NJUG CASE STUDY

CASE STUDY 59: Recycling the past for use in the future

Winner of the NJUG 2011 Sustainability Award

The National Joint Utilities Group (NJUG) is the UK industry association representing utilities on street works issues. The 41 utility companies and 17 contractors[1] we represent work to deliver gas, electricity, water and telecommunications to both individual consumers and UK plc.

NJUG members need to continue to drive forward further improvements. We have therefore developed the NJUG Vision for Street Works, which revolves around six main principles:

1. Safety is the number one priority
2. Utilities deliver consistent high quality
3. Utilities work together and in partnership with local authorities and contractors to minimise disruption
4. Utilities keep the public informed on all aspects of works
5. Utilities maximise the use of sustainable methods and materials
6. Damage to the underground assets is avoided

This case study is an example of NJUG delivering on these principles and turning the vision into reality.

Overview

Complete Utilities has been operating for over 20 years undertaking civils works for major utility providers and contractors such as Western Power Distribution, BT Openreach, Severn Trent, Wales and West Utilities, Enterprise, Laing O'Rourke and Balfour Beatty working in the Gloucestershire, Worcestershire, Herefordshire, Oxfordshire and Bristol council areas. Facing a series of drivers, legislative, environmental and financial, Complete Utilities over a period of 5 years has gone from a position of zero recycling to a recycling rate of almost 100% as a result of the commissioning of the new washing plant.

Case Study

Not being a 'waste company', Complete Utilities started from a limited knowledge base of recycling and experimented in the two commonly used recycling processes involving the use of cementatious bound materials and dry crushing and screening. With both processes the company experienced a number of problems with quality and consistency issues and poor weather conditions restricting production capabilities. As a consequence these operations did not deliver the high recycling rates the company wanted and led to the establishment of their current recycling facility based on a 'washing' system located on a new site at Overton just outside Gloucester.

Recycling Operation

The main element of the processing plant is a Powerscreen Aggwash which washes and grades the trench arising spoil the company generates in its utility work. The Aggwash system includes magnets to remove ferrous metals and a trash screen 'floats' off other contaminates. A log washer, a set of screens and sand tower produces a series of graded aggregates.

[1] NJUG's current members are Energy Networks Association (representing electricity and gas), Water UK (representing all water and wastewater companies), National Grid, BT Openreach, and Virgin Media. Our associate members are Clancy Docwra, Skanska, Balfour Beatty, Morgan Sindall, Carillion, First Intervention, Laing O'Rourke, Compass, AMEC, Enterprise, Morrison Utility Services, Fastflow Pipeline Services, May Gurney, CLC Ltd, PJ Keary and Murphy Ltd. Including members through trade associations, NJUG represents forty-one utility companies, seventeen utility contractors.

The graded aggregate is then blended to meet the specification for a type 1 aggregate material. The whole process is quality driven and the operations are controlled by a factory production control process. Testing is carried out on the recycled aggregate products to confirm it meets British Standards. This is detailed in a 'Quality Protocol' the company has developed specifically for the Overton Plant. This complies with the guidance of WRAP (Waste Action Resources Programme) and confirms that the recycled aggregate Complete Utilities produces meets a specified standard and is not a waste.

Benefits:

Financial

To dispose of spoil in the Gloucester area costs £12.50/tonne and to buy replacement primary aggregate for trench backfill costs £11.50/tonne. Including the high capital investment of the new plant system, the company can still match the landfill and replacement aggregate costs in recycling a tonne of trench spoil back into a high quality aggregate product.

Legislative and Government Drivers

The recycling operation exceeds the targets of 'Halving Waste to Landfill by 2012' and can also realistically achieve Zero Waste to Landfill. It demonstrates the success of the impact of the landfill tax, the government's financial 'disincentive' to landfill. It also ensures that the treatment of trenching waste is moved up the 'waste hierarchy' in accordance with European and government requirements.

Environmental and Sustainability

The operations mean less landfilling of trenching spoil, less demand for primary aggregate and a reduction in carbon emissions as haulage distances are reduced. The plant was commissioned at the end of 2010. In the first six months of 2011 the company processed approximately 12,000 tonnes of trench spoil and produced approximately 8,000 tonnes of type 1, with a remaining tonnage of sand and silt fines. This equates to the entire previous year's figures producing only 3,500 tonnes of type 1 (due to weather dependence) from a similar throughput, with the majority of the residual material requiring to be landfilled. An average monthly spend on type 1 was in the region of £15,000/month and now the company has not bought any type 1 since the full commissioning of the plant.

Because of its size and design the wash system can be located in a very compact area, moving away from locations influenced by the proximity of a quarry and tip and bringing haulage benefits with reduced costs with carbon and time savings. The operator's historic activities with no quarries or tips close to Gloucester meant a round trip of 40 miles to a quarry (which was also a landfill operation and so included 'back loads' benefits to minimise haulage distances). This compares to a 5 miles round trip to the new facility. The carbon savings on the type 1 alone in the first 6 months would be in the region of 6 tonnes.

Previous recycling operations delivered recycling rates of between 20% and 25% of type 1 for 4 to 6 months of the year primarily dependant on weather conditions. The new operation can consistently deliver recycling rates for type 1 in excess of 65% irrespective of weather conditions, with the remaining spilt 20% as graded sand which the company uses for soft fill/cable protection. The washing plant now accounts for 100% of the company's requirements for primary aggregates. The residual is silt fines and the company is investigating further treatment options to use such as the combining with cementatious materials or composting materials to give a full diversion rate of 100% from landfill.