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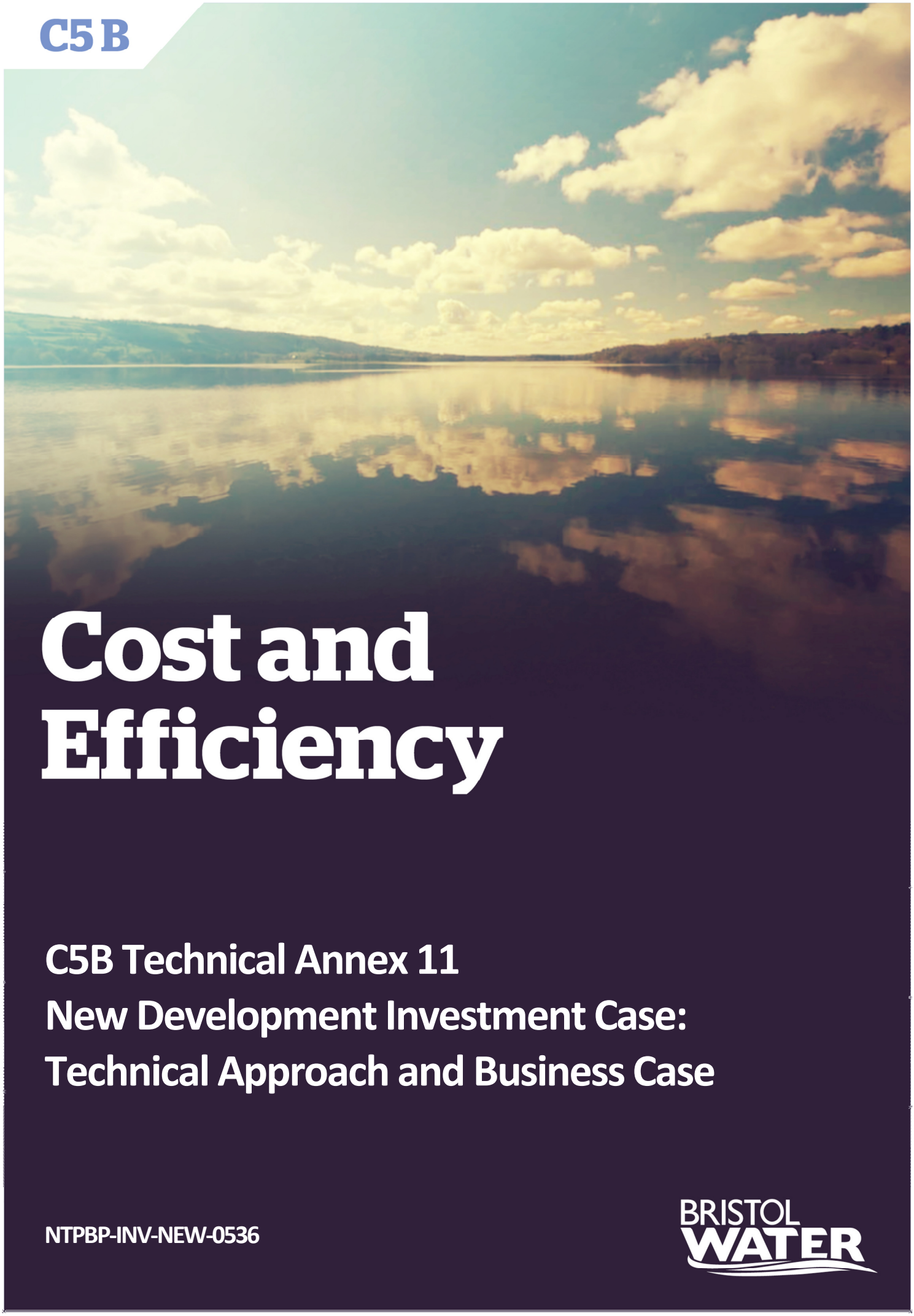


Cost and Efficiency

C5B Technical Annex 11
New Development Investment Case: Technical Approach and Business Case

NTPBP-INV-NEW-0536

BRISTOL WATER

Contents

1 FOREWORD 1
2 EXECUTIVE SUMMARY 2
3 BACKGROUND TO OUR INVESTMENT CASE 5
3.1 CONTEXT 5
3.2 STRATEGY 8
3.3 CUSTOMER PRIORITIES 9
3.4 AMP7 PERFORMANCE COMMITMENTS & OUTCOME DELIVERY INCENTIVES 11
3.5 COMPLIANCE OBLIGATIONS 11
3.6 AMP6 INVESTMENT AND PERFORMANCE 12
4 DEVELOPING OUR INVESTMENT PLAN 14
4.1 INVESTMENT CASE DEVELOPMENT PROCESS 14
4.1.1 Data & Data Assurance 15
4.1.2 Investment Case Risk Identification, Verification & Needs Assessment 16
4.1.3 Optioneering and Intervention Development Methodology 16
4.1.4 Intervention Costing Methodology 16
4.1.5 Benefits Quantification Methodology 16
4.1.6 Investment Optimisation & Intervention Selection 17
4.2 APPLYING THE INVESTMENT PROCESS TO NEW DEVELOPMENT 18
4.2.1 Risk Identification, Verification & Needs Assessment 18
4.2.2 Intervention Costing 18
4.2.3 Benefits Quantification 19
5 OUTCOME 20
5.1 SELECTED INTERVENTIONS 20
5.2 CONTRIBUTION TO PERFORMANCE COMMITMENT 22
5.3 NON SELECTED INTERVENTIONS 23
5.4 ASSUMPTIONS 23
5.5 AMP 8 23
5.6 BASE MAINTENANCE 23
5.7 HISTORIC & AMP7 INVESTMENT COMPARISON 24
6 CONCLUSIONS 25
7 APPENDICES 26
7.1 APPENDIX A: LINE OF SIGHT 27
7.2 APPENDIX B: DATASETS 29
7.3 APPENDIX C1: SELECTED RISKS 31
7.4 APPENDIX C2: NON-SELECTED RISKS 32
7.5 APPENDIX D: OPTIONS CONSIDERED 33
7.6 APPENDIX E: INTERVENTIONS DEVELOPED 35
7.7 APPENDIX F: NON-SELECTED INTERVENTIONS 37

Tables

Table 1: Performance commitment targets and percentage contribution from new development 4
Table 2: Associated performance commitments 11
Table 3: AMP6 net capital investment 12
Table 4: Historic AMP6 Performance 13
Table 5: Selected interventions, costs, and % performance contribution 21
Table 6: Water Service and Business Unit Allocation 21
Table 7: Contribution to Performance Commitment Targets from Selected Interventions 22
Table 8: Historical & AMP7 net Investment 24

Figures

Figure 1: Approach to meeting customer Priorities and Mitigating Risks 3
Figure 2: Planned Housing Development in Bristol Water Supply Area 6
Figure 3: Planned Commercial Development in Bristol Water Supply Area 7
Figure 4: Areas Sensitive to Growth in Bristol Water Supply Area 8

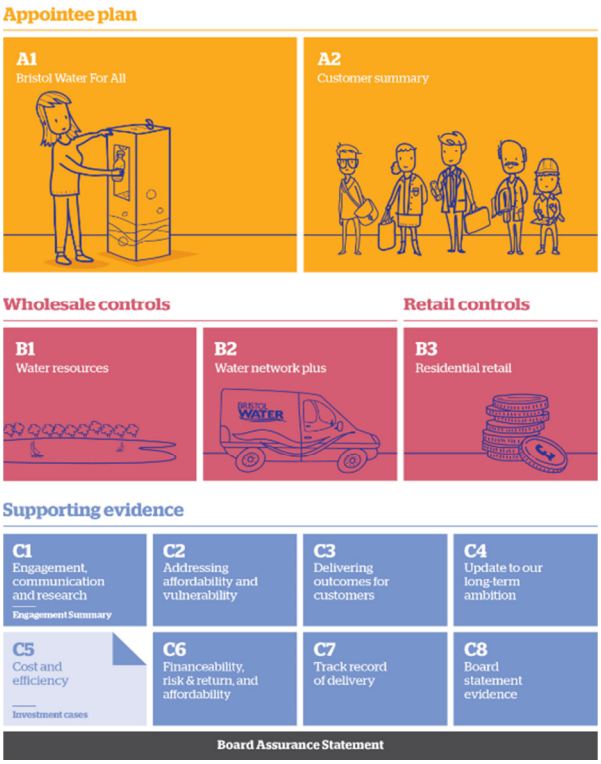
1 Foreword

When new domestic or commercial properties are constructed they need a new connection to the water supply network and may also require a new main to be laid to the development site. Such new development brings new customers. These are not only the end users of the properties but also developers and any contractors who the developer has commissioned to lay water mains instead of Bristol Water, known as self-lay organisations. Under the Water Industry Act 1991[1] we have obligations to these new customers in providing or enabling new connections for an individual property or development site.

These obligations include ensuring that we develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

This investment case, one of 21, will summarise the facts and our methodology for developing the investment requirements for new development for the next review period for 2020 to 2025.

This investment case document is a technical annex to section C5B of our overall business plan submission, as illustrated by the diagram below:



This investment case is aligned to the Water Network Plus Wholesale Control aspect of our business plan. It is recommended that this investment case is read in conjunction with the PR19 Investment Case Summary Document[2] which outlines in detail our methodology for defining investment.

[1] UK Government, Water Industry Act 1991
[2] Bristol Water PR19 Investment Cases Summary Document NTPBP-INV-PR1-0635

2 Executive Summary

In order to provide our customers with new connections when requested, we will invest £29.105m to connect new domestic and commercial properties to our water supply network. Our investment will also reinforce our water supply network to ensure it has sufficient capacity to deliver a safe and reliable supply to our customers. This investment also ensures we meet our obligations under the Water Industry Act 1991 to provide these new connections to customers. This investment also contributes 16.2% towards the performance commitment of a 9% increase in meter penetration, as all new connection will be installed with a water meter. In this same period we expect to receive £15.112m from developers in contributions to recover this investment, resulting in a net pre-efficiency investment of £13.993m. When considering our efficient and innovative approach we plan to deliver our New Development for a net investment of £12.874m.

At Bristol Water we have completed an extensive customer engagement programme which has identified that one of five key priorities for customers is that we keep the water flowing to their tap and one of our four key outcomes is that we provide a safe and reliable supply.

This investment case will address risks and issues associated with new properties built in our supply area, and how our investment will mitigate these risks to our customers. It will also ensure continued compliance with the Water Industry Act 1991.

Our Water Resources Management Plan (2018) forecasts that we are expecting 29,125 requests for new connections (27,840 domestic properties and 1,285 commercial properties) during AMP7. We need to invest to deliver these new connections, and to develop and maintain our water supply system so that we can ensure a Safe and Reliable Supply to our customers.

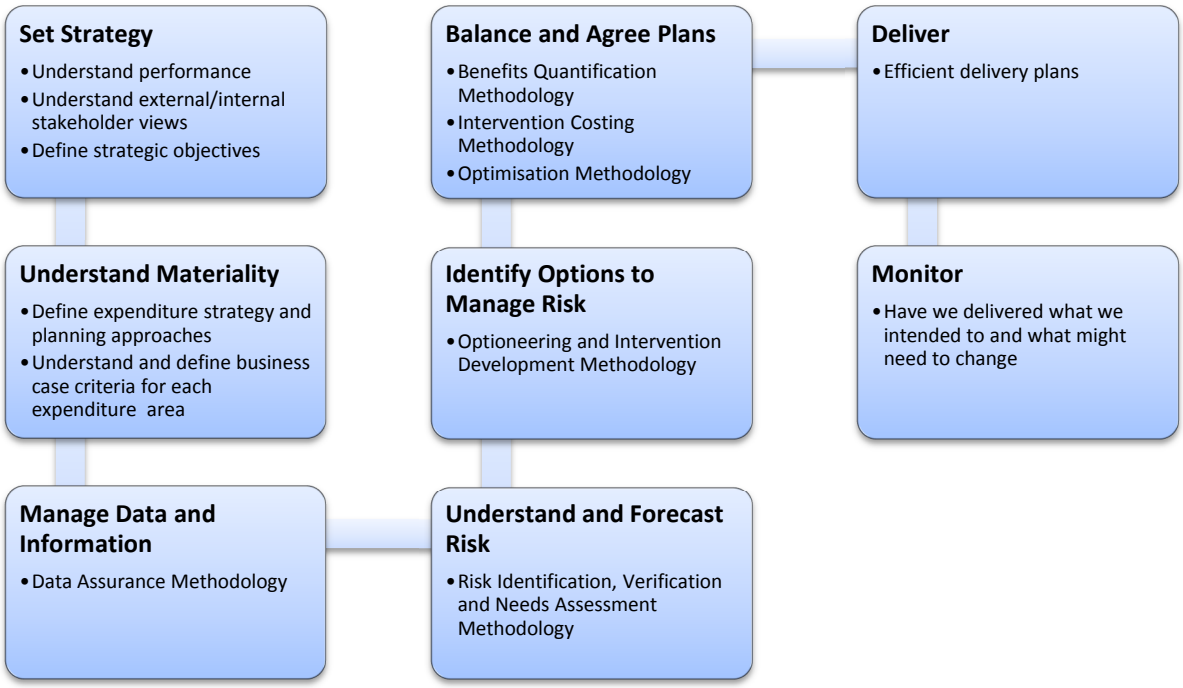
This investment also has an additional benefit of improving our meter penetration performance commitment because every new connection will be installed with a meter. Our AMP7 meter penetration performance commitment is to increase our penetration by 9% in AMP7, from a forecast 66% at the end of AMP6 to 75% at end of AMP7. Meters introduced through new development will contribute 16.2% of this 9% target increase.

Should we fail to invest in new development, the key risks are:

- We will fail to meet both the expectations of our customers and our statutory obligations to provide new connections when requested;
- We will fail to develop and maintain our water supply system so that we can make water available to anyone requesting a new connection; and
- Existing customers may experience low pressure if growth schemes which are funded by the infrastructure charge are not implemented.

In order to ensure that we meet customers' priorities and mitigate the risks associated with New Development we have adopted an asset management totex focused approach as set out in Figure 1.

Figure 1: Approach to meeting customer Priorities and Mitigating Risks



This approach enables us to demonstrate full "line of sight" from customer priorities, through risk review, options analysis and investment optimisation, to outcomes and benefits provided for our customers.

We plan to invest £29.105m from 2020 to 2025 to deliver new connections to our new customers. This investment will include investment in the following assets:

- Domestic and industrial new lay mains;
- Communication pipes to new properties;
- Diversions for new developments;
- Water meters for new properties;
- Off-site mains to the site entrance;
- Other off-site infrastructure to provide sufficient capacity in the wider network.

The investment in off-site assets, classified as Network Reinforcement, represents £4.329m of the net investment of £29.105m. This investment will ensure our water supply network has sufficient capacity to deliver a safe and reliable supply to our customers.

We are forecasting to recover £15.112m of our investment from developers through contributions in the form of:

- Contributions to domestic and industrial new lay mains;
- Contributions to communication pipes;
- Infrastructure charges.

This will result is a net New Development investment (gross investment less developer contributions) of £13.993m. The remainder of our investment will be recovered over the long-term through new revenue generated by our normal water charges applied to these new customers.

We have set ourselves a challenging target of reducing our costs by 8% during AMP7. This will be achieved by delivery of our business transformation programme and results in a post-efficiency net investment of £12.874m. As discussed previously, the required New Development investment will be ultimately determined by the number of requests we receive from developers. The expected number of requests in AMP7 is based upon the forecasts in our Water Resources Management Plan for population growth.

Costs are allocated to the Treated Water Distribution Business Unit. Investment in new development expenditure is categorised as other capital expenditure – infrastructure, and infrastructure network reinforcement. New development contributions are categorised as grants and contributions.

This investment also has an additional benefit of improving our meter penetration performance commitment because every new connection will be installed with a meter. Our meter penetration performance commitment is associated with the outcome 'Safe and Reliable Supply', as set out in Table 1.

Table 1: Performance commitment targets and percentage contribution from new development

Performance Commitment	Unit	2019/20 Baseline	2024/25 Target	Total targeted performance commitment improvement in AMP7	New development % contribution to performance commitment target
Meter penetration	%	66.00	75.00	9.00	16.22%

Full details of our outcomes, performance commitments, and outcome delivery incentives are provided in section C3 of our business plan.

3 Background To Our Investment Case

3.1 Context

This investment case will cover how we plan to invest to account for increasing populations in our supply area between 2020 and 2025.

The price controls set by Ofwat include allowances for water companies to:

- Invest in their water network to support growth; and
- Recover the costs of this investment from customers.

Expenditure on investment in our water network as a result of new development falls under the following headings:

- Domestic new lay mains on the development site;
- Industrial new lay mains on the development site;
- Communication pipes to new properties;
- Diversions of existing water mains to allow a new development to be constructed;
- Water meters for new properties;
- Off-site mains to provide capacity to the site entrance; and
- Investment in mains, reservoirs, pumping stations or other off-site infrastructure to provide sufficient capacity in the wider network.

Recovery of the cost of this investment is governed by the provisions of the Water Industry Act 1991. The recovery of this investment takes account of the fact that water companies, through their normal water charging mechanisms, will earn a revenue stream from new customers over many years after the new connection has been made. Therefore the costs that water companies can recover in the short term are the full cost of the investment less the amount recovered over the long term through water charging.

In addition water companies can recover the cost of reinforcing or increasing the capacity of upstream infrastructure such as water mains, service reservoirs and pumping stations to meet the demand from new development. We recover this cost as an infrastructure charge against each new property constructed. The level of this charge is based on the expected cost of upstream infrastructure required and the expected number of new connections.

Contributions to new development therefore fall under the following headings:

- Contributions to domestic new lay mains on the development site;
- Contributions to industrial new lay mains on the development site; and
- Contributions to communication pipes to new properties.

Population growth in our region is set to increase by approximately 5.4% during AMP7 with both domestic and commercial development planned across our area of supply. Our Water Resources Management Plan indicates that we are expecting 27,840 requests for new connections to domestic properties and 1,285 requests for new connections to commercial properties during AMP7.

The Figure 2 illustrates the planned residential housing development in our area, and Figure 3 illustrates the planned commercial development.

Figure 2: Planned Housing Development in Bristol Water Supply Area

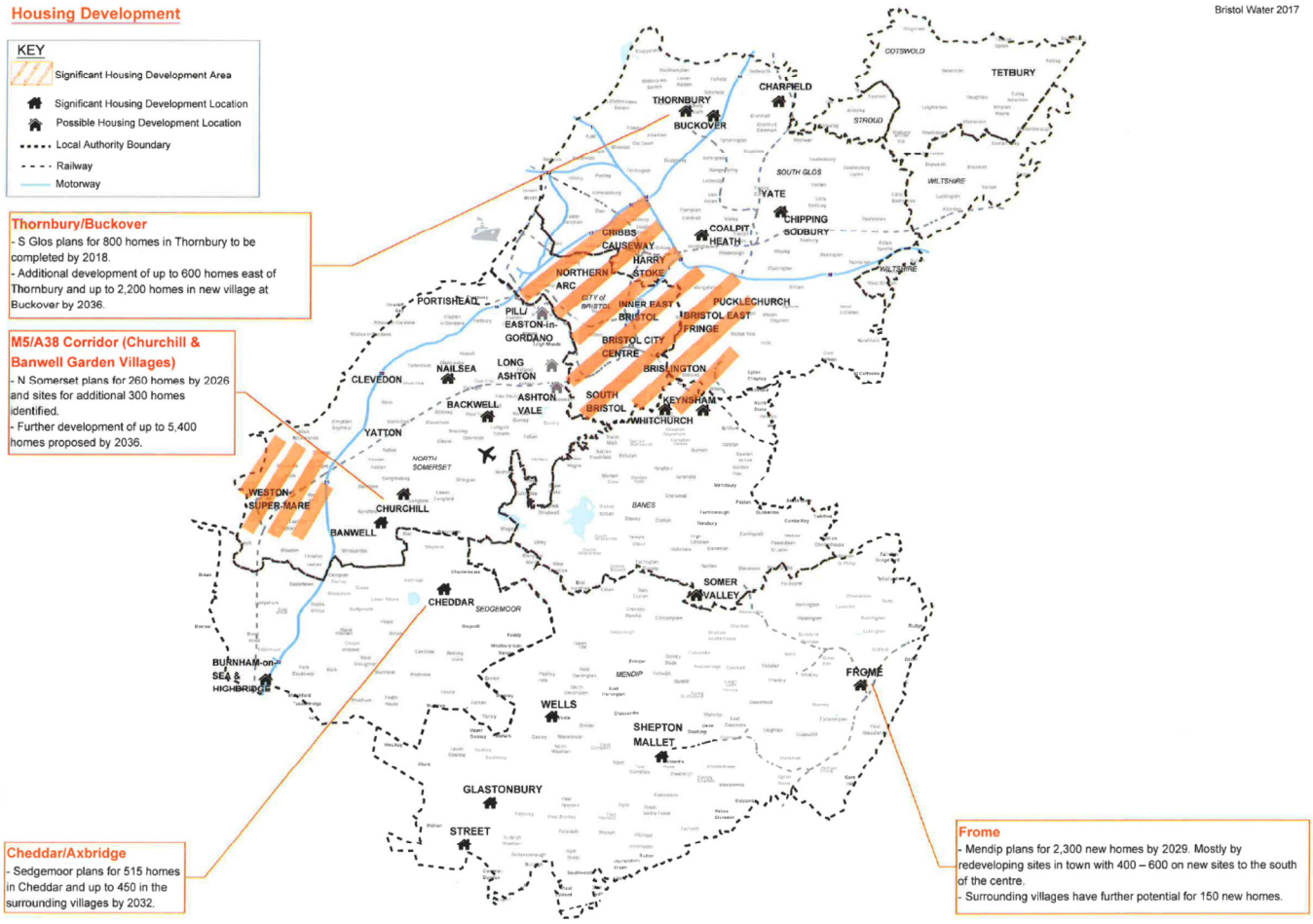
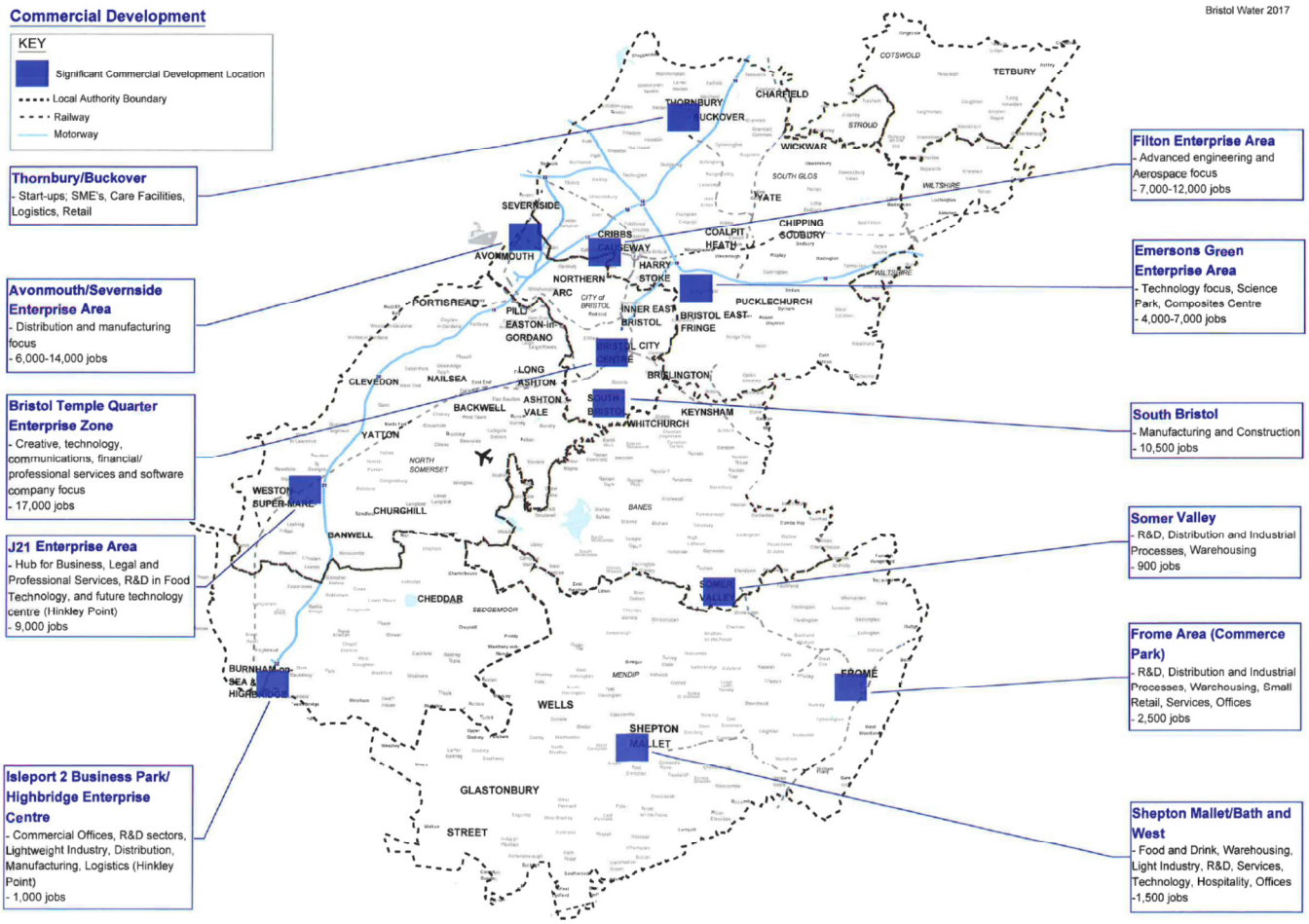
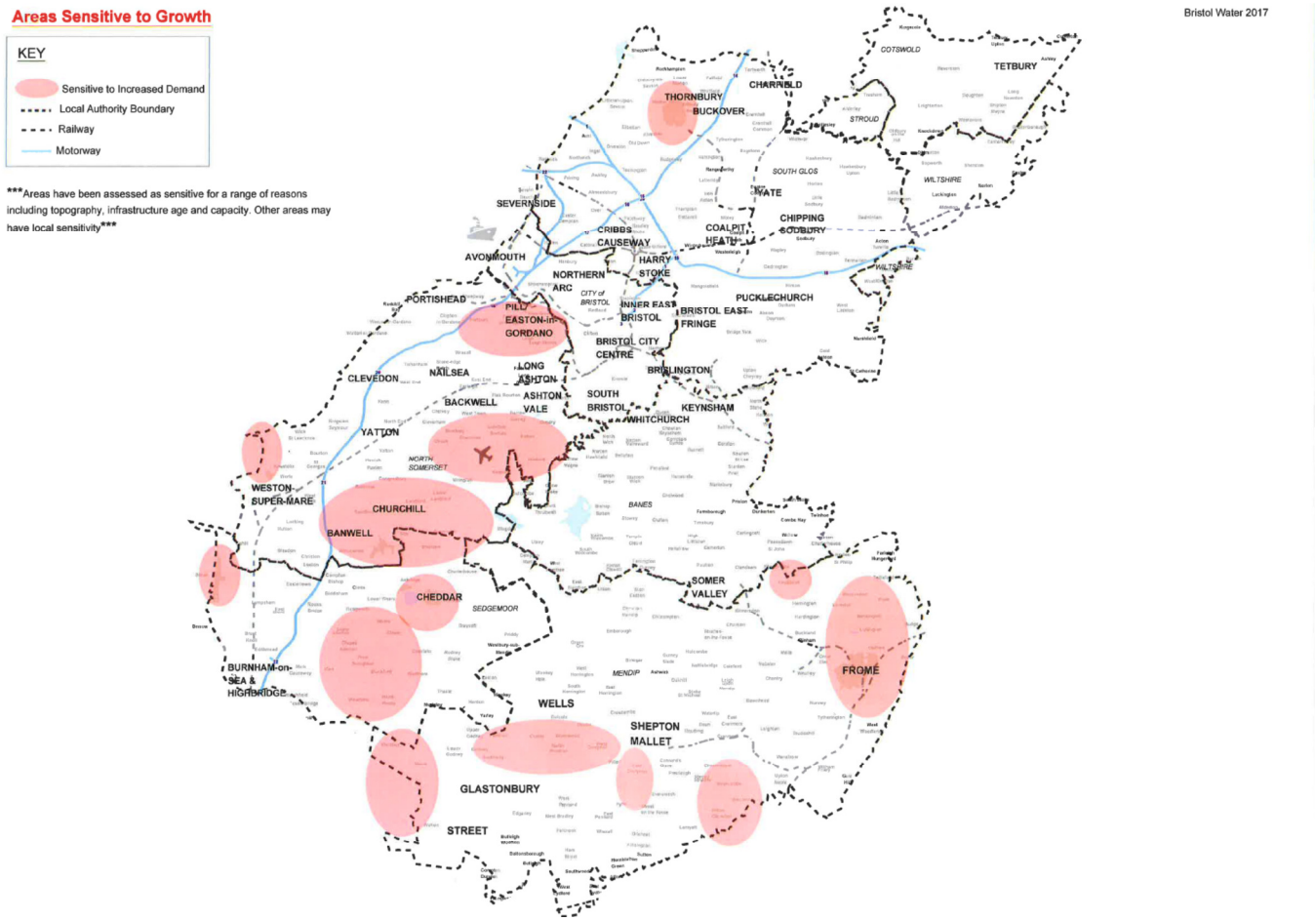


Figure 3: Planned Commercial Development in Bristol Water Supply Area



While we have sufficient water resources to accommodate the new development anticipated in our area of supply in AMP7, our existing network will face challenges in providing sufficient capacity to these new demands. The Figure 4 illustrates the areas of sensitivity in terms of capacity and risks of low pressures arising from increased flows.

Figure 4: Areas Sensitive to Growth in Bristol Water Supply Area



This investment case is interdependent with the Customer Meters investment case as they share the same performance commitment target of Meter Penetration. The significant proportion of the Meter Penetration Performance Commitment is achieved by customer Meters.

3.2 Strategy

Our strategy for New Development is to comply with our statutory obligation to develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

Developing the investment needs for new connections is underpinned by our long term corporate strategy which has the vision “Trust beyond water - we provide excellent experiences”. Our Outcomes Delivery Framework together with our Strategic Asset Management Plan provide the strategic framework that supports this vision and enables investment in new connections to clearly focus in delivering against outcomes and performance commitments.

Our long term strategy, as set out in the Outcome Delivery Framework (Section C3 of our Business Plan), has a focus on resilience and a growing need to ensure our assets are, and remain, fit and well maintained and effective in meeting our performance requirements. There are three strategic drivers identified that together ensure we meet our current and future needs for customers and stakeholders. These are:

- **Operational Resilience** - which have performance commitments to reflect reliability, resilience and quality of water
- **Customer Focused** - performance commitments to reflect customer service and affordability
- **A Sustainable Business** - performance commitments to reflect the environment representing our community and sustainable resources

Within this strategy there are specific outcomes (Local Community and Environmental Resilience, and Excellent Customer Experiences) and specific performance commitments (Meter Penetration, and DMeX) that have strategic targets and incentives. It has proved difficult to directly link totex investment for New Development with the Developer Experience Performance Commitment (DMex). However, Meter Penetration will be directly influenced by our investment needs for new connections.

Our Asset Management Strategy has objectives developed in alignment with the long term strategy and delivery of corporate objectives and outcomes. These objectives cover both our short-term needs and longer-term aims, and drive the capability development plan and asset planning activities. Delivery of the investment for new connections will be driven through the Asset Management Framework, which is designed to enable the efficient and effective planning and delivery of all our asset related activities, to successfully deliver our business and customer outcomes. The framework aligns to, and interacts with, our corporate drivers, which in turn are there to deliver the external expectations and requirements placed upon us by our stakeholders.

3.3 Customer Priorities

Customer priorities relating to Bristol Water's outcomes and performance commitments have been determined through our extensive programme of customer engagement and research. During the development of our business plan we have engaged with over 37,000 customers and conducted over 50 pieces of research. By delivering customer engagement, we have ensured that we can build on the customer insights that we have gained, producing a business plan influenced by our engagement events. This ensures that at Bristol Water we have engaged effectively with our customers on longer-term issues, and have taken into account the needs and requirements of different customers including those in vulnerable circumstances and also our future customers.

Through this process our customers have told us that their top priorities have remained largely unchanged from PR14 and have been identified as follows:

- You can get a bill you can afford;
- Keeping the water flowing to your tap;
- Help to improve your community;
- Save water before developing new supplies; and

- You get the best possible experience every time you need us.

Our engagement with our customers has resulted in the development of four specific outcomes for PR19, which capture what our customers and stakeholders have said; these are:

- Excellent Customer Experiences;
- Safe and Reliable Supply;
- Local Community and Environmental Resilience; and
- Corporate Financial Resilience.

In order to deliver our customers' priorities and outcomes we will measure progress via twenty six performance commitments for which we have set delivery targets.

There is a clear relationship between our investment in New Development and our outcome Local Community and Environmental Resilience.

We undertook more detailed discussions at phase 2 of our engagement process; gathering evidence (see section **C1 – Customer engagement, communication and research** appendix to our business plan) which gave us a wealth of information about how our customers' view Bristol Water, our services, and long term plans. We also explored short and long-term trade-offs in decision making and asked customers to tell us how we should approach long term issues of resilience and how we could best respond to service interruptions.

We consulted on three potential scenarios in relation to Local Community and Environmental Resilience outcomes, as summarised below:

			2024/25 target		
Service	**Performance Commitment**	**2020 target**	**Slower improvement plan**	**Suggested improvement plan**	**Faster improvement plan**
Leakage	The amount of water lost from pipes (million litres per day)	43.0	41.0 5% reduction	36.5 15% reduction	36.0 16% reduction
Water used by customers	Water use per person (litres per day)	142	138 3% reduction	135 5% reduction	129 9% reduction
Enhancing your local environment	Biodiversity index (score)*	17,658	17,683 25 point increase	17,711 53 point increase	17,858 200 point increase
Customers satisfied with our contribution to the local community	Community satisfaction survey	N/A – new measure	Continue current initiatives such as 'Refill' and Water Bar	Enhanced recreational benefits from our sites Working in partnership to deliver community benefit, such as reduced use of resources	Accelerated programme to deliver wider community benefits
Forecast increase to the average bill from additional investment			**£3**	**£10**	**£12**

10 points is equivalent to approximately 1 hectares of great new habitat

When discussing local community and environmental resilience outcome with our customers in our draft business plan consultation, the performance commitments under this outcome had some of the highest levels of support for the faster plan, and for the slowest plan, reflecting the mixed views our customers have about how much of a priority these issues should be for investment.

Results show affordability concerns have driven some customers to choose the slower plan, whereas customers also value the service improvements in the suggested plan. In summary, we consider that a plan with a lower bill level with the suggested improvement plan is more likely to be acceptable to more customers (particularly low-income groups). You can see more about how the feedback from our draft business plan consultation influenced each of our performance commitments in section C3.

The level of support for our plan expressed by our customers, both those we have engaged with over a period of time and those we met for the first time, gives us confidence that our final business plan strikes the right balance of delivering service improvements that customers value at a price that is acceptable to the majority.

This investment case describes how we will achieve the suggested improvement plan and associated level of performance through our investment in New Development, specific details on our planned investment and associated performance can be found in Section 3.4.

3.4 AMP7 Performance Commitments & Outcome Delivery Incentives

While the principal need for investment to support new development is to meet our obligations of providing new supplies to new housing and commercial premises, this investment case also supports the outcome Local Community and Environmental Resilience; by investing in new customer meters in order to make our services robust to what the future may hold.

The 'Local Community and Environmental Resilience' outcome will be measured through a set of associated performance commitments. Our planned investment in connections for new development will include investment in new meters, which will support the achievement of the meter penetration performance commitment as set out in Table 2.

Table 2: Associated performance commitments

Performance Commitment	Unit	2019/20 Baseline	2020/21	2021/22	2022/23	2023/24	2024/25	Performance Improvement Required in AMP7
Meter penetration	%	65.9	67.7	69.5	71.3	73.1	75.0	9.1

Full details of our outcomes, performance commitments, and outcome delivery incentives are provided in Section C3 of our business plan.

A detailed diagram illustrating the full line of sight between customer, outcomes, performance commitments, and outcome delivery incentives related to this investment case is included in Appendix A.

3.5 Compliance Obligations

Statutory and compliance obligations have influenced the development of interventions in this investment case and the investment for AMP7. Relevant legislation is detailed below.

We have a statutory obligation under the Water Industry Act 1991 to ensure that we develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

Within this investment case there are specific interventions that ensure our continued compliance with these obligations. They are explained in Section 5.1.

3.6 AMP6 Investment And Performance

Our AMP6 investment in new development ensures we meet our obligations under the Water Industry Act 1991. It additionally supports our ability to meet our AMP6 performance commitment for Meter Penetration.

A summary of our AMP6 investment in New Development is provided in Table 3 below. We have re-categorised data used in line with the scope of our investment cases. For historic data we have used the 2016/17 wholesale cost assessment data (data tables 1 and 2). Forecast data has been derived from PR19 data (data tables WS1 and WS2).

Table 3: AMP6 net capital investment

Year	New Development net capex (£m)
2015/16 actual	4.203
2016/17 actual	4.778
2017/18 actual	7.671
2018/19 forecast	5.127
2019/20 forecast	6.076
AMP6 forecast	**27.855**

The AMP6 new development investment presented in Table 3 includes investment on a number of one-off strategic schemes, including the Southern Resilience Scheme. A proportion of this expenditure on these schemes is allocated to network growth, and hence for the purposes of a comparison with AMP7 this investment is considered as AMP6 network reinforcement, and is included in the total in Table 3. This AMP6 investment in the reinforcement of our network totals circa £14.1m.

Our investment in AMP6 will also underpin our performance commitments for Meter Penetration in AMP7. The AMP6 meter penetration performance commitment, relate to New Development investment, and our performance, is given in Table 4.

Table 4: Historic AMP6 Performance

Performance Commitment		2015/16	2016/17	2017/18	2018/19 (Forecast)	2019/20 (Forecast)
Meter Penetration (%)						
Bristol Water	Target	50.4	54.8	58.8	62.5	65.9
	Company Performance	47.3	49.6	52.7	58.0	65.9

We have also set up a dedicated project 'Meter 66' to provide the increased focus that delivering our challenging metering target by the end of AMP6. This team will continue the work we have already done to improve our metering processes, as we work towards installing over 70,000 meters to meet our March 2020 target of 65.9%. So far in AMP6, customers opting for a meter fell below the expected levels and therefore we are increasing our promotion of metering, including providing individual customer information on the benefit to them of metered bills, in order to meet our AMP6 target.

4 Developing Our Investment Plan

As we have discussed earlier, the starting point for investment case development is to understand our customers' priorities and determine associated performance commitments. We have adopted totex principles to determine how we should invest in order to deliver these priorities and associated commitments. The totex approach we have adopted considers which the best solution is because it is the lowest cost over the whole life of the asset, regardless of whether it is operational or capital expenditure.

Whilst we do not currently have health and risk indices across our asset groups, we do have a wealth of data. In some cases, analytical models such as the mains deterioration model, provides us with a view of how our assets are performing, as well as a view on their deterioration. The following section describes the process we have created and followed in order to develop our investment cases.

4.1 Investment Case Development Process

This investment case has been developed firstly by taking the growth in new properties predicted in the Water Resources Management Plan. Secondly by taking actual expenditure in 2017/18 for each of the new development investment categories and extrapolating these figures by the growth factor to determine the expenditure in AMP7. For investment in industrial mains and diversions the expenditure is not expected to be linked to growth in new properties and therefore these levels of investment remain at the 2017/18 figures.

In the case of customer meters, we are proposing that in AMP7 all new customer meters will be Automatic Meter Reading (AMR) meters instead of analogue. Therefore this investment has been extrapolated with growth in new properties and a step change in unit cost per meter applied at the start of AMP7.

Historically we recover approximately 85% of our expenditure on mains for new development through water charging over a 12 year period. Therefore contributions have been determined by assuming that this will continue and 85% of the investment will be recoverable through water charging over a 12 year period following installation of any new connection. Therefore only 15% will be charged to the developer. These percentages are based on the average of the developer contributions received over the period 2015/16 and 2016/17 which was based on predicted income from properties to be built in the following 12 year period.

Contributions from infrastructure charges have been calculated from the predicted number of properties contributing to the infrastructure charge combined with an infrastructure charge of £351/ property as set out in our document, 'Charging Arrangement for New Connection Services 2018/19'[3]. This document, and the methodology that has been used to develop of our New Development investment case, aligns to the Ofwat charging rules for new connection services published in July 2018[4].

[3] Bristol Water, Charging Arrangement for New Connection Services 2018/19
[4] Ofwat, July 2018, Charging rules for new connection services (English undertakers)

4.1.1 Data & Data Assurance

The development of our investment cases is dependent on having consistent, accurate and assured data. We therefore recognise that we must be able to demonstrate the quality of the data and information used in the development of our investment cases.

Wherever possible, we have utilised data from our core company systems in order to undertake our analysis and we have sense checked the quality of the data as we have used it.

However, in addition, we have applied a data assurance methodology. We have assessed data quality in terms of completeness, accuracy and reliability. In addition, the methodology also assesses whether data is used as part of the Annual Performance Report to Ofwat, and hence already subject to existing Annual Performance Report assurance mechanisms.

In total we have developed twenty one investment cases. The values of these investment cases range from less than £1m to over £37m. Our overall capital investment plan totals circa £212m.

We have selected a sample of nine investment cases, and have applied detailed data assurance based on their value and complexity. The total value of these nine investment cases represents 66% (circa £140m) of the total capital investment plan, and represents 286 individual data types. We have evaluated all 286 data types and we have evaluated them for quality and their use in the Annual Performance Report process. The overall data quality assessment identified 93% of the data as being good quality, and 55% as having been used and assured through the Annual Performance Report process.

This investment case was not included as part of the sample of nine investment case. The quality of the data used in the development of this investment case will be evaluated as part of our wider data enhancement activities, through which we target improvements to the consistency, accuracy and assurance of our data. This investment case was however assessed for the utilisation of Annual Performance Reporting data, as set out below:

Annual Performance Report Assessments

The data points identified in the Annual Performance Report data assessment table in Appendix B have also been assessed in their utilisation in the Annual Performance Report and their contribution to overall data lines. This process is subject to internal and external assurance and has governed methodologies that are assessed in their application in the provision of Annual Performance Report data tables. The assessment of the Annual Performance Report submission and application of the methodologies are formally governed and recorded.

The assessment of the data points can be found in Appendix B. It was identified that eight (61%) data types were assessed as being a requirement for Annual Performance Report reporting and therefore subject to the assurance requirements as set out in Annual Performance Report Methodologies.

4.1.2 Investment Case Risk Identification, Verification & Needs Assessment

The Methodology for Risk Identification, Risk Verification and Needs Identification did not apply to this investment case, as the investment is determined by requests from developers rather than risks to existing assets or performance commitments.

In broad terms the key risks associated with the New Development Investment Case are:

- That we will fail to meet both the expectations of our customers and our statutory obligations to provide new connections when requested; and
- That we will fail to develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

4.1.3 Optioneering and Intervention Development Methodology

The Methodology for Optioneering and Intervention Development did not apply to this investment case. This Investment Case is an extrapolation of historical spend and contributions. The extrapolation incorporates a growth factor which is derived from growth in new development which Bristol Water (Artesia) have predicted and recorded in our PR19 data tables.

4.1.4 Intervention Costing Methodology

The costings for each intervention in this investment case have been developed in accordance with the Methodology for Investment Costing. This methodology explains the process by which we scoped and costed Interventions. Further details of the methodology, and the methodology itself, are provided in the PR19 Investment Cases Summary Document[5]. The application of this methodology in this investment case is described below.

We have assessed the expected capital cost of each intervention.

Expected Capital Cost (capex after)

If we deliver the capex intervention in a planned way, we have labelled it as ‘capex after’. This is the expected capital cost of the intervention.

Cost estimates were usually based on high level scopes, which contained activity schedules.

4.1.5 Benefits Quantification Methodology

The benefits for each intervention in this investment case have been developed in accordance with the Methodology for Benefits Quantification. This methodology explains the process by which we assessed individual intervention options, in terms of the benefits that are considered to be generated that affect company performance during subsequent AMP periods. Further details of the methodology, and the methodology itself, are provided in the PR19 Investment Cases Summary Document[5].

For this investment case, benefits were assessed as indirect, in relation to improvement in performance commitments or other resultant effects on the company’s performance.

[5] Bristol Water, 2018, PR19 Investment Cases Summary Document, NTPBP-INV-PR1-0635

Indirect Benefits

To measure our performance against our customers' priorities and the associated performance enhancements associated with interventions; we measure the impact that each intervention had on the performance commitment measure.

4.1.6 Investment Optimisation & Intervention Selection

The investment optimisation process determines which interventions are selected to provide the optimal AMP7 investment plan, by delivering the targeted performance commitment improvements, at the lowest cost. We have utilised a water industry standard system (Servelec 'Pioneer') to optimise our AMP7 investment plan. Pioneer provides the functionality for us to assess all interventions developed across all of the investment cases. It will assess the interventions both individually and in comparison to other interventions. It is a decision support tool that produces an optimal investment plan to meet the targeted performance commitment improvements required in AMP7.

The Pioneer investment optimiser model assesses interventions primarily on the overall benefit, which takes account of performance and whole life costs. The investment optimiser calculates the whole life cost as the net present value (NPV) over 40 years. This determines if an intervention is cost beneficial.

We will select interventions for one or more of the following reasons:

- The intervention is mandated (e.g. Drinking Water Inspectorate - water quality requirement).
- The intervention is cost-beneficial
- The intervention is required to achieve the performance commitment targets.

Any performance commitment improvement obtained from mandated or cost-beneficial interventions will contribute to overall performance improvement.

A series of business reviews and sense checks of the investment optimiser results have been undertaken prior to finalising the AMP 7 investment plan.

We can of course model any number of scenarios, and during the process of engaging our customers we ran three scenarios as described in Appendix C1 (slower Improvement plan, suggested improvement plan and faster improvement plan).

4.2 Applying the investment process to New Development

Each of the following sections describes the specific details associated with the application of the investment case development process for New Development.

4.2.1 Risk Identification, Verification & Needs Assessment

As described in Section 4.1.2, the Methodology for Risk Identification, Risk Verification and Needs Identification did not apply to this investment case, as the investment is determined by requests from developers rather than risks to existing assets or performance commitments.

The key risks associated with the New Development investment case, as described in Section 4.1.2, were addressed through the three interventions proposed for this investment case were:

- New Development Expenditure (Excluding Network Reinforcement);
- New Development Contributions; and
- Network Reinforcement element of New Development Expenditure.

All three of these interventions are considered to be mandatory required in order to meet our statutory obligation under the Water Industry Act 1991 to ensure that we develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

4.2.2 Intervention Costing

New Development Expenditure and Contributions have been calculated in-house by Bristol Water.

New Development Expenditure is based on 2017/18 costs for domestic mains, industrial mains, communication pipes, sundry mains, meters and infrastructure mains – and including network reinforcement expenditure. These costs are then multiplied by a growth factor, calculated based on the growth in new properties predicted in the Water Resources Management Plan, for each year to determine the expenditure in AMP7. The exceptions to this are industrial mains and sundry mains, where expenditure is not expected to be linked to growth. In addition, all new customer meters are proposed to be Automated Meter Reading meters in AMP7.

New Development Contributions have been developed assuming a 15% contribution, which is based on our historic data from developers. This assumes that 85% of the investment in a new connection will be recovered through income over a 12 year period. The cost upon which this 15% contribution has been calculated is based on the full cost of domestic and industrial mains and communication pipes and an infrastructure charge of £351 per predicted property contributing to the infrastructure charge total.

The proposed interventions under this investment case are mandatory requirements because of the obligations under the Water Industry Act 1991.

The cost for each intervention that has been developed is presented in Appendix E.

4.2.3 Benefits Quantification

The three identified interventions were assessed for Direct and Indirect benefits. These are presented in Appendix E.

Direct Benefits

A totex approach considering both capital and operational expenditure has been applied to the New Development investment case.

Expected capex before investment

There is no capex before associated with the interventions under this investment case.

Expected capex after

Capex after is the investment required to implement the intervention as part of a capital element of our totex programme within AMP7.

Expected opex before & opex after

There are is no opex associated with the interventions under this investment case.

Indirect Benefits

To measure our performance against what our customers have asked for and the performance enhancements associated with implementing interventions, we have developed performance commitments.

To support us in achieving our outcomes, the interventions proposed in this investment case are required to either contribute to achieving performance commitment targets or be cost beneficial.

The performance commitments that relate to this investment case are discussed below.

Meter Penetration

Investment in new development is not driven by any performance commitment; however the investment has the additional benefit of providing improved performance against our meter penetration target. Every new domestic connection will have a meter installed with it and therefore as the number of new properties grows, so does our meter penetration percentage. New meters installed as part of new development are expected to contribute 16.22% over our overall meter penetration target. The remaining 83.78% of the meter penetration target will be achieved through investment in customer meters under customer meters investment case.

5 Outcome

5.1 Selected Interventions

The three interventions developed within the New Development investment case were assessed through the investment optimisation process. Of these three interventions, all three have been selected.

When it comes to delivering our programme of works we know that we must continue to be innovative and efficient. We have set ourselves a challenging target of reducing our costs by 8% during AMP7. This will be achieved by delivery of our business transformation programme.

We see innovation as integral to our everyday working at Bristol Water: We have deliberately embedded it within the business-as-usual processes of our asset management teams, by embracing the full flexibility that totex and outcomes enables. We will look to be innovative in the following ways:

- **Open Innovation**: We have defined our strategic innovation challenges and run events such as our "Innovation Exchange" that invite suppliers to present their innovative solutions to predefined challenges that we set
- **Market Scanning**: We conduct market scanning for cutting edge technology against our strategic innovation challenges and feed this into our optioneering process. In particular, we subscribe to the Technology Approval Group which regularly scans and meets with water companies to unearth the most promising innovations for the sector
- **Partnering**: we undertake leading research into areas that we provide effective solutions for the future.

We will specifically look for innovations that mean we can contribute to our 8% efficiency challenge and keep our customers' bills low into the future.

An example of such innovation employed in the development of this investment case is Automated Meter Reading technology. This will allow water meters to be read remotely using drive-by technology consisting of transmitters in each meter and receiving devices fitted inside the meter reader's vehicle. Automated Meter Reading meters also have an in-built signalling system to flag up if water runs through the meter continuously for more than 24 hours. This signal will be picked up by the meter reader's vehicle when they drive-by and will help identify where leakage is occurring within the customer's property.

As an example of this kind of smart metering and assistance in water demand reduction, we are working with an EU initiative SUNEX to create city case studies across the world, looking at ways to help reduce and manage demand for water and energy. One example of this planned for the project is the link to urban food growing, helping customers to become more water efficient in their gardening practices through provision of smart online information via apps and other media – helping to create a sustainable urban environment which is more efficient in water use

The three selected interventions are set out in Table 5, along with details of the associated costs and contribution to performance improvement.

Table 5: Selected interventions, costs, and % performance contribution

ID	Intervention Title	Capex (£)	Change in opex per annum (£)	Meter penetration
11.001.01	New Development Expenditure (excluding Network Reinforcement)	£24,776,000	£0	16.22%
11.001.02	New Development Contributions	-£15,112,000	£0	-
11.001.03	Network Reinforcement element of New Development Expenditure	£4,329,000	£0	-
New Development net investment (pre-efficiency)		**£13,993,000**	**£0**	**16.22%**
New Development net investment with 8% capex efficiency		**£12,873,560**		

The total New Development investment, including Water Service and Business Unit Allocation, is summarised in Table 6. This Investment Case is aligned to the Water Network Plus Wholesale Control category of our Business Plan. Costs are allocated to the Treated Water Distribution Business Unit. New development expenditure is categorised as other capital expenditure – infrastructure, and infrastructure network reinforcement. New development contributions are categorised as grants and contributions.

Table 6: Water Service and Business Unit Allocation

Wholesale Control	Water Network Plus	Total (Pre-Efficiency)
Business Unit Allocation	***04 Treated Water Distribution***	
New Development net investment (%)	**100.0%**	**100.0%**
New Development net investment	**£13.993m (net)**	**£13.993m (net)**
Other capital expenditure - infra	£24.776m	**£24.776m**
Infrastructure network reinforcement	£4.329m	**£4.329m**
Grants & contributions	£-15.112m	**£-15.112m**
New Development net investment with 8% capex efficiency	**£12.874m**	**£12.874m**

All three of these interventions are selected because they are mandatory requirements in order to meet our statutory obligation under the Water Industry Act 1991, to ensure that we develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

The individual interventions are described in detail in the following sections:

New Development Expenditure

New Development Expenditure will deliver new connections to our new customers and this will include investment in:

- Domestic and industrial on-site new lay mains;
- Communication pipes to new properties;
- Diversions for new developments; and
- Water meters for new properties.

Network Reinforcement element of New Development Expenditure

Network Reinforcement will deliver the off-site requirements for new connections and this will include investment in:

- Off-site mains to the site entrance; and
- Other off-site infrastructure to provide sufficient capacity in the wider network such as trunk main reinforcement or service reservoir capacity.

New Development Contributions

New Development Contributions accounts for the expenditure we recover from developers through contributions in the form of:

- Contributions to domestic and industrial new lay mains;
- Contributions to communication pipes;
- Infrastructure charges.

5.2 Contribution to Performance Commitment

Table 7 set outs the percentage contribution to performance commitment improvement provided by the selected New Development interventions. The percentage contribution is discussed in the following sections.

Table 7: Contribution to Performance Commitment Targets from Selected Interventions

Performance commitment	Unit	2019/20 Baseline	2020/21	2021/22	2022/23	2023/24	2024/25	Performance improvement required in AMP7	New development % contribution to improvement
Meter penetration	%	65.9	67.7	69.5	71.3	73.1	75.0	9.1	16.22%

Asset Health

Our AMP7 investment in New Development will help ensure our assets are being maintained appropriately to deliver resilient water services to current and future generations.

Meter penetration

Our AMP7 investment in New Development contributes 16.22% towards our meter penetration target, with the remainder of the target being achieved through customer meters investment case (installation of meters in existing properties).

5.3 Non Selected Interventions

All New Development interventions were selected, because they are mandatory requirements in order to meet the statutory requirements of the Water Industry Act 1991[6].

5.4 Assumptions

There are a number of general assumptions that have been made in the development of our investment cases. These are discussed in detail in section 11 of the PR19 Investment Cases Summary Document[7]. Assumptions specific to this investment case are discussed below.

The expected growth in new properties is assumed to be the same as that predicted and used in the WRMP. If the scale of new development is significantly greater than expected, then we will need to invest proportionally more. However, we would achieve a higher meter penetration rate than currently predicted. If the scale of new development is significantly less than expected, then we will need to invest proportionally less, and conversely, our meter penetration rate will be lower, and investment identified in the customer meters investment case will be affected.

5.5 AMP 8

Investment in New Development is proportional to new growth in the housing market. The demand for new housing will be governed by many external factors including affordability, availability of mortgages, price confidence, interest rates, cost of renting, economic growth, employment levels and government policy. At this time, our expectations of new development is based on local plan information and current government policy, which may be subject to change in future years which may significantly affect plans for AMP8. At present we anticipate a continued growth at approximately 5% above current growth rates.

5.6 Base Maintenance

This investment case covers all activities related to new development and therefore no assessment of base maintenance investment is required.

[6] UK Government, Water Industry Act 1991
[7] Bristol Water, 2018, PR19 Investment Cases Summary Document, NTPBP-INV-PR1-0635

5.7 Historic & AMP7 Investment Comparison

A summary of historical investment in New Development is provided in Table 8 along with the planned AMP7 investment value from New Development interventions.

We have re-categorised data used in line with the scope of our investment cases. For historic data we have used the 2016/17 wholesale cost assessment data (data tables 1 and 2). Forecast data has been derived from PR19 data (data tables WS1 and WS2).

Table 8: Historical & AMP7 net Investment

AMP	Capital investment values (net)	Investment (£m)
AMP5	AMP5 actual	8.459
AMP6	2015/16 actual	4.203
	2016/17 actual	4.778
	2017/18 actual	7.671
	2018/19 forecast	5.127
	2019/20 forecast	6.076
	AMP6 forecast	27.855
AMP7	AMP7 pre-efficiency	13.993
	AMP7 8% capex efficiency applied	12.874

The analysis presented in Table 8 shows our AMP6 new development investment to be substantially greater than that in AMP5 and AMP7. This is primarily due to the inclusion of a number of one-off strategic schemes, including the Southern Resilience Scheme, in this analysis. A proportion of this expenditure on these schemes is allocated to network growth, and hence for the purposes of a comparison with AMP7 this investment is considered as AMP6 network reinforcement, and is included in the total in Table 8. This AMP6 investment in the reinforcement of our network totals circa £14.1m.

6 Conclusions

We plan to invest a total of £29.105m in AMP7 in new infrastructure to ensure we connect new domestic and commercial properties to our water supply network. Our investment will also reinforce our water supply network to ensure it has sufficient capacity to deliver a safe and reliable supply to our customers.

In this same period we expect to receive £15.112m from developers in contributions to recover this investment, resulting in a net pre-efficiency investment of £13.993m.

We have set ourselves a challenging target of improving our efficiency by 8% during AMP7. This will be achieved through delivery of our business transformation programme, resulting in a post-efficiency net investment of £12.874m.

We have a statutory obligation under the Water Industry Act 1991[8] to ensure that we develop and maintain our water supply system so that we can make water available to anyone requesting a new connection. Therefore the initial risks associated with this investment case were that we would not meet these obligations. For this reason the three interventions were proposed as mandatory requirements to ensure we fulfil our statutory obligations.

Additionally, this investment case will contributes 16.2% towards the performance commitment of a 9% increase in meter penetration, as all new connection will be installed with a water meter.

This investment will ensure that we maintain our commitment to all our new customers, including developers, self-lay organisations and the end users alike.

Our plan will provide assurance that it will deliver and monitor delivery of its outcomes, meet relevant statutory requirements and licence obligations and take account of the UK Government strategic policy statements.

[8] UK Government, Water Industry Act 1991

7 Appendices

- Appendix A: Line of Sight
- Appendix B: Datasets
- Appendix C1: Selected Risks
- Appendix C2: Non-Selected Risks
- Appendix D: Options Considered
- Appendix E: Interventions Developed
- Appendix F: Non-Selected Interventions

7.1 Appendix A: Line of Sight

New Development- Line of Sight

Investment Case
NTPBP-INV-NEW-0536

Customer Priorities

- Saving Water
- Leakage

Performance Commitments

Optimiser Input Form Reference

NTPBP-CAL-NEW-0355

Slower Plan
Suggested Plan
Faster Plan

Safe and Reliable Supply of Water

- Meter Penetration — 75 | 75 | 75
- Customer High Priority
- ODI
- Bespoke Reward and Penalty

Other Monetary Benefits

Interventions

11.001.01

11.001.03 Network Reinforcement element of New Development Expenditure

OFWAT Initial Assessment Tests

Test Area	OFWAT Initial Assessment Tests
Engaging Customers	What is the quality of the Company's customer engagement and participation and how is it incorporated into the companies business plan and ongoing operations
Securing long term resilience	How well has the company used the best available evidence to objectively assess and prioritise the diverse range of risks and consequences of disruptions to its systems and services and engaged effectively with customers on its assessment of the risks and consequences
	How well has the company objectively assessed the full range of mitigating options and selected the solutions that represent the best value for money over the long term and support from customers
Targeted controls , markets and innovation	To what extent has the company clearly demonstrated that it has considered whether all relevant projects are technically suitable for direct procurement for customers. Where it has one or more such projects, to what extent has the Company provided a well reasoned and well evidenced value for money assessment
Securing Confidence and Assurance	To what extent does the company have a good track record of producing high quality data, taking into account the company's data submission, assurance process and statement of high quality , and our 2018 assessment of the company under the Company Monitoring Framework

Board Requirements

Customer Engagement	Assurance that the company's business plan has been informed by customer engagement and feedback from the company's CCG about the quality of its customer engagement and how this has been incorporated into the plan
Resilience	Assurance that the company's business plan has been informed by a robust and systematic assessment of the resilience of the company's systems and services; customer views on managing resilience and a comprehensive and objective assessment of interventions to manage resilience in customers long term interests
Business Planning	How has it challenged an satisfied itself that the overall strategy for data assurance and governance processes delivers a high quality data
	How has it challenged and satisfied itself that the business plan will enable the company to meet its statutory and licence obligations , now and in the future and take account of the UK and Welsh governments strategic policy statements.
	How has it challenged and satisfied itself that its plan will deliver operational financial and corporate resilience over the next control period and the long term through its governance and assurance processes, taking into account of its track record of performance

Performance Commitment Key

- Common Performance Commitment
- Common New Performance Commitment
- Bespoke Performance Commitment
- Bespoke New Performance Comittment

Document Number: NTPBP-MET-DEV

7.2 Appendix B: Datasets

This appendix lists the datasets used in this investment case and where they have been utilised.

Dataset File Name	Data Summary	Process In Which Data Has Been Used			
		Risk Identification, Verification and Needs Assessment	Optioneering	Intervention Costing	Benefits Quantification
REQ-0157 Capital Predictions - with contributions.xlsx	Forecast predictions for development services in AMP7	-	-	✓	-
REQ-0141 Developer Charges (Excluding Inset Appointments).pdf	Information on Developer Charges and Developer Contributions	-	-	✓	-

7.3 Appendix C1: Selected Risks

The Methodology for Risk Identification, Risk Verification and Needs Identification did not apply to this investment case, as the investment is determined by requests from developers rather than risks to existing assets or performance commitments.

In broad terms the key risks associated with the New Development Investment Case are:

- That we will fail to meet both the expectations of our customers and our statutory obligations to provide new connections when requested; and
- That we will fail to develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

All interventions are considered to be mandatory required in order to meet our statutory obligation under the Water Industry Act 1991 to ensure that we develop and maintain our water supply system so that we can make water available to anyone requesting a new connection.

7.4 Appendix C2: Non-Selected Risks

Not applicable - there are no non-selected risks.

7.5 Appendix D: Options Considered

This appendix shows the 3 options considered.

Strategic Risk Register (SRR) Reference	SRR Revised Risk Description	Risk Need		Identification & Viability of Options			
		SRR Need ID	Need Description (from SRR)	Proposed Option Name	Proposed Option Description	Option Viability?	Option to be Developed into an Intervention?
N/A	N/A	N/A	N/A	New Development Expenditure	N/A	Y	Y
N/A	N/A	N/A	N/A	New Development Contributions	N/A	Y	Y
N/A	N/A	N/A	N/A	Network Reinforcement element of New Development Expenditure	N/A	Y	Y

7.6 Appendix E: Interventions Developed

This appendix shows the 3 interventions developed from the 3 options.

Strategic Risk Register (SRR) Reference	SRR Revised Risk Description	Risk Need		Identification & Viability of Options			Proposed Interventions		Costs	Benefits	
		SRR Need ID	Need Description (from SRR)	Proposed Option Name	Proposed Option Description	Option Viability?	Ref No	Intervention Title	Capex After (£M)	Change in Opex (£k)	Meter Penetration (%)
N/A	N/A	N/A	N/A	New Development Expenditure	New Development capital projections for AMP7. (Excludes Network Reinforcement)	Y	11.001.01	New Development Expenditure	24.776	0	1.46
N/A	N/A	N/A	N/A	New Development Contributions	New Development projected contributions for AMP7.	Y	11.001.02	New Development Contributions	15.112	0	
N/A	N/A	N/A	N/A	Network Reinforcement element of New Development Expenditure	Network Reinforcement element of New Development Expenditure	Y	11.001.03	Network Reinforcement element of New Development Expenditure	4.329	0	

7.7 Appendix F: Non-Selected Interventions

Not applicable - all interventions were selected for New Development.