



Water reuse governance: lessons from Olympic Park, London

Daniel Goodwin
Research Engineer

15th September 2016



Presentation Overview

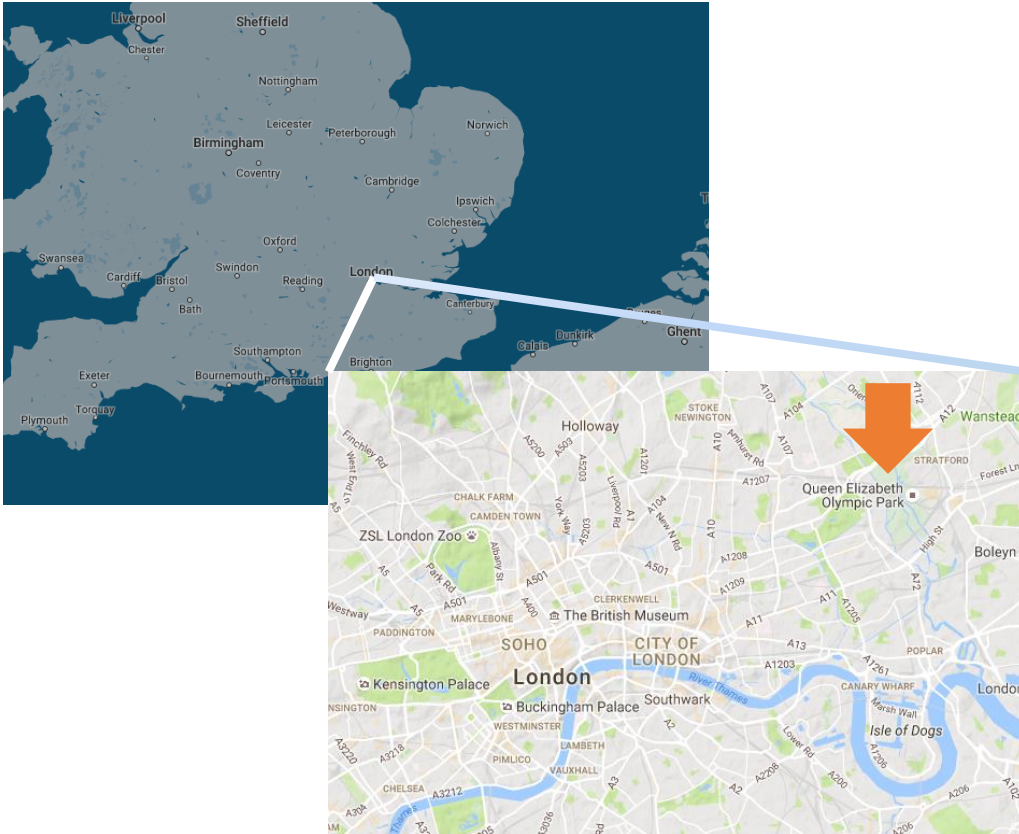
- Overview of Scheme
- Regulation and Risk Management
- Public and Customer Engagement
- Future Challenges



Scheme Overview



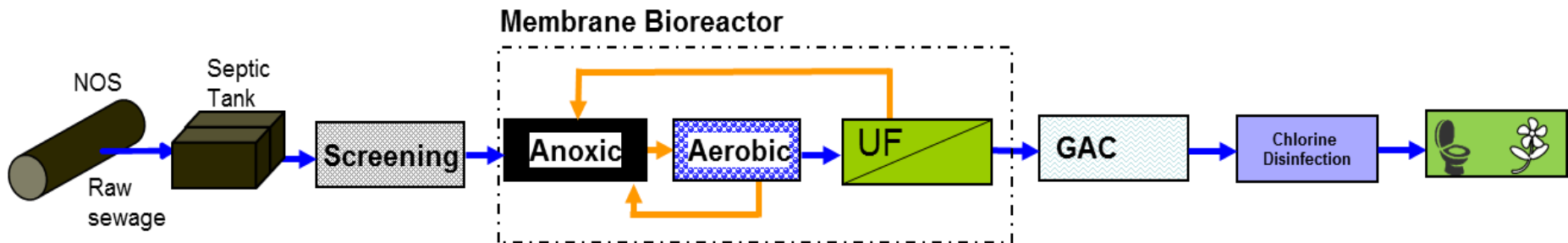
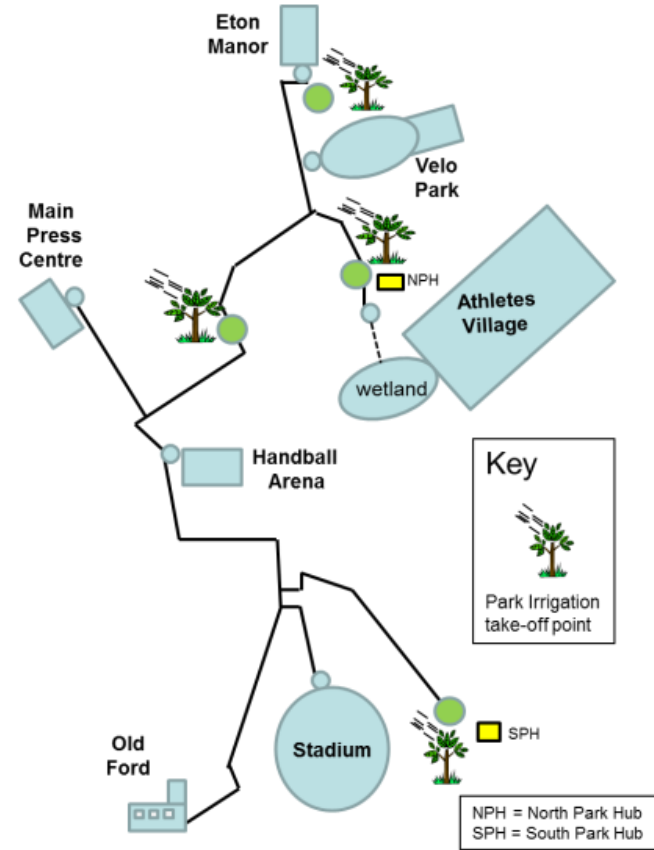
Old Ford Water Recycling Plant – Where is it?





What is it? Overview

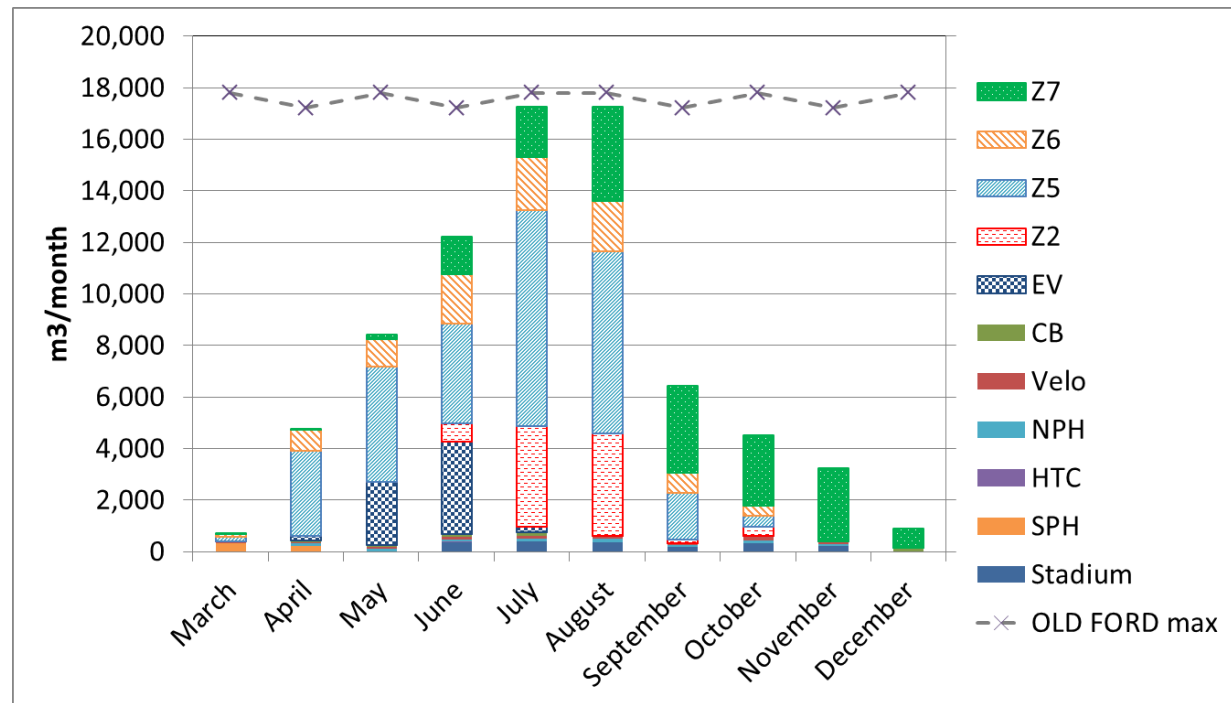
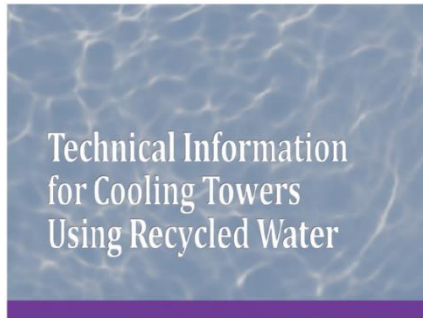
- Largest community wastewater recycling scheme in UK
- London Olympics 'Sustainable Water Strategy'
- Started supply in April 2012
- Plant designed for 574 m³/day reclaimed water from sewage
- Main uses: Irrigation, Toilet flushing
- Currently 12 customers
- 7 year research project





Supply and Demand

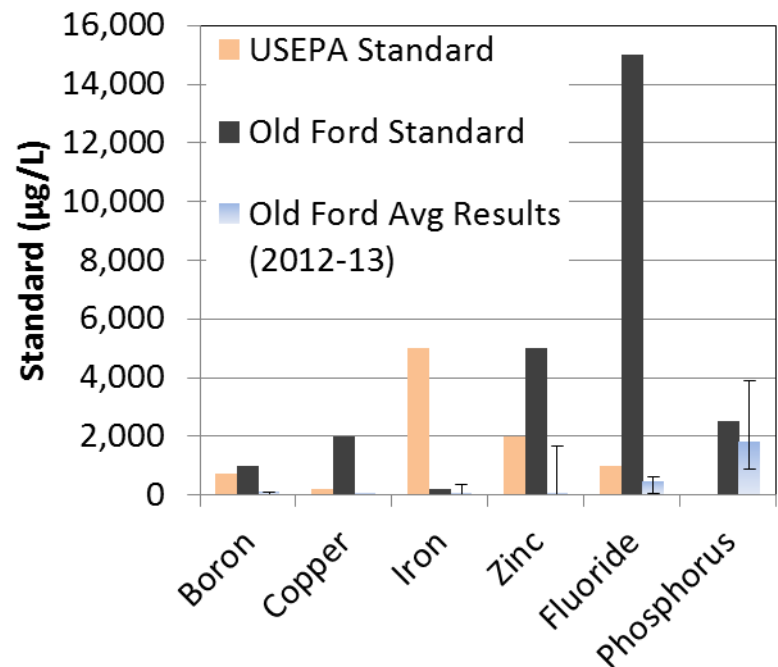
- Variable seasonal demand (irrigation)
- Approximately 70,000m³/year: Only 40% of maximum possible supply
- Energy centre (cooling towers) and Hockey fields did not connect





Water Quality Standard

- Water quality standard – based on USEPA Water Reuse (2004)
- Some USEPA parameters changed to UK drinking water and customer requirements
- Phosphorus: reduced for sensitive landscapes (wildflowers)
- Iron: concerns with fouling irrigation systems
- Energy Centre (conductivity, hardness)
- Aesthetics (colour)
- Nitrate: Drinking Water 50 mgNO₃/L,
Old Ford ~65 mgNO₃/L



Regulation & Risk Management



Roles and Responsibilities

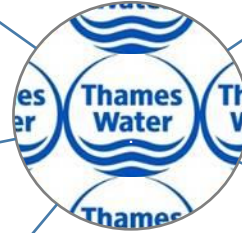
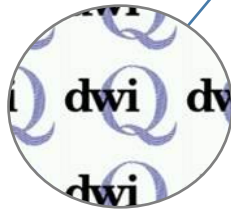
Environment Agency
Regulators



Public Health England
Advisory



Drinking Water Inspectorate
Cross-connections
(Regulation)



Olympic Delivery Authority
Funding, Planning
'Water Policy'



London Legacy Development Corporation
Customer, Planning
authority



Regulation

- Regulatory position statement issued by Environment Agency
- Conditional to risk management plan
- Supportive of Water Safety Plan approach (as per drinking water)
- Recycled water approved for: toilets, irrigation and process cooling
- Water quality standard: contractual



Regulatory position statement

The use of treated blackwater on the London 2012 Olympic park

If you comply with the requirements below, we will allow the use of treated blackwater on the London 2012 Olympic park at Stratford, London for the purposes below without the need for an environmental permit.



Risk Management

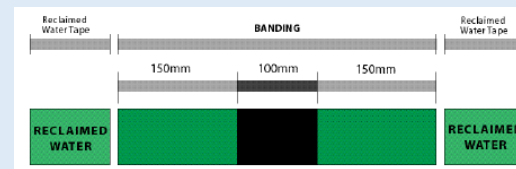
- Water Safety Plan: Catchment to tap
- Multiple barrier approach: treatment and non-treatment (e.g. drip irrigation)
- Signage and labelling (based on WRAS advisory standard)



External



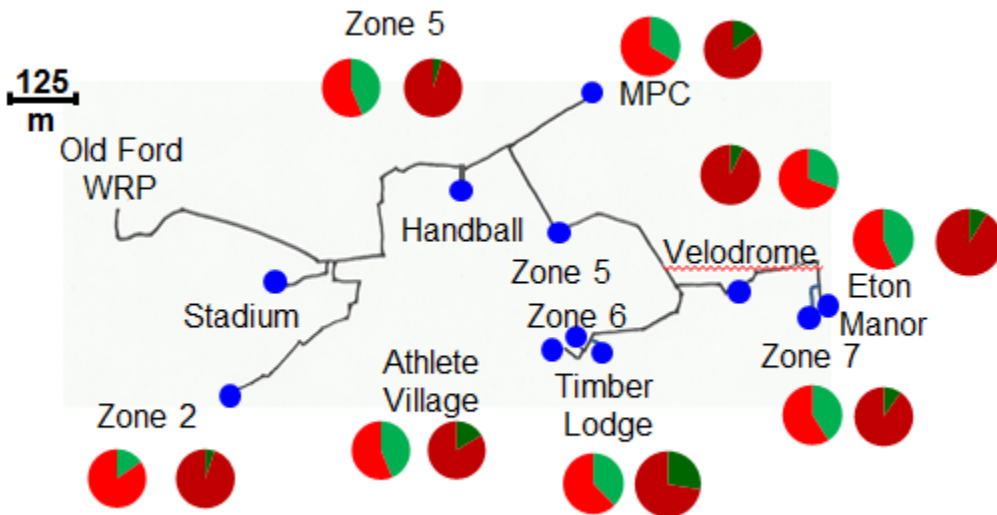
Internal





Risk Management

- Dye and pressure testing for checking cross connection detection
- Network flushing to manage stagnation



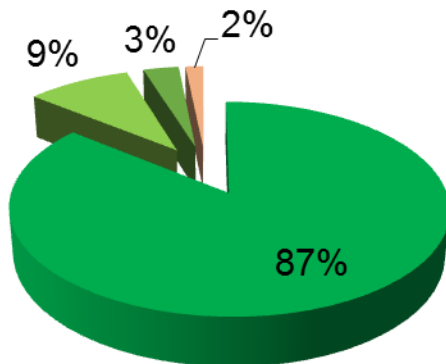
Customer Engagement



Public Engagement

- Public perception surveys
- Site tours
- Open days

Support for using recycled blackwater in public venues



- Completely supportive
- Generally supportive
- Neutral
- Generally against
- Completely against

OLD FORD WATER RECYCLING PLANT

The largest community-scale wastewater recycling facility in the UK, using membrane technology to convert raw sewage to non-potable water to supply Olympic Park venues. Clad in timber, gabion baskets and corten steel to blend within the Old Ford Nature Reserve (a site of SWCI Conservation Importance). Sustainable features include sedum roofs.

Architect

Lyall Bills and Young Architects

Date

2012

[Read more](#)

[Back to search](#)





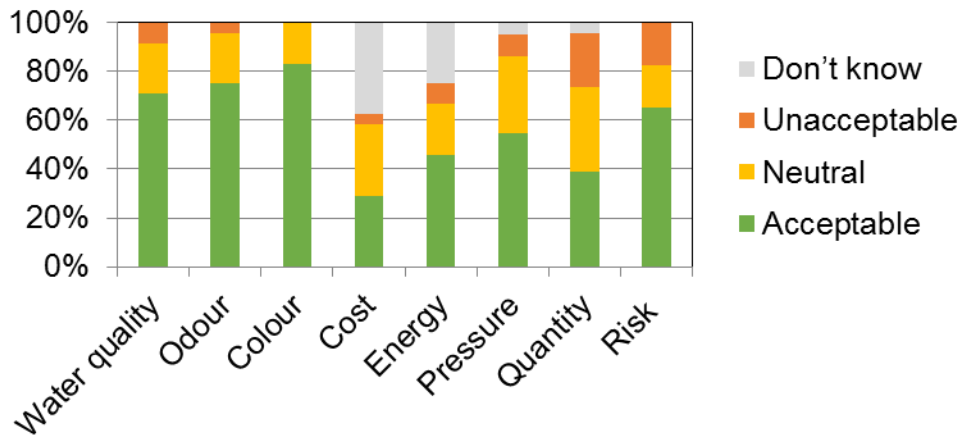
Customer Engagement

- Educational briefings
- Customer forums
- Site tours
- Formal and informal



Overall, how acceptable are the following characteristics of your existing non-potable water supply?

Percentage of total responses (n=24)



“The tool box talks were important for workers using the irrigation system.” Olympic Park Services Manager



Future Challenges



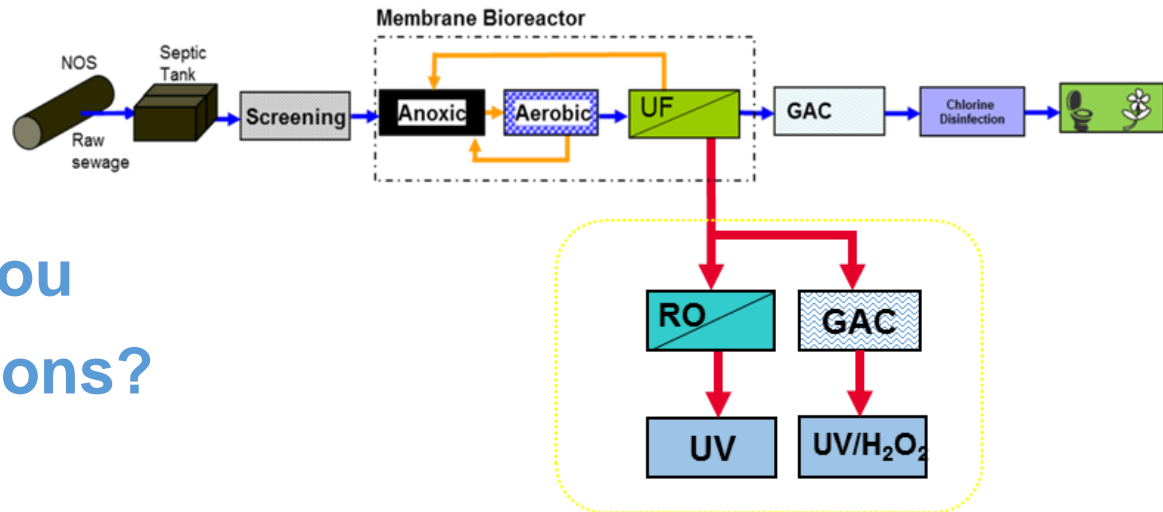
Future Challenges

- Project contract ends in 2019
- Irrigation demand declining?
- Opportunities for new customers?
- Understanding risk appetite, cost-benefit and health risks
- Competition in UK non-domestic retail water supply market 2017



Research

- Water quality for indirect potable reuse
- New pilot plant (RO, AOP)
- Virus removal in MBR
- Carbon dosing system (Nitrates)
- Regulator and customer engagement



Thank you
Any questions?



www.cranfield.ac.uk

T: +44 (0)1234 750111

 @cranfielduni

 @cranfielduni

 /cranfielduni