

New Zealand

Kopuatai Peat Dome

Offline RIS Word form

[Copy of online form submitted through RSIS portal on 2 February 2022.]  
  
All fields marked with an asterisk (\*) are required.  
  
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Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a ‘full’ Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

Summary

1.1 Summary description

Please provide a short descriptive text summarising the key characteristics and internationally important aspects of the site. You may prefer to complete the four following sections before returning to draft this summary.

Summary (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  | Kopuatai Peat Dome is located on the Hauraki Plains in the Waikato Region of the North Island, New Zealand. The site is of international importance for supporting representative, rare or unique natural or near-natural wetland types, threatened species and ecosystems, and contributes to regional biodiversity.    The site consists of a peat dome, surrounding fen, and adjacent mineralised swamp. It is the most intact peat dome/restaid bog remaining in New Zealand, and is the largest remaining freshwater wetland left in the North Island. The site retains much of its original vegetation including about 1,000 ha of giant cane rush (Sporadanthus ferrugineus) rushland and one of the largest remnants of regularly flooded kahikatea (Dacrycarpus dacrydioides) forest in the Waikato Region.    The dome is an acidic, low-nutrient bog fed solely by rainwater and dominated by peat-forming restiad rushes. It grades to a higher fertility fen at the margins, characterised by woody vegetation. Close to the rivers and canals are fertile mineralised swamps, occasionally flooded and mostly comprising introduced species. Constructed waterfowl ponds and connecting channels occur in this wetland type which has high recreational value for duck shooting and provides important habitat for native wader birds, including the critically threatened Australasian bittern (Botaurus poiciloptilus).    The site is home to 54 species of bird, at least one gecko species, one native mammal (a bat), at least eight species of native fish, and 54 native moth species, including two possibly endemic to the Waikato Region. It is a significant habitat for the rare black mudfish (Neochanna diversus) and the cane rush moth (Houdinia flexilissma), the larvae of which are restricted to the stems of giant cane rush. Both species are likely to be represented at over 30% of their global population at this site, being one of their predominant habitats. Houdinia is a monotypic genus that was formally described in 2006 after first being discovered in the wetland in 2003 and is naturally found in only three wetlands, all in the Waikato Region of New Zealand.    The wetland performs important climate regulation (carbon sink) and hydrological (flood storage) functions, and is of high cultural significance for the local indigenous people (Ngati Hako). |

Data & location

2.1 Formal data

2.1.1 Name and address of the compiler of this RIS

Responsible compiler

Name

|  |  |
| --- | --- |
|  | Karen Denyer |

Institution/agency

|  |  |
| --- | --- |
|  | Consultant |

Postal address (This field is limited to 254 characters)

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|  |  |
| --- | --- |
|  |  |

National Ramsar Administrative Authority

Name

|  |  |
| --- | --- |
|  | Ken Brown |

Institution/agency

|  |  |
| --- | --- |
|  | Department of Conservation |

Postal address (This field is limited to 254 characters)

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|  |  |
| --- | --- |
|  |  |

2.1.2 Period of collection of data and information used to compile the RIS

From year (The online RIS only accepts numeric values)

|  |  |
| --- | --- |
|  | 1989 |

Period when the data and information for the sheet for a newly designated site was compiledFor updated RIS: Period when the data and informationfor revision of an existing sheet was updated

To year (The online RIS only accepts numeric values)

|  |  |
| --- | --- |
|  | 2017 |

2.1.3 Name of the Ramsar Site

Official name (in English, French or Spanish)\* (This field is mandatory)

|  |  |
| --- | --- |
|  | Kopuatai Peat Dome |

Unofficial name (optional)

|  |  |
| --- | --- |
|  |  |

2.1.4 Changes to the boundaries and area of the Site since its designation or earlier update

A. Changes to Site boundary (Update)

[x] Yes / [ ] No

.

[x] The boundary has been delineated more accurately

[ ] The boundary has been extended

[ ] The boundary has been restricted

B. Changes to Site area (Update)

|  |  |
| --- | --- |
|  | the area has decreased[[1]](#footnote-1) |

[ ] The Site area has been calculated more accurately

[x] The Site has been delineated more accurately

[ ] The Site area has increased because of a boundary extension

[ ] The Site area has decreased because of a boundary restriction

Important note: If the boundary of the designated site is being restricted/reduced, before submitting this updated RIS to the Secretariat the Contracting Party should have followed: - the requirements in Article 2.5 of the Convention; or - the procedures established by the Conference of the Parties in the annex to Resolution VIII.20 (2002); or - where appropriate instead, the procedures in the annex to Resolution IX.6 (2005). Contracting Parties should also have provided to the Secretariat a report on changes prior to the submission of an updated RIS.

[ ] For secretariat only: This update is an extension

2.1.5 Changes to the ecological character of the Site

6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS? (Update)

|  |  |
| --- | --- |
|  | Yes -actual-[[2]](#footnote-2) |

Are the changes (Update)

[ ] Positive / [ ] Negative / [x] Positive & Negative

.

.

What extent of the Ramsar site is affected (%)

Positive % (Update)

|  |  |
| --- | --- |
|  | 1 |

Negative % (Update)

|  |  |
| --- | --- |
|  | 1 |

Optional text box to provide further information (Update)

|  |  |
| --- | --- |
|  |  |

[ ] No information available

Are changes the result of (tick each category which applies):

[x] Changes resulting from causes operating within the existing boundaries?

[x] Changes resulting from causes operating beyond the site’s boundaries?

[ ] Changes consequent upon site boundary reduction alone (e.g., the exclusion of some wetland types formerly included within the site)?

[ ] Changes consequent upon site boundary increase alone (e.g., the inclusion of different wetland types in the site)?

Please describe any changes to the ecological character of the Ramsar Site, including in the application of the Criteria, since the previous RIS for the site. (Update)

|  |  |
| --- | --- |
|  | Positive changes [actual]    • Targeted control of invasive plants, including blackberry (Rubus fruticosus) and grey willow (Salix cinerea) using selective, aerially-applied herbicide, has converted almost 60 hectares of mostly adventive vegetation on the western and south-western margins of the wetland to indigenous shrubland or sedgeland between 2007 and 2015. This includes 30 ha changed to shrubland dominated by manuka (Leptospermum scoparium) with some residual adventive grey willow, 17 ha changed to native Carex sedgeland, and 6 ha to manuka scrub.    • Within the Ramsar Site, a small area (< 3 ha) of indigenous vegetation on the eastern side of the wetland that was illegally cleared prior to 2004 had reverted back to native vegetation by 2016.    • Surveys have confirmed the presence of previously unrecorded long-tailed bats (Chalinolobus tuberculatus) in 2016, Auckland green gecko (Naultinus elegans elegans) in 2010, and a newly described species (Houdinia flexilissma) - found in 2003 but formally described as a new species in 2006.    • Water level management structures were installed in six outlet drains around the Kopuatai Peat Dome in April 2013 to retain minimum water levels in the wetland, protecting the dome edges from drying out during droughts, and fully inundating the wetland during floods.    Positive changes [likely]    • A 2016 acoustic survey for Australasian bittern (Botaurus poiciloptilus) found good numbers of males in the mineralised zones. These may be birds that have relocated from nearby Whangamarino Wetland Ramsar site, which had reportedly experienced a decline in this species for which the site has been a renowned stronghold. No pre-2016 data exist to determine recent trends in Kopuatai bittern numbers.    • A 2017 survey of introduced rat (Rattus) species using footprint tracking cards found relatively low level of detection. However, no baseline data exists to determine recent trends.    Negative changes [actual]    • In 2008 some 35 hectares of wire rush and manuka vegetation on land adjacent to the Ramsar site’s southern boundary was illegally cleared for conversion to grazing land. The decomposition and compaction of peat soils is likely to have impacted water levels in the bordering peat dome. The area has since regenerated back to indigenous vegetation cover.    • 10 ha of mānuka-grey willow shrubland changed to an exotic vegetation type, as a result of invasion by gorse (Ulex europeaus) and blackberry (Rubus fruticosus) between 2007 and 2015.    • Small fires in 2005 and 2017 burned 1.5 and 0.5 hectares respectively of peatland vegetation within the dome. While this destroyed some indigenous vegetation it may have also have created habitat suitable for threatened species such as Lycopodiella serpentina.    • The invasive species grey willow (Salix cinerea) and royal fern (Osmunda regalis)have spread inwards from the margins of the wetland between 2007 and 2015 (based on surveys of trained botanists). Over 40 hectares of mānuka scrub, was re-mapped as mānuka-grey willow shrubland from over this period, reflecting this invasion of willow trees.    Negative changes [potential]    • In the past, the wetland has been impacted from development of drains and canals, that would have likely resulted in peat subsidence and water level decline in the adjacent Ramsar site. This is linked with the invasion of manuka/willows. It is unknown if hydrological disturbance has increased since 2004. |

Is the change in ecological character negative, human-induced AND a significant change (above the limit of acceptable change) (Update)

[ ] Yes / [x] No

.

Has an Article 3.2 report been submitted to the Secretariat? (Update)

[ ] Yes / [x] No

.

2.2 Site location

2.2.1 Defining the Site boundaries

The site boundaries must be clearly delineated on both: a) a GIS shapefile and b) a digital map/image:

-> To define the site boundaries please complete field 2.2.1 a1), 2.2.1 a2) and 2.2.1 b) via the online form.

-UPLOAD via online form-

Boundaries description (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  | Located on the Hauraki Plains in the North Island of New Zealand, 70 km north east of Hamilton and bounded by the Piako and Waitoa Rivers and Elstow Canal. |

2.2.2 General location

a) In which large administrative region does the site lie?

|  |  |
| --- | --- |
|  | Waikato |

b) What is the nearest town or population centre?

|  |  |
| --- | --- |
|  | Paeroa |

2.2.3 For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries?

[ ] Yes / [x] No

.

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party?

[ ] Yes / [x] No

.

c) Is the site part of a formal transboundary designation with another Contracting Party?

[ ] Yes / [x] No

.

d) Transboundary Ramsar Site name:

|  |  |
| --- | --- |
|  |  |

Sites part of transboundary designation

2.2.4 Area of the Site

If you have not established an official area by other means, you can copy the area calculated from the GIS boundaries into the 'official area' box.

Official area, in hectares (ha): (The online RIS only accepts numeric values)

|  |  |
| --- | --- |
|  | 10056 |

Area, in hectares (ha) as calculated from GIS boundaries

|  |  |
| --- | --- |
|  | 10055.581 |

2.2.5 Biogeography

Please provide the biogeographic region(s) encompassing the site and the biogeographic regionalization scheme applied:

Biogeographic regions

|  |  |
| --- | --- |
| **Regionalisation scheme(s)**[[3]](#footnote-3) | **Biogeographic region** |
| Freshwater Ecoregions of the World (FEOW) | New Zealand |
|  |  |

Other biogeographic regionalisation scheme (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  |  |

Why is the Site important?

3.1 Ramsar Criteria and their justification

Tick the box against each criterion applied to the designation of the Ramsar Site. All criteria which apply should be ticked. Please explain why you selected a criterion by filling in the relevant fields on this page, on the three other pages of this section 'Criteria & justification' and on the 'Wetland types' page of the section 'What is the site like?'.

[x] Criterion 1: Representative, rare or unique natural or near-natural wetland types

To justify this Criterion, please select at least one wetland type as representative, rare or unique in the section What is the site like? > Wetland types and provide further details in at least one of the three boxes below.

Hydrological services provided (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | The mineralised Kopuatai marsh and swamp wetland areas are considered to be very important for flood control and protection as they provide storage for flood water from the Piako/Waitoa catchments. The raised nature of the Kopuatai peat dome relative to the surrounding landscape means that it also act as a natural flood barrier between the Piako and Waihou Rivers. |

Other ecosystem services provided (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | The Kopuatai peat dome provides significant ecosystem services in terms of conserving flora and fauna, including many threatened or rare species. The site includes the best example in New Zealand of Sporadanthus ferrugineus rushland, a community that represents the last stage in the succession of a restiad bog. A kahikatea (Dacrycarpus dacrydioides) forest remnant in the mineralised southwest corner is one of the largest and best remnants of regularly flooded kahikatea swamp forest remaining in the Waikato Region. It supports patches of the regionally uncommon swamp maire (Syzygium maire).    Carbon sequestration contributing to global climate change mitigation is also an important function (ecosystem service) provided by the wetland. The Kopuatai bog has been storing carbon for around 11,000 years, to present-day depths with peat soil depth now up to 8–14 metres. On average it has stored around 2,400 tonnes of carbon per hectare (tC/ha), compared to an average pasture soil which might have 150 tC/ha, and a mature pine forest with around 220 tC/ha stored in the trees themselves.    Research studies indicate the Kopuatai bog is a substantial sink for carbon, ranging from 135 gC m⁻² yr⁻¹ to 217 gC m⁻² yr⁻¹, although the sequestration rates were sensitive to dry conditions (water table decline). While the wetland also emits considerable methane, overall, Kopuatai is a strong greenhouse gas sink. Kopuatai bog takes up more CO2 from the atmosphere each year than similar wetlands in the Northern Hemisphere, mainly because of the year-round growing conditions in New Zealand. |

Other reasons (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Kopuatai Peat Dome is of international importance for supporting representative, rare or unique natural or near-natural wetland types.    The wetland consists of a peat dome, surrounding fen, and adjacent mineralised swamp. It is the most intact peat dome/restaid bog remaining in New Zealand, and is the largest remaining freshwater wetland left in the North Island. The site retains much of its original vegetation including aprpoximately 1,000 ha of giant cane rush (Sporadanthus ferrugineus) rushland and one of the largest remnants of regularly flooded kahikatea (Dacrycarpus dacrydioides) forest in the Waikato Region. It is the best example of its kind nationally, and supports a rare vegetation type that is unique in the world (S. ferrugineus rushland).    Kopuatai formed part of a larger area known to indigenous people Ngati Hako as Tikarahi. Ngati Hako value this area as a taonga (treasure). The area has high cultural values for Ngati Hako including wahi pa (settlements) wahi tapu (sacred sites) and mahinga kai (food gathering places). The wetland forms part of their tribal homelands. Ngati Hako are kaitiaki (guardians) of Kopuatai and have an inter-generational responsibility to ensure the cultural, environmental and spiritual integrity of this taonga is preserved, protected and enhanced for the current and future generations.    The wetland is also a key site for scientific research on ecology, hydrology and carbon dynamics. |

[x] Criterion 2 : Rare species and threatened ecological communities

To justify this Criterion, please give details below on:

- relevant plant species in the section Criteria & justification> Plant species (3.2)

- relevant animal species in the section Criteria & justification> Animal species (3.3)

- relevant ecological communities in the section Criteria & justification> Ecological communities (3.4)

Optional text box to provide further information (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | The Ramsar site supports a number of nationally threatened and declining species including Australasian bittern, longfin eel, and North Island fernbird.    Lycopodiella serpentina (Nationally Vulnerable) is frequently found in the open peat bog areas, and is relatively common amongst certain vegetation types within the bog, particularly the Schoenus/Empodisma zone. Cyclosorus interruptus (At Risk – Declining) is found within the manuka (Leptospermum) shrubland in the fen.    One of the most notable plant species at Kopuatai is the giant jointed rush Sporadanthus ferrugineus. While abundant in Kopuatai it is endemic to the Waikato area and is only present as naturally occurring remnant populations at Kopuatai and other small peat bog remnants. It has been translocated to several other peatland areas in the Waikato from where it had become locally extinct. |

[x] Criterion 3 : Biological diversity

To justify this Criterion, please give details in the box below. If you want to name any specific species, please give details on:

- relevant plant species in the section Criteria & justification> Plant species (3.2)

- relevant animal species in the section Criteria & justification> Animal species (3.3)

Justification (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Species of limited distribution or at their geographic limits are important for maintaining the biological diversity of a particular bio-geographic region. The wetland is a national stronghold habitat for several species of restricted distribution (classified as Relict or Naturally Uncommon), including a bladderwort species (Utricularia delicatula), giant cane rush (Sporadanthus ferrugineus), an endemic moth (Houdinia flexilissima) with larvae that live exclusively within the stems of giant cane rush, and a species of a liverwort (Goebelobryum aff. unguiculatum). The giant cane rush and its associated moth are endemic to the Waikato Region of New Zealand, naturally present at Kopuatai and other small bog remnants. |

[x] Criterion 4 : Support during critical life cycle stage or in adverse conditions

To justify this Criterion, please give details below on:

- relevant plant species in the section Criteria & justification> Plant species (3.2)

- relevant animal species in the section Criteria & justification> Animal species (3.3)

and explain the life cycle stage or nature of adverse conditions in the accompanying 'justification' box.

Optional text box to provide further information (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Kopuatai wetlands are an important spawning area for inanga (Galaxias maculatus). The wetland is a permanent residence for a number of threatened species including Australasian bittern, black mudfish, giant cane rush (Sporadanthus ferrugineus), and the endemic moth (Houdinia flexilissima). Therefore it provides critical breeding habitat upon which the long-term conservation of these species depends. |

[ ] Criterion 5 : >20,000 waterbirds

To justify this Criterion, please give details below on:- the total number of waterbirds and the period of data collection - relevant waterbird species, and if possible their population size, in the section Criteria & justification> Animal species (3.3)

Overall waterbird numbers\* (This field is mandatory)

|  |  |
| --- | --- |
|  |  |

Start year\* (This field is mandatory)

|  |  |
| --- | --- |
|  |  |

End year\* (This field is mandatory)

|  |  |
| --- | --- |
|  |  |

Source of data:

|  |  |
| --- | --- |
|  |  |

Optional text box to provide further information (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  |  |

[ ] Criterion 6 : >1% waterbird population

To justify this Criterion, please give details on relevant waterbird species and their population size in the section Criteria & justification> Animal species (3.3)

Optional text box to provide further information (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  |  |

[x] Criterion 7 : Significant and representative fish

To justify this Criterion, please give information in the box below and details of relevant fish species in the section Criteria & justification> Animal species (3.3)

Justification (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | The wetland provides a wide variety of habitats for indigenous freshwater fish species. In particular, it provides important habitat for the endemic black mudfish (Neochanna diversus) and longfin eel (Anguilla dieffenbachii), as well as supporting the migratory life-cycle of the at-risk inanga (Galaxias maculatus).    The site is nationally significant for the wetland-dependent black mudfish, with the extensive size of the wetland supporting more than 30% of the remaining habitat for black mudfish. |

[ ] Criterion 8 : Fish spawning grounds, etc.

To justify this Criterion, please give information in the box below. Completion of details on relevant fish species in the section Criteria & justification> Animal species (3.3) is optional.

Justification (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  |  |

[x] Criterion 9 : >1% non-avian animal population

To justify this Criterion, please give details on relevant non-avian species and their population size in the section Criteria & justification> Animal species (3.3)

Optional text box to provide further information (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Kopuatai wetland is considered to support more than 1% of the global population of two non-avian animal species; black mudfish (Neochanna diversus) and the cane rush moth (Houdinia flexilissma). Local experts estimate that Kopuatai wetlands comprise more than 30% of the remaining habitat for black mudfish and are therefore likely to support that proportion of the global population of this endemic fish species.    This site is also a national stronghold for the moth H. flexilissima, the larvae of which are totally dependent on Sporadanthus ferrugineus for shelter and food. The moth is classified as ‘At risk - Relict’ because it is only found naturally at three locations within the Waikato, with the largest area of its habitat occurring in the Kopuatai peatlands. Kopuatai likely holds more than 60% of the remaining giant cane rush habitat, however comparative density estimates suggest it may support only 1/5th the density of H. flexilissma than other sites, possibly because of lower nutrient levels in the bog.    Kopuatai and the much smaller nearby Torehape peat dome are the only known sites for an undescribed Bactra moth species. If confirmed as a unique species this moth will likely also trigger Criterion 9. |

3.2 Plant species whose presence relates to the international importance of the site

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phylum** | **Scientific name**\* | **Criterion 2** | **Criterion 3** | **Criterion 4** | **IUCN Red List**[[4]](#footnote-4) | **CITES Appendix I** | **Other status** | **Justification** |
| Birds | | | | | | | | |
| Tracheophyta / Pinopsida | Dacrycarpus dacrydioides | [ ] | [x] | [ ] | LC | [ ] |  | Endemic species (NZ) |
| Tracheophyta / Liliopsida | Empodisma robustum | [ ] | [x] | [ ] |  | [ ] | At Risk (Declining) | Endemic species (NZ) |
| Marchantiophyta / Jungermanniopsida | Goebelobryum unguiculatum | [x] | [ ] | [ ] |  | [ ] | Nationally Endangered | Possibly a stronghold site as this species requires highly acidic conditions |
| Tracheophyta / Lycopodiopsida | Pseudolycopodiella serpentina | [x] | [ ] | [ ] |  | [ ] | Nationally Vulnerable |  |
| Tracheophyta / Liliopsida | Sporadanthus ferrugineus | [ ] | [x] | [ ] |  | [ ] | At Risk (Relict) | Endemic species (NZ). Stronghold site for a species of limited distribution |
| Tracheophyta / Magnoliopsida | Utricularia delicatula | [ ] | [x] | [ ] |  | [ ] | At Risk (Relict) | Endemic species (NZ). Wetland is likely a stronghold for species |
|  |  | [ ] | [ ] | [ ] |  | [ ] |  |  |

GBIF Secretariat (2019). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei accessed via GBIF.org on 2020-07-15.

Optional text box to provide further information on plant species of international importance:

(This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Threatened species status (other status) for qualification under Criterion 2 is based on the New Zealand Threat Classification System  administered by the NZ Department of Conservation. This classification system defines the Threatened (Nationally Critical, Nationally  Endangered and Nationally Vulnerable) species in New Zealand that qualify under Criterion 2. The classification system also defines the At  Risk (Declining, Naturally Uncommon, Relict) species that are near-threatened. For details on the classification system refer to: Townsend et al (2008): New Zealand Threat Classification System Manual. Department of Conservation, Wellington. 35 p.    Endemic species status for qualification under Criterion 3 is based on the New Zealand Plant Conservation Network database.    Three threatened or at risk species of plant were previously recorded at Kopuatai but have no recent records and their continued presence cannot be confirmed.  - Utricularia australis (Nationally Critical): floating bladderwort one record from the 1980s.  - Calochilus robertsonii (At Risk - Naturally Uncommon): an endemic orchid one record from the 1980’s, may no longer occur here.  - Pterostylis paludosa (At Risk – Declining): one record from the 1980’s, likely no longer at that location but possibly present elsewhere in the wetland. |

3.3 Animal species whose presence relates to the international importance of the site

Animals are listed in the following order: birds; fish, mollusc and curstaceen; other animals

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phylum** | **Scientific name**\* | **Species qualifies under criterion** | | | | **Species contributes under criterion** | | | | **Pop. Size**[[5]](#footnote-5) | **Period of pop. Est.**5 | **% occurrence**5 | **IUCN Red List**[[6]](#footnote-6) | **CITES Appendix I** | **CMS Appendix I** | **Other Status** | **Justification** |
| **2** | **4** | **6** | **9** | **3** | **5** | **7** | **8** |
| Others | | | | | | | | | | | | | | | | | |
| Chordata / Mammalia | Chalinolobus tuberculatus | [x] | [ ] | [ ] | [ ] | [x] | [ ] | [ ] | [ ] |  |  |  | VU | [ ] | [ ] | Nationally Critical | Endemic species (NZ) |
| Chordata / Reptilia | Naultinus elegans | [ ] | [ ] | [ ] | [ ] | [x] | [ ] | [ ] | [ ] |  |  |  |  | [ ] | [ ] | At Risk (Declining) | Endemic species (NZ) |
| Fish, Mollusc and Crustacea | | | | | | | | | | | | | | | | | |
| Chordata / Actinopterygii | Anguilla dieffenbachii | [x] | [ ] | [ ] | [ ] | [x] | [ ] | [x] | [ ] |  |  |  | EN | [ ] | [ ] | At Risk (Declining) | Endemic species (NZ). Indigenous fish species |
| Chordata / Actinopterygii | Galaxias maculatus | [ ] | [x] | [ ] | [ ] | [ ] | [ ] | [x] | [ ] |  |  |  | LC | [ ] | [ ] | At Risk (Declining) | Wetland is an important migratory pathway for this diadromous species in this catchment. Indigenous fish species |
| Chordata / Actinopterygii | Neochanna diversus | [x] | [x] | [ ] | [x] | [ ] | [ ] | [x] | [ ] | 0 |  | 30 | EN | [ ] | [ ] | At Risk (Declining) | Critical habitat for rare fish species. Wetlands contains >30% of likely national population (number unknown) estimated to occur at this site. % estimate is based on extent of known habitat for species. |
| Birds | | | | | | | | | | | | | | | | | |
| Chordata / Aves | Botaurus poiciloptilus | [x] | [x] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] |  |  |  | EN | [ ] | [ ] | Nationally Critical | Wetland dependent species that relies on site for feeding and breeding |
| Chordata / Aves | Megalurus punctatus | [ ] | [ ] | [ ] | [ ] | [x] | [ ] | [ ] | [ ] |  |  |  |  | [ ] | [ ] | At Risk (Declining) | Endemic species (NZ) |
| Chordata / Aves | Rallus philippensis | [ ] | [ ] | [ ] | [ ] | [x] | [ ] | [ ] | [ ] |  |  |  |  | [ ] | [ ] | At Risk (Declining) | Endemic subspecies (NZ) |
|  |  | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] |  |  |  |  | [ ] | [ ] |  |  |

GBIF Secretariat (2019). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei accessed via GBIF.org on 2020-07-15.

Optional text box to provide further information on animal species of international importance:

(This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Threatened species status (other status) for qualification under Criterion 2 is based on the New Zealand Threat Classification System  administered by the NZ Department of Conservation (Townsend et al. 2008).    Long-tailed bats (Chalinolobus tuberculatus) were detected in the kahikatea forest in 2016, with sufficient frequency to suggest they may roost in the kahikatea and possibly willow trees. Auckland green gecko (Naultinus elegans elegans) were recorded in 2010, and a newly described species (Houdinia flexilissma) was found in 2003 but formally described in 2006.    This site is a national stronghold for the moth Houdinia flexilissima, the larvae of which are totally dependent on Sporadanthus ferrugineus for shelter and food. The moth is classified as ‘Relict’ because it is only found naturally at a few wetlands within the Waikato, with the largest area of its habitat occurring in the Kopuatai peatlands. Kopuatai likely holds more than 60% of the remaining giant cane rush habitat, however comparative density estimates suggest it may support only 1/5th the density of Houdinia flexilissma at other sites, possibly because of lower nutrient levels in the larger bog.    Kopuatai wetland is considered to support more than 1% of the global population of two non-avian animal species; black mudfish (Neochanna diversus) and the cane rush moth (Houdinia flexilissma). No absolute population data are available for either species, but local experts estimate that Kopuatai wetlands comprise more than 30% of the remaining habitat for black mudfish and are therefore likely to support that proportion of the global population of this endemic fish species. This site is also a national stronghold for the moth H. flexilissima, the larvae of which are totally dependent on Sporadanthus ferrugineus for shelter and food. The moth is classified as ‘At risk - Relict’ because it is only found naturally at three locations within the Waikato, with the largest area of its habitat occurring in the Kopuatai peatlands. Kopuatai likely holds more than 60% of the remaining giant cane rush habitat, however comparative density estimates suggest it may support only 1/5th the density of Houdinia flexilissma at other sites, possibly because of lower nutrient levels in the larger bog. Irrespective, given the extremely limited distribution of this species (in just a handful of locations), it is considered that this site supports >1% of the global population of this invertebrate, thereby triggering Criterion 9. Houdinia flexilissma is not listed in the Catalogue of Life and therefore cannot be entered in the above species table.    Kopuatai peatlands support four of the twelve known species of batrachedrid moths in New Zealand, so the wetland represents an important centre of diversity for them. Kopuatai and the much smaller nearby Torehape peat dome are the only known sites for an as yet undescribed Bactra species, suggesting this species may also trigger Criterion 9. |

3.4 Ecological communities whose presence relates to the international importance of the site

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of ecological community** | **Community qualifies under Criterion 2?** | **Description** | **Justification** |
| Kahikatea (Dacrycarpus dacrydioides) forest | [x] | A significant remnant stand of kahikatea swamp forest (Dacrycarpus dacrydioides) occurs on the southwest corner of Kopuatai and there is also an area of kahikatea to the north west. In 2016 kahikatea swamp forest covered over 30 ha. | Less than 2% of the pre-European extent of kahikatea (white pine) forest remains in New Zealand. |
| Eleocharis sphacelata reedland | [x] | Small patches of Eleocharis sphacelata occur in deep water, usually forming a monoculture, comprising just 0.5 ha in 2016. | Swamps are wetland types that are nationally rare |
| Carex-swamp kiokio-swamp coprosma sedgeland | [x] | Carex, swamp kiokio, and swamp coprosma was probably the original swamp vegetation before it was invaded by non-native willow. Manuka and cabbage tree are occasionally present. In 2016, over 77 ha of this vegetation type was mapped at Kopuatai. | Swamps are wetland types that are nationally rare |
| Harakeke (Phormium tenax) flaxland | [x] | Terrestrial flaxland dominated by harakeke, 7.5 ha of flaxland was mapped in 2016. | This site contains good representative examples of a rare wetland type ( |
| Sporandathus/Empodisma rushland | [ ] | Canopy dominated by Sporadanthus ferrugineus (up to 2 m in height) with wire rush and Schoenus brevifolius amongst stands with occasional stunted mānuka and Epacris pauciflora. | Representative of this naturally rare community |
|  | [ ] |  |  |

Optional text box to provide further information (This field is limited to 4000 characters)

|  |  |
| --- | --- |
|  |  |

What is the Site like?

4.1 Ecological character

Please summarize the ecological components, processes and services which are critical to determining the ecological character of the site. Please also summarize any natural variability in the ecological character of the site, and any known past or current change

(This field is limited to 4000 characters)

|  |  |
| --- | --- |
|  | Kopuatai Peat Dome lies within the Hauraki Plains. Streams rising in the Hapuakohe Ranges feed into the Piako River, which prior to human arrival formed extensive swamplands and peatlands. Drainage and agricultural development of the plains began in the 1900’s.  The largest remaining wetland is the Kopuatai Peat Dome with peat depth ranging from 14 m towards the centre to 1-2 m near the edge. In adjacent pastureland up to 2.5 m of peat settlement may have occurred in the 80 years since drainage canals were constructed. On the eastern boundary, peatlands are separated by the Elstow Canal. Peat settlement inside the Site is detectable up to 50 m from the canal. Distribution of manuka/willows suggests invasion of these species has been assisted by drainage. The extent of invasion is up to 100 m into the wetland. Lowered water table conditions due to drainage may have favoured the development of manuka over Sporadanthus. Impacts into the interior of the wetland are less pronounced.  Although surrounded by farmland, Kopuatai retains vegetation patterns that reflect natural hydrological processes, in terms of water source, water movement, and nutrient status. The peatland is acidic, has low nutrient content and rain-fed. The mineralised area is river influenced, occasionally flooded and of higher nutrient content. Within the dome are shallow lagoons with a water depth of 1-2 metres.  The raised domes support over 5,000 ha of Empodisma robustum rushland and 1000 ha of Sporadanthus ferrugineus rushland. Characteristic species include liverworts (Goebelobryum unguiculatus), mosses (Sphagnum cristatum), carnivorous herbs (Drosera binata), and club moss (Lycopodiella lateralis). The predominant vegetation in the mesotrophic fens are sedges (Machaerina), rushes (Schoenus) and tangle fern (Gleichenia dicarpa). Woody species are few, mainly manuka (Leptospermum scoparium), swamp tamingi (Epacris pauciflora) and gumland grass tree (Dracophyllum lessonianum).  Mineralised swamps originally supported raupo (Typha orientalis), sedges, cabbage tree (Cordyline australis), and New Zealand flax (Phormium tenax). Much of this has been taken over by exotic plants particularly willow (Salix cinerea, S.fragilis), reed sweet grass (Glyceria maxima) and seasonal adventives and grasses. Beneath the willow canopy is often a diversity of native herbs, sedges, rushes and ferns. Despite their degraded state the swamps are important habitat for native birds, including Australasian bittern (Botaurus poiciloptilus).  Endemic black mudfish (Neochanna diversus), longfin eel (Anguilla dieffenbachia) and shortfin eel (Anguilla australis) are probably the only fish in the peat dome proper. Mineralised fringes and rivers contain various species including inanga (Galaxias maculatus), eels, grey mullet (Mugil cephalus), common smelt (Retropinna retropinna), common bullies (Gobiomorphus cotidianus) and flounder (Rhombosolea leporina). Exotic fish include rudd (Scardinius erythrophthalmus), brown bullhead (Ameiurus nebulosus), goldfish (Carassius auratus) and mosquito fish (Gambusia affinis).  Threatened native and endemic bird species include Australasian bittern (Botaurus poiciloptilus), North Island fernbird (Bowdleria punctata vealeae), banded rail (Rallus philippensis assimilis), marsh crake (Porzana pusilla affinis) and spotless crake (Porzana tabuensis plumbea). Many species of Anatidae (black swan, mallard, New Zealand shoveler, grey duck, grey teal) utilise the more fertile open water areas. Introduced rodents and mustelids threaten the native fauna.  Invertebrate fauna is well represented with 188 taxonomic units identified (75% native species). This included 69 families and 11 orders. Moths from 54 native species were recorded from a single survey, including the endemic Batrachedra astricta which is a specialist species on wire rush. An undescribed Chalastra moth species also appears restricted to peatlands and gumlands, possibly specific to tangle fern |

4.2 What wetland type(s) are in the site?

Please list all wetland types which occur on the site, and for each of them: - rank the four most abundant types by area from 1 (greatest extent) to 4 (least extent) in the third column, - if the information exists, provide the area (in ha) in the fourth column - if this wetland type is used for justifying the application of Criterion 1, indicate if it is representative, rare or unique in the last column - you can give the local name of the wetland type if different from the Ramsar classification system in the second column

Marine or coastal wetlands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wetland types (code and name)**[[7]](#footnote-7) | **Local name** | **Ranking of extent (1: greatest - 4: least)** | **Area (ha) of wetland type** | **Justification of Criterion 1**[[8]](#footnote-8) |
|  |  |  |  |  |

Inland wetlands

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wetland types (code and name)**[[9]](#footnote-9) | **Local name** | **Ranking of extent (1: greatest - 4: least)** | **Area (ha) of wetland type** | **Justification of Criterion 1**8 |
| Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks |  | 0 |  |  |
| Fresh water > Flowing water >> N: Seasonal/ intermittent/ irregular rivers/ streams/ creeks |  | 0 |  |  |
| Fresh water > Lakes and pools >> O: Permanent freshwater lakes |  |  |  |  |
| Fresh water > Lakes and pools >> P: Seasonal/ intermittent freshwater lakes |  |  |  |  |
| Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/ pools | Eleocharis reedland, Carex sedgeland, Harakeke flaxland, Transitional vegetation | 0 |  |  |
| Fresh water > Marshes on inorganic soils >> Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils | Seasonal adventives | 4 |  |  |
| Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands | Wire rush rushland, Cane rush rushland, Machaerina sedgeland, Bracken fernland | 1 |  | Representative |
| Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands | Manuka scrub, shrubland | 2 |  |  |
| Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands | Kahikatea forest, willow forest | 3 |  | Representative |
| Fresh water > Flowing water >> Y: Permanent Freshwater springs; oases |  |  |  |  |
|  |  |  |  |  |

Human-made wetlands

|  |  |  |  |
| --- | --- | --- | --- |
| **Wetland types (code and name)**[[10]](#footnote-10) | **Local name** | **Ranking of extent (1: greatest - 4: least)** | **Area (ha) of wetland type** |
| 2: Ponds |  | 0 |  |
| 4: Seasonally flooded agricultural land |  | 0 |  |
| 9: Canals and drainage channels or ditches |  | 0 |  |
|  |  |  |  |

What non-wetland habitats are within the site?

Other non-wetland habitat

|  |  |
| --- | --- |
| **Other non-wetland habitats within the site** | **Area (ha) if known** |
|  |  |

Habitat connectivity (ECD)

|  |  |
| --- | --- |
|  |  |

4.3 Biological components

4.3.1 Plant species

GBIF Secretariat (2019). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei accessed via GBIF.org on 2020-07-15.

Other noteworthy plant species

|  |  |  |
| --- | --- | --- |
| **Phylum** | **Scientific name** | **Position in range / endemism / other** (optional) |
| Bryophyta / Sphagnopsida | Sphagnum cristatum | Peat-former, keystone species |
| Bryophyta / Sphagnopsida | Sphagnum falcatulum | Peat-former, keystone species |
|  |  |  |

Invasive alien plant species

|  |  |  |  |
| --- | --- | --- | --- |
| **Phylum** | **Scientific name** | **Impacts**[[11]](#footnote-11) | **Changes at RIS update**[[12]](#footnote-12) |
| Tracheophyta / Magnoliopsida | Bidens frondosa | Actual (minor impacts) | unknown |
| Tracheophyta / Magnoliopsida | Calystegia sepium | Actual (minor impacts) | unknown |
| Tracheophyta / Liliopsida | Cortaderia selloana | Actual (minor impacts) | unknown |
| Tracheophyta / Liliopsida | Glyceria maxima | Actual (major impacts) | unknown |
| Tracheophyta / Magnoliopsida | Ligustrum sinense | Actual (minor impacts) | unknown |
| Tracheophyta / Magnoliopsida | Lonicera japonica | Actual (minor impacts) | unknown |
| Tracheophyta / Magnoliopsida | Myriophyllum aquaticum | Actual (minor impacts) | unknown |
| Tracheophyta / Polypodiopsida | Osmunda regalis | Actual (major impacts) | increase |
| Tracheophyta / Liliopsida | Phalaris arundinacea | Actual (minor impacts) | unknown |
| Tracheophyta / Magnoliopsida | Salix cinerea | Actual (major impacts) | increase |
| Tracheophyta / Magnoliopsida | Salix fragilis | Actual (minor impacts) | No change |
| Tracheophyta / Magnoliopsida | Ulex europaeus | Actual (minor impacts) | increase |
|  |  |  |  |

GBIF Secretariat (2019). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei accessed via GBIF.org on 2020-07-15.

Optional text box to provide further information (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  | Also Rubus fruitcosus agg, actually minor threat, increase. |

4.3.2 Animal species

Other noteworthy animal species

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phylum** | **Scientific name** | **Pop. size** (optional) | **Period of pop. est.** (optional) | **% occurrence** (optional) | **Position in range /endemism/other** (optional) |
| Chordata / Aves | Anas platyrhynchos |  |  |  | Important game bird, introduced species |
| Chordata / Aves | Anas rhynchotis |  |  |  | Important recreational game bird species (native) |
| Chordata / Actinopterygii | Anguilla australis |  |  |  | Important cultural and commercial fish species (native) |
| Chordata / Actinopterygii | Mugil cephalus |  |  |  | Important cultural and recreational fish species (native) |
| Chordata / Aves | Tadorna variegata |  |  |  | Important recreational game bird species (endemic) |
|  |  |  |  |  |  |

GBIF Secretariat (2019). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei accessed via GBIF.org on 2020-07-15.

Invasive alien animal species

|  |  |  |  |
| --- | --- | --- | --- |
| **Phylum** | **Scientific name** | **Impacts** | **Changes at RIS update**11 |
| Chordata / Actinopterygii | Ameiurus nebulosus | Actual (minor impacts) | No change |
| Chordata / Mammalia | Bos taurus taurus | Actual (minor impacts) | No change |
| Chordata / Aves | Branta canadensis | Actual (minor impacts) | No change |
| Chordata / Actinopterygii | Carassius auratus | Actual (minor impacts) | No change |
| Chordata / Mammalia | Cervus elaphus | Actual (minor impacts) | No change |
| Chordata / Mammalia | Erinaceus europaeus | Actual (minor impacts) | No change |
| Chordata / Mammalia | Felis catus | Actual (minor impacts) | No change |
| Chordata / Actinopterygii | Gambusia affinis | Actual (major impacts) | No change |
| Chordata / Mammalia | Lepus europaeus | Actual (minor impacts) | No change |
| Chordata / Mammalia | Mus musculus | Potential | No change |
| Chordata / Mammalia | Mustela erminea | Actual (major impacts) | No change |
| Chordata / Mammalia | Mustela nivalis | Actual (minor impacts) | No change |
| Chordata / Mammalia | Mustela putorius furo | Actual (minor impacts) | No change |
| Chordata / Mammalia | Oryctolagus cuniculus | Actual (minor impacts) | No change |
| Arthropoda / Insecta | Polistes chinensis | Potential | No change |
| Chordata / Mammalia | Rattus norvegicus | Actual (minor impacts) | No change |
| Chordata / Mammalia | Rattus rattus | Actual (major impacts) | No change |
| Chordata / Actinopterygii | Scardinius erythrophthalmus | Actual (minor impacts) | No change |
| Chordata / Mammalia | Sus scrofa | Actual (minor impacts) | No change |
| Chordata / Mammalia | Trichosurus vulpecula | Actual (minor impacts) | No change |
|  |  |  |  |

GBIF Secretariat (2019). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omei accessed via GBIF.org on 2020-07-15.

Optional text box to provide further information (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  | Gambusia are a major threat to the endemic black mudfish through predation and habitat competition in areas that remain waterlogged year-round. Stoats are a major threat to North Island fernbird and native crakes. |

4.4 Physical components

4.4.1 Climate

Please indicate the prevailing climate type(s) by selecting below the climatic region(s) and subregion(s), using the Köppen-Gieger Climate Classification System.

|  |  |
| --- | --- |
| **Climatic region**[[13]](#footnote-13) | **Subregion**[[14]](#footnote-14) |
| C: Moist Mid-Latitude climate with mild winters | Cfb: Marine west coast (Mild with no dry season, warm summer) |
|  |  |

If changing climatic conditions are affecting the site, please indicate the nature of these changes:

(This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | Climate projections for the Hauraki District where Kopuatai lies include an increased risk of prolonged or more frequent drought in the Hauraki Plains. One of the most severe and widespread meteorological droughts in New Zealand in the past 70 years occurred during the summer/autumn of 2013 and 2014, the net ecosystem carbon balance at Kopuatai bog was reduced by roughly 30–40% compared to the relatively wet or meteorologically “normal” years (2012 and 2015). However, the bog was still a strong carbon sink during the drought years. |

4.4.2 Geomorphic setting

a) Minimum elevation above sea level (in metres) (The online RIS only accepts numeric values)

|  |  |
| --- | --- |
|  | 1 |

a) Maximum elevation above sea level (in metres) (The online RIS only accepts numeric values)

|  |  |
| --- | --- |
|  | 7 |

b) Position in landscape/river basin:

[ ] Entire river basin

[ ] Upper part of river basin

[ ] Middle part of river basin

[x] Lower part of river basin

[ ] More than one river basin

[ ] Not in river basin

[ ] Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean. (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | Waihou River and Piako River |

4.4.3 Soil

[x] Mineral

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[x] Organic

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)?

[ ] Yes / [x] No

.

Please provide further information on the soil (optional) (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | Peat depths at Kopuatai reach 14 m, with an average peat accumulation rate of 0.9 mm/ year throughout the Holocene. The primary peat-forming material is Empodisma robustum root clusters. |

4.4.4 Water regime

Water permanence

|  |  |
| --- | --- |
| **Presence?**[[15]](#footnote-15) | **Changes at RIS update**12 |
| Usually permanent water present | No change |
| Usually seasonal, ephemeral or intermittent water present | No change |
|  |  |

Source of water that maintains character of the site

|  |  |  |
| --- | --- | --- |
| **Presence?**[[16]](#footnote-16) | **Predominant water source** | **Changes at RIS update**12 |
| Water inputs from surface water | [ ] | No change |
| Water inputs from precipitation | [x] | No change |
| Water inputs from groundwater | [ ] | No change |
|  | [ ] |  |

Water destination

|  |  |
| --- | --- |
| **Presence?**[[17]](#footnote-17) | **Changes at RIS update**12 |
| To downstream catchment | No change |
| Feeds groundwater | No change |
|  |  |

Stability of water regime

|  |  |
| --- | --- |
| **Presence?**[[18]](#footnote-18) | **Changes at RIS update**12 |
| Water levels largely stable | No change |
|  |  |

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology: (This field is limited to 2000 characters)

|  |  |
| --- | --- |
|  | Kopuatai peatlands are ombrotrophic. Average annual rainfall is approximately 1,130 mm/yr.    The hydrology of raised peat dome (bog) is driven by rainfall inputs. Jointed wire rush Empodisma robustum is the dominant peat forming species at Kopuatai. and has adapted physiological strategies to actively limit evaporation (Thornburrow 2009). This helps to maintain high water levels through restricted evaporation losses. Further, a thick litter of dead wire rush acts as a mulch. This maintains the hydrological regime and ecological niche required by the oligotrophic species to survive.    The raised interior of the peat dome is sufficiently elevated above the surrounding flood plains that the risk of flood water inundation is minimal. The lower elevation mineralised marshes and swamps receive floodwaters, particularly in the west (Thornburrow 2009).    There has been no significant change in water table level in the bog for the period of the Ramsar sheet update (2004-2017). From 2011 to 2017 the minimum water table at a fixed monitoring site ranged from 150 mm to 300 mm below ground surface. Minimum levels were associated with drought years, with no evidence of any direct anthropogenic change from activities such as drainage or restoration-driven drain blocking.    Fluxes of water between the peat bog and the mineral sediments are relatively unknown. However, the very low hydraulic conductivities at the base of the peat layer present a strong barrier to vertical groundwater exchange evidenced by the raised water table (Thornburrow 2009).    The hydrology of the swamp and marshes, on the margins of Kopuatai are however under pressure from drainage schemes. Further research is required to understand the effect of these drainage schemes on wetlands ecological character. |

Connectivity of surface waters and of groundwater (ECD)

|  |  |
| --- | --- |
|  |  |

Stratification and mixing regime (ECD)

|  |  |
| --- | --- |
|  |  |

4.4.5 Sediment regime

[ ] Significant erosion of sediments occurs on the site

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Significant accretion or deposition of sediments occurs on the site

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Significant transportation of sediments occurs on or through the site

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Sediment regime is highly variable, either seasonally or inter-annually

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Sediment regime unknown

Please provide further information on sediment (optional): (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | Sediment regime is likely stable with minor erosion in the mineralised zones, however there is uncertainty about the full nature of sediment dynamics. Sediment deposition in the lower reaches of the Piako River and Elstow Canal may make these riverine systems prone to flooding and inundating the fringes of the wetland. |

Water turbidity and colour (ECD)

|  |  |
| --- | --- |
|  |  |

Light - reaching wetland (ECD)

|  |  |
| --- | --- |
|  |  |

Water temperature (ECD)

|  |  |
| --- | --- |
|  |  |

4.4.6 Water pH

[x] Acid (pH<5.5)

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[x] Circumneutral (pH: 5.5-7.4 )

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Alkaline (pH>7.4)

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Unknown

Please provide further information on pH (optional): (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | The bog areas are acidic, the mineralised zones circumneutral. |

4.4.7 Water salinity

[x] Fresh (<0.5 g/l)

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Mixohaline (brackish)/Mixosaline (0.5-30 g/l)

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Euhaline/Eusaline (30-40 g/l)

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Hyperhaline/Hypersaline (>40 g/l)

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Unknown

Please provide further information on salinity (optional): (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  |  |

Dissolved gases in water (ECD)

|  |  |
| --- | --- |
|  |  |

4.4.8 Dissolved or suspended nutrients in water

[x] Eutrophic

Changes at RIS update (Update)

[ ] No change / [ ] Increase / [ ] Decrease / [x] Unknown

.

.

.

[x] Mesotrophic

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[x] Oligotrophic

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Dystrophic

Changes at RIS update (Update)

[x] No change / [ ] Increase / [ ] Decrease / [ ] Unknown

.

.

.

[ ] Unknown

Please provide further information on dissolved or suspended nutrients (optional): (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  |  |

Dissolved organic carbon (ECD)

|  |  |
| --- | --- |
|  |  |

Redox potential of water and sediments (ECD)

|  |  |
| --- | --- |
|  |  |

Water conductivity (ECD)

|  |  |
| --- | --- |
|  |  |

4.4.9 Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself:

[ ] i) broadly similar / [x] ii) significantly different

.

If the surrounding area differs from the Ramsar Site, please indicate how: (Please tick all categories that apply)

[x] Surrounding area has greater urbanisation or development

[x] Surrounding area has higher human population density

[x] Surrounding area has more intensive agricultural use

[x] Surrounding area has significantly different land cover or habitat types

Please describe other ways in which the surrounding area is different: (This field is limited to 2000 characters)

|  |  |
| --- | --- |
|  | Much of the catchment is developed, with 85% ingrazing pasture (mainly dairy farms). The surrounding area also includes extensive drainage, some of which occur on or near boundaries of the Ramsar site. |

4.5 Ecosystem services

4.5.1 Ecosystem services/benefits

Please select below all relevant ecosystem services/benefits currently provided by the site and indicate their relative importance in the right-hand column.

Provisioning Services

|  |  |  |
| --- | --- | --- |
| **Ecosystem service**[[19]](#footnote-19) | **Examples**[[20]](#footnote-20) | **Importance/Extent/Significance**[[21]](#footnote-21) |
|  |  |  |

Regulating Services

|  |  |  |
| --- | --- | --- |
| **Ecosystem service**[[22]](#footnote-22) | **Examples**[[23]](#footnote-23) | **Importance/Extent/Significance**21 |
| Maintenance of hydrological regimes | Groundwater recharge and discharge | Medium |
| Maintenance of hydrological regimes | Storage and delivery of water as part of water supply systems for agriculture and industry | Medium |
| Erosion protection | Soil, sediment and nutrient retention | Low |
| Pollution control and detoxification | Water purification/waste treatment or dilution | Low |
| Climate regulation | Local climate regulation/buffering of change | Medium |
| Climate regulation | Regulation of greenhouse gases, temperature, precipitation and other climactic processes | High |
| Hazard reduction | Flood control, flood storage | High |
|  |  |  |

Cultural Services

|  |  |  |
| --- | --- | --- |
| **Ecosystem service**[[24]](#footnote-24) | **Examples**[[25]](#footnote-25) | **Importance/Extent/Significance**21 |
| Recreation and tourism | Recreational hunting and fishing | Medium |
| Spiritual and inspirational | Cultural heritage (historical and archaeological) | High |
| Scientific and educational | Major scientific study site | High |
| Scientific and educational | Educational activities and opportunities | Low |
|  |  |  |

Supporting Services

|  |  |  |
| --- | --- | --- |
| **Ecosystem service**[[26]](#footnote-26) | **Examples**[[27]](#footnote-27) | **Importance/Extent/Significance**21 |
| Biodiversity | Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part | High |
| Nutrient cycling | Storage, recycling, processing and acquisition of nutrients | High |
| Nutrient cycling | Carbon storage/sequestration | High |
| Pollination | Support for pollinators | Medium |
|  |  |  |

Optional text box to provide further information (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  |  |

Other ecosystem service(s) not included above: (This field is limited to 2000 characters)

|  |  |
| --- | --- |
|  |  |

Please make a rough estimate of the approximate number of people (distinguish between residents and visitors if possible) who directly benefit from the ecological services provided by this site (estimate at least in orders of magnitude: 10s, 100s, 1000s, 10 000s etc.):

Within the site:

|  |  |
| --- | --- |
|  | 100 |

Outside the site:

|  |  |
| --- | --- |
|  | 1000 |

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site?

[ ] Yes / [x] No / [ ] Unknown

.

.

Where economic studies or assessments of economic valuation have been undertaken at the site, it would be helpful to provide information on where the results of such studies may be located (e.g. website links, citation of published literature): (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  |  |

4.5.2 Social and cultural values

Is the site considered internationally important for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? If so, please describe this importance under one or more of the four following categories. You should not list here any values derived from non-sustainable exploitation or which result in detrimental ecological changes.

[ ] i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland

Description if applicable (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  |  |

[ ] ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

Description if applicable (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  |  |

[ ] iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples

Description if applicable (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  |  |

[ ] iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland

Description if applicable (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  |  |

4.6 Ecological processes

This section is not intended for completion as part of a standard RIS, but is included for completeness as part of the agreed format of a ‘full’ Ecological Character Description (ECD) outlined by Resolution X.15

Primary production (ECD)

|  |  |
| --- | --- |
|  |  |

Nutrient cycling (ECD)

|  |  |
| --- | --- |
|  |  |

Carbon cycling (ECD)

|  |  |
| --- | --- |
|  |  |

Animal reproductive productivity (ECD)

|  |  |
| --- | --- |
|  |  |

Vegetational productivity, pollination, regeneration processes, succession, role of fire, etc. (ECD)

|  |  |
| --- | --- |
|  |  |

Notable species interactions, including grazing, predation, competition, diseases and pathogens (ECD)

|  |  |
| --- | --- |
|  |  |

Notable aspects concerning animal and plant dispersal (ECD)

|  |  |
| --- | --- |
|  |  |

Notable aspects concerning migration (ECD)

|  |  |
| --- | --- |
|  |  |

Pressures and trends concerning any of the above, and/or concerning ecosystem integrity (ECD)

|  |  |
| --- | --- |
|  |  |

How is the Site managed?

5.1 Land tenure and responsibilities (Managers)

5.1.1 Land tenure/ownership

Please specify if this category applies to the Ramsar Site, to the surrounding area or to both, by ticking the relevant option(s).

Public ownership

|  |  |  |
| --- | --- | --- |
| **Category**[[28]](#footnote-28) | **Within the Ramsar Site** | **In the surrounding area** |
| National/Federal government | [x] | [ ] |
| Provincial/region/state government | [ ] | [x] |
| Other public ownership | [ ] | [x] |
|  | [ ] | [ ] |

Private ownership

|  |  |  |
| --- | --- | --- |
| **Category**[[29]](#footnote-29) | **Within the Ramsar Site** | **In the surrounding area** |
| Other types of private/individual owner(s) | [ ] | [x] |
|  | [ ] | [ ] |

Other

|  |  |  |
| --- | --- | --- |
| **Category**[[30]](#footnote-30) | **Within the Ramsar Site** | **In the surrounding area** |
|  | [ ] | [ ] |

Provide further information on the land tenure / ownership regime (optional): (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  |  |

5.1.2 Management authority

Please list the local office / offices of any agency or organization responsible for managing the site: (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | Department of Conservation |

Provide the name and/or title of the person or people with responsibility for the wetland:

|  |  |
| --- | --- |
|  | Operations Manager |

Postal address: (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | Hauraki Office  Department of Conservation  PO Box 343  Thames 3540  New Zealand |

E-mail address: (The online RIS only accepts valid e-mail addresses, e.g. example@mail.com )

|  |  |
| --- | --- |
|  | thames@doc.govt.nz |

5.2 Ecological character threats and responses (Management)

5.2.1 Factors (actual or likely) adversely affecting the Site’s ecological character

Please specify if this category applies to the Ramsar Site, to the surrounding area or to both, by ticking the relevant option(s).

Human settlements (non agricultural)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[31]](#footnote-31) | **Actual threat**[[32]](#footnote-32) | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
|  |  |  | [ ] |  | [ ] |  |

Water regulation

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[33]](#footnote-33) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Drainage | Medium impact |  | [x] | No change | [x] | No change |
| Canalisation and river regulation | Medium impact |  | [x] | No change | [x] | No change |
|  |  |  | [ ] |  | [ ] |  |

Agriculture and aquaculture

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[34]](#footnote-34) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Livestock farming and ranching | Low impact |  | [ ] | No change | [x] | No change |
|  |  |  | [ ] |  | [ ] |  |

Energy production and mining

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[35]](#footnote-35) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
|  |  |  | [ ] |  | [ ] |  |

Transportation and service corridors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[36]](#footnote-36) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
|  |  |  | [ ] |  | [ ] |  |

Biological resource use

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[37]](#footnote-37) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Fishing and harvesting aquatic resources | Low impact |  | [x] | No change | [x] | No change |
|  |  |  | [ ] |  | [ ] |  |

Human intrusions and disturbance

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[38]](#footnote-38) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Recreational and tourism activities | Low impact |  | [x] | No change | [x] | No change |
|  |  |  | [ ] |  | [ ] |  |

Natural system modifications

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[39]](#footnote-39) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Fire and fire suppression | Low impact | High impact | [x] | No change | [x] | No change |
| Dams and water management/use | Medium impact |  | [x] | No change | [x] | No change |
| Vegetation clearance/ land conversion | Low impact |  | [x] | No change | [x] | No change |
|  |  |  | [ ] |  | [ ] |  |

Invasive and other problematic species and genes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[40]](#footnote-40) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Invasive non-native/ alien species | High impact |  | [x] | No change | [ ] | No change |
|  |  |  | [ ] |  | [ ] |  |

Pollution

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[41]](#footnote-41) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Air-borne pollutants | unknown impact |  | [x] | No change | [x] | No change |
|  |  |  | [ ] |  | [ ] |  |

Geological events

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[42]](#footnote-42) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
|  |  |  | [ ] |  | [ ] |  |

Climate change and severe weather

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Factors adversely affecting site**[[43]](#footnote-43) | **Actual threat**32 | **Potential threat**32 | **Within the site** | **Changes**12 | **In the surrounding area** | **Changes**12 |
| Habitat shifting and alteration | unknown impact |  | [x] | unknown | [x] | unknown |
|  |  |  | [ ] |  | [ ] |  |

Please describe any other threats (optional): (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Airborne pollutants that are threats to the Kopuatai Peat Dome mainly relate to aerially applied or wind-blown fertiliser drift entering the low-nutrient portion of the bog, which risks increasing fertility and supporting spread of invasive weed species.    Projected climate change may increase drought frequency and duration, adversely affecting the peatland communities, however research has indicated that wire rush can continue to function even in severe drought years. |

5.2.2 Legal conservation status

Please list any other relevant conservation status, at global, regional or national level and specify the boundary relationships with the Ramsar Site:

Global legal designations

|  |  |  |  |
| --- | --- | --- | --- |
| **Designation type**[[44]](#footnote-44) | **Name of area** | **Online information url** | **Overlap with Ramsar Site**[[45]](#footnote-45) |
|  |  |  |  |

Regional (international) legal designations

|  |  |  |  |
| --- | --- | --- | --- |
| **Designation type**[[46]](#footnote-46) | **Name of area** | **Online information url** | **Overlap with Ramsar Site**45 |
|  |  |  |  |

National legal designations

|  |  |  |  |
| --- | --- | --- | --- |
| **Designation type** | **Name of area** | **Online information url** | **Overlap with Ramsar Site**45 |
| Government Purpose Reserve | Kopuatai Wetland Management Reserve |  | whole |
| Marginal Strip | Flax Block, Patetonga Canal, Piako River |  | whole |
| Stewardship Area | Awaiti |  | whole |
| Stewardship Area | Elstow Canal |  | whole |
| Wildlife Management Reserve | Flax Block |  | whole |
|  |  |  |  |

Non-statutory designations

|  |  |  |  |
| --- | --- | --- | --- |
| **Designation type**[[47]](#footnote-47) | **Name of area** | **Online information url** | **Overlap with Ramsar Site**45 |
| Other non-statutory designation | Kopuatai Ecological Management Unit |  | whole |
| Other non-statutory designation | Kopuatai Peat Dome Site of Special Wildlife Interest |  | whole |
| Other non-statutory designation | Kopuatai Peat Dome Wetland of Ecological and Representative Importance (WERI) |  | whole |
| Other non-statutory designation | Significant Natural Area (council) |  | whole |
|  |  |  |  |

5.2.3 IUCN protected areas categories (2008)

[ ] Ia Strict Nature Reserve

[x] Ib Wilderness Area: protected area managed mainly for wilderness protection

[ ] II National Park: protected area managed mainly for ecosystem protection and recreation

[ ] III Natural Monument: protected area managed mainly for conservation of specific natural features

[x] IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention

[ ] V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation

[x] VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

5.2.4 Key conservation measures

Legal protection

|  |  |
| --- | --- |
| **Measures**[[48]](#footnote-48) | **Status**[[49]](#footnote-49) |
| Legal protection | Implemented |
|  |  |

Habitat

|  |  |
| --- | --- |
| **Measures**[[50]](#footnote-50) | **Status**49 |
| Land conversion controls | Implemented |
|  |  |

Species

|  |  |
| --- | --- |
| **Measures**[[51]](#footnote-51) | **Status**49 |
| Control of invasive alien animals | Partially implemented |
| Control of invasive alien plants | Partially implemented |
|  |  |

Human Activities

|  |  |
| --- | --- |
| **Measures**[[52]](#footnote-52) | **Status**49 |
| Livestock management/exclusion (excluding fisheries) | Implemented |
| Harvest controls/poaching enforcement | Implemented |
| Regulation/management of recreational activities | Implemented |
| Research | Implemented |
| Management of water abstraction/takes | Partially implemented |
|  |  |

Other: (This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | The site has high importance as a long-term study site into bog functioning, carbon storage and eco-hydrology conducted primarily through University of Waikato and Crown Research Agency Manaaki Whenua Landcare Research. |

5.2.5 Management planning

Is there a site-specific management plan for the site?

|  |  |
| --- | --- |
|  | In preparation[[53]](#footnote-53) |

Is the management plan/planning implemented?

[ ] Yes / [x] No

.

The management plan covers

|  |  |
| --- | --- |
|  | In preparation[[54]](#footnote-54) |

Is the management plan currently subject to review and update?

[ ] Yes / [x] No

.

Has a management effectiveness assessment been undertaken for the site?

[ ] Yes / [x] No

.

Please give link to site-specific plan or other relevant management plan if this is available via the Internet or upload it in section 'Additional material': (This field is limited to 500 characters)

|  |  |
| --- | --- |
|  |  |

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party?

[ ] Yes / [x] No

.

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site: (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  |  |

URL of site-related webpage (if relevant):

|  |  |
| --- | --- |
|  |  |

5.2.6 Planning for restoration

Is there a site-specific restoration plan?

|  |  |
| --- | --- |
|  | Yes; there is a plan[[55]](#footnote-55) |

Has the plan been implemented?

[ ] Yes / [x] No

.

The restoration plan covers:

|  |  |
| --- | --- |
|  | Part of Ramsar Site[[56]](#footnote-56) |

Is the plan currently being reviewed and updated?

[ ] Yes / [x] No

.

Where the restoration is being undertaken to mitigate or respond to a threat or threats identified in this RIS, please indicate it / them: (This field is limited to 1000 characters)

|  |  |
| --- | --- |
|  | An important vegetation type on the western margin of Kopuatai Wetland is a kahikatea (Dacrycarpus dacrydioides) forest covering approximately 34 hectares. The kahikatea forest is being significantly impacted on its margins by pest plants, including large stands of grey willow, dense swathes of reed sweet grass (Glyceria maxima), and patches of reed canary grass (Phalaris arundinacea). Within the kahikatea forest, Chinese privet (Ligustrum sinense) is a relatively common pest plant in the understorey, and there are scattered plants of royal fern (Osmunda regalis) becoming established. With a view to managing pest plants, the Department of Conservation has commissioned several studies to assess the effectiveness of the control of pest plants at the margin of the kahikatea stand and commissioned an ecological restoration and management plan. A draft management plan for the kahikatea forest was completed in July 2017. |

Further information (This field is limited to 2500 characters)

|  |  |
| --- | --- |
|  | A cultural management plan will be compiled using historical and current information from indigenous people (iwi), the Department of Conservation and other agencies. The plan will develop a vision, goals and outcomes for Kopuatai which will include information on the cultural state of the area and analysing the baseline information to determine what cultural conservation outcomes are required. |

5.2.7 Monitoring implemented or proposed

|  |  |
| --- | --- |
| **Monitoring**[[57]](#footnote-57) | **Status**[[58]](#footnote-58) |
| Water regime monitoring | Implemented |
| Animal community | Proposed |
| Birds | Proposed |
| Plant community | Implemented |
|  |  |

Please indicate other monitoring activities:

(This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Various programmes to monitor native wildlife (e.g. Australasian bittern, long-tailed bat, black mudfish) and pest animals are proposed or partly implemented. Ongoing monitoring is subject to budget. |

Additional material

6.1 Additional reports and documents

6.1.1 Bibliographical references

(This field is limited to 3000 characters)

|  |  |
| --- | --- |
|  | Watts, C. and R. Hoare. 2009 The Invertebrate Fauna of Kopuatai Wetland. Landcare Research Contract Report LC0809/124. Manaaki Whenua, Landcare Research, Hamilton.    Beadel, S. 2016. Vegetation Map of Kopuatai and Torehape Wetlands – 2016. Contract Report No. 2116a for the Department of Conservation. Wildland Consultants, Rotorua.    Sturgeon, C. (2013). Assessing dissolved organic carbon export from Kopuatai bog, New Zealand (Thesis, Master of Science (MSc)). University of Waikato, Hamilton, New Zealand.    Newnham RM, de Lange PJ, Lowe DJ (1995) Holocene vegetation, climate, and history of a raised bog complex, northern New Zealand based on palynology, plant microfossils and tephrochronology. The Holocene, 5 (3) 267 – 282.    Reeves, P. 2009. Threatened plant species and significant plant communities at Kopuatai wetland: review of existing information, threats and options for management. Contract Report No 2250 for the Department of Conservation. Wildland Consultants, Rotorua.    Goodrich, J. P., Campbell, D. I., & Schipper, L. A. (2017). Southern Hemisphere bog persists as a strong carbon sink during droughts. Biogeosciences, 14, 4563–4576.    Thornburrow, B., J. Williamson and P. Outram. 2009. Kopuatai Peat Dome Drainage & Desktop Hydrological Study. Contract report prepared for the Department of Conservation. SKM, Auckland.    McLeod M, Taylor A, Duncan L (2003) Subsidence Rates of Peat Since 1923 in the Hauraki Plains Area. Technical Report 2004/18 |

6.1.2 Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

-UPLOAD via online form-

ii. a detailed Ecological Character Description (ECD) (in a national format)

-UPLOAD via online form-

iii. a description of the site in a national or regional wetland inventory

-UPLOAD via online form-

iv. relevant Article 3.2 reports

-UPLOAD via online form-

v. site management plan

-UPLOAD via online form-

vi. other published literature

-UPLOAD via online form-

Please note that any documents uploaded here will be made publicly available.

6.1.3 Photograph(s) of the Site

Please provide at least one photograph of the site:

|  |  |  |  |
| --- | --- | --- | --- |
| **File** | **Copyright holder** | **Date on which the picture was taken** | **Caption** |
| files/28465871/pictures/PA080103.JPG | DOC | 08-10-2009 | Restiad-dominated raised bog, Kopuatai Peat Dome |
|  |  |  |  |

[x] I certify that I am the photographer, the valid holder of rights over the photograph(s), or an authorized representative of the organization which is the valid holder of rights over the photograph(s), and I hereby assign an irrevocable, perpetual and royalty-free right to use, reproduce, edit, display, transmit, prepare derivative works of, modify, publish, affix logos to, and otherwise make use of the submitted photograph(s) in any way, to the Ramsar Convention Secretariat, its affiliates and partners, for non-commercial purposes in conjunction with the mission of the Ramsar Convention. This use includes, but is not limited to, internal and external publication and materials, presentation on the websites of the Ramsar Convention or any affiliated body, and any and all other communication channels with copyright attributed to the holder in all published forms. The full accuracy of all data submitted rests with the submitter, or organization submitting the photograph(s). In submitting, I hereby agree to the aforementioned terms, personally or on behalf of the organization of which I am an authorized official, certifying that the Ramsar Convention Secretariat, its affiliates and partners are explicitly held harmless for any and all costs, expenses, or damages arising from use of the submitted photograph(s) and any additional information provided.

6.1.4 Designation letter and related data

Designation letter\*

-UPLOAD via online form-

Please upload a letter of designation from the Ramsar Administrative Authority. This letter must clearly state that the wetland is being designated for inclusion in the Ramsar List and specify the formal date of designation wished. The letter can be uploaded in two formats: Word document (doc); pdf Strategic Framework: 408. The RIS for a newly designated Site (or an update to the RIS for a previously designated site) must be officially transmitted to the Secretariat by the Ramsar Administrative Authority (AA) of the Contracting Party concerned, with a letter clearly stating that the wetland is being designated for inclusion in the Ramsar List and specifying the formal date of designation if wished. 413. The date of designation of a Ramsar Site is that indicated or requested by the Ramsar Administrative Authority (AA). The designation date required should be indicated in the designation letter from the AA to the Secretariat that accompanies the RIS. 414. If no designation date is indicated to the Secretariat, the Secretariat assigns the date of the designation letter from the Administrative Authority as the designation date of the site. 415. If, following the receipt and review of the RIS by the Secretariat (see below), a significant time-period elapses before any problems with the RIS content are resolved with the Administrative Authority, the Secretariat may propose that, with the agreement of the AA, the date of designation is that on which the RIS is finalised.

Transboundary Designation letter

-UPLOAD via online form-

Date of Designation

|  |  |
| --- | --- |
|  | 1989-12-04 |

Number of certificates wished (The online RIS only accepts numeric values)

|  |  |
| --- | --- |
|  | 0 |

1. No change to area | the area has increased | the area has decreased [↑](#footnote-ref-1)
2. Not evaluated | No | Uncertain | Yes -likely- | Yes -actual- [↑](#footnote-ref-2)
3. Marine Ecoregions of the World (MEOW) | Udvardy's Biogeographical Provinces | Bailey's Ecoregions | WWF Terrestrial Ecoregions | EU biogeographic regionalization | Freshwater Ecoregions of the World (FEOW) | Other scheme (provide name below) [↑](#footnote-ref-3)
4. [↑](#footnote-ref-4)
5. Percentage of the total biogeographic population at the site. These fields are only compulsory to justify criteria 6 & 9 [↑](#footnote-ref-5)
6. [↑](#footnote-ref-6)
7. A: Permanent shallow marine waters | B: Marine subtidal aquatic beds (Underwater vegetation) | C: Coral reefs | D: Rocky marine shores | E: Sand, shingle or pebble shores | G: Intertidal mud, sand or salt flats | Ga: Bivalve (shell-fish) reefs | H: Intertidal marshes | I: Intertidal forested wetlands | J: Coastal brackish / saline lagoons | F: Estuarine waters | Zk(a): Karst and other subterranean hydrological systems | K: Coastal freshwater lagoons [↑](#footnote-ref-7)
8. | Representative | Rare | Unique [↑](#footnote-ref-8)
9. M: Permanent rivers/ streams/ creeks | L: Permanent inland deltas | Y: Permanent Freshwater springs; oases | N: Seasonal/ intermittent/ irregular rivers/ streams/ creeks | O: Permanent freshwater lakes | Tp: Permanent freshwater marshes/ pools | P: Seasonal/ intermittent freshwater lakes | Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils | Tp: Permanent freshwater marshes/ pools | W: Shrub-dominated wetlands | Xf: Freshwater, tree-dominated wetlands | Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils | U: Permanent Non-forested peatlands | Xp: Permanent Forested peatlands | Va: Montane wetlands | Vt: Tundra wetlands | Q: Permanent saline/ brackish/ alkaline lakes | R: Seasonal/ intermittent saline/ brackish/ alkaline lakes and flats | Sp: Permanent saline/ brackish/ alkaline marshes/ pools | Ss: Seasonal/ intermittent saline/ brackish/ alkaline marshes/ pools | Zg: Geothermal wetlands | Zk(b): Karst and other subterranean hydrological systems [↑](#footnote-ref-9)
10. 1: Aquaculture ponds | 2: Ponds | 3: Irrigated land | 4: Seasonally flooded agricultural land | 5: Salt exploitation sites | 6: Water storage areas/Reservoirs | 7: Excavations | 8: Wastewater treatment areas | 9: Canals and drainage channels or ditches | Zk(c): Man-made subterranean hydrological systems [↑](#footnote-ref-10)
11. Potential | Actual (minor impacts) | Actual (major impacts) [↑](#footnote-ref-11)
12. No change | increase | decrease | unknown [↑](#footnote-ref-12)
13. A. Tropical humid climate | B. Dry climate | C. Moist Mid-Latitude climate with mild winters | D. Moist Mid-Latitude climate with cold winters | E. Polar climate with extremely cold winters and summers | H. Highland [↑](#footnote-ref-13)
14. Af: Tropical wet (No dry season) | Am: Tropical monsoonal (Short dry season; heavy monsoonal rains in other months) | Aw: Tropical savanna (Winter dry season) | BWh: Subtropical desert (Low-latitude desert) | BSh: Subtropical steppe (Low-latitude dry) | BWk: Mid-latitude desert (Mid-latitude desert) | BSk: Mid-latitude steppe (Mid-latitude dry) | Csa: Mediterranean (Mild with dry, hot summer) | Csb: Mediterranean (Mild with dry, warm summer) | Cfa: Humid subtropical (Mild with no dry season, hot summer) | Cwa: Humid subtropical (Mild with dry winter, hot summer) | Cfb: Marine west coast (Mild with no dry season, warm summer) | Cfc: Marine west coast (Mild with no dry season, cool summer) | Dfa: Humid continental (Humid with severe winter, no dry season, hot summer) | Dfb: Humid continental (Humid with severe winter, no dry season, warm summer) | Dwa: Humid continental (Humid with severe, dry winter, hot summer) | Dwb: Humid continental (Humid with severe, dry winter, warm summer) | Dfc: Subarctic (Severe winter, no dry season, cool summer) | Dfd: Subarctic (Severe, very cold winter, no dry season, cool summer) | Dwc: Subarctic (Severe, dry winter, cool summer) | Dwd: Subarctic (Severe, very cold and dry winter, cool summer) | ET: Tundra (Polar tundra, no true summer) | EF: Ice Cap (Perennial ice) | H: Highland (-) [↑](#footnote-ref-14)
15. Usually permanent water present | Usually seasonal, ephemeral or intermittent water present | Unknown [↑](#footnote-ref-15)
16. Water inputs from precipitation | Water inputs from surface water | Water inputs from groundwater | Marine water | Unknown [↑](#footnote-ref-16)
17. Feeds groundwater | To downstream catchment | Marine | Unknown [↑](#footnote-ref-17)
18. Water levels largely stable | Water levels fluctuating (including tidal) | Unknown [↑](#footnote-ref-18)
19. Food for humans | Fresh water | Wetland non-food products | Biochemical products | Genetic materials [↑](#footnote-ref-19)
20. Sustenance for humans (e.g., fish, molluscs, grains) | Drinking water for humans and/or livestock | Water for irrigated agriculture | Water for industry | Water for energy production (hydro-electricity) | Timber | Fuel wood/fibre | Peat | Livestock fodder | Reeds and fibre | Other | Extraction of material from biota | Medicinal products | Genes for tolerance to certain conditions (e.g., salinity) | Genes for resistance to plant pathogens | Ornamental species (live and dead) [↑](#footnote-ref-20)
21. not relevant for site | Low | Medium | High [↑](#footnote-ref-21)
22. Maintenance of hydrological regimes | Erosion protection | Pollution control and detoxification | Climate regulation | Biological control of pests and disease | Hazard reduction [↑](#footnote-ref-22)
23. Groundwater recharge and discharge | Storage and delivery of water as part of water supply systems for agriculture and industry | Soil, sediment and nutrient retention | Water purification/waste treatment or dilution | Local climate regulation/buffering of change | Regulation of greenhouse gases, temperature, precipitation and other climactic processes | Support of predators of agricultural pests (e.g., birds feeding on locusts) | Flood control, flood storage | Coastal shoreline and river bank stabilization and storm protection [↑](#footnote-ref-23)
24. Recreation and tourism | Spiritual and inspirational | Scientific and educational [↑](#footnote-ref-24)
25. Recreational hunting and fishing | Water sports and activities | Picnics, outings, touring | Nature observation and nature-based tourism | Inspiration | Cultural heritage (historical and archaeological) | Contemporary cultural significance, including for arts and creative inspiration, and including existence values | Spiritual and religious values | Aesthetic and sense of place values | Educational activities and opportunities | Important knowledge systems, importance for research (scientific reference area or site) | Long-term monitoring site | Major scientific study site | Type location for a taxon [↑](#footnote-ref-25)
26. Biodiversity | Soil formation | Nutrient cycling | Pollination [↑](#footnote-ref-26)
27. Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part | Sediment retention | Accumulation of organic matter | Storage, recycling, processing and acquisition of nutrients | Carbon storage/sequestration | Support for pollinators [↑](#footnote-ref-27)
28. Public land (unspecified) | National/Federal government | Provincial/region/state government | Local authority, municipality, (sub)district, etc. | Other public ownership [↑](#footnote-ref-28)
29. Cooperative/collective (e.g., farmers cooperative) | Commercial (company) | Foundation/non-governmental organization/trust | Religious body/organization | Other types of private/individual owner(s) [↑](#footnote-ref-29)
30. Unspecified mixed ownership | No information available | Commoners/customary rights [↑](#footnote-ref-30)
31. Housing and urban areas | Commercial and industrial areas | Tourism and recreation areas | Unspecified development [↑](#footnote-ref-31)
32. Low impact | Medium impact | High impact | unknown impact | [↑](#footnote-ref-32)
33. Drainage | Water abstraction | Dredging | Salinisation | Water releases | Canalisation and river regulation [↑](#footnote-ref-33)
34. Annual and perennial non-timber crops | Wood and pulp plantations | Livestock farming and ranching | Marine and freshwater aquaculture | Non specified [↑](#footnote-ref-34)
35. Oil and gas drilling | Mining and quarrying | Renewable energy | Unspecified [↑](#footnote-ref-35)
36. Roads and railroads | Utility and service lines (e.g., pipelines) | Shipping lanes | Aircraft flight paths | Unspecified [↑](#footnote-ref-36)
37. Hunting and collecting terrestrial animals | Gathering terrestrial plants | Logging and wood harvesting | Fishing and harvesting aquatic resources | Unspecified [↑](#footnote-ref-37)
38. Recreational and tourism activities | (Para)military activities | Unspecified/others [↑](#footnote-ref-38)
39. Fire and fire suppression | Dams and water management/use | Vegetation clearance/ land conversion | Unspecified/others [↑](#footnote-ref-39)
40. Invasive non-native/ alien species | Problematic native species | Introduced genetic material | Unspecified [↑](#footnote-ref-40)
41. Household sewage, urban waste water | Industrial and military effluents | Agricultural and forestry effluents | Garbage and solid waste | Air-borne pollutants | Excess heat, sound, light | Unspecified [↑](#footnote-ref-41)
42. Volcanoes | Earthquakes/tsunamis | Avalanches/landslides | Unspecified [↑](#footnote-ref-42)
43. Habitat shifting and alteration | Droughts | Temperature extremes | Storms and flooding | Unspecified [↑](#footnote-ref-43)
44. World Heritage site | UNESCO Biosphere Reserve | Other global designation [↑](#footnote-ref-44)
45. whole | partly [↑](#footnote-ref-45)
46. EU Natura 2000 | Other international designation [↑](#footnote-ref-46)
47. Important Bird Area | Important Plant Area | Other non-statutory designation [↑](#footnote-ref-47)
48. Legal protection [↑](#footnote-ref-48)
49. Proposed | Partially implemented | Implemented [↑](#footnote-ref-49)
50. Catchment management initiatives/controls | Improvement of water quality | Habitat manipulation/enhancement | Hydrology management/restoration | Re-vegetation | Soil management | Land conversion controls | Faunal corridors/passage [↑](#footnote-ref-50)
51. Threatened/rare species management programmes | Reintroductions | Control of invasive alien plants | Control of invasive alien animals [↑](#footnote-ref-51)
52. Management of water abstraction/takes | Regulation/management of wastes | Livestock management/exclusion (excluding fisheries) | Fisheries management/regulation | Harvest controls/poaching enforcement | Regulation/management of recreational activities | Communication, education, and participation and awareness activities | Research [↑](#footnote-ref-52)
53. No | Yes | In preparation [↑](#footnote-ref-53)
54. All of Ramsar Site | Part of Ramsar Site [↑](#footnote-ref-54)
55. No need identified | No; the site has already been restored | No; but restoration is needed | No; but a plan is being prepared | Yes; there is a plan [↑](#footnote-ref-55)
56. All of Ramsar Site | Part of Ramsar Site [↑](#footnote-ref-56)
57. Water regime monitoring | Water quality | Soil quality | Plant community | Plant species | Animal community | Animal species (please specify) | Birds [↑](#footnote-ref-57)
58. Implemented | Proposed [↑](#footnote-ref-58)