



Robust Details and Robust Details Ltd  
**3 Year Report**



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# Summary

Faber Maunsell undertook a review of the Robust Details system at the request of the Department for Communities and Local Government. The Robust Details system has been in operation for three years and it was a requirement when the system was established that the review should be undertaken at this time.

The aims and objectives of the review were set out by the Department for Communities and Local Government. These aims and objectives were developed by Faber Maunsell to produce a set of targets and criteria for the review.

The Robust Details system is operated by Robust Details Ltd (RDL), a not-for-profit company set up specifically for this purpose. The company operates from the NHBC offices in Milton Keynes and subcontracts certain parts of the administration of the system to Napier University (assessment of new Robust Details) and Philip Dunbavin Acoustics (the Robust Details Inspectorate).

Faber Maunsell met with Communities and Local Government and RDL to establish the nature of the evidence that was required to complete the review and a process by which it would be undertaken. This process involved an initial submission of documentation by RDL followed by a review visit in which the evidence was investigated in detail. An additional review visit was undertaken at the Robust Details Inspectorate (RDI) and direct contact was made with Robust Details inspectors and Robust Details users.

Robust Details Ltd prepared a report stating its position relative to the criteria established by Faber Maunsell and Communities and Local Government. This document formed the basis for the review. In total, 139 further documents were reviewed in detail and many more documents and database entries were reviewed on computer.

The review process took the form of an examination of procedures, the selection of examples at random and a thorough investigation of all files and paperwork associated with each example. Particular attention was given to the Key Performance Indicators identified by Communities and Local Government.

The review was completed without any significant setbacks. Neither RDL nor RDI denied access to any requested information and all staff were extremely helpful at all times.

The general conclusion of the review was that the Robust Details system is meeting its objective of providing a practical alternative to pre-completion testing for demonstration of compliance with Part E of the Building Regulations. The generally positive industry perception and high market share clearly demonstrate that the building industry has embraced the Robust Details principle. The high performance demonstrated by the

Robust Details performance monitoring process shows that the system is able to deliver satisfactory acoustic results.

There were a number of points which arose during the assessment that resulted in recommendations for potential improvements or changes to the system. These related to such issues as document control, the test numbering system, the information systems used by individual inspectors, the commercial protection afforded to sponsors of proprietary Robust Details and the method used to select sites for testing.

The performance of the Robust Details system against the identified criteria is summarised in the following table.

|           | Indicator   | Target                    | Findings  |
|-----------|---|---------------------------|---|
| <b>1.</b> | <b>Key Performance Indicators</b>                               |                           |   |
| 1A        | <i>RD pass/fail rate</i>  | 95% pass rate             | Target achieved   |
| 1B        | <i>Uptake and market share</i>                                  | 25% of dwellings          | Target achieved   |
| <b>2.</b> | <b>Quality system</b>   |                           |   |
| 2A        | <i>Reporting of 'Red' inspections/tests to RDL and builder</i>  | 90% adherence to protocol | These letters were previously issued directly by the RDI so no monitoring was undertaken by RDL. As RDL has now started issuing these letters on behalf of the RDI at exactly the same time as those to the building control, it is anticipated that records will be kept from now on and performance will be the same as that achieved for Indicator 2B. |
| 2B        | <i>Reporting of 'Red' inspections/tests to building control</i> | 90% adherence to protocol | The claimed performance was verified. The performance is below the target and there are plans to further improve the response times. This will require faster provision of data from the inspectors and revised procedures.   |

|                           | <b>Indicator</b>  | <b>Target</b>   | <b>Findings</b>   |
|---------------------------|---|---|---|
| 2C                        | <i>Protocols for the withdrawal of underperforming RDs</i>                                  | Establishment of underperformance criteria. Appropriate suspension or withdrawal of all underperforming RDs | Target achieved.  |
| 2D                        | <i>Interventions in response to RD underperformance resulting from 'workmanship' issues</i> | Establishment of workmanship assessment criteria. Appropriate actions taken in timely manner for all issues | Target achieved.  |
| 2E                        | <i>Protocols</i>  | Protocols to be comprehensive, practical and well managed   | Target substantially achieved but room for improvement in document control of procedures.<br>No formal feedback/consultation process.                         |
| <b>3. General aspects</b> |   |   |   |
| 3A                        | <i>Financial issues</i>   | Financial viability to be demonstrated along with plans for surpluses                                       | Target achieved.  |
| 3B                        | <i>Industry perception</i>  | Positive perception throughout industry   | Target achieved.  |
| 3C                        | <i>Occupant satisfaction</i>  | Biennial survey   | Target achieved.<br>Survey completed but of more use as an assessment of the impact of the Building Regulations as a whole than Robust Details in particular. |

# Chapter 1

## Introduction

- 1.1 The Department for Communities and Local Government requested Faber Maunsell (FM) to undertake a three-year review of Robust Details (RD) and Robust Details Ltd (RDL).
- 1.2 A three-year review was a requirement of the agreement under which the RD system was originally set up. That agreement established the principle that RD could be used as an alternative to accredited pre-completion testing (PCT) to demonstrate compliance with the 2003 revision of *'Building Regulations Approved Document Part E – Resistance to the passage of sound'*.
- 1.3 RDL is a not-for-profit company set up in 2004 to operate the RD system. It was the third anniversary of the establishment of RDL that prompted the need for the three-year review.
- 1.4 RDL is responsible for managing all aspects of the RD system:
  - assessing and approving new Robust Details (RD) from Candidate Robust Details (CRD) proposed by interested parties
  - producing the Robust Details Handbook listing the technical details of the approved RDs
  - registering building plots for inclusion in the scheme and providing certificates of registration
  - providing technical back-up to subscribers
  - monitoring the installation and performance of the RDs at the registered sites through the Robust Details Inspectorate (RDI)
  - using the monitoring data to ensure that all approved RDs achieve satisfactory performance in the field and that underperforming RDs are either improved or withdrawn.
- 1.5 RDL currently operates from the premises of the NHBC, which also provides administration and technical staff on a contract basis.

- 1.6 Two other organisations provide support to RDL on a contract basis. Napier University manages the process for assessment and approval of new CRD. Philip Dunbavin Acoustics manages the RDI. The nationwide network of inspectors comprises independent consultants paid on a test-by-test basis.
- 1.7 Faber Maunsell was selected to undertake the review as an independent body with wide experience of acoustics in the building industry but with no direct commercial involvement with either the RD system or accredited pre-completion testing.
- 1.8 Communities and Local Government established the basic requirements for the review<sup>(i)</sup> based on the aims and objectives of the RD system. Following discussion with Communities and Local Government and FM, RDL produced a three-year review document summarising the performance of the system to date<sup>(iv)</sup>. This was submitted along with accompanying information (see Appendix 1 part B).
- 1.9 FM devised and developed a review process to assess the RDL documents against the Communities and Local Government aims and objectives. This process involved detailed interviews with staff of RDL and the head of RDI, brief discussions with RD users and examination of the evidence available to support the conclusions of the RDL review document.
- 1.10 This report was written to be read in conjunction with the RDL review<sup>(iv)</sup>. As a result, this report does not describe in detail the operation of the RD system or the structure of RDL unless it is necessary to do so to explain a relevant review issue. The report describes the review programme in detail and lists all of the submitted and examined documents. These documents are listed in Appendix 1 and referenced in the text, where necessary, with superscript lower case roman numerals. The analysis of performance against the Communities and Local Government aims and objectives is given in tabular form for ease of reference and to avoid unnecessary text.
- 1.11 In addition, general observations and recommendations have been included. Some of these refer to the operation of the RD and RDL systems. RDL is in the process of obtaining UKAS accreditation for its performance monitoring programme. It is expected that this process will involve a much more detailed examination of the company's systems than this three-year review.

# Chapter 2

## Criteria

- 2.1 The basic purpose of the review was to assess whether the RD system in general, and RDL in particular, are fulfilling their objective of providing a viable and robust alternative to pre-completion testing (PCT) to demonstrate that residential properties are constructed in compliance with Part E of the Building Regulations.
- 2.2 The outline aims and objectives for the review were set out in tabular form in the Communities and Local Government document '*Specification of Requirements for a Framework Research Proposal, Three year review of the performance of Robust Details and Robust Details Ltd*' <sup>(i)</sup>, which was provided with the invitation to tender. The table is reproduced below.

| Indicator   | Target        | Commentary   |
|---|---------------|--|
| <b>1. Key Performance Indicators</b>                              |               |  |
| Performance and pass/fail rate statistics of all RD constructions | 95% pass rate | The purpose of this indicator is to establish the rate of non-compliance that would indicate that the RD scheme is not delivering the improvements that Government was seeking from the 2003 revision of Part E. The target stated in the ODPM consultation document was a maximum fail rate of 10% after 10 years operation of the new Part E. As RDL has got off to a good start, 5% (instead of 10%) is proposed as the 'warning light' figure for the RD scheme, noting that this is effective from 3 years, rather than 10. |

| Indicator   | Target | Commentary  |
|---|--------|---|
| Uptake of RDs (ie market share compared with testing)                         | 25%    | The purpose of this indicator is to establish a low-water mark below which the scheme is seen to provide little benefit to customers or government in terms of Regulation compliance. RDL has established a market share well in excess of the suggested minimum, but this could change over time. Within Building Regulations, there is no 'market share' requirement for Approved Inspectors or Competent Persons schemes, and it may be that the lower limit for RDL market share will indeed be determined by the 'market' – at a very low level of registrations (estimated to be 25%), RDL fees would have to be high to cover their running costs. This would, in turn, deter customers and, ultimately therefore, maintenance of the scheme would become untenable. |
| <b>2. Quality system</b>  |        |   |
| Actions to remedy observed deviations from RD specifications taken by RDL (1) | 90%    | All reported 'red' inspections and tests to be confirmed to the builder by the RDL Inspector within 5 working days of inspection with a full report to be forwarded to RDL Secretariat within 10 working days. RDL to confirm, in writing, the outcome of the test/inspection to the builder within 5 days of receipt of report.  |
| Actions to remedy observed deviations from RD specifications taken by RDL (2) | 90%    | All reported 'red' inspections and tests to be reported to the Building Control Body, in writing, by the RDL Secretariat within 10 working days of receipt of report.   |
| Actions to improve compliance with RD specifications taken by RDL (1)         |        | RDL has recently developed statistical criteria for the withdrawal/suspension of under-performing RDs and has amended RDL's key protocols. Adherence to these key protocols should ensure that informed decisions to monitor specific RDs can be made and inspection regimes determined accordingly. Decisions to withdraw RDs can be reliably made, defensible with reference to statistical criteria.   |

| Indicator  | Target      | Commentary  |
|--|-------------|---|
| <p>Actions to improve compliance with RD specifications taken by RDL (2)</p> | <p>When</p> | <p>Where ‘workmanship’ issues are identified as contributory to RD underperformance, and where performance is lower than expected but not sufficient to trigger withdrawal or suspension, RDL’s Assessment &amp; Approval Committee will discuss and agree interventions (such as amendments of RDs, training initiatives, publication of supplementary advice, etc.). Where such interventions are made, RDL will monitor the effect over a given time, agreed by the Assessment &amp; Approval Committee, and against given criteria. The net effects of these interventions should be to restore the performance to a level consistent with a fully compliant RD. Failure to achieve this will result in withdrawal/suspension in accordance with the protocols. Once UKAS accreditation has been achieved, the level of nonconformities raised by UKAS in terms of systems and procedures would also be reportable.</p> |
| <p>Adherence to protocols and development of protocols</p>                   |             | <p>It is difficult to attach a numerical target to this indicator, although it is reasonable that non-adherence to protocols should be a matter that would require corrective action by RDL. The open publication of protocols on the RDL website already facilitates comment and feedback from service users and third parties. A comment/feedback mechanism for users of the CRD service could be introduced, although it would be more difficult to routinely seek feedback about the inspection and testing protocols. A survey of customers (builders and suppliers) could include questions about adherence to (and development of) protocols – this could be carried out at the same frequency as the Customer Satisfaction Survey, see below, but in different years. Turn-round time for plot registrations by builders could also be included in a protocol and be monitored.</p>                                 |

| Indicator   | Target          | Commentary  |
|---|-----------------|---|
| <b>3. General aspects</b>   |                 |   |
| Financial stability and use of surplus income                             |                 | Being a private limited company, RDL's audited accounts are a matter of public record. Further information is included in each year's Annual Report. The Finance Committee sets an itemised annual budget for Board agreement that includes provisions for use of any surplus income. The company is non-profit distributing and any accrued surplus funds are retained within the business. Ultimately, the Board will determine how funds are deployed. |
| Industry perception of RDL (press comments, publicity, PR etc)            |                 | RDL monitors press coverage in AV terms and has a budget for marketing and PR activities. However, it would seem difficult to attach any measurable targets to this indicator.  |
| Subjective assessment of sound insulation by occupants of homes using RDs | Biennial survey | RDL has carried out a customer survey to establish satisfaction levels amongst new home occupiers. A commitment to survey and to monitor trends could be the 'target' here.   |

- 2.3 The aims and objectives indicators are divided into Key Performance Indicators (KPIs), targets related to the efficacy of the RDL quality system and more general issues to give an idea of the success of the company. Most of the aims and objectives are focused on the performance of RDL rather than the RD system as a whole.
- 2.4 The review programme was focused on assessing the operations of the system and company against these criteria. FM developed a strategy for the assessment of each of these aims and objectives and presented them in the proposal document. The proposed strategies were further developed following discussions with Communities and Local Government in the early stages of the project and the submission of the first package of information from RDL. These developments included determination of targets for those items for which a numerical performance target had not been given by CLG. These targets, along with the required information and review actions, are listed in the following table, which was the basis of an interim report prepared after the initial meeting with RDL <sup>(cxv)</sup>.

| Indicator                            |  | Form of Evidence and Assessment Method   |
|--------------------------------------|--|--|
| <b>1. Key Performance Indicators</b> |  |  |
| 1A                                   | <p><i>RD pass/fail rate</i><br/>Performance and pass/fail rate statistics of all RD constructions<br/>Target: 95% pass rate</p>  | <p><i>Initial submission:</i><br/>Evidence required is a statement of pass rate and fully backed-up support statistics.</p> <p><i>Review actions:</i><br/>Back-up data to be inspected in verifiable form at RDL and RDI (PDA) premises. Back-up data to include: full lists of results of all tests; data storage and calculation methodologies; evidence that data set is complete. This will involve an examination of records at random.</p>   |
| 1B                                   | <p><i>Uptake and market share</i><br/>Uptake of RDs (ie market share compared with testing)<br/>Target: 25% of dwellings</p>   | <p><i>Initial submission:</i><br/>Evidence required will be a statement of market share and fully backed-up support statistics.</p> <p><i>Review actions:</i><br/>Records of registrations to be inspected. Sources of market size information to be verified via external sources.</p>  |
| <b>2. Quality system</b>             |  |  |
| 2A                                   | <p><i>Reporting of 'Red' inspections/tests to RDL and builder</i><br/>Actions to remedy observed deviations from RD specifications taken by RDL (1)<br/>Target: 90% adherence to protocol</p>  | <p><i>Initial submission:</i><br/>Evidence required will be statement of response time statistics and back-up evidence including a list of all 'red' tests and inspections showing key dates.</p> <p><i>Review actions:</i><br/>Review protocols/procedures and walk through their implementation in practice. Examine records and verify calculations.</p>  |
| 2B                                   | <p><i>Reporting of 'Red' inspections/tests to building control</i><br/>Actions to remedy observed deviations from RD specifications taken by RDL (2)<br/>Target: 90% adherence to protocol</p> | <p><i>Initial submission:</i><br/>Evidence required will be a statement of response time statistics and back-up evidence including a list of all 'red' tests and inspections showing key dates.</p> <p><i>Review actions:</i><br/>Assessment method will involve an examination of the protocols and of records selected at random. Example files showing the paper trail from inspection to informing the building control body will be required, as will a clear statement of the relevant procedures.</p> |

| Indicator |  | Form of Evidence and Assessment Method  |
|-----------|--|---|
| 2C        | <p><i>Protocols for the withdrawal of underperforming RDs</i></p> <p>Actions to improve compliance with RD specifications taken by RDL (1)</p> <p>Target: Establishment of underperformance criteria. Appropriate suspension or withdrawal of all underperforming RDs</p>                                  | <p><i>Initial submission:</i></p> <p>Evidence required will be a full list of actions taken regarding the withdrawal/suspension of underperforming RDs and the benefits achieved as a result of the actions.</p> <p><i>Review actions:</i></p> <p>Assessment method to involve discussion of the relevant procedures and evidence to determine whether more needs to be done to ensure effective operation of the system.</p>   |
| 2D        | <p><i>Interventions in response to RD underperformance resulting from 'workmanship' issues</i></p> <p>Actions to improve compliance with RD specifications taken by RDL (2)</p> <p>Target: Establishment of workmanship assessment criteria. Appropriate actions taken in timely manner for all issues</p> | <p><i>Initial submission:</i></p> <p>Evidence required will be a full list of actions taken in response to 'workmanship' issues identified as significant to the underperformance of some RDs. The benefits achieved as a result of the actions were presented.</p> <p><i>Review actions:</i></p> <p>Assessment method to involve discussion of the relevant procedures and evidence to determine whether more needs to be done to ensure effective operation of the system.</p>  |
| 2E        | <p><i>Protocols</i></p> <p>Adherence to protocols and development of protocols</p> <p>Target: Protocols to be comprehensive, practical and well managed</p>  | <p><i>Initial submission:</i></p> <p>Evidence required will be details of current protocols and evidence of adherence to them including CRD submission, inspection and testing protocols. Evidence also required addressing the suggestions by Communities and Local Government for feedback/consultation mechanisms and monitoring of turn-round time for plot registrations by builders.</p> <p><i>Review actions:</i></p> <p>Assessment method to involve discussion of the evidence to determine whether it meets the needs of the programme.</p> |

| Indicator                 |  | Form of Evidence and Assessment Method  |
|---------------------------|--|---|
| <b>3. General aspects</b> |  |   |
| 3A                        | <p><i>Financial issues</i></p> <p>Financial stability and use of surplus income</p> <p>Target: Financial viability to be demonstrated along with plans for surpluses</p> | <p><i>Initial submission:</i></p> <p>Evidence required will be the most recent audited accounts, Minutes of the Finance and Audit Committee, and a statement on use of surplus income.</p> <p><i>Review actions:</i></p> <p>Follow up actions from minutes selected at random. Identify uses of surplus income.</p>   |
| 3B                        | <p><i>Industry perception</i></p> <p>Industry perception of RDL (press comments, publicity, PR etc)</p> <p>Target: Positive perception throughout industry</p>           | <p><i>Initial submission:</i></p> <p>Evidence required will be a dossier of relevant publicity information and a statement on how the marketing and PR budget has been spent.</p> <p><i>Review actions:</i></p> <p>The assessment method to include a review of the submitted data and direct contact with users such as builders and Robust Detail proposers randomly selected from RDL's records.</p> |
| 3C                        | <p><i>Occupant satisfaction</i></p> <p>Subjective assessment of sound insulation by occupants of homes using RDs</p> <p>Target: Biennial Survey</p>                      | <p><i>Initial submission:</i></p> <p>Evidence required will be the results of the previous surveys.</p> <p><i>Review actions:</i></p> <p>Review previous results against RD criteria and obtain commitment (with the necessary procedures) to survey again and monitor trends.</p>  |

2.5 A number of other issues arose during the review which, although not in the original terms of reference, could have significant impact on the operation of the system. These are:

- the details of the provisions made for a disaster recovery, either major IT system failure or loss of key personnel
- measures taken to ensure consistency of inspection approach
- the means of selecting sites for inspection.

# Chapter 3

## Review Programme

- 3.1 The review programme was based on the simple format discussed with Communities and Local Government during the tender process.
- 3.2 At the proposal stage FM reviewed the Communities and Local Government list of aims and objectives and devised an outline procedure and list of required information. This was discussed with Communities and Local Government prior to submission of the tender.
- 3.3 After the contract had been awarded, FM and Communities and Local Government discussed the aims and objectives in more detail and then met with RDL to discuss the forms of evidence that were required for the review.
- 3.4 RDL then prepared its submission and submitted it electronically to FM.
- 3.5 FM then undertook an initial desktop review of the submitted evidence to identify what additional information was required and develop an outline agenda for the on-site review visits.
- 3.6 FM then visited RDL and RDI to discuss the submitted evidence and verify the claims made by inspection of additional documentation. The visit to RDI was necessary to confirm the processes for ensuring that performance monitoring data used to calculate the KPIs were consistent and comprehensive. It was not considered necessary to visit Napier University to discuss the assessment and approval process. The committee minutes and the data available at RDL were sufficient and the issue was not the subject of a KPI.
- 3.7 FM also directly contacted various RD inspectors and RD users in order to obtain an independent view of the industry perception. RDL supplied a list of all contacts starting with the letter K (letter selected at random by FM) and a complete list of inspectors. The people contacted for the survey were selected at random from these lists.
- 3.8 Finally, all of the data were collated and the performance of RD and RDL against each of the Communities and Local Government indicators was assessed.
- 3.9 The meetings held during the programme are summarised in the table below.

| Location, Attendees and Date |   | Purpose and Outcome   |
|------------------------------|---|---|
| 1                            | <p>Faber Maunsell, St Albans</p> <p>Les Fothergill    Communities and Local Government</p> <p>Mike Hewett    Faber Maunsell</p> <p>7<sup>th</sup> June 2007</p>   | <p><i>Start-up meeting between Communities and Local Government and FM</i></p> <p>An opportunity for Communities and Local Government and FM to discuss the overall approach to the review and the Communities and Local Government aims and objectives before meeting with RDL.</p> <p>Communities and Local Government provided useful background information about the history of the RD system. It was agreed that the approach described in section 2 above was an appropriate starting point for the assessment. It was concluded that the initial meeting with RDL should proceed as soon as possible.</p>   |
| 2                            | <p>Robust Details Ltd, Milton Keynes</p> <p>Les Fothergill    Communities and Local Government</p> <p>David Baker    Robust Details Ltd</p> <p>David Panter    Robust Details Ltd</p> <p>Mike Hewett    Faber Maunsell</p> <p>11<sup>th</sup> June 2007</p> | <p><i>Introduction to RDL</i></p> <p>RDL presented a verbal introduction to the RD system and an outline of the information available for the three-year review.</p> <p>FM listed the information that would be required for a comprehensive review and there was a discussion of what could and could not be provided as part of an initial submission.</p> <p>Communities and Local Government was represented at the meeting to facilitate the introductions and observe the discussions.</p> <p>RDL undertook to prepare and submit a package of information along the lines discussed as soon as possible.</p> <p>FM undertook to review the information in detail when it became available and arrange a return visit at an appropriate time.</p> |

| Location, Attendees and Date |   | Purpose and Outcome  |
|------------------------------|---|--|
| 3                            | <p>Robust Details Ltd, Milton Keynes</p> <p>David Baker Robust Details Ltd</p> <p>David Panter Robust Details Ltd</p> <p>Mike Hewett Faber Maunsell</p> <p>+ Members of RD Secretariat</p> <p>5<sup>th</sup>-6<sup>th</sup> July 2007</p> | <p><i>Audit visit to discuss secretariat issues</i></p> <p>The supplied information was discussed in detail and each item was verified by examination of information on file and walking through procedures.</p>   |
| 4                            | <p>PDA Ltd, Warrington</p> <p>Phil Dunbavin RD Inspectorate</p> <p>Mike Hewett Faber Maunsell</p> <p>18<sup>th</sup> July 2007</p>  | <p><i>Audit visit to discuss inspectorate issues</i></p> <p>The parts of the supplied information and additional information obtained during the RDL visit relevant to the inspectorate were discussed in detail. Further information was obtained to verify performance claims.</p> |

# Chapter 4

## Submission Documents

- 4.1 Following the initial introduction meeting on 11<sup>th</sup> June, RDL submitted a package of information to FM electronically. The contents of this package are listed in part B of the table in Appendix 1. The key element of the package was the RDL 3 Year Review Report V1 itself <sup>(iv)</sup>. In addition to this the package included background information relating to:
- market share calculations <sup>(v)</sup>
  - inspectorate contacts <sup>(vi)</sup>
  - actions in response to ‘red’ tests and inspections <sup>(vii-xxvi)</sup>
  - actions in response to underperforming and RDs, and RDs subject to workmanship issues <sup>(xvii)</sup>
  - RDL audited accounts <sup>(xviii)</sup>
  - RD user contacts beginning with K <sup>(xix)</sup>
  - the most recent market research report <sup>(xx)</sup>
  - minutes of all RDL board meetings held to date <sup>(xxi-xxxiv)</sup>
  - minutes of all RDL Finance and Audit Committee (RDFC) meetings held to date <sup>(xxxv-xlvi)</sup>
  - minutes of all RDL Performance and Monitoring Committee (RDPMC) meetings held to date <sup>(xlvii-lvii)</sup>
  - minutes of all RD Assessment and Approval Committee (RDAC) meetings held to date <sup>(lviii-lxix)</sup>
  - minutes of all RD Inspectorate (RDINSP) meetings held to date <sup>(lxx-lxxxi)</sup>
  - Key Protocol 1 “Assessment and Approval” <sup>(lxxxii)</sup>
  - Key Protocol 3 “Performance Monitoring” and method statements 1 to 3 <sup>(lxxxiii-lxxxvi)</sup>.
- 4.2 All of the documents were examined and reviewed.
- 4.3 The RDL review document is divided into sections dealing with:
- the history of RD
  - the structure of RDL

- an analysis of RD market share
- a review of the operation and outcomes of performance monitoring system performance monitoring
- a review of the internal operational performance of RDL
- a review of the RD performance on encouraging innovation
- a review of customer satisfaction research (home dwellers)
- a review of communications such as media presence and public events
- a review of RDL finances
- a list of the currently approved RDs
- detailed statistical analysis of the performance results for each RD.

4.4 These headings do not coincide directly with the listed review assessment criteria and some of the indicators are not covered directly. However, the document successfully provided the basic framework that allowed the detailed review to go ahead.

4.5 The RD performance statistics in the report are set out clearly and conclude that the system is meeting its target of 95% compliance with Building Regulations standards. The key audit issue for these statistics is that the input data are consistently gathered and fully comprehensive. This was therefore identified as the principal issue to be addressed by the review.

4.6 The RDL market share calculations use a variety of methods and external data (from NHBC and CLG) on the overall size of the housing market. The published data do not cover the exact market in which RDL operates (ie new-build attached properties) as a discrete item. It was therefore necessary for RDL to estimate the market size by adjusting new dwelling statistics to allow for the typical ratio of attached to unattached plots. To reduce overall errors this was done in several different ways. The result is a range of market share values all of which were much better than the Communities and Local Government target. The values were averaged to give an overall market size estimate.

4.7 FM was able to independently obtain the Communities and Local Government and NHBC data to confirm that the values used were those published. FM also repeated a sample of the calculations, getting similar results to RDL. Therefore, the market share claims made by RDL were reasonable.

4.8 The charts in the RDL report appear to address the issue of response times for 'red' tests and inspections to the Building Control Body but not to the builder. However, RDL was able to confirm that under the recently introduced procedures the builder letters are sent out at exactly the same time as those to building control.

- 4.9 A full list of actions taken on withdrawal and workmanship issues was provided <sup>(xvii)</sup>. This raised a number of issues for investigation during the review.
- 4.10 One set of minutes from each group committee was selected for detailed review. These were:
- main board 7th September 2006
  - RDFC 6th September 2006
  - RDPMC 22nd August 2006
  - RDAC 23rd February 2006
  - RDINSP 24th November 2006.
- 4.11 The review of these minutes took the form of identifying actions that arose from the discussions. These actions could then be discussed and investigated during the review visit.
- 4.12 The MORI market research report <sup>(xx)</sup> is a weighty document describing a detailed investigation into people's satisfaction with the noise levels in their new homes. As such its conclusions are more a measure of the success, or otherwise, of the revised Part E in general rather than the specific impact of Robust Details.
- 4.13 The audited accounts and financial statement show a healthy business. However, the issue of uses for potential surpluses are not covered and were identified as a topic for discussion during the review visit. The accounts show the large cash reserves that have accrued as a result of the registration fees being paid up front some two years before the associated testing and inspection costs are incurred. It is clear from the accounts that the tax implications of this have been addressed and it is not proposed that FM comments further on this.

# Chapter 5

## Review

### Outcome of Review Visit to Robust Details Ltd

- 5.1 The review visit took place over two days during which FM was given unrestricted access to RDL's files and staff. The principal RDL contacts were David Baker and David Panter, though other members of the secretariat assisted from time to time. RDL staff were helpful and open throughout the process and no request for information was refused. The additional documents viewed during the review visit are listed in part C of the table in Appendix 1.

#### **Data Used to Calculate Key Performance Indicators**

- 5.2 The principal focus of the review was to verify the claims made by RDI of its performance against the Communities and Local Government KPIs (1A and 1B). The calculations had been checked prior to the visit so the main task was to verify the input data.
- 5.3 The key to verification of the overall performance statistics is to ensure that the test data used to calculate the overall values have been consistently gathered and are fully comprehensive. Any suppressed failures or an inconsistent approach to data gathering would lead to unreliable results and a false impression of the performance. A detailed review was therefore undertaken of the entire performance monitoring data gathering and processing procedures.
- 5.4 The inspectors decide which RD to test in the field based on the priorities set by the Board and the sites that are available in their areas. Overall in the first three years the Inspectorate has undertaken tests of approximately 2 per cent of the available registered plots. Some RDs are more popular than others and in general the number of each Robust Detail that has been tested is proportional to the total number registered.
- 5.5 When an inspector completes a test they give it a unique test number, which is a combination of unique plot registration and the Robust Detail number. Although the test numbers are unique they are not sequential and therefore do not give any indication of the total number of tests that have been completed or an easy way to determine whether any results are missing.

- 5.6 The results of all tests are forwarded to both RDL and the RDI. These copies are sent separately so that both parts of the organisation have independent records. The RDI checks all invoices received from inspectors to ensure that all reports have been received. The invoices will not be paid by RDL until confirmation from RDI has been received.
- 5.7 Every quarter the RDL and RDI records of test reports received are reconciled. There are occasional differences, which are usually related to typographical errors in the unique plot registration number.
- 5.8 The performance statistics given in the RDL report were based on these reconciled test figures. The results are kept on a computer database system. FM was given unrestricted access to navigate this database and was satisfied that the information was comprehensive. The only way in which the data could have been corrupted was if the inspectors themselves had not submitted results of failed tests and inspections. This is unlikely as if results have not been submitted, no payment could have been made. However, this was identified as an issue requiring further investigation by direct contact with the Inspectorate.
- 5.9 Performance statistics are calculated on an on-going basis and presented to the Board and the Performance and Monitoring Committee. The statistics are used as part of the on-going RD management process as well as to indicate compliance with the Communities and Local Government KPIs. Decisions on the prioritisation of future testing and the withdrawal or suspension of individual RDs are based on these statistics.
- 5.10 RDL and the RDI calculate separate performance statistics. The emphasis is slightly different but the basic data are the same. Many different statistical values are calculated, most of which are not relevant to the KPIs under review in this document. Therefore, although the statistical analyses were inspected in detail to ensure that the process was comprehensive, the results will not be discussed in any more detail.
- 5.11 The RDL report includes statistics on the results of visual inspections. However, KPI 1A is related purely to test results. The rate of red and amber failures for visual inspections is higher than that for tests. This indicates that some RDs that have been constructed incorrectly are still able to meet the test criteria. Although assessment of the actual inspection statistics did not form part of this review, it did form part of the verification process.

### **Market Share**

- 5.12 There was further discussion during the review of the market share calculations. The full range of sources of data was explained and the overall conclusions of the calculations verified.

### Plot Registration

- 5.13 The plot registration process is conducted according to a set of working instructions. Copies of these instructions <sup>(xci-xciii)</sup> were provided during the review but it was noted that they did not have unique document reference numbers or easily visible revision records. They are located in an open access area of the server but it would still be worthwhile to ensure that proper revision status tables and document numbers are included so that there is no possibility of obsolete versions being used. The Key Protocols provided prior to the review do have unique document numbers.
- 5.14 When an application is received a set process begins. This process involves initiation of the registration of the site and plots, the issue of the registration certificates (once full payment has been received) and notification of the relevant RD inspector. All documents are filed electronically and records are kept of the time taken from receipt of payment to the issue of the certificate. RDL monitors this response time and has significantly improved it over the last 12 months. This statistic is not one of the indicators specifically identified by Communities and Local Government but is still a significant measure of internal performance. RDL was able to locate a number of records selected at random from a list of registrations. The records located were found to be complete.

### Performance Monitoring

- 5.15 The RD performance monitoring system is set out in Key Protocol 3 and the associated Method Statements 1, 2 and 3 <sup>(lxxxiii-lxxxvi)</sup>. These documents define how tests and visual inspections should be undertaken and the actions to be taken based on the results of those tests and inspection.
- 5.16 The three Method Statements set out how the tests and inspections should be conducted and the various actions that should be taken following green, amber and red results. These actions include the distribution of results and warning letters, the types of investigation to be used to determine the reasons for any failures, and the withdrawal of registrations. A set of tests was selected at random from the database and the various files and records inspected on the system. All was found to be in order.
- 5.17 Key Protocol 3 also includes guidelines for the withdrawal and suspension of underperforming RDs. Decisions to withdraw or suspend RDs are made by the Board based on the advice of the Performance and Monitoring Committee (RDPMC). The RDPMC constantly monitors the performance statistics and reviews all failure reports. In this way, poorly performing RDs and those prone to persistent workmanship problems are identified and brought to the Board's attention. Recommended actions are not limited to withdrawal and suspension. RDs can be amended (in consultation with RDAC) or additional instructions can be issued.

- 5.18 All of the actions taken regarding the withdrawal of RDs and responding to workmanship issues are listed in a document <sup>(xviii)</sup>. This document was used as a basis for a review of the actions taken concerning several individual RDs. These included EFC-3, EFC-4, EFC-5, EWM-7 and EWM-8.
- 5.19 The RDPMC identified high failure rates for RD EFC-3, a generic resilient sheet-based screeded floating floor system, and proposed focused testing in October 2005. The technical reasons for the high failure rate were identified, and in November 2005 an Important Notice explaining the problem and identifying the appropriate ways to avoid it was sent to all existing holders of EFC-3 registration certificates. The focused testing revealed a serious problem with the RD, and in September 2006 the Board withdrew the RD from the handbook. Existing holders of certificates were informed and encouraged to change to other RDs or accept a special inspection programme to ensure that the installation is being done correctly (100% of sites).
- 5.20 RD EFC-4, which is a similar construction to EFC-3 but using proprietary materials rather than generic ones, was included in the notice. However, earlier failure rates were not as high and the material supplier has acted to produce better installation information and guide marks on the material and packaging. As a result, EFC-4 has not been withdrawn. The performance of EFC-4 and the similar EFC-5 are still, however, under scrutiny.
- 5.21 All of the documentation associated with this process, minutes, reports, notices and letters, was reviewed and the process was found to be fair, thorough, justified and in line with the Key Protocol. At every stage there was evidence of consultation with concerned parties and a constructive approach being taken to resolution of the issues.
- 5.22 The process for the suspension of EWM-7 was reviewed in a similar way, giving similar conclusions.

### **Handling of Failed Tests**

- 5.23 The handling of information related to failed tests and inspections was reviewed. The review included selecting failed tests and inspections at random from the lists provided by RDL and locating all of the necessary files. These files included copies of the letters sent to the builders and Building Control Authorities, test reports and investigation reports. All of the necessary files were located easily and the only minor issues noted were that some of the letters to the builders relating to the outcome of failed tests did not identify the RD type number of the RD which had failed. Some of the dates on the letters were slightly different from those given on the lists of failed tests and inspections; the differences were small and insignificant.

- 5.24 The format of the test reports which the inspectors use was changed in April 2007. Prior to that date the reports were Word® format documents. The new reports are in a spreadsheet format in order to allow automatic data harvesting into the RDL database system. The spreadsheet-style test records were viewed on screen and a number of printed out copies were examined.
- 5.25 The procedures for issuing 'red' letters are set out in a document that was made available during the review by RDL <sup>(xcviii)</sup>. The document did not display a unique document reference number, version number or a date of issue.

### **Assessment and Approval of New RDs**

- 5.26 The procedures for assessment and approval of Candidate Robust Details (CRDs) are set out in Key Protocol 1 <sup>(lxxxii)</sup>.
- 5.27 As an example, the files related to the assessment of CRD TF4, which became EFT-3 when it was approved, were reviewed. This CRD was selected at random by FM.
- 5.28 EFT-3 is a proprietary floor system based around metal web joists. The assessment process started in December 2004 following an application from Prestonplan, the metal web joist supplier.
- 5.29 The review followed the progress of the application up until approval in early 2007. The procedures were found to comply with the requirements of Key Protocol 1 and a number of the significant points arose during the review.
- 5.30 Although Prestonplan paid for the 30 tests necessary to complete the assessment process, the RD is not restricted solely to the use of its system. It includes reference to metal web joist systems produced by two other suppliers. During the assessment process two competitors of Prestonplan approached RDL to inquire whether their alternative metal web joist systems could be included. It was concluded that, though there were some differences between the systems, the competitors' systems could be included subject to submission of a reduced number of tests. The competitor organisations undertook these tests and their products were therefore included in the details of RD EFT-3. However, it was Prestonplan that provided the majority of the investment necessary to put the RD through the assessment and approval process.

### **Setting Priorities for Testing**

- 5.31 The means by which testing and inspection targets are established was reviewed by examination of the Board, RDPMC and RDINSP minutes. The RDPMC makes a recommendation to the Board based on the number of previously registered sites that should be ready for testing during each quarter. The general target is for testing of 2 per cent of plots and inspection of 1 per cent. From time to time over-sampling of tests and inspections is specified in order to target specific RDs that have demonstrated problems or have not been tested in sufficient numbers previously. The

decisions made by the Board and implemented by the Inspectorate were found to be consistent with the advice given by the RDPMC. The test statistics showed that the specified targeting had been broadly achieved in practice.

### **Uses of Surplus Income**

- 5.32 To date, cash surpluses generated by the operations of the system have been held as a contingency reserve and used to finance over-sampling of tests and inspections. However, for 2007 £100,000 was budgeted to be spent on research. Proposals on how this budget could be spent were presented to the Board in February 2006 and February 2007. The identified possible areas for research included the development of generic RDs, the application of RDs to the Code for Sustainable Homes and the possible application of the RD principle to other parts of the Building Regulations. It is understood that no research contracts have been awarded to date.

### **Publicity**

- 5.33 Durrants, RDL's public relations consultants, provided details of all coverage in the press since 1<sup>st</sup> January 2005. Durrants also provided a calculation of the advertising equivalent value of all of the listed coverage and a selection of the articles.
- 5.34 In addition to coverage in the press, RDL produced evidence of seminars, exhibitions, and conferences with which they had been involved over the last three years.

### **Disaster Recovery**

- 5.35 Potential risks to the RDL business have been identified in papers presented to the Finance and Audit Committee. The procedures and controls to address the full range of risks are still under development. However, the structures are in place to ensure that the significant risks of the loss of electronic data and key personnel have been minimised.
- 5.36 RDL operates within the systems of the NHBC. As such, all RDL electronic files are backed up in accordance with the NHBC disaster recovery plan. This includes a comprehensive staged back-up process and off-site storage of back-up media. Although RDL operates with very few core staff, there is sufficient shadowing of the key roles to allow recovery should one of the key staff depart.

## **Direct Interviews with Robust Details Inspectors**

- 5.37 In order to further verify adherence to the protocols for performance monitoring, a number of RD inspectors were contacted directly. There was no selection process as such, almost all of the inspectors on the list were called and the actual people interviewed were simply those available at the time of the call.

5.38 The interview took place over the telephone using a pre-prepared questionnaire (see Appendix 2). The following questions were asked:

- How do you select the sites for spot tests and inspections?
- How do you keep your own records of results?
- Have you ever come under any pressure to suppress or not submit failures?
- Any other comments?

5.39 The inspectors interviewed represented a good regional spread across the country and are listed in the following table.

| Organisation                            | Inspector     |
|---|---------------|
| Adrian James Acoustics, Norwich         | Andy Thompson |
| Alan Saunders Acoustics, Winchester     | Alan Saunders |
| Hoare Lea Acoustics, Bristol            | Karl Simpson  |
| Sound Research Laboratories, Manchester | Ray Woolley   |

5.40 There is no standard method of site selection. Each inspector is issued with a list of registrations in their area and then must judge when those sites will be ready for inspection or testing. Some inspectors keep track of progress of the sites in their area by telephoning the site contacts on a regular basis; others locate all of the sites in the area and physically drive past them or call in to assess progress themselves. The actual sites used for tests and inspections are selected from those available based on the test priorities set by the Board. All inspectors stated that actual test and inspection visits are unannounced.

5.41 All of the inspectors have their own in-house data filing systems for their test results. Generally, these are spreadsheet and Windows® file directory based. Some use unique in-house test numbers and others simply file by the RD plot registration number. This non-uniformity of record-keeping may cause problems should the contracted inspectors change in future.

5.42 It was clear that none of the inspectors had ever been pressured to suppress bad results. Indeed, all repeated the point that they only get paid for tests for which results were submitted and they get paid more for failed tests because of the potential for an investigation, which results in further fees being payable. Therefore, there are actual positive incentives to report all results.

5.43 All of the inspectors were happy that the system was running smoothly but some identified the problem of site identification as being significant. The site address information supplied by RDL is sometimes not sufficient to locate the sites.

## Outcome of Review Visit to Robust Details Inspectorate

- 5.44 The review visit to Philip Dunbavin Acoustics (PDA) was intended to further verify that the information used to calculate RD KPI performance was consistent and comprehensive and to investigate the inspection process. Phil was helpful and open at all times and provided all of the information requested.
- 5.45 The procedure of the visit took the form of an interview with Phil Dunbavin during which various computer-based files were accessed.
- 5.46 The quarterly data reconciliation process was described from the RDI point of view. All results of tests and inspections are sent to the RDI at the same time as they are forwarded to RDL. RDI therefore keeps entirely separate records from those maintained by RDL. RDI is also responsible for approving inspector invoices. This gives another, separate, record of the number of tests that have been completed. Invoices will only be approved once the test results have been received. Therefore, every quarter it is possible to reconcile the list of tests based on invoice approvals against the list of tests results held by RDL. Therefore, based on the assumption that the inspectors are likely to be keen to be paid for work they have done as soon as possible, it is very unlikely that any test results will go missing.
- 5.47 The point that inspectors will be potentially paid more for the investigations which follow test failures was also repeated. It is therefore even less likely that failure results were missing.
- 5.48 By their very nature some of the issues that arise during site visual inspections can be subjective. It is therefore important that measures are kept in place to ensure that the inspectors take a consistent approach. This is done through the quarterly open forum at the inspectors' meeting and by the circulation of all red and amber tests and inspections. Each RD has a different inspection template including a checklist that the inspectors use on site. The line between red and amber inspections is based on the accumulation of corporate experience within the Inspectorate team.
- 5.49 The PDA inspectors use the visual monitoring method to select sites for testing. Phil stated that other inspectors work in different ways because of the nature of the area that they have been allocated. However, he did state that the visual inspection method has the advantage of identifying certain issues with a potential site such as the registration of fewer plots on the site than actually exist.
- 5.50 Although the management of the RDI is contracted to PDA, the Inspectorate data are kept on a separate directory on the PDA server. This is backed up every day as part of the PDA disaster recovery process. Phil Dunbavin himself has a central role in the operation of the RDI. There is therefore a potential risk should Phil be no longer able

to work for any reason. This potential risk to the system has been addressed by the transparency of record-keeping with RDL and the shadowing of some responsibilities by other members of PDA staff.

## Direct Interviews with Robust Details Users

- 5.51 As part of the review process, feedback was sought from organisations which have used the RD scheme since its launch three years ago.
- 5.52 The users of the RD scheme can be separated into two categories:
- organisations using RD in new-build residential constructions to achieve compliance with Part E of the Building Regulations
  - organisations submitting constructions for inclusion in the RD handbook.
- 5.53 Only a small sample was considered to be necessary so various contacts from the list provided by RDL were telephoned until two of each type were available. Many calls were made before suitable people in each type of organisation could be identified.
- 5.54 At the majority of organisations contacted, there were very few people able to provide feedback on the scheme, usually as a result of the main contact being unavailable at the time of the survey. Also, a significant number of the contacts supplied by RD had since moved on from the organisation and in some cases the organisation itself no longer existed.
- 5.55 The interview took place over the telephone using a pre-prepared questionnaire (see Appendix 2). The following questions were asked:
- How have Robust Details benefited your organisation?
  - What has been your experience of the service provided by Robust Details Ltd?
  - What change might you suggest to improve the RD system or the service provided by RD Ltd?
  - Do you have any other comments about robust details and Robust Details Ltd?

5.56 The people interviewed are listed in the table below:

| Organisation        | Contact       | User Type    |
|---------------------|---------------|--------------|
| Kendrick Homes      | John Bolt     | RD Specifier |
| KRT Associates      | Chris Davis   | RD Specifier |
| Knauf               | Tony Aindow   | RD Proposer  |
| Kingspan Insulation | Justin Davies | RD Proposer  |

5.57 Further contact was made with a potential RD proposer who wished to remain anonymous.

5.58 The responses received are summarised below. RDL has drawn FM's attention to possible factual errors in these comments, but they have not been changed as the purpose of the exercise was to gauge industry perception of the RDL system. It is therefore important that any perceptions based on inaccuracies are recorded and addressed. RDL will make specific comments on these issues in its formal response to the review.

### **RD Users**

5.59 Both RD users felt that the RD system had been of benefit to their organisation as it avoids the time and cost implications involved in on-site testing of separating constructions. They found that the scheme has helped them as all the details are clear and concisely laid out so they can be sent straight to site for construction. This approach avoids the time and expense that would be required if they had to detail the construction themselves.

5.60 Generally, both users had had very good experiences of dealing with RDL and had contacted it with a significant number of queries regarding the RDs. RDL had always been very quick to deal with any queries. In their dealings with RDL they found help and advice was readily available over the phone and had not had any problems with the advice they had been given.

5.61 The interviewees had not had any personal experience of on-site inspections but one organisation had had one construction which had required remedial work following an inspection. On further discussion of this point, it was established that the RD requiring remedial work has since been withdrawn.

5.62 The only suggestion for improvement from the RD users was to include an RD for a room in the roof of a timber-framed house and that it had not been clear from the RD handbook that the current RD for timber frame RD cannot be used for a room in the roof construction. Other than that the users' experience was generally positive.

### RD Proposers

- 5.63 The views of the RD proposers were mixed, with no clear market view emerging.
- 5.64 One felt that the RD scheme had worked quite well since its inception and had been of benefit to his organisation as the scheme allows it to offer fixed solutions to customers and allows it to clearly focus its product range. The scheme has enabled it to offer simple guarantees for its products which has gone down well with its customers.
- 5.65 The response from others was that the RD scheme had hindered rather than helped and that they have lost sales as a result of the scheme. The reasons given were that the RDs are aimed very much towards traditional building materials and did not consider more '*modern*' materials – the example given was the heavy reliance on mineral wool insulation within many of the RDs.
- 5.66 All were happy with the service provided by RDL, stating that replies had always been prompt and helpful. They were also happy with the quality of the technical advice they received from RDL.
- 5.67 The main criticism of the scheme was that it was a difficult and expensive process to get constructions approved, though the need for a comprehensive process was appreciated so that RDL can be satisfied that the construction would reliably achieve the required performance standards. However, it was felt that RDL should look to work with more manufacturers to get more products and constructions approved. At the moment many of the approved constructions are made from traditional materials and so there is no scope to use more '*modern*' materials within the RD scheme.
- 5.68 As part of this, it was commented that the process for getting constructions approved should be fast-tracked or made easier to allow the inclusion of more innovative materials. It was also suggested that commercial organisations were being put off making the investment to finance the assessment of new proprietary RDs because there was a risk that the RDs could be declared generic or competitor products could be added at a later date, and their competitors could take advantage of the RD status without having to make the initial investment. It was felt that the current reduced testing requirement for additional manufacturers to be added to proprietary RDs is unfair on the original proposer.
- 5.69 On the other hand, one proposer commented that there was possibly too much reliance on specific brands rather than generic types of material. The suggested alternative was that rather than using brand names of products in the handbook, it may be better to specify generic material with a stringent list of material properties and quality standards for manufacture in order to guarantee a minimum standard for products from different manufacturers.

- 5.70 Another suggestion was that the proposer thought it would be beneficial to expand the RD scheme to cover more than just sound insulation. For instance, expanding it so that the RDs cover fire and thermal insulation in addition to sound insulation. For example, by using a Robust Detail this would guarantee compliance with Parts B, E and L of the Building Regulations.
- 5.71 Another point that was made is that there is currently no scope for using the RD to gain points as part of the EcoHomes assessment scheme whilst still avoiding the need to undertake pre-completion sound insulation testing. Currently, to gain any of the available credits for sound insulation under the EcoHomes scheme, a programme of sound insulation testing that at least matches the requirements of the Building Regulations needs to be implemented, so there is little incentive to use the RD. The proposer suggested that RDL needs to work with EcoHomes so that the RDs can be used to gain credits without the need for pre-completion testing.
- 5.72 The proposers also commented on the absence of any RD that can be used for a room in the roof construction in a timber-framed house, and went on to comment that the use of timber-framed constructions is increasing and so this could become more of a problem if a suitable RD is not developed soon.
- 5.73 In order to improve the construction of the RDs on-site, the suggestion was made that a training centre or some sort of approval scheme for builders using the RD should be provided so that they can be trained in how to build them correctly on-site, thus reducing the failure rate.

## Review of All Compiled Information

- 5.74 All of the information gathered during the review was used to assess the performance of the system against the Communities and Local Government criteria. This assessment is summarised in the following table.
- 5.75 The table lists the section of the RDL 3 Year Review that covers each item and the performance claim made. The evidence supporting or contradicting these claims is summarised and an opinion on the status of each target given.

| Findings                    |  |
|-----------------------------|--|
| Indicator                   | Key Performance Indicators   |
| 1A                          | <p><i>RD pass/fail rate</i><br/>Performance and pass/fail rate statistics of all RD constructions</p> <p>Target: 95% pass rate</p> <p>RDL Review Document:<br/>Section: 5 + appendix<br/>Pages: 14-15, ii-iv</p>   |
| Submitted evidence:         | <p>section on performance monitoring and full statistical charts in 3 Year Review Report;<br/>list of Red Inspections and Tests <sup>(viii)</sup>;<br/>Key Protocol 3 Performance Monitoring <sup>(ix-xiii-lxxxvi)</sup>.<br/>97% compliance with Building Regulations standards (93% compliance with Robust Details standards).<br/>repeat of a sample of calculations;<br/>detailed review of results handling process to ensure that results used in statistical calculations had been competently obtained and were comprehensive;<br/>examination of records at random;<br/>discussion with RDL, RDI and inspectors to ensure that no pressure had been applied to suppress bad results;<br/>verification of number of tests conducted by inspection of database.</p> |
| Claimed performance:        | <p>97% compliance with Building Regulations standards (93% compliance with Robust Details standards).</p>  |
| Review procedure:           | <p>repeat of a sample of calculations;<br/>detailed review of results handling process to ensure that results used in statistical calculations had been competently obtained and were comprehensive;<br/>examination of records at random;<br/>discussion with RDL, RDI and inspectors to ensure that no pressure had been applied to suppress bad results;<br/>verification of number of tests conducted by inspection of database.</p>   |
| Additional evidence viewed: | <p>access to RDL results database;<br/>access to RDI records and statistical reports;<br/>discussions with RDI, RDL and inspectors.</p>  |
| <b>Conclusion:</b>          | <b>Claimed performance verified. Target achieved</b>   |

| Findings  |  |
|---|--|
| Indicator   | Findings   |
| <p>1B</p> <p><i>Uptake and market share</i><br/>                     Uptake of RDs (ie market share compared with testing)<br/>                     Target: 25% of dwellings<br/>                     RDL Review Document:<br/>                     Section: 4<br/>                     Pages: 7-9</p>    | <p>Submitted evidence:<br/>                     section on market share in 3 Year Review Report;<br/>                     market share calculation document <sup>(v)</sup>.<br/>                     Claimed performance:<br/>                     65% of new attached dwellings (81% of houses and 53% of apartments).<br/>                     Review procedure:<br/>                     verification of market size assumptions;<br/>                     repeat of sample calculations;<br/>                     verification of RDL sales volume by inspection of registration records.<br/>                     Additional evidence viewed:<br/>                     housing statistics data from NHBC <sup>(xxxvii-xxxviii)</sup> and Communities and Local Government;<br/>                     access to plot registration records.<br/> <b>Claimed performance verified. Target achieved.</b></p>   |
| <p>2</p> <p><b>Quality system</b></p>   | <p><b>Conclusion:</b><br/>                     Claimed performance verified. Target achieved.</p>  |
| <p>2A</p> <p><i>Reporting of Red inspections/tests to RDL and builder</i><br/>                     Actions to remedy observed deviations from RD specifications taken by RDL (1)<br/>                     Target: 90% adherence to protocol<br/>                     RDL Review Document: not covered</p> | <p>Submitted evidence:<br/>                     list of red inspections and tests <sup>(viii)</sup>;<br/>                     sample test reports and letters <sup>(ix-xvi)</sup>.<br/>                     Claimed performance:<br/>                     none.<br/>                     Review procedure:<br/>                     review of 'red' letter procedure;<br/>                     walk through of responses to randomly selected "red" test;<br/>                     inspection of files on system.<br/>                     Additional evidence viewed:<br/>                     'red' letter procedures <sup>(xcviii)</sup>;<br/>                     access to more sample tests reports and letters.<br/> <b>Conclusion:</b><br/>                     These letters were previously issued directly by the RDI so no monitoring was undertaken by RDL. RDL has now started issuing these letters on behalf of the RDI at exactly the same time as the Building Control letter. It is therefore anticipated that records will be kept from now on and performance will be the same as that achieved for Indicator 2B.</p> |

| Indicator   | Findings   |
|---|--|
| <p>2B</p> <p><i>Reporting of 'Red' inspections/tests to building control</i></p> <p>Actions to remedy observed deviations from RD specifications taken by RDL (2)</p> <p>Target: 90% adherence to protocol</p> <p>Review Document:</p> <p>Section: 6</p> <p>Pages: 24</p>   | <p>Submitted evidence:</p> <p>section on internal performance in 3 Year Review Report; list of red inspections and tests <sup>(viii)</sup>; sample test reports and letters <sup>(ix-xvi)</sup>.</p> <p>Claimed Performance</p> <p>Review procedure:</p> <p>80%+ of letters issued within ten days of test. review of 'red' letter process and record; walk through of responses to randomly selected 'red' test; inspection of files on system.</p> <p>Additional evidence viewed:</p> <p>'red' letter procedures <sup>(xcviii)</sup>; access to more sample tests reports and letters; access to database records.</p> <p><b>Conclusion:</b></p> <p><b>The claimed performance was verified. The performance is below the target and there are plans to further improve the response times. This will require faster provision of data from the inspectors and revised procedures.</b></p>   |
| <p>2C</p> <p><i>Protocols for the withdrawal of underperforming RDs</i></p> <p>Actions to improve compliance with RD specifications taken by RDL (1)</p> <p>Target: Establishment of underperformance criteria. Appropriate suspension or withdrawal of all underperforming RDs</p> <p>Review Document:</p> <p>Section: 5</p> <p>Pages: 18-22</p> | <p>Submitted evidence:</p> <p>section on performance monitoring intervention in 3 Year Review Report; copy of Key Protocol 3 <sup>(lxxxiii-lxxxvi)</sup>; list of withdrawal and workmanship actions <sup>(xvii)</sup>; minutes of Board and Performance and Monitoring Committee <sup>(xxi-xxxiv,xlvii-vii)</sup> criteria and procedures in place, one underperforming RD withdrawn and one suspended. review of Key Protocol 3; review of minutes of Board and Performance and Monitoring Committee; review of process for withdrawal of EFC-3 and suspension of EWM-7 access to files on system; report to Performance and Monitoring Committee <sup>(lxxxix-xc)</sup>.</p> <p>Claimed Performance</p> <p>Review procedure:</p> <p>review of minutes of Board and Performance and Monitoring Committee; review of process for withdrawal of EFC-3 and suspension of EWM-7</p> <p>Additional evidence viewed:</p> <p>access to files on system; report to Performance and Monitoring Committee <sup>(lxxxix-xc)</sup>.</p> <p><b>Conclusion:</b></p> <p><b>Target achieved.</b></p> |

| Findings   |  |
|--|--|
| Indicator  | Findings   |
| <p>2D</p> <p><i>Interventions in response to RD underperformance resulting from 'workmanship' issues</i></p> <p>Actions to improve compliance with RD specifications taken by RDL (2)</p> <p>Target: Establishment of workmanship assessment criteria. Appropriate actions taken in timely manner for all issues</p> <p>Review Document: not covered</p> | <p>Submitted evidence: list of withdrawal and workmanship actions <sup>(xvii)</sup>; minutes of Board and Performance and Monitoring Committee <sup>(xxi-xxiv, xvii-ivii)</sup>.</p> <p>Claimed performance: criteria and procedures in place dialogue on-going to address workmanship issues.</p> <p>Review procedure: review of Key Protocol 3; review of minutes of Board and Performance and Monitoring Committee;</p> <p>Additional evidence viewed: examine actions taken selected from supplied list. workmanship advice documents <sup>(xciv-xcvii)</sup>.</p> <p><b>Conclusion:</b> <b>Target achieved.</b></p>   |
| <p>2E</p> <p><i>Protocols</i></p> <p>Adherence to protocols and development of protocols</p> <p>Target: Protocols to be comprehensive, practical and well managed</p> <p>Review Document: Section: 6 Pages: 23-15</p>  | <p>Submitted evidence: sections on internal performance in the 3 Year Review Report; Key Protocols <sup>(lxxxii-lxxxvi)</sup>; minutes of Board <sup>(xxi-xxxiv)</sup>.</p> <p>Claimed performance: protocols and procedures in place and in use with performance monitoring.</p> <p>Review procedure: review of available protocols and procedures; examination of monitoring results; walk through of random examples of each procedure; examination of information on file.</p> <p>Additional evidence viewed: plot registration procedures <sup>(xci-xcii)</sup>; 'red' letter procedures <sup>(xcviii)</sup>; access to more files on system; access to database records.</p> <p><b>Conclusion:</b> <b>Target substantially achieved but room for improvement in document control of procedures. No formal feedback/consultation process.</b></p> |

| Findings   |  |
|--|--|
| Indicator  | Findings   |
| <b>3</b>   | <b>General aspects</b>   |
| <p>3A</p> <p><i>Financial issues</i></p> <p>Financial stability and use of surplus income</p> <p>Target: Financial viability to be demonstrated along with plans for surpluses</p> <p>Review Document:<br/>Section: 10<br/>Pages: 37</p> | <p>Submitted evidence:<br/>audited accounts;<br/>financial section of 3 Year Review Document.<br/>on target and viable.</p> <p>Claimed performance:<br/>Review procedure:<br/>read accounts;<br/>review plans for surplus income.<br/>investigated risk management and disaster recovery plan.<br/>surplus income documents <sup>(ciii-cv)</sup>;<br/>disaster recovery and risk management documents <sup>(cx-cxi)</sup>.</p> <p><b>Conclusion:</b><br/><b>Target Achieved.</b></p>   |
| <p>3B</p> <p><i>Industry perception</i></p> <p>Industry perception of RDL (press comments, publicity, PR etc)</p> <p>Target: Positive perception throughout industry</p> <p>Review Document:<br/>Section: 9<br/>Pages: 34-36</p>         | <p>Submitted evidence:<br/>section on communications in 3 Year Review Document;<br/>list of customers <sup>(xix)</sup>;<br/>list of RD inspectors <sup>(vi)</sup>.<br/>positive perception achieved.</p> <p>Claimed performance:<br/>Review procedure:<br/>review of publicity and communications documents;<br/>direct contact with RD inspectors, users and proposers;</p> <p>Additional evidence viewed:<br/>publication information <sup>(cvi-cxiv)</sup>;<br/>seminar information <sup>(cxii-cxiv)</sup>.</p> <p><b>Conclusion:</b><br/><b>Target Achieved.</b></p> |

| Findings   |  |
|--|--|
| Indicator  | Findings   |
| <p>3C</p> <p><i>Occupant satisfaction</i></p> <p>Subjective assessment of sound insulation by occupants of homes using RDs</p> <p>Target: Biennial Survey</p> <p>Review Document: Section: 8</p> <p>Pages: 32-33</p> | <p>Submitted evidence: section in 3 Year Review Report; MORI market research report <sup>(xx)</sup>. survey completed. read MORI report. none.</p> <p>Claimed performance: Review procedure: Additional evidence viewed:</p> <p><b>Conclusion:</b> <b>Target achieved. Survey completed but of more use as an assessment of the impact of the Building Regulations as a whole than Robust Details in particular.</b></p> |

# Chapter 6

## General Comments and Observations

- 6.1 The overall conclusion of the review is that the Robust Details system is meeting its objective of providing a practical alternative to pre-completion testing for demonstration of compliance with Part E of the Building Regulations. The generally positive industry perception and high market share clearly demonstrate that the building industry has embraced the Robust Details principle. The high performance demonstrated by the Robust Details performance monitoring process shows that the system is able to deliver satisfactory acoustic results.
- 6.2 The Robust Details Ltd and Robust Details Inspectorate staff contacted during the review clearly take great pride in the system and its benefits to industry.
- 6.3 The reconciliation process used to ensure that the records of test results maintained by Robust Details Ltd and the Robust Details Inspectorate are complete is clearly robust. However, this process could be made simpler if each test and inspection undertaken by each inspector was given a sequential number. Ideally, this number would include an element which identifies the inspector and a sequential test number. This would enable quick identification of the missing test results. The current unique test numbers, which are based on plot registration and RD type numbers, do not offer this advantage.
- 6.4 The document control of some of the internal procedures could be improved. Several procedures examined during the review did not have unique document numbers, issue dates or revisions status. Although the team is currently small and the people using the procedures have generally had a hand in their development, it is possible as the business expands that the situation could become more confusing. It is therefore recommended that a comprehensive and uniform system of procedure document control be introduced.
- 6.5 It is clear from the minutes that considerable thought has been put into the balance between the commercial interests of proposers of proprietary Robust Details and the wish to promote an open and inclusive system. However, it appears from the comments received during the review that there is a perception among some potential Robust Details proposers that this balance does not protect their interests sufficiently. If this perception persists it could lead to proposers deciding against making the investment necessary to proceed, thus undermining RDL's ability to promote innovation. It may therefore be beneficial to take action to change this perception.

## Points Noted During the Review in Addition to the Original Terms of Reference

- 6.6 The inspectors currently each have their own methods of keeping records and information. This could cause problems should inspectors change in the future. It may therefore be beneficial for RDL to consider developing a standardised inspector record-keeping system.
- 6.7 The inspectors also each have different methods of selecting the actual sites to be tested or inspected. It is understood that there are good reasons for these differences but, in view of the potential problems that may be caused should inspectors change in the future, it may be beneficial for RDL to devise a standard methodology.

# Appendix 1

## Reference Documents

The documents examined during the review are listed on the following tables.

| <b>A Documents Supplied by Communities and Local Government Prior to Review</b> |  |
|---|--|
| i)  | Communities and Local Government Building Regulations Research Programme, Building Operational Performance, Specification of Requirements for a Framework Research Proposal, Three year review of the performance of Robust Details and Robust Details Ltd |
| ii)   | Articles of association of Robust Details Limited  |
| iii)  | Memorandum of Association of Robust Details Limited  |

| <b>B Documents Submitted by RDL in Response to General Request Before Review</b> |  |
|--|--|
| iv)  | Robust Details 3 Year Review Report Version 1 19 <sup>th</sup> June 2007   |
| v)   | Market Share calculations v2.doc, 20 <sup>th</sup> June 2007   |
| vi)  | RDL_Inspector_Contacts.xls 12 <sup>th</sup> July 2007  |
| vii)   | ALL_TEST_RESULTS_TO_END_MARCH_2007_EXPORT.xls, 20 <sup>th</sup> June 2007  |
| viii)  | List_of_Red_Inspections_and_Tests.xls, 20 <sup>th</sup> June 2007  |
| ix)  | EWM8_E06091482F.xls, 13 <sup>th</sup> June 2007  |
| x)   | Letter – North Norfolk DC – Anchor Homes – Bank Loke North Walsham – 16-04-2007.doc, 13 <sup>th</sup> June 2007                    |
| xi)  | Bldr_Letter – Unicoin New Homes Group – Rear of Sundon Park Road – Luton – Red Test – 30-03-2007.doc, 13 <sup>th</sup> June 2007   |
| xii)   | EFC5_E06033413F_Test1.xls, 13 <sup>th</sup> June 2007  |
| xiii)  | EFC5_E06033413F_Test2.xls, 13 <sup>th</sup> June 2007  |
| xiv)   | EFC5_E06033413F_Test3.xls, 13 <sup>th</sup> June 2007  |
| xv)  | EFC5_E06033413F_Test4.xls, 13 <sup>th</sup> June 2007  |
| xvi)   | Letter – NHBC – Unicoin New Homes Group – Rear of Sundon Park Road – Luton – Red Test – 30-03-2007.doc, 13 <sup>th</sup> June 2007 |
| xvii)  | Withdrawal and workmanship actions.xls, 20 <sup>th</sup> June 2007   |

| <b>B Documents Submitted by RDL in Response to General Request Before Review</b> |   |
|--|---|
| xviii)   | RD07_014b_Robust 2006 final accounts.pdf, 20 <sup>th</sup> June 2007                            |
| xix)   | RDL_Customers_Ks.xls, 20 <sup>th</sup> June 2007  |
| xx)  | MORI_Submitted_Report.pdf, 20 <sup>th</sup> June 2007   |
| xxi)   | RD04-026_Notes_of_RD_Board_Meeting_17_06_2004.doc, 28 <sup>th</sup> June 2004                   |
| xxii)  | RD04-036_Minutes_of_RD_Board_Meeting_21_09_2004.doc, 22 <sup>nd</sup> October 2004              |
| xxiii)   | RD04_044_Minutes_of_RD_Board_Meeting_23_11_2004.doc, 9 <sup>th</sup> December 2004              |
| xxiv)  | RD04_049_Minutes_RD_Board_Meeting_17_12_2004.doc, 4 <sup>th</sup> February 2005                 |
| xxv)   | RD05_008_Minutes_of_RD_Board_Meeting_17_02_2005.doc, 22 <sup>nd</sup> February 2005             |
| xxvi)  | RD05_017_Minutes_of_RD_Board_Meeting_19_05_2005.doc, 6 <sup>th</sup> June 2005                  |
| xxvii)   | RD05_025_Minutes_of_RD_Board_Meeting_18_08_2005V2.doc, 3 <sup>rd</sup> September 2005           |
| xxviii)  | RD05_032_Minutes_of_RD_Board_Meeting_17_11_2005.doc, 22 <sup>nd</sup> November 2005             |
| xxix)  | RD06_007_Minutes_of_RD_Board_Meeting_23_02_2006.doc, 7 <sup>th</sup> March 2006                 |
| xxx)   | RD06_016_Minutes_of_RD_Board_Meeting_25_05_2006.doc, 31 <sup>st</sup> May 2006                  |
| xxxi)  | RD06_026_Minutes_of_RD_Board_Meeting_07_09_2006.doc, 20 <sup>th</sup> September 2006            |
| xxxii)   | RD06_034_Minutes_of_RD_Board_Meeting_23_11_2006.doc, 28 <sup>th</sup> November 2006             |
| xxxiii)  | RD07_008_Minutes_of_RD_Board_Meeting_21_02_2007_Minutes_V3_Final.doc, 29 <sup>th</sup> May 2007 |
| xxxiv)   | RD07_018_Minutes_of_RD_Board_Meeting_24_05_2007_Minutes_V2.doc, 31 <sup>st</sup> May 2007       |
| xxxv)  | RDFC04-006_FinanceCommitteeMinutes_06_09_2004V2.doc, 9 <sup>th</sup> November 2004              |
| xxxvi)   | RDFC04-018_MINUTESFinanceCommittee_16_11_2004.doc, 1 <sup>st</sup> December 2004                |

| <b>B Documents Submitted by RDL in Response to General Request Before Review</b> |   |
|--|---|
| xxxvii)  | RDFC05-008_MINUTESFinanceCommittee_03_02_2005.doc, 11 <sup>th</sup> April 2005                |
| xxxviii)   | RDFC05-016_MINUTES_Finance_Committee_25_04_2005.doc, 9 <sup>th</sup> May 2005                 |
| xxxix)   | RDFC05-021_MINUTES_Finance_Committee_29_07_2005.doc, 2 <sup>nd</sup> August 2005              |
| xl)  | RDFC05_26_Minutes_FinanceCommittee_02_11_2005_V2.doc, 14 <sup>th</sup> November 2005          |
| xli)   | RDFC06-006_MINUTES_Finance_Committee_02_02_2006.doc, 9 <sup>th</sup> February 2006            |
| xlii)  | RDFC06-012_MINUTES_Finance_Committee_27_04_2006.doc, 5 <sup>th</sup> May 2006                 |
| xliii)   | RDFC06_021_Confirmed_minutes 9Aug 06 fin board.doc, 6 <sup>th</sup> September 2006            |
| xliv)  | RDFC06_029_CONFIRMED_MINUTES_Finance_Committee_16_11_2006.doc, 17 <sup>th</sup> November 2006 |
| xlv)   | RDFC07_007_MINUTES_Finance_Committee_01_02_2007_V2.doc, 14 <sup>th</sup> February 2007        |
| xlvi)  | RDFC07_015_MINUTES_Finance_Committee_26_04_2007.doc, 30 <sup>th</sup> April 2007              |
| xlvii)   | RDPMC04-005_MinutesPandMC_08_11_2004Amended.doc, 23 <sup>rd</sup> November 2004               |
| xlviii)  | RDPMC05-006_MinutesPandMC_31_01_2005_V1.doc, 20 <sup>th</sup> April 2005                      |
| xlix)  | RDPMC05-011_MinutesPandMC_29_04_2005_V2.doc, 4 <sup>th</sup> May 2005                         |
| l)   | RDPMC05_015_Minutes_PandMC_01_08_2005_V4.doc, 6 <sup>th</sup> September 2005                  |
| li)  | RDPMC05_019_Minutes_PandMC_31_10_2005_V1.doc, 3 <sup>rd</sup> November 2005                   |
| lii)   | RDPMC06-006_Minutes_PandMC_11_05_2006_V2.doc, 16 <sup>th</sup> May 2006                       |
| liii)  | RDPMC06-011_Minutes_PandMC_22_08_2006_V3.doc, 13 <sup>th</sup> September 2006                 |
| liv)   | RDPMC06-014_Minutes_PandMC_06_11_2006_V1.doc, 13 <sup>th</sup> November 2006                  |
| lv)  | RDPMC06_003_Minutes_PandMC_13_02_2006_V2.doc, 16 <sup>th</sup> February 2006                  |

| <b>B Documents Submitted by RDL in Response to General Request Before Review</b> |  |
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| lvi)   | RDPMC07-006_Minutes_PandMC_13-02-2007_V2.doc, 14 <sup>th</sup> February 2007               |
| lvii)  | RDPMC07-010_Minutes_PandMC_10-05-2007_V2.doc, 15 <sup>th</sup> May 2007                    |
| lviii)   | RDAC04-012_Notes_26_08_2004V3ChangesAccepted.doc, 10 <sup>th</sup> September 2004          |
| lix)   | RDAC04-024_MINUTES_23_11_2004.doc, 5 <sup>th</sup> January 2005                            |
| lx)  | RDAC05-012_MINUTES_17_02_2005.doc, 5 <sup>th</sup> April 2005                              |
| lxi)   | RDAC05-026_MINUTES_19_05_2005.doc, 24 <sup>th</sup> June 2005                              |
| lxii)  | RDAC05-047_MINUTES_18_08_2005.doc, 16 <sup>th</sup> September 2005                         |
| lxiii)   | RDAC05-065_MINUTES_17_11_2005.doc, 28 <sup>th</sup> November 2005                          |
| lxiv)  | RDAC06-008_MINUTES_23_02_2006.doc, 26 <sup>th</sup> April 2006                             |
| lxv)   | RDAC06-021_MINUTES_01_06_2006.doc, 7 <sup>th</sup> June 2006                               |
| lxvi)  | RDAC06-037_MINUTES_07_09_2006.doc, 18 <sup>th</sup> September 2006                         |
| lxvii)   | RDAC06-052_MINUTES.doc, 29 <sup>th</sup> November 2006                                     |
| lxviii)  | RDAC07-013_MINUTES.doc, 20 <sup>th</sup> February 2007                                     |
| lxix)  | RDAC07-033_MINUTES.doc, 5 <sup>th</sup> June 2007  |
| lxx)   | RDINSDP06-008_MinutesInspectorate_26_05_2006_V3.doc, 2 <sup>nd</sup> June 2006             |
| lxxi)  | RDINSDP06-011_MinutesInspectorate_08_09_2006_V4_Approved.doc, 5 <sup>th</sup> October 2006 |
| lxxii)   | RDINSDP06-014_MinutesInspectorate_24_11_2006_V2.doc, 4 <sup>th</sup> December 2006         |
| lxxiii)  | RDINSDP07-003_MinutesInspectorate_23-02-2007_V4.doc, 7 <sup>th</sup> March 2007            |
| lxxiv)   | RDINSP06-005_MinutesInspectorate_24_02_2006_V3.doc, 1 <sup>st</sup> March 2006             |
| lxxv)  | RDINSP07-006_MinutesInspectorate_25-05-2007_V2.doc, 7 <sup>th</sup> June 2007              |
| lxxvi)   | RDINSP-04-002_MinutesInspectorate_22_09_2004.doc, 24 <sup>th</sup> October 2004            |
| lxxvii)  | RDINSP-04-005_MinutesInspectorate_24_11_2004.doc, 28 <sup>th</sup> January 2005            |
| lxxviii)   | RDINSP-05-002_MinutesInspectorate_18_02_2005_V1.doc, 3 <sup>rd</sup> March 2005            |
| lxxix)   | RDINSP-05-007_MinutesInspectorate_20_05_2005_V1.doc, 18 <sup>th</sup> August 2005          |

| <b>B Documents Submitted by RDL in Response to General Request Before Review</b> |   |
|--|---|
| lxxx)  | RDINSP-05-010_MinutesInspectorate_19_08_2005_V3.doc, 7 <sup>th</sup> September 2005               |
| lxxxi)   | RDINSP-05-015_MinutesInspectorate_18_11_2005_V1.doc, 25 <sup>th</sup> November 2005               |
| lxxxii)  | RobustDetails_Key_Protocol_1_Assessment_and_Approval_V3_March2006.pdf, 20 <sup>th</sup> June 2007 |
| lxxxiii)   | Key Protocol 3 Performance Monitoring V5_Agreed_FEB_2007 doc.doc, 20 <sup>th</sup> June 2007      |
| lxxxiv)  | Method Statement 1 Amended 17.10.06.doc, 20 <sup>th</sup> June 2007                               |
| lxxxv)   | Method Statement 2 Amended 17.10.06.doc, 20 <sup>th</sup> June 2007                               |
| lxxxvi)  | Method Statement 3 Ver 4 17.10.06.doc, 20 <sup>th</sup> June 2007                                 |

| <b>C Documents Produced by RDL in Response to Specific Requests During Review</b> |  |
|---|--|
| lxxxvii)  | NHBC New House-Building Statistics Quarter 1 2007 Table 16 Percentage of House Types and Start Price of House Types                |
| lxxxviii)   | NHBC New House-Building Statistics Quarter 4 2007 Table 16 Percentage of House Types and Start Price of House Types                |
| lxxxix)   | RDPMC07-008 Report of the Inspectorate Chairman to the Performance and Monitoring Committee, 10 <sup>th</sup> May 2007             |
| xc)   | RDPMC07-009 Statistical Analysis of RD Performance to end March 2007   |
| xc i)   | Plot Registration Orders, 21 <sup>st</sup> August 2006   |
| xc ii)  | Plot Registration Cancellations, 19 <sup>th</sup> September 2006   |
| xc iii)   | Plot Registration Amendments, 10 <sup>th</sup> August 2006   |
| xc iv)  | Practice Note 2 - Separating Wall – Cavity Masonry February 2007   |
| xc v)   | RDINSP-05-013 Wall Ties for use in Cavity Masonry Separating Walls, 11 <sup>th</sup> November 2005                                 |
| xc vi)  | Important Notice, E-FC-3 and E-FC-4 Precast Concrete Slab, resilient layer(s) and floating screed Separating Floors, November 2005 |
| xc vii)   | Thermal Economics, Robust Detail E-FC-4 Installation Guide, draft 1 June 2007  |
| xc viii)  | Red Letter Procedures, undated   |
| xc ix)  | RDAC05-003 Stage A Assessment – Candidate Assessment Scoring CRD TF4, 9 <sup>th</sup> February 2005                                |

| <b>C Documents Produced by RDL in Response to Specific Requests During Review</b> |   |
|---|---|
| c)  | RDAC06-032 Stage B Assessment – Prestonplan CRD TF4<br>1 <sup>st</sup> September 2006                     |
| ci)   | RDAC07-003 Summary Progress Report Sean Smith, 6 <sup>th</sup> February 2007                              |
| cii)  | E-mail from Technical to A&AC, Robust Details – E-WM-9 and E-FT-3,<br>5 <sup>th</sup> March 2007          |
| ciii)   | RDFC07-XXX (p1) Finance Meeting Thursday August 2007, Budget<br>Variance.                                 |
| civ)  | RD06-021 RDL Research Funding, D. Baker, 23 <sup>rd</sup> February 2006                                   |
| cv)   | RD07-004 RDL Research Proposals and the Code for Sustainable Homes<br>21 <sup>st</sup> February 2007      |
| cvi)  | Putting the Rules to Work, Building, 20 <sup>th</sup> April 2007  |
| cvii)   | Noise Control Special report: Robust Details, Housing Association Building<br>and Maintenance, March 2006 |
| cviii)  | Durrants Coverage List for RDL January 2005 to June 2007  |
| cix)  | Durrants Advertising Equivalent and Public Relations Value Spreadsheet<br>June 2007                       |
| cx)   | RDFC07-006 - Risk Assessment, Sass Ezekiel, 24 <sup>th</sup> January 2007                                 |
| cxii)   | Extract from page 19 of NHBC Recovery Plan  |
| cxii)   | Robust Details Seminar Leaflet, RDL – 3 years on, May 2007  |
| cxiii)  | Robust Details Seminar Leaflet, the results, May 2006   |
| cxiv)   | Robust Details Seminar Leaflet, Robust Details for Sound Business,<br>July 2005                           |

| <b>D Documents Generated by FM During Review</b> |   |
|--|---|
| cxv)   | Faber Maunsell Interim Report   |
| cxvi)  | Questionnaire Form for Telephone Interview with Inspectors<br>12 <sup>th</sup> July 2007          |
| cxvii)   | Questionnaire Form for Telephone Interview with Robust Detail Users<br>12 <sup>th</sup> July 2007 |

| <b>E Documents Produced by RDI in Response to Specific Requests During Review</b> |   |
|---|---|
| cxviii)   | Standard Letter, Acoustic Consultancy Services Provided by Inspectors |

# Appendix 2

## Questionnaires

The following forms were used for the informal telephone interviews with RD users and inspectors.

### Telephone Interview with RD Users

|  |  |  |
|--|--|--|
| Organisation and location  |  |  |
| Builder or Robust Detail Proposer  |  |  |
| Initial contact (ask if they are the right person to speak to and if not ask to be redirected) |  |  |
| Redirected contact (inc. phone number)   |  |  |
| Q 1  | How have Robust Details benefited your organisation?   |  |
| A 1  |  |  |
| Q 2  | What has been your experience of the service provided by Robust Details Ltd?<br><i>maybe prompt on:    speed of response</i><br><i>                                 clarity of supplied information</i><br><i>                                 experiences of inspections and spot check tests</i><br><i>                                 quality and availability of technical backup</i> |  |
| A 2  |  |  |

|               |   |  |
|---------------|---|--|
| Q 3           | What change might you suggest to improve the RD system or the service provided by RD Ltd? |  |
| A 3           |   |  |
| Q 4           | Do you have any other comments about Robust Details and Robust Details Ltd                |  |
| A 4           |   |  |
| Date          |   |  |
| Completed by: |   |  |

## Telephone Interview with Inspectors

|                           |   |
|---------------------------|---|
| Organisation and location |   |
| Inspector                 |   |
| Q 1                       | How do you select the sites for spot tests and inspections?               |
| A 1                       |   |
| Q 2                       | How do you keep your own records of results?                              |
| A 2                       |   |
| Q 3                       | Have you ever come under any pressure to suppress or not submit failures? |
| A 3                       |   |
| Q 4                       | Any other comments?   |
| A 4                       |   |
| Date                      |   |
| Completed by:             |   |

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