REPORT

Tonkin+Taylor

CHBDC District Plan Final Desktop SNA Review - Methodology

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Table of contents

1 Background

Kessels Ecology[1] was contracted by Central Hawkes Bay District Council (CHBDC) to undertake an assessment of natural heritage of the District as a part of the Central Hawke's Bay District Plan Review. The review is presented in the report entitled "Assessment of Natural Heritage for the Review of the Central Hawke's Bay District Plan" (Hickey-Elliott et al., 2018)[2]. A number of limitations of the existing dataset were noted in this report, including:

- Many of the existing significant natural areas (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)[3] and Nationally Threatened Environments (Walker et al 2015)[4] 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. The assessment criteria are attached as Appendix A.

Assessment of these sites was beyond the scope of the initial desktop review, thus CBHBC contracted Tonkin & Taylor Ltd (T+T) to undertake a second desktop review to address these matters. This report outlines the methodology used for the second desktop review and lists a number of consequential limitations and recommendations.

2 Methodology

The following datasets were reviewed by a T+T ecologist 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.

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

[1] Kessels Ecology became part of Tonkin + Taylor Ltd in May 2018

[2] Hickey-Elliot, A., Smith, N., Kessels, G., (2018). Assessment of Natural Heritage for the Review of the Central Hawke's Bay District Plan. Kessels & Associates Ltd.

[3] 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.

[4] Walker, S., Cieraad, E., Barringer, J., 2015. The Threatened Environment Classification for New Zealand 2012: a guide for users. Landcare Research Contract report LC2184.

- 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. Furthermore, areas that were obviously not 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)[5], tree land 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 3.1 of this report.

f **Significance criteria determination:**

- For the 5 criteria proposed (2018) classification was determined as either;
  - Yes – meets or likely to meet criteria
  - No – does not meet criteria

[5] 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.

- Indeterminate – cannot be determined, defined or described accurately due to a lack of information

A confidence level was assigned for each SNA's significance determination. This was assigned one of three 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.

3 Definitions and limitations

3.1 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)[6]. 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'[4]. 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[7]. 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;

[6] Gray, D., & Harding, J. S. (2007). Braided river ecology. *Science for Conservation is a scientific monograph series*.
[7] Aquatic plants that grow in or near water and is either emergent, submergent or floating

- 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)[8]. 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.

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 activates makes these systems difficult to map.

3.2 Wetlands

The 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 the 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 CHBD, 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)[9], and which meets one or more of the SNA significance determination criteria (refer to Appendix 1).

3.3 Limitations and clarifications

A number of limitations have been outlined by Hickey-Elliott et al., (2018). Some of these limitations have now been addressed in this second review of the natural area dataset for the District, 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.

[8] 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.
[9] Johnson, P & Gerbeaux, P. 2004. Wetland Types in New Zealand. Science & Research Unit, Science Technology and Information Services, Department of Conservation, Wellington.

- 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. Therefore, 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 "Nationally Threatened Environment" (refer to Appendix 3). This essentially defaults virtually all intact remaining indigenous dominated ecosystems as being significant.

The proposed District ecological significance criteria mean that areas of mānuka and kanuka (over 30 years old) can still be captured as significant under 'Criterion 2', as native vegetation in land categorized as a Nationally Threatened Environment. 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[10]. 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[11] 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 (Deng Y., & Kessels G., 2018, pers. comm., 26 October).

Thus, in the case of early regenerated mānuka and kanuka (less than 30 years old), usually reverting on steep hill country farmland, criterion 2 and 3 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 be ecologically significant. Mature mānuka and kanuka stands (those over 30 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 will require ground-truthing.

- The DOC Bioweb database[12], the New Zealand Freshwater Fish Database[13] and iNaturalist[14] 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,

[10] 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.
[11] Biodiversity Collaborative Report, 2018. *Report of the Biodiversity Collaborative Group.* Biodiversity (Land and Freshwater) Stakeholder Trust. Wellington, New Zealand
[12] Department of Conservation. (2017). *BioWeb*. Hamilton, New Zealand: Department of Conservation.
[13] NZFFDB (New Zealand Freshwater Fish Database). (2017). *Freshwater fish database.* National Institute for Water and Atmospheric Research. Retrieved from http://fwdb.niwa.co.nz/
[14] http://www.inaturalist.org. Accessed October 2018.

incorrect or partially incorrect. For example, some FFDB 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

- Under the proposed criteria all wetlands, as defined in 3.2 above, are 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 and management values described by Whaley et al (1995)[15](refer to section 2.2 - Hickey-Elliott et al 2018).
- 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.
- SNA scale – defining an SNA based on ecosystem is difficult as ecosystems exist at a number of 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. This depends on species and their respective life habits. 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 and 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 not feasible to dissect all these non-significant portions from an SNA.
- 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. For example, Long-tailed bats (Threatened – Nationally Critical)[16], a highly mobile species are likely to be present across the landscape, especially in close proximity to the Ruahine Forest Park. Long-tailed bats utilise a wide range of habitats and roost in both indigenous and exotic vegetation. Due to a lack of data in the CHBD, their range cannot be determined and thus there are potentially 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 as being significant, even where information to do so is limited or incomplete, is critical to ensure that potentially important habitats for these mobile and migrating species are incorporated into the District Plan dataset.

4 Recommendations

Hickey-Elliott et al (2018) listed a number of recommendations in section 8 of that report. Many of these recommendations have been resolved, and least to some extent, in this second review, within the confines of the limitations set out in both review reports. Other recommendations related to

[15] 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.

[16] 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.

specific natural feature/biodiversity policy have been adopted by Council in the Draft District Plan. In addition to any outstanding recommendations made in the first review, we have the following:

- The SNA GIS/Excel dataset requires final amalgamation and re-numbering to ensure it is able to be easily incorporated into the District's database and Draft District Plan. It will also make the dataset much easier to use and understand by Council staff. We understand that CHBDC's in-house GIS specialist will undertake this work.
- The migrating alluvial rivers layer will require supporting objectives, policy and implementation methods in the Draft Plan to ensure that the likely over-lapping RMA obligations of CHBDC and HBRC are aligned, to account for the dynamic and mobile nature of this ecosystem, and to empathise protection of the importance ecological values of this ecosystem type.
- Once the dataset is amalgamated and re-indexed, the draft SNA maps can be used for the consultation phase of the Draft Plan process. We have discussed a public consultation process with the District Plan Review manager which involves affected landowners and key stakeholders. This will include targeted workshops followed by site visits by Council staff and an ecologist, as and when required subsequent to the outcome of the public workshops. The public needs to be informed of the draft nature of the database and the limitations of the database as set out in both reviews. Feedback from the public consultation process will be essential to capture any modifications required. A strict quality assurance process is required by Council to ensure that the dataset is only changed where expert opinion has been sought before applying any changes to the dataset suggested by the public. It is expected that ground-truthing will be require in many instances. However, the extent of ground-truthing required will be determined by the public consultation process. There are alternative methods to undertake further ground-truthing which other District Councils have adopted in their Plans, such as providing a free survey of an SNA, should a landowner wish to carry out works affecting an SNA which may trigger the need for resource consent. We are able to assist Council staff in formulating additional policy and methods to allow for this approach.
- Following the landowner consultation process the final dataset cataloguing all SNA values within the CHBDC, can form part of the District Plan.

5 Summary

To finalise the draft CHBDC District Plan, CHBDC required a review of the SNAs within their district. This report provides the CHBDC with:

- The methodology and definitions that were used to determine SNA boundaries for previously described SNA as well as newly discovered SNA;
- The limitations in defining SNA from aerial imagery and outdated data or a lack of data; and
- Additional recommendations pertaining to the amalgamation of the provided SNA dataset, policy implementation in the Draft Plan for migrating alluvial rivers, and specific recommendations regarding the public consultation process.

This report satisfies the above requirements, and has been written supplementary to the scope outlined within Tonkin + Taylor LOE dated 9 August 2018, and the subsequent variation to this contract dated 11 October 2018. It has been prepared in order to provide detail of the SNA identification, assessment and classification process used for this work. Once the dataset is amalgamated and re-indexed, the dataset in conjunction with this report will allow the CHBDC to begin the landowner consultation process.

6 Applicability

This report has been prepared for the exclusive use of our client Central Hawkes Bay District Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

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Appendix A: Recommended Ecological Significance Determination Criteria for the Central Hawkes Bay Proposed District Plan

- **From section 3.2.5: Hickey-Elliott et al Kessels, 2018**

The drafted significance assessment criteria are defined below in Table 115, and are also located in Appendix II for ease of use in future referencing. These criteria have been selected to cover an array of the values considered in Whaley et al. (1995), aforementioned in section 2.2. The criteria were also developed taking into account other existing local body significance criteria (See Appendix I).

Criterion 1 considers underrepresented ecosystem/vegetation types as those with less than 30% original coverage remaining. Alignment with the Regional Council's use of 30% (used in the HBRC biodiversity Inventory) was selected to allow for consistency in classification throughout the region (HBRC data set; HBRC, 2014).

Criterion 2 provides regard to potentially more common indigenous ecosystem and vegetation types which may occur on land classified as a Threatened Environment. To align with the classification system, land classed in categories 1-5 was considered a Threatened Environment, and was therefore the standard utilised (Leathwick et al., 2003; Walker et al., 2015).

Criterion 3 provides regard to areas that may not be rare indigenous vegetation, but may provide habitat required or utilised by nationally Threatened or At Risk fauna or flora. Threatened and At Risk species require retainment of all habitat utilised as habitat loss is a major contributing factor to extinctions in New Zealand.

Criterion 4 considers the ecosystem types that are rare and uncommon to New Zealand, and are a significant biodiversity asset to the Central Hawke's Bay. Rare ecosystem types provide unique habitat and resources which are important for local biodiversity.

Criterion 5 provides consideration of sites that may not be considered otherwise important, but are known to be a large example of indigenous habitat, and may therefore provide significant refuge and future regenerative properties which require protection to reduce clearance risks. Such sites, while not necessarily currently comprising rare ecosystems, vegetation types, or rare species, may do so in future, and provide an opportunity for a significant area to remain in a relatively natural state, with reduced edge effects which impact smaller sites.

Other potential criteria could have included intactness and naturalness of the sites, however due to the limited ability of remaining indigenous sites to be intact and in a complete natural state, these criteria were not considered to provide additional value to the significance assessment of the Central Hawke's Bay.

Appendix A Table 1: Proposed significance criteria

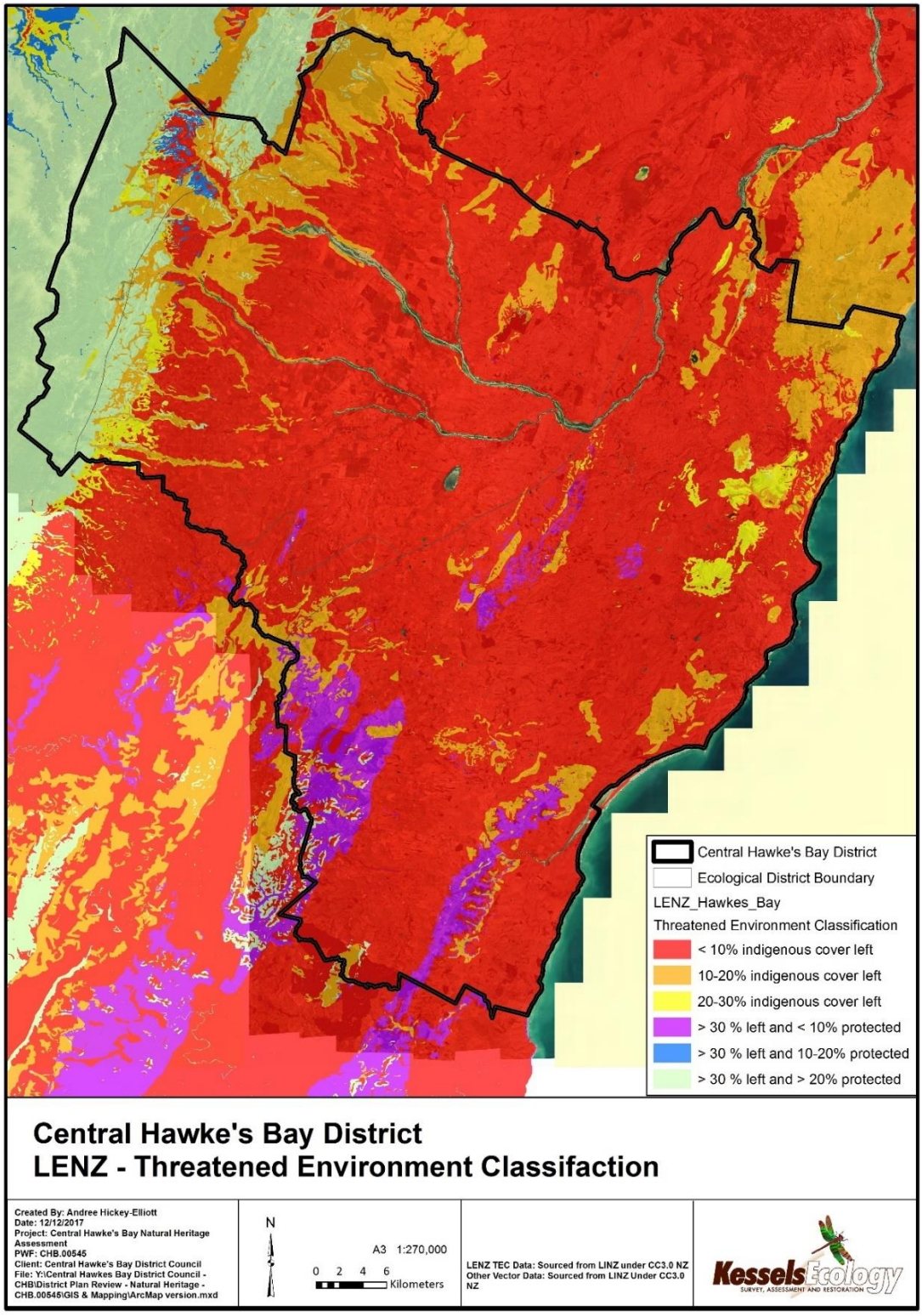
Significance Criteria: Site must meet one or more of the following criteria:	
1	Site contains underrepresented indigenous ecosystem/vegetation type (HBRC dataset <30% remaining is underrepresented)
2	Site contains indigenous dominated vegetation on land of a Threatened Environment Class from 1-5
3	Site is habitat / a migratory pathway for At Risk or Threatened indigenous fauna or flora and is utilised regularly
4	Site contains a rare ecosystem type (e.g. braided river, wetland)
5	Site represents large example of indigenous vegetation (>20 ha)

Appendix B: Confidence Level Assignment Criteria for SNA Assessment in the Central Hakes Bay District

Confidence level	Definition
High	High level of confidence in assessment. Ecological information about the site is: • Comprehensive • Reliable • Applicable and/or recent • Site specific Sites with a high confidence rating include: • Relatively large, well-studied, protected areas. • Protected areas that are well known as habitats for at risk or threatened species • Unprotected sites that have been identified as recommended areas for protection in a protected natural areas survey. • Other sites that have been the subject of fauna and/or flora surveys and the information is comprehensive, reliable, recent and site-specific. Sites with a high confidence level have a low requirement for field survey.
Moderate	Moderate level of confidence in assessment. Ecological information about the site is: • Relatively comprehensive • Reliable • Not entirely applicable/ recent • 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. Sites with a moderate confidence rating include: • Sites where the assessment is based on ecological information that does not meet all of the criteria for a high confidence level. • 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. • Sites for which incomplete ecological information exists, and for which targeted surveys may result in records of at risk or threatened species.

	Sites with a medium confidence level have a requirement for field survey.
Low	Low level of confidence in the assessment. Ecological information about the site is not available or is: • Not comprehensive • Unreliable • Out-dated • General Sites with a low confidence rating include: • Very small protected sites e.g. marginal strips. • Unprotected sites within ecological districts where a protected natural areas survey has not been undertaken. • 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. Sites with a low confidence level have a high requirement for field survey.

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



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