

Roads Authorities & Utilities Committee (Scotland)

Advice Note 3

National Coring Programme

1. Preamble

- 1.1 At the RAUC(S) meeting on 5th March 2014 the report on the 2013 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 Undertakers 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 ninth National Coring Programme is to be undertaken on reinstatements completed between 1st January 2015 and 31st December 2015.
 - 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 ninth National Coring Programme in Scotland.
- 1.3 Advice Note No 3 should be applied to Coring Programmes whether National, local or otherwise.
- 1.4 Building on the experience of the previous eight 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.
- 1.5 The specification applicable is the relevant “*Specification for the Reinstatement of Openings in Roads*” (SROR)¹ – applicable at the time of the work being carried-out.

¹ For the purposes of the rest of this document, the “Specification for the Reinstatement of Openings in Roads” will be referred to as SROR

1.6 The timetable for the 2016 National Coring Programme is as follows:-

Mile stone	Action	Date Start/Finish
M1	Lead Authorities and Nominated Contact List Compiled	F: December 2015
M2	Sample Download	F: 11 th January 2016
M3	Sample List Compilation	S: 11 th January 2016 F: 8 th February 2016
M4	Local Programme Compilation	S: 8 th February 2016 F: 15 th April 2016
M5	Area Programme Compilation	S: 18 th April 2016 F: 29 th April 2016
M6	Core Sampling	S: 3 rd May 2016/ F: 1 st July 2016
M7	Roads Authority Review	S: 1 st July 2016 F: 12 th July 2016
M8	Initial Result Review (Undertaker)	S: 15 th July 2016 F: 29 th July 2016
M9	Agreement Meetings	S: 1 st August 2016 F: 2 nd September 2016
M10	Further Testing, Disputes and Confirmation of results.	S: 5 th September 2016 F: 30 th September 2016
M11	Disputes Panel - Coring Working Group	3 rd October 2016 – 14 th October 2016
M12	Compilation and Completion of RAUC (S) Coring WG report for RAUC(S)	S: 17 th October 2016 F: 25 th November 2016
M13	Approval of National Report by RAUC(S)	December 2016

1.7 The milestones held within the timetable are to ensure the timeous conclusion to the programme. Failure to meet these timescales, by any party, may result in the exclusion of their results either in Area or National result and reported to the Scottish Road Works Commissioner.

1.8 Once all the Area reports have been collated, the RAUC(S) National Coring Working Group will consider, take an overview and compile a report at National level to RAUC(S) as detailed in Section M12.

2. Milestone M1 – Lead Authorities and Undertakers’ Nominated Contact

- 2.1 The Lead Authority is a key position within the National Coring Programme and has the following responsibilities:
- i) Is the key contact for the National Coring Programme within its RAUC(S) area
 - ii) Sets up and administrates the Coring Contract within its RAUC(S) area
 - iii) Compiles the overall sample lists and results for submission to the National Coring Working Group
- 2.2 The 2016 National Coring Programme will be implemented on an Area basis by the Lead Authority. The Lead Authority can be either a Roads Authority or an Undertaker.
- 2.3 Each Roads Authority and Undertaker is to provide a single contact, to act as a focal point, for the National Coring that fulfils the following credentials:
- i) Must have the appropriate technical competence
 - ii) Must have the authority to agree all aspects of the Coring Programme
- 2.4 The names and contact details must be notified to the Lead Authority in each RAUC(S) area prior to the National Coring Programme starting – in this case, 31st December 2015.
- 2.5 It is *essential* that there is a close working and co-operative relationship between Road Authorities and Undertakers, at both local and national levels, in order to achieve the objectives of the National Coring Programme.

3. Milestone M2 – Sample Download

- 3.1 The Sample Download from the Scottish Road Works Register² (SRWR) shall contain pool of 30% of all, or a minimum of 30, reinstated sites completed and have reinstatements, from each Undertaker, that have been made permanent between the 1st January 2015 and 31st December 2015 inclusive.
- 3.2 The Sample Download will be a random selection taken from a pool of sites meeting the following criteria:
- Reinstatement Date within prescribed Range (e.g. 1st January 2015 and 31st December 2015 inclusive)
 - Surface Type must be one of the following;
 - Hot Rolled Asphalt (HRA)
 - Asphalt Concrete (AC)
 - Stone Mastic Asphalt (SMA)
 - Surfaced Dressed
 - Anti-skid
 - Slurry Sealed
 - Location must only be in the Carriageway (preferred) or Footway³
 - Reinstatement type must be Permanent
 - 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 0.35m (to clear track side joints by 100mm and give core diameter).
- 3.3 The Sample Download shall have the output containing the following information:
- a) Council Area
 - b) Town
 - c) Street
 - d) Specific Location
 - e) OSGR (Coordinates)
 - f) Location (Carriageway or Footway)
 - g) LA Reference

² For the purposes of the rest of this document, the Scottish Road Works Register will be referred to as the SRWR

³ Although the sample should be random; extra weighting should be given to a more desirable result. This could be easily accommodated by ordering the results to reinstatements in the carriageway at the top of the report and those in the footpath at the bottom. This is a recommendation only.

- h) Works Promoter Reference
- i) Works Promoter
- j) Date of Reinstatement
- k) Category of Reinstatement
- l) Length
- m) Width
- n) Description of Works

3.4 The download will be in the form of a report exported in CSV format from the Scottish Road Works Register (downloadable from the Road Works Commissioner's website: www.roadworksscotland.gov.uk). This will be available by 11th January 2016.

3.5 In the event of problems being encountered accessing the Sample Download for your Roads Authority or Undertaker, you should contact the SRWR helpdesk in the first instance. Any further issues should be forwarded to the Lead Authority, who will then inform the National Coring Working Group and Scottish Road Works Commissioner.

4. Milestone M3 – Compiled Sample Lists

- 4.1 Each Roads Authority shall compile a Sample List of the locations, from the available notices on the Sample Download that they wish to enter for the National Coring Programme.
- 4.2 The resultant Sample size for each Undertaker, in each Roads Authority area, will be as follows:-
- i) 2% of a Undertakers Permanent Reinstatements completed between 1st January 2015 and 31st December 2015; or
 - ii) A minimum of 5 cores

Where the Sample Size for an Undertaker cannot achieve the minimum 5 cores, it is the discretion of the Roads Authority to include the available works or exclude them from the programme.

- 4.3 All efforts must be taken in order the resultant Sample List only contains items that match the following criteria:-
- i) Sites must have the following Surface Types:-
 - Hot Rolled Asphalt (HRA)
 - Asphalt Concrete (AC)
 - Stone Mastic Asphalt (SMA)
 - Surfaced Dressed
 - Anti-skid
 - Slurry Sealed
 - ii) The Location must be either Carriageway (preferred) or Footway⁴
 - iii) Reinstatement must be permanent
 - iv) Length must be greater than or equal to 0.65m (to clear tie-ins and give core width)
 - v) Width must be greater than or equal to 0.35m (to clear track side joints by 100mm and give core diameter).

⁴ Although the sample must be random; extra weighting should be given to a more desirable result. This could be easily accommodated by ordering the results to reinstatements in the carriageway at the top of the report and those in the footpath at the bottom. This is a recommendation only.

- 4.4 PLEASE NOTE: the downloaded list will show “Verge” on the reinstatement location list if the largest reinstatement is in the verge. However, the notice selected will contain carriageway reinstatement details within its list of sites that meet the selection criteria. Therefore, it is imperative that whoever is involved in producing the Sample List is aware of this fact and has full access to the SRWR notice information to complete this task.
- 4.5 When compiling the preferred Sample List for each Undertaker, it is recommended to use the following methodology:-
- i) Prioritise Carriageway Reinstatements. If quota cannot be reached, Footway Reinstatements should then be chosen.
 - ii) Ensure inclusion of higher category roads, if included in the Sample Download. The aim should be to obtain a representative sample from each reinstatement category that is present – taking into account that Cat 4 reinstatements may be predominant.
- 4.6 Once the preferred Sample List has been achieved, these entries should be either marked as “Preferred” or listed under the heading of “Preferred”. All of the other remaining viable sites should be marked as “Alternative” as a backup in the event that any of the “Preferred” sites are deemed not suitable when checked on site in Milestone M4.
- 4.7 During this period, the Undertakers should scrutinise the full Sample Download for their organisation in preparation for Milestone M4. If there are any items within the list that the Undertaker knows of that are unsuitable to be selected, they should inform the Roads Authority, giving them a reason for the exclusion as soon as reasonably practicable (in the case of a defect, the proposed date of rectification and method shall be agreed in line with the Inspections Code).
- 4.8 The compiled Sample Lists are to be sent to all the affected Undertakers no later than 8th February 2016 – the Lead Authority should monitor this activity to ensure this is done. If this date is missed, this could mean that the Roads Authority Area will be excluded from the National Coring Programme 2016 and reported to the Scottish Road Works Commissioner. If any Roads Authority knowingly has any concerns about achieving the deadline, they should inform the Lead Authority and the National Coring Working Group for their consideration prior to the date expiring.

4.9 Based on section 4.2 and the Glossary of Terms, detailed below are some worked examples for numbers to be included in the Coring Sample:

Example 1

Permanent Registered Reinstatements	1000
Initial Sample	300
Sample for Coring	20

Example 2

Permanent Registered Reinstatements	80
Initial Sample	30 (minimum allowed)
Sample for Coring	5*

Example 3

Permanent Registered Reinstatements	25
Initial Sample	25 (maximum available)
Sample for Coring	5*

* 5 cores being the absolute minimum for an Undertaker to be sampled within the programme.

5. Milestone M4 – Local Programme Compilation

- 5.1 Within this milestone, it is critical that all aspects of the selection and agreements of the Sample List of core locations are both agreed and done timeously. Failure to do so will have impact on the completion time and, more importantly, the overall agreement of the result at the end of the programme.
- 5.2 There are two permitted routes of selection of the 2% (in some cases, this may be less – see 4.9) sample for the National Coring Programme: Traditional (see 5.4) and Hybrid (see 5.7)
- 5.3 There may be instances where the initial Sample Download list has been exhausted and the 2% sample has not been achieved. When this occurs, the following actions can be taken:
- i) A further download should be requested from the SRWR; or
 - ii) An agreement on which notices can be sampled to make up the required amount between the Roads Authority and Undertaker should be reached, or
 - iii) If available, the Roads Authority can use the Undertaker's own Core Reports to complete the sample size (provided that this doesn't exceed the 80% threshold – see 5.10).

Traditional Methodology

- 5.4 The Traditional Selection method is where all sites are available for physical core sampling. All locations have to be agreed and deemed as suitable for sampling based upon the following criteria:
- i) The road surface to be cored is of bituminous material only, and
 - ii) Both the Roads Authority and Undertaker confirms ownership of the reinstatement to be sampled at the given location, and
 - iii) Have no obvious visible defects (these should be actioned through the routine defect routine. Unusually high numbers of surface defects and rejected locations should be noted and reported at Local and Area RAUC meetings), and
 - iv) The reinstatements are greater than 650mm in length and greater than or equal to 0.35m in width in surface dimension, and
 - v) The sample shows the correct Road Type, and
 - vi) Not located in lay-bys, parking bays or areas of vehicle access.
- 5.5 The specific location, within the reinstatement, for which the Core Sample to be taken shall be agreed and will meet the following criteria and considerations:

- i) 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. Be aware the remainder of these reinstatement may only be surface material and best practice may be to avoid ironwork only reinstatements, and
 - ii) Generally cores shall be taken with at least 100mm clearance from any joint edge/kerbs (be aware of the 150mm & 250mm trim-back rule), and
 - iii) Marked in the correct format as laid out in Appendix F
- 5.6 On site location marking can be carried out by two methods. These are as follows:-
- i) Joint Site Meeting Method
The sites are agreed jointly on site between the representatives of the Roads Authority and the Undertaker. The method of marking the specific location within each reinstatement is laid out in Appendix F.
 - ii) Relay Method
The Relay Method is used where either logistic and/or resources issues make the Joint Site Meeting Method unviable. In this method, either the Roads Authority or the Undertaker visits the sites first and marks the reinstatement location with their part of the Marking (see Appendix F). After this, the Organisation still to participate visits the site and, if they agree with the location, then they complete the target marking. If after this there is a dispute on the location for any reason, a joint site meeting should be arranged to resolve either to discount or resolve its inclusion.

Hybrid Methodology

- 5.7 The Hybrid selection method is where the sample of an Undertaker is made up of both physical core sampling (as per 5.3) and the organisations own internal sampling provided that the methods meet those set out in 5.5. The combined sample will still account for 2% of all registered permanent reinstatement that the Undertaker carried out within the sample period.
- 5.8 The Hybrid selection option is used by the discretion of the Roads Authority only and where it is being offered by the Undertaker. There is no obligation for a Roads Authority to use this option.
- 5.9 Where the Hybrid selection option is being used, only where the Undertaker has a suitable Core Report that corresponds to an item of the Sample Download Report from Milestone M2. The only exception to this would be if the downloaded sample has been exhausted and the 2% sample target has not been reached (see 5.3)

- 5.10 The Hybrid selection option is only valid to be used if the Undertaker can demonstrate that the core reports have been achieved by the following standards:
- i) Their internal processes meet, or exceed, those laid out in this Advice Note in the selection of sites (in both random and quantity aspects), and
 - ii) The sampling has to have been carried out by a UKAS accredited laboratory, and
 - iii) The Undertaker can demonstrate the full Quality Assurance behind their auditing and correction processes.
- 5.11 Although the inclusion of the Hybrid Selection option is designed to reduce the financial impact on the Roads Authority in the National Coring Programme via costs, procedures and administration, it is important that the entire sample is not made up of the resultant Undertaker's results. To give credibility to the Undertaker's QA processes, a certain amount of physical coring must be taken as validation. It is recommended that a maximum of 80% of an Undertakers sample be made-up of their own Core Reports and the remaining 20% taken through the traditional route.
- 5.12 Where the Hybrid selection option has been utilised and the Undertaker has shown that an original core sample was taken, had found it to be a "Fail" and can provide evidence of the corrective action for the reinstatement/s to be compliant (i.e. works carried out and further cores taken) prior to the commencement of this milestone, for the purposes of the National Coring Programme, this shall be classified as a "Pass". If, however, the Undertaker cannot demonstrate the corrective action either within or out with the commencement of this milestone, then the result will be progressed as a "Fail".

6. Milestone M5 – Area Programme Compilation

- 6.1 To enable with the administration and timescale of this element of the programme, each participating Roads Authority is required to submit their agreed site locations, Appendix A formats and photographs to the Lead Authority by the 15th April 2016.
- 6.2 The Lead Authority is, then, required to compile and send the Area Coring Locations to the Coring Contractor by the 29th April 2016.
- 6.3 Any issues with Site Locations, meeting the deadline or other related items, the Lead Authority must contact the National Coring Working Group as soon as possible and prior to the deadline.

7. Milestone M6 – Core Sampling

- 7.1 This milestone is concerned with the physical taking of the cores and the subsequent production of the Core Reports. This element is to take place between 3rd May 2016 and 1st July 2016.
- 7.2 The Core Sampling and testing must be carried out by a laboratory holding a current UKAS accreditation, unless otherwise agreed. This is seen as essential in providing objectivity and confidence by using an independent source for testing, accuracy of results and, most importantly, a consistent approach across Scotland.
- 7.3 The Specification for Core Sampling is as follows:-
- i) Cores shall be a nominal size of 100mm in diameter, and
 - ii) Be taken in all bituminous bound layers, and
 - iii) Concrete at binder course and base level shall not be cored but it's presence must be reported, and
 - iv) The reinstatement of the core hole to be as per the SROR (S11.6 Trial Holes), and
 - v) Cores limited to one coring unit (see Glossary Of Terms), and
 - vi) Cores to be uniquely referenced, labelled, and photographed, and
 - vii) Coring contractor will advise both the Roads Authority and Undertaker 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
 - viii) Provide a Core Report for each Core sampled as per 7.5, and
 - ix) The delivery of the Core Samples to location/s agreed for each Area Authority.
- 7.4 The assessment of the Cores will be as follows:-
- i) Measurements shall be taken, to the nearest 5mm, for each layer of material with variations averaged for reporting, and
 - ii) Description of each layer of material, in generic terms (i.e. HRA, etc.), and
 - iii) A visual assessment to be carried out to determine the nominal aggregate size, and
 - iv) State, by visual evidence, whether the material appears to meet the requirements within the applicable SROR for the category of the carriageway/footway from which the core was sampled in the following categories:
 - Layer Depths (by measurement)
 - Material Used (by measurement and/or visual)
 - Compaction/Voiding (by visual)
 - De-bonding/De-lamination (by visual)

- 7.5 The Report for the individual Core Sample (see Example in Appendix A) shall contain the following:-
- i) The individual Core Reference for the sample, and
 - ii) The location in terms of Road Name, reasonably accurate location information within that Road, Town/City and Roads Authority Area, and
 - iii) Road Type (i.e. Type 0, 1, 2, 3 or 4), and
 - iv) Existing/surrounding Surface Course Material, and
 - v) The measured layer thicknesses from the Core Sample against those permissible within the SROR, and
 - vi) An assessment of the materials used against those permitted within the SROR, and
 - vii) An assessment of the compaction of all layers compared to the permitted (see 7.8)
 - viii) An assessment of the bond between each layer (see S7.9), and
 - ix) Photographs pertaining to that Core Sample (see 7.10), and
 - x) An indication, based upon the findings, whether the Core Sample is a “Pass” or “Fail” against the SROR, and
 - xi) The completed report to delivered in PDF format, labelled by the individual Core Reference Number, and
 - xii) An initial Appendix A form completed detailing the summary of all of the results in CSV/xlsx format (a copy of this pro-forma can be found at www.roadworksscotland.gov.uk)
- 7.6 In respects to the taking of the Core Sample, its transportation and storage, care must be taken to protect the integrity and condition of the Cores as a priority. Any damage to a Core Sample may affect the outcome of an agreement between the Roads Authority and the Undertaker (Milestone M9), as well as affect any further testing, and the result in its assessment being void and/or that location being re-sampled.
- 7.7 During the operation of collecting Core Samples, the Coring Contractor may encounter difficulties in retrieving a sample from the designated location (i.e. parked cars, etc.). This must be reported back to the Roads Authority immediately in order for them to make a decision of the course of action needed. This may result be the following:
- i) Removal of the location from the sample, or
 - ii) Request the Coring Contractor attempt to obtain the sample at later time or day, or
 - iii) Agree another location to be agreed with the applicable Undertaker as a replacement.
- If any event, the resolution must be in place prior to the milestone deadline.

- 7.8 The visual assessment of the compaction of Core Sample, in respects to levels of Voiding, cannot be an accurate determination and therefore, can only be gauged against the permitted levels for any particular material layer (see Table S10.1 in the SROR). If the UKAS laboratory considers that the visual assessment of the core shows indicates a level of voids that would exceed those permitted, then the report should indicate a “Fail” as an initial result. Further testing may be required to obtain an empirical result at a later stage (see 11 - Milestone M10).
- 7.9 For the assessment of De-bonding/De-lamination where two layers have separated, the UKAS Laboratory should assess whether the following has occurred:
- i) The action of taking the Core Sample has caused the separation, or
 - ii) There is any detriment present that has caused the lack of adhesion, or
 - iii) There is a lack of Bond or Tack Coat in evidence as per the SROR
- 7.10 Photographs are required for the Report to show the following (examples shown in Appendix F):
- i) The Core Sample laid next to the resultant hole; and
 - ii) A locational view of the selected reinstatement showing the Core Sample and, if possible, any Core Markings.
- 7.11 Both the actual taking of the Core Sample and the subsequent Core Reports must be completed and received by the Lead Authority, or individual Road Authorities if they are the agreed recipients, by no later than 1st July 2016. The delivery of the physical Core Samples can be arranged at a later date in alignment with any Agreement Meetings that may take place.

8. Milestone M7 – Roads Authority Review

- 8.1 Once the Roads Authority is in receipt of all the Core Reports and Appendix A forms for their area, it is advisable to review each of them, by experienced Roads Authority staff, and make a judgement of whether the Core Sample has “Passed” or “Failed”, based upon their own engineering judgement. This is only recommendation as a Roads Authority may elect to proceed with the findings of the Laboratory.
- 8.2 Each Roads Authority shall update the applicable Appendix A form based upon their judgement of the initial result.
- 8.3 The initial result on the Appendix A form and the relevant Core Reports shall be sent to the applicable Undertakers for their review no later than 12th July 2016. This date may change depending on any previous delays in the programme and will be communicated by the National Coring Working Group. If any Roads Authority has any concerns in meeting the deadlines set for this milestone, they must inform the Lead Authority and the National Coring Working Group prior to the deadline. Any Roads Authority that misses this deadline could have their sample removed from the programme and reported to the Scottish Road Works Commissioner.

9. Milestone M8 –Undertaker Review

- 9.1 The Lead Authority shall ensure that each Roads Authority has sent the applicable Core Reports and Appendix A forms to the Undertakers involved in the National Coring Programme in their area by the 15th July 2016
- 9.2 It is highly recommended that the Undertakers scrutinise these Core Reports and Appendix A forms thoroughly prior to the Agreement Meetings. This is to avoid any protracted issues that may arise from the findings.
- 9.3 Any issues found with any other of the findings within either Core Reports or Appendix A must be reported back to the Roads Authority prior to the Agreement Meetings in order for all parties to be prepared to aid early resolution.

10. Milestone M9 – Agreement Meetings

- 10.1 Agreement Meetings are to take place between 1st August 2016 and 2nd September 2016. These can be arranged in in two formats: Area (Surgery) or Individual Formats.
 - 10.1.1 Area (Surgery) type Agreement Meetings – these are held over one or two days and located in a single location within the area. The advantage of this approach is that the Core Samples are delivered to one location and the agreements can be had between the Road Authorities and Statutory Undertaker very quickly. This reduces both time and travel within each Area Authority region. This approach has worked successfully in the NoS RAUC area for a number past programmes
 - 10.1.2 Individual Agreement Meetings – these are arranged on a one-to-one ad-hoc basis, upon agreement, between a Roads Authority and Undertaker.
- 10.2 Both the Roads Authority and Undertaker should have a member of staff present that has the relevant technical knowledge and has the authority to agree the outcome of the samples on behalf of their organisation.
- 10.3 After the delivery to the designated location/s, it is essential that the condition and integrity of Core Samples are maintained throughout the agreement phase of the programme. It is recommended that, upon delivery, the condition of the samples be checked for any damage either through transportation or from taking of the sample. To re-emphasise: the condition of the Core Sample may affect any agreement and/or further testing applications.
- 10.4 Both the Roads Authority and the Undertaker Representative should assess the Core Sample together with the Core Report to determine the final result.
- 10.5 Where the Undertaker either does not attend the Agreement Meeting or make contact about the Core Reports, it is deemed that they agree with the Initial Assessment and that this will be carried forward as the final result. Where this happens, any required Remedial Action that is required will still need to be agreed upon.
- 10.6 Every effort should be made to come to a consensus on the result of a Core Sample. Where a decision cannot be agreed upon, the following options should be followed:-

- i) Further testing, and/or
- ii) Raising a dispute

Both options are described in “11 – M10 Further Testing, Disputes and Confirmation of Results”.

- 10.7 Where it is agreed that a Core Sample has failed, Remedial Action should be discussed and agreed upon. This could also require some further testing (see “11 – M10 Further Testing, Disputes and Confirmation of Results”) to confirm the extent of the defect in some cases.
- 10.8 PLEASE NOTE: Where a Core has been assessed as a fail, the extent of that failure is, initially, determined by the criteria of a “Coring Unit” (see Appendix E). Remedial action is required for the entirety of the “Coring Unit” unless the extent of the failure has been established, by the Undertaker, to reduce this amount. If the Roads Authority has reason to suspect that the failure may extend out with the “Coring Unit”, further testing will be required (i.e. more coring) to establish this unless agreed with the Undertaker.
- 10.9 Where the result of a Core Sample has been agreed (Pass or Fail), it is encouraged that this is registered on the SRWR as soon as reasonably practicable. In the event of a “Fail”, this action will, appropriately, start the remediation timescales in terms of the corrective action and inspection items from the agreement date.

11. Milestone M10 – Further Testing, Disputes and Confirmation of Results

- 11.1 This element of the National Coring Programme has been added to give extra time to allow for further testing and the progression of any unresolved items or disputes to be concluded.
- 11.2 Items that would be have a need for further testing would be:
- i) Extents Coring (see 11.3)
 - ii) Void Testing (see 11.4)
 - iii) Other testing solutions (see 11.5)
- 11.3 Extents Coring is where the Undertaker has elected to take extra Core Samples⁵ to limit the amount of remedial action that is required⁶. This might be by:
- i) Taking a sample every 5 or 10 metres either side of the original along a track to ascertain the failure extent, or
 - ii) By taking extra samples from the same or different reinstatements to limit the failure to a single one.
 - iii) Or other methods as agreed with the Roads Authority.
- 11.4 Where there is a need to obtain an empirical of measurement of the amount voiding that is contained within a Core Sample, the following methods shall be applied:
- i) The single 100mm Core Sample can be used to ascertain the void content result, provided that both the Roads Authority and Undertaker are in agreement. If not, then the notational one core per 6 sq.m determination will apply as per the SROR
 - ii) The Maximum Density shall be measured by BS EN 12697-5 Procedure A “Volumetric Procedure”
 - iii) The Bulk Density shall be measured by BSEN 12697-6 Procedure C “Sealed Specimen”
 - iv) The resultant calculation shall be measured by the appropriate method within BSEN 12697 series.
 - v) In addition to the BSEN 12697, the use of an inert filler is permitted for use where required provided the UKAS accreditation shows this as part of the laboratory’s procedures.

⁵ These Core Samples will not form part of the National Coring Result

⁶ Note: As described in 7.3iv), a failed Core Sample represents one Core Unit of work (see Glossary of Terms)

- 11.5 There may be other instances where further testing is required (i.e. Material Grading) and these should be done by a method agreed between the Roads Authority and the Undertaker.
- 11.6 Where there is a dispute that cannot be resolved between the Roads Authority and the Undertaker, then the matter shall be referred to the National Coring Working Group (see 12 – M11 Disputes Panel) by the Undertaker in the first instance.
- 11.7 Once agreed results should be recorded on the SRWR using the drop-down menu under “National Coring” against the Notice from which it was sampled. This should be done for both “Pass” and “Fail” results. Note that the result can be recorded earlier at Milestone M9 or Milestone M10, depending on when the agreed result is confirmed.
- 11.8 Where the result is a “Fail”, the Undertaker must respond within the specific timescales and rectify the item(s) within 90 calendar days of receipt of the failed inspection. These timescales can vary but only by mutual agreement between the Undertaker and the Roads Authority. Any variance must be recorded on the SRWR in the “comments” section of the Notice.
- 11.9 Where a Core Sample has been a “Fail” and been entered onto the SRWR, the process for the repeat inspections shall be followed. To allow coring results to be distinguished from other inspection results, defective coring results should be recorded as ND2 and ND3. These closely follow the process for D/2 and D/3 inspections respectively. The process is illustrated below in Appendix G.
- 11.10 If the original result of the inspection is deemed to be invalid (e.g. due to discovery of an error / deliberation between the Roads Authority and Undertaker) the original inspection result should be amended, rather than a further inspection recorded.
- 11.11 Once the whole sample has been confirmed, the Roads Authority shall complete the Appendix B form (in CSV or xls/xlsx format) and send it to both the Lead Authority and the applicable Undertakers. Please note: until the final agreed Appendix A form, as well as Appendix B forms, has been sent to the Lead Authority and the Undertaker, the result cannot be deemed to be agreed.

11.12 To improve the usefulness of the National Coring Programme's results, the following reasons for non-compliance will also be reported in Appendices B and C:

- a) Layer Tolerances, and
- b) Material Type, and
- c) Void Content, and
- d) De-bonding/De-lamination

This is in addition to that of Appendix A, under column 11 where all failure attributes are recorded. The Appendix C is completed by the Lead Authority for Area RAUCs, RAUC(S) and SRWC purposes.

11.13 It is a recommendation that all failed Core Samples be retained (provided they have not been used for further testing purposes) until the remedial action has been carried out. This retains the evidence of the failure in case there are any further issues or disputes at a later stage.

11.14 Progression of any further testing shall be carried out prior to 30th September 2016. If a result of a test is still pending and it is causing the late confirmation of the Roads Authority areas result, the Roads Authority shall contact the Lead Authority and the National Coring Working Group of this. If further testing has not be progressed by this deadline, a report on the reasons for delay by both the Roads Authority and Undertaker shall be prepared for submission to the Lead Authority and National Coring Working Group – this may result in the Sample in question being either withdrawn or the initial result standing for the purposes of the overall result.

12. Milestone M11 – Disputes Panel

- 12.1 The Disputes Panel in the 2016 National Coring Programme will be the National Coring Working Group.
- 12.2 To progress a dispute to the Disputes Panel, either the Roads Authority or the Undertaker wishing to raise a dispute must do so in writing (this can be in the form of an e-mail) to the Chair of the National Coring Working Group.
- 12.3 When raising a dispute, the following information must be given:
 - i) The LA Reference of the Notice in which the Core Sample was given, and
 - ii) The Address of the Road, and
 - iii) A brief outline of the dispute details.
- 12.4 Once received, the Chair will inform the Lead Authority that a dispute has been raised to be included in their information and reports to Area RAUC(S)
- 12.5 The Chair will ask the Roads Authority and the Undertaker for their views of the issue/s raised within the dispute. This will be circulated amongst the members of the Working Group. Prior to any Disputes Panel meeting, further information/evidence may be required to be submitted in case a clearer understanding is felt necessary.
- 12.6 The National Coring Working Group will meet to discuss all disputes and will ask the parties in dispute to be present to give representation and any further information/evidence to help achieve a conclusion.
- 12.7 If any of the parties that are involved in the dispute, either from the Roads Authority or the Undertaker, have members on the Working Group, these members cannot be on the Disputes Panel hearing that particular dispute. Although, they can be part of the Roads Authority or the Undertaker representation to give information/evidence on the dispute item. If this leaves an unbalanced representation on the Disputes Panel of Roads Authority or Undertaker, one of member of the prominent representation will stand down from the proceedings for that disputed item.
- 12.8 Upon hearing and consideration of all the information and evidence given in the proceedings, the decision of the Disputes Panel will be binding to both parties.

13. M12 - Compilation and Completion of RAUC (S) Coring WG report for RAUC(S)

- 13.1 Upon the event when all results have been collated and confirmed, the National Coring Group will review and report its findings.
- 13.2 This Report will be prepared and lodged with RAUC(S) and the Scottish Road Works Commissioner for their comment and approval to publish at the December 2016 meeting.

14. Finance and Costs

- 14.1 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 the New Roads and Street Works Act.
- 14.2 Where the Undertaker carries out “Extents Coring”, the cost of these will be borne by themselves.
- 14.3 Where there is a requirement for “Further Testing”, with the exception of “Extents Coring”, to establish or confirm non-compliance, this will go through the procedure of funding and recovery as per Section 131 of the Act.
- 14.4 Where the Undertaker’s Core Reports have been used, as part of the Hybrid Selection Method, there is no costs to the Roads Authority for these samples.

Figure 1

Appendix A

APPENDIX A

Version: **xx** Date:
dd/mm/yyyy

RA: **(Infill RA & RA Rep eg W.Lothian - J Forbes)**

UNDERTAKER: **(Infill SU & SU Rep eg BT- J.Todd)**

1	2	3	4	5	6	7	8	9	10	11	12
Core Ref No	LA Ref No	Specific Location and Street/Road	Town	Date Core Taken	C/W Category or F/W	Specified Material Thickness (mm)	Core Thickness (mm)	Pass or Fail	Reinstatement Size Length Breadth Area	Cause of Failure	Failure Causes Agreed (Yes or No)

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

Appendix C

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

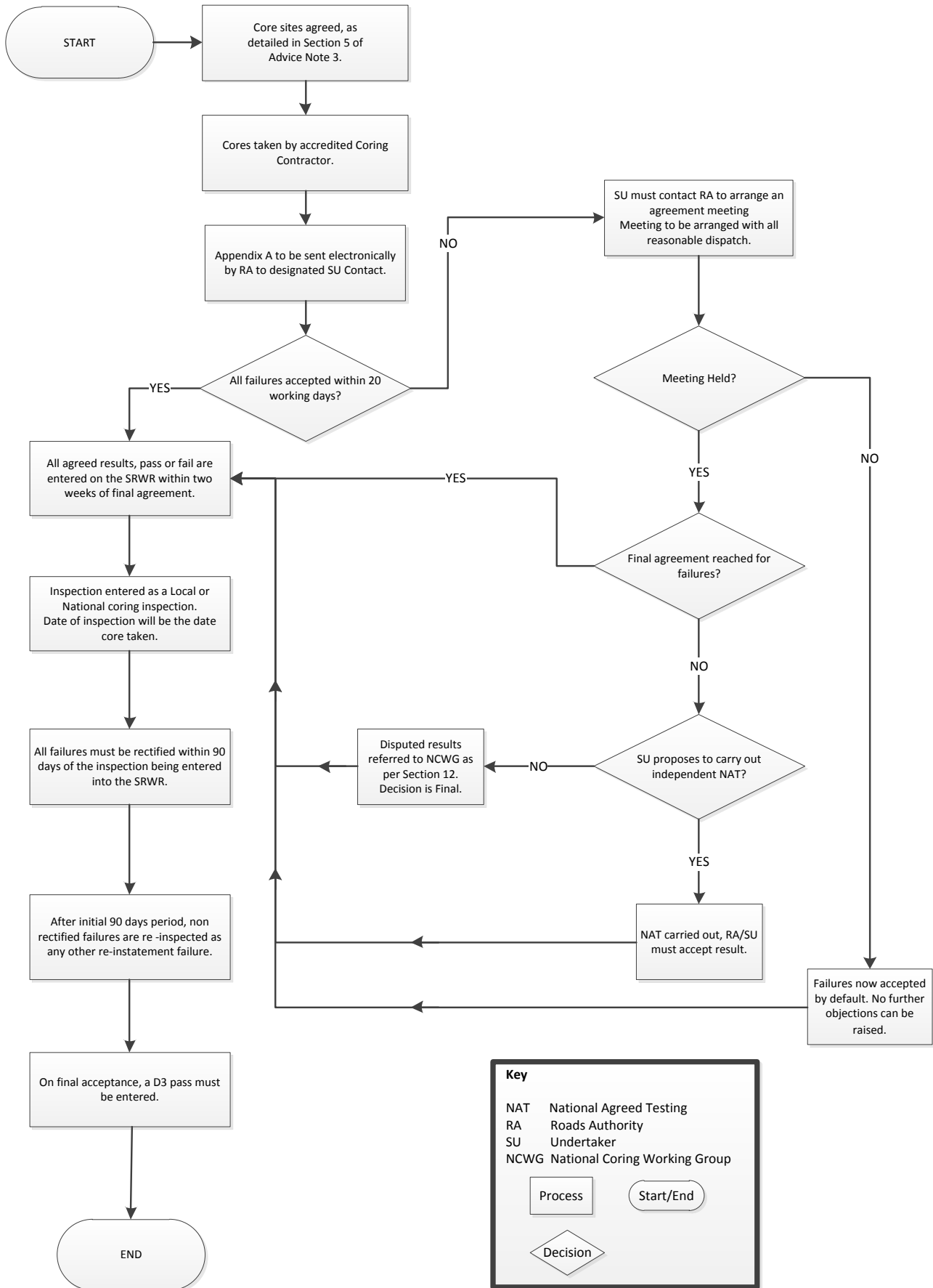
APPENDIX C Version: xx
Date: dd/mm/yyyy

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.

Appendix D – Typical Lifecycle of National/Local Coring Failure

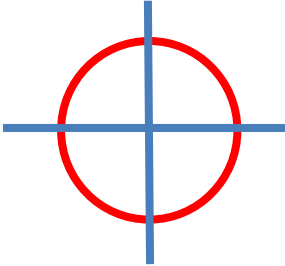


Appendix E – Glossary Of Terms

Pass	Reinstatement in compliance with or exceeding Specification for the Reinstatement of Openings in Roads (SROR) - No Cost to Undertaker. Engineering judgement can be made to allow a reinstatement to be categorised as a pass, where under the SROR, it would be classed as a fail.
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 7.9 above)</p>
Cost	<p>Pass: no cost to Undertakers.</p> <p>Fail (where RA issue contract): 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>Fail (where Undertaker issue contract): financial cost to Undertaker will be: actual cost of core (financial value). This cost will be deducted from the invoice prior to Undertaker issuing.</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>
Coring Unit	<p>(i) a single excavation not exceeding 200m in length and not part of works as defined under (ii) below. Excavations longer than 200m will be counted as one unit of inspection for each 200metres or balance thereof</p> <p>(ii) up to 5 excavations (up to 10 excavations in the case of works relating to service pipes or service lines), provided they meet the following criteria: -</p> <ul style="list-style-type: none"> a) all excavations are in the same road; b) all excavations are part of same works; c) all excavations are made over the same time period (not exceeding 10 days); (d) each excavation is within 500m of every other excavation; (e) the aggregate length of all excavations does not exceed 200m.
Initial Sample	30% of permanent registered reinstatements or minimum of 30 reinstatements, locations randomly sampled via SRWR.
Sample for Coring	2% of permanent registered reinstatements or minimum of 5 reinstatement locations, selected from the Initial Sample.

<p>Layer Tolerances</p>	<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 Roads 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>
<p>Small Excavations and Narrow Trenches</p>	<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 NoS RAUC area where material availability can be problematic)</p>

Appendix F – Format of Core Sample Location Markings and Associated Photographs

Core Sample Location Markings Protocol	
 <p data-bbox="748 450 991 562">Name of the SU to be placed at side of mark</p>	<p data-bbox="1114 344 1461 448">Please Note: Colouring of the items is for diagrammatic purposes only.</p> <p data-bbox="1114 486 1442 584">Red: Roads Authority Mark Blue: Statutory Undertaker Mark</p>

Example of Marked Location Photograph



Marked Location Photographs show where the core is to be taken within the reinstatement. It is recommended that the framing of the photograph should be done in such a way that additional locational information can be accommodated at the same time.

Example of the Environmental Narrative Photograph (Spatial View)



The Environmental, or Spatial, view is to allow for the mark to be viewed in relationship to its positioning with the local vicinity within the road. This is especially helpful in a rural setting with little or no identifying items adjacent to the reinstatement.

Appendix G – Flow Chart of the SRWR Recording and Inspection Process for National Coring

