HAWKE'S BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

Meeting of the Hawke's Bay Regional Council Māori Committee

Available online only

Date: Wednesday 3 September 2025

Time: 11.00am

Venue: Council Chamber
Hawke's Bay Regional Council
159 Dalton Street
NAPIER

Attachments Excluded From Agenda

Reference source	Deed title	Post Settlement Governance Entity (PSGE)	Responsible entity	Commitment type	Timeframe	**Status**	Detail	*Commentary*
Ngāti Pāhauwera Deed of Settlement Clauses 5.23-5.24	Ngāti Pāhauwera and the Crown Deed of Settlement of Historical Claims of Ngāti Pāhauwera (17 December 2010)	Ngāti Pāhauwera Development Trust	Ngāti Pāhauwera Development Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, The Office for Māori Crown Relations - Te Arawhiti	Participation arrangements over natural resources	No timeframe specified	**Completed**	REGIONAL PLANNING COMMITTEE 5.23 The parties agree to establish a planning committee in conjunction with the regional council, the role of which will relate to planning processes that affect the region of the regional council. 5.24 Paragraphs 3.19 to 3.28 of part 3 of the provisions schedule set out the parties' agreement in respect of the planning committee.	*RPC has been established which satisfies this obligation. Terms of Reference were adopted pre Regional Planning Committee Act 2015. All Appointers are yet to ratify revised TOR following HBRPCAct coming into force in 2015.*
Ngāti Pāhauwera Deed of Settlement: Provisions Schedule Part 3 Paragraph 3.19-3.21	Ngāti Pāhauwera and the Crown Deed of Settlement of Historical Claims of Ngāti Pāhauwera (17 December 2010)	Ngāti Pāhauwera Development Trust	Ngāti Pāhauwera Development Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui	Participation arrangements over natural resources	may or may not be determined before the settlement date.	**Completed**	REGIONAL PLANNING COMMITTEE 3.19 Ngāti Pāhauwera, the Crown and the regional council have been discussing the appointment of a committee to be established by legislation deeming it to be a committee under schedule 7 of the Local Government Act 2002. 3.20 It is intended that: 3.20.1 the committee will comprise an equal number of elected members of the regional council and of representatives of Treaty settlement claimant groups (whether or not in any case the group has established a post-settlement governance entity) with interests in the management of natural resources in the regional council's region; and 3.20.2 the committee's role will relate to natural resource planning processes that affect the region, in particular the Mohaka, Waihua and Waikari Rivers and include drafting, and recommending to the regional council, plan and policy changes that affect natural resources in the region; and 3.20.3 the committee's role will be consistent with the regional council retaining final decision-making powers; and 3.20.4 legislation is required to ensure that the committee, as appointed, is permanent and to establish its role and procedures. 3.21 The details of the committee, including its terms of reference, roles, and membership, may or may not be determined before the settlement date.	*RPC has been established in accordance with schedule 7 of Local government act and therefore satifies this obligation*

Ngāti Pāhauwera Treaty Claims Settlement Act 2012 Section 49	Ngāti Pāhauwera and the Crown Deed of Settlement of Historical Claims of Ngāti Pāhauwera (17 December 2010)	Ngāti Pāhauwera Development Trust	Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Wairoa District Council	Cultural redress property transfer	On or by settlement date - 08/05/2012	**Completed**	49 Determination of matters relating to existing structures Despite the vestings under sections 34(2) and 35(2), a local authority must determine the following matters as if the lakebeds were owned by the Crown: (a) a person's application for a resource consent or a building consent under the Resource Management Act 1991 or the Building Act 2004 to use, occupy, access, repair, maintain, remove, or demolish an existing structure; or (b) any attempt by a person to rectify the non-compliance of an existing structure with or under the Resource Management Act 1991 or the Building Act 2004.	*Re S49 of Ngāti Pāhauwera Treaty Claims Settlement Act 2012 relates to activities on the bed of Lake Rotongaio and Lake Rotoroa. We only have one relevant resource consent on either of these two water bodies: https://consents.hbrc.govt.nz/consentdocuments/AUTH-125803-01.pdf which was processed in accordance with the provisions of the RMA in accordance with s49 of the Ngāti Pāhauwera Treaty Claims Settlement Act 2012.*
Ngāti Pāhauwera Treaty Claims Settlement Act 2012 Section 65	Ngāti Pāhauwera and the Crown Deed of Settlement of Historical Claims of Ngāti Pāhauwera (17 December 2010)	Ngāti Pāhauwera Development Trust	Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Wairoa District Council	Participation arrangements over natural resources	No timeframe specified	**Completed**	65 Provision of certain resource consents to trustees of Ngāti Pāhauwera Development Trust (1) A local authority specified in subsection (2) must forward to the trustees of the Ngāti Pāhauwera Development Trust a copy of all applications for resource consents in respect of activities within the catchment of a river specified in subsection (3). (2) The local authorities are— (a) the Hawke´s Bay Regional Council: (b) the Wairoa District Council: (c) the Hastings District Council. (3) The rivers are— (a) the Mohaka River: (b) the Waikari River: (c) the Waihua River.	*Re s65 of Ngāti Pāhauwera Treaty Claims Settlement Act 2012, our internal process is to forward a summary of all resource consents received for the rivers listed by S65 to Ngāti Pahauwera Development Trust. Our internal process is to forward a summary of all resource consents received for activities within, adjacent to, or directly affecting a statutory area identified in the Settlement Act.*

Maungaharuru-Tangitū Hapū Deed of Settlement Clauses 5.44-5.45	The Maungaharuru-Tangitū Hapū and the Trustees of the Maungaharuru-Tangitū Trust and The Crown (25 May 2013)	Maungaharuru-Tangitū Trust	Maungaharuru-Tangitū Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui	Participation arrangements over natural resources	No timeframe specified	**Completed**	Establishment of the committee 5.44 The governance entity and the Regional Council, and other Hawke's Bay iwi and hapū, have agreed to establish the Hawke's Bay Regional Planning Committee (committee) as a permanent committee of the Regional Council in order to improve the engagement between the Regional Council and tāngata whenua in relation to resource management matters in the Hawke's Bay region. 5.45 The governance entity and the Regional Council, and other Hawke's Bay iwi and hapū have agreed interim terms of reference for the committee that were adopted by the Regional Council on 14 December 2011.	*RPC has been established which satisfies this obligation. Terms of Reference were adopted pre Regional Planning Committee Act 2015. All Appointers are yet to ratify revised TOR following HBRPCAct coming into force in 2015.*
Maungaharuru-Tangitū Hapū Claims Settlement Act 2014 Section 21	The Maungaharuru-Tangitū Hapū and the Trustees of the Maungaharuru-Tangitū Trust and The Crown (25 May 2013)	Maungaharuru-Tangitū Trust	Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui	Cultural redress payment	No timeframe specified	**Completed**	21 Council must establish and administer catchments fund (1) The Council must establish a catchments fund by opening a dedicated account at a registered bank. (2) The Council must administer the catchments fund.	*This legislation is given effect by a "Mana Enhancing Agreement". This establishes a partnership between the Maungaharuru-Tangitū Trust and the Hawke's Bay Regional Council (HBRC). This agreement focuses on the management and enhancement of the Tangoio Soil Conservation Reserve and the associated Catchments Fund. Here are the key points:* ***Purpose and Objectives:*** ***Enhance Mana:*** *The agreement is aimed at enhancing the mana (prestige, dignity, and status) of both parties through mutual respect and collaboration.* ***Environmental Management:*** *It emphasizes sustainable environmental outcomes, ensuring that hapū values and principles are embedded in environmental management*

Maungaharuru-Tangitū Hapū Claims Settlement Act 2014 Section 22	The Maungaharuru-Tangitū Hapū and the Trustees of the Maungaharuru-Tangitū Trust and The Crown (25 May 2013)	Maungaharuru-Tangitū Trust	Maungaharuru-Tangitū Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui	Cultural redress payment	No timeframe specified	**Ongoing**	22 Application of money in catchments fund (1) The Council and the trustees must agree on the application of the money in the catchments fund. (2) The Council may apply the money in the catchments fund only for the following purposes: (a) maintaining the physical, chemical, and biological qualities of the soil in the catchments management area: (b) avoiding, remedying, or mitigating soil erosion and its effects on the environment in the catchments management area. (3) Neither the Council nor the trustees must unreasonably withhold consent to any proposed application of money in the catchments fund under subsection (1). (4) To avoid doubt, subsection (2) does not authorise the Council to use any money in the catchments fund to purchase land. (5) The Council must return any money generated from the application of money under subsection (1) to the catchments fund (minus any actual and reasonable expenses incurred by the Council in administering the catchments fund).	*The agreement is given effect by the Maungaharuru-Tangitū Hapū Claims Settlement Act 2014, which includes specific statutory requirements for both parties. Johan Kirsten (Manager of asset planning) is currently the the administrator for this fund and requires 6 monthly reporting from MTT transfer payments* *Catchments Fund Management: The HBRC must establish and administer a catchments fund dedicated to maintaining soil quality and mitigating soil erosion within specified catchment areas surrounding the reserve. Compliance with Soil Conservation and Rivers Control Act 1941: The management of the catchments fund and the reserve must comply with this act, ensuring soil conservation and prevention of land injury.*

Maungaharuru-Tangitū Hapū Claims Settlement Act 2014 Section 23	The Maungaharuru-Tangitū Hapū and the Trustees of the Maungaharuru-Tangitū Trust and The Crown (25 May 2013)	Maungaharuru-Tangitū Trust	Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui	Cultural redress payment	at least once every 3 years after the settlement date, assess whether any money may be transferred from the reserve fund to the catchments fund	**Ongoing**	23 Transfers from reserve fund to catchments fund (1) The Council may, from time to time, transfer money from the reserve fund to the catchments fund if the Council is satisfied that the transfer will not adversely affect its obligations under section 16(4) of the Soil Conservation and Rivers Control Act 1941 to manage and control the Tangoio Soil Conservation Reserve in a manner that in its opinion will best conserve the soil of the reserve and prevent injury to other land. (2) The Council must, at least once every 3 years after the settlement date, assess whether any money may be transferred from the reserve fund to the catchments fund in accordance with subsection (1).	*The adminstrative obligation setup out in this section is also satisfied*
Maungaharuru-Tangitū Hapū Claims Settlement Act 2014 Section 25	The Maungaharuru-Tangitū Hapū and the Trustees of the Maungaharuru-Tangitū Trust and The Crown (25 May 2013)	Maungaharuru-Tangitū Trust	Land Information New Zealand / Toitū te Whenua, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui	Cultural redress payment	No timeframe specified	**Ongoing**	25 Power of LINZ to obtain information relating to catchments fund (1) LINZ may request the Council to supply it with any information in relation to the catchments fund that is necessary to enable LINZ to meet its reporting obligations under the Public Finance Act 1989. (2) A request under subsection (1)— (a) must be in writing; and (b) state the date by which, and the manner in which, the information requested must be provided. (3) If the Council receives a request under subsection (1), the Council must— (a) provide a written response; and (b) provide a copy of the response to the trustees.	

Tūhoe Deed of Settlement Clause 4.292	Tūhoe me Te Uru Taumatua rāua ko Te Karauna/The Crown Te Whakatauna o nā Tohe Raupatu Tawhito Deed of Settlement of Historical Claims (4 June 2013)	Te Uru Taumatua	Te Uru Taumatua, Bay of Plenty Regional Council / Toi Moana, Whakatāne District Council, Wairoa District Council, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Ministry of Education / Te Tāhuhu o te Mātauranga, Ministry of Business, Innovation and Employment / Hīkina Whakatutuki, Ministry of Social Development / Te Manatū Whakahiato Ora, Oranga Tamariki - Ministry for Children, Ministry of Housing and Urban	Relationship redress	No timeframe specified	**Ongoing**	MANA MOTUHAKE 4.292 Tūhoe and Crown Agencies will collaborate on social, economic, environmental, cultural and other matters through the service management plan, protocols, and a relationship agreement referred to in clause 4.337.	*Integrated Planning Protocol agreed –2013 with HBRC and TUT*
The iwi and hapū of Te Rohe o Te Wairoa Deed of Settlement Clauses 5.50-5.51	The iwi and hapū of Te Rohe o Te Wairoa and Trustees of The Tātau Tātau o Te Wairoa Trust and The Crown Deed of Settlement of Historical Claims (26 November 2016)	Tātau Tātau o Te Wairoa Trust	Tātau Tātau o Te Wairoa Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Wairoa District Council	Relationship redress	On or by settlement date - 12/11/2018	**Ongoing**	Tripartite Relationship Agreement 5.50 The parties intend that, on or before the settlement date, the governance entity, the Hawke's Bay Regional Council and the Wairoa District Council will enter into a tripartite relationship agreement in the form set out in part 9 of the documents schedule. 5.51 The purpose of the tripartite relationship agreement is to establish a framework for a positive and enduring relationship between the parties. The tripartite relationship agreement sets out how the Hawke's Bay Regional Council and Wairoa District Council will interact with the governance entity with regard to the matters specified in it.	*Wairoa tripartite agreement has been signed*

Ngāti Tūwharetoa and Te Kotahitanga o Ngāti Tūwharetoa and the Crown Deed of Settlement of Historical Claims Clause 6.122	Ngāti Tūwharetoa and Te Kotahitanga o Ngāti Tūwharetoa and the Crown Deed of Settlement of Historical Claims (8 July 2017)	Te Kotahitanga o Ngāti Tūwharetoa	Te Kotahitanga o Ngāti Tūwharetoa, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui	Participation arrangements over natural resources	once the governance entity is established	**Completed**	Hawke's Bay Regional Planning Committee 6.122 The Hawke's Bay Regional Planning Committee Act 2015 established the Hawke's Bay Regional Planning Committee ("Committee"). Under that Act, one member of the Committee is appointed by the Tuwharetoa Hapu Forum. Once the governance entity is established, it will be substituted as the appointing entity. Ngati Tuwharetoa intends that appointments will be made in consultation with the hapu who have interests within the Committee's boundaries.	*Mike Mohi is currently (May 2024) the Tuwharetoa hapu forum's appointee to the Regional Planning Committee*
Ahuriri Hapu Claims Settlement Act 2021 Section 35	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Relevant consent authority	Statutory acknowledgement	On and from the effective date from/after: 14/08/2022	**Completed**	35 Relevant consent authorities to have regard to statutory acknowledgement (1) This section applies in relation to an application for a resource consent for an activity within, adjacent to, or directly affecting a statutory area. (2) On and from the effective date, a relevant consent authority must have regard to the statutory acknowledgement relating to the statutory area in deciding, under section 95E of the Resource Management Act 1991, whether the trustees are affected persons in relation to the activity. (3) Subsection (2) does not limit the obligations of a relevant consent authority under the Resource Management Act 1991.	*Re Ahuriri Hapu Claims Settlement Act 2021 Section 35. Our internal process is to forward a summary of all resource consents received for activities within, adjacent to, or directly affecting a statutory area identified in the Settlement Act.*

Ahuriri Hapū Claims Settlement Act 2021 Section 39	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Relevant consent authority	Statutory acknowledgement	From: 14/08/2022 To: 14/08/2042 For a period of 20 years on and from the effective date (14 August 2022)	**Completed**	39 Provision of summary or notice to trustees (1) Each relevant consent authority must, for a period of 20 years on and from the effective date, provide the following to the trustees for each resource consent application for an activity within, adjacent to, or directly affecting a statutory area: (a) if the application is received by the consent authority, a summary of the application; or (b) if notice of the application is served on the consent authority under section 145(10) of the Resource Management Act 1991, a copy of the notice. (2) A summary provided under subsection (1)(a) must be the same as would be given to an affected person by limited notification under section 958(4) of the Resource Management Act 1991 or as may be agreed between the trustees and the relevant consent authority. (3) The summary must be provided— (a) as soon as is reasonably practicable after the relevant consent authority receives the application; but (b) before the relevant consent authority decides under section 95 of the Resource Management Act 1991 whether to notify the application. (4) A copy of a notice must be provided under subsection (1)(b) not later than 10 working days after the day on which the consent authority receives the notice. (5) The trustees may, by written notice to a relevant consent	*Re Ahuriri Hapu Claims Settlement Act 2021 Section 35. Our internal process is to forward a summary of all resource consents received for activities within, adjacent to, or directly affecting a statutory area identified in the Settlement Act.*

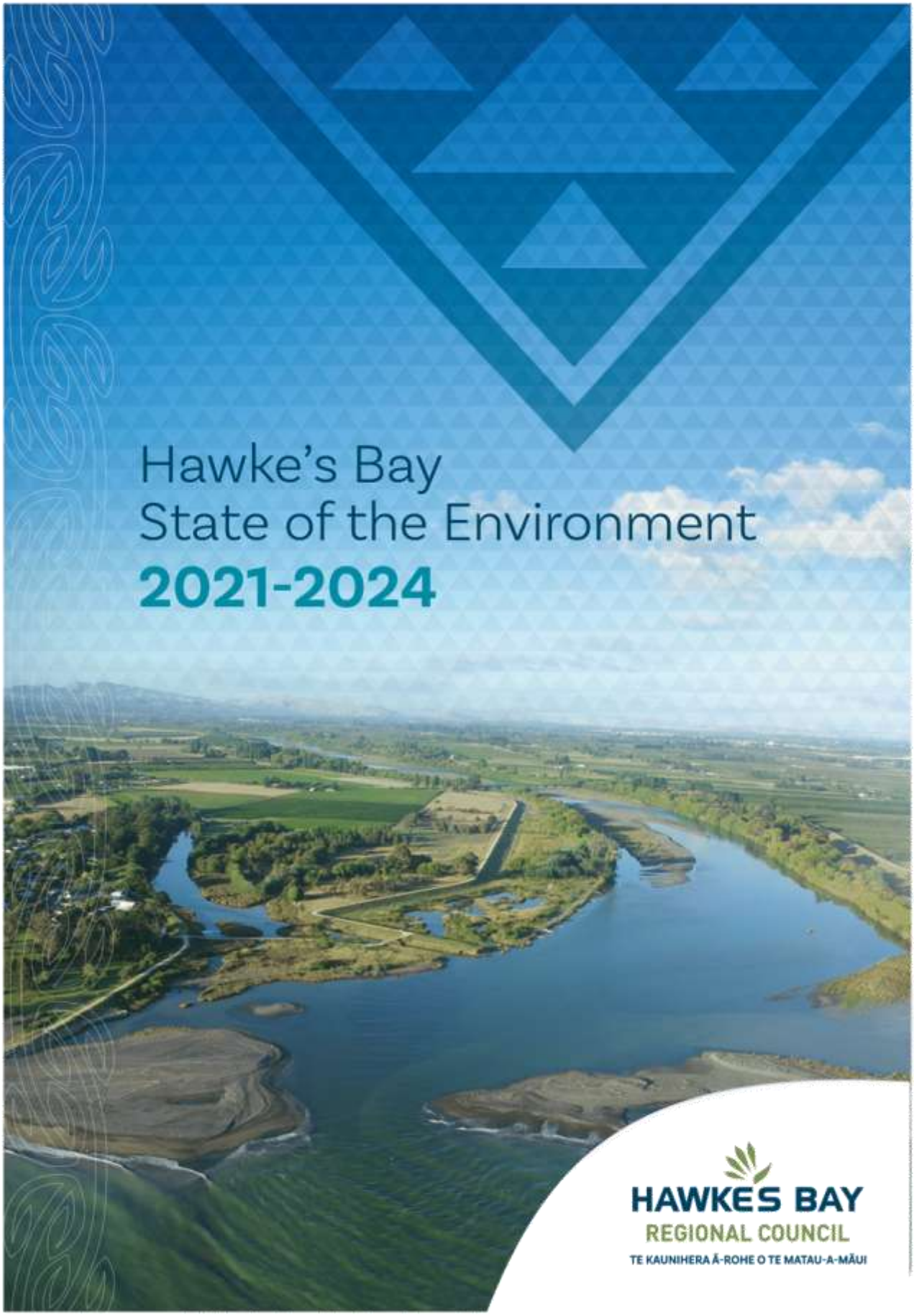
Ahuriri Hapū Claims Settlement Act 2021 Section 87	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Mana Ahuriri Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Department of Conservation / Te Papa Atawhai	Participation arrangements over natural resources	Multiple timeframes	**Completed**	87 Members of Komiti (1) The Komiti consists of 8 members who are appointed as follows: (a) 4 members appointed by the trustees of the Mana Ahuriri Trust; and (b) 1 member appointed by the Hawke's Bay Regional Council; and (c) 1 member appointed by the Hastings District Council; and (d) 1 member appointed by the Napier City Council; and (e) 1 member appointed by the Minister of Conservation. (2) A member appointed by a local authority must be a member of that local authority. (3) In appointing a member of the Komiti, the appointer— (a) must be satisfied that the person to be appointed has the mana, skills, knowledge, or experience— (i) to participate effectively in the Komiti; and (ii) to contribute to achieving the purpose of the Komiti; and (b) must have regard to the attributes of the existing members of the Komiti to ensure that the membership has the balance of skills, knowledge, and experience needed to achieve the Komiti's purpose; and (c) is responsible for the costs of making that appointment and for the remuneration (if any) of the member appointed. (4) Each member is appointed for a term of 3 years and may be reappointed.	*The committee has been established and current membership configuration is consistient with legislation*
Ahuriri Hapū Claims Settlement Act 2021 Section 89	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Mana Ahuriri Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Department of Conservation / Te Papa Atawhai	Participation arrangements over natural resources	No timeframe specified	**Completed**	89 Members must act in interests of Te Muriwai o Te Whanga Each member of the Komiti must act— (a) in the best interests of Te Muriwai o Te Whanga; and (b) in a manner that promotes the effective performance of the functions of the Komiti.	*According to linked minutes, conversations within committee meetings are progressive and collaborative. S89 (a)(b) are satified accordingly*

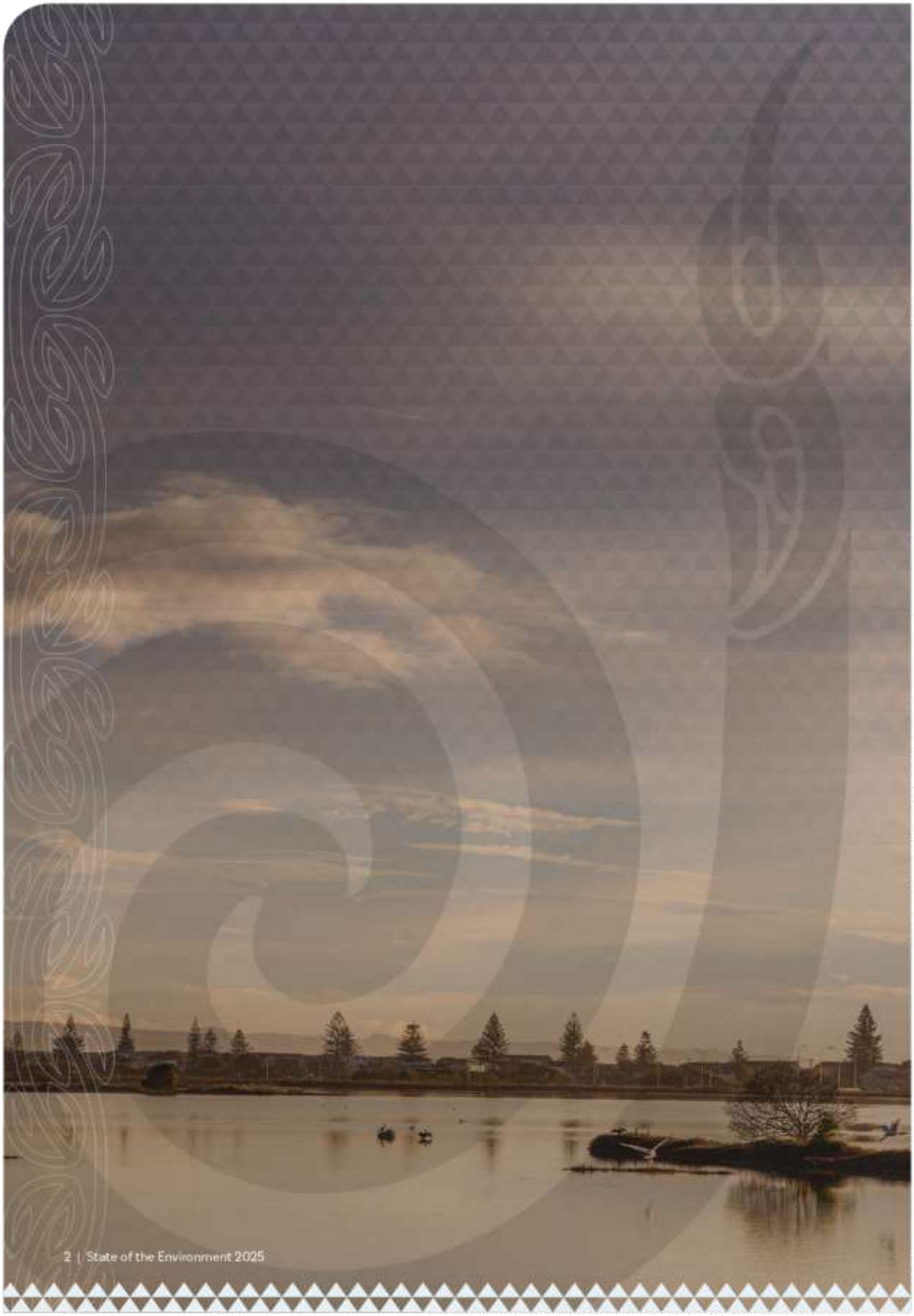
Ahuriri Hapū Claims Settlement Act 2021 Section 94	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Mana Ahuriri Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Department of Conservation / Te Papa Atawhai	Participation arrangements over natural resources	No timeframe specified	**Completed**	94 Purpose and scope of Te Muriwai o Te Whanga Plan (1) The purpose of the Te Muriwai o Te Whanga Plan is to— (a) set out the environmental, economic, social, spiritual, historical, and cultural values of Te Muriwai o Te Whanga; and (b) set out the vision, objectives, and desired outcomes for Te Muriwai o Te Whanga in order to promote the protection and enhancement of those values; and (c) identify the significant issues for Te Muriwai o Te Whanga; and (d) identify how Te Muriwai o Te Whanga may enhance the social, cultural, and economic well-being of people and communities; and (e) consider the integrated management of the waters and lands of Te Muriwai o Te Whanga for the benefit of the health and well-being of Te Muriwai o Te Whanga; and (f) make recommendations on the integration and co-ordination of Te Muriwai o Te Whanga management. (2) The Plan must be consistent with the purpose set out in subsection (1).	*Purpose and scope of plan are clearly outlined to TKMW's communications and are consistent with Section 94 and it's subsections*

Ahuriri Hapū Claims Settlement Act 2021 Section 95	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council	Participation arrangements over natural resources	Multiple timeframes	**Completed**	95 Effect of Plan on Resource Management Act 1991 planning documents and resource consents (1) In preparing or amending a regional policy statement, regional plan, or district plan (as those terms are defined in section 43AA of the Resource Management Act 1991), a local authority must have regard to the Te Muriwai o Te Whanga Plan— (a) to the extent that the contents of the Plan have a bearing on the resource management issues of the region or district; and (b) if doing so is the most appropriate way of achieving the purpose of the Resource Management Act 1991. (2) If a written report, decision, or document is required for the performance or exercise of a function, duty, or power referred to in subsection (1), the report, decision, or document must state how that subsection has been complied with. (3) When a local authority is considering an application for a resource consent to authorise an activity to be undertaken within Te Muriwai o Te Whanga, the local authority must have regard to the Te Muriwai o Te Whanga Plan if the authority considers— (a) that the Plan is relevant; and (b) that having regard to the Plan is reasonably necessary to determine the application. (4) In this section,— (a) a reference to a policy statement includes a proposed policy statement (as that term is defined in section 43AA of the Resource Management Act 1991); and	*TMOTW Plan is completed, HBRC has to have regard to that TMOTW Plan when preparing RPS and regional plans*
Ahuriri Hapū Claims Settlement Act 2021 Section 96	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council	Participation arrangements over natural resources	No timeframe specified	**Completed**	96 Effect of Plan on local government matters (1) This section applies when a local authority is making a decision under the Local Government Act 2002. (2) The local authority must have regard to the Te Muriwai o Te Whanga Plan to the extent that the Plan is relevant to the decision.	*HBRC will have regard to the Plan when making decisions under the LGA, to the extent that it is rlevant to those decisions. Internal working roup across all entities have established to realise plan objectives*

Ahuriri Hapū Claims Settlement Act 2021 Section 98	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Mana Ahuriri Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Department of Conservation / Te Papa Atawhai	Participation arrangements over natural resources	From: 14/02/2022 To: 14/02/2025 Not later than 3 years after the settlement date	**Completed**	98 Preparation and approval of first Plan (1) The Komiti must complete the preparation of the first Te Muriwai o Te Whanga Plan not later than 3 years after the settlement date. (2) In preparing and approving the Plan, the Komiti must— (a) adopt and facilitate a collaborative approach that encourages the participation of interested persons and organisations in the preparation of the Plan; and (b) comply with any requirements set out in the Komiti's terms of reference that relate to the preparation of the Plan. (3) After the Komiti approves the Plan, it must lodge a copy with each local authority and the Director-General.	*TMOTW Plan is completed, HBRC has to have regard to that TMOTW Plan when preparing RPS and regional plans*
Ahuriri Hapū Claims Settlement Act 2021 Section 99	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Mana Ahuriri Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Department of Conservation / Te Papa Atawhai, Te Komiti Muriwai o Te Whanga	Participation arrangements over natural resources	Not later than 10 years after the approval of the first Plan or the completion of the previous review of the Plan.	**Ongoing**	99 Review and amendment of Plan (1) The Komiti may at any time review and, if necessary, amend the Te Muriwai o Te Whanga Plan or any component of the Plan. (2) The Komiti must start a review of the Plan not later than 10 years after— (a) the approval of the first Plan; or (b) the completion of the previous review of the Plan.	*This piece of legislation requires a routine of regular 10-yearly reviews of TKMW's plan. TKMW have yet to complete their first plan. This section will be relevant to HBRC when that first editon Plan has been completed.*

Ahuriri Hapū Claims Settlement Act 2021 Schedule 4	Ahuriri Hapū and The Trustees of the Mana Ahuriri Trust and The Crown Deed of Settlement of Historical Claims (2 November 2016)	Mana Ahuriri Trust	Mana Ahuriri Trust, Hawke's Bay Regional Council / Te Kaunihera-ā-Rohe o te Matau-a-Māui, Hastings District Council, Te Kaunihera o Ahuriri Napier City Council, Department of Conservation / Te Papa Atawhai, Te Komiti Muriwai o Te Whanga	Participation arrangements over natural resources	Multiple timeframes	**Completed - Admnisted by NCC**	Schedule 4 Administration and procedure of Te Komiti Muriwai o Te Whanga 1 Chairperson and deputy chairperson (1) The trustees of the Mana Ahuriri Trust must appoint one of the Komiti's members as chairperson of the Komiti. (2) The term of office of the chairperson is 3 years, unless the chairperson resigns or is removed during that term. (3) The trustees may reappoint or remove the chairperson. (4) The Komiti must appoint one of its members as deputy chairperson of the Komiti. (5) The term of office of the deputy chairperson is 3 years, unless the deputy chairperson resigns or is removed during that term. (6) The Komiti may reappoint or remove the deputy chairperson. 2 Terms of reference (1) The Komiti must, at its first meeting after the settlement date, adopt terms of reference for the operations of the Komiti. (2) The Komiti may amend the terms of reference at any time. (3) However, the Komiti may adopt or amend the terms of reference only if at least 7 of the Komiti's members are present and voting at the meeting or voting by proxy. (4) Members of the Komiti must comply with the terms of reference. 3 Meetings of Komiti Meetings schedule (1) The Komiti must,—	*NCC administer this committee and have established with terms of reference consistent to this section. HBRC's role on Te Komiti is having one appointed member.*


Hawke's Bay
State of the Environment
2021-2024
HAWKE'S BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI


2 | State of the Environment 2025

Foreword

Kia ora koutou

Our environment is under increasing pressure – from climate change, population growth, and how we use our land and water. In Hawke's Bay, these impacts are no longer distant. Hotter summers, stronger storms, and rising seas are already here. Our taiao (environment) is at a critical point.

That's why we carry out a State of the Environment (SOE) report – a regular three-yearly heath check for our environment. It helps us track the condition of our ecosystems and understand how human activities are impacting them. The SOE is one of our most important science-based tools to show where we are making gains and where we need to focus our efforts.

Our SOE reporting uses the whakataukī (proverb) 'Tuia ki te rangi, tuia ki te whenua, tuia ki te moana, tuia ki te here tangata, ka rongo te pō, ka rongo te ao.' as a foundational framework. It emphasises the interconnectedness of the natural world and the importance of balance between all elements of our environment, including tangata (people).

The latest SOE summary draws on the past three years of data and insight, capturing the condition of our environment before and after Cyclone Gabrielle. The effects of the Cyclone can be seen throughout all areas of our SoE reporting and frame many of our insights throughout this report. What we can see is that Cyclone Gabrielle exposed both our strengths and our vulnerabilities.

Our land, rivers, coasts, and communities are under stress. We can't ignore the evidence – and we must not be paralysed by it. This is our call to act.

With the support of our communities, landowners, and mana whenua partners, the Regional Council is taking decisive steps – building flood resilience, securing water, improving air and water quality, and promoting more sustainable land use. We are continuously striving to integrate mātauranga Māori into our environmental reporting to enhance our insights and widen our perspectives. Progress is happening, but it must be shared, supported, and sustained.

No one can solve these challenges alone. Our response must be united, informed, and courageous. We must invest wisely, act boldly, and work together. The wellbeing of our region – and the people who call it home – depends on it.

Let's move forward with purpose and care – committed to leaving this place better than we found it.

Ngā mihi nui,

Hawke's Bay Regional Council Chair
Hinewai Ormsby

Executive Summary

Hawke's Bay's environment is facing challenges

With climate change driving hotter summers, more extreme weather events and longer dry periods can be expected. This has compounding effects, such as reducing water availability, while increasing demand for irrigation.

Climate change is also raising sea levels which is exacerbating natural coastal processes, endangering homes and habitats. Much of the region's remaining biodiversity is under threat. The condition of more than half of the wetlands monitored during this reporting period declined since they were last surveyed.

Although the region's groundwater quality is generally good, many monitoring wells show signs of impacts from land use. With the region's growing population, pressure on the water supply is expected to increase. Sediment from erosion and poor land management practices is contributing to poor water quality in many of our lakes and rivers. Most shallow lakes also suffer poor water quality. Lowland freshwater ecosystems face ongoing stress from warm temperatures, oxygen depletion, high macrophyte cover, and habitat loss, meaning they are challenging environments for fish and macroinvertebrates. The region's freshwater and marine swimming and shellfish gathering sites are largely in good order, but its estuaries and lagoons need more support with erosion reducing clarity and making them muddier.

The issues present are complex and often oppose each other. Developing new land for urban growth is favoured over increasing the intensity of the land already used for urban purposes. This makes it difficult to retain appropriate land for food production. However, agriculture also produces most of the region's carbon footprint. Likewise, exotic forestry offsets most of the region's carbon emissions, but can have negative impacts on soil and water quality if not managed carefully.

We are supporting the community to overcome these challenges.

We continue to improve our understanding of the sources of emissions and pollution so they can be reduced more effectively.

We are supporting landowners with leading technology to plant the right trees in the right places, sequestering carbon and keeping the soil on the hills. Of the waterways surveyed prior to the Cyclone, stock was excluded from half and about a third was covered by riparian planting.

Improved modelling means the region's surface and groundwater resources and how to manage them are better understood. The region's hydrological monitoring network is being rebuilt with improved resilience to reduce the risk of losing data and communication with the network during mega-events like Cyclone Gabrielle.

The region's air quality monitoring equipment has been upgraded. This helps us better understand what is causing any problems and how they can be addressed. Households shifting to cleaner methods of home heating have improved the region's air quality since 2006, but we need new initiatives if we are to further improve air quality.

To make the biggest, most cost-effective difference for the region's environment, we must plan for the long-term, while acting now

Greenhouse gas emissions need to continue to be reduced if the region is to limit climate change in line with New Zealand's international obligations.

Ongoing targeted pest and predator control operations are needed to support improved terrestrial and aquatic biodiversity, including the recovery of several coastal bird species that declined in response to the Cyclone. Better management policies, community education, and funding would help restore, maintain and improve the region's wetlands.

Continued erosion control measures, fencing the remaining waterways, riparian planting, and managing nutrients like run-off from fertiliser will help improve water quality, habitat health, and ecosystem resilience in the region's freshwater and marine environments. We have a draft fish passage framework that can be used to create action plans for each catchment that will help to improve populations of threatened species by reconnecting them with their vital habitats. The region's water resources need to be managed carefully by all users to ensure there is enough to go around.

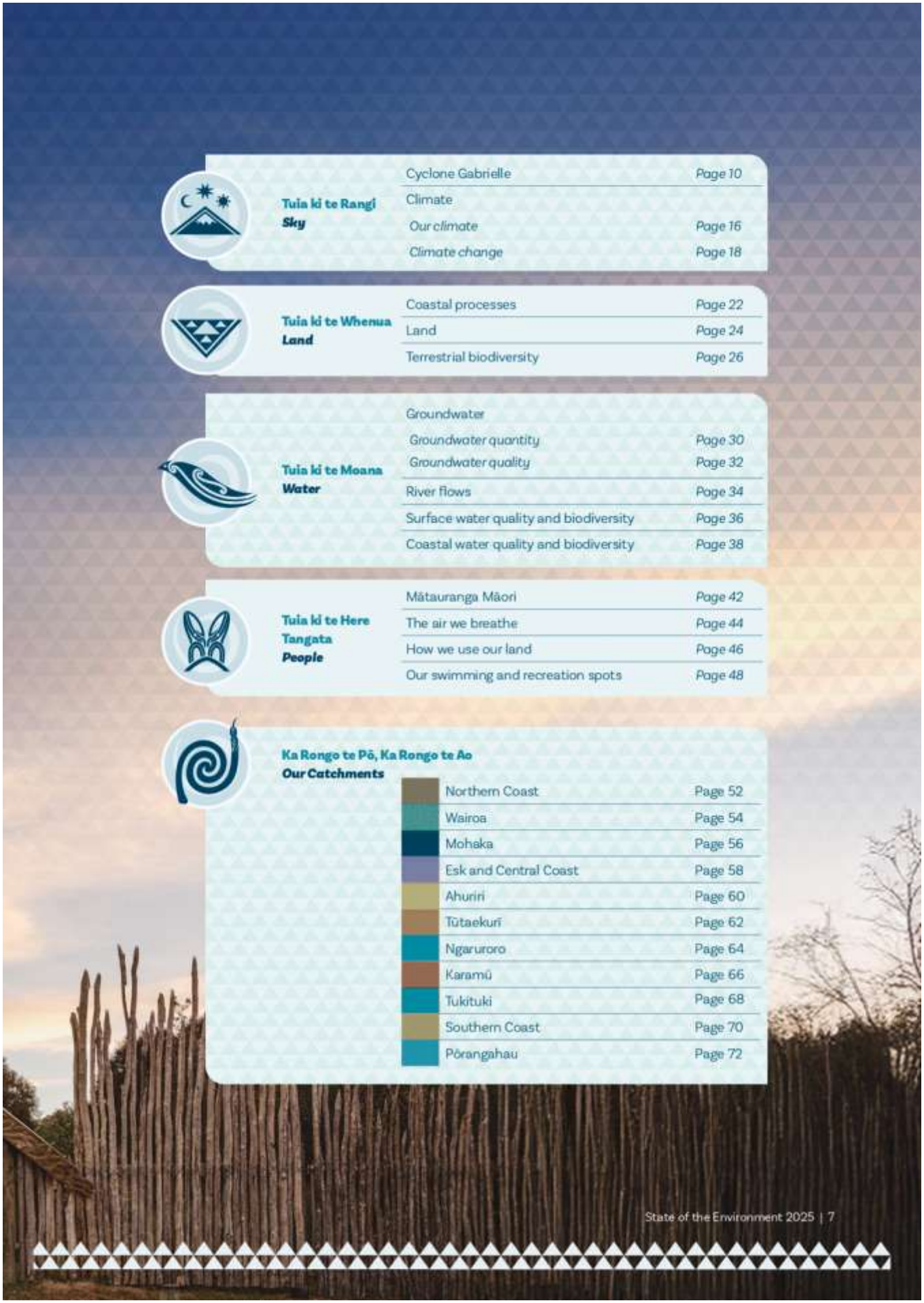
We need to continue to find ways to support iwi to realise their aspirations for the taiao, and practice mātauranga Māori which provides important insights into how to care for the environment. We need to do more if the region is to consistently meet WHO guidelines for air quality. Land use and management practices need to improve, to ensure the region's resources are being used to best advantage and to improve soil and water quality.

There is a lot of work ahead of us and the community to preserve the region's greatest assets and ensure the environment can thrive for future generations. Our state of the environment reporting framework helps us, and the community, understand where collaborative efforts can best be focussed. We can't do it alone, and neither can the community.

"Tuia ki te rangi, tuia ki te whenua, tuia ki te moana, tuia ki te here tangata, ka rongo te pō, ka rongo te ao."

Interwoven by the sky, interwoven by the land, interwoven by the ocean, interwoven by the people, the night hears, the day hears, the balance between day and night, the balance between all living things.

This ***whakataukī*** (proverb) is the basis of our framework around which we have presented our State of Environment reporting. It speaks to the weaving together of the essential threads of ***te taiao*** (our environment), emphasising the interconnectedness of ***te rangi*** (sky), ***whenua*** (land), ***moana*** (encompassing all water; rivers, lakes, groundwater, and oceans), and ***tangata*** (people). ***Ao*** (day) and ***pō*** (night), signify the breadth through which our connections and impacts are felt, and emphasise the importance of balance between all elements that enable ***te taio*** to thrive.




Tuia ki te Rangi
Sky
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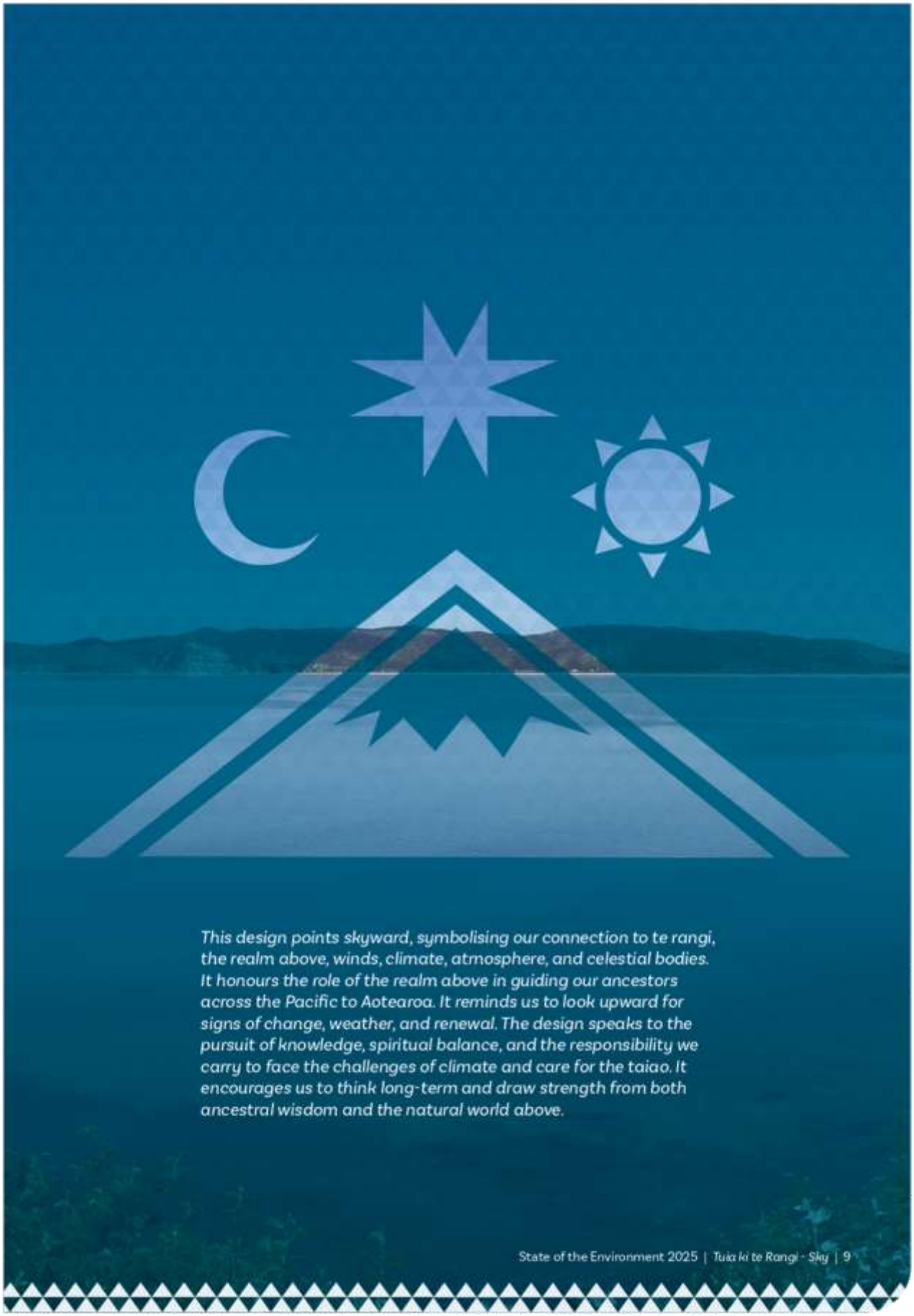
This design points skyward, symbolising our connection to te rangi, the realm above, winds, climate, atmosphere, and celestial bodies. It honours the role of the realm above in guiding our ancestors across the Pacific to Aotearoa. It reminds us to look upward for signs of change, weather, and renewal. The design speaks to the pursuit of knowledge, spiritual balance, and the responsibility we carry to face the challenges of climate and care for the taiao. It encourages us to think long-term and draw strength from both ancestral wisdom and the natural world above.
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Cyclone Gabrielle

On 13–14 February 2023, Cyclone Gabrielle, one of New Zealand's most severe meteorological events in recent history, brought record-breaking rainfall, widespread flooding, and extensive infrastructure and environmental damage across the region.

Rainfall and Flooding

Around the region historical rainfall records were exceeded at multiple climate sites, both in terms of total volume and peak intensities. In the Esk and Central Coast catchments, a total of 546 mm of rain was recorded, equivalent to half a year's rainfall. Of that total, 372 mm fell in 12 hours and 501 mm within 24 hours. It is possible that totals reached up to 700 mm higher in the catchment.

Cyclone Gabrielle produced short-duration rainfall intensities exceeding those recorded during Cyclone Bola in 1988 and contributed to February totals reaching 450 percent of the long-term average. Over half of HBRC's monitoring sites recorded new maximum rainfall totals for durations ranging from 6 to 36 hours.

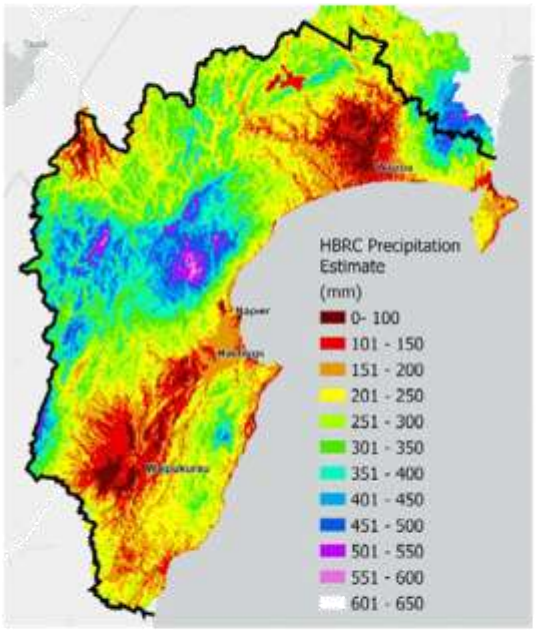

Figure 1-1: Estimated rainfall across the region from Cyclone Gabrielle, covering the period from the 11th to the 15th of February 2023 inclusive. The rainfall shown extends northward beyond the Hawke's Bay Regional Council's administrative boundary (black line) to cover the full catchment area of the region's rivers.

This exceptional rainfall resulted in some of the largest river flows on record for many of the region's rivers, surpassing previous records at multiple monitoring sites. Monitoring data and hydrological modelling showed record-breaking flood peaks in several river systems, many of which exceeded the design parameters of existing flood protection infrastructure.

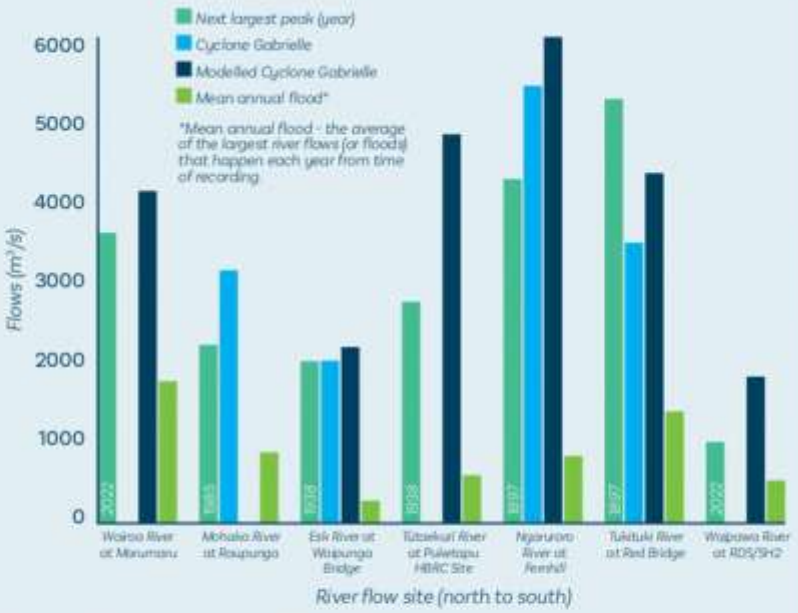

Figure 1-2: Peak river flows at key river sites across Hawke's Bay showing pre-cyclone known peaks, Cyclone Gabrielle peaks and modelled Cyclone Gabrielle peaks.

Because of the extreme nature of the event, many of the instruments used to measure river levels and flow were damaged or swept away, making it difficult to record accurate data. Assessing peak flow was further complicated by overtopping and breaching of stopbanks, resulting in water spilling out of the rivers before it could be measured properly.

Peak flows of our rivers were estimated using a range of tools, including modelling, and assessed through flood frequency analysis to understand the event's magnitude.

Flood frequency analysis assesses past floods to predict the chances of future ones determining how often floods of different sizes are likely to happen.

The flow return period (a statistical estimate of how often a specific flow is likely to occur) indicates how often we would have expected to see the peak flow of this size occurring over time (Table 1-1). This changes as we add data into the record.

Table 1-1: Cyclone Gabrielle flow return period changes pre and post cyclone . Data supplied by NIWA.

River Site	Estimated Peak Flow (m^3/s)*	Flow return period pre-cyclone	Flow return period post-cyclone(SH5)
Wairoa River at Marumaru	4100 m3/s	250 years	120 years
Esk River at Waipunga	2175 m3/s	220 years	180 years
Tūtaekurī River at Puketapu	4800 m3/s	980 years	400 years
Ngaruroro River at Fernhill	6000 m3/s	>1000 years	480 years
Waipawa River at RDS	1810 m3/s	>1000 years	120 years
Tukituki River at Red Bridge	4320 m3/s	80 years	60 years

**Changes to estimated flow return periods using modelled Cyclone Gabrielle peak flows.*

Landslides and sediment movement

The sheer intensity of rainfall, coupled with previously saturated soils from high rainfall in previous months triggered a massive number of landslides across the East Coast, with approximately 300 million tonnes of soil and landslide material mobilised. Approximately 61 percent of this total occurred in Hawke's Bay.

Over 300,000 land slips, each containing an average of 1,000 tonnes of soil , were estimated to have occurred on the East Coast of the North Island. An estimated 5.7 million tonnes of silt was deposited on the floodplains in the Esk Valley alone (Figure 1-3).

Figure 1-3: Deposited silt in the Esk Valley post Cyclone Gabrielle.

The largest sediment loads came from some of the larger catchments of the Ngaruroro and Tūtaekūri, which contributed approximately 44 percent of the overall event sediment load (Table 1-2), disproportionate to the catchment size .

Table 1-2: Sediment loads at HBRC's monitoring sites during Cyclone Gabriel compared to a normal year.

Site	Normal Sediment Load (tonnes per year)	Cyclone Gabrielle Event Load (tonnes)	Cyclone Gabrielle load as a percentage of normal annual load
Aropaoanui River at Aropaoanui*	93,220	15,117	16%
Esk River at Waipunga Bridge*	115,774	737,931	637%
Hawea Stream off St Lawrence Road	1,944	3,558	183%
Karamū Stream at Floodgates*	143,417	287,073	200%
Mangakuri River at Nilsson Road	50,896	4,184	8%
Mangamaire Stream at Cooks Tooth Rd	45,650	27,930	61%
Mangaone River at Rissington*	129,999	1,964,150	1511%
Maraetotara River at Waimarama Road	12,647	4,307	34%
Ngaruroro River at Fernhill	1,495,003	3,699,683	247%
Pōrangahau River at Saleyards*	942,893	184,548	20%
Sandy Creek at Papakiri*	25,957	248,619	958%
Tukituki River at Red Bridge	1,672,278	1,362,961	82%
Tūtaekūri River at Puketapu HBRC Site^*	510,915	2,159,201	423%
Waiau River at Ardkeen	434,790	744,996	171%
Waikatuku Stream off Harrison Rd	16,617	11,441	69%
Waimaunu Stream at Duncans	11,566	5,042	44%
Wairoa River at Marumaru^	2,710,186	1,412,675	52%
Wharerangi Stream at Codds	111,055	101,173	91%
TOTAL	**8,524,808**	**12,974,589**	

^*Revised using modelled cyclone data.*
**Site destroyed/compromised during the event and therefore not the total load.*

Figure 1-4: Resuspended silt.

Air quality effects

The movement of vast quantities of sediment during Cyclone Gabrielle had significant secondary impacts on air quality, particularly through the resuspension of fine silt dust in flood-affected areas. While the initial erosion and deposition of an estimated 300 million tonnes of soil led to widespread landscape change, it was the drying and recirculation of deposited silt that posed the greatest risk to air quality in the months following the event. This was most clearly observed at HBRC's air quality monitoring site in Awatoto, which recorded eight exceedances of the national PM10 standard in 2023 and 2024 attributable to silt dust. These exceedances provide a regional indication of degraded air quality following the cyclone from silt deposits in flood plain areas.

Ecological impacts

The extensive rainfall and river flows reformed much of Hawke's Bay's landscape, and as such had profound effects on the region's riparian, freshwater, and marine systems.

The large river flows resulted in changes to the riparian margins of small rivers and streams, including reductions in fencing and grass cover, and increased areas with no vegetation, likely caused by storm related streambank erosion.

Cyclone Gabrielle also had profound impacts on freshwater ecosystems in Hawke's Bay. The loss of riparian vegetation and increased fine sediment deposition resulted in extensive damage to habitat for fish, macroinvertebrates and other small aquatic organisms.

Macroinvertebrate communities declined noticeably after the cyclone at many monitoring sites, with recovery by 2024 varying from place to place, reflecting differences in local resilience. While some upland streams showed signs of improvement, many lowland sites remained in poor condition. These streams were often dominated by pollution-tolerant species, with sensitive species still largely absent.

Fish communities responded in a similar, varying way. Within a year some species, such as īnanga and smelt, were consistently found again, suggesting relatively rapid recolonisation. Others, including redfin bully and brown trout, were less widespread than before, reflecting both species-specific sensitivities and differences in habitat loss and recovery.

As well as impacting rivers and streams, the surrounding landslides deposited sediment into Lake Tūtira. Approximately 75cm of fresh sediment was deposited on the lake floor, a similar amount to Cyclone Bola, which can impact the lake ecosystem over time. Conversely, neighbouring Lake Waikopiro received a much lower level of sediment deposition when compared to Cyclone Bola, possibly due to extensive catchment and wetland revegetation since Cyclone Bola.

Transported by the rivers and streams, sediment delivery to the coast was a prominent feature for the Hawke's Bay coastline for many months following the Cyclone. As landslide debris, eroded streambanks, and flood plain deposits continued to be transported to the coast, high levels of turbidity and deposited sediment were evident in the region's estuaries and nearshore coastal environment.

Figure 1-5: Esk River at Waipunga Bridge pre and post cyclone showing extensive habitat damage.

Over 20 million tonnes of sediment were estimated to have been delivered into Hawke Bay, roughly twice the annual average load previously described.

Sediment was both retained in the water column, reducing light availability for algal growth and visual predators, and deposited onto the seafloor, altering the habitat and changing the types of species able to live there. In some areas, an estimated 125mm was deposited on the seafloor, making it difficult for animals living on or in the seabed to access oxygenated water and food. Typically, only 3mm of sediment deposited on the seafloor can cause negative impacts on the animals and plants that live there. Changes in coastal sediment texture resulting from land-based inputs were measured following the cyclone. Changes in sediment texture were most pronounced in the Napier to Waipatiki area, where the highest rainfall was recorded.

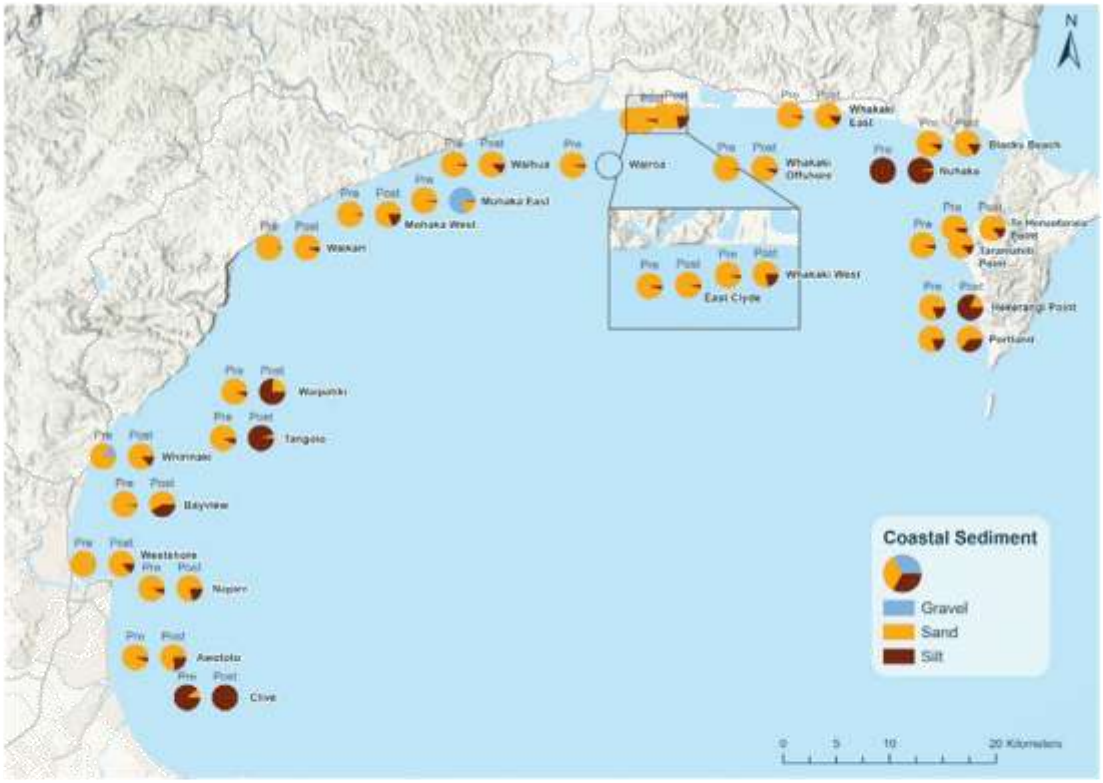

Figure 1-6: Changes in the coastal sediment composition pre and post Cyclone Gabrielle.

Cyclone Gabrielle was an extreme event that set new benchmarks across the region. The level of rainfall, river flows, sediment and landslide activity exceeded many historic records. The exceptional rainfall triggered numerous landslides and resulted in some of the highest river flows on record. Silt that deposited once the flood water receded continued to feed the region's rivers, streams and coast, ultimately impacting the animals and plants living in these systems. While some freshwater and coastal systems have shown signs of recovery, long-term monitoring will be critical in understanding the ongoing impacts of the Cyclone.

HBRC acknowledges Pattle Delamore Partners LTD for their contribution to this chapter.


GAIR
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Climate

Our climate

Hawke's Bay's climate supports our lifestyles and economy but also brings hazards. It allows the region to thrive, or borderline survive. We monitor climate because it is the first and overarching cog in a "mountains-to-sea" approach to environmental management. It influences the state of our environment and provides context for the impacts of human activities, whether these be air quality, land or soil, biodiversity, water quality or quantity, or marine ecology. It can be considered a 'natural amplifier' of human impacts but is now understood to face human impacts too.

Just as we monitor and manage the effects of human activities on many aspects of the environment, climate is no exception. The main pressure on climate is rising levels of greenhouse gases, from both local and global sources. (See chapter: Climate Change)

Climate patterns

Our climate is also driven by recurring atmospheric patterns found around the globe, such as the El Niño-Southern Oscillation (ENSO), a climate pattern occurring in the tropical Pacific Ocean. ENSO fluctuates through El Niño, La Niña, and neutral phases, with El Niño bringing westerlies and a risk of dry weather to the region, and La Niña bringing easterlies and wet weather. These patterns signalled that the initial two years in the 2021-2024 period would be wet years as La Niña conditions dominated this period. La Niña also supported an increase in the number of tropical cyclones hitting Aotearoa in those years. El Niño's drier conditions eventually surfaced in 2024.

Rainfall

Three extreme rainfall events hit Hawke's Bay between 2021-2024. Cyclone Gabrielle in February 2023 took a region-wide toll. The other events primarily affected Wairoa communities. The first of these was eight days of rain in March 2022 when an 'atmospheric river' brought a flow of moisture from the tropics to the Wairoa District. The second was a combination of rain and rough seas that flooded the Wairoa township. All three of these events featured weather patterns involving high atmospheric pressure centred near southern New Zealand, leaving northern areas vulnerable to approaching storms. Although they occurred in separate years, each event compounded damage from the prior storm, hindering recovery.

These events contributed to annual rainfall above the long-term average in all three years, though still within the normal range (within 120 percent of the long-term average) in 2021-2022 and 2023-2024. Cyclone Gabrielle afflicted 2022-2023 was not only 172 percent above average, but the wettest year in our rainfall records. This included a summer season that was the wettest in our records and 326 percent above average.

Air temperatures through the three years were mostly above average but the wet summer of 2022-2023 lowered the year's daytime temperatures to within the normal range. Wind speeds were a little lighter than average. Northeasterlies were more prevalent than average in the first two years, but the belated emergence of El Niño conditions boosted the frequency of westerly winds in 2023-2024. Potential Evapotranspiration (PET) rates – the amount of water that can possibly be evaporated or transpired by plants – were consistently low, particularly during 2022-2023.

A changing climate

In some of our northern areas, total rainfall is observed to have been increasing since the late 1980s. Similarly, the number of wet days (daily rain greater than one millimetre) in these areas is also increasing. Rain may also be arriving in heavier falls in the Tutaekurī and Ahuriri catchments. Likewise, over the past 25 years, average monthly maximum and minimum temperatures have increased between 0.5-1°C. Days with temperature above 25°C are increasing in some areas and the number of frosts is declining. PET rates have increased with warming temperatures, while wind speeds have decreased.

These lighter winds are expected because of a tendency for the westerly wind-stream known as the 'Roaring Forties' to shift south rather than lie over New Zealand. This shift alone potentially exposes us to more extreme weather – both extreme dry and extreme wet.

Seasonal rainfall

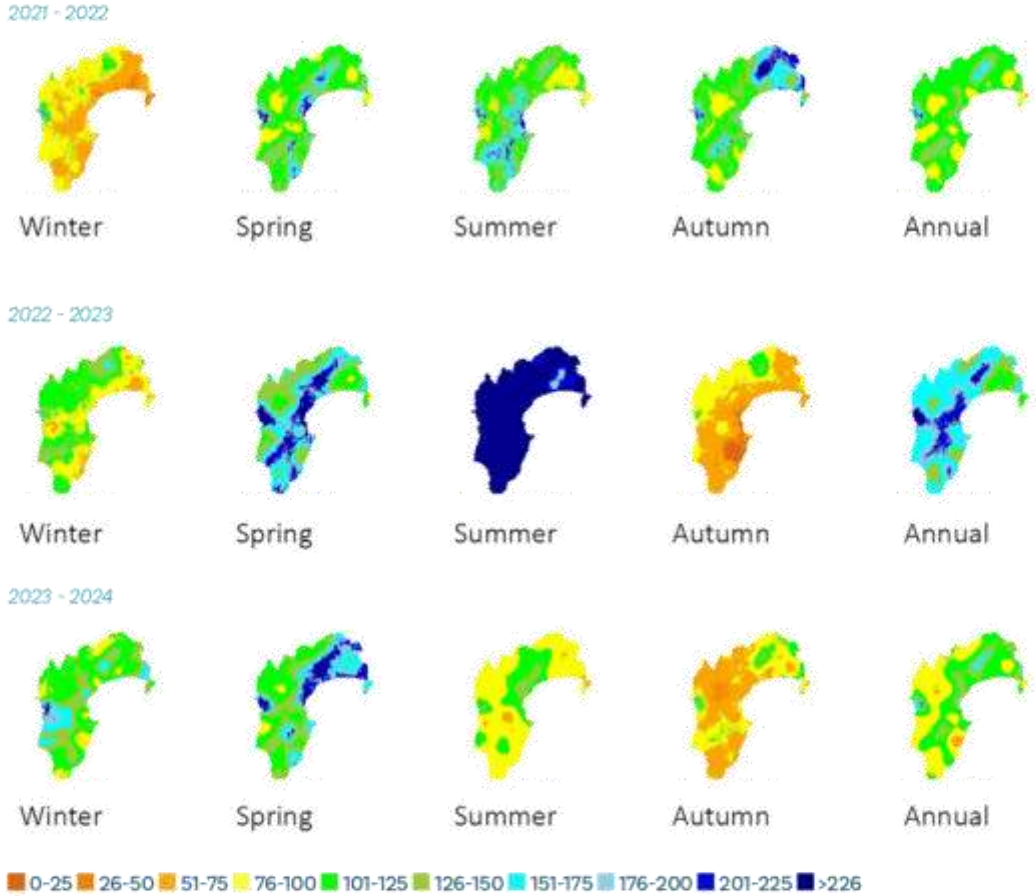


Figure 2-1: Rainfall levels as a percentage of 'normal' between 2021-2024

Climate Change

Carbon Emissions

Hawke's Bay has a goal of net-zero greenhouse gas emissions by 2050. To track progress, HBRC measures the region's carbon footprint. By understanding our emissions and their sources, we can plan and take action to reduce our impact on climate change and protect our communities, environment, and economy.

The most recent greenhouse gas emissions inventory covers July 2022 to June 2023. During this period, Hawke's Bay emitted 4.1 million tonnes of carbon dioxide equivalent (tCO2e). That's about four times the emissions from all domestic flights in New Zealand in an average year, and about 5.3 percent of New Zealand's total 2022 emissions.

Most of our emissions (70.8 percent) come from agriculture. Of Hawke's Bay's total carbon footprint, 56.5 percent comes from the digestion process in cattle, sheep, and other ruminant animals. Transport is the next-largest contributor, followed by stationary energy (not used for transport).

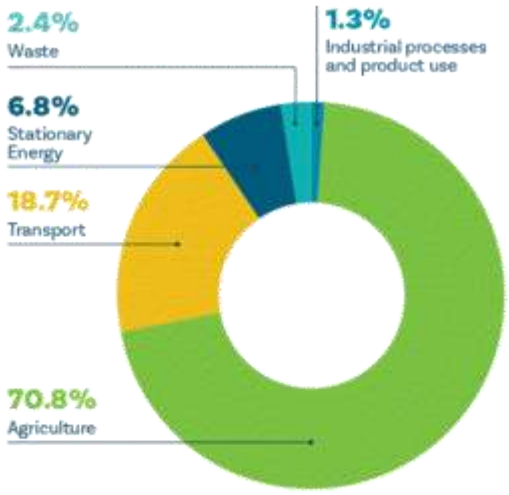


Figure 2-3: Hawke's Bay's carbon footprint for July 2022 to June 2023

Emissions over time

Over the past five years, Hawke's Bay's overall (gross) emissions have decreased by 8.8 percent. In this time, we have experienced many extreme events, including a global pandemic, drought combined with a bovine tuberculosis outbreak, and Cyclone Gabrielle. These events, combined with sustainability efforts, have influenced our emissions, though we do not know the amount each of these changes influenced the overall decrease.

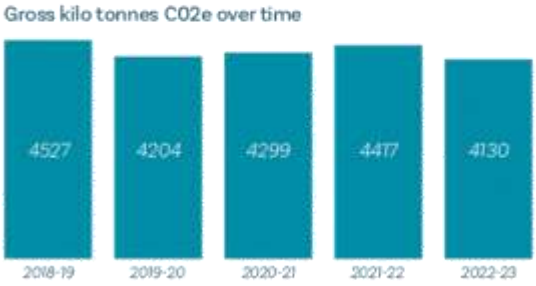


Figure 2-2: Hawke's Bay's gross carbon footprint over time.

Figure 2-4: Changes in 2022-2023

Impact of Cyclone Gabrielle

Between 2021-2022 and 2022-2023, emissions dropped by 6.5 percent, partly due to the impact of Cyclone Gabrielle in February 2023. The cyclone caused widespread damage to livestock, vineyards, farmlands and orchards. Storm damage to road and railway networks reduced ground and rail travel, leading to increased reliance on marine freight. Jet fuel sales were also up, as planes and helicopters were used for rescue operations and emergency supply deliveries.

Emissions from electricity use were also lower compared to the previous year. This is due to both lower electricity use and a reduction in the national electricity grid's reliance on fossil fuels.

The role of forestry

Hawke's Bay's forests absorb large amounts of carbon dioxide. In 2022-2023, forestry removed 2.8 million tCO2e from the atmosphere, offsetting 67.3 percent of Hawke's Bay's gross emissions. However, the amount of carbon removed by commercial forests varies yearly. Exotic forestry, if not managed carefully, can also be detrimental to other areas of our environment, such as soil and water quality. This shows that reducing gross emissions is crucial for long-term progress.

Reducing emissions

Lower emissions will help limit warming of global and local temperatures. The warmer it gets, the more extreme events like heavy rainfall and droughts will be. The Paris Agreement, which New Zealand joined, aims to cap warming at below 2°C, and ideally to no more than 1.5°C above pre-industrial temperatures.

Average global temperatures have risen about 0.9°C in the 2006-2015 period compared to 1850-1900. In New Zealand, temperatures have risen about 1.02°C in the century from 1909. The commitments and policies of different countries to reduce emissions currently place us on a path to 2-3°C warming by 2090.

In this scenario, Hawke's Bay preschoolers could experience in their lifetime:

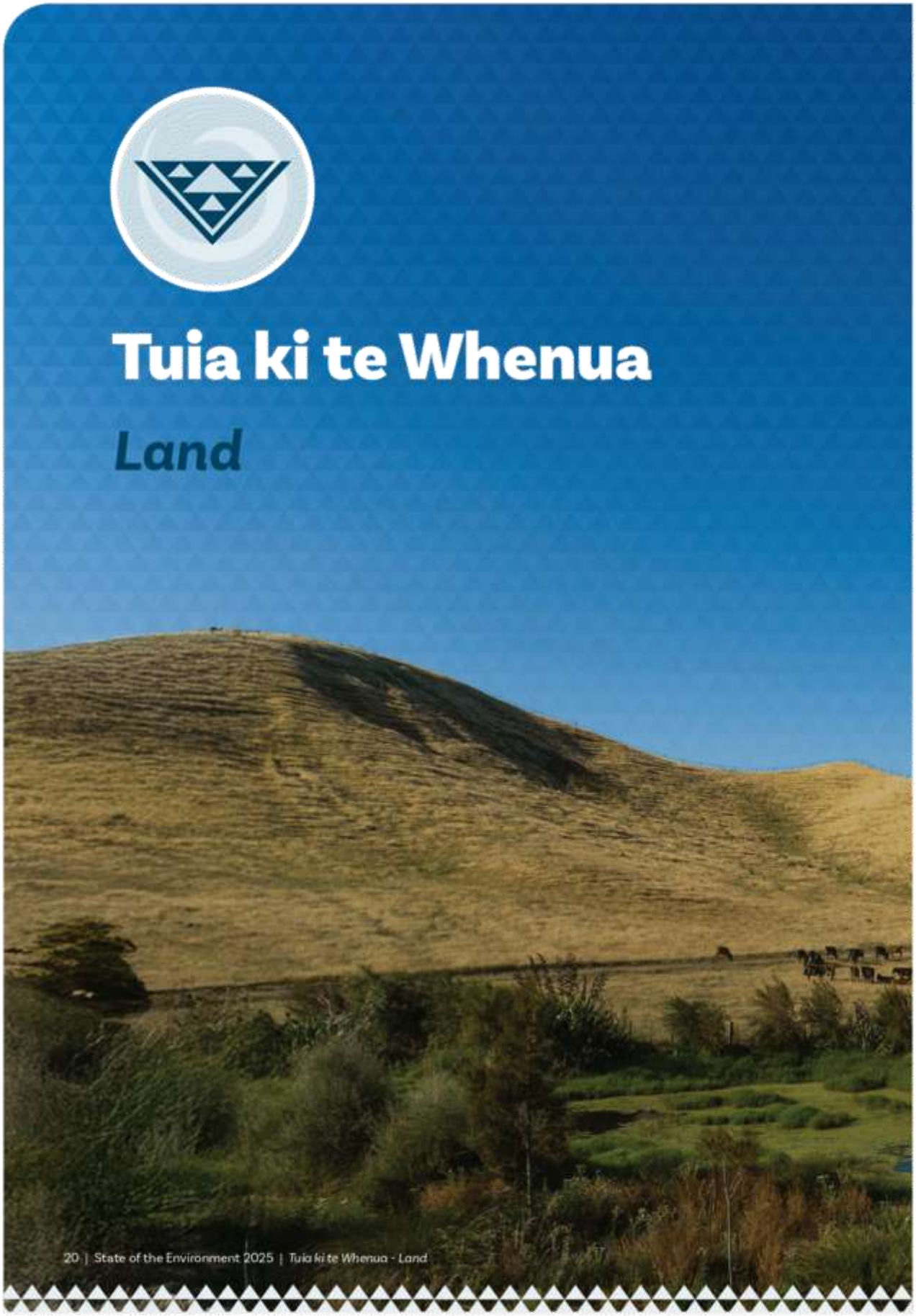
- average *yearly temperatures rising 2°C*
- up to *52 more hot days above 25°C* (almost two months!) and *2 weeks more of days above 30°C*
- frost days dropping from a regional average of *23 to just 10*
- up to an *extra week of dry days*
- approximately *three more weeks of reduced grass growth* added to the roughly four months already occurring in some areas
- annual rainfall *decreasing up to 10 percent* and *heavy rainfall increasing 12 percent.*

These changes could impact the region's food production, the wellbeing of people and animals, increase wildfire risk, and allow new pests to make Hawke's Bay home. More intense rainfall leaves us vulnerable to floods, erosion, and infrastructure damage. Sea level rise will compound these hazards.

What can you do?

Consider where you can decrease your own carbon footprint, such as choosing more sustainable transport choices, home energy, and purchases. Little changes support everyone's efforts to reduce emissions.

Visit the Climate Action Hub on the HBRC website to learn more about climate change and how we can decarbonise Hawke's Bay.


Tuia ki te Whenua
Land
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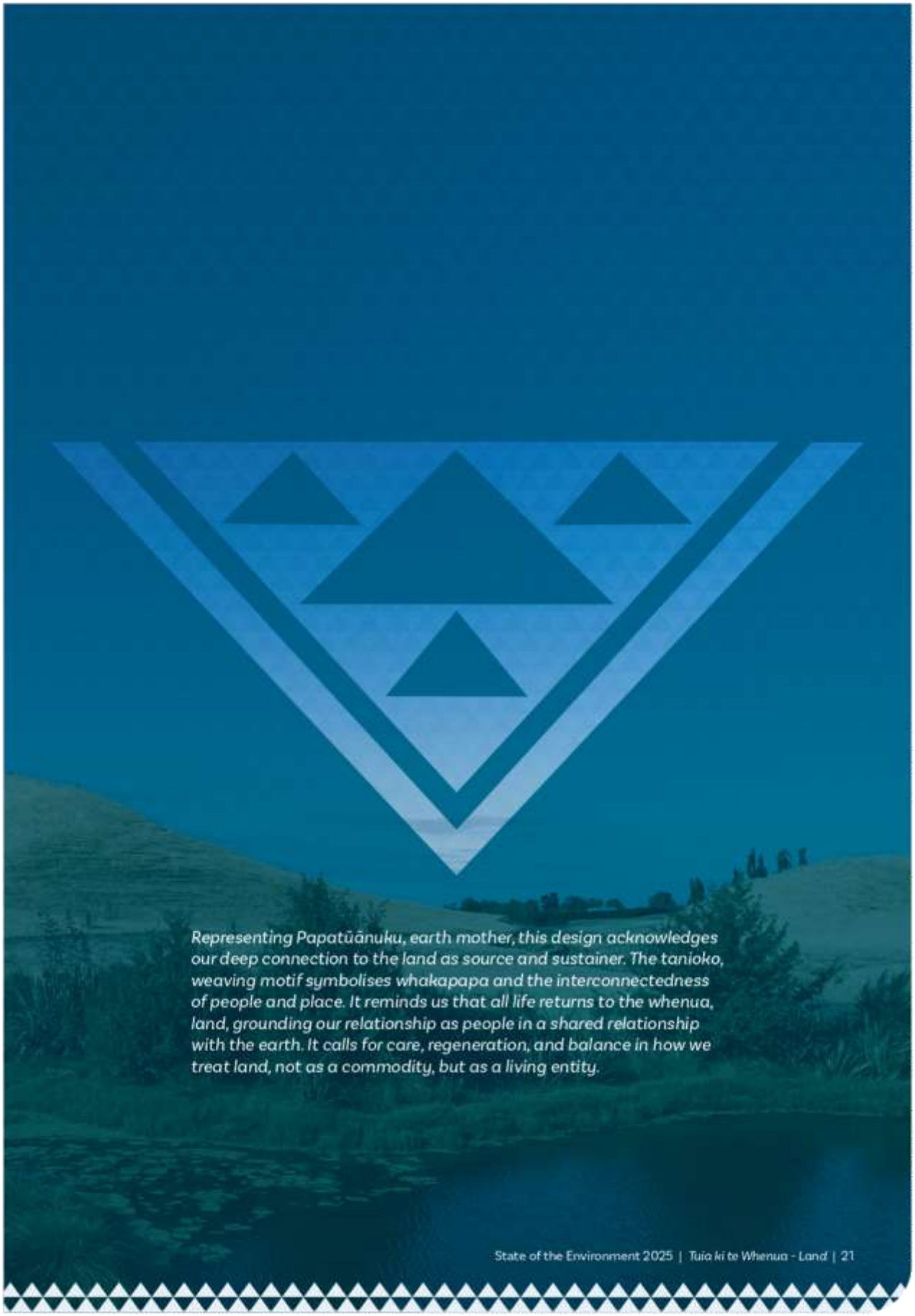
Representing Papatūānuku, earth mother, this design acknowledges our deep connection to the land as source and sustainer. The tanioko, weaving motif symbolises whakapapa and the interconnectedness of people and place. It reminds us that all life returns to the whenua, land, grounding our relationship as people in a shared relationship with the earth. It calls for care, regeneration, and balance in how we treat land, not as a commodity, but as a living entity.
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Coastal Processes

Hawke's Bay's costal environment is made up of more than 333km of coastline, from Mahanga to Cape Turnagain.

The many ecosystems of our offshore environment are comprised of reef systems, a continental shelf, marine trenches, siltstone stacks, intertidal platforms, sand spits, and varying sediment deposits. Lagoons, estuaries, salt marshes, tidal mudflats and backwaters connecting the rivers to the sea are also part of the coastal environment. Hawke Bay itself provides a mix of sandy and gravel beaches, a series of reefs, an offshore island and several large rivers draining into the coast. The coastal backdrop varies from high undulating sea cliffs to low-lying areas characterised by gravel beaches, longshore bars, and dunes.

Coastal erosion

There is ongoing risk to hundreds of Hawke's Bay's coastal properties from erosion and inundation (flooding from the sea). Between 2022 and 2024 the region experienced three significant storm events, including Cyclone Gabrielle, which caused substantial damage to coastal land and properties. In addition to these major events, numerous smaller storms have also contributed to the progression of coastal erosion and caused localised property damage.

Coastal monitoring assists in determining how waves and storms affect the region's beaches over time. Beach profiles are areas perpendicular to the shoreline, which are measured from above the high tide line to the low tide line.

Figure 3-1: Long term beach trends showing stable, eroding or accreting status.

These profiles are essential for understanding how beaches respond to natural forces like waves, tides, and storms. HBRC has been measuring 23 beach profiles from Clifton to Tangoio since at least 1995. The beaches are surveyed regularly, as well as after severe storm events, to monitor changes in the coastline. By comparing the shape and size of these profiles over time, we can determine whether a beach is growing (accreting) or shrinking (eroding) (Figure 3-1). Even though these are natural processes, beach erosion can be a problem when people and infrastructure become exposed to wave action. Sediment accretion is generally good; however it may block river mouths, which can potentially lead to flooding during rain events.

Wave Data

Data from a wave buoy situated approximately 2.3 nautical miles northeast of Port of Napier shows that maximum wave heights reached nearly nine metres during February 2023 with the highest third of waves reaching over five metres.

Event	Max Wave Height (m)	Max Significant Wave Height (m)	Reported or Recorded Property Damage (excludes flooding of gardens or yards)
March 2022	5.78	3.19	No
July 2022	4.99	3.12	No
Feb 2023	8.92	5.46	Yes - Major

Table 3-1: Summary of Swell Event data. Significant wave height is equal to the average of the highest one-third of the waves, maximum wave height is size of the highest wave recorded during the event

Sea Level Rise

Much of New Zealand's urban areas and infrastructure are in coastal areas. These areas face growing risks from coastal erosion, flooding, and rising sea levels due to climate change. The Ministry for the Environment provides guidance on how much sea level rise should be prepared for by the year 2130.

1.7 metres: The amount of sea level rise to account for when building new coastal subdivisions, major infrastructure, or developing previously unused land.

1.2 metres: The recommended figure for managing existing coastal areas, such as updating land use planning controls for the future of roads, buildings, and other assets already in place.

These numbers are based on the Sixth Assessment Report of the Intergovernmental Panel on Climate Change's latest sea level rise figures and are designed to help councils make smart, long-term decisions that protect people, property, and the environment.

As our climate continues to change, sea levels are expected to keep rising. This means coastal erosion will likely increase, and we can expect more frequent and widespread flooding during storms. These changes highlight the need for long-term planning and action to protect our coastal communities and environments.

Figure 3-2: Sea level rise (SLR) pushes the beach area inland, away from the rising ocean.

Land

Soil quality

In Hawke's Bay, many of our region's most pressing challenges and opportunities for growth come from the soil beneath our feet.

HBRC's Soil Quality Monitoring (SQM) Programme monitors the physical, chemical, and biological health of our region's soils (Figure 4-1). It has been purpose-built to provide relevant resource information across a variety of soil types and land uses including cropping land, pasture, and forests. Our regional soil quality is also compared to national targets to evaluate the health of our soil resources from a country-wide perspective.

Soil carbon plays a critical role in both environmental health and sustainable agricultural production. The presence of soil carbon can aid in climate change mitigation and improve soil health by enhancing nutrient cycling, water retention, and plant growth. Long-term monitoring data (Figure 4-2) indicates that median soil carbon levels are highest in indigenous forests (6.6 percent), followed by pastures (4.8 percent), and the inter-rows within orchards (4.5 percent).

The loss of soil carbon is accelerated on cultivated land due to oxidation of soil aggregates, increased erosion, increased microbial respiration, and reduced plant residue released into the topsoil. All 11 monitored cropping sites, with multiple years of sampling, show a consistent decrease in soil carbon.

Encouragingly, over 90 percent of soil observations met the guideline ranges for Anaerobically Mineralisable Nitrogen, soil pH, and bulk density. Over 85 percent were within acceptable limits for total carbon, total nitrogen, and macroporosity (Figure 4-3).

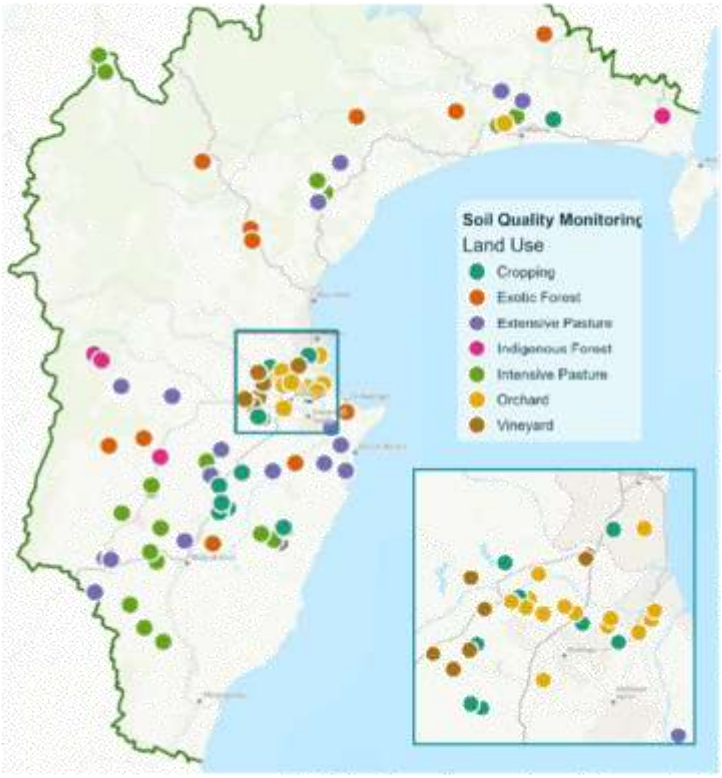


Figure 4-1: Location of the 96 long-term soil observation sites across Hawke's Bay

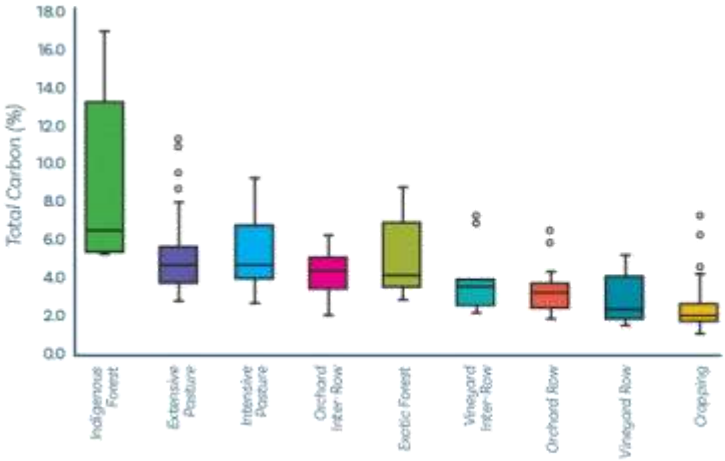


Figure 4-2: Total soil carbon (%) per monitored land use. Sampling period varies between 2000-2021 depending on land use. The median is shown as the bold line in each box. The boxes represent the interquartile range (25th to 75th percentile), the whiskers show the range of values that fall within a land use. The dots are outliers.

However, only 42 percent of samples for Olsen Phosphorus fell within the recommended range. A total of 28 percent of SQM sites were below the recommended levels, indicating potential nutrient deficiencies. Conversely, 30 percent exceeded the upper limit, raising concerns about potential phosphorus loss to waterways. Excess phosphorus also represents an economic loss for the farmer, due to unutilised fertiliser.

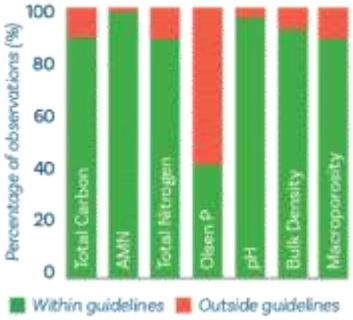


Figure 4-3: Percentage of observation within or outside soil quality guideline ranges for key soil quality indicators.

Most exceedances were recorded under cropping land and orchards, while 63 percent of soils with below recommended phosphorus levels were found on pastoral land. To keep agricultural soil healthy and productive, phosphorus fertiliser should be used at optimal levels for plant growth, avoiding over-application to reduce risk to the environment.

Erosion and sedimentation

Erosion is estimated to have increased 857 percent from pre-human levels in Hawke's Bay. Erosion reduces soil quality and productivity, as fertile topsoil is discharged into the receiving environment, increasing sediment in waterways, estuaries and the marine environment. This harms aquatic fauna, reduces water clarity, and negatively impacts recreation. Excess sediment can smother habitats, while deposition may cause waterways to flood onto nearby land.

Hill country erosion is a key issue in Hawke's Bay. 18 percent of our eroding land experiences over 1000 tonnes of erosion per square kilometre each year. It is also estimated that this land delivers 8.5 megatonnes of sediment to the stream and river network and 8 megatonnes of sediment to the coast every year.

Erosion and deposition can be monitored by measuring suspended sediment concentrations (SSC) in waterways. Automatic water samplers (ISCOs) collect instream/river samples across a range of different flow conditions. Before Cyclone Gabrielle, the ISCO network covered 64 percent of the Hawke's Bay catchment area (Figure 5).

From July 2021 to February 2023, the total cumulative load for the network was 8.52 megatonnes per year. This is 18 percent higher than reported in 2021, illustrating an increasing trend in sediment load over the period, most likely due to higher rainfall. Over the week of Cyclone Gabrielle in February 2023, the hypothetical cumulative loads on the network totaled 12.97 megatonnes. However, this is not a complete total (see Cyclone Gabrielle chapter for more detail).

Figure 4-4: HBRCs ISCO network.

The ISCO network post Cyclone Gabrielle now covers only 19 percent of the region. From February 2023 to June 2024, the total cumulative load for the network was 1.48 megatonnes per year.

The Waikatuku Stream, Wairoa River, Porangahau River, and Sandy Creek have the highest sediment load per year per hectare relative to other catchments. Conversely, Hawea Stream and the Maraetotara River are comparatively low. This comparison highlights where targeting erosion through efforts such as planting along riverbanks and along the hills upstream of these areas has been successful. It also suggests where to focus these future erosion control efforts.

Terrestrial Biodiversity

Bird populations

Hawke's Bay's coastline and braided rivers are home to large numbers of specialised bird species, which are unique to New Zealand. These species' populations are vulnerable to extreme weather events, most recently Cyclone Gabrielle. The impact of these events can affect these species on a regional, national, and even global level.

Although many species of coastal birds such as tarāpuka (black-billed gulls) and tōrea pango (variable oystercatchers) showed resilience to the impacts of Cyclone Gabrielle, other species were negatively affected (Figure 5-1). Populations of pohowera (banded dotterel) and tūturuwhatu (New Zealand dotterel) declined, affecting both these species on a global level. Likewise, severe flooding of the Tūtaekurī, Ngaruroro, and Tukituki Rivers impacted several species that use these riverbeds for breeding, including up to half the national breeding population of black fronted dotterels.

To offset the loss of nests and chicks, mammalian predator control could be implemented across these landscapes, and practices such as beach raking continued, to help reduce exotic weeds in nesting habitat. Long-term action must be taken to ensure coastal and braided river bird populations are protected from climate change induced events. Managing coastal land use and working to reduce flood impacts on the rivers will be essential to maintain our bird populations.

Figure 5-1: Notable declines of Hawke's Bay's coastal birds.

Dune health

Coastal dunes are naturally uncommon ecosystems and unique habitats for specialised plant species.

To thrive in these environments, plants must adapt to high winds, sea spray, extremes in temperature, and sand cover. Healthy dunes show a range of plant types and adaptations, with more tolerant species found closer to the shore and more sensitive species occurring more densely further back. A wide area spanning away from the ocean allows for greater dune plant diversity.

Ocean Beach is the first dune system in our monitoring programme. The northern sections of these dunes are observed to be in better condition, with native species occurring more dominantly over exotics, as well as having greater width. In contrast, dunes in the southern sections have higher numbers of introduced species and are narrower in width. The southern sections are likely impacted by their proximity to residential areas, roads, and farms. Dune health is inhibited by invasion from exotic plants species, grazing by stock and, the driving of vehicles on the beach. Replanting dunes with native species such as kōwhangatara and pīngao can add to their width, installing fencing in problem areas can help to reduce vehicle and stock damage, and continuing to remove weeds will help increase the health of this dune system.

Native forests

Outcome monitoring is undertaken in native forests managed by HBRC's Biodiversity Team as part of our Priority Ecosystem Programme. Due to ongoing consumption from browsing mammals – stock, sheep, feral pigs, goats, and deer – these forests are showing a lack of new plant growth in their understoreys of all but the most browse-resistant species. This highlights the need to protect as much of our remaining native ecosystems from browsers and other pressures like pest plant invasion, to ensure these environments regenerate and thrive.

HBRC acknowledges Pattle Delamore Partners LTD for their contribution to this chapter.

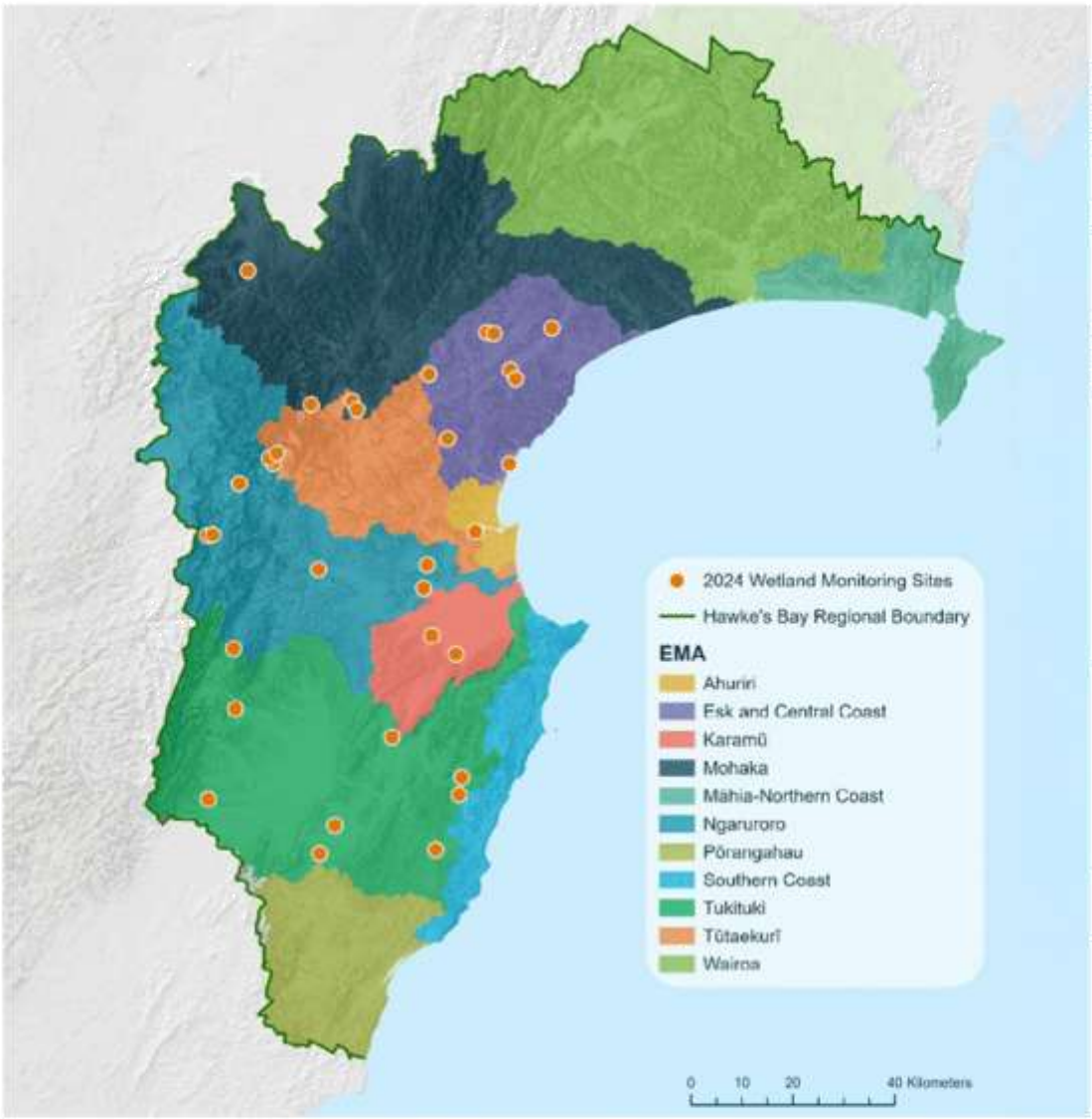


Figure 5-2: HBRC's wetland monitoring sites.

Wetlands

Between 2016 and 2022, Hawke's Bay Regional Council has collected baseline condition data on 42 of its estimated 3400 remaining wetlands. In the period between 2022 and 2024, 33 of these wetlands were remeasured, most to assess the environmental effects of Cyclone Gabrielle on wetland condition.

Wetlands experience natural change over time, but current regional land use has a large impact on these ecosystems. Change in water movement, water quality decline, exotic animal impacts, presence of undesirable species, amounts of exotic vegetation, and isolation all influence how wetlands in each catchment experience condition decline. The rate at which wetlands experience decline depends on the intensity of these pressures.

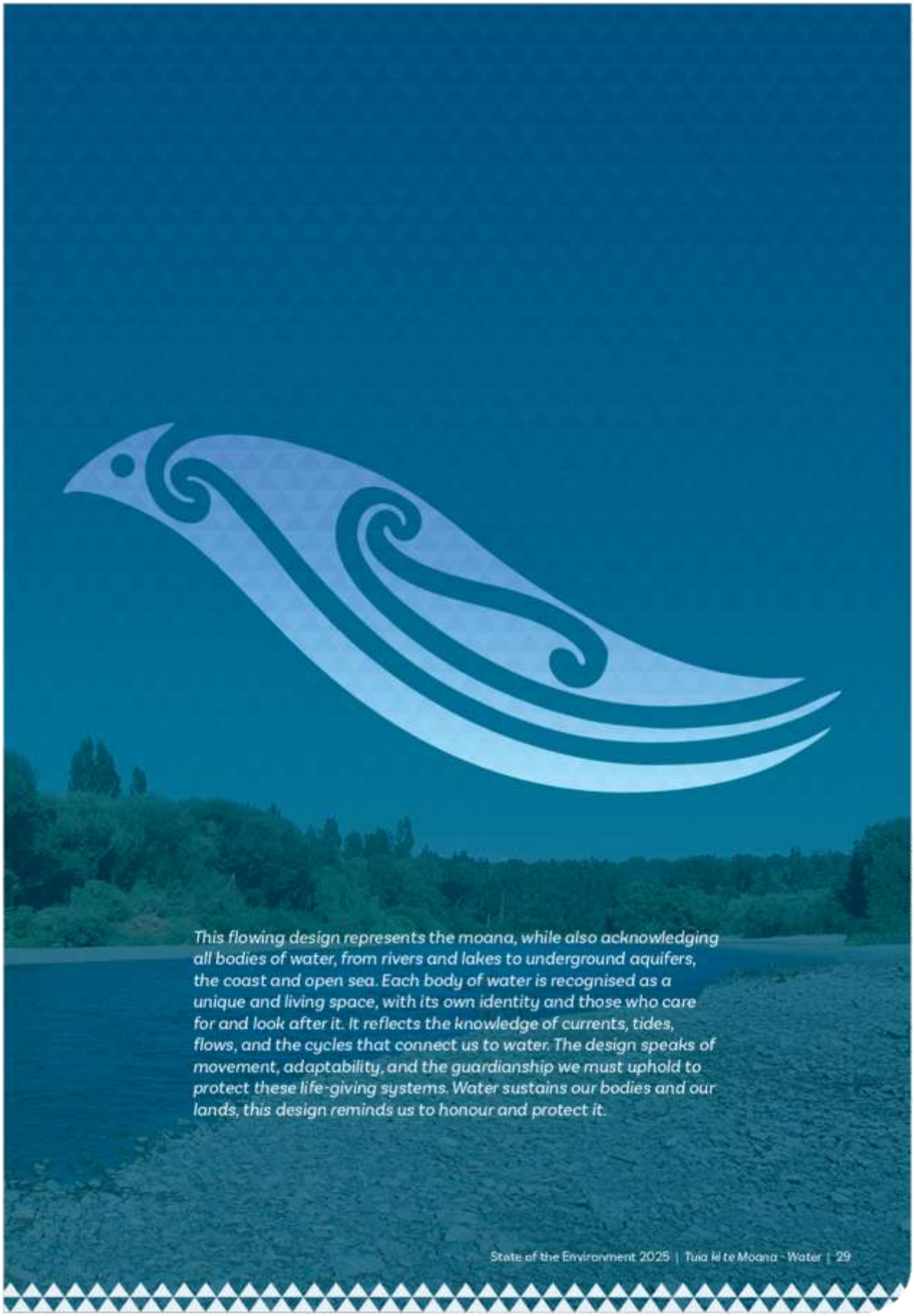
Some wetland types are also more susceptible to certain pressures than others.

As a result of high pressures, including the disturbances caused by Cyclone Gabrielle, 18 out of the 33 remeasured wetlands experienced a decrease in condition .

An increase in community education on the variety of wetland types and the pressures exerted on them will help protect and enhance these ecosystems. However, education on its own is not enough to stop the decline in regional wetland health. Stronger regional policy around wetland protection and development of funding programmes to aid community groups and landowners to protect wetlands on their land would also be beneficial.

Tuia ki te Moana

Water


This flowing design represents the moana, while also acknowledging all bodies of water, from rivers and lakes to underground aquifers, the coast and open sea. Each body of water is recognised as a unique and living space, with its own identity and those who care for and look after it. It reflects the knowledge of currents, tides, flows, and the cycles that connect us to water. The design speaks of movement, adaptability, and the guardianship we must uphold to protect these life-giving systems. Water sustains our bodies and our lands, this design reminds us to honour and protect it.
State of the Environment 2025 | Tuia ki te Moana - Water | 29

Groundwater

Groundwater quantity

Groundwater is the water stored in the cracks and spaces within soil, sand, and rock beneath the ground surface. Cracks and spaces which hold and move large amounts of water, supplying wells, springs, and surface waters, including municipal drinking supplies are known as aquifers.

Groundwater level conditions (2021-2024)

Between July 2021 and June 2024, groundwater levels varied significantly across Hawke's Bay, with 2022-2023 standing out as an exceptionally wet year. The high groundwater levels observed in 2022-2023 were primarily driven by higher-than-usual rainfall over the summer months. Some wells even reached their highest-ever levels for that time of the year. This increased rainfall decreased demand for groundwater. These conditions contrast sharply with drier years, when groundwater levels tend to decline further due to higher pumping rates.

Figure 6-1: Groundwater levels in the Heretaunga and Ruataniwha Plains between July 2021 and June 2024. Below-normal (0-25th percentile), lowest-ever, normal (25-75th percentile), above-normal (75th-100th percentile), highest-ever.

Long-term groundwater level conditions (1984-2024)

In the Heretaunga Plains, groundwater levels have declined by 0.4-2 metres over the past four decades, with the most persistent declines occurring between Roy's Hill and Fernhill. Seasonal variations have increased but remain smaller than in the Ruataniwha Plains due to the area's highly permeable aquifers and strong surface water connections.

In contrast, the Ruataniwha Plains have seen greater groundwater declines, averaging 2.8-6 metres since the 1980s. Levels decline sharply during peak irrigation months (December-March), emphasising the strong impact of seasonal water demand on aquifer depletion.

Understanding trends and groundwater level variations

Short-term groundwater levels are largely influenced by climatic factors such as annual changes in rainfall and temperature, while long-term trends are driven by sustained pumping. In Hawke's Bay, groundwater use has risen sharply over the past 40 years, with more takes and higher volumes leading to a steady decline in water levels. These effects are most evident in summer, when peak demand intensifies groundwater use.

In areas like Fernhill, localised groundwater declines are likely due to changes to the riverbed caused by gravel extraction and river engineering, rather than pumping. These factors make it difficult to understand all the causes of groundwater level changes over time.

Management issues

In Hawke's Bay, two major challenges arise from changes to groundwater levels: reductions in surface water flows and increasing risks to water supply. Groundwater pumping has significantly reduced streamflow in major rivers and spring-fed streams, particularly during summer. Beyond flow reductions, declines in groundwater levels threaten water supply, particularly for shallow wells in areas such as Bridge Pa, Tikokino, and Ongaonga, where some domestic and stock water supplies have been affected during periods of extreme low groundwater levels.

Management solutions

To address these challenges, the HBRC has set groundwater allocation limits informed by groundwater modelling, to balance water use with the environmental impacts. Groundwater allocation limits have been modelled to prevent ongoing declines, but as these limits are relatively new, it will take time for the groundwater system to reach a new equilibrium.

What can you do?

Everyone has a role in protecting groundwater. Here's how you can help:

Conserve water
Use water efficiently at home, on farms, and in businesses to reduce demand on groundwater.

Improve irrigation efficiency
Adopt best practices and modern irrigation technology to minimise water use while maintaining productivity.

Plan for dry periods
Ensure wells are properly designed and positioned to maintain access to water during droughts.

Consider water storage
Explore options for capturing and storing water during wet periods for use when supplies are low.

Have your say

Participate in the planning process by providing feedback on water management policies and allocation rules.

Small actions can make a big difference in protecting groundwater for future generations.

Groundwater Quality

The quality of our groundwater is influenced by the natural water cycle and human activities, including land use, pollution, and rising water demand. Declines in groundwater quality pose a risk to human health and aquatic ecosystems. Some groundwater can retain much higher nutrient concentrations than those seen in surface waters. In areas like the Tukituki catchment, groundwater feeds surface water bodies through springs and seeps, adding to the nutrient load in streams. Elevated nutrient levels in surface waters encourage excessive growth of periphyton, algae and vascular plants. At high concentrations, these can be toxic to aquatic life.

Our drinking water

Between 1 July 2019 and 30 June 2024, HBRC's 91 monitoring sites showed that groundwater quality in Hawke's Bay was generally good for drinking. There were no exceedances of the NZ drinking water standard for cadmium, chromium, copper, lead, nickel, nitrite, or zinc. A 2022 survey of 13 shallow wells also detected no pesticides.

However, some wells exceeded the drinking water standard for arsenic, manganese, nitrate and *E. coli*. The arsenic exceedances occurred in three wells where high arsenic concentrations occur naturally. The exceedances for manganese occurred at nine sites. Manganese often occurs in high concentrations in aquifer materials and is rarely caused by human activity.

Nitrate-nitrogen concentration exceeded the drinking water standard in one well in the Ruataniwha aquifer, which is impacted by land use. Consented discharges that could affect this well are not exceeding limits for their nitrogen use (nitrogen loading limits), however they still might affect groundwater quality if nitrogen is leeching through the soil. A model for the Ruataniwha Aquifer is being developed to better understand nitrate loading impacts at this and other affected sites.

E. coli was detected at 22 monitoring sites. Seven of these wells had multiple exceedances, indicating a consistent source of *E. coli* contamination. These were not drinking water supply wells, however the results highlight the importance of testing and/or installing appropriate water treatment options such as UV in private drinking water supplies.

Land use impacts

Land use has a significant impact on groundwater quality and nutrient availability across Hawke's Bay. Dissolved reactive phosphorus and nitrate nitrogen applied to soils through land use activities such as fertilizer application, wastewater discharge, and urine patches from stock can leach into groundwater, affecting its quality.

Dissolved reactive phosphorus levels are naturally elevated in some areas of Hawke's Bay due to local geology, making it challenging to distinguish between natural sources and those influenced by land use.

Nitrate-nitrogen concentrations exceeded expected natural levels at 52 of 91 groundwater monitoring sites. Of the wells with elevated nitrate concentrations, nine showed significant increasing trends, and seven sites decreasing trends. Seven of the sites with increasing trends were in the Ruataniwha aquifer, highlighting it as the area most affected by nitrate leaching from land use in the region.

Protecting our groundwater quality

To reduce nutrient leaching and runoff, best management practices can be implemented, such as precision fertilizer application, riverside buffer zones, and cover cropping. These strategies help retain nutrients in the soil, improve water infiltration, and minimise the movement of dissolved reactive phosphorus and nitrate into groundwater and surface water.

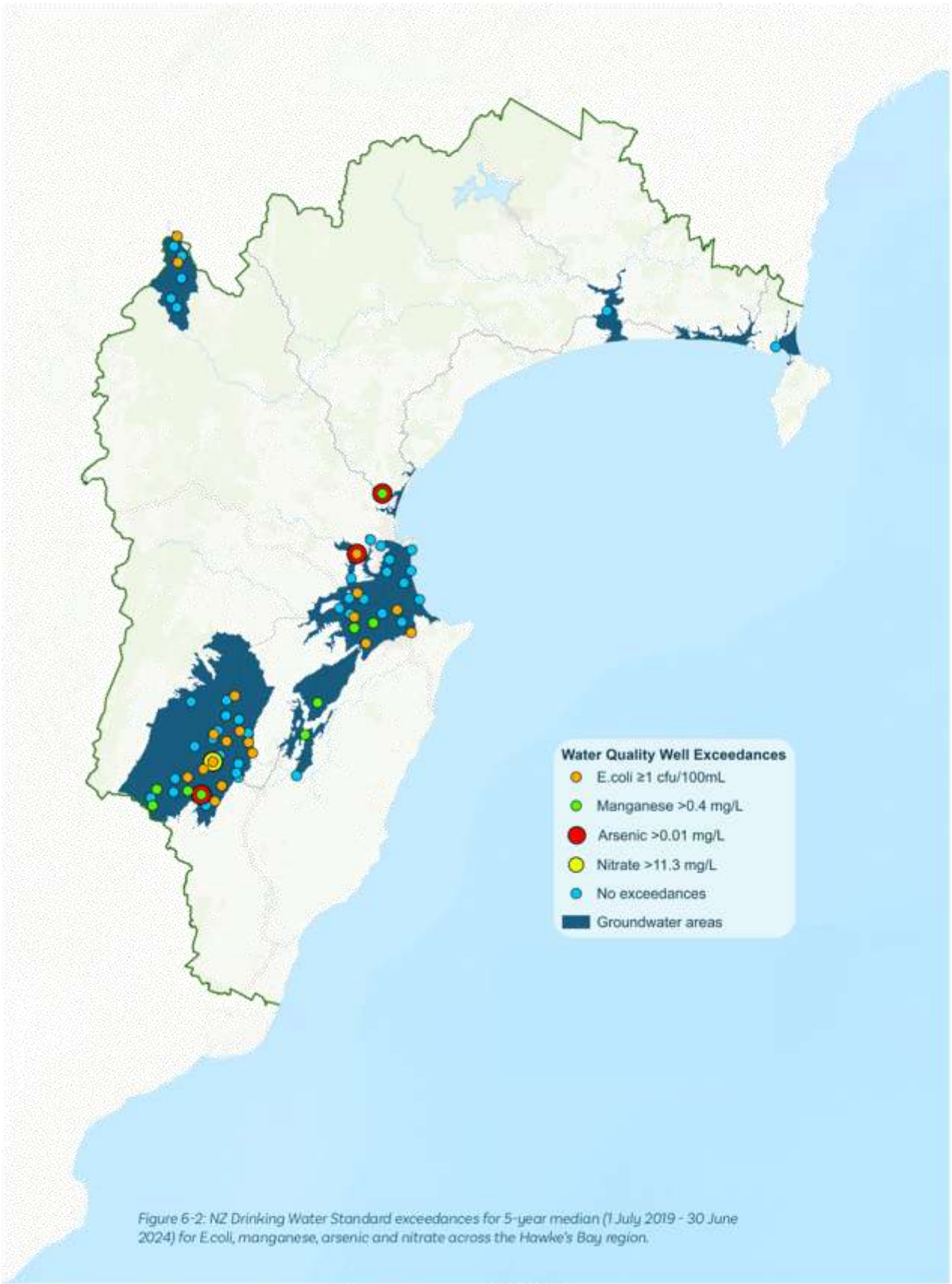


Figure 6-2: NZ Drinking Water Standard exceedances for 5-year median (1 July 2019 - 30 June 2024) for E.coli, manganese, arsenic and nitrate across the Hawke's Bay region.

River Flows

Rivers are more than just waterways. They connect land, people, and water — k i uta ki tai, from mountains to sea. The Ngaruroro River, for instance, originates in the Kaweka Range, carving through steep gorges before descending to the Heretaunga Plains. There it spreads across the floodplain, braiding and reshaping its course before reaching the coast. Rivers sustain life, providing habitat for freshwater ecosystems while supporting recreation, kai gathering, and the local economy.

Understanding how rivers flow and respond to change is essential to keeping them healthy for future generations. River flow is the volume of water moving through a river over time, typically measured in cubic metres per second (m^3/s) or litres per second (L/s).

Hawke's Bay's rivers and groundwater aquifers (see groundwater chapter for further information) are closely interconnected, with water naturally moving between them. In some areas, rivers receive water from underlying aquifers (groundwater), sustaining river flows during dry periods. In other areas, they lose water to these aquifers, replenishing groundwater reserves. This balance is influenced by changes in river flows, climate patterns, and water use. This affects the availability of both surface water and groundwater resources.

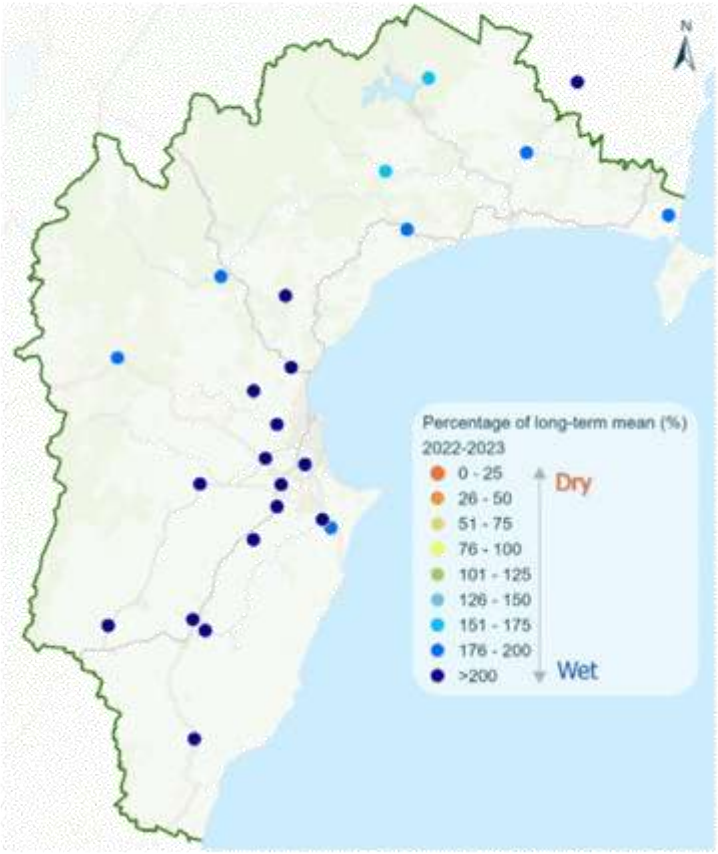


Figure 7-1: Annual mean flow as a percentage of long-term mean flow for hydrological year 2022-2023

Annual river flows are measured from July to June to align with seasonal patterns. This is known as the 'hydrological year'. Using the hydrological year ensures low-flow periods in the drier seasons are not split, and provides a clearer picture of long-term river trends.

The average river flow over the hydrological year is known as the annual mean flow. This is an important measure of overall river flow. (Figure 7-1) shows how the 2022-2023 annual mean flow compares to the long-term average, helping to illustrate whether that year was wetter or drier than usual. ***The 2022-2023 period was significantly wetter than normal, with most rivers recording flows well above 150 percent of their long-term average, and some exceeding 200 percent.***

The 7-day Mean Annual Low Flow (MALF) is an important measure of river flows. It represents the average of the lowest recorded flows over 7 days each year. MALF helps us understand how much water remains in a river during the driest times of the year, which is crucial for management of both ecosystems and water use.

MALF is a key indicator of river health because low flows can affect water quality and habitat availability for fish and other freshwater species. It also helps water managers set sustainable water allocation limits, ensuring that enough water remains in the river to support both environmental and human needs.

(Figure 7-2) shows the 2022-2023 period experienced elevated flows, with many rivers experiencing flows well above 200 percent of their long-term MALF. This was widespread across the Hawke's Bay region and reflects a year of persistent wetter conditions.

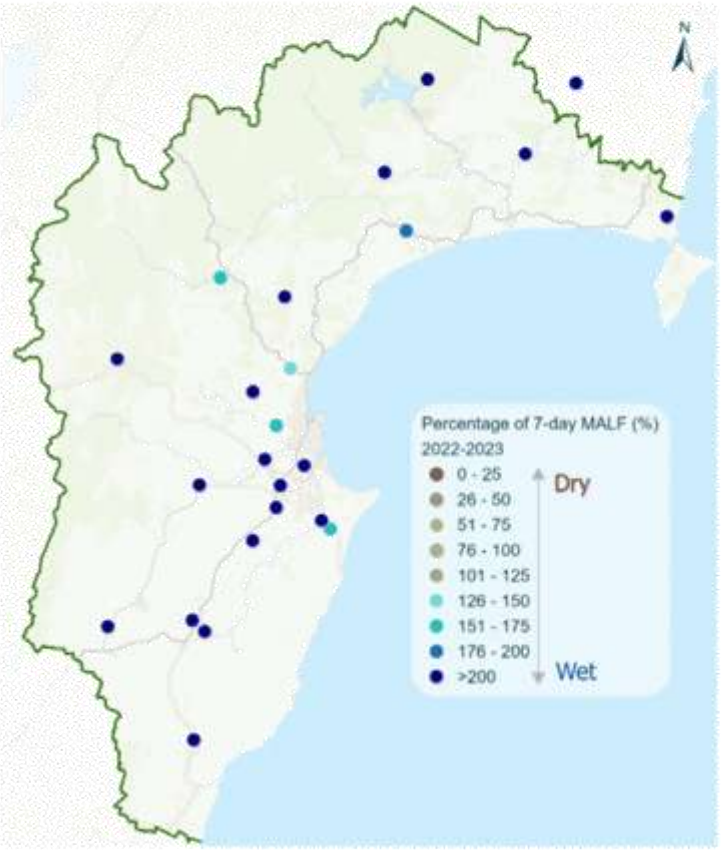


Figure 7-2: Annual 7-day minimum as a percentage of 7-day MALF for hydrological year 2022-2023

In contrast to 2022-2023, the 2021-2022 and 2023-2024 years had closer to normal flows across the region.

Hawke's Bay experienced large variation in river flow for the reporting period, impacting water management, ecosystems, and water users. Understanding these fluctuations is crucial for managing the region's water resources effectively.

Taking water from rivers and streams can also reduce flows. HBRC manages river flows by setting minimum flow limits. Limits are based on factors such as habitat levels of aquatic species, role of river flow on water quality, and groundwater recharge.

What can you do?

To protect rivers during dry periods, users with resource consents stop taking water when flows drop to specific ban limits. These restrictions help maintain the balance between water use and sustainable river flows. This ensures that our rivers continue to function as healthy, resilient ecosystems.

For more information on river flow and ban limits visit ***hbrc.govt.nz, search #lowflows***

Surface Water Quality and Biodiversity

Healthy freshwater ecosystems — streams, rivers, and lakes — support diverse aquatic life and rely on the balance between water quality, habitat, and plant or algal growth. Monitoring these factors helps assess ecological health and identify stress from pollution or degradation.

Nutrients

Nitrogen and phosphorus are essential for plant growth, but in excess cause algal blooms, oxygen depletion, and habitat degradation. In Hawke's Bay, phosphorus is more problematic than nitrogen. Around 60 percent of sites are within nitrogen guidelines, but phosphorus exceeds acceptable levels at nearly half of sites — especially in the Karamu, Ahuriri, and Tukituki catchments.

Nitrogen Toxicity

Nitrate and ammonia can harm aquatic life at high concentrations. Most Hawke's Bay sites remain below harmful levels, protecting over 95 percent of species. However, 10 sites show elevated nitrate, and ammonia peaks seasonally at 12 sites, mainly in the Tukituki, Mohaka, and Karamu catchments, potentially affecting sensitive species.

Sediment

Sediment, both suspended and deposited, harms ecosystems by smothering habitats, damaging gills, and reducing feeding and visibility. Water clarity indicates sediment levels. Headwaters of the Tūtaekurī, Ngaruroro, and Mohaka rivers have clear water due to intact vegetation, with visibility often over 5.5 metres. Clarity drops near the coast due to erosion and tributary inputs. Deposited sediment can cover 30–50 percent of the streambed, reducing habitat quality.

Algae and Aquatic Plants

Algae (periphyton) and aquatic plants (macrophytes) are natural, but become harmful when growing excessively, depleting oxygen and degrading habitat. Some algae are toxic to humans and animals. Aquatic plant cover exceeds guidelines in many lowland streams, especially in the Karamu and Tukituki catchments. Droughts in 2020, 2021, and 2024 have worsened algal blooms. Growth is driven by excess nutrients, warm temperatures, and sunlight. Riverside (riparian) planting is a key tool to reduce light, cool water, and control growth.

Habitat

Stream habitat — comprising bed, banks, and riparian zones — supports aquatic life by providing

Figure 8-1: Hornwort completely smothers native plant communities, degrading habitats and reducing resources for fish and other aquatic animals.

shelter and food. Habitat scores are lowest in the Karamu and Ahuriri catchments and highest in headwaters of the Mohaka, Tukituki, Ngaruroro, and Tūtaekurī. Lack of shading and flow variability limits habitat diversity in lowland streams.

Water Temperature

Water temperature affects oxygen levels and species health. The Cox-Rutherford Index (CRI) measures thermal stress; values above 25°C pose risks. The Mohaka headwaters are the coolest (CRI <16°C), while unshaded streams in the Wairoa and Pōrangahau catchments exceed 25°C.

Dissolved Oxygen

Dissolved oxygen (DO) is vital for supporting aquatic organisms. DO fluctuates daily, peaking during daylight when plants photosynthesise, and dropping at night during respiration. Lowland sites often show dangerously low nighttime DO due to excessive aquatic plant growth. In streams like Poukawa and Ruahāpia, DO is additionally used up during the decomposition of organic matter, which also worsens DO during daytime.

Macroinvertebrates

These organisms are key indicators of freshwater health. Communities are poorest in lowland streams with soft sediment and low gradients — especially in the Karamu, Tukituki, and small southern coastal streams. The healthiest communities are found in the Mohaka, Ngaruroro, and Tūtaekurī headwaters. Lowland ecosystems face ongoing stress from warm temperatures, oxygen depletion, and habitat loss.

Lakes

Lakes are dynamic ecosystems, where algae growth is influenced by runoff from surrounding land and nutrients stored in the lakebed. The Trophic Level Index (TLI) indicates nutrient enrichment and the risk of algal blooms in lakes.

In Hawke's Bay, most shallow lakes suffer poor water quality, while deeper lakes like Tūtira generally have better — but still variable — conditions. Persistent nutrient enrichment is the main driver of these issues. Shallow lakes such as Whakakī and Rūnanga have become murky and dominated by algae, which

Figure 8-2: A kākahi filter feeding on the lakebed of Lake Tūtira.

is difficult to reverse. Significant reductions in both catchment and in-lake nutrients are needed to improve water quality.

Hawke's Bay is home to a single species of kākahi (*Echyridella menziesii)* a long-lived native freshwater mussel found throughout Aotearoa. Kākahi populations are present in good numbers in several Hawke's Bay lakes, including Opouahi, Waikōpiro, Rotonuiahā, and Tūtira. They are found in shallow, sandy or firm substrates with minimal silt. Densities are highest near inflows or crests of lakebed slopes, with most individuals being mature and actively filtering. Native aquatic plants provide suitable habitats, but invasive species like hornwort threaten kākahi populations by smothering habitats, reducing space, and hindering feeding and reproduction.

Aquatic plants also support key ecosystem functions like productivity, nutrient uptake, and habitat for aquatic life, but invasive species disrupt these processes and can worsen excess nutrient build-up.

Freshwater Fish

Hawke's Bay is home to around 19 native freshwater fish species, nearly half are classified as At Risk or Threatened. Most are diadromous (migratory), moving between rivers and the ocean to complete their life cycles. In recent years, eDNA monitoring has been a valuable tool for detecting rare and threatened species – including pouched lamprey and shortjaw kōkopu – and understanding their distribution.

Fish IBI (Index of Biotic Integrity) is a measure of fish community health, based on species diversity. Scores are generally highest in lowland and coastal streams with good access to the sea, particularly where riparian vegetation and habitat quality are maintained. However, many lowland streams – such as those in the Ahuriri and Karamū catchments – are degraded, with high temperatures, low oxygen, excessive plant growth, and sedimentation, reducing habitat suitability for sensitive species.

Inland and high-elevation streams are less accessible to weaker-swimming species but offer cool, shaded refuge where riparian vegetation is intact. Because fewer species are observed at these sites, they tend to have lower IBI scores.

However, these are important habitats for strong climbers like kōaro and longfin eel, which reach headwaters over 100 km inland.

Different species have specific habitat preferences. Kōaro and banded kōkopu are commonly found in shaded or well-vegetated streams. Bullies like redfin and bluegill prefer clean cobbles and gravels, while īnanga rely on vegetated estuarine margins for spawning. Most importantly, fish need access to these habitats. In-stream structures like perched culverts, weirs, dams, and pump stations are major barriers to movement. Between 2019–2024 around 500 in-stream structures were assessed, with around 20 percent identified as high risk to fish movement. Common issues included steep drops, high-velocity flows, shallow water, and physical blockages – all of which can prevent fish from moving upstream. Restoring fish passage ensures species can access critical areas for spawning and rearing. HBRC is working on a 'Fish Passage Action Plan' to provide solutions. For example, barriers closer to the coast and more likely to block access to a greater proportion of upstream habitat would be a priority for establishing fish passage.

What can you do?

Sustained efforts in these areas will improve water quality, habitat health, and ecosystem resilience:

Riparian planting:

One of the most effective management tools and fastest to see positive results in smaller streams, with a positive effect downstream. Plant roots reinforce streambanks, reducing land erosion and minimising sediment inputs. Riparian vegetation also enhances instream habitat by providing shade and cover, contributing natural inputs like leaves and woody debris, and supporting spawning areas that sustain diverse aquatic communities. This vegetation also increases shade, stabilises oxygen levels, and helps limit the growth of algae and nuisance aquatic plants by reducing light availability and stream temperature.

Managing nutrients:

Restoring and maintaining wetlands helps to remove excess nitrogen from the surrounding environment. Preventing excess runoff from fertiliser application and wastewater discharge will also limit phosphorus inputs.

Coastal water quality and biodiversity

Nearshore water quality

The coastal marine area is affected by all land-based activities in Hawke's Bay. Our rivers can directly transport pollutants to estuaries and nearshore waters, making these environments vulnerable to water quality decline.

Suspended sediment reduces water clarity, blocking light needed for plant growth. Suspended sediment levels in Hawke's Bay nearshore coastal waters are below national median levels, however the waters off Wairoa River have the poorest clarity in the region. Reducing sediment appears to improve coastal health, but without also reducing nutrients such as nitrogen and phosphorus there is a risk of undesirable plant and algae growth.

Nitrogen and phosphorus concentrations in our coastal waters are within the range of other New Zealand sites, however several sites – such as Awatoto, Haumoana and Westshore – that are located close to river and sewage outfalls exhibit elevated nitrogen concentrations which exceed recommended guideline values. Dissolved inorganic nitrogen concentrations appear to be reducing at Mahia, Mohaka and Westshore. Elevated levels of dissolved reactive phosphorus were recorded at Ocean Beach and Red Island but has generally remained below national guideline values. Moreover, phosphorus concentrations appear to be reducing at multiple nearshore sites.

Our estuaries

Healthy estuaries tend to be sandy, with the presence of fine mud indicating external inputs. Estuarine organisms have important roles in keeping the environment clean and healthy (Figure 9-1). However, several species need to contribute to each role to ensure it is still supported if one species is compromised. In New Zealand, estuaries are the most at-risk coastal environments. They are vulnerable to contaminants such as nutrients, sediments, trace metals, and pesticides.

Suspended sediment levels continue to be elevated in Hawke's Bay estuaries. Median values at Ahuriri Estuary at Quarantine Road and Pōrangahau Estuary are consistently higher than similar New Zealand estuaries. Spikes in suspended sediment levels – especially in Wairoa and Pōrangahau Estuary – suggest major sediment inflows, likely during floods.

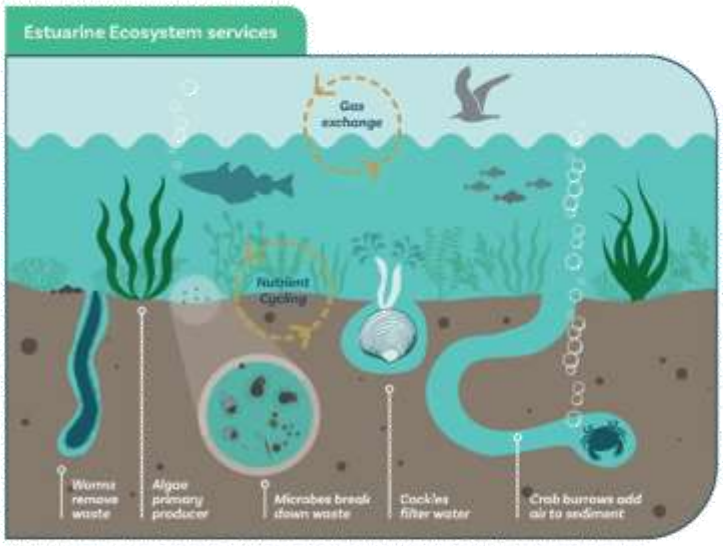


Figure 9-1: Types of ecosystem services provided by estuarine animals and plants.

HBRC acknowledges Pattle Delamore Partners LTD for their contribution to this chapter.

When fine sediment settles on the seafloor it causes estuaries to become muddier. In several of our estuaries, mud levels are over 25 percent, which negatively impacts animals living in the sediment. At most sites, it appears that seafloor communities have been relatively stable. However, our assessments show that there are only 1-2 species contributing to each role, among the lowest observed nationally.

Figure 9-2: Satellite imagery showing the influence of Cyclone Gabrielle on the transport of sediment to the coast (February 2023).

Following cyclone Gabrielle, high sediment loads were discharged to the coast with every rainfall (Figure 9-2). At first, sediment levels in the Waitangi Estuary appeared unchanged. However, in the months following the cyclone, sediment continued to accumulate until it peaked nearly 10 months later. Sediment levels have remained high since then.

Nutrient concentrations, particularly nitrogen, remain high in the Ahuriri, Tukituki and Pōrangahau Estuaries, often exceeding recommended guideline values.

What can you do?

Nutrients, sediment loads, and other stressors need to be reduced. This requires an integrated approach, combining sustainable land management, riparian planting, flood mitigation strategies, and proactive water quality management to restore and protect the delicate balance of our coastal and estuarine ecosystems.

Intertidal and subtidal habitats

Hawke's Bay has patches of intertidal (above water at low tide and submerged at high tide) rocky reefs along its coastline. They play an important role in protecting the coastline from waves, and are highly diverse, supporting many marine species. They are also a valuable source of kai moana. Despite environmental disturbances like marine heatwaves and storms, intertidal reef communities have remained relatively stable.

Seagrass is a marine flowering plant that supports diverse species and absorbs and stores significant amounts of carbon from the atmosphere and ocean. Its presence is a distinguishing feature of our intertidal reefs. Seagrass across the region is generally in healthy condition, occurring prominently in the northern and southern coastal areas.

Subtidal (permanently submerged) reefs support a variety of aquatic communities, including species of interest to commercial and recreational fisheries. Two distinctive rocky areas on the Hawke Bay seafloor – Wairoa Hard and Clive Hard – are classified as Significant Conservation Areas. Underwater footage has displayed the condition of the seabed before and after cyclone Gabrielle. Footage shows diverse sponge gardens, extensive boulder areas, and canopy-forming macroalgae that provide refuge for many species. Understanding the state of our intertidal and subtidal communities is vital for better management and protection from sedimentation and other stressors.

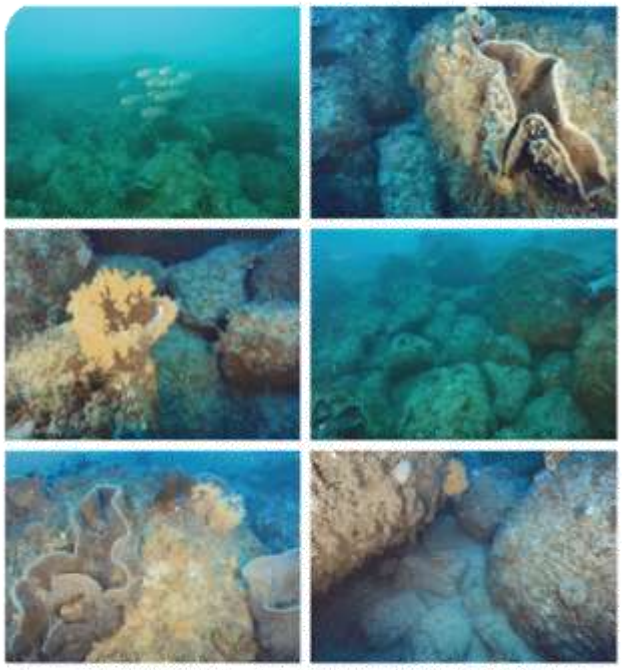


Figure 9-3: Images captured of Hawke Bay's subtidal reefs by a remote operated vehicle.


Tuia ki te
Here Tangata
People
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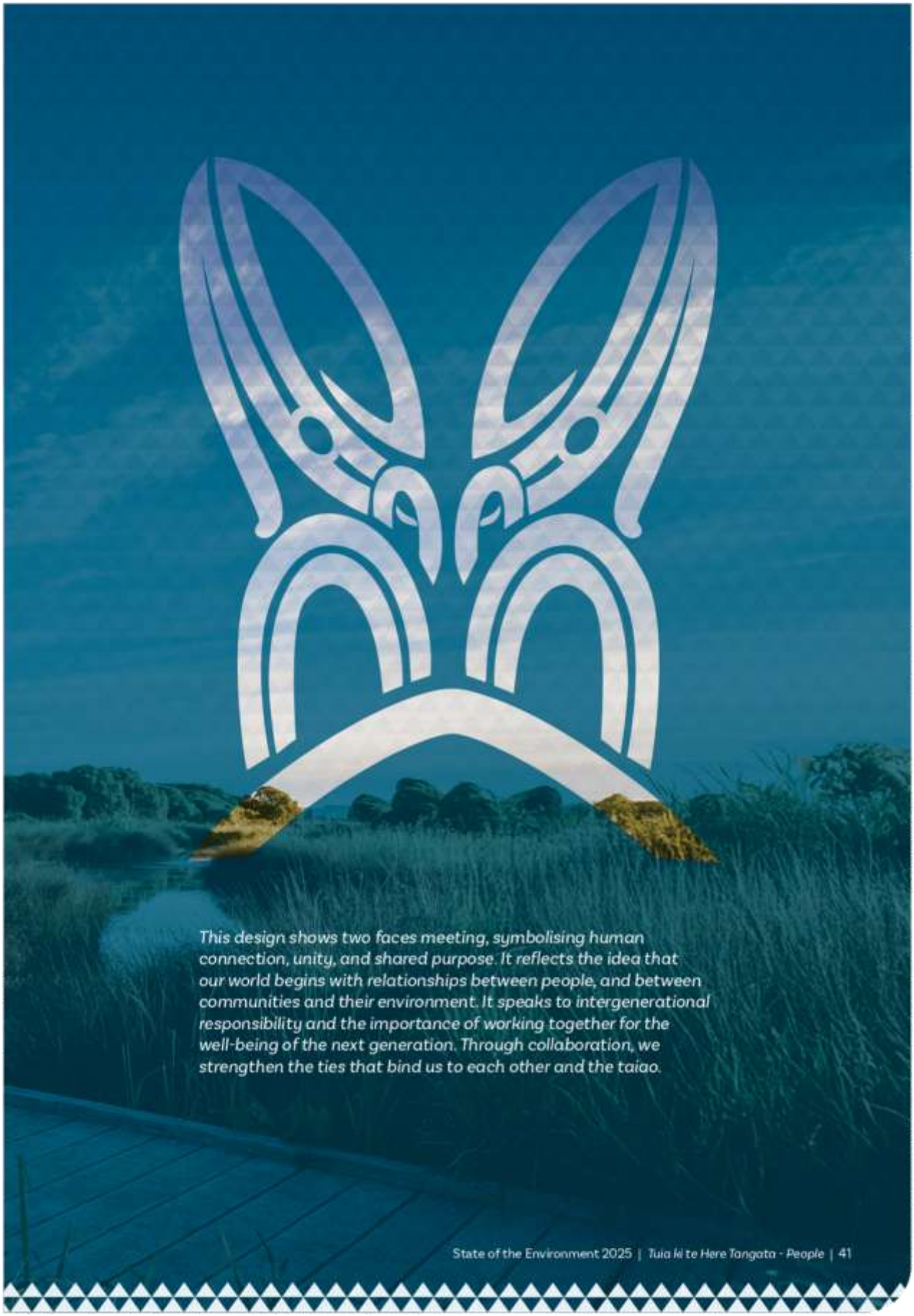
This design shows two faces meeting, symbolising human connection, unity, and shared purpose. It reflects the idea that our world begins with relationships between people, and between communities and their environment. It speaks to intergenerational responsibility and the importance of working together for the well-being of the next generation. Through collaboration, we strengthen the ties that bind us to each other and the taiao.
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Mātauranga Māori

Mātauranga Māori (Māori intergenerational knowledge) is increasingly recognized as a vital component of environmental reporting. It offers a unique perspective on environmental issues, grounded in a deep connection to the land and traditional knowledge systems from a Te Ao Māori (Māori worldview) perspective.

Central to mātauranga Māori are values such as kaitiakitanga (guardianship), which emphasize the interconnectedness and holistic care of ecosystems.

By embracing these values, environmental assessments are enriched with broader insights. This approach not only deepens our understanding of environmental challenges but also enhances decision-making by drawing on the wisdom of generations intimately connected to the natural world.

Understanding mātauranga Māori first requires an understanding of Te Ao Māori.

Ngā tirohanga ao Māori – Te Ao Māori

A worldview is shaped by beliefs, values, and expectations. Te Ao Māori is based on relationships between living and non-living beings. Four key principles are essential to understanding Te Ao Māori, mātauranga Māori, and te taiao (the environment).

Figure 10-1: Key principles of Te Ao Māori (Image sourced and adapted from Ministry of Business, Innovation and Employment).

- **Whakapapa** refers to ancestry, genealogy, connections and relationships. It is a way of understanding the world and the connections of people to each other, flora, fauna, mountains, and waters, with an understanding that all nature descends from ātua (Māori Gods).
- **Mauri** can be described as the life force, vitality, and metaphysical essence or energy of landscapes and systems. All plants, animals, water, and soil have mauri. There are various ways to understand mauri, and a range of tools for measuring mauri that can be used to track environmental health.
- **Katiakitanga** is an expression of tapu – it acknowledges the sacred responsibility to protect and uphold the mauri and integrity of people, places, and taonga (treasures). In Te Ao Māori, mana whenua (hapū and iwi with traditional authority (Mana) over an area) are kaitiaki, stewards or guardians of their environment. Whakapapa is central to kaitiakitanga.
- **Rangatiratanga** means self-determination of Māori as decision-makers in a Te Tiriti partnership with Tangata Tiriti (non-Māori). Rangatiratanga is an expression of mana – the authority to uphold this responsibility in accordance with tikanga (customs and ways of operating) and whakapapa. In terms of te taiao, rangatiratanga is important to ensure the best interests of the people and the environment are prioritised.

HBRC acknowledges Pattle Delamore Partners LTD for their contribution to this chapter.

In Te Ao Māori, te taiao includes humans. This means that landscapes are part of people and community. Te Ao Māori and mātauranga Māori have a holistic view of te taiao, which is reflected in the concept ki uta ki tai (from the mountains to the sea). It shows the need to consider the interconnectedness of te taiao including air/weather/climate, maunga (mountains), lakes, through awa (rivers), groundwater, hāpua (lagoons), whenua (land, including soil), whanga (estuaries), and the moana (sea). Ki uta ki tai is a concept that resonates with holistic environmental approaches such as catchment planning and integrated management.

Mātauranga Māori encompasses the pursuit, application, and body of knowledge and understanding of te taiao and te ao tūroa (the natural world). It's based on systematic methodology and built on evidence, incorporating intrinsic cultural values and worldviews. This taonga tuku iho (knowledge passed down) is lived, practiced, tested, and updated. It evolves with the influence of new knowledge, research and discoveries. This knowledge is directly informed by whakapapa, as local landscape features like maunga and awa are seen as kin. Furthermore, it is embedded in stories, environments, ways of doing, being and knowing, language, technology, law systems, and much more.

Mātauranga in Hawke's Bay

Mātauranga Māori is place-based, highly variable and locally specific. Mātauranga from Hawke's Bay can be exemplified in place names, pūrākau and maramataka.

Figure 10-2: Matariki marks the start of the Māori new year and a key marker for the changing of the season. The revival of Matariki celebrations around the country has gone hand-in-hand with resurgence in the maramataka.

Place names throughout Hawke's Bay, reflect the rich history and mātauranga of the areas and natural features. Te Matau-a-Māui (Hawke's Bay) translates to the hook of Māui. It reflects the fishhook Māui used to fish up the North Island of Aotearoa, demonstrating the large, hooked shape of the bay.

Pūrākau are traditional Māori narratives, oral stories or legends that convey important knowledge, values, and teachings. They serve to pass down mātauranga about genealogy, history, the natural world, and human behaviour. Pūrākau often explain the origins of significant landmarks, environmental phenomena, or social customs. Pūrakau involving taniwha can reflect the danger of natural hazards, such as Moremore, son of Pania, whose presence can warn of dangers in the coastal waters of Ahuriri.

The maramataka, the traditional Māori lunar calendar, is used to align human activities with natural cycles. Local iwi and hapū incorporate maramataka principles in freshwater and marine management, using moon phases to determine optimal times for planting, harvesting, and fishing to ensure sustainability. For example, some Māori-led restoration projects time native tree planting with the waxing moon to encourage strong growth. Additionally, educators and environmental groups integrate maramataka into water quality monitoring and mātauranga Māori initiatives, helping communities reconnect with traditional knowledge to support ecosystem health.

Mātauranga Māori is an important knowledge system, valued by Hawke's Bay Regional Council. We are committed to better understanding the needs and aspirations of iwi in its revitalisation and ongoing practice, and our role in supporting them to do so.

We look forward to exploring with iwi how we can incorporate mātauranga Māori into our environmental thinking, planning, and doing.

The air we breathe

The air is a precious resource, a taonga, and one that is essential for human life. Pressure is placed on this resource when certain activities as simple as driving our cars or using our fireplaces release pollutants into the air. When we breathe in these pollutants, our health and wellbeing can suffer.

Hawke's Bay generally experiences good air quality and residents can be assured the air is safe to breathe. However, there are occasions when levels of air pollutants can exceed health-based standards. Air pollution in our urban areas is typically highest during the winter, when cold, calm weather allows smoke from residential wood burning to accumulate. Natural sources such as sea salt and windblown dust can also contribute to air pollution, especially near the coast.

HBRC began monitoring air quality continuously in Napier in 2005, Hastings in 2006, and Awatoto in 2012. We monitor for PM10, which stands for particulate matter less than 10 micrometers in diameter. These tiny airborne particles are smaller than a fifth of the width of a human hair and can be inhaled deep into our lungs. More recently, monitoring for PM2.5 has also commenced at our sites. PM2.5 are even smaller particles and can penetrate deeper into our respiratory system.

The results of our monitoring are compared to the National Environmental Standards (NES) for Air Quality, which set out limits for PM10 and four pollutant gases (carbon monoxide, nitrogen dioxide, ozone and sulphur dioxide). There is a daily limit for PM10 which must not be exceeded more than once per year. HBRC has also set a strategic goal of meeting the World Health Organisation's

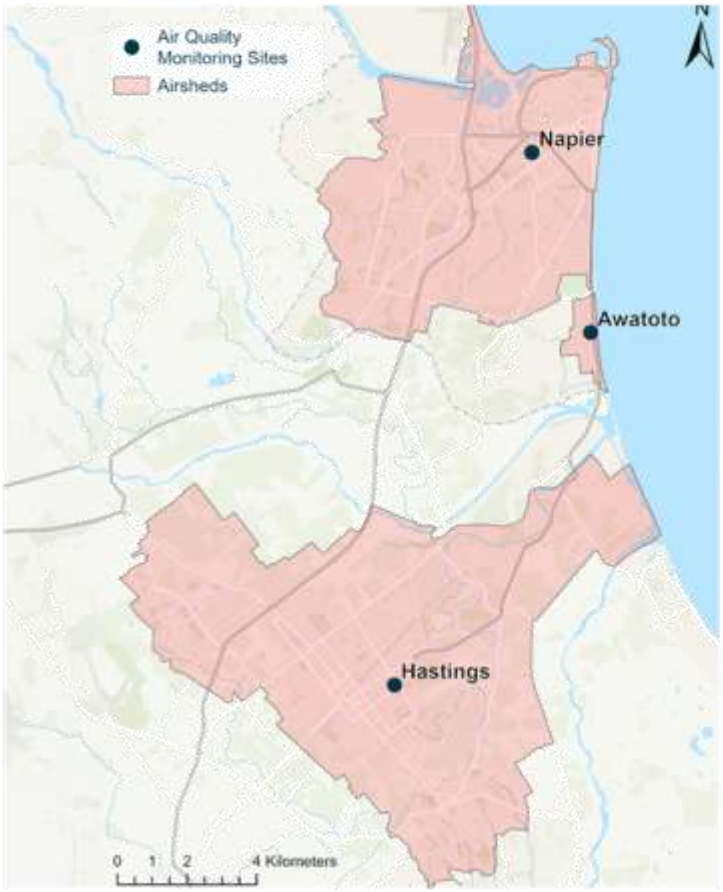


Figure 11-1: The locations of HBRC's air quality monitoring stations. The airsheds represent areas where specific rules apply for air quality management.

(WHO) air quality guidelines. These guidelines include stricter limits for the same pollutants as the NES, with the addition of PM2.5. The WHO guidelines allow for no more than 4 exceedances of the daily limits per year.

Our monitoring shows that air quality in Napier and Hastings has improved since 2006. This improvement is largely due to residents switching to cleaner forms of home heating. In Napier only one day in the past ten years has exceeded the PM10 limit (Figure 11-2). In Hastings air quality did not meet the NES requirements in 2022 and 2023, but in 2024 only one day exceeded the NES limit which is encouraging. PM10 levels in Awatoto show no trend since monitoring began and do not meet the NES requirements either. However, most of the PM10 in Awatoto comes from natural sources which is difficult to control.

2023 and 2024 saw an increase in days exceeding the PM10 limit due to dust from the silt left behind by Cyclone Gabrielle.

Each year, Napier and Hastings experience many days where PM2.5 levels exceed the WHO guideline (Figure 11-3). PM2.5 levels in Awatoto are low in comparison to Napier and Hastings and are already close to meeting the WHO guidelines. This is because there are not many homes in the area to produce smoke from burning wood in the winter.

HBRC also carries out short term monitoring campaigns every four to five years at busy roadside locations in Napier and Hastings. These campaigns monitor for the pollutant gases in the NES. The most recent results show no exceedances of the NES, however levels of nitrogen dioxide did exceed the WHO guideline limit in both Napier and Hastings. Nitrogen dioxide is produced by vehicles as they burn petrol or diesel in their engines. As Hawke's Bay transitions to carbon neutral transport, we expect levels of nitrogen dioxide and other pollutants to decrease near our roads.

What can you do?

Results of our monitoring show that efforts to improve air quality in our urban areas have been successful. Napier is meeting the NES and Hastings is improving! If we are to achieve our goal of meeting the WHO guidelines then there is more work to be done. Residents can help by choosing cleaner forms of home heating and transport, for example heat pumps and electric vehicles or public transport.

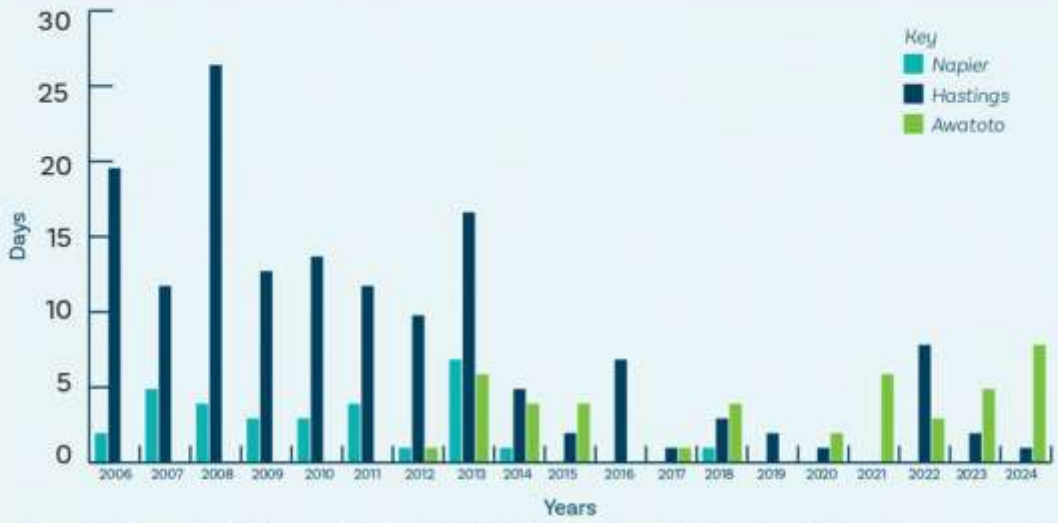


Figure 11-2: The number of days exceeding the NES PM10 limit in Napier and Hastings since 2006, and Awatoto since 2012.

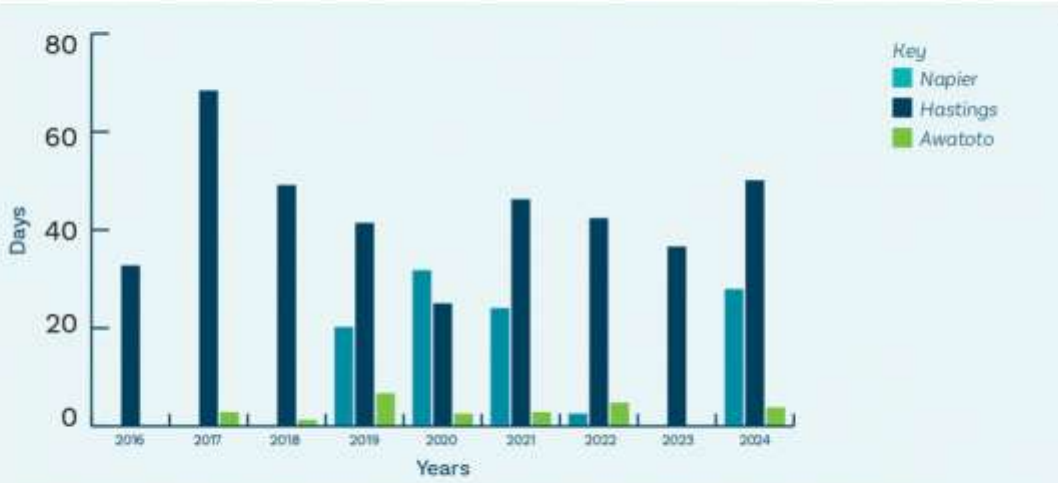


Figure 11-3: The number of days exceeding the WHO PM2.5 limit in Napier, Hastings and Awatoto since 2016. Monitoring data in Napier begins in 2019 and is missing for years 2022 and 2023.

How we use our land

Knowing how we use our land provides us with valuable insights into how land is allocated for activities and development across Hawke's Bay. It helps us assess how intensively land is being used, which is essential for setting environmental limits, and understanding the combined impact of different land-based activities. This information also helps us make informed decisions about where future growth should occur and guides sustainable land management practices across the region.

Most land in Hawke's Bay is used for pastoral farming, followed by conservation and plantation forestry (see Table 12-1). Other primary industries of note include horticulture, dairy, and cropping. Except for dairy, these are large markets in Hawke's Bay, with intensive land use. Manufacturing, which is included in 'Industrial' land use and includes processing the produce from our primary industries, is our largest sector by regional Gross Domestic Product.

Measuring how land use changes over time is also useful to inform town planners, developers, infrastructure providers, and industries more generally.
One objective is to record and monitor the change in the extent of land use intensification and expansion. This could be through subdivision or amalgamation of parcels of land in urban areas, fragmentation of parcels of land in rural areas, or amalgamation of land into larger productive units. These changes may lead to a loss of highly productive land (arable land supporting multiple uses such as horticulture, viticulture and forestry), or the fragmentation of productive land units, diminishing its economic profitability or leading to economic losses.

Land Use Group	Total Area (ha)	Total Area (%)
Pastoral Farming	653,087	46.00
Conservation	459,318	32.35
Plantation Forests	177,094	12.47
Horticultural	24,507	1.73
Dairy	22,814	1.61
Rural Residential	21,245	1.50
Water	18,360	1.29
Transport & Communication	13,271	0.93
Cropping	10,183	0.72
Residential	6,651	0.47
Specialist Livestock	4,078	0.29
Commercial	2,246	0.16
Vacant & Transitioning Land	1,982	0.14
Public	1,832	0.13
Industrial	1,807	0.13
Other	834	0.06
Cultural	195	0.01
Mining	188	0.01
Utility	108	0.01
Water Supply & Wastewater	44	0.00
TOTAL	**1,419,844**	

Table 12-1: Hawke's Bay's land use by group

Conversely, land use intensification can lead to a more efficient land resource allocation and reduce the cost of infrastructure. To measure changes in land use over time, a spatial model used territorial authority planning zones to define land use category types. From 2019 to 2024, it compared each year against the previous one to detect any change.

Figure 12-1: Area of greenfield land developed into urban areas from 2020-2024.

Urban development, including both subdivision and amalgamation occurred at a rate of 229 hectares per year over this period. Only 15ha was infill development, the rest was greenfield (previously undeveloped land) development (Figure 12-1). This illustrates a lack of reuse of developed land, infill housing, and medium to high-density commercial and residential options. Territorial Local Authorities will need to push for these alternatives to minimise the loss of productive land. Although the above-ground build costs may be higher, there are also benefits to intensification, such as lower transportation costs, and lower land costs by floor area. ***Greenfield development also runs the risk of removing access to productive soils.*** The Land Use Capability (LUC) system is used to analyse versatile soil lost from primary industries. Classes range from LUC 1 (most versatile soils) to LUC 8 (severely limited). LUC 3 is the dominant area for subdivisions and amalgamations in our greenfield areas with 327 ha converted between 2020-2024. The total area of LUC 1-3 converted was 653 ha or 131 ha per year (Figure 12-2).

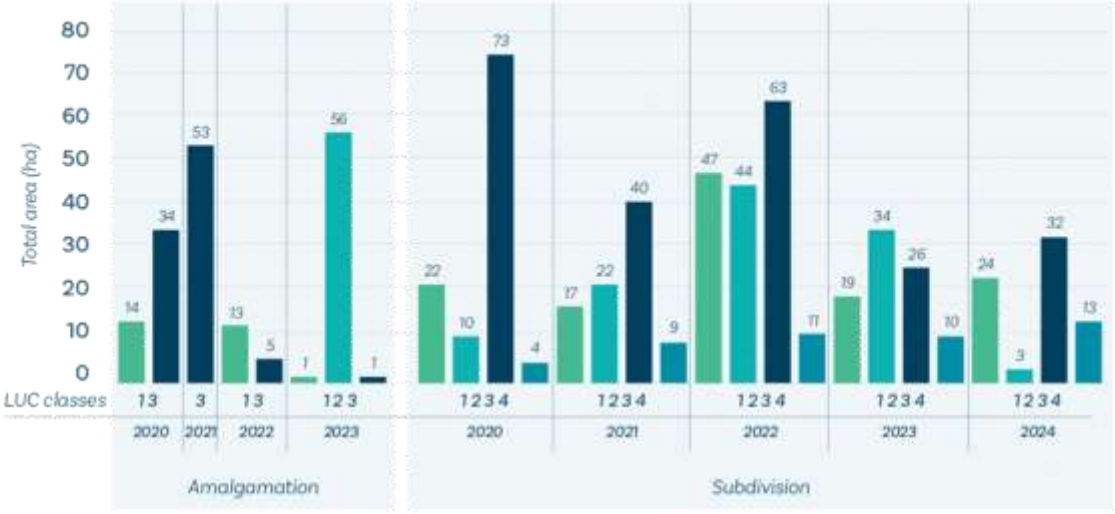


Figure 12-2: Area of versatile soils (LUC 1-4) used for development from 2020-2024.

Alternatively in rural areas, fragmentations are the largest change by area as they involve large rural lots. The consequences of fragmentation are often unique and require further exploration, however it's observed that diminishing lot sizes eventually leads to unproductive units of land. Many of these fragmentations involve dwellings separated from the farm unit to create a new separate title. The Tukituki catchment has seen the greatest amount of rural fragmentation at 20,184 ha over 985 occurrences; an average of 390 occurrences per year across the region. Conversely, rural amalgamations in the Tukituki affected only 994 ha over the period.

Our swimming and seafood gathering spots

Hawke's Bay's coastal waters, lakes, and rivers are popular for activities like swimming, kayaking, surfing and gathering kai. However, harmful bacteria from human or animal poo (faeces) can make these places unsafe for people to use.

There are lots of ways that faeces can enter our waterways. Animals may defecate into streams or rivers when drinking. Rain can wash faeces into waterways. Aging or illegal stormwater, sewer and sceptic tank systems may leak or overflow during periods of heavy rain. These things can lead to increased levels of bacteria in our waterways, making them potentially unsafe for people.

Results for the region

Over summer, HBRC monitors the water quality at 37 popular freshwater, estuarine and coastal sites weekly. See the chapter specific to your catchment for more detail about these sites, or head to *lawa.org.nz* to check the water quality near you.

Water quality in our rivers, lakes, and streams can be affected by rain. However, these waterways were still suitable for swimming 88 percent of the time over the last five years.

Lagoons and estuaries can have poorer water quality as they are at the end of the catchment and generally have warm, slower moving waters with abundant birdlife that also produce waste. These areas were suitable for swimming 80 percent of the time over the past five years.

Beaches in Hawke's Bay tend to have excellent water quality and any instances of high bacterial levels are typically short-lived.

Figure 13-1: Sites monitored for swimming and seafood gathering in the Hawke's Bay.

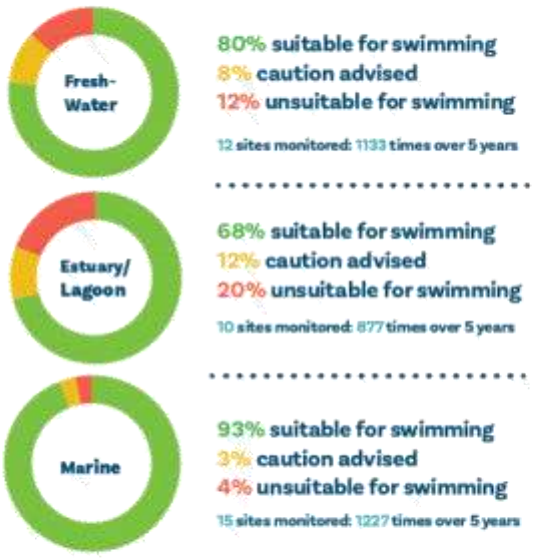


Figure 13-2: The percentage of time our popular sites across Hawke's Bay were suitable for swimming.

Nine of the 37 monitored sites are permanently signposted to inform swimmers of the high levels of faecal bacteria present there. Of the sites we monitor, 51 percent are getting worse over time. To protect these taonga locations, it is important that we work together to reverse this trend by reducing the amount of faecal contamination in our waterways.

Tracking where the faeces come from

We need to understand the source of contaminants to better target management and reduce high bacterial loads. When sites frequently exceed the guidelines, HBRC conducts faecal source tracking to identify the types of animals responsible. It is hard to determine how much of this faecal matter is present, however. Between 2019 and 2024, ruminants (cows, sheep, deer, goats) and waterfowl were the most common sources detected, although usually at low levels. In 2022 human faeces were present in low levels in Pōrangahau estuary, suggesting contamination from sewage. Human faeces were not present when the estuary was re-tested in 2023. While faecal source testing provides useful insights, identifying sources with confidence remains difficult without more frequent and targeted sampling.

Toxic algae

The presence of potentially toxic algae can also reduce swimming suitability at freshwater sites. In rivers, *Microcoleus* (previously called *Phormidium*) is naturally occurring but can become a health risk to humans and dogs (Figure 13-3). It can occur all year round but the risk of contact is higher during summer, when people spend more time in the water.

Out of the 67 sites monitored by HBRC for toxic algae over the past five years, 11 sites had coverage exceeding 20 percent, including two sites that exceeded 50 percent coverage.

Figure 13-3: Different shades of Microcoleus, including a brown mat growing underwater (left) and an exposed grey mat (right).

Elevated toxic algae levels may indicate a potential risk in these areas, particularly in the Tukituki Catchment, where five of the exceeding sites were located. To stay safe, avoid contact with water if you observe algal blooms.

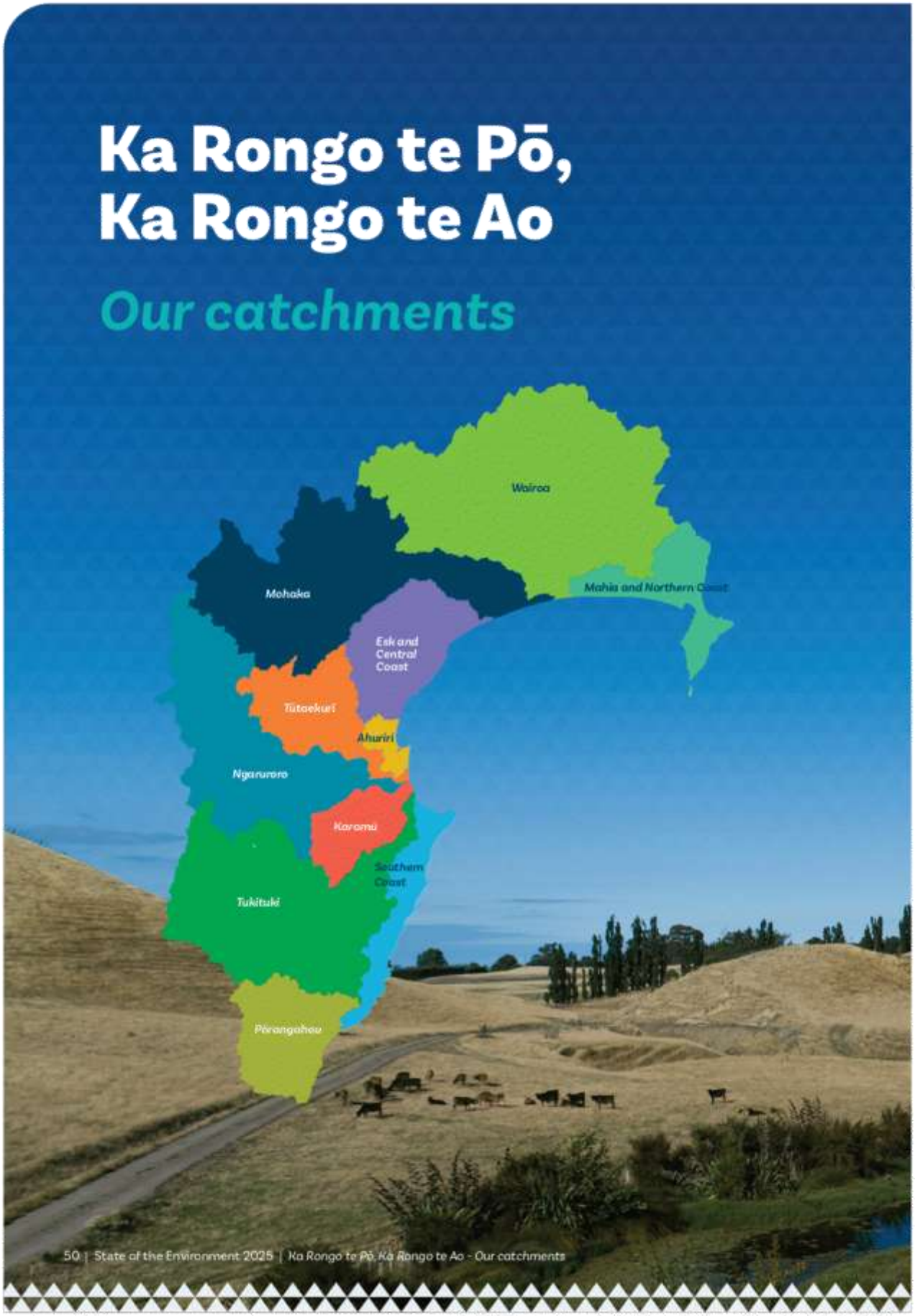
There is a complex cause and effect relationship between high levels of *Microcoleus* and environmental conditions. However, there may be a link to elevated levels of nutrients, high water temperature and light levels, amongst other factors. Reducing nutrient and sediment levels and increasing tree shade will likely help to reduce the growth of toxic algae.

Shellfish gathering

Gathering kai moana (seafood) is important to Hawke's Bay's people. However, shellfish are filter feeders and can make you sick if the water they live in is polluted. We monitor water quality to determine when shellfish might be unsafe to eat. Compliance with health guidelines varies across the region. Some sites show a decline in suitability for shellfish gathering, and three sites (Maungawhio Lagoon, Te Mahia and Pōrangahau Estuary) have consistently failed to meet the guidelines throughout the entire sampling record (2009-2024).

What can you do?

We need different approaches to reduce bacteria depending on where it comes from and how it gets into our water. Keeping stock out, fencing and planting and targeted erosion control will assist in improving the health of our waterways. Improvements to stormwater and sewer networks will also help to reduce potential discharges into local waterways. You can also help by maintaining your property's wastewater systems and using public toilet facilities when visiting our swim sites. Positive changes within our freshwater environments will flow on, benefiting the receiving environments downstream.


Ka Rongo te Pō,
Ka Rongo te Ao
Our catchments
Wairoa
Mohaka
Māhia and Northern Coast
Esk and Central Coast
Tūtaekurī
Ahuriri
Ngaruroro
Karamū
Southern Coast
Tukituki
Porangahau
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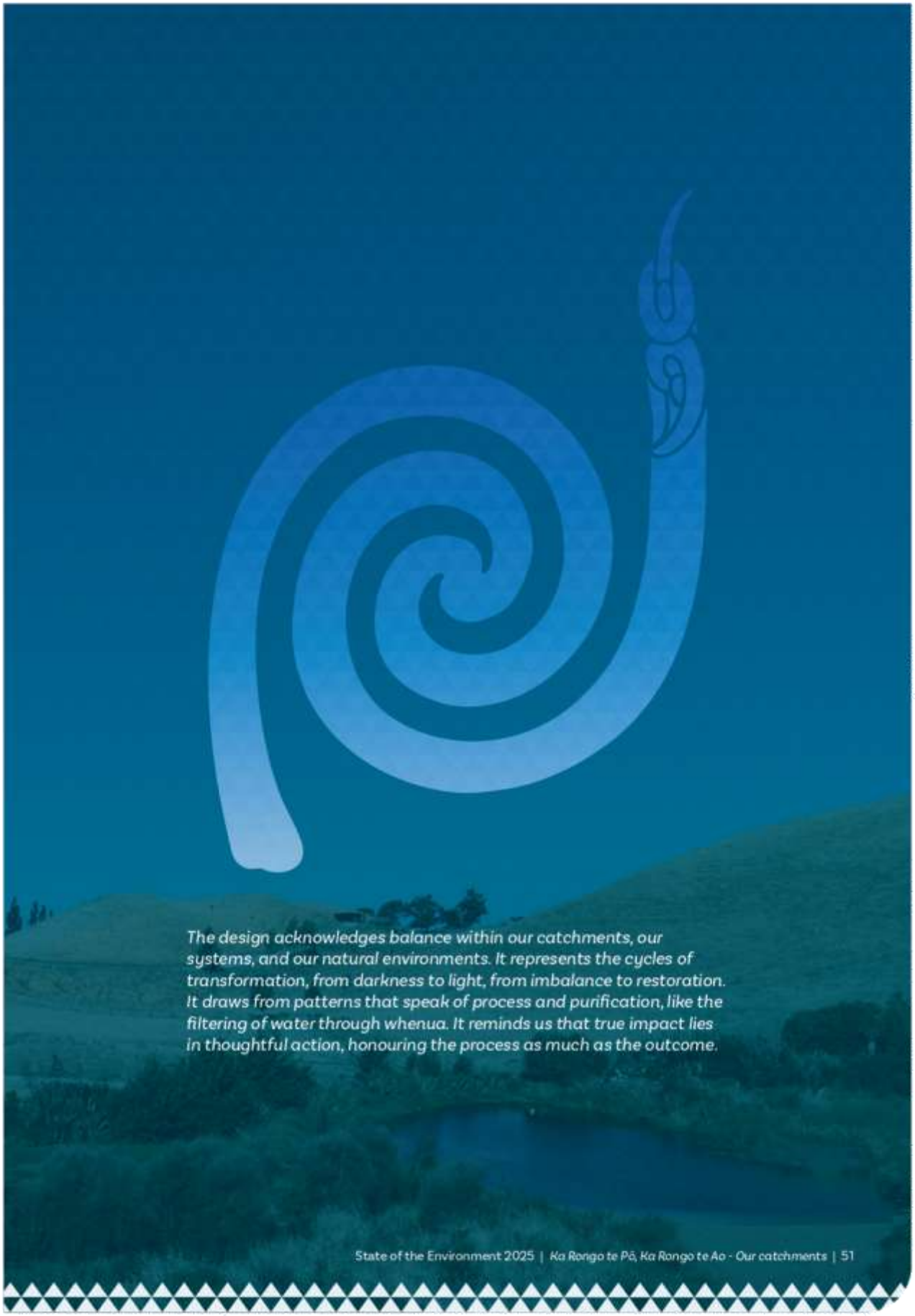
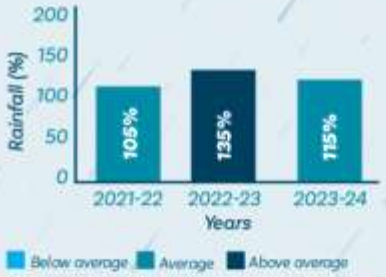

The design acknowledges balance within our catchments, our systems, and our natural environments. It represents the cycles of transformation, from darkness to light, from imbalance to restoration. It draws from patterns that speak of process and purification, like the filtering of water through whenua. It reminds us that true impact lies in thoughtful action, honouring the process as much as the outcome.

Northern Coast

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

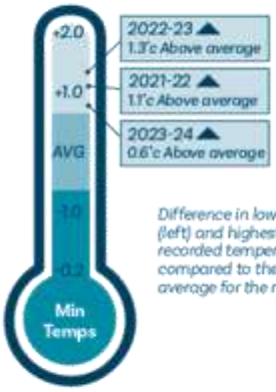
Tuia ki te Rangi *Sky*

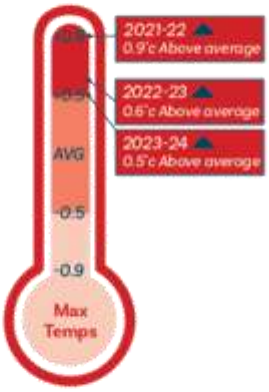
Our rainfall



Difference in rainfall levels compared to the 30-year average for the region.

Our climate





Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.

Tuia ki te Moana Water

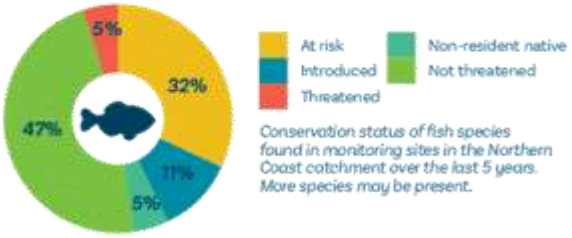
River flows

Kopuawhara Stream at Railway Bridge

Lake water quality

Average Trophic Level Index (TLI) for Whakaki Lake (Eastern), Whakaki Lake (Western) and Rahui Channel over the last 5 years. TLI scores for a lake are calculated using four water quality measurements: total nitrogen, total phosphorus, water clarity and chlorophyll-a.

Freshwater fish



Conservation status of fish species found in monitoring sites in the Northern Coast catchment over the last 5 years. More species may be present.

River water quality

River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

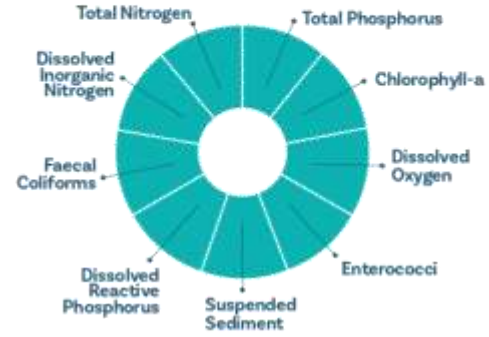
Aquatic habitats

Rapid Habitat Assessments (RHA) for streams in 3 areas of Northern Coast catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Northern Coast catchment.

Very poor Poor Moderate Good Great

Nearshore water quality

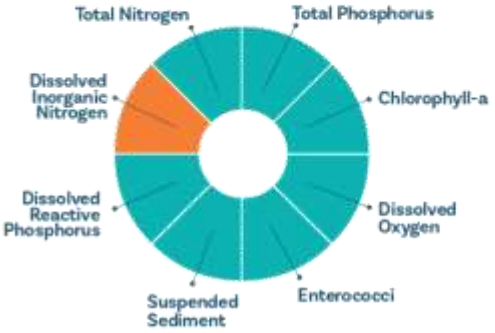
Number of sites monitored: 3



Strongly within NZ range | Outside NZ range
Strongly outside NZ range | Within NZ range

Estuary water quality

Number of sites monitored: 1

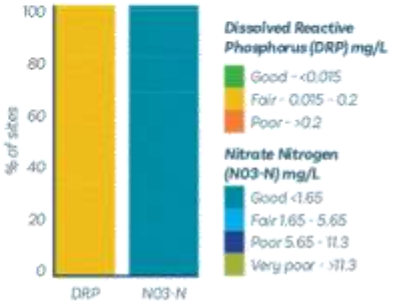


Strongly within NZ range | Outside NZ range
Strongly outside NZ range | Within NZ range

Groundwater quality

Drinking water standards New Zealand (DWSNZ)*

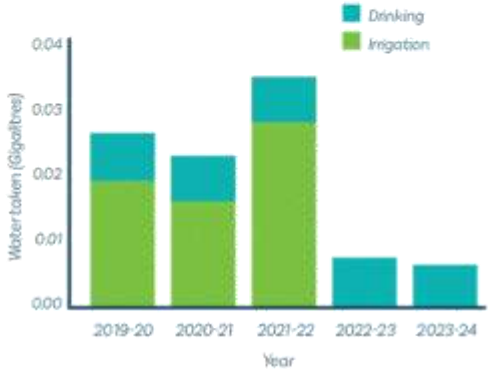
Land use impacts



Wells in exceedance | Wells in compliance

There is 1 well monitored in the Northern Coast catchment. The well is monitored to assess both drinking water standards (left) and the impacts of land use (right).
**These wells do not supply drinking water.*

Groundwater use



Tuia ki te Here Tangata People

Our swimming spots

Percent of time over 5 years our swimming spots were

58% suitable for swimming
21% caution advised
21% unsuitable for swimming
1 site monitored: 108 times over 5 years

85% suitable for swimming
3% caution advised
12% unsuitable for swimming
2 sites monitored: 198 times over 5 years

91% suitable for swimming
7% caution advised
2% unsuitable for swimming
3 sites monitored: 254 times over 5 years

Shellfish gathering

Land use

Wairoa

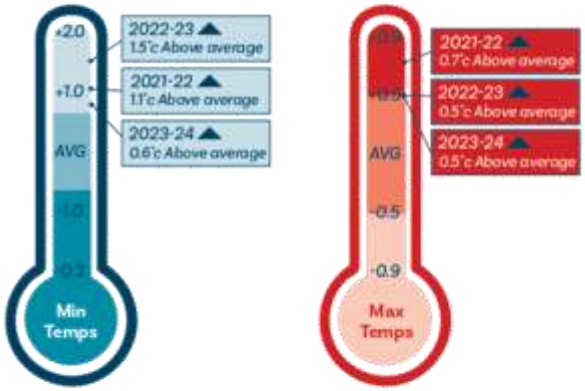
The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

Tuia ki te Rangi *Sky*

Our rainfall

Difference in rainfall levels compared to the 30-year average for the region.

Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.

Tuia ki te Whenua *Land*

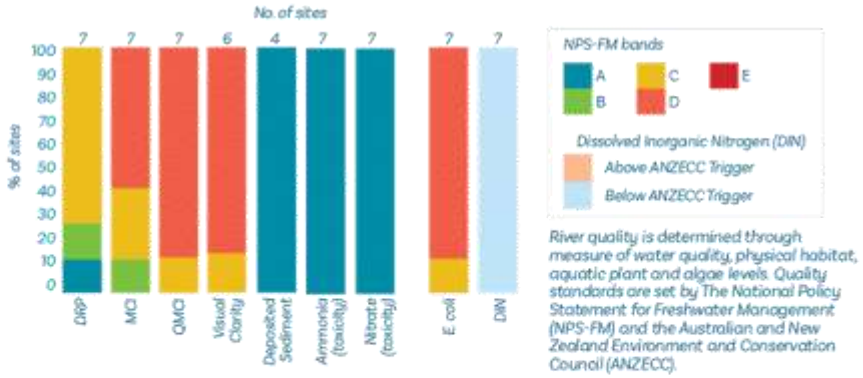
Wetland condition

There is 1 monitored wetland in the Wairoa catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

Excellent Moderate
Good Poor/degraded

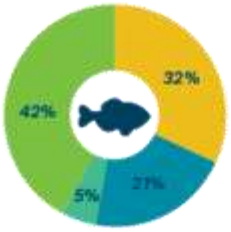
Tuia ki te Moana *Water*

River water quality



River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

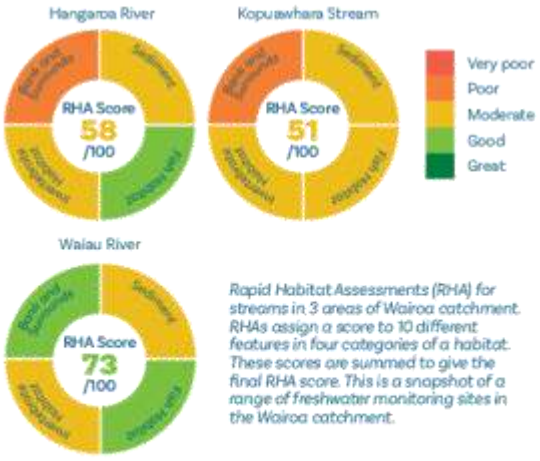
Freshwater fish



At risk
Introduced
Threatened
Non-resident native
Not threatened

Conservation status of fish species found in monitoring sites in the Wairoa catchment over the last 5 years. More species may be present.

Aquatic habitats



Rapid Habitat Assessments (RHA) for streams in 3 areas of Wairoa catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Wairoa catchment.

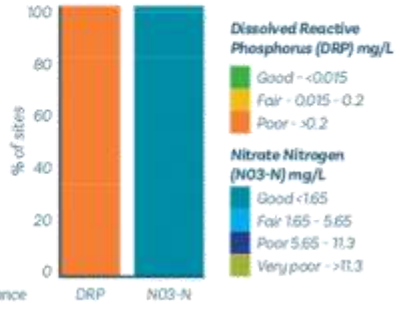
River flows

Wairoa River at Marumaru

Groundwater quality

Drinking water standards New Zealand (DWSNZ)*

Land use impacts



There is 1 well monitored in the Wairoa catchment. The well is monitored to assess both drinking water standards (left) and the impacts of land use (right).

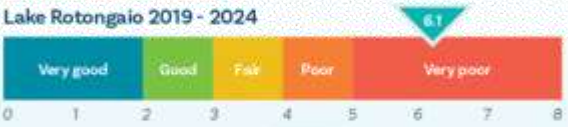
*These wells do not supply drinking water.

Groundwater levels

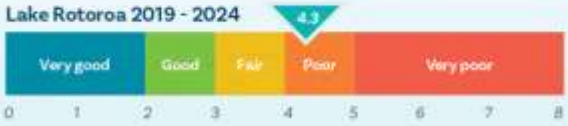
Median percentile out of 100%

Lake water quality

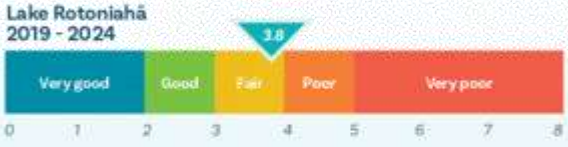
Lake Rotongaio 2019 - 2024



Lake Rotoroa 2019 - 2024



Lake Rotoniahā 2019 - 2024



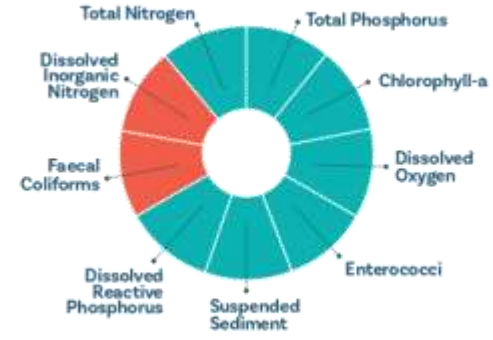
Average Trophic Level Index (TLI) for lakes Rotongaio, Rotoniahā, and Rotoroa over the last 5 years. TLI scores for a lake are calculated using four water quality measurements: total nitrogen, total phosphorus, water clarity and chlorophyll-a.

Estuary water quality

Number of sites monitored: 6

Nearshore water quality

Number of sites monitored: 1



Tuia ki te Here Tangata People

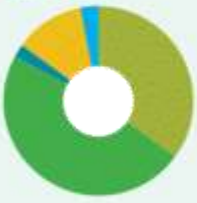
Our swimming spots

Percent of time over 5 years our swimming spots were:

33% suitable for swimming
20% caution advised
47% unsuitable for swimming

2 sites monitored, 289 times over 5 years

Land use



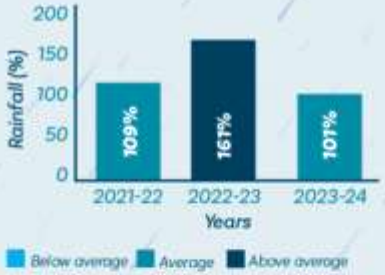
39% Extensive pastoral farming
40% Native & exotic vegetation
12% Plantation forests
3% Waterbodies & wetlands
2% Other

Mohaka

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

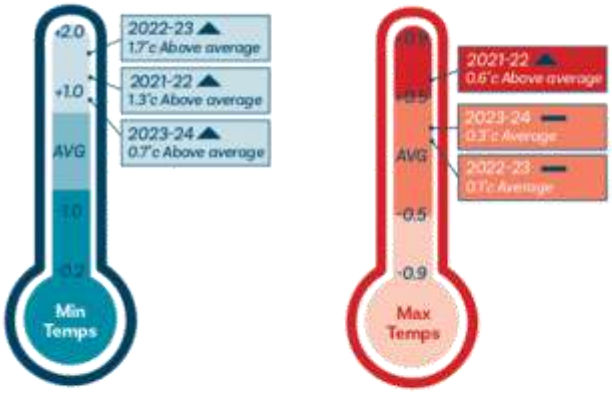
Tuia ki te Rangi *Sky*

Our rainfall



Difference in rainfall levels compared to the 30-year average for the region.

Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.

Tuia ki te Whenua *Land*

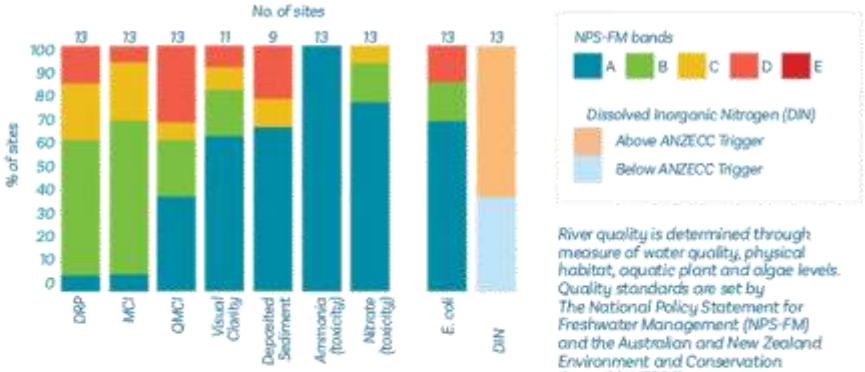
Wetland condition

There are 3 monitored wetlands in the Mohaka catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

Excellent
Moderate
Good
Poor/degraded

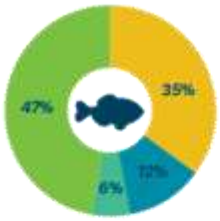
Tuia ki te Moana *Water*

River water quality



River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

Freshwater fish



At risk
Introduced
Threatened
Non-resident native
Not threatened

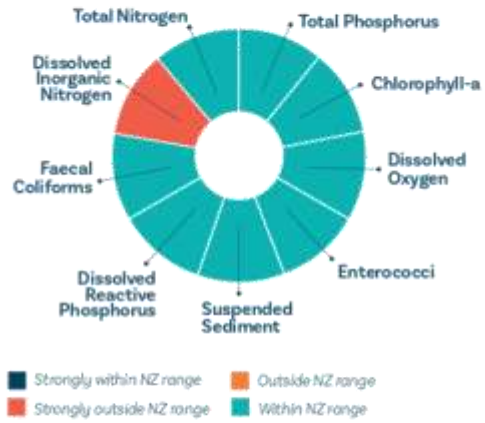
Conservation status of fish species found in monitoring sites in the Mohaka catchment over the last 5 years. More species may be present.

Aquatic habitats

Rapid Habitat Assessments (RHA) for streams in 3 areas of Mohaka catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Mohaka catchment.

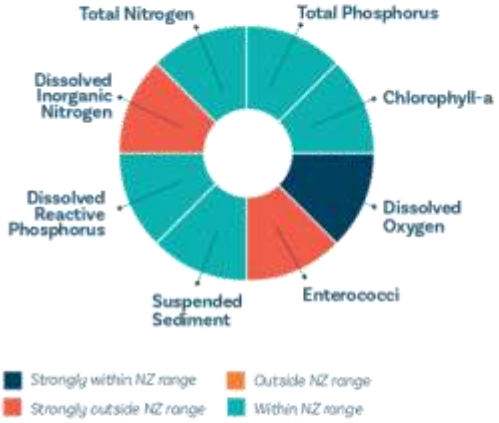
Nearshore water quality

Number of sites monitored: 1

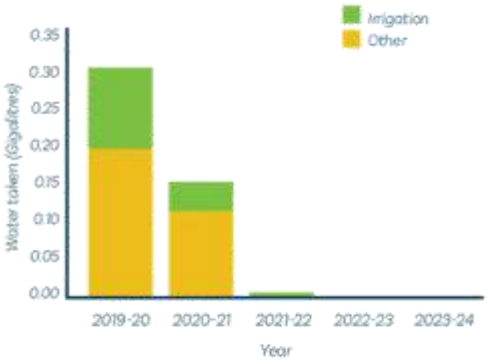


Estuary water quality

Number of sites monitored: 1

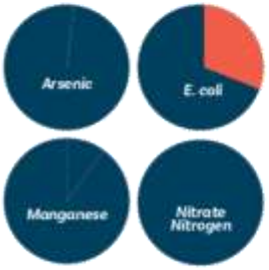


Groundwater use

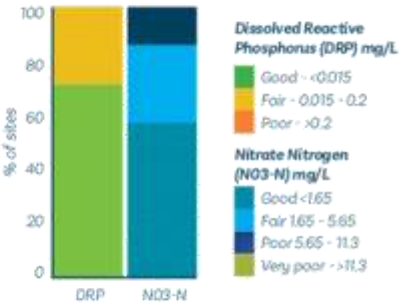


Groundwater quality

Drinking water standards New Zealand (DWSNZ)*



Land use impacts



There are 7 wells monitored in the Mohaka catchment. The wells are monitored to assess both drinking water standards (left) and the impacts of land use (right).
**These wells do not supply drinking water.*

River flows

Mohaka River at Raupunga

Tuia ki te Here Tangata

People

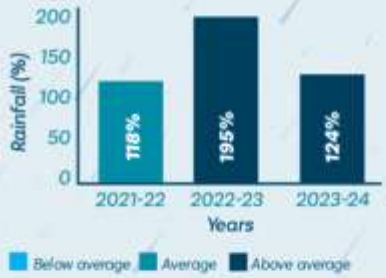
Land use

Esk & Central Coast

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

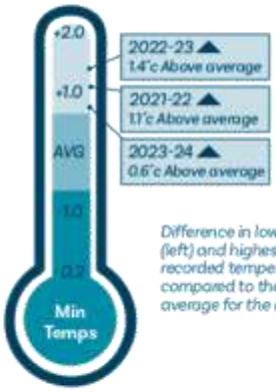
Tuia ki te Rangi *Sky*

Our rainfall

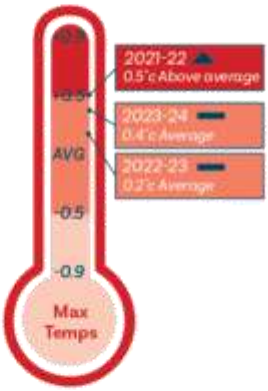


Difference in rainfall levels compared to the 30-year average for the region.

Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.



Tuia ki te Whenua *Land*

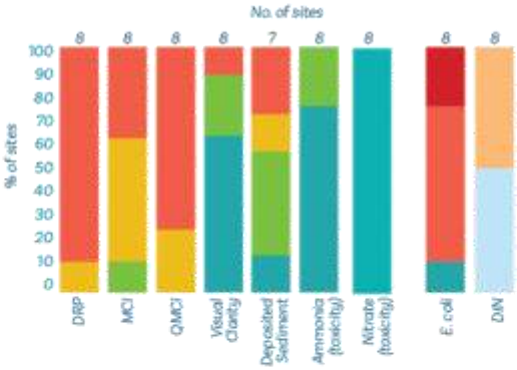
Wetland condition

There are 8 monitored wetlands in the Esk and Central Coast catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

Excellent Moderate
Good Poor/degraded

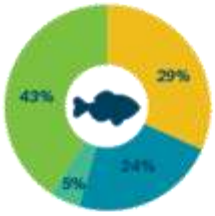
Tuia ki te Moana *Water*

River water quality



River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

Freshwater fish



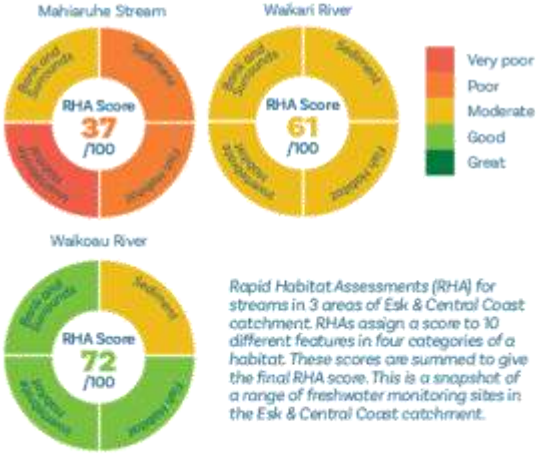
At risk
Introduced
Threatened
Non-resident native
Not threatened

Conservation status of fish species found in monitoring sites in the Esk & Central Coast catchment over the last 5 years. More species may be present.

River flows

Esk River at Waipunga Bridge

Aquatic habitats



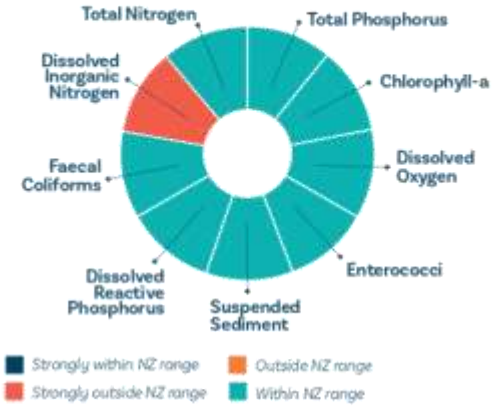
Rapid Habitat Assessments (RHA) for streams in 3 areas of Esk & Central Coast catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Esk & Central Coast catchment.

Lake water quality

Average Trophic Level Index (TLI) for Lakes Opouahi and Tūtira over the last 5 years. TLI scores for a lake are calculated using four water quality measurements: total nitrogen, total phosphorus, water clarity and chlorophyll-a.

Nearshore water quality

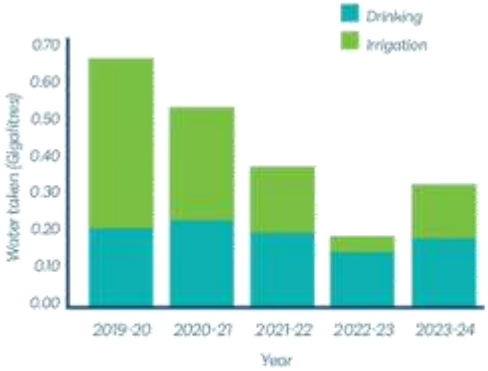
Number of sites monitored: 3



Groundwater levels

Median percentile out of 100%

Groundwater use



Tuia ki te Here Tangata *People*

Our swimming spots

Percent of time over 5 years our swimming spots were

86% suitable for swimming
5% caution advised
9% unsuitable for swimming
2 sites monitored, 186 times over 5 years

61% suitable for swimming
21% caution advised
18% unsuitable for swimming
1 sites monitored, 102 times over 5 years

96% suitable for swimming
2% caution advised
2% unsuitable for swimming
1 sites monitored, 95 times over 5 years

Land use

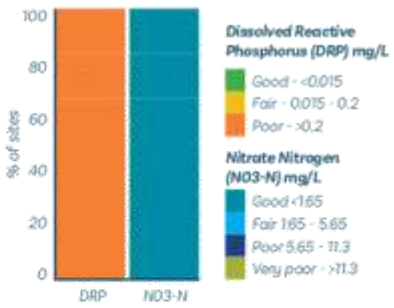
Shellfish gathering

Waipatiki

Groundwater quality

Drinking water standards New Zealand (DWSNZ)*

Land use impacts



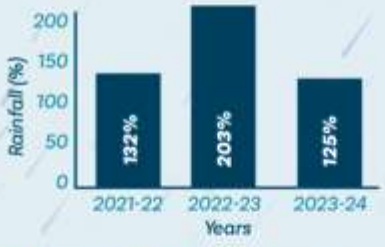
There is 1 well monitored in the Esk & Central Coast catchment. The well is monitored to assess both drinking water standards (left) and the impacts of land use (right).
These wells do not supply drinking water.

Ahuriri

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

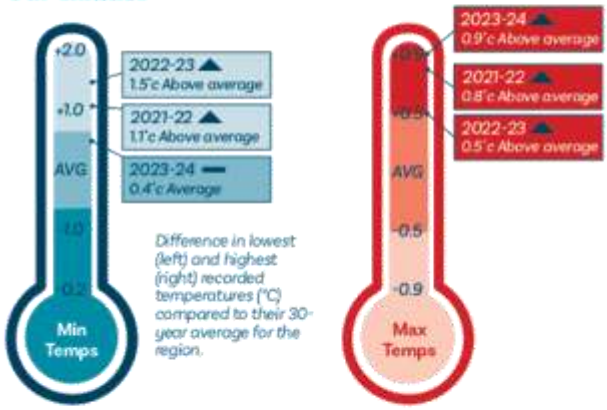
Tuia ki te Rangi *Sky*

Our rainfall



Difference in rainfall levels compared to the 30-year average for the region.

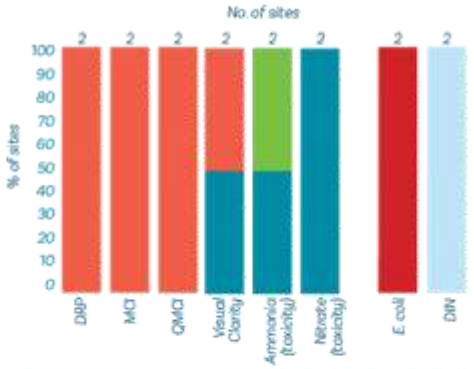
Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.

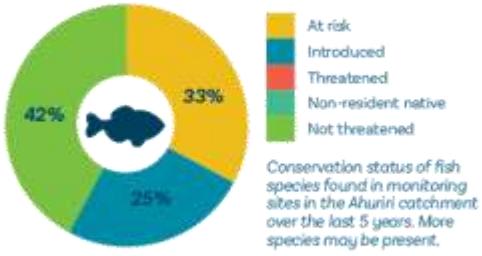
Tuia ki te Moana *Water*

River water quality



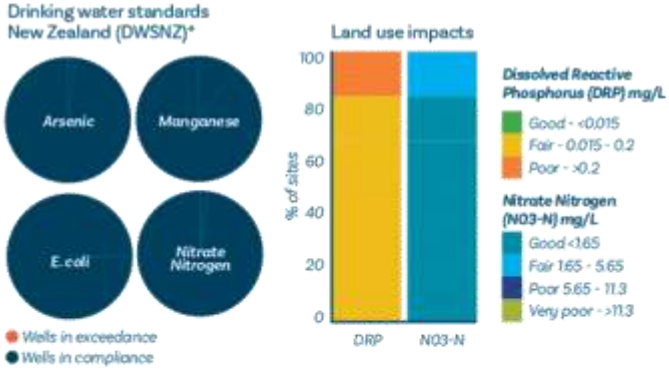
River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

Freshwater fish



Conservation status of fish species found in monitoring sites in the Ahuriri catchment over the last 5 years. More species may be present.

Groundwater quality



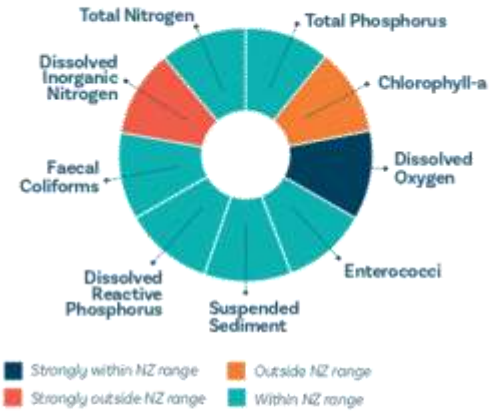
There are 4 wells monitored in the Ahuriri catchment. The wells are monitored to assess both drinking water standards (left) and the impacts of land use (right).
**These wells do not supply drinking water.*

Groundwater levels

Median percentile out of 100%

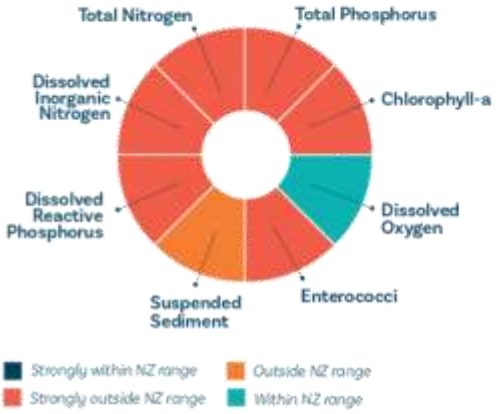
Nearshore water quality

Number of sites monitored: 2



Estuary water quality

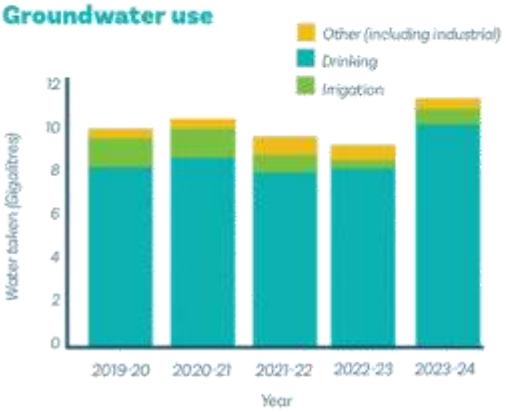
Number of sites monitored: 3



Aquatic habitats

Rapid Habitat Assessments (RHA) for streams in 2 areas of Ahuriri catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Ahuriri catchment.

Groundwater use



Tuia ki te Here Tangata People

Our swimming spots

Percent of time over 5 years our swimming spots were

81% suitable for swimming
7% caution advised
12% unsuitable for swimming

1 sites monitored, 122 times over 5 years

91% suitable for swimming
3% caution advised
6% unsuitable for swimming

3 sites monitored, 309 times over 5 years

Shellfish gathering

Ahuriri Estuary

Land use

36% Extensive pastoral farming
1% Industrial
6% Native & exotic vegetation
5% Orchard, vineyard & other perennial crops
4% Plantation forests
12% Urban
2% Waterbodies & wetlands
34% Other

Air quality

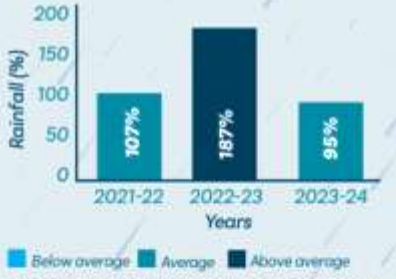
Napier

Tūtaekurī

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

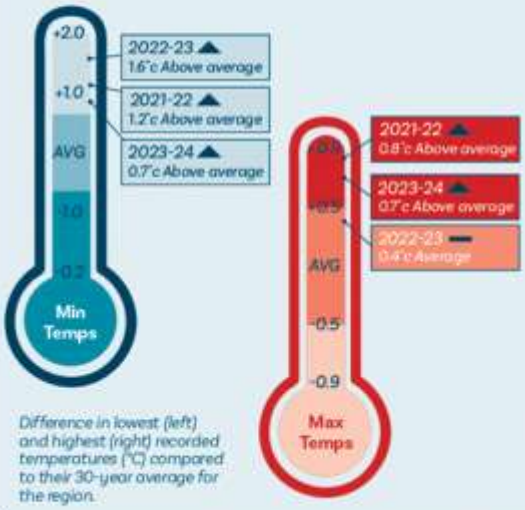
Tuia ki te Rangi *Sky*

Our rainfall



Difference in rainfall levels compared to the 30-year average for the region.

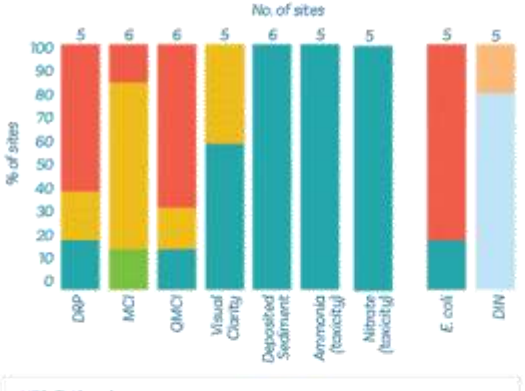
Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.

Tuia ki te Moana *Water*

River water quality



River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

River flows

Ngaruroro River at Fernhill

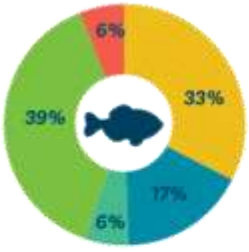
Tuia ki te Whenua *Land*

Wetland condition

- Excellent
- Good
- Moderate
- Poor/degraded

There are 2 monitored wetlands in the Tūtaekurī catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

Freshwater fish



- At risk
- Introduced
- Threatened
- Non-resident native
- Not threatened

Conservation status of fish species found in monitoring sites in the Tūtaekurī catchment over the last 5 years. More species may be present.

Aquatic habitats

Rapid Habitat Assessments (RHA) for streams in 3 areas of Tūtaekuri catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Tūtaekuri catchment.

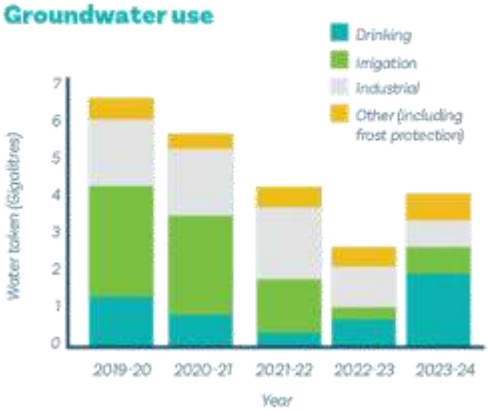
Very poor
Poor
Moderate
Good
Great

Groundwater levels

Median percentile out of 100%

Below normal
Normal
Above normal

Groundwater use

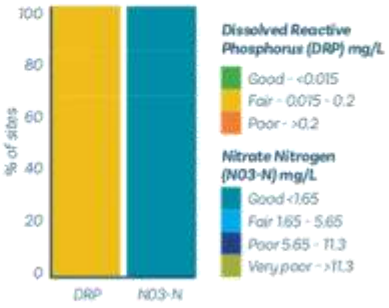


Groundwater quality

Drinking water standards New Zealand (DWSNZ)*

Wells in exceedance
Wells in compliance

Land use impacts



There are 3 wells monitored in the Tūtaekuri catchment. The wells are monitored to assess both drinking water standards (left) and the impacts of land use (right).
**These wells do not supply drinking water.*

Tuia ki te Here Tangata People

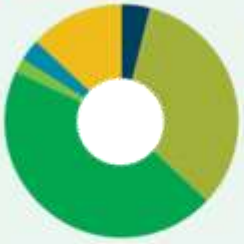
Our swimming spots

Percent of time over 5 years our swimming spots were

85% suitable for swimming
4% caution advised
11% unsuitable for swimming

7 sites monitored, 96 times over 5 years

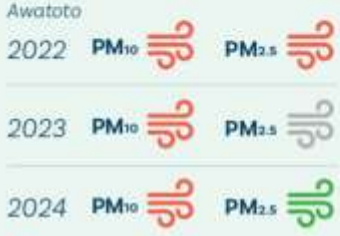
Land use



4% Dairy
33% Extensive pastoral farming
48% Native & exotic vegetation
2% Orchard, vineyard & other perennial crops
13% Plantation forests
3% Other

Air quality

Awatoto



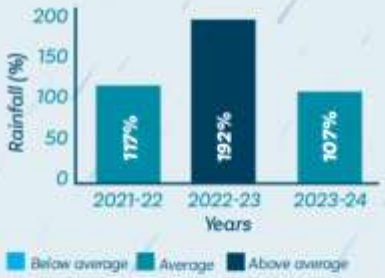
Meeting standards
Not meeting standards
No data

Ngaruroro

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

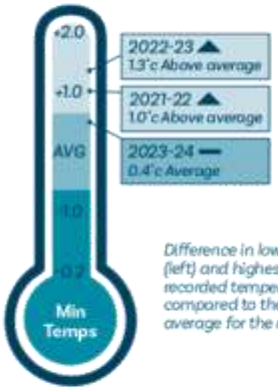
Tuia ki te Rangi *Sky*

Our rainfall

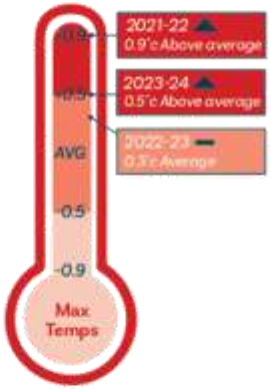


Difference in rainfall levels compared to the 30-year average for the region.

Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.



Tuia ki te Whenua *Land*

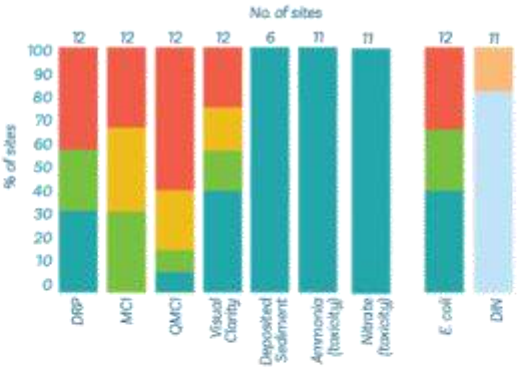
Wetland condition

There are 9 monitored wetlands in the Ngaruroro catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

Excellent
Moderate
Good
Poor/degraded

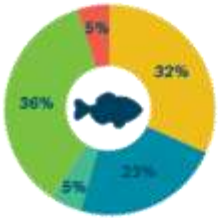
Tuia ki te Moana *Water*

River water quality



River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

Freshwater fish



At risk
Introduced
Threatened
Non-resident native
Not threatened

Conservation status of fish species found in monitoring sites in the Ngaruroro catchment over the last 5 years. More species may be present.

River flows

Ngaruroro River at Fernhill

Aquatic habitats

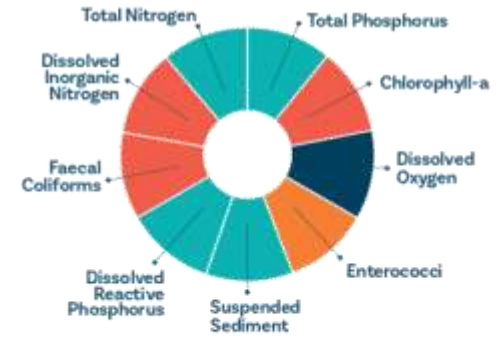
Rapid Habitat Assessments (RHA) for streams in 3 areas of Ngaruroro catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Ngaruroro catchment.

Lake water quality

Average Trophic Level Index (TLI) for Lake Rototuna and Rūnanga lake over the last 5 years. TLI scores for a lake are calculated using four water quality measurements: total nitrogen, total phosphorus, water clarity and chlorophyll-a.

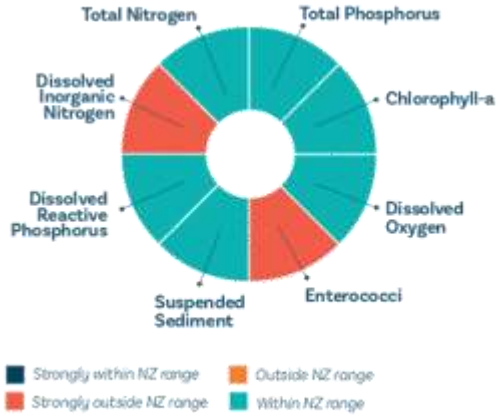
Nearshore water quality

Number of sites monitored: 1



Estuary water quality

Number of sites monitored: 2



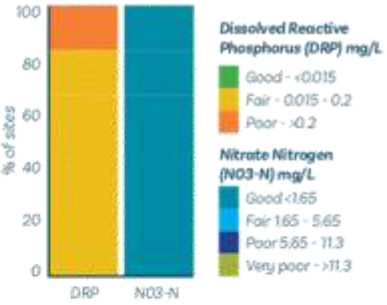
Groundwater levels

Median percentile out of 100%

Groundwater quality

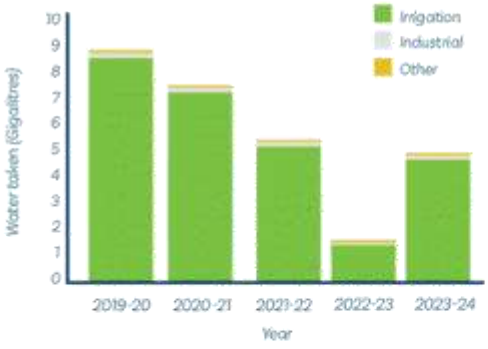
Drinking water standards New Zealand (DWSNZ)*

Land use impacts



There are 5 wells monitored in the Ngaruroro catchment. The wells are monitored to assess both drinking water standards (left) and the impacts of land use (right).
**These wells do not supply drinking water.*

Groundwater use



Tuia ki te Here Tangata People

Our swimming spots

Percent of time over 5 years our swimming spots were

91% suitable for swimming
2% caution advised
7% unsuitable for swimming

1 sites monitored, 96 times over 5 years

Land use

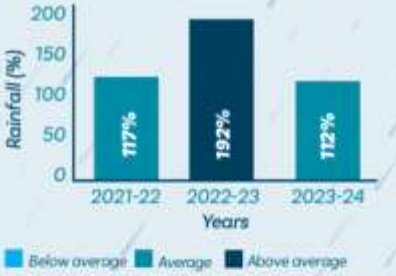
47% Extensive pastoral farming
48% Native & exotic vegetation
3% Orchard, vineyard & other perennial crops
4% Plantation forests
7% Waterbodies & wetlands
3% Other

Karamū

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

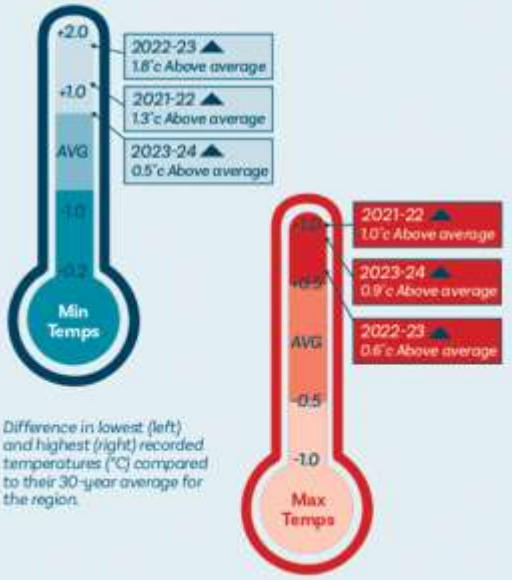
Tuia ki te Rangi *Sky*

Our rainfall



Difference in rainfall levels compared to the 30-year average for the region.

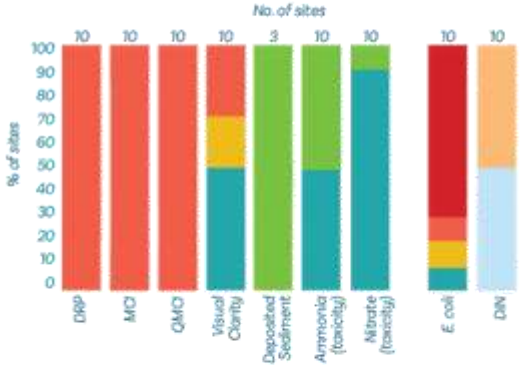
Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.

Tuia ki te Moana *Water*

River water quality

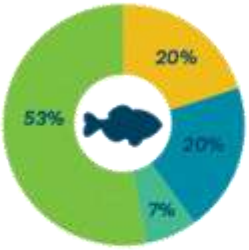


River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

River flows

Awanui Stream at Flume

Freshwater fish



Conservation status of fish species found in monitoring sites in the Karamū catchment over the last 5 years. More species may be present.

Tuia ki te Whenua *Land*

Wetland condition

There are 2 monitored wetlands in the Karamū catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

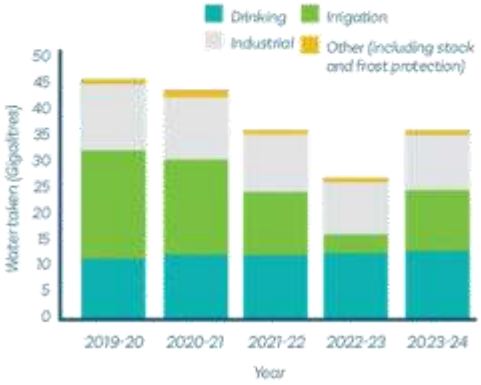
Aquatic habitats

Rapid Habitat Assessments (RHA) for streams in 3 areas of Karamū catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Karamū catchment.

Groundwater levels

Median percentile out of 100%

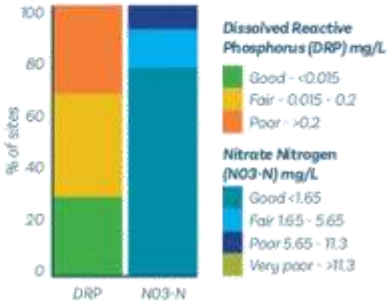
Groundwater use



Groundwater quality

Drinking water standards New Zealand (DWSNZ)*

Land use impacts



There are 22 wells monitored in the Karamū catchment. The wells are monitored to assess both drinking water standards (left) and the impacts of land use (right).
**These wells do not supply drinking water.*

Tuia ki te Here Tangata People

Our swimming spots

Percent of time over 5 years our swimming spots were

59% suitable for swimming
24% caution advised
17% unsuitable for swimming

1 sites monitored, 75 times over 5 years

Land use

49% Extensive pastoral farming
2% Industrial
2% Native & exotic vegetation
24% Orchard, vineyard & other perennial crops
6% Short-rotation cropland
5% Urban
12% Other

Air quality

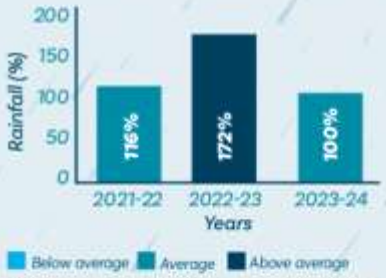
Hastings

Tukituki

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

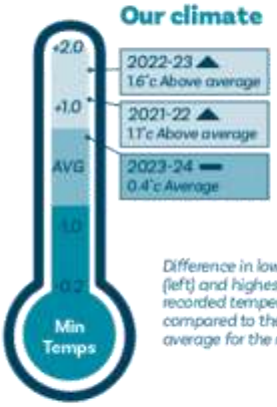
Tuia ki te Rangi *Sky*

Our rainfall

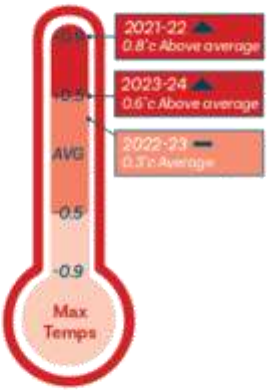


Difference in rainfall levels compared to the 30-year average for the region.

Our climate



Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.



Tuia ki te Whenua *Land*

Wetland condition

Excellent
Moderate
Good
Poor/degraded

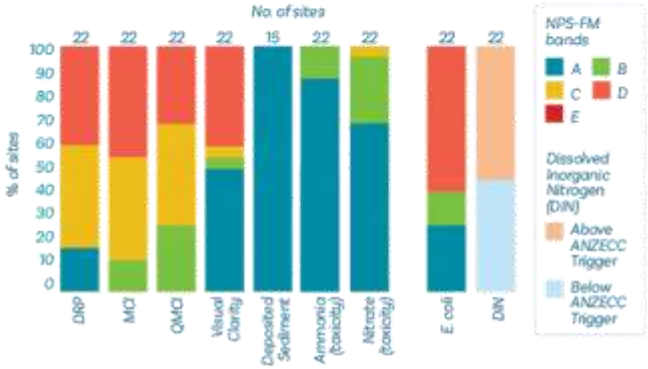
There are 9 monitored wetlands in the Tukituki catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

Tuia ki te Moana *Water*

River flows

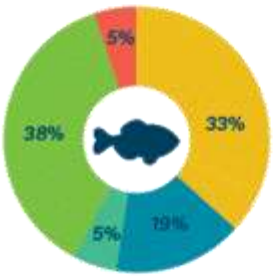
Tukituki River at Red Bridge

River water quality



River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC)

Freshwater fish

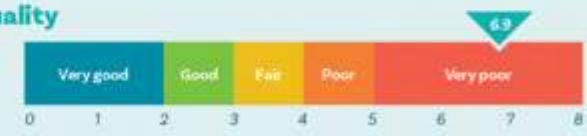


At risk
Introduced
Threatened
Non-resident native
Not threatened

Conservation status of fish species found in monitoring sites in the Tukituki catchment over the last 5 years. More species may be present.

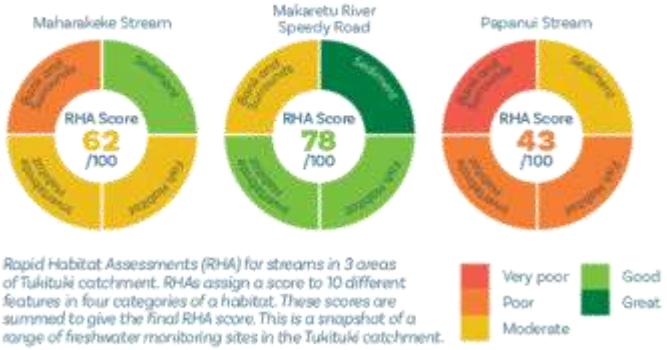
Lake water quality

Lake Whatumā 2022 - 2024



Average Trophic Level Index (TLI) for Lake Whatumā over the last 5 years. TLI scores for a lake are calculated using four water quality measurements: total nitrogen, total phosphorus, water clarity and chlorophyll-a.

Aquatic habitats

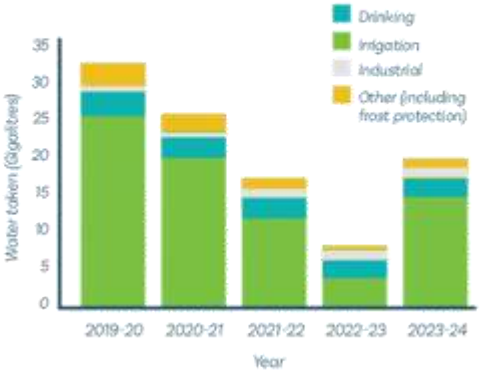


Rapid Habitat Assessments (RHA) for streams in 3 areas of Tukituki catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Tukituki catchment.

Groundwater levels

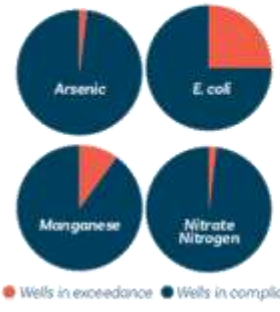
Median percentile out of 100%

Groundwater use

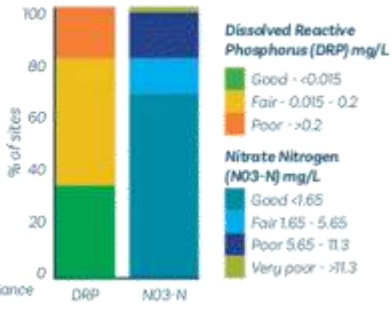


Groundwater quality

Drinking water standards New Zealand (DWSNZ)*



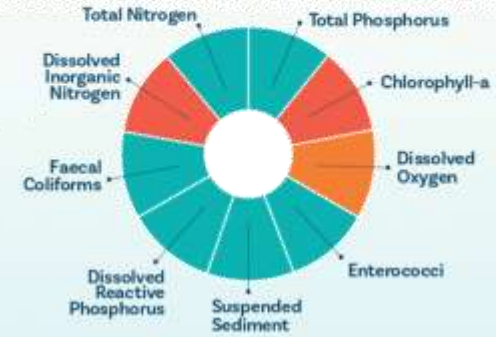
Land use impacts



There are 47 wells monitored in the Tukituki catchment. The wells are monitored to assess both drinking water standards (left) and the impacts of land use (right).
**These wells do not supply drinking water.*

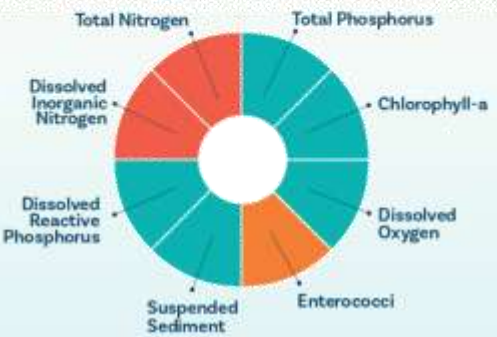
Nearshore water quality

Number of sites monitored: 1



Estuary water quality

Number of sites monitored: 1



Tuia ki te Here Tangata *People*

Our swimming spots

Percent of time over 5 years our swimming spots were

89% suitable for swimming
4% caution advised
7% unsuitable for swimming

3 sites monitored, 289 times over 5 years

Land use

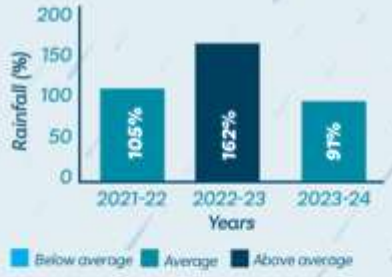
4% Dairy
65% Extensive pastoral farming
19% Native & exotic vegetation
4% Plantation forests
1% Short-rotation cropland
1% Waterbodies & wetlands
6% Other

Southern Coast

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

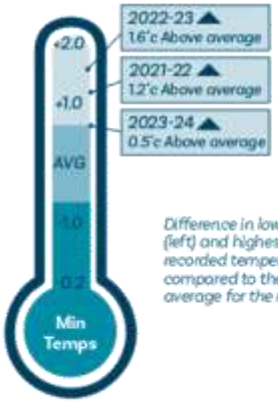
Tuia ki te Rangi *Sky*

Our rainfall

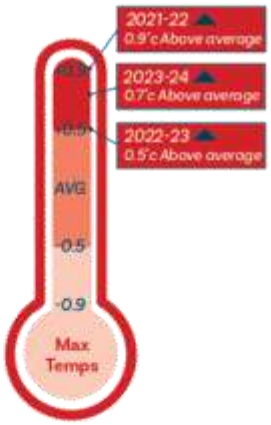


Difference in rainfall levels compared to the 30-year average for the region.

Our climate

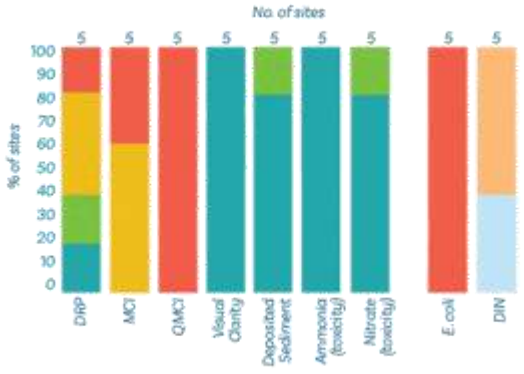


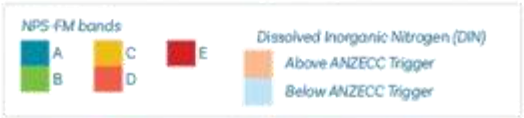
Difference in lowest (left) and highest (right) recorded temperatures (°C) compared to their 30-year average for the region.



Tuia ki te Moana *Water*

River water quality



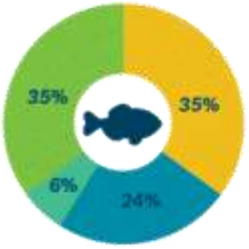


River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

River flows

Maraetotara River at Waimarama Road

Freshwater fish



Conservation status of fish species found in monitoring sites in the Southern Coast catchment over the last 5 years. More species may be present.

Aquatic habitats

Rapid Habitat Assessments (RHA) for streams in 3 areas of the Southern Coast catchment. RHAs assign a score to 10 different features in four categories of a habitat. These scores are summed to give the final RHA score. This is a snapshot of a range of freshwater monitoring sites in the Southern Coast catchment.

Very poor
Poor
Moderate
Good
Great

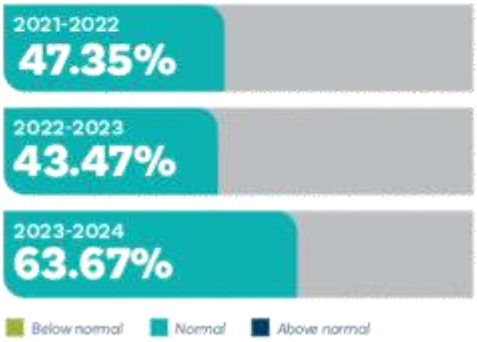
Nearshore water quality

Number of sites monitored: 2

Strongly within NZ range
Outside NZ range
Strongly outside NZ range
Within NZ range

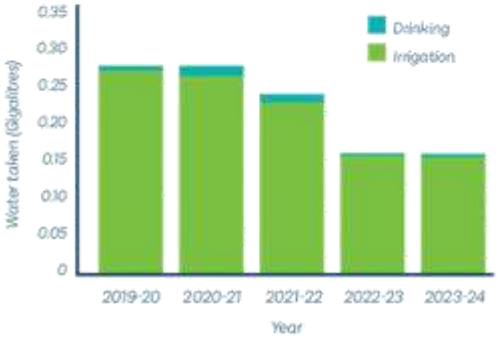
Groundwater levels

Median percentile out of 100%



Below normal
Normal
Above normal

Groundwater use



Tuia ki te Here Tangata People

Our swimming spots

Percent of time over 5 years our swimming spots were

90% suitable for swimming
3% caution advised
7% unsuitable for swimming

1 site monitored: 97 times over 5 years

70% suitable for swimming
12% caution advised
18% unsuitable for swimming

5 sites monitored: 401 times over 5 years

95% suitable for swimming
1% caution advised
4% unsuitable for swimming

7 sites monitored: 565 times over 5 years

Land use

75% *Extensive pastoral farming*
9% *Native & exotic vegetation*
4% *Plantation forests*
5% *Urban*
4% *Other*

Shellfish gathering

Te Awanga

Kairakau Beach

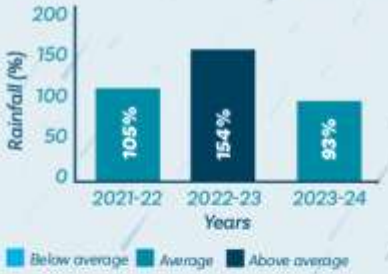
Compliant (with guidelines)
Not compliant
Not tested

Pōrangahau

The charts on this page use the Hydrological Year where relevant. The Hydrological Year spans from July to June to better align with natural seasonal cycles. Although trends in data can't be supplied for this period, it will be possible to provide these in the next SoE.

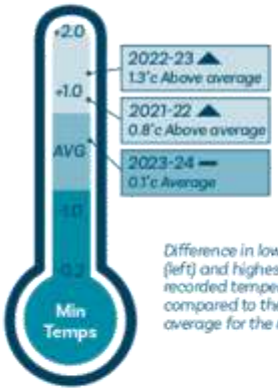
Tuia ki te Rangi *Sky*

Our rainfall



Difference in rainfall levels compared to the 30-year average for the region.

Our climate



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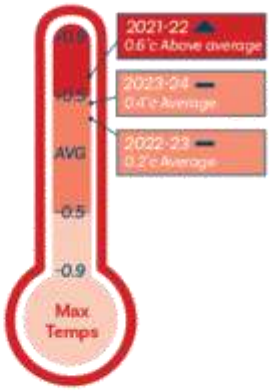


Tuia ki te Whenua *Land*

Wetland condition

Excellent
Moderate
Good
Poor/degraded

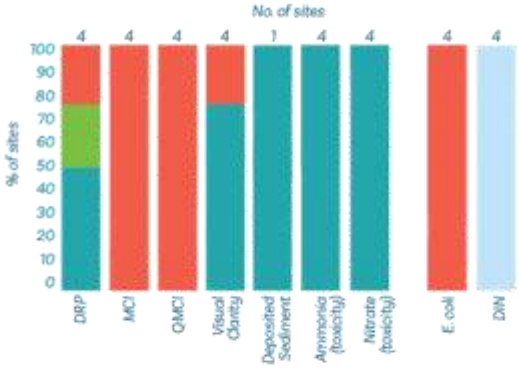
There are 6 monitored wetlands in the Pōrangahau catchment. There will be more on private property. Reach out to our biodiversity team for help with your wetland.

Tuia ki te Moana *Water*

River flows

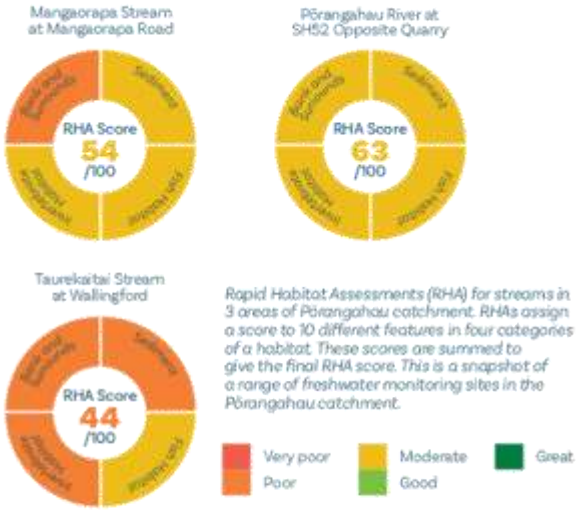
Tourekaitai Stream at Wallingford

River water quality

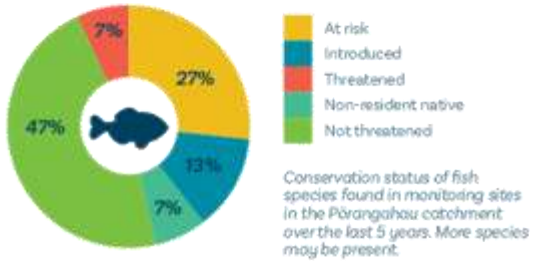


River quality is determined through measure of water quality, physical habitat, aquatic plant and algae levels. Quality standards are set by The National Policy Statement for Freshwater Management (NPS-FM) and the Australian and New Zealand Environment and Conservation Council (ANZECC).

Aquatic habitats

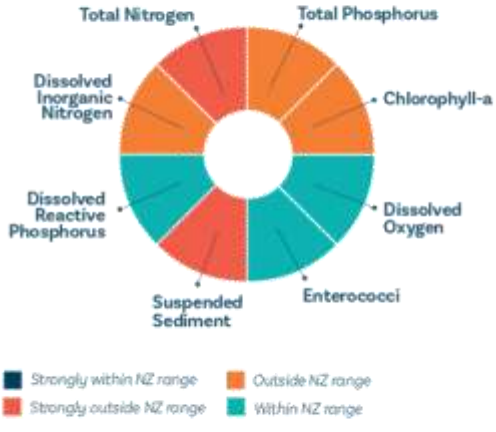


Freshwater fish



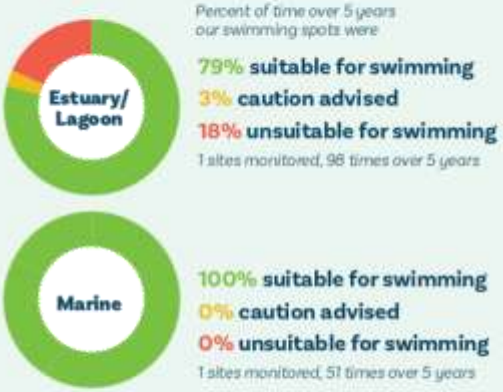
Estuary water quality

Number of sites monitored: 1

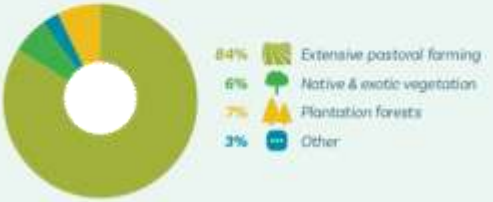


Tuia ki te Here Tangata People

Our swimming spots



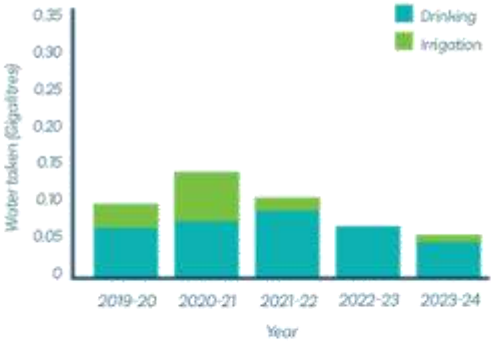
Land use

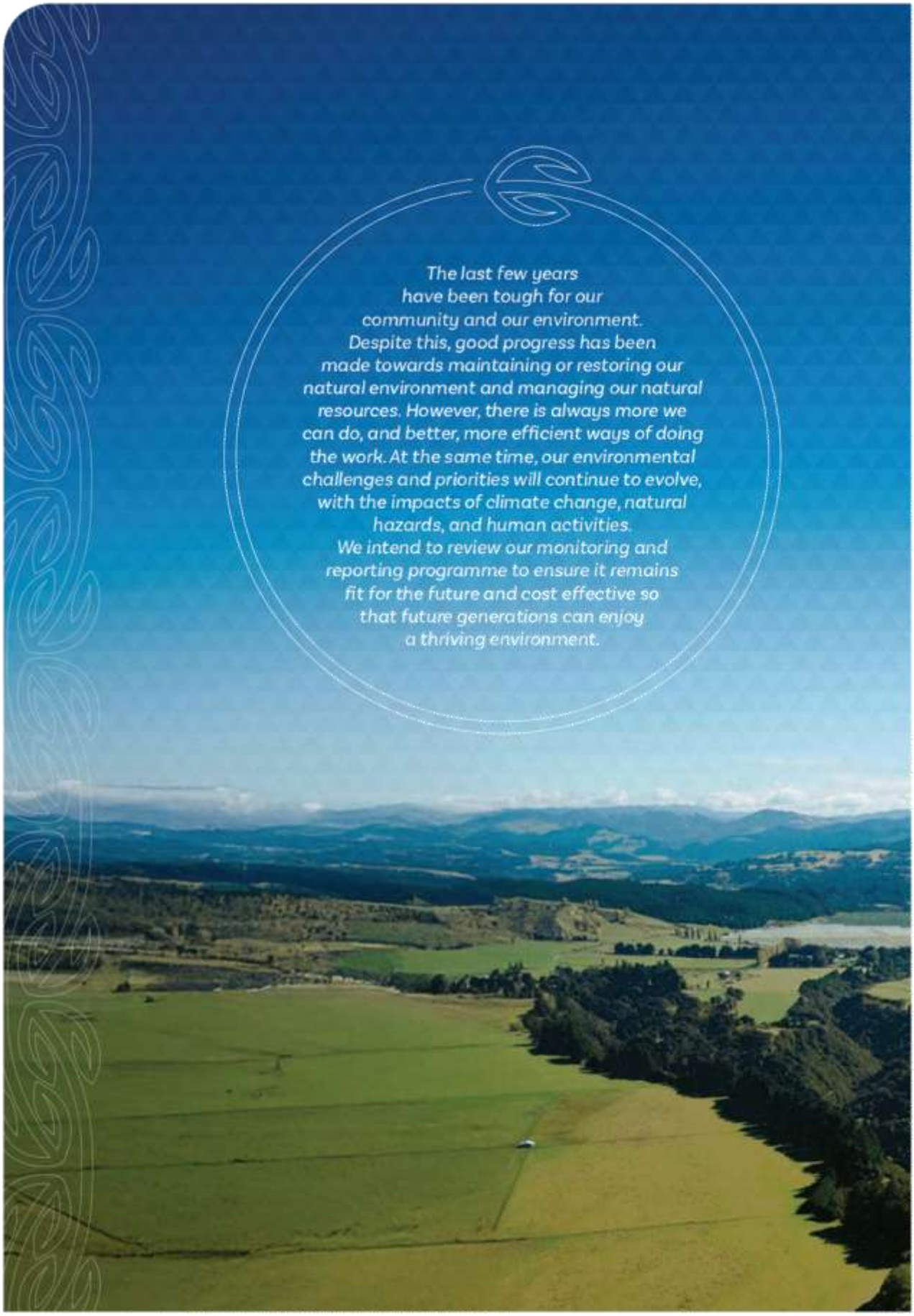


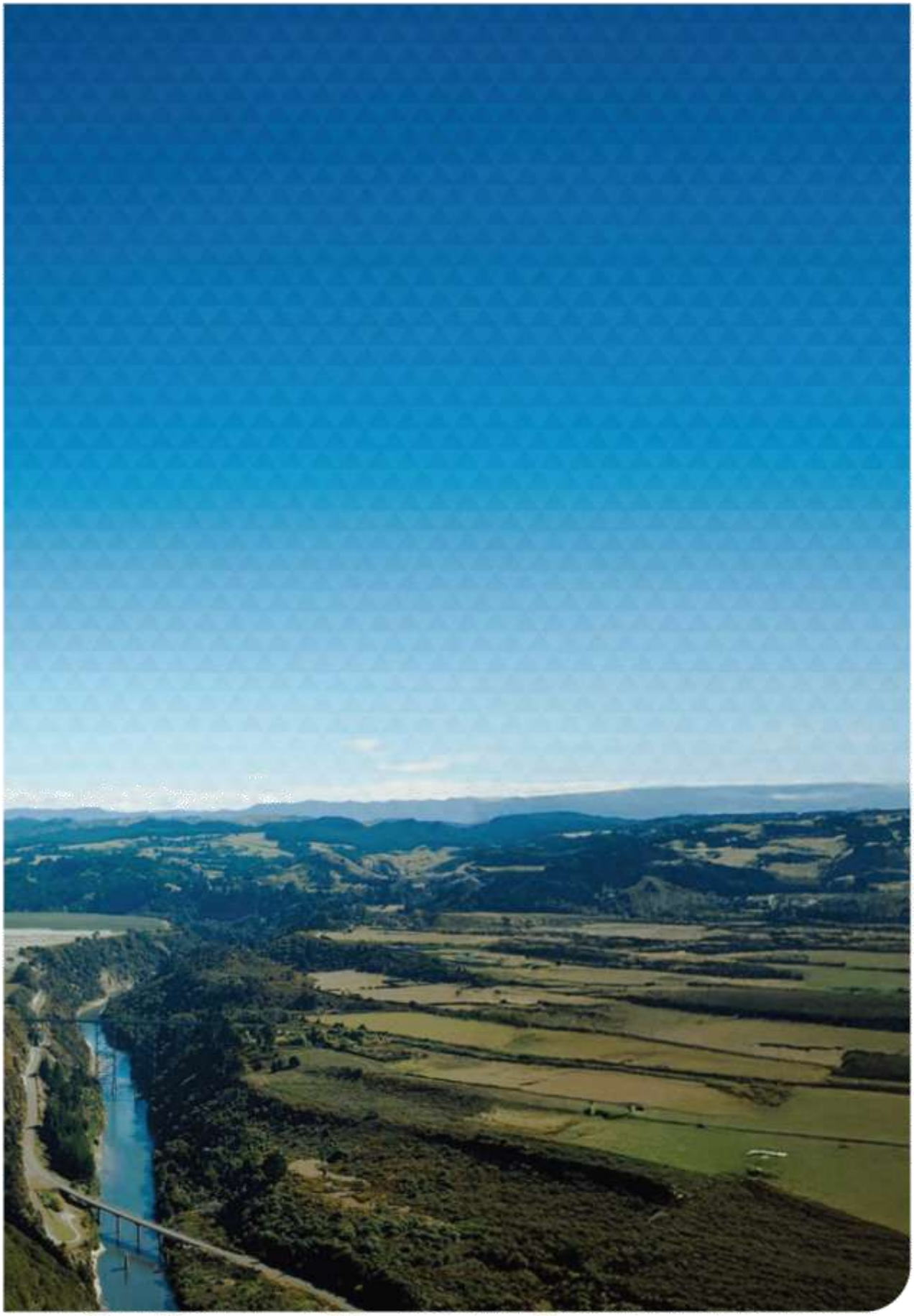
Shellfish gathering

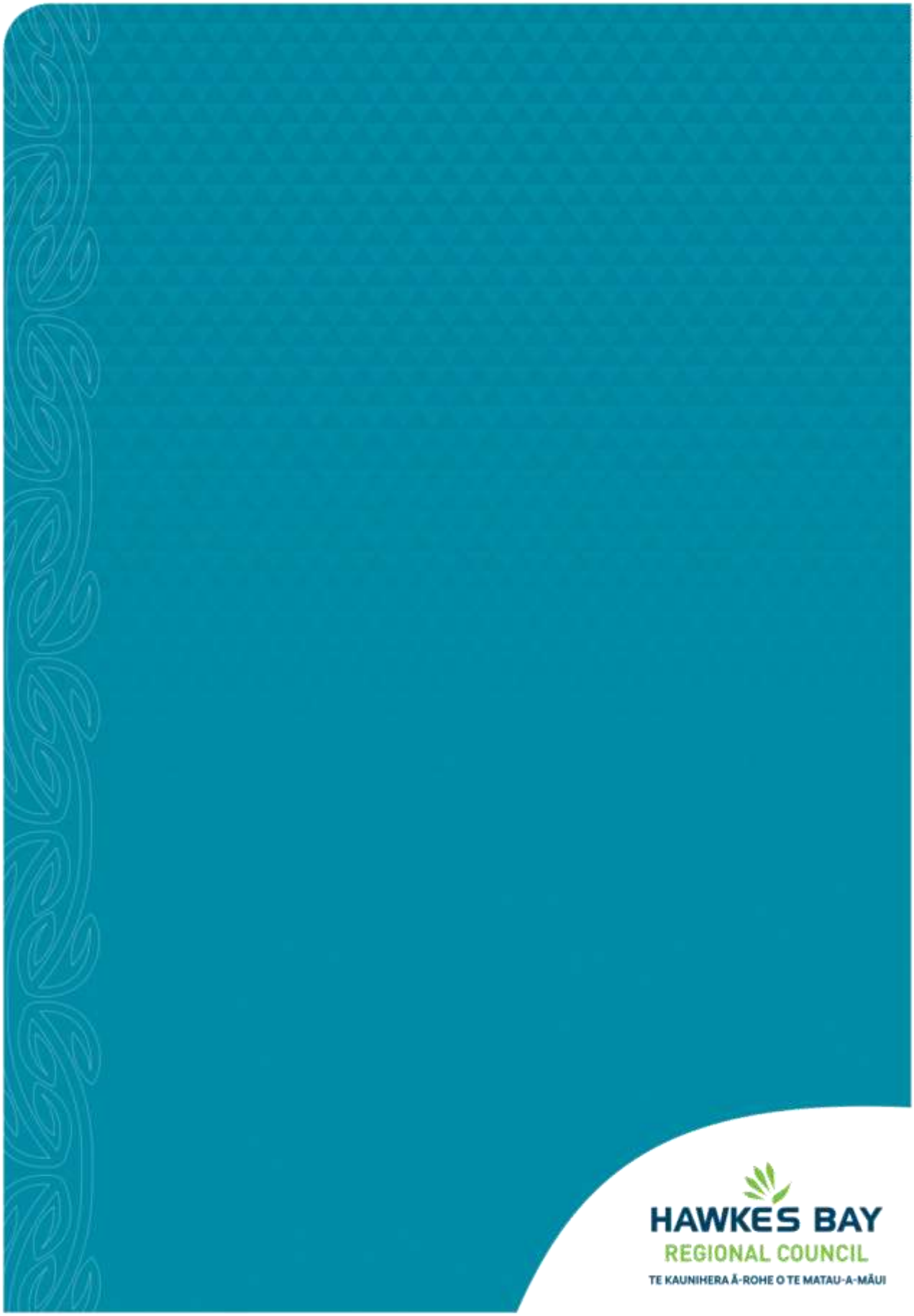
Pōrangahau Estuary

Groundwater use




The last few years
have been tough for our
community and our environment.
Despite this, good progress has been
made towards maintaining or restoring our
natural environment and managing our natural
resources. However, there is always more we
can do, and better, more efficient ways of doing
the work. At the same time, our environmental
challenges and priorities will continue to evolve,
with the impacts of climate change, natural
hazards, and human activities.
We intend to review our monitoring and
reporting programme to ensure it remains
fit for the future and cost effective so
that future generations can enjoy
a thriving environment.




HAWKES BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI