Research and analysis: Infrastructure finance review: insights for district heat network investment in the UK

This review of key UK infrastructure sub sectors by Deloitte was designed to identify lessons learnt from relevant infrastructure sub sectors that will help unlock third party finance for district heat/cooling networks in England and Wales.

Sectors explored include:

- energy from waste
- offshore wind
- ground mounted solar
- smart meter portfolios
- licenced offshore transmission links (OFTOs)
- interconnectors
- licenced Regulated Asset Base (RAB) networks under economic regulation
- infrastructure provider model as used in Thames Tideway Tunnel
- PFI / PF2 / PPP

Guidance: Heat networks: procuring finance

This paper is designed to help local authorities which recognise the potential benefits of engaging with a non-public investor (NPI) to deliver a heat network, but want to better understand:

- at what stage the local authority can engage with the NPI
- what role the NPI could play in developing the heat network project
- the procurement law and state aid implications of involving the NPI
- the alternatives for delivering the project in a way which meets the local authority’s objectives, complies with legal requirements and supports investment from non-public sources

Similarly, NPIs considering investment in a heat network project with a local authority may want to better understand the procurement law and state aid considerations which are relevant to the structuring of the project, and how these influence the local authority’s approach.

News story: New test for sepsis could improve survival rates thanks to Dstl scientists

A new test for sepsis, which globally claims 6 million lives a year, could soon be available thanks to an innovation by scientists at the Defence Science and Technology Laboratory (Dstl).

The ground-breaking innovation will mean that patients with sepsis stand a much better chance of survival as diagnosis and treatment can take place before symptoms even appear.

For patients that have contracted sepsis, every treatment hour is crucial as survival rates can drop by up to 8% per hour, and if detected and treated early enough there is a significant increase in recovery and survival rates. However, the current bacterial diagnosis method needs the patient to show symptoms of having sepsis by which time the condition is already well advanced. It then additionally takes a number of hours and possibly days for test results to come back during which time the patient's condition will have deteriorated further.

The new Dstl innovation can detect sepsis before symptoms appear and provides fast and accurate results to give medical teams hours or even days of critical extra time to treat this life-threatening condition.

Minister for Defence Procurement Stuart Andrew said:

> This crucial breakthrough in sepsis treatment is an outstanding example of the pioneering research carried out by Dstl scientists and highlights how lessons learned on the battlefield can have a huge impact on improving the day-to-day lives of UK citizens.
>
> We continue to see how strong investment in defence results in knock-on benefits across a huge range of areas from revolutionary medicine to advanced mechanics.

It uses 'biomarkers', or predictors, that sepsis is present and has been demonstrated to be 97% accurate, following a decade-long study of 4,385 surgery patients in Germany and the UK.

Dr Roman Lukaszewski, the lead Dstl scientist behind the innovation, said:

> This breakthrough comes from many years of work in this area to help Service personnel survive injury and infection on the front

> line. By detecting sepsis earlier, the therapeutic window is extended, treatments are more effective, and survivability rates are potentially increased.

In order to make this innovation available, Dstl has turned to its commercialisation organisation, Ploughshare Innovations, which is currently looking for a licensee to turn the invention into a product.

Dr Mark Gostock, from Ploughshare Innovations and responsible for getting this innovation into industry commented:

> This innovation is a step-change in the pre-determination of sepsis and could potentially help millions of people worldwide. We are keen to see it put to good use and are actively seeking partners to turn it into a product to allow earlier treatment of sepsis which in turn, improves survivability and reduces treatment costs.

Sepsis affects around 30 million people each year worldwide and is increasing at a rate of 8 – 13% each year. In the UK, it incurs costs of around £15 billion and is responsible for more deaths than bowel, breast and prostate cancer combined.

For more information on the licensing opportunities for this invention, please visit the Ploughshare site.

News story: Divers complete ponds mission at Sizewell A

The team of underwater experts explored new depths at the former nuclear power station, with the task of cutting up old fuel storage skips and other redundant equipment as part of work to dismantle the site.

The team tackled their first UK ‘nuclear dive’ at Magnox’s Dungeness A Site in 2016. Bringing valuable learning from their work at Dungeness, the team arrived on site at Sizewell A in October 2017.

The divers, who wear full protective suits and are shielded from radiation by the water in the ponds, successfully cut up and ‘size reduced’ all 35 skips left in the ponds.

The team also cut up around 100 tonnes of other redundant equipment during the dives before removing all the radioactive sludge from the pond floor.

During the operational life of the power station, the ponds were used to

store thousands of used nuclear fuel rods, held in metal skips, after they were discharged from the reactors. After the last fuel was transferred to Sellafield for reprocessing, the skips and a range of other waste items, including radioactive sludge, were left behind under the water.

Conventionally, pond clean-out is done using remotely operated equipment to lift the whole radioactive skips and other pond furniture clear of the water, exposing them to the air, where they are carefully cut up and decontaminated. This process is slow with potential radiation dose risks for workers.

Using this innovative underwater decommissioning technique, radiation levels for workers were around 20 times less than with conventional techniques. As well as reducing the overall radiation dose for workers, the diving technique has a lower environmental impact, is quicker and more efficient, resulting in greater value for the UK taxpayer.

Divers complete ponds mission at Sizewell A Site

David Rushton, Programme Manager for the Nuclear Decommissioning Authority which owns Sizewell A and 16 other UK nuclear sites, said:

> Using divers at Sizewell is a fantastic example of Magnox taking an innovative approach to decommissioning and hazard reduction.
>
> The end of the work to remove radioactive waste from Sizewell's ponds will mark another successful step towards cleaning up the UK's earliest nuclear sites. We've learned valuable lessons and gained some useful experience in ponds decommissioning which could help our work to reduce the hazards at the NDA's other nuclear sites.

The ponds are set to be completely emptied and drained by the end of 2019.

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