

Developments in the use of ecological surveys to manage effects of gravel extraction

BRaid Symposium

July 2026

Gravel extraction - Risks

- General question we get from Consent Planners
- “Are the ‘standard bird conditions’ sufficient to manage effects on terrestrial ecology values?”
- The answer is No, for three reasons



1st reason

- The standard conditions are designed only to avoid direct impacts on protected native ground-nesting birds.
- They do not avoid or mitigate effects of gravel extraction on bird breeding & feeding habitats.

2nd reason

- The 'standard' bird survey and nest setback conditions are not wholly effective in avoiding direct disturbance of breeding birds and chicks.
- The only sure way to avoid direct impacts of gravel extraction on ground-nesting birds is to restrict works to outside the bird breeding season or to rivers/parts of rivers where no nesting birds present.

3rd reason

- The 'standard conditions' do not recognise, and therefore do not mitigate, effects of GE on other terrestrial ecology values or braided river natural character (i.e. braided river ecosystem functions and processes).

A Way Forward

- We now recommend the 'standard' bird survey conditions are supplemented with a habitat-based survey approach.
- This approach identifies and avoids key habitats for indigenous species (plants, lizards, fish, invertebrates as well as birds).
- Paired with site-specific post-works ecological remediation plans for defined GE campaign areas.

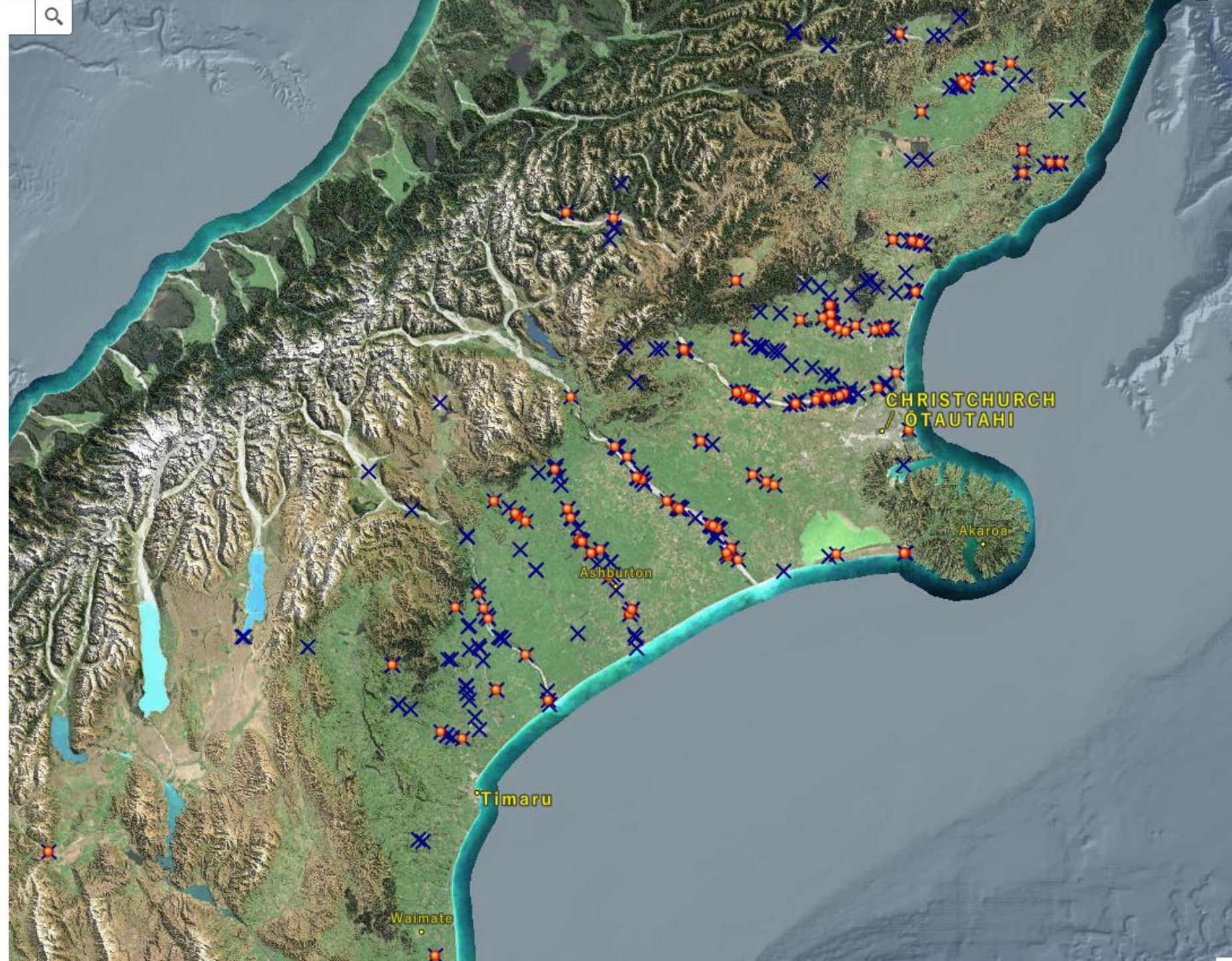
Pre-work river bird surveys



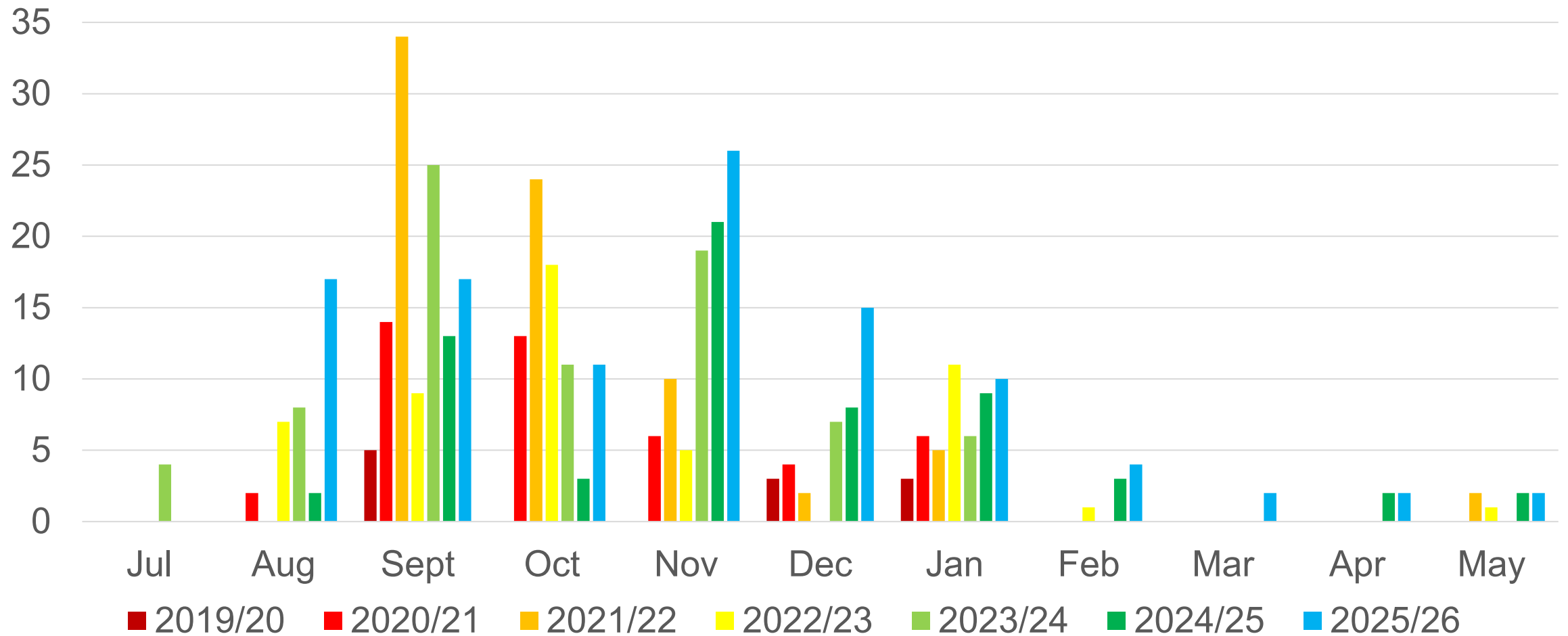
Pre-work Survey Location

- ✕ Checklist
- Breeding Observation

Since 2019
Total checklists: 434



Survey (checklists) by season



Pre-work surveys - data since 2019

- Total checklists: 434 (31 outside nesting season)
- Over 5,000 species observations
- Over 70% (315) include at least one Threatened or At Risk species
- Overall, 25% (111) include a 'breeding' ToAR species

	2019	2020	2021	2022	2023	2024	2025
Total surveys	11	45	77	52	80	63	106
Total inside nesting season	11	45	75	50	76	56	96
Total with a ToAR species	82%	65%	58%	85%	80%	70%	76%
Total with nesting observation	0%	33%	41%	48%	32%	29%	28%
Total with nesting ToAR species	0%	20%	34%	33%	32%	21%	21%

The pre-work bird survey conditions - conclusions

- Pre-work surveys are useful, but have limitations
- The standard conditions are designed only to reduce direct impacts on threatened or at-risk native ground-nesting birds.
- They are temporally limited and do not avoid or mitigate the effects of gravel extraction on bird habitat.
- Habitat surveys address some of these limitations

Ecological Habitat Mapping

Flora and Fauna Survey

- 7 Prior to any mechanical works being carried out in the area identified on Plan CRC234035A, and any use of the gravel operation areas identified in Plans CRC234035C and CRC234035D, unless exempt under Condition (9), the Consent Holder must ensure that:
- a) At least 15 working days prior to any active extraction works being carried out a formal request is made to Canterbury Regional Council: Attention Regional Leader – Braided River Revival and Team Leader – Land Ecology, for a joint Site Visit with a suitably qualified and experienced expert(s), as certified in accordance with Condition (7)(c), engaged by the Consent Holder.
 - b) **The Site Visit will involve a joint Survey** undertaken by both the person nominated in accordance with 7(c) and a Canterbury Regional Council ecologist identifying, locating, and mapping any indigenous flora or fauna and associated critical habitat that are likely to be adversely affected by works associated with this consent, including both terrestrial and aquatic species, within the areas identified on Plans



Wed 31 Dec 2025 8:33 AM

[Edit Date and Effort](#)

2661 Old West Coast Road, Darfield, Canterbury Region, NZ (-43.441, 172.179) [Selwyn District County, Canterbury, New Zealand](#)

Environment Canterbury

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Thomas Smy

Traveling Complete

2



eBird Mobile GPS track

Gravel Extraction Survey
Waimakariri River CRC234035 - Cooks Rd
Southern Screenworks Ltd

Submitted from eBird for Android, version 3.3.3

[Edit Comments](#)

20 Species Observed 332 individuals

- 2 **California Quail** *
- 6 **Rock Pigeon (Feral Pigeon)** *
- 9 **South Island Pied Oystercatcher (SIPO)**
- 16 **Banded Dotterel**
Many chicks, see report
BREEDING BEHAVIOR CODE: **NY Nest with Young (Confirmed)**
- 7 **Wrybill**
2 sets of chicks, see report
BREEDING BEHAVIOR CODE: **NY Nest with Young (Confirmed)**
- 1 **Black-billed Gull**
- 200 **Southern Black-backed Gull**
BREEDING BEHAVIOR CODE: **NY Nest with Young (Confirmed)**
- 52 **Black-fronted Tern**
Colony, recently began incubating in last few days. Approx 20 pairs
BREEDING BEHAVIOR CODE: **NE Nest with Eggs (Confirmed)**
- 2 **Black Shag**
- 1 **Pied Shag**



A habitat-based approach

1. Grid Surveying

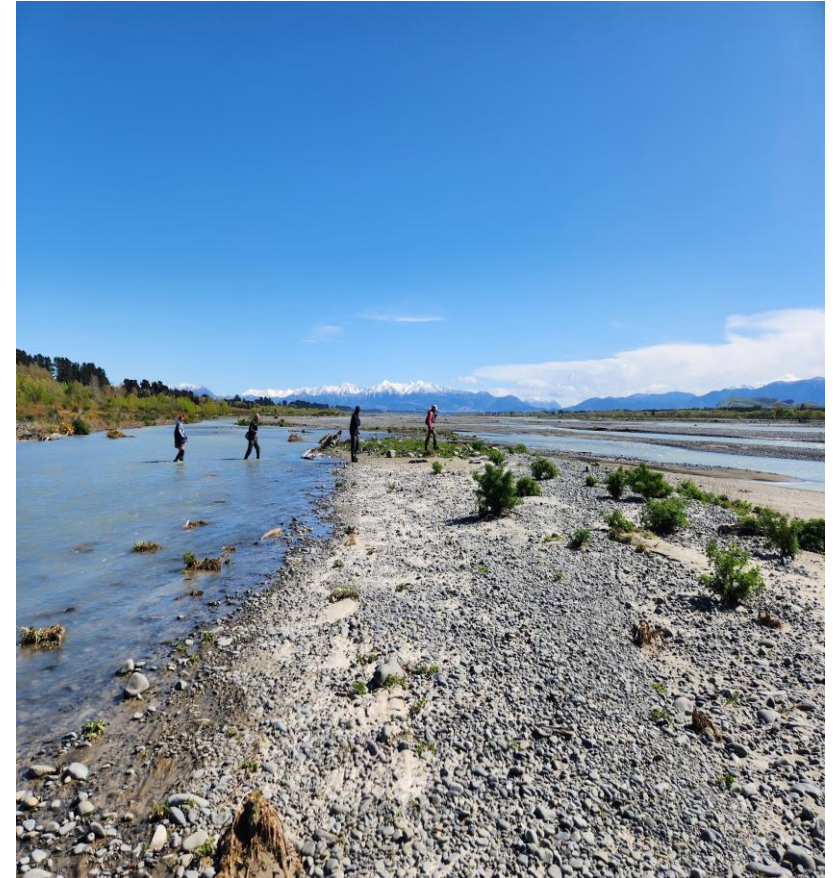
Survey using a 50m spacing.

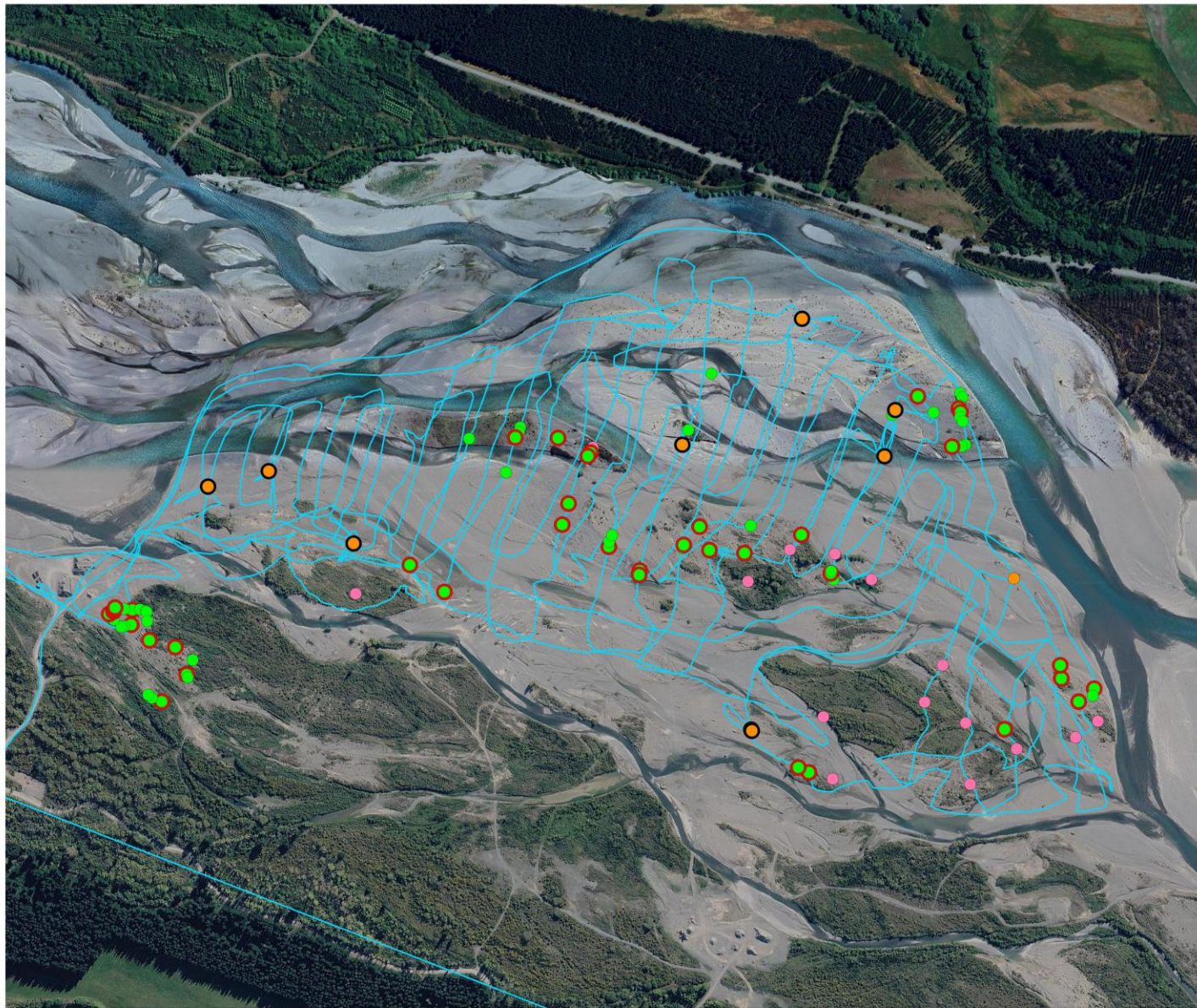
2. Habitat Identification

Native plants, birds, fish, invertebrates, and lizards.

3. Complete Protection

Establish areas on the site with complete ecological protection.





Legend

— Surveyor Tracks

Survey Waypoints

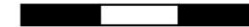
- Bird Nest - At Risk/Threatened
- Chick Observation
- Native Plant - At Risk/Declining
- Native Plant
- Dense Weeds

Note:

This map is indicative only and represents the work completed by Keystone Ecology.

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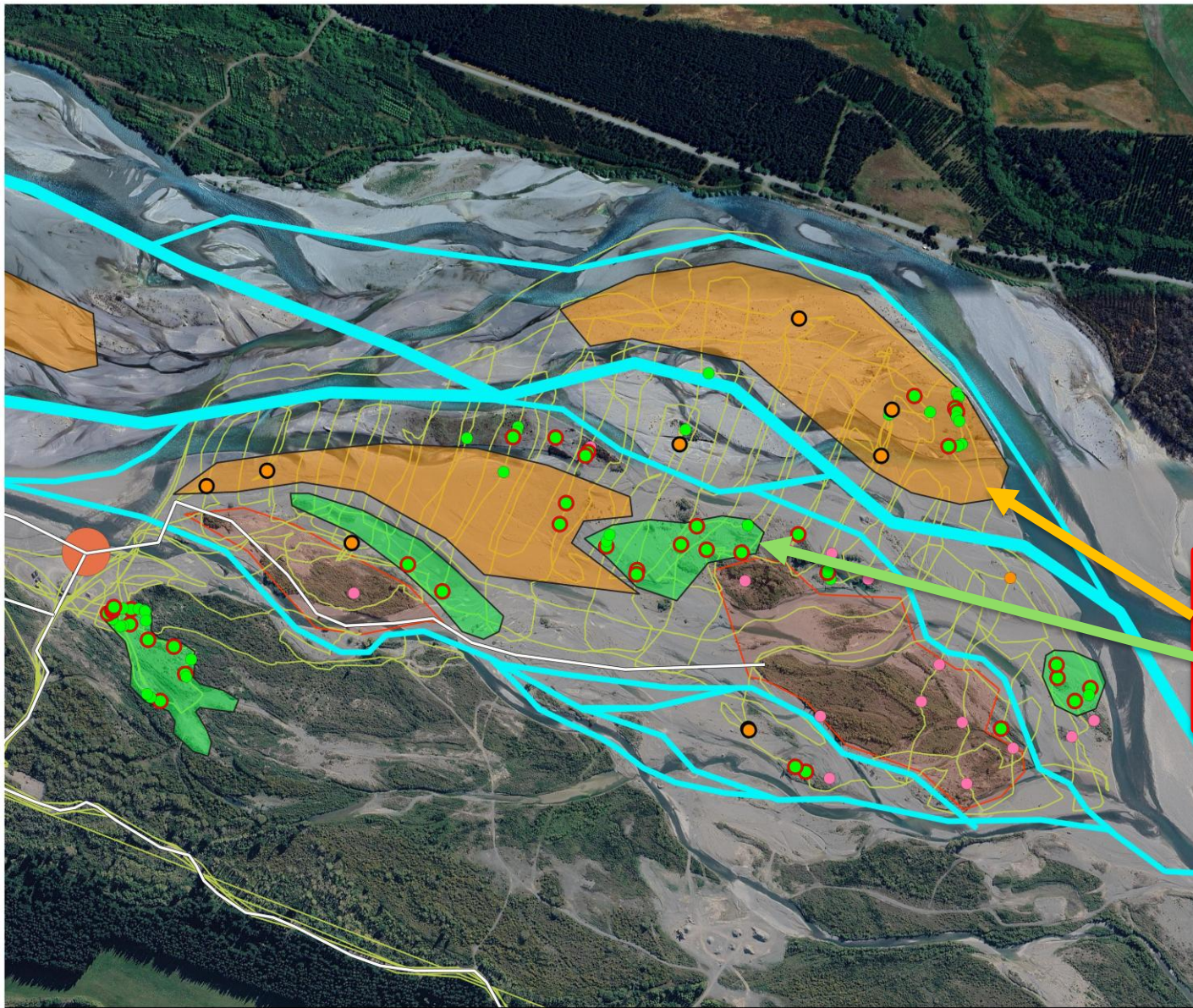
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Created by Keystone Ecology 03/06/26



Critical Habitats Survey Map
December 2025
CRC234035

Environment
anterbury
Regional Council
nihera Taiao ki Waitaha



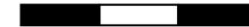
Legend

- Survey Tracks
- Survey Waypoints**
 - Prior Nest - At Risk/Threatened
 - Prior Chick Observation
 - Native Plant - At Risk/Declining
 - Native Plant
 - Dense Weeds
- River Channel (June 2026)**
 - Main
 - Secondary
 - Site Access Route
- Stockpiling Location
- Exclusion Zones (June 2026)**
 - Bird
 - Native Vegetation
 - Fish
- Priority Extraction Areas

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Scale: 1:12,000

Created by Keystone Ecology 03/06/26



Critical Habitats Map
June 2026 (valid for 12 months)
CRC234035

Niall

Remaining limitations

Braided Rivers are Unpredictable

The yearly habitat review can show drastic natural change

Difficulty Communicating Habitat Maps

The message needs to be simple for river operators.

Highly Labour Intensive

Surveying, reporting, reviewing, and yearly re-surveying whole consent areas.

Pre-works bird surveys

Surveys confirm a safe starting point for works
BUT there is no follow up direction as the breeding season progresses
NOR much follow-up/outcomes monitoring



Consideration of just 'threatened' and 'at risk' species is NOT consistent with the Wildlife Act (1953)



Appendix 1. Wildlife Act (1953) requirements:

63 Taking protected wildlife or game, etc

(1) No person may, without lawful authority,—

(a) hunt or kill any absolutely protected or partially protected wildlife or any game:

(c) rob, disturb, or destroy, or have in his or her possession the nest of any absolutely protected or partially protected wildlife or of any game.

(1A) Every person who contravenes subsection (1) commits an offence and,—

(a) in respect of an offence committed in relation to absolutely protected wildlife, is liable on conviction to the penalty set out in [section 67A\(1\)](#):

(c) in respect of an offence committed in relation to game, is liable on conviction to the penalty set out in [section 67E\(3\)](#).

67A Penalties for offences in respect of absolutely protected wildlife

(1) Every person who commits an offence against any of the provisions listed in subsection (2) is liable on conviction to,—

(a) in the case of an individual, imprisonment for a term not exceeding 2 years or a fine not exceeding \$100,000, or both:

(b) in the case of a body corporate, a fine not exceeding \$200,000.

(2) The provisions are—

Niall – Conclusion 2 min

Conclusion

- Bird surveys don't avoid all effects
- Secondary effects. (4wd)
- Habitat survey results are complex



Conclusion

- Conditions are compromising each other
- Keep it simple.
- Avoidance is best



Acknowledgements

Grant Davey and ARRG

Background imagery to slides: Plato Creative