

The Overall Measure of Delivery (OMD)

A guide to its calculation and interpretation

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The Guideline OMD Document

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Introduction

1. The Commission introduced the notion of a single, objective measure of investment performance around year 2008. The Overall Measure of Delivery (or OMD) was conceived and a pilot version developed using information from the 2006-10 investment period.
2. The OMD is one of the reported metrics set out in the Regulatory Contract. It is, therefore, established as an integral part of investment monitoring within the 2010-15 regulatory period.
3. The OMD methodology has been enhanced to enable the deliverables financed in the 2010-15 period to be monitored using the OMD. The purpose of this guide is to explain fully the concept of the OMD and the assessment methodology.
4. This guide is primarily designed for use by Scottish Water and the Water Industry Commission for Scotland (WICS) but not exclusively. The guide assumes knowledge of regulatory and investment terms commonly used throughout the water sector; however a glossary of terms used in this document is included in Appendix A. Whilst this guide documents the latest thinking on the OMD, the assessment methodology will be subject to an annual review (as a minimum); it may be revised to accommodate changes as the measure is implemented. The Capital Investment Return spreadsheet used to inform progress on investment delivery now includes the OMD calculation template.
5. There are three main sections:
 - Section 1 provides the background behind the introduction of the OMD;
 - Section 2 presents the concept of the OMD; and
 - Section 3 gives details on how the OMD is calculated and reported.
6. Each section begins with a brief synopsis setting out the key features, followed by the main body of the text and ends with a set of key messages.

Key Principles of the OMD

- ❖ The OMD is a single, comprehensive measure of Scottish Water's overall progress with investment delivery. It balances outputs that are on, ahead and behind target with information on expenditure performance.
- ❖ The OMD monitors elements of the enhancement programme for which there is a suitable level of certainty regarding outputs and expenditure.
- ❖ The OMD assesses the 2010-15 (Q&S3b) investment period only. Other investment periods have separate OMDs.
- ❖ The measure uses information from authoritative sources but ensures that the measure remains 'output-centric' to align with the requirements of the Regulatory Contract.
- ❖ At the beginning of the Q&S3b investment period the OMD score starts at zero and rises to 250 points. If all the outputs being monitored are delivered to time and to budget the 250 point score will be attained at the end of the 2010-15 regulatory period. The actual score could be higher or lower and is dependent on the degree of expenditure under- or out-performance.
- ❖ If planned late delivery of outputs occurs then the end target score of 250 points still holds but the score which is attainable by the close of the regulatory period becomes lower. Provided that there is consensus to the legitimacy of the planned late delivery of outputs then the lower score becomes the reference score for the assessment. The unfinished outputs would continue to be monitored until completed.
- ❖ The OMD score is assessed quarterly. The score accumulates through time but is dependent on positive progress with output and expenditure delivery. It is possible within a quarter for the OMD score to be moderated downwards but embedded rules prevent the 'outputs based' OMD score dropping lower than it was in the previous quarter.
- ❖ The OMD assessment is based on delivery performance against a forecast. The first year of assessment (2010-11) is referenced against Scottish Water's initial (baseline) Delivery Plan forecast. Future assessments are based on Scottish Water's annual Delivery Plan updates.
- ❖ The OMD methodology will, as a minimum, be reviewed yearly (and revised where necessary) to ensure that it remains a credible measure.

Section 1 – Background to the Overall Measure of Delivery

This section provides the backdrop and context for the Overall Measure of Delivery (OMD). It begins by setting out how, in simple terms, the vast array of assets provides service to customers, why money must be invested on these assets, differentiating between capital maintenance and capital enhancement expenditure. Scottish Water is, amongst its other requirements, financed to invest in both forms of capital expenditure throughout the 2010-15 period. The OMD will be used objectively to assess output delivery that arises from capital enhancement expenditure and to communicate this performance.

1. Scottish Water has an extensive asset base across Scotland including its islands. These range from pumps to pipes, water reservoirs to treatment works. These physical assets are designed to provide a continuous supply of drinking water to customers and to collect dirty water and treat it effectively.
2. Expenditure on the asset base is required to:
 - *maintain* the service to customers; and
 - to enhance and extend the asset base to deliver *service improvements*.
3. Service improvements often arise through the need to provide better drinking water for customers and the requirement to meet new, higher standards in wastewater discharges to protect the environment. Periodically the asset base must be extended to service new developments (to meet growth) through the provision of new or adapted infrastructure.
4. Deciding which outputs are required to be delivered over a fixed investment period requires the input of a number of stakeholders. Outputs are the deliverables such as extending a wastewater treatment facility to comply with the phosphorus standard, increasing the security of supply index, provision for growth, etc.
5. As the economic regulator, the Water Industry Commission for Scotland's (WICS), role is to establish the finance required to deliver these outputs taking account of the comparative efficiencies that have been achieved by water and wastewater companies operating in England and Wales. This is part of the extensive process referred to as the Strategic Review of Charges.
6. Scottish Water is required to accept (or reject) the totality of the regulatory settlement set out in the Final Determination. Scottish Water has agreed to the regulatory settlement for the 2010-15 period. It includes the completion of unfinished investment outputs from previous periods.

7. The monitoring of the delivery of the outputs is through the Output Monitoring Group (OMG) with the detailed monitoring divested to the OMG Working Group. Both groups have representation from WICS, Scottish Government, Scottish Water, the environment regulator (Scottish Environment Protection Agency), the Drinking Water Quality Regulator (DWQR) and Waterwatch Scotland. These groups meet quarterly with emphasis on the delivery of capital enhancement (asset improvements) and serviceability measures.
8. The monitoring undertaken by the OMG Working Group and OMG has historically focussed on 'exception reporting' which tends to fixate on outputs that are 'behind target'. In programme management 'exception reporting' is a recognised approach because it directs attention to those aspects of the investment programme that are poorly performing. The risk is that such emphasis can lead to a negative perception of overall investment performance.
9. The solution proposed by WICS is a single measure which articulates overall progress with the delivery of the enhancement investment programme; an approach that takes full account of those outputs ahead, on or behind target but also incorporates information on expenditure performance. It is called the Overall Measure of Delivery (or OMD). The OMD is explained fully in this guide.
10. The OMD will be used from April 2010 to monitor the delivery of the enhancement outputs arising from capital investment expenditure allowed for in the 2010-15 period. It will feature as the headline metric within the Output Monitoring (OMG) Working Group and OMG Reports. A trial version of the OMD has already been developed and tested by WICS to monitor the delivery of outputs financed in the preceding (2006-10) period.

Section 1 - key messages:

- Scottish Water invests in its assets to maintain service to customers (capital maintenance) and to meet new quality and growth requirements (capital enhancement).
- The OMD will objectively assess the delivery of outputs (arising from capital enhancement expenditure only) from the start of the 2010-15 period.
- The OMD provides a single score which will be used to articulate delivery progress.

Section 2 – Developing the philosophy of the OMD into a working concept

This part of the guide presents the conceptual development of the OMD. It starts with the basis for the OMD and builds on some essential features, such as dealing with outputs delivered early or late to illustrate how these are treated. It purposefully avoids numbers so that the reader understands the functionality of the OMD in advance of the calculation methodology.

The conceptual platform

11. The OMD is conceived on the principle that it provides a simple, single statement of delivery performance which is a composite of more detailed information. It can be presented as a number, graphically or both.
12. At the beginning of the investment period the OMD score starts at zero (or 0%) and rises as the programme is delivered; the concept of the cumulative, rising OMD score is illustrated in Figure 1. A 250 point score is achieved when all the outputs financed for delivery are completed and to cost. Ideally attainment of the full score would be at the end of the five year period (at the end of March 2015). Certain circumstances, however, can result in legitimate adjustments to this target.

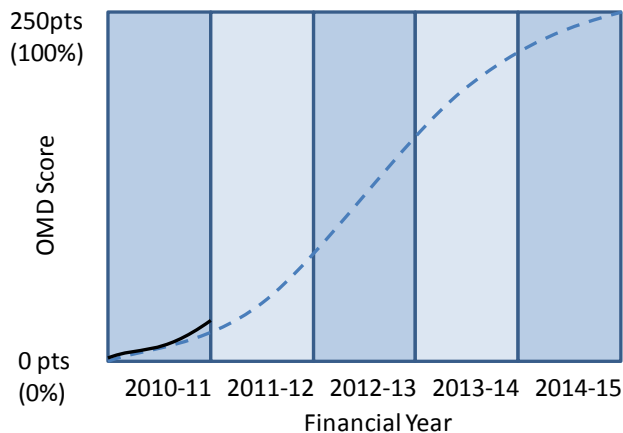


Figure 1 – Conceptual OMD delivery profile for the five year period (blue dotted line) with first year’s actual performance shown by the solid black line.

13. The OMD assessment relies on a comparison of actual delivery performance (shown by the solid black line) against a prediction (illustrated by the dotted blue line). Progress is monitored every quarter and an OMD score is obtained which confirms the actual position against the forecast position and against the expected year-end forecast.
14. This leads to an important point. At the outset of a regulatory period, the initial forecast of delivery performance (the ‘baseline’ profile) is unlikely to be a correct prediction for the latter years. Such early predictions of output delivery and cost tend to become

modified as individual solutions are better defined and become more certain. A shifting delivery profile is a recognised feature of a large and diverse programme of works.

15. In addition, output and schemes can also be removed and added to programme through time – the *Technical Expression and Change Register* provides the vehicle for tracking and documenting these adjustments. The OMD score is designed to accommodate re-profiling, output programme additions and deletions.
16. Scottish Water reflects any new knowledge in investment planning by refreshing its Delivery Plan forecast each year. Each *revised Delivery Plan* will be used as the basis for future OMD assessments. A re-profiled delivery plan forecast is shown in Figure 2a; it shows a ‘red line’ delivery profile recast after the first year (compared with the initial, baseline forecast shown by the ‘blue line’). In this example the delivery end-point is the same but could be different.

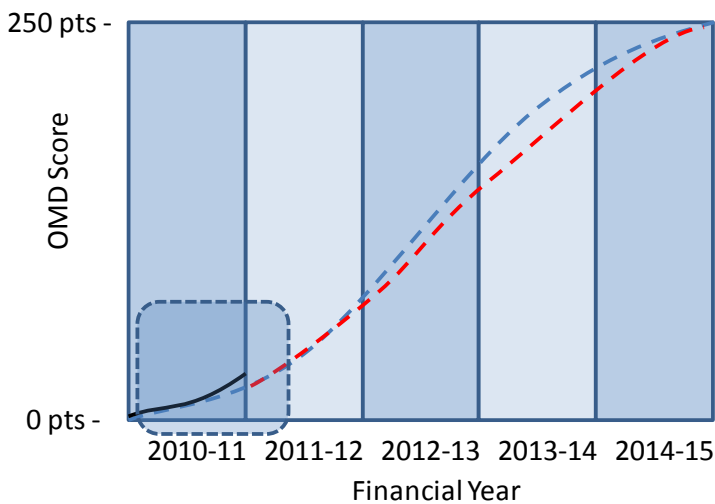
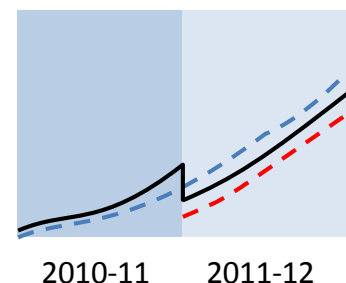


Figure 2a – The initial OMD delivery profile for the five year period (blue line) recast at the beginning of Year 2 (red line).

17. Figure 2a shows a simplistic re-profiling of delivery with the *existing* set of outputs. For some output programmes, such as the removal of Unsatisfactory Intermittent Discharges, the revision in outputs, year-on-year, could be bigger and more volatile than others. In these cases the delivery profile may not just stretch horizontally but vertically – there would be a ‘step’ up and down in the actual and forecast delivery profiles – as shown in Figure 2b (which is a magnified portion of Figure 2a).

Figure 2b – Illustrative example of a shift in the actual and forecast delivery profiles arising from a step change in deliverables.



18. This potential 'step effect' reflects annual corrections to the output Delivery Plan forecasting¹. Any rebasing which arises from annual Delivery Plan changes will be carefully communicated to stakeholders. Rebasing does not change the end target OMD score of 250 points.
19. Delivering the ideal position – all outputs monitored by the OMD by the end March 2015 - may not be attainable because of, for example, unplanned delivery delays or the introduction of new programmes of work which have not been planned for or specifically financed in the Strategic Review of Charges 2010. The OMD has been designed to accommodate these adjustments but they can change the way in which the OMD is assessed and interpreted. The influence of these programme changes is discussed in the following sections.

New programmes of work

20. If a new programme of work is introduced (or removed) from the existing investment programme the OMD is sufficiently adaptive to handle these types of changes. Programme additions (or deletions) do not change the end target OMD score of 250 points but may moderate the investment delivery profile. Adjustments to programmes are presented annually through Scottish Water's updated Delivery Plan.

Dealing with unplanned (and planned) late finishes

21. For reasons often beyond Scottish Water's control, such as unforeseen construction delays, there may be occasions where the delivery of an output is postponed. Some deliverables may be purposefully planned to be delivered after the end of the regulatory period because there is simply not enough time remaining in the current regulatory window to complete them. Delayed delivery of outputs places the completion of some outputs beyond the end of the current regulatory period.
22. Under either of these circumstances the OMD can be assessed both in terms of the forecast outputs that can be *reasonably delivered* within the remainder of the regulatory period and against the full set financed. Figure 3 illustrates this aspect of the OMD.

¹ It was agreed between WICS and Scottish Water that this feature is more preferable than retrospectively modifying or smoothing the delivery profile appearance

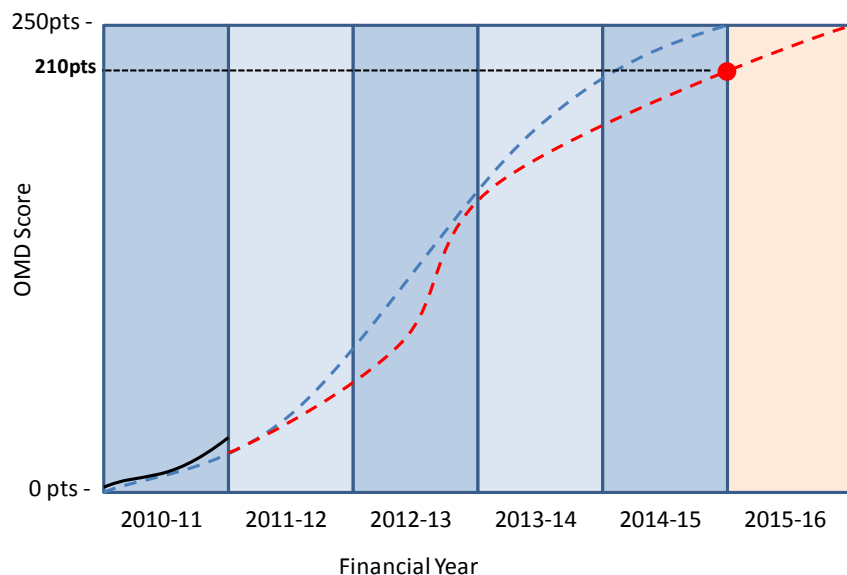


Figure 3 – Conceptual OMD delivery profile for the five year period (blue dotted line) adjusted at Year 2 with a revised delivery plan profile (red dotted line) which extends into the 2015-16 period.

23. The red dotted line in Figure 3 shows a revised delivery plan forecast with outputs planned for completion the year after the end of the 2010-15 regulatory period; the end target 250 point score still holds. Provided delivery delays are genuine it is reasonable to assess actual progress against the revised, downward forecast at the end of March 2015. Using the example in Figure 3, delivery performance is measured against a lower target of 210 points. This means that completion of the remaining, unfinished outputs, worth a further 40 points, are delivered beyond the end of the 2014-15 regulatory period.
24. Maintaining a clear view on the status of the remaining unfinished outputs whether planned for (or not) is essential. The unfinished element including the cost to bring this work to conclusion is monitored in subsequent regulatory periods. For some ongoing outputs, such as growth projects, the output and cost could simply be transferred to the objectives and score mechanism for the next regulatory period.
25. Planned early delivery can, too, be accommodated. If Scottish Water elects to bring forward programmes of work it can do so with annual and end of period assessments on an upward profile. It may however choose to be credited for the early delivery against an existing profile – this is permissible within the OMD.

Treatment of early start deliverables

26. The cyclical nature of the regulatory mechanism has historically led to peaks and troughs in Scottish Water’s investment activity which may not be the most efficient for investment planning and delivery. To smooth out this process Scottish Water is

encouraged to progress outputs ahead of a forthcoming regulatory period. If outputs for a forthcoming regulatory period are delivered early this is favourably accounted for in the future OMD assessment.

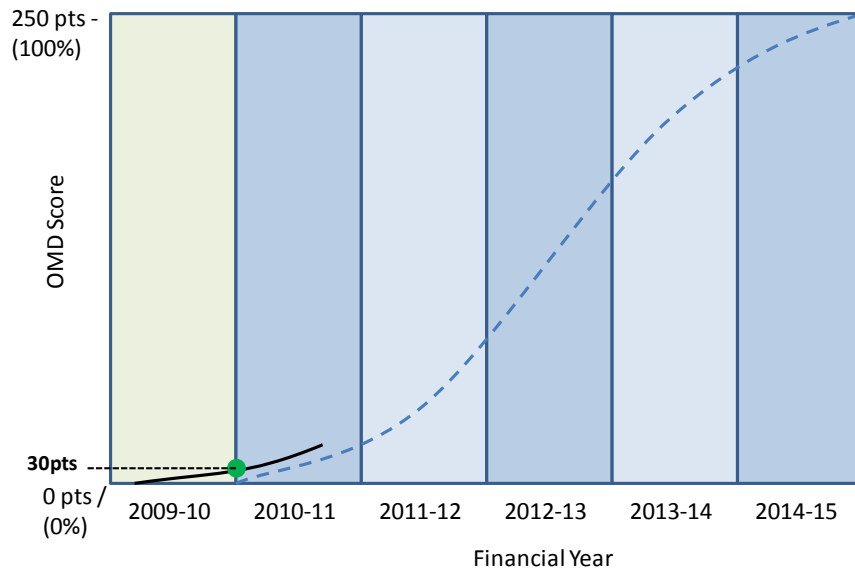


Figure 4 – Conceptual OMD delivery profile for the five year period (blue dotted line) showing early start in 2009-10.

27. Conceptually, the OMD score starts at zero at the beginning of the period but if output is delivered early then the OMD credits a score at the start of the regulatory period based on the baseline delivery plan. Figure 3 shows a credit of 30 points (the ‘green dot’ on the actual delivery line) above the baseline delivery plan forecast.

Interpreting the OMD

28. The OMD score can be used to establish if progress is “on”, “ahead of” or “behind” target by reference to a numerical value – for example an assessment of (say) +2% would be considered as “ahead of” forecast. Conversely -3% position would be considered as “behind” target. These are factual statements on overall performance based on objective evidence. An accepted difficulty for the reader is the ability to qualify the *significance* of these departures. Is a +2% OMD score outstanding or marginal? Is -3% insignificant or cause for concern?
29. At this stage in the development of the OMD no forced interpretation is provided (one could consider, for example, a range of scores with an agreed interpretation depending on the OMD score). Experience has shown that such interpretation is not necessary – any shortfall in delivery performance in one quarter can be over-written by the following quarter’s performance because the OMD score accumulates through time. It is the tracking of progress through time which becomes as important as the immediate quarterly position.

Section 2 - key messages:

- The OMD is presented as a number, graphically or both.
- Scores are established each quarter making reference to the immediate, end of the financial year and end of the regulatory period positions. If outputs are forecast beyond the end of the period the OMD assesses this too.
- The assessment is based on actual delivery performance against a forecast. The first year's assessment is against a 'baseline forecast'. Subsequent delivery plan forecasts can be revised annually to reflect better the delivery of outputs as solutions develop. Any significant revisions may appear as step changes in the OMD 'tracker' graphs.
- The OMD score starts at zero at the beginning of the investment period and rises as the programme is delivered. If outputs are delivered early there is an above zero 'credit' at the beginning of the investment period.
- If planned late delivery of outputs occurs then the end target score of 250 points still holds but the score which is attainable by the close of the regulatory period becomes lower. The lower score becomes the reference score for assessment (provided there is mutual agreement to the lower threshold). The unfinished outputs would continue to be monitored until completed.
- The OMD score establishes if progress is "on", "ahead of" or "behind" target. Tracking of progress through time is as important as the immediate position and the OMD provides both.

Section 3 – Calculating and Reporting the Overall Measure of Delivery

This section of the guide explains the OMD calculation methodology. It shows that output and expenditure information is sourced from Scottish Water’s Capital Investment Return (CIR) and CIR Summary respectively; this information is operated on to establish a combined, single value of overall delivery performance. Controls within the calculation ensure that the OMD behaves correctly. Specific equations that relate to the calculation method are captured in a separate section. The section concludes with a section on how the OMD is reported.

The information basis for the OMD

30. Having established the conceptual basis for the OMD in Section 2, this part of the guide set outs the methodology for calculating it.
31. It is common practice to assess investment delivery progress using three critical components: satisfaction that delivery is on schedule, to cost and has delivered the required outputs. The approach developed is one which uses a combination of this information *objectively* to assess overall investment delivery. However and in keeping with the principles of the Regulatory Contract there is greater emphasis on output performance. The OMD is essentially an ‘output-centric’ measure.
32. The OMD is calculated using output and expenditure information from two authoritative sources:
 - Scottish Water’s quarterly Capital Investment Return (CIR), and
 - Scottish Water’s quarterly CIR Summary Report.

The OMD is, therefore, a *product* of information already assembled within Scottish Water’s business.

33. The Capital Investment Return lists all the projects associated with delivering the outputs within the 2010-15 regulatory period. (There are other CIRs for preceding investment periods but these are not used - this ensures that the assessment is strictly associated with the investment period being monitored).

34. The CIR is a comprehensive spreadsheet-type document. It is characterised by thousands of rows, each row representing a single project² in Scottish Water's capital programme. The information held on each project row can include:
- detailed expenditure (present and future spend),
 - the progress of the project in the delivery process ('need identified', 'in construction' etc),
 - how each project will contribute towards output delivery, and
 - confirmed or expected project delivery timings at each of the five investment deliverable milestones:

[The five investment delivery milestones mirror Scottish Water's investment process: from inception to financial closure. They are in sequential (logical) order from solution development, delivery and beyond: 'MS1 – Preferred Option identified', 'MS2 – Financial Budget Approved', 'MS3 – Work Started on Site', 'MS4' Internal Project Acceptance achieved', 'MS5 – Output signed-off externally by the relevant quality regulator'].

35. The project information within the CIR is arranged into sub-sets or *output programme groups*; these groups reflect the way in which stakeholders have agreed the information should be reported to simplify the monitoring of output delivery. These are listed in Appendix B. The OMD uses this summary level of information in the assessment; if there is a need to understand which projects in a specific output programme group are out- or under- performing this can be established by directly referring to the information held in the CIR.
36. The output programme groups used in the OMD assessment are only associated with capital enhancement expenditure. The OMD does not capture all the capital enhancement financed outputs; some output groups have been purposefully excluded such as, early-start projects for the next regulatory period (2015-) and unpredictable outputs like those initiated by customers such as lead communications pipe replacement.
37. The majority of output programme groups have sufficient definition and expenditure certainty that progress can be monitored at each of the five investment delivery milestones (MS1-5). Output programme groups that lack sufficient definition or have significant expenditure uncertainty are treated differently with the OMD. They are only assessed in terms of the milestones for which certainty exists. For example, the Unsatisfactory Intermittent Discharges (UIDs) output programme subject to the 7-stage process is monitored, initially, in the OMD at stages 'MS1' and 'MS2'. If an output is taken forward, when there is better output and expenditure certainty, it is then assessed on the remaining delivery stages 'MS3-5' inclusive.

² These project lines can, in the early stages, show as conglomerate projects (such as regional initiatives) and are later are 'broken-out' or disaggregated as they become better defined (by asset, place etc).

38. Study only deliverables are monitored in terms of the attaining stages 'MS1', 'MS2' and 'MS5' because there is no immediate physical construction work expected from these outputs.
39. The full list of output programme groups used in the OMD assessment is listed in Appendix B; Appendix B also shows how individual output programme groups are assessed. For each output programme group Scottish Water, in its *baseline* Delivery Plan, has set out the expected output delivery profiles over the 2010-15 period. These forecast profiles are reflected in Scottish Water's CIR forecast.
40. The expenditure information in the CIR Summary Report is presented in a way which *directly* relates to those enhancement outputs used in the OMD assessment. It avoids the need to calculate and filter expenditure information 'bottom up' from the CIR. Also, Scottish Water through its annual Delivery Plans updates should, where necessary, revise its expenditure forecast to take account of externalities such as inflation.
41. It should be noted that some individual projects in the CIR may incorporate capital maintenance (CM) and capital enhancement. This is often practiced on single, above-ground sites such as water treatment and sewage works where efficiency gains of combining the two types of capital work is advantageous. There is a small risk that this could distort the OMD assessment. The extent to which this occurs will be monitored and may be mitigated by Scottish Water decoupling the enhancement and CM elements in the CIR such that the enhancement element only, output and expenditure information, is monitored through the OMD.

Calculating OMD - Assessing investment performance from the CIR

42. The way in which the OMD is calculated is shown in the 4-step process in Figure 6. It shows, on the left, input information and how this information is operated on in the process of generating a single, OMD score. Each calculation step is explained in the sections that follow. Where calculations are used to operate on information these are shown with ‘markers’, such as [❶]. A more detailed, worked example of the OMD calculation including the equations used in the assessment is presented in Appendix C.

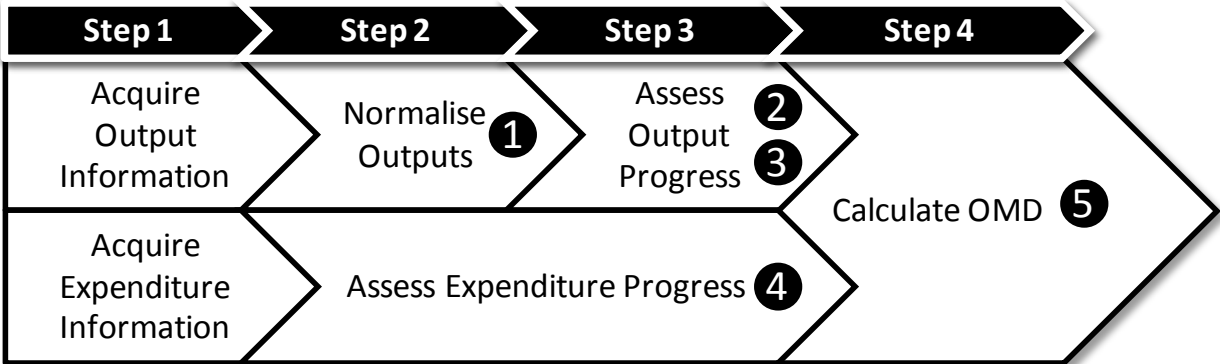


Figure 6 – An illustration of the 4-step OMD calculation

43. **Step 1: Acquire information.** The starting point is the acquisition of input information. The quarterly CIR is used as the basis for output information. The CIR captures progress with actual output delivery and that planned at each of the five investment delivery stages (‘MS1-5’) for each of the 37 output programme groups assessed using the OMD (excluding, for example capital maintenance projects). Scottish Water’s CIR Summary Report provides actual and forecast expenditure associated with the investment outputs also monitored by the OMD.
44. **Step 2: Normalising the Outputs.** Actual and forecast information is converted (“indexed”) to a common currency [❶] because comparing and combining, real but dissimilar output information can make the assessment cumbersome. For each output programme group and at each milestone the output is converted to a value within the range of 0 to 10: zero reflects no deliverables and a value of ten confirms that all outputs have been delivered. A score of 50, 10 at each of the five delivery stages, signals that the individual output programme group has been fully completed³.

³ This is capped in the OMD so that there is no reward for the delivery of outputs above that set out in the Delivery Plan. However out-performance, delivery of outputs *early*, is fully rewarded.

45. **Step 3: Assess Progress.** Actual (and forecast) index scores for each output programme group are summated [2] for each of the investment delivery milestones. Progress is established by calculating the actual (and forecast) summated index scores as a proportion of all the deliverables [3]. The value derived is referred to as the ‘unadjusted output score’.
46. An actual score of 40 points at ‘Milestone 1’ reflects that *collectively* 80% of the output programme groups have reached this investment stage. It may be that some specific output groups are behind individual, desired forecast positions but are compensated by those output programme groups that are ahead. The purpose of the OMD is to provide this balanced assessment.
47. Expenditure progress is derived from a comparison of actual expenditure versus that forecast using information from the CIR Summary Report [4]. In those cases where Scottish Water, for efficiency reasons, has elected to deliver enhancement and capital maintenance project work together (such as on above-ground sites) it has in its presentation of expenditure included the enhancement only expenditure associated with these joint projects.
48. **Step 4: Calculate OMD.** In the OMD, output information is combined with expenditure information. The OMD moderates the ‘unadjusted output score’ according to expenditure performance but only if actual expenditure divergence is considerably greater or less than planned. The scale of any adjustment is carefully controlled to ensure a credible OMD score.
49. Given the typical volatility in expenditure commitment and inherent uncertainty in its prediction⁴ a ±£20m tolerance, or “buffer”, is permitted in the expenditure differential before any adjustment takes effect. Beyond this threshold any adjustment applied is proportional to the degree of quarterly over- or under-spend [5]. The treatment of over- or under-spend is symmetrical. A control limits the level of adjustment to no more than ±10%. A second control ensures that the computed ‘adjusted OMD score’ cannot be lower than the ‘unadjusted OMD score’ of the previous quarter.

Reporting the OMD

50. The OMD is the headline metric in the Output Monitoring Group (OMG) and OMG Working Group Reports. These reports provide relevant stakeholders with summary information on progress with investment delivery performance. A standardised OMD statement and information graph has been prepared for use within these investment reports to show how the OMD information is articulated, for example, as follows:
51. Within the Executive Summary

⁴ Associated with managing the delivery of a large capital programme

“The Overall Measure of Delivery (OMD) provides a high-level measure of progress in implementing the enhancement investment programme financed in the 2010-15 period. At the end of [month year], the OMD score stands at [x] points. This is [y] points (or ±[y]%) [ahead/on target/behind] of where Scottish Water planned to be according to its Delivery Plan. By the close of [2010-11] Scottish Water predicts an OMD score of [z] points⁵.”

52. Within the main body of the report

“The Overall Measure of Delivery (OMD) provides a high level measure of delivery performance, taking account of progress of all enhancement outputs being monitored along with information on expenditure performance.”

“At the end of [month year] actual investment delivery, as measured by the OMD, was [x] points. This was [y] points (or ±[y]%) [ahead/on target/behind] of where Scottish Water planned to be according to its [baseline/updated] Delivery Plan. By the close of [2010-11] Scottish Water predicts an OMD score of [z] points. This performance is illustrated in Figure 1 below.”

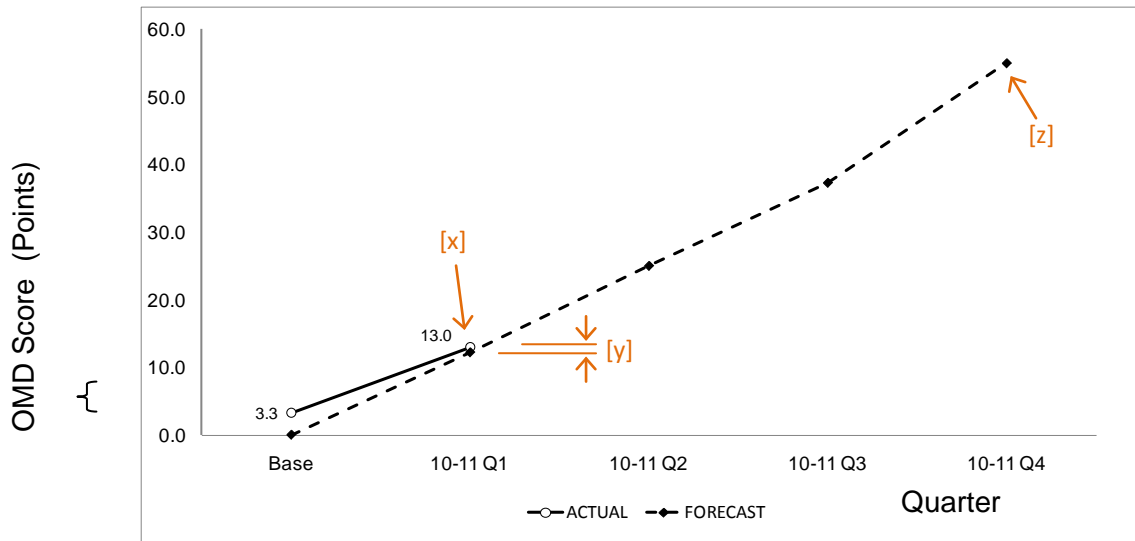


Figure 1 – Example Overall Measure of Delivery Score

where:

- [x] is the actual OMD point score for the quarter assessed;

⁵ This last sentence is removed for the Quarter 4 (end of financial year) assessment.

- [y] is the difference between the actual adjusted OMD score and that forecast (in points and percentage terms); and
- [z] is the forecast OMD score to the end of the current financial year.

Section 3 - key messages:

- Calculating the OMD can be explained in four simple steps.
- The first step is where the “input information” is acquired. The OMD sources output and expenditure information from Scottish Water’s Capital Investment Return (CIR) and its CIR Summary Report respectively.
- The output information is dissimilar and is converted to a common currency in the second step.
- The third step establishes the numerical difference between the actual outputs delivered against that planned for; and for expenditure, too.
- In the final stage, output information is combined with expenditure information. Controls within the calculation ensure that the OMD behaves correctly. The result is a robust, objective, single value of overall delivery performance which is ‘output-centric’.
- A standard format for reporting the OMD in the Output Monitoring Group (OMG) and OMG Working Group Reports is included.

Further Information

This guide has been developed by the Water Industry Commission for Scotland and Scottish Water. This document will be periodically reviewed and revised along with the OMD. As a minimum the review process will take place annually. Any suggested improvements to its style or content are welcome. For further information please contact the following organisational representatives.

Scottish Water	Water Industry Commission for Scotland
<i>To be advised</i>	Dr David Tyler (Investment Team) Telephone 01786 430 200 Email david.tyler@watercommission.co.uk

Appendix A – Glossary of Terms

Term	Explanation
'Baseline' Delivery Plan	Scottish Water's initial estimate of output delivery profiles and expenditure estimates over the regulatory period.
Capital Investment Return (CIR)	A comprehensive, live list of all the capital projects in Scottish Water's investment programme which shows the output, time and expenditure status of each.
Final Determination	The economic regulator's proposed overarching budgetary constraint to deliver (amongst other things) the outputs required by Scottish Ministers.
Outputs	Tangible deliverables associated with Scottish Water's assets such as odour improvements to sewage treatment works, removal of unsatisfactory intermittent discharges from the sewer network, the number of water treatment works receiving improved disinfection control.
Overall Measure of Delivery (OMD)	A single, objective measure of investment delivery performance
Output Monitoring Group (OMG)	The stakeholder group consisting of Scottish Government, Scottish Environment Protection Agency (SEPA), the Drinking Water Quality Regulator (DWQR), Scottish Water, the Water Industry Commission for Scotland (WICS) and Waterwatch Scotland who monitor the delivery of investment outputs.
Output Programme Groups	The summary, sub-division of output information used to monitor (and measure) output delivery performance
Regulatory Contract (or Regulatory Settlement)	The binding agreement in which Scottish Water agrees to deliver the totality of outputs within the defined <i>regulatory period</i> for the finance allowed for in the Final Determination, subject to formally agreed changes.
Regulatory Period	The fixed time frame in which financed outputs are required to be delivered. The present regulatory period, referred to as 'Q&S3b' runs from 1 st April 2010 to 31 st March 2015.
Updated (or 'revised') Delivery Plan	Scottish Water's adjusted estimate of its output and expenditure delivery profiles over the remaining regulatory period.

Appendix B – Output Programme Groups

The 37 programme groups used in the 2010-15 OMD assessment are listed below. The majority of programme groups are assessed considering progress at each of the five delivery stages, MS1 to MS5 (annotated as ‘A’ in the output programme group table below). Typically the solutions to deliver these outputs are certain and/or well defined. Investigative or study-only outputs are assessed at delivery milestones MS1, MS2 and MS5 (‘B’).

For some outputs there is insufficient definition to assess these fully in the OMD. For some outputs, such as the Unsatisfactory Intermittent Discharges subject to the 7-stage process, the uncertainty exists at the later stages whereas for others, such as strategic capacity, the uncertainty is at the early stages. An output with uncertainty at the later stages is initially assessed at MS1 and MS2 (Marked ‘C’); if the output is then progressed through to delivery it is monitored from MS3-MS5. An output with uncertainty at the early stages is only monitored at stages MS3-5 (Marked ‘D’).

Minister's Objectives		OMD monitoring programme groups	37	Milestones assessed
Drinking Water Quality and Water Resources Objectives	Drinking Water Quality	Km of mains rehabilitated (including flushing and swabbing) to improve drinking water quality.	4532	A
		Number WTW receiving improved disinfection control	34	A
		Number of treatment works improved to meet drinking water quality standards	6	A
		Number of sites with reduced risk from cryptosporidium	45	A
		Number of zones with reduced lead levels	64	A
		Number of DMA subject to investigations	143	B
		Type A Raw water supplies provided with treatment	5	A
		Number of raw water sample points installed	230	A
	Water quality protection	Number of backflow prevention devices installed	275	A
		Number of sites covered by drinking water safety plans	174	B
	Security of supply	Number of tanker fill points installed	14	A
		Number of sites with increased security	590	A

		Number of water resource zones receiving company standard for security of supply (under 7 stage)	14	C
		Number of water resource zones receiving company standard for security of supply	1	A
Environmental Protection Objectives	Quality of the water environment	Improvements to the Wastewater Network (properties)	32	A
		Number of properties alleviated from external sewer flooding (Commonwealth Games)	92	A
		Number of UID improved (under 7 stage)	197	C
		Number of UID improved (excluding 7 stage)	26	A
		Number of dual manhole systems upgraded	10	A
		Number of WwTW discharges improved to meet new licence requirements	74	A
		Number of WwTW upgraded to meet existing licence requirements	25	A
		Number of WWPS upgraded to comply with existing licence requirements	23	A
		Number of WwTW brought into compliance with licence non-sanitary requirements	83	A
		Number of wastewater network assets made compliant with licence requirements	230	A
		Number of surface water systems upgraded	6	A
	Management of waste products	Number of sludge treatment facilities improved to comply with safe sludge matrix §	2	A
	Preparation for future investment periods	Number of environmental studies undertaken	110	B
Malodour objectives	Malodour objectives	Number of sites where malodour is reduced	4	A

Capital Maintenance & Service Standards Objectives	Service Standards	Number of properties removed from low pressure register	2309	A
		Number of properties removed from low pressure register (Exclusions under Water (Scotland) Act 1980)	128	A
Climate Change & Adaptation	Climate Change & Adaptation	Number of studies §	12	B
		Renewable generation capacity (GWh) §	25	A
Flood Management	Flood Management	Number of assets protected from flood risk	26	A
		Number of models to support the Flooding Bill	5	B
		Number of flooding asset risk assessments	294	B
Strategic Capacity for New Development Objectives	Strategic Capacity for New Development	Water strategic capacity (PE)	29618	D
		Wastewater strategic capacity (PE)	22555	D

§ reported to OMD annually but assessed within the OMD quarterly for consistency

Appendix C – A more comprehensive explanation of the OMD calculation

This section, using information examples, shows the reader, in more detail than outlined in Section 3, how to calculate an OMD score.

Step 1: Acquire information

The Capital Investment Return (CIR) presents progress with output delivery progress for each output group at each of the five investment delivery stages. Information is provided showing actual progress and that forecast (the latter is based on Scottish Water’s baseline/annually updated Delivery Plan).

An extract from the CIR showing actual, summary progress information for *one* output programme group is shown in Figure C1. The CIR captures cumulative output delivery profiles for each quarter over the full regulatory period; it shows historic output delivery, the present confirmed position (‘qtr’), a prediction of the likely output delivery and the totality of the deliverables (‘final’).

	qtr	final
MS1 - Preferred option identified	14	14
MS2 - Financial budget approved	14	14
MS3 - Work started on site	14	14
MS4 - Project Acceptance achieved	11	14
MS5 - Project output signed-off	10	14

Figure C1 – actual information sample

Earlier CIRs will have presented forecast information in a similar way; Figure C2 refers. (These two pieces of information is used to generate the CIR graphs shared between Scottish Water and its stakeholders at OMG WG and OMG).

	qtr	final
MS1 - Preferred option identified	14	14
MS2 - Financial budget approved	14	14
MS3 - Work started on site	14	14
MS4 - Project Acceptance achieved	13	14
MS5 - Project output signed-off	12	14

Figure C2 – forecast information sample

This set of actual and forecast information is acquired for each output programme group. In addition, Scottish Water’s CIR Summary Report provides actual and forecast expenditure strictly associated with those outputs monitored by the OMD. For example, imagine that actual cumulative expenditure is (to deliver the outputs monitored, thus far) is £625 million and that the forecast position for the same quarter is £615 million.

Step 2: Normalising the Outputs.

For individual output groups a view about output progress can be established using unprocessed information from the CIR. For example, comparing information in Figures D1 and D2 reveals some output slippage at investment stages 'MS4' (actual 11/forecast 13) and 'MS5'.

Understanding overall output progress with a dynamic mix of dissimilar output information requires some form of normalisation to simplify the assessment. Actual (and forecast) information is converted to a common currency using Equation 1.

Equation 1

$$\text{processed output score} = \{(final\ output\ value)^{-1}\} \times \{unprocessed\ output\ score\} \times \{index\}$$

Where the standard 'index' value in the OMD = 10

Example:

e.g. using information from Figure D1 at the 'MS4' delivery stage an actual value of 11 after indexing converts to 7.9.

$$\Rightarrow 14^{-1} \times 11 \times 10 = 7.9$$

Note - a rule is applied such that converted actual scores cannot exceed the final output value.

Rule 1: if the processed output score >10 then apply a value of 10

Step 3: Assess Progress. The individual ‘indexed scores’ for all programme groups are added together at each of the five investment delivery milestones. A score is acquired for forecast and actual performance for the quarter (period) under assessment, Equation 2 refers.

Equation 2	<i>output score = \sum(indexed output scores)</i>					
	<u>Example:</u>					
	Investment Delivery Stages	Indexed Output Scores				
		Forecast	Actual	EoP	Beyond	Final
	MS1 - Preferred option identified	120.33	119.70	171.00	19.00	190.00
	MS2 - Financial budget approved	118.00	119.65	171.00	19.00	190.00
	MS3 - Work started on site	110.00	112.96	171.00	19.00	190.00
	MS4 - Project Assurance achieved	101.00	102.48	159.60	30.40	190.00
	MS5 - Project output signed-off	80.47	78.41	128.00	32.00	160.00
	Total	529.80	533.20	800.60	119.40	920.00
	<i>Note – each quarter the scores are summated for each of the five investment delivery milestones, for all output programme groups.</i>					

This example shows the summated indexed output scores for the full set of output programme groups monitored by the OMD. The ‘forecast’ and ‘actual’ columns capture output delivery for the period (quarter) under assessment whereas the ‘End of Period’ (EoP) and ‘Beyond’ columns establish the predicted score at the end of March 2015 and the extent of additional work to bring all the outputs to conclusion, respectively.

In this example there are 19 programme groups assessed at the MS1-4 stages and 16 programme groups assessed at the MS5 stage. The maximum score at each investment delivery stage for each programme grouping is 10. The total attainable (‘Final’) indexed output score is the sum of all scores $(10 \times 19 \times 4) + (10 \times 16) = 920$. It is at this point when all the outputs are confirmed as completed.

The End of the Period (EoP) score, in this example, is truncated at 800.6; it indicates the extent of outputs that will be completed by the end of March 2015 – the remaining outputs amounting to 119.4 will be delivered beyond the end of the period. (This information will be used later to illustrate how the planned late delivery of outputs can be assessed)⁶.

⁶ Applying this principle to the 2010-15 programme grouping suggests that the totality of the baseline output score for that period is $(340 \times 3) + (280 \times 2) = 1630$. It is based on the 37 programme groups being monitored at different investment delivery stages to reflect the certainty in output definition: 34 output programme groups are assessed at stages MS1, MS2 and MS5, 28 output programme groups are assessed at stages MS3 and MS4. The baseline forecast of output delivery predicts completion by the end of the period with no planned late delivery of outputs. So, at this point, the end of period summated index score is the same as the final.

Progress is first assessed by calculating the actual (and forecast) summated index scores as a proportion of all the deliverables. The second step is to convert the percentage output progress to an 'unadjusted output score', see Equation 3.

Equation 3

Output progress (%) = (indexed output score/EoP indexed output score) x 100
Unadjusted output score = {output progress x ((EoP indexed output score/Final Indexed output score) x 50)}/100

Example:

Investment Delivery Stages	Output Progress (%EoP)		Unadjusted Output Score (points)			
	Forecast	Actual	Forecast	Actual	EoP	Final
MS1 - Preferred option identified	70.37	70.00	31.67	31.50	45.00	50.00
MS2 - Financial budget approved	69.01	69.97	31.05	31.49	45.00	50.00
MS3 - Work started on site	64.33	66.06	28.95	29.73	45.00	50.00
MS4 - Project Assurance achieved	63.28	64.21	26.58	26.97	42.00	50.00
MS5 - Project output signed-off	62.87	61.26	25.15	24.50	40.00	50.00
Total			143.39	144.18	217.00	250.00

Note – A final actual score of 50 points confirms that the outputs for that milestone is finished. A final score of 250 points means that all outputs are completed.

The OMD assessment is based on completion of the full set of deliverables (250 points) but if there are agreed, planned late outputs then the reference point for the assessment becomes the End of Period position (or 217 points). This represents the extent of the outputs that can be reasonably delivered by the end of the regulatory period.

Expenditure progress is obtained by comparing actual expenditure with that forecast, see Equation ④]. The aim of this initial assessment is to establish *if* the level of expenditure associated with the delivery of outputs is *within* the allowable tolerance ('buffer').

Equation ④

Acceptable expenditure differential = absolute (actual cumulative expenditure-forecast cumulative expenditure) within 'expenditure buffer'.

Where the expenditure buffer = $\pm£20$ million

Example:

Actual expenditure £625 million

Forecast expenditure £615 million

Expenditure buffer = $\pm£20$ million

↳ absolute expenditure differential (£625m-£615m) = £10m

↳ IS £10m less than £20 million? ↳ "yes" (therefore acceptable)

Note – if the outcome of this assessment determines expenditure beyond the allowable buffer its treatment is contained with the OMD calculation stage.

Step 4: Calculate the 'Adjusted' OMD. The OMD moderates the 'unadjusted output score' according to expenditure performance but only when actual expenditure divergence is considerably greater or less than planned. The scale of any adjustment is carefully controlled to ensure a credible OMD score.

If expenditure is within the allowable expenditure buffer the 'unadjusted output score' is used as the final OMD score and the 'Adjusted' and 'Unadjusted' OMD scores are the same. If expenditure is outside the expenditure allowable buffer the actual output score is modified using the logarithmic equation in ⑤. The forecast output score remains unadjusted.

Multiplier = 1 + log [c- b x ((actual cumulative expenditure ± buffer⁷) – forecast cumulative expenditure) / forecast cumulative expenditure]

Adjusted output (OMD) Score = unadjusted actual output score x multiplier

The value of constant 'c' = 1

The value of the scaling factor 'b' = 1

Example:

Actual expenditure £650 million

Forecast expenditure £615 million

Expenditure buffer = ±£20 million

Expenditure Multiplier = 1 + log [1- 1 x ((650 – 20 – 615) / 615)] = 0.959

Adjusted output (OMD) Score = 144.18 x 0.959 = 138.32

Note – the level of adjustment to the OMD score is capped such that the adjustment does not exceed ±10%. In addition, a rule is applied so that the actual score cannot be less than the score from the preceding quarter.

Rule 2: *if the expenditure multiplier < 0.9 then apply a value of 0.9
if the expenditure multiplier > 1.1 then apply a value of 1.1*

Rule 3: *AND if the actual adjusted OMD score is < previous quarters unadjusted OMD score then apply the unadjusted OMD score from the previous quarter*

The final OMD score is technically an 'adjusted output score'. The example above shows a moderated actual score of 138.32 which if compared with the forecast score for the same quarter (143.39) suggests that investment is "behind target" by -3.5%⁸.

⁷ In an under-spend scenario the buffer is added to actual cumulative expenditure and vice versa.

⁸ $100 - \{(Adjusted\ actual\ score / forecast\ score) \times 100\}$