

[PDF Page 6](#) [Print Page 4](#)

Capital maintenance

We suggest that assessment of capital maintenance could also include comparison with a scenario of installing newer technology modular plants and retiring existing conventional methods assets and plant. This comparison could include capital costs, running costs, ongoing maintenance, higher quality results achievable with newer technologies, reduced disruption and earlier delivery dates.

Enhancement investment

We suggest an additional bullet point

- *comparison with the costs, quality levels, disruption and delivery dates using newer technologies and processes established and in use elsewhere*

[PDF Page 7](#) [Print Page 5](#)

Challenge to the proposed scope of works

We concur with the DWQR's view that water quality could be improved for considerably less. In specific projects mentioned in the media we have estimated that this objective could be achieved for 5% or less of the headline media figure. We recognise that media information should be treated with caution but we are sure that on access to actual Scottish Water parameters very significant reductions in capital and running costs and much earlier service delivery will remain when using newer technologies.

Faber Maunsell also noted that the proposed costs for addressing unsatisfactory intermittent discharges (UIDs) were excessive.

We have access to very limited information on UID's but, using different technologies from drinking water processing, we would expect similar orders of magnitude of savings to those in drinking water.

[PDF Page 8](#) [Print Page 6](#)

Costing the investment programme

Scottish Water had asked its joint venture company Scottish Water Solutions⁴ to cost the delivery of the ministerial objectives. In his review of Scottish Water's proposed investment programme, the Reporter highlighted some concerns about how the costs of Scottish Water's proposed investment programme had been estimated. His work identified much higher than expected costs for small treatment works.

We concur with the Reporter's view on much higher than expected small treatment works costs. Against Scottish Water £1.5m - £2.5m plant cost figures identified by the Reporter in previous consultation documents we have estimated that package waste water treatment plant or plants, which we believe are acceptable to SEPA for the most sensitive water environments as they can be specified to discharge at drinking water quality for 100% of the time, could be installed from £100k upwards. We recognise that general information should be treated with caution but are sure that on access to actual Scottish Water proposals and specific requirements, very significant reductions in capital and running costs and much earlier service delivery compared to conventional methods will remain.

Our overall conclusions on capital expenditure

We would suggest that, by introducing newer technologies used elsewhere, very material capital and running cost savings are achievable. Disruption and service delivery times would be similarly reduced. Project management and monitoring gains would trend likewise.

[PDF Page 8](#) [Print Page 6](#)

Our proposed approach at the 2010-14 review

We suggest a preliminary step

0. Explore whether the adoption of newer technologies used elsewhere would deliver Ministers' objectives sooner with less disruption and at lower cost

PDF Page 9 Print Page 7

Establishing that the investment programme can be delivered efficiently

With newer technologies many of the topics and concerns expressed in this section are greatly reduced and the whole process becomes much more manageable and achievable.

PDF Page 10 Print Page 8

Scottish Water's capability

Scottish Water's capability to deliver its investment programme will depend on the range of outputs required. The greater the number of smaller projects, the more difficult it will be for Scottish Water to manage the programme efficiently

We would beg to differ on this point. Where smaller projects mean standard factory built newer technologies plant and equipment delivered as large modules ready for hook up, rather than bespoke designs constructed on site and vulnerable to snags not revealed by initial surveys, inclement weather, etc., programme management is much simpler.

Addressing issues such as climate change may also require newer and more innovative solutions.

Our newer and more innovative solutions already accommodate climate change issues.

Adopting a strategic approach to major improvements

.....We are keen to explore with stakeholders the scope for greater long-term planning (an effective response to the Glasgow Strategic Drainage Plan would be a useful example).

From the limited information available on Glasgow Strategic Drainage our understanding is that the existing situation has arisen over many years with overflows being knocked from sewers into local watercourses as sewers reached capacity. In flood conditions this results in (filtered) sewage overflowing into water courses.

Our pathfinder solution is to install membrane bio reactor package waste water treatment plants, which we believe are acceptable to SEPA, at the sites of the existing overflows. These could deliver at up to drinking quality water into the natural water courses in place of the existing sewage. The combined additional capacity of the MBR plants would add to the strategic capacity of the sewer infrastructure network. The sewer network then makes this widely available to support additional domestic and economic development. We can also deliver additional sewage processing capacity, temporarily or permanently, on stream four months from order, by installing MBR plants in existing sewage treatment works. MBR plants are compact continuous non odiferous processes which don't require consumables and which don't sludge up.

Scottish civil engineering capacity

Since the consultation paper was issued extensive flooding in England has increased demand further.

Disruption to local communities

Newer technologies create much less disruption for shorter periods.

PDF Page 20 Print Page 18

Early start to delivering 2010-14 regulatory control period required outputs

We suggest any start should be delayed until after a review of the application and adoption of newer technologies. Such a review might identify projects in the current five year plan where conventional methods solutions are very costly or other factors such as planning and regulatory permissions or access difficulties are causing delays or where the contract has not been let , invite newer technology proposals and run a batch of trials in 2008.

We are obviously concerned that the regulatory process facilitates the long term planning of the capital investment programme. As such we are open to initiatives that would help ensure that there is no repeat of the slow start to the delivery of the current capital programme.

More capable plant and equipment based on newer technologies and which are very largely standard plant modules independent of site conditions greatly reduce the regulatory issues and the timescale to attend to them.

Introducing Our Water Services

R S Garrow Ltd is a small business with over twenty years experience in business and product development. We created Garrow Water Services after identifying widespread housing site generation and other developments being severely constrained by the absence, difficulty and high costs in providing water services.

In our search for solutions we found the Aqualogix award winning UK based drinking water processing plant specified to cope with virtually any raw water source and deliver WHO quality water. For waste water, also UK based, we have the Microbac Membrane Bio Reactor aerobic natural bacterial non odiferous package waste water treatment plants, as used in the English Lake District National Park and worldwide in sensitive environments. We now offer these proven technology plants to homes, business, industry, water utilities and other customers.

Capital and running costs with these new technologies are very small fractions of the financial numbers attributed to Scottish Water in various public domain sources. Our drinking water quality exceeds the targets set for UK public water utilities to reach in a few years time. Our waste water discharge quality can be at drinking water quality 100% of the time although there is little benefit and additional cost in discharging at a quality better than the local water environment.

Taken together, the capability to draw on virtually any local sources of water including collected rainwater, process it into drinking water, use it then clean it up to the local water environment quality and return it to the environment means that the environmental effect is very small. Water utilities plan on 95% of the water metered in appearing as waste water. On the 200 litres per day per head of population planning figure, 10 litres, a bucket full to the brim, is the 5% not returned to the environment.

Where we are collecting and storing for use rainwater that would otherwise have continued its natural run off, the environmental effect of development on flood drainage could conceivably be positive.

By using the existing natural environment to deliver water to us and discharging it clean locally after use to continue its previous role in the natural environment, we only need short input feed and discharge pipes. Compared to costs from public Consultations, £150,000 for a kilometre of input main and £220,000 for a kilometre of foul sewer, a total of £370,000 per kilometre, our infrastructure network costs are likely to be less or absent.

Freed from water network hook up costs and/or waste water technology that relies on soak away ground conditions and sludge tanker access, development can be more flexible. New buildings can be moved to less intrusive positions in the landscape. Catering and toilets can be provided economically at points where tourists congregate, along trafficked paths and cycle tracks, etc.

Multimillion pound schemes tend to custom designs, involve several parties and take time for regulatory and budget approvals. Then the construction phase causes upheaval and takes time. Our new technology plants with their small footprints, low dependence on site conditions, low environmental impacts, flexibility of siting, high technical capabilities and modest costs may be simpler and easier to get approved and funded, particularly once they are more widely known.

Standard delivery on our Microbac MBR waste water treatment plants is twelve weeks. The site survey only needs to find a level base foundation the size of a garden shed and, by carrying out the limited civil and electrical works and selecting and breeding the natural bacteria population to match the waste (their food) stream during plant manufacture, delivery, installation and commissioning can be a same day process. Our Aqualogix drinking water plants are on short delivery, sometimes ex stock. The Aqualogix is portable and Microbac MBR plants can be specified to be relocatable and/or expandable. Regulatory bodies unused to the technologies are possibly the limiting factor on deploying them for temporary or seasonal use.

These MBR plants could be used in conjunction with the public network infrastructure. Where a sewer network coincides with a watercourse or the water environment is capable of accepting a drinking water quality discharge, a Microbac MBR package plant could be installed to process some of the flow in the sewer out to the environment. The sewer network then enables the equivalent volume to be connected elsewhere, upstream or downstream of the MBR.

Where a sewer has collapsed or needs to be dewatered for maintenance, relocatable MBR's could be placed upstream to process the flow to drinking quality water thus allowing it to be diverted to surface water drainage or the natural water environment.

Fitting an Aqualogix, drawing local raw water and/or installing rain water collection in premises already connected to the mains network and using this in priority to drawing water off the mains leaves this additional capacity in the main and available anywhere on the network. Note that this does not make any connection between the locally processed water and the public network main.

Bob Garrow, Director, R S Garrow Ltd, Registered in Scotland No:- SC95887
Registered Office:- 4 Mossbank Avenue, Milngavie, Glasgow G62 8NL UK
Tel: +44 (0)141 956 2732 Fax: +44 (0)141 570 2732 Mobile: +44 (0)7711 49 86 49
<http://www.rsgarrow.co.uk> "Business and Product Development in Hands On/ Partner Mode"

<http://www.rsgarrow.co.uk/page29.html> links to a GarrowWater PDF file, containing an executive overview, details of the Aqualogix drinking water processor and Microbac MBR waste water treatment plants, laboratory reports, case studies, etc. plus videos of the two plants, etc. I can also supply this on CD (the videos are too large for e mail attachment). All this website information can be shared freely.
