

## **NetCreate – Using Digital to Develop Mains Rehabilitation Solutions**

With over 400km of pipes making up the UK water supply network, maintaining this vital infrastructure is an ongoing challenge. To optimise the limited resources available for replacement of undersized and outdated mains, the industry needs to prioritise efficient water use, maintain water quality, and simplify operational issues. Can we use digital applications to pioneer network rehabilitation solutions in a targeted manner?

NetCreate is an innovative digital process created by Atkins that uses global open-source or client-specific GIS datasets to automatically create outline networks on a repeatable basis. Already proven on wastewater masterplanning projects in the Middle East, the FME-based tool has been adapted for clean water networks to bring together population or demand distribution, road layout integrated with existing mains, and topographic data to assign the shortest route from supply source to each customer point. Nodes are inserted at junctions and defined intervals, and pipe sizes are assigned based on velocity and headloss criteria. NetCreate outputs can then be imported into proprietary hydraulic modelling software, eg. InfoWorks WS Pro, EPANet, SynerGee.

In 2017, WaterAid established The Beacon Project, bringing clean water, decent toilets, and good hygiene to everyone living in Lahan by 2030 to achieve the United Nations Sustainable Development Goal (UN SDG) No. 6. Upon hearing about Anglian Water’s charitable support for this cause, Atkins offered to deploy NetCreate to accelerate water network layout planning in Lahan. In under 3 months, NetCreate generated over 170km of high-level water network. The project was broken down into two stages – 1) develop networks in three rural wards that do not currently have any pipework, served by three water towers, and 2) to expand the water supply layout for urban wards for an increased customer coverage. Additional post-processing for Stage 2 resulted in network upgrade or extension recommendations to allow water supply to more customers, including the marginalised Dalit communities.

Clean water provision covers 100% of the UK population. In real terms, the need for development of new clean water networks in the UK is limited to areas being developed or regenerated. However, with the need to replace ageing infrastructure, NetCreate can provide a blueprint to approach mains rehabilitation at a zonal level, in a holistic and system-wide manner. Additionally, with operational net zero targets set for the near future along with traditional network management such as leakage reduction, we need to unlock ‘non-standard’ solutions to ensure the future success of our water networks.

Presenters:

Evita Widjaja ([Evita.Widjaja@atkinsrealis.com](mailto:Evita.Widjaja@atkinsrealis.com)) – Engineer, Networks & Drainage Solutions, AtkinsRéalis

James Gelsthorpe ([jGelsthorpe2@anglianwater.co.uk](mailto:jGelsthorpe2@anglianwater.co.uk)) – Senior System Optimisation Engineer, Anglian Water

Linked relevant articles:

- [Atkins uses NetCreate to accelerate water network planning in Nepal - for Anglian Water and WaterAid – SNC-Lavalin \(snclavalin.com\)](#)
- [Atkins boosts WaterAid Nepal project with digital plans \(thewaterreport.co.uk\)](#)
- [Atkins software tool helps WaterAid project in Nepal - Build in Digital](#)
- [Atkins uses NetCreate to accelerate water network planning in Nepal - for Anglian Water and WaterAid - Water Magazine](#)

- [Make Water Famous – Water pipes boost health and hygiene in Nepal](#)
- [Digital tool speeds up Atkins' design of water pipework in Nepal \(bimplus.co.uk\)](#)
- [Atkins used NetCreate for water network planning in Nepal - for Anglian Water and WaterAid \(smartwatermagazine.com\)](#)
- [Atkins accelerates water network planning in Nepal | Infrastructure Intelligence \(infrastructure-intelligence.com\)](#)
- [Digital tool lets Atkins design 170km of water pipework fast for thirsty Nepal - Global Construction Review](#)
- [Digital tool lets Atkins design 170km of water pipework fast for thirsty Nepal | Constructor Mag](#)
- [Digital tool lets Atkins design 170km of water pipework fast for thirsty Nepal - Latest Construction News - Construo](#)