

RAUCS Approved 2 June 2010



ROADS AUTHORITIES & UTILITIES COMMITTEE
(SCOTLAND)

ADVICE NOTE 3

Approved by RAUC (S) Coring Working Group – 22 April 2010

Approved by RAUC (S) – 2 June 2010

NATIONAL CORING PROGRAMME

Version 7.01

(CWG update 22 June after RAUCS direction on 2 June 10)

National Coring Programme

Version History

Version	Date	Notes
1.00 – 3.00		Approved by RAUC(S) at various dates
4.00	June '04	Approved by RAUC(S) 10 th March 2004
5.00	Feb '06	Approved by RAUC(S) 8 th March 2006. Published by the coring Group in the interests of disseminating new information at the earliest possible date.
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Index

	<u>Page:</u>
1. Introduction	3
2. Implementation of Programme and Reporting Mechanism	4
3. Cost Sharing	5
4. Scale and Details of the Programme	5
5. Coring Specification	6
6. Assessment and Interpretation of Cores	7
7. Defect Notification	8
8. Reporting	9
9. Timetable for Future Programmes	10
Glossary of Terms	11 & 12
Appendix "Coring Criteria"	13 & 14
Appendix D "Lifecycle of Coring Defect"	15
Appendix A	16
Appendix B	17
Appendix C	18

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Advice Note 3

National Coring Programme

1. Introduction

1.1 At the RAUC(S) meeting on 3 June 2009 the report on the 2008 National Coring Programme was approved. It was further agreed that:

- a) this Advice Note be reviewed by the RAUC(S) Coring Working Group;
- b) the results of individual areas should be discussed locally by Statutory Undertakers/Undertakers (SU) and local Roads Authorities (RA); and
- c) the RAUC(S) Coring Working Group meets to address issues that have not been handled in an agreed method e.g. consultations, locations in the previous exercise with a view to producing a guidance note for future programmes.
- d) a seventh National Coring Programme is to be undertaken on reinstatements completed between 1 July 2009 and 30 June 2010.
- e) the results of any undertaker, local roads or Area coring programmes should continue to be shared within the User Community to widen the scope of discussion on this issue.

1.2 This Advice Note has been prepared by the RAUC (S) Coring Working Group to outline the methodology, procedures and specification to be used in the implementation of the Seventh National Coring Programme in Scotland.

1.3 Advice Note No 3 should be applied to Coring Programmes whether National, local or otherwise.

1.4 The specification applicable is the *Specification for the Reinstatement of Openings in Roads – October 2003.*

2. Implementation of Programme and Reporting Mechanism

- 2.1 Building on the experience of the previous six National Coring Programmes it is seen as essential that each Roads Authority and Undertaker is directly involved in the coring exercise with monitoring of the programme being essential at all levels: Local, Area and National.
- 2.2 The implementation of the programme will be organised on an Area basis. To implement and overview the Programme it is recommended that each Area RAUC may consider the setting up an Area Coring Group (minimum of 2 Roads Authorities and 2 nominated Undertakers) that will ensure proper and consistent implementation of the programme at Local and Area levels, this could include the resolution of disputes (see.6.3). These groups should meet regularly. The Chairmanship will rotate with the lead role being taken by a Roads Authority, where practicable on a biennial basis.
- 2.3 The Coring Programmes will be implemented on an Area basis by the lead Roads Authority. The core sampling and testing must be carried out by a laboratory holding current UKAS accreditation covering the specified method of testing, unless otherwise agreed. This is seen as essential in providing a level of independence and confidence in the quality of testing and accuracy of results and most importantly in providing a consistent approach across Scotland.
- 2.4 The coring contractors' reports of the programmes will be first considered at local level between Roads Authorities and Undertakers. Reports will be provided through the lead Roads Authority. Once the Area report has been collated it will be forwarded to the RAUC(S) Coring Working Group for their consideration, overview and to compile a report at National level to RAUC(S) as detailed in paragraph 8.
- 2.5 It is **essential** that there is close working and co-operation at a local level between Roads Authorities and Undertakers in that:
- a) RAs and SUs must nominate a contact person with the appropriate technical competence to the Lead Authority, prior to the start of the coring programme;
 - b) Personnel nominated by both RAs and SUs must have the authority to implement and agree all aspects of the Coring Programme;
 - c) RAs to electronically inform Undertakers of locations and categories of initial sample of 20% (see 4.1 below) prior to commencement of programme. This will be in the form of a report exported in the original CSV format from the Scottish Road Works Register; Appendices A, B and C (downloadable from the Road Works Commissioner's website: www.roadworksscotland.gov.uk) must be used at each appropriate stage. Where the RA fails to contact the SU within 20 working days of reports becoming available on the SRWR, the SU will seek advice from the Scottish Road Works Commissioner, informing the Lead Authority of their action.
 - d) Jointly identifying and agreeing the locations of the sample sites to be cored. This must be completed timeously to allow progression of the programme.
 - i) Option 1- SU must respond to RA within 4 weeks of receipt of initial 20% sample, to schedule joint selection.
 - ii) Option 2- By agreement any other appropriate method of selection may be used. This agreement must be made within the same 4 week period.

RAUCS Approved 2 June 2010

These options are included to give flexibility to both parties. Where either party fails to fulfil their obligations the matter should be referred to the lead authority for inclusion in the national report.

- e) Agreeing additional core locations as back up in the event of failure to locate original locations at time of coring;
- f) Agreeing the findings of the coring programme locally before the results are submitted to the lead Roads Authority; and
- g) Agreeing any remedial measures.

3. Cost Sharing

- 3.1 Roads Authorities will fund the administration and implementation of the coring programme, with Undertakers paying for the cost of any non-compliant cores in accordance with Section 131 of NRSWA.

4. Scale and Details of the Programme

- 4.1 The sample size will be 20% or a minimum of 30 No, of the permanent reinstatements, meeting the criteria for coring (refer to Appendix “Criteria for Coring”) and registered between 1 July 2009 to 30 June 2010. Random samples are to be provided by the SRWR service provider, obtained as an ‘offline’ report by the individual Roads Authority. In the event of problems being encountered please contact the SRWR helpdesk. Any further issues should be forwarded to the lead Roads Authority and Susiephone Ltd Liaison Manager.
- 4.2 To reflect the variable workloads of each Undertaker, a 2% Sample for coring is the agreed annual sample size with the proviso of a minimum of 5 cores per Undertaker in each Roads Authority area to ensure an adequate sample size.
- 4.3 Care is required in finalising the actual sample for coring from the initial sample of 20% or minimum 30 No sample. To ensure the greatest benefit from the exercise the following guidelines are to be used:
- a) RA and SU to eliminate unsuitable sites from the initial 20% download sample to establish a list of suitable sites from which the 2% sample size will be drawn;
 - b) Where SUs have less than 30 No openings, all should be considered to obtain the minimum of 5 cores required;
 - c) Confirm it is the correct Undertakers;
 - d) Prioritise towards **carriageway** reinstatements;
 - e) If the given quota cannot be reached after initial sampling of carriageway then sample the footway;
 - f) If, for any reason, the given quota still cannot be reached, the RA may by agreement with SU, randomly select other completed reinstatements from the prescribed date range;
 - g) Ensure inclusion of higher category roads if sampled. However, an adequate sample shall still be taken from the lower category roads. The aim should be to obtain a representative sample from each reinstatement category present, taking account of Cat 4 reinstatements being predominant;

RAUCS Approved 2 June 2010

- h) Avoid verges, slabs, cobbles, etc;
- i) The road surface to be cored is to be bituminous material only;
- j) Concrete at binder course and base level shall not be cored but it's presence must be reported;
- k) Care to be taken with cores adjacent to ironwork. Core to be taken out-with the perimeter of the structure below and, at least 300mm clearance from the leading edge of any ironwork;
- l) Generally cores shall be taken with at least 100mm clearance from any joint edge/kerbs (be aware of the 150mm & 250mm trim-back rule);
- m) Do not take cores where the sample shows the wrong road type – select an alternative site and investigate reasons for discrepancy;
- n) Do not include sample site if obvious visual defect. These should be actioned through the routine defect regime. Unusually high numbers of surface defects, rejected during initial site sampling, should be noted in the Local and Area reports;
- o) Cores must not be taken from lay-bys, parking bays or areas of vehicle access;
- p) Reinstatements less than 650mm x 650mm should also be excluded (see Criteria for Coring, below).

4.4 Based on sections 4.1 to 4.3 above and the Glossary of Terms, detailed below are worked examples:

Permanent registered reinstatements	1000
Initial Sample	200
Sample for Coring	20
Permanent registered reinstatements	100
Initial Sample	30 – minimum allowed
Sample for Coring	5 *
Permanent registered reinstatements	25
Initial Sample	25 - maximum available
Sample for Coring	5*

A total of 5 minimum cores are to be taken for the National programme. Any number of cores can be taken for local or other programmes.

5. Coring Specification

5.1 The key elements of the coring specification are detailed below: (See also 6.2)

- (a) Cores shall be a nominal size of 100mm in diameter;
- (b) Cores shall be taken in all bituminous bound layers;
- (c) Measurements shall be to the nearest 5mm for each layer of material with variations in thickness averaged for reporting;
- (d) Describe each layer of material in generic terms: asphalt/macadam etc;
- (e) A visual assessment is to be carried out to determine whether the material is a hot rolled asphalt or an asphalt concrete. If hot rolled asphalt describe nominal stone size;

RAUCS Approved 2 June 2010

- (f) State whether the material meets the RAUC(S) Specification for the Reinstatement of Openings in Roads 2003 for the category of carriageway where the core was taken;
- (g) Describe the degree of compaction/voiding as: - pass or fail relevant to Table S10.1 in RAUC(S) Specification for the Reinstatement of Openings in Roads 2003;
- (h) Cores to be uniquely referenced, labelled, photographed and packaged with all cores being transported and stored carefully at all stages until the status of the core is agreed by the Roads Authority and respective Undertaker. Roads Authorities shall provide Undertakers an opportunity to inspect the cores prior to disposal;
- (i) Cores limited to one per unit of inspection;
- (j) Reinstatement of core holes to be as per RAUC(S) Specification for the Reinstatement of Openings in Roads – S11.5 Test Holes;
- (k) Coring contractor will advise both the Roads Authority and Undertakers of daily testing programme in order to provide opportunity to monitor the coring process. In addition, coring contractor to provide means of contact (e.g. mobile phone number); and
- (l) Location photograph and core photograph within individual core log report sheets to be provided for each core in PDF, identified by core reference number.

6. **Assessment and Interpretation of Cores**

6.1

- (a) The initial assessment and interpretation shall be undertaken by UKAS laboratories that shall be accredited to assess against NRSWA specifications, unless otherwise agreed. The summary result shall be submitted on the appendix “A” form, (downloadable from the Scottish Road Works Commissioner’s website: www.roadworksscotland.gov.uk) and the initial lab result will then be reviewed by experienced Roads Authority staff who shall electronically provide the Undertaker with copies of the results in CSV/spreadsheet format. The results shall be discussed and agreed at a local level between the Roads Authority and SU. The agreed results shall then be entered onto the SRWR by the RA and the Lead RA notified.
- (b) Failures will be deemed to be agreed if the SU does not contact the RA to arrange an agreement meeting within 20 working days of receipt of the coring results. The 20 working days period will commence when Appendices A & B are sent to the nominated SU contact by electronic means for the appropriate SU who shall also confirm receipt.
- (c) Failed cores mean the whole unit of inspection has failed.
- (d) Where the extent of the defect is challenged, the SU will have a further 20 working days to provide supporting evidence as described in (e) below. An auditable process must be available in this instance.
- (e) SUs may take additional cores or, carry out any other tests approved to a national standard or, works to investigate the extent of the defect within the unit of inspection. These works will not form part of the National Coring Programme and as such will be carried-out at the expense of the Undertaker. Any coring shall be subject to the same guidelines given in this Advice Note. Therefore, Roads Authorities shall be consulted during each step and results discussed with RA to agree possible reduced extent of remedial work required.

- 6.2 Assessment of the coring contractor report will include (See also 5.1)
- (a) layer thickness compared with specified carriageway/footway category thickness;
 - (b) type of construction versus permissible reinstatement types;
 - (c) tolerances as listed in the *RAUC(S) Specification for the Reinstatement of Openings in Roads: A Code of Practice (S6.6 Appendix A2.5 Tolerances)*. (Note that these tolerances apply to both the carriageway and footway). See Layer Tolerances in Glossary of Terms;
 - (d) visual assessment of voiding relevant to table S10.1 in the *RAUC(S) Specification for the Reinstatement of Openings in Roads: A Code of Practice* ;
 - (e) an assessment of stone size to be carried out, and compared to that of the specified material. Determine whether the material is a hot rolled asphalt or an asphalt concrete. If hot rolled asphalt describe nominal stone size;
 - (f) state if no bond between layers. If no bond evident this may constitute a failure. However, as cores can break due to uneven forces applied during coring, a clean break is not necessarily a reason for failure.
- 6.3 In the event of non-agreement between Roads Authority and Undertaker the following procedure should be adopted:
- (a) If the dispute relates to voiding, then a separate air voids test may be arranged with the coring contractor. This will involve a percentage air voids test, on original core, in accordance with BSEN 12697. The cost of this test will be met in accordance with Item 3 (Cost Sharing) above, depending on the result;
 - (b) Otherwise, the dispute must initially be reported to the lead Roads Authority. If all parties cannot agree, the Area Coring Group (or Area RAUC if no Area Coring Group has been formed) shall then consider it in full;
 - (c) In the event that the dispute still cannot be resolved, it should be presented, in writing (e.g. e-mail), to the chair of the RAUC (S) Coring Working Group for consideration of relevant members of the Coring Working Group;
 - (d) The decision of RAUC (S) Coring Working Group will be binding with both parties.

7. **Defect Notification**

- 7.1 Where agreement has been reached, defects should be notified to Undertakers using the drop-down menu in the SRWR under 'National Coring' (see also 9.3).

8. Reporting

- 8.1 It is vital to determine the reinstatements which comply or otherwise with the *RAUC(S) Specification for the Reinstatement of Openings in Roads*. This is the prime reinstatement quality standard.
- 8.2 The results of the exercise are to be reported in the following categories:
- (a) Pass See Glossary of Terms
 - (b) Fail See Glossary of Terms
- 8.3 To improve the usefulness of the results, the following reasons for non-compliance will also be reported in Appendices B and C:
- a) layer tolerances;
 - b) voiding;
 - c) material type; and
 - d) bond.

In Appendix A, under column 11 all failure attributes to be noted.

- 8.4 The results from the laboratory will be summarised as follows:
- a) By Roads Authority for Undertaker in Appendices A & B;
 - b) By Roads Authority for Local RAUC in Appendices A & B;
 - c) By Roads Authority, on behalf of Local RAUC, for lead Roads Authority in Appendices A & B;
 - d) By lead Roads Authority collated for Area RAUC in Appendices B & C;
 - e) By lead Roads Authority, on behalf of Area RAUC, for RAUC(S). Coring Working Group in Appendices B & C; and
 - f) By RAUC(S) Coring Working Group at National level in Appendices B & C – monitored by RAUC(S).

9. Timetable for Future Programmes

9.1 Now that the six previous programmes have been completed it is essential this exercise be repeated on a regular basis. It is considered that biennial programmes will be necessary until the level of performance provides the industry with confidence in reinstatement quality and therefore reduce the frequency of any future coring programmes.

9.2 For 2010 the following programme is proposed:

a)	Have Lead Authorities in place who will invite tenders and compile nominated contact list	December 2009
b)	Establish Area Coring Group	January 2010
c)	Initial sample to be available for download from the SRWR to each Roads Authority	Last week July 2010
d)	Compile Local Programmes – check accuracy/sites, agree with Undertakers and submit (Appendix A) to lead RA	Aug/Sept 2010
e)	Lead RA to collate Area Programme and engage Coring Contractor	Aug/Sep 2010
f)	Undertake Coring Programme	Oct/Nov 2010
g)	Coring Contractor to have results to Lead Authority	December 2010
h)	Local scrutiny and agreement of results. Any written disagreements to be passed onto lead RA.	Jan/Feb 2011
i)	Report of Local/Area results to Area RAUC(S)	March 2011
j)	Lead R/A or Area Coring Working Groups report to RAUC(S) Coring Working Group.	April 2011
k)	RAUC(S) Coring WG report to RAUC(S)	May 2011
l)	Approval of National Report by RAUC(S)	June 2011

9.3 Rectification of identified defects

Agreed Defect Notices should be issued by the Roads Authorities through SRWR as soon as is practical. SU to respond within the specified Notice Periods and rectify failed reinstatements within 90 calendar days. The inspection due date may have to be manually recorded in the SRWR by the RA to meet these timescales. These dates can vary but only by mutual agreement recorded in the SRWR in “comments” section of the notice.

GLOSSARY OF TERMS

Pass	<p>Reinstatement in compliance with, or exceeding Specification for the Reinstatement of Openings in Roads (Specification) - No Cost to Undertaker.</p> <p>Engineering judgement can be made to allow a reinstatement to be categorised as a pass, where under the “Specification” it would be classed as a fail.</p>
Fail	<p>Layer Tolerance (bound material depth)</p> <p>Voiding / compaction not to Specification must be mutually agreed. Failure to agree may result in the core being subject to an “air void” test.</p> <p>Material Type (HRA, Asphalt Concrete etc)</p> <p>Poor Bond between layers (see 6.2(f) above)</p>
Cost	<p>Pass: no cost to Undertakers.</p> <p>Fail: financial cost to Undertaker will be: actual cost of core (financial value) plus 2 x normal inspection fees as a standard administration fee.</p> <p>After the agreed 90-calendar day remedial rectification period, the defect inspection regime in accordance with RAUC(S) Code of Practice for Inspections will apply as appropriate.</p>
Initial Sample	<p>20% of permanent registered reinstatements or minimum of 30 reinstatements, locations randomly sampled via SRWR.</p>
Sample for Coring	<p>2% of permanent registered reinstatements or minimum of 5 reinstatement locations, selected from the Initial Sample.</p>

GLOSSARY OF TERMS

Layer Tolerances	<p>Clause S6.6 (Appendix A2.5) c/w & f/w: - SC -5mm; any other structural layer comprising bound material -10mm</p> <p>Combination tolerance in carriageways is -15mm (for two layers : SC & BC) Combination tolerance in footways is -10mm (for two layers : SC & BC) Absolute minimum c/way 100mm bound material Absolute minimum f/way 60mm bound material</p> <p>Designed or alternative layer thicknesses for each core location, if different to the standard option from RAUC(S) Specification for all road types, shall be supplied by each Undertaker to the local Road Authority prior to coring.</p> <p>Clause S8.4.1 Commercial Vehicle Access in Footway: Specification to Type 4 but check Clause S8.4.1 (3) for special construction greater than Type 4.</p> <p>Clause S8.4.2 Domestic Vehicle Access in Footway: As existing construction subject to absolute minimum 60mm bound material.</p>
Small Excavations and Narrow Trenches	<p>Clauses S6.4.10, S1.5.1 and S1.5.2 – Small reinstatements = or < 300mm width or, = or < 2m² in flexible and composite carriageways. Engineering judgement should be used to decide core results for reinstatements slightly over 2m² where two permanent surface course layers are used. (This option for assessing cores in reinstatements slightly greater than 2m² is available where a case is made in the NoSRAUC area where material availability can be problematic)</p>

Criteria for Coring: Selection for National and Local Coring Reports.

Criteria

Random selection taken from pool of sites meeting the following criteria;

Reinstatement Date within prescribed Range (e.g. 1st April – 31st March. Fixed for National Coring, but variable for Local Coring)

Surface Type must be one of the following:

- HRA
- Asphalt Concrete
- SMA
- Surface Dressed
- Anti Skid
- Slurry Seal

Location must only be in the Carriageway (preferred) or Footway (see Note 1 below)

Reinstatement type must be Permanent

Size range;

- Length must be greater than or equal to 0.65m (to clear tie ins and give core width)
- Width must be greater than or equal to 0.65m (to clear track side joints by 100mm and give core diameter)
- Reinstatements where **both** dimensions are less than 0.65m x 0.65m **will be excluded from the report;**
- Reinstatements where any dimension is greater than 0.65m and the other dimension less than 0.65m (say 100m x 0.4m) **will be included in the report;**

Outputs

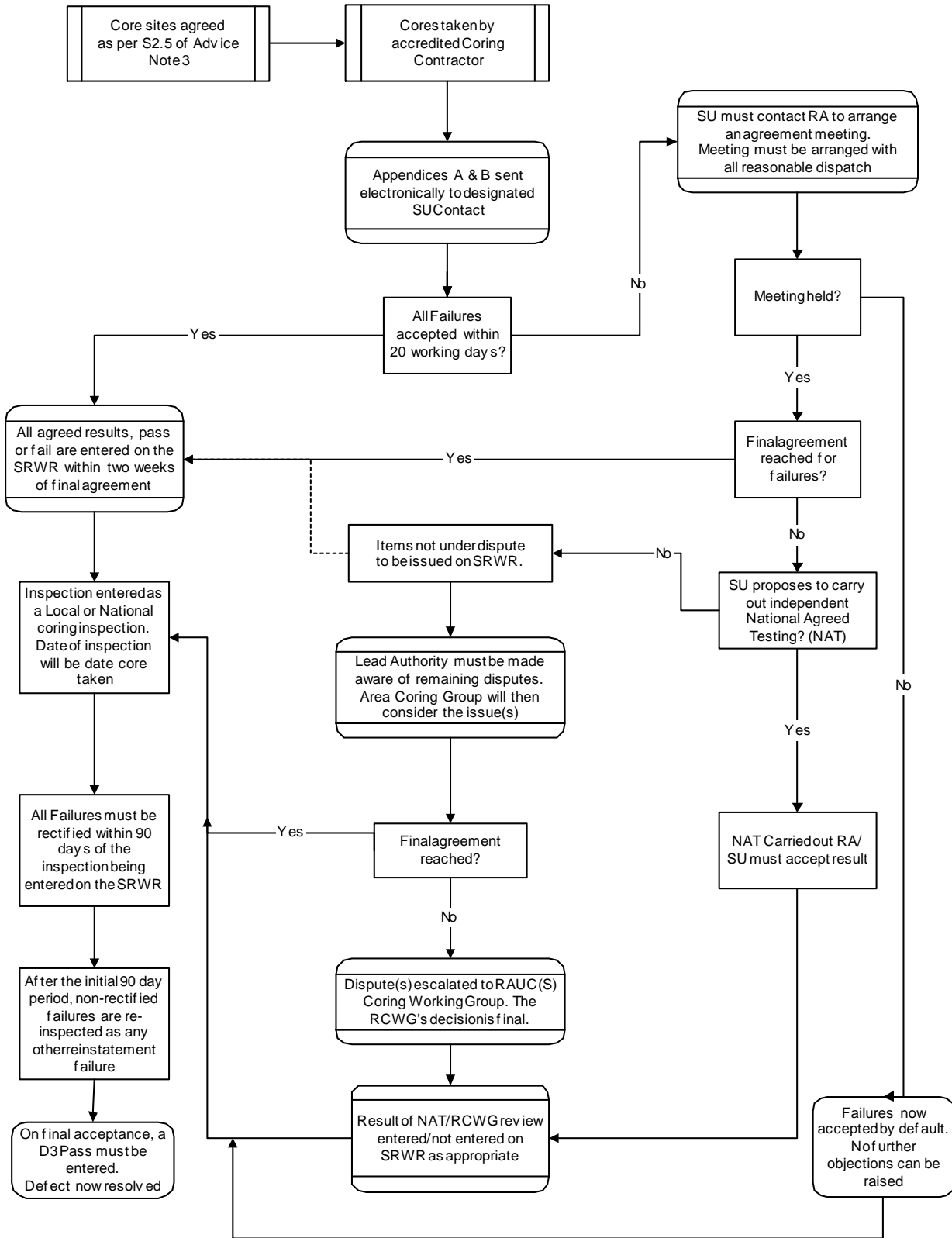
The report showing the selection must contain the following information;

- Council Area
- Town
- Street
- Specific Location
- OSGR (coordinates)
- Location (Carriageway or Footway)
- LA Ref
- Works Promoter Ref
- Works Promoter
- Date of Reinstatement
- Category of Reinstatement
- Length
- Width
- Description of Works

Note 1: Although the results must be random extra weighting should be given to more desirable results. This could easily be accommodated by ordering the results to show reinstatements in the carriageway at the top of the report, with those in the footpath at the bottom. This is not a requirement, but would make selection easier.

Note 2: Important Information - the downloaded list will show verges on the reinstatement location list if the largest reinstatement is in the verge. However the notice selected will contain carriageway reinstatements in its list of sites meeting the selection criteria. Therefore it is imperative that those involved in manipulating and using the lists to produce a final core sample have full access to the SRWR notice information to complete the process.

Appendix D - Typical Lifecycle of National/Local Coring Failure



TYPE of CORING PROGRAMME: RA, SU Area or RAUC (HIGHLIGHT TYPE)

APPENDIX C Version: xx
Date: dd/mm/yyyy

NATIONAL CORING (INFILL YEAR)

1	2	3	4	5	6	7	8	9	10
UNDERTAKER	Nos.	Nos.	%	Voiding	Layer Tolerance	Material Type	Bond	TOTAL	
								No	%
Infill each SU result from RA in Area RAUC									
TOTALS	0	0		0	0	0	0	0	

Note: A 'free-standing' Excel version of the appendices is available at www.roadworksscotland.gov.uk.