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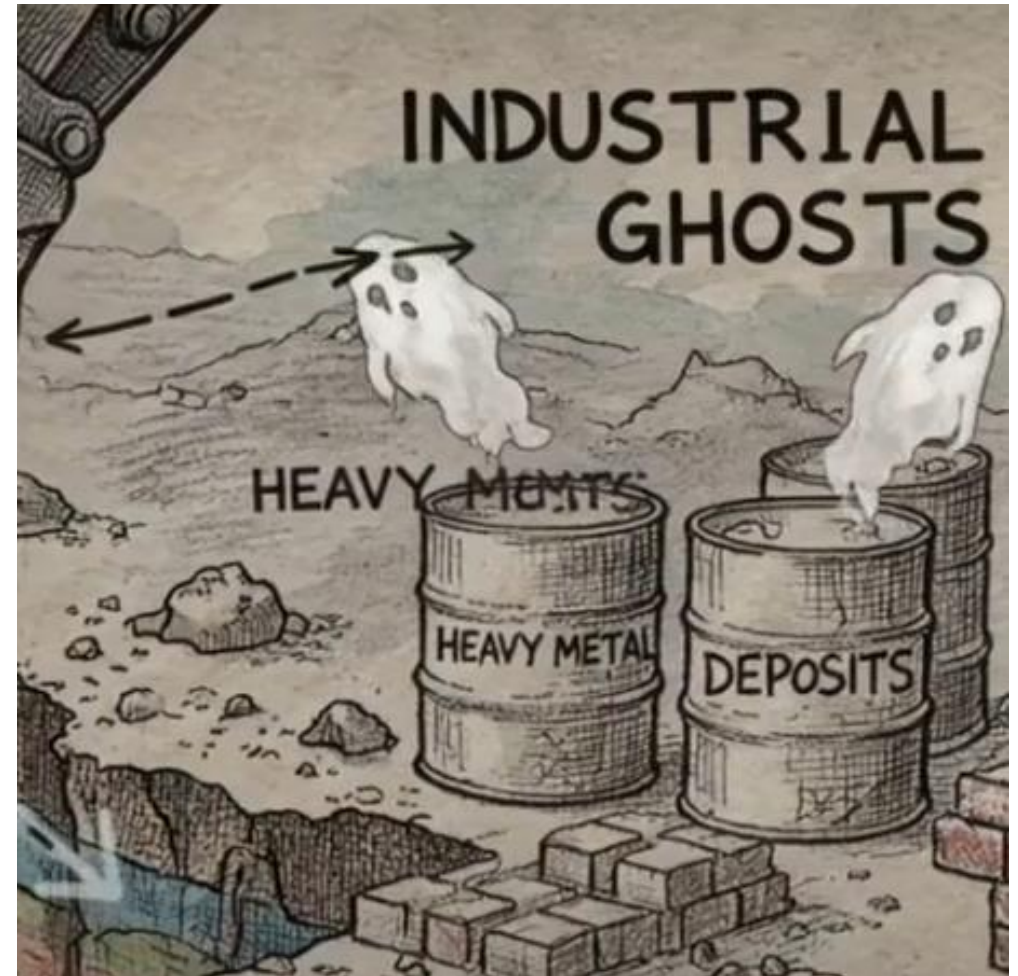
Integrating Multiple Vapour Intrusion Risk Management Measures Under O. Reg. 153/04

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Introduction

- Contaminants > RMMs
- Strategy depends on multiple factors:
 - Contaminants/Concentrations
 - Hydrogeology and Geology
 - Development Plan
 - Client Needs



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Case Study 1 - The Usual Suspects



Case Study 1 - The Usual Suspects

1. Soil Vapour Intrusion Mitigation System
2. Vapour Barrier
3. Venting Layer



Risk Management Options

Risk Management Measure	Limitations
Building Prohibition	Usually a building is required
Vapour Membrane	Paired with another RMM- storage garage or SVIMS
Soil Vapour Intrusion Mitigation System (SVIMS)	On-going maintenance and monitoring
First Floor Residential Restriction	Ventilation separation Definition of residential spaces

Can mitigate risks with additional lines of evidence or remediation

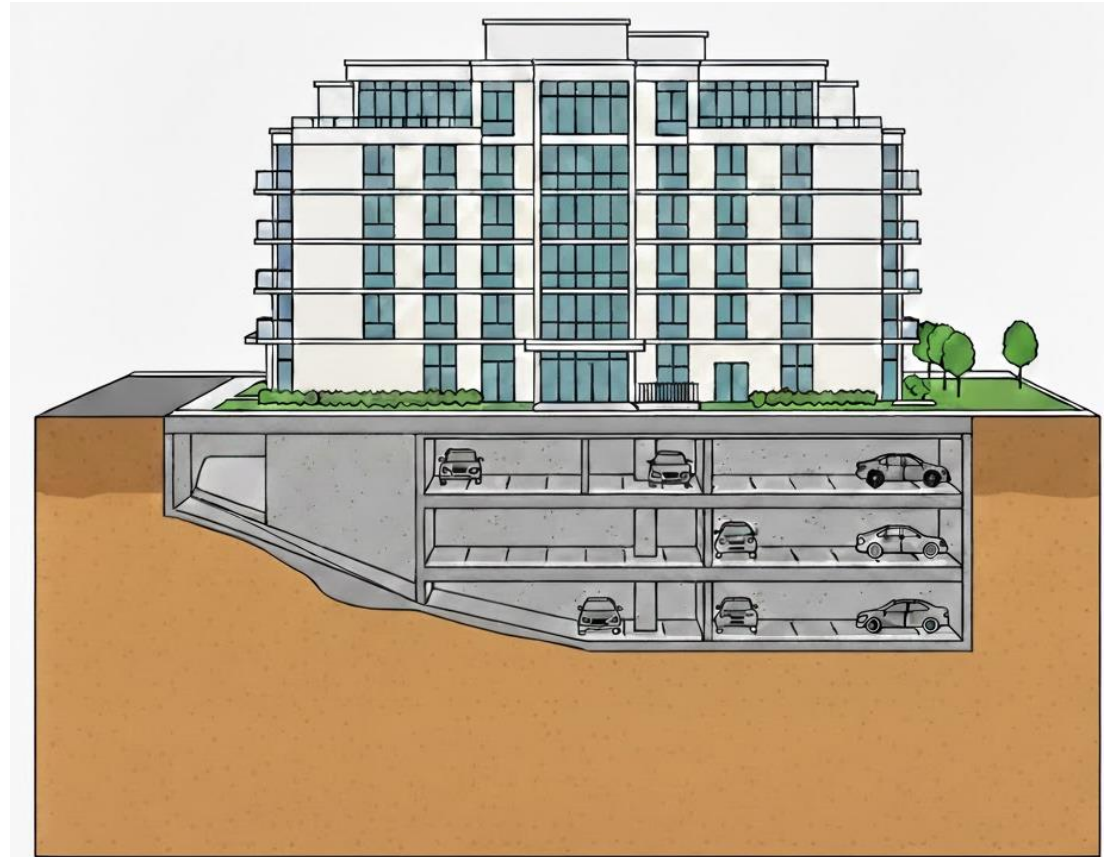


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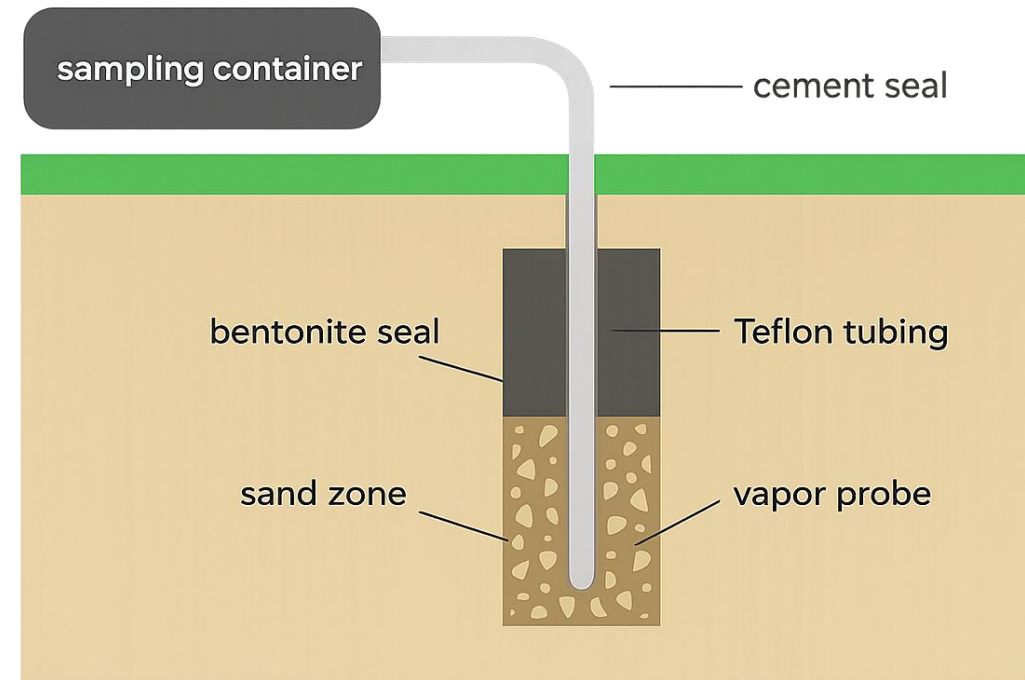
Information to Determine RMM Options

- When will development occur?
- Above or below grade parking garage?
- Slab on grade?
- At grade residential units?
- Amenities? Retail? Lobby?
- Consider flexibility for development changes
- Can have a “pick your own adventure”



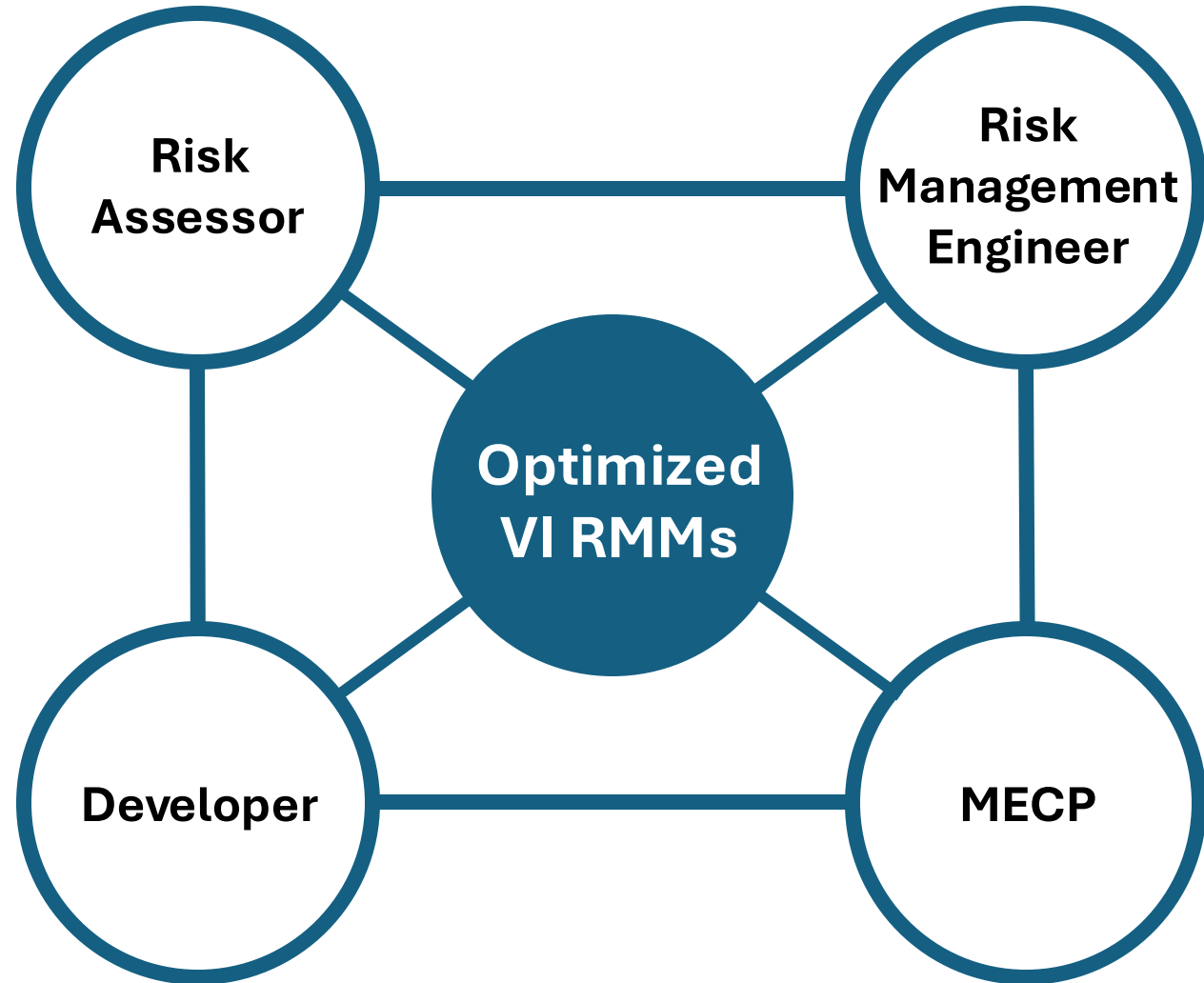
Multiple Lines of Evidence

- Source Size
- Site Specific Modelling
- Soil Vapour Samples
- Sub-Slab Vapour Samples
- Indoor Air Samples

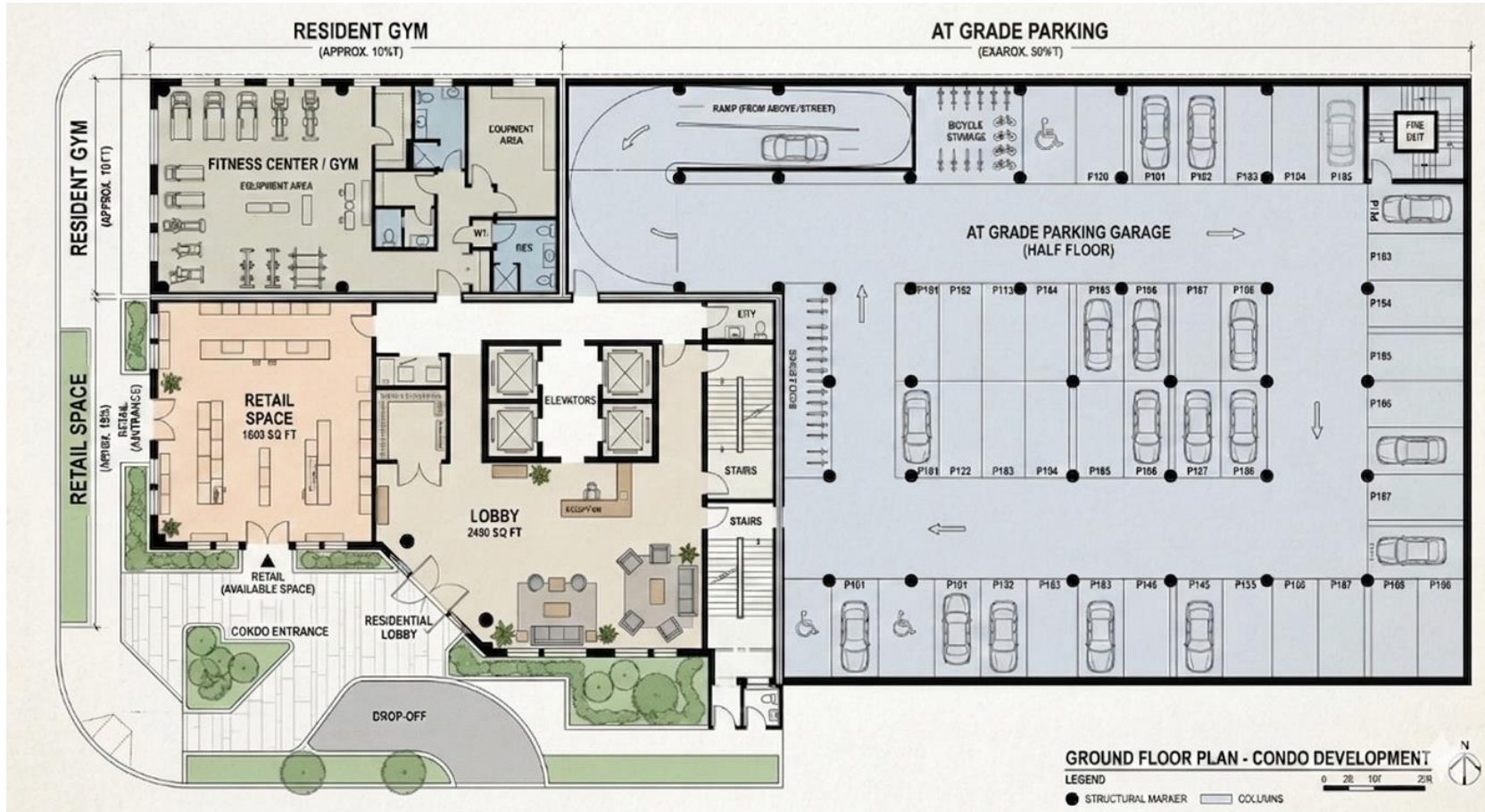


Take Home Messages

- Use Multiple Lines of Evidence
- Communication is Key!



Case Study 2



First Floor Non-Residential?



- Residential amenity/lobby space is for residents but not at residential exposure factors
- Confirm with MECP
- Need vapour mitigation if commercial risks are present:
 - Lobby Staff
 - Cleaners
 - Personal Trainers



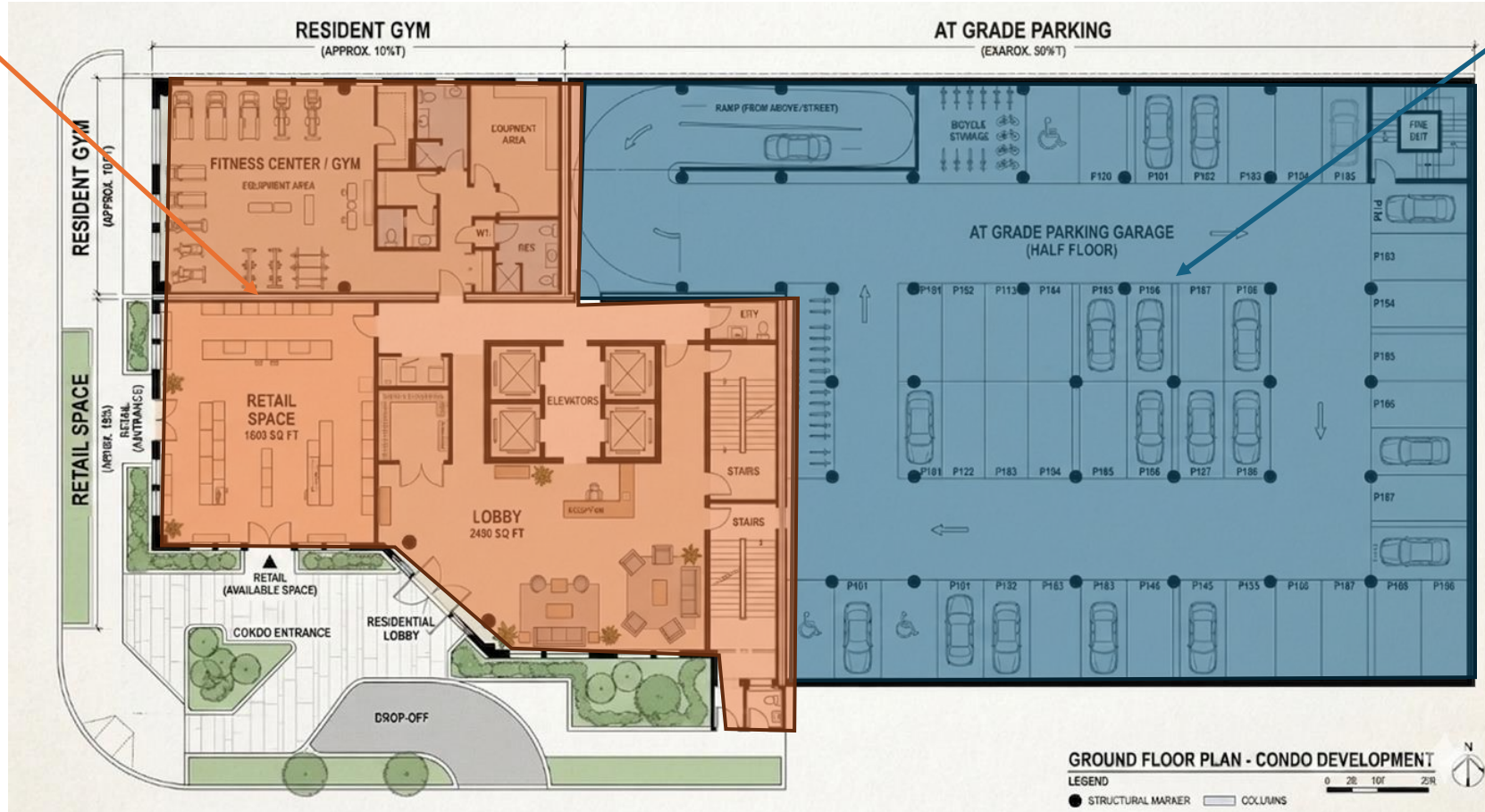
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Case Study 2: RMMs

Soil Vapour Intrusion Mitigation System

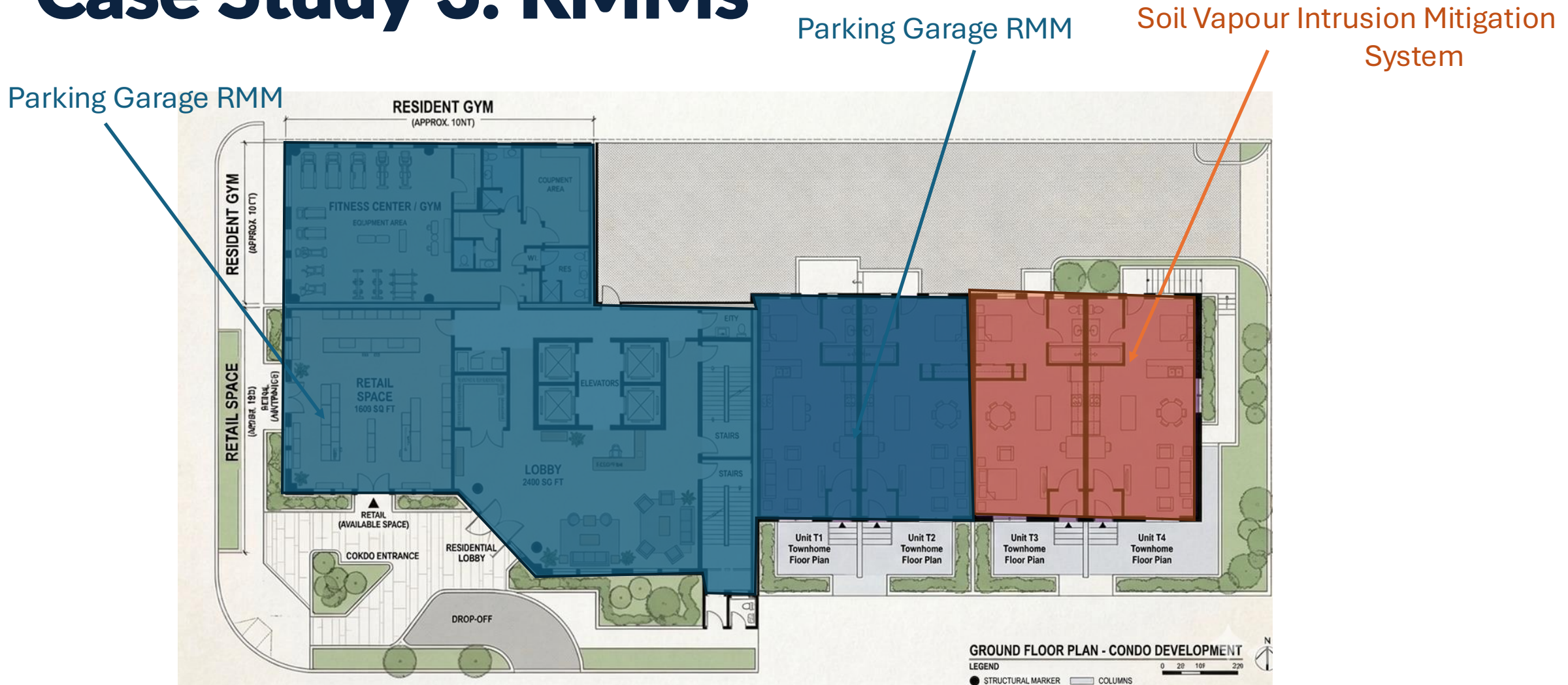
Parking Garage RMM



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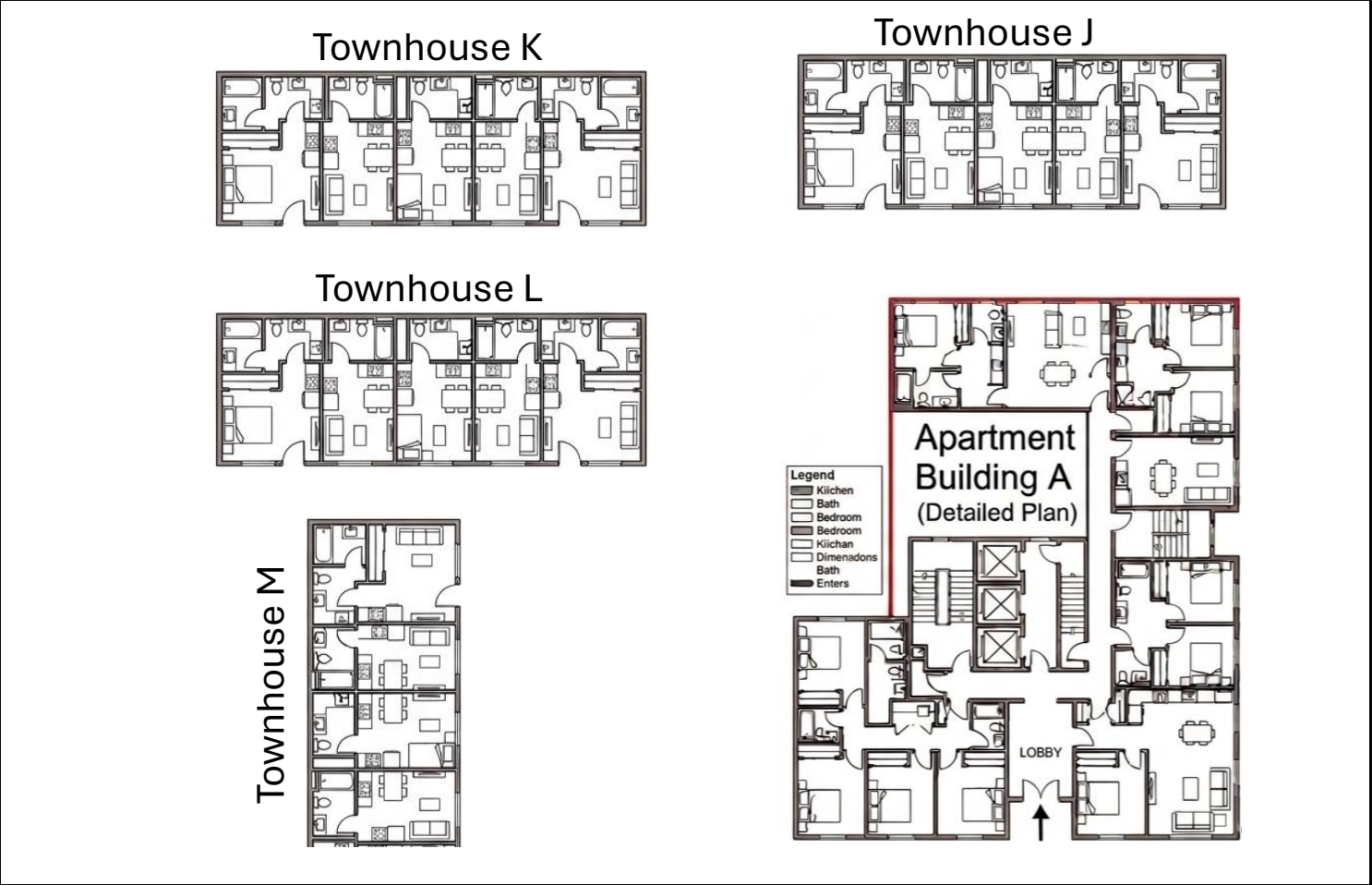
Case Study 3: RMMs



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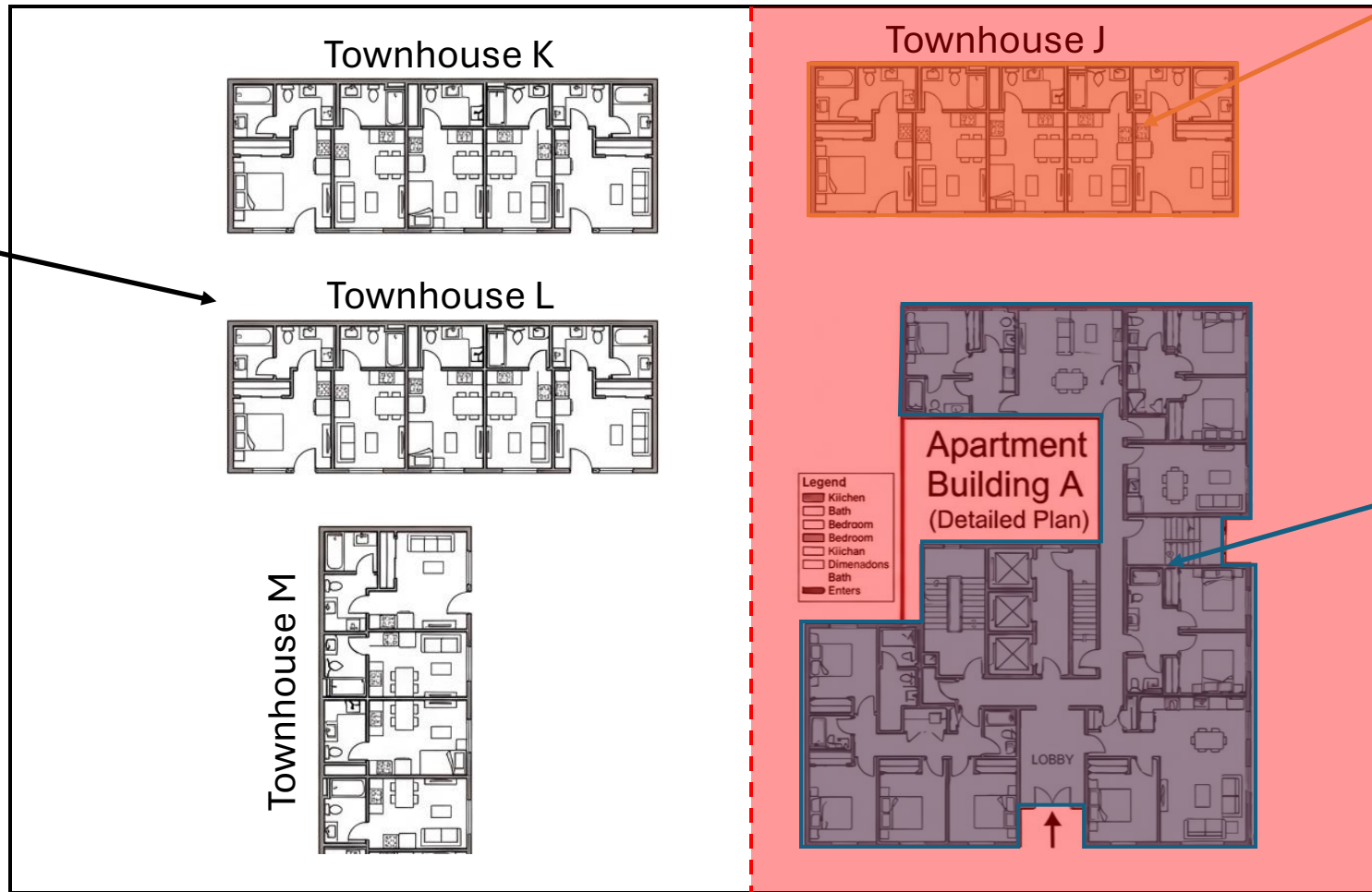


Case Study 4



Case Study 4: RMMs

No Vapour RMMs
Required



Soil Vapour Intrusion Mitigation
System

Parking Garage RMM



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Conclusion

- Consider multiple lines of evidence
- Tailor RMMs to site-specific conditions and development plans
- Communication between risk assessors, engineers, and developers is key
- Build flexibility into RMM design for evolving development needs
- Combine RMMs (SVIMS, vapour barrier, parking garage) for robust protection



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Questions?

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