



Gisborne District Council

PRELIMINARY SITE INVESTIGATION (PSI)

Te Karaka Stopbank

DOCUMENT CONTROL

Version	Date	Comments
A	5/02/2026	PSI Issued for Information.
B	17/03/2026	Report updates due to updated proposed stopbank alignment provided by Client.

Version	Issued For	Prepared By	Reviewed & Authorised By
B	Issued for Information	 Erin Gasston Environmental Scientist	  James Gladwin Environmental Group Manager SQEP

EXECUTIVE SUMMARY

A contamination preliminary site investigation (PSI) has been conducted for the proposed new stopbank alignment and proposed borrow site, located within the Te Karaka township. LDE understands that the site is to undergo soil disturbance and therefore requires an assessment under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCSC).

This PSI is therefore required to identify if there are or were any current or historical land-use activities that could have caused soil contamination that is a risk to human health in order to determine if the NESCSC applies to the land and whether further investigation is required to accompany the consent application for the proposed development.

Evidence from the PSI and site history review, indicates **HAIL A10**: '*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*', **HAIL A18**: '*Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside*', **HAIL E1**: '*Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition*', and **HAIL I**: '*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*' are more likely than not to have occurred at the site.

Based on the currently available information presented in this report LDE considers that the NESCSC applies. This is because soil disturbance is covered by Regulations 5(4). The land is also covered by the NESCSC because of HAIL activities that are more than likely to have been carried out at the site.

A detailed site investigation (DSI) is recommended to establish if soil contamination exceeds the applicable standard to determine if the site is a restricted discretionary or controlled consent under the NESCSC. Soil sampling is proposed to be undertaken within the identified HAIL locations, as well as systematic sampling along the proposed alignment where orchards are or were historically present.

A resource consent will be required before groundworks can commence.

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1 INTRODUCTION

LDE has been engaged by Gisborne District Council to undertake a soil contamination Preliminary Site Investigation (PSI) for the proposed stopbank alignment in Te Karaka, Gisborne. LDE understands the existing stopbank soils will be utilised within the proposed stopbank, along with soils from an identified 'borrow site'.

This PSI is therefore required to identify if there are or were any current or historical land-use activities that could have caused soil contamination that is a risk to human health in order to determine if the NESCS applies to the land and whether further investigation is required to accompany the consent application for the proposed development.

This site investigation has been prepared in accordance with the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2021. It has been managed by a suitably qualified and experienced practitioner (SQEP); carried out in general accordance with the Contaminated Land Management Guidelines No.1- Reporting on Contaminated Sites in New Zealand (revised 2021) and Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils (revised 2021).

1.1 Investigation Objectives

The objectives of the investigation are to:

- Assess whether there has been (or there is more likely than not to have been) a potentially contaminating land use.
- Assess the nature and source of potential or likely contaminants.
- Identify the possible locations of contamination.
- Identify known or potential exposure pathways by which identified receptors could be exposed to the contaminants whilst undertaking the current or proposed future land use.
- Identify known or potential human and ecological receptors that could be exposed to contaminants.
- Assess if the project is covered by the NESCS Regulations.
- Determine if further investigation in the form of a Detailed Site Investigation (DSI) is required.

1.2 Site Identification

1.2.1 Proposed and Existing Stopbank Alignment

The proposed stopbank alignment borders the Te Karaka township to the west, north and east. The proposed alignment closely follows the existing alignment to the west and east of the township. To the north, the proposed alignment is between 140 - 370m closer to the township than the existing alignment. Refer to Table 1 and Figure 1 for the proposed alignment, and Figure 2 and Figure 3 for the updated proposed alignment locations.

Table 1. Address and Legal Description of area covered by the Existing and Proposed stopbank alignment.

Address (Clockwise W-E)	Legal Description	Alignment
Matawai Road	Lot 2 DP 570263	Proposed (tunnel bund)
23-27 Cliff Road	Lot 1, Pt Lot 2 DP 3062 Lots 1-4 DP 4355 Lot 1 DP 3109	Existing and proposed.
9-11 Rangatira Road	Pt Lot 25 DP 1287 Lot 1 DP 3768	Existing and proposed.
Library Road	Sec 1, Sec 3 SO 494650	Existing and proposed.
1 Kipling Road	Lot 15 DP 1145	Existing and proposed.
7 Kipling Road 27 Kipling Road Morris Road/Kipling Road	Pt Lot 16 DP 1145 Lot 2 DP 2786 Pt Lot 18 DP 1145 Lot 1-2 DP 3322	Proposed.
29-44 Morris Road	Lot 21-23 DP 1145	Existing.
Kipling Road	Te Karaka 16E Block Pt Karaka 15 Block	Existing.
59 Kipling Road	Lot 1 DP 2909 Lot 1 DP 8784	Proposed.
69 Kanakanaia Road	Pt Sec 44 Block IV Waikohu SD Pt Karaka 17 Block	Existing and proposed.
90 Kanakanaia Road	Karaka 11A2 Block	Proposed.
35 Paulson Road	Te Karaka 11B2 Block	Existing and proposed.
32 Main Road	Lot 9 DP 1326	Existing and proposed.
Matawai Road	Pt Karaka 7 Block	Existing and proposed.
2424 Matawai Road	Karaka 8 Block	Existing and proposed.
Matawai Road	Sec 3 Block IV Waikohu SD	Proposed.

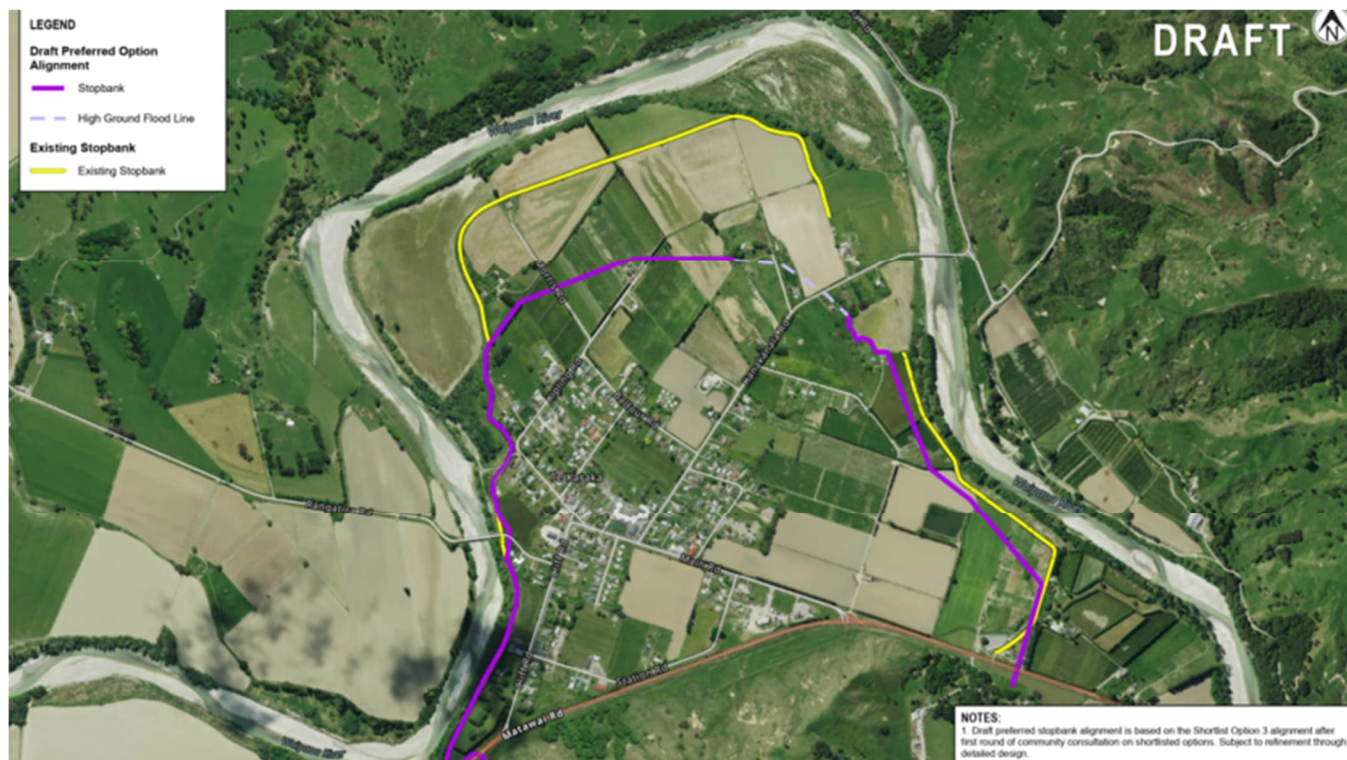


Figure 1. Draft alignment of proposed stopbank (purple) and existing stopbank (yellow). Source: Supplied by Client.



Figure 2. Updated alignment changes (dated 19/02/2026).

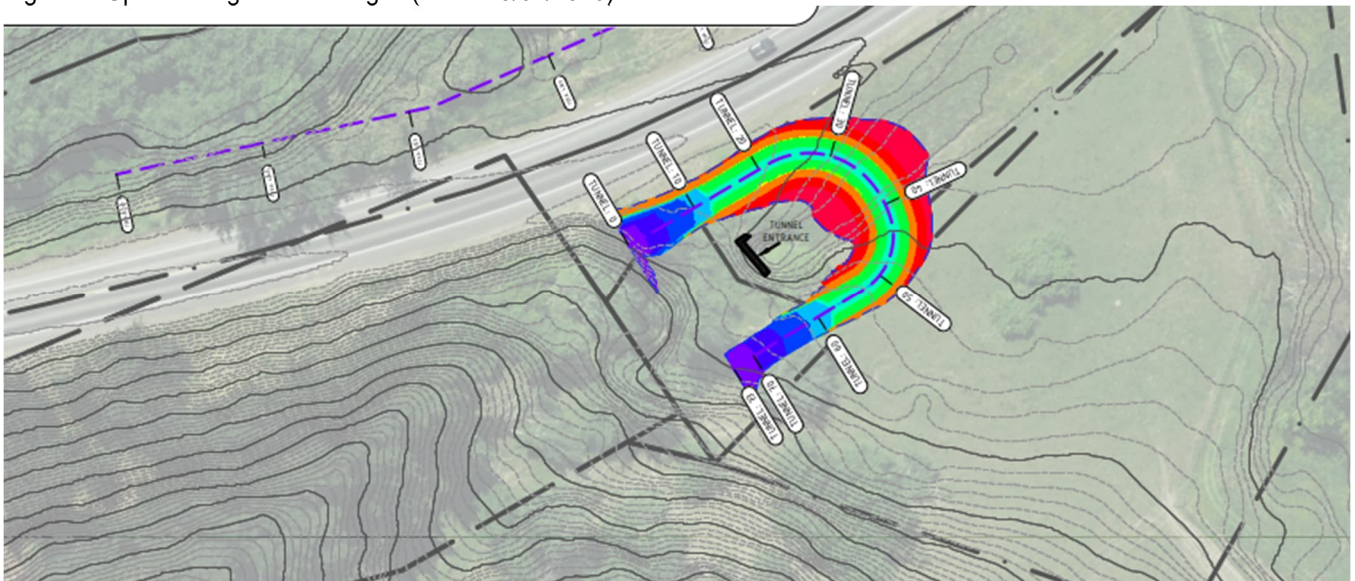


Figure 3. Tunnel bund located across Main Road, south of the western-most extent of the proposed stopbank (dated 02/2026).

1.2.2 Proposed Borrow Site

The proposed borrow site includes part of the existing stopbank alignment. The site borders the Waipaoa River to the north. The borrow site is proposed to be excavated to a maximum depth of 1.5m. The address and legal descriptions of the area covered by the proposed borrow site is shown in Table 2.

Table 2. Address and legal descriptions of area covered by the proposed borrow site.

Address (Clockwise W-E)	Legal Description
44 Morris Road, Te Karaka	Lots 21-23 DP 1145-INCLS ACCRE
Kanakanaia Road, Te Karaka	PT Te Karaka 17 Te Karaka 16F Te Karaka 16E PT Te Karaka 15 – INCLS ACCRE



Figure 4. Proposed borrow site, outlined in red. Source: Supplied by Client.

2 SITE DESCRIPTION

2.1 Environmental Setting

Te Karaka township sits at approximately 40 m above sea level. The Waipaoa River borders the township to the west, north and east, with Matawai Road / State Highway 2 bordering the township to the south.

2.1.1 Geology

The New Zealand Geology Web Map by GNS¹ Science identifies the majority of the Te Karaka township as being underlain by 'Holocene River Deposits' described as 'Gravel, sand and silt.' Minor deposits of 'Late Pleistocene River Deposits' (described as 'Gravel, sand and silt') also intersect the Te Karaka township in several locations.

¹ <http://data.gns.cri.nz/geology/>. Retrieved December 2025.

3 HISTORIC SITE USE

The following information was reviewed in order to establish the history of the site:

- Historical aerial photographs
- Council Records

3.1 Historical Aerial Imagery – Proposed Alignment

Aerial images from 1949 to 2024 have been analysed as part of this investigation for the proposed and existing stopbank alignments. This section has been updated following the updated stopbank alignment received March 2026. This section outlines LDEs assessment of the aerals with a tubulised summary provided in section 3.1.1.

1949: The majority of the proposed and exiting stopbank alignments pass through pasture. A single dwelling to the north and a small shed to the east are the only visible structures the proposed alignment crosses. The tunnel located south of the western-most alignment extent is visible in this historic aerial.



Figure 5. Aerial imagery 1949. Full (top) and Zoomed-in (bottom) aers. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1952: A second dwelling has been constructed along the proposed alignment route to the west. The remainder of the proposed alignment is unchanged.

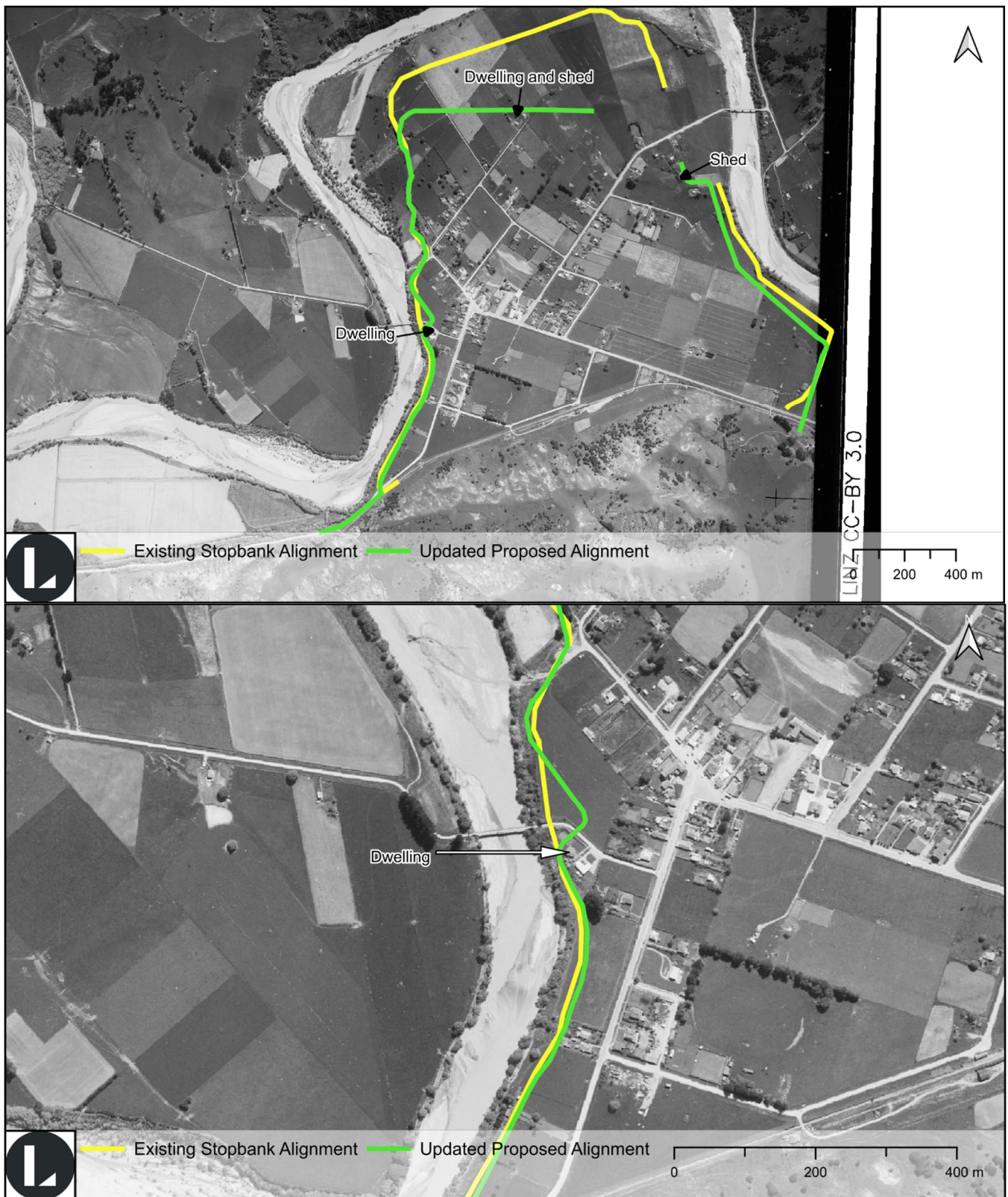


Figure 6. Aerial imagery 1952. Full (top) and Zoomed-in (bottom) aerals. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1960: The dwelling and shed to the north of the proposed alignment have been removed. Miscellaneous storage, possible timber, is visible close to the northern bend of the proposed alignment. The remaining proposed alignment passes through pasture.

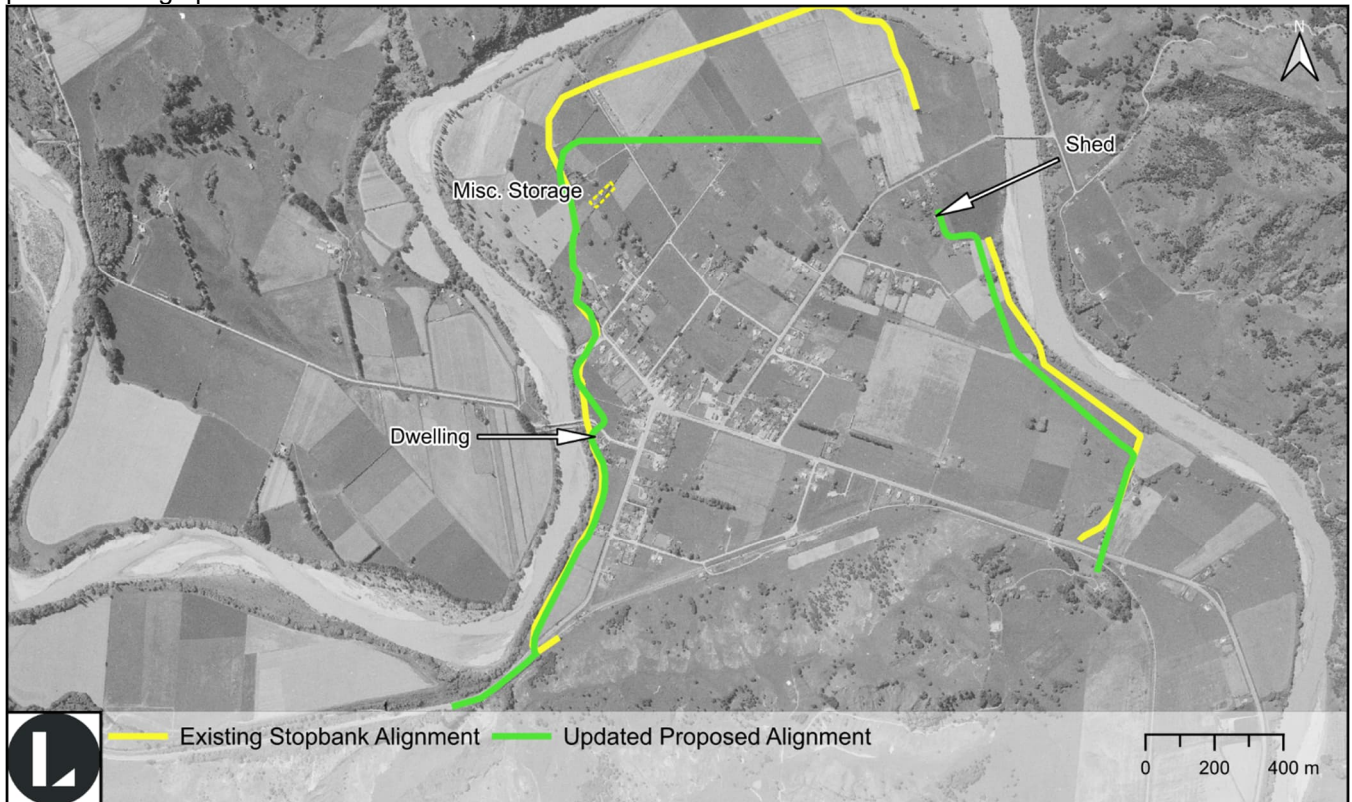


Figure 7. Aerial imagery 1960. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1974: Miscellaneous storage, possibly timber, is present adjacent to the proposed alignment. A series of large sheds or glasshouses have been constructed to the west adjacent to the proposed alignment. The remaining proposed alignment is unchanged.



Figure 8. Aerial imagery 1974. Full (top) and Zoomed-in (bottom) aeriels. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1982: Sheds / glasshouses along the NW proposed alignment are being removed. The alignment crosses several newly established orchards in the north and east, and is adjacent to another recently established orchard in the SE.

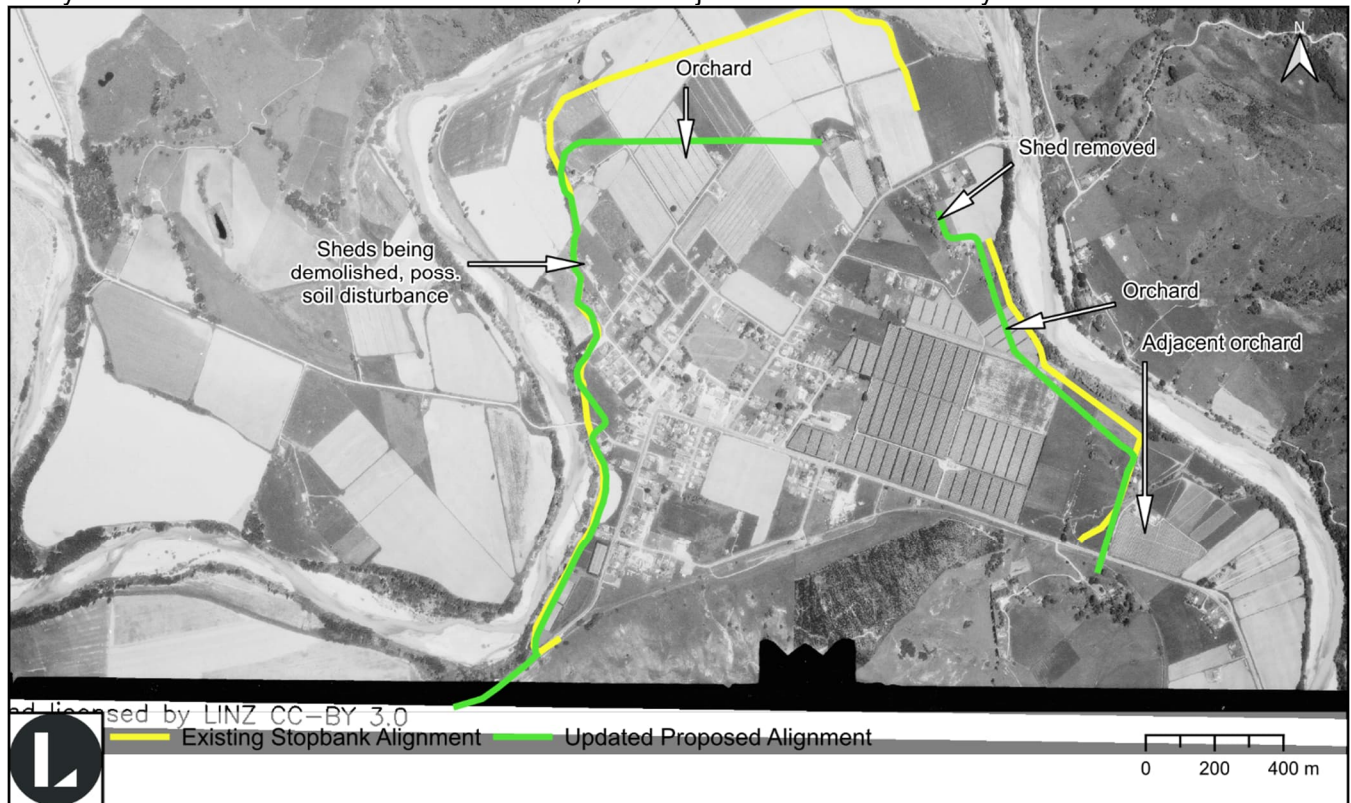


Figure 9. Aerial imagery 1982. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

2003: The existing stopbank has been constructed. A dwelling close to the Rangatira Road bridge has been removed. The remainder of the proposed alignment is unchanged.

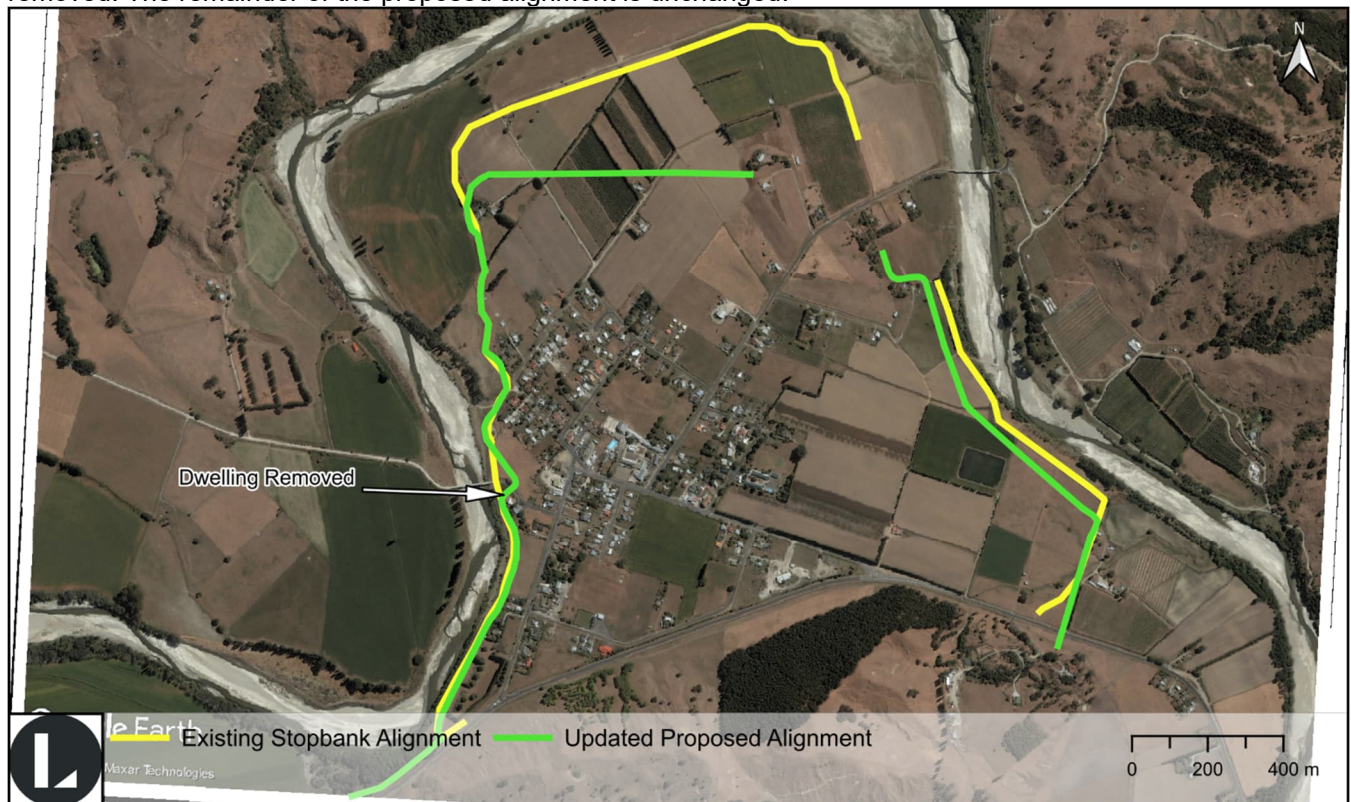


Figure 10. Aerial imagery 2003. Sourced from Google Earth (annotated image).

2013: The majority of the proposed alignment remains unchanged. A stock yard or possible sheep dip is present near the SE proposed alignment.



Figure 11. Aerial imagery 2013. Zoomed-in aerial shown below to highlight possible dip along the proposed alignment. Sourced from LINZ (annotated image).

2019: The stock yards have expanded. The remainder of the proposed alignment remains unchanged.



Figure 12. Aerial imagery 2019. Zoomed-in aerial shown below to highlight expansion of stock yards along the proposed alignment. Sourced from LINZ (annotated image).

2024: The majority of the proposed alignment remains unchanged. The proposed alignment crosses a small area of silt storage to the north.

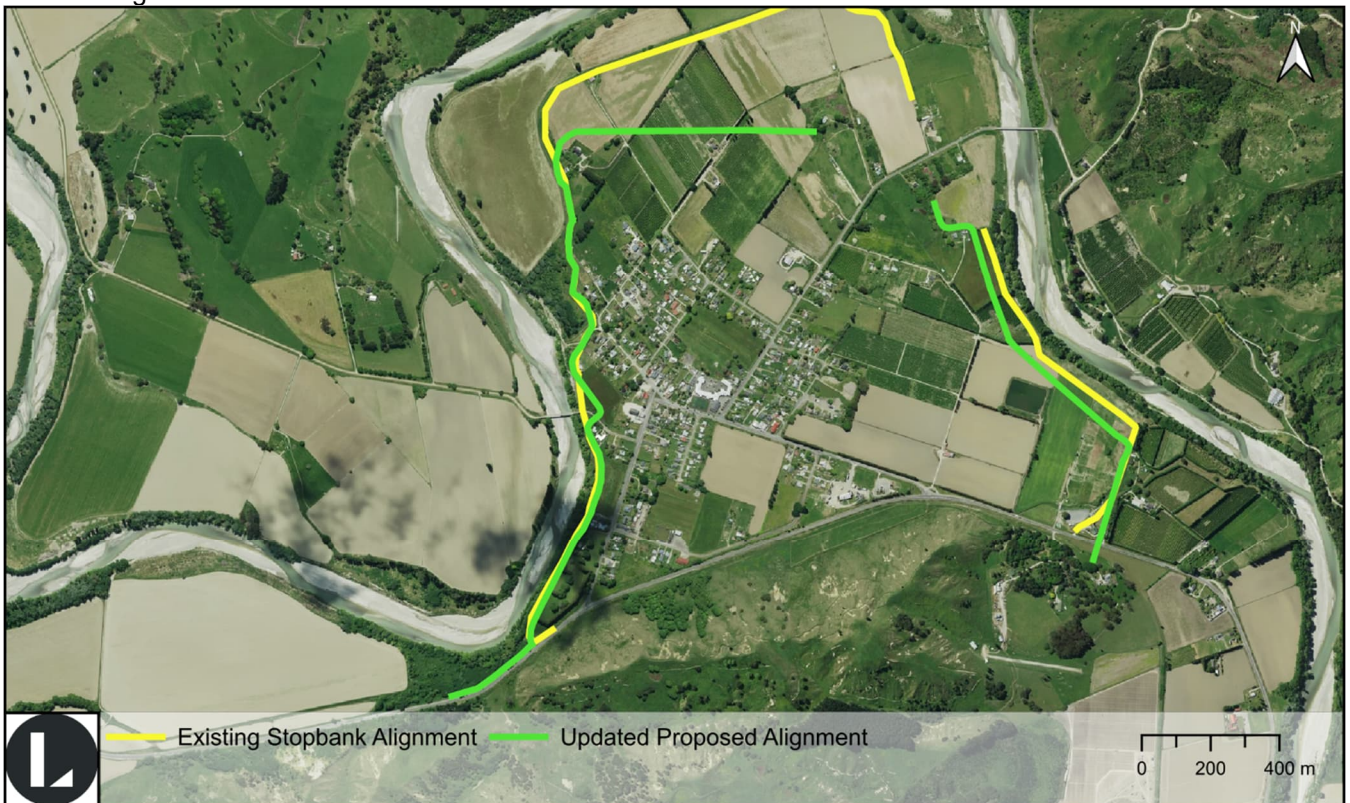


Figure 13. Aerial imagery 2024. Sourced from Tairawhiti Maps².

² [Tairāwhiti Aerial Imagery](#). Accessed December 2025.

3.1.1 Potential Areas of Contamination

Table 3 below summarises the identified potential areas of contamination based on the aerial photograph review. No additional potential areas of contamination were identified following the updated proposed alignment (March 2026).

Table 3. Potential areas of contamination observed from aerial photograph review.

Address	HAIL Category and date observed	Potential contamination (Y/N) for	Alignment affected
59 Kipling Road 11 Rangatira Road	HAIL E1/I – 1949+	Y – demolition of structures built prior to 2000s possibly containing asbestos and/or lead paint.	Proposed - 59 Kipling Road
90 Kanakanaia Road	HAIL E1/I – 1949+	N - demolition of minor shed structure built prior to 2000s. Possibly containing asbestos and/or lead paint however size is unlikely to have resulted in significant contamination.	Proposed
29 Morris Road	HAIL A18 – 1960	Y – storage of potential treated timber and miscellaneous storage	Proposed
7 Kipling Road	HAIL A10 – 1974-1982 HAIL I – 1982	Y – possible glasshouses Y – Demolition	Existing – further soil disturbance not anticipated in this location.
69 Kanakanaia Road	HAIL I – 2024	N – storage of silt from flooding. Unlikely to contain contaminants based on available silt testing to date.	N/A
2424 Matawai Road	HAIL A8 – 2013+	N – date of presence unlikely to indicate typical dip contaminants (Arsenic, Pesticides).	N/A
Morris Road / Kipling Road / Paulson Road / Matawai Road	HAIL A10 – 1982+	Y – various orchards cross the proposed alignment.	Proposed

3.2 Historical Aerial Imagery – Borrow Site

Aerial images from 1949 to 2024 have been analysed as part of this investigation for the proposed borrow site. This section outlines LDEs assessment of the aerals with a tubulised summary provided in section 3.2.1.

1949: The majority of the borrow site is pasture. A single dwelling is present to the west.

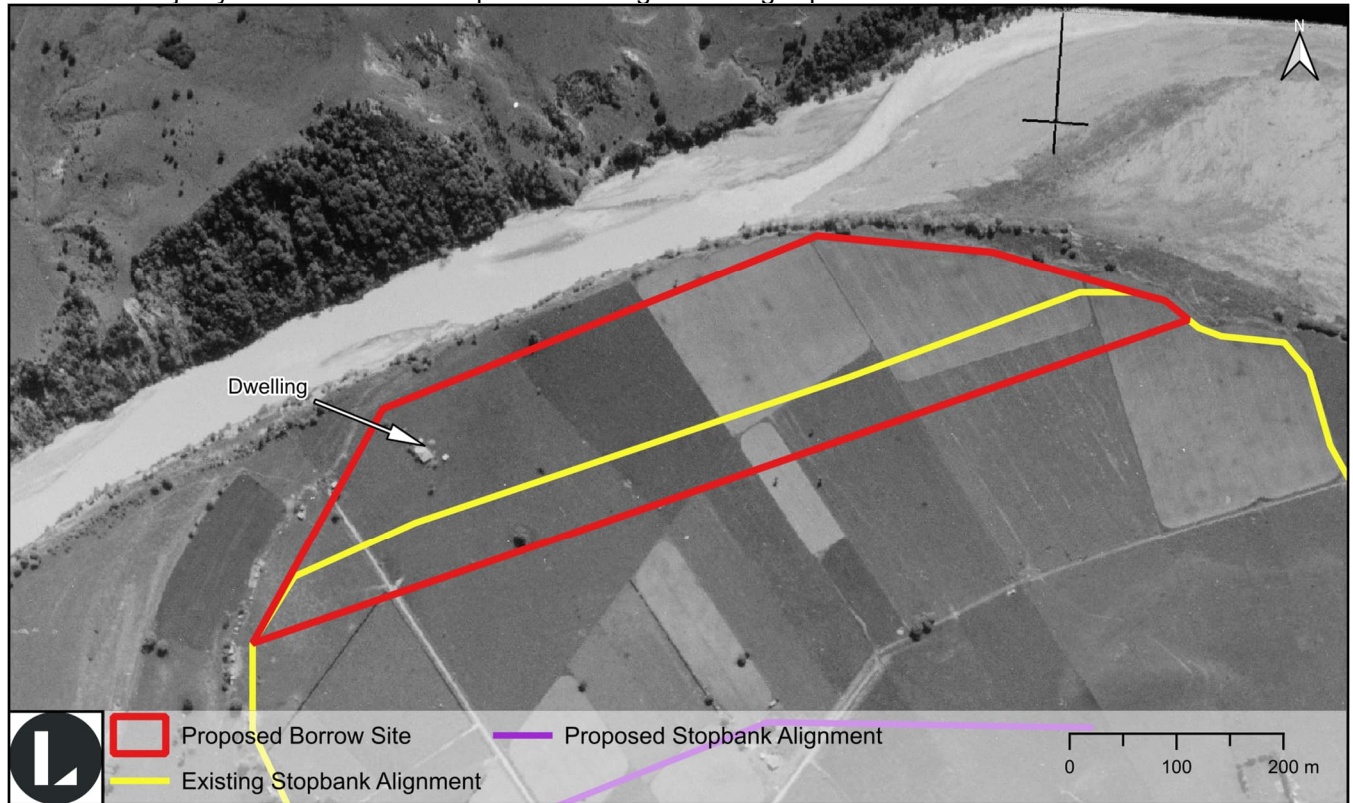


Figure 14. Aerial imagery 1949. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1952: A second dwelling is present. The remainder of the borrow site is unchanged.

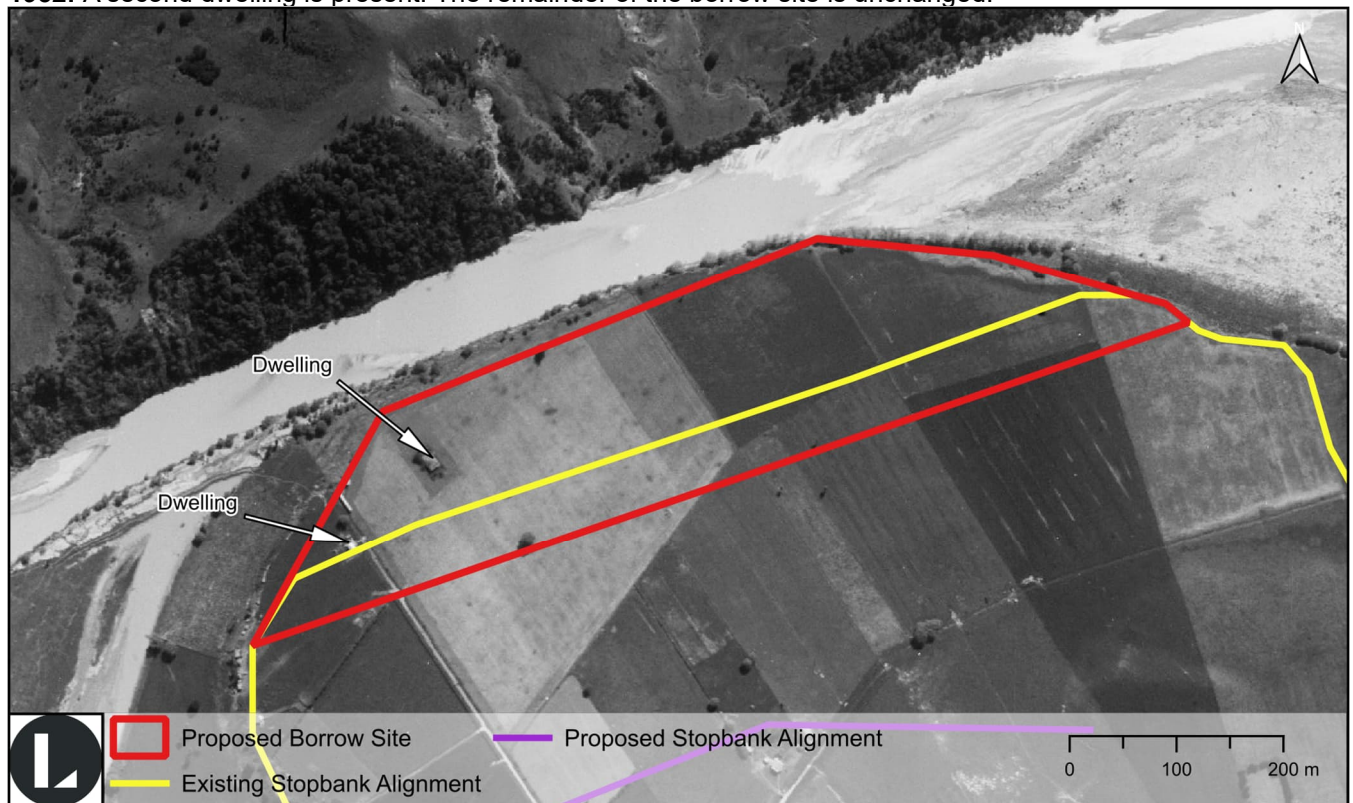


Figure 15. Aerial imagery 1952. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1960: The additional dwelling present in the 1952 aerial has been removed. An additional dwelling and shed are present to the south of the original dwelling. The remainder of the borrow site is unchanged.

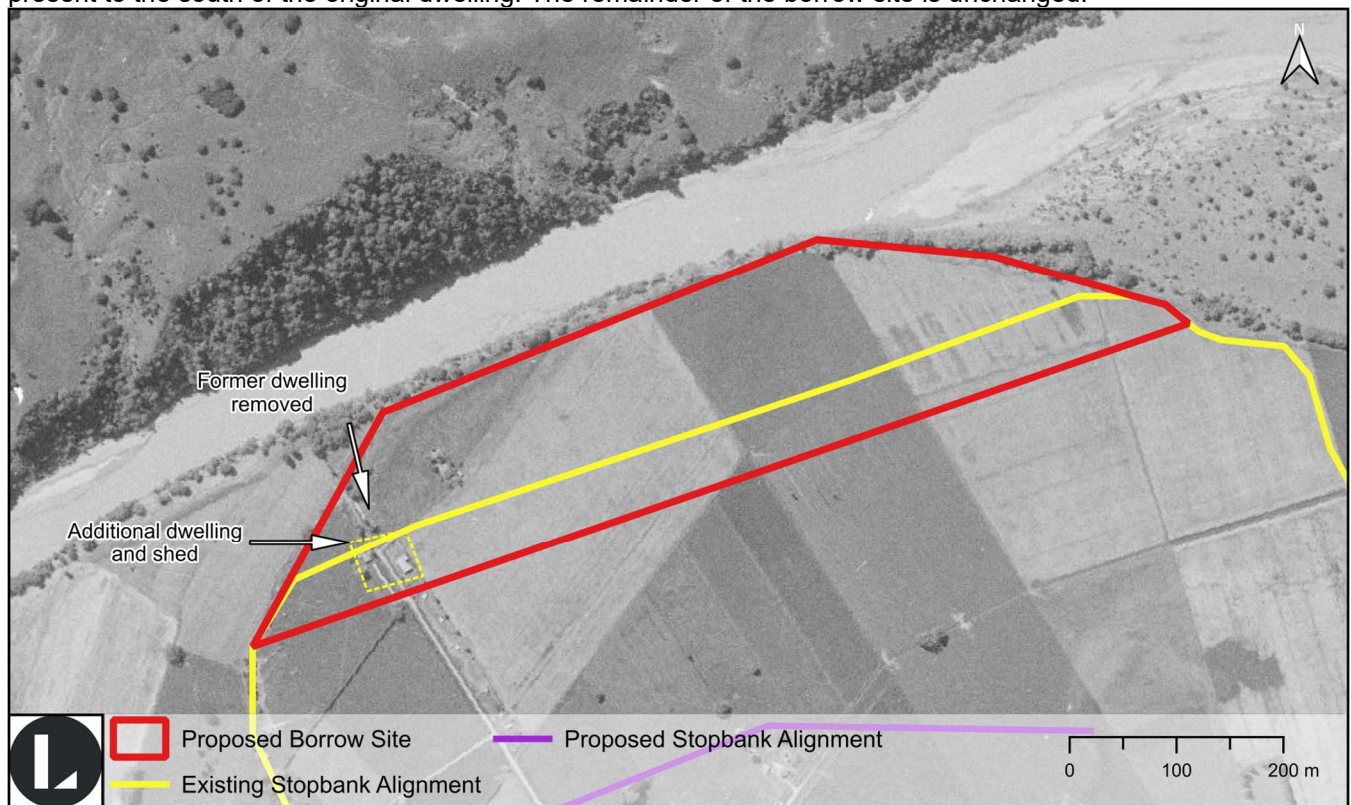


Figure 16. Aerial imagery 1960. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1974: A row of miscellaneous storage is noted to the west of Morris Road. The remaining borrow site is unchanged.

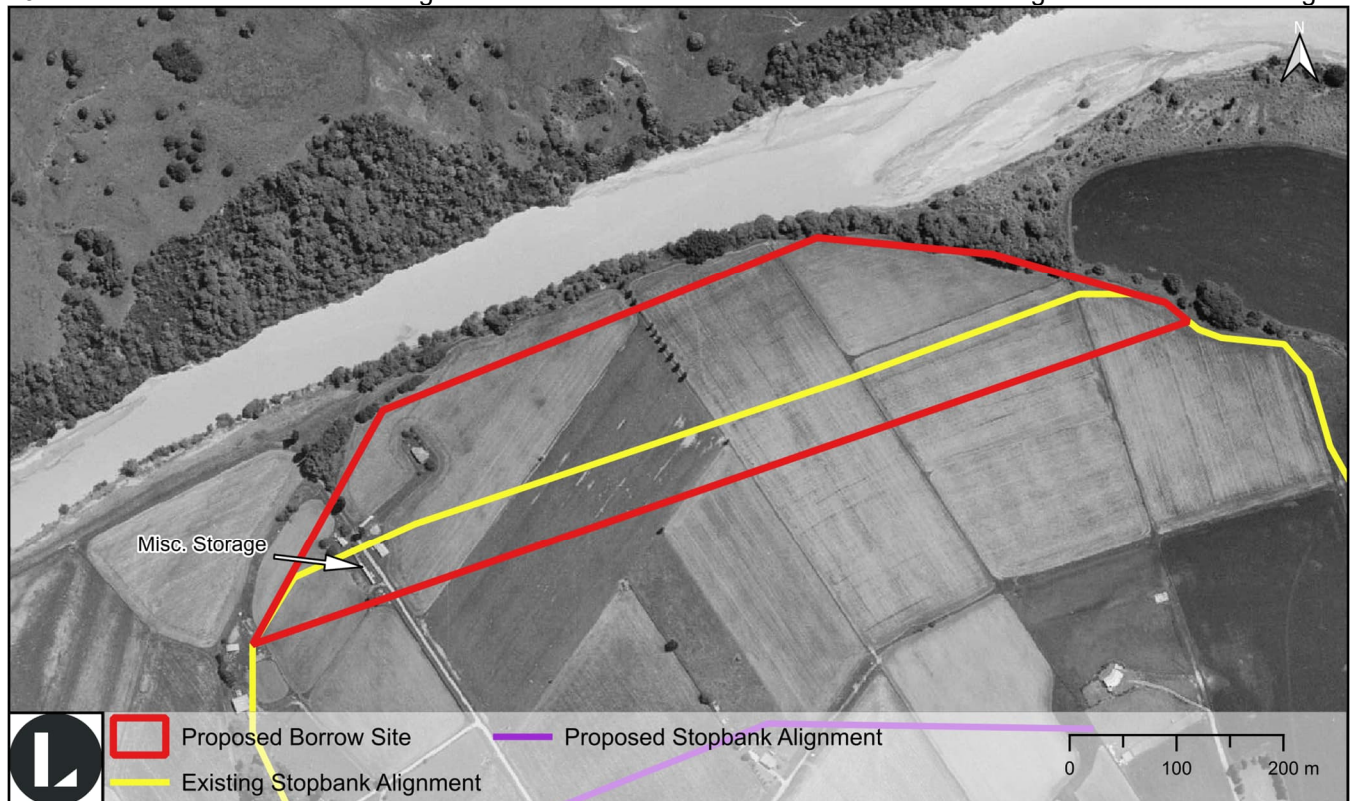


Figure 17. Aerial imagery 1974. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1982: The borrow site remains unchanged.

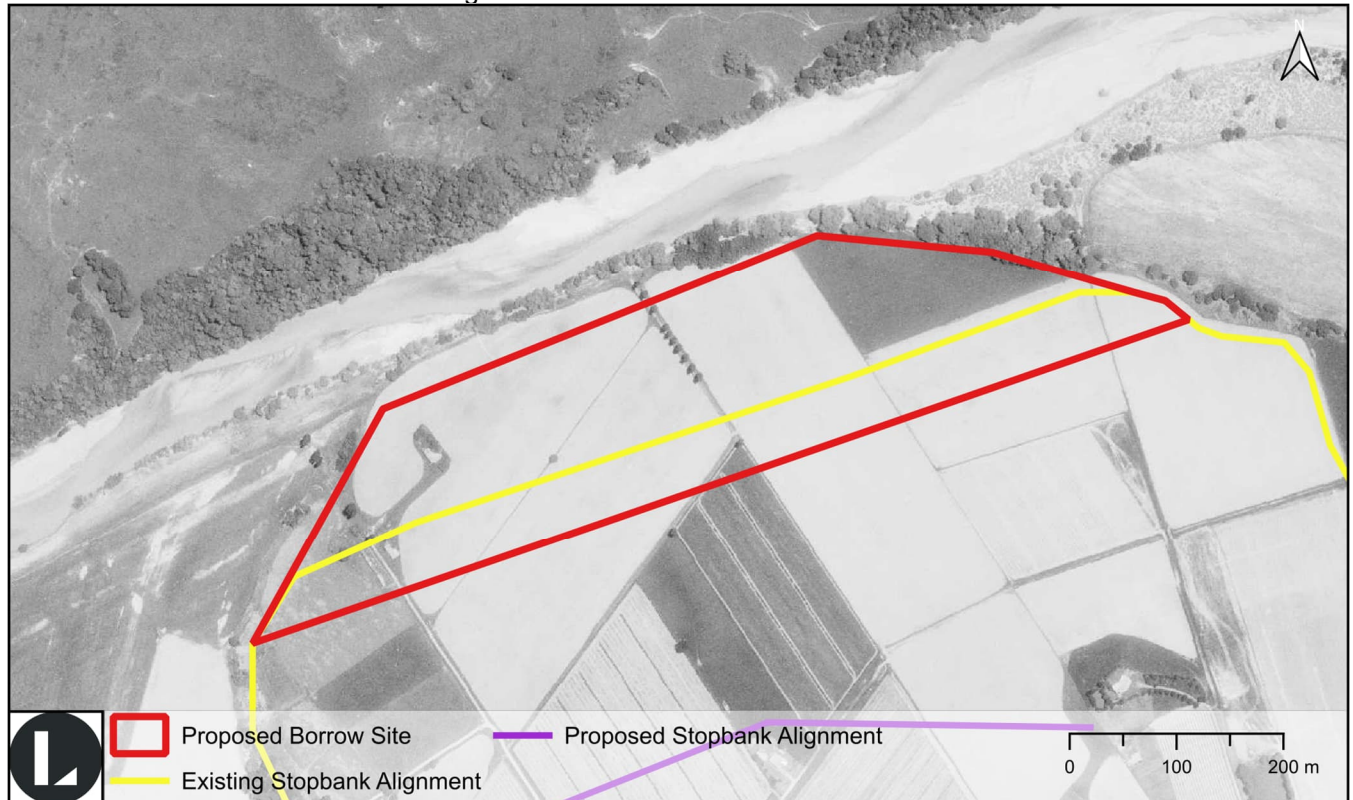


Figure 18. Aerial imagery 1982. Sourced from Retrolenz.nz and licensed by LINZ (annotated image). Approximate site boundary shown in yellow.

2003: The existing stopbank has been constructed through the borrow site. The original dwelling from 1949 has been removed. Stock yards are visible adjacent to the dwelling south of the existing stopbank. The remainder of the borrow site is unchanged.

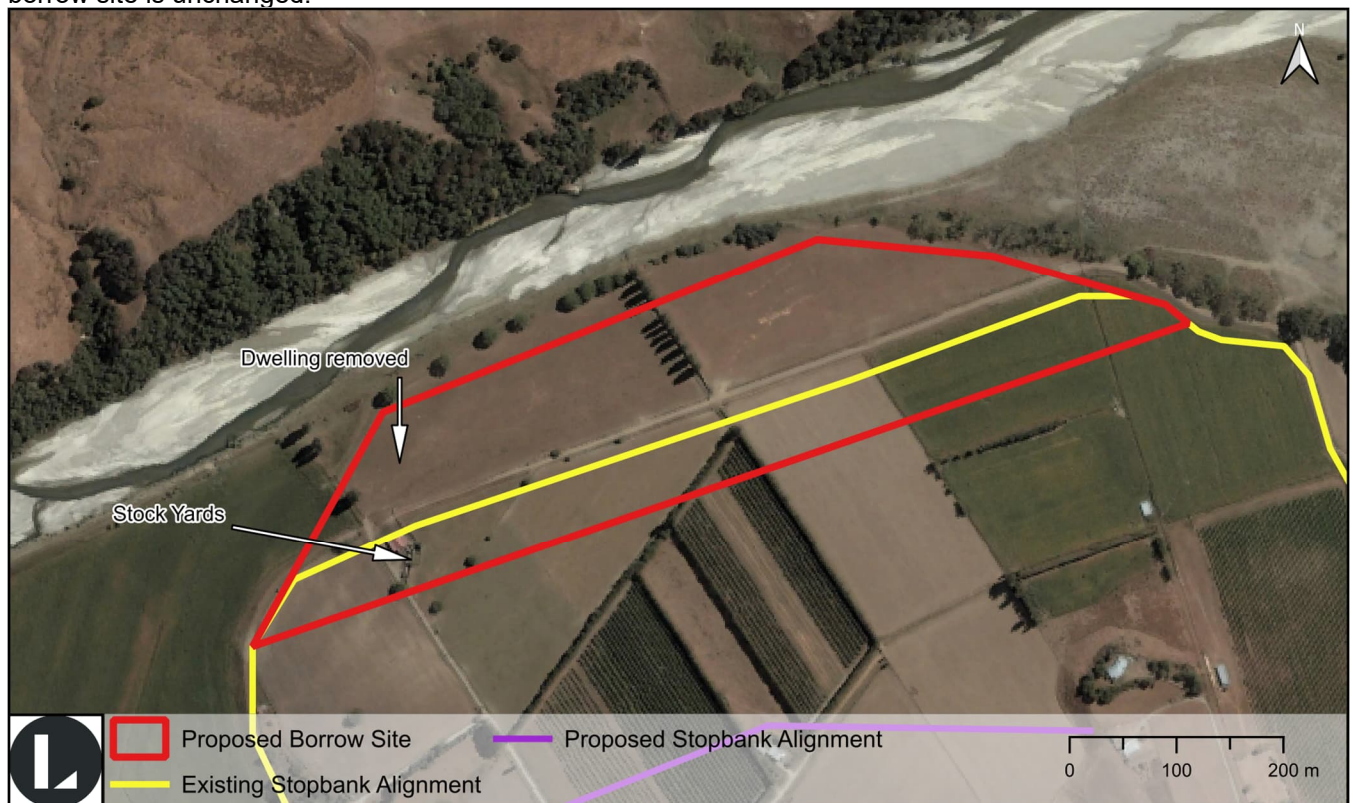


Figure 19. Aerial imagery 2003. Sourced from Google Earth (annotated image). Approximate site boundary shown in yellow.

2013: The borrow site remains unchanged.

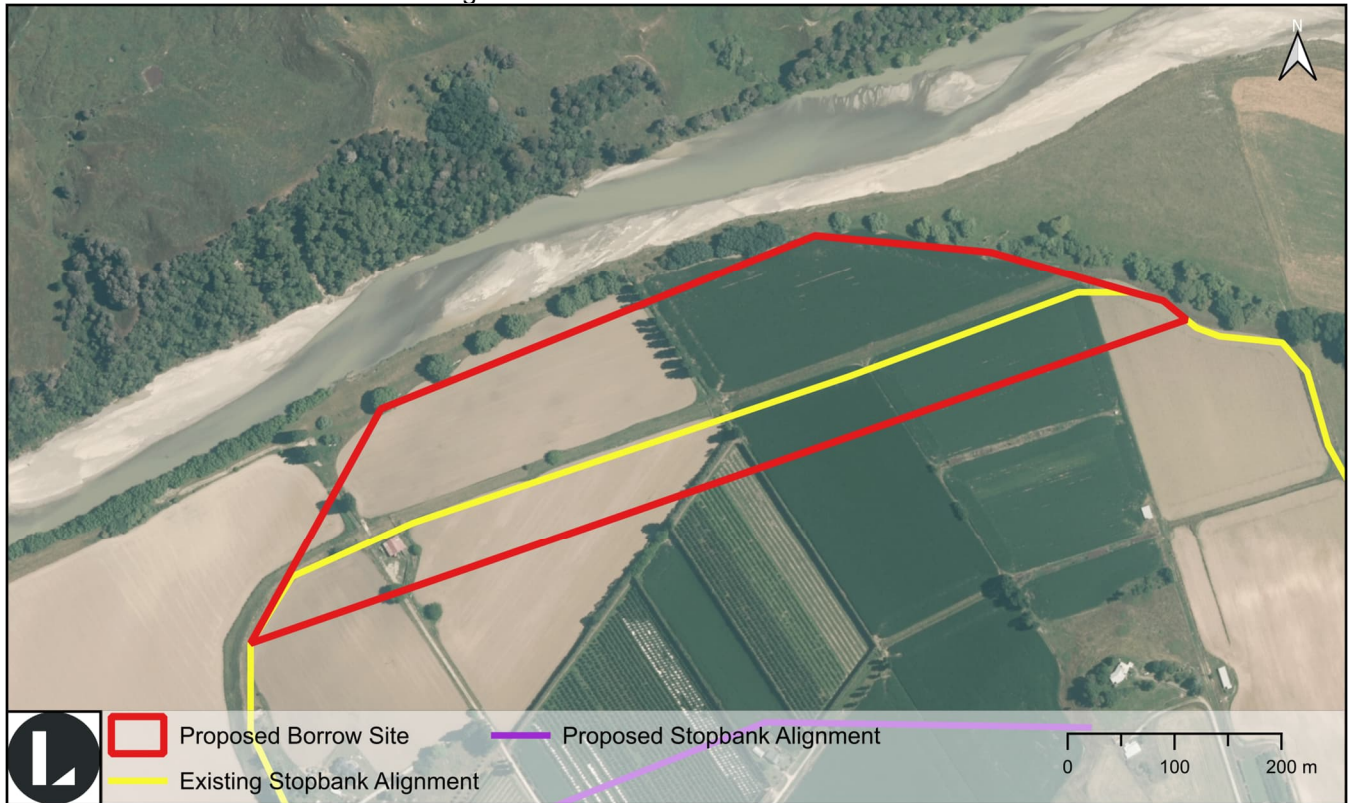


Figure 20. Aerial imagery 2013. Sourced from LINZ (annotated image). Approximate site boundary shown in yellow.

2019: The borrow site remains unchanged.

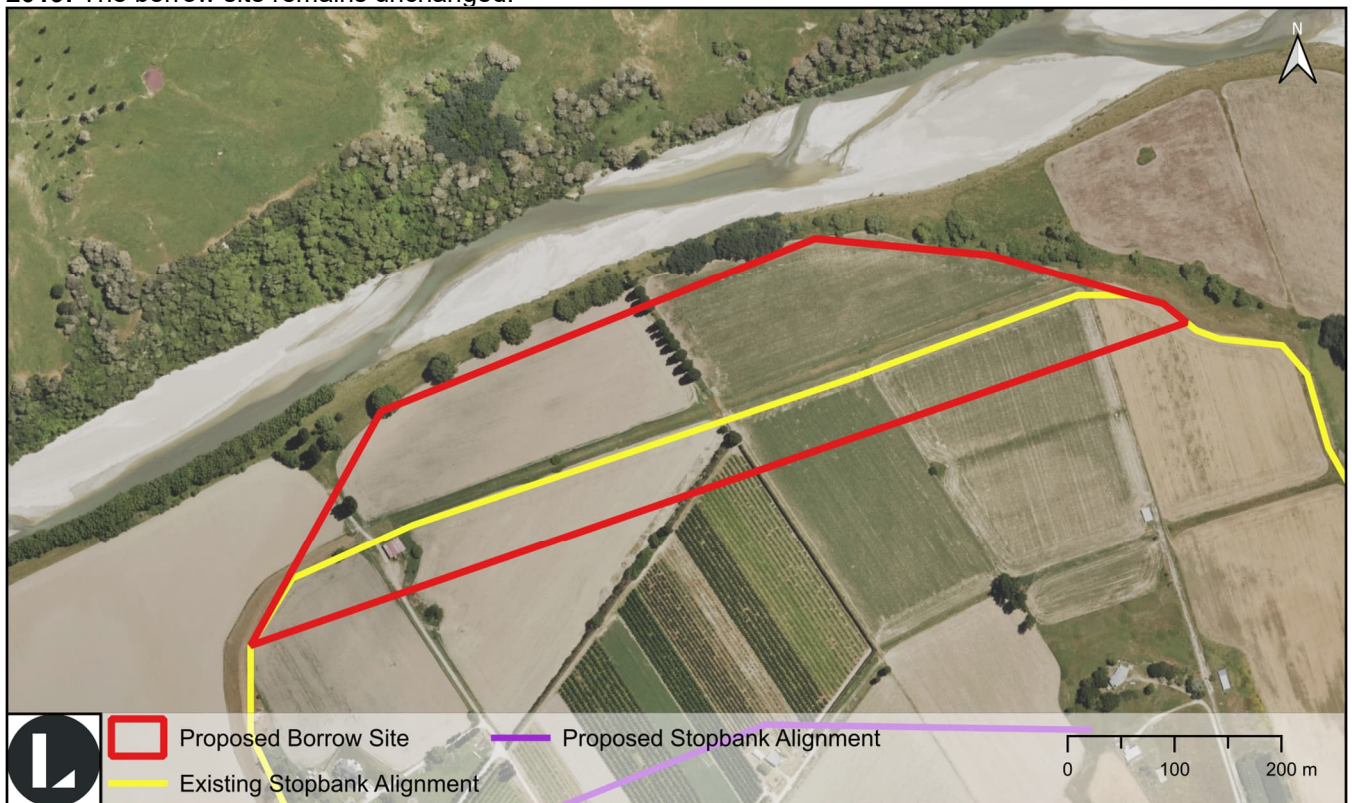


Figure 21. Aerial imagery 2019. Sourced from LINZ (annotated image). Approximate site boundary shown in yellow.

2024: The borrow site remains unchanged.

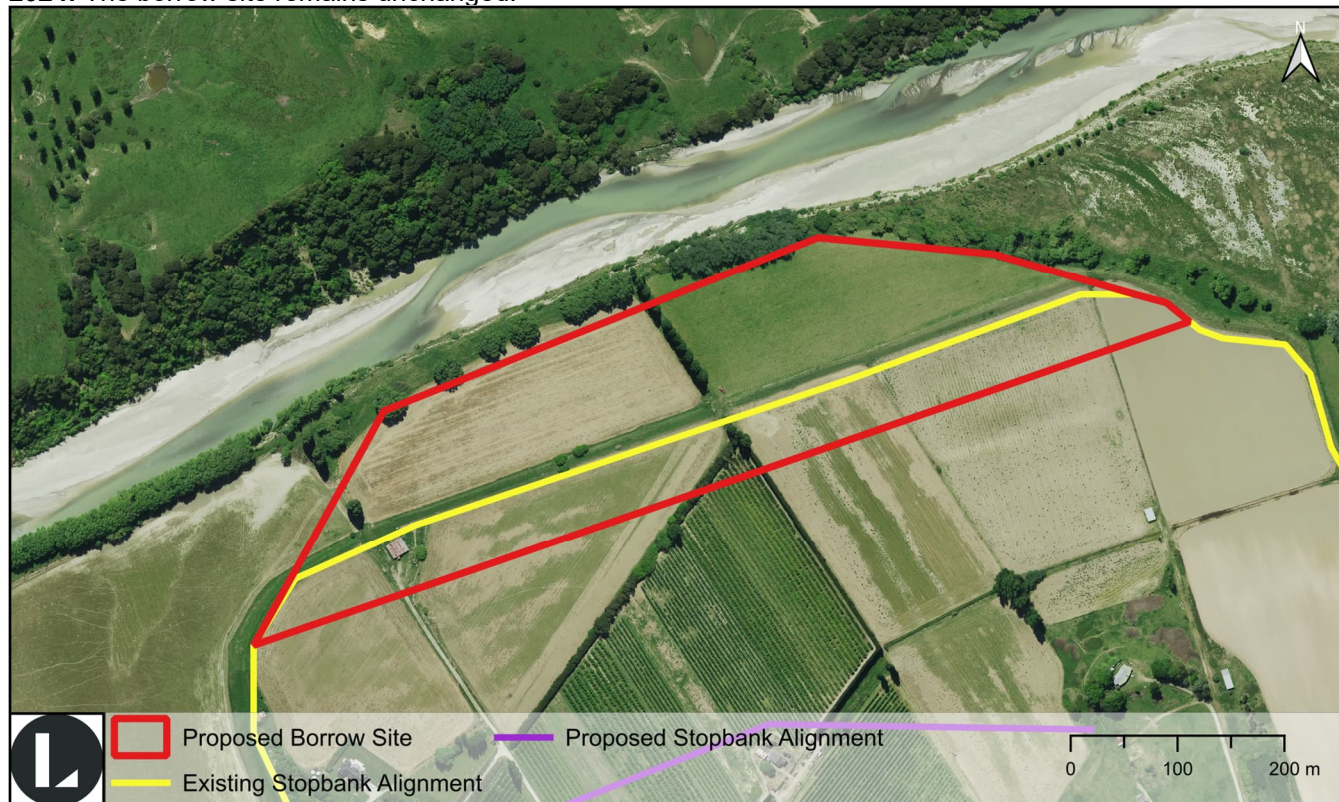


Figure 22. Aerial imagery 2024. Sourced from Tairāwhiti Maps³. Approximate site boundary shown in yellow.

3.2.1 Potential Areas of Contamination

Table 4 below summarises the identified potential areas of contamination based on the aerial photograph review.

Table 4. Potential areas of contamination observed from aerial photograph review.

Address	HAIL Category and date observed	Potential for contamination (Y/N)
44 Morris Road	HAIL E1/I – 1949+	Y – demolition of structures prior to 2000s possibly containing asbestos and/or lead paint.
	HAIL A8 – 2003+	N - date of presence of stock yards unlikely to indicate typical dip contaminants (Arsenic, Pesticides).
29 Morris Road	HAIL I – 1960+	Y – demolition of structures prior to 2000s possibly containing asbestos and/or lead paint. Miscellaneous storage.

³ [Tairāwhiti Aerial Imagery](#). Accessed December 2025.

3.3 Gisborne District Council Information

The Gisborne District Council (GDC) HAIL register⁴ was reviewed as part of this investigation. No registered HAIL sites intersect with either the proposed alignment or the proposed borrow site.

A summary of registered HAIL sites in the Te Karaka township in relation to the proposed alignment and proposed borrow site is provided in Table 5 below.

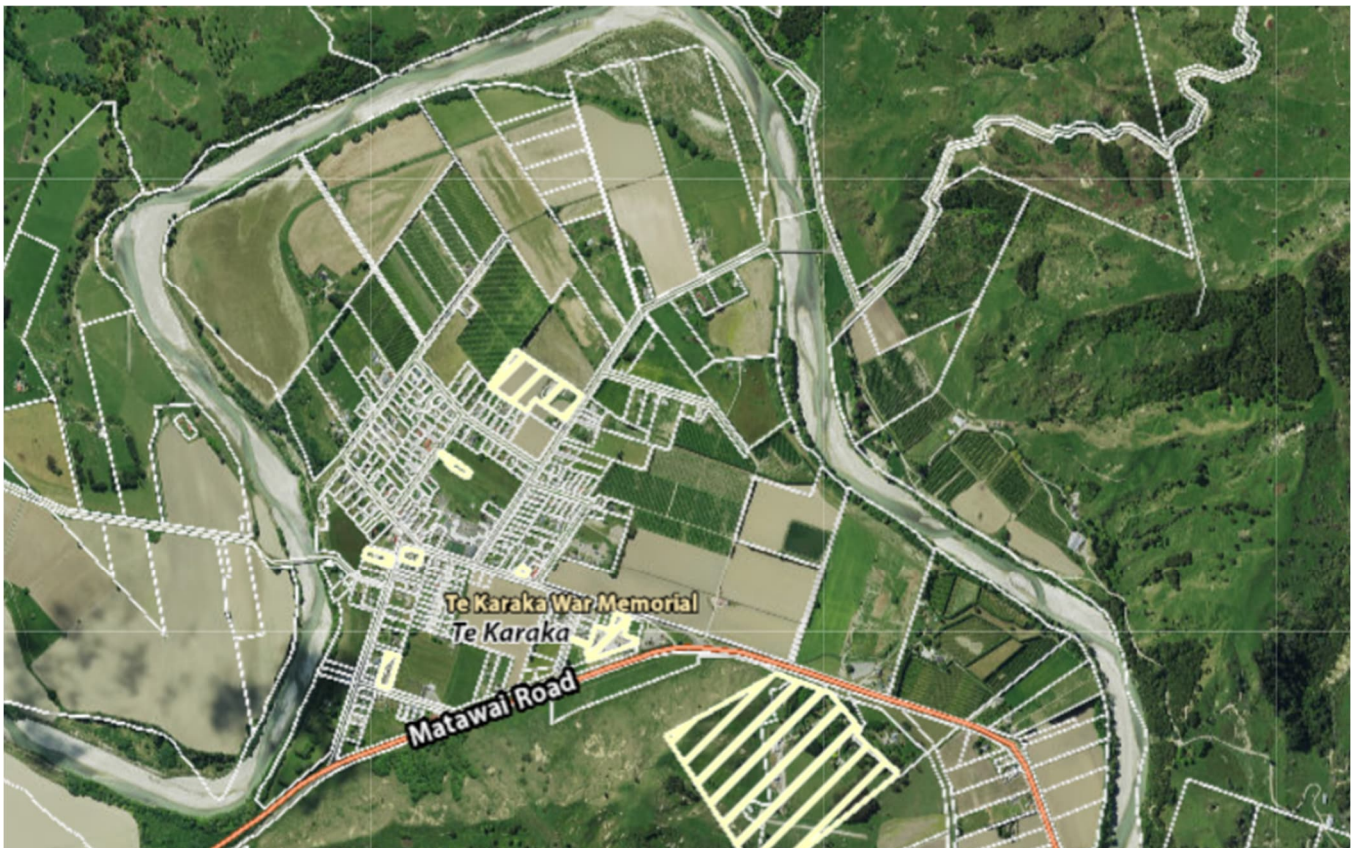


Figure 23. Extract from GDC HAIL Register, showing location of known HAIL sites within the Te Karaka township.

⁴ [Tairāwhiti External](#). Accessed December 2025.

Table 5. Identified HAIL sites within the Te Karaka township. Information sourced from GDC HAIL register.

Address	HAIL Category	Potential for contaminant migration?
70 Station Road	E7 – Mining industries	N – existing adjacent stopbank already in place
52 Main Road	F4 – Motor vehicle workshop (Te Karaka Motors)	N - >200m from proposed alignment.
59 Cliff Road	A17 – Service station (Graham Motors) F4 –Motor vehicle workshop	N - Possible offsite migration of hydrocarbons if any leaks/spills are recorded, however only likely to affect deeper site soils (if contamination present). Development of proposed stopbank unlikely to entail deep excavation. Proposed alignment between service station and river, therefore groundwater flow is presumed to pass through the proposed alignment location.
83 Main Road	F4 – Motor vehicle workshop	N – unlikely for offsite migration of contaminants unless any leaks/spills or underground tanks in disrepair are present on site.
5 Kanakanaia Road	A10 – Persistent pesticide use (Waikohu College)	N - >200m from proposed alignment.
2433 Matawai Road	F8 – Transport depot A6 –fertiliser manufacture or bulk storage	N – unlikely. ~100m from proposed alignment end at Matawai Road.
25 Main Road	F8 – Transport depot	N - >200m from proposed alignment.
53 Kanakanaia Road	F8 – Transport depot	N - >200m from proposed alignment.

3.3.1 Property File Information

Following a review of historic aerals for the proposed alignment, property file information was requested from GDC for selected sites. The following information is noted to be relevant to the existing investigation. The relevant information from each of the property file is included in Appendix A.

11 Rangatira Road:

- 1967 – consent to extend car shed. External wall covering noted to be corrugated iron and asbestos.

59 Kipling Road:

- No information relevant to potential contamination noted.

7 Kipling Road:

- No information relevant to potential contamination noted.

29 – 44 Morris Road:

- 1983 – consent to install covered deer yards and shed for machinery storage.
- 2007 – consent for new dwelling at 29 Morris Road. Dwelling has an external cladding of plaster fibre cement, which given the date of building, is unlikely to contain asbestos.

4 RISK ASSESSMENT

This section uses a Conceptual Site Model (CSM) to assess the currently available information presented in this report to determine:

- whether there has been (or there is more likely than not to have been) a potentially contaminating land use.
- the nature and source of potential or likely contaminants.
- the possible locations of contamination.
- known or potential exposure pathways by which identified receptors could be exposed to the contaminants whilst undertaking the current or proposed future land use.
- known or potential human and ecological receptors that could be exposed to contaminants.

4.1 Conceptual Site Model – Proposed Alignment

The preliminary site CSM for the proposed alignment is provided in Table 6, Figure 24 and Figure 25. No additional HAIL activities were identified following the updated proposed alignment (March 2026). A human health risk can only occur where there is a complete pathway between contaminant source and a receptor. Building floors and paved or sealed areas will largely or completely prevent contact with underlying soils and therefore, direct exposure pathways are or will be incomplete for such areas.

Table 6. Conceptual Site Model for proposed stopbank alignment at the PSI stage.

HAIL, Potential Contaminants and Location	Receptors	Potential Pathways
HAIL E1 – Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition. HAIL I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment. 59 Kipling Road – Demolition of pre-2000's structure. 11 Rangatira Road - Demolition of pre-2000's structure.	Construction workers	Inhalation of dust (containing asbestos fibers), Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Inhalation of dust (containing asbestos fibers), Ingestion or skin contact with exposed soil.
	Workers at soil disposal sites	Inhalation of dust (containing asbestos fibers) during placement at an offsite disposal site.
	Ecological receptors	Discharges to air / water / land. Sediment runoff, shallow groundwater flows.
HAIL A18 – Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside. 29 Morris Road - Miscellaneous storage of unknown materials including possible treated timber.	Construction workers	Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Ingestion or skin contact with exposed soil
	Workers at off-site soil disposal sites	Inhalation of contaminated dust during placement at offsite disposal site.
	Ecological receptors	Sediment runoff, shallow groundwater flows.
HAIL A10 – Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds. Along proposed alignment – various orchards noted since 1982 onwards.	Construction workers	Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Ingestion or skin contact with exposed soil
	Workers at off-site soil disposal sites	Inhalation of contaminated dust during placement at offsite disposal site.
	Ecological receptors	Sediment runoff, shallow groundwater flows.

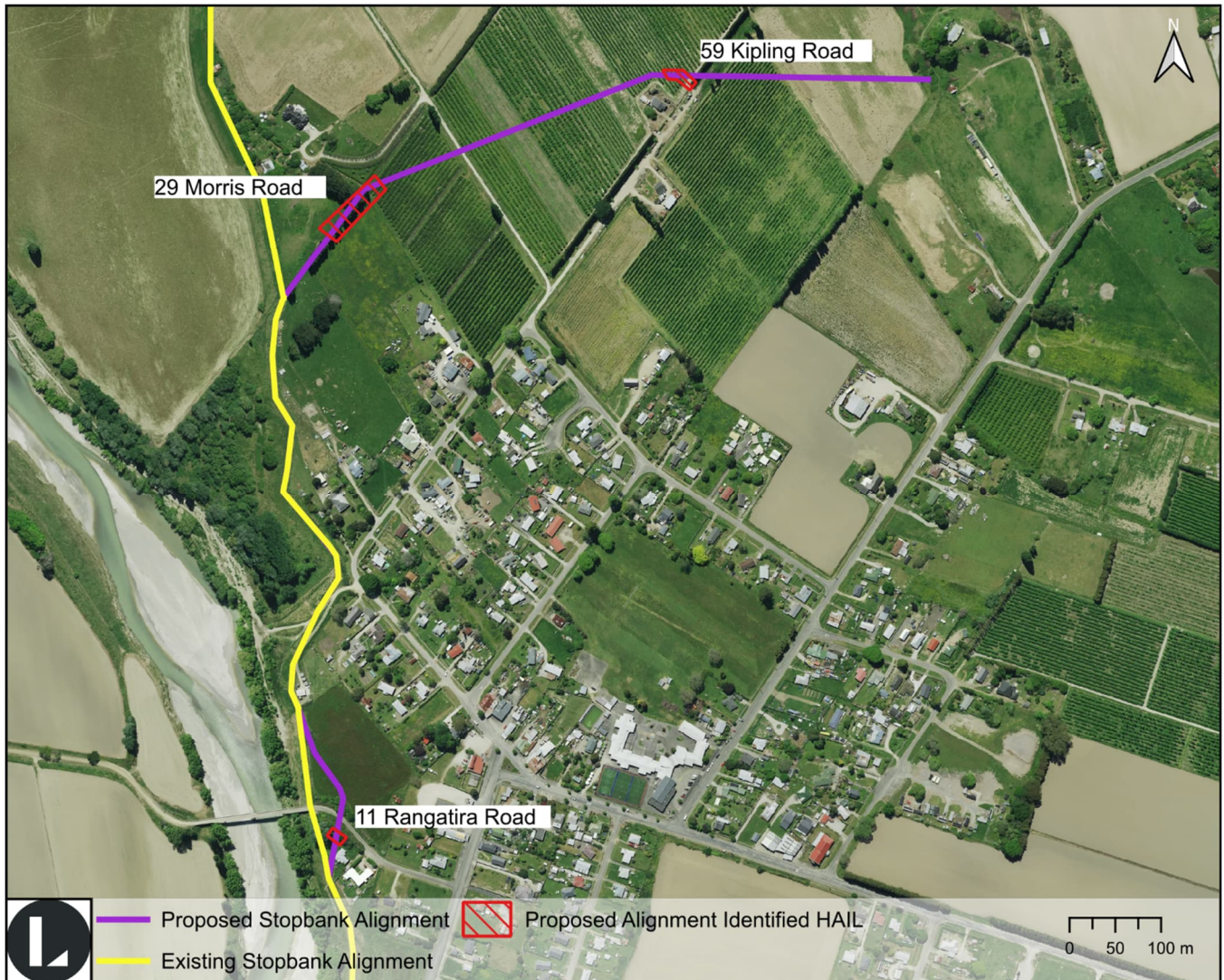


Figure 24. Summary plan showing location of identified HAIL sites along the proposed stopbank alignment. HAIL A10 also identified at various orchards along the proposed alignment. Refer to Figure 25 for zoomed-in plan. No additional HAIL sites were identified following the updates to the proposed alignment (March 2026).

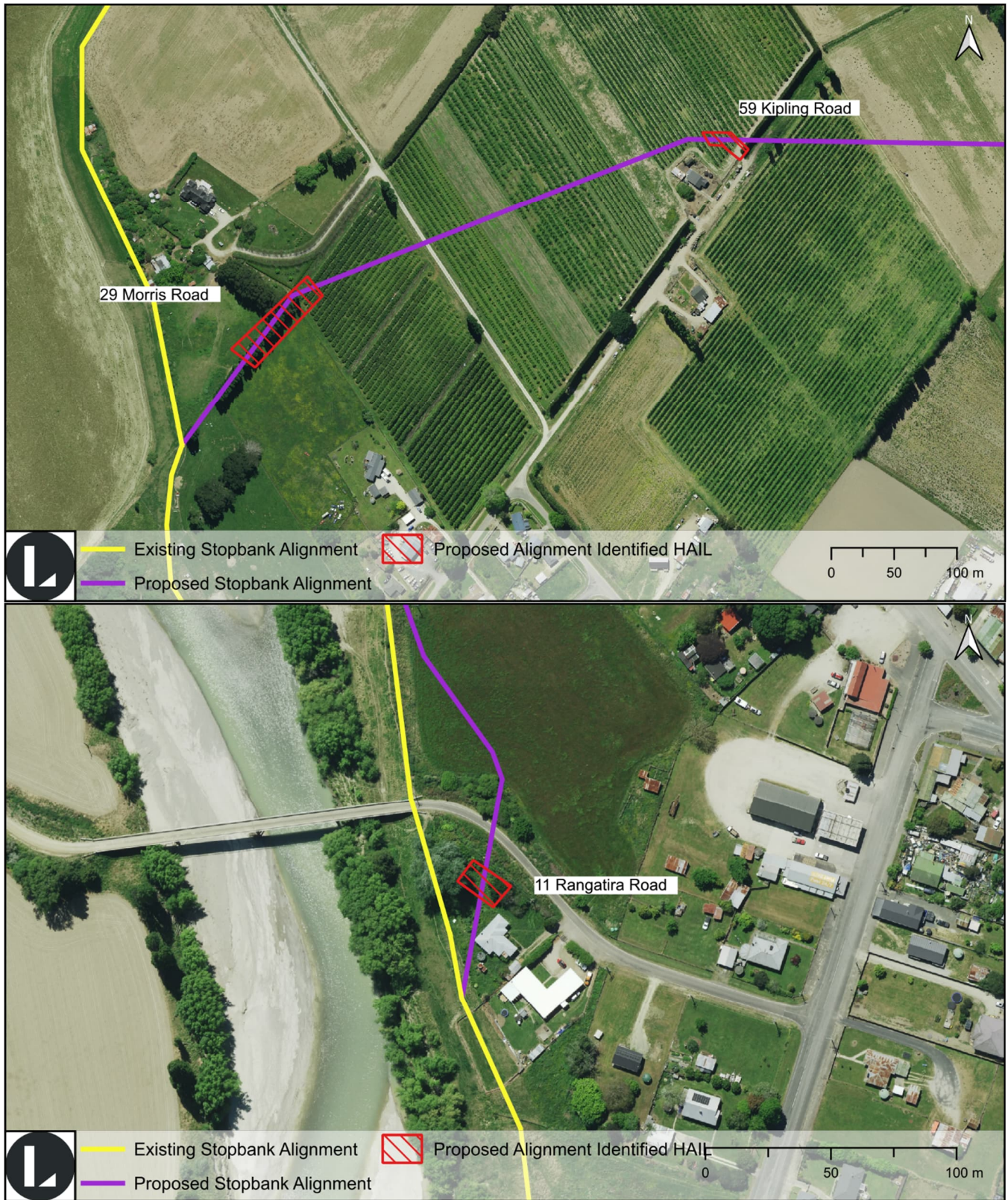


Figure 25. Zoomed-in plans showing identified HAIL locations along proposed stopbank alignment. No additional HAIL sites were identified following the updates to the proposed alignment (March 2026).

4.2 Conceptual Site Model – Proposed Borrow Site

The preliminary site CSM for the proposed borrow site is provided in Table 7 and Figure 26. A human health risk can only occur where there is a complete pathway between contaminant source and a receptor. Building floors and paved or sealed areas will largely or completely prevent contact with underlying soils and therefore, direct exposure pathways are or will be incomplete for such areas.

Table 7. Conceptual Site Model for proposed borrow site at the PSI stage.

HAIL, Potential Contaminants and Location	Receptors	Potential Pathways
HAIL E1 – Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition. HAIL I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment. 29 Morris Road – Demolition of pre-2000's structure. Miscellaneous storage. 44 Morris Road - Demolition of pre-2000's structure.	Construction workers	Inhalation of dust (containing asbestos fibers), Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Inhalation of dust (containing asbestos fibers), Ingestion or skin contact with exposed soil.
	Workers at off-site soil disposal sites	Inhalation of dust (containing asbestos fibers) during placement at an offsite disposal site.
	Ecological receptors	Discharges to air / water / land. Sediment runoff, shallow groundwater flows. Inhalation of dust (containing asbestos fibers), Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).

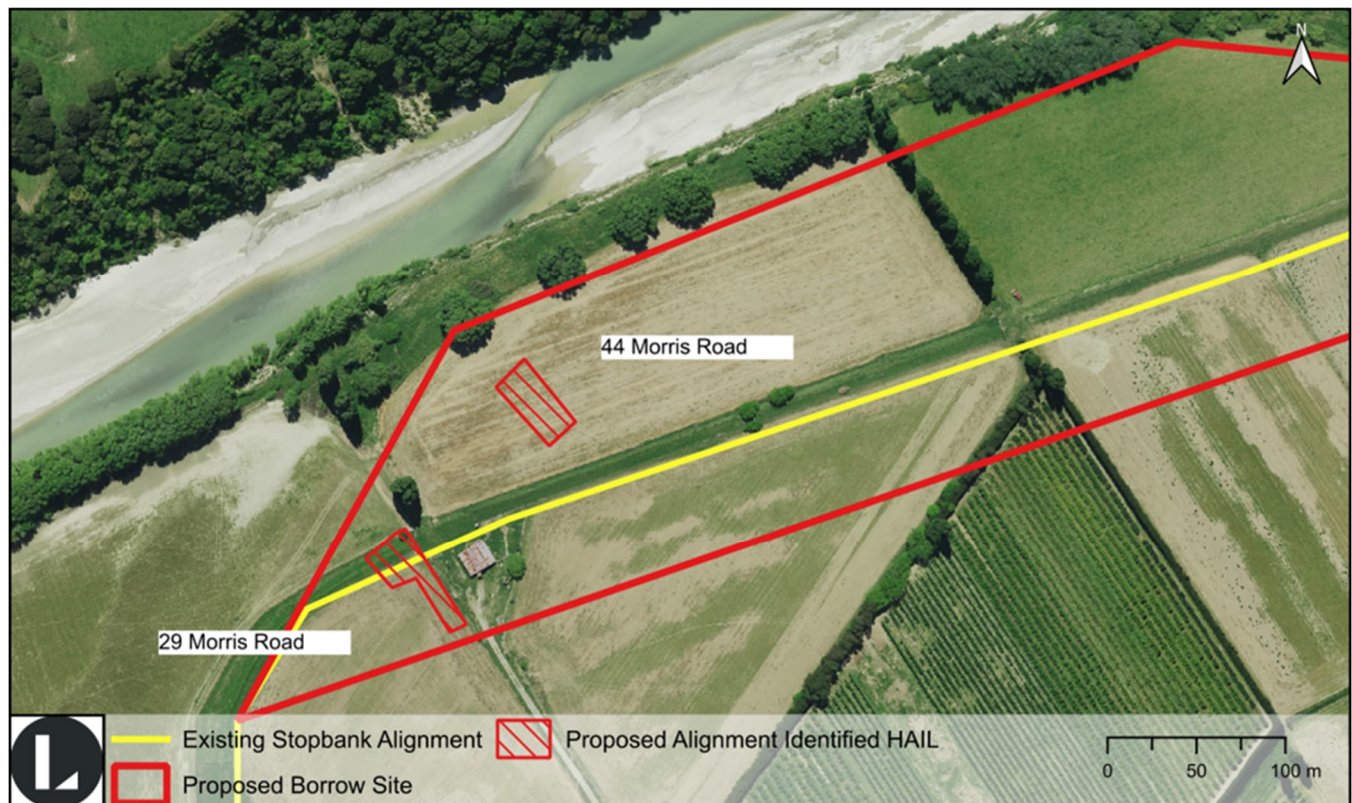


Figure 26. Site plan showing location of identified HAIL sites along the proposed borrow site.

4.3 Applicability of NESCS

As per Regulation 6 (3) it is considered that it is more likely than not an activity or industry described in the HAIL has been undertaken on the piece of land (HAIL A10, HAIL A18, HAIL E1 and HAIL I). Soils in the locations identified could be contaminated and could be a risk to human health. As per Regulation 8(4)(b), LDE considers that there could be a risk to human health if the activity is done to the piece of land.

5 CONCLUSION

Evidence from the PSI and site history review, indicates **HAIL A10**: '*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*', **HAIL A18**: '*Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside*', **HAIL E1**: '*Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition*', and **HAIL I**: '*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*' are more likely than not to have occurred.

No additional HAIL sites were identified following the updates to the proposed alignment (March 2026).

Based on the currently available information presented in this report LDE considers that the NESCS applies. This is because soil disturbance is covered by Regulations 5(4). The land is also covered by the NESCS because of HAIL activities that are more than likely to have been carried out at the site.

A detailed site investigation (DSI) is recommended to establish if soil contamination exceeds the applicable standard to determine if the site is a restricted discretionary or controlled consent under the NESCS. Soil sampling is proposed to be undertaken within the identified HAIL locations, as well as systematic sampling along the proposed alignment where orchards are or were historically present.

A resource consent will be required before groundworks can commence.

5.1 Preliminary Site Investigation Certifying Statement

The document signatories of LDE certify that:

1. this preliminary site investigation meets the requirements of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) Regulations 2011 because it has been:
 - a. done by a suitably qualified and experienced practitioner, and
 - b. reported on in accordance with the current edition of Contaminated land management guidelines No 1 – Reporting on contaminated sites in New Zealand, and

- c. the report is certified by a suitably qualified and experienced practitioner.

For activities under Regulation 8(4) of the NESCS this preliminary site investigation concludes is not highly unlikely that there will be a risk to human health if the activity is done to the piece of land.

The activity to be undertaken as defined in Regulation 5(4) is described:

- a. on page 3 of this preliminary site investigation.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner(s) (SQEPs) who have done this investigation and have certified this report is included in Appendix B.

6 LIMITATIONS

This investigation presents a preliminary site investigations of the potential for ground contamination, prepared exclusively for Gisborne District Council with respect to the particular brief given to us. Information, opinions, and recommendations contained in it cannot be used for any other purpose or by any other entity without our review and written consent. LDE Ltd accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report by any third party.

Opinions given in this report are based on a review of existing data available to LDE. There is still some possibility that contaminating activities have taken place or contamination at the site is in excess of that described in this report and we should be contacted immediately if the conditions are suspected to differ from that described.

APPENDIX A

SEARCH OF COUNCIL RECORDS / PROPERTY FILE RECORDS

807/85/3.

018504

Zeke 334

Pec. No- feS'Q
50e.

W A I K O H U COUNTY COUNCIL

BUILDING APPLICATION FORM

SCANNED

Date: 2/- 8-67

The Engineer,
Haikohu County Council,
TE K A R A K A

Dear Sir,

I hereby apply for permission to (full particulars) Extend Car Shed at
Te Karaka for Presbyterian Church Manse of
Timber Frame & Cor Iron according to locality plan and detailed plans, elevations, cross
sections and specifications of building deposited herewith in duplicate.

Particulars of land: Lot No. Section D.p. 3768 Kftnala Bite

Length of boundaries area 2.36 Estimated Starting date 28-8-67

Particulars of building: Foundations Concrete finishing date ... T ... T&Z ...
Walls Gw Iron & Asbestos Roof Cor. J-C

Area of ground floor 80 sq. feet. Area of outbuildings P.W. sq. feet.

Estimated Cost: Building £ Go
Plumbing £ — Total &Go

Proposed purposes for which every part of building is to be used or occupied (describing separately each
part intended for use or occupation for a separate purpose) Car Shed extension

Proposed use or occupancy of other part of building

Nature of ground on which building is to be placed and of the subjacent strata K«Q?r...lp.<?yy>.....

Yours faithfully,

A. R. Townsend.
PP Presbyterian blui fiL Roberts VtaiMbvV&t

Postal Address The Manse, Te Karaka A. R. Townsend Builder

Drainlajfng -

llaoc of Subcontractors:

Plumbing-



BC

807/85/3.

018504

File 374

Rec. No. 6512
50c.

W A I K O H U COUNTY COUNCIL

BUILDING APPLICATION FORM

Date: 2/- 8-6/

The Engineer,
Waikohu County Council,
TE K A R A K A.

Dear Sir,

I hereby apply for permission to .XtqIUaxtVMtor.s.) Extend Car Shed at

Te Karaka for Presbyterian Church Manse of

Timber Frame & Cor Iron according to locality plan and detailed plans, elevations, cross

sections and specifications of building deposited herewith in duplicate.

Particulars of Land: Lot No. 1 Section 37/ fl Kcirkft fth
O.P. 72

Length of boundaries area 2.36 Estimated Starting date 28-8 finishing date 7.7.72

Particulars of building: Foundations CpnfXlte..fiU Walls CjC; Iron & Ashlar Roof Cor..T-X

Area of ground floor 80 sq. feet. Area of outbuildings \$0 sq. feet.

Estimated Cost: Building £ C?O
Plumbing £ ■ Total £60

Proposed purposes for which every part of building is to be used or occupied (describing separately each part intended for use or occupation for a separate purpose)..... Car Shed extension

Proposed use or occupancy of other part of building

Nature of ground on which building is to be placed and of the subjacent strata River loam

Yours faithfully,

A. R. Townsend
pP- Presbyterian Church Property ffiMciOwner

Postal Address The Manse, Te Karaka A. R. Townsend Builder

Drainlajing - ■

Name of Subcontractors: Pluobing- ■

SPECIFICATIONS FOR BUILDERS.

FOUNDATIONS - Concrete, continuous or otherwise Concrete Pile

PILES - Material, size and distance apart both ways Concrete 9" x 9" 4 ft Apart

STRINGERS - Size and spacing, and type of timber /

FLOOR JOISTS - Size and distance apart, and type of timber /

FRAMING - Size & type of timber, height of stud & distance apart 4" x 2" treated timbers,
6' 6" studs @ 18" spacing

RAFTERS - Size, type of timber and distance apart 4 1/2" Ramin 3' 3" spacing

PURLINS - Size, type of timber and distance apart 3X2" treated, 1/4" x 2" 2' 6"

ROOF COVERING - Type of Material Cor Iron

ROOF BRACING - Description of /

EXTERNAL WALL COVERING - Type of material Cor Iron & 4" x 4" treated

PARTITION WALL COVERING, Type of materials /

NAME OF PLUMBER /

ADDRESS: /

WAIKOHU COUNTY COUNCIL

OFFICES:
MAIN ROAD
TE KARAKA

TELEPHONE TTK 809

ALL COMMUNICATIONS
TO BE ADDRESSED TO
THE COUNTY CLERK

SCANNED

REF. No.

YOUR REF.

P.O. BOX 17

TE KARAKA

APPLICATION FOR A BUILDING PERMIT.

The Engineer,
Waikohu County Council.
Te Karaka.

Please print clearly.

Sir, I hereby apply for a permit to:-

Description of work.

Covered Deer yards + 2 stand shearing
shed and machinery storage area

For:-

Owner.

Name... R M TRAFFORD

Mailing Address... MORRIS RD TEKARAKA

Phone... 646 T.K.K.

Builder.

Name... self

Mailing Address...

Phone...

Location of work.

Address... MORRIS RD

Te KARAKA

NOTE:

If location vague give description
of route to site.

Legal Description.

Lot... 23... DP. 1145

Block No.....

Survey District... WAIKOHU.

Valuation Ref. 8070-114-0-000

Estimated Values.

Building \$ 7800

Plumbing \$ -

Drainage \$ -

TOTAL \$ 7800

Applicants Name... R M TRAFFORD

Applicants Signature... R M TRAFFORD

Date of application... 29/11/83

For Office Use Only

Date Received... 29-11-83

Building Fee \$ 30-00

BRANZ Levy \$ -

TOTALS: \$ 30-00

Receipt No... 3152

Building permit No... 45134

Date Issued... 13/12/83

File No... 1541

Issuing Officer... [Signature]

Related D & P Permit No.....



R m TRAFFORD Deer shed.

Area. $15\text{ m} \times 13.5 = 202.5\text{ sq m.}$

Construction 4 7 metre trusses with 2 4 metre beam to each side.

Materials Purlins and Rafter - 150 x 50. Timber
Truss and Rafter supports Heavy gauge Railway
Iron. Trusses Bolted on to same by
welded on brackets.

Woolshed Floor. 100 x 100 plates. 150 x 50 Joists
T.O.G. Flooring. concrete piles

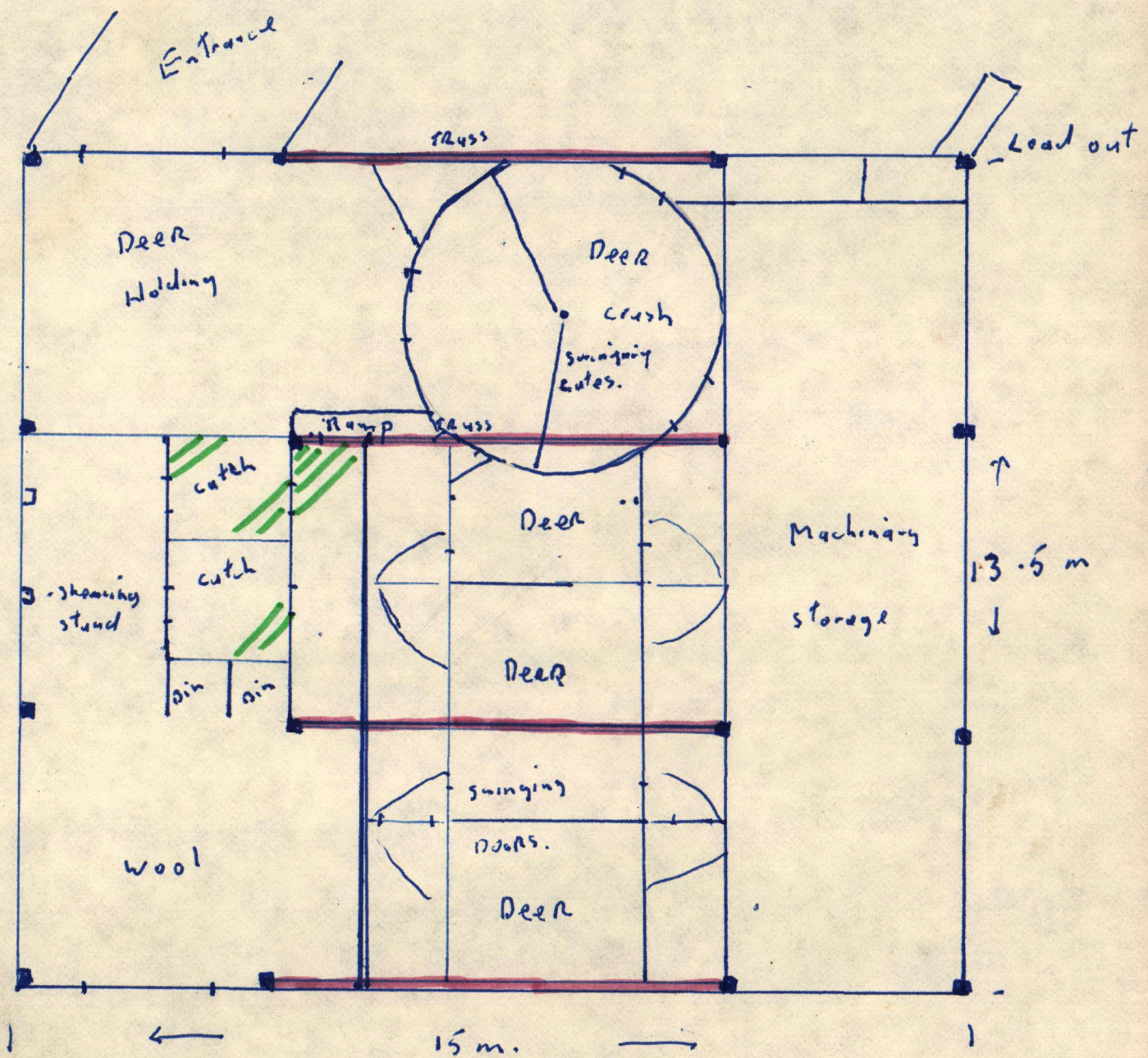
Roof. Insulation over wire netting. Corrugated
Iron.

Exterior. Implement shed side open.
Woolshed corrugated Iron.

Interior. Deer walls construction ply or 6 x 1
on 100 x 50 studs on 2.7 metre
 $\frac{1}{4}$ Round deer posts with 250 x 50
cap Rail.

R. M. TRAFFORD
Deer shed. + woolshed.

scale 1cm = 1 metre

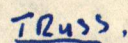


/// GRATED AREA.

— 7 metre Trusses.

■ Heavy duty Railway Iron sunk 1.2 metre in ground

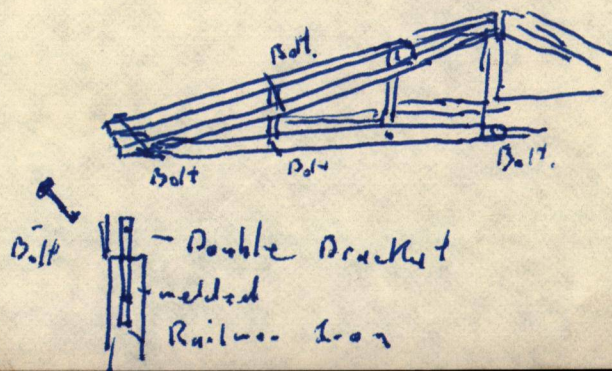
scale 1 cm = 1 metre



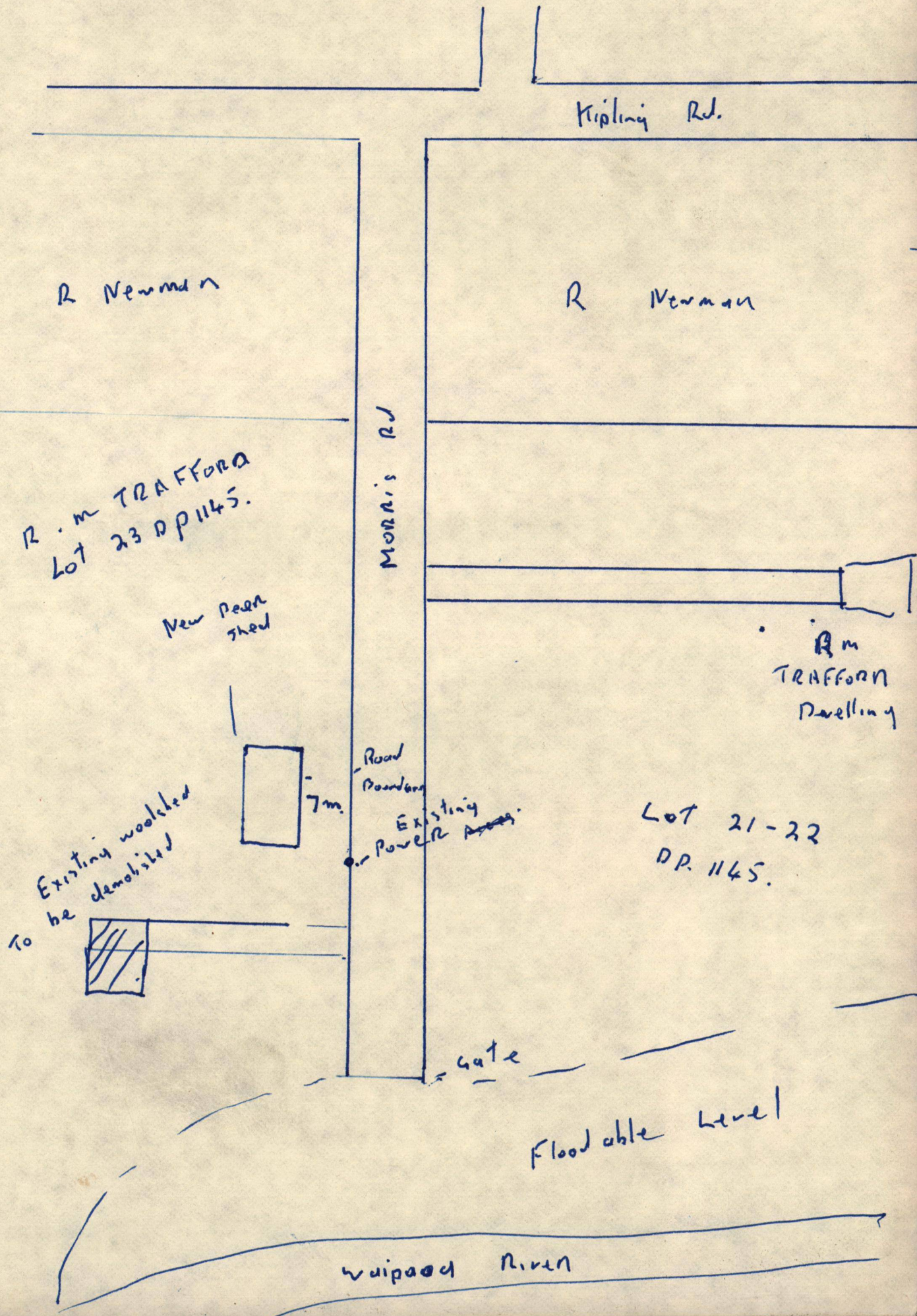
Lean to Rafter 150 x 50 spaced 0.7 metres

TRUSS Detail

2 100 x 50 Main supports Bolted together
with 100 x 50 Bracing in between.



R M TRAFFORN Deer shed site Plan



APPENDIX B

QUALIFICATIONS AND EXPERIENCE OF THE SQEPS

James Gladwin - BSc (Hons) Environmental Science, PgDip in Soil Science, CEnvP.

James is a Suitably Qualified and Experience Practitioners (SQEP). He has +15 years of experience in contaminated land covering a wide range of sites and contamination types, and as a result has an excellent understanding of the National Environmental Standards for Contaminated Land (NESC) and the Contaminated Land Management Guidelines (CLMG).

James is a certified environmental practitioner (CEnvP) and has provided a wide range of contaminated land services to an array of clients. Key clients include the District and City Councils of the Bay of Plenty, the Bay of Plenty Regional Council, Christchurch City Council, Gisborne City Council, New Plymouth District Council and the NZ Transport Agency. He has been a panel member that provided technical review and guidance for the development of contaminated sites. He has also provided technical reviews for contaminated land investigations completed by third parties.

James worked on the Kopeopeo Canal Remediation Project, providing independent technical analysis for dioxin contamination in soils, sediment, water and air. He monitored and reported on the effectiveness of the dredge trial within resource consent requirements. This provided proof that the remediation methods were effective and practical so that the full-scale remediation of the canal could be completed. James continued to provide technical input through the remediation stage of the project.



Gisborne District Council

DETAILED SITE INVESTIGATION (DSI)

Te Karaka Stopbank

DOCUMENT CONTROL

Version	Date	Comments
A	10/03/2026	DSI issued for information
B	17/03/2026	Report updated to reflect the revised proposed stopbank alignment provided by Client.

Version	Issued For	Prepared By	Reviewed & Authorised By
B	Issued for Information	 Erin Gasston Environmental Scientist	  James Gladwin Environmental Group Manager SQEP

EXECUTIVE SUMMARY

A contamination detailed site investigation (DSI) has been conducted for the proposed new stopbank alignment and proposed borrow site, located within the Te Karaka township. The objectives of the assessment were to determine the contamination status of soils at the site, and to subsequently assess compliance with the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS) for the proposed soil disturbance at the site.

The investigation comprises a DSI (i.e., intrusive soil sampling investigation). Evidence from the PSI (LDE, 2026; Appendix A) indicates that **HAIL A10**: '*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*', **HAIL A18**: '*Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside*', **HAIL E1**: '*Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition*', and **HAIL I**: '*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*' are more likely than not to have occurred at the site.

Soil sampling and analysis was therefore undertaken to identify if these activities have contributed to soil contamination that would be unacceptable for the proposed development.

The results determined that contamination present at the site is below the applicable soil contaminant standard for a Recreational land-use, however, remain above the predicted background concentrations.

One location (S6) reported concentrations of zinc above the Ecological Soil Guideline Values (SGVs), however following an update to the proposed alignment (March 2026), this no longer intersects with the identified HAIL (sample location S6). The revised realignment of the stopbank has moved it away from a number of potential HAIL, reducing the risk of the proposed works to human health and the environment.

As a number of samples report concentrations above predicted background ranges, under a controlled activity consent from Gisborne District Council, a Site Management Plan (SMP) should be prepared to outline appropriate site management procedures to mitigate any offsite impacts during stopbank construction works. **A resource consent may be required before groundworks can commence. As per Regulation 9 (3)(c) the regulatory authority must be provided a copy of this report.**

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1 INTRODUCTION

LDE has been engaged by Gisborne District Council to undertake a soil contamination Detailed Site Investigation (DSI) for the for the proposed stopbank alignment and proposed borrow site in Te Karaka, Gisborne. LDE understands that the site is to undergo soil disturbance that may not meet the permitted activity conditions (Regulation 8) of the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS).

Based on the findings of the PSI, further investigation was required to establish if soil contamination exceeds the applicable standard and to determine if the site is restricted discretionary or controlled under the NESCS.

This site investigation has been prepared in accordance with the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2021. It has been managed by a suitably qualified and experienced practitioner (SQEP); carried out in general accordance with the Contaminated Land Management Guidelines No.1- Reporting on Contaminated Sites in New Zealand (revised 2021) and Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils (revised 2021).

1.1 Investigation Objectives

The objectives of the investigation are to:

- Determine if soil contamination associated with the HAIL Activities identified in the PSI exceeds the applicable standard and to identify if the site is restricted discretionary or controlled under the NESCS.
- Delineate the extent (vertically and horizontally) of the contamination on the site.

Based on the conceptual site model and taking into consideration the methodology for deriving soil contaminant standards (SCS) and the proposed development at the site, our investigation was designed to establish if site soils exhibit contaminant concentrations exceeding the soils contaminant standards applicable to the '*Recreational*' land-use scenario. Recreational land use has been selected as members of the public using the stopbanks for recreational walking are the most likely end user.

1.2 Site Identification

1.2.1 Proposed Borrow Site

The proposed borrow site includes part of the existing stopbank alignment. The site borders the Waipaoa River to the north. The borrow site is proposed to be excavated to a maximum depth of 1.5m. The proposed borrow site is outlined in Figure 1. A summary of addresses covered is provided in the PSI (Appendix A).



Figure 1. Proposed borrow site, outlined in red. Source: Supplied by Client.

1.2.2 Proposed Stopbank Alignment

The proposed stopbank alignment borders the Te Karaka township to the west, north and east. The proposed alignment closely follows the existing alignment to the west and east of the township. To the north, the proposed alignment is between 140 - 370m closer to the township than the existing alignment. Refer to **Error! Reference source not found.** and Figure 3 for the updated proposed alignment locations. A summary of addresses covered is provided in the PSI (Appendix A).



Figure 2. Updated alignment changes (dated 19/02/2026).

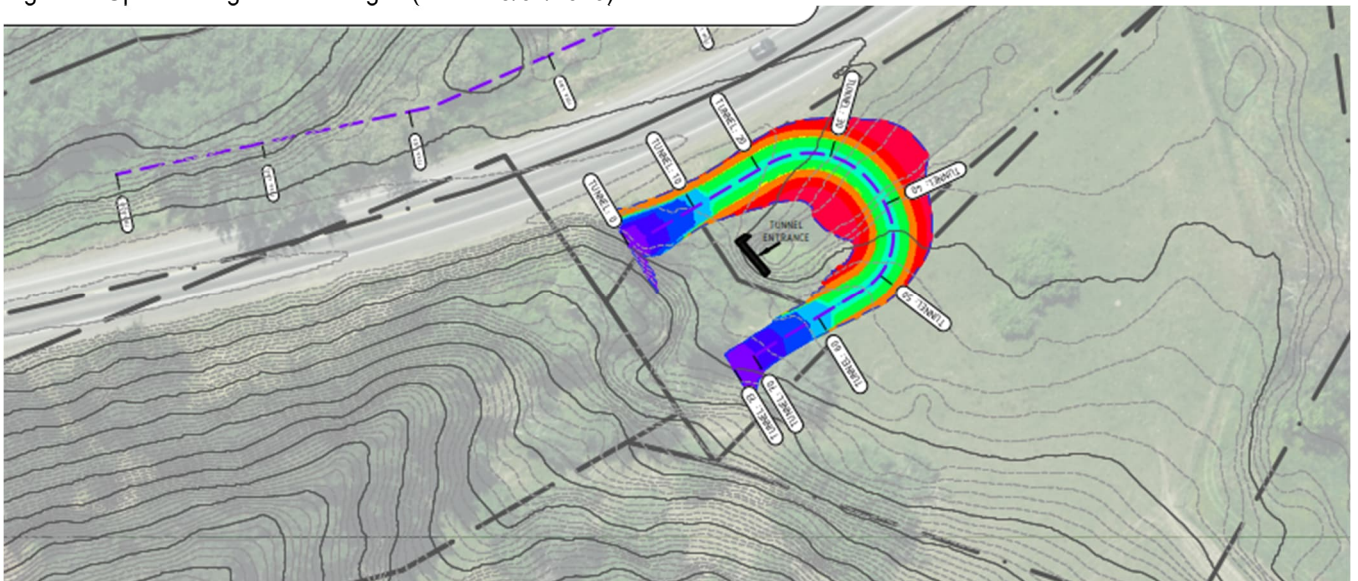


Figure 3. Tunnel bund located across Main Road, south of the western-most extent of the proposed stopbank (dated 02/2026).

2 PSI SUMMARY

The PSI (Appendix A) identified several potential HAIL sites along both the proposed stopbank alignment and within the proposed borrow site. No additional HAIL activities were identified following the updated proposed alignment (March 2026). These are summarised in Table 2 and Table 1, and shown in Figure 5 and Figure 4, below.

2.1 Proposed Borrow Site

Table 1. Potential HAIL sites within proposed borrow site.

Address	HAIL Category and date observed	Potential for contamination (Y/N)
44 Morris Road	HAIL E1/I – 1949+	Y – demolition of structures prior to 2000s possibly containing asbestos and/or lead paint.
29 Morris Road	HAIL I – 1960+	Y – demolition of structures prior to 2000s possibly containing asbestos and/or lead paint. Miscellaneous storage.

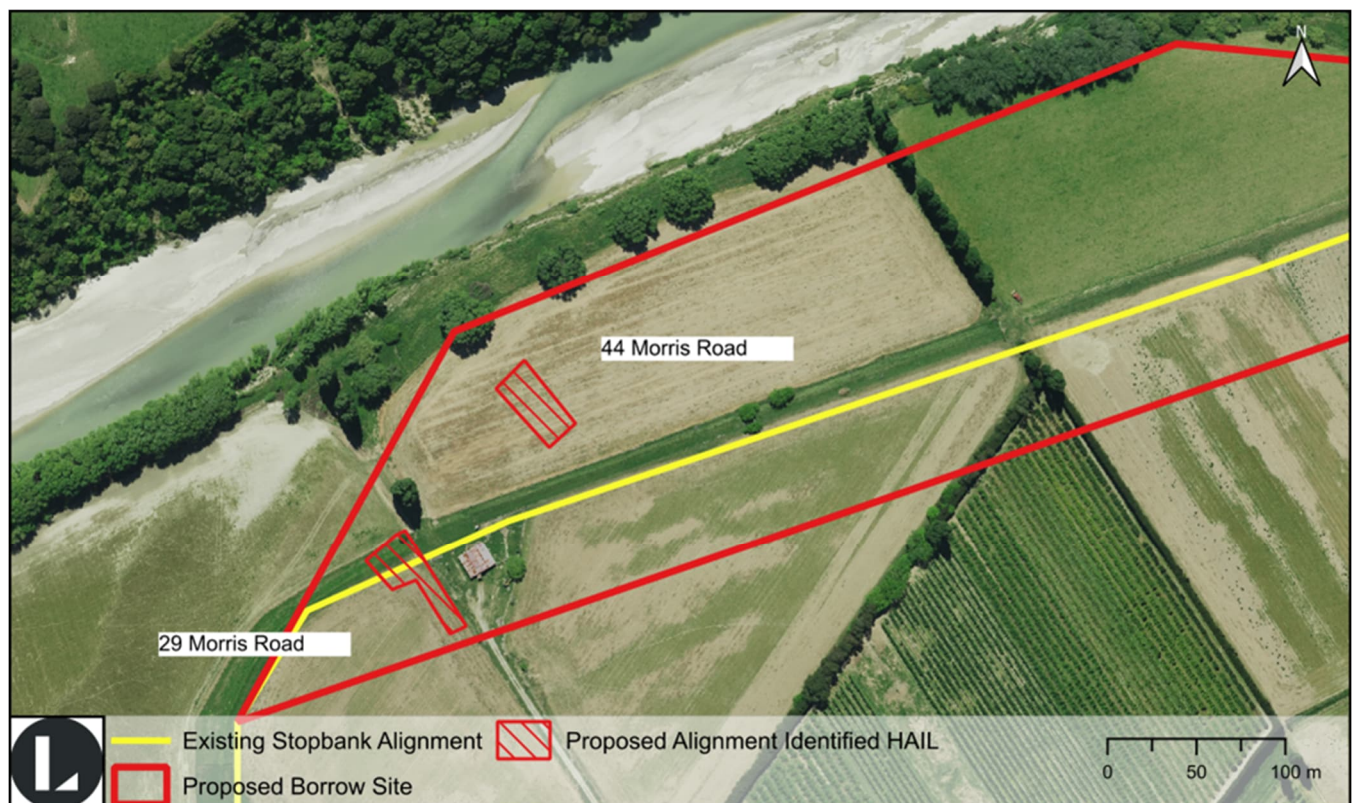


Figure 4. Site plan showing location of identified HAIL sites within the proposed borrow site.

2.2 Proposed Stopbank Alignment

Table 2. Potential HAIL sites along proposed stopbank alignment.

Address	HAIL Category and date observed	Potential for contamination (Y/N)
59 Kipling Road 11 Rangatira Road	HAIL E1/I – 1949+	Y – demolition of structures built prior to 2000s possibly containing asbestos and/or lead paint.
29 Morris Road	HAIL A18 – 1960	Y – storage of potential treated timber and miscellaneous storage
Morris Road / Kipling Road / Paulson Road / Matawai Road	HAIL A10 – 1982+	Y – various orchards cross the proposed alignment.

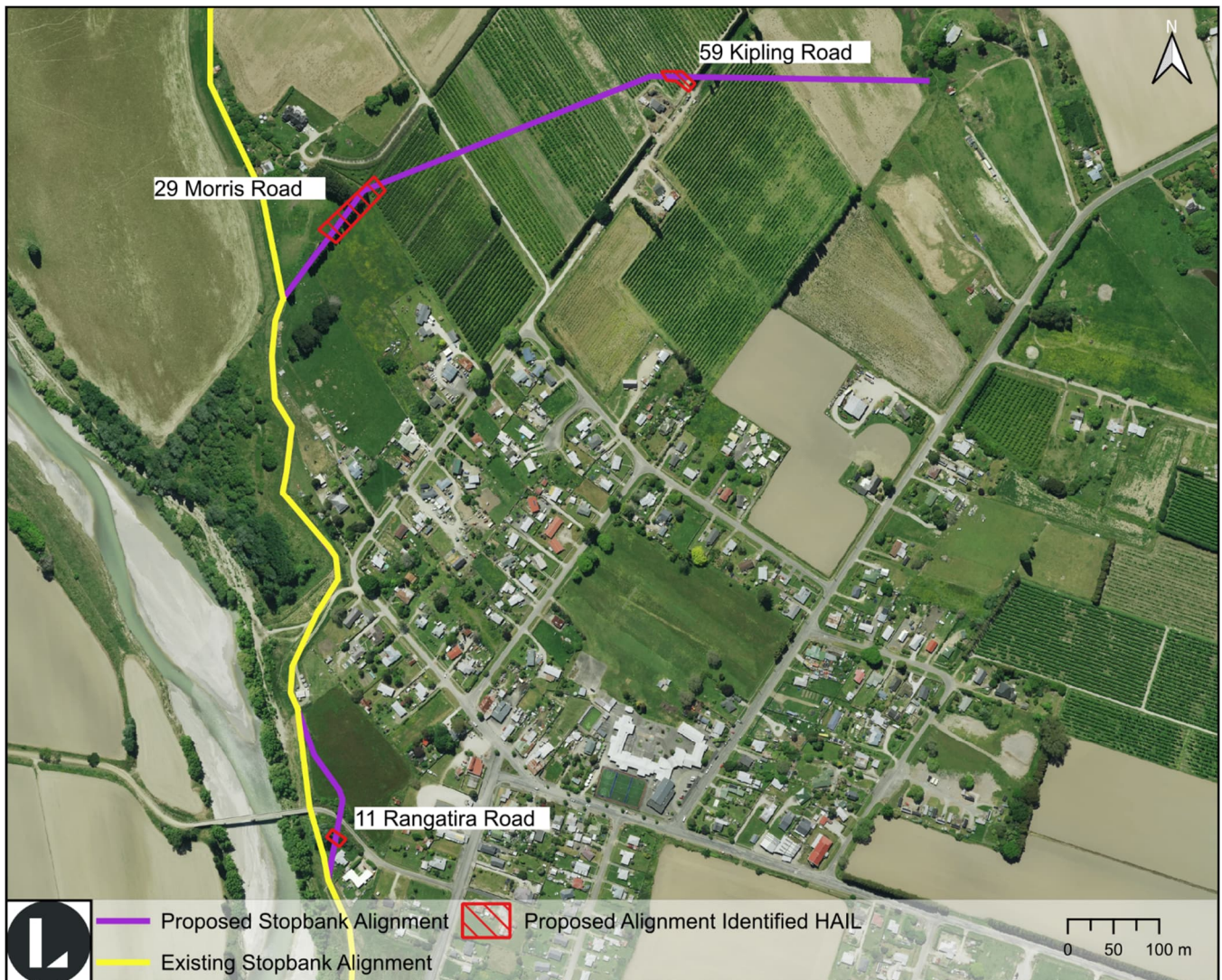


Figure 5. Summary plan showing location of identified HAIL sites along the proposed stopbank alignment. HAIL A10 also identified at various orchards along the proposed alignment. No additional HAIL activities were identified following the updated proposed alignment (March 2026).

3 DETAILED SITE INVESTIGATION

3.1 Site Walkover

A site walkover was undertaken on 23 February 2026 by an LDE scientist. The site walkover included areas identified as HAIL sites during the PSI, and a walkover of the wider proposed alignment and proposed borrow site. No visual or olfactory evidence of actual or potential contamination was identified during the site walkover.

Rows of crops, including apples, citrus, corn, beets are present along the proposed alignment length.



Figure 6. Various crops / orchards visible along the proposed alignment.



Figure 7. Various crops visible along the proposed alignment.



Figure 8. Section of proposed alignment used for pasture.



Figure 9. Farm shed at 44 Morris Road – proposed borrow site. Piles of fencing wire visible.

3.2 Sampling and analysis plan

The field investigation was undertaken concurrently with the site walkover on 23 February 2026 by an LDE scientist. Each one of the sample locations was selected based on the proposed development, site history, and visual site characteristics. Discrete surface (topsoil) samples from locations S1 to S18 were collected across the proposed development area. All samples were tested for heavy metals, and selected samples were also analysed for asbestos in soil and organochlorine pesticides (OCPs) where historic or current site activities indicated a potential for these contaminants. The sample locations and details are shown in Figure 10 to Figure 13.

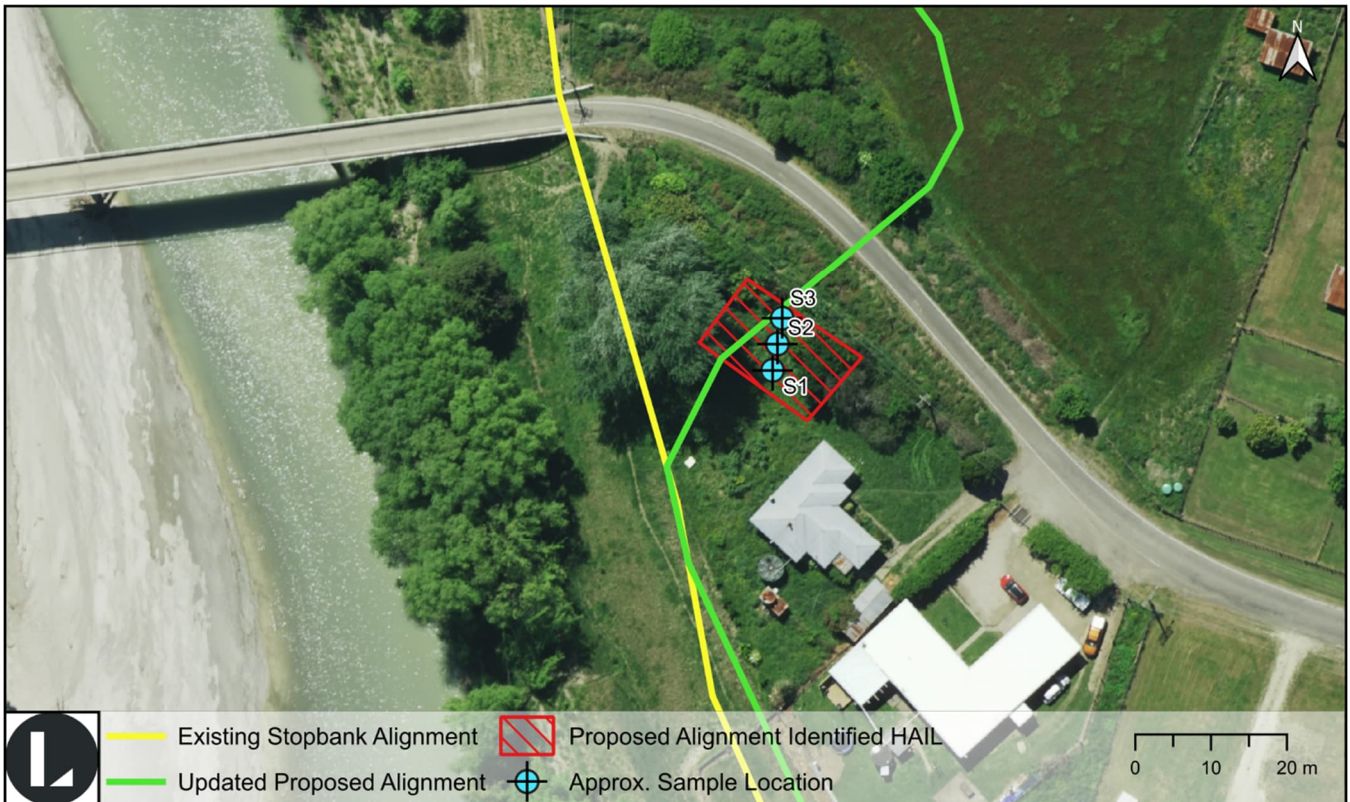


Figure 10. Site sampling plan along proposed stopbank alignment, sample locations S1-S3.

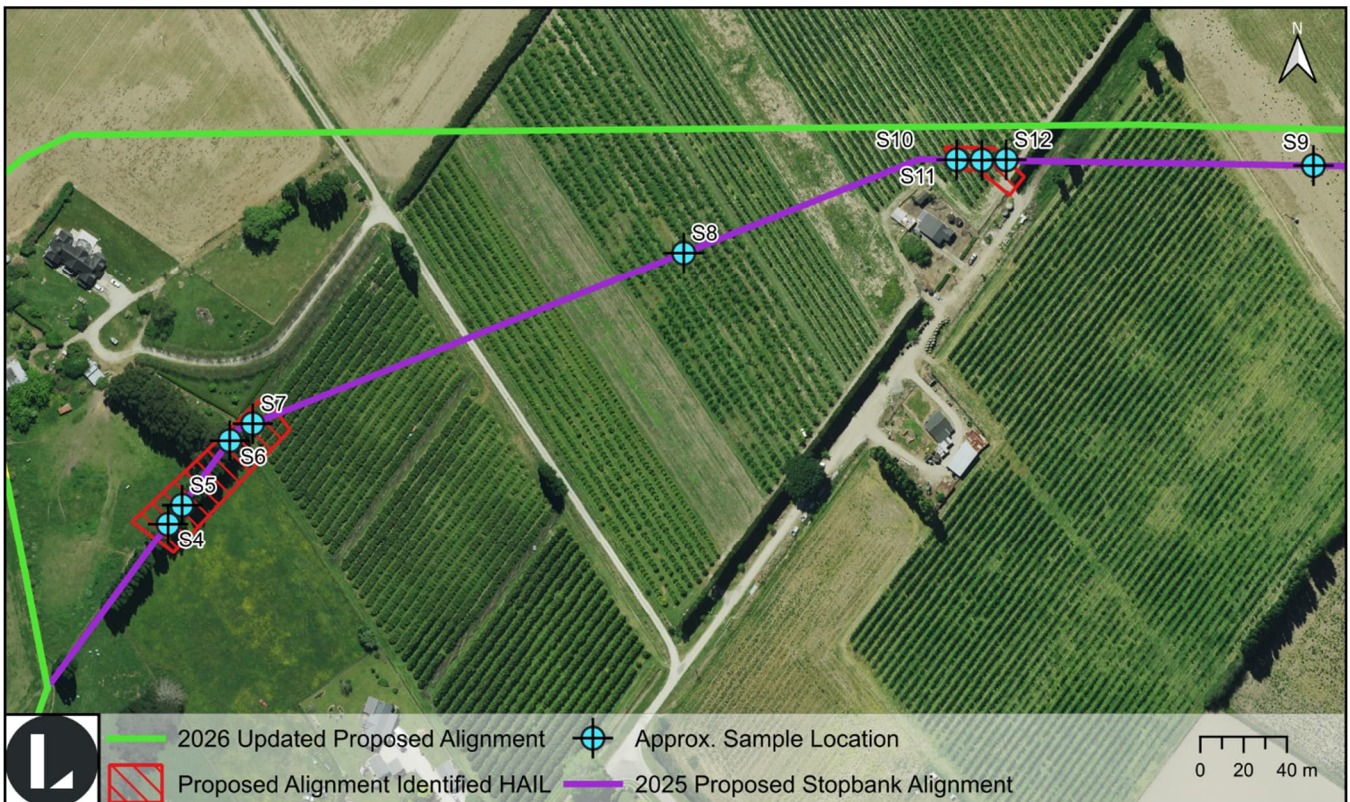


Figure 11. Site sampling plan along proposed stopbank alignment, sample locations S4-S9.

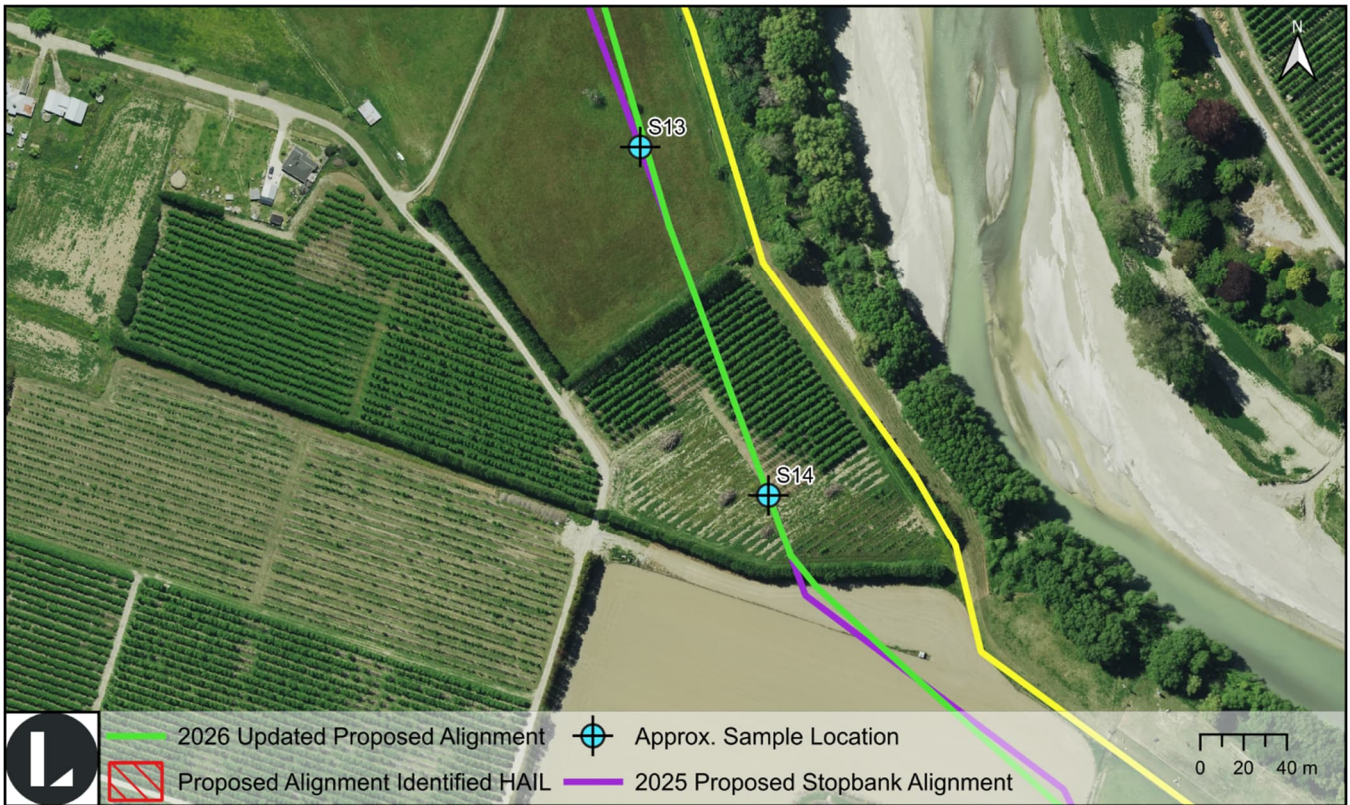


Figure 12. Site sampling plan along proposed stopbank alignment, sample locations S13-S14.

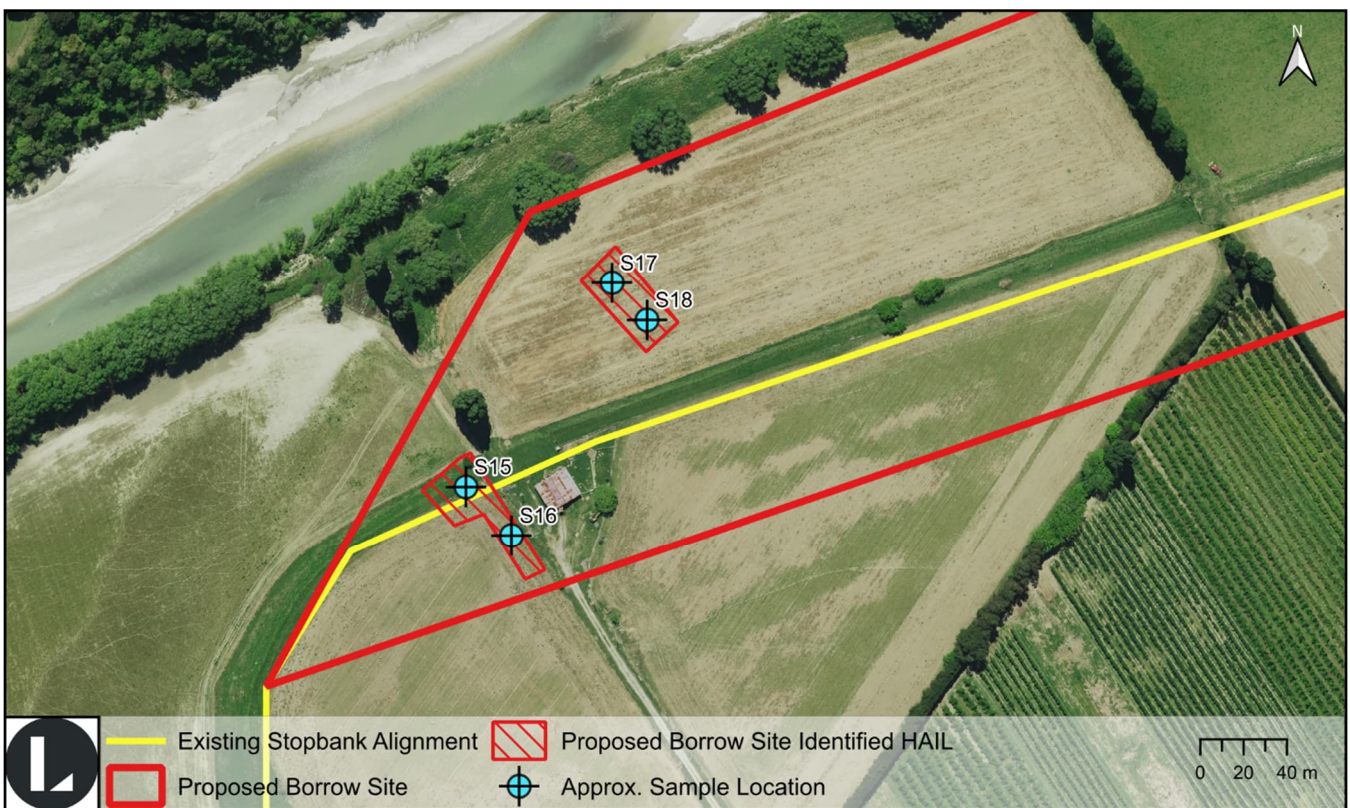


Figure 13. Site sampling plan within proposed borrow site, sample locations S15-S18

3.3 Quality Assurance and Quality Control

3.3.1 Field QA/QC

The following procedures were adopted during soil investigation works:

- All fieldwork was carried out in compliance with a project specific Health and Safety Plan prepared for the site works.
- All works were conducted by trained LDE staff with precautions including implementation of procedures for the appropriate handling of potentially contaminated material.
- Prior to sampling, and between sample locations, equipment used to retrieve samples was cleaned by washing with potable water to minimise the chance of cross contamination.
- Soil samples were collected using a hand trowel / hand auger.
- A clean pair of nitrile gloves was also used for each sample location. All samples were placed into labelled laboratory supplied sample containers.
- Additional laboratory containers were taken to the site as a contingency for grab samples (one-off samples of material or soil that are of interest and observed by the sampler during a site inspection or sampling event) including soil stains, burn patches or pits, filled areas, and treated timber stockpiles.
- Following collection, all samples were transported, under standard chain of custody procedures, to an IANZ accredited laboratory (Hill Labs) for analysis. The chain of custody documentation is attached in Appendix B.

3.3.2 Laboratory QA/QC

Laboratory reports from Hill Labs have been included in Appendix B. These include the analytical methods and detection limits used by the laboratory and the laboratory accreditation for analytical methods used.

All Laboratory Analysis was completed through Hill Labs. Hill Labs are accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.

3.4 Background Concentrations, Soil Contaminant Standards (SCSs) and Guideline Values (SGVs)

3.4.1 Human Health

The NESCS references the Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (MfE, 2011). This is a national risk-based methodology for deriving soil contaminant concentrations protective of human health. Soil Contaminant Standards (SCS) and Soil Guideline Values (SGVs) have been selected in accordance with regulation 7.

Regulation 7 states that if the contaminant of concern is a priority contaminant¹ and the land use fits within an exposure scenario adopted in the Methodology², the applicable standard is the soil contaminant standard for the priority contaminant. If the contaminant of concern is a priority contaminant and the land use does not fit within an exposure scenario adopted in the Methodology, the applicable standard is whichever of the following is more appropriate in the circumstances:

- a) the guideline value derived in accordance with the methods and guidance on site-specific risk assessment provided in the Methodology;
- b) the soil contaminant standard for the priority contaminant of the exposure scenario adopted in the Methodology with greater assumed exposure than the actual exposure.

If the contaminant of concern is not a priority contaminant, the applicable standard is whichever of the following is more appropriate in the circumstances:

- a) the guideline value derived in accordance with the methods and guidance on site-specific risk assessment provided in the Methodology;
- b) a guideline value for the protection of human health that is chosen in accordance with the current edition of Contaminated Land Management Guidelines No. 2–Hierarchy and Application in New Zealand of Environmental Guideline.

Following the guidance, the Soil Contaminant Standards (SCS) for selected priority contaminants and for non-priority contaminants guidelines values were selected following Regulation 7 and the Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values (Revised 2021) as screening criteria for the risk to humans at the site and to inform on-site management actions. If exceeded, further investigation and a Tier 2 assessment would be considered.

No applicable New Zealand guideline criteria exist for some of the tested metals (i.e., nickel and zinc) and therefore Health Investigation Level (HIL) values from the Australian Guideline on the Investigation Levels for Soil and Groundwater have been used under the residential land-use scenario as outlined in the MfE document.

The soil samples were tested at the laboratory for total chromium. However, the methodology document distinguishes between the stable chromium III and the potentially toxic and less stable chromium VI. For the purposes of this analysis all total chromium results have been conservatively compared to the chromium VI.

Asbestos results are compared against the New Zealand Guidelines for Assessing and Managing Asbestos in Soils (NZ GAMAS) for Fibrous Asbestos (FA), Asbestos Fines (AF) and Asbestos Containing Materials (ACM).

¹ a contaminant for which the Methodology derives a soil contaminant standard.

² The current edition of the Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

3.4.2 Environmental

All results are compared against the Predicted Background Soil Concentrations (Landcare Research Limited)³ to determine if soil concentrations are anthropologically affected and the applicability of the NESCS.

All results are also compared with the '*Updated Development of Soil Guideline Values for the Protection of Ecological Receptors (Eco-SGVs): Technical Document (Landcare Research, June 2019). Eco-SGVs for typical soil, aged contamination source, and a Recreational land use.*'

3.5 Results

3.5.1 Heavy Metals

Table 3 summarises the laboratory results of soil samples tested for heavy metals.

- All metal concentrations were below the respective SCS for a '*Recreational*' land-use scenario.
- There are several exceedances of the Predicted Background Soil Concentrations for arsenic, cadmium, lead, nickel and/or zinc.
- Zinc is seen to be elevated above the Ecological SGV for a recreational site in one sample only (S6), which is now outside the proposed realignment.

The full lab results are included in Appendix B.

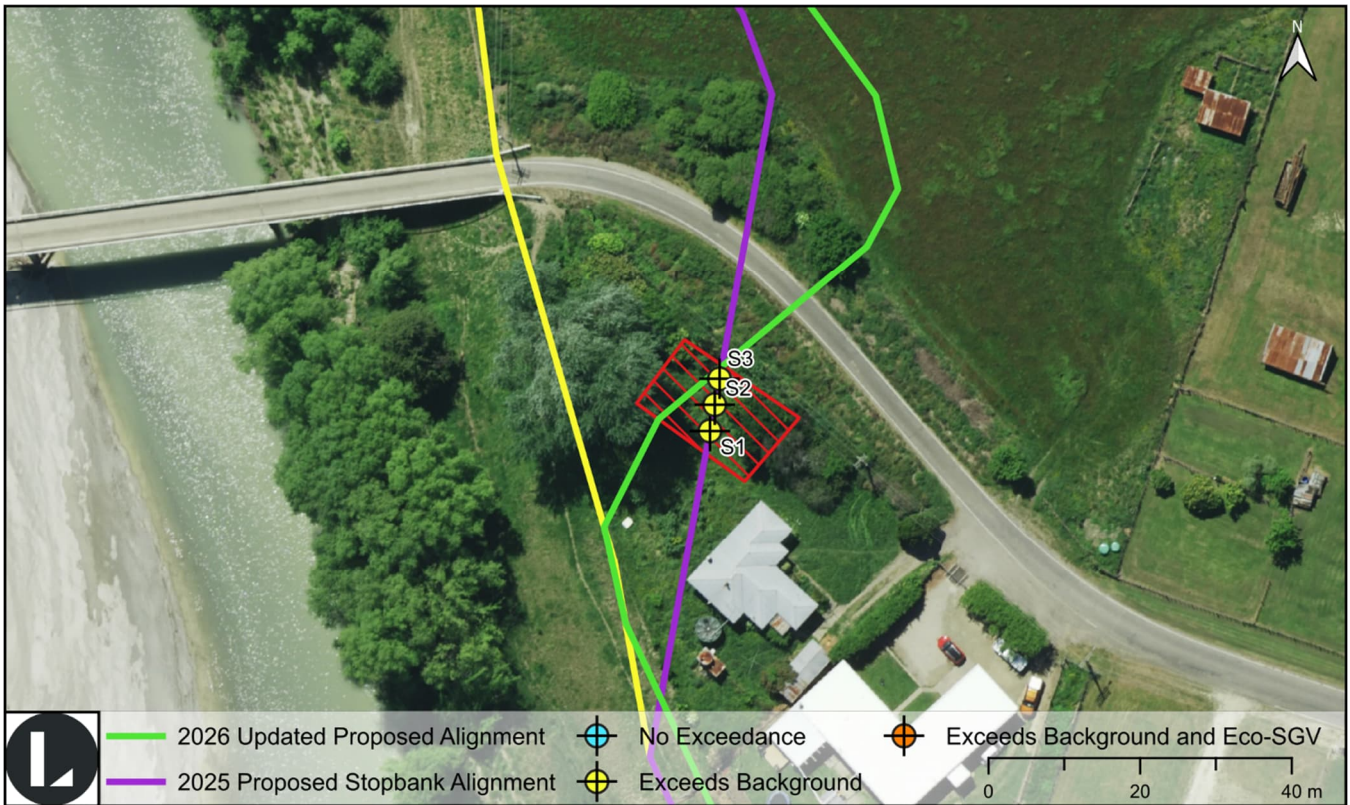
³ <https://iris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/>

Table 3. Laboratory tests (heavy metal) compared against the soil contaminant standard (SCS) for a 'Recreational' land-use.

Sample ID	Depth (mm)	Sample Description	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc
Proposed Stopbank Alignment									
S1	0-50	Topsoil	5	0.27	23	24	49	26	115
S2	0-50	Topsoil	5	0.36	23	21	57	26	125
S3	0-50	Topsoil	6	0.23	22	18	42	25	89
S4	0-50	Topsoil	6	0.41	26	21	40	37	109
S5	0-50	Topsoil	7	0.43	27	21	71	33	149
S6	0-50	Topsoil	5	0.43	23	19	37	28	390
S7	0-50	Topsoil	6	0.23	24	17	15.4	29	109
S8	0-50	Topsoil	8	0.21	26	16	9.2	30	84
S9	0-50	Topsoil	6	0.2	29	17	10.8	32	76
S10	0-50	Topsoil	5	0.18	26	18	12.9	31	86
S11	0-50	Topsoil	10	0.13	31	23	16.9	40	93
S12	0-50	Topsoil	6	0.19	27	19	16.2	31	89
S13	0-50	Topsoil	6	0.19	29	22	14.3	39	83
S14	0-50	Topsoil	7	0.13	31	24	11.3	42	85
Proposed Borrow Site									
S15	0-50	Topsoil	6	0.14	22	18	11.1	30	76
S16	0-50	Topsoil	5	0.23	23	19	43	28	146
S17	0-50	Topsoil	5	0.21	25	17	30	30	72
S18	0-50	Topsoil	5	0.18	25	16	28	29	79
Recreation¹			80	400	2700	10000	880	1200	30000
Background soil concentrations²			9.97	0.33	56.88	48.14	25.83	35.15	97.97
Ecological-SGV³			60	12	390	240	900	-	300

Notes: All results and standard values are presented in mg/kg (dry weight). All metals tested for 'Total Recoverable' at screen level. Depths are mm below ground level.

- 1 Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Ministry for the Environment, 2011.
- 2 [Predicted Background Soil Concentrations, New Zealand, Landcare Research Limited.](#)
Updated Development of Soil Guideline Values for the Protection of Ecological Receptors (Eco-SGVs): Technical Document (Landcare Research, June 2019). Eco-SGVs for
- 3 typical soil, aged contamination source, and a recreational land use'



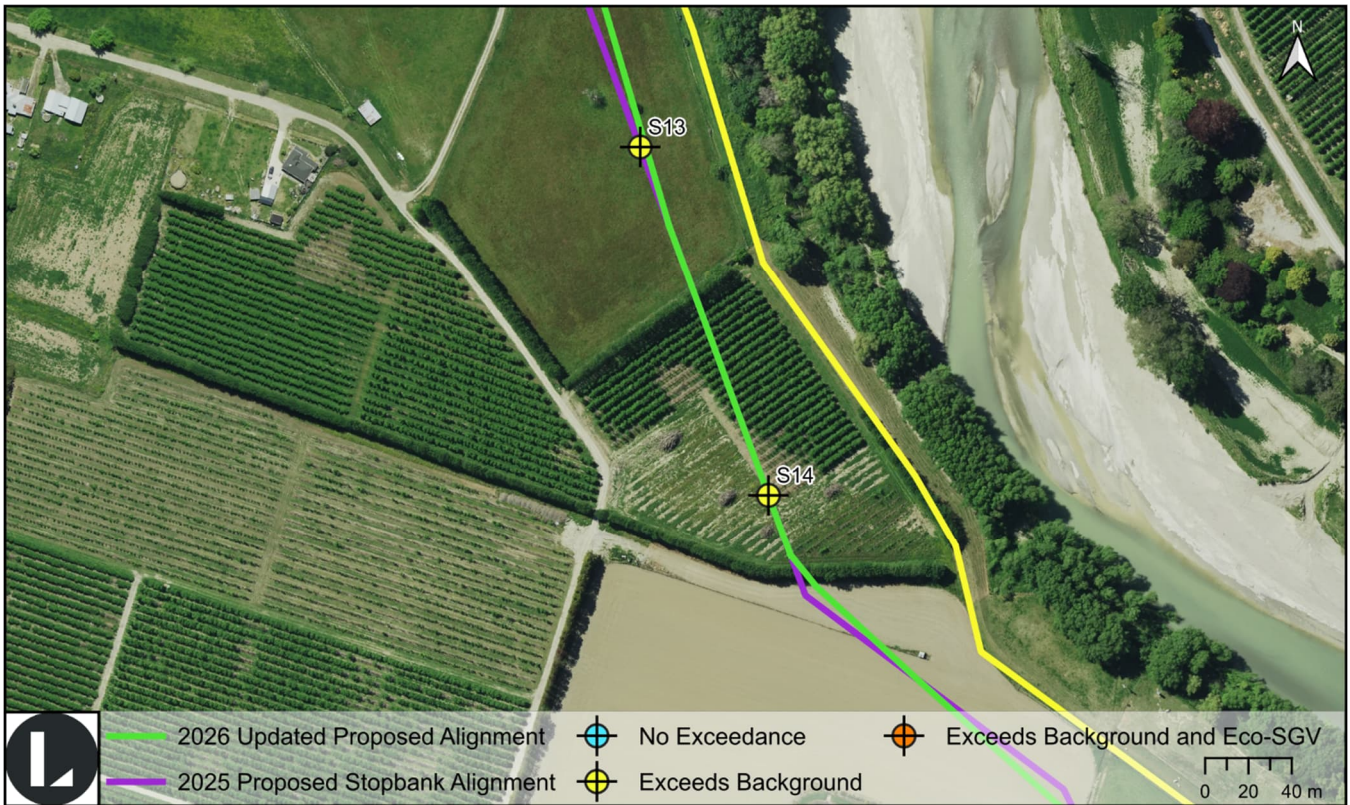


Figure 16. Soil sample results for samples S13-S14 along the proposed stopbank alignment.

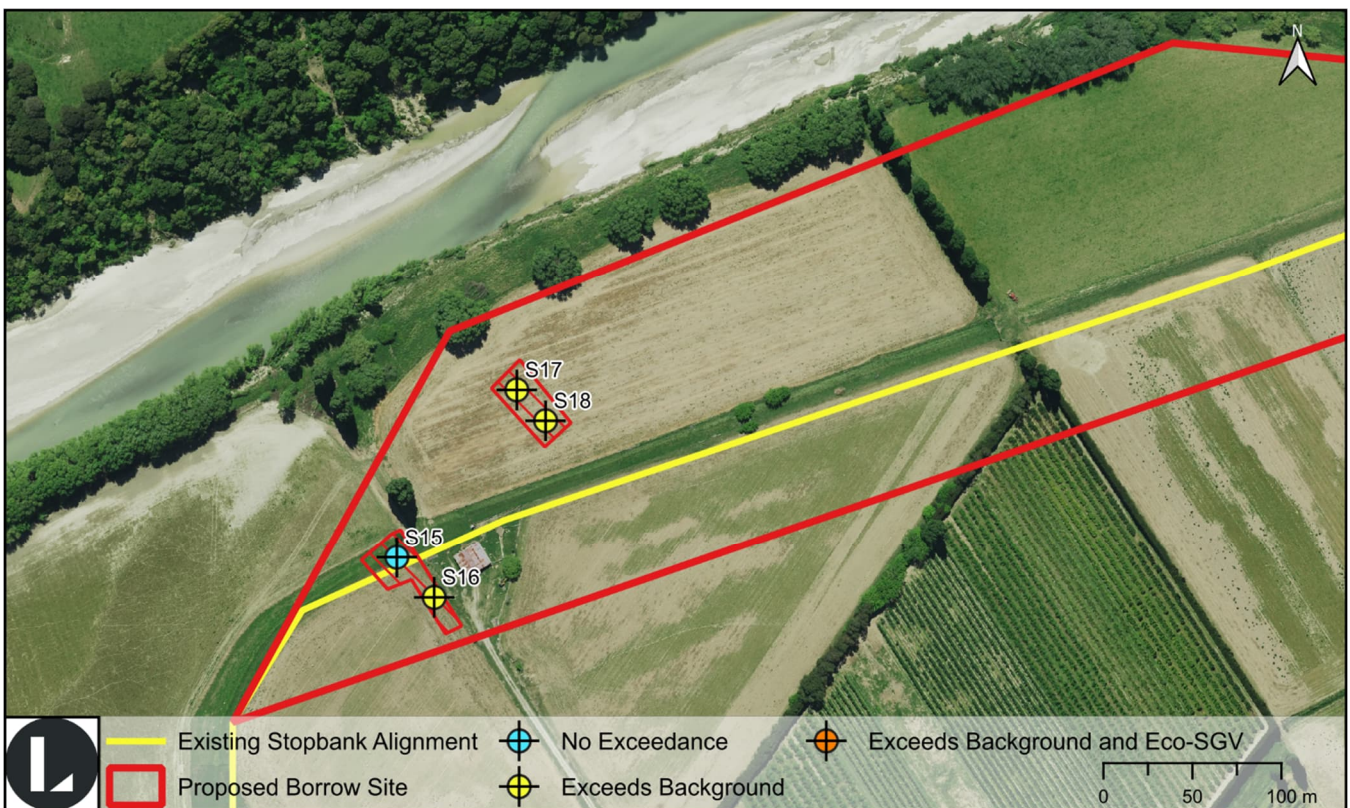


Figure 17. Soil sample results for samples S15-S18 within the proposed borrow site.

3.5.2 Organochlorine Pesticide (OCP) Results

Table 4 summarises OCP results. OCPs in all samples were below the guideline value. The laboratory transcripts are appended in Appendix B.

Table 4. Laboratory test results for OCP.

Sample ID	Depth (mm)	Description	Total DDT	Dieldrin	Aldrin	Aldrin+Dieldrin
Proposed Stopbank Alignment						
S8	0-50	Topsoil	<0.08	<0.013	<0.013	<0.026
S9	0-50	Topsoil	<0.08	<0.013	<0.013	<0.026
S13	0-50	Topsoil	<0.08	<0.013	<0.013	<0.026
S14	0-50	Topsoil	<0.08	<0.013	<0.013	<0.026
Recreation¹			400	70	70	70

Notes: All results and standard values are presented in mg/kg (dry weight). Depths are mm below ground level.

Total DDT = sum of DDT, DDD, and DDE.

DDT = dichlorodiphenyltrichloroethane.

DDD = dichlorodiphenyldichloroethane.

DDE = dichlorodiphenyldichloroethylene.

¹ Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Ministry for the Environment, 2011.

3.5.3 Asbestos Results

Table 5 shows the semi-quantitative asbestos analysis completed for the site. No asbestos was detected in any analysed sample. The laboratory transcripts are appended in Appendix B.

Table 5. Asbestos Semi-Quantitative Analysis.

Sample ID	Depth (mm)	Trace Asbestos (Presence / Absence)	Asbestos (Presence / Absence)	ACM (W/W%)	AF / FA (W/W%)
Proposed Stopbank Alignment					
S2	0-50	Absent	Absent	<0.001	<0.001
S11	0-50	Absent	Absent	<0.001	<0.001
Proposed Borrow Site					
S15	0-50	Absent	Absent	<0.001	<0.001
S16	0-50	Absent	Absent	<0.001	<0.001
S17	0-50	Absent	Absent	<0.001	<0.001
S18	0-50	Absent	Absent	<0.001	<0.001
Recreational¹				0.020	0.001

Notes: Depths are mm below ground level.

ACM = asbestos containing material.

AF/FA = asbestos fines / fibrous asbestos.

W/W% = weight for weight %.

¹ New Zealand Guidelines for Assessing and Managing Asbestos in Soil (GAMAS). BRANZ Limited, 2017.

4 DSI RISK ASSESSMENT

This section uses a Conceptual Site Model (CSM) to assess the currently available information presented in this report to determine:

- if the project is covered by the NESCS Regulations.
- if soil contamination exceeds the applicable standard and to identify if the site is restricted discretionary or controlled under the NESCS.

4.1 DSI Conceptual Site Models

The preliminary site CSM for the proposed alignment is provided in Table 6. A human health risk can only occur where there is a complete pathway between contaminant source and a receptor. Building floors and paved or sealed areas will largely or completely prevent contact with underlying soils and therefore, direct exposure pathways are or will be incomplete for such areas. Table 6 and Table 7 detail the DSI CSM for both the proposed alignment and the proposed borrow site.

Table 6. Conceptual Site Model for proposed stopbank alignment at the DSI stage.

HAIL, Potential Contaminants and Location	Receptors	Potential Pathways
HAIL E1 – Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition. HAIL I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment. 59 Kipling Road – Demolition of pre-2000's structure. 11 Rangatira Road - Demolition of pre-2000's structure.	Construction workers	Incomplete - Inhalation of dust (containing asbestos fibres). Contamination was not detected above the SCS or SGVs.
	Future site users	
HAIL A18 – Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside. 29 Morris Road - Miscellaneous storage of unknown materials including possible treated timber.	Construction workers	Incomplete - Ingestion or skin contact with exposed soil. Contamination was not detected above the SCS.
	Future site users	
	Ecological receptors	<i>Incomplete</i> - Although contamination (zinc) was detected in one location (S6) above the Eco-SGVs, the updated (March 2026) alignment no longer intersects with this area.
HAIL A10 – Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds. Along proposed alignment – various orchards noted since 1982 onwards.	Construction workers	Incomplete - Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal). Contamination was not detected above the SCS or SGVs.
	Future site users	
	Ecological receptors	Incomplete - Sediment and surface water runoff to the receiving water bodies. Contamination was not detected above the SCS or Eco-SGVs.

Table 7. Conceptual Site Model for proposed borrow site at the DSI stage.

HAIL, Potential Contaminants and Location	Receptors	Potential Pathways
HAIL E1 – Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition. HAIL I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment. 29 Morris Road – Demolition of pre-2000's structure within borrow site. Miscellaneous storage within borrow site. 44 Morris Road - Demolition of pre-2000's structure within borrow site.	Construction workers	Incomplete - Inhalation of dust (containing asbestos fibres). Ingestion or skin contact with exposed soil. Contamination was not detected above the SCS.
	Future site users	
	Ecological receptors	Incomplete - Sediment and surface water runoff to the receiving water bodies. Contamination was not detected above the SCS or Eco-SGVs.

4.1.1 NESCS Application

As per Regulation 9, soil contamination does not exceed the applicable standard in Regulation 7 (refer to section 3.4.1 for description of each human health standard selected and the section 3.5 for results showing no exceedances of the human health standards) but is above background concentrations as per Regulation 5(9). As a result, LDE considers the site to be controlled under the NESCS.

5 CONCLUSIONS AND RECOMMENDATIONS

Activities on the MfE HAIL were identified at the site. These included **HAIL A10**: '*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*', **HAIL A18**: '*Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside*', **HAIL E1**: '*Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition*', and **HAIL I**: '*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.*'

Soil sampling and analysis was therefore undertaken to identify if these activities have contributed to soil contamination that would be unacceptable for the proposed development.

The results determined that contamination present at the site is below the applicable soil contaminant standard for a Recreational land-use, however, remain above the predicted background concentrations.

One location (S6) reported concentrations of zinc above the Ecological Soil Guideline Values (SGVs), however following an update to the proposed alignment (March 2026), this no longer intersects with the identified HAIL (sample location S6). The revised realignment of the stopbank has moved it away from a number of potential HAIL, reducing the risk of the proposed works to human health and the environment.

As a number of samples report concentrations above predicted background ranges, under a controlled activity consent from Gisborne District Council, a Site Management Plan (SMP) should be prepared to outline appropriate

site management procedures to mitigate any offsite impacts during stopbank construction works. ***A resource consent may be required before groundworks can commence. As per Regulation 9 (3)(c) the regulatory authority must be provided a copy of this report.***

5.1 Site Investigation Certifying Statement

The document signatories of LDE certify that:

1. this preliminary and detailed site investigation meets the requirements of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) Regulations 2011 because it has been:
 - a. done by a suitably qualified and experienced practitioner, and
 - b. done in accordance with the current edition of Contaminated land management guidelines No 5 – Site investigation and analysis of soils, and
 - c. reported on in accordance with the current edition of Contaminated land management guidelines No 1 – Reporting on contaminated sites in New Zealand, and
 - d. the report is certified by a suitably qualified and experienced practitioner.

This detailed site investigation concludes that:

- a. [For activities under Regulation 9 of the NESCS] does not exceed the applicable standard in Regulation 7 of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner(s) (SQEPs) who have done this investigation and have certified this report is included in Appendix C.

6 LIMITATIONS

This investigation presents a preliminary and detailed site investigations of the potential for ground contamination, prepared exclusively for Gisborne District Council with respect to the brief given to us.

Information, opinions, and recommendations contained in it cannot be used for any other purpose or by any other entity without our review and written consent. LDE Ltd accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report by any third party.

Opinions given in this report are based on a review of existing data, evidence gathered during a site walkover, anecdotal information, and specific soil sampling at discrete locations. There is still some possibility that contaminating activities have taken place or contamination at the site is more than that described in this report and LDE should be contacted immediately if the conditions are suspected to differ from that described.

7 REFERENCES

- ANZECC. (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Auckland: Australian and New Zealand Environment and Conservation Council.
- Auckland Regional Council. (2001). *Background Concentrations of Inorganic Elements in Soils in the Auckland Region*. Auckland: ARC.
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- WasteMinz. (2018). *Technical Guidelines for Disposal to Land*. Auckland: Waste Management Institute New Zealand.

APPENDIX A

LDE PRELIMINARY SITE INVESTIGATION (2026)



Gisborne District Council

PRELIMINARY SITE INVESTIGATION (PSI)

Te Karaka Stopbank

DOCUMENT CONTROL

Version	Date	Comments
A	5/02/2026	PSI Issued for Information.
B	17/03/2026	Report updates due to updated proposed stopbank alignment provided by Client.

Version	Issued For	Prepared By	Reviewed & Authorised By
B	Issued for Information	 Erin Gasston Environmental Scientist	  James Gladwin Environmental Group Manager SQEP

EXECUTIVE SUMMARY

A contamination preliminary site investigation (PSI) has been conducted for the proposed new stopbank alignment and proposed borrow site, located within the Te Karaka township. LDE understands that the site is to undergo soil disturbance and therefore requires an assessment under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCSC).

This PSI is therefore required to identify if there are or were any current or historical land-use activities that could have caused soil contamination that is a risk to human health in order to determine if the NESCSC applies to the land and whether further investigation is required to accompany the consent application for the proposed development.

Evidence from the PSI and site history review, indicates **HAIL A10**: '*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*', **HAIL A18**: '*Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside*', **HAIL E1**: '*Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition*', and **HAIL I**: '*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*' are more likely than not to have occurred at the site.

Based on the currently available information presented in this report LDE considers that the NESCSC applies. This is because soil disturbance is covered by Regulations 5(4). The land is also covered by the NESCSC because of HAIL activities that are more than likely to have been carried out at the site.

A detailed site investigation (DSI) is recommended to establish if soil contamination exceeds the applicable standard to determine if the site is a restricted discretionary or controlled consent under the NESCSC. Soil sampling is proposed to be undertaken within the identified HAIL locations, as well as systematic sampling along the proposed alignment where orchards are or were historically present.

A resource consent will be required before groundworks can commence.

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1 INTRODUCTION

LDE has been engaged by Gisborne District Council to undertake a soil contamination Preliminary Site Investigation (PSI) for the proposed stopbank alignment in Te Karaka, Gisborne. LDE understands the existing stopbank soils will be utilised within the proposed stopbank, along with soils from an identified 'borrow site'.

This PSI is therefore required to identify if there are or were any current or historical land-use activities that could have caused soil contamination that is a risk to human health in order to determine if the NESCS applies to the land and whether further investigation is required to accompany the consent application for the proposed development.

This site investigation has been prepared in accordance with the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2021. It has been managed by a suitably qualified and experienced practitioner (SQEP); carried out in general accordance with the Contaminated Land Management Guidelines No.1- Reporting on Contaminated Sites in New Zealand (revised 2021) and Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils (revised 2021).

1.1 Investigation Objectives

The objectives of the investigation are to:

- Assess whether there has been (or there is more likely than not to have been) a potentially contaminating land use.
- Assess the nature and source of potential or likely contaminants.
- Identify the possible locations of contamination.
- Identify known or potential exposure pathways by which identified receptors could be exposed to the contaminants whilst undertaking the current or proposed future land use.
- Identify known or potential human and ecological receptors that could be exposed to contaminants.
- Assess if the project is covered by the NESCS Regulations.
- Determine if further investigation in the form of a Detailed Site Investigation (DSI) is required.

1.2 Site Identification

1.2.1 Proposed and Existing Stopbank Alignment

The proposed stopbank alignment borders the Te Karaka township to the west, north and east. The proposed alignment closely follows the existing alignment to the west and east of the township. To the north, the proposed alignment is between 140 - 370m closer to the township than the existing alignment. Refer to Table 1 and Figure 1 for the proposed alignment, and Figure 2 and Figure 3 for the updated proposed alignment locations.

Table 1. Address and Legal Description of area covered by the Existing and Proposed stopbank alignment.

Address (Clockwise W-E)	Legal Description	Alignment
Matawai Road	Lot 2 DP 570263	Proposed (tunnel bund)
23-27 Cliff Road	Lot 1, Pt Lot 2 DP 3062 Lots 1-4 DP 4355 Lot 1 DP 3109	Existing and proposed.
9-11 Rangatira Road	Pt Lot 25 DP 1287 Lot 1 DP 3768	Existing and proposed.
Library Road	Sec 1, Sec 3 SO 494650	Existing and proposed.
1 Kipling Road	Lot 15 DP 1145	Existing and proposed.
7 Kipling Road 27 Kipling Road Morris Road/Kipling Road	Pt Lot 16 DP 1145 Lot 2 DP 2786 Pt Lot 18 DP 1145 Lot 1-2 DP 3322	Proposed.
29-44 Morris Road	Lot 21-23 DP 1145	Existing.
Kipling Road	Te Karaka 16E Block Pt Karaka 15 Block	Existing.
59 Kipling Road	Lot 1 DP 2909 Lot 1 DP 8784	Proposed.
69 Kanakanaia Road	Pt Sec 44 Block IV Waikohu SD Pt Karaka 17 Block	Existing and proposed.
90 Kanakanaia Road	Karaka 11A2 Block	Proposed.
35 Paulson Road	Te Karaka 11B2 Block	Existing and proposed.
32 Main Road	Lot 9 DP 1326	Existing and proposed.
Matawai Road	Pt Karaka 7 Block	Existing and proposed.
2424 Matawai Road	Karaka 8 Block	Existing and proposed.
Matawai Road	Sec 3 Block IV Waikohu SD	Proposed.

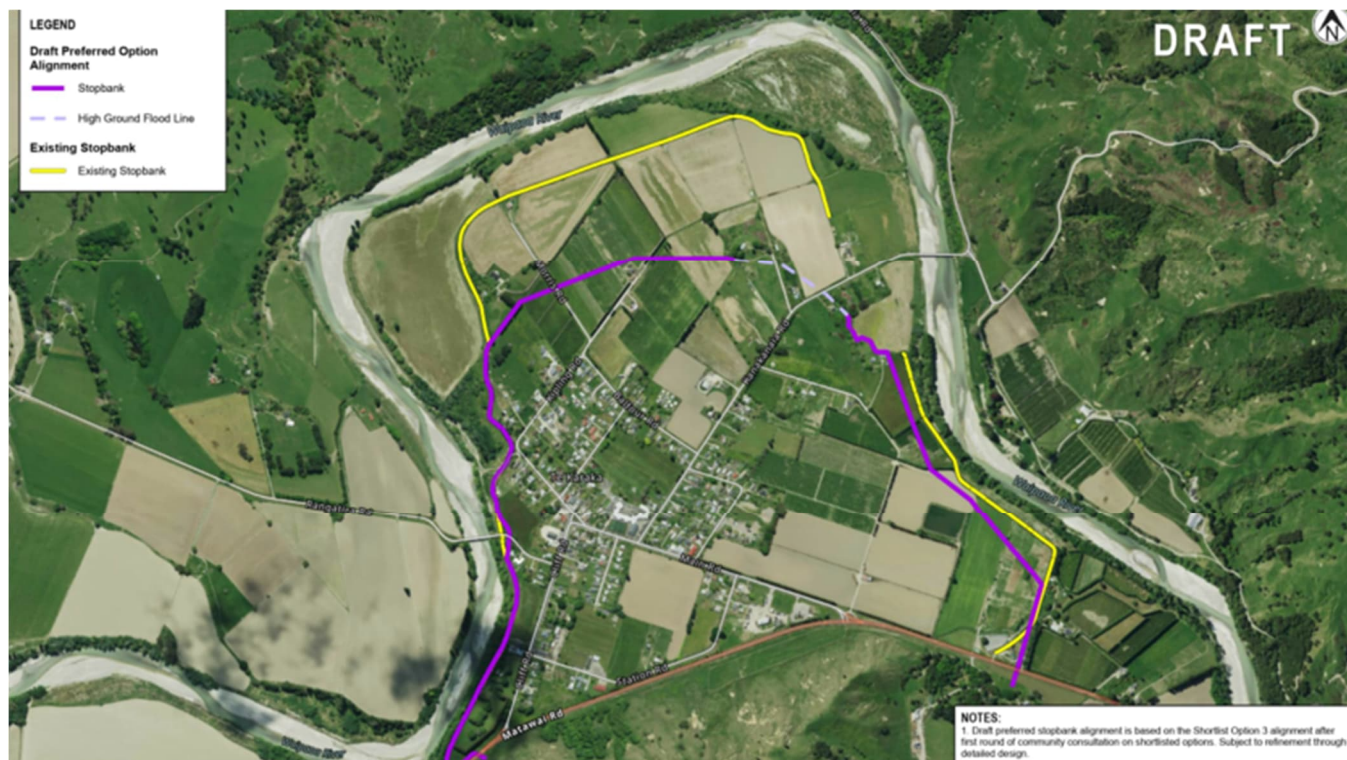


Figure 1. Draft alignment of proposed stopbank (purple) and existing stopbank (yellow). Source: Supplied by Client.

LDE

1.2.2 Proposed Borrow Site

The proposed borrow site includes part of the existing stopbank alignment. The site borders the Waipaoa River to the north. The borrow site is proposed to be excavated to a maximum depth of 1.5m. The address and legal descriptions of the area covered by the proposed borrow site is shown in Table 2.

Table 2. Address and legal descriptions of area covered by the proposed borrow site.

Address (Clockwise W-E)	Legal Description
44 Morris Road, Te Karaka	Lots 21-23 DP 1145-INCLS ACCRE
Kanakanaia Road, Te Karaka	PT Te Karaka 17 Te Karaka 16F Te Karaka 16E PT Te Karaka 15 – INCLS ACCRE



Figure 4. Proposed borrow site, outlined in red. Source: Supplied by Client.

2 SITE DESCRIPTION

2.1 Environmental Setting

Te Karaka township sits at approximately 40 m above sea level. The Waipaoa River borders the township to the west, north and east, with Matawai Road / State Highway 2 bordering the township to the south.

2.1.1 Geology

The New Zealand Geology Web Map by GNS¹ Science identifies the majority of the Te Karaka township as being underlain by 'Holocene River Deposits' described as 'Gravel, sand and silt.' Minor deposits of 'Late Pleistocene River Deposits' (described as 'Gravel, sand and silt') also intersect the Te Karaka township in several locations.

¹ <http://data.gns.cri.nz/geology/>. Retrieved December 2025.

3 HISTORIC SITE USE

The following information was reviewed in order to establish the history of the site:

- Historical aerial photographs
- Council Records

3.1 Historical Aerial Imagery – Proposed Alignment

Aerial images from 1949 to 2024 have been analysed as part of this investigation for the proposed and existing stopbank alignments. This section has been updated following the updated stopbank alignment received March 2026. This section outlines LDEs assessment of the aerals with a tubulised summary provided in section 3.1.1.

1949: The majority of the proposed and exiting stopbank alignments pass through pasture. A single dwelling to the north and a small shed to the east are the only visible structures the proposed alignment crosses. The tunnel located south of the western-most alignment extent is visible in this historic aerial.



Figure 5. Aerial imagery 1949. Full (top) and Zoomed-in (bottom) aers. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1952: A second dwelling has been constructed along the proposed alignment route to the west. The remainder of the proposed alignment is unchanged.

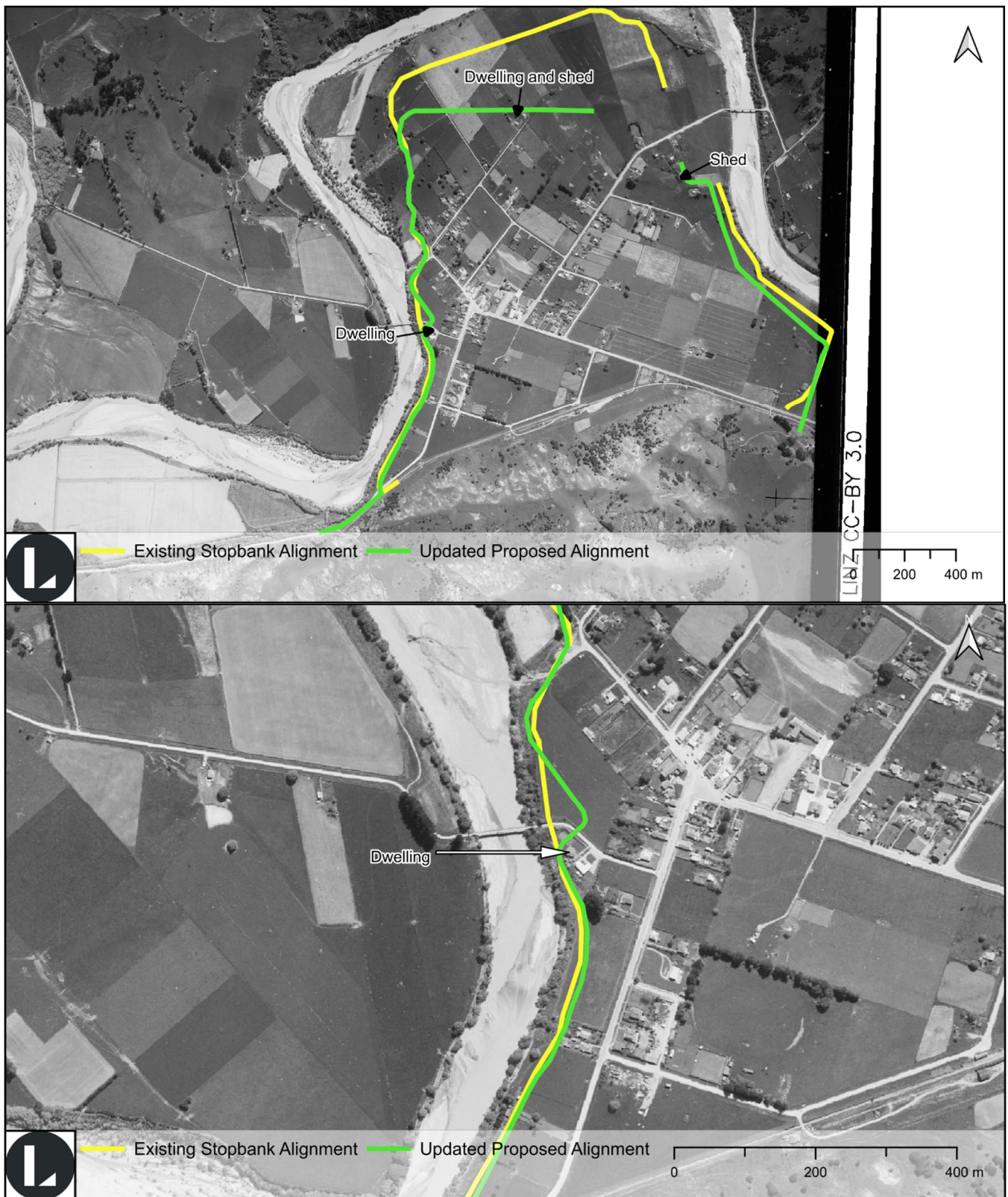


Figure 6. Aerial imagery 1952. Full (top) and Zoomed-in (bottom) aeriels. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1960: The dwelling and shed to the north of the proposed alignment have been removed. Miscellaneous storage, possible timber, is visible close to the northern bend of the proposed alignment. The remaining proposed alignment passes through pasture.

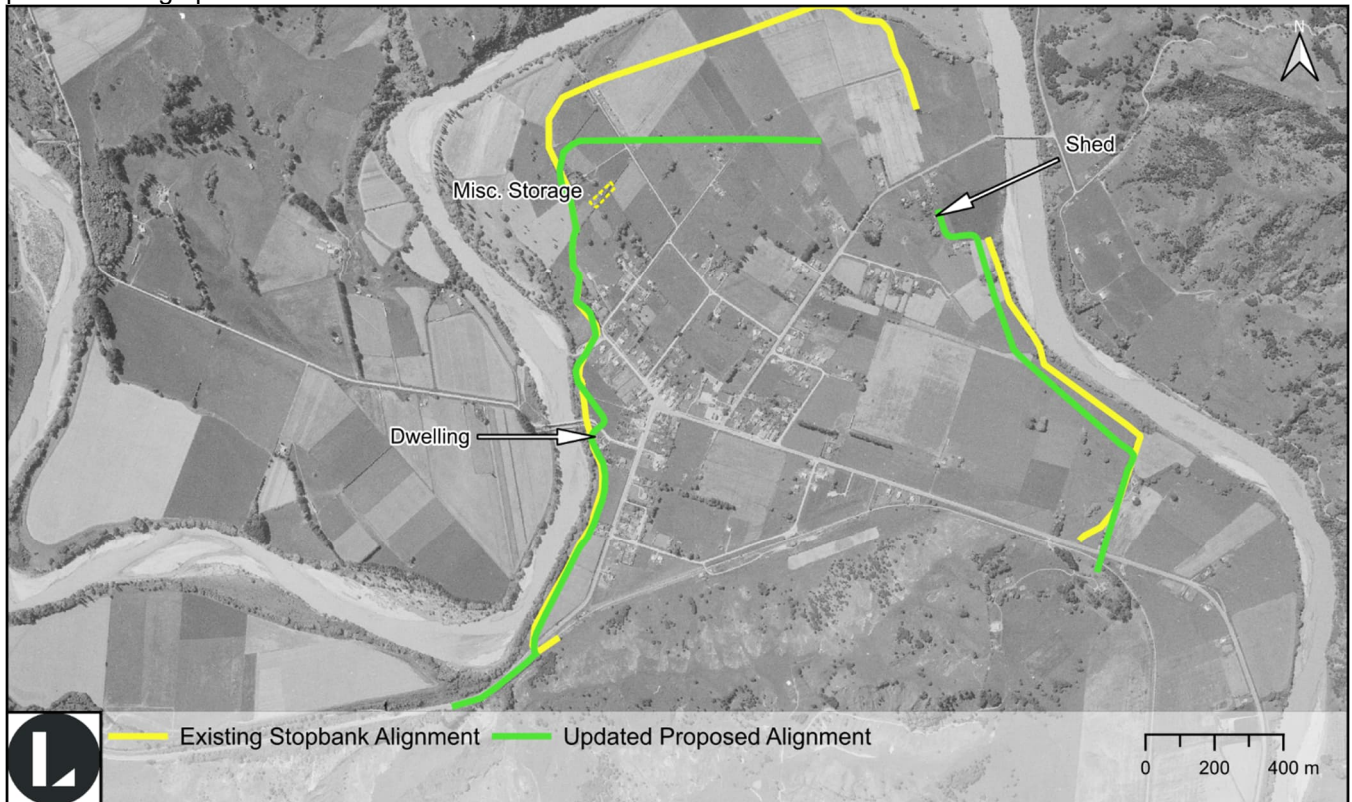


Figure 7. Aerial imagery 1960. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1974: Miscellaneous storage, possibly timber, is present adjacent to the proposed alignment. A series of large sheds or glasshouses have been constructed to the west adjacent to the proposed alignment. The remaining proposed alignment is unchanged.



Figure 8. Aerial imagery 1974. Full (top) and Zoomed-in (bottom) aeriels. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1982: Sheds / glasshouses along the NW proposed alignment are being removed. The alignment crosses several newly established orchards in the north and east, and is adjacent to another recently established orchard in the SE.

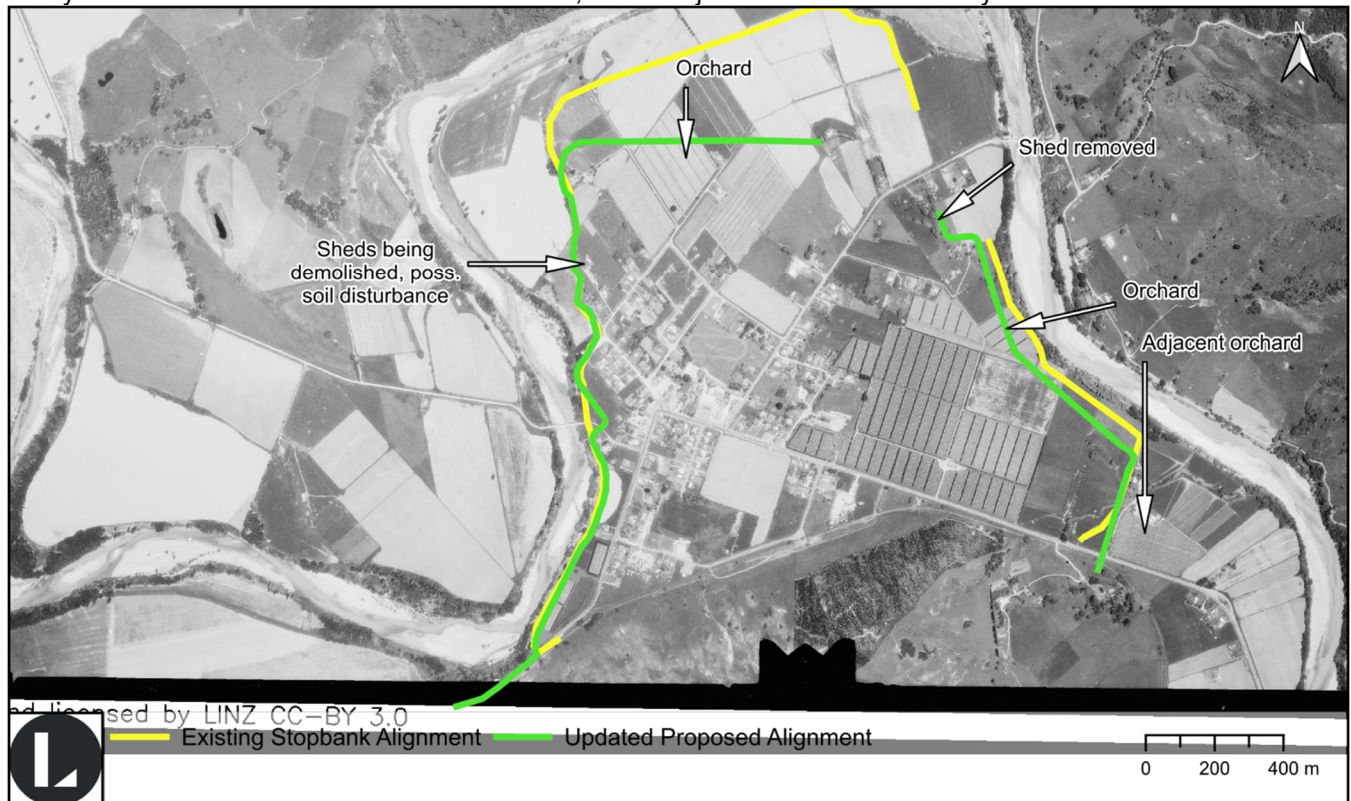


Figure 9. Aerial imagery 1982. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

2003: The existing stopbank has been constructed. A dwelling close to the Rangatira Road bridge has been removed. The remainder of the proposed alignment is unchanged.

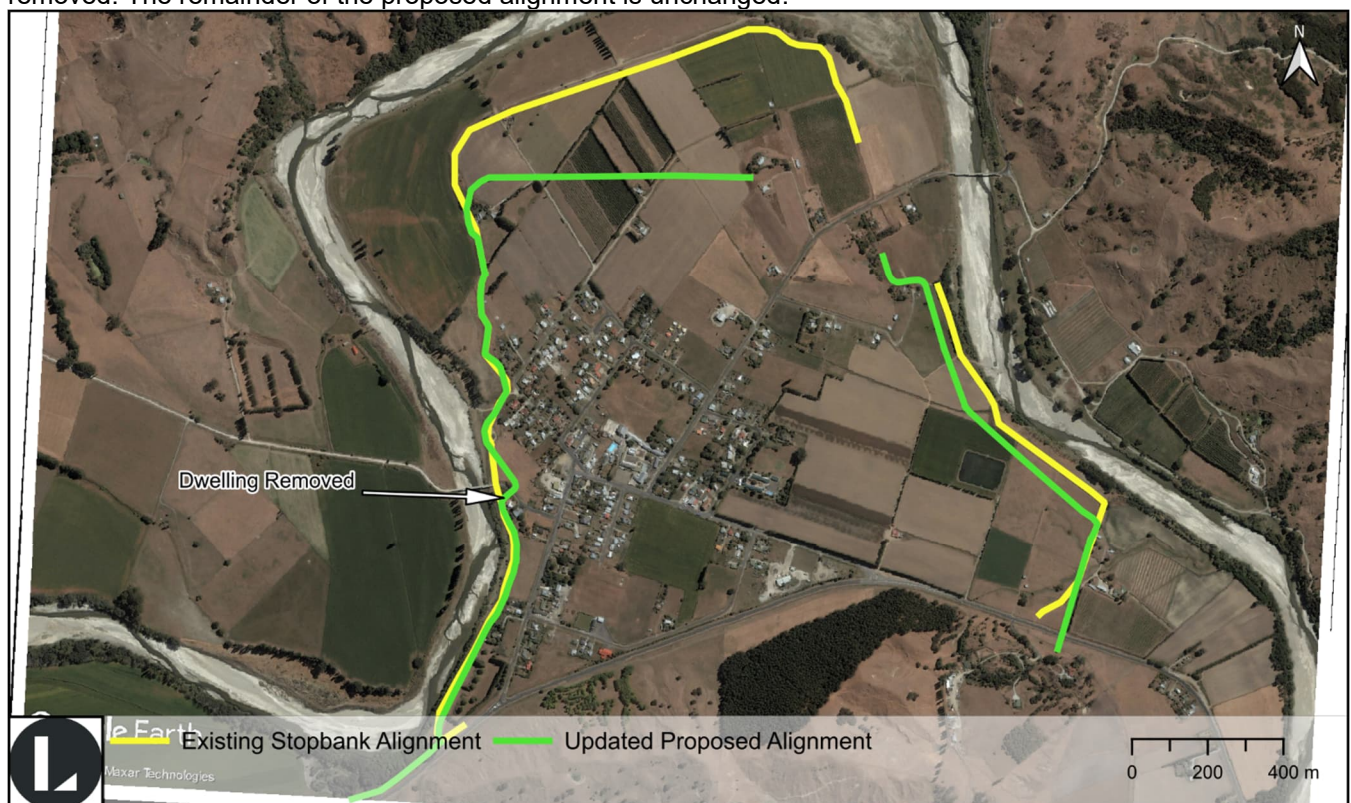


Figure 10. Aerial imagery 2003. Sourced from Google Earth (annotated image).

2013: The majority of the proposed alignment remains unchanged. A stock yard or possible sheep dip is present near the SE proposed alignment.



Figure 11. Aerial imagery 2013. Zoomed-in aerial shown below to highlight possible dip along the proposed alignment. Sourced from LINZ (annotated image).

2019: The stock yards have expanded. The remainder of the proposed alignment remains unchanged.



Figure 12. Aerial imagery 2019. Zoomed-in aerial shown below to highlight expansion of stock yards along the proposed alignment. Sourced from LINZ (annotated image).

2024: The majority of the proposed alignment remains unchanged. The proposed alignment crosses a small area of silt storage to the north.

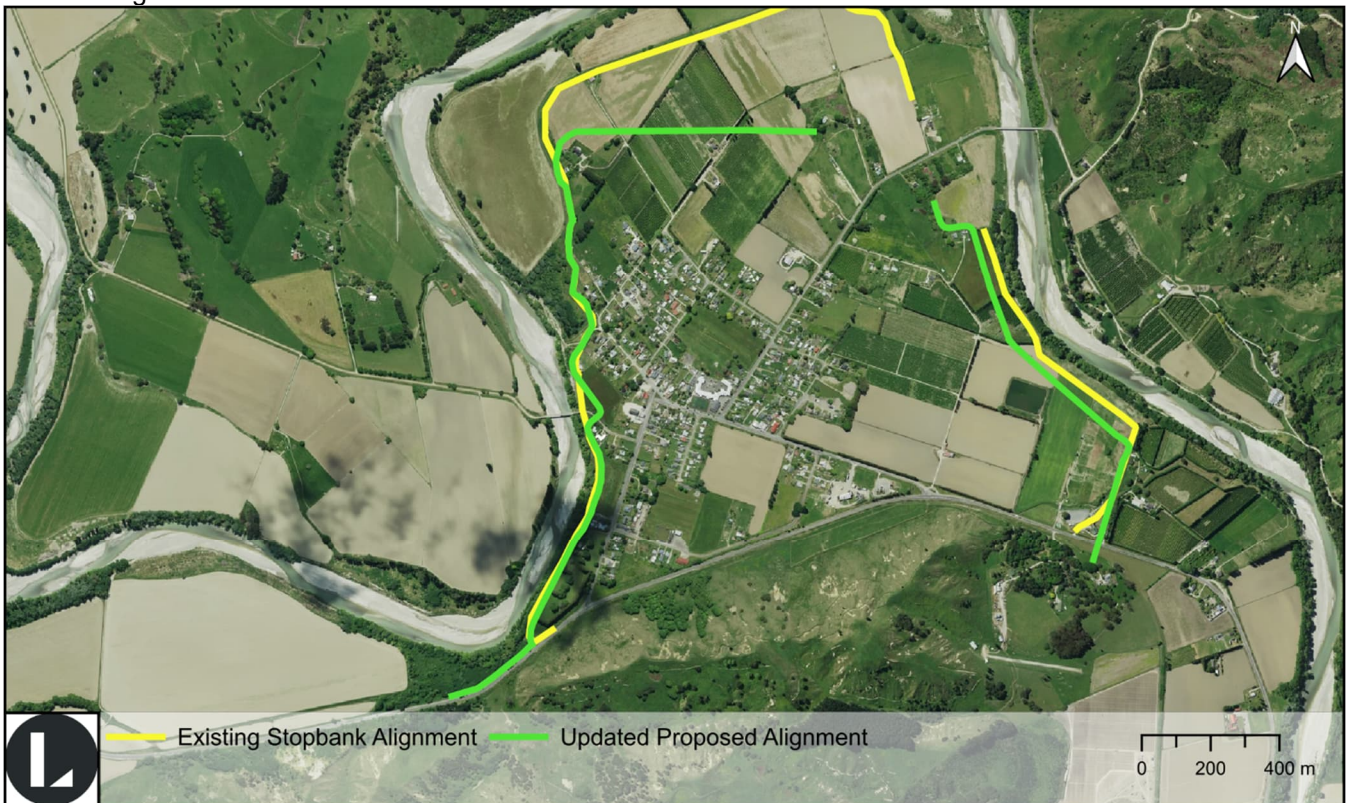


Figure 13. Aerial imagery 2024. Sourced from Tairawhiti Maps².

² [Tairāwhiti Aerial Imagery](#). Accessed December 2025.

3.1.1 Potential Areas of Contamination

Table 3 below summarises the identified potential areas of contamination based on the aerial photograph review. No additional potential areas of contamination were identified following the updated proposed alignment (March 2026).

Table 3. Potential areas of contamination observed from aerial photograph review.

Address	HAIL Category and date observed	Potential contamination (Y/N) for	Alignment affected
59 Kipling Road 11 Rangatira Road	HAIL E1/I – 1949+	Y – demolition of structures built prior to 2000s possibly containing asbestos and/or lead paint.	Proposed - 59 Kipling Road
90 Kanakanaia Road	HAIL E1/I – 1949+	N - demolition of minor shed structure built prior to 2000s. Possibly containing asbestos and/or lead paint however size is unlikely to have resulted in significant contamination.	Proposed
29 Morris Road	HAIL A18 – 1960	Y – storage of potential treated timber and miscellaneous storage	Proposed
7 Kipling Road	HAIL A10 – 1974-1982 HAIL I – 1982	Y – possible glasshouses Y – Demolition	Existing – further soil disturbance not anticipated in this location.
69 Kanakanaia Road	HAIL I – 2024	N – storage of silt from flooding. Unlikely to contain contaminants based on available silt testing to date.	N/A
2424 Matawai Road	HAIL A8 – 2013+	N – date of presence unlikely to indicate typical dip contaminants (Arsenic, Pesticides).	N/A
Morris Road / Kipling Road / Paulson Road / Matawai Road	HAIL A10 – 1982+	Y – various orchards cross the proposed alignment.	Proposed

3.2 Historical Aerial Imagery – Borrow Site

Aerial images from 1949 to 2024 have been analysed as part of this investigation for the proposed borrow site. This section outlines LDEs assessment of the aerals with a tubulised summary provided in section 3.2.1.

1949: The majority of the borrow site is pasture. A single dwelling is present to the west.

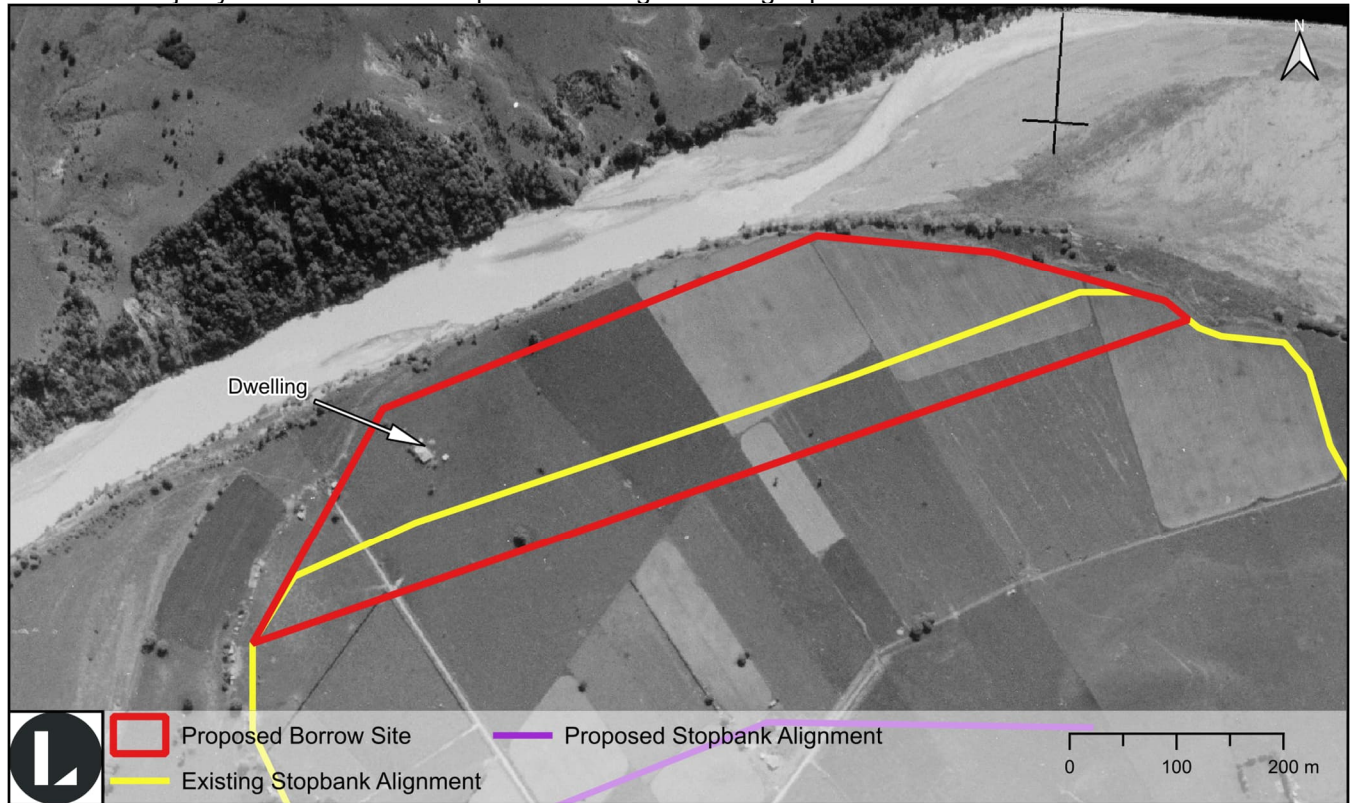


Figure 14. Aerial imagery 1949. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1952: A second dwelling is present. The remainder of the borrow site is unchanged.

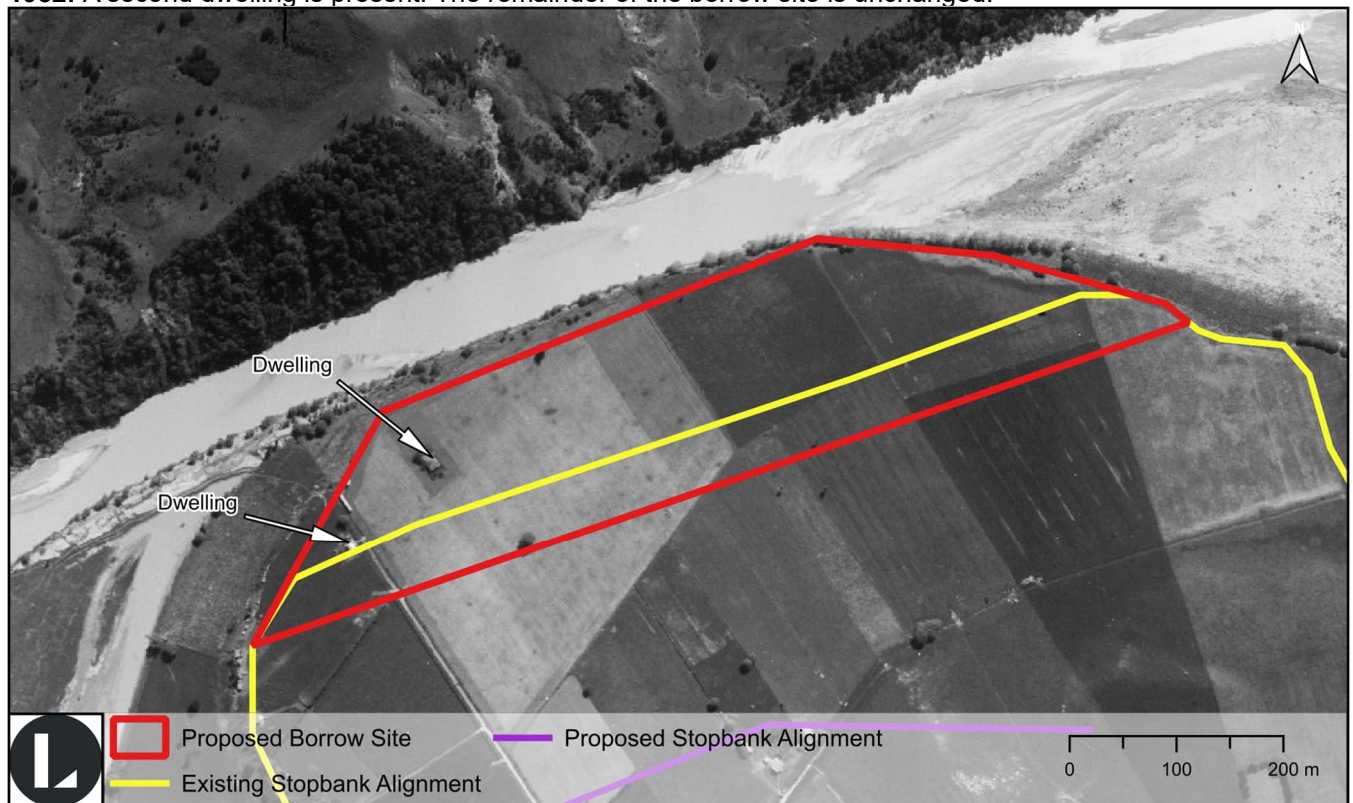


Figure 15. Aerial imagery 1952. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1960: The additional dwelling present in the 1952 aerial has been removed. An additional dwelling and shed are present to the south of the original dwelling. The remainder of the borrow site is unchanged.

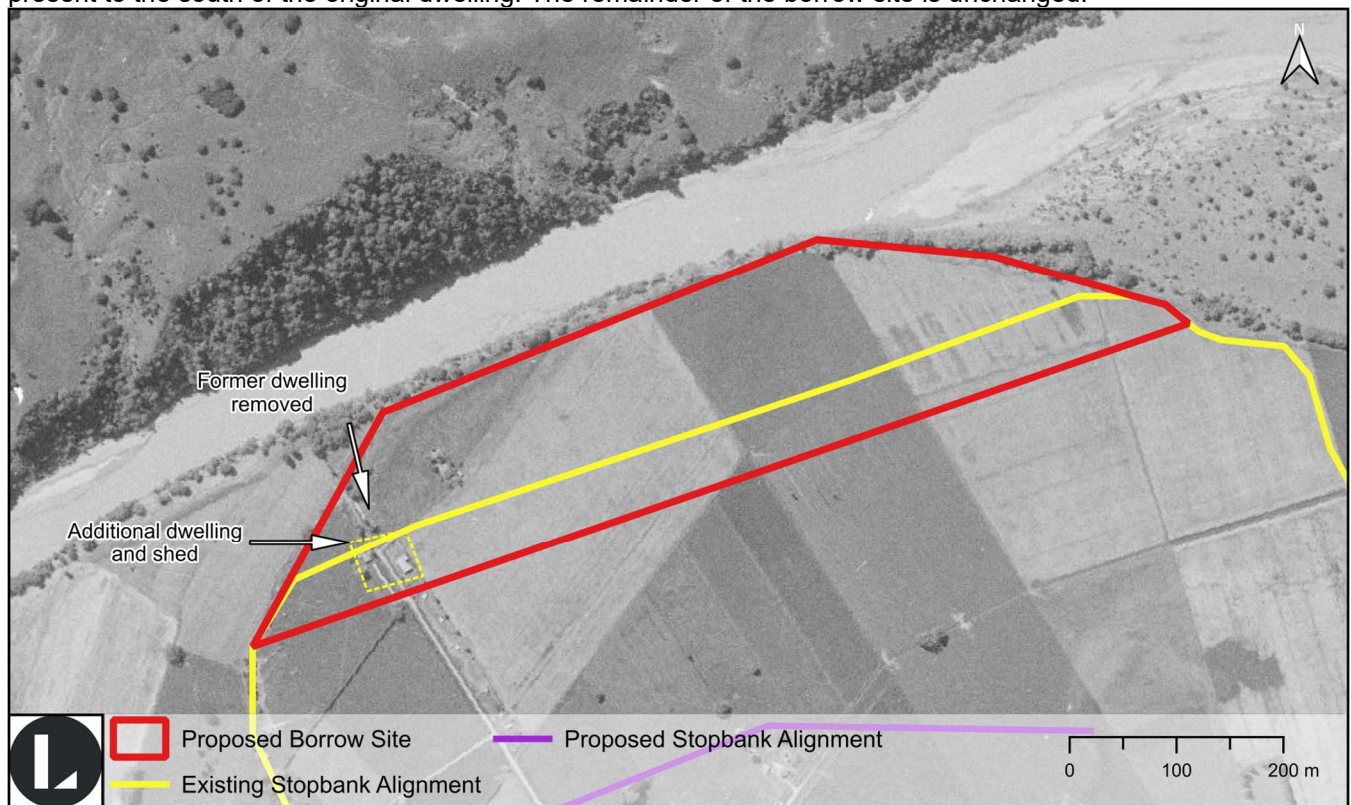


Figure 16. Aerial imagery 1960. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1974: A row of miscellaneous storage is noted to the west of Morris Road. The remaining borrow site is unchanged.

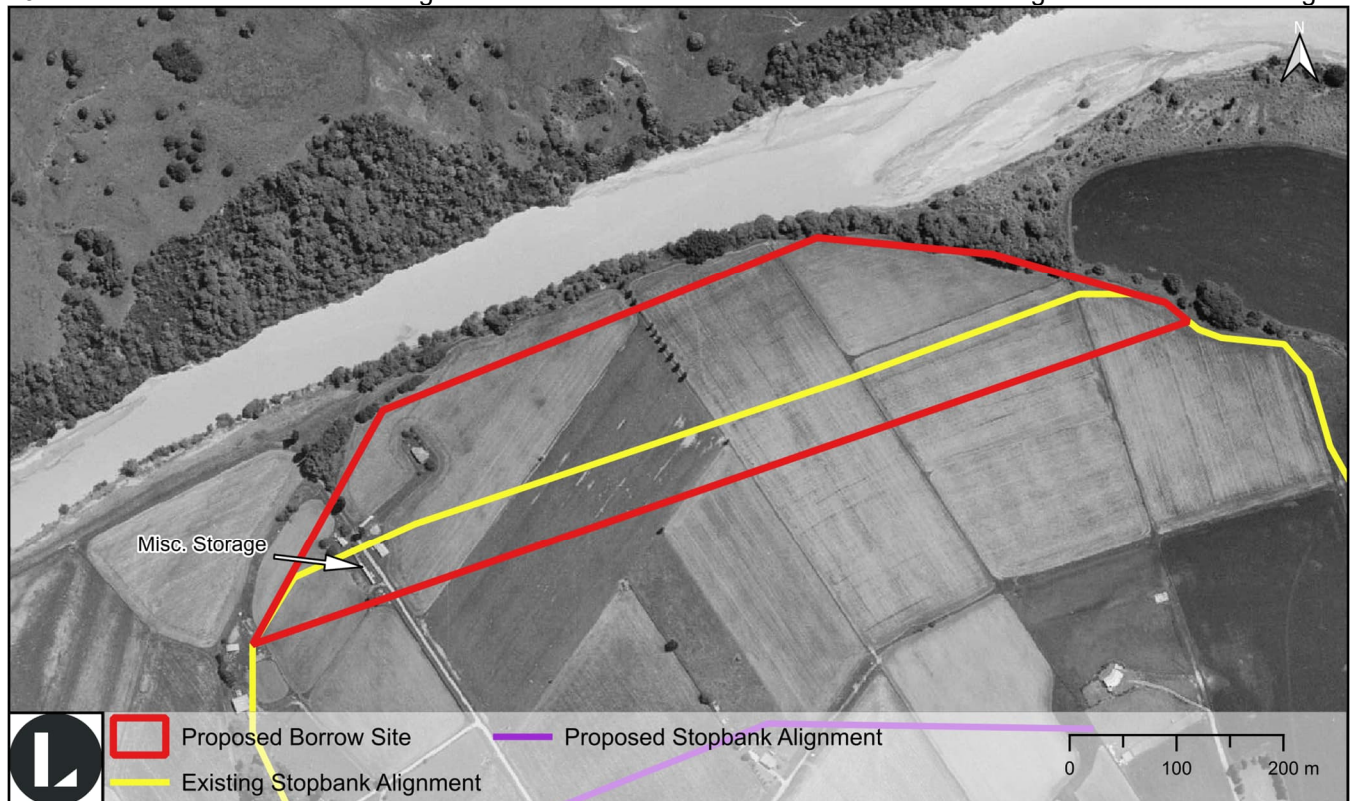


Figure 17. Aerial imagery 1974. Sourced from Retrolenz.nz and licensed by LINZ (annotated image).

1982: The borrow site remains unchanged.

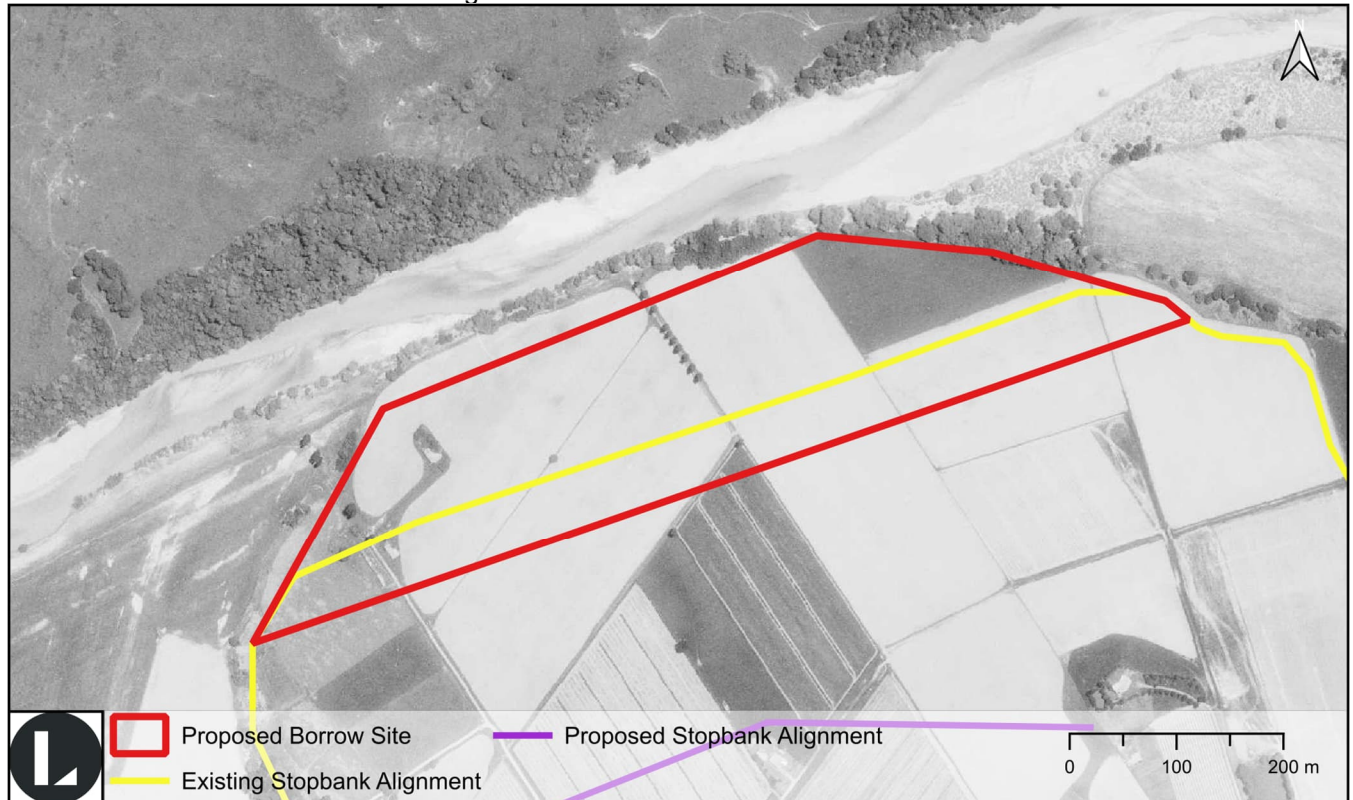


Figure 18. Aerial imagery 1982. Sourced from Retrolenz.nz and licensed by LINZ (annotated image). Approximate site boundary shown in yellow.

2003: The existing stopbank has been constructed through the borrow site. The original dwelling from 1949 has been removed. Stock yards are visible adjacent to the dwelling south of the existing stopbank. The remainder of the borrow site is unchanged.

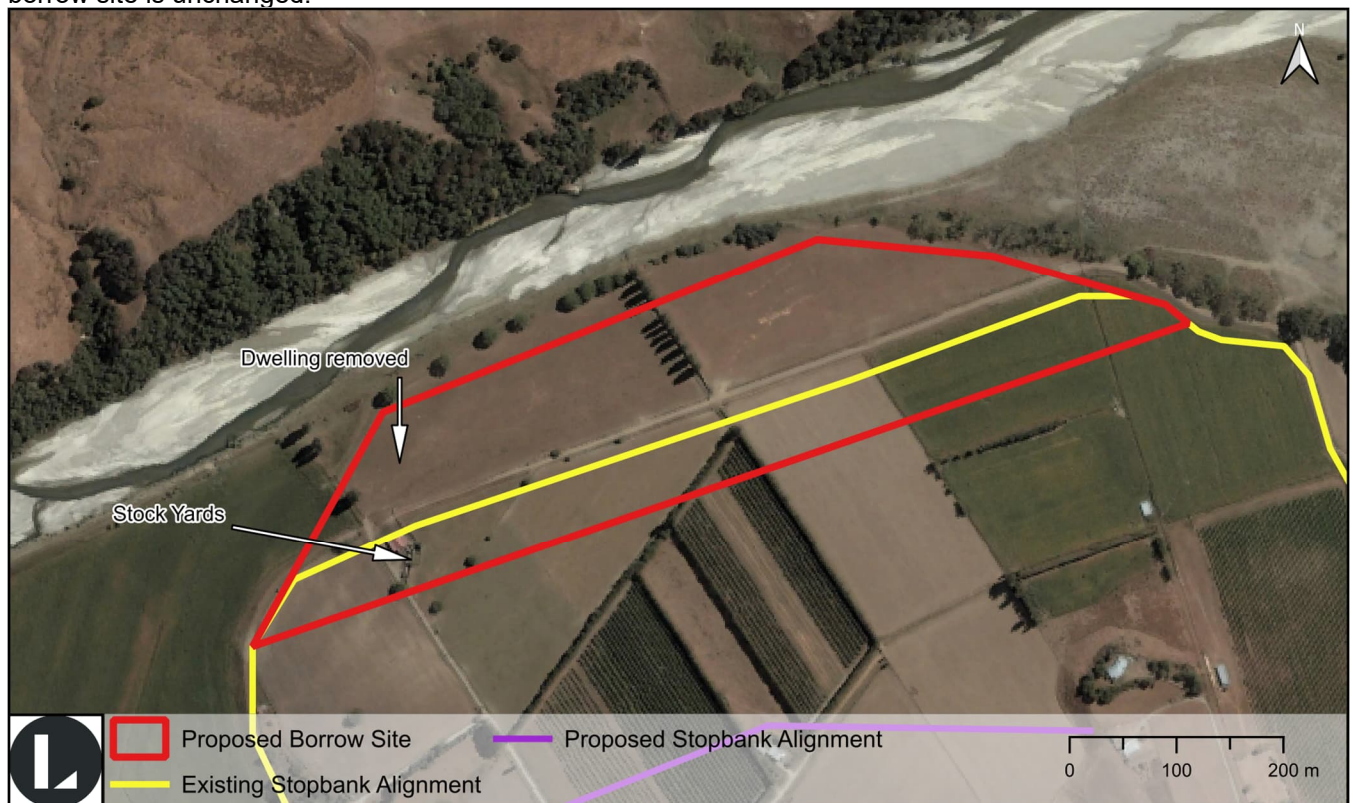


Figure 19. Aerial imagery 2003. Sourced from Google Earth (annotated image). Approximate site boundary shown in yellow.

2013: The borrow site remains unchanged.

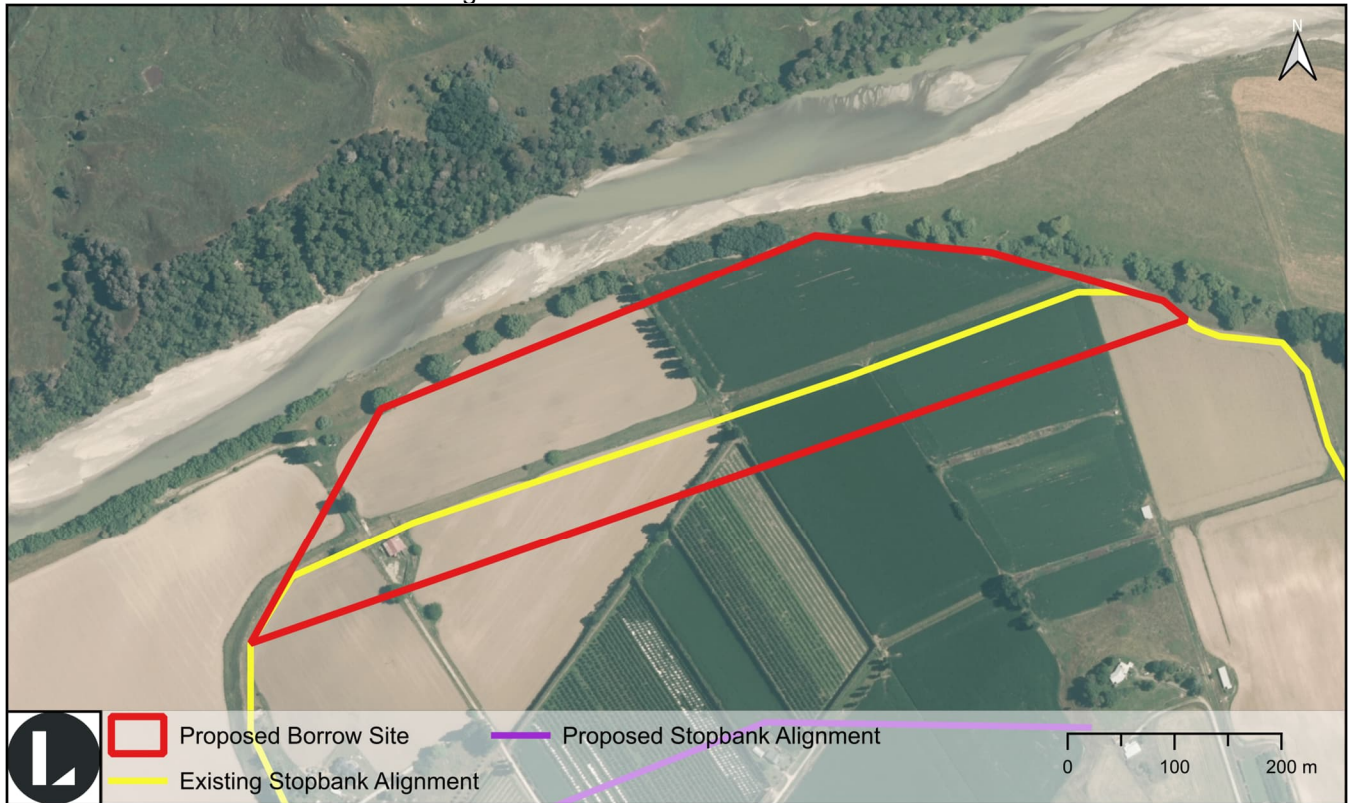


Figure 20. Aerial imagery 2013. Sourced from LINZ (annotated image). Approximate site boundary shown in yellow.

2019: The borrow site remains unchanged.

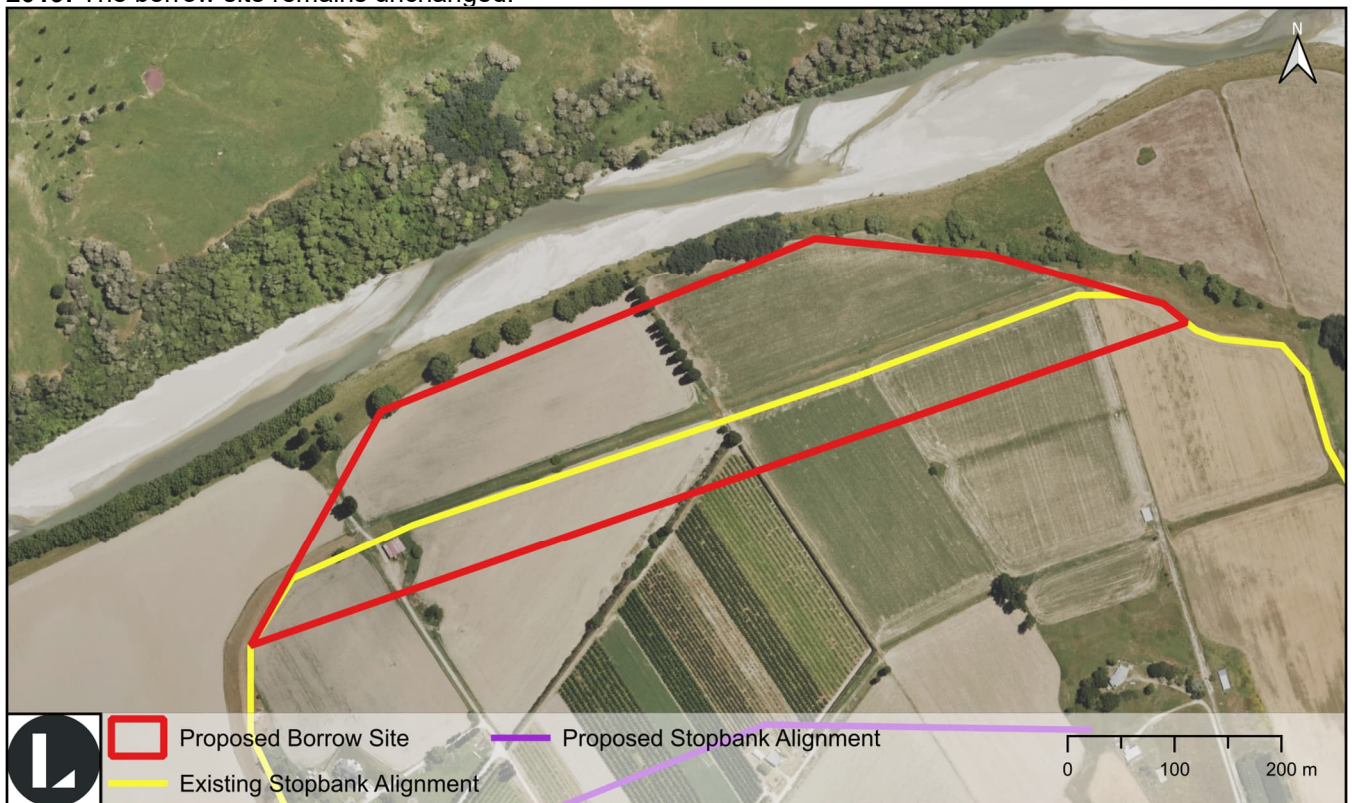


Figure 21. Aerial imagery 2019. Sourced from LINZ (annotated image). Approximate site boundary shown in yellow.

2024: The borrow site remains unchanged.

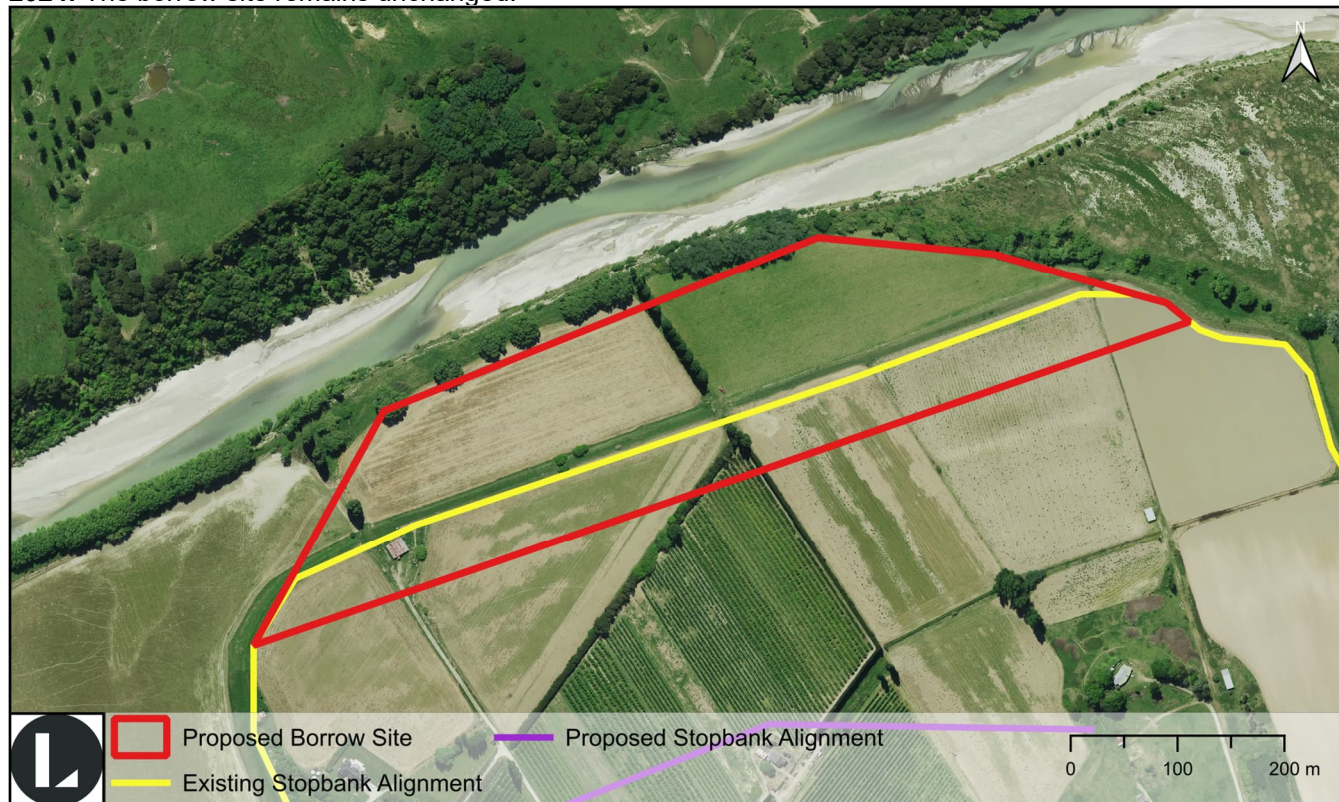


Figure 22. Aerial imagery 2024. Sourced from Tairāwhiti Maps³. Approximate site boundary shown in yellow.

3.2.1 Potential Areas of Contamination

Table 4 below summarises the identified potential areas of contamination based on the aerial photograph review.

Table 4. Potential areas of contamination observed from aerial photograph review.

Address	HAIL Category and date observed	Potential for contamination (Y/N)
44 Morris Road	HAIL E1/I – 1949+	Y – demolition of structures prior to 2000s possibly containing asbestos and/or lead paint.
	HAIL A8 – 2003+	N - date of presence of stock yards unlikely to indicate typical dip contaminants (Arsenic, Pesticides).
29 Morris Road	HAIL I – 1960+	Y – demolition of structures prior to 2000s possibly containing asbestos and/or lead paint. Miscellaneous storage.

³ [Tairāwhiti Aerial Imagery](#). Accessed December 2025.

3.3 Gisborne District Council Information

The Gisborne District Council (GDC) HAIL register⁴ was reviewed as part of this investigation. No registered HAIL sites intersect with either the proposed alignment or the proposed borrow site.

A summary of registered HAIL sites in the Te Karaka township in relation to the proposed alignment and proposed borrow site is provided in Table 5 below.

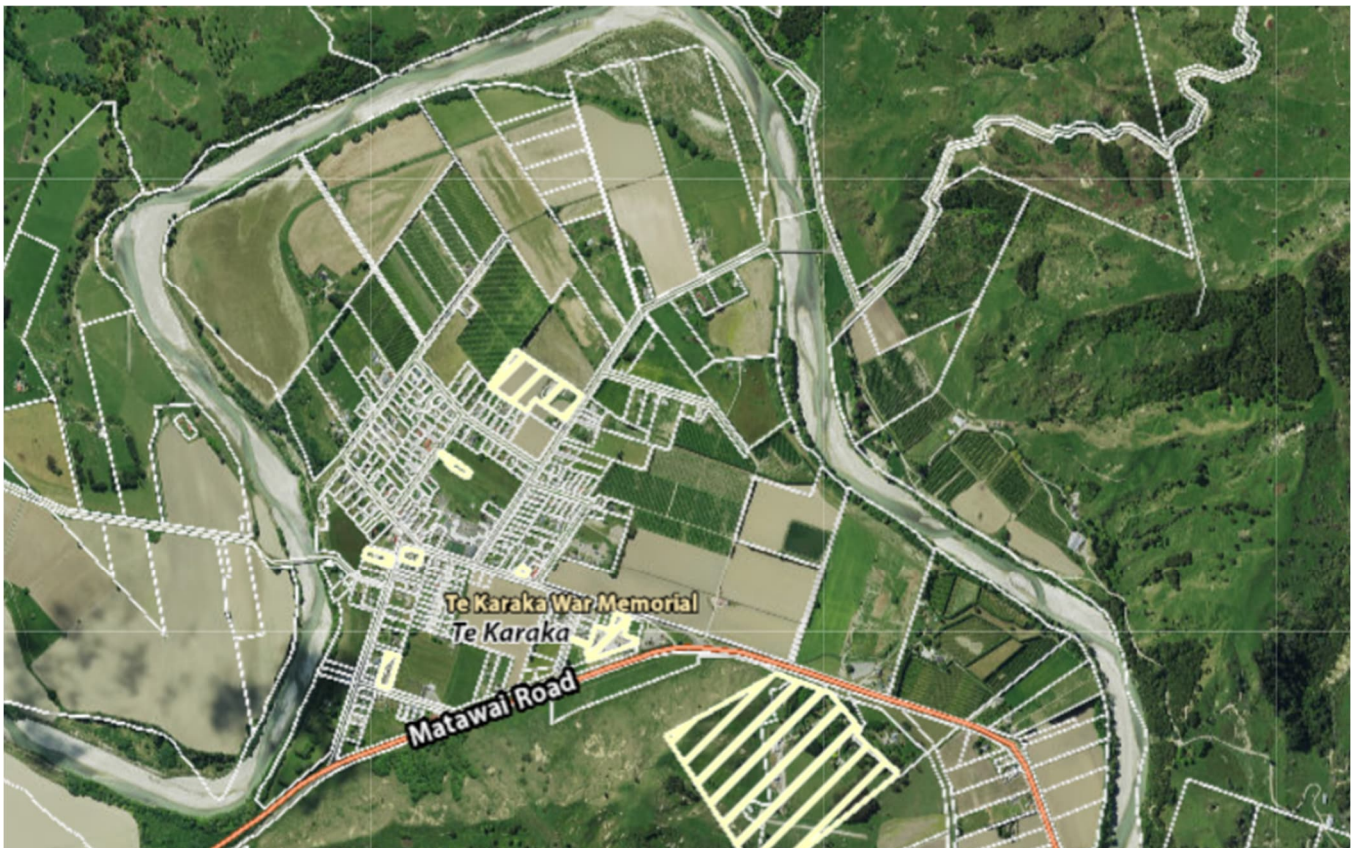


Figure 23. Extract from GDC HAIL Register, showing location of known HAIL sites within the Te Karaka township.

⁴ [Tairāwhiti External](#). Accessed December 2025.

Table 5. Identified HAIL sites within the Te Karaka township. Information sourced from GDC HAIL register.

Address	HAIL Category	Potential for contaminant migration?
70 Station Road	E7 – Mining industries	N – existing adjacent stopbank already in place
52 Main Road	F4 – Motor vehicle workshop (Te Karaka Motors)	N - >200m from proposed alignment.
59 Cliff Road	A17 – Service station (Graham Motors) F4 –Motor vehicle workshop	N - Possible offsite migration of hydrocarbons if any leaks/spills are recorded, however only likely to affect deeper site soils (if contamination present). Development of proposed stopbank unlikely to entail deep excavation. Proposed alignment between service station and river, therefore groundwater flow is presumed to pass through the proposed alignment location.
83 Main Road	F4 – Motor vehicle workshop	N – unlikely for offsite migration of contaminants unless any leaks/spills or underground tanks in disrepair are present on site.
5 Kanakanaia Road	A10 – Persistent pesticide use (Waikohu College)	N - >200m from proposed alignment.
2433 Matawai Road	F8 – Transport depot A6 –fertiliser manufacture or bulk storage	N – unlikely. ~100m from proposed alignment end at Matawai Road.
25 Main Road	F8 – Transport depot	N - >200m from proposed alignment.
53 Kanakanaia Road	F8 – Transport depot	N - >200m from proposed alignment.

3.3.1 Property File Information

Following a review of historic aerals for the proposed alignment, property file information was requested from GDC for selected sites. The following information is noted to be relevant to the existing investigation. The relevant information from each of the property file is included in Appendix A.

11 Rangatira Road:

- 1967 – consent to extend car shed. External wall covering noted to be corrugated iron and asbestos.

59 Kipling Road:

- No information relevant to potential contamination noted.

7 Kipling Road:

- No information relevant to potential contamination noted.

29 – 44 Morris Road:

- 1983 – consent to install covered deer yards and shed for machinery storage.
- 2007 – consent for new dwelling at 29 Morris Road. Dwelling has an external cladding of plaster fibre cement, which given the date of building, is unlikely to contain asbestos.

4 RISK ASSESSMENT

This section uses a Conceptual Site Model (CSM) to assess the currently available information presented in this report to determine:

- whether there has been (or there is more likely than not to have been) a potentially contaminating land use.
- the nature and source of potential or likely contaminants.
- the possible locations of contamination.
- known or potential exposure pathways by which identified receptors could be exposed to the contaminants whilst undertaking the current or proposed future land use.
- known or potential human and ecological receptors that could be exposed to contaminants.

4.1 Conceptual Site Model – Proposed Alignment

The preliminary site CSM for the proposed alignment is provided in Table 6, Figure 24 and Figure 25. No additional HAIL activities were identified following the updated proposed alignment (March 2026). A human health risk can only occur where there is a complete pathway between contaminant source and a receptor. Building floors and paved or sealed areas will largely or completely prevent contact with underlying soils and therefore, direct exposure pathways are or will be incomplete for such areas.

Table 6. Conceptual Site Model for proposed stopbank alignment at the PSI stage.

HAIL, Potential Contaminants and Location	Receptors	Potential Pathways
HAIL E1 – Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition. HAIL I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment. 59 Kipling Road – Demolition of pre-2000's structure. 11 Rangatira Road - Demolition of pre-2000's structure.	Construction workers	Inhalation of dust (containing asbestos fibers), Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Inhalation of dust (containing asbestos fibers), Ingestion or skin contact with exposed soil.
	Workers at soil disposal sites	Inhalation of dust (containing asbestos fibers) during placement at an offsite disposal site.
	Ecological receptors	Discharges to air / water / land. Sediment runoff, shallow groundwater flows.
HAIL A18 – Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside. 29 Morris Road - Miscellaneous storage of unknown materials including possible treated timber.	Construction workers	Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Ingestion or skin contact with exposed soil
	Workers at off-site soil disposal sites	Inhalation of contaminated dust during placement at offsite disposal site.
	Ecological receptors	Sediment runoff, shallow groundwater flows.
HAIL A10 – Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds. Along proposed alignment – various orchards noted since 1982 onwards.	Construction workers	Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Ingestion or skin contact with exposed soil
	Workers at off-site soil disposal sites	Inhalation of contaminated dust during placement at offsite disposal site.
	Ecological receptors	Sediment runoff, shallow groundwater flows.

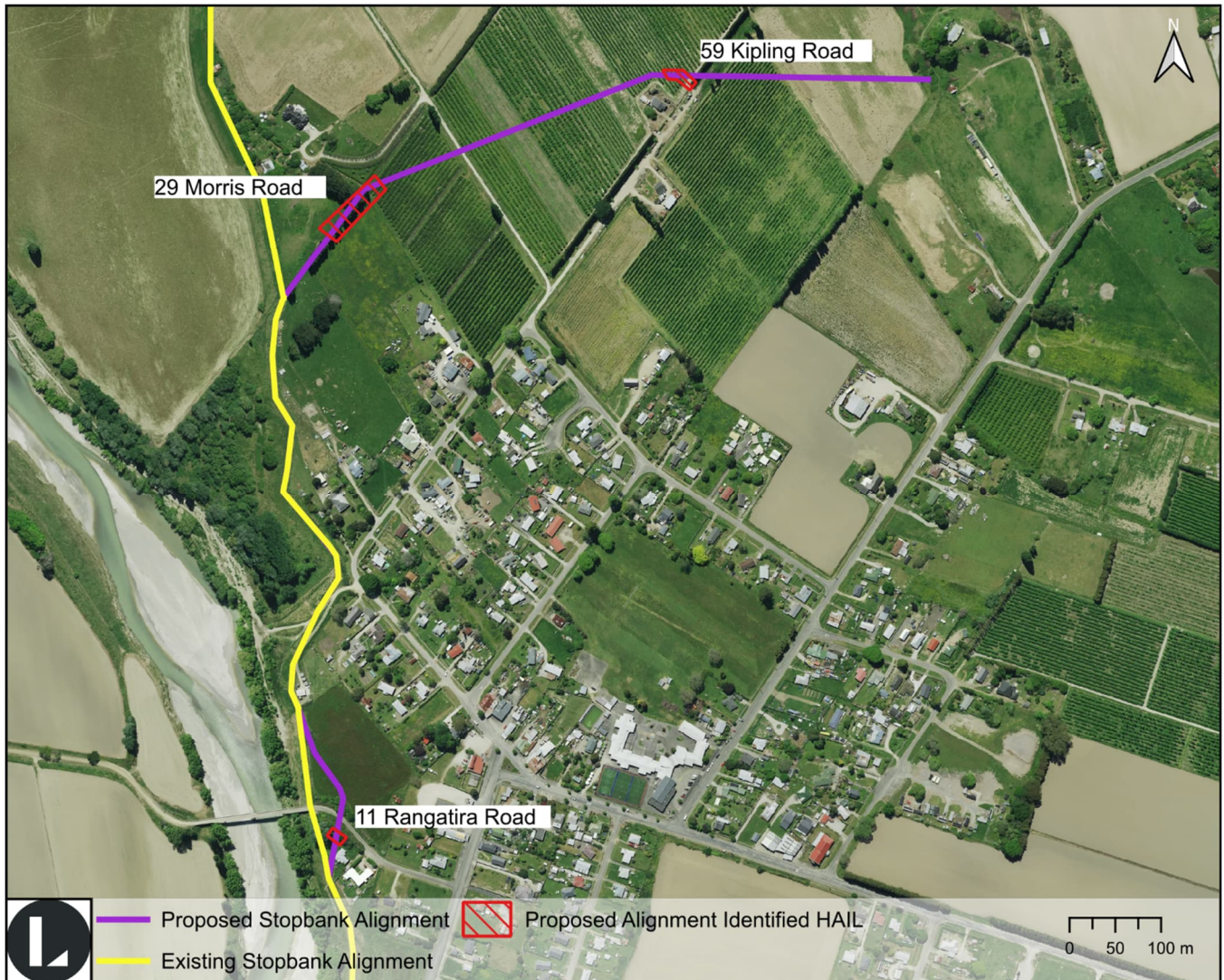


Figure 24. Summary plan showing location of identified HAIL sites along the proposed stopbank alignment. HAIL A10 also identified at various orchards along the proposed alignment. Refer to Figure 25 for zoomed-in plan. No additional HAIL sites were identified following the updates to the proposed alignment (March 2026).

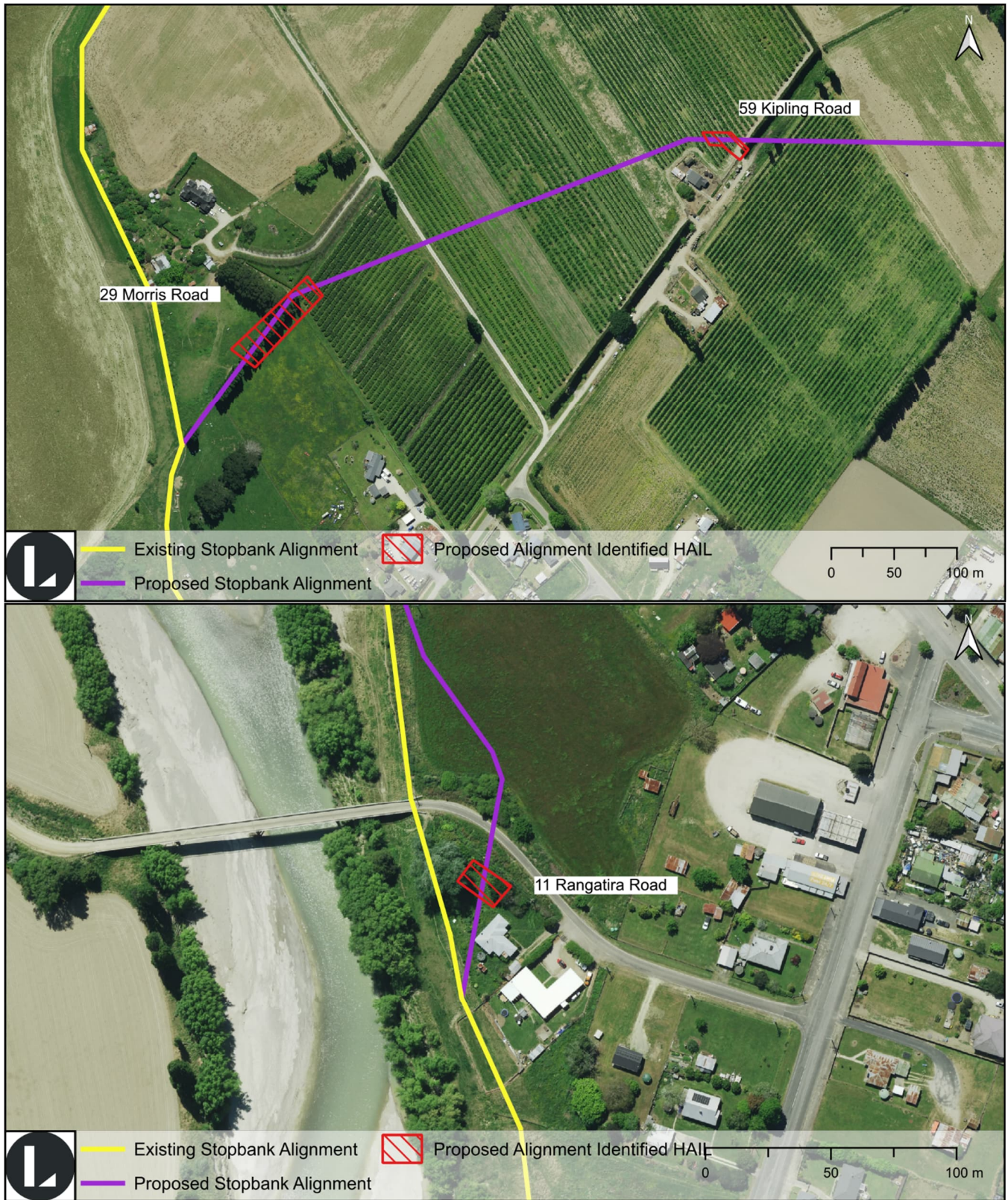


Figure 25. Zoomed-in plans showing identified HAIL locations along proposed stopbank alignment. No additional HAIL sites were identified following the updates to the proposed alignment (March 2026).

4.2 Conceptual Site Model – Proposed Borrow Site

The preliminary site CSM for the proposed borrow site is provided in Table 7 and Figure 26. A human health risk can only occur where there is a complete pathway between contaminant source and a receptor. Building floors and paved or sealed areas will largely or completely prevent contact with underlying soils and therefore, direct exposure pathways are or will be incomplete for such areas.

Table 7. Conceptual Site Model for proposed borrow site at the PSI stage.

HAIL, Potential Contaminants and Location	Receptors	Potential Pathways
HAIL E1 – Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition. HAIL I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment. 29 Morris Road – Demolition of pre-2000's structure. Miscellaneous storage. 44 Morris Road - Demolition of pre-2000's structure.	Construction workers	Inhalation of dust (containing asbestos fibers), Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).
	Future site users	Inhalation of dust (containing asbestos fibers), Ingestion or skin contact with exposed soil.
	Workers at off-site soil disposal sites	Inhalation of dust (containing asbestos fibers) during placement at an offsite disposal site.
	Ecological receptors	Discharges to air / water / land. Sediment runoff, shallow groundwater flows. Inhalation of dust (containing asbestos fibers), Exposure via inhalation of contaminated dust or ingestion and skin contact (dermal).

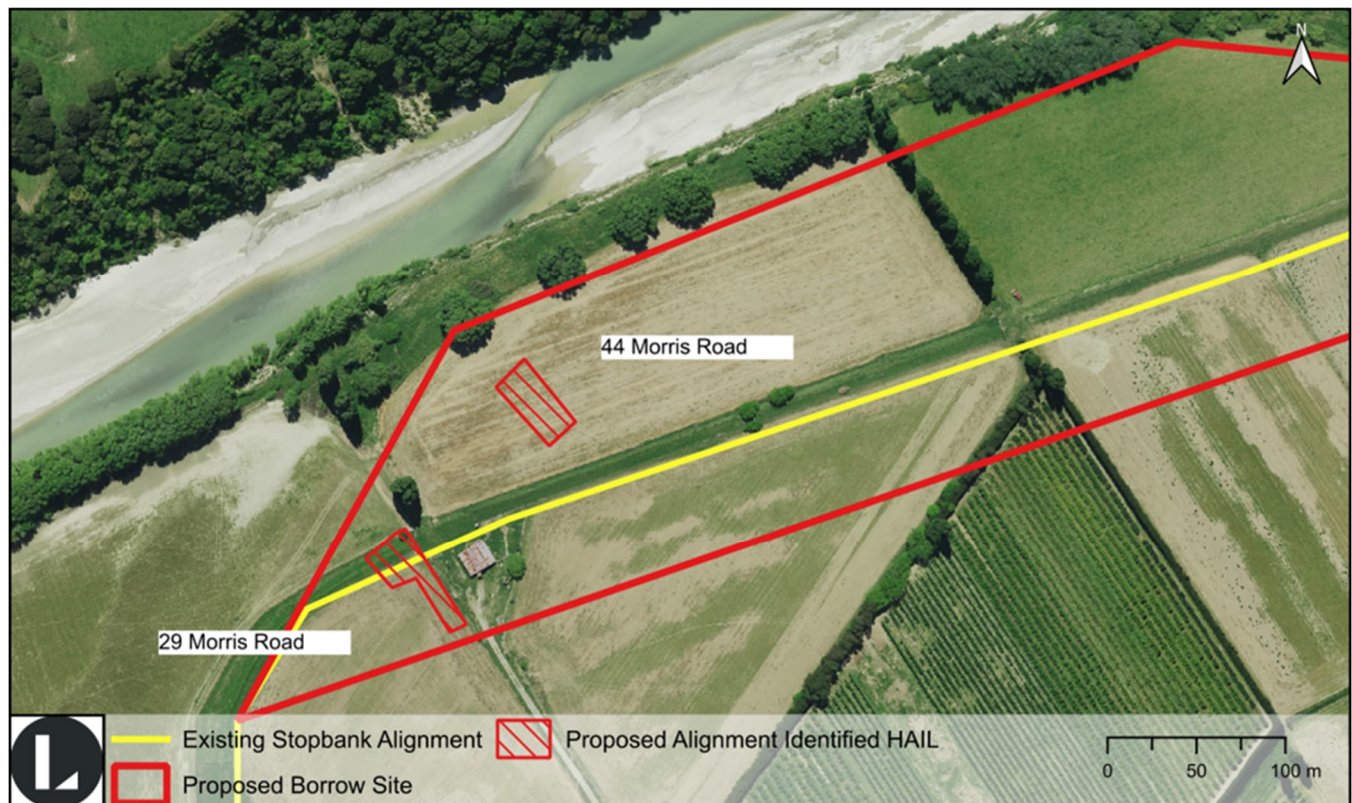


Figure 26. Site plan showing location of identified HAIL sites along the proposed borrow site.

4.3 Applicability of NESCS

As per Regulation 6 (3) it is considered that it is more likely than not an activity or industry described in the HAIL has been undertaken on the piece of land (HAIL A10, HAIL A18, HAIL E1 and HAIL I). Soils in the locations identified could be contaminated and could be a risk to human health. As per Regulation 8(4)(b), LDE considers that there could be a risk to human health if the activity is done to the piece of land.

5 CONCLUSION

Evidence from the PSI and site history review, indicates **HAIL A10**: '*Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds*', **HAIL A18**: '*Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside*', **HAIL E1**: '*Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition*', and **HAIL I**: '*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*' are more likely than not to have occurred.

No additional HAIL sites were identified following the updates to the proposed alignment (March 2026).

Based on the currently available information presented in this report LDE considers that the NESCS applies. This is because soil disturbance is covered by Regulations 5(4). The land is also covered by the NESCS because of HAIL activities that are more than likely to have been carried out at the site.

A detailed site investigation (DSI) is recommended to establish if soil contamination exceeds the applicable standard to determine if the site is a restricted discretionary or controlled consent under the NESCS. Soil sampling is proposed to be undertaken within the identified HAIL locations, as well as systematic sampling along the proposed alignment where orchards are or were historically present.

A resource consent will be required before groundworks can commence.

5.1 Preliminary Site Investigation Certifying Statement

The document signatories of LDE certify that:

1. this preliminary site investigation meets the requirements of the Resource Management (National Environmental Standard for assessing and managing contaminants in soil to protect human health) Regulations 2011 because it has been:
 - a. done by a suitably qualified and experienced practitioner, and
 - b. reported on in accordance with the current edition of Contaminated land management guidelines No 1 – Reporting on contaminated sites in New Zealand, and

- c. the report is certified by a suitably qualified and experienced practitioner.

For activities under Regulation 8(4) of the NESCS this preliminary site investigation concludes is not highly unlikely that there will be a risk to human health if the activity is done to the piece of land.

The activity to be undertaken as defined in Regulation 5(4) is described:

- a. on page 3 of this preliminary site investigation.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner(s) (SQEPs) who have done this investigation and have certified this report is included in Appendix B.

6 LIMITATIONS

This investigation presents a preliminary site investigations of the potential for ground contamination, prepared exclusively for Gisborne District Council with respect to the particular brief given to us. Information, opinions, and recommendations contained in it cannot be used for any other purpose or by any other entity without our review and written consent. LDE Ltd accepts no liability or responsibility whatsoever for or in respect of any use or reliance upon this report by any third party.

Opinions given in this report are based on a review of existing data available to LDE. There is still some possibility that contaminating activities have taken place or contamination at the site is in excess of that described in this report and we should be contacted immediately if the conditions are suspected to differ from that described.