

21 July 2023

ABIB (Oamaru) Ltd

Attn: Hari De Alwis

hari@goodland.co.nz

Dear Hari

RE: WETLAND EARTHWORKS ASSESSMENT (REVISION B) – 2127 KAIPARA COAST HIGHWAY, KAKANUI

The proposed development of 2127 Kaipara Coast Highway involves cut to fill earthworks to form new access roads to serve a proposed subdivision. The proposed earthworks have been reported on in the infrastructure report dated July 2023.

The National Environmental Standards for Freshwater applies to the undertaking of earthworks within 10m of a natural wetland and the diversion of water within 100m of a natural wetland. A non-complying resource consent is required. This report is an assessment of the potential environmental effects on the wetlands due to the proposed earthworks and the mitigation measures to protect these wetlands.

21 natural wetlands have been identified within 100m of the proposed earthworks. 6 of these wetlands (i.e. Wetlands 1, 3, 5, 7, 14 and 22) are within 10m of the proposed earthworks, only Wetlands 1 and 22 will have minor earthwork within the 10m buffer area. An engineering plan showing the proposed earthworks in relation to the wetlands is attached to this report for reference.

Our assessment of each wetland, potential effects and mitigation measures proposed is contained in the table below.

NO.	LOCATION	ASSESSMENT OF EFFECTS
1	Immediately downstream of the entrance off SH16 and within 10m of earthworks	This wetland is within a defined gully approximately 4m below the earthworks. Earthworks are restricted to forming a road with minimal cut and fill depths. The crossing of the stream will be culverted with vertical walls on each side to minimize disturbance. Upstream flows will be maintained to the wetland through the culvert. The access road has open table drains on each side for water treatment and conveyance. Flows intercepted by the table drains will be directed into the wetland to ensure that the hydrology of the wetland is not compromised.



		<p>Sediment controls will consist of a decanting earthbund, dirty water runoff drains, cleanwater diversions and silt fences all constructed to GD-05 standards to ensure the protection of the wetland during the earthworks.</p> <p>Earthwork cutting within 10m offset boundary of the wetland has been limited to a maximum of 1m depth from existing surface over an area of approximately 15 m². The finished level after cutting will be about 5m higher than the elevation of Wetland 1. The impact is considered less than minor, given the flow regime into the wetland is maintained as per its pre-development condition.</p>
2	Downstream of proposed earthworks	Minor earthworks are proposed to widen out an existing farm track. Runoff regime will be maintained by ensuring table drain turnouts occur to the existing grassed paddocks upstream of the wetlands.
3	Immediately upstream of earthworks and within 10m	This wetland was formed upstream of the existing farm track through a perched farm culvert. The wetland will be protected by maintaining the existing culvert in its current location and ensuring sediment controls are installed while the works to form the access way are completed.
4	Downstream of proposed earthworks	These are large wetland areas on the Kaipara flats below the site. They are approx. 10m below the site at a distance averaging 30m away. Sediment controls will ensure that these are protected. Groundwater regimes will not be affected by the works as the cut to fill is minor.
5	Larger wetland with part within 10m of the earthworks. Upstream of work.	Part of this wetland was formed upstream of the existing farm track through a perched farm culvert. The wetland will be protected by maintaining the existing culvert in its current location and ensuring sediment controls are installed while the works to form the access way are completed.
6	Downstream of proposed earthworks	These are large wetland areas on the Kaipara flats below the site. They are approx. 10m below the site at a distance averaging 30m away. Sediment controls will ensure that these are protected. Groundwater regimes will not be affected by the works as the cut to fill is minor.
7	Larger wetland with part within 10m of the earthworks. Downstream and beside earthworks.	Minor earthworks are proposed to widen out existing farm tracks. Runoff regime will be maintained by ensuring table drain turnouts occur to the existing grassed paddocks upstream of the wetland. Sediment controls to GD-05 standard will ensure that the wetland is protected.
8	Downstream of proposed earthworks	Earthworks are proposed upstream of the wetland to widen out the existing farm track. Runoff regime will be maintained by ensuring table drain

		turnouts occur to the existing grassed paddocks upstream of the wetland. Sediment controls to GD-05 standard will ensure that the wetland is protected.
9 to 12	Wetlands downstream of earthworks within a gullies	These wetlands are in a defined gully well below the proposed earthworks. The earthworks are minor in nature to form new access roads on existing ridges. Runoff regimes will be maintained by ensuring table drain turnouts occur frequently and to the existing grassed paddocks upstream of the wetlands.
13	Upstream of entrance road	These wetlands are upstream of the proposed earthworks. The proposed earthworks are far enough away and downstream so that they will not affect the wetlands.
14	Immediately upstream of the entrance off SH16 and within 10m of earthworks	This wetland is immediately upstream and within the gully. A culvert is proposed to enable the formation of the access road. It is located immediately upstream and will have an invert level at the same level as the existing ground so that water is neither impounded or drained from the wetland. Sediment controls will be installed to ensure no sediments can migrate upstream into the wetland.
15	Downstream of proposed earthworks	Minor earthworks are proposed to widen out an existing farm track. Runoff regime will be maintained by ensuring table drain turnouts occur to the existing grassed paddocks upstream of the wetlands.
16	At approx. 100m from the proposed earthworks	This wetland is approx. 100m from access road construction both upstream and downstream of works. Wetland 16 feeds Wetland 3 within a defined shallow gully. The works are well away from this wetland and are only minor to enable the widening of the existing farm track.
17	Downstream of proposed earthworks	These are large wetland areas on the Kaipara flats below the site. They are approx. 10m below the site at a distance averaging 30m away. Sediment controls will ensure that these are protected. Groundwater regimes will not be affected by the works as the cut to fill is minor.
18	Approx 50m upstream of earthworks	This wetland is approx. 50m upstream of the access road. The works are well away from this wetland and are only minor to enable the widening of the existing farm track.
19	Downstream of proposed earthworks	These are large wetland areas on the Kaipara flats below the site. They are approx. 10m below the site at a distance averaging 160m away. Sediment controls will ensure that these are protected. Groundwater regimes will not be affected by the works as the cut to fill is minor.
20	Wetlands downstream of	These wetlands are in a defined gully well below the proposed earthworks. The earthworks are

	earthworks within a gullies	minor in nature to form new access roads on existing ridges. Runoff regimes will be maintained by ensuring table drain turnouts occur frequently and to the existing grassed paddocks upstream of the wetlands.
21	Wetland further downstream of earthworks out of 100m	Minor earthworks are proposed upstream to widen out an existing farm track. Runoff regime will be maintained by ensuring table drain turnouts occur to the existing grassed paddocks upstream of the wetlands.
22	Wetland beside earthworks with part within 10m.	Earthworks are proposed beside the wetland to form the end of an access way. Runoff regime will be maintained by ensuring table drain turnouts occur to the existing wetland. Sediment controls to GD-05 standard will ensure that the wetland is protected. Earthwork cutting within 10m offset boundary of the wetland has been limited to a maximum of 0.5 m depth from existing surface over an area of approximately 10 m ² . The finished level after cutting will be at a similar elevation to Wetland 22 at RL 42 m. The impact is considered less than minor, given the flow regime into the wetland is well maintained as per its pre-development condition.
23	Wetlands downstream of earthworks within a gullies	These wetlands are in a defined gully well below the proposed earthworks. The earthworks are minor in nature to form new access roads on existing ridges. Runoff regimes will be maintained by ensuring table drain turnouts occur frequently and to the existing grassed paddocks upstream of the wetlands.
24	Wetland further downstream of earthworks but within 100m.	Wetland is in a defined gully. Minor earthworks are proposed upstream to widen out an existing farm track. Runoff regime will be maintained by ensuring table drain turnouts occur to the existing grassed paddocks upstream of the wetlands.

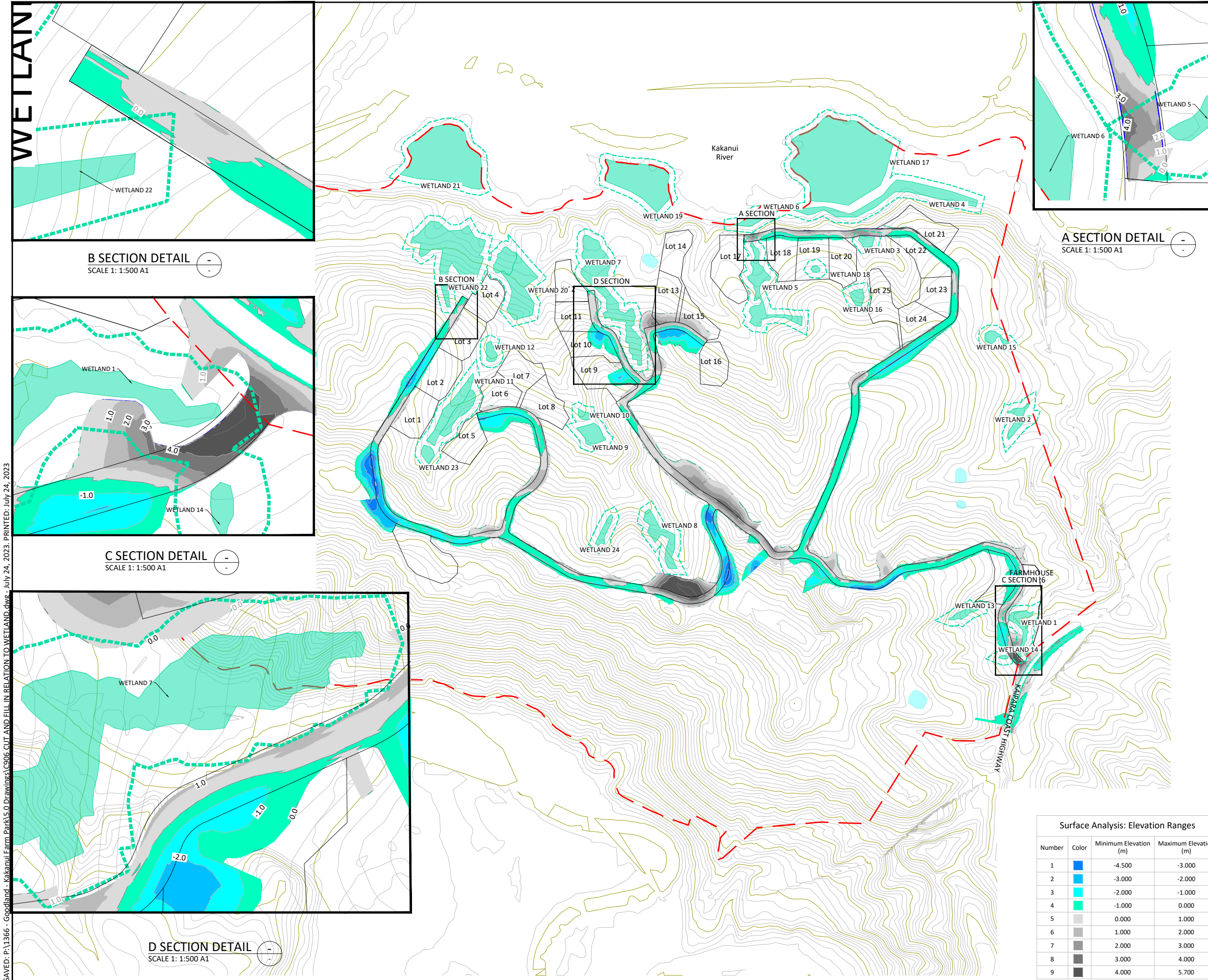
As outlined in the assessment above the proposed earthworks are minor and largely involve the widening of existing farm tracks and forming new table drains for conveying and controlling stormwater runoff . By ensuring that the works are properly controlled with appropriate sediment controls complying with Council GD-05 standards, and ensuring that the table drains have frequent turnouts so that the hydraulic regime is maintained then there will be no effect on the existing wetlands.

For further details on comparison of wetland hydrological in both pre and post-development, please refer to the Wetland Hydrological Assessment Memo.

Yours sincerely

CRANG CIVIL

Zibo Yang



LEGEND

- SITE BOUNDARY
- EARTHWORKS EXTENT
- PROPOSED LOT AND ROAD BOUNDARIES
- PROPOSED RETAINING WALL
- █ EXISTING NATURAL WETLAND
- █ EXISTING MAN-MADE WETLAND
- 10m SETBACK FROM NATURAL WETLAND



A SECTION DETAIL
SCALE 1: 1:500 A1

B SECTION DETAIL
SCALE 1: 1:500 A1

C SECTION DETAIL
SCALE 1: 1:500 A1

D SECTION DETAIL
SCALE 1: 1:500 A1

CONSENT ISSUE

REVISION	CHANGES	CHECKED	DATE
A	ORIGINAL	ZY	21/07/23

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CLIENT
ABIB (OAMARU) LTD

PROJECT
GOODLAND COASTAL FARM

TITLE
CUT AND FILL IN RELATION TO WETLAND

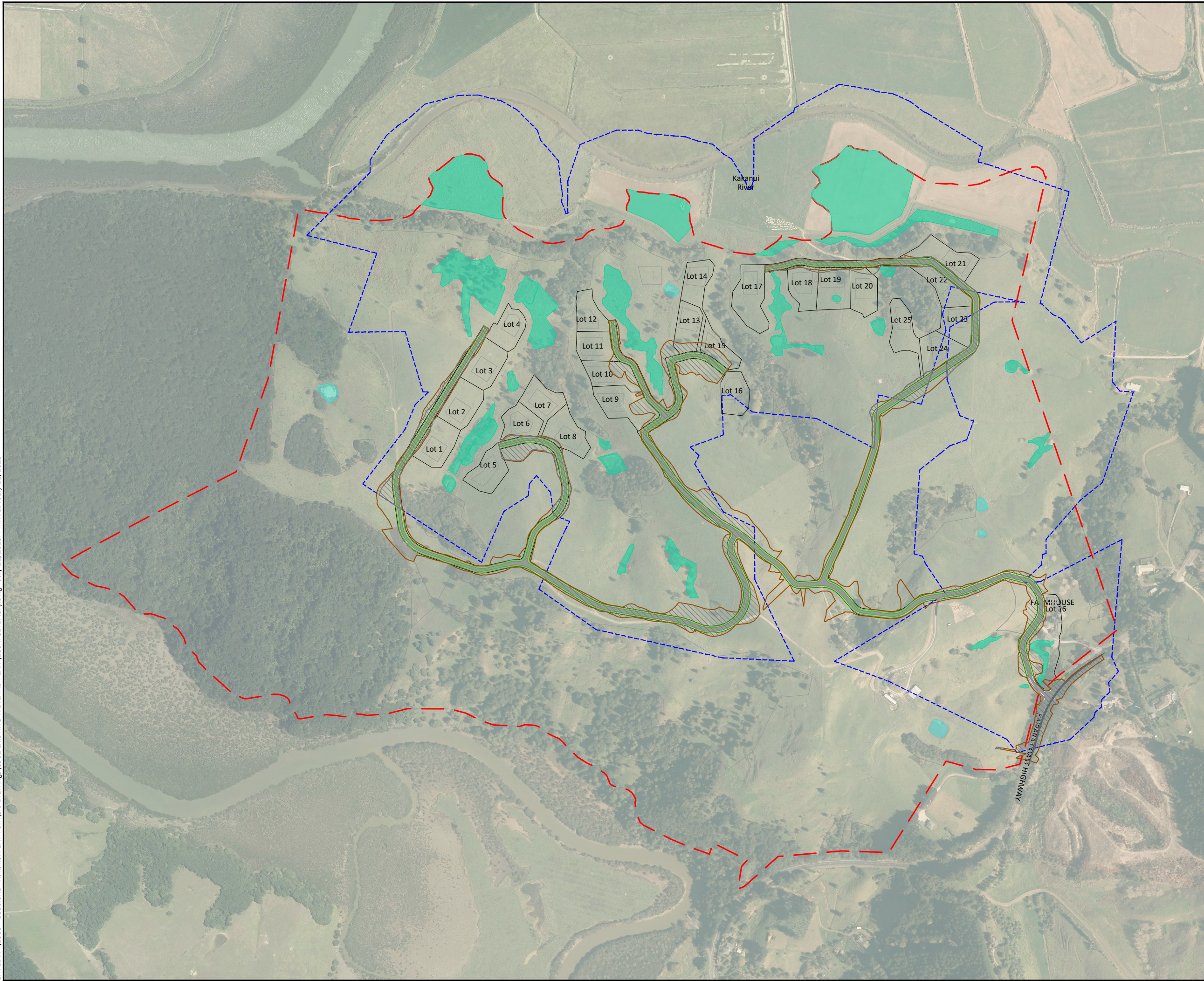
DRAWN	TG	SCALE	A1 1:3000
DESIGNED	TG	SCALE	A3 1:6000
PROJECT No	1366	DRAWING No	C906
REVISION	A		

Surface Analysis: Elevation Ranges

Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1	Blue	-4.500	-3.000
2	Light Blue	-3.000	-2.000
3	Cyan	-2.000	-1.000
4	Green	-1.000	0.000
5	Light Green	0.000	1.000
6	Yellow-Green	1.000	2.000
7	Yellow	2.000	3.000
8	Orange	3.000	4.000
9	Red	4.000	5.700

SAVED: P:\1366 - Goodland - Kakanui Farm Park\5.0 Drawings\C906 CUT AND FILL IN RELATION TO WETLAND.dwg - July 24, 2023. PRINTED: July 24, 2023

SAVED: P:\1366 - Goodland - Kakanui Farm Park\5.0 Drawings\C902 EXISTING WETLAND PLAN (100m SETBACK).dwg - July 21, 2023. PRINTED: July 21, 2023



LEGEND

- - - SITE BOUNDARY
- PROPOSED LOT AND ROAD BOUNDARIES
- PROPOSED BUILDING PLATFORM
- EARTHWORK EXTENT
- NATURAL WETLAND
- MANMADE WETLAND
- 100m SETBACK FROM NATURAL WETLAND
- OVERLAY BETWEEN 100m SETBACK AND EARTHWORKS EXTENT AREA: 63487m²

CONSENT ISSUE

REVISION	CHANGES	CHECKED	DATE
A	ORIGINAL ISSUE	ZY	21/07/23

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CLIENT
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PROJECT
GOODLAND COASTAL FARM

TITLE
EXISTING WETLAND PLAN (100m SETBACK)

DRAWN	TG	SCALE	A1 1:3000
DESIGNED	TG	A3	1:6000
PROJECT No	DRAWING No	REVISION	
1366	C902	A	