

Example of a section 29E application

This document presents an example of an application for a departure from Scottish Water's wholesale charges scheme under section 29E of the Water Industry (Scotland) Act 2002. The Commission's purpose in publishing the example is to promote interest in section 29E among Scottish Water, licensed providers and customers; and to provide guidance in how to complete the application form.

The example is not, however, intended as a model section 29E application. The network design criteria and practices embodied in the example are not held out as representative of Scottish Water's current practice. In addition, although the example refers to details that would be included in appendices, examples of such appendices have not been created.

Application under section 29E of the Water Services etc. (Scotland) Act 2005 for a departure from Scottish Water's wholesale charges scheme

1. Overview

1.1 Summary

An application for a section 29E departure based on reducing Scottish Water's costs of providing water at peak times in Anytown. In order to reduce costs, the customer has agreed to reschedule its demands on the Scottish Water distribution system to the night-time and will store water on site for its daytime use.

1.2 Customer/licensed provider information

	Licensed Provider	Customer
Name and contact person:	New Water Retail Ltd. Norma Smith	Widget Manufacturing Fred Bloggs
Address:	123 Retail Road Anytown Business Park Anytown A29 4CD	Unit 4 Farmside Industrial Estate Anytown A29 5EE
Telephone:	(01234) 654 321	(01234) 567 890
Identifier:	Licensed provider reference:	Supply point identifier(s): 12347823WS
Description of water use:	The premises used 180MI of water during the last financial year and this demand is forecast to be constant for the next 10 years. It is served by a 100mm meter, a 40mm meter and a 20mm meter. All water demand during the last financial year was during normal office hours.	

1.3 Nature of proposed 29E departure

Widget Manufacturing is located in an industrial zone served by a local network supplied by a river source and associated treatment plant. Average daily demand on the local network is 4.5MI, of which Widget Manufacturing consumes 0.5MI.

Widget Manufacturing will agree not to draw any water from the Scottish Water's network except between the hours of 7:30pm and 6:30am. This reduces relevant peak demand by

nearly 15 per cent. The customer will install its own on-site storage to ensure its water supply during normal working hours.

1.4 Cost savings to Scottish Water

The departure will generate savings in Scottish Water's costs as shown in Table 1.1. (Further information is in Section 2 of this application.)

Table 1.1: savings to Scottish Water

Type of cost	Nature of saving	Present value
Operating costs — pumping from source to service reservoir	7 per cent reduction in electricity costs	£30k
Capital costs — service reservoir	7 year deferral (from 2010-11) of next capacity increment	£70k
Capital costs — outlet mains	12½ year deferral (from 2008-09) of additional main	£90k
Capital costs — large distribution mains	25 year deferral (from 2008-09) of additional main	£140k
Total (2008-09 prices)		£330k

The present value of the savings is £330k, which is greater than the £250k threshold. The parties have agreed a pragmatic break-point in the application of the end of 2013-14, when the effectiveness of the contract will be reviewed. The period up to 2013-14 takes account of around £140k of the potential benefits (leaving £190k to form the start of any future section 29E departure).

The profile of savings is shown in Table 1.2. The change in 2010-11 is caused by the deferral of the investment in the service reservoir.

Table 1.2: annual savings to Scottish Water (real)

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Saving	£16.8k	£16.8k	£28.5k	£28.5k	£28.5k	£28.5k
PV of saving	£140k					

1.5 Proposed reduction in wholesale charge

In order to provide a stable charging profile over the 6 years, the parties have agreed that the annual discount will be based on a 6-year annuity of the £140k, which is around £24k.

The wholesale charge in respect of the customer under Scottish Water's wholesale charges scheme is £120k per annum. Scottish Water proposes a 10 per cent reduction in this wholesale charge. This equates to approximately £12k per annum (in 2008-09), or 50 per cent of the savings generated by the departure, with Scottish Water to retain the remaining 50 per cent.

1.6 Proposed conditions to be imposed by Commission

The charge reduction should remain in place so long as the customer draws no water from Scottish Water's network between 6:30am and 7:30pm on business days. If the customer draws water between those hours at any time during a month the wholesale charge reduction will be cancelled for that month. The licensed provider will install data logging equipment on the meters to record the time when water is drawn. More details are in the correspondence at Appendix B.

1.7 Licensed provider's comments

New Water Retail agrees with the proposals and offers no additional comments.

EXAMPLE

2. Supporting information

2.1 Scottish Water's relevant supply system as currently configured

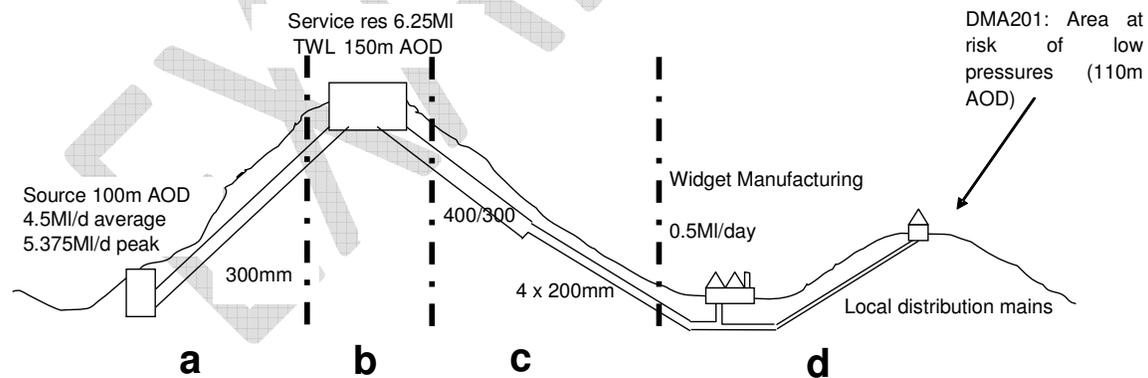
System description

Average annual demand in the system is 4.5MI/d. The customer accounts for more than 10 per cent of annual system demand.

The system is configured as follows:

- Supplied from a river source with an associated treatment plant¹.
- Treated water is pumped 50m uphill through a 300mm trunk main.
- Service reservoir provides sufficient storage for 33 hours of system average demand.
- Two 2-kilometre outlet mains (450mm and 300mm) transport the water from the service reservoir into the distribution system.
- The local network is connected to the outlet mains via four 200mm large distribution mains serving separate districts. The customer is fed from these mains via a 150mm link main, connecting two of the 200mm mains.
- The local network is currently operating at (or around) its economic level of leakage – all realisable savings from leakage reduction have therefore been made.

Figure 2.1: Simplified network diagram



¹ Coagulation/sedimentation/filtration.

2.2 Scottish Water's current investment plans for the system

Scottish Water's investment plans for the network are summarised in Table 2.1.

Table 2.1: Investment plan summary

Investment type	Summary
Capital maintenance (base and infrastructure renewals)	<ul style="list-style-type: none"> Treatment works was refurbished during Q&S2 and there are no substantive maintenance plans in either the 2006-10 or 2010-14 periods.
Supply/Demand	<ul style="list-style-type: none"> Background growth in demand is c1 per cent per year and this has resulted in parts of the network requiring upgrades to meet demand from existing users. There is no known development activity in the area.
Quality improvement	<ul style="list-style-type: none"> The network is currently performing to all water quality standards and there are no plans for quality investment in either the 2006-10 or 2010-14 periods.

Source, treatment and trunk mains

The source and treatment works (part 'a' of Figure 2.1) are able to cope with current peak demand requirements. There is sufficient licensed source yield and there is spare capacity in the high lift pumps at the treatment works and the existing 300mm trunk main to meet projected demands for 30 years. However, the treatment works will accommodate 5 years of projected growth in demand before requiring an upgrade. Scottish Water intends to extend the treatment works in 2014 by adding two filtration units.

Service reservoir

Scottish Water's policy is that the existing reservoir (part 'b' of Figure 2.1) should be sized to provide 32 hours² storage. Its existing storage of 33 hours will fail this criterion in just 2 years' time and Scottish Water plans to construct a new (linked) tank of 1.25MI capacity at the same top water level in 2010.

Outlet mains

The current outlet mains (part 'c' of Figure 2.1) are at capacity at current peak hour peak week and in need of imminent reinforcement. Preserving the current pressure head in the outlet mains will require construction of 2 kilometres of 250mm main linked back into the existing looped system.

Large distribution mains

The larger distribution mains (part 'd' of Figure 2.1) are also at capacity, and have been identified as the prime reason for the developing pressure problems in DMA 201. This requires imminent construction of a further 2 kilometres of 200mm main, directed towards DMA 201. Scottish Water has investigated the possibility of installing a small temporary

² 24 hours at peak-week average demand plus 8 hours of day use.

booster pump for the affected area but this option was not feasible, largely due to constraints on the local electricity loop.

2.3 Details of section 29E application

The customer at the premises has agreed to receive water only between 7.30pm and 6.30am. The customer will continue to operate during normal working hours, but its water supply will be ensured through provision of a storage tank.

This will not change the total demand on the system. However, it will reduce demand at daily peak times.

Arrangements have also been put in place to ensure that Scottish Water is able to confirm that water is only taken during the permitted hours. Correspondence that confirms this is included in Appendix B.

This arrangement will remain in place for 6 years, to 2013-14, and will be reviewed at the end of that period with a view to continuing the benefits to both parties under this section 29E departure at that date.

2.4 Impact of application on Scottish Water's systems

Overview

Scottish Water designs its system so that it can meet the peak demands likely to be placed upon it. The system is currently at capacity: it can meet peak demands today, but needs additional capacity to cater for future growth. By reducing the peak demand, the section 29E proposal will delay the investments Scottish Water needs to make to provide this additional capacity. It will also save some operational pumping costs.

Figures 2.2 and 2.3 show the average daily demand pattern before and after the proposed change in Widget Manufacturing's demand. The proposed section 29E departure would reduce the peak hour demand on an average day from c350 m³ to c290 m³. It would reduce the peak hour demand on the peak day from 365 m³ to 315 m³ (see Figures 2.4 and 2.5).

Figure 2.2: Average daily demand profile before section 29E departure (MI/d)

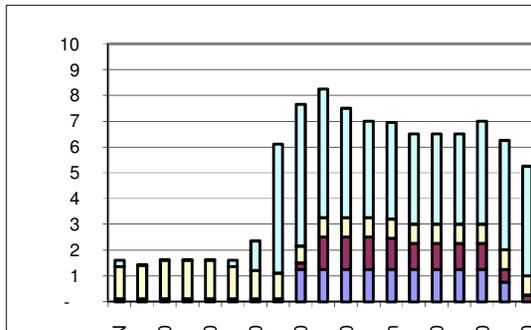


Figure 2.3: Average daily demand profile after section 29E departure (MI/d)

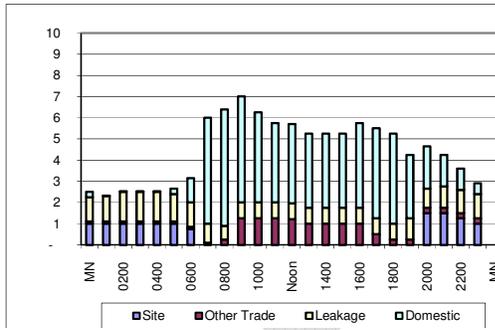


Figure 2.4: Peak daily demand profile before section 29E departure (MI/d)

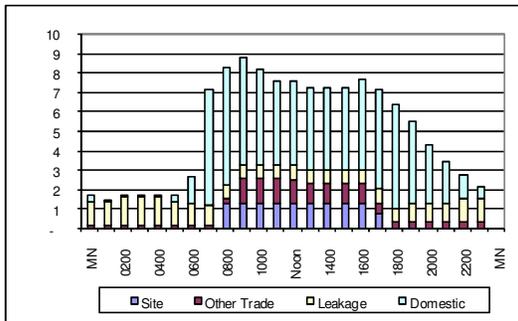
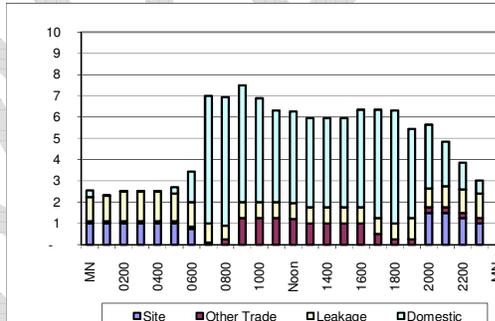


Figure 2.5: Peak daily demand profile after section 29E departure (MI/d)



Source, treatment and trunk mains

The planned section 29E departure will have no impact on the planned increase in capacity at the treatment works (part 'a' of Figure 2.1).

However, the release of spare capacity in the service reservoir permits operation of tariff advantage pumping. The resulting savings are summarised in Table 2.2.

Table 2.2: Electricity cost savings

Daily cost prior to section 29E departure	£80.27
Daily cost after section 29E departure	£76.11
Reduction in daily costs	£4.16
Therefore, annual cost saving	£1.5K

Service reservoir

Service reservoir (part 'b' of Figure 2.1) capacity is 6.25MI and in the absence of the departure, Scottish Water would construct an additional tank of 1.25MI capacity (20 year design horizon) in 2010. The cost for the 1.25MI tank is estimated as £0.5m (in 2010).

The section 29E departure reduces the day-time drawdown from the service reservoir as shown in Table 2.3. This allows Scottish Water to defer investment in the service reservoir.

Table 2.3: Reduction in drawdown from service reservoir

	Peak week, 24 hour average demand	Peak week, 8 daytime hours average demand	Required minimum service reservoir size	Time until next upgrade
Existing	5.4MI	0.8MI	6.2MI	2 years
Following S29E departure	5.4MI	0.4MI	5.8MI	9 years

Given the 1 per cent per year demand growth, the saving in reservoir drawdown allows Scottish Water to defer the next capacity increase by 7 years. The impact of this saving is summarised in Table 2.4.

Table 2.4: Deferral of service reservoir capacity investment

Present value of investment if carried out in 2010	£475k
Present value of investment if carried out in 2017	£405k
Present value of savings	£70k

Outlet mains

The 400/300mm outlet mains (part 'c' of Figure 2.1) are currently operating at design capacity. The current network configuration results in a hydraulic gradient of:

- 0.8/1000 at peak hour peak week design flow; and
- 0.6/1000 at average peak hour gradient.

Over a 20-year design horizon, peak hour demand is expected to increase by around 20 per cent. To operate at the same hydraulic gradient as the existing 400/300mm arrangement requires an additional 250mm, 2-kilometre main, which is estimated to cost £0.36 million.

The proposed demand shift reduced peak hour demand by 12½ per cent, which results in a 12½ year deferral. The impact of this saving is summarised in Table 2.5.

Table 2.5: Deferral of new outlet mains

Present value of investment if carried out in 2008	£360k
Present value of investment if carried out in 2021	£270k
Present value of savings	£90k

Large distribution mains

As with the outlet mains, the distribution mains (part 'd' of Figure 2.1) require to be upgraded in order to maintain pressures in DMA 201. The 1 per cent growth rate per year assumption suggests another 250mm main of 2.5 kilometres is required (to cater for 20 years' growth); this is estimated to cost £0.325m.

The effect of the section 29E departure is to delay the investment by 12½ years. The impact of this saving is summarised in Table 2.5.

Table 2.5: Deferral of new distribution mains

Present value of investment if carried out in 2008	£325k
Present value of investment if carried out in 2021	£185k
Present value of savings	£140k

Appendix A Network Configuration

Appendix B Warranties and Correspondence

Ref: 080827 Example Final
Last updated: 27/08/2008 11:22