University of Strathclyde Business School

Fraser of Allander Institute

The affordability of water and sewerage charges in Scotland

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Fraser of Allander Institute

Contents

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Preface

The analysis in this report has been conducted by the Fraser of Allander Institute (FAI) at the University of Strathclyde. The FAI is a leading academic research centre focussed on the Scottish economy.

The report was commissioned by Citizens Advice Scotland's Consumer Futures Unit, with the technical analysis and writing of the results undertaken independently by the FAI.

The FAI is committed to informing and encouraging public debate through the provision of the highest quality analytical advice and analysis. We are therefore happy to respond to requests for factual advice and analysis. Any technical errors or omissions are those of the FAI.

Acknowledgements

The Fraser of Allander gratefully acknowledges the support of Citizens Advice Scotland in helping to make this study possible.

We also thank the UK Data Service and the Department for Work and Pensions for the use of data.

Executive Summary

The affordability of water and sewerage in Scotland

Background and context

Water and sewerage charges are an expense for Scottish consumers. The average annual combined household charge was just under £350 in 2015/16.

Water and sewerage bills are determined by council tax band, with higher banded properties paying progressively more than lower banded properties. The responsibility for billing and collecting water charges rests with local authorities, which collect water and sewerage charges alongside council tax and return to Scottish Water a share of the amount collected.

Some discounts, exemptions and reductions are available for water and sewerage bills. For example, there is a 25% discount for single people and those in receipt of council tax reduction can receive a reduction of up to 25%.

The Scottish Government has established a Long Term Charging Group (LTCG) to review charging policy for the (publicly owned) water industry.

The purpose of this report is to identify the characteristics of households in Scotland that pay the most for water and sewerage charges as a proportion of income, and to consider options for targeting support at those households. It is anticipated that the report will inform the deliberations of the LTCG.

Methodology

In this report, the affordability of water and sewerage charges for individual households is measured by considering a household's water and sewerage bill as a proportion of the household's net after housing costs income. Following previous research, households facing water and sewerage affordability issues are presumed to be those which spend more than 3% or more than 5% of net household income on water and sewerage.

The analysis in this report is based on two data sources: the Family Resources Survey (FRS) and the Households Below Average Income (HBAI) dataset, which is itself derived from the FRS. The FRS is a representative survey of around 3,000 households annually in Scotland, administered by the Department for Work and Pensions. The survey includes questions on income (by source), household composition and tenure, benefit receipt, council tax band, housing costs, and crucially for this study, information on water and sewerage bills. The most recent data available relates to 2015/16, although this study uses data from three years: 2013/14, 2014/15 and 2015/16, to enhance the robustness of analysis.

The affordability of water and sewerage charges by household

Around 15% of Scottish households (of whom there are approximately 2.4 million) were paying over 3% of their disposable income for water and sewerage in 2015/16, whilst 6% of Scottish households were paying more than 5% of their disposable income for water and sewerage.

The strongest predictor of a household spending more than 3% or 5% of its income on water and sewerage is income. 84% of the poorest tenth of Scottish households spend more than 3% of income on water and sewerage, and 33% of households in the second poorest decile do. Households in the top half of the income distribution are virtually guaranteed not to spend more than 3% of income on water and sewerage. The Council Tax band of a household is not a good predictor of whether a household spends more than 3% of income on water and sewerage. This is because although water and sewerage charges rise with council

tax band, household income is only poorly correlated with council tax band.

Single households are more likely to spend more than 3% or 5% of income on water and sewerage. Although single person households are entitled to a 25% reduction on their bill, their incomes tend to be lower on average than the incomes of non-single person households.

Pensioner households are marginally less likely to be spending above 3% of income on water and sewerage than non-pensioner households. Owner occupiers are less likely to spend over 3% of income on water and sewerage than renters.

Those spending more than 3% of income on water and sewerage are more likely to be in receipt of a means tested working age benefit than the population as a whole, and are more likely to be workless households.

Policy options

The cost of discounts required to ensure that no household spent more than 3% of its net AHC income on water and sewerage charges would have been £34 million in 2015/16.

In reality, it will not be possible to identify exactly which households pay more than 3% or 5% of their net after housing costs income on water and sewerage charges. Instead, any system of reliefs or discounts must make simplifying assumptions – based on proxy indicators – about households' need for support with their bills.

Chapter 5 considers some of the policy options available for reducing the prevalence of water and sewerage affordability issues (i.e. reducing the proportion of households spending more than 3% of income on water and sewerage).

Options considered include:

1. changes to the existing council tax band-based set of charges and discounts;
2. the introduction of some form of discretionary industry support based on specific eligibility criteria;
3. and the provision of some form of means tested social security benefit.

In general there is a trade-off between administrative complexity and effectiveness. For example, extending the Single Person discount to 50% would be administratively simple, and would reduce the percentage of households spending more than 3% of net after housing costs income on water and sewerage from 15% to 9%. But many Single Person households would benefit from lower bills who are not currently above the 3% income threshold. Providing full relief from water and sewerage charges to all households entitled to Council Tax Reduction would cost an estimated £85 million but only reduce the proportion of households spending over 3% of income on water and sewerage from 15% to 11% (a large number of households currently above the threshold are not in receipt of CTR, and so do not benefit from the policy).

Provision of a system of reliefs on application would in theory provide a cost-effective way of reducing the proportion of households facing affordability issues, if the criteria were appropriately designed. But the costs of administering a scheme are likely to be prohibitive. The same is true of the option to create a new, specific benefit.

The Scottish Government could, under its Scotland Act 2016 powers, top-up one or more reserved low-income benefits, such as Universal Credit. But this would be a relatively blunt way to address affordability issues, as individual UC claimants face very different affordability constraints depending on their income, housing costs and council tax band.

Summary

The composition of households spending more than 3% of net after housing costs income on water and sewerage is diverse. The group includes working age and pensioner households, those in receipt of means tested benefits and those not in receipt of such benefits, households across all council tax bands, and across all tenure types.

The main reason why the group of households spending more than 3% (or 5%) of net after housing costs income on water and sewerage is so diverse relates to the way in which charges are billed. Charges are related to council tax band, with those in Band D paying one and a half times as much as those in Band A, whilst those in Band G pay two thirds more than those in Band D.

Whilst the scale of this increase in charge with council tax band is broadly proportionate with median income by band (Band D median income is almost twice as much as Band A median income, whilst Band G median income is 80% higher than Band D), the variance of income within each council tax band is large. Thus there are households in lower banded properties with relatively high incomes, and households in higher banded properties with relatively low incomes.

The main factor determining whether or not a household faces water and sewerage affordability issues is income: the lower the income, the more likely the property is to be spending more than 3% of income on water and sewerage.

From an administrative perspective, basing the water and sewerage billing system on the council tax billing system makes sense. Local authorities have access to all the information they require to set each household's bill (council tax band, status discount eligibility and council tax reduction eligibility), and a well-established system in place for collecting liabilities.

But by basing bills on council tax band, it is not clear what the principle is behind the billing structure, other than continuing to follow a legacy charging structure. In designing a billing system, policy makers should be more explicit about whether the principle for charging for water and sewerage is that bills should be proportionate to use (with some relief for those with limited ability to pay); or proportionate to income; or indeed to something else.

Introduction

Chapter 1

The Fraser of Allander Institute (FAI) was commissioned by Citizens Advice Scotland (CAS) in July 2017 to undertake research into the affordability of water and sewerage charges in Scotland.

Water and sewerage charges are a significant expense for Scottish consumers. The average annual household charge was just under £350 in 2015/16. Water and sewerage bills are determined by council tax band, with higher banded properties paying progressively more than lower banded properties. Unlike Council Tax however, the charging structure is determined nationally, and there is no local variation. Some discounts, exemptions and reductions are available. For example, there is a 25% discount for single people, and those in receipt of council tax reduction can receive a reduction of up to 25%. The charging structure is discussed in more detail in Chapter 2.

However, as explained in Chapter 2, reductions for water and sewerage charges are in general not as comprehensive as they are for council tax. Given this, there is some concern that water and sewerage charges place a particular financial burden on some households. As a charge, households cannot reduce their bill by 'using less'.

Scottish Water is publicly owned and the Water Industry Commission for Scotland (WICS) sets prices for water and sewerage services that deliver Ministers' objectives for the water industry at the lowest reasonable overall cost. The Scottish Government has established a Long Term Charging Group (LTCG) to review charging policy for the water industry, of which the Consumer Futures Unit is a member. The Group's work will inform policy on water and sewerage charges and charging principles. The LTCG has identified the need for further information on which consumer groups are most likely to struggle to pay for water and sewerage charges, and the cost of options to the industry. This research is intended to inform the deliberations of the LTCG, and to provide evidence on which future charging principles can be based. The purpose and objectives of the research were set out in the invitation to tender issued by the Consumer Futures Unit at Citizens Advice Scotland. The invitation to tender specified that the research should follow the methodology used in recent work by OFWAT for England and Wales[1].

The primary research question is identified as:

- How can support be effectively targeted towards households which are most at risk of being unable to afford their water and sewerage charges?

In order to address this question, the invitation to tender identified the need to address the following questions:

- How many households pay over 3% / 5% of net after housing costs income for water and sewerage?
- What would the cost be of reducing this group's cost of water and sewerage to below 3% of their weekly income after housing costs, and how could this support be most effectively implemented?
- What are the characteristics of households that pay most for water and sewerage as a proportion of net after housing costs income?

The remainder of the report is structured as follows:

- Chapter 2 describes how water and sewerage bills in Scotland are set, and how they have evolved over time. It summarises previous research into water and sewerage indebtedness and affordability.
- Chapter 3 provides methodological detail on the data sources used and the definitions applied.
- Chapter 4 presents findings on how water and sewerage charges as a proportion of income vary by household characteristic and type.
- Chapter 5 considers some possible policy options to alleviate water and sewerage affordability.
- Chapter 6 concludes.

1 Ofwat (2015): http://www.ofwat.gov.uk/wp-content/uploads/2015/12/pap_tec20151201affordabilitysupp.pdf

Background and context

Chapter 2

2.1 Water and Sewerage charges

Every household served by Scottish Water has to pay for the supply of water and, when connected to the sewerage system, for the collection and treatment of waste water.

Table 2.1: Water and sewerage charges 2017/18

Council tax band	Ratio to Band D	Water supply*	Waste water collection*	Combined services
A	0.667	£132.84	£154.20	£287.04
B	0.778	£154.98	£179.90	£334.88
C	0.889	£177.12	£205.60	£382.72
D	1.000	£199.26	£231.30	£430.56
E	1.222	£243.54	£282.70	£526.24
F	1.444	£287.82	£334.10	£621.92
G	1.667	£332.10	£385.50	£717.60
H	2.000	£398.52	£462.60	£861.12

* Domestic properties with a private water supply are not liable for the water charge and domestic properties which are not connected to the public sewer are not liable for waste water charges

Source: *Scottish Water website*

Unlike in England and Wales, domestic water users in Scotland tend to be unmetered and are not billed on the basis of water use[2]. Instead, household charges for water and sewerage are determined by the Council Tax band a household falls within. Water and sewerage charges are levied on the basis of full cost recovery - with all costs associated with providing water and sewerage services recovered from customers' charges.

The charges for water and sewerage in 2017/18 are shown in Table 2.1. In this year, the combined water and sewerage charge for a Band D property is £430.56. The charges for other bands are calculated relative to the Band D charge, using the same Council Tax band ratios that applied until April 2017[3].

While council tax charges can vary by local authority, water and sewerage charges by council tax band have been identical across Scottish local authorities from 2004/05 onwards.

2.2 Discounts, exemptions and reductions

Not all households are eligible for the full water and sewerage combined charge in Table 2.1. A number of status discounts, exemptions and reductions are available.

Status discounts

Status discounts are discounts on water charges that are dependent on the number of people living within the property that are eligible to pay Council Tax. There are two main types of status discount:

- Single occupancy discount: where a household consists of only one adult eligible for council tax, that household receives a 25% discount on its water and sewerage bill.

- Disregard occupancy discount: Where a household consists entirely of individuals who are exempt from paying Council Tax (this group includes long-term hospital patients, student nurses, prisoners, and members of religious communities), the household receives a 50% discount on its water and sewerage bill.

2 Less than 500 domestic properties in Scotland have metered water usage

3 The ratios for Council Tax were changed in April 2017 so that Bands E-H pay relatively more council tax than in previous years. However, these changes to council tax ratios were not applied to water and sewerage charges.

Exemptions

Some households are fully exempted from water and sewerage charges. These include households occupied solely by students, solely occupied by adults that are severely mentally impaired, and short-term vacant households.

Reductions

Some households have their water and sewerage charge reduced.

- Council tax reduction: households that receive council tax reduction (previously known as Council Tax Benefit) automatically receive a reduction of up to 25 per cent from their water and wastewater bill through the Water Charges Reduction Scheme, unless the household is already receiving the full 25 per cent single-occupancy reduction. The amount of reduction available is proportionate to the amount of council tax reduction (CTR) received. Full entitlement to CTR attracts the full 25 per cent water and sewerage discount. But if a household receives a 50% reduction on their council tax bill, they receive 50% of the maximum discount available on their water and sewerage bill (i.e. 50% x 25% = 12.5%).

- Disabled banding reduction: properties that have been adapted to meet the needs of a disabled person can qualify for a reduction. The reduction works by charging the household the charge for a property one band below that at which the property is currently valued.

The reductions and reliefs available for water and sewerage charges are therefore less generous than those available for council tax (in that households receiving full Council Tax Reduction obtain only a 25% reduction on their water and sewerage bill). We return to a discussion of policy options in Chapter 5.

2.3 Billing: the role of local government

The responsibility for billing and collecting water charges does not rest with Scottish Water but with local authorities.

Local authorities collect water charges together with council tax. The notification of charges received by households specifies the breakdown of the bill between these two types of charges. They return to Scottish Water a share of the amount collected on a pro-rata basis of all the charges billed[4].

Scottish Water makes payments to local authorities in exchange for them assuming the function of billing and collecting charges. Billing and collection of water charges by local authorities is seen to be efficient (as local authorities hold information on council tax band of properties, and have systems in place for billing and recovery). However, the arrangement does have consequences for consumers.

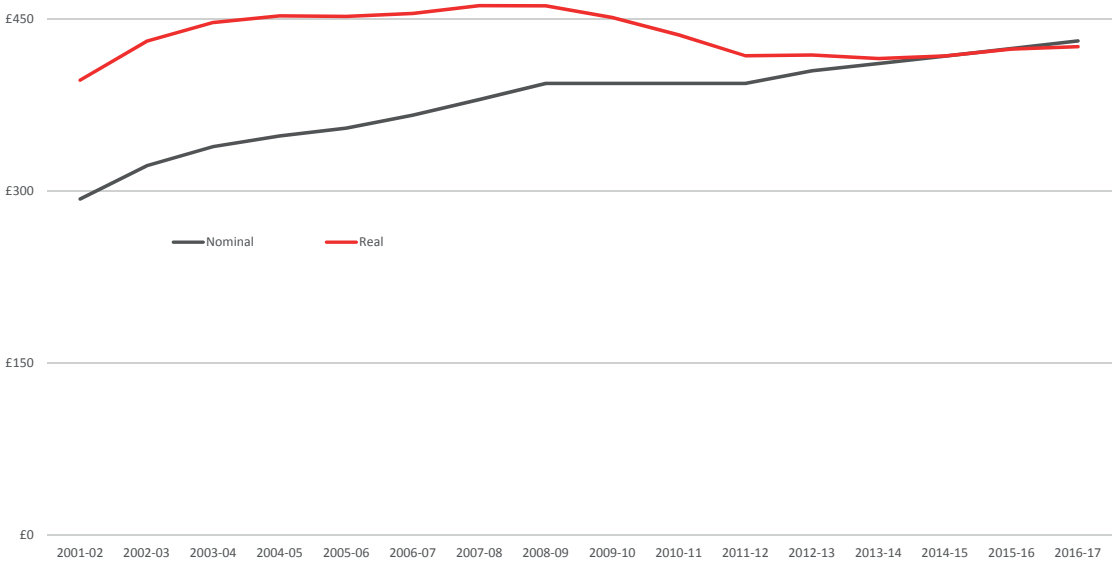
Consumers in Scotland receive one annual notification (or Demand notice) containing two bills, one for council tax and one for water. In other words, customers receive one invoice containing two bills.But, as discussed above, the system of reductions is different for water and sewerage compared to council tax.

Recent research provides evidence that some consumers who receive a 100% reduction for council tax assume that the same discount applies to water, do not pay and subsequently find themselves in debt[5]. This confusion around billing is believed to be one reason why indebtedness for water charges is relatively high.

4 The amount returned by local authorities to Scottish Water is calculated through application of the 'ABCD formula'. This formula applies a percentage to all monies collected for council taxes and water charges, irrespective of their intended destination, as if they were a single payment. Because some households are liable for water charges only (when in receipt of full council tax benefits), the ABCD formula may create distortion between what local authorities effectively collect for water and what they pay to Scottish Water.

5 Citizens Advice Scotland (2015) 'Sink or Swim: consumer experiences of water and sewerage debt'

Chart 2.1 Annual Band D charge for water and sewerage in Scotland



***Source**: Water Industry Commission for Scotland*

2.4 Water and sewerage charges over time

Chart 2.1 sets out the evolution of water and sewerage charges since 2001/02. Scottish Water was created in 2002 and bills were standardised across local authorities from 2004/05 onwards. Water and sewerage charges are lower in real terms[6] (Chart 2.1) than they were in 2004/05.

Water and sewerage bills have been increasing much less quickly than in England and Wales[7]. The fact that water and sewerage bills have remained broadly constant in real terms also contrasts with the relatively faster increases in energy bills that have been observed during this time[8].

The Water Industry Commission for Scotland (WICS) sets prices for water and sewerage services that deliver Ministers' objectives for the water industry at the lowest reasonable overall cost. The price setting process takes place every six years through the Strategic Review of Charges process. The charge caps for the regulatory period 2015-2021 were published in November 2014[9].

These specified:

- For the three-year period from 2015-16 to 2017-18, Scottish Water's charges will increase by 1.6% per year in nominal terms (in other words, irrespective of inflation).

- For the subsequent three-year period 2018-19 to 2020-21, prices will rise at CPI minus 0.3%, subject to the overall requirement for prices over the six-year period to rise by no more than CPI minus 1.8%.

6 Charges expressed in real terms have been adjusted for inflation, whereas charges in nominal terms have not. So Chart 2.1 for example shows that whilst in nominal terms bills have been increasing, this increase in bills has in general been slower than the general increase in prices (i.e. inflation); hence in 'real terms' bills have actually fallen since 2008/09.
7 Since 2002, bills have been increasing around 2.3% a year in Scotland compared to around 5.2% per year in England and Wales. Source: Consumer Futures (2014) 'Keeping your head above water' (Section 3.1.2)
8 Consumer Futures (2014) 'Keeping your head above water' (Figure 12)
9 Strategic Review of Charges 2014-2021, WICS http://www.watercommission.co.uk/UserFiles/Documents/Final%20Determination%20-%20Final.pdf

Methodology

Chapter 3

3.1 Defining and measuring affordability of water and sewerage charges

Affordability is measured by the proportion of household income spent on water and sewerage charges. Household expenditure on water and sewerage charges is measured after any reliefs have been applied. Income is measured as net household income after benefits received, and after payment of direct taxes.

In our main analysis, household income is measured after housing costs, and is unequivalised. Box 3.1 discusses housing costs and equivalisation in more detail.

Following previous research, those households facing water and sewerage affordability issues are presumed to be those which spend more than 3% or more than 5% of net household income on water and sewerage. The 3% and 5% thresholds were originally identified in research by DEFRA[10]. DEFRA chose 3% as an indicator of water affordability on the basis that household median spend on water was less than 1.5%, and took the view that spending on water above twice the median would be indicative of an affordability constraint. The 3% and 5% targets were subsequently adopted by OFWAT[11], who argued that 'affordability risks arise when a household spends more than 3%, or more than 5%, of their disposable income on water and sewerage bills'.

There is currently no official definition of 'water affordability', however the 3% of household weekly income after housing costs has become the commonly accepted definition and it is the definition we adopt in this report. The 5% threshold can be thought of as representing more acute affordability constraints.

It is important to note however that there is little evidence as to whether those households which face the most significant affordability issues are more likely to be those that fall into arrears with their payments.

This lack of evidence arises because the surveys which collate evidence on household income and bills tend not to contain information on debt; whilst the organisations who hold information on individual household debt do not observe household income.

3.2 The data sources

The analysis is based on two data sources: the Households Below Average Income (HBAI)[12] dataset and the Family Resources Survey (FRS)[13]. The most recently available FRS/HBAI data is for 2015/16.

The FRS is a representative survey of around 3,000 households annually in Scotland, administered by the Department for Work and Pensions. The survey includes questions on income (by source), household composition and tenure, benefit receipt, council tax band, housing costs, and crucially for this study, information on water and sewerage bills[14].

Despite its name, the HBAI covers all households in Scotland and is derived from the FRS.

10 Fitch and Price (2002), Water Poverty in England and Wales, http://www.cieh.org/library/Knowledge/Environmental_protection/waterpoverty.pdf
11 OFWAT (2010) Affordability and debt 2009-10 – current evidence
12 Department for Work and Pensions. (2017). Households Below Average Income, 1994/95-2015/16. [data collection]. 10th Edition. UK Data Service. SN: 5828, http://doi.org/10.5255/UKDA-SN-5828-8
13 Department for Work and Pensions, National Centre for Social Research, Office for National Statistics. Social and Vital Statistics Division. (2017). Family Resources Survey, 2015-2016. [data collection]. UK Data Service. SN: 8171, http://doi.org/10.5255/UKDA-SN-8171-1
14 The FRS contains a dataset with information about water debt recovered through benefits but there are only a handful of cases in the Scottish sample so analysis of water debt was not possible

Box 3.1 Measuring income: housing costs and equivalisation

The measure of income used in this report is net income at household level. But two further questions remain: should income be measured before housing costs or after housing costs? And should it be equivalised or unequivalised?

Housing costs

The argument for measuring income after housing costs is straightforward: housing costs represent a significant cost for most households, and thus significantly reduces disposable household income. Measuring the affordability of water and sewerage charges before housing costs had been considered might therefore provide an overly optimistic picture about the extent to which water and sewerage costs were acting as a constraint on household disposable income.

On the other hand, the argument against measuring income after housing costs is that housing costs to an extent are a choice. But more generally, it is important to note that whether income is measured before or after housing costs will influence the analysis of which households are more or less likely to face affordability constraints. Households with comparatively low incomes but also comparatively low housing costs (e.g. retired households who have paid off a mortgage) are less likely to be deemed as facing an affordability constraint if income is measured after housing costs.

The analysis in this report follows that in previous reports by focussing on income measured after housing costs. 'Housing costs' normally includes the costs associated with water and sewerage charges. However, as discussed later in this chapter, our analysis removes water and sewerage charges from the definition of housing costs in order to look at the implications for households of these costs specifically.

Equivalisation

Much analysis of income at household level tends to use measures of equivalised income. A given household income will tend to secure a higher standard of living if the household consists of one adult than if the household consists of two or more adults and one or more children. For example, an adult living alone on a weekly budget of £400 is likely to be more able to afford goods and services than a family of four on the same weekly budget.

Equivalisation adjusts household income to reflect the different financial needs of different household types, effectively reducing the incomes of larger households relative to those of smaller households.

To illustrate the effects of equivalisation, consider the following example. There are two households, each with income of £350 (per week) and a water and sewerage bill of £7. On an unequivalised basis, both households are spending 2% of income on water and sewerage. But imagine that one of these households consists of two adults. The process of equivalisation takes account of the fact that the £350 income of the two-adult household has to 'go further' than it does for the other household (which we assume is a single-person household). Equivalising the income of the couple household involves dividing it by 1.5, so it becomes £267 (£350/1.5). (There are a number of different 'equivalisation scales'. The one we use here is the so-called 'OECD-modified' equivalence scale. This scale assigns a value of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child.) This household thus spends 3% of equivalised income on water and sewerage (£7/£267).

In its previous work looking at the affordability of water and sewerage charges in England, OFWAT used unequivalised income when measuring affordability. OFWAT argued that water bills are likely to be correlated with household size either explicitly (because of metered charges) or implicitly (based of the rateable value, i.e. council tax band of the property). OFWAT argued therefore that "using equivalised income would result in adjusting for occupancy in our 'income', but not in our 'bills'", and that "using equivalised incomes would have the effect of increasing affordability risks for large occupancy households".

In other words, the OFWAT argument is that, because larger households tend to have larger bills, there is no point in adjusting the incomes of these households without adjusting the bills correspondingly. Adjusting income only would bias the results to suggest that larger households face greater affordability constraints than they actually do. The alternative argument however is to argue that water and sewerage bills should be compared to equivalised income, as equivalised income is a better measure of how constrained a household budget is in relation to that households' composition.

The analysis in this report follows the OFWAT methodology and measures affordability using unequivalised income. Indeed, the data suggests that there is a strong, statistically significant correlation between household composition and water bills in Scotland, reiterating the point made by OFWAT (single person households are eligible for a 25% discount, and bills in Scotland rise according to council tax band, where band is a proxy for household size).

At the same time however, although the relationship between household size and water bill is strong, there is a lot of variation around this average relationship. Some single person households have relatively large bills, and some larger households have relatively low bills.

It should therefore be remembered that the choice of equivalised or unequivalised income will influence results. Using unequivalised income will imply that the affordability issue is more constraining for single person households relative to larger households; using equivalised income will tend to imply that the affordability issue is more constraining for larger relative to single person households.

Our results focus on unequivalised income, but we include some sensitivity analysis where appropriate.

The principle advantage of using HBAI over the FRS is two-fold. First, it aggregates some of the very detailed information in the FRS into more manageable variables. Second, it adjusts the survey weights to account for the fact that the FRS is likely to under-sample some high income households. It does this by augmenting the FRS results with the results of HMRC's Survey of Personal Incomes, a detailed survey of taxpayer returns.

In many respects the most challenging aspect of this research was to create the dataset for analysis as the FRS consists of a number of different datasets. These include for example the 'household' dataset, which contains key household-level information such as council tax band and tenure; and the 'benefit' dataset which records detailed information about benefits received.

The relevant variables from each dataset were extracted and merged with the HBAI dataset. Furthermore, data from the last three years of FRS/HBAI surveys was combined in order to maximise sample size. This is discussed further below.

3.3 Calculating water and sewerage expenditure as a percentage of income

HBAI contains variables for net disposable[15] household income[16] before housing costs (BHC) and after housing costs (AHC). The after housing costs household income variables in HBAI deduct rent (gross of housing benefit), mortgage interest payments, structural insurance premiums (for owner occupiers), and ground rent and service charges. The after housing costs variables also deduct water and sewerage charges.

In order to calculate the proportion of AHC income spent on water and sewerage, after housing costs net household income has to be recalculated in such a way that water and sewerage charges are not deducted from AHC income (otherwise we overestimate the proportion of households spending more than 3%/5% of income on water and sewerage, as the numerator (water and sewerage costs) has already been deducted from the denominator).

To recalculate AHC income, the starting point is the variable ESNINCHH which is the net before housing costs income for households in the sample. The next stage is to calculate each households' housing costs excluding water and sewerage costs. This involves deducting household water and sewerage costs (CWATHH) from housing costs (EHCOST). CWATHH[17] reflects households water charges after any reductions or reliefs.

This revised estimate of housing costs is then deducted from ESNINCHH (before housing cost income) to produce an adjusted after housing cost income variable that excludes water and sewerage charges. This was deflated by the in-year deflator (AHCDEF); this controls for the fact that a household interviewed at the start of the year in question may appear to have a lower income than a household interviewed at the end of the year in question.

15 Disposable net income is household income net of: income tax payments; National Insurance contributions; domestic rates / council tax; contributions to occupational pension schemes (including all additional voluntary contributions (AVCs) to occupational pension schemes, and any contributions to stakeholder and personal pensions); all maintenance and child support payments, which are deducted from the income of the person making the payment; parental contributions to students living away from home; student loan repayments.

16 Household income includes the following main components: net earnings from employment; profit or loss from self-employment (losses are treated as a negative income); all Social Security benefits (including Housing Benefit, Social Fund, maternity, funeral and community care grants, but excluding Social Fund loans) and Tax Credits; income from occupational and private pensions; investment income; maintenance payments; income from educational grants and scholarships (including, for students, top-up loans and parental contributions); the cash value of certain forms of income in kind (free school meals, Healthy Start vouchers and free school milk and free TV licence for those aged 75 and over).

17 This is the amount due after deducting: council tax reduction; status discounts; water charge reduction scheme discount.

Figure 3.1 Derivation of net household income after housing costs variable[18]

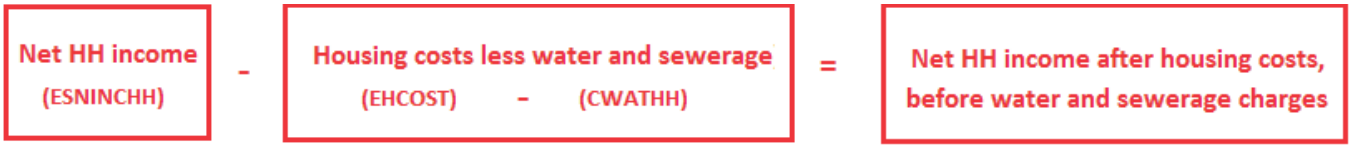


Figure 3.1 sets out the steps involved in creating the net household after housing costs income measure in diagrammatic form. This revised estimate of household income (AHC) can then be used as the denominator to calculate the proportion of household AHC income spent on water and sewerage charges.

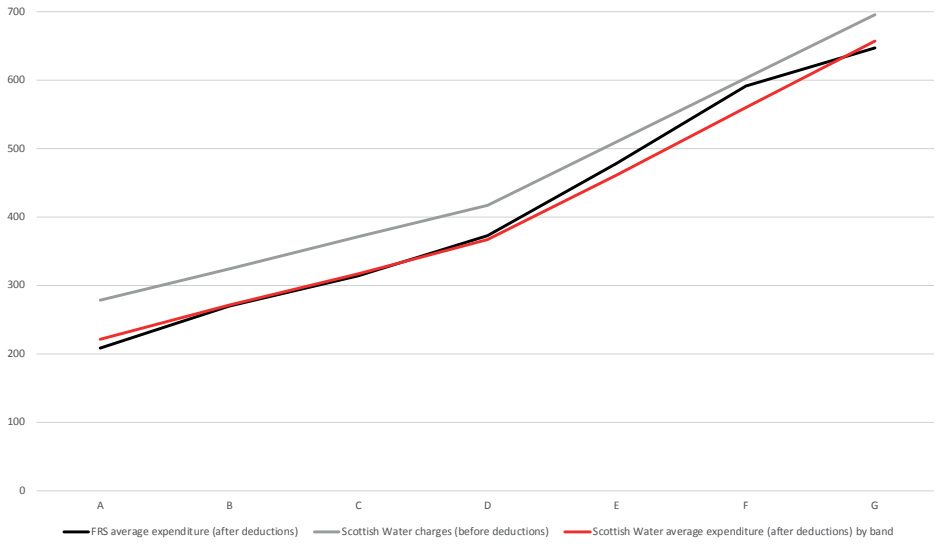
The water and sewerage charge (CWATHH) was then divided by this adjusted net household income (less housing costs) to calculate the percentage of income households are spending on water and sewerage. A flag is created in the dataset to identify where this is greater than 3% or 5%[19].

3.4 Further statistical issues

Surveys gather information from a sample rather than from the whole population. The sample is designed carefully to be as accurate as possible given practical limitations such as time and cost constraints. Results from sample surveys are estimates rather than exact figures, with larger samples having smaller margins of error[20] around the estimates derived.

Unlike other questions in the FRS survey, questions on water and sewerage bills and council tax are made with reference to a household's latest council tax bill. Comparing water and sewerage charges by band with Scottish Water charges[21] demonstrates that FRS water and sewerage charges closely follow Scottish Water figures (Chart 3.1).

Chart 3.1 HBAI/FRS water and sewerage charges (2015/16) compared with Scottish Water charges



18 As noted in Box 3.1, the income variable can either be equivalised (i.e. adjusted for household size) or left unequivalised.
19 Approximately 1% of households in the HBAI have negative or zero income figures while having water and sewerage charges. These are recorded as households which spend more than 3% and 5% of disposable after housing costs income for the various cross tab analyses. However the percentage of disposable income spent on water and sewerage cannot be computed for these cases and these households are not included in such figures.
20 Due to the complexity surrounding sampling design and the sampling unit information being unavailable, confidence intervals have not been calculated for the estimates in this report: https://www.ifs.org.uk/uploads/publications/mimeos/Bootstrapping%20paper%2C%20DWP%2C%20Jan%202017.pdf
21 http://www.scottishwater.co.uk/you-and-your-home/your-charges/2015-2016-charges/2015-2016-unmetered-charges

Scottish Water estimate that the average annual household water bill in Scotland (after deductions) in 2015/16 was £346[22]. Calculating the average water charge for Scottish households in 2015/16 (after deductions) using the FRS gives a similar estimate of £345 or £6.61 per week.

On average, this represents around 2% of household disposable income after housing costs. The median expenditure on water and sewerage is 1.5% of net AHC income. This is in line with previous OFWAT research for England (and is the basis of the argument that 3% of net AHC income is an appropriate definition of water and sewerage affordability).

The UK Statistics Authority has designated the HBAI series as National Statistics, signifying compliance with the Code of Practice for Official Statistics. National Statistics status means that the official statistics meet the highest standards of trustworthiness, quality and public value. In addition, the Institute for Fiscal Studies (IFS) quality assures the HBAI datasets, verifying the income variables and grossing factors used[23]. The dataset is the largest annual dataset available on Scottish household finances and is considered the 'best source of information on household income in Scotland', according to the Scottish Government[24].

We have followed the guidelines in the HBAI and FRS guidance documentation with regards to appropriate sample sizes, in order to produce reliable estimates. Due to the small number of households within the data sets with water and sewerage affordability issues, looking at these in relation to a breakdown of their characteristics means that subsamples, on which further cross-tabulation analysis is to be based, are often too small in a single year of data to be considered to give reliable estimates.

Where this is the case, three years of data are combined and assessed to see whether cell sizes are large enough for reporting purposes. In line with the guidance, when reporting percentages we report on the basis that the cell size denominator is at least 100. When reporting averages, we report on the basis that the cell size must be at least 50. If this is not the case then the analysis is not reported or suppressed, in line with the HBAI guidance.

Quality assurance procedures have taken place to ensure that water and sewerage charges are consistent with Scottish Water's annual combined water and sewerage charges. These were found to be consistent.

Data analysis was undertaken using statistical packages SAS and STATA.

22 Scottish Water: http://www.scottishwater.co.uk/you-and-your-home/your-charges/2015-2016-charges
23 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/599163/households-below-average-income-quality-metholodogy-2015-2016.pdf
24 http://www.gov.scot/Resource/0052/00527052.pdf

Affordability of water and sewerage

Chapter 4

In this chapter we consider how various household characteristics influence the likelihood of a household spending more than 3% or 5% of its AHC income on water and sewerage.

In section 4.1 we consider the proportion of households spending above the 3%/5% thresholds overall.

In section 4.2 we consider how the likelihood of spending above the 3%/5% thresholds varies with characteristics such as council tax band, household composition, income, and tenure.

In section 4.3 we summarise the results of some regression analysis, which attempts to assess the importance of various household characteristics in influencing whether a household spends above the 3%/5% income threshold in water and sewerage.

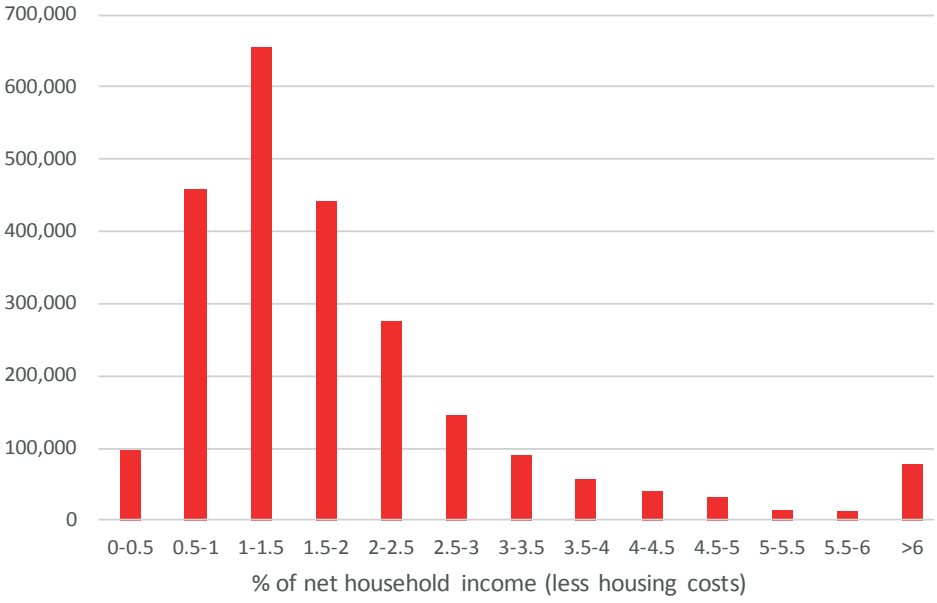
Section 4.4 looks at the issue from a slightly different angle. Whereas sections 4.2 and 4.3 look at the proportion of households with a given characteristic that spend more than 3%/5% of income on water and sewerage, section 4.4 looks specifically at those households who do spend more than the 3%/5% thresholds on water and sewerage charges, and examines the composition of this group[25].

Section 4.5 concludes.

4.1 Overview

As can be seen in Chart 4.1, around 15% of Scottish households (of whom there are approximately 2.4 million) were paying over 3% of their disposable income for water and sewerage in 2015/16. Approximately 6% of households were paying more than 5% of their income on water and sewerage.

Chart 4.1 Distribution of households by percentage of net (AHC) income spent on water and sewerage



25 It is important to consider these two angles: the proportion of households with various characteristics that spend more than 3%/5% of income on water and sewerage, and the composition of those households spending above the 3%/5% thresholds, as these are two slightly different things. Both inform the assessment of policy options. For example, it might be the case that 80% of those in receipt of JSA spend more than 3% of income on water and sewerage; but it might also be the case that only 10% of all those households spending more than 3% of income on water and sewerage are in receipt of JSA. In this case, it may make sense to target some support at JSA claimants, but this would need to recognise that a large proportion of households spending above the 3% threshold on water and sewerage would not benefit from this support.

Using an equivalent methodology for 2014/15, Ofwat found that 24% of households in England and Wales spend more than 3% of income on water and sewerage bills, whilst 11% of households in England and Wales spend more than 5% of income on water and sewerage[26].

4.2 The affordability of water and sewerage by household type

In this section we consider the prevalence of spending more than 3%/5% of household income on water and sewerage by household type. In other words, for a given characteristic, what proportion of households with that characteristic pay above the 3% or 5% water affordability thresholds?

Income

Table 4.1 divides the 2.4 million Scottish households into ten equally sized groups of households (deciles) from the lowest income decile to the highest income decile. Perhaps unsurprisingly, income is strongly correlated with the likelihood of spending more than 3%/5% of income on water and sewerage.

84%[27] of households in the bottom decile spend more than 3% of net income on water and sewerage. This falls to 33% in the second decile and 14% in the third decile, and so on. Households in the top half of the income distribution are virtually guaranteed not to spend more than 3% of income on water and sewerage.

Table 4.1: Spending more than 3%/5% of income on water / sewerage by decile of net (AHC) income, 2015/16

Equivalised decile	Spend more than 3% of net income on water and sewerage	Spend more than 5% of net income on water and sewerage	Income below £...*
Lowest	84%	56%	173
2	33%	4%	248
3	14%	0%	302
4	11%	0%	359
5	4%	0%	420
6	2%	0%	486
7	1%	0%	561
8	1%	0%	666
9	0%	0%	842
Highest	0%	0%	

* Households in the lowest decile have AHC equivalised income below £173 per week, those in the second decile have equivalised income between £173 and £248 per week, etc. Households in the highest decile have equivalised income above £842. ***Source:*** *FAI calculations*

Of course it is not surprising that lower income households are more likely to spend above the income thresholds on water and sewerage than higher income households. Indeed, given that income is the denominator in the measure of water and sewerage affordability, lower income must by definition be associated with higher likelihood of spending above the threshold on water and sewerage.

Council tax band

Table 4.2 shows that the average share of disposable income spent on water sewerage by council tax band is broadly flat across all bands at around 2%.

26 Ofwat (2015) Affordability and debt 2014/15

27 Of these: 40% are in council tax band A; 25% in band B; 11% in band C; 12% in band D; 5% in band E; 2% in band F; 5% in band G; and 1% in band H. Despite being in the lowest decile, households paying more than 3% are distributed across all council tax bands (even H). This reiterates a point made throughout this report, that council tax band is not well correlated with net (AHC) income.

Table 4.2: Average expenditure** on water and sewerage by council tax band

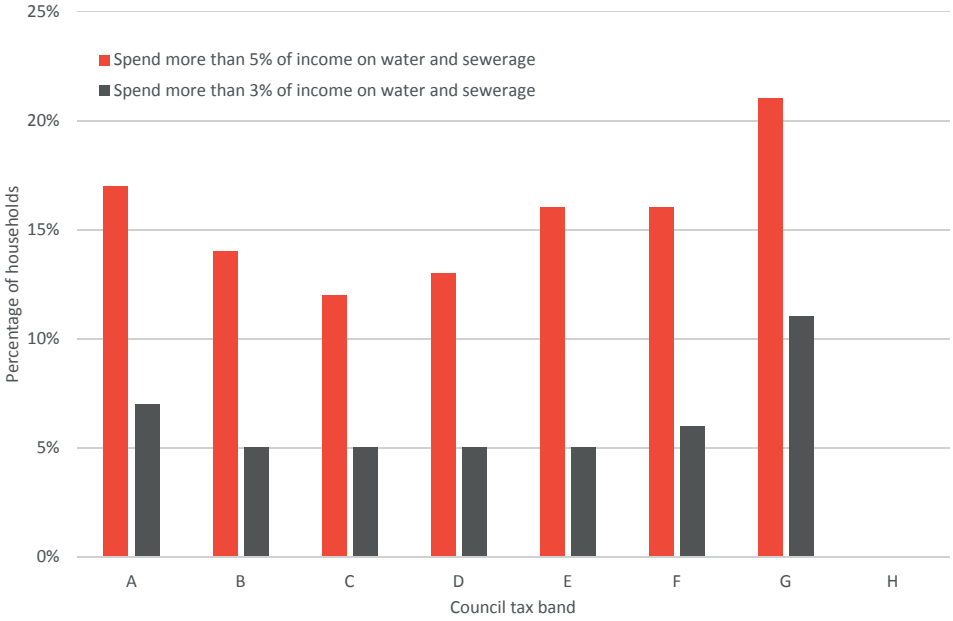
Council tax band	A	B	C	D	E	F	G	H
% of ahc disposable income spent on water / sewerage*	2.4%	2.1%	1.9%	2.1%	2.2%	2.0%	2.3%	*
% of households in each band	21%	24%	15%	13%	14%	7%	4%	*

*Insufficent cell sizes ** Does not include households with negative or zero incomes

***Source**: FAI calculations*

What about the prevalence of spending on water and sewerage above the 3% and 5% thresholds? Chart 4.2 shows that 17% of Band A properties spend over 3% of income on water and sewerage. This is similar to the proportions spending above this threshold in bands B-D. Perhaps surprisingly, spending more than 3%/5% of income on water and sewerage is somewhat more likely in bands E, F and G.

Chart 4.2 Households spending above 3%/5% of income on water and sewerage by council tax band*



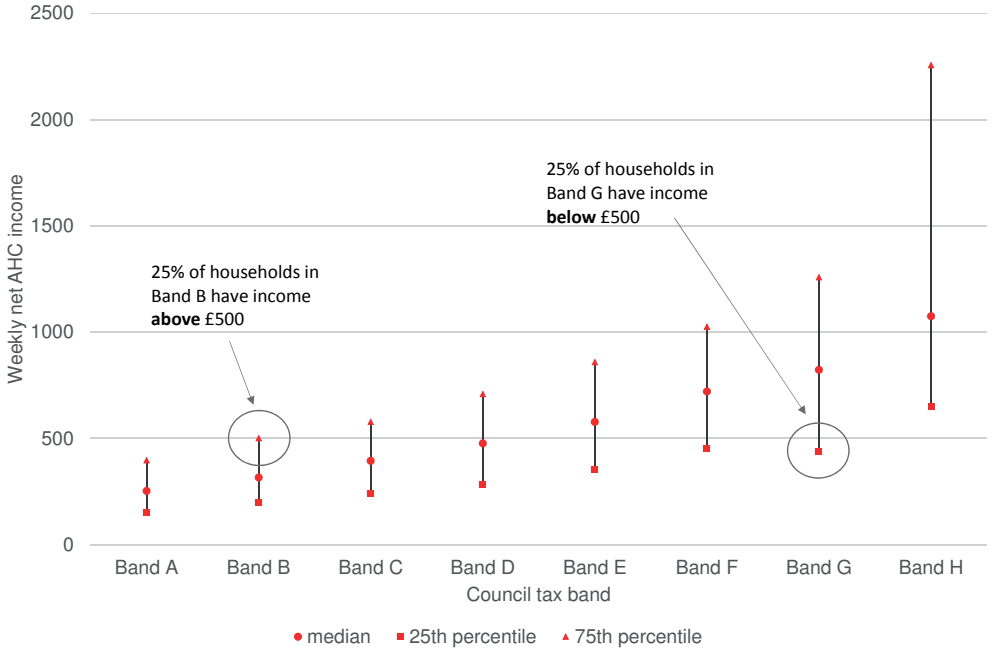
*Data for Band H suppressed because of insufficient observations

The finding that rates of spending on water and sewerage above these income thresholds are higher in Bands E, F and G than in bands B, C and D may appear counter-intuitive. But it results from two facts:

- The water and sewerage charge increases by council tax band;
- Whilst income on average increases by band, there is a great deal of variation around this average relationship. In other words, council tax bands B, C and D consist of some households with relatively high incomes, whilst council tax bands E, F, G and H consist of some households with relatively low incomes.

This is illustrated in Chart 4.3. Specifically, Chart 4.3 plots, for each council tax band, the median household income in that band, together with the 25th percentile and 75th percentile of income for each band. (25% of households have income below the 25th percentile, whilst the 25% of households have income above the 75th percentile). Median income increases with band. But there is substantial variation within each band. To take a specific example, Chart 4.3 shows that 25% of households in Band B have income above £500 per week. At the same time, 25% of households in Band G have income below £500 per week. Yet we know that the water and sewerage charge for a Band G property is more than twice as much (£380 annually) as the charge for a Band B property.

Chart 4.3 Distribution of net after housing costs income by council tax band



So the apparent lack of correlation between council tax band and expenditure on water and sewerage (as a percentage of income) is not necessarily counter-intuitive; it stems from the fact that the correlation between council tax band and income is actually quite weak, whilst water and sewerage charges are determined by band[28].

This is an important finding, the implications of which are discussed in later chapters of the report. A key question that arises is, to what extent is the charging structure for water and sewerage intended to reflect water use (where this is proxied by band), and to what extent is it intended to be proportionate to income?

Table 4.3: Average household spend** on water/sewerage by council tax band and decile of net ahc income

Equivalised decile	A	B	C	D	E	F	G	H
Lowest	7.1	7.1	6.4	10.0	11.3	*	*	*
2	2.2	2.6	2.8	3.1	3.9	*	*	*
3	1.8	2.1	2.2	2.7	3.3	*	*	*
4	1.6	1.8	1.8	2.0	2.4	*	*	*
5	1.3	1.6	1.7	1.8	2.4	*	*	*
6	1.1	1.4	1.5	1.6	1.8	2.2	*	*
7	1.1	1.2	1.3	1.5	1.7	1.8	*	*
8	0.9	1.0	1.1	1.2	1.4	1.6	*	*
9	0.8	0.8	0.9	1.0	1.2	1.4	1.5	*
Highest	*	0.7	0.7	0.8	0.8	1.0	0.9	*

*Insufficent cell sizes ** Does not include households with negative or zero incomes

Source: *FAI calculations*

Table 4.3 provides further analysis of the relationship between income, council tax band, and affordability of water and sewerage charges. It shows the average percentage of disposable household income spent on water and sewerage by council tax band and income decile.

28 The finding that water and sewerage affordability decreases as council tax band increases is even stronger if we consider before housing cost, rather than after housing cost income. This in turn suggests that housing costs make up a smaller proportion of income for households in higher banded rather than lower banded properties.

It shows, for example, that households in the bottom 10% of the income distribution in Scotland and living in a Band A property spend 7.1% of disposable income on water and sewerage. More specifically:

- For any given income decile, households on average spend a greater proportion of income on water and sewerage as they move up council tax bands (i.e. from A through to H).
- For any given council tax band, households on average spend less on water and sewerage as they move up the income distribution.

To summarise the findings so far, we have found that the proportion of income spent on water and sewerage is strongly related to income, with lower income associated with higher proportionate expenditure on water and sewerage. However, there is little correlation between council tax band and the proportion of household income spent on water and sewerage because income and council tax band are poorly correlated.

These findings are broadly consistent with those from previous work which looked at water and sewerage affordability in 2005/06[29]. This found that bills as a proportion of income are highest for low income households, with households in the bottom decile paying more than 3% on average of income on water and sewerage. The report also found that, within each income decile, bills rise with council tax band, replicating the findings of Table 4.3.

Household composition

Household composition is arguably a better proxy for water usage than council tax band, so we now look at the relationship between household size and expenditure on water and sewerage. Table 4.4 shows the proportion of households spending above the 3%/5% thresholds by household composition. Despite the single person discount, single adult households are more at risk of spending more than 3%/5% of income on water and sewerage than households with two or more adults.

Table 4.4: Spending above income thresholds on water and sewerage by household type

		% spending more than 3% on water / sewerage	% spending more than 5% on water / sewerage	% of household type in population	Average % spent on water and sewerage
Working age					
one adult	-	31%	14%	18%	3.3
	1 child	13%	6%	3%	2.4
	› 1 child	5%	2%	2%	2.4
one couple	-	9%	4%	17%	1.7
	1 child	10%	6%	7%	1.7
	› 1 child	6%	3%	8%	1.5
Pension age					
one adult		24%	6%	15%	2.7
one couple		10%	2%	13%	1.9
Multi family households		7%	3%	16%	1.4

Notes: Pension age households include a small number of pensioner households with dependent children **Source:** *FAI calculations*

29 Sawkins and Dickie (2008) Affordability of Scottish Household Water and Sewerage Charges: Historic Trends and Current Position

- 31% of single working age households without children and 24% of single pensioner households spend more than 3% of income on water and sewerage.
- Couple households without children are significantly less likely to spend more than 3% of income on water and sewerage (9% and 10% for working age and pensioner households respectively).

Of course, this result partly reflects the decision to use unequivalised income. If equivalised income were used, then the proportion of single working age households spending more than 3% on water and sewerage would fall to around 14%. Similarly the proportion of couples with children spending more than 3% on water and sewerage would increase to 16%.

Households with children are no more likely to spend more than 3%/5% of income on water and sewerage than couple households without children. If income was equivalised, then households with children would appear relatively more likely to spend more than 3% of income on water and sewerage (as children do not tend to contribute to household income, but do provide an additional cost constraint which equivalisation attempts to capture). Pensioner households are marginally less likely to spend more than 3%/5% of income on water and sewerage than non-pensioner households.

Household Tenure

Table 4.5 shows the incidence of spending above the 3% and 5% income thresholds by tenure type. The proportion of those spending more than 3% of income on water and sewerage is highest among those renting privately. It is somewhat lower for those renting from the council or renting from housing associations. This presumably reflects a combination of the fact that rental costs tend to be lower for the latter tenure types, and privately rented households are likely to be more evenly distributed across council tax bands (and thus be subject to higher charges on average).

The incidence of spending above the 3%/5% thresholds is lowest amongst those owning their property. This is unsurprising to the extent that property owners tend to have higher incomes on average than renters[30]. Moreover the costs of owning relative to renting have fallen in recent years reflecting historically low interest rates, raising the after housing costs net income of owners relative to renters[31].

Perhaps surprisingly, the incidence of spending above the income thresholds is higher among owner occupiers than it is for those who own with a mortgage. This presumably reflects the fact that a large proportion of owner occupiers are retired households with relatively lower incomes.

Table 4.5: Spending more than 3%/5% of income on water and sewerage by tenure

	% spending more than 3%	% spending more than 5%
Rented from council	18%	7%
Rented from housing association	23%	9%
Rented privately unfurnished	20%	9%
Rented privately furnished	23%	12%
Owned outright	15%	5%
Owned with mortgage	7%	3%

***Source**: FAI calculations*

30 Data from the 2015/16 indicates that the weekly (before housing cost) income of households owned with a mortgage was £792, compared to £600 for households owned outright, £500 for households rented privately, and £360 for households renting from a housing association or council.
31 This may change in the future.

Benefit

Table 4.6 shows the prevalence of spending above the 3%/5% income threshold by specific benefits[32]. 16% of those in receipt of the State Pension spend more than 3% of income on water and sewerage. The fact that this is not dissimilar from the national average is not surprising given that those of State Pension age are distributed fairly evenly across the income (and council tax band) distribution.

Those in receipt of means tested benefits are more likely to spend above 3%/5% of income on water and sewerage than average. For example, almost half those claiming Jobseekers Allowance spend more than 3% of income on water and sewerage, and a quarter of claimants of Housing Benefit do.

In many ways however, what might be seen as surprising is the relatively low prevalence of spending above the 3%/5% thresholds among claimants of some of these benefits. For example, the fact that only 15% of Income Support and 17% of Council Tax Reduction recipients spend more than 3% of income on water and sewerage means that the prevalence of water and sewerage affordability issues is not really any different among these groups than it is for the population as a whole (recall from earlier that 15% of households overall are spending more than 3% of income on water and sewerage).

This arguably counter-intuitive result might reflect a number of factors. It may reflect the fact that receipt of these benefits raises (net) income. It may partially reflect the fact that those in receipt of these benefits tend to have lower housing costs (raising AHC income relative to average), and it may reflect the fact that those in receipt of these benefits tend to live in lower banded properties on average (and thus face lower water and sewerage charges). In the case of Council Tax Reduction, it also reflects the fact that people in receipt of this benefit are likely to have had their charge reduced, by virtue of being in receipt of this benefit.

Table 4.6: Percentage of households spending › 3% or 5% of income on water and sewerage by benefit

Benefit*	% spending more than 3%	% spending more than 5%
State Pension	16%	4%
Housing Benefit	25%	9%
Working Tax Credits	12%	5%
Employment and Support Allowance	28%	8%
Disability Living Allowance	9%	3%
Pension Credit	13%	3%
Attendance Allowance	7%	1%
PIP	*	*
Child Tax Credits	9%	3%
Jobseeker's Allowance	48%	26%
Carer's Allowance	9%	4%
Income Support	15%	4%
Council Tax Reduction	17%	7%
Universal Credit	21%	8%

* Cells suppressed where based on less than 50 households in line with FRS guidance

***Source**: FAI calculations*

Notes: Universal Credit estimates are based on whether households are receiving one or more of Income Support, Income based JSA, Income related ESA, Housing Benefit, Working Tax Credit, Child Tax Credit

32 Looking at all combinations of benefits would not be feasible as there are over 100 individual benefits in the FRS dataset. It would not be useful to look at single vs multiple benefits as households typically receive at least one benefit (e.g. families receive Child Benefit; pensioner households receive State pension). Instead, benefits brought together under Universal Credit are looked at alongside benefits grouped by whether income related or non-income related.

While there are only a handful of Universal Credit cases in the 2015/16 sample, we can create a proxy for Universal Credit by merging the benefits that are being combined into Universal Credit. The working age means tested benefits that are being combined in Universal Credit are Housing Benefit, Working Tax Credit, income related JSA and ESA, and Child Tax Credit. Combining these suggests that around 21% of households in receipt of a means tested working age benefit spend more than 3% on water and sewerage.

A DWP background note for the 2015/16 FRS provides a definition of income related and non income related benefits[33]. Households were classified as to whether they receive one or more of income related or non-income related benefits, regardless of the level of support received. As such, a household included under "income related benefit receiving households" can also be included under "non income related benefit receiving households". 23% of households receiving income related benefits pay more than 3% of their disposable household income on water / sewerage while 8% of households receiving non income related benefits pay more than 3% of their disposable household income on water/sewerage.

The FRS has only limited information on the length of time that claimants have been in receipt of particular benefits: job seekers allowance, employment support allowance, pension credit and income support. However, even where information on claimant duration is available, limited sample sizes means that this cannot be combined with information on water and sewerage spending in any reliable way so was not included in analysis.

We can also look in more detail at those in receipt of some form of discount or relief for their water and sewerage bill. This reveals that, of those receiving a status discount (primarily the single person status discount), 24% spend more than 3% of net AHC on water and sewerage (and 9% spend more than 5% of income on water and sewerage). Of those who receive a discount through the Water Charge Reduction Scheme, 22% spend more than 3% of income on water and sewerage.

This indicates that the prevalence of water and sewerage affordability issues is relatively high amongst those receiving some form of deduction on their bill. But at the same time, it also indicates that the majority of households receiving some form of discount are not having water and sewerage affordability issues. This suggests that there may be scope to improve targeting of the discounts.

Work status

68% of working age households where nobody is in work, and either the head of the household or the spouse are unemployed, spend more than 3% of net after housing costs income on water and sewerage. 40% of this category spend more than 5% on water and sewerage charges. This is clearly much higher than the national average. Similarly, 32% of economically inactive households spend more than 3% of net after housing costs income on water and sewerage.

On the other hand, among households with all adults in full-time work, 7% spend more than 3% of net after housing costs income on water and sewerage which is approximately half the national average rate.

Whilst this does indicate that the probability of spending more than 3%/5% of income on water and sewerage does decline as work status increases, it also indicates that being in full-time employment is not a guarantee of not spending above the 3% threshold on water and sewerage charges.

33 http://dera.ioe.ac.uk/29115/2/family-resources-survey-background-note-and-methodology-2015-16.pdf

4.3 The role of various factors in influencing the probability of having water and sewerage affodability issues: regression analysis

The analysis up until now has considered how various factors individually influence the likelihood of a given household spending more than 3%/5% of income on water and sewerage. But what is the role of various different factors in combination in explaining the likelihood of a household spending more than these thresholds on water and sewerage charges?

We can use the dataset and a particular form of regression analysis – known as 'probit' regression – to examine the probability of a household having water and sewerage affordability issues given that household's characteristics. This regression analysis is explained in Annex A.

Being in receipt of means tested benefits does increase the likelihood of a household spending more than 3% of income on water and sewerage, mainly because these benefits are proxying for (low) income. Council tax band is correlated with water and sewerage affordability in arguably counterintuitive ways. This is because, whilst bills increase with band, household income becomes increasingly dispersed with band, so that there is in fact a relatively high prevalence of water and sewerage affordability issues in the higher bands.

The main message to take from the regression analysis is that, in explaining the likelihood of a household spending more than 3% of its income on water and sewerage, income is by far the most important explanatory factor.

4.4 What are the characteristics of those spending more than 3%/ 5% of income on water and sewerage?

The analysis up until now has focused on the likelihood of spending more than 3%/ 5% of income on water and sewerage across particular groups. But that analysis in itself does not necessarily tell us much about the composition of those households which actually spend above 3%/5% of income on water and sewerage. For example, the analysis above revealed that a relatively large proportion of those claiming JSA spend more than 3% of income on water and sewerage. But because relatively few people claim JSA, it does not follow that JSA claimants make up a large proportion of all those who face water and sewerage affordability issues.

In this section therefore, we turn the focus of the analysis to look at the characteristics of those who spend more than 3%/5% of income on water and sewerage as a group.

Council tax band

Although the prevalence of water and sewerage affordability was fairly consistent across bands, the majority of those paying more than 3%/5% of their income on water and sewerage are found in council tax bands A and B. This is driven by there being proportionately more properties in bands A and B (Table 4.7).

Table 4.7: Composition of households with water and sewerage affordability issues by council tax band

	A	B	C	D	E	F	G	H
>3%	24%	23%	12%	12%	15%	8%	6%	*
>5%	26%	19%	12%	12%	13%	8%	9%	*
% of CT bands	21%	24%	15%	13%	14%	7%	4%	1%

Source: *FAI calculations*

Household composition

Of those paying more than 3% on water and sewerage, just over 60% are single households: 38% are single adult households of working age, whilst 24% are single adult households of pension age (Table 4.8). This is much higher than the percentage of single households in the population.

Table 4.8: Households spending above 3%/5% of income on water and sewerage by household composition

	Working Age						Pension age		Multi family house-holds
	One adult	+1 child	+ >1 child	**One couple**	+1 child	+ >1 child	**One adult**	**One couple**	
Spending >3% on water / sewerage	38%	3%	1%	10%	5%	3%	24%	9%	7%
Spending >5% on water / sewerage	44%	3%	1%	12%	7%	4%	17%	5%	8%
% of household type in population	18%	3%	2%	17%	7%	8%	15%	13%	16%

Source: *FAI calculations*

Tenure

The composition of households spending more than 3%/5% of income on water and sewerage is somewhat different from the composition of the tenure distribution of all households (Table 4.9).

- A quarter of households spending above 3% of income on water and sewerage are privately rented households (compared to 16% of households generally in this category).
- 31% are rented from a council or housing association (compared to 23% of households in total).
- Almost one third of households spending above 3% of income on water and sewerage are owned outright, similar to the proportion of households owned outright in total.
- Only 13% of households spending over 3%/5% of income on water and sewerage are owned with a mortgage, compared to 29% of households generally. This reflects the fact that the proportion of owner-occupied households spending more than 3% of income on water and sewerage is around half the rate of the population as a whole.

Table 4.9: Composition of households spending above 3%/5% of income on water and sewerage by tenure

	Rented from council	Rented from Housing Association	Rented privately (un-furnished)	Rented privately (furnished)	Owned outright	Owned with mortgage
Spending >3% on water / sewerage	17%	14%	16%	8%	32%	13%
Spending >5% on water / sewerage	16%	14%	18%	11%	28%	15%
% of household type in population	14%	9%	11%	5%	32%	29%

*

Source: *FAI calculations*

Benefits

Of those households paying more than 3% of household disposable income on water and sewerage, 39% receive income related benefits while 58% receive non-income related benefits[34]. This may appear to be different to section 4.2 but the findings are compatible. As those paying more than 3% on water and sewerage are a group of households with low incomes, the percentage receiving benefits (whether income related or not) is higher than for the population as a whole.

Table 4.10: Households spending above 3%/5% of income on water and sewerage by benefit type

	State Pen.	Hous. Ben.	WTC	ESA	DLA	Pen. Cred.	Attend. Allow.	CTC	JSA	Carer's Allow.	Inc. Supp.	CTR	UC*
Spending › 3% on water / sewerage	33%	27%	5%	10%	6%	5%	1%	6%	11%	1%	3%	29%	36%
Spending › 5% on water / sewerage	22%	26%	5%	7%	4%	3%	1%	6%	15%	1%	2%	26%	36%
% of household type in receipt	31%	16%	6%	5%	10%	6%	3%	10%	3%	2%	3%	19%	25%

* in receipt of one or more of the benefits being replaced by Universal Credit

Source: *FAI calculations*

Of those households spending over 3%/5% of income on water and sewerage, one third are in receipt of the State Pension; this is similar to the proportion of all households in receipt of the State Pension (Table 4.10). In general, those spending above the 3%/5% income thresholds on water and sewerage are more likely to be in receipt of a means tested working age benefit than the population as a whole.

- Around one quarter are in receipt of Housing Benefit (higher than the 16% of households in total in receipt of Housing Benefits).
- 29% of households facing water and sewerage affordability issues are in receipt of Council Tax Reduction (compared to 19% of households in total in receipt of CTR).
- 36% of those in facing water and sewerage affordability issues are in receipt of one of the six benefits being combined into Universal Credit, compared to 25% of all households in receipt of one of these benefits[35].

It might be seen as a surprise that relatively low proportions of those spending more than 3%/5% of income on water and sewerage are in receipt of low-income benefits such as Council Tax Reduction and Housing Benefit. Indeed, these figures are likely to be underestimates of the proportion spending above the 3%/5% thresholds, as there is known to be some under-reporting of benefit receipt in the FRS survey. For example, comparing the FRS data with administrative data indicates that the FRS underestimates receipients of CTR by 11%, of Housing Benefit by 14%, and of Working Tax Credit by 29%[36].

Moreover, the issue of under-reporting is exacerbated by an issue of low take-up rates for some benefits (i.e. not all of those who are technically eligible for a benefit actually claim that benefit). There are no recent estimates of the number of people that could potentially be eligible for CTR who have not applied for it.

34 As previously discussed in section 4.2, these are not mutually exclusive.
35 It may come as a surprise that 25% of households receive one of the six means tested working age benefits that are being combined into Universal Credit. But this is consistent with Scottish Government estimates that between 650,000 to 700,000 households are likely to be receiving Universal Credit in Scotland once fully rolled out: http://www.gov.scot/Publications/2017/06/6808/9
36 See table M.6 of the FRS Methodology Report https://www.gov.uk/government/statistics/family-resources-survey-financial-year-201516

However, previous DWP take-up statistics indicated that council tax benefit had a relatively poor uptake, particularly amongst pensioners and those living in owner-occupied housing. The DWP estimated that in 2009, GB-wide take-up of council tax benefit was between 62% and 69%, and between 54% and 61% for pensioners. The Scottish Government announced in 2016 that it would try to increase CTR take-up rates.

Work status

We saw previously that the prevalence of water and sewerage affordability issues among workless (unemployed) working age households was high (68%). However, these households make up only 10% of all households spending more than 3% of income on water and sewerage and 2% of all households (Table 4.11). Households with all adults in full time work also make up 10% of all those facing water and sewerage affordability issues, despite accounting for 23% of all households. Workless households with a head or spouse aged 60 or over are more likely to feature in those paying more than 3% on water and sewerage, making up 35% of those spending more than 3% compared to 26% of households in general.

Table 4.11: Households spending above 3%/5% of income on water and sewerage by economic status

	One or more self-employed	All in full-time work	One (or more) in full-time work, one (or more) part-time	One (or more) in full-time work, one (or more) not working	No full-time work, one or more in part-time work	Workless, head or spouse aged 60 or over	Workless, head or spouse unemployed	Workless, other economically inactive	Multi mixed family units*
Spending › 3% on water / sewerage	9%	10%	1%	4%	10%	35%	10%	14%	7%
Spending › 5% on water / sewerage	11%	8%	1%	3%	11%	26%	14%	17%	8%
% of household type in population	6%	23%	7%	6%	7%	26%	2%	7%	16%

* consists of households made up of different combinations of economic status (ECOBU) ***Source:*** *FAI calculations*

4.5 Summary

This section has considered two broad issues: what are the chances of a household with a given characteristic spending more than 3%/5% of income on water and sewerage?; and what is the composition of all those households spending above 3%/5% of income on water and sewerage?

Understanding both is important in the context of identifying policy options for reducing water and sewerage affordability constraints. The likelihood of spending more than 3%/5% of income on water and sewerage is primarily related to income: the lower the income, the greater the probability of spending more than 3% (or 5%) on water and sewerage. As water and sewerage charges are related to council tax band, and the correlation between council tax band and income is weak, the likelihood of facing water and sewerage affordability issues is ubiquitous across all council tax bands. Single people are more likely to spend more than 3% of their income on water and sewerage than non-single households. Although these households receive a 25% status discount, this tends not to sufficiently compensate for their lower incomes. This result is partly a function of the fact that we have considered spending on water and sewerage as a function of unequivalised income, in line with previous OFWAT research[37].

More generally, the factors influencing whether a household spends above 3% of income on water and sewerage are diverse. This is consistent with the idea that households with a low income (i.e. households in income poverty) are diverse, including pensioner and non-pensioner households, working and non-working households, and households in receipt of means tested benefits and not in receipt of benefits.

37 Using unequivalised income, we have seen that 65% of households facing affordability issues are single adult households. If we use equivalised income, only 34% of households spending above 3% of income on water and sewerage are single households.

Policy options

Chapter 5

5.1 Introduction

The diversity amongst those facing water and sewerage affordability constraints makes the targeting of support for those most in need challenging. Having set out the factors that influence the proportion of household income spent on water and sewerage in the last chapter, in this chapter we consider some of the policy options available for reducing the prevalence of water and sewerage affordability issues.

Of course, policy can only really be designed with respect to a particular set of underlying charging principles. We are unaware of any comprehensive set of principles on which water charges in Scotland are to be based[38]. We therefore assume that the principles for charging for water and sewerage services include that the system is efficient, cost-effective, administratively simple, and is underpinned by some notion of 'fairness'. The latter principle is however somewhat nebulous, as fairness is a contestable concept. Most would argue that charges should in some way be proportionate, but that leaves open the question as to whether charges should be proportionate to use or proportionate to income, or indeed to something else.

On the face of it, there are three types of policy options to mitigate water and sewerage affordability issues[39]:

1. changes to the existing council tax band-based set of charges and discounts;
2. the introduction of some form of discretionary industry support based on specific eligibility criteria;
3. and the provision of some form of means tested social security benefit.

Policies in the first group are likely to include:

- Extending reductions for water and sewerage charges to be more consistent with Council Tax Reduction. For example, if an individual is entitled to the full amount of CTR, they could be eligible for full relief from water and sewerage charges (as opposed to the current situation, where full entitlement to CTR corresponds to only a 25% reduction in water and sewerage charge)
- Reductions for those in receipt of particular low income benefits (i.e. those benefits whose receipt is correlated with having water and sewerage affordability issues)
- Introduction of some form of relief – underpinned by specific criteria – that households can make a specific application for
- Extending the scope of existing discounts – such as the Single Person discount
- A change in the ratios between bands

The devolution of new social security powers to the Scottish Parliament over the coming years provides additional scope to address affordability constraints. These powers include the ability to top-up benefits which remain reserved to the UK Parliament, and the ability for the Scottish Parliament to create new benefits.

Thus additional policy options could include the topping-up of one or more reserved benefits, or the creation of a new benefit specifically targeted at addressing water and sewerage charges, which could be administered by the Scottish Social Security Agency, or by local authorities.

38 The Scottish Government's 'Principles of Charging for Water Services 2015-2021 identifies five principles for charging: certainty and stability; not rise by more than inflation; reflect in aggregate the full cost of charges to customers; treat equivalent customers in different parts of Scotland consistently; and be cost reflective. However, these principles do not particularly inform a more fundamental consideration about how the charging approach could vary.

39 These three broad groups were identified during discussions with the Long Term Charging Group at the Group's meeting in August 2017.

In the remainder of this Chapter we consider the feasibility in broad terms of a number of potential policy responses, based on criteria including:

- Direct costs of the policy[40]
- Efficiency (how well does any proposed scheme target those deemed in need of support)
- Administrative costs and complexity for the industry
- Transparency for recipients (in terms of what they are eligible for, and how eligibility will change given any change in circumstances), and integration and coherence with existing system of council tax reduction and other benefits
- Other aspects of institutional design (for example, how does the design of any policy, including its labelling, influence the extent to which consumers use any payment specifically for the purpose of spending on water and sewerage charges?

5.2 The 'full cost' of reducing water and sewerage spend to less than 3% of income

If all households currently spending more than 3% of their net AHC income on water and sewerage were offered a discount on their bill that would bring their expenditure on water and sewerage to exactly 3% of income, what would the cost of this be?

We can calculate this on the basis of the FRS dataset. For each household, we calculate what the water and sewerage charge would need to be in order for that household's expenditure on it to be exactly 3% of the household's net household income. Then, for any household spending more than 3% on water and sewerage charges, we calculate the difference between the household's current charge, and the charge that the household would need if its expenditure was exactly 3%. These differences are then summed over all households in the sample and weighted to give an estimate for Scotland as a whole.

Our results indicate that in 2015/16, the cost of discounts required to ensure that no household spends more than 3% of its net AHC income on water and sewerage charges would have been around £34 million. Just over 300,000 households would require some form of discount. Remember that these costs are additional to existing reliefs and discounts and does not include households with negative or zero incomes.

Clearly, the costs of ensuring that no household faces charges in excess of 5% would be less than the costs of ensuring that they spend in excess of 3%. Our analysis suggests that the costs of ensuring that no household faces of charges of more than 5% would be around £12 million. Table 5.1 summarises the results.

Table 5.1: Costs of ensuring that no household spends more than a given threshold of income on water and sewerage charges

	3% threshold		5% threshold	
	Annual cost (£million)	No. of affected households	Annual cost (£million)	No. of affected households
2013/14	£32	315,619	£12	105,793
2014/15	£31	316,511	£10	102,775
2015/16	£34	325,556	£12	104,285

***Source**: FAI calculations*

40 Any policy to reduce the bill (or increase the income) for particular households in order that those households no longer pay more than 3% of income on water and sewerage will entail costs. Given that one of the Principles of Charging for the water industry is the principle of 'full cost recovery', it is likely that the costs behind any policy option would have to be cross financed by other household charges. Of course, these costs could in principle be recouped through higher charges for other households so that the net costs of changes to the charging structure are revenue neutral. This could push households currently paying below the threshold into spending more than 3% / 5% of their income on water and sewerage. The question as to how these policy changes are funded is beyond the scope of the current study and the focus in this chapter is on the estimated costs of addressing water affordability issues.

In reality of course it will not be possible to identify exactly which households pay more than 3% or 5% of their after housing costs net income on water and sewerage charges (as there is not a population level database setting out the incomes and housing costs of each and every household in Scotland). Instead, any system of reliefs or discounts must make simplifying assumptions – based on proxy indicators – about households' need for support with their bills.

Inevitably therefore, a balance must be struck between, on the one hand, the desire to most effectively target those most in need with, on the other hand, a recognition that more effective targeting often tends to avoid higher administrative costs in terms of assessing eligibility.

5.3 Options within the existing council tax based system

The current system of charges and reliefs for water and sewerage is based around the council tax system. Bills relate to council tax band; reliefs are based around eligibility for Council Tax Reduction; and various status discounts that are themselves aligned with the status discounts available for Council Tax.

This alignment of water and sewerage billing with council tax bills is a function of the fact that local authorities are responsible for billing and collecting water and sewerage charges. In turn, the fact that local authorities are responsible for water and sewerage billing is seen as efficient in that local authorities already have billing systems in place and have access to information on relevant household information, namely the council tax band of the property, whether any status discounts are applicable, and the extent to which the property is in receipt of Council Tax Reduction.

There is a strong motivation to maintain local authorities' role in billing water and sewerage charges. Currently Ministers have decided to maintain Council Tax legislation as the rationale and basis for water and sewerage charges and there does not appear to be a plan to change this in the foreseeable future. There is thus strong motivation to retain in broad terms the charging structure that currently operates.

But to what extent might it be possible to reduce the prevalence of water and sewerage affordability issues by varying the current charging parameters, albeit whilst keeping the broad structure in place?[41]

Changing the ratios between bands

The first point to note is that there seems relatively little case for changing the ratios between council tax bands. As noted in Chapter 4, there is no evidence that the likelihood of having water and sewerage affordability issues is lower in higher banded properties. Indeed, there is some evidence that the prevalence of spending more than 3%/5% of income on water and sewerage increases within higher banded properties.

This simply reflects the well-established fact that the relationship between council tax band and income is weak. But the weakness of this relationship limits options: increasing the ratios between bands will make more households in higher banded properties spend more on water and sewerage; reducing the ratios between bands will have the same effect on households in lower banded properties.

Extending the Single Person status discount

The analysis in Chapter 4 showed that having water and sewerage affordability issues is predominantly a problem for single person households. One option could therefore be to extend the single person status discount above 25%. Administratively, this would be relatively straightforward.

41 Policy figures in this section are based on calculations performed on the FRS sample and should be viewed as indicative estimates rather than precise costings of options

Our analysis shows that extending the single person discount to 50% would cost around £78 million. It is estimated that the percentage of households paying more than 3% of income on water and sewerage would fall from 15% to 9%.

Extending the Single Person discount further to 100% would cost an estimated £235m. This would bring the percentage of households paying more than 3% from 15% to 2.5%. On the other hand, removing the 25% single person discount would increase the percentage of households paying more than 3% from 15% to 19%, or by around 100,000 households.

However, whilst 65% of those with water and sewerage affordability issues are single adult households, there is nonetheless a large proportion of single person households who are not facing water and sewerage affordability issues. Any scheme to increase the Single Person discount would therefore involve significant 'deadweight'. It is thus not a particularly efficient policy.

Extending the Council Tax Reduction

Extending reliefs for water and sewerage charges to be more consistent with those for Council Tax is likely to be relatively efficient, as CTR is targeted specifically at relatively low income households and, as we have seen in the previous chapter, it is primarily low-income households who face water and sewerage affordability issues. Moreover, the policy should be relatively straightforward to implement administratively, as local authorities already have access to the relevant household information (although there is a significant issue around low take-up of Council Tax Reduction).

We have costed three policies (Table 5.2). Extending WCRS relief to 25% for all those who currently receive a CTR based discount of less than 25% would cost an estimated £2.5 million. Increasing the relief to 50% for all those currently in receipt of CTR (including those additionally in receipt of status discounts) would cost around £32 million. And increasing the relief to 100% for all those currently in receipt of CTR (including those additionally in receipt of status discounts) would cost around £90 million.

But what would the effects be on the rates of those paying more than 3%/5% of household income on water and sewerage? The proportion of households spending more than 3% of income on water and sewerage would fall from 15% to 11%, whilst the proportion spending more than 5% of income on water and sewerage would fall from 6% to 5%.

It is perhaps surprising that, even if full relief on water and sewerage bills is provided to all households receiving Council Tax Reduction, a more significant increase in water and sewerage affordability is not observed.

Table 5.2: Cost to extending Council Tax Reduction (WCRS) relief

Policy	2015/16	2017/18*
Extending relief to 25% for those receiving under 25% reduction	£2.5 million	-
Increasing relief to 50% for all currently in receipt	£32 million	£33.5 million
Increasing relief to 100% for all currently in receipt of CTR	£90 million	£106 million

***Source**: FAI calculations, * Scottish Water calculations*

But recall from Table 4.10 that only 29% of households with water and sewerage affordability issues receive Council Tax Reduction. Further research is required in order to ascertain the extent to which this reflects in part low take-up rates of Council Tax Reduction among eligible households and/or under-reporting[42].

42 http://www.parliament.scot/ResearchBriefingsAndFactsheets/S5/SB_17-24_Council_Tax_Reduction.pdf

5.4 A relief scheme on application

A further option is to run a relief scheme on application. Scottish Water is considering exploring the introduction of a Hardship Fund in 2021 to coincide with their 2021-2027 Business Plan. The determination of eligibility for such a relief should be based around clear and unambiguous eligibility criteria. Given that water and sewerage affordability is primarily a function of income, the most efficient scheme is likely to be one that determines eligibility on the basis of income.

Table 5.3 shows the annual net household income that would be required in order for a household to spend less than 3% (or less than 5%) of its net income on water and sewerage charges in 2017/18, given the existing charge structure. It shows for example that a household in a Band A property needed income of £9,500 in order to pay less than 3% of its income on water and sewerage (whilst a single person Band A household required income of 25% less than this given that their charge is 25% lower).

Table 5.3: Net household income required to spend ‹ 3%/5% of income on water and sewerage (2017/18)

		Annual household net income required in order to spend ...			
Council tax band	Combined services charge	**... less than 3% of income on water and sewerage**		**... less than 5% of income on water and sewerage**	
		Standard	Single person	Standard	Single person
A	£287.04	£9,568	£7,176	£5,741	£4,306
B	£334.88	£11,163	£8,372	£6,698	£5,023
C	£382.72	£12,757	£9,568	£7,654	£5,741
D	£430.56	£14,352	£10,764	£8,611	£6,458
E	£526.24	£17,541	£13,156	£10,525	£7,894
F	£621.92	£20,731	£15,548	£12,438	£9,329
G	£717.60	£23,920	£17,940	£14,352	£10,764
H	£861.12	£28,704	£21,528	£17,222	£12,917

***Source**: FAI calculations*

One way in which a relief scheme could operate then is to offer relief to households whose net income is below these thresholds (we discuss subsequently the practicalities of such a system). Households whose income fell below the relevant threshold could apply to the scheme. The scheme could offer either to reduce the water and sewerage charge bill sufficiently so that the household spent no more than 3% (5%) of its income on water and sewerage; or, it may be administratively simpler to offer a standard relief (say 25%) to all applicants who qualify.

The cost of the scheme, if it was fully taken up, would be in the region of £34 million, given that this is the cost of reducing all households bills to within the 3% threshold, as identified above.

However, it seems unlikely that any such scheme would be fully taken up, partly because visibility of the scheme is likely to be partial, and partly because some households – particularly those who would only qualify for marginal levels of relief – may decide that the burden of applying does not outweigh the potential monetary benefits.

In principle this relief scheme has the potential to be a very efficient way in which to address affordability issues in water and sewerage. However, the costs of administering the scheme are likely to be substantial, as the scheme requires assessments of household net income on a case-by-case basis. Net income in this context includes income after income tax, national insurance from a variety of sources – including

employment, self-employment, pensions, and income from benefits – together with an assessment of housing costs including rent or mortgage payments. The scheme administrators would need some way to verify the basis of any claim being made. And any successful claim would need to be reappraised on a periodic basis to verify that the household remained eligible over time, or whether circumstances had changed.

Administratively, it would be simpler to operate the scheme on a 'before housing costs' basis, although this would mean targeting the scheme on a somewhat different subset of households from those in the after housing costs definition.

5.5 Topping up existing benefits

Under the Scotland Act 2016, the Scottish Government can 'top-up' benefits that are determined at Westminster and delivered by DWP.

Given that being in above the 3%/5% income thresholds appears to be predominantly an issue associated with low income, one option available to the Scottish Government therefore is to top-up one or more means tested benefits. For example, Universal Credit, (or the benefits that form part of Universal Credit) could be topped-up.

We have seen for example that Universal Credit claimants make up over one third of all those spending more than 3%/5% of income on water and sewerage. However, only just over one fifth of Universal Credit claimants themselves spend more than 3%/5% of income on water and sewerage, and thus any top-up to Universal Credit in general would generate substantial deadweight (i.e. benefits that do not go to the target group).

In principle, if all those Universal Credit claimants currently paying more than 3% of net AHC income on water and sewerage (of whom there are approximately 125,000) could be targeted with a benefit that was just sufficient to bring their expenditure on water and sewerage to 3%, this would cost around £10 million. This is an average of £84 per relevant household, per year[43].

But in reality, it would be impossible to target this subset of Universal Credit recipients with a benefit that was particular to their individual needs. The administratively more realistic option would be to offer the £84 top-up to all Universal Credit recipients. This would cost around £50 million[44].

Even among those households who were spending more than 3% of their income on water and sewerage, the policy is likely to be somewhat inefficient – the £84 top-up would likely not be sufficient to bring some households within the 3% threshold, whilst it would be far too generous for others.

Eligibility for a top-up scheme would simply be determined by DWP, and there would be an automatic 'top-up' for any Scottish claimant. But, under the rules of the Scottish fiscal framework, the Scottish Government would have to reimburse DWP for the costs of administering a top-up system. These costs would likely be substantial.

A further question arises in relation to how such a change would be perceived by claimants. There is a risk that a small increase in benefit would go largely unnoticed, and would do nothing to raise awareness about liability for water and sewerage bills (and hence have limited effects on water and sewerage debt).

43 Strictly speaking, the £84 is the annual amount by which households' bills would need to fall to bring those households within the 3% expenditure target. Adding £84 to income technically would not be sufficient to bring household spending within the 3% target. This is because a given cash reduction to a bill has a greater impact than an equivalent cash increase to income on reducing the proportion of income spent on water and sewerage.

44 To be revenue neutral, this policy would need to go alongside an average bill increase of around £30 per year for households not in receipt of Universal Credit.

5.6 Creating a new benefit

The Scottish Government has the ability to create new benefits in areas of devolved competence. This opens the possibility that a new benefit could be created and administered by the Scottish Social Security Agency which is being established by the Scottish Government.

As discussed previously, in relation to a scheme based 'on application', an efficient scheme would be based around eligibility criteria that take account of both net income (after housing costs) and council tax band (and thus charge).

However, it seems unlikely that the Scottish Social Security Agency will have access to households' income data, and administering a scheme based on such relatively detailed criteria would be extremely complex and administratively demanding.

The Agency could instead administer a new benefit for which eligibility would be based on receipt of one or more existing benefits. But such a scheme would then suffer from the same problems of targeting as do the 'top-up' schemes, namely that no one benefit (or group of benefits) is very closely correlated with the prevalence of spending more than 3%/5% of income on water and sewerage. There would be the added complication that the Scottish Agency would need to liaise with DWP to ascertain eligibility.

Indeed the only advantage of creating a new benefit in such circumstances is that a wholly new benefit – labelled as a 'water and sewerage' benefit for example – would be visible to recipients as such, and would be more likely to be used by households to support expenditure on water and sewerage bills[45].

5.7 Summary

Table 5.4 summarises the analysis in this chapter.

There are clearly a number of trade-offs. In general, policies that are more targeted will be more efficient, but they also tend to be associated with higher administrative costs. Policies that are specifically labelled water and sewerage relief/benefit might help raise awareness of water and sewerage charges and result in fewer households falling into arrears; but such policies might also add to the complexity of the benefit landscape for recipients.

45 Previous research has found that the way benefits are labelled does influence the way that those benefits are used. For example, Beatty et al. (2011) find evidence that recipients of the Winter Fuel Payment do use this benefit to fund higher expenditure on heating than would be expected if the benefit were allocated as an unlabelled cash benefit (see 'Cash by any other name? Evidence on labelling from the UK Winter Fuel Payment' https://www.ifs.org.uk/wps/wp1110.pdf) . Similar labelling effects have been found for Child Benefit (see Kooreman, 2000 'The labelling effect of a child benefit system' https://www.jstor.org/stable/117343?seq=11#page_scan_tab_contents

Table 5.4: Summary of policy options

	Cost	Efficiency	Admin. cost/ complexity	Transparency / coherence for recipients	Other aspects of design
Changing the ratios between bands	Low	Inefficient as weak relationship between council tax band and income.	Low	Little change from current system in place	Increasing the ratios between bands will make more households in higher banded properties spend more on water / sewerage while reducing the ratios will have the same effect on households in lower banded properties
Extending Single Person discount	Depends on extent to which relief is extended. If full relief was given to all households in receipt of status discount, cost would be around £235m.	This would reduce the percentage of households paying more than 3% from 15% to 2.5%. However, this would clearly benefit wealthy single households.	Relatively simple. However, if this were to be funded by others customers then would need to ensure that these customers weren't pushed into spending more than 3% due to increasing charges	Would not change anything from recipient perspective. If costs were to be picked up by other customers, then increases to charges would need to be communicated	Not clear this would do anything to raise awareness of distinction between council tax bill and water and sewerage charge. This, as discussed in Section 2.4, is thought to be a cause of household indebtness for water and sewerage charges
Extending Council Tax Reduction	Depends on extent to which relief is extended. If full relief was given to all households in receipt of CTR, cost is around £90 million.	Reasonably efficient in that most of the increase in spending goes on those on low incomes; although the majority with water and sewerage affordability issues are not in receipt of CTR and would thus not benefit	Relatively simple to extend existing CTR eligibility rules to water and sewerage	Extending the benefit may have implications for work incentives and 'better-off' calculations as recipients move into employment or see their incomes rise	Not clear this would do anything to raise awareness of distinction between council tax bill and water and sewerage charge
Support scheme 'on application'	Potentially relatively low if based around very specific eligibility criteria	Efficient if based on income and housing cost criteria	Substantial administrative costs in assessing each application	As a separate benefit, coherence with existing system not clear	Benefit would be clearly labelled as water and sewerage relief, thus more likely to reduce incidence of debt
Top-up of UK benefit	Substantial, depending on which benefits topped up, and to what extent	Likely to result in many who do not have water and sewerage affordability issues receiving 'top-up'; whilst top-up may not be sufficient for some of those with water and sewerage affordability issues	Costs would fall on DWP which would seek reimbursement from Scottish Government; likely fairly substantial	Would not change anything from recipient perspective	Small top-up unlikely to be noticed by recipients, and may not change behaviour
New benefit, delivered by Scottish Social Security Agency	Potentially low, depending on specificity of eligibility criteria. However, see administrative costs.	Depends on specificity of eligibility criteria	Substantial costs for new Social Security Agency in terms of administration	A new benefit might add to complexity of landscape. Care would be required to ensure the benefit was not withdrawn at the same time as other benefits (as income increases).	If the benefit was labelled as water and sewerage relief, households would be more likely to allocate it to water and sewerage expenditure

Conclusions

Chapter 6

Scottish households spend an average of 2% of net after housing cost (AHC) income on water and sewerage. Median expenditure on water and sewerage is lower, at 1.5%.

In total, 15% of Scottish households spend more than 3% of net AHC income on water and sewerage. This represents around 360,000 households.

6% of Scottish households spend more than 5% of net AHC income on water and sewerage, representing around 145,000 households.

The costs of reducing the bills of all households who currently spend more than 3% of income on water and sewerage charges to 3% would be around £34 million (assuming that all households, their incomes and housing costs could be identified).

The composition of households spending more than 3% of income on water and sewerage is diverse. The group includes working age and pensioner households, those in receipt of means tested benefits and those not in receipt of such benefits, households across all council tax bands, and across all tenures.

The main reason why the group of households spending more than 3% (or 5%) of income on water and sewerage is so diverse relates to the way in which charges are billed. Charges are related to council tax band, with those in Band D paying one and a half times as much as those in Band A, whilst those in Band G pay two thirds more than those in Band D.

Whilst the scale of this increase in charge with council tax band is broadly proportionate with median income by band (Band D median income is almost twice as much as Band A median income, whilst Band G median income is 80% higher than Band D), the variance of income within each council tax band is large. Thus there are households in lower banded properties with relatively high incomes, and households in higher banded properties with relatively low incomes.

As a result, the proportion of income spent on water and sewerage varies significantly within each council tax band.

The main factor determining whether or not a household has water and sewerage affordability issues is income: the lower the income, the more likely the property is to be spending more than 3% of income on water and sewerage.

But household income is determined by a multiplicity of factors, including work and benefit status. In this context, it is not surprising that our work has similarly found that the factors determining expenditure on water and sewerage as a percentage of income are complex and multifaceted. Workless households are more likely to spend more than 3% of income on water and sewerage than working households, but being in work is no guarantee that a household will not be spending more than 3% of income on water and sewerage.

Single households are more likely to above the 3% income threshold on water and sewerage than multiple occupancy households. The reason for this is simple: whilst single households receive a 25% discount on their water and sewerage charge, their income tends to be lower, on average than non-single households.

Pensioner households are slightly less likely to be spending more than 3% (or 5%) of income on water and sewerage than working age households. Whilst this may surprise some, it results from the fact that whilst pensioners have somewhat lower before housing cost income than working age households, they also tend to have lower housing costs (both because they are more likely to own their properties outright and because they are more likely to be in social housing, compared to working age households who are more likely to have either mortgage costs or be in the private rented sector). As a result, pensioners tend to have similar or slightly higher AHC incomes than working age households.

The fact that the composition of the households who spend above the income thresholds on water and sewerage is so diverse makes designing policy solutions to alleviate water and sewerage affordability issues challenging.

No easy solutions exist (in terms of extending existing reliefs or making new reliefs available to those on particular benefits) without both creating 'deadweight' (i.e. providing financial support to households which do not spend more than 3%/5% of income on water and sewerage), and without favouring one group at the expense of another.

Fundamentally, a big part of the issue relates to the way in which the current billing system is based around the council tax system. From an administrative perspective, basing the billing system on council tax makes sense. Local authorities have access to all the information they require to set each households' bill (council tax band, status discount eligibility and council tax reduction eligibility), and a well-established system in place for collecting liabilities.

But by basing bills on council tax band, it is not clear what the principle is behind the billing structure, other than continuing to follow a legacy charging structure.

It is unclear whether the principle for designing water charges is that bills should be proportionate to use (with some relief for those unable to pay), or proportionate to income. This report has re-established the fact that there is only weak correlation between council tax band and income. We are unaware of any data linking council tax band to water use, although a strong relationship appears unlikely given that council tax band is intended to proxy property value, not property size or occupancy.

Whatever the broad principles for charging, support will need to be targeted at those with limited ability to pay, i.e. at those with relatively low incomes. If the current system of charging based on council tax is maintained, extending the reductions to be more consistent with the reductions available with Council Tax Reduction would be a prudent way to reduce water affordability constraints. However, the policy would create some deadweight (in the sense that some households would see their bills reduce despite not spending above the 3% income threshold on water and sewerage themselves). Moreover, a large proportion of those spending above 3% of income on water and sewerage would not benefit, as only around a third of these households are in receipt of CTR.

Another way to reduce the incidence of households spending over 3% of income on water and sewerage would be to extend the Single Person discount. However, this is a high cost policy and would also create deadweight. Moreover it is a policy recommendation that results directly from the particular definition of water and sewerage affordability used.

The aim of this report has been to identify in broad terms the characteristics of households spending more than 3% / 5% of their net household income on water and sewerage charges and to identify suitable policy options to reduce water affordability issues. However, the costs of any policy response to reduce affordability issues (by reducing the bills of particular groups of consumers) will need to be recouped through higher costs to other customers. It is beyond the scope of this report to identify how any bill increases might be distributed across the remaining customer base, but policy would have to be carefully designed to avoid any of those remaining customers being pushed over the 3% threshold as a result of broader charging changes.

In summary, the composition of households spending more than 3% of income on water and sewerage is diverse. Policy solutions to addressing water and sewerage affordability issues will need to trade-off efficiency considerations with administrative considerations. But the diverse nature of the target group means that cost-effective design of policy to reduce water and sewerage affordability issues will be difficult within the confines of the current charging system.

Annex A: Regression analysis

Table A.1 shows the results of two probit regressions.

Regression 1 assesses the probability of spending more than 3% of AHC income on water and sewerage given eleven variables relating to council tax band, benefit status, whether the household is single/nonsingle, and whether it has dependent children or not.

All variables are significant at the 5% level or higher. The interpretation is as follows:

- The coefficient of 0.147 on the 'Single' variable implies that single households are almost 15% more likely to spend above 3% of income on water and sewerage than non-single households (holding all other factors constant). This reflects the fact that, whilst single households tend to receive a 25% discount on their bills, their income tends to be lower too.
- Households with dependent children are 12% less likely to spend more than 3% of income on water and sewerage than households without dependent children. This is intuitive in the sense that households with children tend to have higher incomes on average than those without.
- The model then includes five variables to reflect council tax band. The 'excluded variable' is Band D, which means that the model assesses differences relative to Band D. For example, the coefficient of -0.48 on the Band A variable means that households in Band A properties are 5% less likely to spend more than 3% of income on water and sewerage than households in a Band D property. According to the regression results, households in Bands A, B and C are less likely to spend more than 3% on water and sewerage than band D households, whilst households in bands E and Bands FGH are more likely to spend above the 3% threshold.
- The results for council tax may appear counter-intuitive. But they reflect the fact that what the model does is assess the likelihood of a household spending more than 3% of income on water and sewerage holding other variables constant. So, all else equal, being in a higher banded property implies a higher likelihood of spending more than 3% of income on water and sewerage, reflecting bills being higher for higher banded properties.
- Regression 1 then includes several variables for benefit receipt. These show for example that households in receipt of a means-tested benefit (defined to include Working Tax Credits, Child Tax Credits, Housing Benefit, JSA, ESA and Income Support) are more likely to spend more than 3% of income on water and sewerage than those who are not in receipt of these benefits.
- Those in receipt of DLA or PIP are less likely to spend more than 3% of income on water and sewerage. This is intuitive in the sense that households in receipt of these benefits tend to be located slightly further up the income distribution on average, by virtue of receiving a non-means tested benefit[1].
- Those in receipt of State Pension are marginally less likely to spend more than 3% of income on water and sewerage. Those in receipt of means tested Pension Credit are 6% less likely to spend more than 3% of income than those who do not receive pension credit. This does appear a somewhat counterintuitive result. It might be picking up the fact that those in receipt of Pension Credit tend to live in lower banded properties on average, and are therefore less likely to spend more than 3% of income on water and sewerage on average.

1 It could be argued that disability benefits should be deducted from measures of disposable income, as they are intended to reflect additional costs associated with disability.

Regression 2 is the same as Regression 1 other than the fact that we add one more variable: household net income. This has a number of effects:

- The sign on some of the explanatory variables switches. For example, the coefficient on the Single variable is now negative. This is because we are now controlling for income so the interpretation is different. By including an income variable, Regression 2 asks, for a given income, to what extent does being single influence the likelihood of spending more than 3% of income on in water and sewerage? The coefficient is negative because, conditional on income, single people tend to have lower bills (because they receive a 25% discount). Regression 1 did not control for income, and the coefficient was conflating the fact that single people have lower bills with the fact that they also have lower incomes.
- Two variables that were significant in Regression 1 become insignificant in Regression 2: whether the household has dependent children, and whether the household receives DLA/PIP. This suggests that these variables were significant in Regression 1 because they are correlated with income in some way, and once we include income as a separate variable, these variables cease to have any explanatory power.
- More generally, the size of the coefficients on all the explanatory variables shrinks significantly under Regression 2. Furthermore the R2 – which shows what proportion of variation in the dependent variable can be explained by the explanatory variables – increases from 0.11 under Regression 1 to 0.75 in Regression 2.
- This suggests that income has a major role to play in explaining whether households are likely to spend above 3% of income on water and sewerage, and the variables in Regression 1 were all proxying income to an extent.

Table A.1: Regression results

	Regression 1			Regression 2		
variable	Coefficient	Standard error	Signif. level	Coefficient	Standard Error	Signif. level
Single	0.147	0.009	0.01	-9.1E-11	1.2E-10	0.01
Dependent children	-0.122	0.007	0.01	1.1E-13	3.4E-12	*
Band A	-0.048	0.011	0.01	-3.2E-11	4.3E-11	0.01
Band B	-0.026	0.012	0.05	-1.5E-11	2.1E-11	0.01
Band C	-0.030	0.012	0.05	-6.9E-12	9.8E-12	0.01
Band E	0.059	0.017	0.01	4.2E-08	4.6E-08	0.01
Band FGH	0.107	0.019	0.01	3.1E-04	2.0E-04	0.01
In receipt: working age benefits	0.144	0.013	0.01	-5.7E-12	8.0E-12	0.01
In receipt: DLA/ PIP	-0.117	0.014	0.01	-3.1E-12	5.8E-12	*
In receipt: State Pension	-0.027	0.008	0.01	5.0E-12	7.1E-12	0.1
In receipt: Pension Credit	-0.061	0.011	0.01	-5.3E-12	7.6E-12	0.01
AHC income				-7.1E-13	9.8E-13	0.01
Observations	8543			8543		
R2	0.11			0.75		

* Not statistically significant

***Source**: FAI calculations*

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