



National Audit Office

**MEASURING UP**

HOW GOOD ARE THE GOVERNMENT'S  
DATA SYSTEMS FOR MONITORING PERFORMANCE  
AGAINST PUBLIC SERVICE AGREEMENTS?

**JUNE 2010**

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**Comprehensive Spending Review 2007 covering the period 2008-2011**

**Review of the data systems for Public Service  
Agreement 28 led by the Department of  
Environment, Food and Rural Affairs:**

*‘Secure a healthy environment for today and  
the future’*

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The National Audit Office scrutinises public spending on behalf of Parliament. The Comptroller and Auditor General, Amyas Morse, is an Officer of the House of Commons. He is the head of the National Audit Office which employs some 900 staff. He and the National Audit Office are totally independent of Government. He certifies the accounts of all Government departments and a wide range of other public sector bodies; and he has statutory authority to report to Parliament on the economy, efficiency and effectiveness with which departments and other bodies have used their resources. Our work leads to savings and other efficiency gains worth many millions of pounds; £890 million in 2009-10.

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# Summary

## Introduction

1. This report summarises the results of our follow-up examination of the data systems used by the Department for Environment, Food and Rural Affairs (Defra) to monitor and report on progress against its 2008-2011 Public Service Agreements.

## Public Service Agreements

2. Public Service Agreements (PSAs) are at the centre of Government's performance measurement system. They are usually three year agreements, set during the spending review process and negotiated between Departments and the Treasury. They set the objectives for the priority areas of Government's work.
3. PSA 28, 'Secure a healthy natural environment for today and the future' is led by Defra, with data provided by Natural England, the Environment Agency and a range of other sources. Each PSA has a Senior Responsible Officer who is responsible for maintaining a sound system of control across Departmental boundaries that supports the achievement of the PSA. The underlying data systems are an important element in this framework of control.
4. Defra used to be responsible for PSA 27. However, they have now passed this responsibility to the Department for Energy and Climate Change (DECC). Defra now provide data to DECC to ensure that this PSA is appropriately reported.

## The purpose and scope of this review

5. The Government invited the Comptroller and Auditor General to validate the data systems used by Defra to monitor and report its performance. During 2008, the National Audit Office (NAO) carried out an examination of the data systems for Defra's PSAs (then PSA 27 and PSA 28). This involved for each individual data system a detailed review of the processes and controls governing:
  - The match between the indicators selected to measure performance and the PSAs. The indicators should address all key elements of performance referred to in the PSAs;
  - The match between indicators and their data systems. The data system

should produce data that allows Defra to accurately measure the relevant element of performance;

- The selection, collection, processing and analysis of data. Control procedures should mitigate all known significant risks to data reliability. In addition, system processes and controls should be adequately documented to support consistent application over time; and
- The reporting of results. Outturn data should be presented fairly for all key aspects of performance referred to in the target. Any significant limitations should be disclosed and the implications for interpreting progress explained.

6. Following the findings from the validation process each of the data systems underpinning a PSA indicator were graded, as follows: (see Figure 1).

**Figure 1: Key to traffic light ratings**

<b>Rating</b>	<b>Meaning ...</b>
<b>Green Fit for purpose</b>	The data system is fit for the purpose of measuring and reporting performance against the indicator.
<b>Green Disclosure</b>	The data system is appropriate for the indicator and Defra has explained fully the implications of limitations that cannot be cost-effectively controlled.
<b>Amber Systems</b>	Broadly appropriate, but needs strengthening to ensure that remaining risks are adequately controlled.
<b>Amber Disclosure</b>	Broadly appropriate, but includes limitations that cannot be cost-effectively controlled; Defra should explain the implications of these.
<b>Red Systems</b>	The data system does not permit reliable measurement and reporting of performance against the indicator.
<b>Red Not Established</b>	Defra has not yet put in place a system to measure performance against the indicator.

7. The ratings are based on the extent to which Defra has:
  - i) put in place and operated internal controls over the data systems that are effective and proportionate to the risks involved; and
  - ii) explained clearly any limitations in the quality of its data systems to Parliament and the public.
8. The findings from 2008 validation exercise were reported to Defra in early 2009.

#### **The purpose and scope of the 2009 validation review**

9. Our follow-up review which was undertaken between October and December 2009 focused on:
  - Reviewing and assessing the implications of any significant changes to the data system underpinning each PSA indicator since 2008. It was agreed with Defra the review would focus on following up those indicators where Defra believed improvements had been made to the system;
  - Following up the findings from our 2008 validation exercise (which were presented in December 2008 although not formally cleared until September 2009) and establishing if Defra had actioned the recommendations made following our review; and
10. Section 1 of this report looks at the wider control environment which Defra has put in place to support its measurement and reporting of performance against PSA indicators. Section 2 summarises the results of our follow-up review on an indicator by indicator basis. Section 3 includes a brief description of the findings and conclusions for those data systems which have undergone significant change. Our assessment does not provide a conclusion on the accuracy of the outturn figures included in Defra's public performance statements. This is because the existence of sound data systems reduces, but does not eliminate, the possibility of error in reported data.

## Summary of results

11. Figure 2 summarises our assessment of Defra's PSA data systems. Our key findings are set out in paragraphs 12 to 16.

**Figure 2: Summary of assessments for PSA data systems**

	PSA 28	
Number of data systems	2008 Rating	2009 Rating
Rating		
Green Fit for Purpose	1	1
Green Disclosure	-	-
Amber Systems	4	4
Amber Disclosure	-	-
Red Systems	-	-
Red Not established	-	-
<b>TOTAL</b>	<b>5</b>	<b>5</b>

### **Summary of findings 2009**

- Defra has acted to improve assurance of third party systems. In a number of cases this still needs to be embedded. Defra are aware of the need to get this more fully embedded and they should ensure that these control arrangements work effectively.
- Defra has not yet produced detailed written guidance on processes for some of its PSA indicators, explaining how each is calculated and, for example, how outliers/missing values are addressed.



## **Section 1 – Wider control environment**

12. Our review in 2008 concluded that Defra's governance arrangements in respect of its PSAs were generally satisfactory but noted a number of improvements which could be made. During this review we considered whether Defra has implemented the recommendations. The prior year review assessed PSA 27 and PSA 28 indicators. In the current year the responsibility for performance of PSA 27 has passed to DECC and this has been considered under a separate review.

### **Internal Governance Arrangements**

13. Previously we reported that for all indicators for PSA 28, Defra relied upon third parties to provide the data to enable it to calculate the indicators. We recommended that Defra needed to demonstrate appropriate checks over the quality of the data it was using and suggested that where they did not already exist, agree Service Level Agreements with third parties clearly setting out Defra's data quality assurance requirements. We noted during the follow up review that Defra have acted upon our recommendations and have adapted a revised approach to data assurance and have asked third party data providers to sign a data quality assurance statement for most indicators. We have found that this new approach is still being embedded and its use is not consistent or fully in place throughout Defra for all of its PSA data providers. We are aware Defra are working towards having this arrangement in place for all of its data providers. Defra should ensure that all data quality officers obtain a data quality assurance statement from their data providers and affirm that their providers' data quality controls are operating effectively.
14. From our current work we also noted that Defra has not yet produced detailed written procedure notes for its PSA, explaining how each indicator is to be calculated and how any outliers or missing data are to be addressed. However, we noted that many more of the indicators now have documented formal Measurement Annexes or equivalent in place which underpins which data and sources are used to calculate the indicators. While these issues do not impact the validity of the data systems or streams, it does make it difficult for Defra to ensure the comparability of data over time, particularly if responsibility for the calculation of performance

against a given indicator is passed to a different member of staff.

15. It was noted during our review, that the 2009 APR has significantly less detailed explanation about the indicators compared to the previous years APR. In addition, graphs and numbers to support the indicators have been excluded in a number of instances. Therefore the narrative provided for readers for some indicators is minimal and it is difficult to understand how Defra have reached their conclusions as to whether the indicator has improved or not. It is recommended that this should be an area of focus next year in that text should be expanded to allow readers to fully understand how indicators have been compiled, key limitations with data systems and a thorough explanation of the data sources. We recognise that the Treasury guidance recommends as the norm a shorter narrative for each indicator but does not rule out additional explanations where deemed useful by the reporting body.
16. As part of this review we did not consider the suitability of the indicator set as this was undertaken in the previous year's review.

## Section 2 – Results of the follow-up review

### PSA 28 - Secure a healthy natural environment for today and the future

17. All indicators under PSA 28 have previously been reviewed in 2008 and therefore we have carried out a follow up review for these indicators in the current year.

No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
28.1	Water Quality as measured by parameters assessed by Environment Agency river water quality monitoring programmes	Amber Systems	Amber Systems	<p>Defra has implemented the majority of our prior year recommendations. We recommended that Defra should seek data quality assurances from the Environment Agency (EA), assess the EA's processes and controls, retain evidence to support reasonableness checks carried out on the data and provide a cross-reference to other publicly available information in reporting.</p> <p>Since our prior year review the department has obtained written assurances from the EA and a pack covering all aspects of the data collection process including design, methodology, statistical validity and measures of uncertainty. Defra has confirmed the sampling methods are statistically robust and has documented this. Defra has also retained evidence of reasonableness checks. Defra has provided cross reference to the EA's website in reporting to enable the reader to obtain further information.</p> <p>Defra has not implemented a further 2008 recommendation to describe data quality in reporting.</p>

No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
				<p>Furthermore, an additional weakness has been identified in the current year reporting in that, it is not clear that the reported data covers England only, and the reasons for not reporting data on river water quality in Wales, Scotland and Northern Ireland are not disclosed. This weakness has arisen since last year as the 2008 APR included a graph which indicated that the data represented England only. We have therefore concluded that the system should remain Amber as reporting is ambiguous and limitations of the data system are not described.</p>
28.2	Biodiversity as indicated by changes in wild breeding bird populations in England, as a proxy for the health of wider biodiversity	Green Fit for purpose	Green Fit for Purpose	<p>There has been no change in the indicator's system for collecting, analysing and reporting data; hence the overall grading has not changed since the full review undertaken in December 2008.</p> <p>The data for the indicator is provided by the British Trust for Ornithology, who are considered experts in their area and reliance is placed on the data they provide. In the full review we recommended Defra update the technical annex with a more detailed explanation of BTO data analysis methodologies. This has not been completed; however a provisional technical document is in place.</p> <p>We believe that this recommendation remains valid and will if implemented help to further improve the controls over the data system. However, we have concluded that the rating given to this indicator in 2008 is still appropriate, as the data system has not changed since 2008.</p>

No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
28.3	Air Quality – meeting the Air Quality Strategy objectives for eight air pollutants as illustrated by trends in measurements in two of the more important pollutants which affect public health: particles and nitrogen dioxide	Amber Systems	Amber Systems	<p>Defra has resolved some of the issues documented in the prior year review. However, some issues remain with the data system. Recommendations were raised in the prior year review and actioned by Defra are as follows:</p> <ul style="list-style-type: none"> <li>Defra has implemented a risk register to identify key risks associated with the external contractors IT systems, processes and to monitor risks associated with quality control and assurance.</li> <li>Defra has also attained from the external contractor a certificate of accreditation which shows that the system follows the environmental and quality management system standards ISO 9001 &amp; 14001.</li> <li>Defra and the external contractor have documented the processes in place including how each site is selected for data collection and the quality assurance and quality control procedures in place.</li> <li>Defra have drafted a Measurement Annex for this Indicator and are awaiting further guidance from Treasury before it can be finalised.</li> </ul> <p>One recommendation per the prior year has not been actioned as detailed below:</p> <ul style="list-style-type: none"> <li>The APR contains insufficient detail on how the data is compiled, its source and the limitations in the system, which are critical to ensure that the reader can interpret the results correctly.</li> </ul> <p>In addition this year it was noted that the indicator only covers</p>

No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
				<p>England. However; the APR refers to the UK and does not make it clear that performance on this indicator is for England only.</p> <p>We believe that the prior year recommendation is valid and will if implemented help to further improve the controls over the data system. We have concluded that the rating given to this indicator in 2008 is still appropriate, as the reporting is ambiguous and the recommendation remains outstanding.</p>
28.4	Marine Health – Clean, healthy, safe, productive and biologically diverse oceans and seas as indicated by proxy measurements of fish stocks, sea pollution and plankton status	Amber Systems	Amber Systems	<p>This is measured using three data systems dealing respectively with – (i) Riverine and direct inputs of metals, (ii) Fish stocks, and (iii) Plankton status.</p> <p><b>(i) <u>Riverine and direct inputs of metals</u></b></p> <p>There are no major changes with the data system and it is consistent with the prior year.</p> <p>In 2008 we recommended that Defra obtain written data quality assurances from its data providers. Defra has obtained a data quality assurance statement from the main data provider for this indicator, the Environment Agency (EA). A reporting protocol has also been agreed with the EA, however this has not yet been embedded as the EA only signed up to the new arrangements in December 2009. Defra has not obtained statements from the other two data providers for this indicator, SEPA and DARDNI. Defra has made some improvements to reporting since our last review. We recommended that the results of the indicator should be explained more clearly, particularly graphical representations, and that the data quality arrangements should be described. We also recommended that reporting should refer to other publicly available documents to provide the reader with</p>

No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
				<p>further information. In the 2009 APR Defra has disclosed the data source and quality arrangements, and provided across-reference to the corresponding PSA measurement annex. However, Defra has removed the graph, thus the explanation of results in the 2009 APR is less clear.</p> <p>We believe that these recommendations remain valid and will if implemented help to further improve the controls over the data system. However, we have concluded that the rating given to this indicator in 2008 is still appropriate, as the data System has not changed significantly since 2008 and recommendations remain outstanding.</p> <p>(ii) <b><u>Fish Stocks</u></b></p> <p>In 2008 we recommended that Defra obtain written data quality assurances from its data provider and review the data provider's data collection procedures to ensure controls are operating effectively. Defra has obtained a data quality assurance statement from the data provider CEFAS. The quality assurance statement states that results will be quality checked by statistics and fisheries policy advisers in Defra before being reported, however as this protocol was only implemented in November 2009 operation of this control could not be evidenced and is not fully embedded.</p> <p>Defra has made some improvements to reporting since our last review. We recommended that the results of the indicator should be explained more clearly, particularly graphical representations, and that the data quality arrangements should be described. We also recommended that reporting should refer to other publicly available documents to provide</p>

No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
				<p>the reader with further information. In the 2009 APR Defra has disclosed the data source and quality arrangements, and provided a cross-reference to the corresponding PSA measurement annex. However, Defra has removed the graph, thus the explanation of results in the 2009 APR is less clear. Also, a cross-reference to the CEFAS website would provide the reader with more detailed data and further information on CEFAS which is not provided in the measurement annex.</p> <p>We believe that the outstanding recommendations from the prior year remain valid and will if implemented help to further improve the controls over the data system. We have concluded that the rating given to this indicator in 2008 is still appropriate.</p> <p><b>(iii) <u>Plankton status</u></b></p> <p>There are no major changes with the data system being fairly consistent with prior year.</p> <p>In 2008 we recommended that Defra obtain written data quality assurances from its data provider and review the data provider's data collection procedures to ensure controls are operating effectively. Defra has obtained a data quality assurance statement from the data provider SAHFOS. The quality assurance statement includes a protocol for reviewing SAHFOS's data collection methodology and results in review meetings twice annually. This was only agreed in December 2009 so is not yet embedded.</p>



No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
				<p>Defra has made some improvements to reporting since our last review. We recommended that the results of the indicator should be explained more clearly, particularly graphical presentations, and that the data quality arrangements should be described. We also recommended that reporting should refer to other publicly available documents to provide the reader with further information. In the 2009 APR Defra has disclosed the data source and quality arrangements, and provided a cross-reference to the corresponding PSA measurement annex. However, Defra has removed the graph, thus the explanation of results in the 2009 APR is less clear.</p> <p>We believe that the outstanding recommendations from the prior year remain valid and will if implemented help to further improve the controls over the data system. We have concluded that the rating given to this indicator in 2008 is still appropriate.</p>
28.5	Land Management – the contribution of agricultural land management to the natural environment as measured by the positive and negative impacts of farming	Amber Systems	Amber Systems	<p>No improvements have been made to the data system since the December 2008 full review.</p> <p>We recommended that Defra should document and formalize its processes and procedures in order to ensure data is collected consistently and robustly, and also formally undertake and document a risk assessment of the data system. Neither of these recommendations have been implemented.</p> <p>Current year reporting was assessed as part of our follow-up review. No cross-reference has been made to the PSA measurement annex and the quality of the data has not been</p>

No	Indicator	Rating at full review	Rating at follow-up review	Reasons for change and additional comments
				<p>described.</p> <p>We believe that these recommendations remain valid and will if implemented help to further improve the controls over the data system. However, we have concluded that the rating given to this indicator in 2008 is still appropriate, as the data system has not changed since 2008.</p>

### **Section 3 – Findings and conclusions for individual data systems – follow up review**

18. The results of the NAO's examination of the data systems used to measure performance against Defra's PSA 28 found that none had undergone significant change since the time of our full review in 2008.