



ROADS AUTHORITIES & UTILITIES COMMITTEE
(SCOTLAND)

ADVICE NOTE 3

National Coring Programme 2022

Version 11

National Coring Programme 2022

Version History

Version	Date	Notes
11.00	1 December 2021	First published & RAUC(S) approved version for the 2022 programme (previous versions applied to previous programmes).

Preamble

P.1 At the RAUC(S) meeting on 3rd March 2021 the proposal for a further National Coring Programme was approved. It was further agreed that:

- i) This Advice Note be reviewed by the RAUC(S) Coring Working Group.
- ii) An eleventh National Coring Programme is to be undertaken on reinstatements completed between 1st January 2021 and 31st December 2021.
- iii) The Milestone Timetable in P.6 following was also approved.

P.2 Advice Note 3 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 eleventh National Coring Programme in Scotland.

P.3 Advice Note 3 must be applied to the National Coring Programme. Appropriate sections, general advice and best practice items should also be applied to Local Coring Programmes.

P.4 Building on the experience of the previous ten 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.

P.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.

P.6 The Coring Working Group recognises the use of Narrow Trenching. When it becomes more widespread a method of assessing reinstatement quality will need to be considered. For this programme (2022) the minimum widths to be sampled as detailed in S3.3 iv) & v) will be applied.

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

P.7 Timetable for the 2022 National Coring Programme

Milestone	Action	Date Start/Finish
M1	Lead Authorities and Nominated Contact List Compiled (K-Hub access to be organised for SU & RA contacts for file sharing)	F: 24 Dec 2021
M2	Sample Download Issued	F: 21 Jan 2022
	(Coring Contract Tender Process should be under way)	
M3	Sample List Compilation	S: 24 Jan 2022 F: 25 Feb 2022
M4	Coring Contract Awards intents reported to S.U.s, oSRWC and at earliest RAUC meeting	F: 4 March 2022
M5	Viewing of Coring Contractor Qualifications and responses by S. U.s	S: 7 March 2022 F: 18 March 2022
M6	Coring Contract Awards confirmed to RAUCs, S.U.s & oSRWC	F: 6 May 2022
M7	Local Programme Compilation	S: 28 Feb 2022 F: 6 May 2022
M8	Area Programme Compilation	S: 9 May 2022 F: 20 May 2022
M9	Core Sampling	S: 13 June 2022 F: 23 Sept 2022
M10	Roads Authority Review	S: 26 Sept 2022 F: 14 Oct 2022
M11	Initial Result Review (Undertaker)	S: 17 Oct 2022 F: 28 Oct 2022
M12	Agreement Meetings	S: 31 Oct 2022 F: 9 Dec 2022
M13	Further Testing, Local Disputes and Confirmation of results.	S: 31 Oct 2022 F: 20 Jan 2023
M14	Disputes Panel - Coring Working Group	S: 23 Jan 2023 F: 27 Jan 2023
M15	Compilation and Completion of RAUC (S) Coring WG report for RAUC(S)	S: 30 Jan 2023 F: 17 Feb 2023
M16	Approval of National Report by RAUC(S)	March 2023

P.8 The milestones held within the timetable are to ensure the timeous conclusion of the programme and all dates are binding. Failure to meet these timescales by any party may lead to the exclusion of their results either in Area or National report and the failure reported to the Scottish Road Works Commissioner. The start date on the milestones does not exclude any part being commenced early (except the initial download) to allow progression of the programme.

P.9 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 M15.

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

- 1.1 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 with assistance from oSRWC for submission to the National Coring Working Group
- 1.2 The 2022 National Coring Programme will be implemented on an Area basis by the Lead Authority.
- 1.3 Each Roads Authority and Undertaker must provide a single contact, for the National Coring that fulfils the following credentials:
- i) Must have or obtain the appropriate technical competence and administrative support to fulfil their functions under this Advice Note.
 - ii) Must have the authority to agree all aspects throughout the Programme.
- 1.4 The names and contact details must be notified to the oSRWC and Lead Authority in each RAUC(S) area prior to the National Coring Programme starting - 1st December 2021. (oSRWC: enquiries@roadworks.scot)
- 1.5 It is **essential** that there is a close working and co-operative relationship between Road Authorities and Undertakers, at both local and national levels, to achieve the objectives of the Programme.
- 1.6 Any local agreements that deviate from SROR must be sent by the Roads Authority to oSRWC to be included on the local materials register for authority wide agreements. For site specific agreements details must be recorded on the relevant street works notice.

2. Milestone M2 – Sample Download

- 2.1 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 2021 and 31st December 2021 inclusive.
- 2.2 The Sample Download will be a random selection taken from a pool of sites meeting the following criteria:
- i) Reinstatement Date within prescribed Range
 - ii) Reinstatement surface type must be one of the following.
 - Hot Rolled Asphalt (HRA)
 - Asphalt Concrete (AC)
 - Stone Mastic Asphalt (SMA)
 - Permanent Cold Lay
 - High Friction Surfacing (Anti-Skid)
 - Slurry Sealed
 - iii) Location must only be in the Carriageway (preferred) or Footway
 - iv) Reinstatement type must be Permanent
 - v) Length must be greater than or equal to 0.65m (to clear tie-ins and give core width)
 - vi) Width must be greater than or equal to 0.35m (to clear track side joints by 100mm and give core diameter).

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

- 2.3 The Sample Download shall have the output containing the following information:
- i) Maintaining Authority
 - ii) Town
 - iii) Street
 - iv) Specific Location
 - v) OSGR (Coordinates)
 - vi) Location (Carriageway or Footway)
 - vii) Local Reference/Activity Number (aka LA Ref)
 - viii) Activity Reference (aka Works Promoter Reference)
 - ix) Works Promoter
 - x) Date of Reinstatement
 - xi) Category of Reinstatement
 - xii) Length
 - xiii) Width
 - xiv) Description of Works
- 2.4 The sample download will be in the form of a report exported in CSV format convertible to Excel from the SRWR (available from the Road Works Commissioner's website: <http://roadworks.scot>). This will be available by 21st January 2022.
- 2.5 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 the oSRWC.

3. Milestone M3 – Compiled Sample Lists

3.1 Each Roads Authority shall compile a Sample List of the locations, from the available notices on the Sample Download from the SRWR that they wish to enter for the National Coring Programme.

3.2 The resultant Sample size for each Undertaker, in each Roads Authority area, will be 2% of an Undertakers Permanent Reinstatements completed between 1st January 2021 and 31st December 2021.

Where the Sample Size for an Undertaker cannot achieve a minimum of 5 cores in an individual Roads Authority Area then the result must not be used for issuing an improvement notice. However, the National Coring Report may be published with results for undertakers having 10 or more cores taken across the whole of Scotland.

3.3 All efforts must be taken to ensure that the Sample List only contains items that match the following criteria:

i) Reinstatements must have one or more of the following Surface Types:

- Hot Rolled Asphalt (HRA)
- Asphalt Concrete (AC)
- Stone Mastic Asphalt (SMA)
- High Friction Surfacing (Anti-Skid)
- Slurry Sealing (Micro Surfacing)
- Permanent Cold Lay (PCSC/PCSM)

ii) The Location must be either Carriageway (preferred) or Footway

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).

3.4 PLEASE NOTE: the downloaded list will show “Verge” on the reinstatement location list if the first site on the notice 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.

- 3.5 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 Type 4 reinstatements may be predominant.
- 3.6 Once the preferred Sample List has been achieved, these entries should be either marked as “Preferred” or listed under the heading of “Preferred”. All 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 M7. It is good practice to have a robust “Alternative” list of similar size to the “Preferred” list.
- 3.7 During this period, the Undertakers should scrutinise the full Sample Download for their organisation in preparation for Milestone M7. 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).
- 3.8 The compiled Sample Lists are to be sent to all the affected Undertakers no later than Milestone M3 – 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 may be excluded from the National Coring Programme 2022 and reported to the oSRWC by the Lead Authority. 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.

- 3.9 Based on section 3.2 and the Glossary of Terms (see Appendix E), detailed below are some worked examples for numbers to be included in the Coring Sample:

Example 1

Permanent Registered Reinstatements	1000	
Initial Sample (Download 30%)		300
Sample for Coring (2% of reinstatements. -Divide download by 15)		20

Example 2

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

Example 3

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

* See note in M3.2.

4. Milestone M4 – Coring Contract Intents Announcement

As per date for Milestone M4, Lead Authorities Coring Contract Awards intents must be reported to RAUCS, S.U.s & oSRWC before awarding the coring contract. Lead Authorities must have distributable copies of their preferred contractor's UKAS qualifications and method statements. They are to inform all the Statutory Undertakers, RAUCS and the oSRWC as to who is the tender winner.

5. Milestone M5 – Review of Coring Contractor Qualifications

5.1 As per Milestone M5 the Lead Authorities will make available electronic copies of the proposed coring contractor's qualifications method statements by email to any Statutory Undertaker who requests them.

5.2 Statutory Undertakers must register in advance any request to view so that the documentation can be sent by commencement of Milestone M5.

5.3 Any Statutory Undertaker with objections or queries which have not been resolved by 1st April 2022 with the Lead Authority must report them to the Coring Working Group by 8th April 2022.

6 Milestone M6 – Coring Contract Award Confirmation

6.1 Lead Authorities will have resolved any queries about contractor's qualifications and appointed a suitably qualified contractor agreed by the SUs in time for commencement of coring programme, Milestone M9. The chosen contractor will be confirmed to RAUC(S), the SUs and the oSRWC.

7 Milestone M7 – Local Programme Compilation

7.1 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.

7.2 There are two permitted routes of selection of the 2% sample: Traditional (see 7.4) and Hybrid (see 7.7).

7.3 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 (if this doesn't exceed the 80% threshold – see 7.11).

Traditional Methodology

- 7.4 The Traditional Selection method is where all sites are available for physical core sampling. All locations must 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.
 - ii) Both the Roads Authority and Undertaker confirms ownership.
 - iii) No visible defects (these should be actioned through the Routine Defect process. Unusually high numbers of surface defects and rejected locations should be noted and reported at Local and Area RAUC meetings).
 - iv) The reinstatements are greater than 0.65m in length and greater than or equal to 0.35m in width.
 - v) Not located in lay-bys, parking bays or areas of vehicle access to premises.
 - vi) Where concrete (except FCR) is known to be present beneath the surface then a core shall also be taken in the adjacent surface for layer thickness comparison.
 - vii) Where concrete other than FCR, HBM or SMR is found below the core, shallower than 100mm then only the Surface Course criteria, voiding and bonding may be considered in absence of an adjacent core for comparison.
- 7.5 The specific location, within the reinstatement, for which the Core Sample is 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 reinstatements may only be surface material, 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.

- 7.6 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

- 7.7 The Hybrid selection method is where the sample of an Undertaker is made up of both physical core sampling (as per 7.3) and the organisations own internal core sampling provided that the methods meet those set out in 7.5. The combined sample will still account for 2% of all registered permanent reinstatements that the Undertaker carried out within the sample period.
- 7.8 The Hybrid selection option is only used at the discretion of the Roads Authority. There is no obligation for a Roads Authority to use this option.
- 7.9 The Hybrid selection option can be 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 7.3). Then other logs can be offered up.
- 7.10 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 been carried out by a UKAS accredited laboratory, and
 - iii) The Undertaker can demonstrate the full Quality Assurance behind their auditing and correction processes.

- 7.11 Although the inclusion of the Hybrid Selection option is designed to reduce the 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.
- 7.12 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".

8 Milestone M8 – Area Programme Compilation

- 8.1 To facilitate the administration and timescale of this element of the programme, each participating Roads Authority is required to submit their agreed site locations in Appendix A format and photographs to the Lead Authority by the timetable end date for M7 at the latest.
- 8.2 The Lead Authority is, then, required to compile and send the Area Coring Locations to the Coring Contractor by the timetable end date M8.
- 8.3 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 in M7.

9 Milestone M9 – Core Sampling

- 9.1 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 dates on timetable for M9.
- 9.2 The Core Sampling and testing must be carried out by a laboratory holding a current UKAS accreditation, to cover all forms and functions of coring and testing to be carried out in the programme. 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. Any coring contractor or test house failing to meet these requirements must not be employed. Evidence of full accreditation must be part of the tender qualifications and sent for review to all participating bodies on request. See Appendix H for list of requirements.
- 9.3 The Specification for Core Sampling is as follows: -
- i) Coring contractor will advise both the Roads Authority and Undertaker of overall area daily extraction programme at least one week in advance in order to provide opportunity to monitor the coring process. In addition, coring contractor to provide means of contact (e.g., mobile phone number). Any changes to the programme are to be notified prior to coring the affected cores.
 - ii) Cores shall be a nominal size of 100mm in diameter, and
 - iii) Be taken in all bituminous bound layers, and
 - iv) Concrete at binder course and base level shall not be cored but it's presence must be reported, and
 - v) The reinstatement of the core hole to be as per the SROR (S11.6 Trial Holes), and
 - vi) Cores limited to one per coring unit (see Glossary of Terms), and
 - vii) Cores to be uniquely referenced, labelled, and photographed, and
 - viii) Provide a Core Report for each Core sampled as per 9.5, and
 - ix) The delivery of the Core Samples to location/s agreed for each Area Authority.
- 9.4 The assessment of the Cores will be as follows: -
- i) Measurements shall be taken to the nearest 1mm for each layer of material with variations averaged for reporting to the nearest 5mm, 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)

Note1: Reinstatement category flexible Type-1 carriageway specification has various guidance within SROR. The definitive combined base/binder course target layer thicknesses are in Table A11.1 of SROR. The initial assessment should be looking at specification for the preferred material (as shaded green) unless another option is known to have been used. See RAUCS minutes of meeting December 2019.

Note2: Where the core has a concrete base, this shall be taken into account when assessing binder course thickness and material type: i.e., there may not be sufficient cover for normal type of binder course to be used nor normal thickness to be laid.

Note3: Where it is found that the core has been taken in an area of trimback then it can only be assessed for compliance against surface course material type & compaction and bonding between surface course and substrate.

9.5 The Report, “Core Log”, for each core shall be supplied in individual PDF format. The Report for the individual Core Sample (see Example in Appendix A) must contain the following: -

- i) The individual Core Reference for the sample, and
- ii) The location in terms of Road Name, accurate location information within that Road, Town/City and Roads Authority Area, Map grid reference, Postal Code (obtainable from map layers in SRWR) and
- iii) Road Type (i.e., Type 0, 1, 2, 3 or 4), and those appropriate for footways as applicable.
- 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 air void content of all layers compared to the permitted values (see 9.8)
- viii) An assessment of the bond between each layer (see S9.9), and
- ix) Photographs pertaining to that Core Sample (see 9.10), 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 be 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 MS Excel spreadsheet format (a copy of this pro-forma can be found at www.roadworks.scot)

9.6 Transportation and storage of the core samples must be carried out with care to protect the integrity and condition of the Cores. Any damage to a Core Sample may affect the outcome of an agreement between the Roads Authority and the Undertaker, as well as affect any further testing, and the result in its assessment being void and/or that location being re-sampled.

9.7 During the operation of collecting Core Samples, the Coring Contractor may encounter difficulties in retrieving a sample from the designated location due to 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 in 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) Roads Authority agrees with the applicable Undertaker another location to be sampled as a replacement.

A resolution must be in place prior to Milestone M9 deadline.

9.8 If the UKAS laboratory considers that the visual assessment of the core indicates a level of voids that would exceed those permitted, then the report should indicate a “Fail” as an initial result. However, a visual assessment may not be empirical and further testing may be required to obtain a definitive result at a later stage (Milestone M13) judged against table 10.1 in the SROR.

9.9 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.

- 9.10 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 any Core Markings and
 - iii) The dried core against a metric ruler with scale visible.
- 9.11 The actual taking of the Core Sample must be completed and the subsequent Core Reports (core logs & appendix A initial result) must be uploaded to the Knowledge Hub by no later than end date for M9. The Lead Authority must be notified of this by the coring contractor immediately. The delivery of the physical Core Samples can be arranged later prior to any review by the roads authorities and Agreement Meetings that may take place.

10 Milestone M10 – Roads Authority Review

- 10.1 Once each Roads Authority is in receipt of all the Core Reports, Appendix A forms and cores for their area, they must be reviewed by competent staff. The RA will agree or disagree with the findings of the Laboratory. The RA decision must be recorded in the appropriate results column no.14 in the appendix A form.

Note4. *Where a core is inadvertently taken from a trimback area, a decision must be made in consultation with the SU, resulting in one of the following:*

- i) The result is excluded, and another core taken from the same notice.
 - ii) The result is excluded, and another core taken from the reserve list.
 - iii) The core will be included and assessed as per M9.4.
- 10.2 After the delivery to the designated locations, 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.
- 10.3 The updated Appendix A form and the relevant Core Reports shall be available via the appropriate folders in KHub for Undertakers review prior to M11. This date may change depending on any previous delays in the programme and will be communicated to 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.
- 10.4 The Lead Authority shall ensure that each Roads Authority has uploaded their Core Reports and updated Appendix A forms to the KHub for Undertakers to review by Start date M11.
- 10.5 Results **MUST** not be entered in the SRWR until agreed as laid down in the Milestones Table.

11 Milestone M11 –Undertaker Review

- 11.1 Undertakers must review Core Reports and Appendix A forms thoroughly. This is to decide whether they agree with the RA. Should the Undertaker disagree an Agreement Meeting must be arranged.
- 11.2 Any issues found must be reported back to the Roads Authority prior to any Agreement Meeting in order for all parties to be prepared to aid early resolution.
- 11.3 If the Undertaker agrees with the Roads Authority decisions, they must notify the RA in writing. No Agreement Meeting would be required. This final result will be recorded in the “Final Agreed Result” column in appendix A.

12 Milestone M12 – Agreement Meetings

- 12.1 Agreement Meetings take place during M12. These can be arranged in two formats: Area (Surgery) or Individual Formats.
- i) Area (Surgery) Meetings. The advantage of this approach is that the Core Samples are delivered to one location and the meetings can be held between all Roads Authorities and Undertakers over one or two days. This reduces both time and travel within each Area Authority region.
 - ii) Individual Meetings – these are arranged on a one-to-one basis, between a Roads Authority and Undertaker.
- 12.2 Both the Roads Authority and Undertaker should send a competent and authorised member of staff to agree the outcome of the samples on behalf of their organisation.
- 12.3 Both the Roads Authority and the Undertaker should assess the Core Sample together with the Core Report to determine the final result.
- 12.4 Where the Undertaker either does not make contact about the Core Reports by end of Milestone 11 or attend the Agreement Meeting, it is deemed that they agree with the RA decision and that this will be carried forward as the final result. Where this happens, any Remedial Action that is required will still need to be agreed.
- 12.5 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 Milestone 13.
- 12.6 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 M13) to confirm the extent of the defect in some cases. Failed cores should be retained by the road works authority (or other appropriate party by agreement) until the remedial works have been carried out and be available for re-inspection upon receipt of reasonable notice.
- 12.7 Where a Core has been assessed as a failure, the extent is initially determined by the criteria of a “Coring Unit” (see Appendix E). Remedial action is required for the entire “Coring Unit” unless the extent of the failure has been established, by the Undertaker. 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.

- 12.8 Where the result of a Core Sample has been agreed, it is mandatory that all results are recorded on the SRWR as “N/C” inspection by the Roads Authority no later than the start of M15. In the event of a “Fail”, this will start the remediation timescales in terms of the corrective action and inspection items from the failure agreement date. The date of inspection to be entered in the SRWR is the date of agreement. The final result will be recorded in the “Final Agreed Result” column in appendix A.

13 Milestone M13 – Further Testing, Disputes and Confirmation of Results

- 13.1 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.
- 13.2 Items that may have a need for further testing would include:
- i) Extents Coring (see 13.3)
 - ii) Void Testing (see 13.4)
 - iii) Other testing solutions (see 13.5)
- 13.3 Extents Coring is where the Undertaker has elected to take extra Core Samples³ to limit the amount of remedial action that is required⁴. 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.
 - iv) The results of extents coring must be agreed between RA & SU.
- 13.4 Where there is a need to obtain an empirical 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 m² determination will apply as per the SROR S10.2.3, to give an individual result per 6 m² segment (this may be carried out after the initial result has been obtained, on an extents basis).
 - ii) The Maximum Density shall be measured by BS EN 12697-5 Procedure A “Volumetric Procedure”
 - iii) The Bulk Density shall be measured by BS EN 12697-6 Procedure C “Sealed Specimen” enhanced by filling large surface voids with inert filler.
 - iv) The resultant calculation shall be measured by the appropriate method within BS EN 12697-8.

³ These Core Samples will not form part of the National Coring Result

⁴ Note: A failed Core Sample represents one Core Unit of work (see Glossary of Terms)

- 13.5 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.
- 13.6 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 M14) by the Undertaker in the first instance.
- 13.7 The agreed results must 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 M12, M13 or M14, depending on when the agreed result is confirmed in time for M15.
- 13.8 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.
- 13.9 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.
- 13.10 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.
- 13.11 Once the whole sample has been confirmed, the Roads Authority shall complete the Appendix B form (xls/xlsx format) and upload it to the relevant folder in the KHub and notify the Lead Authority oSRWC 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, oSRWC and the Undertaker, the result cannot be deemed to be agreed.

13.12 The following reasons for non-compliance will be reported in Appendices B and C:

- i) Layer Tolerances, and
- ii) Material Type, and
- iii) Void Content, and
- iv) De-bonding/De-lamination

This is in addition to that of Appendix A, under column 16 & 17 where all failure attributes are recorded. The Appendix C is completed by the Lead Authority for Area RAUCs, RAUC(S) and oSRWC purposes.

13.13 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.

13.14 Progression of any further testing shall be carried out prior to M14. If a test result is still pending causing the late confirmation of the area results, the Roads Authority shall contact the Lead Authority and the National Coring Working Group.

13.15 If further testing has not been progressed by M14, 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.

14 Milestone M14 - Disputes Panel - Coring Working Group

- 14.1 The Disputes Panel for the 2022 National Coring Programme will consist of members of the National Coring Working Group. It will consist of a minimum of 3 people, 1 SU, 1 RA & 1 co-chair.
- 14.2 To progress a dispute to the Disputes Panel, either the Roads Authority or the Undertaker must do so in writing (this can be in the form of an e-mail) to the Co-Chairs of the National Coring Working Group. This must happen by end of Milestone M13. Any disputes received after this time will not be considered.
- 14.3 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
 - iii) The core log, and
 - iv) A brief outline of the dispute details.
- 14.4 Once received, the Co-Chair will inform the Lead Authority that a dispute has been raised to be included in their information and reports to quarterly Area RAUC(S) meetings.
- 14.5 The Co-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 the meeting, further information/evidence may be required for clarity. The Co-Chairs will consult with each other to arrange a hearing with feedback to all relevant parties.
- 14.6 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.
- 14.7 A member of the Working Group cannot arbitrate on a dispute involving their organisation, but they can be part of the Road Works 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 member of the panel will stand down from the proceedings for that disputed item.
- 14.8 The decision of the Disputes Panel will be binding to both parties.

15 M15 - Compilation and Completion of RAUC(S) Coring WG report for RAUC(S)

- 15.1 When all results have been collated and confirmed, the National Coring Group will review its findings and prepare the report.

16 M16 – Approval of RAUC(S) Coring WG report by RAUC(S)

- 16.1 This Report will be submitted to RAUC(S) and the Scottish Road Works Commissioner for their comment and approval prior to publication.

17 Finance and Costs

- 17.1 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 1991. (See Appendix E)
- 17.2 Where the Undertaker carries out “Extents Coring”, the cost of these will be borne by themselves. (See M13.3)
- 17.3 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 NRSWA 1991.
- 17.4 Where the Undertaker’s Core Reports have been used, as part of the Hybrid Selection Method, there are no costs to the Roads Authority for these samples.

Appendix A

National Coring Programme 2022

Version:11

APPENDIX A

Date: dd/mm/yyyy RA: (Infill RA & RA Rep eg Fife Council- I Jones)

Undertaker: (Infill SU & SU Rep eg SW - C.McQueen)

Version 11

[illegible]

(Feel free to insert extra rows) (Examples shown in red)

Appendix B

National Coring Programme 2022										
								APPENDIX B Version 11		
								Date:		
1	2	3	4	5	6	7	8	9	10	11
Roads Authority (Infill RA eg W.Loathian)	CORE	PASS		FAIL		FAILURE TYPE				
	Nos.	Nos.	%	Nos.	%	Voiding	Layer Tolerances	Material Type	Bond	Total No of Failure Types
Infill SUs in each row										
eg										
BT	100	93	93%	7	7%	4	4	5	1	14
SGN	100	90	90%	10	10%	3	5	2		10
Virgin Media	90	82	91%	8	9%		8	2		10
Scottish Water	100	90	90%	10	10%	1	6	4	1	12
TOTALS	390	355	91%	35	9%	8	23	13	2	46

Only final confirmed/agreed results should be recorded on this sheet.

Appendix

National Coring Programme 2022						APPENDIX C Version 11				
Lead Authority e.g. NoSRAUC						Date:				
1	2	3	4	5	6	7	8	9	10	11
Statutory Undertaker	CORE	PASS		FAIL		FAILURE TYPE				
	Nos.	Nos.	%	Nos.	%	Voiding	Layer Tolerance	Material Type	Bond	Total No of Failure Types
each SU total for whole area										
Infill SUs in each row										
eg										
BT	100	93	93%	7	7%	4	4	5	1	14
SGN	100	90	90%	10	10%	3	5	2		10
Virgin Media	90	82	91%	8	9%		8	2		10
Scottish Water	100	90	90%	10	10%	1	6	4	1	12
TOTALS	390	355	91%	35	9%	8	23	13	2	46

Note:

Only final confirmed/agreed results should be recorded on this sheet.

Freestanding Excel

spread sheet versions of Appendices A, B and C are available from the OSRWC website:
<https://roadworks.scot/>

Appendix D – Not Taken Up

Appendix E – Glossary of Terms

1. Coring Unit

- 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
- 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: -
 - all excavations are in the same road
 - all excavations are part of same works on the same notice
 - all excavations are made over the same time period (not exceeding 10 days)
 - each excavation is within 500m of every other excavation
 - the aggregate length of all excavations does not exceed 200m.

2. Cost

- i) Pass: no cost to Undertakers.
- ii) Fail: Undertaker will pay the actual cost of the core (financial value) plus 2 x normal inspection fees as a standard administration fee.

3. Fail

- i) Core does not comply with any/all of the following: -
- ii) Layer Tolerance (bound material depth)
- iii) Voiding not to specification, must be mutually agreed. Failure to agree may result in the core being subject to an “air void” test.
- iv) Material Type (HRA, Asphalt Concrete etc.)
- v) Poor Bond between layers.
 - 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.

Note5: Engineering judgement can be made where a reinstatement is categorised as a Fail, but the RA are satisfied that it is fit for purpose, they may agree no remedial work is required. This will be recorded as a Fail in the NC inspection but can later be entered as a Pass in the follow up inspection phase.

4. Inspection Date

Inspection date for “Pass” or “Fail” in SRWR should be entered as the date the agreement took place.

5. K-Hub

The Knowledge Hub. A “Global Community for Public Service” on the internet to which appropriate participants in the National Coring Programme will be granted access for the purpose of viewing and transferring data. This will be required for large files e.g., site photographs, results, lists etc.

6. Layer Tolerances

- i) Clause S6.6 (Appendix A2.5) c/w & f/w: - SC –5mm; any other structural layer comprising bound material –10mm
 - 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
- ii) 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.
- iii) Clause S8.4.2 Domestic Vehicle Access in Footway: As existing construction subject to absolute minimum 60mm bound material.

7. Pass

Reinstatement in compliance with or exceeding Specification for the Reinstatement of Openings in Roads (SROR) - No Cost to Undertaker.

8. PCSM

Permanent Cold lay Surfacing Material

9. Sample Download

30% of permanent registered reinstatements or minimum of 30 reinstatements from the specified sample period (year), locations randomly selected by SRWR.

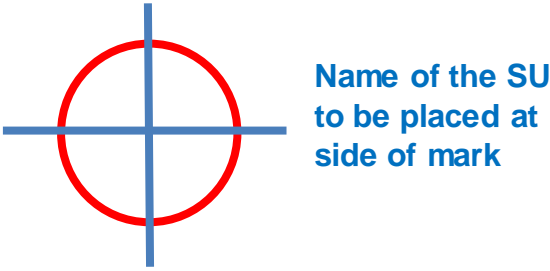
10. Small Excavations and Narrow Trenches

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).

11. Trimback

Area beyond the edges of the full excavation to a suitable area in the existing surface to facilitate a good reinstatement. This may generally only be in the surface course layer.

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

Core Sample Location Markings Protocol	
 <p>Name of the SU to be placed at side of mark</p>	<p>Please Note: Colouring of the items is for diagrammatic purposes only.</p> <p>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 – Not Taken Up

Appendix H – List of tests and activities used in National Coring determinations for which lab must be UKAS Accredited.

Laboratories or test houses employed in the National Coring Programme are required to hold appropriate accreditations to show that they are capable taking, assessing, testing and reporting on the sample.

No	Items & Requirements
1	Testing Laboratory UKAS Accreditation (ISO/IEC 17025:25)
2	Reinstatement Coring (Sampling) BS EN 12697-27
3	Indicative Grading Tests - From Cores (Bituminous) Suitable method to establish indicative grading as per full grading test in 4 below except that the required minimum mass is waived.
4	Full Grading Tests - Bituminous (Bound) Test Only BS EN 12697 parts 1, 2 & 28 - Bituminous (Bound) Test & Sample BS EN 12697 parts 1,2,27 & 28
5	Voiding/Compaction - Water Bath (Air Void) BS EN 12697 parts 5, 6 (Using Procedure C enhanced with use of inert filler as appropriate) & 8.
6	Measurement of Layer Thicknesses BS EN 12697-29 BS EN 12697-32 (see 9.4.i of this Advice Note for reporting)
7	Assessment To the requirements of the "Specification for the Reinstatement of Openings In Roads" that is relevant to the reinstatement being tested. See requirements in M9.
8	Binder Penetration Grade Indication Binder Recovery Test BS EN 12697 part 3 to extract the bitumen binder from the asphalt BS EN 1426 Needle Penetration Test. To determine binder hardness in the event of dispute over bindercourse material layer thicknesses when permitted options other than preferred materials are utilised by S.U.s

Note6: It is expected that as British Standards are updated that the latest version will be required.
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Additionally, the coring teams must hold appropriate NRSWA qualifications and registration cards.

End of Document