. Tide status: At time of inspection and high tide rises in relation to estuary/lagoon water levels.
6. Swell forecast;
 - o <http://www.swellmap.com/surfing/new-zealand/>
 - o <https://www.surf-forecast.com/regions/Hawkes-Bay>
 - o <https://www.windy.com/-/Waves-waves?waves,-39.487,177.095,11>
7. Check metrological/weather forecasts prior to inspection
 - o <https://www.metservice.com/towns-cities/locations/hastings>
 - o <http://www.metvuw.com/forecast/forecast.php?type=rain®ion=nz&noofdays=10>
 - o <https://www.windy.com/-/Rain-thunder-rain?rain,-39.100,177.617,9>
8. Any threat to life or property, and services (roads, infrastructure).

In response to an extreme natural event, such as a tsunami or flood, the Officer of the Council must inform floodplain landowners of Civil Defense warnings, potential hazards to property, roads, welfare and ensure they have an adequate emergency management plan to evacuate at short notice.

To ascertain more information relating to floodplain landowners refer to Lagoon and River Mouth Opening Instructions.

1. Ōpoutama Stream (261-012)

Definition: Ō (has, have, own), pou (post or appoint), tama (son, boy, nephew); shimmering waters

Contacts

Mouth monitored periodically by Engineering Cadet ([REDACTED])

Local landowners carry out more frequent monitoring:

[REDACTED]
[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]
[REDACTED]



Contractors

[REDACTED] open the mouth (Ph. [REDACTED] or Ph. [REDACTED], [REDACTED], Ph. [REDACTED] or, [REDACTED], Ph. [REDACTED] 766). If they are unable to then it is their responsibility to arrange an alternative contractor.

Maximum water level

Check levels at Ōpoutama Stream – By school.

Notes

Approximately 15ha of pastoral land and the Ōpoutama School are immediately affected. ([REDACTED] Property)

We have written instructions from Tranz Rail not to excavate more than 0.90m below existing bed level (no bed level RL given).

One major floodgate silts up and becomes blocked if stream levels are high.

The Ōpoutama loop road and bridge become impassable.

Ideally all openings should be undertaken at low tide with a relatively flat sea.

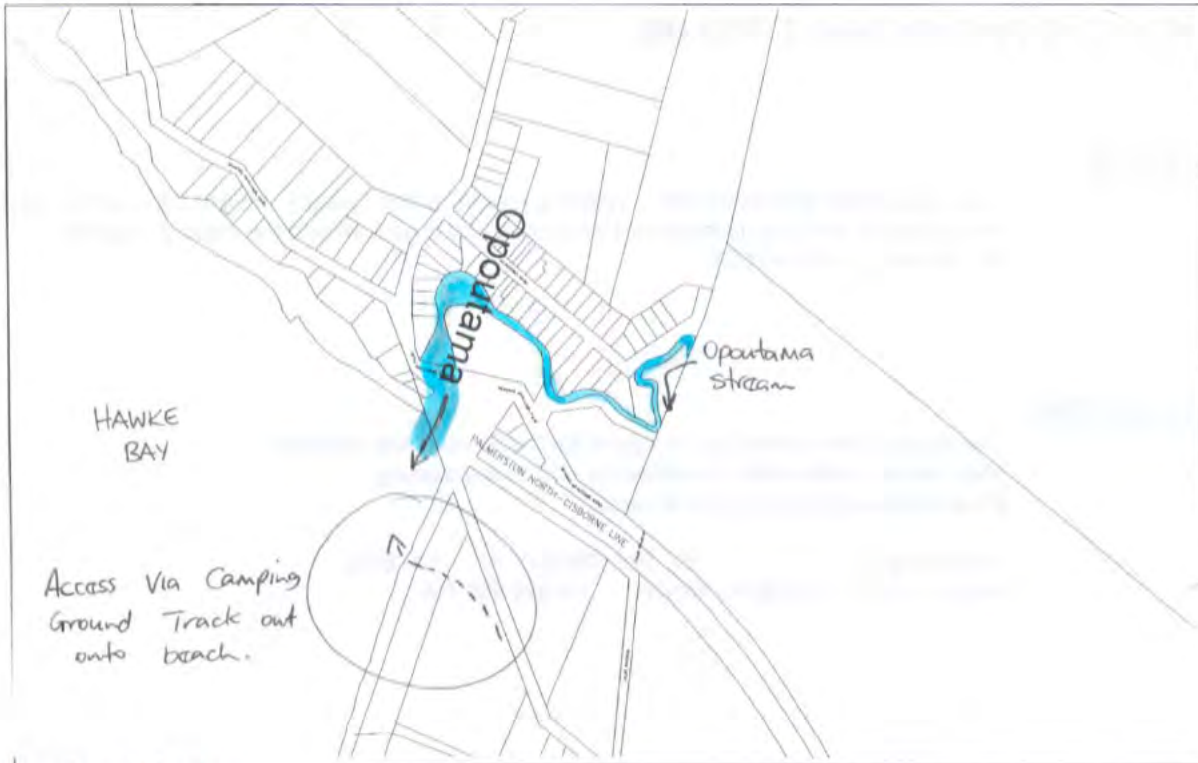
Excavated material is to be stockpiled clear of the mouth to minimise chances of re-blocking.



Ōpoutama Stream

Location and Access

Ideal



Location of Mouth



2. 261-001 Ngā Nūhaka Taku Awa

Contacts

Mouth monitored periodically by Engineering Cadet ([REDACTED], Ph. [REDACTED])

Local landowners carry out more frequent monitoring:

[REDACTED]
 [REDACTED] Farms left bank of the lower reaches, is the first person affected and contacts HBRC to notify.



[REDACTED]
 [REDACTED]

[REDACTED]
 [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED] ■ [REDACTED]
 [REDACTED]

[REDACTED] 975).

[REDACTED], Aramatua Station Manager (Ph. [REDACTED]). Contact prior to crossing farmland to access river mouth at intersection of Riripeti Street and Tamakahu Street.

Cost

Approximate cost to open: [REDACTED] +GST (2019-20).

Contractors

[REDACTED] open the mouth (Ph. [REDACTED]). If they are unable to then it is their responsibility to arrange an alternative contractor ([REDACTED]).
 [REDACTED]

Maximum water level

On staff gauge at Nūhaka town bridge pillar (right bank) and at [REDACTED] property

12.500-13.100m Monitor

13.200m Open

Notes

Closes frequently and has low-lying farmland and dwellings at risk. [REDACTED]
 [REDACTED]
 [REDACTED] A small number of houses in the Nūhaka Township and up to 10ha of farmland are affected. At high levels, stop-banks protecting approximately 55ha of farmland are threatened. Rises in river levels can be very rapid due to frequent intense rainfall in the catchment. Mouth will often scour itself out at low tide so if there is an overnight delay prior to a mechanical opening, get [REDACTED] to check if an opening is still required. [REDACTED] (who opened the

mouth with a shovel as a child) suggested alternating the opening alignment to avoid the sand bar. Ideally, all openings should under-taken at low tide with a relatively flat sea.

Ngā Nūhaka Taku Awa

Location and Access



Ideal Location of Mouth



3. Tāhaenui River

Definition: Tāhae (stealing, thieving, dishonest, fraudulent), nui (to be large, big, many, plentiful, numerous, great, abundant, ample, superior, of high rank, important).

Contacts

The mouth is monitored periodically by Engineering Cadet [REDACTED]

Tāhaenui Station [REDACTED]

Opoho Station [REDACTED]).



Contractors

[REDACTED] open the mouth (Ph. [REDACTED]). If they are unable to then it is their responsibility to arrange an alternative contractor ([REDACTED]).

[REDACTED]

[REDACTED]

Maximum water level

Nothing established at present.

Notes

This mouth rarely required a mechanical opening.

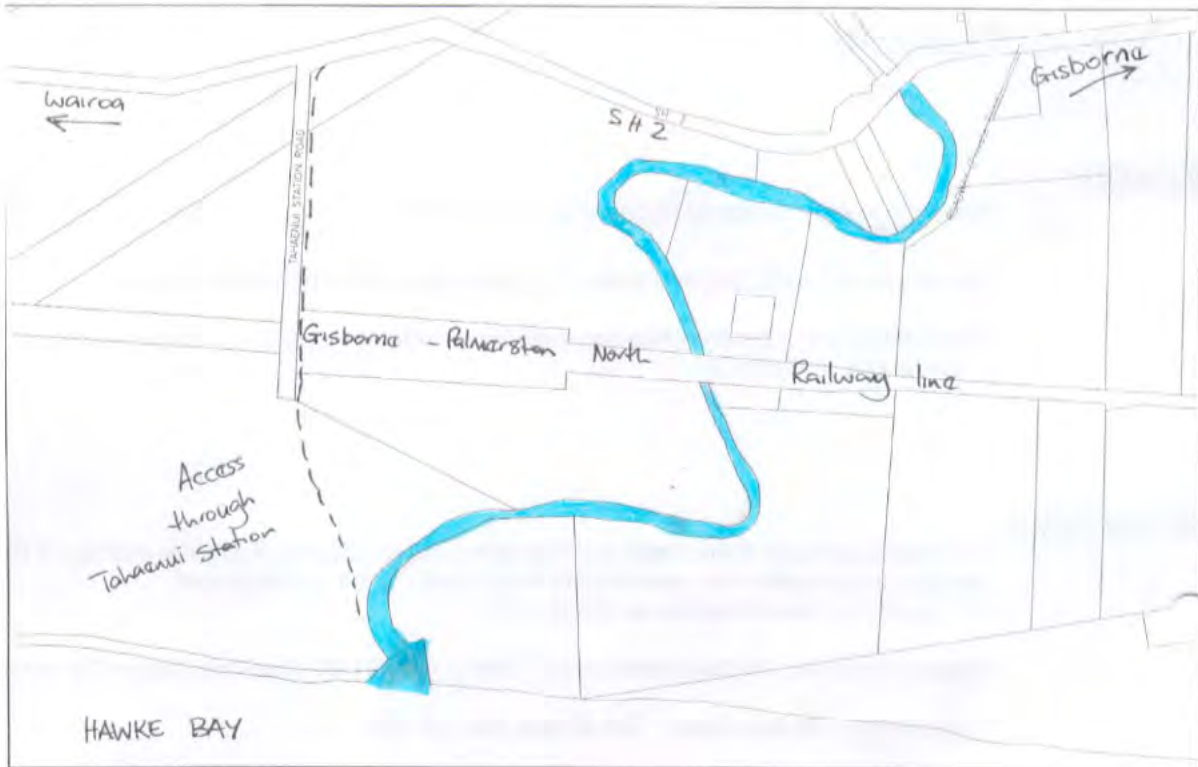
Mainly required for re-alignment purposes when mouth has become inefficient.

Ideally all openings should be undertaken at low tide with a relatively flat sea.

Excavated material is to be stockpiled clear of the mouth to minimise chances of re-blocking.

Tāhaenui River

Location and Access



Contact manager of Tāhaenui Station for access details Ph. [REDACTED].

Ideal Location of Mouth



4. Opoho Stream

Definition: The Opoho Wairere (stream) is of integral cultural significance to Ngāti Teipu, Ngāti Hinepua, Ngāti Hine and hapū of and hapū of Te Whakakī Nui-a-Rua. Historically, the wairere lies adjacent to numerous pa tuna sites.

Contacts

Mouth monitored periodically by Engineering Cadet ([REDACTED])

Local landowners carry out more frequent monitoring.

Iwi contact: [REDACTED]

Contractors

[REDACTED] open the mouth [REDACTED]
[REDACTED] If they are unable to
then it is their responsibility to arrange an
alternative contractor [REDACTED]
[REDACTED]

Maximum water level

Nothing established at present.

Notes

Occasionally this mouth requires re-alignment as long periods of restricted flow causes over siltation of the waterway and upstream drainage scheme problems.

Ideally, all openings should be undertaken at low tide with a relatively flat sea.

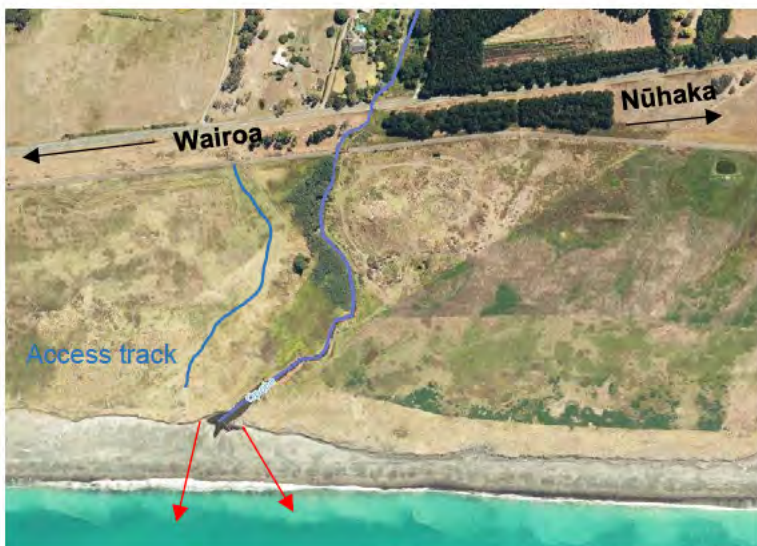


Opoho Stream

Location and Access



Ideal Location of Mouth



5. 261-003 Whakakī-Nui-ā-Rua Lagoon

Definition: Whakakī, (to fill). Whakakī-Nui-ā-Rua Lagoon is of spiritual and cultural significance to Ngāti Hinepua, Ngāti Hine and hapū of Te Whakakī Nui-a-Rua. Successive generations were dependent on the lake and associated natural resources for survival. Over time the lake has become a central feature of local hapū identity, highly valued, respected and admired.

Contacts

Mouth monitored periodically by Wairoa Area Manager [REDACTED] and Engineering Cadet [REDACTED]



Whakakī Trustees, Whakakī Lake Trust Chairman,
[REDACTED]

Local landowners carry out more frequent monitoring.

Contractors

[REDACTED] open the mouth (Ph. [REDACTED]). If they are unable to then it is their responsibility to arrange an alternative contractor ([REDACTED])

Maximum water level

11.80m on the staff gauge situated beside SH2.

Notes

In 2017, HBRC and Whakakī Lake Trust met to discuss a permanent solution with the Regional Council committing to advance a plan for a permanent weir to manage the lake level.

The lake level must be quite high for an effective mechanical opening to be successful.

Weir being discussed. Includes forced closure.

BUT KEEP IN MIND THAT:

Several hundred hectares of highly productive pastoral land is severely affected at high levels.

Existing subsurface drainage of surrounding land becomes ineffective at high levels.

Floodgate outlets into the Tuhara Drain are affected and increased siltation is a problem in the lower Rama Rama Drain.

When necessary Te Whakakī is opened at Paaka, located at the end of the Rahui channel. These openings are decided by the Te Whakakī Lake Trustees, but managed by HBRC. Te Whakakī Lake Trustees do not open between 1 September and 20 March because of the risk of the lagoon drying out over summer.

In recent years summer openings have been followed by trial forced closings. Planning of these trial closings can be more complex than the openings. Attempting to open when conditions aren't suitable often leads to the mouth closing rapidly and the excess water failing to drain away. Ideally all openings should be undertaken at low tide with a relatively flat sea.

Whakaki-Nui-ā-Rua Lagoon

Location and Access



Ideal Location of Mouth



6. 261-002 Waihoratuna Channel/Ohuia Lagoon

Definition: Waiho, (to let be, leave alone), ra, (over there), tuna (eel of various species, including the longfin eel and shortfin eel).

Contacts

Mouth monitored periodically by Engineering Cadet [REDACTED]

Ohuia Station Farm Manager, [REDACTED]



Contractors

[REDACTED] open the mouth (Ph. [REDACTED]). If they are unable to then it is their responsibility to arrange an alternative contractor [REDACTED]

Maximum water level

13.50 on staff gauge beside Waihoratuna pump house.

Notes

Low point in stop bank, left bank Waihoratuna above Woolsheds Bridge.

Sea conditions need to be good for mechanical opening to be successful (although one of easiest in Wairoa).

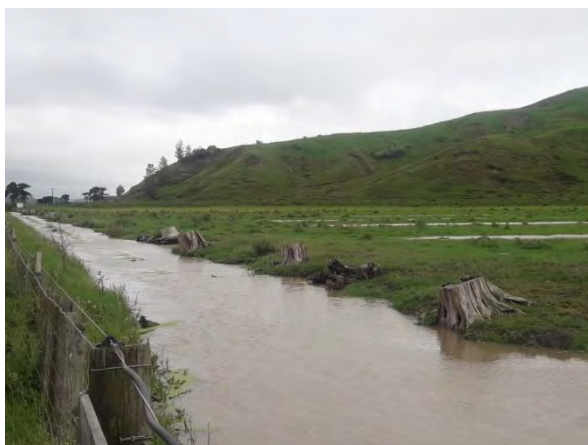
Can blow itself open.

Water level in Ohuia Lagoon needs to be quite high.

Ideally all openings should be undertaken at low tide with a relatively flat sea.

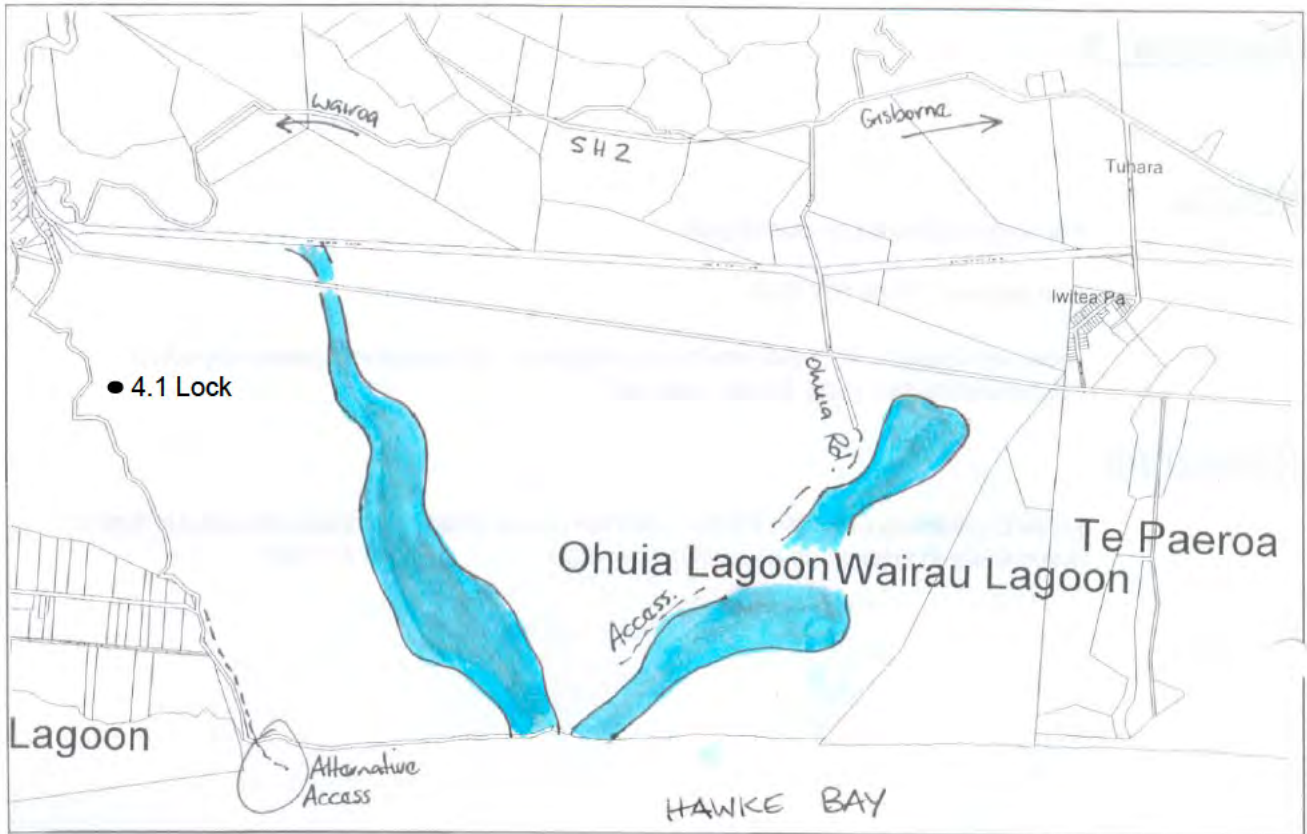
Will open itself if enough flow. With low flows and southerly swells we have had to mechanically open more often of late.

The Waihoratuna lagoon is an integral part of Ohuia Stations flood control scheme, with the Ohuia lagoon entering the Waihoratuna through a 40-metre long 600mm pipe. When this outlet is blocked with sand, we open the Waihoratuna as close to the eastern side of beach as possible, this will scour and clear outlet.



Waihoratuna Channel/Ohuia Lagoon

Location and Access



Access through Ohuia Station and on past the woolshed. (Contact the station manager for additional information)

Ideal Location of Mouth



261-004 Wairoa River

Definition: Te Wairoa Hōpūpū Hōnengenge Mātangirau.

Contacts

Mouth monitored periodically by Engineering Cadet [REDACTED]

Contractors

[REDACTED] open the mouth (Ph. [REDACTED]). If they are unable to then it is their responsibility to arrange an alternative contractor ([REDACTED]).



PLEASE NOTE: If the mouth is partially closed or restricted, or is not in a very good position, then attention to weather forecasts and sea conditions is required as mechanical openings of this mouth may normally involve quite an extensive operation, sometimes-taking days to complete.

Maximum water level

11.65m which is the top of the timber piles of the old pier out by the coast.

Notes

The potential for damage due to flooding caused by a river mouth blockage is significant.

Numerous small pastoral and residential properties in the Kihitu and Kopu Road areas are also affected.

Access Roads into Whakamahi and Kihitu become blocked.

After taking the above into consideration, a significant head of water in the river along with favourable sea conditions is required for a successful mechanical opening.

Ideally, all openings should be undertaken at low tide with a relatively flat sea.

Excavated material is to be stockpiled clear of the mouth to minimise chances of re-blocking.

The mouth's position is highly dynamic, migrates east toward Pilot Hill and west dependant on swell direction and intensity.

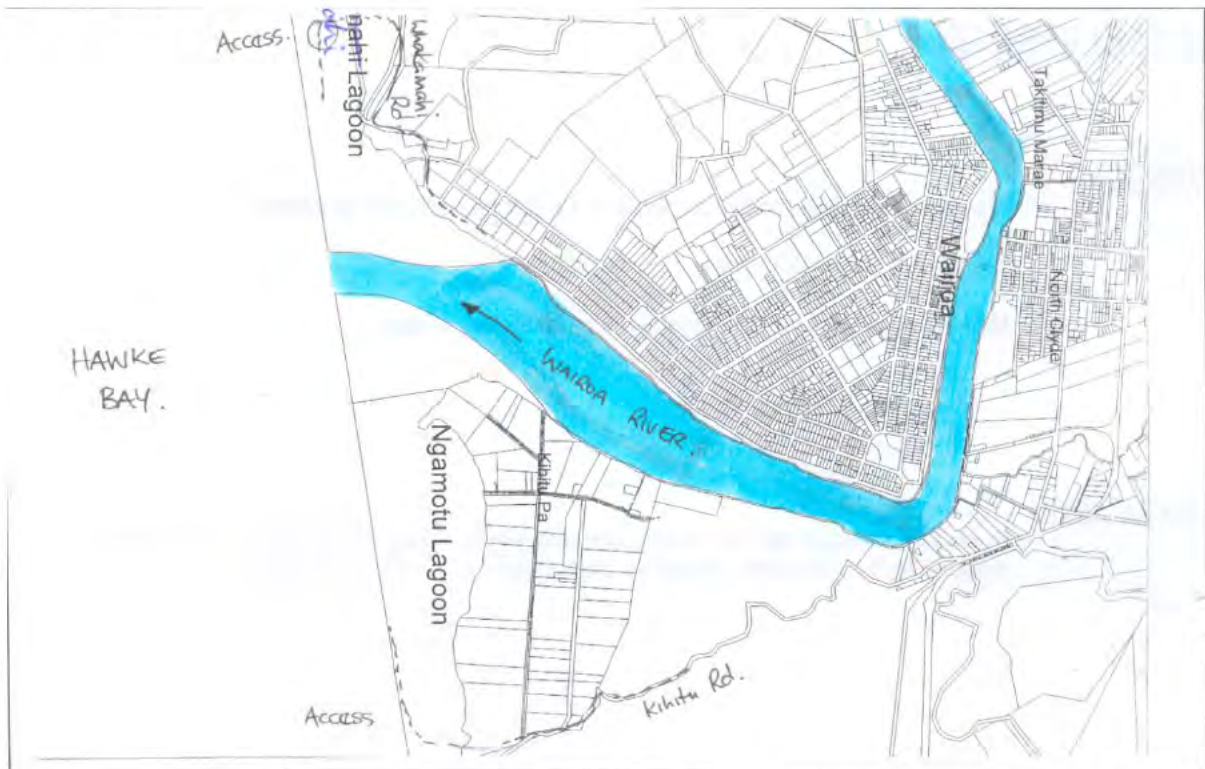
Notable erosion at Pilot hill carpark.

- For a successful realignment of the Wairoa bar, river needs to completely close, gain a substantial head of water, and then we recut to the old pile lines.



Wairoa River

Location and Access



Access is available from both side of the river. From the Northern side go through the gate and follow the track off Kihitu Road (it follows around the toe of the hill). Southern side access is off the end of Whakamahi Road.

Ideal Location of Mouth



Waihua River

Location and Access



Access off the end of Waihua Beach Road.

Ideal Location of Mouth



8. 261-013 Mōhaka River

Definition: Mōhaka, ('place for dancing')

Traditionally, there were many pā, kāinga, cultivations, mahinga kai and urupā – many listed by people in Waitangi Tribunal evidence as being used in remembered history and since 1840. The landscape is a culturally dense one loaded with a wealth of place names and remembered events

The upper Mohaka includes the overlapping areas of interest of four treaty settlement entities: Ngāti Hineuru, Ngāti Pāhauwera, Ahuriri Hapū and Ngāti Tūwharetoa.



Contacts

Mouth monitored periodically by Engineering Cadet [REDACTED]

Local landowners carry out monitoring.

Contractors

[REDACTED] open the mouth (Ph. [REDACTED] If they are unable to then it is their responsibility to arrange an alternative contractor ([REDACTED])
[REDACTED]
[REDACTED]

Maximum water level

Erosion of the right bank and maintaining access via the public road on the right bank is what determines the need for an opening.

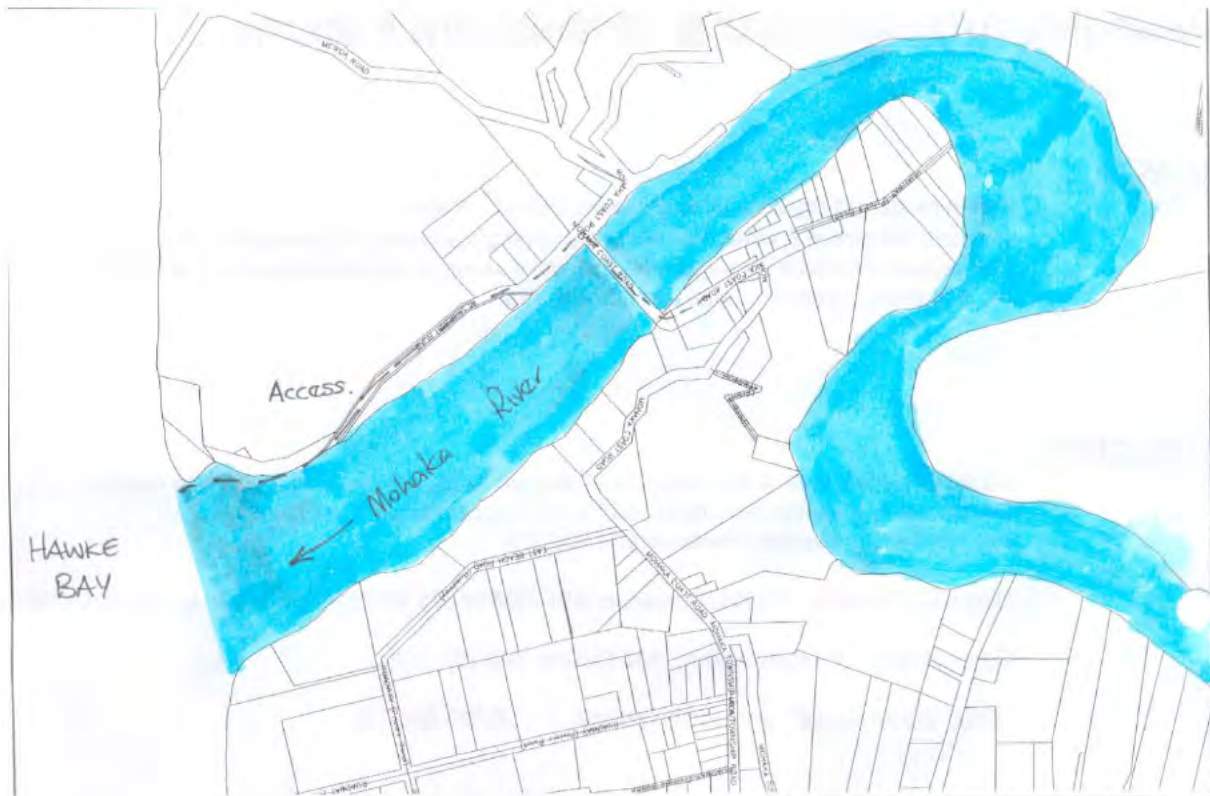
No actual level established.

Notes

Ideally, all openings should be undertaken at low tide with a relatively flat sea.

Mōhaka River

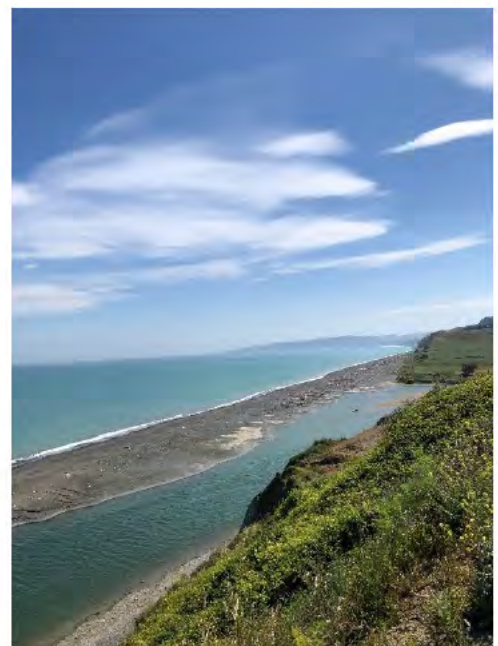
Location and Access



Access across bridge to right bank, then off the end of West Beach Road.

Ideal Location of Mouth

Ideal location is down the centerline of the mouth.



9. Waikari River

Definition: Waikari, (ditch, drain).

Contacts

Mouth monitored periodically by Engineering Cadet ([REDACTED])

[REDACTED]
[REDACTED] lives at mouth on left bank.

Contractors

No specific contractor used. Organise on a case-by-case basis.

Maximum water level

Nothing established at present.

Notes

DOC camping ground affected in flood type situations, otherwise no low lying land affected.

Ideally, all openings should be undertaken at low tide with a relatively flat sea.



Waikari River

Location and Access



Ideal Location of Mouth

Access via Tait Rd



10.261-006 Te Ngarue and Pakuratahi Streams

Definition: Ngarue (to shake, move to and fro).

Contacts

Mouth monitored regularly by Engineering Cadet [REDACTED]

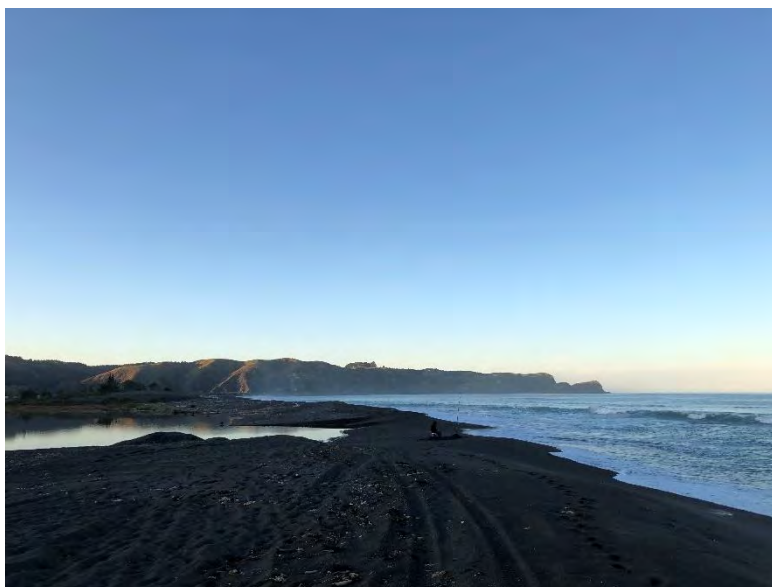
[REDACTED] opens the mouth.

[REDACTED]
[REDACTED]

[REDACTED] Orchard Manager

[REDACTED]

[REDACTED] Confluence landowner ([REDACTED]) often ring to say it requires opening.



Iwi Contacts: Maungaharuru-Tangitū Trust (Petane Marae, Tongoio Marae Ph. [REDACTED], www.tangoio.maori.nz).

[REDACTED] If not available, [REDACTED] Kaiwhakahaere Tari – Office Manager. Ngāti Pāhauwera Development Trust, [REDACTED]

[REDACTED]

Contractors

[REDACTED] [REDACTED] Ph. [REDACTED]). If they are unable to then it is their responsibility to arrange an alternative contractor.

[REDACTED]

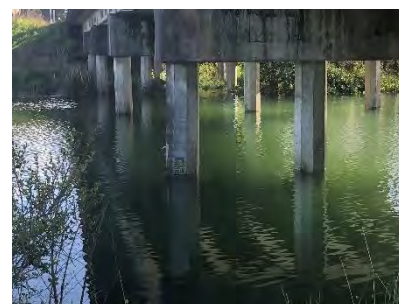
HBRC Works Group [REDACTED]

Maximum water level

Staff gauge located alongside right bank on Pakuratahi Bridge

10.300-10.700m Monitor

10.800-11.000m Open



Cost

Approximate cost to open: [REDACTED] +gst.

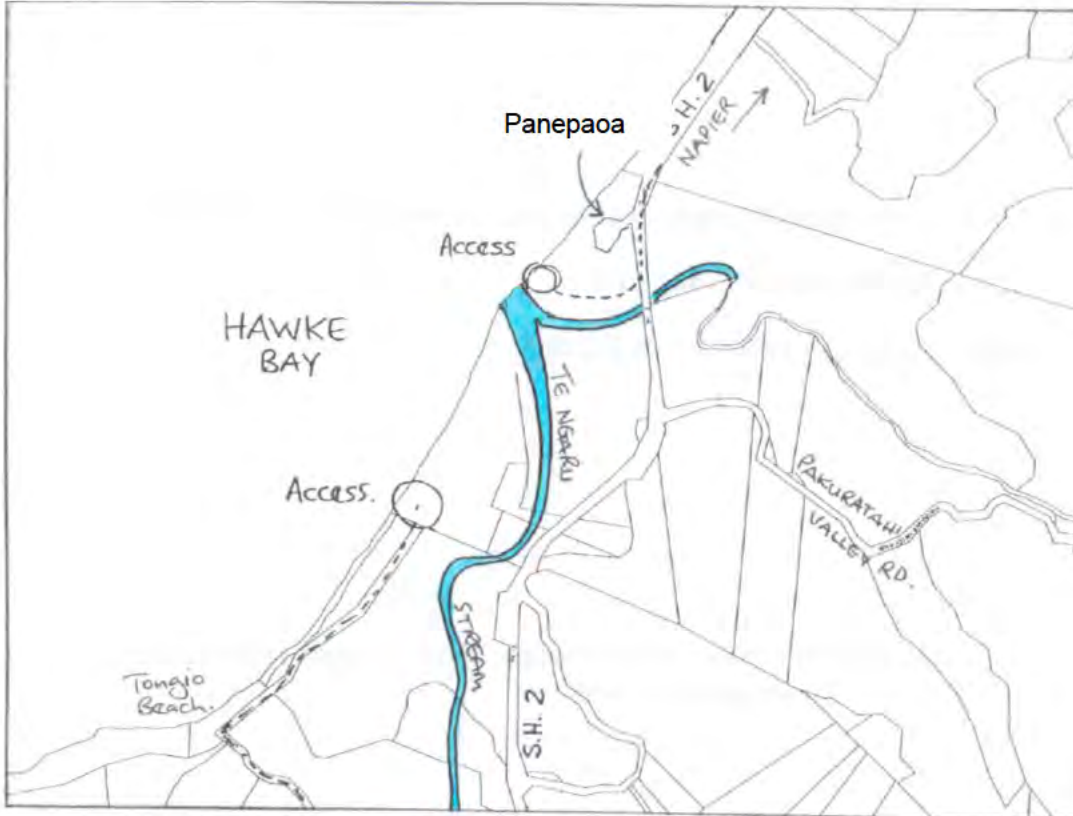
Notes

[REDACTED]. However, with both streams at higher levels, up to four properties affected including a Market Garden and extensive cropping land. Gravity drainage for the Market Garden and a floodgate from a significant tributary affected by high water levels. Ideally, all openings should be undertaken at low tide with a relatively flat sea. "Panepaoa" is a place name given to the urapā/limestone monument. It is thought a Māori Tohunga used to ram a post on the ground causing vibrations through

the sea bed stopping the whales coming through the rocky channels and beaching themselves. The urapā is thought to be in the northern vicinity of “Panepaoa”.

Te Ngarue and Pakuratahi Streams

Location and Access



Can unload at the car park area beside “Panepaoa” on SH2. Otherwise, access is from Tangoio Beach depending on which side of the existing mouth the new mouth is to be established.

Ideal Location of Mouth

Walk along beach crest until the two marker poles line up. As shown on the diagram below.



11.261-007 Te Wai-o-Hinganga (Esk) River and Whirinaki

Definition: Either from British word 'isca' meaning water (the rivers Axe, Exe and 'Esk' have the same origin) or meaning 'abounding in fish'.

Contacts

Mouth monitored regularly by Engineering Officer – Rivers [REDACTED]

[REDACTED] is usually the first person to notify us when mouth is closed and water level is rising. He lives on left bank downstream of SH5 [REDACTED]



[REDACTED] owns horticulture block on the right bank [REDACTED]

Panpac: Has issues with tower drain and salt-water intake at high levels. Contact [REDACTED] before opening.

Contractors

[REDACTED] If they are unable to then it is their responsibility to arrange an alternative contractor

HBRC Works Group [REDACTED]

Cost

Approximate cost to open: \$ [REDACTED] +gst.

Maximum opening water level

Bottom of soffit level on the small bridge over the Whirinaki drain down stream of SH5 (see diagram on opposite page).

Notes

Approximately five ha of [REDACTED] land is flooded when water level exceeds soffit level on bridge.

River edge protection planting maybe affected by salt-water inundation.

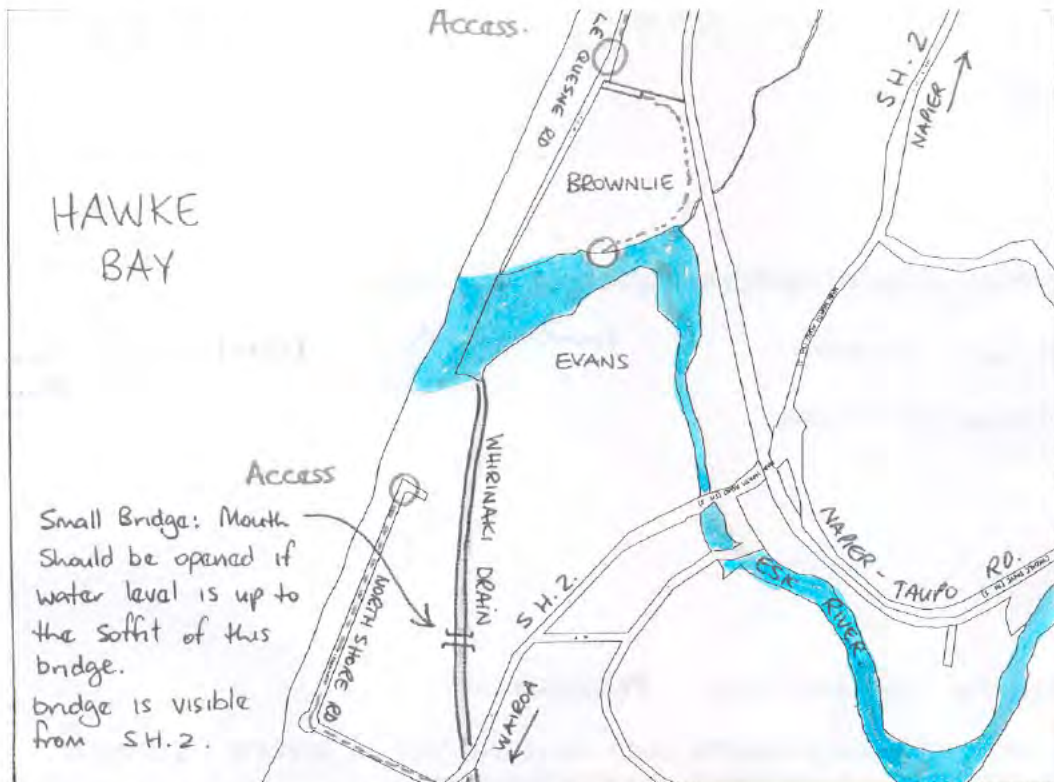
Mouth requires reopening to the right of the Estuary (in line with the marker poles).

If the mouth is opened in too much of a northerly position, rapid fluctuations in water level occur in the Whirinaki stream causing significant degradation. Seawater intrudes upriver as a result of tidal dispersion and residual circulation. We have already had to undertake some bank stabilization work because of this.

Ideally, all openings should be undertaken at low tide with a relatively flat sea.

Te Wai-o-Hinganga (Esk) River and Whirinaki

Location and Access



Transporters driven to the end of either North Shore Road or Le Quesne Road depending on which side of the existing mouth the new mouth is to be established.

Ideal Location of Mouth

Walk along beach crest until the two marker poles situated on the southern side of the river line up. Then establish new mouth at right angles to the beach (as shown on the above diagram).

PLEASE NOTE: Do **NOT** open along the alignment of the markers poles. They are to establish the ideal location of the mouth **NOT** the ideal alignment.



12.261-010 Ngaruroro, Tūtaekurī & Clive Combined River Mouth

Definition: Nga (to take breath, breathe), ru (to shake, quiver), roro (brain, marrow, spongy matter). The traditions of Ngāti Whitikaupeka, Ngāti Hauiti and Ngāti Apa tell how Tamatea (one of the great early explorers) went up the Ngaruroro River and across the upper Rangitīkei River into the Waiōuru and Taihapedistricts, where he stocked the Moawhango River with freshwater kōura (crayfish). Tūtaekurī ('blessed river'). Ahuriri Hapū have a strong cultural association with the Tūtaekurī River and its significant tributary, the Mangaone River (Deed of Settlement). The river, its floodplain and associated swamps were resources of high significance and many kāinga were established along its course. It was historically connected with Te Whanganui a Orotū. Both were integral to the prosperity and survival of the tangata whenua who dwelled, and still dwell, in the vicinity.



Contacts

Mouth monitored regularly by Engineering Officer – Rivers ([REDACTED])

Normally anglers, surfers, and other river users are ringing early if this mouth is blocked.

Contractors

No specific contractor. Normally quite a big job requiring a 20 tonne machine or bigger.

[REDACTED]

HBRC Works Group ([REDACTED])

[REDACTED]

Cost

Approximate cost to open: [REDACTED] +gst.

Maximum water level

No specific level at this stage. Primarily a judgement call.

Notes

Gravity outlets from Muddy Creek, Pakowhai, Farndon Domain and Kohupatiki Catchments Clive boat ramp camping area affected at levels above normal high tide.

High levels also affect outlets at Puninga Catchment, but pumping is available in these catchments.

Otherwise, inundation confined to river berm land.

No highly productive privately owned land is affected.

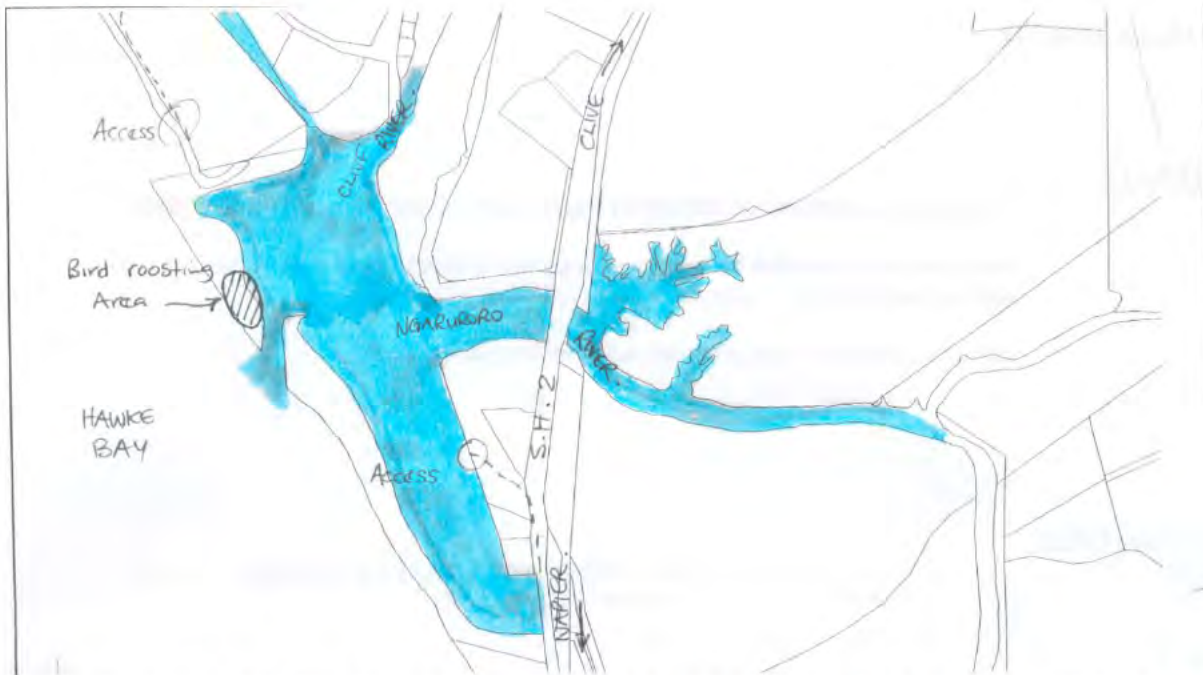
Ideally, all openings should be undertaken at low tide with a relatively flat sea.

No excavation is to be carried out inside the bird nesting area (any queries contact DOC).



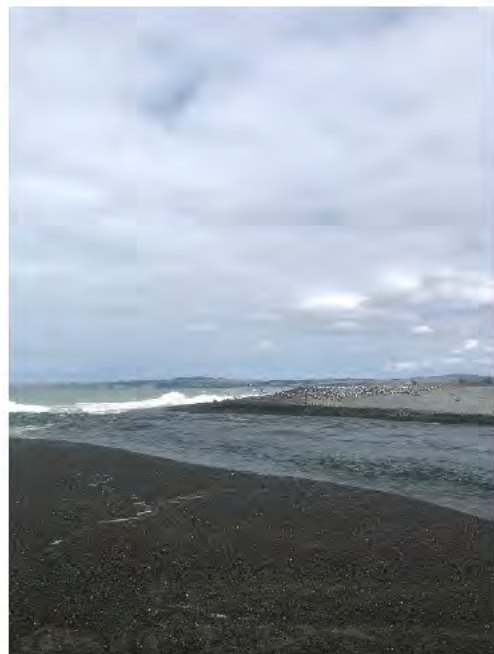
Ngaruroro, Tūtaekurī & Clive Combined River Mouth

Location and Access



Access is available from both sides of the river. From the southern side, from the end of Richmond Road follow the track north as far as you can then walk digger along beach crest. Northern side access is available through the Waitangi Public access are. (Walk digger along beach crest from there)

Ideal Location of Mouth



Mouth should line up just inside the northern back of the river. As shown on the above diagram, open on a slightly southerly direction.

13.261-008 Tukituki River Mouth

Definition: Tukituki, "to demolish", presumably referring to the power of the river in flood.

Contacts

Mouth monitored regularly by Engineering Officer – Rivers (██████████)

Normally fishermen and other river users are ringing pretty early if this mouth is blocked.

████████████████████
████████████████████



Contractors

██

HBRC Works Group (████████████████████)

Cost

Approximate cost to open: (██████████) +GST (2019-20).

Maximum Water Level

There is a staff gauge at the outlet of Grange Creek and (██████████) residence but at this stage **no specific maximum water level has been established.**

Trial level of 11.7m on Haumoana PS and (██████████) Staff Gauge.

Notes

High river levels affect the water level in the Lagoon/Estuarine area.

At moderate/high levels, low lying pastoral, horticultural and residential land on a number of properties is affected.

Grange Creek, which is the major outlet for the Haumoana Catchment backs up for some distance, affecting the drainage from a number of properties.

The Haumoana floodgate at Grange road will close at levels approaching normal high tide. Pumping is available.

Ideally all openings should be undertaken at low tide with a relatively flat sea.

Lagoon & River Mouth Instructions

Tukituki River Mouth

Location and Access



Access is available from both sides of the river. From the Northern side off the end of Bell Street in East Clive or at the end of Domain Road in Haumoana when coming from the Southern side.

Ideal Location of Mouth



The ideal mouth location is approximately 280m north of the concrete groin on the Southern side of the river (see the diagram above).

14. Haggerty's Drain

Contacts

Drain Mouth monitored regularly by Engineering Officer – Rivers [REDACTED], Ph. 027 441 5282)

Contractors

[REDACTED]

HBRC Works Group [REDACTED]

Maximum Opening Water Level

Top of white section of rusty marker pole in fence-line (see image below).

Notes

When the water level at the southern end (or top section) of the drain gets too high the overflow flows back down into Clifton Road causing surface flooding and restricts access to some properties. Elephant Hill and Turfreys sometimes have issues.

The middle drain runs through several residential property's causing surface flooding and wastewater system problems.

The water level in the drain needs to be quite high for an effective mechanical opening to be successful.

Ideally all openings should be undertaken at low tide with a relatively flat sea.



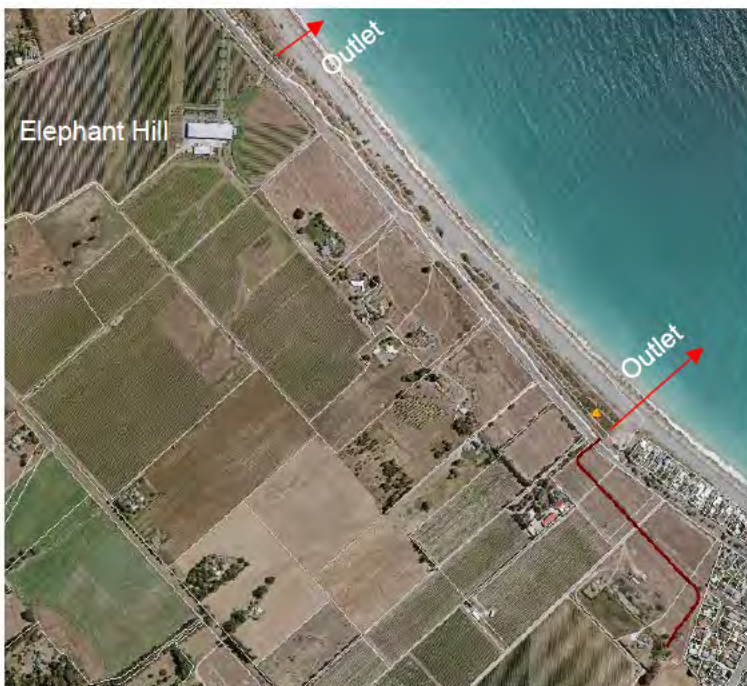
Haggerty's Drain

Location and Access



Access is available off Clifton Road.

Ideal Location of Mouth



15. 261-009 Maraetotara Stream

Definition: Marae (to be generous, hospitable); tōtara (tree).

Contacts

Mouth monitored regularly by Engineering Officer – Rivers [REDACTED]

Managers of the Te Awanga Motor Camp [REDACTED]



Contractors

[REDACTED]

HBRC Works Group [REDACTED]

Maximum Opening Water Level

Staff gauge located alongside left bank jetty adjacent to Te Awanga Motor Camp

11.300m Monitor

11.400-12.0m Open

Cost

Approximate cost to open: [REDACTED] +gst (2019-20).

Notes

The channel that flows out of the Te Awanga Lagoon backs up as the river level rises, resulting in flooding at the back of the motor camp and some residents' septic tanks back up also.

12.65m is the approximate height of the stopbank, water is most susceptible to flowing over the left bank of the stream flooding the motor camp.

Once the river level exceeds **11.65m** on the staff gauge, water flows over the left bank of the stream and floods the motor camp.

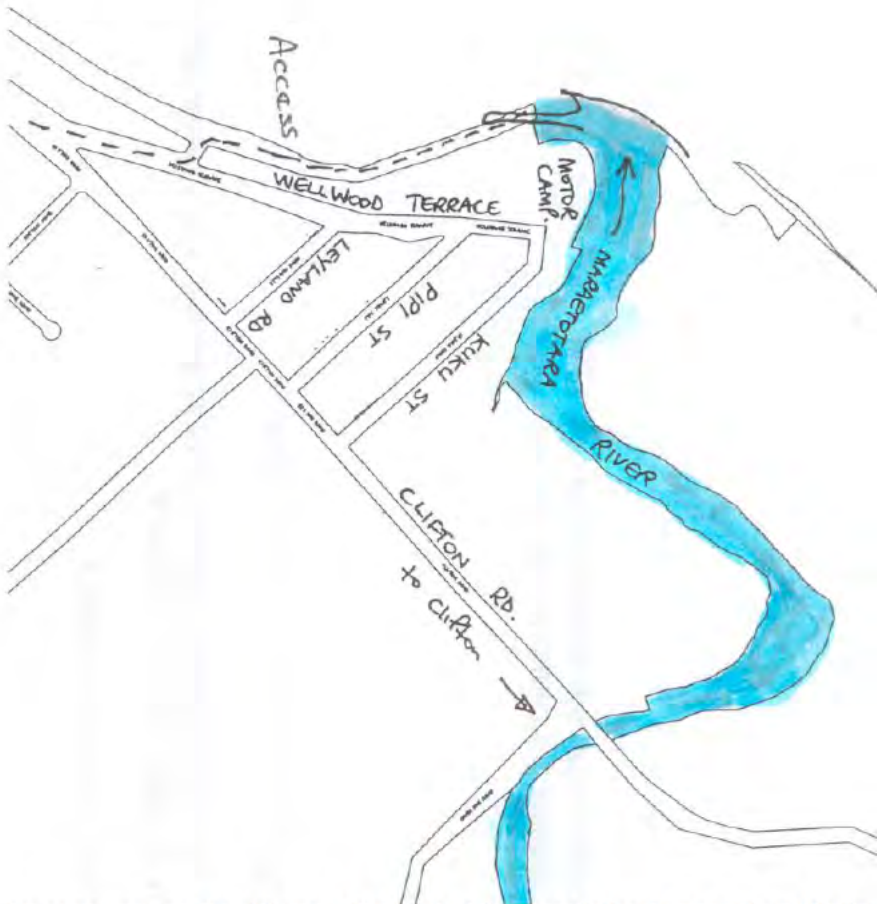
The Leyland St Drain and lower lying areas of Te Awanga are also affected.

Ideally all openings should be undertaken at low tide with a relatively flat sea.

Lagoon & River Mouth Instructions

Maraetotara River

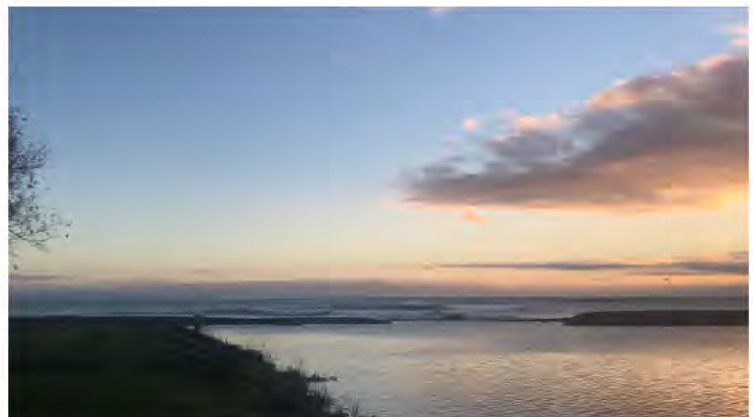
Location and Access



Transporters can be driven to the end of the beach front car park off Wellwood Terrace. Then walk excavator along beach to mouth.

Ideal Location of Mouth

The mouth should be opened down the centreline of the river on a slightly northerly direction as it heads out to sea. Cut mouth north along beach from lagoon, access into carpark.



16. Other Rivers and Lagoons

Maungawhio Lagoon, Kōpuawhara Stream, Māhanga/Lake Rotopounamu

Definition: Maunga, (Mountain, mount, peak), whio, (to whistle).

Definition: Kōpua, (to be deep), whara, (be defeated, beaten, overcome, conquered, vanquished)

Definition: Māhanga (to trap, ensnare)/ Roto, (location), pounamu, (be dark green, greenstone)

Previously some HBRC Asset Management involvement with levels. Contentious.

Hine Rauriri Stream, Māhanga (Rongomaiwāhine)

Definition: Māhanga, also known as Rongomaiwāhine, is located in Māhia. Its principal hapū are Ngāi Tū of the iwi Rongomaiwahine. Māhanga also has connections to the iwi Ngāti Kahungunu. The wharenuī is called Te Poho o Rongomaiwahine. The marae connects ancestrally to the waka Takitimu, the maunga Rākauwhakatangi, the awa Kōpuawhara and the roto Rotopounamu.

Contacts

Mouth not regularly monitored by Council Staff.

Wairoa DC manage in consultation with HBRC Area Manager - Northern Hawke's Bay, DoC ([insert Gisborne contact](#)) and Māhanga Tangata Whenua.

████████████████████

Iwi Contact: ██████████ (Māhanga Marae Ph. ██████████
████████████████████ or ██████████
████████████████████



Maximum Water Level

[No specific maximum water level has been established.](#)

Notes

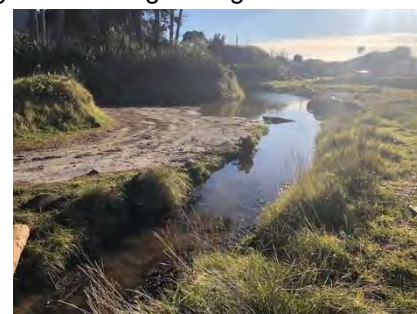
Consult with ██████████ & DoC before opening in order to provide for fish passage in accordance with the National Environmental Standards for Freshwater.

When the mouth is blocked water levels on the upstream side of the blockage can affect water levels on the boundary of the settlement which adversely impact on the operation of septic tanks and storm water drainage. However, when the mouth is blocked water levels within the wetland area remain high to the benefit of the ecology of the wetland.

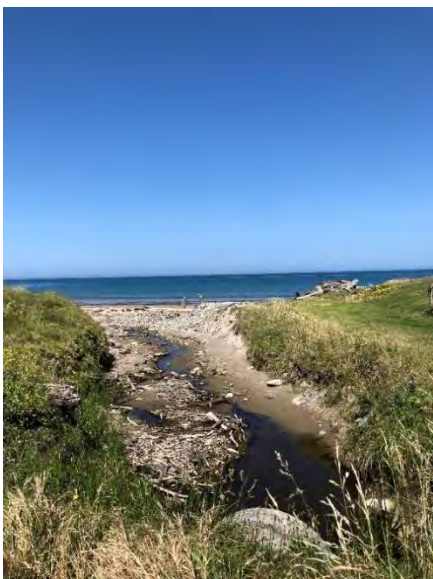
Any opening would need to involve Tangata Whenua (people of the land) as there is a tikanga (correct and culturally proper practices) with a karakia (Māori blessing, used to evoke spiritual guidance and protection) given and a representative being on site upon opening. Without any formal plan in place there will be an expectation by the community that we follow the guidance of John Cheyne in the 'Ecological values and restoration options Māhanga Wetland' report for opening of the channel.

The area was settled and used for many hundreds of years, prior to the housing subdivision. There are numerous archaeological features recorded in the area, including within the stream flowing out of the wetland called Hine Rauriri, and the spring on this stream called Tamatea Spring. The ecological significance of the wetland was recognised in the early 2000's when a Conservation covenant under Section 77 of the Reserves Act 1977 was placed over the wetland area. More detailed history of the wetland and surrounding area is provided in:

- ["Ecological values and restoration options Māhanga Wetland"](#) December 2014 by John Cheyne.
- "Māhanga Wetland Assessment" August 2016 by Nicholas Singers.



Newcastle Street, Taylors Bay Outlet/Culvert



Wairoa DC manage.

Māhia Stream, Taylors Bay

Definition: Māhia, (indistinct sound).

Mahia Stream outlet, 40 Moana Dr, Mahia

Wairoa DC manage.

Increasing expectations; buildup of driftwood debris at mouth and Mokotahi Boat Ramp (pictured).



Mangakuri River

Contacts

Mouth monitored on a case-by-case basis by Officer Schemes [redacted] and Waipukurau Catchment Overseer [redacted]

Contractors

[redacted]
HBRC Works Group ([redacted])

Maximum Water Level

No specific maximum water level has been established.

Notes

High river levels prevent ford crossing and access to multiple properties on Kairakau Rd, Mananui Rd and Kairakau Beach Rd.

[redacted] will advocate for opening to be done at a lower a level than required.

River flows north, parallel to the coast and veers northeast to reach the sea. Not regularly monitored by Council staff, susceptible to closing with large prevailing easterly, south-easterly swell.

Ideally all openings should be undertaken at low tide with a relatively flat sea.



Mangakuri River

Location and Access

Transporters can be driven the end of the beach front to Kairakau Campground. Then walk excavator along beach to centre of the crest (not at low point), instruct operator to displace sand on northern side of the mouth.

Ideal location of mouth



The mouth should be opened down the centreline of the river on a slightly northerly direction as it heads out to sea.

Porangahou River

Definition: Porangahou, (Taumatawhakatangihangakoauauotamateaturipukakapikimaungahoronukupokaiwhenu), is the Māori name for a hill, 305 metres high, close to Porangahau, south of Waipukurau in southern Hawke's Bay, New Zealand.

Not aware of any history with closures.