Response to Draft Determination

Bathing Water Enhancement Programme

Issue

Customer engagement on our Business Plan and Outcome Delivery Incentives (ODIs) revealed that significantly improving the quality of bathing water in our region is a key priority for our customers. In response to this strong customer feedback, we included £52.1 million (totex) in our December 2013 Business Plan to deliver 41 investigations and improve the quality of seven additional bathing waters to ‘excellent’ (two improving from ‘sufficient’ and five from ‘good’) by 2020. This water quality standard is a pre-requisite for a bathing water to attain "Blue Flag" status. Southern Water's operating area covers communities living in southern coastal areas whose livelihoods depend on tourism income, which in turn is dependent on high quality bathing waters. It is therefore not surprising that this improvement was supported by 92% of our customers.

In the Draft Determination Ofwat accepted the need for the investment, but challenged the scale of the proposed bathing water investigations programme. It noted, in terms of cost benefit analysis, that Southern Water had “done as much as it could reasonably have been expected at this stage.” It also acknowledged that our bathing water selection criteria reflected customers’ preferences.

Ofwat accepted the evidence which supports a programme of interventions at seven bathing waters, capped at the ‘Willingness to Pay’ value of £49 million. Whilst it understood the cost estimates for the individual elements, it has expressed concerns on how the combined costs fully account for customers’ preferences. On these grounds, and on underlying cost uncertainty, it ‘rejected’ the totality of our proposal from the Draft Determination.

Ofwat did not directly comment on customer protection, however, in subsequent discussions with Southern Water it has indicated that additional customer protection was needed to better safeguard the interests of customers.

<table>
<thead>
<tr>
<th>Company Proposal</th>
<th>Assessment</th>
<th>DD Allowance</th>
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</thead>
<tbody>
<tr>
<td>Claim Amount Sought</td>
<td>Implicit Allowance</td>
<td>Need</td>
</tr>
<tr>
<td>Bathing Waters</td>
<td>£52.1m</td>
<td>£13.1m</td>
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In our representation response to the Draft Determination we are including the following additional information:

i) a reduced programme of studies, limited to those that directly support the intervention programme in AMP6;
ii) an updated bathing water programme, building on the approach set out in our June Business Plan update;

iii) confirmation that the updated programme is the most cost-beneficial option, using the un-weighted application of the bathing water selection criteria;

iv) additional evidence using our assessment of the latest bathing water quality data;

v) a revised ODI and expanded customer engagement programme; and

vi) confirmation of CCG’s support for our updated proposals.

As a result of the above we have restated our Business Plan proposal at £33.377 million (totex) representing a 36% reduction in the required Totex.

Remedy

- We request that the revised value of £33.377 million for the Bathing Water Enhancement (Cleaner Seas for the South) programme is reflected in the Company totex forecasts for 2015-2020 and the Company view of the menu cost as per Table A3.2 in the Draft Determination Appendix.

- We request that the revised value of £33.377 million Bathing Water Enhancement programme is fully recognised in the Final Determination totex baseline.

- We request that the financially incentivised ODI is reflected in the Final Determination ODI framework.
Summary of the evidence

1. Justification

Customer engagement on our Business Plan and Outcome Delivery Incentives (ODIs) revealed that significantly improving the quality of bathing waters in our region is a key priority for our customers. Southern Water’s operating area covers communities living in southern coastal areas whose livelihoods depend on tourism income and in turn the quality of the regions bathing waters. It is therefore not surprising that this priority was high on our customers’ agenda, and was supported by 92% of our customers. Indeed, our customers are willing to pay extra for delivery of these enhancements.

Our Strategic Statement research on the pace at which customers expect us to deliver improvements over the next 25 years indicated that customers felt that this work, and in other priority areas, should not be delayed. We, therefore, included £52.1 million (totex) in our December 2013 Business Plan to deliver 41 investigations and to improve the quality of seven additional bathing waters to ‘excellent’ (two improving from ‘sufficient’ and five from ‘good’) by 2020.

This is an ambitious programme, given our intention to both investigate and deliver bathing water improvements in a single AMP period. The scale and pace of work proposed during 2015-20 is fully supported by customers, stakeholders, our Customer Challenge Group and our Board. Our research showed 92% of customers agreed with these proposals.

In our June 2014 submission we re-stated our investment proposals, unchanged. We provided further and better information on costs, cost assurances and our modelled cost approach which added robustness and confidence to our case.

At the Draft Determination, Ofwat, rejected our investment proposal for bathing water enhancements principally because of underlying concerns around cost uncertainty. The cost assessment in the more recent ‘deep-dive’, risk-based review did, however, allow for £13.128 million as an implicit allowance.

In light of these concerns we have revisited our proposals. We have:

- revised down the number of investigations from 41 to 21; and
- reshaped our bathing water intervention programme to one which delivers a package of seven highest ranked bathing waters, a programme that maximises net results using our bathing water selection criteria.

Our updated Bathing Water quality enhancement programme is restated at £33.377 million (totex). We are therefore seeking an additional £ 20.249 million for bathing enhancements in addition to the implicit allowance of £13.128 million. The programme is material at 1.8% wastewater service totex, well above the 0.5% threshold for special cases.

Our revised costs for the bathing water enhancement programme scheme is reflected in our revision to Table S3 & S11. We request that the £33.377 million costs are fully recognised in the Final Determination baseline.
2. Evidence

Our proposed programme for Bathing Water enhancement is an atypical programme which goes beyond the statutory requirements of bathing water quality to fulfil customer and stakeholder priorities. It is a programme not represented by Ofwat’s standard cost assessment models and requires Southern Water to make its representation for investment within the 2015-20 plan period and for Ofwat to consider it.

To understand fully the programme of improvements required, our approach was to investigate the source of bathing water quality compliance issues followed by a programme of interventions. Both these elements of our bathing water programme are set out below.

2.1 Bathing Water Investigations

There are currently 83 accessible, designated bathing waters in Southern Water’s area. They include the newly designated bathing water at Shoreham which was added at the beginning of the 2014 bathing season.

In preparing our Business Plan submission we established, using Defra’s 2012 review, that 41 (of the original 82) accessible bathing waters, were forecast to attain the highest water quality classification ‘excellent’ when the new standards come into force in 2015. Those bathing waters not forecast as ‘excellent’ informed the scope of our investigation and intervention programme.

We confirmed, in our June 2014 submission, that Defra had revised the number of ‘excellent’ bathing waters in our area up to 46 at the close of the 2013 bathing season. Although the more recent bathing water data did suggest an overall uplift in bathing water quality it was also clear from our analysis that the probability of bathing waters retaining the highest classification varied considerably. This is associated with the unique and complex interaction between the environment and each bathing water.

To better understand these interactions (and risk) we retained the investigation programme at 41 locations. We also recognised the need to work closer with Councils, landowners and local communities to better understand other sources and pathways of bacterial pollutants that lead to bathing water compliance issues. These studies allowed for an appropriate level of stakeholder and customer engagement to facilitate these discussions.

In its Draft Determination, Ofwat challenged the scale of investigations we proposed. It identified that the findings from 20 studies used to define the interventions beyond AMP6 are likely to become outdated, particularly those interventions delivered in AMP10.

We have, therefore, reduced the number of investigations to the 21 which will directly inform the AMP6 intervention programme. In reducing the scale of our investigations programme we will delay the scientific study and, consequently, improvement of the twelve more complex and involved bathing waters. We will revisit our forward investigation proposals at PR19 including mechanisms for transition investment in AMP7; our preparation for PR19 will include an assessment of bathing water quality and risk to shape the investigation programme required.
A summary of our approach leading to the AMP6 investigations programme is illustrated in Figure 1.

**Figure 1: Southern Water’s approach to defining its above-statutory bathing water programme**

Notes:
* excludes Newhaven which is closed to the public
** Shoreham, albeit recently designated, is expected to be a bathing water with ‘excellent’ water quality
*** Benefit, Proximity, Cost, Time, Inland Characteristics and Success

The revised cost of this element of the programme is £1.882 million (totex), a reduction from the £3.113 million stated in our June 2014 update. This sum includes for an appropriate level of customer engagement. We have provided our modified investigation programme in Annex 1.

The location of the bathing waters, for investigation, are illustrated in Figure 2.
To reflect the uncertainty in bathing water compliance, and to better protect the interests of customers, our target to improve seven bathing waters to ‘excellent’ water quality will be based on the Environment Agency’s sample data at the close of the 2014 bathing season. This will incorporate any changes which may have occurred in the two years since our original estimate of 41 bathing waters, which was based upon Defra’s 2012 prediction.

In advance of the 2014 bathing season concluding, we have collated and assessed the latest bathing water quality sample data. ‘Excellent’ water quality is defined as no more than 100 *Intestinal Enterococci* cfu/ml and 250 *Escherichia coli* cfu/ml in at least 19 out of 20 samples. Our analysis would suggest that the number of bathing waters likely to be at ‘excellent’ quality at the close of the 2014 bathing season is 54, Figure 3 refers.
Our 2014 assessment shows a lower number of ‘excellent’ bathing waters than the assessed annual position in 2013 but higher than the 2012 annual assessment. This is likely to be associated with 2013 being a drier year and 2012 a wetter year than ‘normal’.

Indeed, we set out the relationship between bathing water quality compliance and rainfall events in Appendix 3 which supported our June 2014 submission update. We showed that whilst this relationship is weak generally, for some bathing waters the statistical relationship is stronger. We concluded that whilst the year-on-year variation in bathing water quality at a number of locations may be explained by externalities, such as weather-related events, other bathing waters would require more detailed, scientific studies to understand fully these dependencies.

Our analysis serves to illustrate that there is an element of expected movement between bathing water classes which is dependent on bathing water quality; some of this movement is within, and some outside of, Southern Water’s immediate control.

This leads to three important points:

1. To achieve our promises to customers we will need to minimise future movement between bathing water categories. Southern Water would aim for bathing waters to retain their predicted quality. This is especially important for those bathing waters already predicted to attain ‘excellent’ quality, and not targeted for specific investment, so that there is no deterioration in our overall position. This objective is further considered in setting the Outcome Delivery Incentive (ODI), Annex 3 refers.

2. Where we can positively influence improvements, Southern Water considers only those bathing waters for intervention where there is the potential to attain ‘excellent’ water quality in the 2015-20 period. (We show in Section 2.4.2 how the bathing water selection criteria we developed will be used to choose those bathing waters we can improve in AMP6). Customers are also protected for the delivery of this targeted investment, once confirmed, in a separate ODI - Annex 3 refers.

3. We will continue to monitor bathing water quality at all 83 locations to understand better how the influence of externalities, such as rainfall, can impact them.

Our target to improve seven bathing waters to ‘excellent’ water quality will be based on the position confirmed using the Environment Agency’s data, at the close of the 2014 bathing season. Whilst we wait for this confirmation we have modified our target to improve an additional seven bathing waters by the end of March 2020, starting at 54 and closing at 61 ‘excellent’ bathing waters.

2.2 Bathing Water Intervention

To reflect the ambition to deliver significant improvements in bathing water quality by the close of the 2015-20 investment period, we also committed to carry out a programme of interventions at seven bathing waters, directed by the preceding study work.
In our June 2014 submission we set out our approach to understand the likely extent of intervention activity for our AMP6 programme; we costed a programme with a P50 value of £49.023 million to £64.6 million (-25% to +32%) respectively. This intervention programme is to deliver two bathing waters from ‘sufficient’ and five from ‘good’ quality, to ‘excellent’ bathing water quality, selected from the sub-set of 21 candidate locations as identified using our weighted bathing water criteria.

Our bathing water selection criteria in our June 2014 submission takes account of six factors – benefit to users, delivery cost, delivery time, proximity, root cause and the likelihood of success – in addition to information on bathing water quality. These criteria are fully defined in Annex 2. We have confirmed that our criteria include the decision attributes that are, most important to our customers.

The assessment used in our June 2014 submission applied additional weight to the ‘benefit to users’ and ‘delivery time’ because, we believe, these reflect the interests of our customers and our business. Our assessment revealed that the most likely (P50) cost to deliver a programme of seven bathing waters was estimated at £49.023 million; we also demonstrated that this programme, including the investigations, was cost beneficial.

Ofwat notes in the Draft Determination, that whilst it has “…no concerns with the costing of the individual elements of the proposed programme…” it has issues on how the “…intervention component costs have been combined into a programme of £49m…” We failed to adequately convince Ofwat on our use of the most likely modelled value; indeed it could “…see a better argument for using the mean cost which looks to be around £30m…”

It also stated that “…it is not clear to us how the analysis has taken account of customer preferences…” and, from the information we presented, “…seven bathing waters with the highest benefit…” could cost less. It is on the grounds of significant cost uncertainty that Ofwat ‘rejected’ our case for investment.

Our methodology was set out within Appendix 3 of our June 2014 update. We demonstrated that our approach is well argued and consistently applied: the inputs, the bathing water criteria, outputs and our modelled-costs were independently assured.

However, in light of the issues raised by Ofwat, we have reviewed two alternate bathing water intervention programmes and compared these with the proposal set out in our June 2014 submission. These variants use the same base information but take a modified approach. They, therefore, preserve the integrity of our unit cost information and bathing water selection criteria acknowledged by Ofwat in its Draft Determination.

All three alternate intervention programmes are summarised below:

1. **June 2014 Submission** – Full application of our bathing selection criteria, weighted towards the ‘benefit to users’ and ‘delivery time’; delivering seven bathing water improvements at two locations where quality is forecast as ‘sufficient’ and five are forecast as ‘good.’
2. **Highest Ranked (weighted)** – a programme of seven highest ranked bathing waters using our bathing water selection criteria, weighted towards those that deliver maximum benefit with added consideration around delivery. Within our assessment a weighting of ‘6’ is applied to the ‘benefit to users’ score and a weighting of ‘2’ is applied to the ‘time to deliver’ component; all remaining components of the score set to ‘1’. Full details of the criteria are set out in Annex 2

3. **Highest Ranked (un-weighted)** - a programme of seven highest ranked bathing waters using our bathing water selection criteria. All components of the score used in our assessment are set equally to ‘1’. Full details of the criteria are set out in Annex 2

Consistent with our approach for our June 2014 submission, we have used the Monte Carlo Simulation to model costs and cost uncertainties for each alternate package of interventions. We confirmed via our working level discussions, following the Draft Determination, that the use of Monte Carlo modelling was not of concern to Ofwat in the programme development.
2.2.1 Model Approach

The inputs to our modelled approach since the June Submission update are unchanged. The model uses the same scheme cost data and risk assumptions, identical bathing water selection criteria and scores, and an approach to Cost Benefit Analysis consistent across our Business Plan.

We modelled every possible cost combination of seven bathing waters (116,282) from the 21 sub-set using Monte Carlo Simulation. We selected the highest ranking bathing waters, using the same base scores and bathing water selection criteria as that used in our June submission update, for both the un-weighted and weighted intervention programmes. We then assessed the cost benefit of each programme using our company standard approach. Our approach is illustrated in Figure 4 and our programme options are summarised in Table 2.

![Model Approach Diagram]

Figure 4: Model Approach showing no change in the input data

<table>
<thead>
<tr>
<th>Intervention Programme</th>
<th>P10 (£m)</th>
<th>P50 (£m)</th>
<th>P90 (£m)</th>
<th>Uncertainty Range (%)</th>
<th>Uncertainty Range (£m)</th>
<th>Weighted CBA (£m)</th>
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</thead>
<tbody>
<tr>
<td>1 June 2014 Submission</td>
<td>36.6</td>
<td>49.0</td>
<td>64.6</td>
<td>-25/+32</td>
<td>28.0</td>
<td>-3.3</td>
</tr>
<tr>
<td>2 Highest Ranked 7 (weighted)</td>
<td>28.4</td>
<td>36.5</td>
<td>45.8</td>
<td>-22/+25</td>
<td>18.4</td>
<td>-15.8</td>
</tr>
<tr>
<td>3 Highest Ranked 7 (un-weighted)</td>
<td>22.8</td>
<td>31.5</td>
<td>40.9</td>
<td>-28/+30</td>
<td>18.1</td>
<td>-19.4</td>
</tr>
</tbody>
</table>

Table 2: Summary of Intervention Costs, Cost Uncertainties and Weighted Cost Benefit Assessment
We have estimated the time taken to deliver each scheme on the best information we have available at this stage of our programme development. Our modelling of the intervention programmes are based on these delivery estimates. Once the study work is complete we can be more certain on these timescales and better inform, from the 21 candidate bathing waters, those that can be effectively delivered by the end of March 2020. To account for this uncertainty our bathing water selection criteria will filter only those intervention schemes that can be delivered within the 2015-20 timeframe. This is set out in more detail in Annex 2.

We also investigated an intervention programme not bound to our bathing water selection criteria. It considers every possible combination of improving seven bathing waters and revealed a most likely (P50) value of £29.4 million with a higher cost uncertainty range, P10 to P90, of -36/+37%. Whilst it is a lower cost compared with the June 2014 submission the scenarios do not reflect fully those factors important to customers and more importantly, in the absence of the selection criteria, would not protect customers. We, therefore, took this option no further.

From our modelled assessment, the two alternate intervention programmes of seven bathing waters are likely to deliver at lower total values and with narrower uncertainties than the proposal we set out in our June 2014 submission.

2.3. Cost Benefit Assessment

Our formal willingness to pay quantitative research included a valuation for improving bathing waters. The value for improving one bathing water from ‘sufficient’ to ‘excellent’ is £1,023,886 and from ‘good’ to ‘excellent’ is £279,974. We have assessed the cost benefit for the two alternate intervention programmes. The programme at our December 2013 submission and June 2014 update delivered a cost benefit of £-3.3 million. A negative value, in our Cost Benefit Assessment, confirms that the benefits outweigh the costs over the lifetime of the scheme.

Unlike the previous proposal the two alternate intervention programmes are not constrained to solutions that only deliver two bathing waters from ‘sufficient’ and five from ‘good’ status. Our modelled approach has revealed that the most common package of seven interventions, under both alternate programmes, are those that deliver two bathing waters from ‘sufficient’ and five from ‘good’ status and one, bathing water from ‘sufficient’ and five move from ‘good’ status, Table 3 refers.

<table>
<thead>
<tr>
<th>Bathing Water Programme Configuration</th>
<th>June 2014 Submission</th>
<th>Highest Ranked 7 (weighted)</th>
<th>Highest Ranked 7 (un-weighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 ‘sufficient’ and 2 ‘good’</td>
<td>--</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>4 ‘sufficient’ and 3 ‘good’</td>
<td>--</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>3 ‘sufficient’ and 4 ‘good’</td>
<td>--</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>2 ‘sufficient’ and 5 ‘good’</td>
<td>100%</td>
<td>36%</td>
<td>34%</td>
</tr>
<tr>
<td>1 ‘sufficient’ and 6 ‘good’</td>
<td>--</td>
<td>39%</td>
<td>41%</td>
</tr>
<tr>
<td>0 ‘sufficient’ and 7 ‘good’</td>
<td>--</td>
<td>12%</td>
<td>14%</td>
</tr>
</tbody>
</table>
We have modified the cost benefit assessment to account for the unique mix. The cost benefit assessment for the ‘highest ranked un-weighted’ programme is marginally more cost beneficial than that determined for the ‘highest ranked weighted’ programme, with a cost benefit of £19.4 million compared to £15.8 million respectively, Table 2 refers. Both alternative programmes are more favourable than the June 2014 submission proposal.

We have tested these proposals with our Board and Customer Challenge Group (CCG) who support an intervention programme based upon the ‘highest ranked un-weighted’ approach with a central estimate value of £31.5 million.

Overall, an intervention programme that is based on the un-weighted application of the bathing water criteria clearly is the most favourable; this is the intervention programme proposed in response to the Draft Determination.

It is a lower cost alternative to that presented in our December 2013 submission and June 2014 update because it is not constrained to a package of seven interventions made of two bathing waters from ‘sufficient’ and five from ‘good’ status. There is a good chance, 86%, that at least one ‘sufficient’ bathing water will feature in the un-weighted programme.

The revised bathing water quality programme, investigations and interventions, is restated at £33.377 million (totex). The CCG support these revised proposals.

2.4 Customer Protection

A financial penalty based ODI for programme non-delivery of the seven schemes to deliver bathing water quality improvements has been included as set out in Annex 3. The penalty is based upon the incremental totex in conjunction with the 50:50 sharing totex menu mechanism.

We request that the financially incentivised ODI is reflected in the Final Determination ODI framework.

2.4.1 Safeguarding the Interests of Customers

Our revised proposal includes investment to investigate 21 coastal bathing waters and improve seven of these in the 2015-20 period at those locations that deliver maximum benefit to customers. This remains an ambitious target but one which we regard as achievable and affordable.

Until the investigations are complete we are unable to full define the solutions required to improve seven bathing waters and, therefore, uncertainty in the totality of intervention costs that could occur.

In our June 2014 submission we set out how we protect customers’ interests. These have been refreshed in response to our Draft Determination. We protect customers against the following:

Windfall gains from bathing water improvements not directly influenced by the 2015-20 intervention programme and in delivering these improvements for significantly less than the proposed central P50 estimate i.e. programme cost reductions are revealed, at the post investigation stage, as the product of an original over-estimate and not through true efficiencies.
In terms of protecting customers against material underspend against the allowed funding, we proposed within the ODI framework to effectively have a ‘penalty’ for any ‘windfall’ gain. This would be assessed once the investigations were completed, the uncertainty removed and baseline costs identified at that time.

**Overspend arising from inefficiencies or an under-estimate of the original cost to deliver the programme.**

We believe that the ODI, as currently configured, adequately protects customers against the risk of overspend. This is because we would have no incentive to deliver a scheme that exceeded customers’ willingness to pay or the incremental totex, as set out in our June ODI for this measure, since it would be more beneficial to pay the ODI penalty.

**Selecting the cheapest bathing waters for intervention, rather than those consistent with the application of the selection criteria as used in the development of our Draft Determination representation programme**

We have limited the number of bathing waters we investigate in AMP6 to 21. We shall study only those locations where we could potentially attain ‘excellent’ water quality in the 2015-20 period. In order to meet our commitment for the bathing water improvements we have phased the delivery of these 21 investigations to the end of March 2017.

We have committed to deliver improvements at seven highest-ranking bathing waters, from the sub-set of 21 investigated by the end of March 2020, which deliver high benefit, as set out in Annex 1.

We would await the outcome of the investigations to inform our choice of the seven bathing waters and select only those where we are confident of delivering improvements by the end of March 2020. We would engage with customers and stakeholders to agree these and their prioritisation through the transparent application of the ‘bathing water criteria’. Our approach and its assurance are set out in more detail in Section 2.4.2.

**We deliver what customer most value.** In May 2014, we undertook customer research to test how we would select specific bathing waters for improvement, reflecting what customers value for the specific bathing waters to be improved. This goes beyond the usual willingness to pay information for bathing water improvements (which does not differentiate between those which are at particular water quality only) and is therefore informed by particular bathing water characteristics that customers value.

Customers were asked for their suggestions on how bathing waters might be best selected, with the most common areas proposed being:

- the level of bacteria in the bathing waters
- how much and in what ways the beach is used
- the cost of the improvements
- the certainty of the problem being fixed.
Our customers were then shown our proposed selection criteria and could both identify with and had confidence in the overlap between their suggestions and those proposed by Southern Water.

It is therefore clear that customers support a multi-criteria approach to bathing water selection, including bacteria levels, use of bathing water, cost, time to delivery and confidence of deliverability and engagement. This informed our selection criteria as set out in Annex 2.

Successful programme completion at the targeted additional bathing waters requires the evidence that the bathing waters improved were in line with the un-weighted application of the selection criteria, as set out in Annex 2. Failure to demonstrate this will result in a penalty payment.

This will be subject to independent assurance and review by the Customer Advisory Panel, as part of any such ODI condition on the use of the selection criteria i.e. the role of the independent Customer Advisory Panel has been formalised via an ODI condition for the Bathing Water Programme.

Further detail on how this would work in practice is set out in the next section.

2.4.2 Application of bathing water selection criteria

In our December 2013 Business Plan and our June 2014 update we intentionally did not identify the seven bathing water locations but indicated that the outcome of the studies would inform the choice of bathing water interventions. To assist in making these choices we set out our ‘bathing water selection criteria’.

In our June 2014 update we demonstrated that customers support our multi-criteria approach to bathing water selection. It reflects, fully, the features customers regard as important when making these choices. We also shared our commitment to engage fully and transparently with customers on applying the criteria when choosing the bathing waters for intervention.

In our representation we have confirmed that the most cost beneficial and least uncertain programme is one created from the un-weighted application of these customer supported selection criteria.

To further increase confidence that that our programme will not transfer risk to customers, we set out how we will select and deliver bathing water improvements. This makes use of specific bathing water selection criteria, is supported by independent technical assurance and will be overseen by an independent Customer Advisory Panel (CAP), which is proposed as the successor to our CCG.

The selection criteria for bathing waters are:

- statistical compliance with the specific bacteriological parameters for bathing water quality
- bathing water use / character /amenity (e.g. leisure and frequent use compared to rural infrequent use), including customer and stakeholder engagement on the use of these bathing waters
- proximity to neighbouring bathing waters (to consider the potential benefit of grouping adjoining bathing waters)
- solution effectiveness (i.e. some may be less certain than others)
- solution deliverability of improvement by the 2020 bathing water compliance season
- solution intervention costs i.e. cost of improvements for specific bathing waters

The following flow chart illustrates the process we will follow, with narrative for each step set out below. We have highlighted those steps where there is specific customer engagement and expanded, in Section 2.4.3, the nature and purpose of this engagement.
Figure 5 – Application of selection criteria flow chart

Step 1
Final Determination confirms funded programme

Step 2
Independent Customer Advisory Panel review and challenge engagement design
Customer & stakeholder engagement on bathing water amenity
Complete investigations and confirm costs for 21 candidate sites

Step 3
Application of selection criteria
Independent external technical assurance

Step 4
Independent external technical assurance
Assess windfall gain customer protection

Step 5
Review by independent Customer Advisory Panel
CAP report considers application of un-weighted selection criteria and assessment of windfall gain
Recommendation of planned programme to Southern Water Board

Step 6
Southern Water Board approve recommended programme

Step 7
Communicate planned programme to stakeholders, customers
Local customer and stakeholder engagement on delivery implementation

Step 8
Commence delivery programme of improvements
Local customer and stakeholder engagement on delivery implementation

Step 9
Meet customer promise
Assess ODI application
Step 1: Final Determination

- Final Determination confirms the funding to investigate 21 candidate bathing waters and undertake improvements at seven bathing waters to the ‘excellent’ bathing water quality standard by 2020.

Step 2: Planning, customer and stakeholder engagement, investigations and cost confirmation

- Investigations will be undertaken to confirm the risks and root cause of bathing water non-compliance with ‘excellent’ bathing water quality standards of the revised EU Bathing Waters Directive. These studies will also enable the costs of proposed interventions to be confirmed to the level of detail required for a business plan assessment and assurance (i.e. site specific unit costs and scope).

- The investigations will be carried out at the 21 candidate bathing waters.

- Design, with review and challenge from the independent Customer Advisory Panel, the customer engagement. This is set out in more detail in Section 2.4.3.

- Carry out customer engagement on the Communication Plan and also customer and stakeholder views on bathing water amenity and local benefit.

Step 3: Bathing Water selection and acceptability testing

- Application of bathing water (un-weighted) selection criteria to create the proposed bathing waters improvement programme to 2020.

- Independent assurance of the study results and cost assessment and the application of the bathing water (un-weighted) selection criteria.

- Design, with review and challenge from the independent Customer Advisory Panel, the customer acceptability engagement. This is detailed further in Section 2.4.3.

- Carry out customer engagement on acceptability of proposed programme or, if applicable, options.

Note: Given the joint reliance of both the Company and the CAP on the independent assurance to review and report on the calculation of the windfall assessment and the un-weighted use of the selection criteria, there will be a tripartite (Company, CAP and independent assurance company) review of the scope of assurance prior to it being undertaken.
Step 4: Independent technical assurance review

- Independent assurance of the study results and cost assessment including an assessment of the application of the bathing water selection criteria and acceptability results. This will confirm compliance with, or variation from, the un-weighted selection criteria.

- Independent assurance of any potential windfall gain as a result of more informed post investigation costs at this stage.

- Independent assurance report assesses and reports how the bathing waters selected for improvement. This will confirm compliance with, or variation from, the un-weighted selection criteria, which is the basis for the funded programme.

- This evidence will be required for the Customer Advisory Panel consideration, Southern Water Board approval and as evidence that the selected bathing waters comply with the Outcome Delivery Incentive condition that improvements are to be delivered at seven bathing waters in line with the un-weighted application of the selection criteria.

- Independent assurance of any potential windfall gain at this stage by assessment of the post investigation costs. This evidence will be required for CAP consideration, Southern Water Board approval and as evidence that customers have been protected from windfall gain as a consequence of more informed, post investigation, costs.

- Note: Given the joint reliance of both the Company and the CAP on the independent assurance to report on the calculation of the windfall assessment and the un-weighted use of the selection criteria, there will be a tripartite (Company, CAP and independent assurance company) review of the scope of assurance prior to it being undertaken.

Step 5: Review by independent Customer Advisory Panel

- Results of investigations, customer and stakeholder engagement, independent assurance findings and the recommended programme will be presented to the CAP for review and challenge.

- The CAP considers how the proposed programme has been developed in line with the Outcome Delivery Incentive condition that i.e. improvements are to be delivered at seven bathing waters in line with the un-weighted application of the selection criteria.

- The CAP considers any windfall gain associated with the proposed programme, to be returned to customers via the windfall gain protection ODI condition. The windfall gain value, if applicable, will have been calculated via the independent technical assurance.

- The CAP will feedback to the Company its views of any variation from the un-weighted selection criteria and the assessment of any windfall gain. This variation may be resolved in consultation with the Company prior to the finalisation of the programme and CAP / Company recommendations to the Board, or may be subject to Board review in the final reports.
The CAP will confirm to Ofwat if we have applied the un-weighted bathing water selection criteria appropriately and the scale of any windfall gain. The Company's Board will decide on the intervention programme it shall implement accepting any ODI implications.

*Note: The CAP review will be supported by the independent technical assurance and reports arising from Step 4. This will be supplemented by further discussions with the Company and the independent technical reviewers as applicable.*

**Step 6: Board approval**

- The recommended programme will be presented to the Southern Water Board. This will be based upon investigations, customer and stakeholder engagement results, independent assurance findings and Independent Customer Advisory Panel.
- The Board will consider the recommended programme with reference to the Company recommendation, the independent assurance report and CAP report.
- Any variation from the un-weighted application of the selection criteria and the consequential ODI penalty will be subject to Board review, challenge and approval.
- Any windfall gain to be returned to customers via the windfall gain ODI condition will be subject to Board review, challenge and approval.
- The Board will review, challenge and finally approve the delivery programme, prior to delivery implementation taking account of any ODI implications.

**Step 7: Communication of planned delivery programme**

- Communicate planned programme to stakeholders, customers, partners (i.e. other beach operators and Local Authorities) and the Customer Advisory Panel.
- Local customer and stakeholder engagement on the planned implementation for example the timing and duration of construction activities at particular locations. This will enable accommodation of local customer and stakeholder feedback with regard to the phasing of work in sensitive locations, the location of activities itself, planning approvals, road works etc as part of the construction programme.
- We set this out in more detail in Section 2.4.3.

**Step 8: Commence delivery of improvement and communication updates**

- Commence delivery programme
- On-going progress updates and communication and local engagement with customers, stakeholders, partners (i.e. other beach operators and Local Authorities), Customer Advisory Panel and Southern Water Board.
- Local customer and stakeholder engagement on the planned implementation will continue, as in step 7 to accommodate feedback with regard to the timing and duration of construction activities at particular locations.
Step 9: Confirmation of customer promise met and application of Outcome Delivery Incentives

- Monitor delivery programme for assessment of completion of customer promise
  - Seven bathing waters improved to ‘excellent’ water quality by 2020. The measure of ‘excellent’ water quality is no more than 100 *Intestinal Enterococci* cfu/ml and 250 *Escherichia coli* cfu/ml in at least 19 out of 20 samples
  - Monitoring of non-targeted bathing waters. The measure of excellent water quality is no more than 100 *Intestinal Enterococci* cfu/ml and 250 *Escherichia coli* cfu/ml in at least 19 out of 20 samples

- Outcome Delivery Incentive condition 1 – At least maintaining current performance
  - A penalty will be paid should there be deterioration in water quality below 54 ‘excellent’ water quality bathing waters (as per the measure defined above)
  - An incentive will be paid should there be an improvement in water quality above 54 ‘excellent’ water quality bathing waters (as per the measure defined above). This excludes improvements at the seven targeted bathing waters.
  - Both the penalty and incentive will be subject to a water quality performance dead band which reflects natural variation in performance e.g. due to weather.
    (Note the 54 is based upon the latest bathing water quality results before the 2014 season ends. A final update to this number will be required when the Environment Agency publish the findings in Autumn 2014)

- Outcome Delivery Incentive condition 2 – Targeted improvements at 7 bathing waters
  - A penalty will be paid should seven targeted bathing waters not meet ‘excellent’ water quality by 2020 (as per the measure defined above). This will be scaled per bathing water not improved.
  - An incentive will be paid should any of the seven targeted bathing waters meet ‘excellent’ water quality earlier than 2020 (as per the measure defined above). This will be scaled per bathing water, per year of early improvement.
  - Programme completion at the targeted additional bathing waters requires the evidence from steps 4-5 via the independent technical assurance report and the independent Customer Advisory Panel report that the bathing waters improved were in line with the un-weighted application of the selection criteria, as described in the Draft Determination response.
  - Failure to demonstrate the selection of the bathing waters for improvement followed the un-weighted selection criteria (as set out in Annex 2) will result in a penalty payment. This will be scaled per bathing water not selected in accordance with the criteria.
• Outcome Delivery Incentive condition 3 - Windfall gain
  o Return of any material windfall gain as identified in Steps 3-6 to customers
  o The windfall gain will be calculated following the investigations when costs are confirmed at individual Bathing Waters and the targeted bathing waters selected. This calculation will be confirmed via independent technical assurance and reviewed by the CAP.
  o Note: This condition does not prevent the continued drive for innovation and efficiency in the delivery programme. Once the targeted bathing waters are selected, further efficiencies will be shared 50:50 between customers and the Company via the totex menu mechanism.

We are confident that this approach protects the interests of customers. These protection measures are supported by customers and the CCG.

2.4.3 Customer and Stakeholder Engagement

In section 2.4.2 we have defined steps and the process flow chart that illustrates the process we will follow. In reality, in order to deliver a genuine and robust process of customer and stakeholder engagement, the steps will be iterative.

Further to discussion with the CCG on our updated Bathing Water programme and the use of the selection criteria in this programme, we have strengthened the details regarding our customer and stakeholder engagement. These set out how customer and stakeholder views will inform the selection of bathing waters for the planned delivery programme.

We have expanded and included more detail for those steps which are key customer and stakeholder engagement phases within our Draft Determination representation. The following sets out the nature and purpose of our engagement with customers, from insight to delivery. This has been developed in consultation with our CCG.

Planning phase. (Step 2 of Figure 5)
This includes the design and delivery of customer and stakeholder engagement to inform the bathing water selection and programme development. This process will be supported by advice and challenge via the CAP.

There are two distinct elements of customer engagement within our planning phase.

Customer and stakeholder insight.

The purpose is to get insight to inform the development of our communication and engagement plan and to incorporate feedback into the evolution of these plans. This will be delivered by:

• Customer workshops
• Stakeholder workshops / meetings
• Non-household customers e.g. via Chambers of Commerce visits
• Engagement with our customers of tomorrow via our schools programme
**Customer and stakeholder engagement.**

The purpose is to have informed engagement into the benefit / amenity at particular bathing waters, for use in the selection criteria. The outcome will be the amenity category [e.g. 1-5] for each of the 21 candidate bathing waters as input into bathing water prioritisation via the selection criteria.

Material will be provided about the use of each Bathing Water as is already published in the Good Beach Guide (GBG). This includes offshore and on shore use, local events and festivals, sports use etc. We will seek feedback on additional topics to factor in, or where to vary from the published GBG classifications in order to assess the amenity category at each of the 21 candidate bathing waters, in accordance with customers’ feedback.

In addition we will use the focus groups to test and seek feedback on draft communication material and the latest communications plan.

This will be delivered by qualitative engagement:

- **Customer focus groups**
  - Social and economic groups including hard to reach recruitment
  - Geographical – Isle of Wight Hampshire, West Sussex, East Sussex and Kent
  - Seeking representation from both users and non-users

- **Stakeholder regional workshops** including non-household representatives such as Chambers of Commerce members and local user groups

Note: The Environment Agency will be invited to the stakeholder engagement events, in addition to the usual Company bi-lateral engagement on environmental priorities for the Southern Water region.

**Acceptability phase (Step 3 of Figure 5)**

This engagement will be to test acceptability of our proposals, following the planning phase. It will be supported by advice and challenge via the CAP.

**Acceptability engagement**

The purpose is to feedback to customers and stakeholders the findings of our investigations, the engagement and the planned delivery programme and to test the acceptability of our plans with them.

---

1 To ensure the customer base is represented, as non-users and users pay equally for the improvements
This will be undertaken as quantitative representative research and will be delivered by:

- Cognitive testing via focus group/s
- On-line panel acceptability testing
  - Household and non-household
  - We will seek to create a panel which can support the engagement generally and on the longer term bathing water programme, given this programme will continue beyond 2020 for the next phase of improvements
- In depth telephone interviews for hard to reach customers
  - Household and non-household
- Stakeholder workshops / meetings
- Non-household customers e.g. via Chambers of Commerce visits

We will complete a peer review of the acceptability and engagement programme, prior to confirmation of the planned programme.

**Delivery Communication Phase (Step 7 of Figure 5)**

**Communication programme**

The purpose is to provide feedback on the planned delivery programme and to give regular updates on progress. This will be delivered by a communication programme, which has been informed with customer and stakeholder insight in steps 2 and 3.

It is envisaged that this will include:

- On-line and written communication
- Community communication events
- Working with our customers of tomorrow via our schools programme
- Feedback via stakeholder meetings e.g. Chambers of Commerce

There will be an initial communication at the announcement of the programme followed by regular progress updates, during delivery in step 8. We do not envisage widespread media campaigns, but communication via community communication events.

This stage will also include local engagement on the timing, duration and impact of the activities associated with the improvement works e.g. construction. This will enable the implementation programme to accommodate local customer and stakeholder feedback with regard to the phasing of work in sensitive locations, the location of activities itself, planning approvals, road works etc. as part of the construction programme.

This is consistent with good practice already carried out for our major improvement programmes, where the impact on the local community is considered in our delivery programme.

**3. Board Engagement**

The Board has supported the case as part of our overall Draft Determination representations.
4. CCG

CCG fully support our updated bathing water programme and our planned customer engagement as part of our Draft Determination representations. In particular, the role of the CAP and the planned engagement programme have been developed in consultation with the CCG.

5. External Assurance

This representation has been independently assured by Halcrow Management Sciences Limited, a subsidiary of CH2M HILL. Their report confirmed that there were no issues with the source data, our robustness of the evidence base including cost benefit analysis.

Their ‘Review and Assurance of Draft Determination Representations, Summary Report’ dated 2 October stated:

“Our review of the draft narratives and cases, and the sample checks on the data presented in the Company's representation has confirmed satisfactory trails to both internal and external information sources. On this basis we conclude that the evidence base for the representation is robust.”

It also added “We reviewed the methodology used and confirmed the Bathing Water Selection Criteria has been applied consistently and transparently to determine the intervention programme proposed.”

6. Annexes

Annex 1 – Revised Investigations Programme
Annex 3 – Outcome Delivery Incentive

Introduction

We have proposed bathing water selection criteria which we will use to inform which bathing waters are selected for improvement following completion of the investigation phase. The multiple selection criteria take into account the specific benefits of the bathing water improvements, customer engagement, root cause and deliverability. We have consulted with customers, the Environment Agency and our Customer Challenge Group on the proposed approach and it has had unanimous support.

This annex sets out, unequivocally, our screening and ranking approach (‘Step 3’ of the process). It is formed of three key stages. The first assesses bathing water quality and removes those bathing waters that achieve ‘excellent’ quality. The second stage applies six additional criteria to rank the remainder of the candidate schemes in order of preference to develop a programme of interventions. The third stage seeks to test the acceptability of this programme. The approach is illustrated in Figure A1. The success of the approach is predicated on the successful completion of bathing water studies (‘Step 2’). These will be sufficiently comprehensive to update the bathing water selection criteria.

![Figure A1 – Bathing Water Screening and Ranking Approach](image)

**Stage 1 – Review Bathing Water Quality**

This first stage uses robust bathing water quality data and a defined approach to discriminate those bathing waters to take forward into the second stage.
Acquire independent and validated bathing water sample data (Intestinal Enterococci and Escherichia Coli data only) for all accessible, designated bathing waters.

Apply the revised Bathing Water Directive assessment methodology as follows:

- Assess the \( \log_{10} \) (bacteria count) for each bathing water sample point.
- Calculate the arithmetic mean, \( \mu \), for the sample.
- Calculate the standard deviation, \( \sigma \), for the sample.
- For 90% Calculate \( 10^{(\mu + 1.645\sigma)} \)
- For 95% calculate \( 10^{(\mu + 1.96\sigma)} \)
- Review data against the classification table, Table 1.

<table>
<thead>
<tr>
<th>Classifications (cfu/100 ml)</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intestinal Enterococci/ faecal streptococci</td>
<td></td>
</tr>
<tr>
<td>‘Excellent’</td>
<td>100 95%</td>
</tr>
<tr>
<td>‘Good’</td>
<td>200 95%</td>
</tr>
<tr>
<td>‘Sufficient’</td>
<td>185 90%</td>
</tr>
<tr>
<td>Escherichia Coli/ faecal coliforms</td>
<td></td>
</tr>
<tr>
<td>‘Excellent’</td>
<td>250 95%</td>
</tr>
<tr>
<td>‘Good’</td>
<td>500 95%</td>
</tr>
<tr>
<td>‘Sufficient’</td>
<td>500 90%</td>
</tr>
</tbody>
</table>

The measure of ‘excellent’ bathing water quality is where the calculated 95%ile is no more than 100 Intestinal Enterococci cfu/ml AND the calculated 95%ile is no more than 250 Escherichia coli cfu/ml. (Note: this is the same as the standard of ‘no more than 100 Intestinal Enterococci cfu/ml and 250 Escherichia coli cfu/ml in at least 19 out of 20 samples’)

The measure of ‘good’ bathing water quality is where the calculated 95%ile is no more than 200 Intestinal Enterococci cfu/ml AND the calculated 95%ile is no more than 500 Escherichia coli cfu/ml.

The measure of ‘sufficient’ bathing water quality is where the calculated 90%ile is no more than 185 Intestinal Enterococci cfu/ml AND the calculated 90%ile is no more than 500 Escherichia coli cfu/ml.

A lower assessment indicates a ‘poor’ quality bathing water and will be below the minimum statutory requirements when the revised Bathing Water Directive comes into force in 2015.

The bathing water quality assessment may identify different classification (a product of using two bacterial indicators); in all cases adopt the lower of the two classifications.
• Progress those bathing waters assessed as below ‘excellent’, those at ‘sufficient’ and ‘good’ classification, to the next stage, ‘Stage 2’.

Stage 2 – Selection of Preferred Sites for Intervention

In order to select and prioritise the seven bathing water improvements, from the subset of 21 sites, our ‘bathing water selected criteria’ is applied in the second stage of the assessment. These six criteria (in addition to bathing water quality, Stage 1) are as follows:

1. Amenity Value (Benefit to user)
2. Inland Characteristics
3. Deliverability / Effectiveness of Intervention Measure
4. Additional benefits by clustering neighbouring Bathing Waters (proximity)
5. The cost of the interventions, and
6. The time required to deliver the interventions.

Within each criteria a number of categories have been developed to score each bathing water; these are carried forward to create an overall rank. Each criteria may be weighted to modify the score, and the bathing water prioritisation, to reflect customer and stakeholder preferences.

1. Amenity Value (Benefit to User)

This criteria consists of three categories: Use, Type & Population Served; and then ranks the bathing water beach in terms of what is available to attract visitors to it, what its surrounding area is like and how many people have access to it. A bathing water beach is afforded the highest rating where it has a wide range of on and off-shore activities, set in an urban context with a large number of frequent users. The information will be provided in the investigation report for each bathing water.

Use

Using information available from the Good Beach Guide website\(^2\) (publicised by the Marine Conservation Society) or better a list of activities undertaken at each Bathing Beach each bathing water beach is scored based on the descriptions below;

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bathing including general beach activities - nothing extra available</td>
</tr>
<tr>
<td>2</td>
<td>Bathing + Offshore OR Onshore Activities</td>
</tr>
<tr>
<td>3</td>
<td>Bathing + Offshore AND Onshore Activities</td>
</tr>
<tr>
<td>4</td>
<td>Bathing + Offshore AND Onshore Activities + Known Tourist Destination</td>
</tr>
<tr>
<td>5</td>
<td>Many uses in all categories + Local festivals / activities critical to the area etc.</td>
</tr>
</tbody>
</table>

The highest benefit score is afforded to bathing waters that have the widest activities available that are likely to encourage visitors (both residents and non-residents) i.e. the most beneficial.

\(^2\) (http://www.goodbeachguide.co.uk/)
Note: The ‘use’ score will be adjusted to reflect customer and stakeholder views. We shall take account of their opinions on the local amenities which are important when considering bathing water and bathing beach use, and their priority.

Our customer and stakeholder engagement is set out in section 2.4.3. Material will be provided about the use of each Bathing Water as is already published in the Good Beach Guide (GBG). This includes offshore and on shore use, local events and festivals, sports use etc. We will seek feedback on additional topics to factor in, or where to vary from the published GBG classifications in order to assess the amenity category at each of the 21 candidate bathing waters, in accordance with customers’ feedback. We will adjust the use score to reflect the outcome these discussions, for each of the 21 candidate bathing waters.

Type

Satellite imagery and land use analysis is used to determine whether the bathing water beach can be described as ‘Natural’, ‘Urbanised’ or between these two characteristics.

The scoring criteria are shown below:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Natural</td>
</tr>
<tr>
<td>2</td>
<td>Semi Natural</td>
</tr>
<tr>
<td>3</td>
<td>Equally Natural &amp; Urban</td>
</tr>
<tr>
<td>4</td>
<td>Semi Urban</td>
</tr>
<tr>
<td>5</td>
<td>Urban</td>
</tr>
</tbody>
</table>

Population Served

A score is attributed to each bathing water beach dependant on the size of the resident population served. The bathing water with the highest population is given the maximum score of 5 and that with the lowest population the minimum score of 1.

2. Inland Characteristics

This criteria considers the effects inland urban or rural catchments may have on the downstream bathing water quality. Satellite imagery and land use analysis is used to assess the proportion of the bathing beach catchment considered as ‘rural’ or ‘urban’. The information will be provided in the investigation report for each bathing water.

<table>
<thead>
<tr>
<th>Rural Score</th>
<th>Urban Score</th>
<th>Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
<td>Completely Urban Catchment</td>
</tr>
<tr>
<td>2.5</td>
<td>2.5</td>
<td>Equally Urban and Rural Catchment</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>Completely Rural Catchment</td>
</tr>
</tbody>
</table>
3. **Deliverability & Effectiveness of Intervention Measure**

This criteria covers the ease of deliverability, the effectiveness of and confidence in each intervention measure. Identify the percentage each type of intervention measure contributes to the total cost. The three type of intervention measures are as follows:

1. Diffused Agricultural Sources
2. Misconnections & Dual Manholes, and
3. CSO, EO & WwTW Storm Overflows

The information will be provided in the investigation report for each bathing water to apportion the full 5 point score.

**Additional benefits by clustering neighbouring Bathing Waters**

Each bathing water is assessed and scored based on its proximity to a bathing water not classified as ‘excellent’ to maximise the potential benefit of the intervention. If a site has more than one adjacent bathing water falling into this category the scores are added to show the possible increased benefit.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No neighbouring bathing water within 10km</td>
</tr>
<tr>
<td>2</td>
<td>8 to 10km</td>
</tr>
<tr>
<td>3</td>
<td>5 to 7km</td>
</tr>
<tr>
<td>4</td>
<td>2 to 4km</td>
</tr>
<tr>
<td>5</td>
<td>Within 2km</td>
</tr>
</tbody>
</table>

4. **The Cost of Intervention Measures**

We will assess the central cost estimate for the interventions that will deliver ‘excellent bathing water quality at each location. The information will be provided in the investigation report.

Each bathing water is scored according to the lowest to highest cost: the lowest cost to deliver ‘excellent’ bathing water is scored ‘5’ with the highest scoring ‘1’. The remaining sites are assessed proportionally between these values using central estimated cost to scale the score.

5. **Time to Deliver**

For each bathing water we will assess the time in years required to design and implement the interventions required achieve ‘excellent; bathing water. The ‘time to deliver’ information will be provided in the investigation report for each bathing water. Given some studies may take up to two years to complete there may be limited remaining time to fully implement the interventions within AMP6. We will divide the ‘time to deliver’ by three (3”), remove all those above unity “1” and then rescale the time to deliver value to a score of between “1” (minimum) and “5” (maximum).
Assessing Overall Bathing Water Ranking

With all of the categories in place and the scoring for each complete, weighting may be applied to reflect customer and stakeholder preferences. In our December 2013 submission, June 2014 update and options for the Draft Determination response, schemes were weighted. A weighting of “6” was applied to the Amenity Value and a weighting of “2” to the Time to Deliver; all remaining weightings were set as “1” for their inclusion. In an un-weighted approach all criteria are equally set to “1”.

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Sub-Selection Criteria</th>
<th>Score</th>
<th>Un-weighted (W1)</th>
<th>Weighted (W2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenity Value</td>
<td>(a) Bathing Beach Use – See Note*</td>
<td>1 to 5 (steps of 1)</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(b) Beach Type</td>
<td>1 to 5 (steps of 1)</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(c) Population Served</td>
<td>1 to 5 (scaled)</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Inland Characteristics</td>
<td>(d) Rural</td>
<td>0 to 5 (steps of 0.5)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(e) Urban</td>
<td>0 to 5 (steps of 0.5)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Effectiveness / Certainty of Intervention</td>
<td>(f) Diffused Agricultural Sources</td>
<td>Total score of 5 (scaled according to proportion of each intervention)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(g) Misconnections &amp; Dual Manholes</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(h) CSO, EO &amp; WwTW Storm Overflows</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Proximity (i)</td>
<td></td>
<td>1 to 5 (scaled)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cost to Deliver (j)</td>
<td></td>
<td>1 to 5 (scaled)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Time to Deliver (k)</td>
<td></td>
<td>1 to 5 (scaled)</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Note* - The metric will be informed through our customer and stakeholder engagement into the benefit / amenity at particular bathing waters.

To assess the score at each bathing water the following calculation is applied:

Un-weighted Score = \( \text{Sum} \{ (n) \times W1_n \} \) where \( n=(a) \) to \( (k) \) and \( W1 \) is the un-weighted element

Weighted Score = \( \text{Sum} \{ (n) \times W2_n \} \) where \( n=(a) \) to \( (k) \) and \( W2 \) is the weighted element

Scores are ranked and prioritised to develop an intervention programme. Examples of the application of the un-weighted and weighted bathing water criteria follow.
Stage 3 – Acceptability Testing

We shall then test the acceptability of the intervention programme through further customer engagement.
Annexe 3 – Outcome Delivery Incentive

To better safeguard the interests of customers we have revised our proposed Outcome Delivery Incentive (ODI) for delivering ‘excellent’ quality beaches during AMP6. It is formed of three component parts, as follows:

Part 1 - maintain the current level of beaches with ‘excellent’ bathing water quality

Our estimate of our 2014-15 base performance is 54 beaches with ‘excellent’ water quality. This will be confirmed and updated once Defra publish their annual bathing water report expected in Autumn 2014. This component of the ODI ensures that customers are protected from any deterioration in the current level of ‘excellent’ quality beaches from the base position at the outset of AMP6. Falling below this level will result in a financial penalty.

We have set the dead-band at one standard deviation from the target, at +/-6 bathing ‘excellent’ waters. It is derived the historic bathing water quality data, from the 2009 bathing season, excluding the atypical 2013 data set, Table 1 refers. ‘Excellent’ water quality is defined as no more than 100 *Intestinal Enterococci* cfu/ml and 250 *Escherichia coli* cfu/ml in at least 19 out of 20 samples.

Table 1 – bathing waters at ‘excellent’ quality on an annual basis (*based on bathing water information prior to the conclusion of the 2014 bathing season)

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014*</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No at ‘excellent’</td>
<td>48</td>
<td>38</td>
<td>46</td>
<td>47</td>
<td>61</td>
<td>54</td>
<td>5.95</td>
</tr>
</tbody>
</table>

We set the caps and collars at two standard deviations, or +/-12 bathing waters.

Our measurement of performance for this component of the ODI applies only to beaches which are not targeted for specific investment under the Final Determination bathing water seas programme.

**Detailed definition of performance measure:** Maintain the number of bathing waters with ‘excellent’ water quality as defined under the revised Bathing Water Directive at the 2014-15 level.

**Incentive type:** Financial – reward and penalty

| | Starting level | Committed performance levels |
|---|---|---|---|---|---|---|---|
| PC | 54* | 54* | 54* | 54* | 54* | 54* |
| Penalty collar | 42* | 42* | 42* | 42* | 42* | 42* |
| Penalty | 48* | 48* | 48* | 48* | 48* | 48* |
### Starting level

<table>
<thead>
<tr>
<th>Unit</th>
<th>2014-15</th>
</tr>
</thead>
</table>

### Committed performance levels

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>deadband</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reward deadband</td>
<td>60*</td>
<td>60*</td>
<td>60*</td>
<td>60*</td>
<td>60*</td>
</tr>
<tr>
<td>Reward cap</td>
<td>66*</td>
<td>66*</td>
<td>66*</td>
<td>66*</td>
<td>66*</td>
</tr>
</tbody>
</table>

### Incentive rates

<table>
<thead>
<tr>
<th>Incentive type</th>
<th>Performance levels (beaches)</th>
<th>Incentive rate (£/beach/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>Penalty</td>
<td>42*</td>
<td>48*</td>
</tr>
<tr>
<td>Reward</td>
<td>60*</td>
<td>66*</td>
</tr>
</tbody>
</table>

*Estimate to be updated once bathing water results are published by Defra in 2014-15

### Additional details

| Necessary detail on measurement units | Measurement of performance against the revised Bathing Water Directive is published by Defra.  
The measure of ‘excellent’ water quality is no more than 100 *Intestinal Enterococci* cfu/ml and 250 *Escherichia coli* cfu/ml in at least 19 out of 20 samples.  
Performance commitments, deadbands, caps and collars, and performance ranges will be confirmed in 2014-15 once the bathing water quality results are published by Defra. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of PC measurement and any use of averaging</td>
<td>Performance will be measured and reported annually and at the end of the AMP as a five-year total.</td>
</tr>
<tr>
<td>Timing and frequency of rewards/penalties</td>
<td>Rewards and penalties apply at the end of the AMP based on performance against the annual targets.</td>
</tr>
<tr>
<td>Form of reward/penalty</td>
<td>Revenue adjustment</td>
</tr>
<tr>
<td>Any other information or clarifications relevant to correct</td>
<td>The purpose of this component of the ODI is to protect customers against any deterioration in</td>
</tr>
<tr>
<td>application of incentive</td>
<td>the current level of bathing waters with ‘excellent’ water quality. Rewards and penalties will apply for performance against our 2014-15 level of bathing waters with ‘excellent’ water quality. Measurement applies only to bathing waters which are not targeted for specific investment under the Final Determination bathing water clean seas enhancement programme.</td>
</tr>
</tbody>
</table>
Part 2 – Delivery of targeted beaches for AMP6

The second part ensures that customers are protected from the non-delivery of the seven beaches which we are being financed to improve to 'excellent' water quality. These seven beaches will be chosen based on our selection criteria which we have agreed with our customers (see Annex 2 for the full set of criteria and its application). To ensure that we correctly apply the criteria, our selection of beaches will be independently assured, and agreed with our Customer Advisory Panel.

Failure to deliver any of the agreed beaches by 2019-20 will result in financial penalties. However, we are also financially incentivised for the early delivery of bathing water improvements where possible. The willingness-to-pay research we have carried out indicates the benefit customers derive from additional years of beaches with 'excellent' water quality.

**Detailed definition of performance measure:** Increase the number of bathing waters with 'excellent' water quality as defined under the revised Bathing Water Directive.

**Incentive type:** Financial – rewards and penalties

**Performance commitments**

<table>
<thead>
<tr>
<th></th>
<th>Starting level</th>
<th>Committed performance levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>target</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Penalty collar</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Penalty deadband</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Reward deadband</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Reward cap</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

**Incentive rates**

<table>
<thead>
<tr>
<th>Incentive type</th>
<th>Performance levels (beaches)</th>
<th>Incentive rate (£/beach/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>Penalty</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Reward</td>
<td>0</td>
<td>7</td>
</tr>
</tbody>
</table>
**Additional details**

<table>
<thead>
<tr>
<th>Necessary detail on measurement units</th>
<th>Measurement of performance against the revised Bathing Water Directive is published by Defra. The measure of ‘excellent’ water quality is no more than 100 <em>Intestinal Enterococci</em> cfu/ml and 250 <em>Escherchia coli</em> cfu/ml in at least 19 out of 20 samples.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of PC measurement and any use of averaging</td>
<td>Performance will be measured and reported annually and at the end of the AMP as a five-year total.</td>
</tr>
<tr>
<td>Timing and frequency of rewards/penalties</td>
<td>Rewards and penalties apply at the end of the AMP based on performance against the annual targets.</td>
</tr>
<tr>
<td>Form of reward/penalty</td>
<td>Revenue adjustment</td>
</tr>
<tr>
<td>Any other information or clarifications relevant to correct application of incentive</td>
<td>The purpose of this ODI is to protect customers from the non-delivery of our programme to improve seven bathing waters to ‘excellent’ standard in line with our published selection criteria by 2019-20 (see Annex 2 for details of selection criteria). Penalties will apply for failure to complete the seven targeted beaches to ‘excellent’ standard by 2019-20 based on the unweighted application of our independently assured selection criteria as described in our Draft Determination representation. Furthermore, the planned bathing waters will be reviewed by the independent Customer Advisory Panel who will confirm whether we have appropriately applied the bathing water selection criteria. Rewards will apply for the early delivery of the seven targeted bathing waters to ‘excellent’ standard.</td>
</tr>
</tbody>
</table>
Part 3 – Protection from windfall gain

The third part of the ODI protects customers against any possible windfall gain which could arise due to the current uncertainty around the cost of delivering the programme of seven bathing waters to ‘excellent’ standard. If, following the investigations, the actual costs associated with delivery of the programme are materially different from the current estimated cost the difference will be returned to our customers through the ODI mechanism.

We have defined the deadband as one standard deviation below the estimated P50 (median) value of £31.5m at £24.56m.

<table>
<thead>
<tr>
<th>Cost</th>
<th>P10</th>
<th>P50</th>
<th>P90</th>
<th>Mean</th>
<th>Stdev</th>
</tr>
</thead>
<tbody>
<tr>
<td>£(m)</td>
<td>22.779</td>
<td>31.495</td>
<td>40.854</td>
<td>31.659</td>
<td>6.938</td>
</tr>
</tbody>
</table>

Our modelled median (P50) value is close to the mean value for the programme of interventions because the modelled probability density function is close to a normal distribution, see below.

**Detailed definition of performance measure:** Estimated scheme costs of £31.5m for our planned bathing water improvements

**Incentive type:** Financial – penalty only

**Performance commitments**

<table>
<thead>
<tr>
<th>Starting level</th>
<th>Committed performance levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC £m</td>
<td>n/a</td>
</tr>
</tbody>
</table>
### Starting level

|------|---------|---------|---------|---------|---------|---------|

### Committed performance levels

| Penalty collar | £m |  |  |  |  | 0 |
| Penalty deadband | £m |  |  |  |  | 24.56 |

### Incentive rates

<table>
<thead>
<tr>
<th>Incentive type</th>
<th>Performance levels (£m)</th>
<th>Incentive rate (£m/£m/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>Penalty</td>
<td>0</td>
<td>28.35</td>
</tr>
</tbody>
</table>

### Additional details

| Necessary detail on measurement units | The current estimated cost of delivering the Bathing Water programme is £31.5million. Once we have carried out the full scheme investigations, these costs will be re-estimated to determine whether they are materially different from the current expected cost. |
| Frequency of PC measurement and any use of averaging | The estimated costs will be compared once the investigations have been completed during the AMP period. |
| Timing and frequency of rewards/penalties | Penalties will apply in 2019-20. |
| Form of reward/penalty | RCV adjustment |
| Any other information or clarifications relevant to correct application of incentive | This component of the ODI protects customers against any possible windfall gain which could arise due to the current uncertainty around the programme cost of delivering additional bathing waters to 'excellent' standard. This component of the ODI ensures that, if, following the investigations, the actual costs associated with delivery are materially different from the current estimated costs (defined as one standard deviation below the estimated P50 cost £31.5m setting the deadband at £24.56m), the difference will be returned to our customers through the ODI mechanism. Once we have the investigation results, the programme costs will be re-estimated with more |
informed solution costs. We will apply the bathing water selection criteria following investigations, and if the cost is less than that FD allowance, we will calculate the windfall gain and return this to our customers through the ODI mechanism.

The ‘performance commitment’ is an estimated cost of £31.5m for the seven improvement schemes. If the revised estimate following the investigations turns out to be lower than the expected cost, for each £1m below the deadband of £24.56m we will pay back £0.5m to customers. They will get back the remaining 50% through cost performance incentives.