

26 August 2022

Our ref: 773-WLGGE225406AE-RevB

Upper Hutt City Council
838-842 Fergusson Drive
Upper Hutt Central
Upper Hutt 5018

Attention: Nick Tait

Dear Nick,

Mangaroa Peatlands Extent - Mapping Update

Introduction

Upper Hutt City Council (UHCC) requested Tetra Tech Coffey (NZ) Ltd refine the southern extent of the Mangaroa Peatlands in the area around Katherine Mansfield Drive, Upper Hutt as outlined in Tetra Tech Coffey's proposal "Mangaroa Peatlands Extent – KMD" dated 18 November 2021.

Mangaroa Peatland area in the Upper Mangaroa Valley has been identified as a geotechnical hazard in previous reporting and mapping by Tetra Tech Coffey as part of the input into Plan Change 47 – Natural Hazards (PC47) and Plan Change 50 - Rural and Residential Chapters Review (PC50). More details about this can be found in the following report:

- "Upper Hutt City Council Residential & Rural Chapter Review" Coffey Services NZ Ltd, reference 773-WLGGE225406AB rev 6 dated 12 October 2020

The extent of this peat hazard overlay has been determined based on the area mapped as peat in the Geology of Wellington 1:50 000 Map¹. Katherine Mansfield Drive runs near the south-eastern boundary of this peat overlay, crossing some mapped peat areas. Some of the rural-lifestyle properties in the area overlap the peat overlay area. During the consultation process, some residents have provided submissions relating to the location of the Mangaroa Peat Overlay on their property. Discussions with Upper Hutt City Council (UHCC) have determined that a site walkover with access to relevant properties be undertaken to refine the southern boundary of the peatland extent.

Methodology

The following steps were undertaken:

1. Site walkover on 21 December 2021, 25 January 2022 and 26 July 2022 to conduct geological and geomorphological mapping to refine the southern boundary of the peatland where possible.
2. Review of available data including any available geotechnical reports as well as geology, contour and soil maps.

¹Begg, J.G.; Mazengarb, C. 1996. Geology of the Wellington area: sheets R27, R28, and part Q27, scale 1:50,000. Institute of Geological & Nuclear Sciences geological map 22. Institute of Geological & Nuclear Sciences, Lower Hutt. 128 p. + 1 sheet.

The peatland boundary was only adjusted where there was clear evidence that areas currently mapped as peat were likely not peat. The following key criteria was the basis of the adjustment of the peat extent:

- Exposed ground: Where the upper soil profile (below any topsoil) was able to be viewed (for example via cuttings or pits), this was used to confirm the presence or otherwise of peat at that location.
- Slope angle: The peat area is characterised by flat topography, with some gentle slopes around the margins. Therefore, areas that were moderate to steep were generally excluded from the peat extent.
- Discussions with property owners: Where there was information provided about soil behaviour or conditions from property owners experience, this was used to refine the peat extent boundary.
- Soil maps: The existing peat extent and site observations were compared with the soil maps² (ref). In particular the NZSC Soil Order where those soils mapped as Brown or Ultic soil were generally considered outside of the peat extent and soil drainage where moderately and well drained soils were generally considered outside of the peat extent.

The following table summarises the properties where the peat boundary has been adjusted.

Table 1: Properties Affected by Peat Hazard Extent Adjustments

Katherine Mansfield Drive		Janet Frame Way		Ashton Warner Way	
Physical Address	Legal Description	Physical Address	Legal Description	Physical Address	Legal Description
-	Lot 4 DP 381858	4a	Lot 20 DP 78794	4	Lot 5 DP 56754
-	Pt Lot 1 DP 24378	4b	Lot 19 DP 78794	12	Lot 6 DP 56754
50a	Lot 1 DP 72375	5a	Lot 14 DP 78794	16	Lot 7 DP 56754
50b	Lot 2 DP 72375	5b	Lot 17 DP 78794		
50e	Lot 1 DP 89007	5c	Lot 16 DP 78794		
50f	Lot 6 DP 72375	6	Lot 18 DP 78794		
52	Lot 7 DP 72375				
74	Lot 2 DP 409459				
76	Lot 1 DP 385148				
83	Lot 46 DP 56753				
91	Lot 45 DP 56753				
93	Pt Lot 44 DP 56753				
110	Lot 1 DP 508688				
115	Lot 43 DP 56754				
122	Lot 4 DP 56754				
155a	Lot 27 DP 75528				
156	Lot 12 DP 56754				
157	Lot 41 DP 56756				
159	Lot 40 DP 56756				
160	Lot 13 DP 56754				
165a	Lot 39 DP 56756				

² S-Map Online Manaaki Whenua Landcare Research <https://smap.landcareresearch.co.nz/maps-and-tools/app/> accessed February 2022

165c	Lot 38 DP 56756				
174	Lot 14 DP 56754				
176b	Lot 15 DP 56754				
191	Lot 34 DP 56756				
191a	Lot 33 DP 56756				
193	Lot 32 DP 56756				
199	Lot 31 DP 56757				
285	Lot 2 DP 557634				
321	Lot 1 DP 534395				

Future Work

We assess that the revised peatland extent map is sufficient for an area-wide assessment. Site specific intrusive investigation could be undertaken for proposed dwellings within the mapped peatland area to confirm the presence and/or extent of peat and determine the geotechnical hazard and mitigation measures on a case-by-case basis.

If more information about the peat hazard is required, an InSAR (Interferometric Synthetic Aperture Radar) assessment could be undertaken. InSAR is a remote sensing technique which would provide information about the extent and amount of settlement detected in the peat area. This technique assesses ground deformation over time which enables settlement to be detected from radar reflected surfaces such as residential or agricultural roof areas, roadways, and/or other repeatable ground surfaces. This could be undertaken using publicly available data having a resolution of 30m ground cells dating back to 2014. It is noted that the publicly available data would allow understanding of deformation of reflected surfaces in the peat area. To refine the mapped extent and increase the accuracy of the deformation over time using InSAR, commercially available data having a resolution of 10m ground cells could be considered for analysis.

If further physical testing data is required, an intrusive investigation comprising cone penetrometer testing (CPTs) would be the method recommended. This would provide individual point data that would further inform the peat extent and thickness.

For and on behalf of Tetra Tech Coffey (NZ) Ltd

Prepared by



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Reviewed by



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Principal Engineering Geologist/Geotechnical Engineer

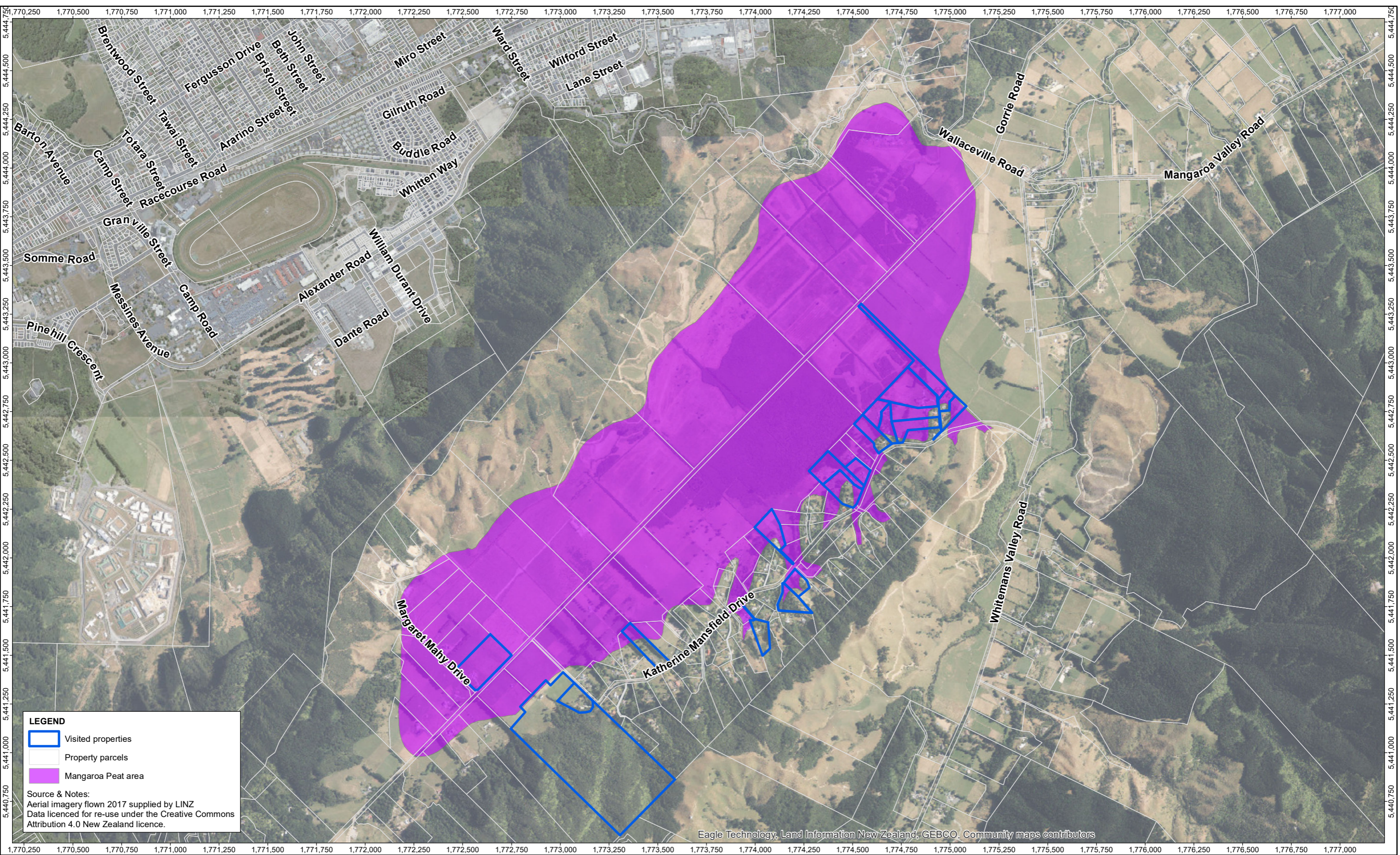
Cc James Beban (Urban Edge Planning)

Attachments

Figure 1 – Geotechnical Hazard – Peat (pdf and GIS file)

Figure 2 – Changes to peat extent

Please note: This report must be read in the context of the attached limitations.




LEGEND

- Visited properties
- Property parcels
- Mangaroa Peat area

Source & Notes:
 Aerial imagery flown 2017 supplied by LINZ
 Data licenced for re-use under the Creative Commons Attribution 4.0 New Zealand licence.

Eagle Technology, Land Information New Zealand, GEBCO, Community maps contributors

no.	description	drawn	approved	date
B	PEAT EXTENT UPDATED	RZ	SM	19.08.22
A	ORIGINAL ISSUE	RZ	SM	12.02.22



0 200 400 600 800
SCALE 1:18,000 (A3) METRES

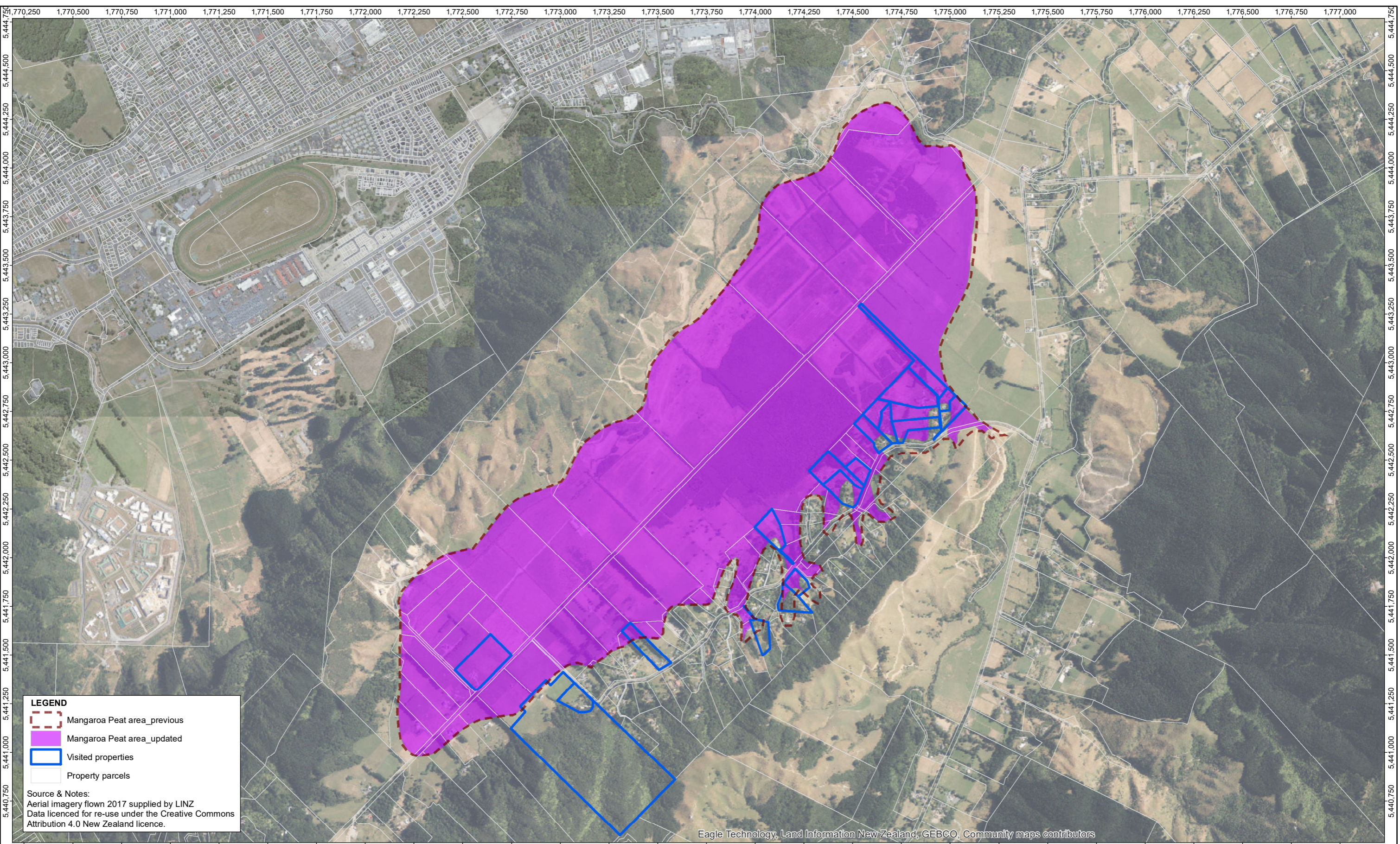
Projection: NZGD 2000 New Zealand Transverse Mercator

drawn	RZ
approved	SM
date	19.08.2022
scale	AS SHOWN
original size	A3



client:	UPPER HUTT CITY COUNCIL		
project:	MANGAROA PEAT EXTENT		
title:	GEOTECHNICAL HAZARD - PEAT		
project no:	773-WLGGE225406AE	figure no:	01
rev:	B		

MXD ref: 225406AE_01_CS0001_1



LEGEND


- Mangaroa Peat area_previous
- Mangaroa Peat area_updated
- Visited properties
- Property parcels

Source & Notes:
 Aerial imagery flown 2017 supplied by LINZ
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 Attribution 4.0 New Zealand licence.

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date	19.08.2022
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original size	A3



client:	UPPER HUTT CITY COUNCIL		
project:	MANGAROA PEAT EXTENT		
title:	CHANGES TO PEAT HAZARD EXTENT		
project no:	773-WLGGE225406AE	figure no:	02
rev:	B		

MXD ref: 225406AE_01_CIS002_1