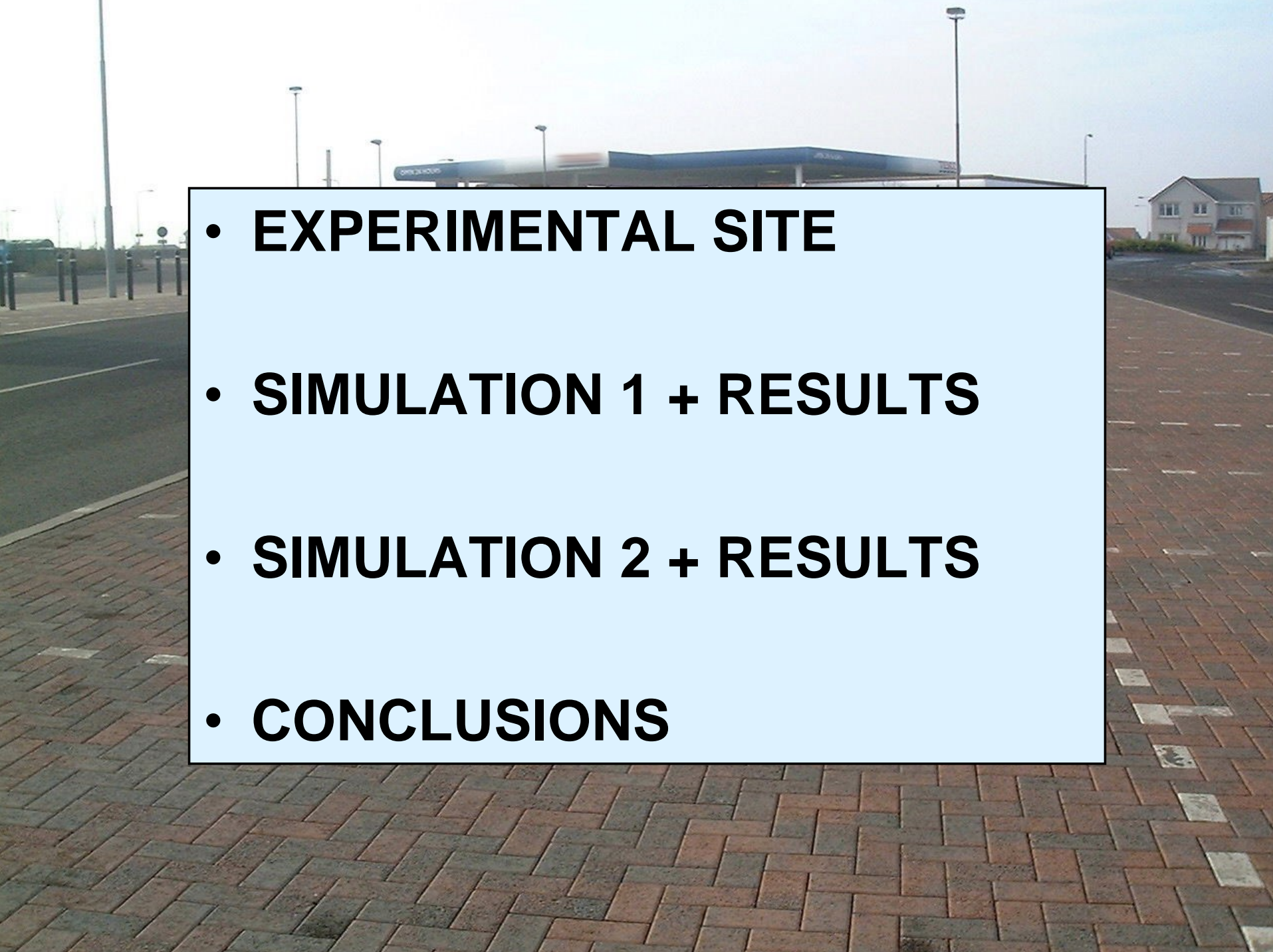


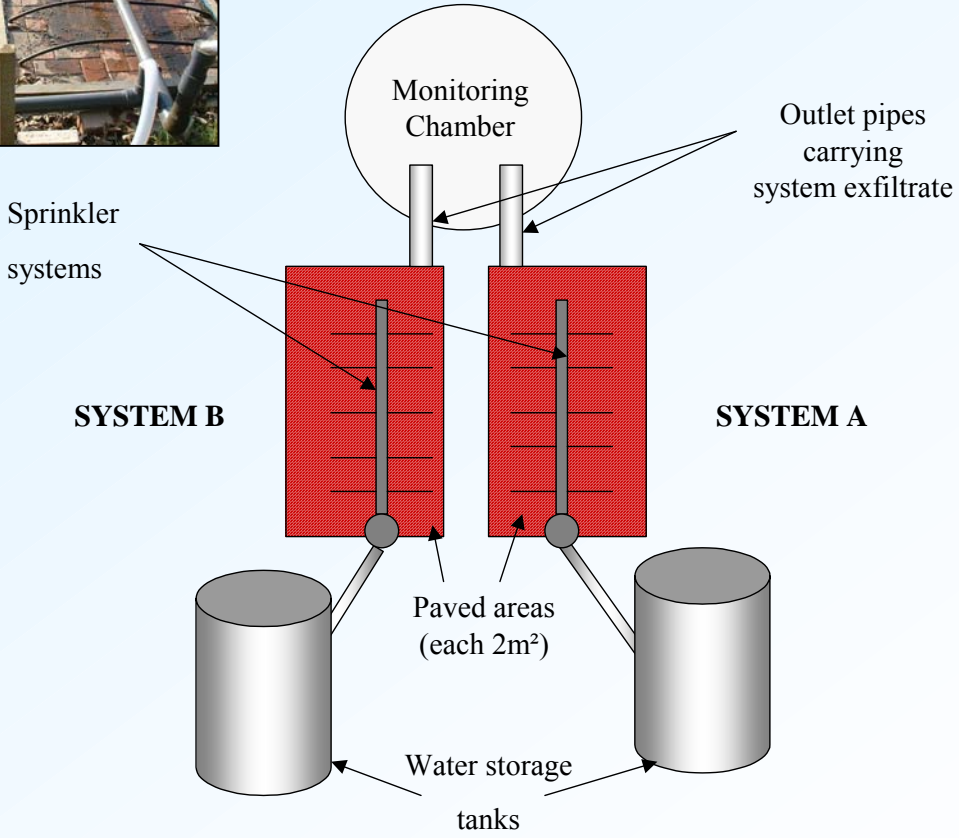
METAL BEHAVIOUR IN PERMEABLE BLOCK PAVING

FIONA NAPIER



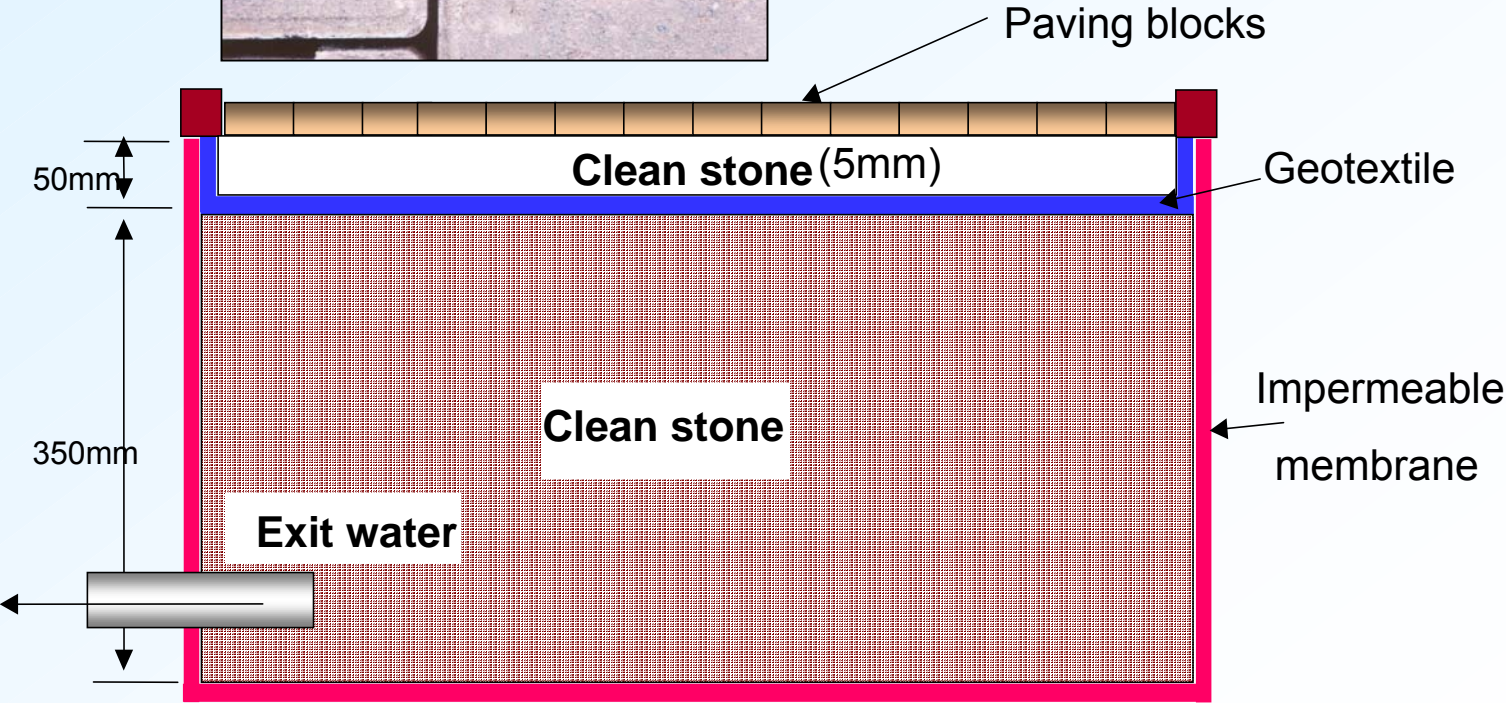
- 
- **EXPERIMENTAL SITE**
 - **SIMULATION 1 + RESULTS**
 - **SIMULATION 2 + RESULTS**
 - **CONCLUSIONS**

FIELD SITE LAYOUT

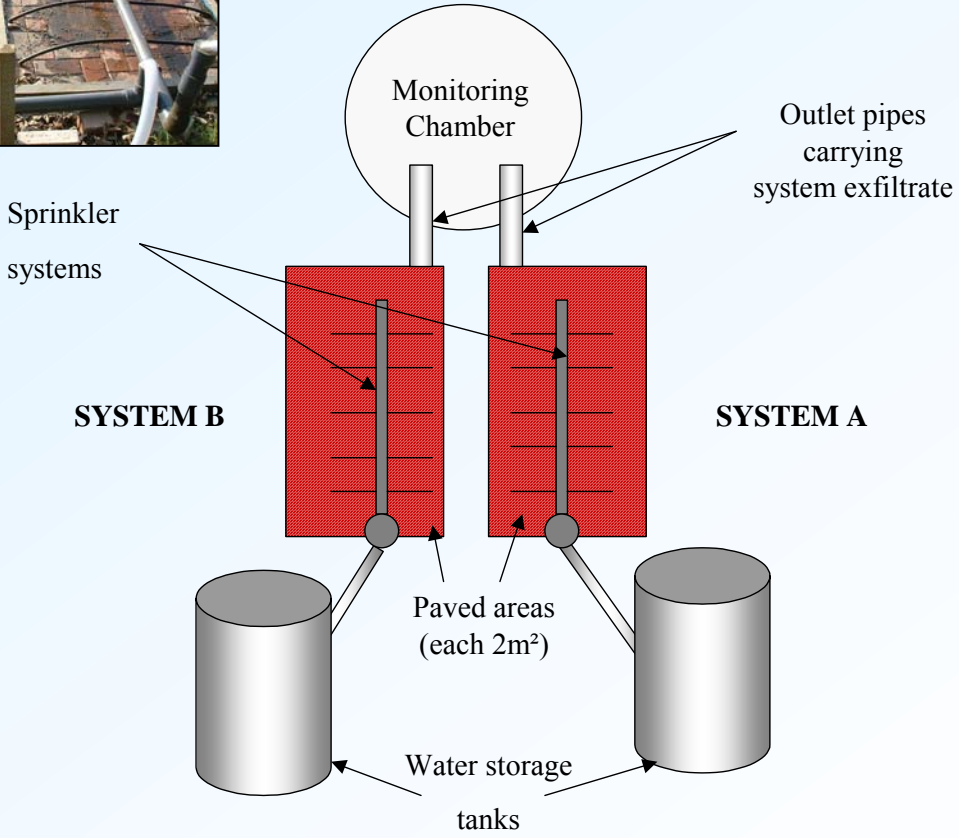


PAVEMENT CONSTRUCTION

(Not to scale)



FIELD SITE LAYOUT



SIMULATION 1

SIMULATION 1

SYSTEM A

- **Heavy sediment loading (232g total)**
- **10 metal applications**
- **Cd, Cu, Ni, Pb, Zn**

SIMULATION 1

SYSTEM A

- **Heavy sediment loading (232g total)**
- **10 metal applications**
- **Cd, Cu, Ni, Pb, Zn**

SYSTEM B

- **Light sediment loading (44.6g total)**
- **10 metal applications**
- **Cd, Cu, Ni, Pb, Zn**

SIMULATION 1 - RESULTS

Cd, Cu, Ni, Pb

- **> 95% removal**
- **no difference between systems**

Zn

- **0-95% removal**
- **distinct difference between systems**

SIMULATION 2

SIMULATION 2

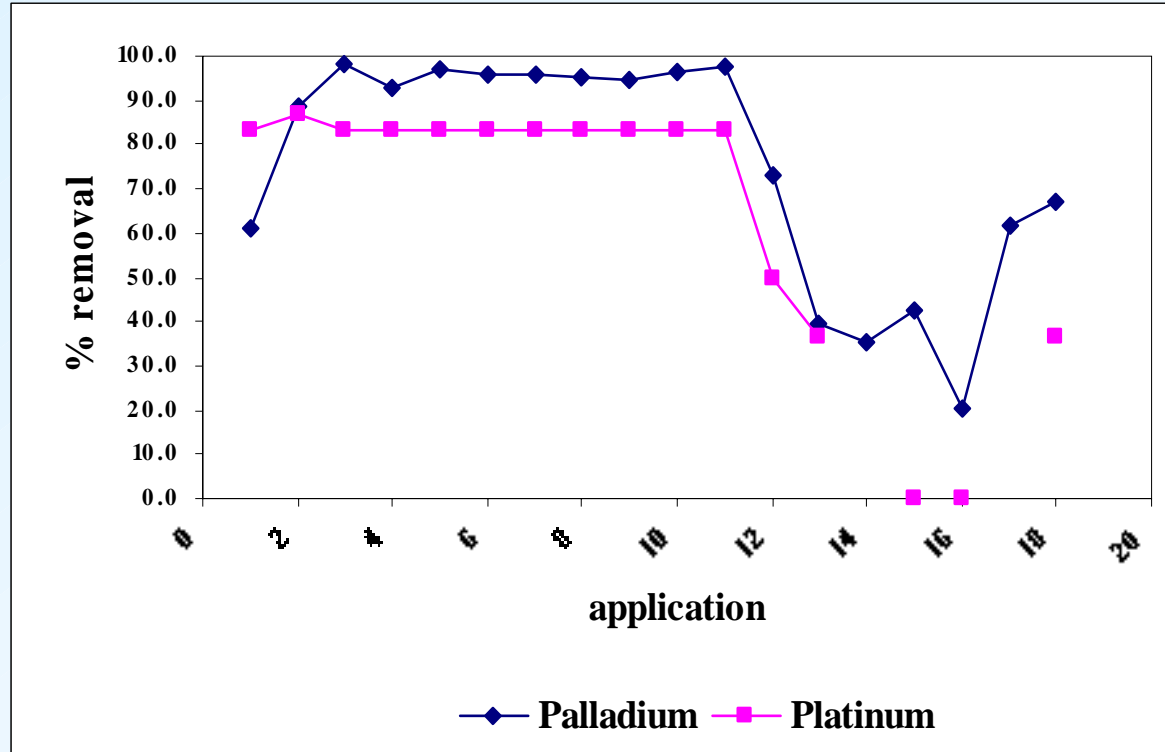
- Heavy sediment loading (232g total)
- 18 doses metals + light sediment loading (80.3g total)
- Pd + Pt

SIMULATION 2 - RESULTS

- **Pd** : >90% removal
- **Pt** : >80% removal

- Pt concentration doubled → dramatic drop in removal rates

SIMULATION 2 - RESULTS



OBSERVATIONS

- Removal rates for most metals studied were good

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- Variable for zinc

OBSERVATIONS

ZINC

- SYSTEM A 0-95% metal removal
(heavy sediment loading)
- SYSTEM B 60-95% metal removal
(light sediment loading)

OBSERVATIONS

- Removal rates for most metals studied were good
- Variable for zinc
- Response of system to shock loading

OBSERVATIONS

SIMULATION 1 Cd, Cu, Ni, Pb, Zn

- 58 mg/m² each metal per application
- Total metals applied during simulation 2.90 g /m²
- No system failure

SIMULATION 2 Pt, Pd

- 58 mg/m² each metal per application
- 1.392 g/m² total metals applied → **system failure**

OBSERVATIONS

SIMULATION 1 Cd, Cu, Ni, Pb, Zn

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SIMULATION 2 Pt, Pd

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CONCLUSION

- Metal specific

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