



Are we monitoring in the dark?

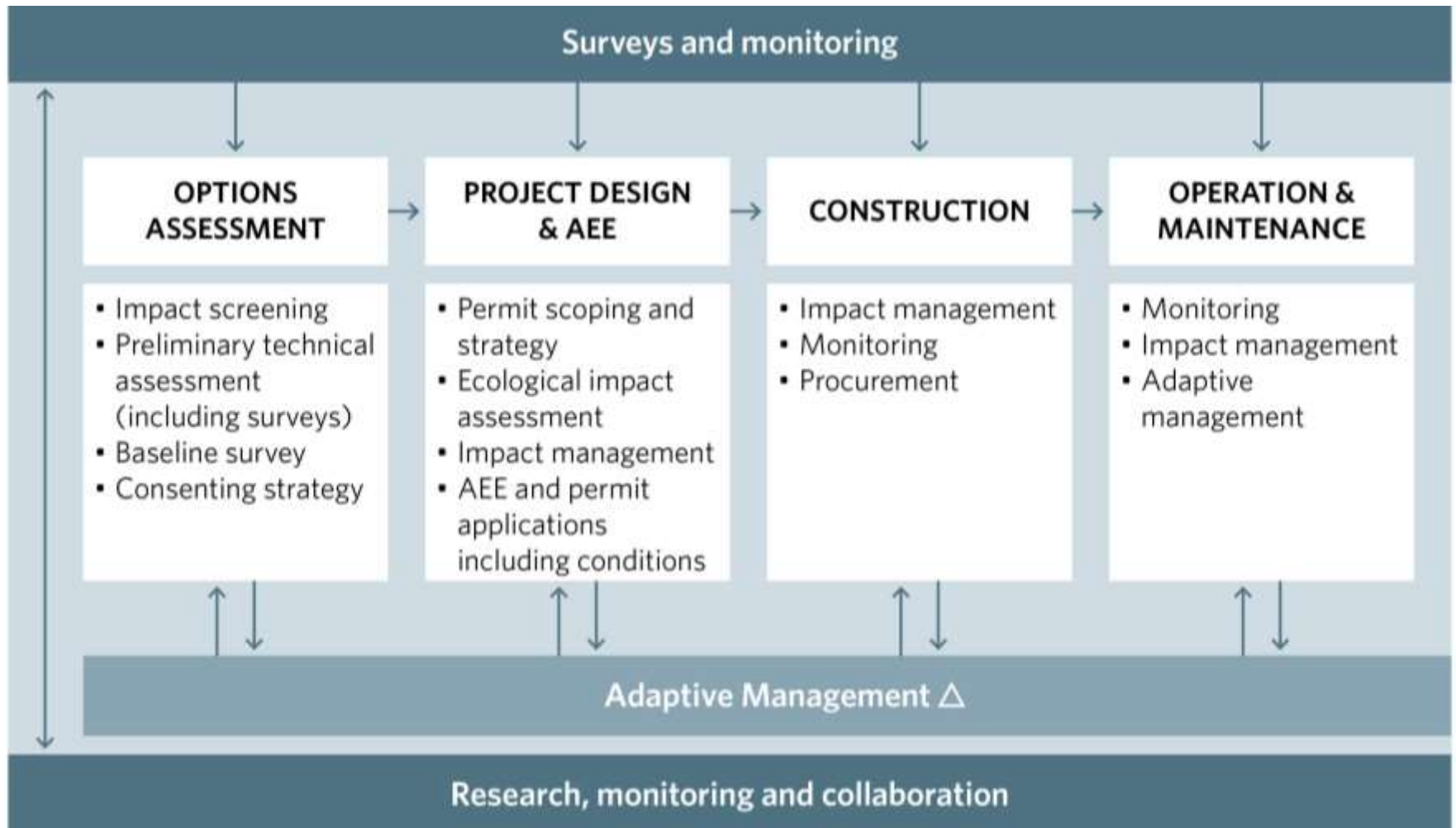
Implementation of a bat framework on a roading project in Hamilton, New Zealand

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Presentation outline

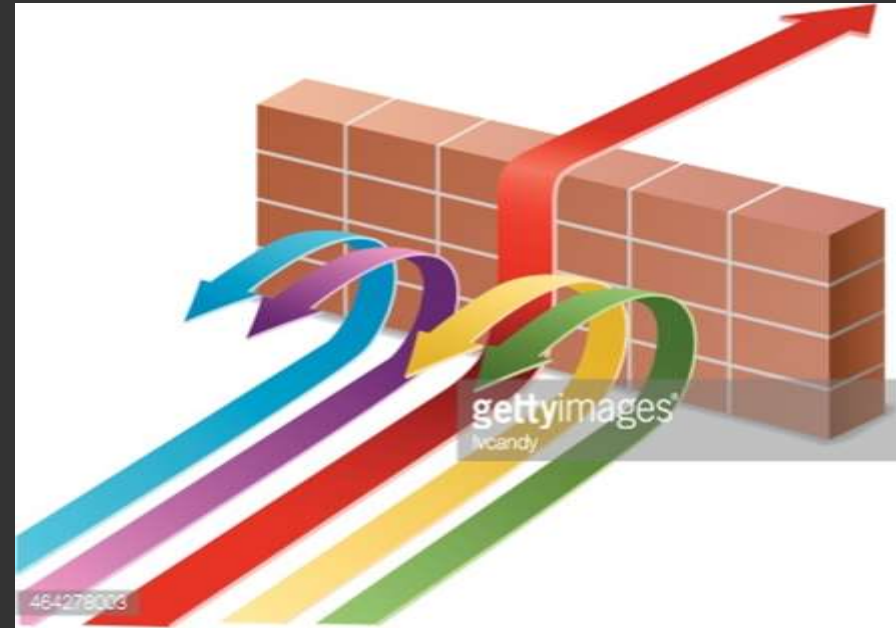
- Bat framework – can it help reduce the barriers to good monitoring?
- Framework and monitoring in practice – Southern Links case study

Bat framework overview



Potential barriers to monitoring of bats and evaluation of the effects of roading

- 1) Not always a legal requirement
- 2) Costly and resource- or labour-intensive
- 3) Limited experience and understanding
- 4) Methodological challenges





Bat parents

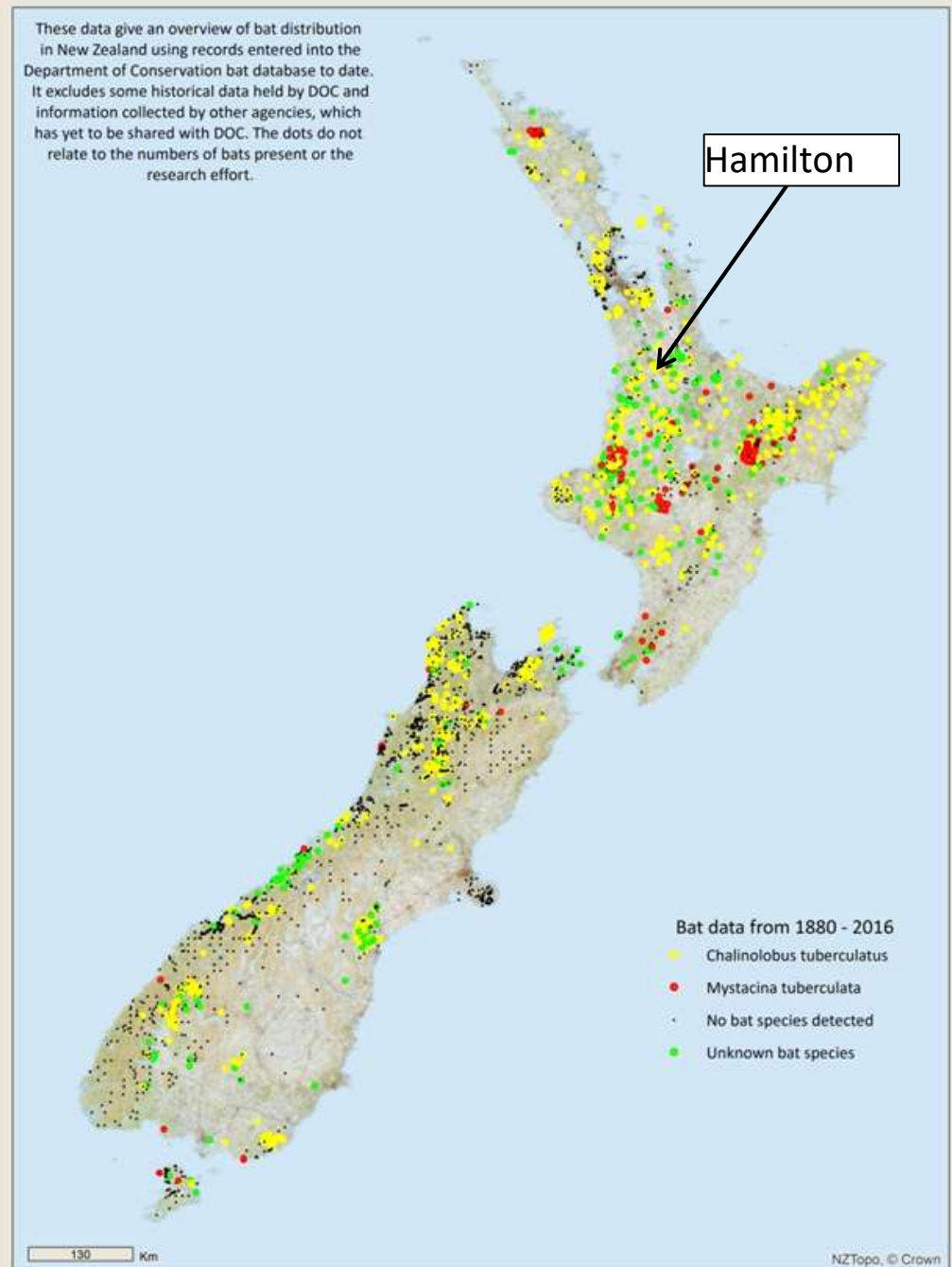
Monitoring in practice

Bat monitoring on the southern links roading project

Presentation Title

Southern Links roading project

These data give an overview of bat distribution in New Zealand using records entered into the Department of Conservation bat database to date. It excludes some historical data held by DOC and information collected by other agencies, which has yet to be shared with DOC. The dots do not relate to the numbers of bats present or the research effort.



Hamilton and long-tailed bats





Monitoring objectives

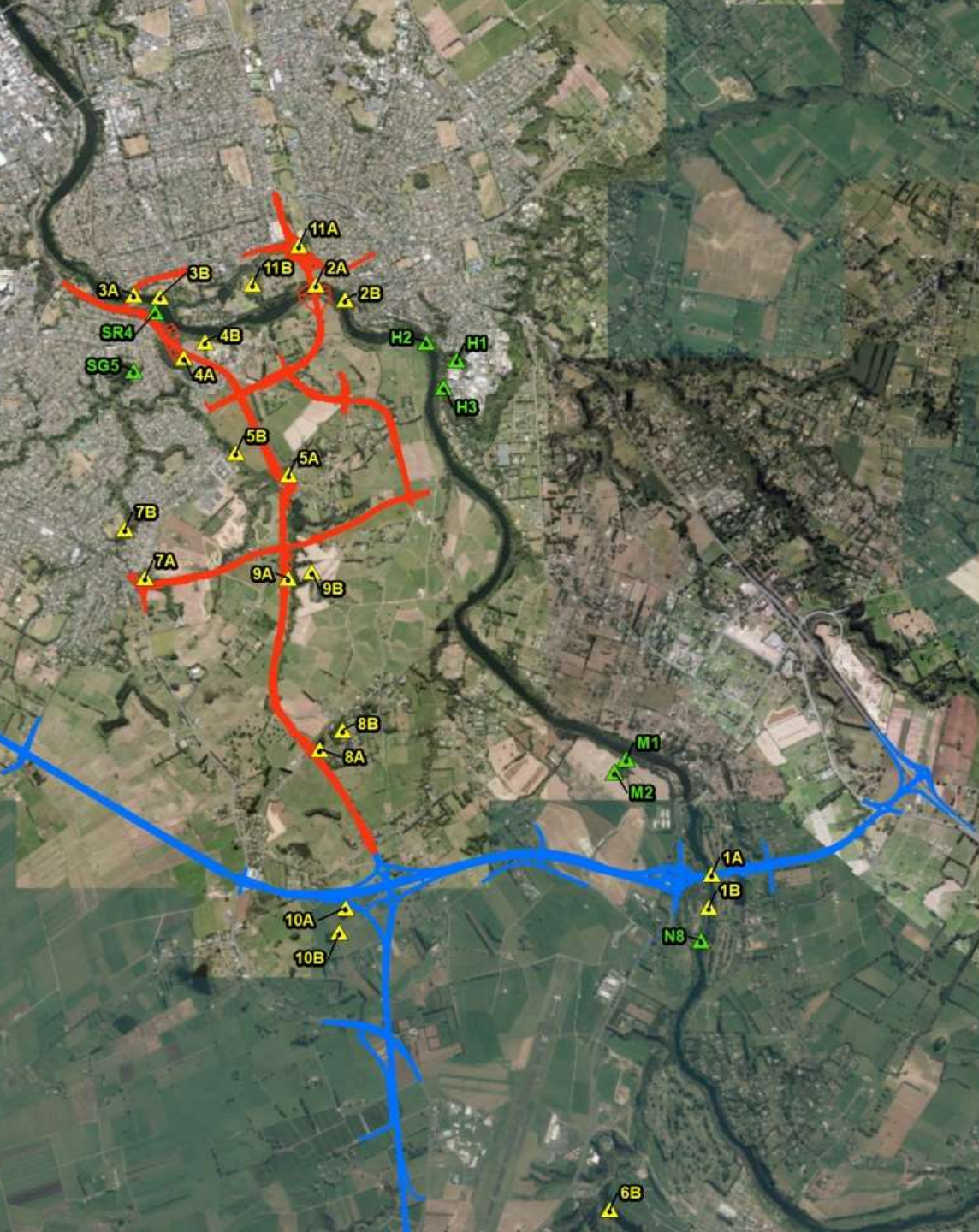
- Designation conditions
 - Baseline surveys (2 years prior), during and post construction (5 years) monitoring
 - Changes in bat activity and behavioural patterns
 - Priority monitoring objectives including:
 - Effects of lighting and roads other key potential barriers (e.g. bridges);
 - Effectiveness of the animal pest control; and
 - Key habitats (e.g. maternal roosting sites and foraging sites).

Selection of bat monitoring techniques (Year 1)

Combination of Acoustic Monitors and thermal imaging camera chosen to address objectives



Monitoring design



- Paired sites
 - One at proposed road/bridge site (impact)
 - One ≥ 200 m away (control)
- Repetition - 21 or 3 nights (road or bridge)
- Light (lux), noise (dB) recorded



Adaptive management in practice

- A review of Year one monitoring identified 'problem' areas where data was still required
- Year 2 survey re-scoped in order to meet monitoring objectives

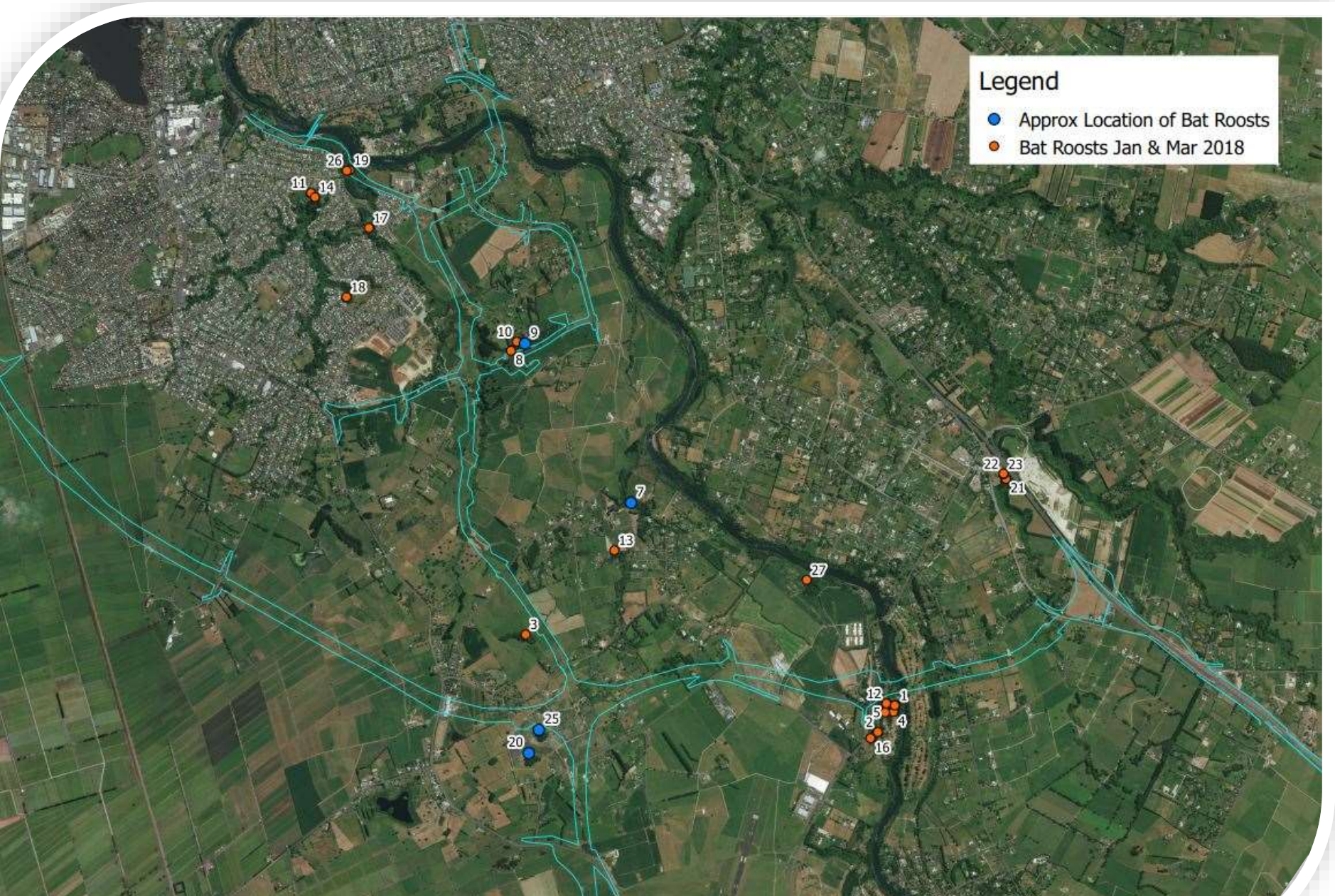
- Problem #1: Lack of information on exact bat roost locations
- Solution: Radio tracking survey of bats in Year 2



- Problem #2: Lack of information on gully bridge sites and their use by bats
- Solution: Additional thermal imaging sites (including controls)



Preliminary results – Year two



Preliminary results – Year two



Framework implementation on Southern Links – summary

Barrier	Southern Links result
Legal requirement no guarantee	<ul style="list-style-type: none">• Monitoring requirements set by conditions• Effective monitoring design
Cost- and/or resource-intensive	<ul style="list-style-type: none">• Focused monitoring/adaptive management – meet objectives• Thermal – high cost• Radio tracking – reduced risk and costs
Limited experience	<ul style="list-style-type: none">• Competent ecologists used• Bat competencies challenging - lack of certification and training
Methodological challenges	<ul style="list-style-type: none">• Range of survey techniques

Thanks and any questions?

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