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Dear Matt and Bill,

Renewal Volumes - E&P and Telecoms

## 1 Introduction

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In response to mandate AO/025: Audit of Renewal Volumes Data, earlier this year we carried out a review into the reliability and accuracy of the renewal volumes reported to the ORR. This covered Track, Signalling, Telecoms, E&P and Civils assets and reviewed volumes reported in the 2011/12 Period 10 Finance Pack which were the latest available at the time of our review.

We presented our findings in a report ('AO/025: Audit of Renewal Volumes Data') dated the 3<sup>rd</sup> July 2012. This showed that volumes for Track, Signalling and Civils were reported accurately, all of which were assessed with a Confidence grade of B1 (see Appendix A at the end of this letter for a definition of the grades).

However, errors were identified for E&P and Telecoms which were given grades of C4 and C5 respectively. It was agreed that we should review these two assets again as reported in the Period 13 Finance Pack since these figures are used in the assessment of Network Rail's efficiency for 2011/12. This letter presents our findings from these follow-on reviews.

## 2 Approach

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We met each of the data specialists responsible for reporting the E&P and Telecoms renewal volumes to review:

- Progress made on the recommendations made in our report;
- Any changes to processes, though we did not review these in detail;
- Review each of the reported projects, both those reviewed before and any new ones since Period 10, checking for consistency with volumes reported in the P3e project management database; and

- For any discrepancies identified, seek additional evidence to confirm the correct volume.

As before, both of the data specialists were very helpful and open with us.

## 3 E&P

### 3.1 Progress against Recommendations

The table below summarises progress made against each of the recommendations made in our earlier review.

No.	Recommendation	Who	When	Progress
2012REN07	E&P – fully implement new procedures	Peter Krawczyk	October 2012	NR plan to allocate a person dedicated to create new procedures soon so that the recommendation can be met in the required timescale. So far has been held up by a number of large organisational changes. Status: <b>Ongoing</b>
2012REN08	E&P – clarify when to report volumes (staged or final commission)	Peter Krawczyk	July 2012	Included in the current procedures, so closed. Status: <b>Closed</b>
2012REN09	E&P – update full year forecasts of renewal volumes every period	Peter Krawczyk	May 2012	This practice was started at the beginning of the 2012/13 financial year. Status: <b>Closed</b>
2012REN10	E&P – improve reporting of volumes delivered by Maintenance	Peter Krawczyk	October 2012	As per 2012REN07. Status: <b>Ongoing</b>
2012REN11	E&P – seriously consider imposing central reporting on LNW route	Peter Krawczyk	July 2012	As per 2012REN07. Status: <b>Ongoing</b>
2012REN12	E&P – review the reporting of pilot DC HV cables	Peter Krawczyk	July 2012	As per 2012REN07. Status: <b>Ongoing</b>

### 3.2 Findings

With the re-organisation of NR still underway, it is not clear to the data specialist who will be responsible for reporting volumes in the future, whether it will be in the centre or in the routes. Updating the processes has therefore been put on hold until there is greater clarity. As an observation, we would point out that the transition will need to be managed carefully to maintain the recent improvement in the reliability and accuracy of reporting.

We reviewed all of the projects reported in the Period 13 Finance Pack. This raised some questions on certain projects which the NR reporting team subsequently investigated and provided us with supplementary evidence. These projects are listed in Appendix B along with the results of the investigations.

Table 1 below compares the volumes reported for each E&P asset in the Finance Pack compared with what should have been reported calculated from the individual project details.

**Table 1: Comparison of Period 13 Finance Pack with individual project details**

Asset Type	2011/12 Period 13 Finance Pack	Volume from individual projects	Error in Finance Pack <sup>1</sup>
<u>AC Systems</u>			
OLE Campaign Changes (wire runs)	1,126	1,128.26	-0.2%
OLE Re-wiring (wire runs)	49	44.1	+10%
Conductor Rail (km)	17	16.991	0%
<u>AC Distribution</u>			
AC HV Switchgear (Circuit Breakers)	32	32	0%
AC GSP transformer (No.)	-	-	-
AC GSP cable (Km)	-	-	-
AC Booster Transformers (No.)	2	2	0%
<u>DC Systems</u>			
DC HV Switchgear (No.)	14	14	0%
DC HV Cables (km)	20	20	0%
LV Switchgear (No.)	13	13	0%
LV cabling (km)	7	7	0%
DC Transformers rectifiers (No)	32	32	0%
<u>Plant &amp; machinery</u>			
Points Heaters (No.)	531	529	0.4%

<sup>1</sup> -ve if under-reported

### 3.3 Confidence Grade

Given the procedures have not yet been updated, we judge that a C grade remains valid for reliability. The accuracy averaged over the 11 asset types with reportable volumes is within 1% overall which is a 1 score. We therefore ascribe a grade of C1 to the volumes reported in the Period 13 Finance Pack, which is an improvement on the C4 score awarded in our earlier report.

### 3.4 Conclusions

All the errors that we identified in our earlier review of the Period 10 figures have been corrected for the Finance Pack. Only three projects were found to have errors this time. This is reflected in the improved grade. We did, though, find more errors in the figures reported in P3e, some of which are still to be corrected.

To make further improvements, the focus should be on improving the procedures and it will be important that reporting responsibilities are made clear in the re-organisation within NR.

## 4 Telecoms

### 4.1 Progress against Recommendations

The table summarises progress against the recommendations made in our earlier review:

No.	Recommendation	Who	When	
2012REN03	Telecoms - Update and issue the procedure for reporting renewal volumes.	Richard Lawes	July 2012	Still awaiting issue following appointments to key posts Status: <b>Ongoing</b>
2012REN04	Telecoms - Appoint a new reporting specialist and ensure deputies are in place	Richard Lawes	July 2012	No appointment made yet. No suitable candidate has been found to date. Post now located in Milton Keynes. Status; <b>Ongoing</b>
2012REN05	Telecoms – Use P3e as the source information for renewal volumes delivered	Richard Lawes	July 2012	Routine checks are now required by Route teams to confirm reported volumes against P3e and to investigate any discrepancies. Not yet in the formal procedures. Status: <b>Ongoing</b>

### 4.2 Findings

The position on process remains broadly unchanged since the initial audit. The new procedures are still in draft form and have not been reissued and a reporting specialist has still to be appointed. Efforts to fill the post have so far been unsuccessful and interviews were about to take place at the time of our visit following the relocation of the team to Milton Keynes. Other organisational changes in telecoms since the audit in period 10 has been the appoint of the permanent Head of Telecom [Asset, Design & Delivery Management] who started in Jul-12 and replaces an interim arrangement with a manager covering various roles.

A full check of all the jobs reported as part of the finance pack was carried out at the meeting reviewing each job individually to check reported volumes against those recorded in P3e. A number of queries were raised and NR carried out subsequent checks to investigate where there were differences. A summary of these checks is in the right hand column.

**Table 2: Checks of Telecoms projects**

Project	Renewals in Telecoms P13 Finance Pack	Volumes in P3e	Difference	Comments on Differences after Additional NR checks
112230	105 CIS 228 PA	105 228	0 0	
106671	36 CIS	37	-1	NR confirmed that they under reported by 1 volume
106695	206 CIS 634 PA 148 CCTV	206 634 148	0 0 0	
MLNE0075	2 CIS	n/a	-	
100813	39 CIS 213 PA 81 CCTV	39 213 81	0 0 0	

Project	Renewals in Telecoms P13 Finance Pack	Volumes in P3e	Difference	Comments on Differences after Additional NR checks
	9 clocks	9	0	
106689	0 PA	0	0	
112239	0 PA	0	0	
106615	393 PA	393	0	
112217	0 PA	0	0	
118834	77 PA	77	0	
106640	900 PA	927	-27	The job was split over 2 years. Following checks it was confirmed the actual volume delivered in 11/12 was 907 so there was an under reporting of 7 volumes
118836	0 CCTV 0 DOO	0 0	0 0	
119461	0 Clocks	2	-2	Confirmed that no volumes were delivered in 11/12. The 2 volumes in P3e were actually delivered in P2 of 12/13
112245	0 Large Conc. 17 Small Conc.	0 14	0 +3	Confirmed that 17 were delivered and P3e updated following checks
118837	1 Large Conc.	0	0	Delivered by resignalling project so not in P3e
DDA13	0 Large Conc.	0	0	
103875	0 Large Conc.	0	0	
106656	0 Large Conc.	0	0	
112254	0 Large Conc.	0	0	
LSE0052	0 Large Conc.	0	0	
112231	7 Small Conc. 4 PETS	7 4	0 0	
118844	0 Small Conc.	0	0	
112257	0 Small Conc	0	0	
106683	83 DOO	83	0	
118836	0 DOO	0	0	
112256	34 DOO	34	0	
106664	8 PETS	8	0	
112250	14 CIS 2 Clocks	14 2	0 0	
LSC0114	1 Large Conc. 1 Voice Recorder	0 0	0 0	Delivered by enhancements so not in P3e
122555	47 CIS	0		
123209	0 Small Conc.	1	-1	Confirmed that no volumes delivered in 11/12, actually delivered in P2 12/13

Following the clarification the overall position is that all but 2 jobs were reported correctly. The errors mean that the following were under reported;

- 1 CIS unit out of 449 reported in P13
- 7 PA units out of 2,445 reported in p13

All other volumes were therefore reported correctly.

### 4.3 Confidence Grade

Given the procedures have not yet been updated we judge that a C grade remains valid for reliability. The accuracy averaged over the 9 asset types with reportable volumes is well within 1% which is a 1 score. We therefore ascribe a grade of C1 to the volumes reported in the Period 13 Finance Pack, which is a substantial improvement on the C5 score awarded in our earlier report.

### 4.4 Conclusions

The accuracy of reporting has improved considerably on the position at P10 with only minor discrepancies found. However, NR do need to reissue the procedures and appoint a reporting specialist quickly to avoid similar problems occurring again. In particular efforts should be made to enforce the routine P3e checks against reported volumes to ensure errors are picked up earlier.

## 5 Overall Conclusions

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The accuracy of both the E&P and Telecoms reported volumes has improved from the previous audit, with most errors having been corrected. The reliability of the processes remains largely unchanged and efforts should be made to address these to reduce the risk of future errors.

Yours sincerely



Stefan Sanders  
Director

cc Jonathon Haskins, Network Rail  
Richard Lawes, Network Rail  
Peter Krawczyk, Network Rail  
Ian Hood, Arup

## Appendix A: Confidence Grades

### A1 Introduction

Each asset is awarded an alpha-numeric grade of the reliability and accuracy of its reported renewal volumes. The definition of the grading is described below.

### A2 System reliability grading system

System Reliability Band	Description
A	<p>Appropriate, auditable, properly documented, well-defined and written records, reporting arrangements, procedures, investigations and analysis shall be maintained, and consistently applied across Network Rail. Where appropriate the systems used to collect and analyse the data will be automated. The system is regularly reviewed and updated by Network Rail's senior management so that it remains fit for purpose. This includes identifying potential risks that could materially affect the reliability of the system or the accuracy of the data and identifying ways that these risks can be mitigated.</p> <p>The system that is used is recognised as representing best practice and is an effective method of data collation and analysis. If necessary, it also uses appropriate algorithms.</p> <p>The system is resourced by appropriate numbers of effective people who have been appropriately trained. Appropriate contingency plans will also be in place to ensure that if the system fails there is an alternative way of sourcing and processing data to produce appropriate outputs.</p> <p>Appropriate internal verification of the data and the data processing system is carried out and appropriate control systems and governance arrangements are in place.</p> <p>The outputs and any analysis produced by the system are subject to management analysis and challenge. This includes being able to adequately explain variances between expected and actual results, time-series data, targets etc.</p> <p>There may be some negligible shortcomings in the system that would only have a negligible effect on the reliability of the system.</p>
B	<p>As A, but with minor shortcomings in the system.</p> <p>The minor shortcomings would only have a minor effect on the reliability of the system.</p>
C	<p>As A, but with some significant shortcomings in the system.</p> <p>The significant shortcomings would have a significant effect on the reliability of the system.</p>
D	<p>As A, but with some highly significant shortcomings in the system.</p> <p>The highly significant shortcomings would have a highly significant effect on the reliability of the system.</p>

Notes:

1. System reliability is a measure of the overall reliability, quality, robustness and integrity of the system that produces the data.
2. Some examples of the potential shortcomings include old assessment, missing documentation, insufficient internal verification and undocumented reliance on third-party data.

## A3 Accuracy grading system

Accuracy Band	Description
1*	Data used to calculate the measure is accurate to within 0.1%
1	Data used to calculate the measure is accurate to within 1%
2	Data used to calculate the measure is accurate to within 5%
3	Data used to calculate the measure is accurate to within 10%
4	Data used to calculate the measure is accurate to within 25%
5	Data used to calculate the measure is accurate to within 50%
6	Data used to calculate the measure is inaccurate by more than 50%
X	Data accuracy cannot be measured

Notes:

1. Accuracy is a measure of the closeness of the data used in the system to the true values.
2. Accuracy is defined at the 95% confidence level - i.e. the true value of 95% of the data points will be in the accuracy bands defined above.

## A4 Benchmark grades

The ORR has set a benchmark grade for each asset which it believes should be achieved by Network Rail. The table below provides these benchmark grades for reporting the renewal volumes.

Measure	Benchmark grade
Signalling	A1
E&P	A1
Track	A1
Telecoms	A1
Civils	A1

## Appendix B: E&P Project Investigations

During our meeting with the data specialist, we identified a number of projects for more detailed checking. This Appendix presents the findings of these checks.

The table below compares figures reported in the 2011/12 Period 13 Finance Pack against what is recorded in P3e and the figures reported in the 2012 Annual Return. Reasons for any discrepancies are shown in the table along with any identified error.

Category	Project	Route	Reported in P13 Finance Pack	P3e at P13	2012 Annual Return	Comments	Error in P13 report <sup>1</sup>
OLE Campaign changes	103080	Anglia	60	56	60	MBR confirms that 60 is correct volume and that P3e is wrong.	0
OLE Campaign changes	106333	Scotland	377	379	377	MBR confirms 377 is correct volume; P3e to be corrected.	0
OLE Campaign changes	107851	LNE	571	527	572	44 units are incorrectly coded in P3e as 'insulators and Neutral sections' which are not reportable. They should, however, be re-coded as 'Neutral sections' and be reported.	0
OLE Campaign changes	119861	LNW N	0	46	0	The 46 volumes in P3e are for refurbishment and so are not reportable renewal volumes.	0
OLE Campaign changes	119865	LNW S	5.5	8	5.5	Route confirmed correct volume to report is 7.76.	-2.26
OLE Campaign changes	122673	LNW N	0.5	0	0.3	0.5 volumes is confirmed as correct	0
OLE Re-wires	101567	Anglia	31	23	31	MBR shows 31 is correct volume. P3e to be corrected.	0
OLE Re-wires	103628	EM	9	0	9	These were delivered by the Thameslink Programme. Only 4.1 volumes were delivered (discrepancy due to reporting in different unit of measure).	+4.9
Conductor Rail	121761	Sussex	14.091	0	14.091	Volumes delivered by Maintenance and so not in P3e. Confirmed as correct by the Delivery Unit.	0
DC HV Cables	103126	Wessex	10	14	10	A copy of the change log that was approved on the 12th March 2012 shows 10 is the correct renewal volumes, with extra 4 as enhancements.	0
DC HV Cables	105335	Wessex	1	0	1	Project report confirms 1 is the correct volume. P3e to be corrected.	0
LV Cabling	TBA067	MTCE Reactive works	7.485	7.485	7.485	Maintenance minor works - breakdown of jobs confirms a total of 7.485 volumes.	0
Transformer Rectifier	EEP04	LNW S	4	4	4	Completion certificates provided for 4 rectifiers.	0
Transformer	123083	Wessex	1	1	1	Documentation provided confirms 1 as reported volume.	0

Category	Project	Route	Reported in P13 Finance Pack	P3e at P13	2012 Annual Return	Comments	Error in P13 report <sup>1</sup>
Rectifier							
Points Heating	103083	Wessex	87	83	83	Project report confirms 87 as the correct volume.	0
Points Heating	103458	Anglia	85	47	85	MBR confirms 85 as the correct volume.	0
Points Heating	118620	LNW N	9	0	9	Only 7 volumes were delivered, since 2 were part of an S&C abandonment and so no longer required.	+2

<sup>1</sup> + means that the volume was over-reported (i.e. too high), - means the volume was under-reported (i.e. too low)