

## Introduction

This paper will examine Severn Trent's experiences in designing, constructing and maintaining overflows over the last five years. It will highlight some of the common problems faced and look at solutions.

In particular the paper will review the following:-

- 1) The importance of a standard approach to screens is important for capital procurement and operation. The paper will overview the procedures within the company
- 2) The paper will describe how standardisation in Severn Trent is being developed with the use of templates.
- 3) The paper will also review the results of post project appraisal and how the lessons learned have been feedback into the supply chain.

### 1) Amp 3 Challenge

During Amp3 Severn Trent had to improve some 369 overflows which were designated as unsatisfactory. These overflows are located throughout the length and breadth of the company ( Figure 1)

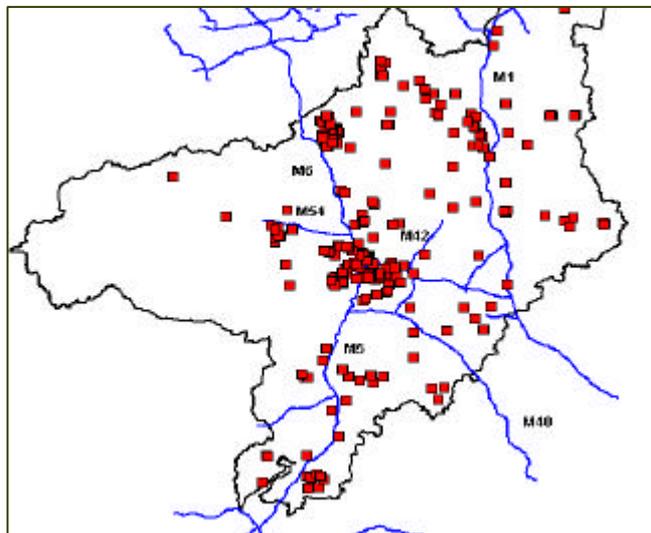


Figure 1

The main areas for investment are Birmingham and Stoke. The Tame catchment in the West Midlands has 92 unsatisfactory overflows with 55 in Birmingham alone. Stoke has 54 for improvement.

Faced with such a large programme of improvements there were a number of practical issues that needs to be resolved in order for the programme to run smoothly:-

- Supply of Screens
- Process of approval with Environment Agency
- Efficient Capital delivery
- Understanding what the real problem was versa the perceived problem



One of the major concerns at the start of the Amp period was the ability of the screen manufacturers to match the demand from all the water companies. Most water companies develop framework agreements with suppliers in order to secure quality and supply.

Within Severn Trent a pilot study was carried out of various manufacturers and from this trial 3 manufacturers were selected to aid us screens for UID's. These are –

- Longwood - Parkwood stormguard
- Huber – Rotomat RoK1
- Hydro International – Hydro-jet screen

The decision was made not to enter into a framework agreement for static screens as there was enough capacity/expertise on the market.

These have worked very well and have been successful for all the suppliers.

We developed a CSO design guide in conjunction with Thompson RPM to aid designers with selection of screens. There are several factors which have to be accommodated as shown in figure 3 below:-

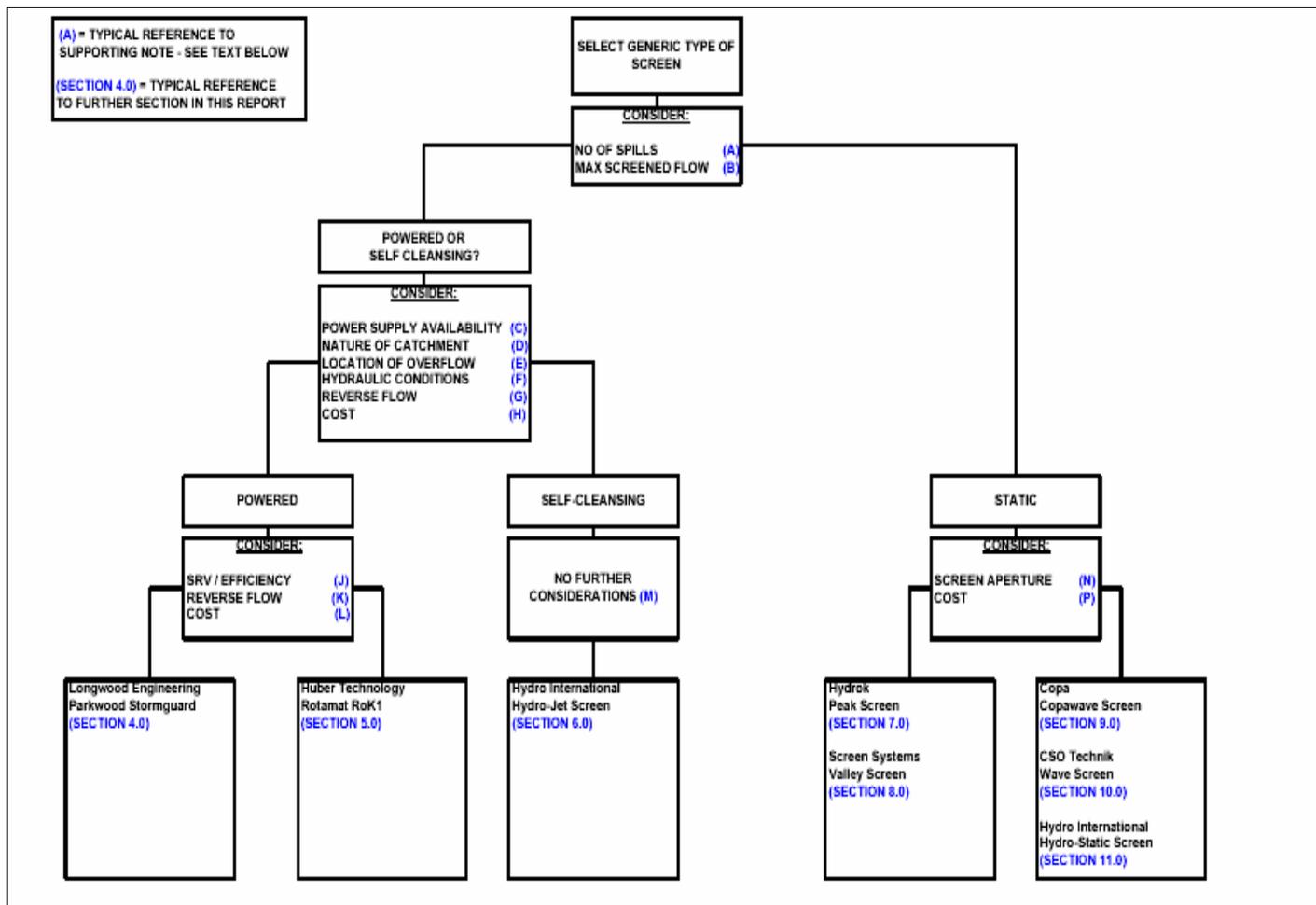


Figure 3 screen selection guide

The CSO screen selection guide also incorporated standard drawings for the various sizes of kit required. See figure 4 for typical details.

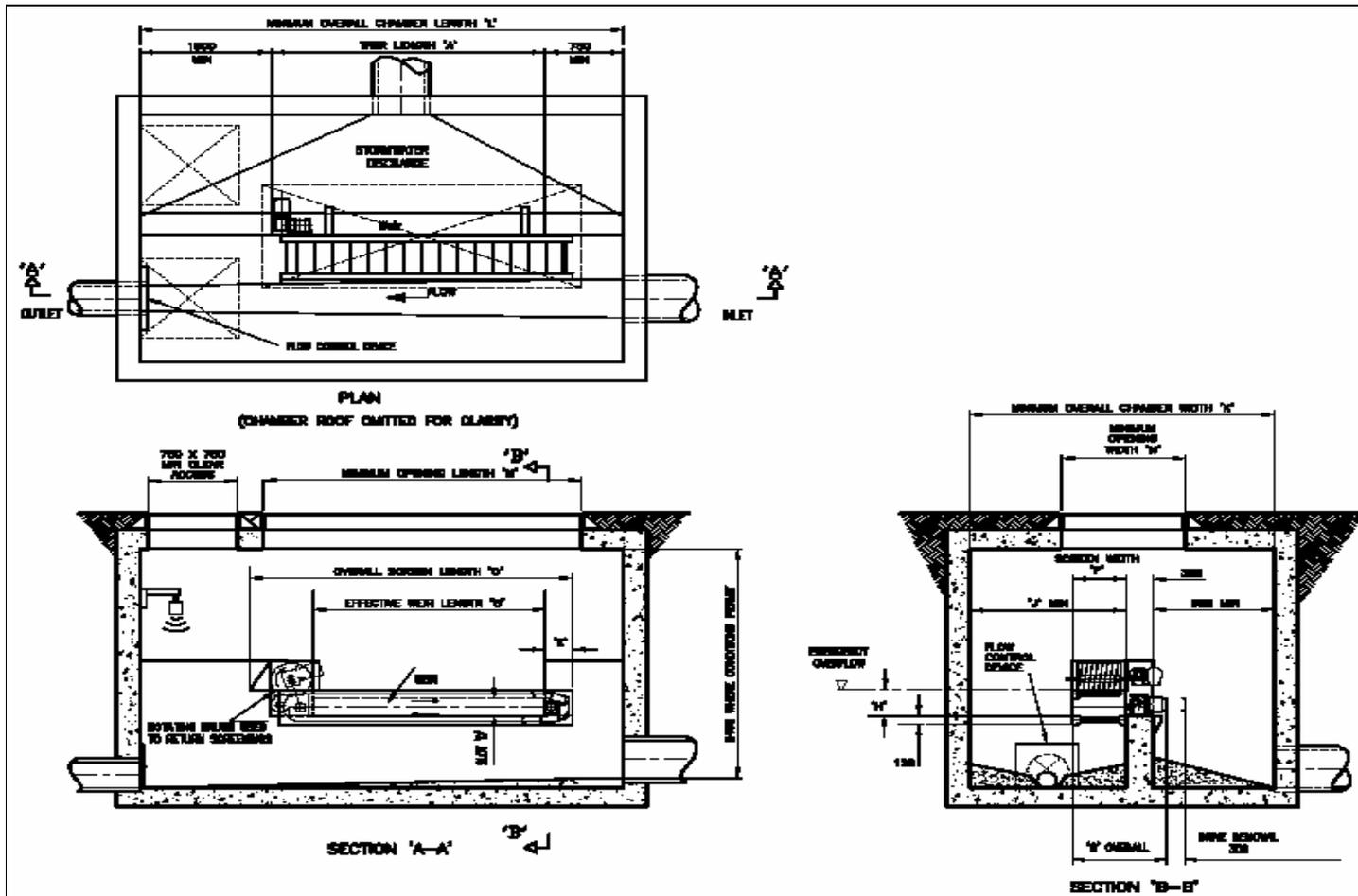


Figure 4 Typical screen layout

The selection guide has been helpful in driving standardisation forward but we realised we needed something more to tackle the other issues that were arising eg access to site, working area around screens etc.

#### 4) Standardisation – Template solutions

How many ways are there to boil an egg? As many ways as you want is one answer, within Severn Trent we need to drive standardisation even further and produce plant layouts with the same footprint, similar equipment, appropriate access etc. Severn Trent is developing a range of standard template solutions for Amp4 . These will give designers, contractors and operators key points for guidance and standardisation. These are signed off at a senior level across the company and give operators comfort in knowing they will get the similar designs rather than a new one each time.

If operators know what they are going to have to operate before handover and it is the same as 20 other sites then handover will go more smoothly. The more we can agree common standards for items such as access the better our designs will be.

In Amp3 it is fair to say we have had chambers that have had the following access arrangements:

- Step rungs
- Ladders
- Half Landing slabs
- Step Irons

Recently we have achieved agreement over access and anything deeper than 2m will have a vertical access.

I have a bee in bonnet about this and believe designers should give more consideration to how the asset will be operated safely – and we have a legal obligation to do so under CDM. After much debate we have settled on an access policy for sewerage assets ( pumping stations, shaft tanks and CSO chambers) this will enable a much greater degree of standardisation than before.

We have developed a standard layout for telemetry at CSO's, this includes a battery pack kit for those locations where there is no power. All new CSO's will have basic on/off telemetry using probes (see Figure 5). We can also use ultrasonics for complex sites or hot spots. This allows operators to respond quicker when alarms are received during dry weather. We are working through the Amp3 sites and currently we have about 40 sites on our PMCS system – there have been some delays with land and planning (which I am sure you will be familiar with).



Figure 5 Typical Probe installation

Telemetry will also provide designers with an excellent post project appraisal tool to check their designs against actual spills.

Maintenance is an issue with any asset and the best design make the operators lives as easy as possible – we have trialled various wash water systems using spray bars connected to a jetter unit. We are currently trialling one connected to the water mains – using the telemetry to trigger an automatic wash down of the static screen.

### 5) Post Project Appraisal

Engineers seldom stand back once a project is complete and critically review the project in light of the initial objectives and targets. Severn Trent has carried out two rounds of post project appraisal surveys.

The first round in summer 2003 looked at 59 sites throughout the company and looked at a range of issues. These surveys showed that generally sites were being well designed, constructed and handed over. In December 2003 a CSO conference was held with supply chain members to review these surveys and highlight areas for improvement. Figure 6 shows a problem with workmanship – note the gap between the screen and the wall – more than 6mm!



Figure 6 Mind the gap

A second round of 12 surveys (of sites built since December 2003) was undertaken in summer 2004 to review progress. This confirmed improvements to workmanship and handover issues. (Figure 7 shows access to one site)



Figure 7 Improved access

## Conclusion

The challenge for Amp3 was to deliver the capital programme and that will be delivered by March 2005 (with a few late nights on site). We have developed a new design template which incorporates our learning and experiences. Together with colleagues in the EA we have managed our way through a significant number of consent applications. In some locations we have been able to use UPM methodology to identify significant improvements to the catchment and have been able to relocate the required storage to locations where we can build it.

The French say "*Plus ca change, plus ce la meme chose.*" (The more things change, the more they stay the same). The challenge of Amp 4 holds a similar magnitude for the industry as Amp3. Within Severn Trent there are some 200 CSO's on the draft list – final confirmation will happen in December 04.

However, what we have all learned is that screens are not the panacea that some hoped for and can cause as many problems as they solve. Designers should give more thought to the operators who have to maintain these assets. Our experience of designing, building and operating these assets over the last five years stands us in good stead for the future.

## Acknowledgements

The views expressed here are the author's and not Severn Trent policy.

I would also like to thank Ian Elliot for permission to do the paper and Peter Myerscough for badgering me to do so. I would also like to thank all those colleagues and friends who have helped pull this together.