UKCRIC – NATIONAL WATER DISTRIBUTED INFRASTRUCTURE FACILITY

UNIVERSITY OF SHEFFIELD

National Water Distributed Infrastructure (DWI) Facility – University of Sheffield

- Provides a facility capable of investigating the failure and repair of distributed water asset infrastructure as it is implemented within the urban environment

- Distributed water infrastructure in the UK (over 1M km of system) – Grey/Blue infrastructure – provides water supply, drainage and public health services to the UK population

- DWI – Supports research on interactions between infrastructure and the natural environment – soils, groundwater, rainfall, raw water supplies

- Facility services – potable water supply, sewage, drainage services, project management and technician support

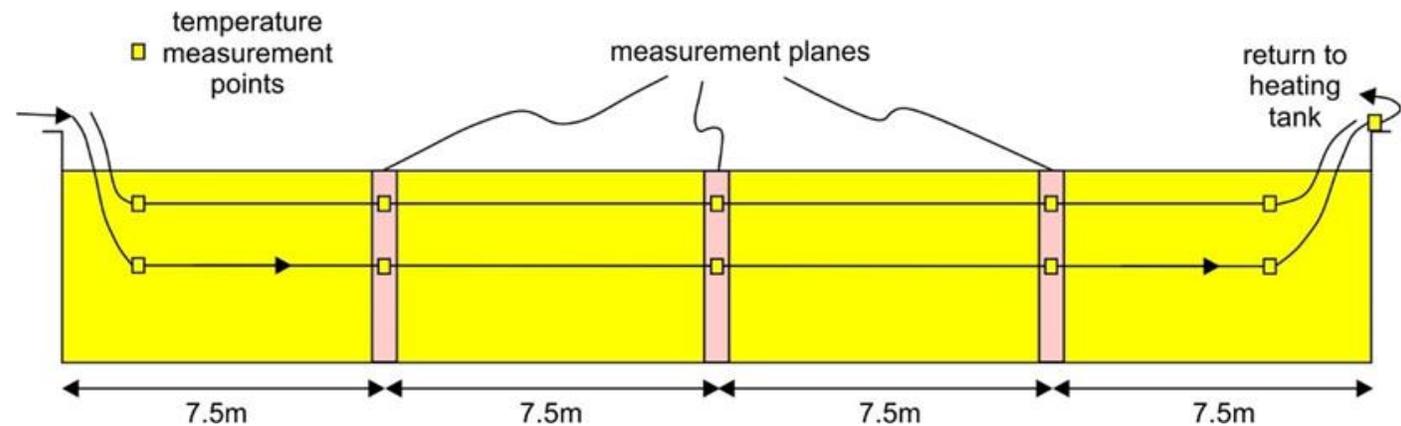# National Water Distributed Infrastructure Facility - – University of Sheffield

- Test cell: 1200m^3 filled with soil – can be flexibly divided to control soil/groundwater conditions around infrastructure – full scale assets – complex interactions.

- Cyclic surface loading

- Gravity and pressurised flow

- Interactions between above and below ground systems – heat flux

- Supported by analytical facilities of laboratories at central campus – water analysis, pollutants

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Example of previous and current projects :

- EPSRC PLEXUS – Multi-use infrastructure "Net Zero" heat transfer between pipes/soil

- Multi-university: full scale system – integrating soil/groundwater/atmosphere
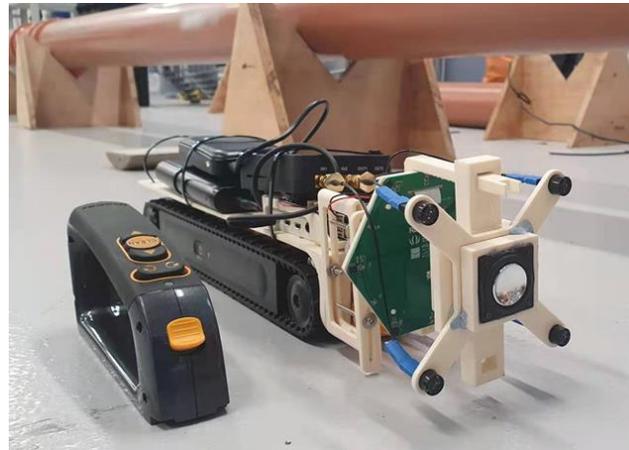
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Example of previous and current projects :

- EPSRC "pipebots" – Smart grey infrastructure – autonomous robotic inspection

- Multi-university: objective technology development – interactions with stakeholders

- Multiple strands: communication/mechatronics/AI/sensing/business models/engagement

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Capabilities :

- Feasibility studies

- Secondments : work with existing projects

- EU funded infrastructure facility in urban drainage area - CoUD-Labs

- Networking facilities

- Interaction studies – built into facility design (whole system approach)

  - Recovery of energy or heat from buried water infrastructure (net zero)

  - Sensing - data collection and analysis (Smart)

  - Linkages between buried and surface infrastructure – flooding and pollutants (Resilient – blue/grey/green linkages)

  - Water and solute exchange between buried infrastructure, soil and groundwater

National Water Distributed Infrastructure Facility

Points of Initial Contacts

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