

# Northumbrian Pumping Station Programme

## some £8.5m invested in 3 years - £30m budget for next 5 years

by  
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Northumbrian Water operates in excess of 670 waste and 200 clean water pumping stations in the North East of England, in an area stretching from Teesside to the Scottish border, serving a population of some 2.6 million. Many of the pumping stations were adopted from Local Authorities and previous private water companies and as such are of an age where investment was required to ensure that key obligations would be met.



Typical pumping station in three year programme

*Photo: Courtesy Northumbrian Water.*

### These obligations included:

- \* reduction in the possibility of supply failure, in the case of clean water;
- \* reduction in the possibility of compliance failure, including unconsented discharges, in the case of waste water;
- \* reduction in operational expenditure, both energy and labour costs;
- \* reduction in health and safety risk;
- \* improve the asset life of the station.

The above obligations would also ensure that targets set by both OFWAT and the Drinking Water Inspectorate are met.

### The approach

The initial programme was established following asset surveys on a number of stations with the aim of identifying those considered most critical. These were carried out in conjunction with the Operational and Maintenance staff who were able to identify particular issues with regard to both plant and buildings. However, whilst this enabled work to commence, opinions expressed were subjective and it was agreed that further prioritisation should be carried out, with each station scored on asset condition, performance and risk of supply or compliance failure. This allowed

the programme of work to be prioritised and permitted the inclusion of any additional stations not previously identified.

### Delivery

Delivery of the work was developed throughout the programme. Initially, the consultant was involved in development of designs for a number of small stations, both clean and waste water, which were competitively tendered to establish benchmark costs for similar works. However, the development of standard designs, specifically for clean water, has meant that Northumbrian Water can now make direct appointments to the Framework Contractors, leading to a reduction in "front end input" by the consultant, improving spend efficiency within the programme budget. The consultant's scope for smaller schemes, typically less than £150k in value, has included the Planning Supervisor role, dealing with land and planning issues and contract administration.

### Standard design

The development of standard designs, referred to above, was required for clean water applications as a design for a two-pump sewage pumping station already existed, based on Sewers for Adoption.

The standard was developed in conjunction with all parties involved in the programme and encourages the following:

- \* **single man working with all equipment located above ground where possible;**
- \* **use of standard equipment to develop familiarity within all of Northumbrian Water's operating areas;**
- \* **efficient delivery of the programme;**
- \* **minimal effect on the environment, ie use of GRP enclosures with external finish to suit the location. this may include simulated brick finish in urban areas and a simple green finish in rural areas;**

Initially the standard design incorporated a duty/standby pump arrangement in all cases. However, this obviously came at a cost, not only in plant but also the need for larger enclosures and the associated civil works. It was, therefore, agreed that for those stations supplying a small number of consumers, normally less than ten properties, only a single, duty pump would be provided where the consequence of failure would be a reduction in pressure only. However, for those applications where the consequence would be immediate loss of supply it was agreed that in all instances a two pump station would be provided.

**Project execution**

A key element to the successful delivery of the programme has been the management of not only the interface between the client, the consultant and the contractor, but also the management of the internal interfaces within Northumbrian Water.

The "Team" realised from the outset the importance of regular meetings, particularly with operational staff to identify/confirm the issues and ensure an acceptable solution is obtained. In addition, regular workshops have been held, involving representatives from all parties, at which the work completed and the future programme was discussed openly.

The majority of the work within the programme has involved delivery of smaller stations, nominally rated at less than 22kw and constructed to the designs mentioned previously. However work at a number of larger stations has also been undertaken, at a value of up to £800k. Whilst work at the smaller stations was fairly straightforward, be it either refurbishment or construction of a new station, the larger schemes generally included consideration of various options. Options considered included full or partial refurbishment, reconstruction and in some cases abandonment through network rationalisation. For each of these options Whole Life Costing, over a period of forty years was considered to ensure that the best value solution was delivered.

**Lessons learnt**

The key lessons learnt in delivering the programmes of work have included:

- \* early identification and effective prioritisation of works;
- \* effective and regular discussions with the stakeholder;
- \* regular reviews and workshops involving the whole team;
- \* a flexible design and procurement route;
- \* agree roles and responsibilities for each role;
- \* effective planning to ensure third party issues do not significantly impact the programme.

**Conclusion**

To date work at 36 waste and 26 clean water stations has been completed with a total investment of approximately £8.5 million over a three year period ending in December 2005. The Asset Management Period 4 (AMP4) covering years 2005 to 2010 will see delivery of a greater number of stations with an anticipated budget of £30 million. Preparations for the programme of work in AMP4 has already commenced and has been an integral part of the work carried out to date and it is intended to continue on from the lessons learned and "hit the ground running." ■

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