Title: Impact Assessment for the automatic adoption and national build standards for foul sewers and lateral drains **IA No:** Defra 1349 **Lead department or agency:** Defra **Other departments or agencies:** Ofwat	Impact Assessment (IA) **Date:** 13/12/2011 **Stage:** Consultation **Source of intervention:** Domestic **Type of measure:** Secondary legislation **Contact for enquiries**: Pauline Crellin

Summary: Intervention and Options

RPC Opinion: RED

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, One-Out?**	**Measure qualifies as**
£406m	£310m	-£14m	Yes	Zero Net Cost

What is the problem under consideration? Why is government intervention necessary?

Fewer than 20% of foul sewers and lateral drains built in new developments are adopted by water and sewerage companies (WaSCs). Private ownership causes problems: for house buyers unaware of their liability to repair sewers; expensive piecemeal repairs; diificulty to recuperate costs from everyone where liability is shared; and difficulty with public access to private land. Government action was taken to transfer ownership of existing private sewers to WaSCs with effect from 1 October 2011. Action is needed to deal with new foul sewers and lateral drains to avoid slowly undermining all of the benefits from the transfer of existing private sewers.

What are the policy objectives and the intended effects?

Government has two policy objectives: firstly to ensure that WaSCs adopt new sewers to prevent the problems associated with private ownership. Secondly, to move to a national build standard for new sewers that balances the 'whole life' costs of construction and maintenance. The intended effects are to provide a more resilient sewerage network that costs less. A new national build standard would remove significant regional variations and simplify the process for developers, which in turn would make adoption more efficient. Alternative standards that are tailored to the requirements of a development could be agreed between a developer and WaSC.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

The options considered in this impact assessment are: Baseline - absolute right to connect, no automatic adoption, no harmonised build standard and varying advice from local planning authorities and WaSCs; Option 1 - automatic adoption and freedom to use current standards (typically Sewers for Adoption volume 6) as a condition to connect to public sewers; and Option 2 (preferred) - automatic adoption and a national build standard, published by the Minister, as a condition to connect to public sewers in order to harmonise existing guidance and protocols and supplement it with guidance from the water industry). Option 2 is preferred because new sewers are adopted with a benefit (net present value) of £406m and the cost of building new sewers remains similar to the current (Baseline) costs - the cost of building sewers is greatly increased for Option 1.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 04/2017

Does implementation go beyond minimum EU requirements?			N/A		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** Yes	**< 20** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:**	**Non-traded:**	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: ..... Date: .....

Summary: Analysis & Evidence

Policy Option 1

Description: Automatic adoption with un-harmonised build standards

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2010	Time Period Years 40	Net Benefit (Present Value (PV)) (£m)		
			Low: -2027	**High:** -1950	**Best Estimate:** -1967

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		50	**2083**
High	Optional		104	**2150**
Best Estimate	0		103	**2101**

Description and scale of key monetised costs by 'main affected groups'

Costs fall to developers to build the 80% of new sewers to a higher adoptable standard, which would otherwise have been built as private sewers. The Baseline assumes these would be built as private sewers and below the adoptable standard. The cost is an estimated £94.7m per year. There will also be increased inspection costs to WaSCs from the extra sewers to be adopted (£2.4m). Liability and cost of maintenance is transferred from private owners to WaSCs (£5.4m).

Other key non-monetised costs by 'main affected groups'

Higher maintenance costs for WaSCs from the extra sewers to be adopted (assumed minimal owing to the economies of scale for private sewers becoming part of the far larger public sewerage network). Loss of income to insurance industry and home drain/plumbing policy providers (assumed negligible because plumbing should still be insured and maintenance work of former private sewers will still be needed and either this work will be sub-contracted or extra staff will be recruited).

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**Optional**
High	Optional		Optional	**Optional**
Best Estimate	0		8	**133**

Description and scale of key monetised benefits by 'main affected groups'

Estimated £5.7m per year avoided for private maintenance by private sewer owners. Households will save an average of £0.3m per year owing to less time spent unblocking sewers. Reduction in administration costs for local authorities responding to environmental health incidents (£2.1m).

Other key non-monetised benefits by 'main affected groups'

Savings for developers due to earlier release of bonds; this is more significant for large sites. Social benefits from WaSCs' more efficient maintenance of sewers, fewer blockages, less pollution, less flooding and fewer health hazards. Removes responsibility and distress associated with blockages from householders. Non-monetised benefits assumed to be higher for Option 2.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Cost of designing to non-harmonised standards; current build and adoption estimates; cost of accreditation; blockage rates. Reasonable and prudent assumptions have been made, based upon the best available evidence, however we will test this during consultation. Range represents high and low estimates of the sensitivity of: cost of accreditation; blockage rate; and emergency call out rate. Costs and benefits are proportional to the assumed number of houses built.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 114	**Benefits:** 0	**Net:** -114	Yes	IN

Summary: Analysis & Evidence

Policy Option 2

Description: Automatic adoption with national build standard

FULL ECONOMIC ASSESSMENT

Price Base Year 2009	PV Base Year 2010	Time Period Years 40	Net Benefit (Present Value (PV)) (£m)		
			Low: -675	**High:** 425	**Best Estimate:** 406

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		3	**45**
High	Optional		41	**830**
Best Estimate	0		6	**92**

Description and scale of key monetised costs by 'main affected groups'

Liability for and maintenance of sewers that would have been privately owned under the Baseline is transferred to WaSCs at a cost of £5.6m a year.

Other key non-monetised costs by 'main affected groups'

Developers may face transitional costs from using the new national build standards; principally the training of employees. Steps have been taken to minimise transition costs where development has already been approved. Higher maintenance costs for WaSCs from the extra sewers adopted. Loss of income to insurance industry and home drain/plumbing policy providers (see Option 1).

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		10	**155**
High	Optional		26	**506**
Best Estimate	0		26	**498**

Description and scale of key monetised benefits by 'main affected groups'

Developers' are estimated to save £16.2m per year from building sewers to the new standard and associated savings in supervision costs (£0.4m). Estimated average £6.9m per year cost avoided for maintenance by private sewer owners. Households will save an average of £0.4m per year from less time spent dealing with blockages. Reduction in administration costs for local authorities responding to environmental health incidents (£2.2m).

Other key non-monetised benefits by 'main affected groups'

Savings for developers due to earlier release of bonds; more significant for large sites. Social benefits from WaSCs' more efficient and strategic maintenance of sewers, fewer blockages, less pollution, less flooding and fewer health hazards. Removes responsibility and distress associated with blockages from householders. Improved workmanship due to training and accreditation.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Cost of designing to harmonised national build standard; current build and adoption estimates; cost of accreditation; blockage rates. Reasonable and prudent assumptions have been used in all cases, based upon the best available evidence. Range represents high and low points of sensitivities over: cost of accreditation, blockage rate and emergency call out rate. Costs and benefits are proportional to the assumed number of houses built.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 5	**Benefits:** 19	**Net:** -15	Yes	Zero net cost

Evidence Base (for summary sheets)

1. Section 42 of the Flood and Water Management Act 2010 (the Act) makes provision for the automatic adoption of new foul sewers and lateral drains (sewers) by water and sewerage companies (WaSCs) and a national build standard. The automatic right to connect to a public sewer is made conditional on a Section 104 Agreement in the Water Industry Act (1991). The terms of that agreement become new national build standards, which the Act provides for the Minister to publish. Government policy is to preserve the ability for developers to agree an alternative standard with WaSCs, where agreed these would supersede the national build standards.
2. This consultation Impact Assessment (IA) examines three options to implement the provisions. It does not consider the transfer of existing private sewers, which Government commenced on 1 October 2011. Surface water drainage is not covered by this consultation; Section 32 and Schedule 3 for sustainable drainage in the Act will be the subject of a separate consultation. Also adoption of pumping stations and other ancillary structures will remain subject to individual agreements with WaSCs, to recognise that health and safety and operational requirements need local specification.
3. The policy for new sewers has been developed following close engagement with the water industry, developers, manufacturers and suppliers, local authorities, and the Consumer Council for Water.
4. This IA is consistent with the IA for the transfer of private sewers (Defra, 2010) and the IA for the decision to transfer private sewers (Defra, 2008). Evidence from both has been used for the Baseline in this IA.
5. The IA has been rewritten in response to the opinion from the Regulatory Policy Committee[1] which challenged us to make the evidence more accessible. We have done that and invite you to review this IA and share with us any relevant evidence that has not been considered – please respond to question 2.8 in the consultation.

Which problems are being addressed?

6. By definition, sewers are drains that serve more than one property and drains are pipes that serve a single property. A lateral drain is the section of pipe serving a single property which extends beyond the property boundary.
7. Private sewers are sewers that have not been adopted by WaSCs as part of the public sewerage system; often because they were not considered to be an adoptable standard for (this includes standards which may have been accepted by other WaSCs). Private sewers extend to the point of connecting to the public sewer system. The connection is usually under the nearest public highway and so the private sewer may extend beyond the property boundary. All the sewers on that development may be private sewers unless adopted by the WaSC.
8. Private sewers cause a variety of problems. In summary, most home owners are unaware of their liability for private sewer maintenance and when undertaken, it tends to be reactive and patchy which increases the cost. The costs to owners can be high and shared ownership is commonplace, which frequently leads to disputes between neighbours over maintenance costs. Local authorities have reported that they are often called on to intervene; in order to prevent (or minimise) environmental pollution and public health hazards. Individual responsibilities, a result of ambiguity or lack of awareness, can prove difficult or impossible to enforce and lead to a burden on local authorities' budgets. The overall consequence is that the current system gives rise to a high level of consumer dissatisfaction and the perception that the system is unfair.
9. The disparate ownership of sewers often results in a lack of management of the whole public sewerage system and presents a barrier to efficient infrastructure development and maintenance. In economic terms the system also represents a cross subsidy to those who reside in or own properties with shared sewers which predate the transfer of existing private sewers on 1 October 2011 as these are now owned by the WaSC. This means that for those individuals, responsibility

[1] http://regulatorypolicycommittee.independent.gov.uk/

for maintenance already sits with the WaSC. However, sewerage bills do not reflect this difference in status and everyone pays the same regardless of whether their private sewer (where there is one) is their own responsibility or that of the sewerage undertaker.

10. Government policy is to address the problems caused by a disparate system once and for all. This has been achieved in part by the transfer of existing private sewers to the WaSC in 1 October 2012. To prevent the recurrence of the same problems in future, we propose that new sewers are automatically adopted by WaSCs.

Current practice

11. Prior to 1974 and the establishment of the water and sewerage authorities (now WaSCs), local authorities tended to provide sewer extensions to enable connections for new developments. Traditionally, sewers would be laid in conjunction with highways (mainly for ease but also because development tended to be on previously undeveloped sites where highways were being laid or renewed). Both the sewers and the highways were the responsibility of the local authority and would be built together prior to commercial development.
12. Since 1974, developers tend to construct the majority of sewers (up to 95%), after agreeing a point of connection to the public sewerage network (and including, in some cases volume of discharge). Under the Water Industry Act (1991) the right to connect is absolute and most sewers need to comply with Part H of the Building Regulations. The costs of new sewers are therefore included within the sale price of the property, paid for by new homeowners and those sewers become the responsibility of that homeowner, where they are not adopted by the WaSC under Section 104 of the Water Industry Act (1991).
13. Developers agree a Section 104 Agreement for less than 20% of development. The agreement determines, amongst other things, the design and construction standard of the sewer in order that is adopted by WaSC. Typically the standard is Sewers for Adoption Volume 6 (SfA6) or a regional variant. Once the sewer is adopted by the WaSC it is responsible for maintenance. However, it has not been a requirement for new sewers to be adopted and where there is no agreement, the sewers are not adopted, often because they are not an adoptable standard. In this circumstance sewer maintenance is the responsibility of the homeowner. This situation has led to a muddled legacy of private sewers with varying standards of build and maintenance. There is no comprehensive or reliable record of private sewers and lateral drains.
14. Where it is not reasonably practical for the developer to connect to the public sewer and a cesspool or sewerage treatment system is provided then no standard is required above compliance with Part H of the Building Regulations.
15. Currently, households with private sewers connected to the public sewer often receive bills for sewerage services consistent with the rest of the WaSC region. This fails to incentivise WaSCs to adopt these sewers since the household is billed the same and they have fewer sewers to maintain. Inequities result between those with adopted sewers and those without. Where a property is not connected to the sewer the household pays no sewerage charge to the WaSC.
16. Under current legislation, house buyers may be advised that an agreement to adopt the sewers is in place but this is not always the case. Whether they are advised or not, it may be difficult to determine later on whether adoption did (or is on track to) take place.
17. Problems with unmaintained private sewers not only impact on the individuals directly but may also give rise to a negative impact (externality) on the local community through local environmental pollution that can be a health hazard.

Current standards, guidance and protocols

18. Prior to 1974, each local authority had their own sewer design and construction standards as the sewerage undertaker. This continued even after the creation of the WaSCs because local authorities often acted as their agents for sewerage functions. This was partly rectified by issuing the first edition of SEWERS FOR ADOPTION in 1980 although local variations persisted despite this nationally available guidance. The standard applied to sewers up to 2.5m outside the property

boundary. In parallel, Building Regulations have provided a minimum standard for building of sewers.

19. SEWERS FOR ADOPTION is now in its 6th Edition. Successive editions have resulted in greater overall convergence of standards across the 10 statutory WaSCs but regional differences remain. There is no evidence that the number of sewer adoptions has increased. Thus, although providing a valuable reference point for the industry, the non-regulatory approach of using voluntary guidance has failed to achieve Government's policy objective.
20. Government recognised the problems of private sewer ownership, partly through the issue of the PROTOCOL ON DESIGN, CONSTRUCTION AND ADOPTION OF SEWERS IN ENGLAND AND WALES (Defra, 2002), which tried to encourage behaviour change and for WaSCs to adoption more sewers. However, as part of the research into the transfer of existing private sewers, a review of the effectiveness of the protocol concluded that it too had failed to achieve the outcomes required, with increased uptake at only 1% (Atkins, XX).
21. In collaboration with WaSCs, the protocol was fully integrated into SfA6 in an attempt to increase its standing amongst developers. WaSCs all use the standards in SfA6 at WWW.WRCPLC.CO.UK/SFA as a common basis but each publishes its own addenda that contain substantial regional variations of acceptable design and construction standards.

Private sewers are problematic

22. There is no guarantee that the WaSC will adopt sewers in new homes. It is estimated that less than 20% of new sewers have been adopted by WaSCs under a Section 104 Agreement of the Water Industry Act (1991). As a consequence several issues arise as follows:
    - Developers must research and adapt practices and processes to meet the differences in standards between the WaSCs including some who refuse to accept certain materials (e.g. plastic pipes) – which is inefficient and burdensome;
    - Local authorities may need to intervene, using their powers under Part III of the Building Act (1984) in disputes between property owners or land-owners who, wittingly or unwittingly, have shared responsibility for a private sewer;
    - Manufacturers and suppliers for sewers need to cater for small variations in specification, for example sizing or marking, which are required to meet the various build requirements of WaSCs: this is inefficient in terms of effort and failure to reap the full benefits of economies of scale;
    - WaSCs can be asked to step in to resolve issues at crisis point, and realistically have little market incentive to take on responsibility or plan effectively for a functioning and effectively integrated sewer and drainage systems which would benefit the water infrastructure as a whole; and
    - Consumers feel that the current system is burdensome, high cost and high impact, and often unfair in terms of "surprise ownership" – and also billing costs cross-subsidise those who for historical reasons do not have to pay.
23. Owners of private sewer can apply to their WaSC to have their sewer adopted at any time rather than only when first connected to the public sewer. However, adoption is at the discretion of WaSCs and the owner may well have to rectify deficiencies at their own expense prior to adoption. Where private sewers have been constructed from sub-standard materials, or lie at a gradient too shallow for effective drainage, complete re-laying may be required before adoption, for which costs can be prohibitively high.

Expensive maintenance

24. Owners of private sewers often lack the technical competence to recognise problems that require more than basic maintenance. In addition, once problems become apparent to the untrained eye they are often very serious – emergency (urgent or unexpected) blockage clearance is estimated (using industry data) to cost in the region of £100 – £280[2] per incident. Rehabilitation costs can

[2] Price range is based on standard emergency drain clearance. Industry prices vary according to factors such as date, time and location of callout.

be greater. One residents' association letter received by Defra in December 2004 highlighted costs of £10,000 for repairs to a stretch of private sewer and the associated difficulty in getting contributions from all equally-responsible properties to recover those costs. In addition, drainage repair companies responding to private owner call-outs tend to focus on dealing with the immediate problem, and may or may not identify or remedy the underlying cause of the blockage. Blockages are more likely to recur and are less likely to be efficiently resolved with un-adopted networks than when those networks are managed by WaSCs. The "short-term fix" approach often taken by home or property owners leads ultimately to higher costs than would arise from long term problem-solving, involving detailed examination of assets and diagnosis of problems, with any necessary upgrading or replacement, which would be expected from WaSCs.

25. Owners of private sewers are also frequently unsure which organisation to approach for advice. This is exacerbated in cases where the lateral drains run beneath public land or highways, and where remedial work may involve digging up the road. UKWIR and Ofwat have previously estimated that over 13,500km of lateral drains lie under public highways in England and Wales. There are also lengths of private sewer under highways and to a lesser extent railway, due to failed adoption agreements though these cannot be easily estimated. Households or their contractors have the statutory rights to undertake repairs to the sewer and therefore work in the highway if the relevant work permits etc are obtained but navigating their way around 'the system' is not straightforward and is often expensive.

Insurance not straightforward

26. Whilst some owners of private sewer may be insured for the cost of repairs, insurers usually provide cover only for accidental damage rather than wear and tear and other gaps in cover exist.

Flood risk

27. Private sewers are currently not monitored for flooding because they are not the responsibility of WaSCs or local authorities and their location is often unknown. Nor are private sewer owners eligible for GSS payments[3] where flooding has occurred as a result of problems arising in a private sewer or lateral drain.

Why is Government intervention needed?

28. Government's policy is that the automatic adoption of new sewers, proposed in this consultation, follows the transfer of existing private sewers to WaSCs on 1 October 2011. Without this policy, new un-adopted sewers (80% in the Baseline) would slowly undermine the benefits from the transfer of existing private sewers.

29. It is self evident that the non-regulatory attempts to encourage behaviour change have not been successful. Specifically, the issue of SEWERS FOR ADOPTION and the merger with the PROTOCOL ON DESIGN, CONSTRUCTION AND ADOPTION OF SEWERS IN ENGLAND AND WALES has achieved an amount of convergence of standards but it is now estimated that less than 20% of new sewers have been adopted by WaSCs, despite this non-regulatory intervention.

30. Given the already highly regulated nature of the industry, which reflects both the regional monopoly of WaSCs and the need for standards on drainage to protect public health and environment pollution, regulation is required. The provisions in the Act reflect the barriers identified in the earlier assessments and the most efficient solution.

31. WaSCs have expressed concerns that if they adopt certain sewers, which subsequently fail prematurely, Ofwat may require them to rectify problems at the expense of their customers. That is why a national build standard is necessary.

32. For example, in the summary of responses – to consultation on the transfer of private sewers (Defra, 2008) – it was reported that respondents supported a standard to accompany automatic adoption (88% of respondents supported and 1% opposed). Respondents in favour said that it would prevent pollution, address flood risk, mitigate the impact of climate change and avoid an

[3] The Government sets guaranteed standards of service that water and sewerage customers are entitled to receive from their WaSC. The guaranteed standards scheme (GSS) sets out the standards and the levels of GSS payment companies can make and is monitored by Ofwat. WaSCs make GSS payments when their level of service drops below certain standards for services ranging from making and keeping appointments to dealing with sewer flooding.

increase in costs to WaSC customers (arising from expenditure to remedy adopted sub-standard sewers). Respondents also supported a standard predicated on existing voluntary guidance provided by water companies to developers – Sewers for Adoption 6th edition (SfA6) – but to review this and remove regional variations and excess costs.

33. Government's policy would introduce an efficient and consistent process for the design and construction of new sewers which ensures that sewers are automatically adopted by WaSCs in the future. Government's policy is for drains to remain un-adopted by WaSCs, they will continue to comply with Building Regulations, and forever remain the responsibility of the property owner.

What policy options have been considered?

34. Government consultation on the decision to transfer private sewers (Defra, 2007) sought views on the construction of future private sewers that still connect to the public system. Three policy options were identified as a result.

35. The proposals in this consultation (for Options 1 and 2) are for the right to connect new private sewers to the public sewerage system to be conditional on being built to agreed standards leading to the automatic adoption of these sewers by the WaSC, as provided for in Section 42 of the Act.

Policy Option 0: Do nothing (baseline)

36. The Baseline in this IA is to do nothing – that is, to allow the status quo to continue. Under this option the automatic right to connect to a public sewer under section 106 of the Water Industry Act (1991) would continue; there would be no automatic adoption and so only 20% of new sewers would be built to SfA6 standards and adopted; and no harmonised build standard would exist. WaSCs would continue to issue variable guidance (i.e. within SfA6).

37. The main consequences of the Baseline would be that 80% of sewers would not be built to SfA6 standards and not be adopted. The 20% that were adopted would be built to the standards preferred by individual WaSCs in the absence of harmonised national build standards, perpetuating inefficiencies (mainly higher costs of procurement and planning) for developers. In the absence of automatic adoption the past problems with private sewers would continue. The continuing unconditional right to connect disincentivises any change.

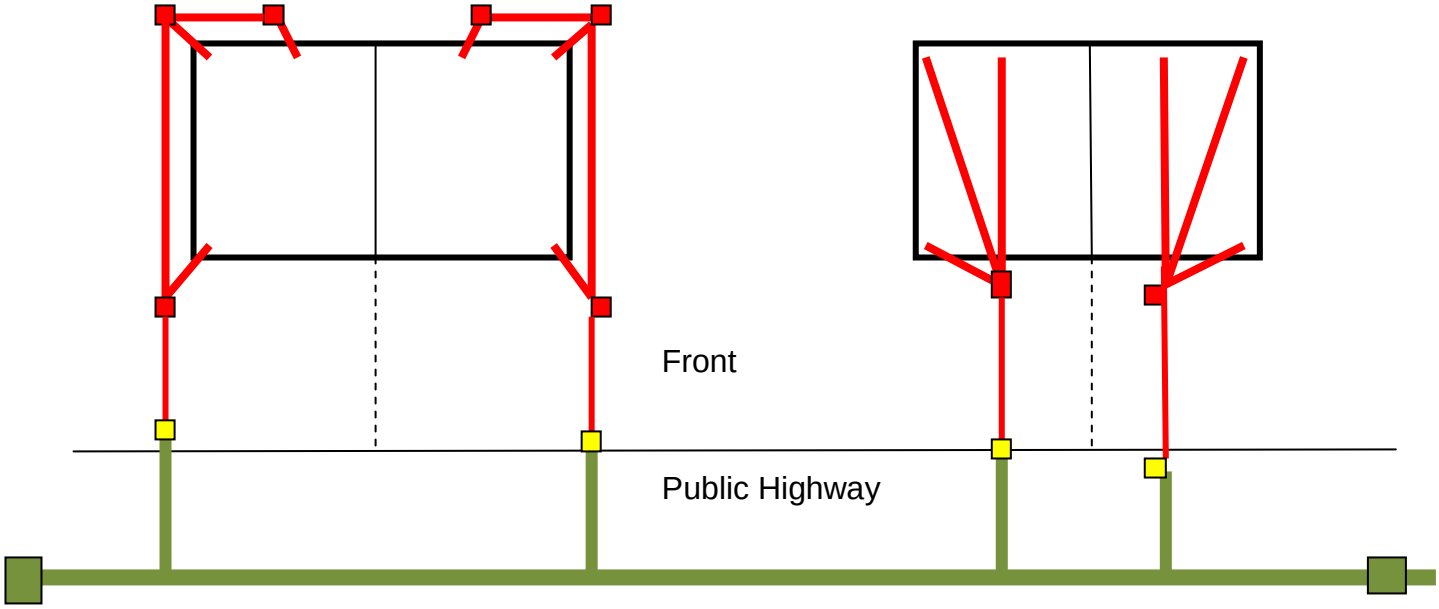
Policy Option 1: Automatic adoption with un-harmonised build standards

38. Section 42 of the Act would be commenced. The right to connect to the public sewer is made conditional on a Section 104 Agreement. A consequence of the agreement is the automatic adoption of new sewers by WaSCs provided agreed standards are met. However those standards would be un-harmonised (as with the 20% of sewers adopted under the Baseline). Part H of the Building Regulations and SfA6, including regional variants set by WaSCs, would continue to be used.

39. SfA6 is one of six working versions and WaSCs have regional variants of these. It was also primarily designed for use where two premises are joined together and requires sewers to be a minimum of 2.5m from the edge of a building (often putting them under the highway).

40. This approach is not aligned with the proposed automatic adoption, which entails the adoption of the sewer from the main public sewer up to the final lateral drain into the property where that is inside the property boundary, or up to the property curtilage where the lateral drain starts outside it. As a result WaSCs will often be adopting sewers that run across properties and under buildings. SfA6 also focuses on the standards required for sewers to be constructed within public highways. This means that the construction has to be deep and is expensive and is not appropriate for many of the sewers now likely to be adopted. In addition the minimum distance requirement that places many sewers into the public highway leads to unnecessary disruption during construction and maintenance.

Figure 1: represents Option 1 where existing requirements in SfA6 stipulate the layout.



41. Figure 1 illustrates a typical pair of semidetached houses where drains/access points in red; adoptable public sewer and lateral drain in green; demarcation chamber delineates change of ownership between property owner and adopting WaSC in yellow.

Policy Option 2: Automatic adoption with national build standards

42. Section 42 of the Act would be commenced. The right to connect to the public sewer is made conditional on a Section 104 Agreement. A consequence of the agreement is the automatic adoption of new sewers by WaSCs provided the sewer meets new national build standards.

43. The introduction of a national build standard is a key provision in the Act. The lack of a uniform standard has been identified as a key issue behind the low rate of adoption under the current approach (Baseline). The national build standards would benefit all parties as follows:

- Construction costs to developers should be reduced with the benefit of uniform standards since developers will be able to operate a consistent approach nationwide. Over 6,000 developers are estimated to be operating in the residential construction market, with seven companies responsible for around 40% of total completions in 2006[4]. The industry has for long called for a uniform build standard.
- WaSCs benefit by knowing that the systems they adopt are built to a satisfactory standard and providing greater control over the sewerage network. The effect should be more resilient sewers that are more effective, more of the time.
- Homeowners and purchasers benefit from a working sewer that costs less to maintain; according to the WaSCs' economy of scale.

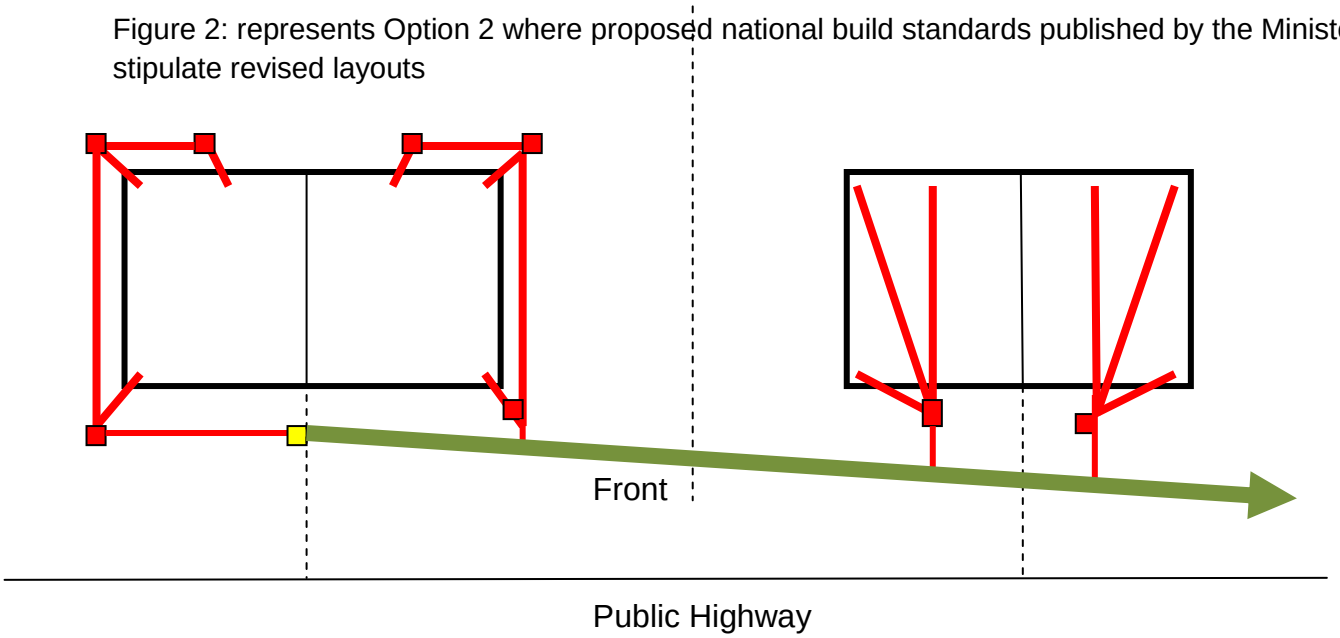
44. A national build standard would provide harmonised criteria that cover design, layout, construction, operation and maintenance. This would simplify the process of constructing new sewers to an adoptable standard and satisfy developers' desire for consistency.

45. In conjunction with the national build standard, a refined (slimmer) version has been drafted for small developments only. This shorter version omits the elements of the longer version that are inappropriate to small scale development and the small businesses that usually develop them. The option remains for developers to agree local standards with WaSCs in the place of the nation build standards (this is also essential in order not to stifle innovation).

46. Adoption with the benefit of a consistent nation build standard will prevent recurrence of problems associated with private ownership (including the cross subsidisation of maintenance, disputes around joint ownership and homeowners lack of awareness of their liability for maintenance). The costs and burdens born by homeowners responsible for private sewers will be removed.

[4] Source: Draft IA Impact Assessment for Mandatory Build Standard for Sewers and Lateral Drains, June 2009.

Figure 2: represents Option 2 where proposed national build standards published by the Minister stipulate revised layouts



47. Figure 2 illustrates a typical pair of semidetached houses – drains/access points in Red; adoptable public sewer and lateral drain in green; and demarcation chamber delineates change of ownership between property owner and adopting WaSC in yellow.

Sectors and groups affected

48. Groups affected by the proposed option include: private sewer owners (predominantly households but also businesses, local authorities, housing associations, and other property owners such as Government, non-Governmental organisations and institutions); WaSCs who are currently responsible for public sewers and would assume responsibility for construction standards in future; WaSCs' customers who would look to WaSCs and their contractors to uphold standards and resolve problems; insurance companies who, over a range of quality of cover, indemnify those householders who elect to take such cover against the costs of maintenance and repairs; drain repair businesses/contractors, who currently contract to carry out such work but would in future contract to the WaSCs; regulators including Ofwat and the Environment Agency; consumer bodies such as. CC Water; and developers of residential and commercial property and those engaged in the development process such as building contractors, architects and surveyors, groundwork contractors and drainage engineers.

Detailed costs and benefits

49. This section estimates the costs and benefits for the range of options identified in this Impact Assessment. All costs (and benefits) are calculated using central estimates. A forty-year analysis period has been chosen, which is in common with the Impact Assessment on the transfer of private sewers to WaSCs. This recognises the long-term nature of the sewerage assets being considered and the problems that the options are seeking to avoid. Specifically, the inadequate maintenance under private ownership would lead to worsening problems over time. The results of the analysis were not sensitive to the period of analysis used, as discussed in more detail below. In accordance with The Treasury's Green Book guidance, a discount ratio of 3.5% has been applied to calculate present values from years 0-30 of the analysis, and a lower rate of 3% from year 31 onwards. Costs and benefits are quoted in present values.

50. Sensitivity analyses has been carried out on a number of key parameters: period of analysis; construction costs; the number of newly built homes; accreditation and inspection costs; the blockage rate for private sewers; and, the cost of reactive maintenance (to remove blockages). The results of these analyses are reported in the monetised costs and benefits sections for each option.

51. A central estimate of 245,000 new homes being built annually was used (CLG, 2010). Sensitivities using indicative lower rates of home building (120,000, 150,000 and 200,000) were also undertaken. These suggested that the results are not sensitive to the projected number of new homes built. Total costs and total benefits are proportional to the new build figure used. Hence, whilst total costs and total benefits increase as the number of new builds increases, the benefit relative to cost remains the same irrespective of the figure used.

Assessment of Baseline

52. The Baseline for this IA is that there would be no automatic adoption of sewers by WaSCs and no national build standard. WaSCs would continue to issue varying guidance on the design and construction of sewers and adopt around 20% of them. The automatic right to connect to a public sewer would continue.

Baseline costs

53. The Baseline imposes no additional direct costs on developers or WaSCs.

54. The impact of more private sewers and the impact on flooding, pollution and associated public health has not been monetised in this IA.

Baseline benefits

55. No benefits are expected to arise from the status quo of sewers privately managed in the absence of adoption.

56. The main consequences of the Baseline would be to adoption, as follows:

- Higher procurement and planning costs would remain, particularly for larger developers, in the absence of a consistent national build standard and the continued use of varying standards preferred by individual WaSCs. The need for supply chain manufacturers to cater to sometimes minor variations in specification provides a barrier to capitalise on economies of scale available to larger production volumes;
- In the absence of automatic adoption the status quo of current practices would be preserved, which perpetuate the circumstances that arose from the Public Health Act (1936) described in the transfer of private sewers IA (Defra, 2010). The **regulatory failure** of the Public Health Act (1936) that failed to achieve intended voluntary adoption of sewers has been widely discussed and the **market failure** (discussed in this IA) provides no incentive for WaSCs to adopt sewers.

Assessment of Policy Option 1

57. Option 1 – automatic adoption with un-harmonised build standards – would provide for the automatic adoption of new sewers after construction by requiring the applicant to enter into a Section 104 agreement as a condition of making the connection to the public sewer. Part H of the Building Regulations and SfA6 would continue to be applicable, complete with regional variations set by WaSCs.

Monetised costs of Option 1

58. Developers will see higher construction costs in this option because WaSCs automatically adopt new sewers. The estimated 80% new sewers that are currently un-adopted (private sewers) are built to a variety of standards. The automatic adoption of new sewers in the future will mean WaSCs require the SfA6 standard to manage their liability. In many cases this will increase the cost of the sewers. We will collect any more, available evidence during this consultation to test this assumption.

59. Sewer layouts were designed by the Home Builders Federation (HBF) for a typical housing estate in order to estimate construction costs. To represent the Baseline both HBF and the British Plastics Federation (BPF) engaged specialist surveyors who drafted schedules for materials and costs where public sewers meet SfA6 and private sewers meet Part H of the Building Regulations (less stringent standards). Once the Baseline was estimated the process was repeated so that sewers that would otherwise have been privately owned were designed to meet the SfA6 standard. The schedules produced by the BPF incorporated a greater range of options that reflect the numerous ways to provide sewers that meet SfA6.

60. The following features were applied to the sewer design in order to meet SfA6:
    - 2.5m stand-off from buildings but varies by WaSC region; and
    - (non-plastic) inspection chambers;
    - 900mm minimum depth.

61. In addition, some sewers were moved into the highway due to the requirement for an increased distance from the buildings they serve. The associated cost was increased by 20% to account for working in the highway.

62. The additional cost of constructing new sewers is estimated at £386 per home. Extra costs of £95m per year are estimated for this option to build the same sewers for 245,000 new homes each year in England and Wales (CLG, 2010). The additional cost is small relative to the price of a house. Consequently, it is anticipated that developers would pass this additional cost onto house buyers in the sale price of the property.

Inspection and supervision

63. WaSCs currently charge supervision/inspection fees to the developer at 2.5% of the estimated construction costs. Therefore, these charges would be higher for this option because of the extra cost of the sewers required to meet SfA6.

64. The cost of supervision/inspection was doubled to 5% of the estimated construction costs for our sensitivity analysis, to reflect the possibly increase of these costs in the future. The analysis demonstrated that the benefits are not sensitive to an increase in these fees; the benefits decreased from -£1,967m to -£2,017m.

Blockage rates

65. The majority of costs arising from this option that fall to WaSCs are associated with maintenance of the extra sewers from automatic adoption. Although the costs fall to WaSCs, ultimately they would be passed on to their customers in sewerage bills, through Ofwat's regulatory mechanism.

66. Based on the number of blockages reported by WaSCs in their June Return to Ofwat[5], an average blockage rate of 0.5blocks/km/year has been applied for all public sewers in this assessment. Since older, smaller sewers tend to have higher blockage rates, a rate of 1block/km/year is assumed for all private sewers. There is no data available on the blockage rate of new small diameter public sewers – the sort that would be automatically adopted. Therefore, it has been assumed that the blockage rate will remain constant at 1block/km/year for new sewers that would formerly have been privately owned.

67. Based on the assumed rate of 1blockage/km/year, WaSCs would have to resolve an additional 1,766 blockages in 2011/12 as a result of automatic adoption. Blockages and hence costs will rise year on year as more new houses are built. The additional cost to WaSCs of dealing with blockages has been estimated at an average £5.4m per year. This is a transfer of costs from households and local authorities to WaSCs. The cost to WaSCs would ultimately be passed on to their customers and equates to less than 25p per household per year, based on 23m households in England and Wales (CLG, 2008).

68. A blockage rate of 0.5blocks/km/year was applied to public sewers that would have been privately owned under the Baseline for our sensitivity analysis. This had an insignificant impact on the net present value of option 1: -£1,967m reduced to -£1,972m with the lower blockage rate.

69. Costs and benefits associated with this option are shown in Table 1.

[5] See http://www.ofwat.gov.uk/regulating/junereturn/jrlatestdata/ June Return, Table 16a.

Non-monetised costs of Option 1

70. In some instances developers will fail to meet the WaSCs' required standards (i.e. SfA6). Whilst developers will usually complete remedial work, or cover the costs of remedial work via bonds, WaSCs will have to undertake additional administrative work to recover these costs. Developers may face higher costs through lost bonds where work is not up to standard, since all sewers will need to meet the standards required by WaSCs whereas in the baseline there is no requirement for any to meet a standard other than where required by Building Regulations. This burden will come from those sewers that would otherwise not have been adopted and have remained private sewers.

Insurance

71. Current general household and specific emergency insurance may cover private sewers as well as internal plumbing. Following the automatic adoption of private sewers there may be a slight decrease in the cover required from these insurance policies. However, households will retain responsibility for the drains which serve their own property and lie within their curtilage. There is a small risk that some households would refrain from taking up an adequate insurance policy, which could result in loss of income to insurers and maintenance costs falling to the household.

72. However, such policies frequently do not cover private sewers which lie outside the curtilage. So whilst householders will receive major benefit from the loss of liability to maintain sewers outside their property, the perceived reduction in risk is not likely to affect the uptake of policies significantly. The risk of reduced business is also minimised by the fact that, initially, the proportion of newly built properties is small to the existing housing stock. Thus, in the longer term insurers might be expected to reflect the reduced level of risk in premiums – although the actual reduction in liability will be limited. This is likely to be limited and probably insignificant compared with wider economic changes that affect people's attitudes to insurance.

Proactive maintenance

73. Proactive maintenance of public sewers is carried out on sewers where problems indicate the need. It can include jetting in lengths prone to silting, blocking or FOG (fats, oils and greases) build-up. Repeat blockages will be surveyed using CCTV to identify whether rehabilitation work is required. However, new sewers designed in accordance with latest design guidance should not require proactive maintenance. Proactive maintenance of these sewers will only be programmed where a need arises and the costs of this will be offset by a reduction in the costs of reactive maintenance. The estimated costs of maintenance therefore cover both proactive and reactive approaches.

Monetised Benefits of Option 1

Blockages

74. Households and local authorities in England and Wales will avoid dealing with approximately 900 blockages in 2011/12 owing to the shorter length of sewers under private ownership. This equates to a saving of £5.7m a year (on average, over 40 years).

75. WaSCs are likely to have service contracts in place with sub-contractors, which will result in more efficient maintenance and lower unit repair from the economies of scale. Consequently, the benefit to households will be greater than the associated cost to WaSCs.

76. Also the number of blockages avoided will be less than the numbers of blockages the WaSCs inherit because of the standards (SfA6 or other) required for automatic adoption – Section 104 agreement; and consequently will reduce the occurrence of blockages.

77. The time saved by households from fewer blockages is estimated at 1.5hr per blockage and valued at the median wage. Cost avoided from the time spent maintaining private sewers is estimated at £0.33m per year and the total cost avoided is £6m.

Disputes

78. A reduced burden on local authorities in dealing with disputes is expected. Local authorities currently spend approximately £13m on resolving blockage disputes. The average unit cost (per

km) to local authorities was calculated and used to estimate the extra length of sewers from new homes, which gives a saving to local authorities of £2.1m per year.

79. Benefits arising from Option 1 are shown in Table 1.

Non-monetised benefits of Option 1

80. The process for automatic adoption will be streamlined which has the potential to reduce administrative costs of developers and WaSCs.
81. Developers' bonds will be released earlier than under the Baseline, owing to the streamlined adoption process, which will result in a positive impact on developers' cash flow.
82. In the short term, insurance companies may benefit from the same level of income from household emergency policies but with an incremental reduction in risk over time, insurers are expected to lower premiums to reflect the reduced risk. On balance this impact is not expected to be significant.
83. Purchasers of new homes will not be at risk of owning private sewers. Automatic adoption would clarify what are currently poorly defined property rights and thus reduce distress and cost. The distress arising from ownership liability has been expressed by owners and includes:
84. Maintenance should be more effective than under the Baseline and would be expected to move over time to more planned and less reactive maintenance under WaSC ownership. Well-maintained public sewers have positive public health and environmental externalities. It is in the intrinsic interests of the owners of private sewers to maintain them for the good of their own and general public health. Local authorities, who have oversight through their environmental health function, have power to intervene where necessary in order to protect public health, and this arrangement generally achieves its goal. However, where intervention is necessary because of the failure of private sewer owners to carry out necessary works, the process of remedying problems can be protracted and expensive for local authorities. Whilst local authorities may ultimately recover their costs via land charges on affected properties reliance on third party intervention is an inefficient way of safe-guarding public health. The IA does not however seek to suggest that the (non-monetised) public health benefits justify the automatic adoption or build standards: the proposed new build arrangements for sewers and lateral drains will continue to protect public health and in the long run will do so at lower cost. Since sewers will be better maintained there will be a slightly reduced risk to public health compared with the baseline. But this is not monetised, is likely to be small, and is not a primary driver for this proposal.

Direct Impact on Business of Option 1

85. Using central estimates, Option 1 will impose an additional equivalent annual direct cost of £114.2m on WaSCs and developers. Except in so far as they may be private sewer owners, businesses will not benefit directly from the proposed regulation. Therefore, the measure proposed under Option 1 qualifies as an 'IN' under the OIOO Methodology. The equivalent annual net direct value was calculated following the current OIOO guidance, over the 40-year appraisal period and applying a declining discount rate as per the HMT Green Book guidance.

Present Value of Option 1

86. Monetised costs and benefits of Option 1 are shown in Table 1.

Table 1: Option 1 total costs and benefits (present values) over 40 years

Costs	**Present Value (£m)**
Additional CAPEX (developers)	1963
Cost of dealing with blockages (WaSC)	89
Additional supervision/inspection costs (WaSC)	49
TOTAL COSTS	2101

Benefits	
Saved cost of dealing with blockages (householders)	93
Saved time dealing with blockages (householders)	5
Saved time dealing with disputes (local authorities)	35
TOTAL BENEFITS	133
NPV	-1,967

87. The results of Option 1 are not sensitive to the time period for analysis: time periods from 10-60 years all result in negative benefits. Although benefits become increasingly negative as the time period is extended.

Assessment of Policy Option 2

88. Option 2 – automatic adoption with a national build standard – would mean that the automatic adoption of new sewers would be built to a harmonised standard as published by the Minister. The right to connect to the public sewerage system depends on there being an adoption agreement in place under section 42 of the Act. Adoption agreements must be predicated on the national build standard.

89. Option 2 would facilitate the national accreditation of contractors. Whilst it is not a requirement of the standard, it is very likely that WaSCs would endorse an accreditation scheme given the costs of supervising the construction of new sewers. Such a scheme would improve the standards of workmanship on site and reduce the need for inspections by WaSCs. Accreditation should also reduce the cost of sureties/ bonds.

Construction

90. Construction cost estimates for the Baseline and Option 2 were provided by the HBF and BPF. Whilst BPF estimated an average cost saving of £66 per household, HBF estimated an additional cost of £141 per household. The difference in these estimates appears to arise because HBF estimates were calculated from data and experience in the East Midlands and cannot be treated as representative. By contrast the BPF estimate used a national price reference and takes into account that it will be cheaper to build to consistent national build standards than variable current arrangements. In reaching these estimates both HBF and BPF used independent quantity surveyors working to a 'typical' development layout provided by the HBF.

91. BPF illustrated a range of options in providing both adoptable and non-adoptable sewerage, which reflected some of the many options that meet national build standards. On this basis the BPF figure has been used but it should be recognised that, in proportion to the price of a new house, neither figure is significant.

92. BPF's estimate was chosen following discussion with WRc, the authors of the current adoption standards. Defra and WRc judged the data more robust for complying with the nation build standards. The impact of the national build standards should reduce the construction costs by streamlining the agreement, construction and approval processes and consequently the additional costs implied by the HBF estimate represent a high cost scenario.

93. Results of the analysis are sensitive to the difference in the cost estimates between BPF and HBF; this will be further investigated during consultation. The benefits are positive using BPF data but negative using HBF data. Sensitivity analysis suggests that additional costs up to £13 per household would still produce benefit.

94. Changes to SfA6 proposed in the national build standards are not considered to reduce the effectiveness of sewers. Key changes between the current voluntary adoption under SfA6 and the national build standards are:
    - Minimum depth 350mm (down from 900mm);
    - Minimum distance from buildings 100mm (down from 2.5m).

95. Scope exists for fewer pipes and sewers can be laid to a shallower depth and closer to buildings, which should offer developers lower cost options for adoptable sewers. In certain circumstances

the head length of the pipe might need to be extended beyond current practice to allow for accessibility. But the removal of the requirement to have access points on every individual property connection to the sewer will more than offset these costs. This not only has the potential to lower construction costs but should also deliver future maintenance benefits for adopted assets through improved accessibility.

96. Defra has worked closely with developers and water companies in developing the national build standards to ensure that the current work practices are sustained where possible.

Monetised Costs of Option 2

97. WaSCs will be responsible for dealing with blockages on public sewers which would have been private sewers under the Baseline scenario. Based on an assumed rate of 1block/km/year, WaSCs will have to resolve an additional 1,830 blockages in 2011/12 as a result of automatic adoption. These costs are a transfer from households and Local Authorities, who benefit from avoided costs. Blockages and, hence, costs will rise year on year as more new houses are built. The additional cost to WaSCs of dealing with blockages has been estimated as, on average, £5.6 million per year. These costs will be passed on to all householders through their sewerage bills, via Ofwat's regulatory mechanisms. This will have a minimal impact on households' bills, equating to less than 30p a year; assuming 23m households in England and Wales (CLG, 2008).

98. Typical sewerage scheme designs were used to estimate the additional length of public sewers for Options 1 and 2 and thereby the number of additional blockages that WaSCs will have to deal with. The cost to WaSCs of dealing with blockages is higher for Option 2 than for Option 1 due to a marginally longer length of sewers under the Option 2 scheme design.

99. Costs associated with Option 2 are shown in Table 2.

Non-Monetised Costs of Option 2

100. These will be the same as the non-monetised costs under Option 1.

101. Where industry adopts new practices there will be some associated transitional costs. Such costs arise mainly from training employees to be aware of and competent in any new practices and the procurement and use of new equipment such practices may require. It is unlikely that industry would need to change equipment procurement and familiarisation practices as a result of implementation of a national build standard.

102. Training costs will vary according to the size of the organization since economies of scale will allow the cost per person to be reduced for larger organisations. Training costs of £140 per person have previously been assumed when assessing the impacts of change in practices due to updating the Building Regulations (Approved Document B and Approved Document G). However, the training and familiarisation required for implementation of a national build standard will vary according to organisation size and experience.

103. Large organisations which currently construct public sewers using SfA6 as a guide will already be familiar with practices that a national build standard will require. Such companies will require less familiarisation than some smaller organisations not using Sewers for Adoption given that they currently construct private sewers using Building Regulations Approved Document H. However, smaller organisations will be able to use the reduced guidance supporting the national build standard, making training and familiarisation easier. Larger organisations, however, will require training and familiarisation for the full guidance. On this basis there should be some balance in training costs between economies of scale for larger organisations and simplified guidance for smaller organisations.

104. A national build standard for sewers will be a core skill for all builders, developers, consultants etc. It is possible that the training will be covered by the time dedicated to continuing professional development that professional institutions normally require of their members. Training costs may not be additional if training for the existing standards is currently undertaken. Where such training is not currently undertaken, additional costs will be incurred. At this stage the extent to which training is already occurring is not known so no training cost estimates have been developed. Evidence to enable such estimates will be sought during the consultation process.

Monetised Benefits of Option 2

105. By building sewers to national build standards there will be a marginal CAPEX cost saving to developers; estimated at £16m per year, representing the benefit of simplifying build standards.

106. Due to the reduction in length of sewers and drains under private ownership, householders and Local Authorities in England and Wales will avoid dealing with approximately 1,830 blockages in 2011/12, rising year on year as more houses are built. This equates to a saving of £6.9 million per annum (on average, over 40 years) on emergency private sewer maintenance. The cost of dealing with problems is transferred to WaSCs. Since WaSCs are assumed to be able to tackle the repairs more cost-effectively, the overall effect of automatic adoption on ongoing maintenance costs is a net benefit. Typical sewerage scheme designs were used to estimate the remaining lengths of private sewers and drains under Options 1 and 2, and hence the reduction in blockages. The benefit to householders and Local Authorities is higher for Option 2 than for Option 1 since the national build standards differ in some respects from Sewers for Adoption and one effect of that difference will be, in some situations, to enable adoptable sewers which under Sewers for Adoption would not be adoptable. It has therefore been assumed that there will be fewer private sewers remaining under Option 2.

107. The number of blockages avoided is lower than the number of blockages the WaSCs gain because automatic adoption has the effect of increasing the length of sewers in WaSC ownership (as with Option 1). This is because the majority of developments are currently constructed without any adoption agreement and therefore are not constructed to the SFA6 standards, while meeting adoption standards will increase the total length of adoptable sewer. The increase in sewer length (and thus number of blockages to be dealt with by WaSCs) is lower under Option 2 (a 9% increase) than under Option 1 (an 11% increase) due to the differences between Sewers for Adoption and the proposed national build standards.

108. Time saved by householders, due to a reduction in the number of blockages, is quantified as an hour and a half per blockage avoided, valued at the median wage. The average annual cost avoided from time spent maintaining private sewers is estimated as £0.39 million per annum.

109. There will be a reduced burden on local authorities in dealing with disputes related to private sewer/ lateral drain blockages. The benefit to local authorities is estimated to be £2.2 million p.a. (annual average).

Training and accreditation

110. Under Option 2, it is considered to be very likely that contractors may choose to become trained, accredited and registered to ensure consistent, good quality construction practice in line with the new build standard. A single, national standard will make this more viable, and could emulate the ‘self lay’ scheme used for water mains. Should such accreditation happen developers may benefit due to concessions around sureties and compliance criteria associated with automatic adoption. It is further anticipated that accreditation processes should reduce the incidence of defects and that the use of a contractor who is a member of an approved scheme may reduce the rectification costs of attending to agreed defects, thereby minimising any surety claims. A number of water companies already operate ‘bond waiver’ schemes under the current voluntary adoption process when approved contractors are employed to construct adoptable sewerage assets. These enable the surety bonds required under current processes to be minimised, offering surety savings to developers.

111. A number of such schemes are already in place for the electricity, gas and water distribution sectors and similar schemes are being developed for the sewerage sector.

112. The cost of operating the accreditation scheme will be borne by the fees paid by the contractors seeking and holding accreditation. The cost of gaining accreditation would be derived from standard fees which have regard for the scopes being sought and the size of the company. Assuming that the assessment is broadly similar to existing schemes, this would mean that assessment costs would currently typically be between £4000 and £8000 per company.

Supervision/ Inspection of construction

113. Supervision fees are currently charged to the developer at 2.5% of estimated construction costs. Therefore the costs to the developer will increase in Option 2 due to the longer lengths of pipelines being included in Section 104 agreements.

114. For this impact assessment, it has been assumed that the costs to the WaSC of this supervision are covered by these fees. However, the WaSCs have concerns that this is not the case and proposals are being made to increase these fees.

115. In practice, there will be a trade-off between the supervision fees and the cost of training/accreditation. Using the example development scheme drawn up to estimate costs of construction under Options 1 and 2, the cost of supervision of the scheme would be £8500 at 2.5% of estimated construction costs (Option 2). Should the fees increase beyond 2.5%, or the developer be involved in more than one construction site, it might be more cost effective to seek accreditation. Therefore, it has been assumed that the maximum supervision costs under Option 1 and 2 are 2.5% of estimated construction costs. This is the upper bound value.

116. Since WaSC costs for maintenance and repair under Option 2 is lower than comparable CAPEX by private sewer owners under the Baseline scenario, it is assumed that there will be an associated reduction in inspection/supervision costs.

117. The cost of supervision/inspection was doubled to 5% of estimated construction costs in sensitivity analysis. The analysis showed that the NPV is not sensitive to an increase in these fees (other things being equal, NPV increased from £406.1 million to £414.5 million.

118. Monetised benefits arising from Option 2 are shown in Table 2

Non-Monetised Benefits of Option 2

119. In addition to the benefits realised under Option 1 from automatic adoption, developers, WaSCs and society will benefit from a single, unified national build standard as follows:

- developers will save time and costs in submitting plans to WaSCs;
- standardisation and repetition of layouts will reduce design costs;
- local authorities will no longer have to assess design and inspection of sewers and laterals which are not offered for adoption, or subsequently not adopted due to arising issues;
- local authorities will have a reduced burden of environmental control in dealing with problems (odours, flooding, etc);
- streamlined adoption procedures will save time and costs for all involved;
- society will benefit from product innovation encouraged by better ability of manufacturers to recover development costs by marketing the same product to all water companies

120. The Standard's specification of compliant materials will ensure lower whole-life costs for maintenance (e.g. Option 2 would see greater accessibility than in the Baseline case). Developers will benefit from economies of scale due to standardisation of materials and new products could be developed in response to uniformity of design specification.

Sureties/ bonds

121. Under the existing agreements for adoption under Section 104 of the Water Industry Act 1991, WaSCs agree to adopt sewers provided they are completed in accordance with the terms of an agreement. Adoption usually takes place following completion of the whole sewerage system and more than 50% occupation of the properties on the site. Developers are required to provide a 10% non-performance bond, which will allow the WaSC to carry out a certain amount of remedial work in the event of non-performance by the developer. This bond is released following adoption and a maintenance period (minimum of 12 months) across the whole development site.

122. Under the new proposals, adoption could take place, for example, once the floor slab/foundations of the development are cast and the foul drainage is fixed (that is the final position of the adoptable assets is confirmed). Equally, notification from the developer might be triggered once the roof is completed and all scaffolding removed. It is anticipated that the sewers would be inspected prior to adoption and obvious defects remedied. However, this could not prevent adoption. Therefore adoption could be phased across the development site and it would

not be necessary to wait until the whole development is completed. This could have the benefit of enabling inspections to be undertaken earlier and any remedial works undertaken prior to finishing off surfacing and while pipe-laying contractors are on site.

123. Although the sewers and laterals would become the responsibility of the WaSC on adoption, it is anticipated that the agreement for adoption under Section 104 would provide for a maintenance period following adoption during which time the developer would be responsible for any defects associated with the construction.

124. Under the proposals, because adoption would be automatic, developers would be required to provide up to a 100% non-performance bond, which will allow the WaSC to carry out a certain amount of remedial work in the event of non-performance by the developer. This would be released following adoption and the 12 month maintenance period on the phase of development.

125. However while the level of bond will increase the duration of the bonds/sureties is likely to be shorter as a result of a more sequential approach dictated by the sale and occupancy of premises. Currently most bonds are guarantees from providers such as NHBC/LABC New Homes Warranty etc. There would be upward pressure on the insurance premiums paid by the developers because of the size of the non-performance bond required, but some downward pressure because of the shorter durations arising from a more streamlined approach. In addition, as with the current system, developers with good track records will pay significantly less. Accreditation is also likely to reduce the levels required.

126. For smaller developments, the current system, whereby a developer can requisition a sewer under Section 98 of the Water Industry Act 1991, will continue. It is then the duty of the WaSC to provide a public sewer to be used for the drainage for domestic purposes of premises in a particular locality in its area. The costs of construction will therefore fall on the WaSC and no bond or surety would be required.

Direct Impact on Business of Option 2

127. Using central estimates, Option 2 will impose an additional equivalent annual direct cost of £5.0 million on WaSCs – the cost of dealing with blockages. However, WaSCs will also benefit from the regulation due to reduced supervision costs (equivalent annual direct benefit £0.5 million). Developers will also benefit from lower construction costs (equivalent annual direct benefit £18.2 million). Under Option 2, the net direct benefit to business will be £13.7 million. Option 2 qualifies as a 'zero cost IN' under the OIOO Methodology.

Results for Option 2

128. Monetised costs and benefits of Option 2 are shown in Table 2.

Table 2: Policy Option 2 costs and benefits (present values) over 40 years

Costs	**Present Value (£m)**
Cost of dealing with blockages (WaSC)	92
TOTAL COSTS	92
Benefits	
Saved cost of dealing with blockages (householders)	112
Saved time dealing with blockages (householders)	6
Saved time dealing with disputes (local authorities)	36
CAPEX savings (developers)	335
Inspection/supervision cost savings (WaSC)	8

TOTAL BENEFITS	498
NPV	406

129. The results of Option 2 are not sensitive to the period of analysis selected. Analyses using time periods from 10 years to 60 years all resulted in positive net present values. Since well-constructed drains and sewers have long asset lifetimes, net benefits are expected to continue well beyond 40 years.

Transitional arrangements

130. Steps have been taken to minimise the costs of the new measures during transition. These recognise that some new developments will be mid-development when the proposed regulations come into effect. Where new developments are at an advanced stage, or works are progressing in respect of the provision of new sewers, it proposed that these will be dealt with as follows:

- Where defined sewers and lateral drains are subject to an existing Section 104 Agreement, this will continue under the original terms of that Agreement and the WaSC will adopt, subject to the rectification of any defects by the developer;
- Where sewers and lateral drains are not covered by a Section 104 Agreement but other approvals have been granted, for example under the Building Regulations, then works will continue in line with that approval. The WaSC will adopt, with any defects assessed and prioritised according to their maintenance strategy;
- Where new developments have not gained approval by an alternate route by 1 April 2012, then they must enter into a Section 104 Agreement with the adopting WaSC.

131. All of the above are predicated on connection to an existing public sewer. The limit of liability of the adopting WaSC is indicated by the presence of a demarcation chamber located at or very near to the curtilage of the property. Curtilage for the purpose of this application is deemed to be the legal boundary of a site comprising single premises.

Risks and assumptions

132. There is a risk associated with Option 2 that the implementation of a national build standard could lead to designs being constrained, thus limiting innovation. This is perceived to be a low risk due to the scope allowed by the Regulations. Steps can be taken to mitigate this risk by regular reviews of the guidance given by the national build standard to ensure best practice is reflected.

133. It is assumed that the overall cost of flooding (e.g. clean up) due to sewer blockages will not change with change in ownership of the pipe work.

134. All assumptions used in cost-benefit modelling are shown in Table 5. The IA looks at the best available evidence on all parameters, and relies upon reasonable and prudent assumptions. Being a consultation stage IA, it is expected that the process of consultation will provide an opportunity to test the assumptions used and improve the evidence base where possible.

Table 3: Assumptions used in cost-benefit modelling

Parameter	Assumed Value	Source
Projected house building	245,120 (sensitivity analysis: 120,000; 150,000; 200,000)	CLG Live Tables. Table 401: House building projections 2008-2033.
Period of analysis	40 year	
Discount rate (0-30 years)	3.5%	HM Treasury Green Book

Discount rate (>30 years)	3%	HM Treasury Green Book
Current length of private sewers and lateral drains (km)	220,233	Transfer of Private Sewers IA
Average annual local authority cost of dealing with disputes related to sewer blockages on sewers that will transfer under automatic adoption (2009 prices)	£13m	Transfer of Private Sewers IA
Cost of supervision/inspection	2.5% of construction costs (sensitivity analysis: 5% of construction costs)	SfA6
Sewerage construction costs for 172 dwelling development	Option 0: £351,538 (sensitivity analysis: £237,031) Option 1: £418,009 Option 2: £340,208 (sensitivity analysis: £261,405)	Figures provided by BPF (figures used in sensitivity analysis provided by HBF)
Lengths of public/private sewers in development	Option 0: 691/4630 Option 1: 1930/3979 Option 2: 1975/3844	Figures provided by BPF
Blockage rate on public pipes (blockages/km/year)	0.5	Based on expert opinion
Blockage rate on private pipes (blockages/km/year)	1.0	Based on expert opinion
Time to deal with blockage (hrs)	1.5	Transfer of Private Sewers IA
Unit cost rate – public blockage (£/hr)	100	Based on expert opinion
Unit cost rate – private blockage (£/hr)	200	Based on expert opinion
Average Value of householder time (£/hr)	11.4	Transfer of Private Sewers IA

Assumptions from IA for transfer of private sewers

135. Analysis in the IA for the transfer of private sewers uses best available cost estimates and data relating to WaSCs provided by the independent economic regulator Ofwat in March 2010. The figures build on previous work undertaken by Atkins and WRc/UKWIR.

136. The current length of private sewers and lateral drains is uncertain but 220,233km represents the best available assumption. Greater accuracy would require an extensive survey and mapping exercise at an estimated cost of £1bn. We do not propose to undertake this exercise and spending even a fraction of this amount on a more limited survey is unlikely to represent value for money.

137. The time saved by sewer owners not having to deal with blockages is quantified at an hour and a half per blockage avoided, valued at the median wage. Recent research by Mouchel substantiates the estimate of time saved. It indicates that the private drainage sector commands £454m pa in managing 2.2m sewer blockages. This averages to just over £200 per call out. Current published rates by independent drainage contractors indicate rates of £75 + VAT for 30 minutes work – suggesting that a £200 call out would last 1 hour 10 minutes. The time saved by

private sewer owners will also include time to assess the problem, research a suitable contractor, arrange the call out, and so on. Taking these into account as well suggests that the time saved would be at least 1.5 hours, and could easily be more.

Assumptions based on expert opinion

138. The blockage rate on private pipes is assumed to be 1blockage/km/year. WaSCs report public sewer blockage rates to Ofwat in their June Return submissions, which suggest an average blockage rate of 0.5blockages/km/year (with a range between companies of 0.24 to 0.89). Small diameter pipes (which will be the predominant type being adopted) tend to have higher blockage rates but there is no evidence available on the blockage rate for new, publicly-owned small diameter pipes. A rate of 1blockag/ km/year has been assumed, based on WRc's opinion – as authors of the current adoption standards and industry experts.

Other Assumptions

139. The sewerage construction cost figures (a saving of £66 per property) and lengths of public/private sewers in development were provided by the British Plastic Federation (BPF). These are judged by Defra and WRc to represent the best estimate, capturing the least cost solutions currently available to comply with the standards and because the calculations were made using a nationally recognised price book. A cost estimate (an additional cost of £141 per property) from the Home Builders Federation (HBF), which relies on data and experience form only one site in the East Midlands and is not therefore regarded as fully representative, was used as a high cost estimate. The BPF figures estimate a cost saving per household whilst HBF figures estimate an additional cost. The NPV of Option 2 is sensitive to this assumption: the central estimate (BPF figures) is positive whereas the NPV is negative when the HBF figures are used. Use of the BPF estimate in the central case in consistent with the simplification motivation for the standards, which are intended to simplify compliance with the adoption standards.

140. The lengths of sewers in development were provided by BPF through discussion with Defra and WRc. The total length of sewer increases under both options, relative to the baseline. This is because not all sewers currently constructed are built to the SFA6 standards required for adoption by WaSCs. The majority of developments have been/are constructed without any adoption agreement. For developments where an agreement is in place this often defines certain sewers and applies to a minority length of assets. Automatic adoption would require compliance either with the current SfA6 standards in Option 1 or with the new national build standards in Option 2, which has the effect of increasing sewer length and therefore the build costs. The increase is less for the preferred Option 2 is 9% compared with Option 1 is 11% as a result of simplified design layouts.

Summary and Conclusions

141. This IA considers the costs and benefits of automatic adoption and a national build standard for new sewers. Three options have been considered: (0) Baseline – do nothing, (1) automatic adoption with existing standards and (2) automatic adoption with a national build standard.

142. Option 2 is the preferred option for the automatic adoption of new sewers because it provides the most benefit and will harmonise build standards. The national build standards are anticipated to conserve or improve the quality of sewers adopted by WaSCs. This approach is an essential adjunct to the transfer of existing private sewers in October 2011, if the experience of un-adopted sewers since 1937 and all the reasons for the transfer, are not to be repeated in the future.

143. Option 2 is expected to deliver a net benefit of £406m, although sensitivity analysis shows there are some uncertainties over construction costs which the consultation should help to resolve. Option 2 is within scope of OIOO and qualifies as an 'Zero cost In' with an equivalent annual net direct benefit to business of £14m.

144. Option 1 was rejected because it has a negative cost-benefit and would not achieve the policy objectives. Sensitivity analyses suggest that benefits are not sensitive to increases in the cost of inspection/supervision but are sensitive to the estimated change in construction costs.

When an increase in construction costs is assumed (using HBF's higher estimates) the benefits become negative.

Impact assessment tests

145. These specific impact assessments were carried out for the IA on the transfer of private sewers and lateral drains to statutory water and sewerage companies (Defra, 2010) and have been supplemented for this IA.

Impact on developers

146. Government committed, in the Spending Review, to reduce burdens on the house-building industry. As a consequence, the impact of policy on developers has been analysed.

147. This IA has identified a net cost saving to developers for the preferred option (Option 2). By building what would have been private sewers to the simplified national build standard, there will be a marginal CAPEX cost saving to developers, estimated at £16.15m per year. In addition, there are cost savings to developers from reduced inspection and supervision costs of £0.40m per year. In total, undiscounted cost savings to developers are £16.55m per year. The policy has been appraised over a 40-year time period. Discounted cost savings to developers are set out in Table 4 below.

Table 4: Discounted cost savings to developers of Option 2

2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
15.4	14.9	14.4	13.9	13.5	13.0	12.6	12.1	11.7	11.3
2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
11.0	10.6	10.2	9.9	9.5	9.2	8.9	8.6	8.3	8.0
2031	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**
7.8	7.5	7.2	7.0	6.8	6.5	6.3	6.1	5.9	5.7
2041	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**	**2048**	**2049**	**2050**
5.6	5.4	5.2	5.1	4.9	4.8	4.7	4.5	4.4	4.3

Competition Assessment

148. Automatic adoption and national build standards are likely to change the current market structure in the drainage repair industry, WaSCs will replace private sewer owners as the customers for repair services. However the position in respect of drains which remain the responsibility of householders will be unchanged. Possible impacts on the structure of and competition include:

- The amount of work for drain repair companies from the householder and from insurance companies is likely to decrease;
- WaSCs will likely need to contract back out some of the extra work to the drain repair industry;
- Competition for contract work from WaSCs may increase, which could improve standards of training and workmanship;
- Some smaller businesses may be less able to compete and could cease trading or merge with other businesses;

149. However the scale of these impacts will be less from this proposal than from the transfer of existing private sewers.

Small Firms Impact Test

150. There may inevitably be a change in the market focus for some private drainage contractors operating in this sector, who may wish to enter into arrangements with WaSCs or their sub-contractors.

151. The small firms most likely to be affected by automatic adoption and new build standards are those in the independent drainage repair and maintenance sector. These small businesses tend to be 'small bore specialists' operating cleaning, surveying and repair services primarily within and around the curtilage of a property. The drains within the curtilage will remain the responsibility of the householder, leaving this section of the market unaffected.

152. We understand the concerns expressed by small firms about this, detailed in the IA for the transfer of private sewers (Defra, 2010). We anticipate that some WaSCs will encourage their main contractors to allow smaller, independent drainage sector to tender for appropriate work, and their main contractors are also likely to recruit those with relevant skills as their work increases.

153. It is likely that WaSCs will seek quality assurance in respect of the independent sector and the NADC has been working with WaSCs to develop a suitable training/accreditation scheme.

154. If Option 2 were selected, including the accreditation of contractors, the affordability of the accreditation could be an undue burden on smaller developers. However, the current system will continue for smaller developments and the developer can requisition a sewer under Section 98 of the Water Industry Act (1991). It is then the duty of the WaSC to provide a public sewer to be used for the drainage for domestic purposes and the cost of construction will therefore fall to the WaSC.

Steps to help small businesses

155. In conjunction with the national build standard, a refined (slimmer) version giving guidance for small developments only has been developed. The scope of this smaller document covers drainage systems:

- For housing developments of less than 10 dwellings or commercial developments with a combined roof area less than 1000 m^2;
- Drained only by gravity (i.e. no adoptable pumping stations);
- With a total impermeable area draining to the adoptable system less than 0.5 ha;
- Where pipes are installed using conventional open trench construction; and
- Not involving the construction of any manholes (i.e. man access chambers, inspection chambers are permitted);
- Not involving the construction of any inspection chambers greater than 3 m in depth;
- In which no parts of the adoptable system are more than 150m from an existing manhole on the public sewer system; and,
- Not involving any on-site casting of reinforced concrete structures.

156. This document is for use by developers when planning, designing and constructing conventional foul and surface water gravity sewers and lateral drains for small developments which meet all of the criteria listed above.

Sustainable Development Impact Test

157. It is envisaged that the policy proposal will result in the better management of the wider sewerage system and that as a result future pollution events will be reduced. No other significant environmental impacts are anticipated.

158. The distribution over time of the key monetised and non-monetised costs and benefits of the proposal are implicit in the Evidence Base. Monetised costs and benefits will increase over time, since the length of public sewers will increase (increasing costs to WaSCs) and, hence the

length of private sewers will reduce (increasing benefits to householders and Local Authorities). Non-monetised costs and benefits, although uncertain and likely to be minimal, would be expected to increase over time too.

159. Implementation of the preferred option should mean that future generations do not have to repeat the transfer process of private sewers in future years. No significant impacts are expected to fall disproportionately on future generations.

160. The results of the Sustainable Development issues considered above are, on balance, likely to be moderately positive. The balance of monetised costs and benefits is considered to be moderately positive for the preferred policy option. The balance of non-monetised costs and benefits is likely to be moderately positive.

161. The balance of the monetised and non-monetised costs and benefits and the sustainability issues is considered to be moderately positive. All key costs and benefits have been monetised, resulting in a cost-beneficial policy proposal (Option 2). Non-monetised costs and benefits are considered to be minimal, but are likely to be positive on balance. There are no conflicts between the cost benefit results and the sustainable development impact assessment results.

Table 5: extra impact assessment tests

Statutory Equality Duties Impact Test	It is envisaged that the proposal will have no impact on statutory equality duties.
Greenhouse Gas Assessment	We do not anticipate any changes in the overall level of greenhouse gas emissions. The build standard is not very different from current practices in SfA6 but allows shallower pipes, with less excavation.
Wider Environmental Issues Impact Test	Better management of the wider sewerage system in the longer term is expected to reduce pollution events.
Health and Well-being Impact Test	No direct impacts on health but the distress caused by the current system should be reduced.
Human Rights Impact Test	It is envisaged that the proposal will have no impact on human rights.
Justice Impact Test	It is envisaged that the proposal will have no impact on the justice system.
Rural Proofing Impact Test	Whilst it is envisaged that the proposal will have no significant impact on rural communities, these communities frequently have a relatively high percentage of private treatment facilities (e.g. septic tanks) and so will accrue fewer benefits than urban communities.

Micro-businesses exemption

162. We have not exempted micro-businesses. The purpose of the measure is to ensure that all sewers associated with new build that are connected to the public sewerage system are adopted and built to a sufficient standard to ensure that their full life costs are minimised. . So it would make no sense to exempt those constructed by micro-businesses.

Sunset Clause

163. The Regulations include a sunset clause that would come into effect in 2019. We will review this measure in 2017 ahead of this date.