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# Project Cartref Investment Case

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## Executive summary

### Driver for investment

Project Cartref (meaning “home” in Welsh) is about working with customers and using innovation to reduce wastage of water, either through leakage or inefficient use, and to save them money. We think this is the right thing to do in view of the long-term challenges of conserving our water resources against the background of climate change and a growing population. Our recent successes in reducing leakage (by 40% since 2000) has come about by predominantly tackling leakage in trunk mains and distribution networks, and by smarter network management. The returns on this approach are now diminishing, and to meet the expectations of customers and stakeholders to reduce consumption and leakage, while keeping bills down, we will need to try something different. Because of our non-shareholder model, and our very high levels of trust established with customers over recent years, there are opportunities to work more closely with customers for mutual benefit in ways that might not work in other companies.

Project Cartref is not just about reducing leakage and consumption. Project Cartref is about establishing a conversation with customers about how we can help them. We offer many services that we believe could be of interest to a great many more customers, but a meaningful face to face conversation is required to explain the benefits. These services include social tariffs, priority services registers, tap water quality and lower bills through reducing consumption. Helping customers to tackle leakage and wastage on the part of the network legally beyond the responsibility of water companies – beyond the stop tap – enables these conversations to take place. It’s a proactive and preventative approach that will save water, and save money, for this and future generations.

### The investment

The cost of our Project Cartref programme in AMP7 is £32.8m. This includes the costs of household water use surveys, house visits by specially trained staff, supply pipe replacement, and (non-billed) meter installations. We are presenting a separate investment case for Project Cartref as this is a unique innovation programme with multiple benefits that go beyond leakage. We have a separate leakage case for our challenging and innovative leakage reduction programmes on the network.

### Delivering for our customers

This work will support meeting the following customer promises in particular:



**Clean, safe drinking water for all:** Providing water that our customers can trust is clean and safe to drink.



**Put things right when they go wrong:** Reduce the need for reactive maintenance, deliver effective approaches to response and recovery



**A more sustainable and prosperous future for communities:** Improving the environment for our communities to enjoy.

## Delivering our strategic responses

In Welsh Water 2050, we set out our commitment to deliver 18 Strategic Responses over the long-term. This investment will contribute to the following Strategic Responses:

**Enough water for all:** By helping to reduce leakage and wasted water in the home, Project Cartref will help ensure we have enough water to supply our growing population particularly against the background of climate change.

**Towards a lead free Wales:** Project Cartref will help us to identify lead supply pipes eligible for replacement under our lead pipes replacement programme.

**Working with customers and communities:** Project Cartref will be an example of working customers and communities to co-create and co-deliver solutions.

**Supporting customers in vulnerable circumstances:** Project Cartref will be an example of using and sharing data appropriately, and providing a personalised service, to give appropriate and effective support to customers in vulnerable circumstances.

**Leading edge customer service.** Project Cartref will be part of our customer service culture, going beyond the minimum of what is required of a water company to offer multiple benefits to customers by using new approaches and innovative technology.

**Smart water system management:** Capitalising on technological advances such as remote sensing and automation will allow our system to become more resilient by mitigating problems before they have an impact on customers.

## Achieving our measures of success

For AMP7 we will measure our performance based on measures of success (MoS). This investment will contribute to achieving the following MoS targets for AMP7.

Measure of Success	End of AMP6 Position	End of Investment Position
<b>En4: Leakage (three year rolling average)</b>	171.0MI/d	148.2MI/d
<b>En5: Per capita consumption</b>	145l/p/d	138l/p/d
<b>Bl2: Vulnerable customers on social tariffs</b>	133,100	148,000
<b>Sv1: Customer Trust</b>	Upper quartile	Upper quartile
<b>Sv5: Vulnerable customers on priority services register</b>	52,000	102,900

# 1 Delivering our customer outcomes

## Need for investment

Project Cartref is an innovative programme responding to multiple needs and exploiting opportunities now emerging thanks to new technology. It builds on existing services and operational practices, but represents a bold and innovative new departure in the way it sets out to engage customers to deliver benefits for the company and customers.

In the build up to PR19 Ofwat set out its expectation that companies should be aiming to reduce leakage by at least 15%, or explain why this is not the case. We have continually reduced leakage over the past 20 years, including delivering the biggest percentage reduction in the industry in the past five years. This has been achieved by applying innovation, better use of analytics and metering, and smart network management, rather than simply replacing old mains pipes. In order to continue to reduce leakage in an affordable way, we now need to look beyond trunk mains and distribution network leakage.

We have always assumed a certain proportion of leakage to be occurring on customer owned supply pipes and in the home, but recent advances in leakage detection have led us to increase our estimate of this proportion. This means that in order to continue to make significant inroads towards our Welsh Water 2050 target of reducing leakage to 10%, we will need to tackle this element of leakage with greater focus.

Per capita consumption is closely related to leakage, particularly when considering how to reduce water use or misuse beyond the stop tap. Industry standard methodology for estimating leakage makes assumptions about household water use, particularly during the night. Thanks to the increasing availability of data on household water use, we are able to better identify where customers are using more water than would be expected, or at unusual times of the day and night. This may be due to in-home leakage, plumbing losses, or inefficient use of water (or of course, totally legitimate but unusual patterns of water use).

We can no longer ignore this information if we are to meet our challenging AMP7 targets for the reduction of per capita consumption. Project

Cartref enables us to talk to customers about how to reduce consumption, misuse or wastage of water in the home, thereby helping the environment and reducing water loss.

## Views of our customers and stakeholders

Project Cartref is a scheme with multiple benefits for customers. We have undertaken customer research to understand their views on some of these benefits, notably leakage, usage metering and per capita consumption. Leakage reduction remains a key priority for our customers and regulators alike. When leakage levels are revealed to customers, they are surprised and concerned that it should be allowed to continue. However, when the costs of leakage reduction are explained to them, they accept that there is a balance to be struck.

Project Cartref is a way of addressing the problem of leakage in a new way, without incurring the significant costs associated with 'traditional' trunk mains or distribution mains leakage detection and repair. As such it accords very much with customer views on leakage.

In terms of reducing per capita consumption, we know that increasing metering penetration can have a positive impact. However, it is clear from our customer research that customers are not in favour of compulsory metering, and we plan to continue with our current approach of extending metering only through meter installation on new properties and making available the option of metering to customers free of charge.

Project Cartref depends heavily on customer perceptions of Welsh Water. They will not respond positively to the kind of conversations we need to have with them, and the services we can offer, unless they have a favourable view of the company and trust us to do the right thing, in their homes.

Our Trust levels are now at 8.15/10 (CC Water survey 2017-18), and we have industry leading customer satisfaction results. Our Project Cartref trials show a promising number of customers being willing to engage positively in the project.

Our trials of Project Cartref have been positively received by customers.

## Benefit for our customers

As noted above, Project Cartref will have a number of different benefits for customers, at different levels. At the individual customer level, it could help them to save money on their water charges, avoid potentially expensive supply pipe repair or replacement costs, sign up to social tariffs or one of the services available to vulnerable customers. The replacement of a lead supply pipe could improve their health and future wellbeing, particularly children in the household. While all of these things could potentially happen independently without Project Cartref, Project Cartref will enable far more customers to receive these benefits.

For customers as a whole and the environment, Project Cartref will help to reduce total leakage and reduce per capita consumption thereby conserving water resources for future generations. It will also help to keep bills down, by achieving the above benefits efficiently.

Finally, Project Cartref offers the benefit of helping us to meet our target of inspecting 5% of new build domestic properties each year, in accordance with the Water Fittings regulations introduced in 1999.

## 2 What is Project Cartref?

### Introduction

Project Cartref (meaning ‘home’ in Welsh) is a new approach to engaging with customers in the delivery of services and performance improvements. The starting point and the main driver of this engagement is the need to reduce leakage and misuse or wastage of water on the ‘customer side’ of the network, that is, on customer supply pipes and in the home. We will offer to fix ‘customer side’ leaks and other sources of water wastage such as leaking taps and toilets – at no cost to customers.

However, engaging customers on the issue of supply pipe leakage, plumbing losses and water efficiency also gives us the opportunity to talk to them about wider service offerings that can help customers to save money and improve health and wellbeing.

### Background – why now?

During AMP6 we have invested significantly in ‘smart’ network monitoring, and trialled new technology that enables us to identify smaller ‘low flow’ leaks on customer properties. We now believe that around 40MI/d is lost on the ‘customer side’ of the network (compared to around 100MI/d on the distribution network and 30MI/d on trunk mains) – a significantly higher proportion than previously estimated.

While water companies have powers to insist that customers address leaks on their properties, they are often unwilling to do so, and in many cases the costs of such repairs are unaffordable. While we do offer a free supply pipe repair policy, this has limitations and only addresses part of the issue. The legal framework, and the default approach, pits companies against customers, and is not in line with our ‘customer led success’ strategy.

Project Cartref takes a different approach, identifying customers who have private leakage and then offering an enhanced service to repair leaks including plumbing losses, while offering guidance and support in other areas. It involves Welsh Water staff engaging customers in new ways – face to face and in the home.

### Trials

Project Cartref was launched as a trial in April 2018. Pilot areas have been focused around the Swansea area. The principal challenge around this new approach has proved to be customers’ understandable suspicion of a company offering something ‘for free’, while giving access to the home. We have learned from this experience and refined our approach and communication materials accordingly. We are now finding that on the whole customers are willing to respond positively to an approach which takes as its starting point the customers’ water use and the possibility of saving money while helping the environment.

To-date we have conducted full Project Cartref surveys of some 2,000 properties in our trial, in addition to 4,000 properties surveyed with sensor technology, to understand demand beyond the stop tap.

### How will it work?

We start with information from our network monitoring on the patterns of water use within District Metered Areas (DMAs). This allows us to focus on those DMAs that appear to have the greatest potential for reductions in customer side leakage and consumption.

We then deploy Stop.Watch devices to measure flows into individual households to gather data on consumption volumes and patterns of water use. The Stop.Watch devices are an innovation which permit measurement of flows at much lower levels than is possible through a traditional meter, and they can be easily and cheaply installed on a temporary basis, then reused elsewhere.

Armed with this information, we are able to approach households with above average flows, to talk to them about potential solutions to address any leaks, plumbing losses, and inefficient use of water. In the latter case, and where customers decline an appointment, we can offer to install non-billed meters to provide information to help customers understand their consumption patterns. It can also enable them to make an informed decision as to whether in the future they wish to move onto a metered bill.

This requires specially trained teams, with the skills and information needed to have productive

and non-intrusive conversations with customers about water use and pipe ownership, as well completing the repair and installation of water efficiency products on the first visit. If the initial conversation goes well, and depending on the situation, we are able where relevant to offer information about other services we offer, such as the Priority Services Register and the HelpU social tariffs, as well as wider water efficiency measures and metering options.



### 3 Customer and stakeholder support

#### Customer views

We have not engaged in specific customer research on Project Cartref itself. However, there is a wealth of customer research on attitudes to leakage, and on how to best to conserve water resources.

We believe that Project Cartref is closely aligned with these views. It allows us to bring down leakage affordably, without costly engineering interventions such as mains replacement or by allocating vastly more manpower to leakage detection and fix in the distribution network. It enables us to bring down per capita consumption without relying on unpopular compulsory metering.

Our trials of Project Cartref have helped us to refine our approach, such that customers are now responding overwhelmingly positively to the offer to solve issues within their homes. In our trials 60% of households identified as a 'point of interest' in terms of the water usage now result positively in the customer agreeing to make an appointment to discuss solutions. We are continuing to carefully monitor customer feedback following the appointments.

#### Stakeholder views

Our per capita consumption and leakage targets are of priority interest to the Welsh Government and our environmental regulator, Natural Resources Wales (NRW). The Water Strategy for Wales includes a commitment to 'Improve the Way we Plan and Manage our Water Services', which includes reducing leakage. The Government's Strategic Priorities and Objectives Statement to Ofwat has Innovation as a priority, summarised as "Ofwat should incentivise companies to seek new ways of delivering services for customers and the environment more efficiently, on the basis of sound evidence and research". Project Cartref fits precisely with this description of innovation. Under the priority of "Stronger Customer Focus" it also says that "Ofwat should also encourage companies to communicate effectively with their customers and increase customer involvement where customer behaviour can help reduce operating problems and increase efficiency".

Again, this is a perfect description of what Project Cartref seeks to achieve.

The independent organisation Waterwise has reviewed our long-term aspiration of reducing per capita consumption to below 100 litres per person per day by utilising the Cartref approach. They have strongly endorsed Project Cartref as a practical and innovative approach.

Finally, we have discussed our approach to leakage in general and Project Cartref in particular with our Customer Challenge Group (CCG). They are particularly supportive of this as an effort to engage customers in service provision and to achieve ambitious reductions in per capita consumption and leakage.

## 4 Outputs and costs for AMP7

### Planned outputs

We are committed to the following results from Project Cartref in AMP7

- Surveying over 700,000 properties regionally with our Stop.Watch method of identifying Customers with specific issues relating to private leakage or undue consumption
- Visiting over 36,000 properties to undertake repairs or supply pipe replacement, and providing advice and guidance to customers around the benefits of using water wisely and repairing leaks
- Repairing 29,000 leaks on or inside customers properties and installing over 90,000 water efficiency devices
- Inspecting all properties in regard to Water Quality and Public Health removing any risk of contamination of customers water supply caused by incorrectly installed water appliances or poor plumbing standards
- Saving 26.5Ml of water per day through leakage and consumption reductions combined.

### Cost calculation

Our proposed costs for the AMP7 scheme have been built bottom-up from the unit costs experienced in our pilot scheme. A 25% efficiency has been applied to the initial survey cost due projected advancements in both the technology and process, as well as a returns to scale effect. The other rates are drawn from large framework contracts where efficiencies have already been achieved.

Items	Unit Cost
Initial survey	£31.50
Scheduling	£10
Home appointments	£65
Internal products & repair	£75
Supply pipe repairs	£300
Meter installation	£200

We have also estimated based on our pilot scheme the conversion rate from identified 'points of interest' (households where we would like to engage customers in a conversation about water usage) to appointments, and then the proportion of appointments resulting in leakage repair, new meters etc. This is shown in the table below.

Variables	Unit
Surveys converted to 'points of interest'	10%
Appointment conversion from points of interest	50%
Appointments with a leak	80%
Appointments supply pipe repair	8%
Points of interest requiring meter	25%
Total Leakage Reduction (Mld)	14.00
Estimated consumption reduction (Mld)	12.50

Leakage reduction is based on an assumption of the leakage volume saved per repair. On consumption reduction, we estimate that around 4 litres of the total per capita consumption saving of 7 litres per head per day will come from Project Cartref.

This results in the following total costs to achieve our 26.5Ml/day total water saving from Project Cartref.:

Total Programme	Properties	Cost
Number of properties surveyed	730,000	£22,969,000
Number of 'points of interest'	73,000	£729,000
Number of appointments	36,500	£2,370,000
Number of leaks repaired	29,000	£2,188,000
Number of supply pipe repairs	2,900	£875,000
Number meter installations	18,000	£3,646,000
<b>Total Cost</b>		<b>£32,776,000</b>
<b>Cost per Mld saved</b>		<b>£1,236,000</b>