Fundamentals of Drainage

Agenda
09:15 Arrive – Registration / coffee / tea

09:30 Session 1 The basics

- Why we need drainage?
  different types of drainage – household, highway, rainwater, agricultural etc
- History of drainage systems.
  UK, other countries and continents

11:15 Coffee / tea break (15 mins)

11:30 Session 2 The science of drainage systems

- The physics of drainage
  fluid mechanics, water traps, mechanical traps, air flow, steady-state flow, transient flows, wave reflections, gravity, vacuum, pumps, infiltration, run-off, etc.
- The statistics of drainage
  probability, obtaining data, appropriateness and reliability of data, forecasting, etc.

13:00 Lunch (60 mins)

14:00 Session 3 The impact of drainage systems beyond the pipe

- The impacts of drainage on the environment
  pollution, flooding, land-take, safety, climate change factors etc.
- SuDS, NFM and IWM
  Overview of SuDS components, techniques and examples, Overview of NFM. Implications for IWM systems of different drainage options.
- The different philosophies of drainage design
  Filling degrees, pipe sizes, bend radii, velocity breaks, swirl, mechanical ventilation, materials, cost, location of pipework, expandability, separating system, packaging systems, incinerating systems, links to solid waste management systems, small-bore pumping systems, basement drainage issues, water reuse systems, CSOs, the 'super sewer', porous paving, linear drainage, etc

For more information about this course contact the training team:
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15:00 Coffee / tea break (15 mins)

15:15 Session 4 The law and the future

- **Legislation and Standards relating to drainage**
  National Building Regulations, ISO Standards, EU Directives, Sewers for adoption 8, etc.

- **Future drainage systems**
  Impact of reinvented toilets, waterless technologies, intelligent and smart systems, zero-discharge systems, autonomous buildings, new materials, utilization of ‘waste’, Toilet Board Coalition,

- **Other CIBE drainage courses**
  Above ground drainage, Below ground drainage.

- **Review of issues covered by questions and answers**.
  About 20 questions that are answered in class. The answers given help influence the next presentation and may require some material updates

16.00 - 16.30 Q & A