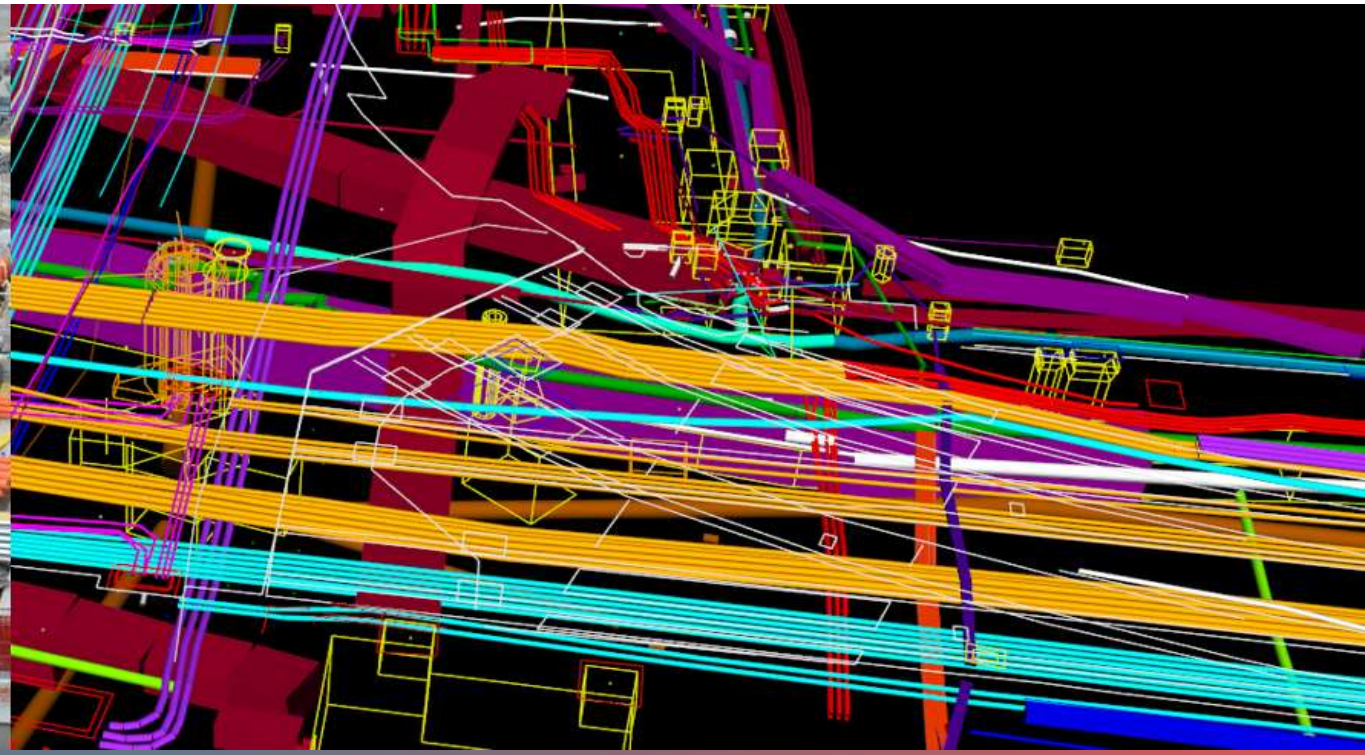
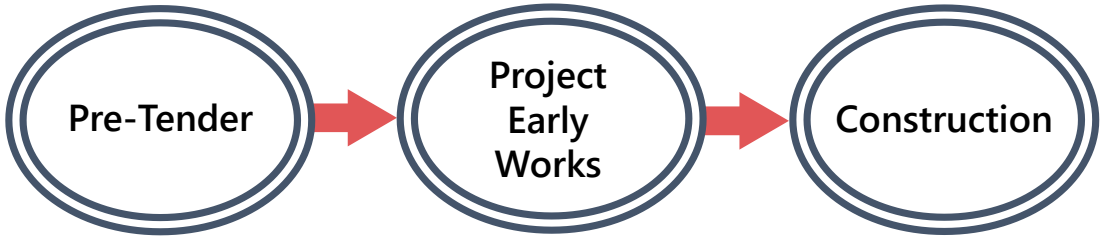
Sydney Light Rail Project - Lessons Learnt



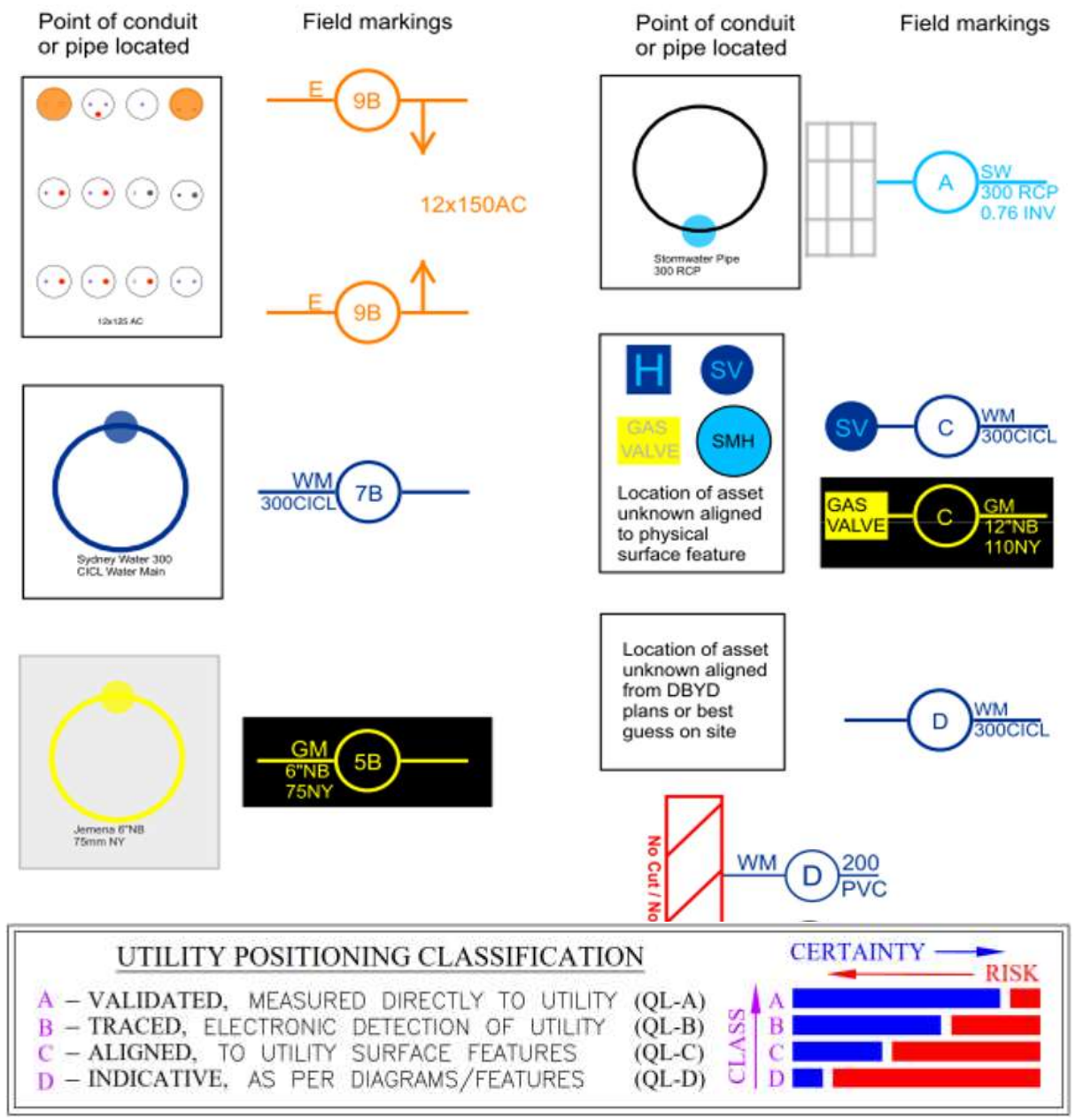
About Locaters

Locaters - 21 years experience in Locating, Surveying and Utility Modelling.

- **Utility Locating and Surveying Service** – All of our field staff are qualified Locators and Surveyors
- **Utility Modelling** – 12d, BIM, GIS, PDF – creating and managing 3d utility models, providing visibility across projects
- **Specialised Consultancy** - customised project safety systems, procedures and education



"SET THE EXPECTATION AND REMOVE THE ASSUMPTIONS THAT EXIST WITHIN THE INDUSTRY"



A Different Approach

- Most struggle to understand what's going on in the underground environment
- Communicate 'what we know - what we think we know - what we DON'T KNOW'
- Using a simple classification system
- Consistent terminology & language
- Removes the assumption and leads to better decision making

Case Study:

Sydney Light Rail

Sydney Light Rail - About

- Light Rail travels from Sydney CBD to the South Eastern Suburbs, through Surry Hills and onto Randwick
- Initial project budget: $1.6bn
- Projected completion cost: $3.1bn
- 12km of track with 19 stops
- Early Works 2014 – 2015 (Laing O'Rourke – TfNSW)
- Construction 2015 – 2021 (Acciona – TfNSW)

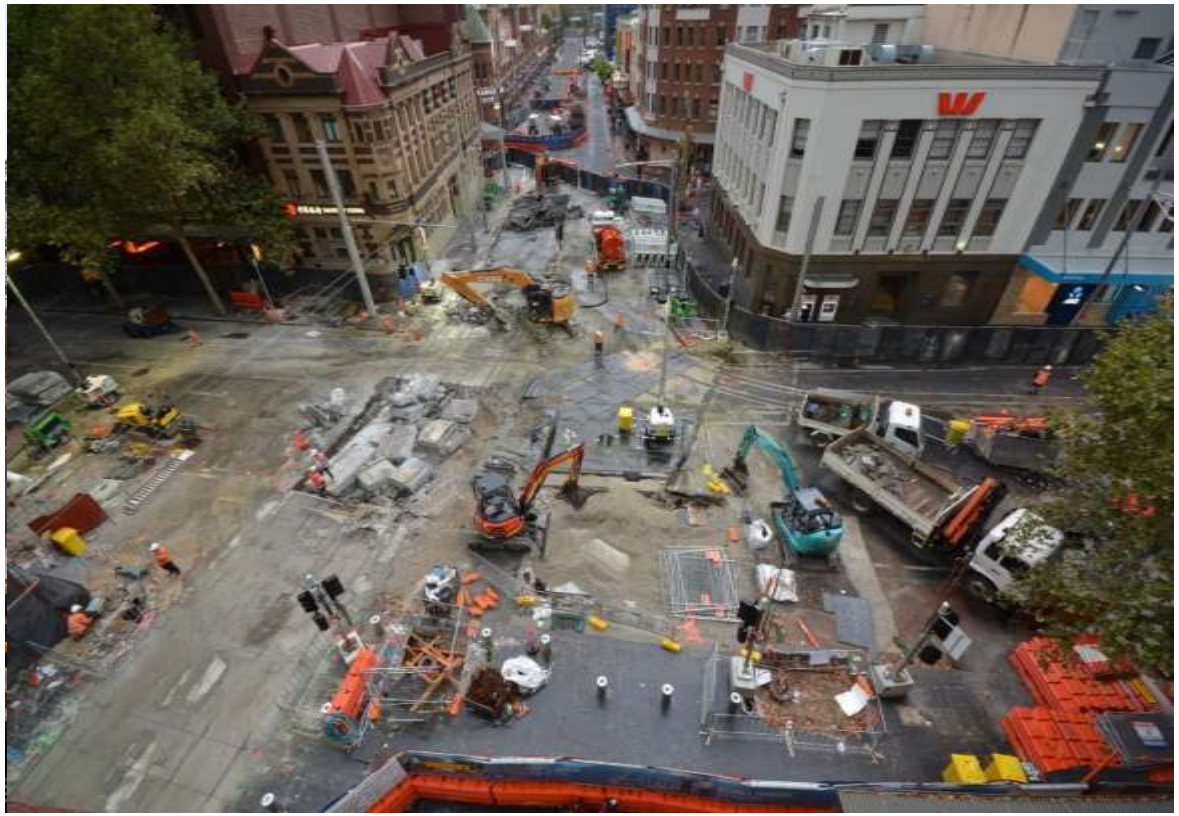
Utility Survey Manager

- Site Locate and Survey Management
- Utility Model Management
- Excavation Permits
- Standardising Survey
- Incident Reporting
- Improvised Design
- Unknown Utility Management
- Project-Wide Utility Training
- Providing the link between **field workers and utility designers**

“Mitigating risk by better understanding and planning of the complex subsurface utility network”

Sydney Light Rail – Utilities

Over 10,000 Known Utilities



Sydney Light Rail – Utilities

475 Utility Re-locations

Over 2,000 Unknown Utilities

Sydney Light Rail – Utilities

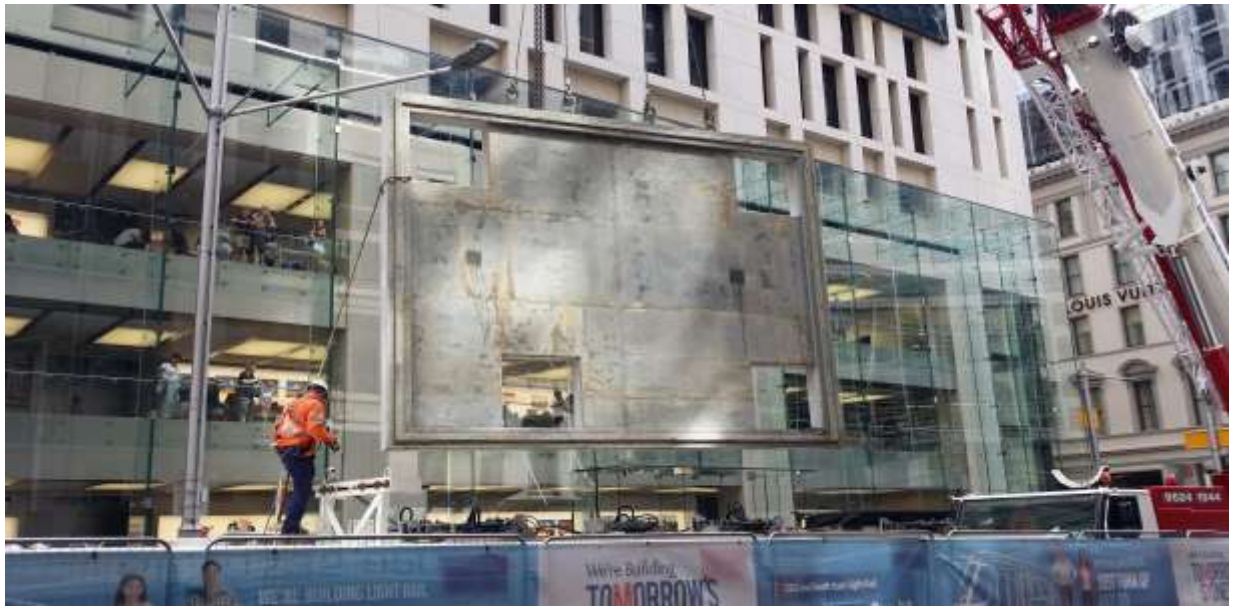
300 Utility Protections

120 Future Provisions

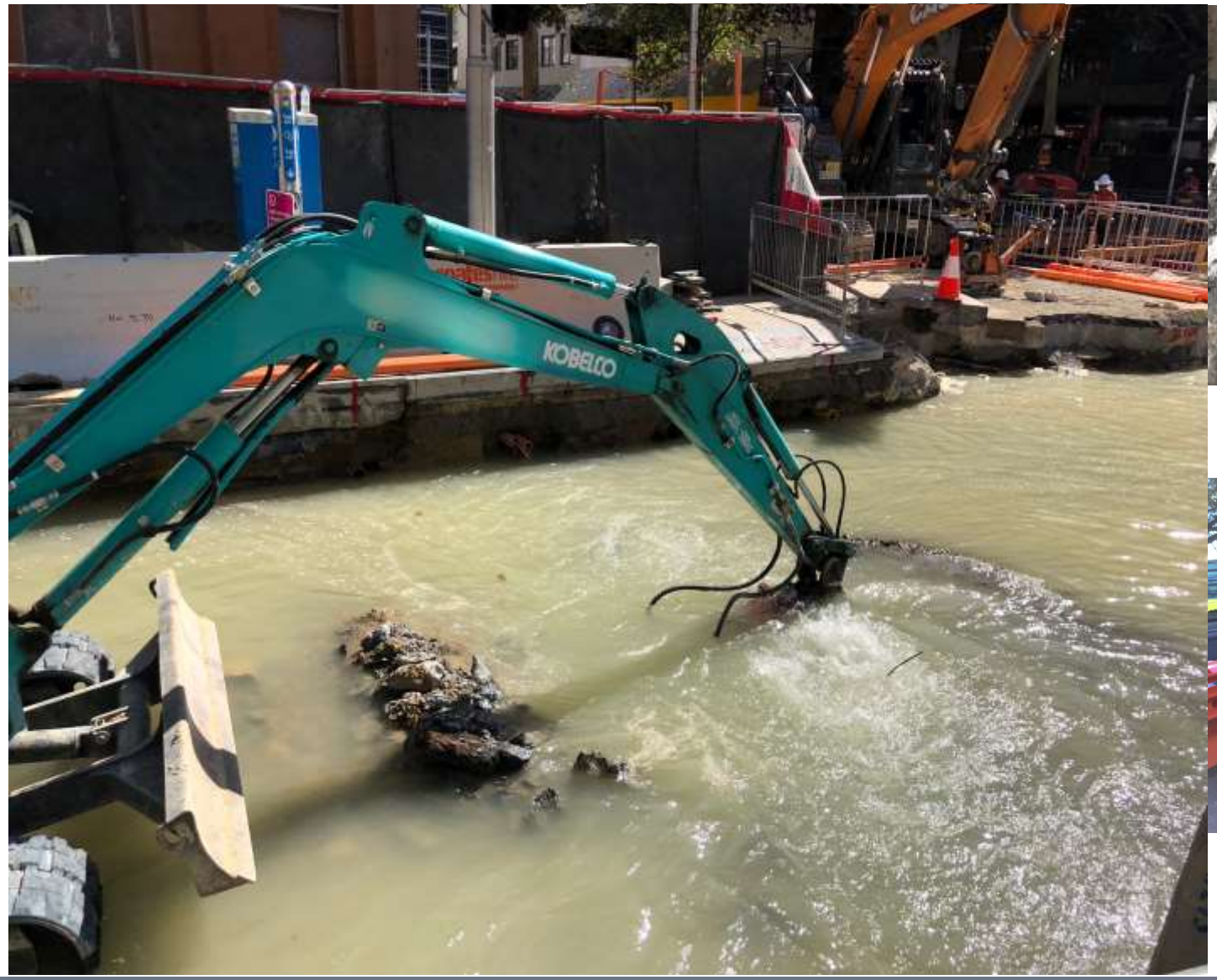
Sydney Light Rail – Utilities

62 Pitt Modifications

29 Major Pit Rebuilds

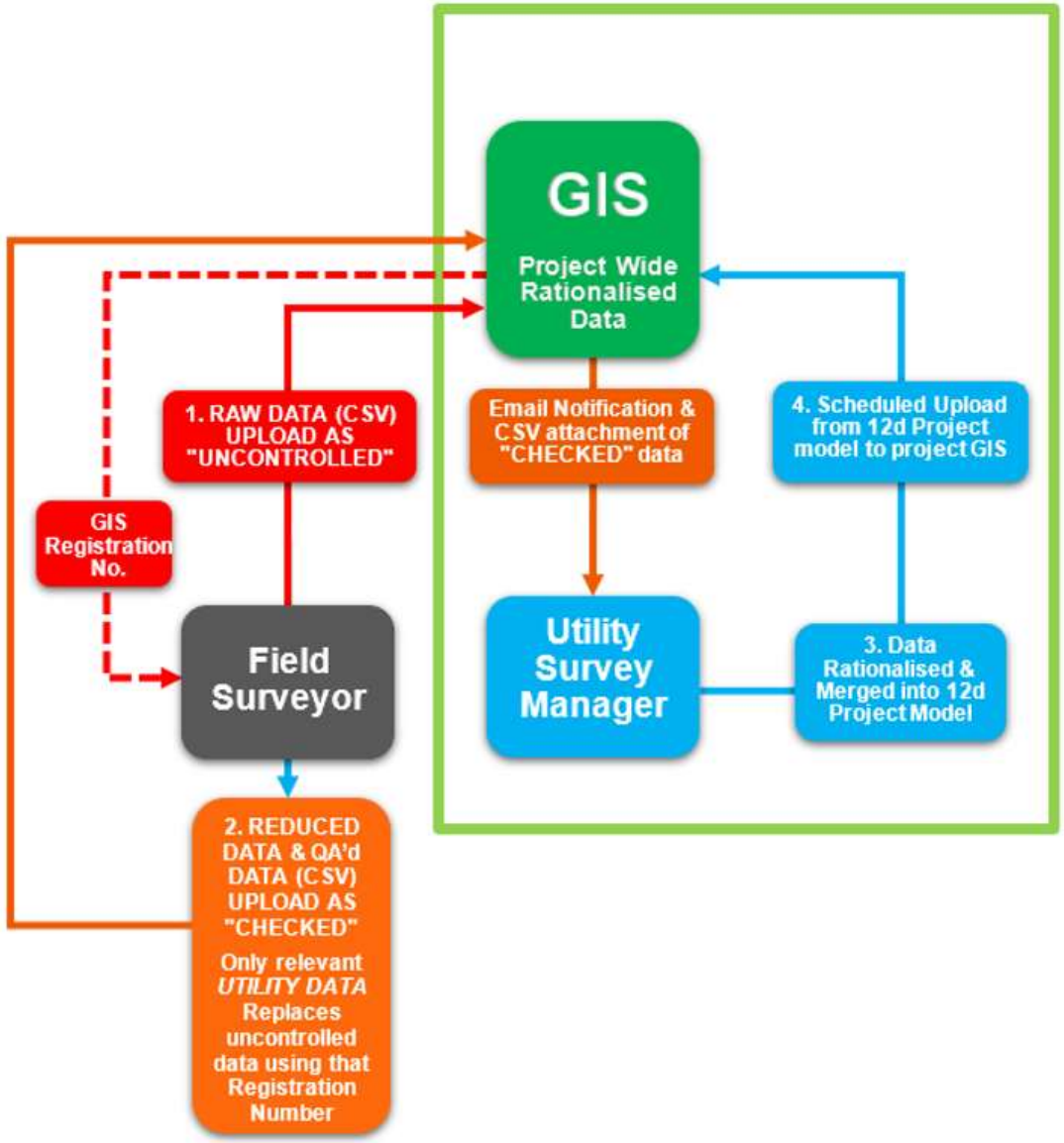


Utility Strikes



Project On-boarding

- **Surveyor and Locator Project on-boarding**
  - Both Surveyors and Locators were taken through the same on-boarding
  - 36 unique attributes for each survey point
  - Surveyor only collects 8 attributes, 28 are collected through 12d macros
  - Upload of live data to project GIS with a 3 step control system



Project Wide Training

- **Level 1 Utility Awareness Training**
  - Utility Awareness Training was provided to over **8,000** personnel as part of the face to face project induction
  - A 20 min presentation followed by a physical walk through onsite, explaining utility ground markings and colours,
  - Raising awareness to all workers, regardless of their position on the project.

Project Wide Training

- **Level 2 Permit Controller Training & Assessment**
  - Completed by 570 personnel
  - 2 hr training session followed by an assessment,
  - Excavation Permit non-negotiables, GIS training, procedure to safely expose utilities
  - Provided to foreman, supervisors and crew leads
  - Once passed, personnel are permitted with the responsibility of controlling an excavation permit on site.

SLR – Lessons Learnt

- **Project On-boarding** – Surveyor and Locator on-boarding, standardised utility marking and utility survey
- **Utility Data Visibility** – all groups within a project must have access to the same data set, regardless of what they platform use (12d, BIM, GIS…)
- **Stakeholder Alignment** – one consistent language used project wide A – B – C – D
- **Project-Wide Education** – All project personnel from the Labourer to the Construction Manager require a minimum level of utility education

Locaters NEW ZEALAND

Thankyou

Any Questions?