Modelling Blue-Green approaches to stormwater management

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Climate resilience using green solutions
Reduce flooding
Improve river water quality
Provide a greener and cleaner community
Green job creation
Begin with the end in Mind
Our Challenge

Project Programme:

Nov 2021 – June 2024
- Site selection
- Outline Design

April 2022 – December 2024
- Detailed Design

August 2022 - March 2025
- Construction

A typical project model approach:

1. Model Review
2. Scope Surveys
3. Survey Period
4. Upgrade Baseline Model
5. Verification/Sensitivity Testing
6. Liaise with Design Team
7. Develop Option Scenarios
Model Strategy

- Baseline upgrade
- Interventions
- Catchment Strategy
- Confidence
- Model as an asset
- Programme Pace
- Knowledge Gaps
- Model Type
- Essential vs Nice to Have
- Proportionality
- DWMP
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A multi-stranded approach

Delivering a better world
SuDS Volume Calculation tool – proceed at speed
Strand 1: Baseline 2D Direct Rainfall

Catchment Scale

Local Scale
“I had my doubts about the rain garden as to whether it was a good idea and would it work, but after arriving home from work today with this torrential downpour my doubts disappeared as usually my garage gets flooded on very heavy downpours but today, big surprise, the rain garden seems to be doing its job…”
Strand 2: 1D Baseline

- 12,881 nodes
- 108,341 population
Strand 3: 1D Scheme “Green Recovery Master Scenario”

Redraw 1D subcatchments from contributing areas

Include nodes, orifices, weirs from as-built drawings design

Verify with available monitoring data

Model simulations to compare to updated baseline

Essential Reporting

- Manhole flood volumes
- Flood return period
- Storm Overflow frequency
- Storm Overflow Volume
- Volume to WWTW
- WWTW spill volumes
Strand 4: Detention Basins

Catchment Strategy

ICM
Strand 4: Detention Basins
Strand 4: Linnet Drive Basin
Strand 6: Monitoring and Evaluation
Strand 6: Monitoring and Evaluation
Strand 5: Outline Business Case

- £76million, £9million to be found by Partnership funding - Flood & Coastal Erosion Risk Management Grant in Aid Application

- Working with the Environment Agency to develop technical approach to OBC in line with HM Treasury Green Book

- Strategic modelling to understand properties which may benefit from scheme

- Initial results promising for flood risk and Storm Overflow activations
Conclusion