



Bay of Islands

Intertidal vegetation mapping

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Authors: Andrew McDonald - Biospatial Ltd
Richard Griffiths, Katrina Hansen, Neihana Umuroa - Northland
Regional Council

Mapping process and purpose

A remote sensing method has been used to map wetland/saltmarsh and mangrove habitat in Northland. This mapping aims to improve spatial intertidal habitat data for Northland. Please refer to the separate methodology report¹ for details of the mapping process.

This is one of 19 worksheets that display the extent and location of mapped wetland/saltmarsh and mangrove habitats in the Northland region. The worksheets also identify intertidal saltmarsh habitat that exceeds the Regional Policy Statement for Northland (RPS) wetland area threshold of 0.5 hectare for significant saltmarsh (referred to below as significant saltmarsh). Oblique aerial images of all significant saltmarsh features and a summary of significant avifaunal values that are associated with this coastal wetland are also included in the worksheets. The saltmarsh and mangrove layers are available via an online viewer:

<https://localmaps.nrc.govt.nz/LocalMapsGallery/>

Where coastal wetlands extend inland, the degree of salt influence reduces until wetland transitions from saltmarsh to a freshwater wetland. In order to limit the identification of significant features to saltmarsh habitat and avoid mapping freshwater wetland, the landward extent of significant saltmarsh was delimited using selected LINZ hydro parcels. In a small number of instances (eg. Whangārei Harbour, Pātaua Estuary, Horahora Estuary and Kāretu River), where the hydro parcel clearly omitted areas of intertidal habitat, the LINZ NZ property parcel was used. By limiting the mapping of significant saltmarsh to areas within the LINZ hydro parcels, there is a high level of confidence that the significant saltmarsh mapped by this project is saltmarsh and not freshwater wetland.

During the validation process it was apparent from the oblique imagery that typically inland of the hydro parcels the saltmarsh transitions to freshwater habitat. By utilising the LINZ hydro layer, degraded habitat that may not have dominant indigenous vegetation has been avoided, as has wetland or saltmarsh on private title. However, by using the LINZ NZ property parcel and LINZ hydro parcels as the inland boundary, some saltmarsh habitat inland of these boundaries will have been omitted. Further work is required to develop a robust method to delineate the landward extent of saltmarsh habitat.

¹ MacDonald, Griffiths, Griffin, Pene & Umuroa (2020). Northland Intertidal vegetation mapping methodology.

Area description and map outputs

One thousand, one hundred and seventy-seven hectares of mangrove and 374 hectares of saltmarsh have been mapped. A total of 94 saltmarsh sites have been identified that exceed the RPS wetland area threshold of 0.5 hectare for significant saltmarsh, with a total area of 205 ha (Table 1).

Table 1. Significant saltmarsh identified in the Bay of Islands

Area	Saltmarsh sites over significance threshold	Total area (m ²)
Te Puna Inlet	7	72,398
Kerikeri	5	79,653
Rāwhiti	6	52,381
Waitangi	5	86,177
Russell	2	18,901
Whangae River	6	64,912
Lower Kawakawa River	5	53,881
Upper Kawakawa River	6	201,740
Kāretu	10	736,239
Mid Waikare Inlet	10	75,933
Upper Waikare Inlet	22	415,153
Waikino Creek	10	189,603
Total	94	2,046,971

In the Bay of Islands there are several inlets extending well inland, with varying levels of buffering by mangroves and saltmarsh. The avifauna is diverse and breeding birds include local breeding red-billed gull, little blue penguin, pied shag, reef heron, Australasian bittern, northern NZ dotterel, banded rail, fernbird and pāteke (Table 2).

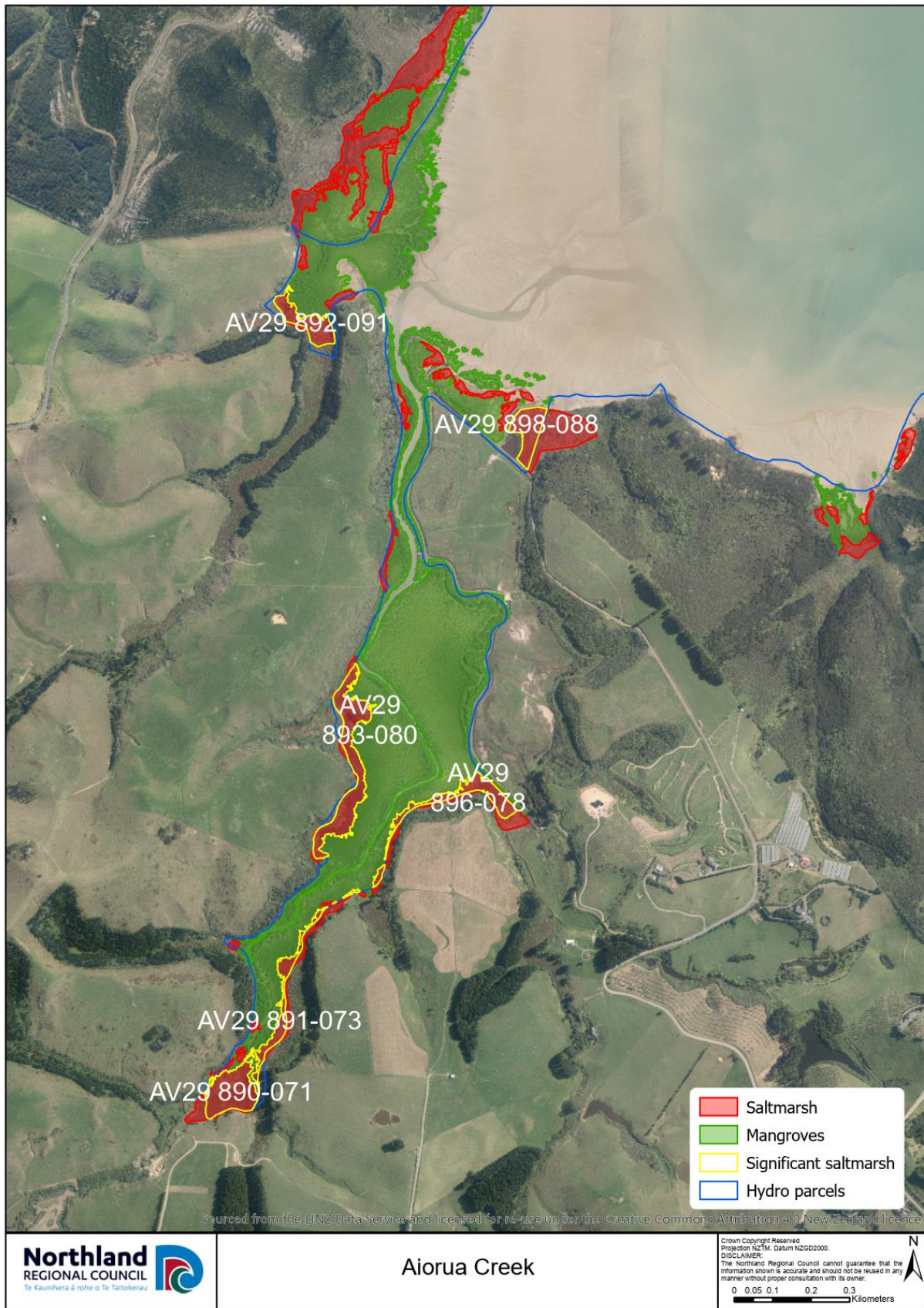
Table 2. ‘Threatened’ and ‘At Risk’ birds using saltmarsh/mangrove habitat in the Bay of Islands

Species Scientific Name	Species Common Name	NZ threat classification (2016)		Significance for species
<i>Botaurus poiciloptilus</i>	Australasian bittern	Threatened	Nationally critical	Locally important habitat (saltmarsh/mangrove)
<i>Hydroprogne caspia</i>	Caspian tern	Threatened	Nationally vulnerable	Local feeding (mangrove channels)
<i>Bowdleria punctata vealeae</i>	North Island fernbird	At Risk	Declining	Locally important resident population (saltmarsh/mangrove)
<i>Gallirallus philippensis assimilis</i>	Banded rail	At Risk	Declining	Locally important resident population (saltmarsh/mangrove)

Species Scientific Name	Species Common Name	NZ threat classification (2016)		Significance for species
<i>Haematopus finschi</i>	NZ pied oystercatcher	At Risk	Declining	Local feeding (mangrove edges)
<i>Limosa lapponica baueri</i>	Eastern bar-tailed godwit	At Risk	Declining	Local feeding (mangrove edges)
<i>Porzana tabuensis tabuensis</i>	Spotless crane	At Risk	Declining	Locally important breeding and feeding (saltmarsh/mangrove)
<i>Phalacrocorax varius varius</i>	Pied shag	At Risk	Recovering	Nationally important breeding and feeding (mangrove roost, channels)

Te Puna Inlet

Figure 1: Saltmarsh and mangroves in Aiorua Creek



Seven significant saltmarsh habitats were identified in Te Puna, totalling seven hectares (Figure 1 & Table 3). Six of the seven significant features are in the Aiorua Creek (Figure 1).

Table 3: Significant saltmarsh identified in Te Puna Inlet

Reference	Area (m ²)
AV29 896-078	9,375
AV29 891-073	7,708
AV29 893-080	20,482
AV29 890-071	12,973
AV29 892-091	8,093
AV29 898-088	8,095
AV29 977-090	5,671
Total	72,398

Figure 2: AV29 892-091



Figure 3: AV29 898-088



Figure 4: AV 29 896-078, AV29 893-080



Figure 5: AV29 891-073, AV29 890-071

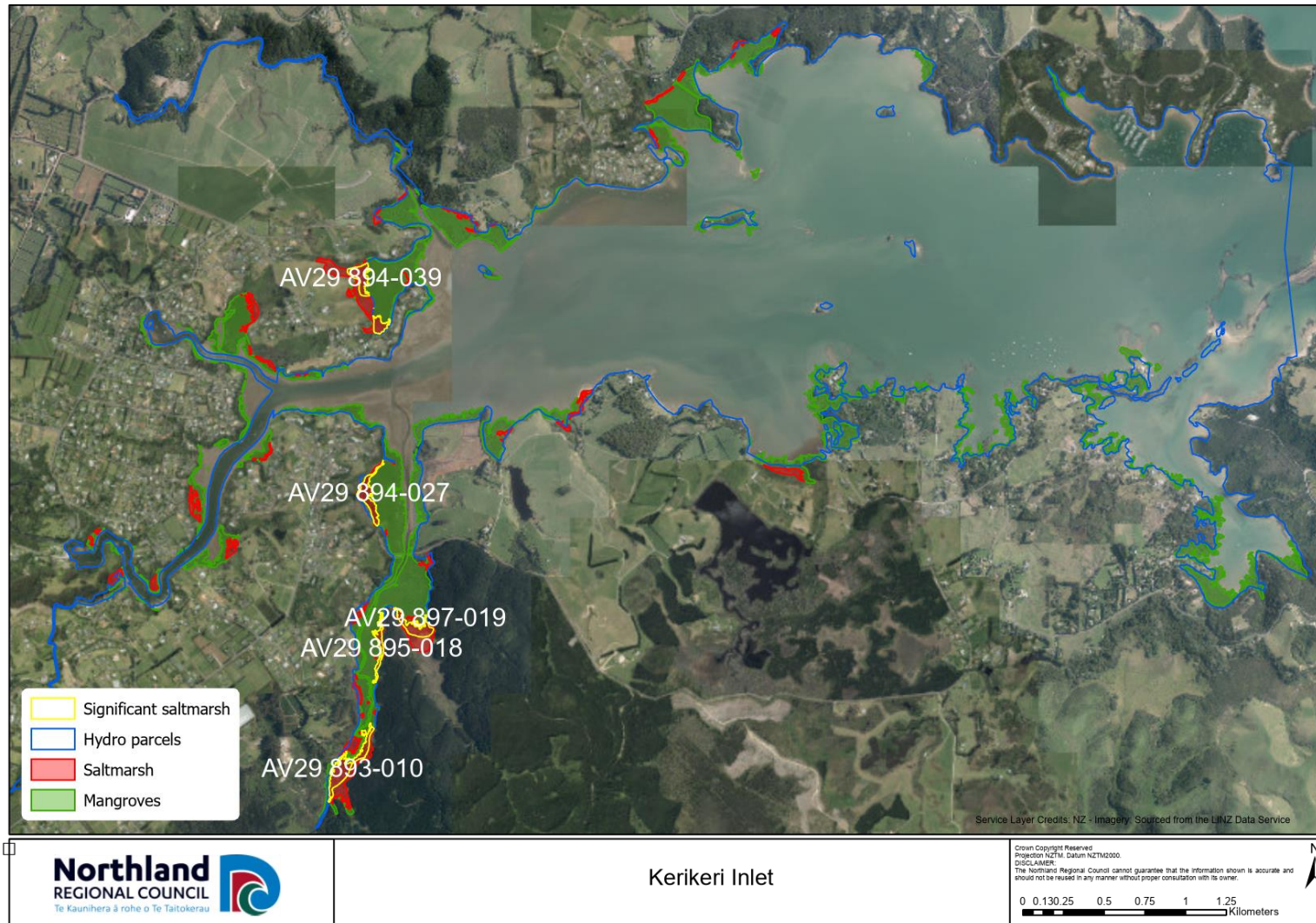


Figure 6: AV29 977-090



Kerikeri Inlet

Figure 7: Saltmarsh and mangroves in Kerikeri Inlet



Five significant saltmarsh habitats were identified in Kerikeri Inlet, totalling eight hectares (Figure 7 & Table 4). One is located on the north shore of the Inlet at the mouth of the Rangitane River and four are located in the Okura River.

Table 4: Significant saltmarsh identified in Kerikeri Inlet

Reference	Area (m ²)
AV29 893-010	23,511
AV29 895-018	7,732
AV29 894-027	15,170
AV29 894-039	19,406
AV29 897-019	13,834
Total	79,653

Figure 8: AV29 894-039



Figure 9: AV29 894-027



Figure 10: AV29 897-019



Figure 11: AV 895-018

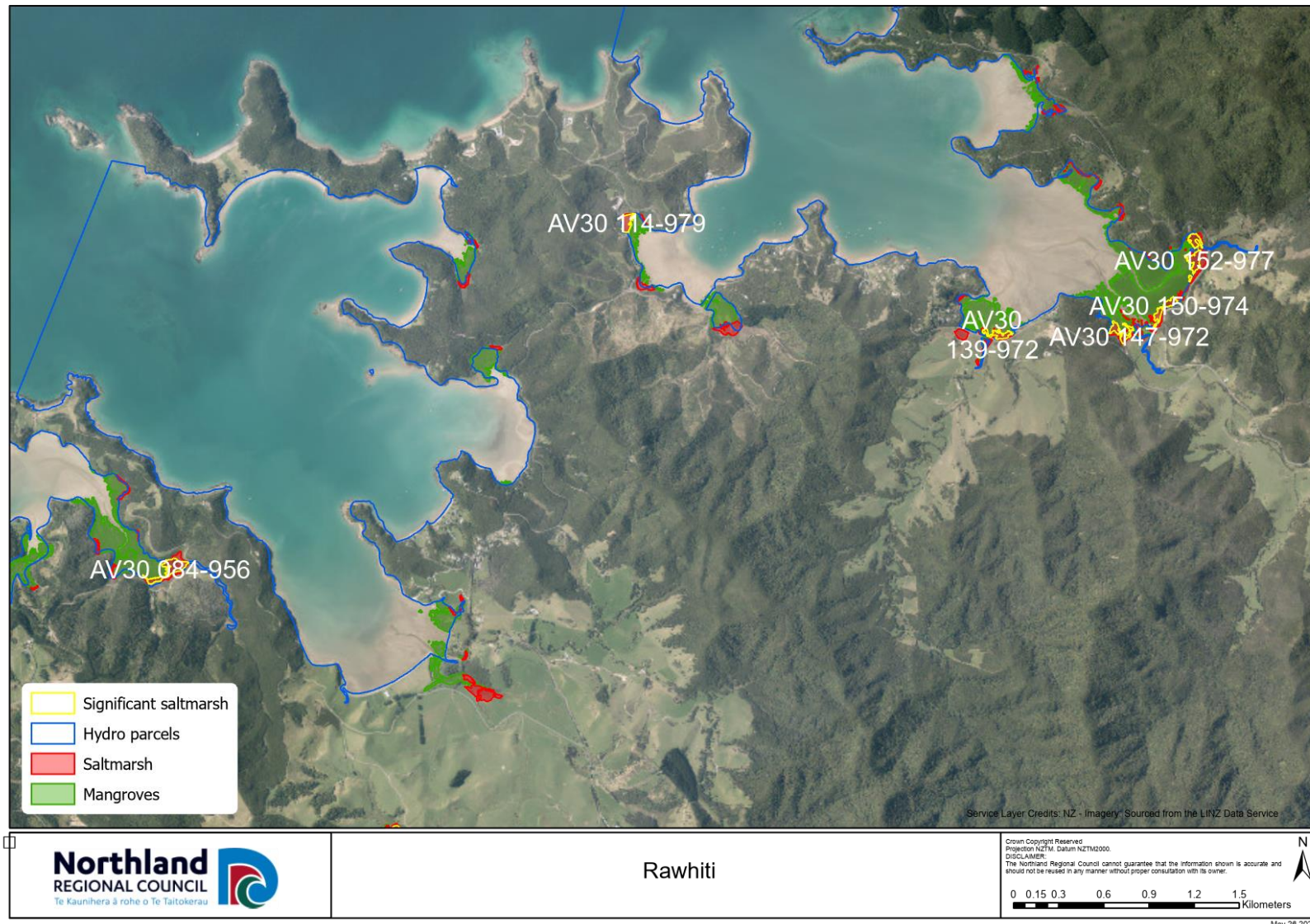


Figure 12: AV29 893-010



Rāwhiti

Figure 13: Saltmarsh and mangroves in Rāwhiti



Six significant saltmarsh habitats were identified in Rāwhiti, totalling 5.2 hectares (Figure 13 & Table 5).

Table 5: Significant saltmarsh identified in Rāwhiti

Reference	Area (m ²)
AV30 084-956	13,655
AV30 139-972	5,616
AV30 147-972	6,970
AV30 150-974	6,589
AV30 152-977	13,013
AV30 114-979	6,537
Total	52,381

Figure 14: AV30 152-977



Figure 15: AV30 150-974

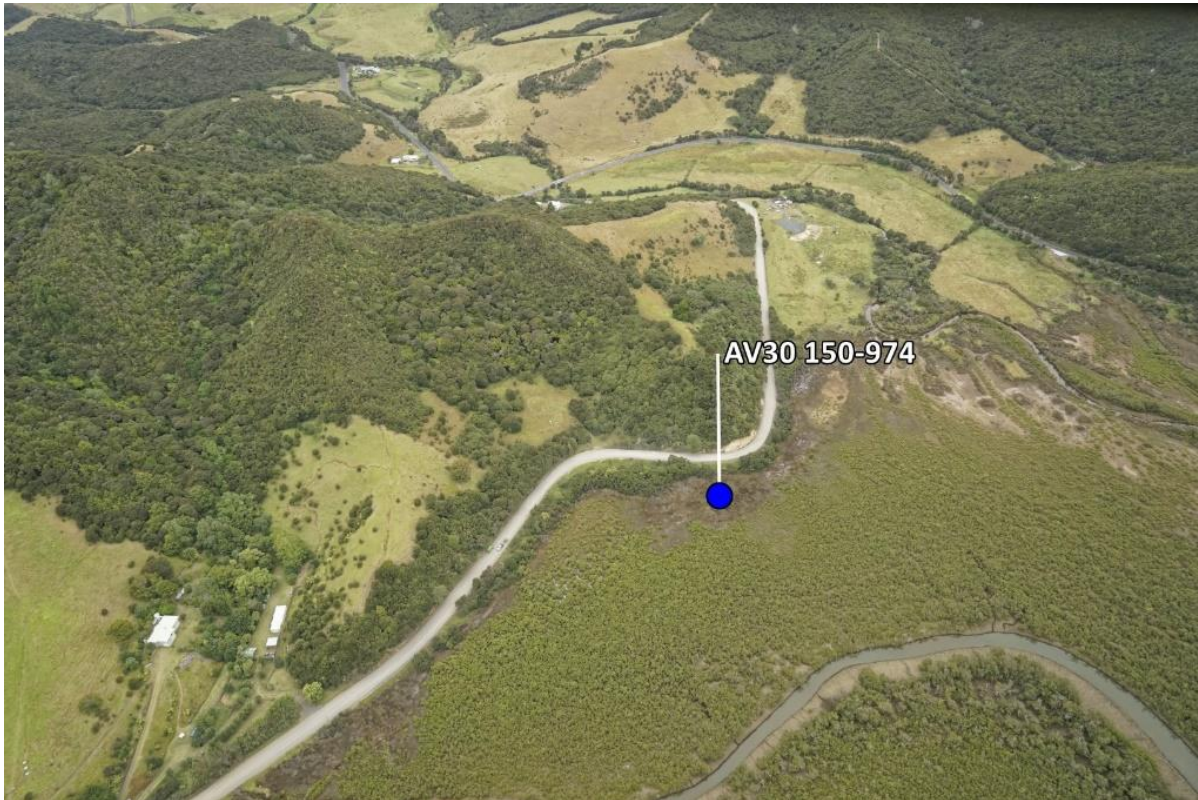


Figure 16: AV30 147-972



Figure 17: AV30 139-972



Figure 18: AV30 114-979



Figure 19: AV30 084-956



Waitangi and Russell

Figure 20: Saltmarsh and mangroves in the Waitangi Estuary

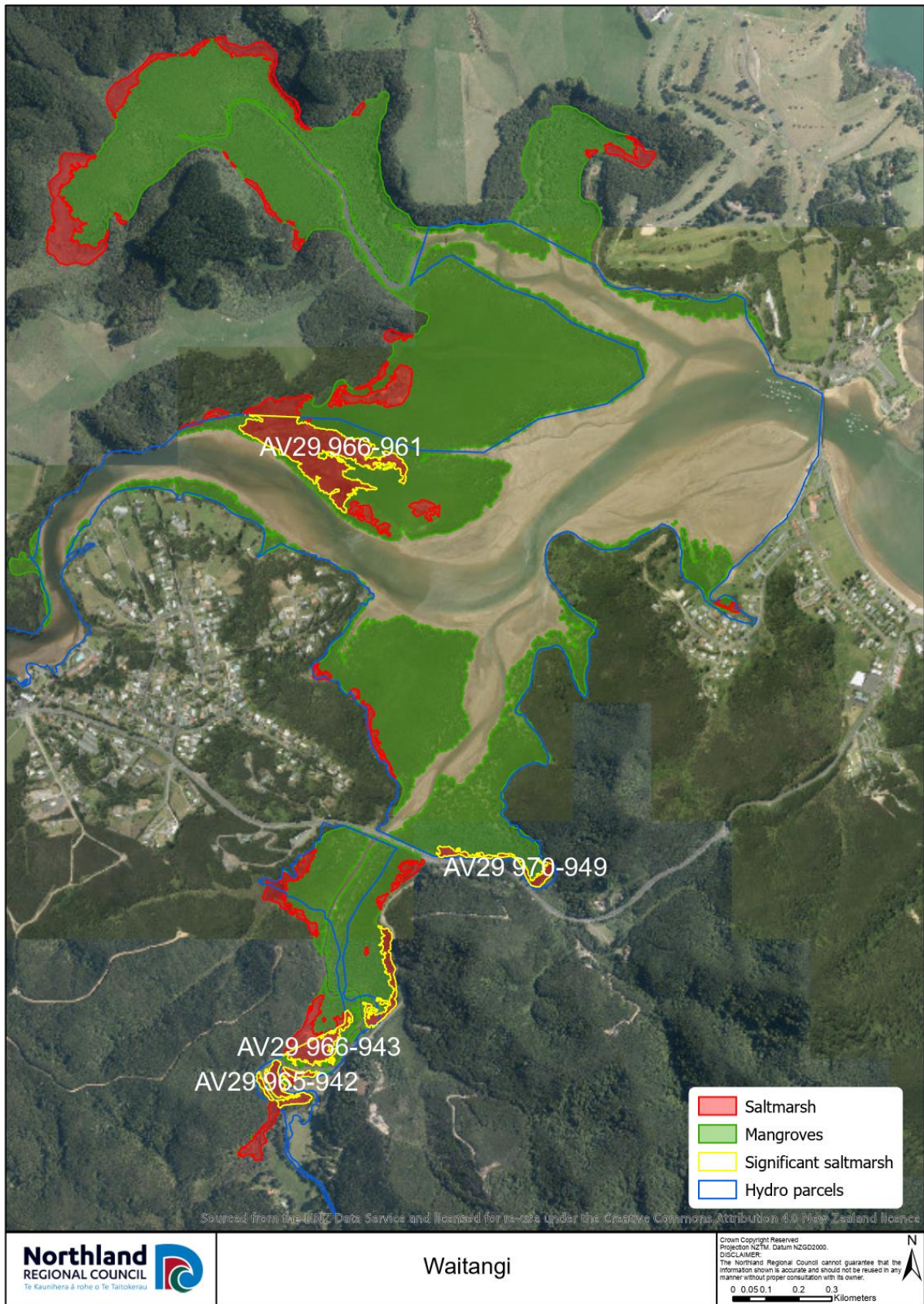
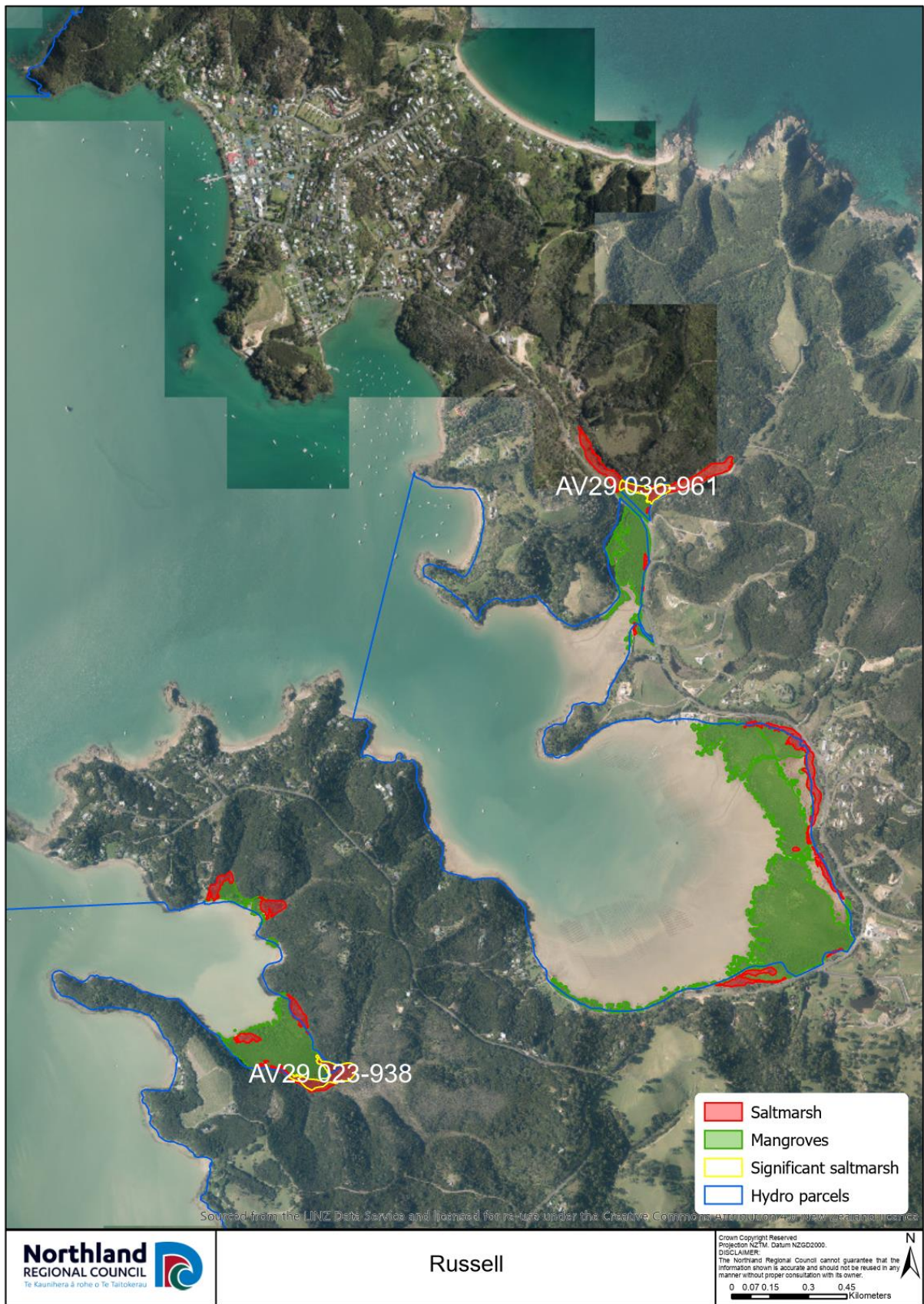


Figure 21: Saltmarsh and mangroves in Russell



Five significant saltmarsh habitats were identified in the Waitangi Estuary totalling 8.6 ha (Figure 20 & Table 6). Two were identified in Russell (Figure 21, Table 7).

Table 6: Significant saltmarsh identified in Waitangi

Reference	Area (m ²)
AV29 965-942	9,199
AV29 966-943	10,090
AV29 970-949	6,088
AV29 968-945	8,110
AV29 966-961	52,690
Total	86,177

Table 7: Significant saltmarsh identified in Russell

Reference	Area (m ²)
AV29 036-961	6,679
AV29 023-938	12,222
Total	18,901

Figure 22: AV29 023-938



Figure 23: AV29 036-961 Area subject to revision of SEA mapping



Figure 24: AV29 965-942, AV29 966-943

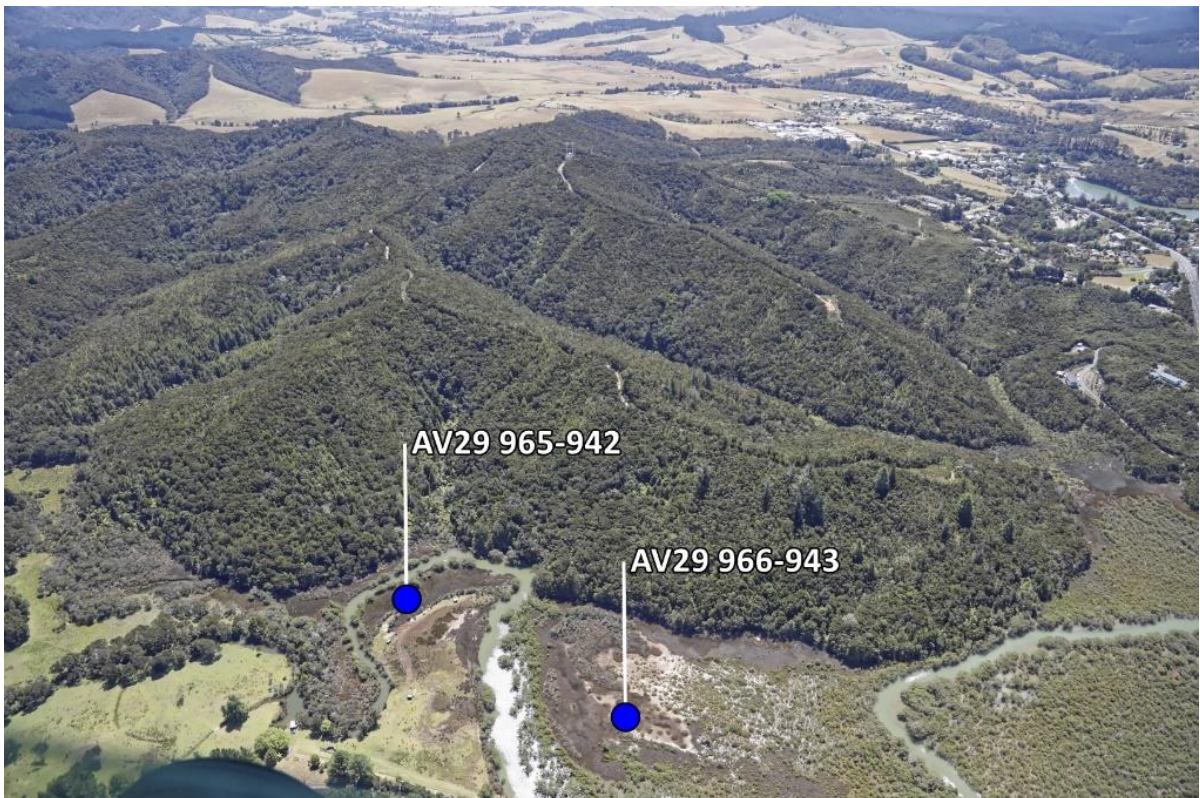


Figure 25: AV29 966-943



Figure 26: AV29 970-949

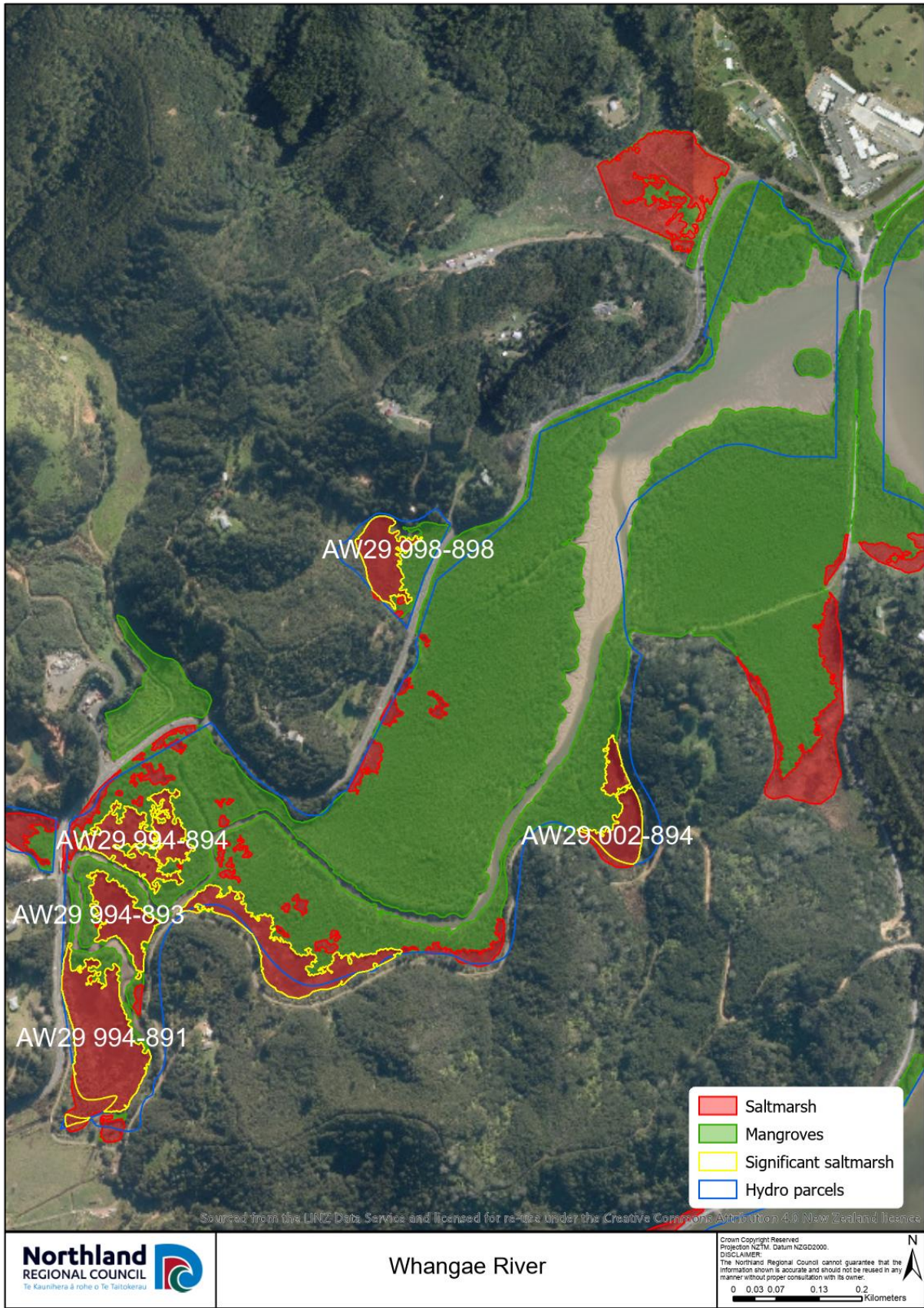


Figure 27: AV29 966-961



Whangae River

Figure 28: Saltmarsh and mangrove habitat in Whangae River



Six significant saltmarsh features were identified in Whangae River, totally 6.4 hectares (Figure 28 & Table 8).

Table 8: Significant saltmarsh identified in Whangae River

Reference	Area (m ²)
AW29 994-894	11,236
AW29 002-894	7,021
AW29 994-893	7,468
AW29 998-898	6,828
AW29 997-892	13,417
AW29 994-891	18,943
Total	64,912

Figure 29: AW29 994-894, AW29 994-893, AW29 994-891

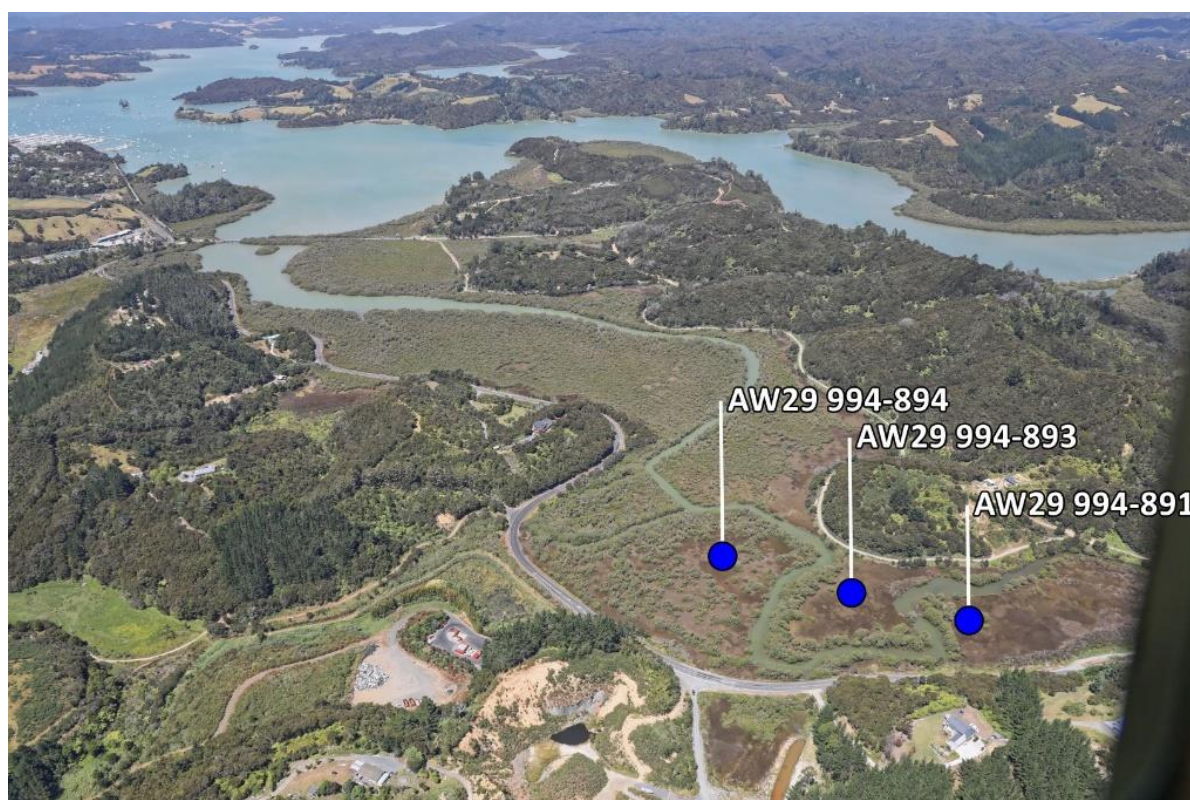


Figure 30: AW29 994-893, AW29 994-891

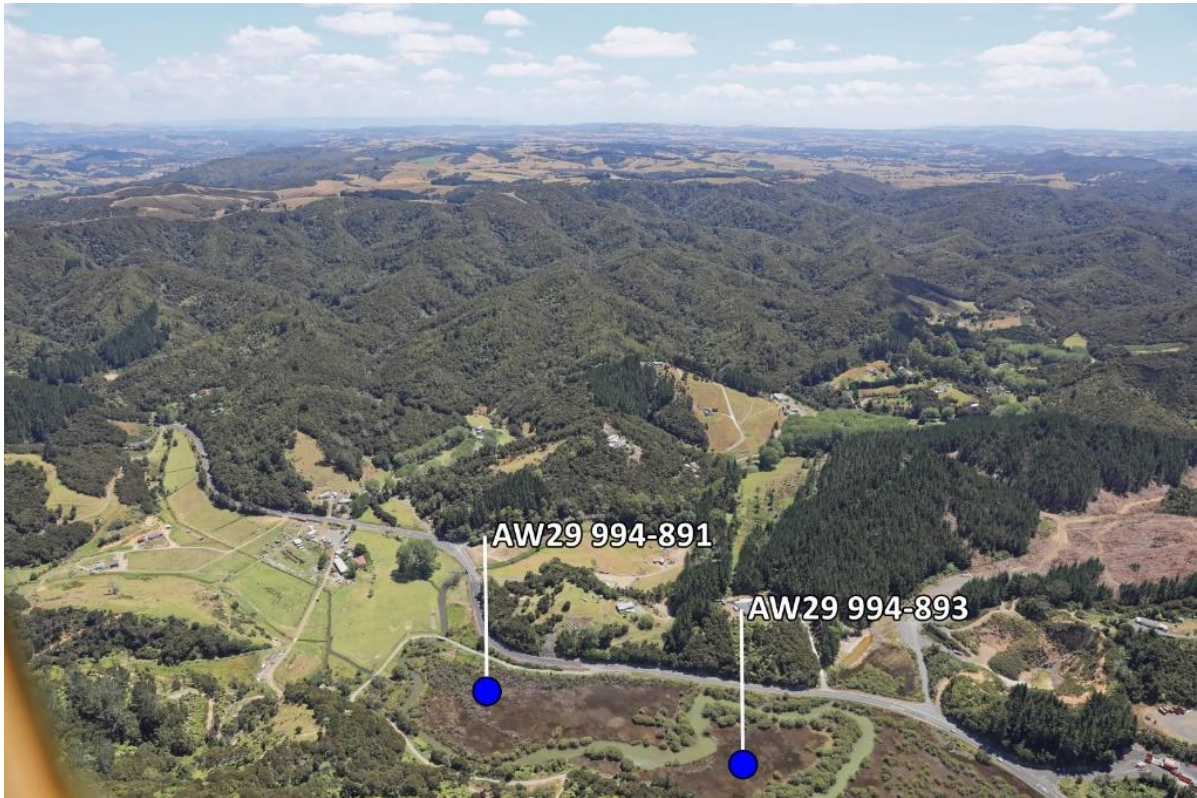


Figure 31: AW29 997-892, AW29 002-894

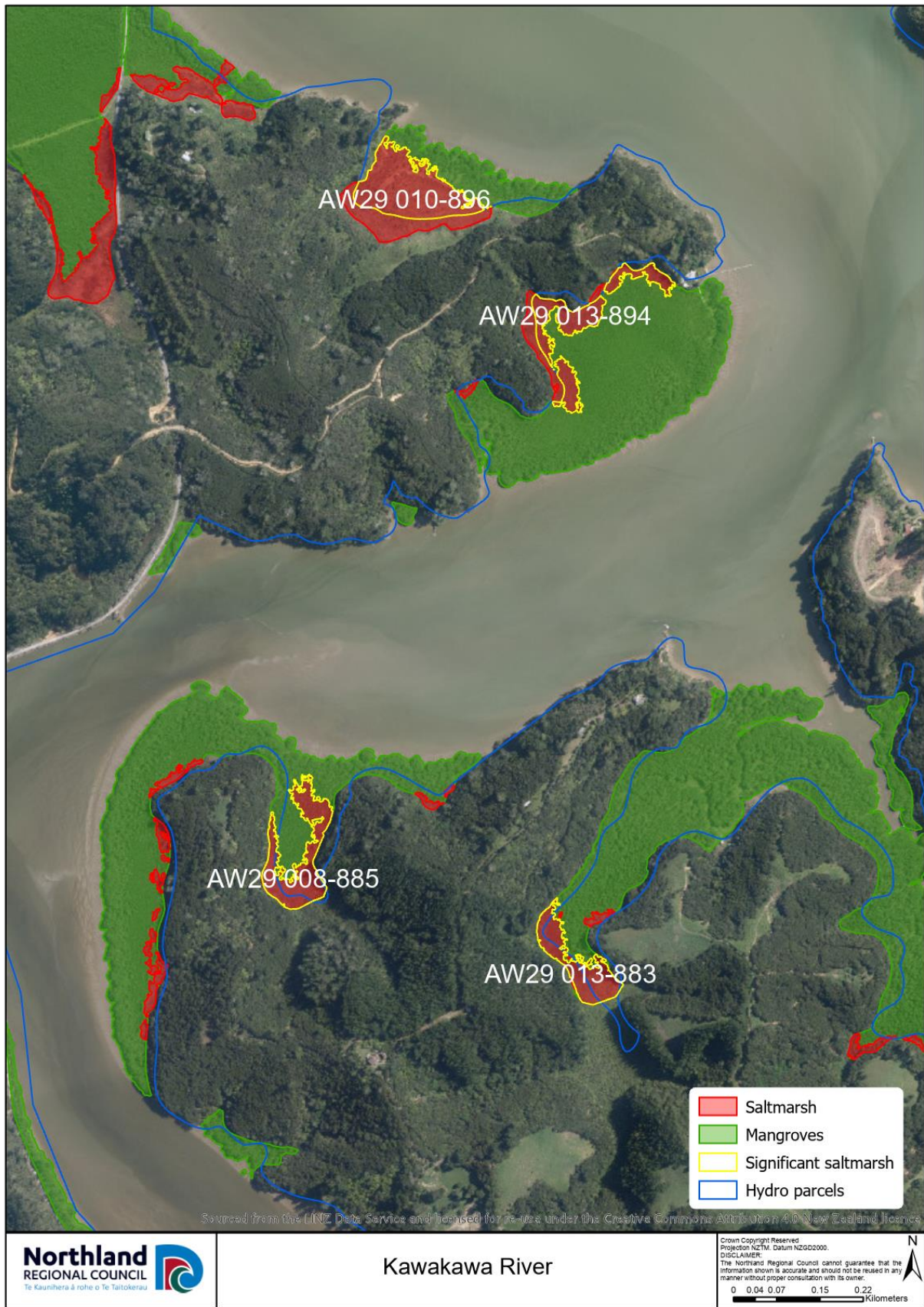


Figure 32: AW29 998-898



Lower Kawakawa River

Figure 33: Saltmarsh and mangroves in the Lower Kawakawa River



Five significant saltmarsh features were identified in the Lower Kawakawa River totalling 5.4 hectares (Figure 33 & Table 9).

Table 9: Significant saltmarsh identified in the Lower Kawakawa River

Reference	Area (m ²)
AW29 010-896	16,597
AW29 013-894	10,877
AW29 008-885	11,413
AW29 000-884	6,617
AW29 013-883	8,378
Total	53,881

Figure 34: AW29 010-896



Figure 35: AW29 013-894



Figure 36: AW29 000-884



Figure 37: AW29 008-885

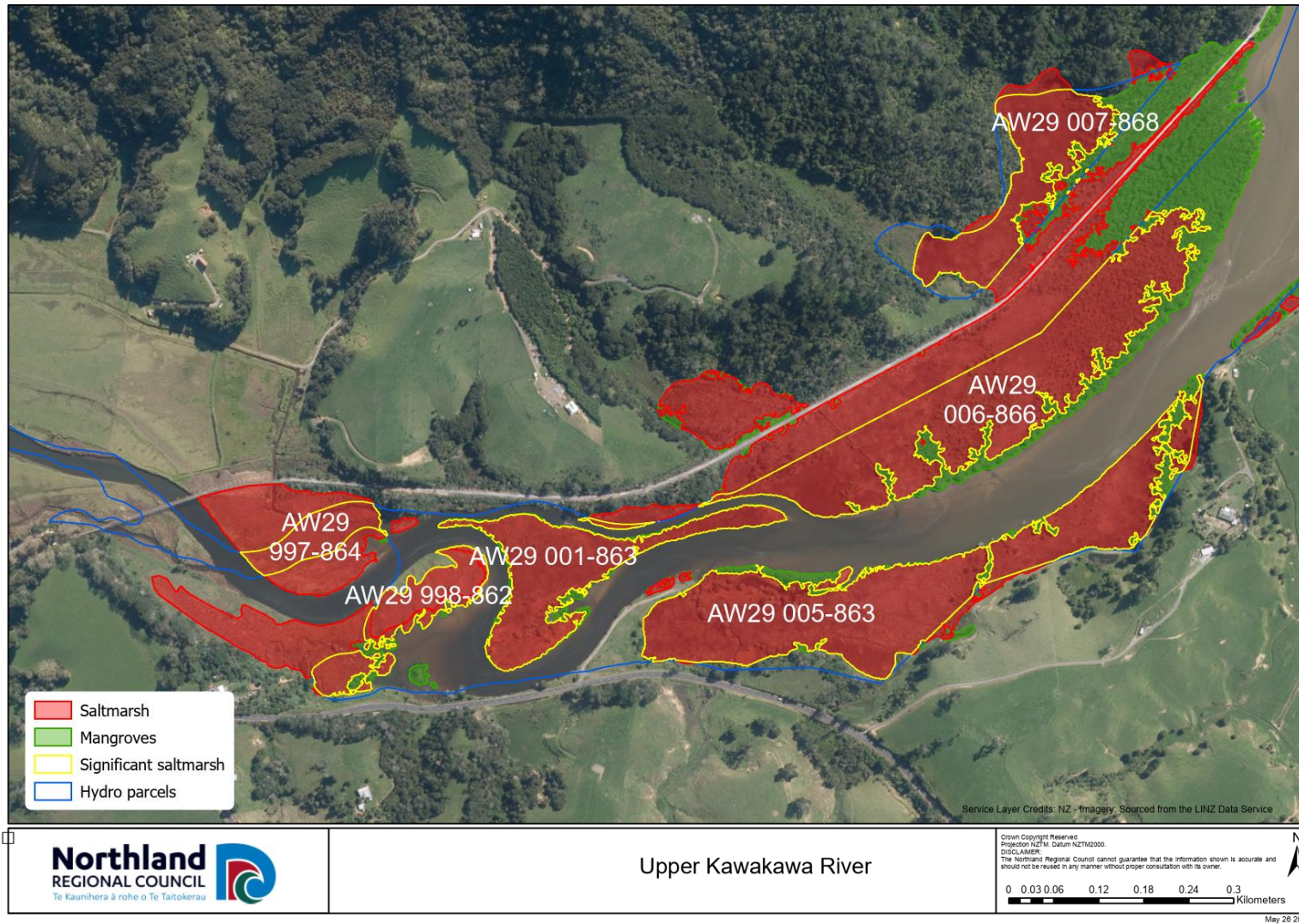


Figure 38: W29 013-883



Upper Kawakawa River

Figure 39: Saltmarsh and mangroves in the Upper Kawakawa River



Six significant saltmarsh features were identified in the Upper Kawakawa River totalling 20 hectares (Figure 39 and Table 10). The saltmarsh in the Upper Kawakawa River, are particularly extensive with two features over six hectares and another two habitats over two hectares.

Table 10: Significant saltmarsh identified in the Upper Kawakawa River

Reference	Area (m ²)
AW29 006-866	63,005
AW29 005-863	66,969
AW29 998-862	13,730
AW29 001-863	26,427
AW29 997-864	7,843
AW29 007-868	23,766
Total	201,740

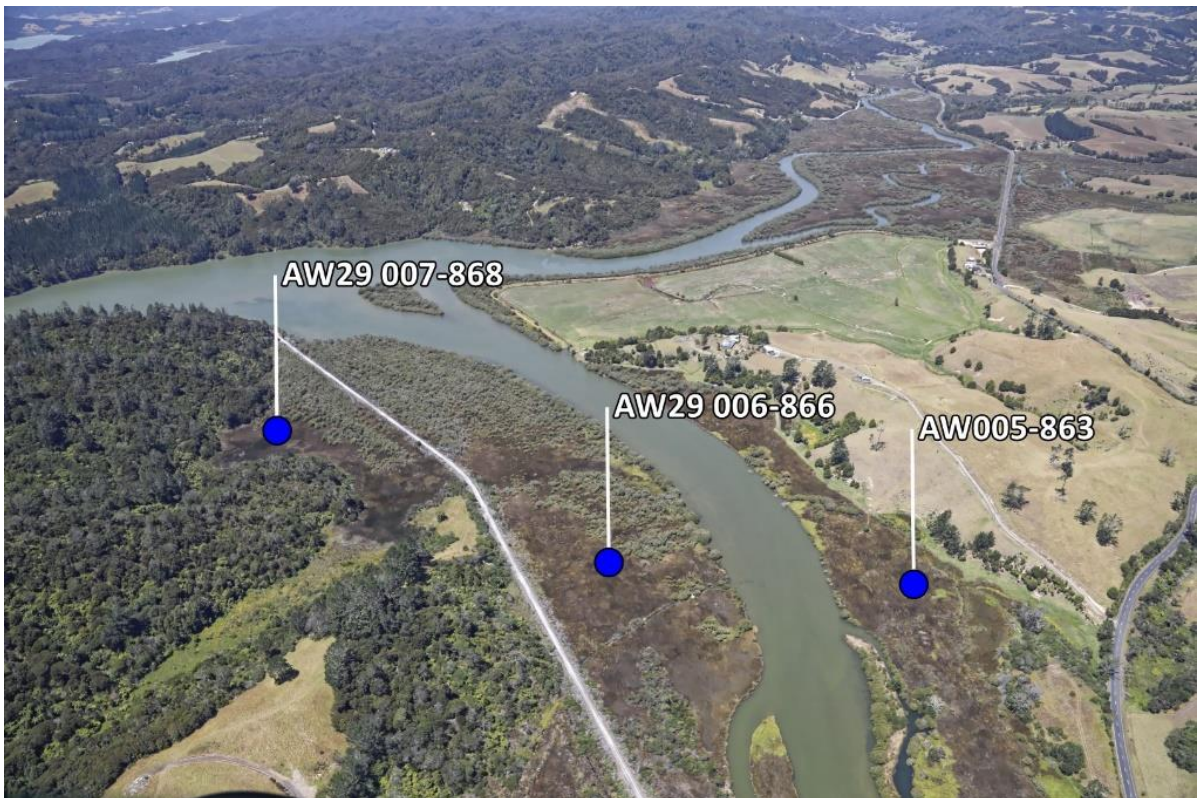
Figure 40: AW29 001-863



Figure 41: AW29 005-863, AW29 001-863, AW29 998-862

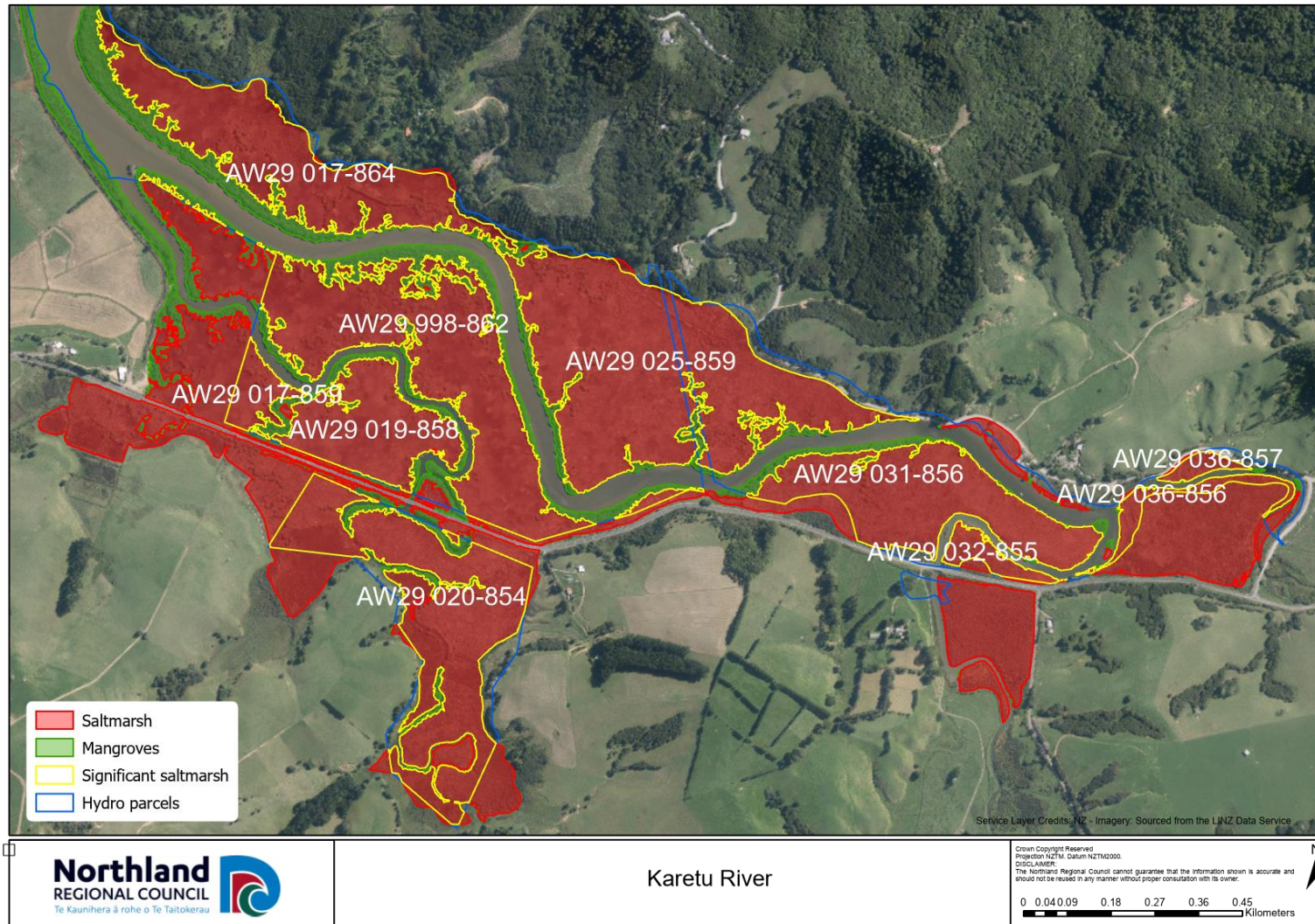


Figure 42: AW29 006-866



Kāretu River

Figure 43: Saltmarsh and mangroves in Kāretu River



Ten significant saltmarsh features were identified in the Kāretu River, including four particularly large features, all over 10 hectares (Figure 43 & Table 11). In total, the six features totalled 74 hectares.

Table 11: Significant saltmarsh identified in Kāretu River

Reference	Area (m ²)
AW29 032-855	9,868
AW29 031-856	86,402
AW29 025-859	192,548
AW29 020-854	121,723
AW29 017-859	13,611
AW29 036-856	10,645
AW29 017-864	102,721
AW29 019-858	54,588
AW29 036-857	5276
AW29 998-862	138,856
Total	736,239

Figure 44: AW29 036-856

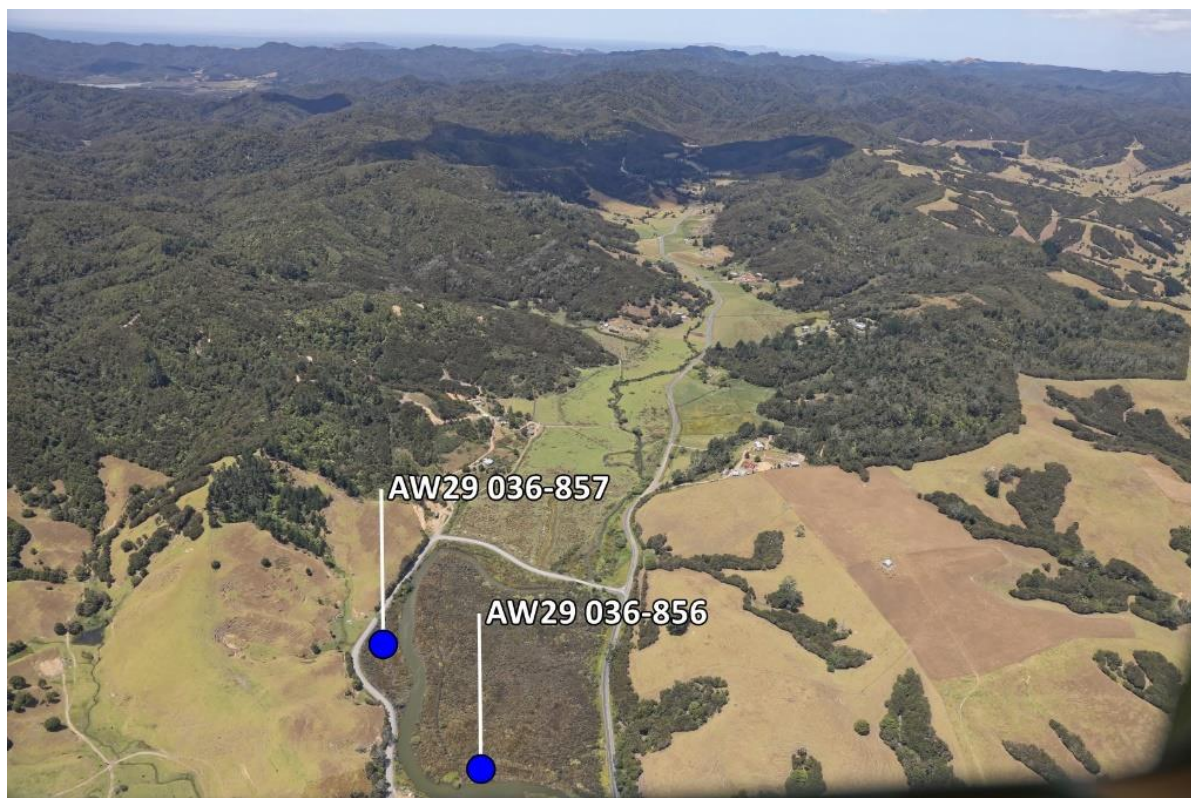


Figure 45: AW29 031-856

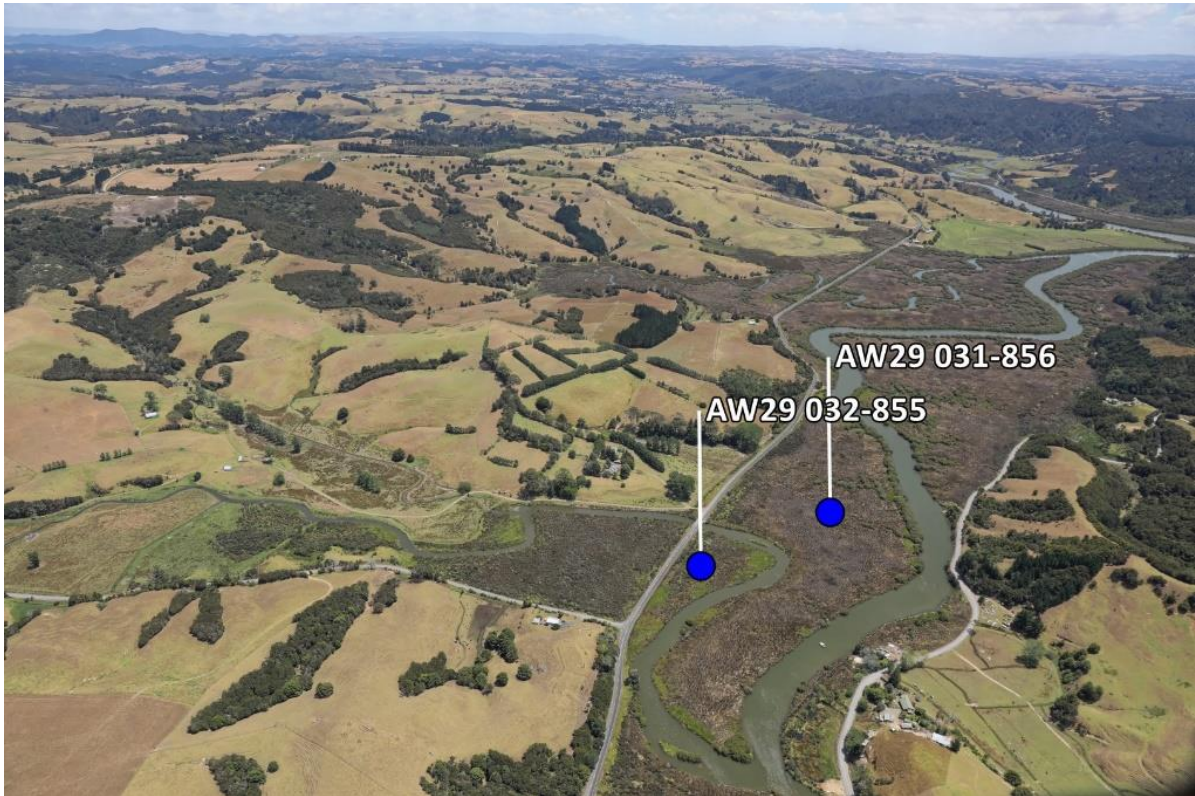


Figure 46: AW29 025-85



Figure 47: AW29 017-864, AW29 017-859, AW29 998-862, AW29 025-859

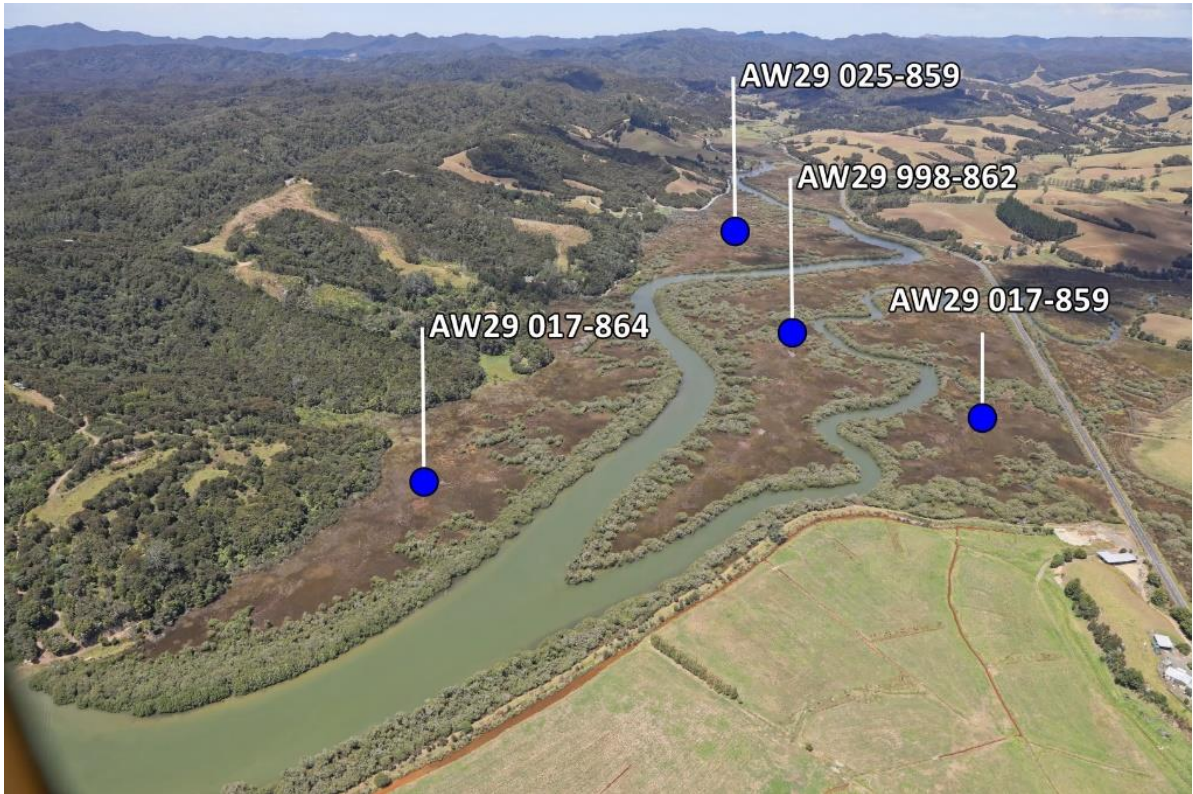
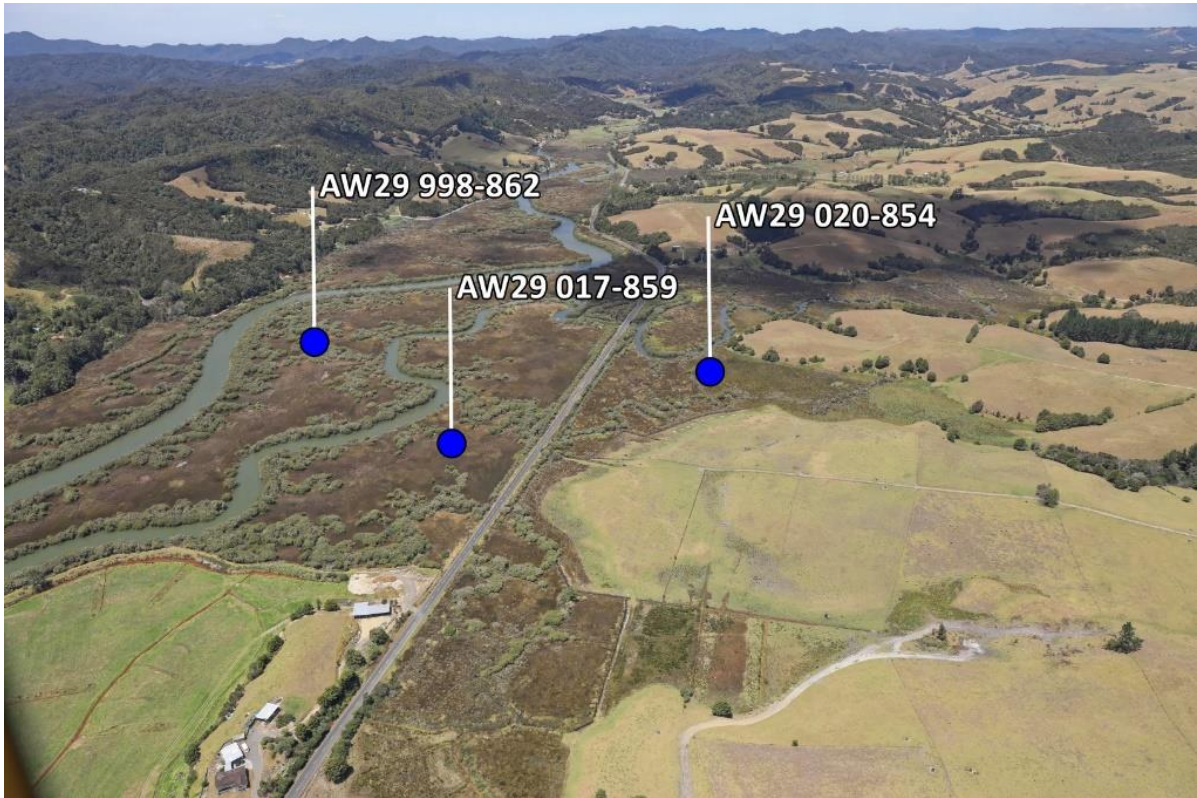


Figure 48: AW29 020-854, AW29 019-858, AW29 998-862

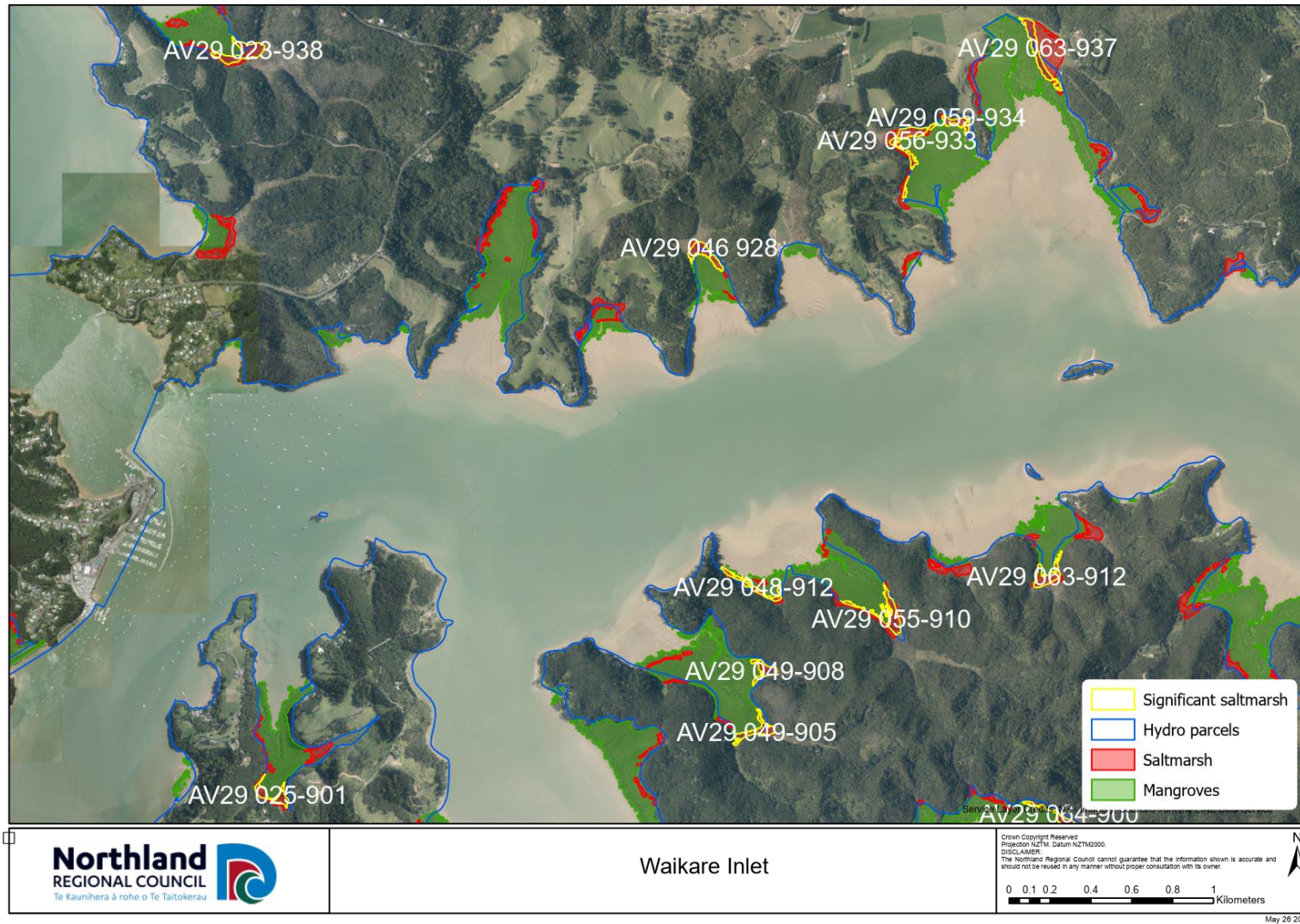


Figure 49: AW29 998-862, AW29 020-854, AW29 017-859



Mid Waikare Inlet

Figure 50: Saltmarsh and mangrove in mid Waikare Inlet



Ten significant saltmarsh features were identified in the Mid Waikare Inlet totalling 7.6 hectares (Figure 50 & Table 12).

Table 12: Significant saltmarsh identified in Mid Waikare Inlet

Reference	Area (m ²)
AV29 025-901	6,269
AV29 048-912	5,256
AV29 055-910	10,572
AV29 056-933	10,029
AV29 059-934	5,048
AV29 049-905	7,038
AV29 049-908	5,364
AV29 063-912	7,727
AV29 046 928	8,028
AV29 063-937	10,604
Total	75,933

Figure 51: AV29 025-901



Figure 52: AV29 048-912



Figure 53: AV29 056-933, AV29 059-934



Figure 54: AV29 063-937



Figure 55: AV29 049-905



Figure 56: AV29 049-908



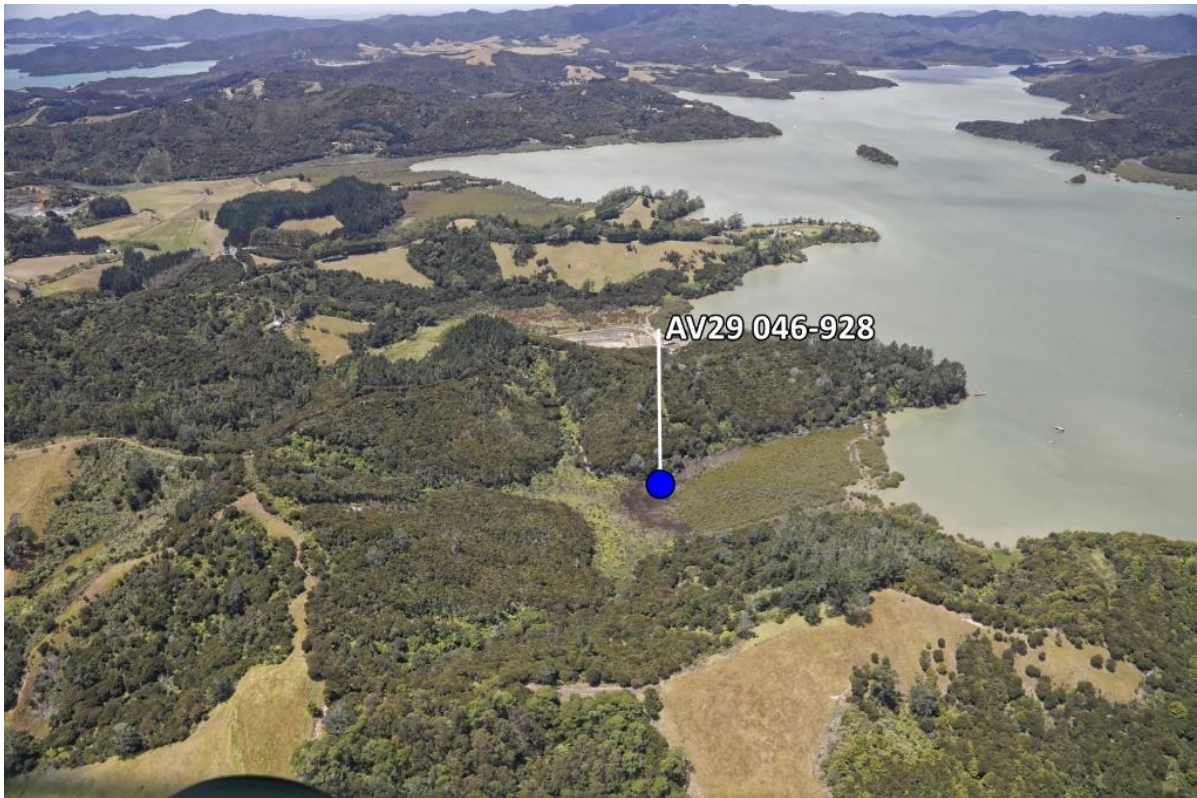
Figure 57: AV29 055-910



Figure 58: AV29 063-912

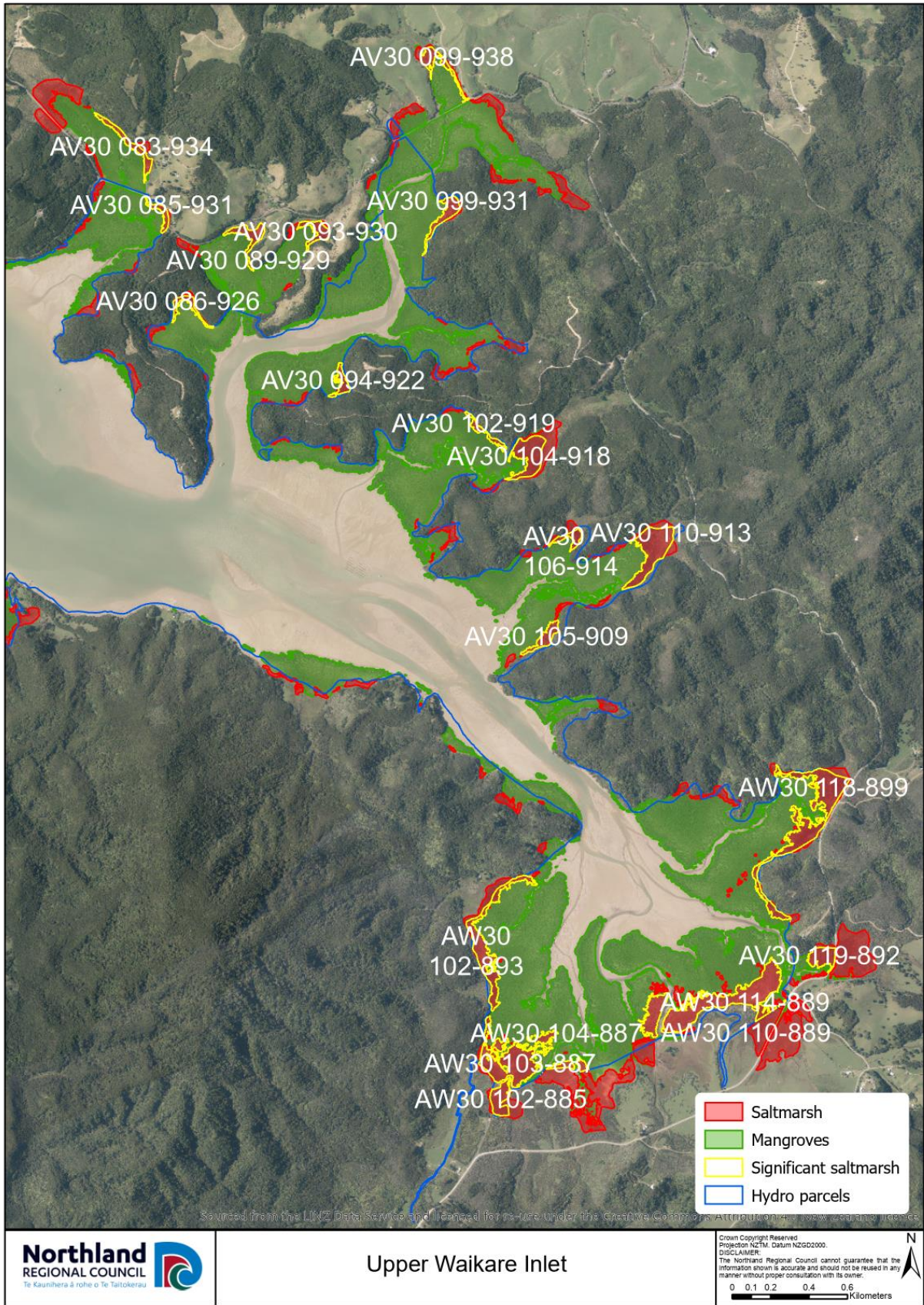


Figure 59: AV29 046-928



Upper Waikare Inlet

Figure 60: Saltmarsh and mangrove habitat in the upper Waikare Inlet



Twenty-two significant saltmarsh features were identified in the Upper Waikare Inlet, totalling 41.5 hectares (Figure 60 & Table 13).

Table 13: Significant saltmarsh identified in Upper Waikare Inlet

Reference	Area (m ²)	Reference	Area (m ²)
AW30 118-899	64,630	AV30 099-931	11,534
AW30 110-889	16,806	AV30 094-922	6,725
AW30 102-885	12,930	AV30 085-931	5,229
AW30 106-886	6,211	AV30 086-926	5,997
AW30 103-887	46,515	AW30 114-889	68,134
AW30 102-893	32,752	AV30 119-892	11,948
AW30 104-887	6,183	AV30 099-938	10,076
AV30 102-919	5,374	AV30 089-929	11,404
AV30 105-909	9,425	AV30 093-930	9,109
AV30 110-913	33,260	AV30 083-934	10,904
AV30 106-914	5,929		
AV30 104-918	24,076		
		Total	415,153

Figure 61: AV30 083-934



Figure 62: AV30 085-931



Figure 63: AV30 086-926



Figure 64: AV30 089-929



Figure 65: AV30 093-930



Figure 66: AV30 099-938



Figure 67: AV30 099-931



Figure 68: AV30 094-922



Figure 69: AV30 104-919, AV30 104-918



Figure 70: AV30 104-918



Figure 71: AV30 106-914



Figure 72: AV30 106-914, AV30 110-913

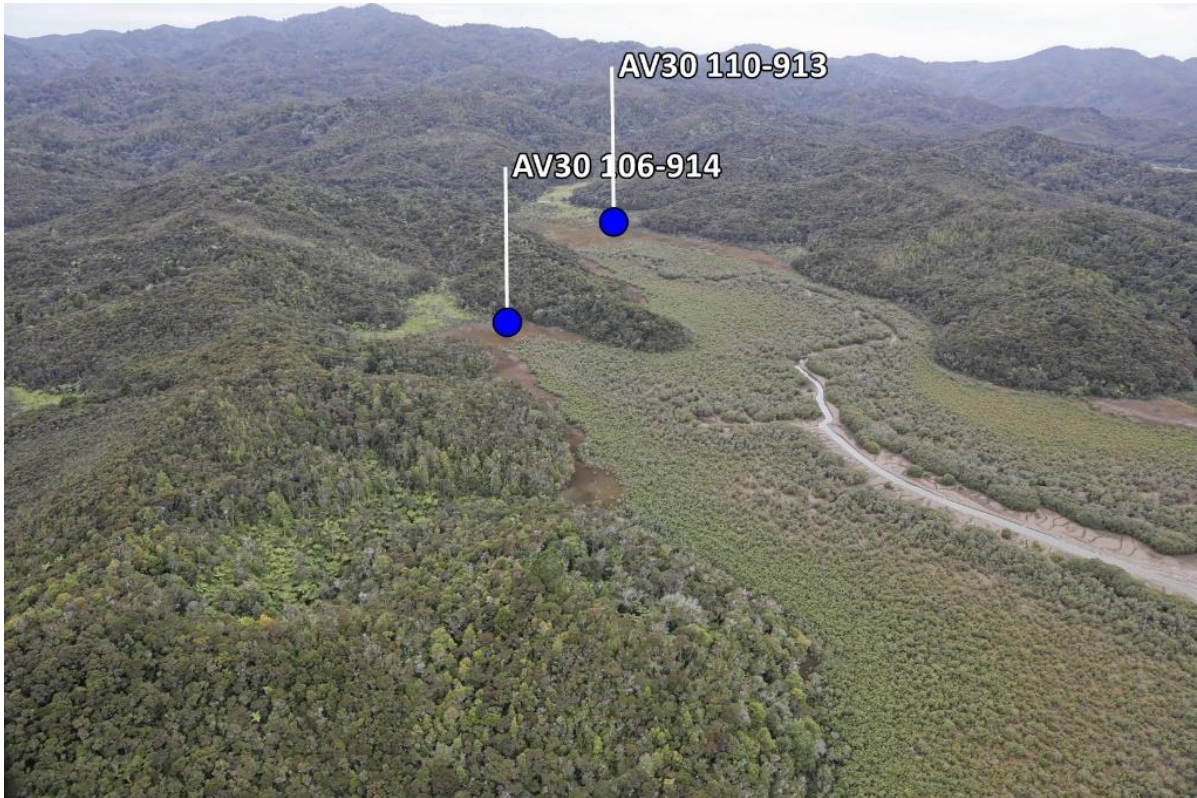


Figure 73: AV30 105-909, AV30 110-913

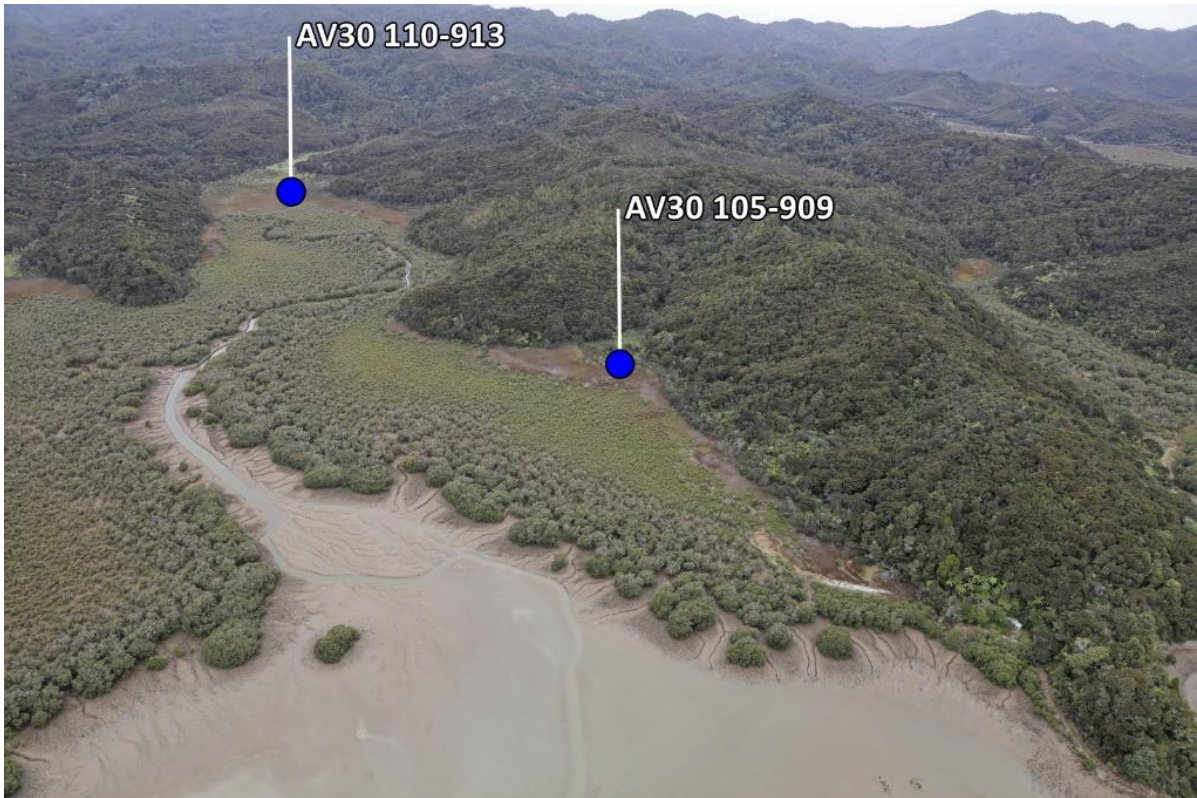


Figure 74: AW30 118-889



Figure 75: AW30 118-889



Figure 76: AW30 114-889



Figure 77: AW30 114-889, AW30 110-889, AW30 106-886



Figure 78: AW30 103-887, AW30 102-885, AW30 104-887, AW30 106-886

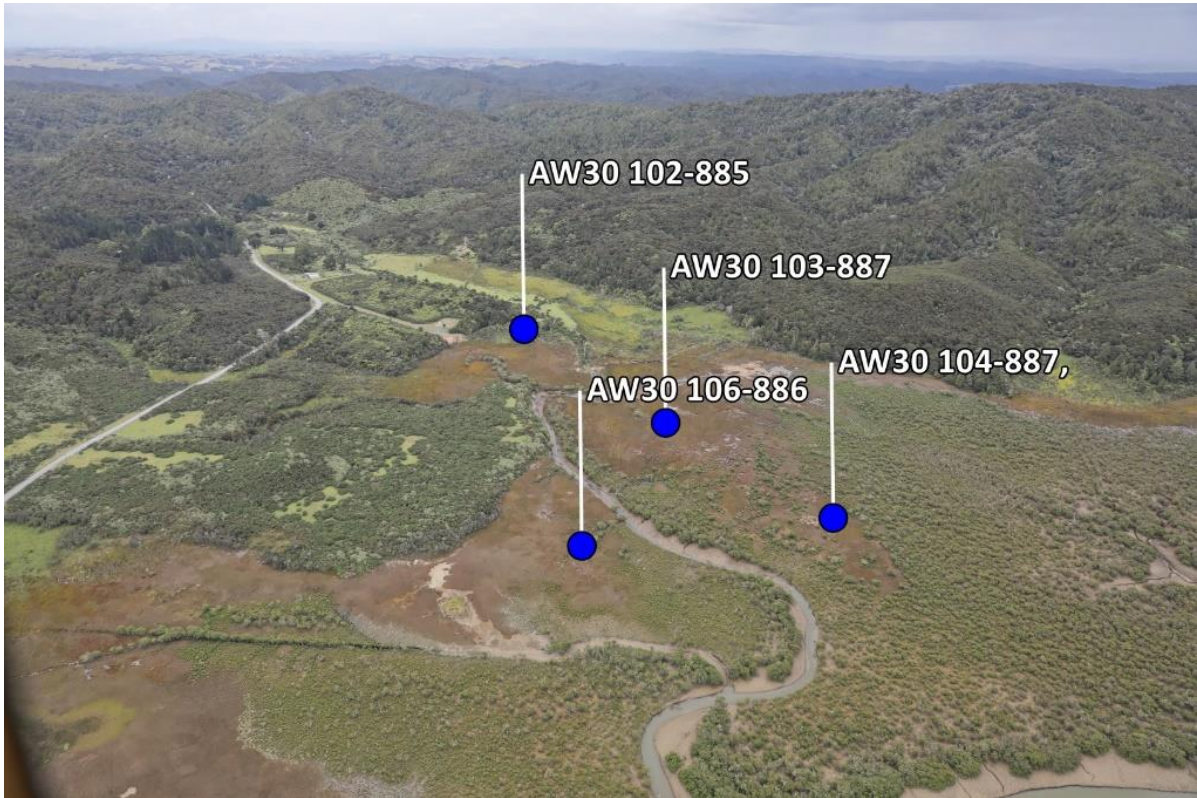
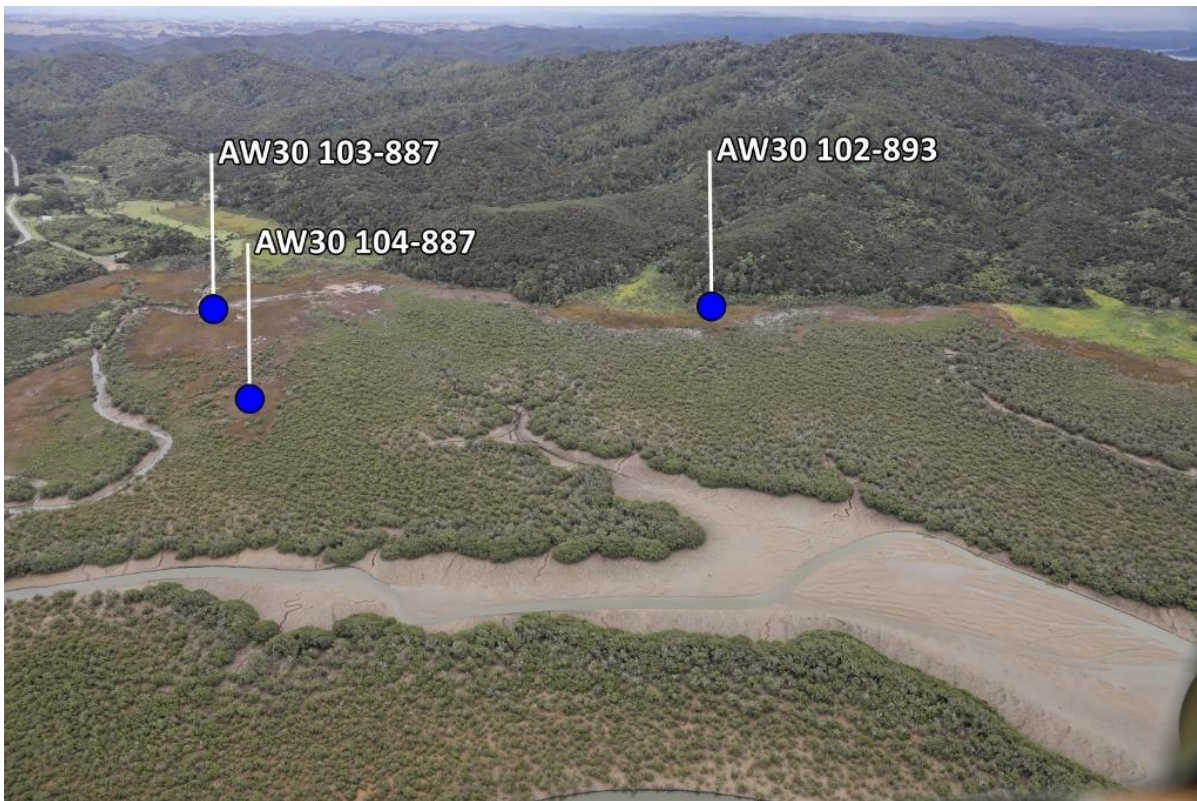
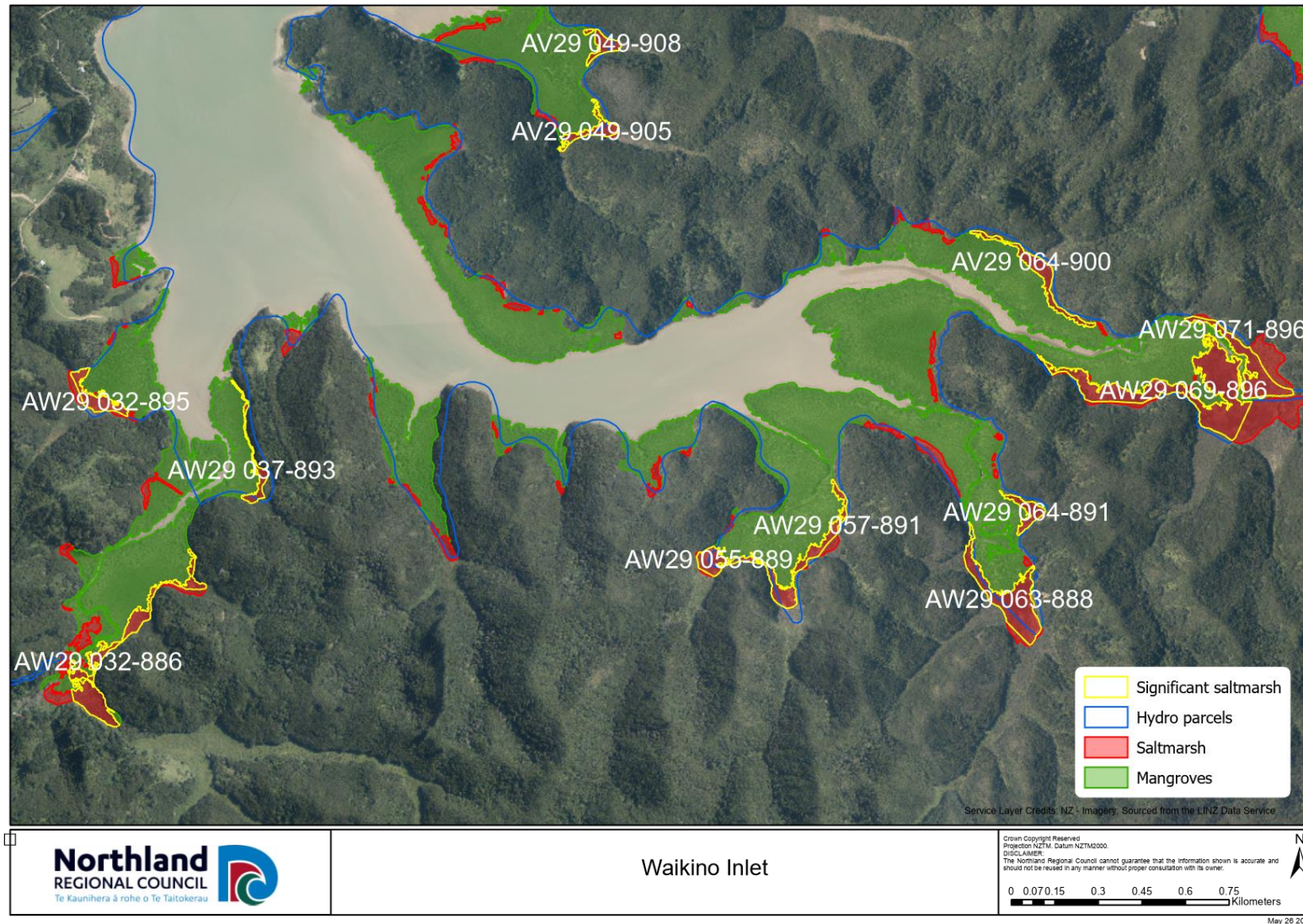


Figure 79: AW30 103-887, AW30 102-885, AW30 104-887



Waikino Inlet

Figure 80: Saltmarsh and mangrove habitat in Waikino Inlet



Ten significant saltmarsh features were identified in the Waikino Inlet (Figure 80. & Table 13). In total, the ten features totalled 19 hectares.

Table 14: Significant saltmarsh identified in Waikino Inlet

Reference	Area (m ²)
AW29 063-888	27,541
AV29 064-900	12,038
AW29 057-891	8,450
AW29 032-895	9,310
AW29 064-891	5,992
AW29 071-896	18,731
AW29 032-886	27,675
AW29 037-893	5,651
AW29 055-889	15,548
AW29 069-896	58,667
Total	189,603

Figure 81: AW29 037-893



Figure 82: AW29 032-886



Figure 83: AW29 071-896, AW29 069-896

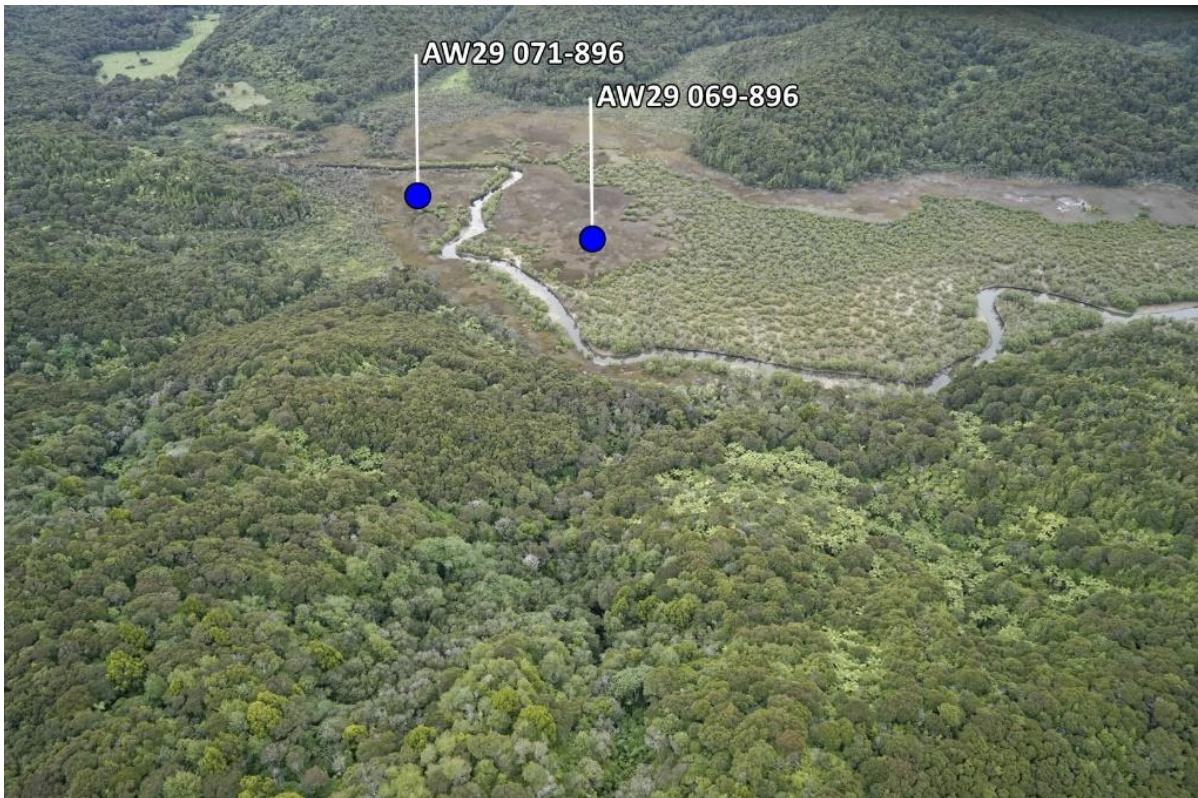


Figure 84: AV29 64-900, AW29 069-896, AW29 071-896



Figure 85: AW29 063-888, AW29 064-891



Figure 86: AW29 055-889, AW29 057-891

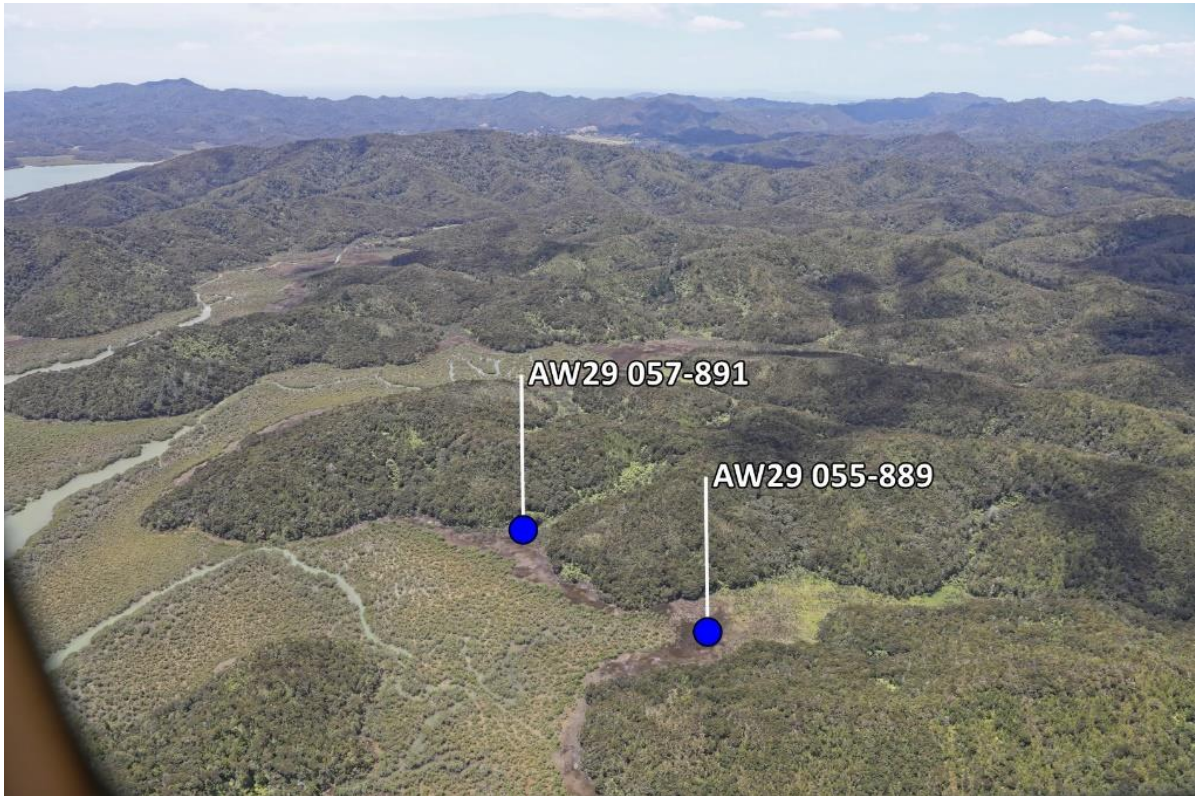


Figure 87: AW29 032-895



Northland Regional Council

P 0800 002 004

E info@nrc.govt.nz

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