

---

# ***Central Hawkes Bay District Council***

---

## **District Plan Significant Natural Area Review – May 2020**

---



## Table of Contents

1	Introduction .....	2
1.1	Background & scope	2
1.2	Central government policy direction	2
2	Methodology for desktop assessment .....	3
2.1	Shortfalls in the existing datasets	3
2.2	Assessment and merging of datasets	3
2.3	Significance criteria determination	4
2.4	Landowner consultation and ground-truthing	5
3	Definitions and limitations .....	5
3.1	Limitations and clarifications	5
3.2	SNA scale	6
3.3	Wetlands	6
3.4	Migrating alluvial rivers	7
3.5	Manuka & kanuka	8
3.6	Nationally at risk and threatened species	8
4	Recommendations .....	9
	Appendix I: Recommended Ecological Significance Determination Criteria for SNA in the Central Hawkes Bay District .....	10
	Appendix II: Confidence Level Assignment Criteria .....	14
	Appendix III: Spatial Extent of Threatened Environment Classes within the Central Hawkes Bay District	15

---

Prepared by: Gerry Kessels

PWF ref: CHB.00545

Version: FINAL IV 05062020030620

---

Except for the purposes of individual study or fair review, for which the authors must be acknowledged, no part of this report may be copied, scanned, stored in any type of electronic file or retrieval system or published in any other form without the express written permission of Kessels & Associates Ltd trading as Bluewattle Ecology.

© Kessels & Associates Ltd 2020.



# 1 Introduction

## 1.1 Background & scope

In 2018, as a part of the Central Hawke's Bay District Plan Review, an assessment of the natural heritage of the District was undertaken by Kessels Ecology (Hickey-Elliott et al., 2018)<sup>1</sup> for Central Hawke's Bay District Council (CHBDC). Subsequently, Kessels Ecology was purchased by Tonkin & Taylor Ltd (T+T) and further assessment was undertaken by Tonkin & Taylor in 2019 (Pickett & Kessels, 2019)<sup>2</sup>. Bluewattle Ecology was engaged in January 2020 to proceed with finalisation of the significant natural area (SNA) assessment and assist with landowner consultation. This report contains the findings of the T+T 2019 review as well as providing further update to Council on the methodology and assessment process to date as at May 2020. The report concludes with several recommendations to complete the SNA identification and management process leading into notification of the Proposed District Plan.

A number of limitations of the existing SNA dataset were noted in the 2018 review. As a consequence, CBHBC engaged the consulting ecologists to undertake further desktop review, landowner consultation and targeted ground truthing site visits to address these matters. In March 2019 a desk-top review of the potential SNA and associated GIS dataset was completed and passed on to the Central Hawke's Bay District Council in-house GIS specialists – CHBDC have held and administered the SNA GIS dataset since March 2019.

In April 2019 CHBDC began a landowner consultation process involving community meetings and workshops followed by targeted site visits by Council staff and consulting ecologists. The outcomes of this consultation process have resulted in a number of recommended changes to the SNA database.

## 1.2 Central government policy direction

In late 2018 central government released the Biodiversity Collaborative Working Group' report of biodiversity assessment and regulation in New Zealand (MfE/DoC 2018)<sup>3</sup>.

In November 2019 the NZ government released a 'Draft National Policy Statement for Indigenous Biodiversity - Proposals for consultation November 2019' (NPSIB; NZ Government 2019a)<sup>4</sup>, supported by a discussion document on terrestrial biodiversity prepared by the Department of Conservation (DoC - NZ Government 2019b)<sup>5</sup>.

These central government biodiversity related technical and policy documents have resulted in a necessity to review and make amendments to the SNA assessment methodology for Central Hawke's Bay District in order to anticipate upcoming central government policy regulation for determination of SNAs.

<sup>1</sup> Hickey-Elliott, A., Smith, N., Kessels, G., (2018). Assessment of Natural Heritage for the Review of the Central Hawke's Bay District Plan. Kessels & Associates Ltd.

<sup>2</sup> Pickett, D. & Kessels, G. (2019). Draft CHBDC District Plan Final Desktop SNA Review – Methodology. Tonkin & Taylor Ltd.

<sup>3</sup> Biodiversity Collaborative Report, 2018. Report of the Biodiversity Collaborative Group. Biodiversity (Land and Freshwater) Stakeholder Trust. Wellington, New Zealand

<sup>4</sup> NZ Government (2019). Draft National Policy Statement for Indigenous Biodiversity - Proposals for consultation November 2019. Ministry for the Environment, Wellington.

<sup>5</sup> New Zealand Government (2019). Te Kōihoa O te Kōihoa. Our shared vision for living with nature. Discussions document published by Department of Conservation, Wellington



## 2 Methodology for desktop assessment

### 2.1 Shortfalls in the existing datasets

There were a number of shortfalls in the existing datasets which limited the accuracy of the review process including:

- Many of the existing SNAs mapped in the Operative District Plan were based on data that was several decades old, and thus often did not reflect the current values or spatial extent of the remnants when overlaid on recent aerial maps;
- The Hawkes Bay Regional Council (HBRC) wetland database required review to determine the full extent of potentially significant wetlands found within the District;
- Many bush, wetland or coastal remnants were observed in the aerial mapping process in addition to those shown in the operative District Plan. Moreover, when combined with the HBRC predicted vegetation type (Grainger et al 2014)<sup>6</sup> and Nationally Threatened Environments (Walker et al 2015)<sup>7</sup> datasets, it became apparent that many of these remnants could be potentially ecologically significant; and
- Determination of ecological significance of all existing and potential SNA using current best practice methodology, in accordance with section 6(c) of the Resource Management Act (RMA), was required.

These matters have now been addressed, within the limitations of a desktop review and limited ground truthing, by the methods outlined in sections 3.2 to 3.6 below.

### 2.2 Assessment and merging of datasets

The following datasets were reviewed and merged into one overall SNA dataset by the consulting ecologists with the assistance of CHBDCs in-house GIS specialists:

#### a **'Protected vegetation' dataset:**

- The CHBDCs in-house GIS specialists provided an updated protected vegetation dataset which was used to identify new potential SNA;
- The protected vegetation did not follow the wider vegetation boundaries in all circumstances, as such the line work was extended by CHBDC's in-house specialist to include these;
- The in-house specialist added identifiers for every potential SNA listing their protection status; and
- This resulted in 42 additional proposed SNAs needing significance classification.
- It is recommended that these additional proposed SNA are incorporated into the District Planning maps.

#### b **'Predicted vegetation remaining additional' dataset:**

- The potential vegetation remaining dataset was used to identify potential new SNA's. This included a number of areas that were less than 0.5 ha. It is well established that species diversity and ecological function decrease with decreasing fragment size, as such areas under 0.5 ha have been deemed unlikely to hold high ecological significance. These fragments have been removed from the dataset to create a manageable number of polygons for SNA assessment and where functional sustainability is unlikely over the long-term. Furthermore, areas that were obviously not

<sup>6</sup> Grainger, N., Collier, K. J., Hitchmough, R., Harding, J. S., Smith, B. J., & Sutherland, D. L. (2014). Conservation status of New Zealand freshwater invertebrates, 2013 (pp. 1-28). Department of Conservation. Hawke's Bay Regional Council. 2014. Hawke's Bay Biodiversity Inventory: Current State of Knowledge. HBRC Report No. RM 13/23 – 4554. Hawke's Bay Regional Council, Napier, New Zealand.

<sup>7</sup> Walker, S., Cieraad, E., Barringer, J., 2015. The Threatened Environment Classification for New Zealand 2012: a guide for users. Landcare Research Contract report LC2184.



vegetated, or in which vegetation removal has occurred, were removed from the dataset; and

- Required line-work was completed for all polygons in adherence to Atkinson's vegetation descriptions (1985)<sup>8</sup>, treeland and scrubland was not included; and
- Those polygons that were deemed to be part of the same local ecological unit (SNA) have been merged together thus reducing the total number of potential SNA for classification; and
- This process resulted in an additional 222 areas needing significance classification from the potential vegetation remaining dataset.

**c 'Revised polygons' dataset:**

- Minor edits were made to increase the accuracy of the line work to better align with current vegetation boundaries.

The above terrestrial layers 'protected vegetation', 'predicted vegetation remaining additional' and 'revised polygons' were then amalgamated by a CHBDC GIS specialist. This was done because in some cases several polygons from separate layers were deemed to be part of the same local ecological system e.g. a gully.

**d 'Wetland' dataset:**

- The CHBDC and HBRC databases did not align well and were often incomplete. The data from both databases was compiled into a new dataset. This dataset served as a starting point to evaluate the validity of the wetland and, if a valid wetland, whether the line work needed adjusting. In most cases the line work was adjusted significantly; and
- While assessing the mapped wetland areas, several more were identified, these were additionally mapped.
- All potential wetlands were assessed for significance.

**e 'Migrating river' dataset:**

- Sections of the Waipawa River and the Tukituki River were captured in a previous assessment of CHBDC's significant natural areas and relate back to original Department of Conservation (DoC) surveys undertaken over twenty years ago (Hickey-Elliott et al, 2018). These were re-assessed and it was found that the mapped sections needed to be extended;
- Further to this, another six migrating riverbeds were identified as being potentially significant; and
- For both the previously mapped reaches and the newly mapped reaches line work was completed based on the definitions and likely ecosystems types identified as described further in section 3 of this report.

## **2.3 Significance criteria determination**

While the draft NPSIB has no statutory weight at present, it does provide an indication of the likely set of ecological significance criteria which local authorities will be required to adopt once the NPSIB is finalised and has statutory weight. Accordingly, the SNA determination criteria for CHBDC have been reviewed and updated to reflect the draft NPSIB criteria set. However, and importantly, the criteria recommended for CHBDC have been drafted to reflect local circumstances. A set of guidelines have also been developed to assist the consulting ecologist when assessing a potential SNA, and also to allow for a transparent and consistent approach in the determination of SNA in the District. These are attached as Appendix 1.

<sup>8</sup> Atkinson, I. A. E. (1985). Derivation of vegetation mapping units for an ecological survey of Tongariro National North Island, New Zealand. *New Zealand journal of botany*, 23(3), 361-378.



As part of the 2019 SNA review a 'confidence level' was assigned for each SNA's significance determination to present an indication on the degree of accuracy of the desk-top ranking assessment. Each SNA has been assigned one of three confidence levels that was based on available data, or lack thereof – High, Moderate or Low. The specific criteria for assigning confidence level are contained in Appendix 2.

## **2.4 Landowner consultation and ground-truthing**

In 2019 CHBDC undertook a district wide consultation process with landowners who had potential SNA on their property. From this process feedback was received and reviewed by Council's consulting ecologists. Recommendations were made to Council by the consulting ecologists on the basis of the feedback received.

Feedback provided by landowners was generally positive in terms of appreciating the value of their natural feature and seeking ways and resources to manage them. Discussions often focussed on how to manage pest animals, pest plants, the status of grazing/fencing of the natural areas, as well as seeking information on how to manage the effects of surrounding land use. A number of sites were also ground -truthed, either at the request for the landowner or by Council on the advice of the consulting ecologist – with permission for access granted by the affected landowner. A summary of the changes required to be made into the SNA GIS dataset as a consequence of the consultation process includes:

- removing, adding or altering the outline of an SNA boundary;
- changing the significance ranking of the SNA;
- adding information on animal pests, plant pests, fencing and grazing status;
- adding site specific information on flora and fauna species present; and
- adding information on other issues.

Overall, the confidence level of the SNA sites on which feedback was received increased, particularly when a visit was paid to a site. When a site was visited more detailed information was able to be gathered directly by the project ecologists and incorporated into the dataset.

As at May 2020 the review process following consultation is still underway, with many consequential changes to SNA status or boundary adjustments required to be made to SNA GIS dataset.

## **3 Definitions and limitations**

### **3.1 Limitations and clarifications**

A number of limitations have been outlined by the previous reviews. Some of these limitations have now been addressed in this review, including the development of a set of significance criteria, review of the HBRC predicted vegetation dataset, the combination and assessment of existing wetland datasets, reassessment and inclusion of a range of braided river ecosystem types, and further refinement of the spatial extent and significance assessment of the existing Operative District Plan SNAs. However, several limitations still apply to the dataset, including the following:

- The precise boundaries of proposed SNA are based on aerial photography from 2016, as such, the boundaries of some mapped vegetation, wetlands, and rivers etc., may be incorrect. The accuracy of the spatial boundaries of the sites in the data set is dependent on the data from which the boundaries are derived, with ground truthing being the ultimate method to ensure a high level of accuracy. Aerial photo base spatial analysis is limited by the date of the photo, the resolution of the photo and the ability of the assessor to determine the vegetation types presented. In general, the positional accuracy of aerial photography can be considered to be at worst within +/- 30 m.
- The methodology used to identify new potential SNA relied on the accuracy of the 'predicted vegetation remaining layer' supplied by HBRC. Some native vegetation present in the CHBD may not have been captured by this model. As such there are potentially areas of





native vegetation that trigger SNA significance criteria that have not been captured by this analysis. The number of missed vegetated areas has been reduced due to the incorporation of mapping upon incidental discovery of unmapped vegetated areas.

- Vegetation classifications as determined in the original ‘potential vegetation remaining’ layer are based on past predicted vegetation extents and are not representative of what is currently there. Therefore, the vegetation description cannot be used to accurately determine the native vegetation threat classification. This means that some areas, currently assessed as being significant may not be significant because the predicted or potential vegetation GIS layers may not actually be represented on the ground as predicted in the model. It is often not possible to accurately determine these vegetation communities from aerial photography, with ground-truthing often being the only way to accurately do so.
- With the exception of most of the Ruahine Ecological District, almost the entire District is classed as a “Nationally Threatened Environment” (refer to Appendix 3). This essentially means most functionally and structurally intact remaining indigenous dominated ecosystems which are older than 15 years, are likely to be SNA candidates.

### 3.2 SNA scale

Defining an SNA based on ecosystem is difficult as ecosystems exist at a number of complex and unclear scales. As such SNA's are generally grouped assemblages of similar habitat types in close proximity to one another and may, or may not, be ecologically connected based on the opinion of the assessing ecologist. As such the classification of SNA's as ecosystems is somewhat arbitrary. For example, spatial boundaries based on legal protection status may be a practical way to define an SNA for management purposes but may not capture the importance of buffering or connectivity functions adjacent and contiguous remnants play surrounding or near to the protected SNA. Another example is that often highly fragmented SNAs contain farm tracks and open pasture areas within them. It is often not feasible to dissect all of these non-significant portions from an SNA.

### 3.3 Wetlands

The Resource Management Act 1991 (RMA) defines a wetland as including ‘permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions’. This definition is very broad and difficult to apply in the field. In the case of determining SNA, Section 6(c) of RMA requires that wetlands defined as SNA must be shown to be areas of significant indigenous vegetation and significant habitats of indigenous fauna - not simply being a wetland, but a significant wetland. As such for the purpose of defining wetland SNA for the CHBDC, a wetland is defined as a habitat for indigenous plant communities and/or indigenous fauna communities (excluding exotic rush/pasture communities) characteristic of wetland ecosystems types, as defined by Johnson & Gerbeaux (2004)<sup>9</sup>, and which meets one or more of the SNA significance determination criteria (refer to Appendix 1).

Desk-top review does not easily allow for finer grained determination of potentially significant wetlands. Initially all potential wetlands were captured as significant wetlands due to the fact they are, as a whole, considered an under-represented ecosystem type. What this does not take into consideration is the type of wetland, of which some of these may be more common than in the past, such as farmland sedge and rush communities.

Due to the difficulty in characterising these from aerial imagery many mapped wetland SNA will require a site visit in order to determine whether they are significant or not, particularly with reference to the array of ecological functional values described by Whaley et al (1995)<sup>10</sup> (refer to section 2.2 - Hickey-Elliott et al 2018).

<sup>9</sup> Johnson, P & Gerbeaux, P. 2004. Wetland Types in New Zealand. Science & Research Unit, Science Technology and Information Services, Department of Conservation, Wellington.

<sup>10</sup> Whaley, K.; Clarkson, B.D.; Leathwick, J.R. 1995. Assessment of the criteria used to determine ‘significance’ of natural areas in relation to section 6(c) of the Resource Management Act (1991). Landcare Research contract report no. LC9596/021, Hamilton. 34 p.



In regards to waterways, if the upstream site has been determined to be significant habitat for indigenous fauna which have migratory aspects to their lifecycle, then downstream habitat is likely to be significant because it may provide a migration pathway to a significant habitat.

### 3.4 Migrating alluvial rivers

New Zealand has a high density of migrating alluvial river ecosystems, but these tend to be concentrated in the South Island. They are relatively rare in the North Island, possibly due to the lack of a combination of factors that are needed for them to result; large alluvial fans, high rainfall and steep headwaters.

The significant ecological extent of the District's migrating alluvial rivers can be difficult to define as their pattern (planform) can be considered at vastly different scales. This planform changes through space and time and contributes to current and future habitats for the native flora and fauna. These fluctuating and dynamic processes need to be taken into consideration for the future viability of ecological populations and have thus been included in this SNA definition. A number of definitions exist and they are now considered to exist on a continuum reducing in the number of channels further from its source. Generally, they must at some point flow in multiple mobile channels across an alluvial floodplain and they must show evidence of recent channel migration and of historical movements of the bed across the wider flood plain (Grey & Harding, 2007)<sup>11</sup>. Grey and Harding (2007) define braided rivers as 'characterised by having a number of alluvial channels with bars and islands between meeting and dividing again, and presenting from the air the intertwining effect of a braid'<sup>4</sup>. However, the migrating alluvial rivers definition, differs for the purposes of defining SNA in this report, must include a number of habitats. When these habitats are combined, they form the key functional and successional attributes of migrating alluvial river ecosystems. These are defined as follows:

- The river bed of these systems can be defined by the extent of the gravel bed confined by the onset of the floodplain.
- Floodplain – areas adjacent to a river or stream which experience flooding during periods of high flow. These areas are known to be important spawning areas for At – Risk/Threatened fish species.
- Braid bars are often temporary islands consisting of alluvial material. Occasionally the deposited material reaches an extent where it may become more permanent and can become vegetated. As these generally exist between river channels they provide important refuge and mating sites for At-Risk and Threatened avifauna.
- Riparian margins exist as the interface between land and a waterbody, they can exist in a number of states but are usually characterised by hydrophilic plants<sup>12</sup>. They can be important spawning habitat for At Risk and Threatened fish species, as well as providing potential nesting and feeding habitat for At-Risk and Threatened avifauna;
- Fluvial terraces are elongated terraces that flank the active floodplain. They consist of a relatively level strip of land separated from either an adjacent floodplain or other fluvial terraces;
- Oxbow, or oxbow lakes, are U-shaped meanders in river systems that have been cut off from the main watercourse. They can exist as lakes, wetlands or as dry vegetated ground and are habitat for plants such as *Coprosma pedicellata* (At Risk – Declining) and *Pittosporum obcordatum* (Threatened – Nationally Vulnerable)<sup>13</sup>. Due to large scale deforestation, farming activities, and channel straightening, these habitats exist as some of the last refuges for these species and may provide habitat for other At-Risk and Threatened species associated with these vegetation communities;
- Terrace cliffs allow for unique assemblages of flora, likely including *Coprosma pedicellata*. They are also likely to be an important refugia for this and other threatened plant species that traditionally inhabited the, now modified, fluvial terraces.

<sup>11</sup> Gray, D., & Harding, J. S. (2007). Braided river ecology. *Science for Conservation is a scientific monograph series*.

<sup>12</sup> Aquatic plants that grow in or near water and is either emergent, submergent or floating

<sup>13</sup> De Lange, P. J., Rolfe, J. R., Barkla, J. W., Courtney, S., Champion, P. D., Perrie, L. R., ... & Hindmarsh-Walls, R. (2018). *Conservation status of New Zealand indigenous vascular plants, 2017*. Publishing Team, Department of Conservation.





The margins and wider ecosystems of these river systems have been largely modified by the construction of flood prevention works, as well as modification for utilisation by farming. The obscure transition between ecological values and anthropogenic activities makes these systems difficult to map.

### 3.5 Manuka & kanuka

In 2018 mānuka and kanuka were reclassified by DoC as either At Risk or Threatened as a preventative measure due to the threat posed by Myrtle Rust<sup>14</sup>. Of the 10 species of kanuka, all are now considered to be threatened, of which 7 of these 10 species were previously considered Threatened or At-Risk. We understand that the sole basis for this change in threat status was because of the threat posed by Myrtle Rust to these two genera. In 2018, the government biodiversity working group<sup>15</sup> recommended that a natural area should not be considered as being ecologically significant in terms of section 6(c) of the RMA if it comprises of mānuka and/or kanuka dominated indigenous vegetation alone.

Thus, in the case of early regenerated mānuka and kanuka (less than 15 years old), usually reverting on steep hill country farmland, the relevant criterion have been ignored where it was possible to determine from viewing historical aerial photography. However, while we have adopted this approach for recent secondary regrowth mānuka and/or kanuka on farmland, there are situations where ecosystems dominated by these two species may still be ecologically significant. Mature mānuka and kanuka stands (those over 15 years old) are likely to have a regenerating understory increasing potential to harbour At-Risk or Threatened species. In addition, some wetland types, such as peat bogs, are often dominated by mānuka. Furthermore it is possible that some coastal species of previously At-Risk or Threatened kanuka species are present within the CHBDC. These stands are likely to be ecologically significant. As such, their significance cannot be determined from aerial photography alone, and these areas would require ground-truthing in order to ascertain their SNA status with any degree of certainty.

### 3.6 Nationally at risk and threatened species

The DoC Bioweb database<sup>16</sup>, the New Zealand Freshwater Fish Database<sup>17</sup> and iNaturalist<sup>18</sup> data was used to determine whether At Risk and Threatened species were present within or nearby a proposed SNA. At least some of this geographic data appears to be out-of-date, incorrect or partially incorrect. For example, some Freshwater Fish Database data shows the location of longfin eel in terrestrial habitat located close to a stream or river but far enough away to conclude it is an error, making the data less reliable. Similarly iNaturalist uses publicly gathered data; although, in this assessment, only research grade information was used.

Many native animals require a diverse range of habitats as part of their life cycle or to migrate from one habitat to another in order to complete their life cycle. Without these connectivity linkages, these species will disappear from the landscape over time. As the information on the utilisation of habitats within the district by native animals and plants is sparse, and often out of date, it is likely that the full range of significant habitats have not been captured.

Long-tailed bats (Threatened – Nationally Critical)<sup>19</sup> are a good example of presenting the limitations when determining significant habitats for at risk and threatened species. Long-tailed bats are a highly mobile fauna species and are now known to be utilising both native and exotic treescapes, river margins and pastureland across many parts of the plains of the Central

<sup>14</sup> De Lange, P. J., Rolfe, J. R., Barkla, J. W., Courtney, S., Champion, P. D., Perrie, L. R., ... & Hindmarsh-Walls, R. (2018). *Conservation status of New Zealand indigenous vascular plants, 2017*. Publishing Team, Department of Conservation.

<sup>15</sup> Biodiversity Collaborative Report, 2018. *Report of the Biodiversity Collaborative Group*. Biodiversity (Land and Freshwater) Stakeholder Trust. Wellington, New Zealand

<sup>16</sup> Department of Conservation. (2017). *BioWeb*. Hamilton, New Zealand: Department of Conservation.

<sup>17</sup> NZFFDB (New Zealand Freshwater Fish Database). (2017). *Freshwater fish database*. National Institute for Water and Atmospheric Research. Retrieved from <http://fwdb.niwa.co.nz/>

<sup>18</sup> <http://www.inaturalist.org>. Accessed October 2018.

<sup>19</sup> O'Donnell, C. F., Borkin, K. M., Christie, J. E., Lloyd, B., Parsons, S., & Hitchmough, R. A. (2018). *Conservation status of New Zealand bats, 2017* (pp. 1-8). New Zealand Department of Conservation.



Hawkes Bay District (Griffiths et al 2020)<sup>20</sup>. Long-tailed bats utilise a wide range of habitats and roost in both indigenous and exotic vegetation. Due to this widespread and complex usage it is not possible to map all habitats they require as part of their survival in the District. Thus, there is a range of habitats that this species require, which currently have not been captured in the District's SNA database.

In this regard, defining and mapping the full extent migrating alluvial river ecosystems, including their often exotic vegetation dominated riparian margins, as being significant, even where information to do so is limited or incomplete, is further supported by scientific evidence of more mobile native species full habitat usage requirements at a landscape wide scale. This allows for including significant habitats of mobile and migrating species, such as bats and wader birds, which are difficult to identify and map at a fine-grained scale, into the SNA GIS database.

## 4 Recommendations

Most of the technical recommendations made in previous review reports of the SNA dataset in the Central Hawkes Bay District for Council have been resolved, within the confines of the limitations set out in this report. Other recommendations related to landowner consultation and specific natural feature/biodiversity policy have been considered by Council planners in the development of the Proposed District Plan. In addition to any outstanding recommendations made in the previous reviews, the following recommendations are presented for Council to consider:

- That Council adopt the revised SNA determination criteria set and associated guidelines as presented in Appendix 1 of this report.
- The SNA GIS/Excel dataset requires final updating with feedback from the landowner consultation process, and from the consulting ecologists recommendations following ground truthing.
- As a consequence of the landowner consultation and Draft Plan notification process it is evident that a transparent and strict quality assurance process is required by the Council to ensure that the SNA dataset is only track-changed where expert opinion has been sought before applying any changes to the GIS SNA dataset.
- The SNA GIS/Excel dataset needs a final review by the consulting ecologist to ensure that ranking, mapping, amalgamation and re-numbering is consistent with recommendations made in this report and previous reports to ensure the dataset is scientifically robust and reflects the methodology and outcomes of the consultation process.
- Once the NPSIB is finalised, a review of the SNA set is recommended to test the accuracy of the ranking criteria against those used in this assessment process. The NPSIB may also require an assignment of a relative value attribute for each SNA (e.g. 'High' or 'Medium' value SNAs). If so, it is recommended that each SNA in the CHBDC dataset is reviewed to apply this value attribute.

<sup>20</sup> Griffiths, K; More, J; Quinnell, A. 2020. Ngā Pekapeka o Ngā Motu Rākau o Ruataniwha: Protecting and Enhancing Long-Tailed Bat Populations in Central Hawke's Bay - Assessment of colonies and roosting sites in Puahanui Bush and Makaretu / Tukituki areas over summer 2019 / 2020. The Conservation Company Ltd



## Appendix I: Recommended Ecological Significance Determination Criteria for SNA in the Central Hawkes Bay District

Ecological Significance Determination Criteria for SNA in the Central Hawkes Bay District	
CRITERION 1 <u>Protection Status</u> :	It is indigenous vegetation or habitat for indigenous fauna that is currently, or is recommended to be, set aside by Government statute or covenant, or by the Nature Heritage Fund, or Ngā Whenua Rāhui committees, or the Queen Elizabeth the Second National Trust Board of Directors as an Open Space Covenant, specifically for the protection of biodiversity, and meets at least one of criteria 2-7.
CRITERION 2 <u>Representativeness</u> :	<ul style="list-style-type: none"> <li>It is vegetation or habitat of indigenous fauna that is highly typical or characteristic of the indigenous biodiversity in the Hawkes Bay Region or an Ecological District within the Central Hawkes Bay District, or nationally.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>It is habitat that forms part of an ecological sequence, that is either not common in the Hawkes Bay Region or an Ecological District within the Central Hawkes Bay District, or is an exceptional, representative example of its type at a national level.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>It is habitat that supports a typical suite of indigenous fauna and flora and that is characteristic of the habitat type in an Ecological District within the Central Hawkes Bay District.</li> </ul>
CRITERION 3 <u>Diversity and Pattern</u> :	It is an area of indigenous vegetation or habitat of high diversity (for its type) that forms ecotones, gradients, or sequences.
CRITERION 4 <u>Rarity – Species</u> :	<p>It is vegetation or habitat (including exotic vegetation or braided river bed for highly mobile fauna species), that is currently regularly utilised habitat for indigenous flora or fauna species or associations of indigenous flora and fauna species that are:</p> <ul style="list-style-type: none"> <li>classed as nationally Threatened or At Risk by the Department of Conservation, or</li> <li>endemic or uncommon to the Hawkes Bay Region, or</li> <li>at the limit of their natural range.</li> </ul>
CRITERION 5 <u>Rarity - Ecosystems</u> :	It is indigenous vegetation or habitat that is, and prior to human settlement was nationally uncommon.
CRITERION 6 <u>Distinctiveness</u> :	<p>It is indigenous vegetation, habitat or an ecosystem type that is under-represented (30% or less of its known or likely original extent remaining) in an Ecological District, or Ecological Region, or nationally.</p> <p>OR</p> <p>It is wetland, sand dune, braided river or estuarine habitats, or a distinctive assemblage or community of indigenous species habitat for indigenous plant communities and/or indigenous fauna communities (excluding exotic rush/pasture communities) that has <i>not</i> been created and subsequently maintained for or in connection with:</p> <ul style="list-style-type: none"> <li>waste treatment;</li> <li>wastewater renovation;</li> <li>hydroelectric power lakes;</li> <li>water storage for irrigation; or</li> <li>water supply storage, including stock water storage.</li> </ul>
CRITERION 7 <u>Ecological Context</u> :	<p>It is an area of indigenous vegetation or naturally occurring habitat that:</p> <ul style="list-style-type: none"> <li>is moderate to large, well buffered and is a compact shape, in the context of the Ecological District it is found in, and which contains all or almost all indigenous species typical of that habitat type.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>is critical to the self-sustainability of an indigenous flora or fauna species within a catchment of the Hawkes Bay Region. In this context “critical” means essential for a specific component of the life cycle and includes breeding and spawning grounds, juvenile nursery areas, important feeding areas and migratory and dispersal pathways of an indigenous species. This includes areas that maintain connectivity between habitats.</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>is a site that provides a full or partial buffer to, or link between, other important habitats or significant natural area(s) and/or is important for the natural functioning of a freshwater or coastal/estuarine system.</li> </ul>



## Ecological Significance Determination Criteria for SNA in the Central Hawkes Bay District

### Qualifying Thresholds & Attribute Assessment Guidance:

- a) All areas to be assessed using these criteria must be undertaken by a suitably qualified and experienced ecologist.
- b) For an area to be significant, and ranked as a significant natural area, one or more of criteria 2-7 is to be met.
- c) Habitats for Highly Mobile Indigenous Fauna Species: In some cases habitats for highly mobile indigenous fauna species are not contained within mapped significant natural areas, and can include exotic features, such as exotic trees used for roosting by long-tailed bats. For the purposes of this District Plan highly mobile indigenous fauna means species that; are highly mobile; where some individuals move between different environments during their life cycle for reasons such as feeding, mating, nesting, moulting or in response to climatic conditions; and include only nationally Threatened or At-Risk fauna species.
- d) The following guidance notes provides technical advice to determine what are the habitat usage and ecological integrity thresholds to be met before an area can be a potential significant natural area (e.g. to establish if a treeland or scrubland remnant with less than 80% canopy cover over pasture is still structurally intact, or to assist in determination of clearly recognisable patterns of seasonal use by a fauna species as opposed to one-off opportunistic uses of habitat).
- e) The guidance notes define the attributes for ranking the value of each significance assessment criterion – High, Medium or Low value.
- f) The ecologist needs to consider the following matters to determine when delineating the extent of a habitat used by indigenous species and identifying an indigenous vegetation area as an significant natural area:
  - i. Threshold determiner for rare species: Can the habitats of the Threatened or At Risk species be clearly delineated and regular usage be determined? Consider the pattern of distribution of the subject species, its key habitat and lifecycle requirements, including if habitat usage is regular, seasonal or occasional.
  - ii. Threshold determiner for indigenous vegetation or ecosystem type: Is the *ecosystem integrity* of the subject area sufficiently intact to delineate and define a recognisable ecosystem type comprising predominately of indigenous species? Matters to consider are vegetation cover composition and density at all structural tiers, the characteristic biophysical elements supporting that ecosystem type, the ecosystem's capacity to maintain its structural and functional processes, the proportion of exotic vegetation cover as opposed to indigenous vegetation cover, and if contains a range of defining elements characteristic for its ecotype.
  - iii. Representativeness includes commonplace vegetation/habitats, which is where most indigenous biodiversity is present. It is not restricted to the best or most representative examples. It is not a measure of how well that vegetation or habitat is protected elsewhere in the ecological district. This can include secondary or regenerating vegetation that is recovering following natural or induced disturbance, provided indigenous species composition is typical of that type of vegetation. Representative indigenous fauna habitat can support the typical suite of indigenous animals that would occur in the present-day, regardless of the threat status of those species.
  - iv. Representativeness Ranking Attributes (Criterion 2):  
 High: Ecological unit(s) present that is typical of the indigenous character of the ecological district and which retains a high level of ecological integrity in the context of what remains in the ecological district.  
 High: Habitat that supports a typical suite of indigenous fauna that is characteristic of the habitat type in the ecological district and retains the majority of species expected for that habitat type in the ecological district.  
 Medium: Ecosystem type(s) present that is typical of the indigenous character of the ecological district and which retains a moderate level of ecological integrity in the context of what remains in the ecological district.  
 Medium: Habitat that supports a typical suite of indigenous taxa that is characteristic of the habitat type in the ecological district and retains a moderate range of species expected for that habitat type in the ecological district.  
 Low: Vegetation or habitat that is not typical of the indigenous vegetation or habitat of the ecological district or marine biogeographic area.
  - v. Diversity has biological components, such as species/taxa, communities, and ecological variation. It also has physical components, such as geology, soils/substrate, aspect/exposure, and altitude. Pattern includes changes along environmental gradients, such as ecotones and sequences. Some communities or habitats are uniform, with naturally low species diversity; that attribute is assessed under the representativeness criterion.
  - vi. Diversity & Pattern Ranking Attributes (Criterion 3):  
 High A high diversity of indigenous species, vegetation, habitats of indigenous fauna, or communities within the context of the ecological district.  
 High: Presence of important ecotones and/or complete gradients or sequences.  
 Medium: A moderate diversity of indigenous species, vegetation, habitats of indigenous fauna, or communities within the context of the ecological district.  
 Medium: Presence of 1 or more ecotones and/or gradients or sequences.  
 Low: A low diversity of indigenous species, habitats or communities, and lack of ecotones, gradients or sequences.
  - vii. Rarity includes ecosystems that are uncommon, and species that are threatened. Threatened and At Risk (including 'naturally uncommon') species at a national scale are listed in publications (for plants, mammals, birds, and reptiles) prepared and regularly updated by the Department of Conservation. Rarity at a regional or local scale is defined by published local lists or determined by professional opinion. Some species within the



**Ecological Significance Determination Criteria for SNA in the Central Hawkes Bay District**

- Myrtaceae family are relatively common in the Central Hawkes Bay (e.g. kānuka, mānuka) but are listed as Threatened or At Risk due to the threat posed by myrtle rust. If an area is identified only because of the presence of mānuka and kānuka, it should not trigger Criterion 4. However, if it qualifies as significant for any other reason, then it should be ranked as a Significant Natural Area. Two national frameworks are available for the assessment of rarity of terrestrial indigenous vegetation or ecosystems: Ecological Districts, as defined by McEwen (1987); and Land Environments, as defined by Leathwick et al (2003).
- viii. Rarity – Species Ranking Attributes (Criterion 4):  
 High: Provides habitat for a nationally Threatened, or two or more At Risk indigenous species as identified in the New Zealand Threat Classification System lists as published by the Department of Conservation.  
 Medium: Provides habitat for an At Risk indigenous species as identified in the New Zealand Threat Classification System lists as published by the Department of Conservation.  
 Medium: Indigenous vegetation or a ecosystem type for an indigenous fauna species that is uncommon or at its distributional limit within the Hawkes Bay Region or ecological district within the Central Hawkes Bay.  
 Low: Supports no Threatened, At Risk, regionally or locally uncommon indigenous species; and no indigenous species near distributional limits.
  - ix. Historically rare (or naturally uncommon) terrestrial ecosystems are defined and listed by Williams et al (2007) and further defined by Wiser et al (2013). These ecosystems, along with wetlands and sand dunes, are proposed as a priority for protection on private land by the Ministry for the Environment (2007).
  - x. Historically Rare Ranking Attributes (Criterion 5):  
 High: Indigenous vegetation/habitat occurring on 'originally rare' ecosystem types.  
 Low: Is not indigenous vegetation/habitat on sand dunes, wetlands, estuaries or 'originally rare' ecosystems.
  - xi. Distinctiveness includes distribution limits for indigenous vegetation types or ecosystems (as opposed to species), type localities, local endemism, relict distributions, and special ecological or scientific features. Distinctiveness of indigenous vegetation in each Land Environment has been assessed by Walker et al (2006) and Cieraad et al (2015). Land Environment data should be interpreted with caution. These are based on physical attributes which may not accurately reflect vegetation (or habitat) patterns at a local scale. Distinctiveness at a regional or local scale is defined by published local lists or determined by professional opinion.
  - xii. Distinctiveness Ranking Attributes (Criterion 6):  
 High: Indigenous vegetation or habitat of indigenous fauna or ecosystem that has been reduced to less than 30% of its former extent in the ecological district or land environment within the Hawkes Bay Region.  
 High: Indigenous vegetation/habitat occurring on sand dunes, wetlands, or estuaries.  
 High: An indigenous vegetation community or ecosystem type at, or near, its distributional limit.  
 Medium: The presence of a distinctive assemblage or community of indigenous species, or special ecological or scientific feature.  
 Low: Is not indigenous vegetation or ecosystems type that has been reduced to less than 30% of its former extent in the ecological district or land environment within the Hawkes Bay Region.  
 Low: Is not indigenous vegetation/habitat on sand dunes, wetlands, estuaries or 'originally rare' ecosystems.
  - xiii. Ecological Context is the extent to which the size, shape, and position of an area within the wider environment (land, freshwater or marine) contributes to the maintenance of indigenous biodiversity. Ecological context has two main attributes: the characteristics that help maintain indigenous biodiversity at the site (such as size, shape and configuration); and the contribution the site makes to protection of indigenous biodiversity in the wider landscape (such as by linking or buffering other sites, providing 'stepping stones' of habitat, or maintaining ecological and hydrological processes). Higher value is placed on sites that: have features (such as size, shape, configuration or buffering) that help maintain indigenous biodiversity at the site; support large numbers of or provide important habitat for indigenous fauna; provide a buffer to or link between other significant areas; or play an important role in the biological/natural functioning of a freshwater or coastal/marine system.
  - xiv. Ecological Context Ranking Attributes (Criterion 7):  
 High: A functionally and structurally intact site that is large in area compared to other remnants in an ecological district, is not fragmented and is contiguous or in close proximity to other significant natural areas.  
 High: A site that provides a functionally and structurally intact buffer to, or link between, other significant natural areas or significant habitats of indigenous fauna.  
 High: A site that supports large numbers of and/or provides critical habitat for indigenous fauna through one or more life cycle stages.  
 Medium: A site that provides a partially functionally and structurally intact buffer to, or link between, other significant natural areas.  
 Medium: A site that supports moderate numbers of and/or provides seasonal habitat for indigenous fauna through one or more life cycle stages, and where that habitat is not critical.  
 Low: An isolated, degraded or fragmented site with no obvious buffer or linkage values.  
 Low: A site with no obvious habitat value for indigenous fauna through one or more life cycle stages.

**References Cited**

Cieraad, E.; Walker, S.; Price, R.; Barringer, J. 2015. An updated assessment of indigenous cover remaining and legal protection in New Zealand's land environments. NZ Journal of Ecology 39: 309-315.





**Ecological Significance Determination Criteria for SNA in the Central Hawkes Bay District**

Leathwick, J.; Wilson, G.; Rutledge, D.; Wardle, P.; Morgan, F.; Johnston, K.; McLeod, M.; Kirkpatrick, R. 2003. Land Environments of New Zealand. David Bateman, Auckland. 184p.

McEwen, W.M. (editor) 1987. Ecological regions and districts of New Zealand, third revised edition. New Zealand Biological Resources Centre Publication No.5. Department of Conservation, Wellington, 1987.

MfE, 2007. Protecting Our Places. Ministry for the Environment and Department of Conservation, Wellington.

Walker, S.; Price, R.; Rutledge, D.; Stephens, R.T.T.; Lee, W.G. 2006. Recent loss of indigenous cover in New Zealand. NZ Journal of Ecology 30: 169-177.

Williams, P.A.; Wiser, S.; Clarkson, B.; Stanley, M.C. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. NZ Journal of Ecology 31: 119-128.

Wiser SK, Buxton, R.P.; Clarkson, B.R.; Hoare, R.J.B.; Holdaway, R.J.; Richardson, S.J.; Smale, M.C.; West, C.; Williams P.A. 2013. New Zealand's naturally uncommon ecosystems. In Dymond JR ed. Ecosystem services in New Zealand – conditions and trends. Manaaki Whenua Press, Lincoln, New Zealand. Pp. 49–61.



## Appendix II: Confidence Level Assignment Criteria

Confidence level	Definition
High	<p>High level of confidence in assessment.</p> <p>Ecological information about the site is:</p> <ul style="list-style-type: none"> <li>• Comprehensive</li> <li>• Reliable</li> <li>• Applicable and/or recent</li> <li>• Site specific</li> </ul> <p>Sites with a high confidence rating include:</p> <ul style="list-style-type: none"> <li>• Relatively large, well-studied, protected areas.</li> <li>• Protected areas that are well known as habitats for at risk or threatened species</li> <li>• Unprotected sites that have been identified as recommended areas for protection in a protected natural areas survey.</li> <li>• Other sites that have been the subject of fauna and/or flora surveys and the information is comprehensive, reliable, recent and site-specific.</li> </ul> <p>Sites with a high confidence level have a low requirement for field survey.</p>
Moderate	<p>Moderate level of confidence in assessment.</p> <p>Ecological information about the site is:</p> <ul style="list-style-type: none"> <li>• Relatively comprehensive</li> <li>• Reliable</li> <li>• Not entirely applicable/ recent</li> <li>• More likely to be general than site-specific, e.g. the information applies to a larger tract of indigenous vegetation, of which the site is a relatively small part.</li> </ul> <p>Sites with a moderate confidence rating include:</p> <ul style="list-style-type: none"> <li>• Sites where the assessment is based on ecological information that does not meet all of the criteria for a high confidence level.</li> <li>• Sites that are contiguous with a site that has a high confidence level, and information about the contiguous site is assumed to be applicable to the site that is being assessed.</li> <li>• Sites for which incomplete ecological information exists, and for which targeted surveys may result in records of at risk or threatened species.</li> </ul> <p>Sites with a medium confidence level have a requirement for field survey.</p>
Low	<p>Low level of confidence in the assessment.</p> <p>Ecological information about the site is not available or is:</p> <ul style="list-style-type: none"> <li>• Not comprehensive</li> <li>• Unreliable</li> <li>• Out-dated</li> <li>• General</li> </ul> <p>Sites with a low confidence rating include:</p> <ul style="list-style-type: none"> <li>• Very small protected sites e.g. marginal strips.</li> <li>• Unprotected sites within ecological districts where a protected natural areas survey has not been undertaken.</li> <li>• Sites that have met criteria for national significance, solely on the basis of a record of a species that is probably now extinct at the site.</li> </ul> <p>Sites with a low confidence level have a high requirement for field survey.</p>



## Appendix III: Spatial Extent of Threatened Environment Classes within the Central Hawkes Bay District

