Ministry for Primary Industries
Manatū Ahu Matua

# The New Zealand National Biocontainment Laboratory Project – Innovative Approaches to Meet Testing Requirements in the Event of an FMD Outbreak

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# The Animal Health Laboratory

- New Zealand's national veterinary laboratory.
- Diagnose, research and help control animal diseases – focus on exotic diseases.
- First Animal Health Laboratory in southern hemisphere.


# Current Enhanced PC3 Laboratory

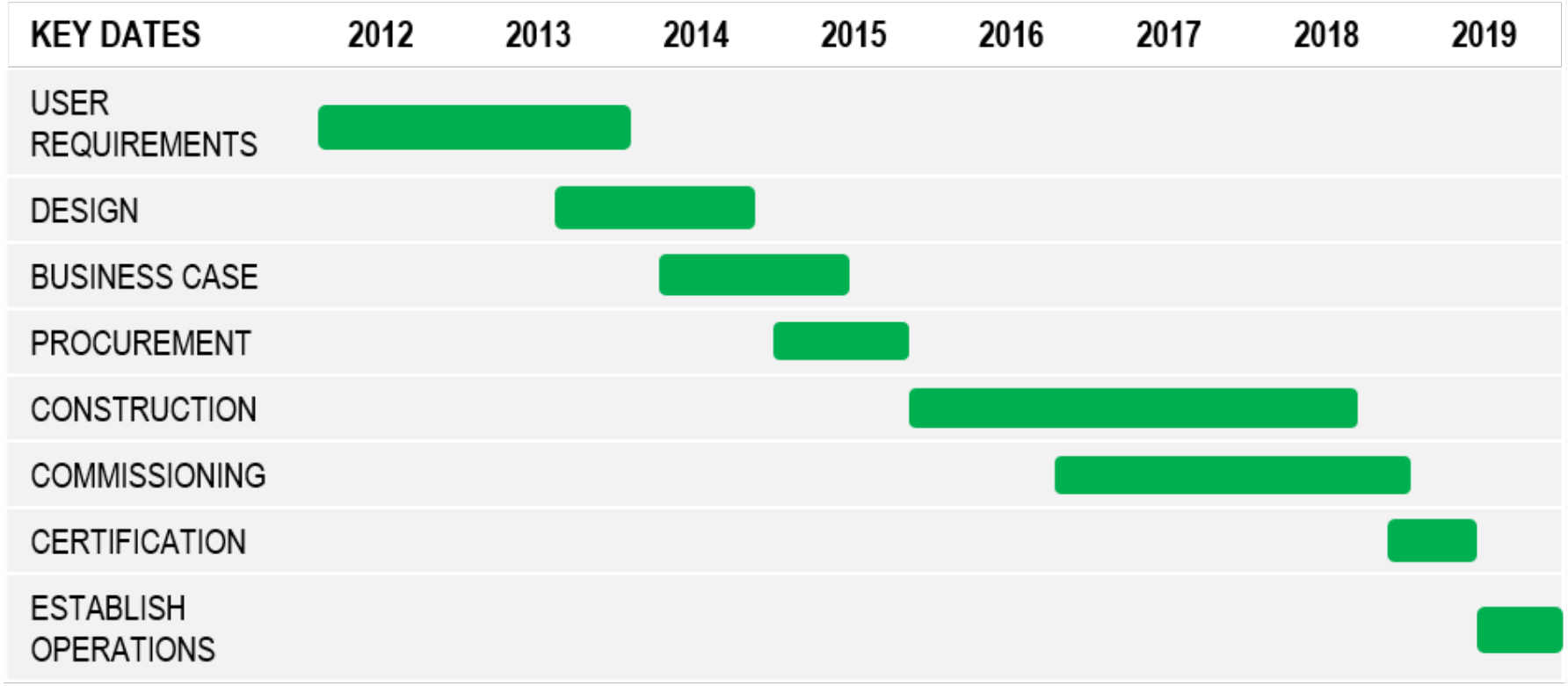
**AHL has the only enhanced PC3 containment laboratory in New Zealand.**

- Commissioned in 1998
- Design life 15-20 years
- Increasing maintenance
- Is poorly designed for our work (e.g. DNA)
- Lacks flexibility.

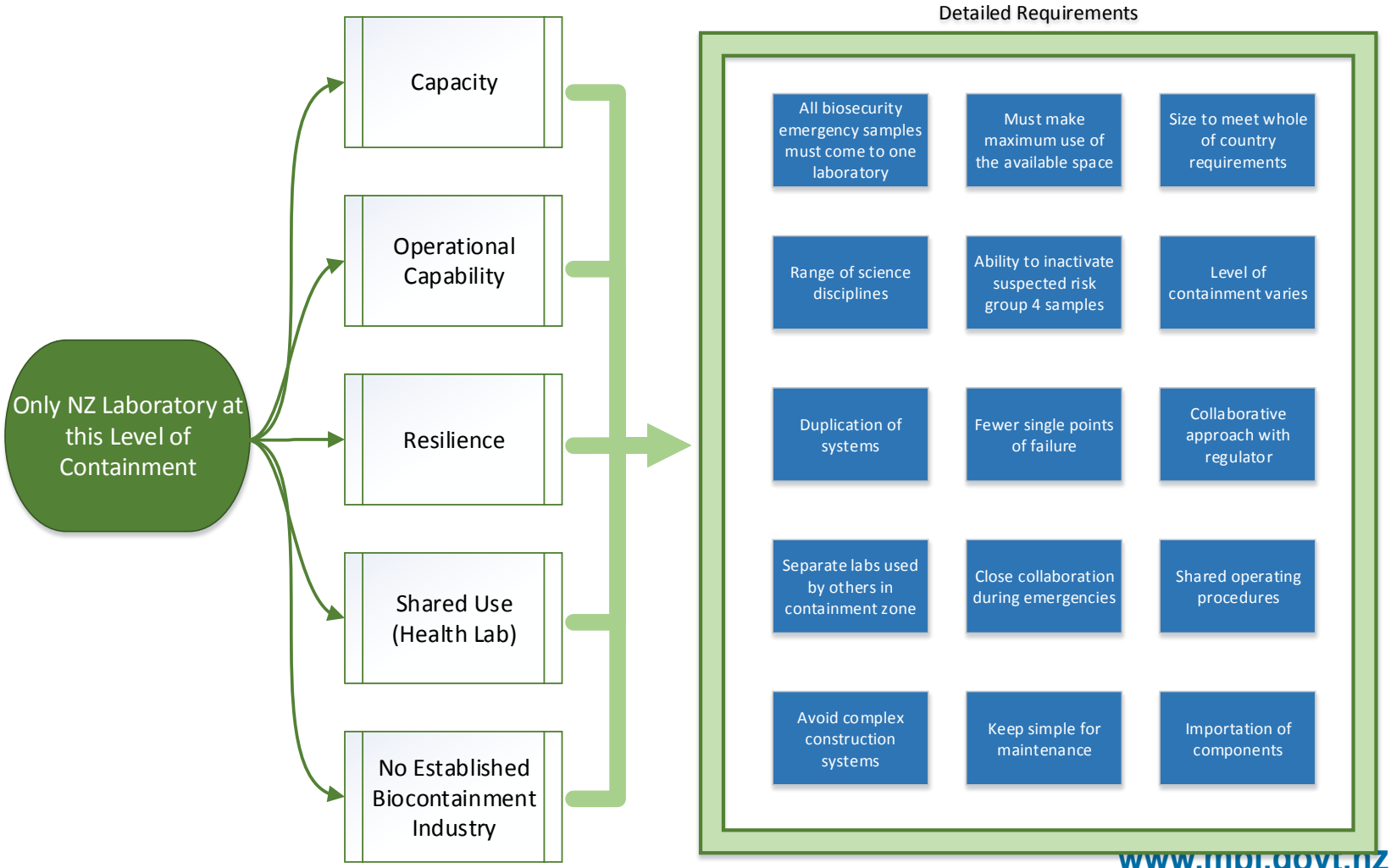
# The National Biocontainment Laboratory Project (NBLP) - Investment Objectives

- Improve the ability to identify and manage organisms that present a high risk to NZ.
- Help maintain NZ's international health and trade 'standing'.
- Provide services that can meet surge requirements.
- Provide a safer and more secure working environment.
- Make biocontainment services more efficient and maintainable.

# Project Timeline



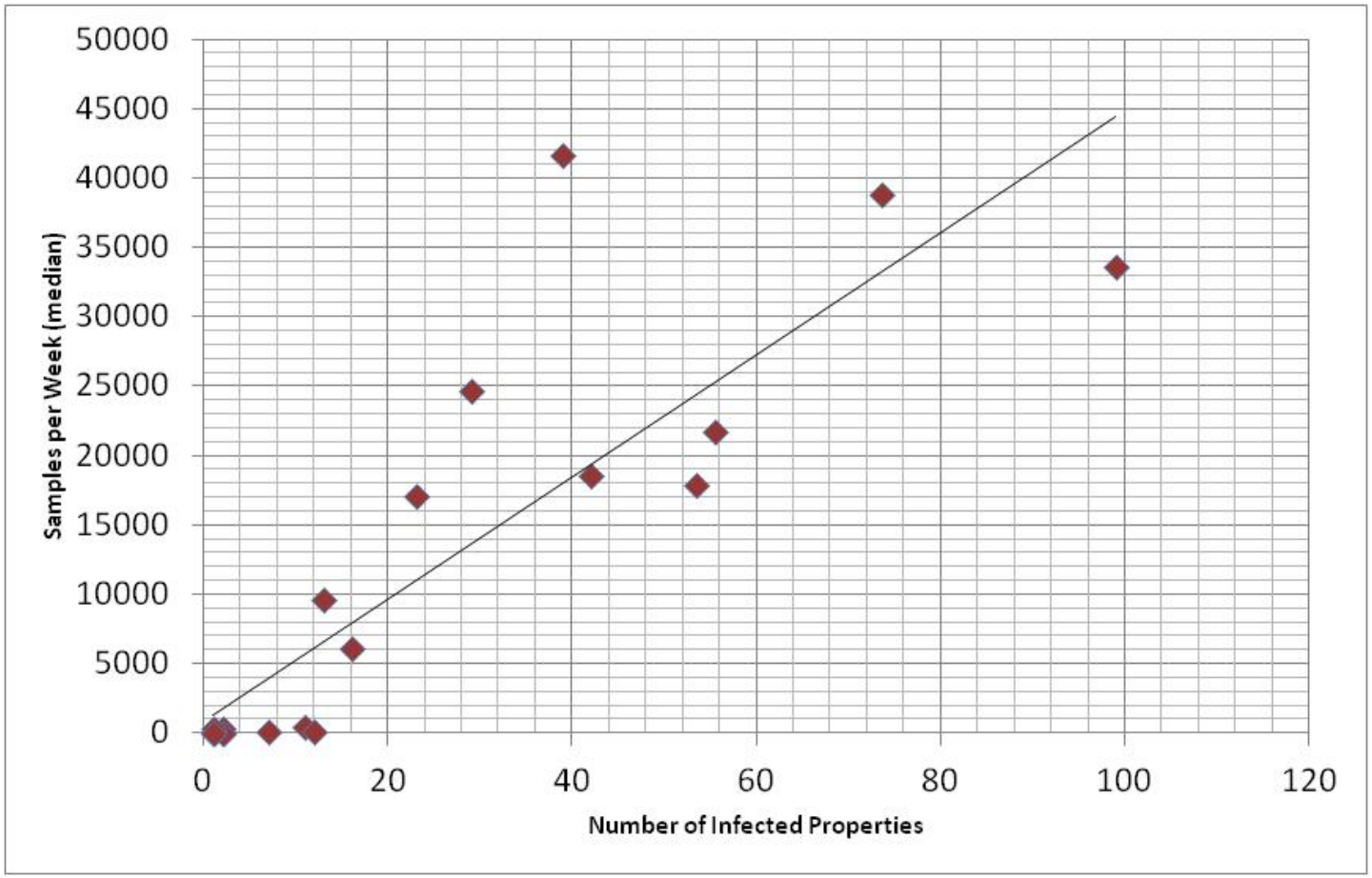
# Broad Impact of Strategic Factors



# How Big Should the Lab Be?

- Used FMD as a model of ‘maximum demand’.
- Reviewed experience from UK 2001 and 2007.
- Modelled potential outbreaks in NZ:
  - 2 different FMD viruses
  - 5 different locations
  - 4 different delays till detection
  - Applied existing sampling protocols
- Developed estimate of sample numbers related to number of infected properties.

# Modelled Median Samples per Week: FMD



# Maximum Capacity of Design – FMD Testing

| Maximum capacity | Per Day | Per Week |
|---|---|---|
| Samples received | 7360 | 51,520 |
| | | |
| ELISA (Antigen) | 200 | 1400 |
| ELISA (Antibody) | 7894 | 55,258 |
| | | |
| PCR (real time) | 5,500 | 38,500 |
| | | |
| Total tests | 13,600 | 95,200 |

# Key FMD Related Design Responses

- High level of seismic protection.
- Enhanced PC3.
- Enhanced air filtration for both floors.
- Lower floor able to operate as an FMD contingency laboratory.
- Reconfigurable rooms for greater capacity.
- Redundancy in systems e.g. EDS.
- Systems scaled for higher (surge) capacity e.g. EDS, heat load, generator size, showers etc.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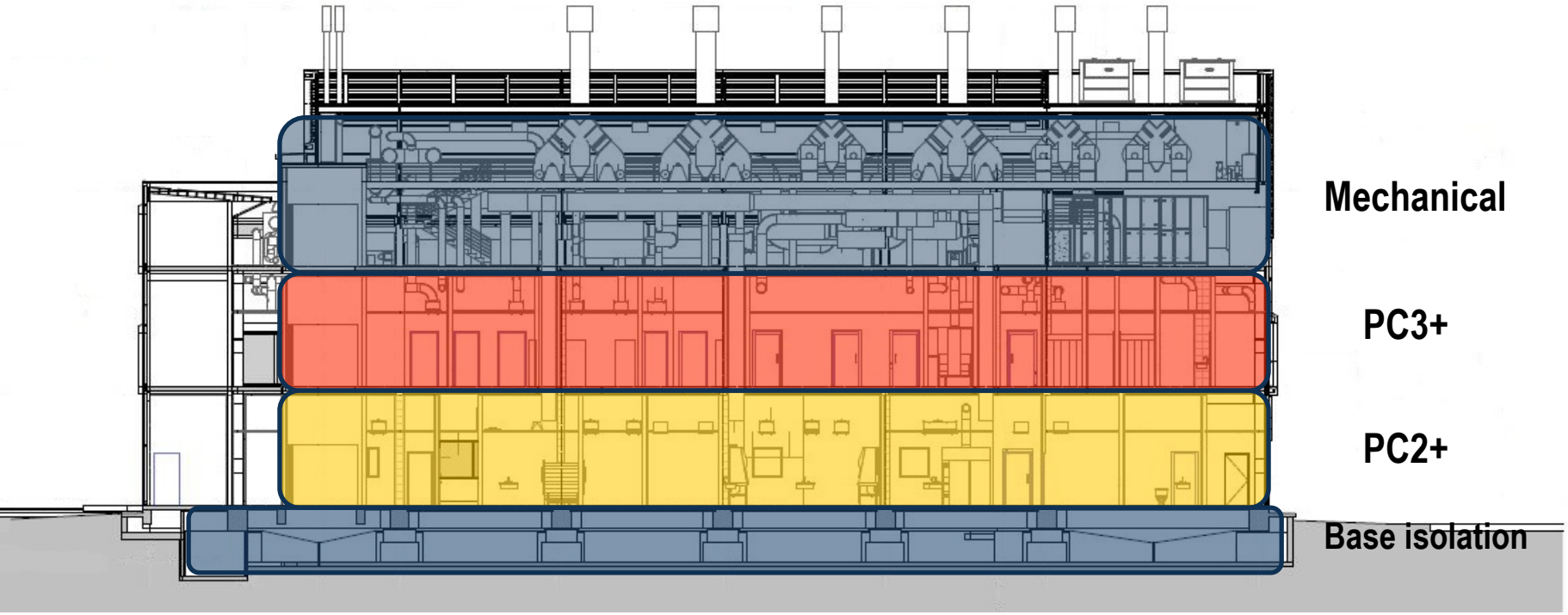
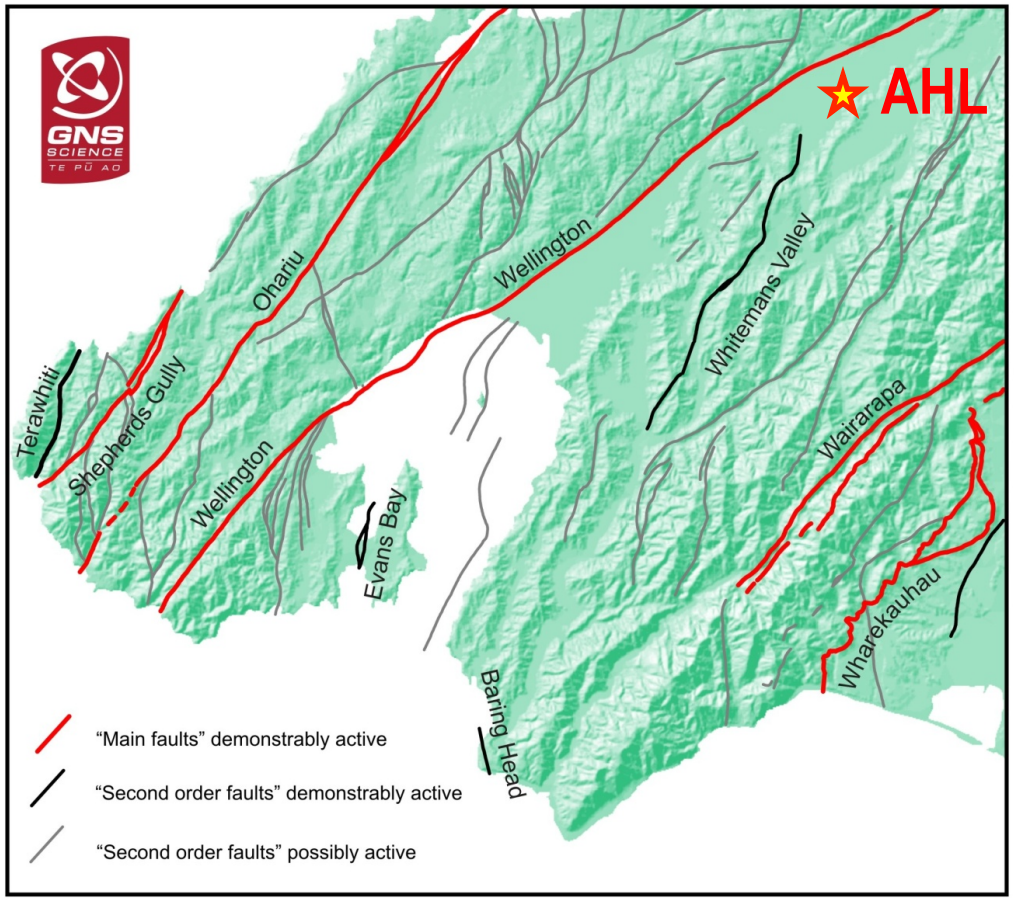
# Longitudinal Section

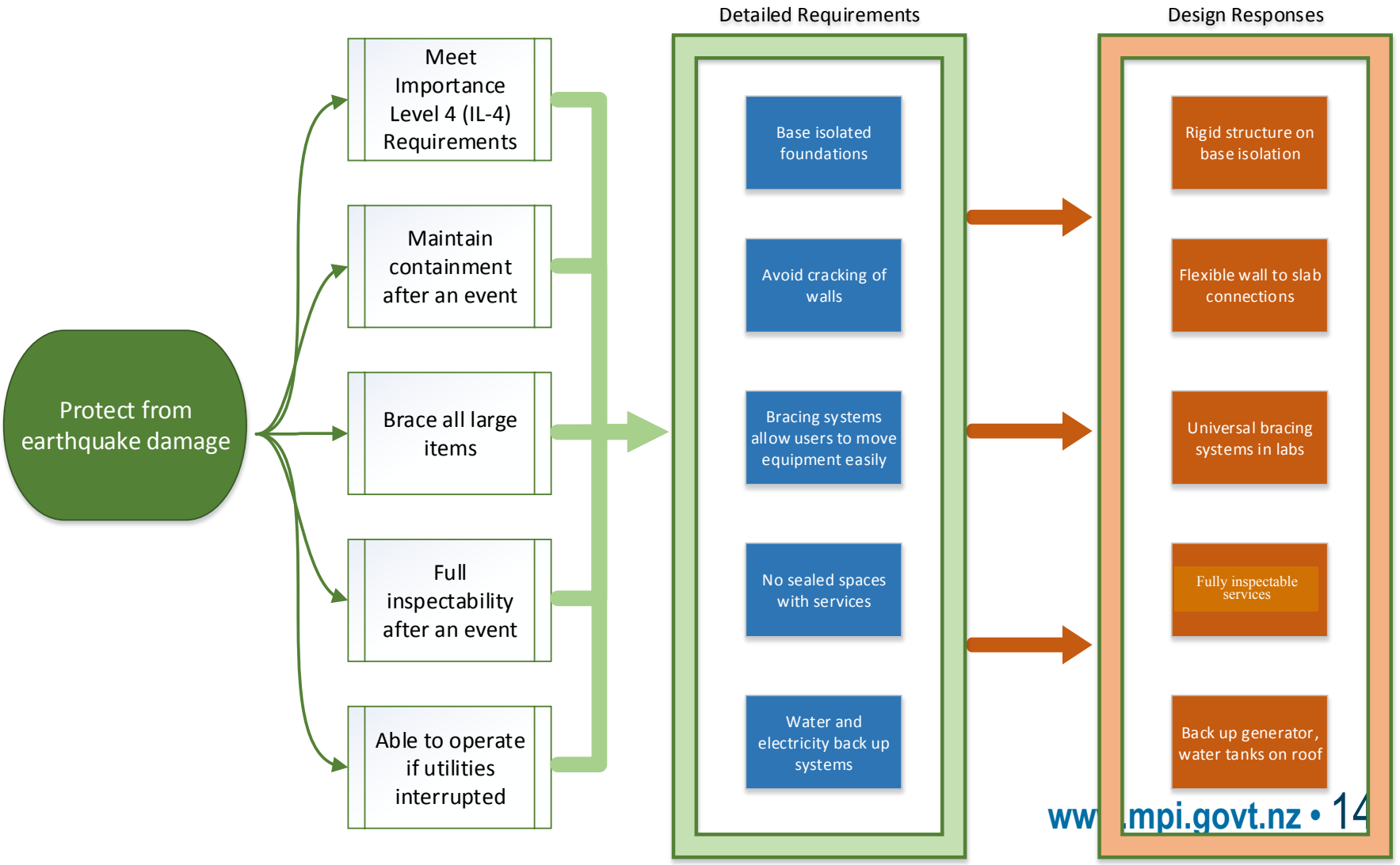


# Seismic hazard

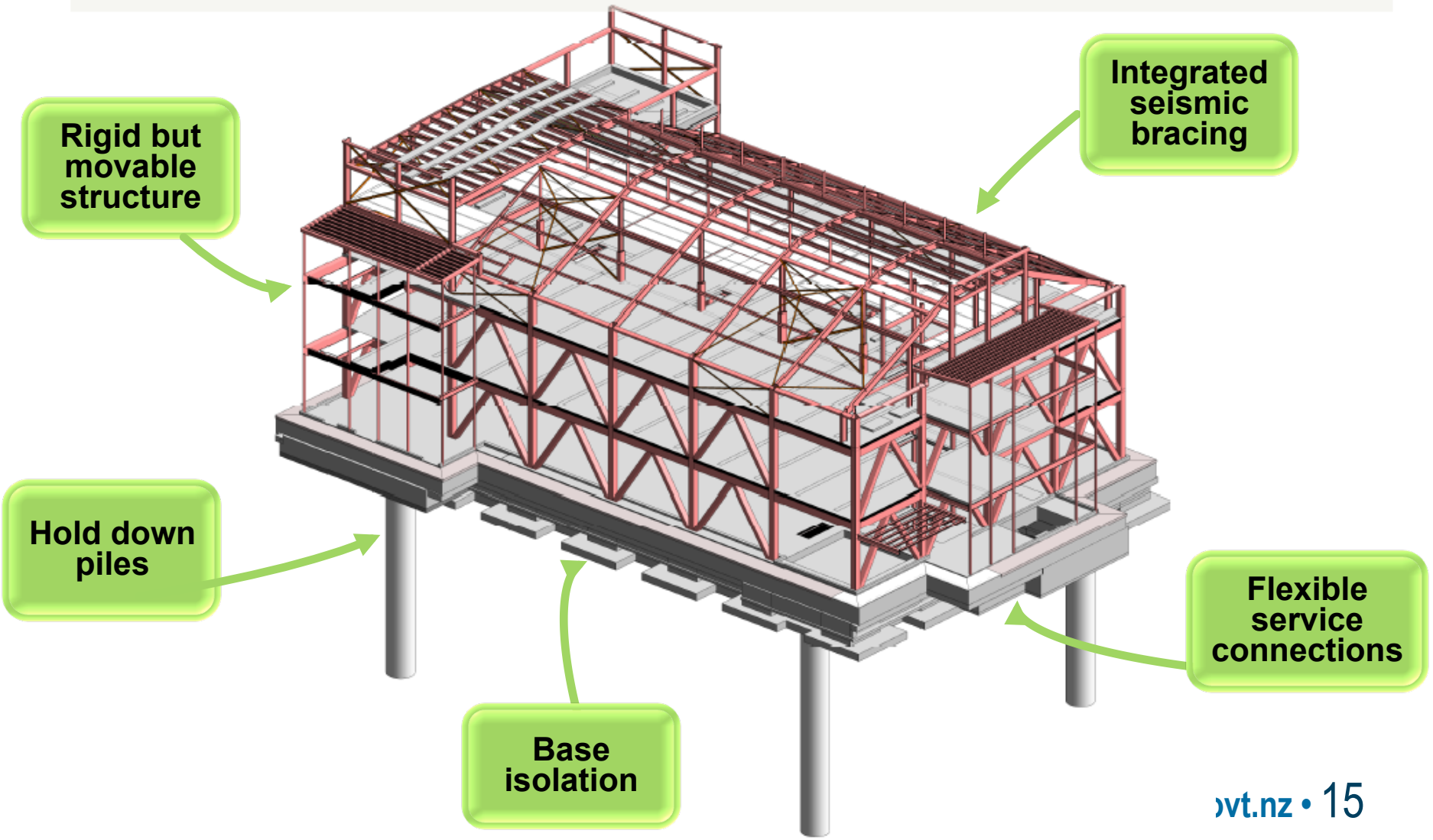
**Main Active Faults in Wellington**



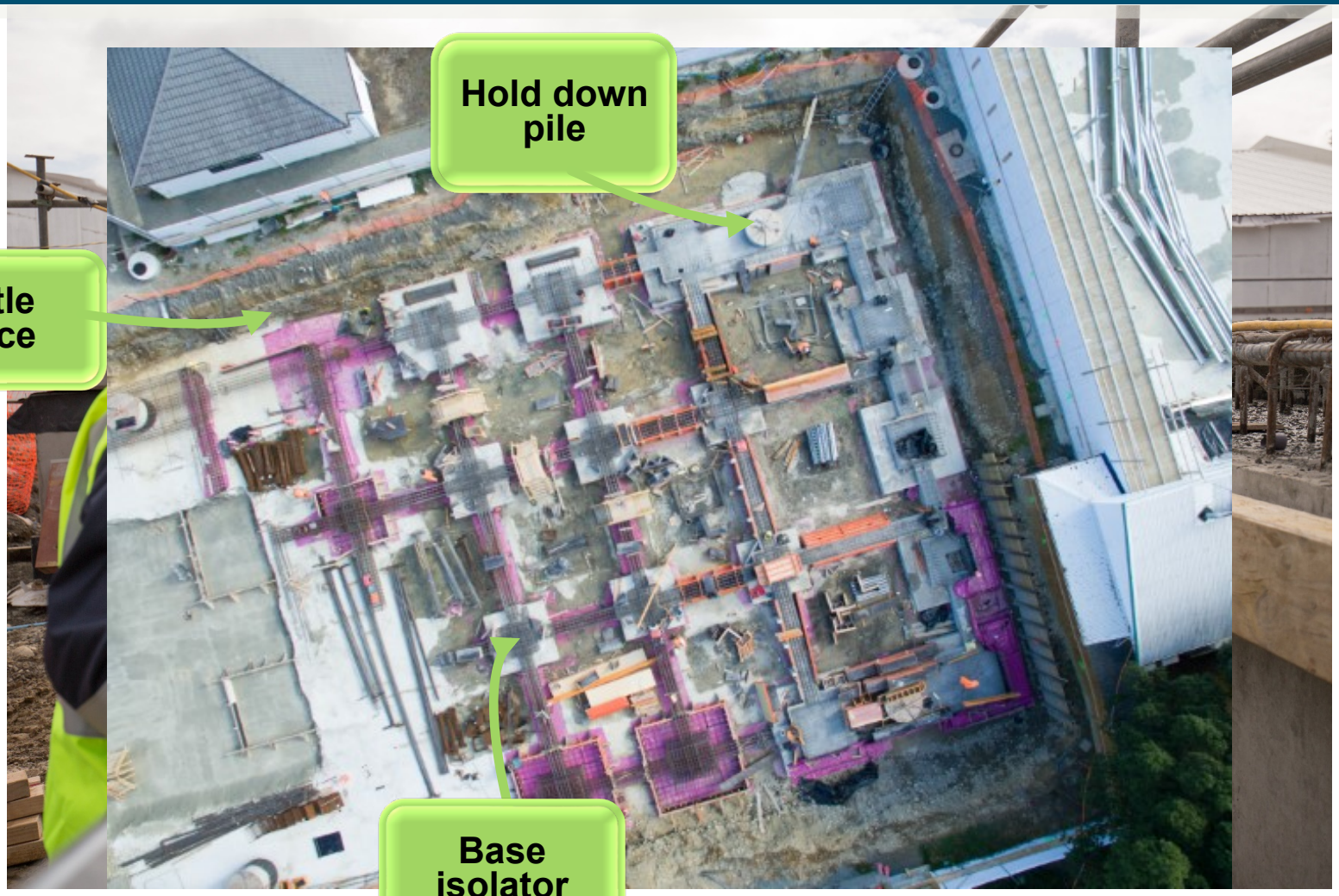
# Seismic design aspects



# Seismic Resilience



# Seismic resilience



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# Thank-you