



# **SROH Strategic Review**

## **Legacy Document**

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## 1. Purpose of this document

This document presents key amendments included within the 4<sup>th</sup> Edition of the Specification for the Reinstatement of Openings in Highways (SROH). In addition, it includes proposed amendments which were broadly supported, but could not be actioned within the project timescales.

## 2. The Strategic Review process and stakeholders

The objectives of the Strategic Review of the SROH included: making the document clearer, less open to misinterpretation; fill any gaps in advice; reduce the level of prescription; increase the palette of permitted materials; make the document more open to innovation; ensure it is fair to authorities and utilities; and ensure its requirements are achievable and verifiable.

The process was divided into 3 phases: scoping, doing and finalising. During the “scoping phase”, stakeholder engagement was key to comprehensively define the issues to be addressed in the SROH 4<sup>th</sup> Edition. For this, input from the HAUC SROH Working party (herein referred to as the Reference Group) and industry was crucial. To gather input, a workshop was organised on the 5<sup>th</sup> February 2018, with invites sent to the Reference Group, and its two sub groups titled “Subject Matter Experts” (SMEs) and “Innovation”. This workshop helped identify topics to be considered in the next phase.

Through the “doing phase” several meetings with the Reference group and DfT were held to address the identified issues and produce the 4<sup>th</sup> Edition of the SROH (February 2018 to March 2019).

The “Finalising phase” included an 8-week Public Consultation period. The feedback review included 4 meetings with the Reference Group and the finalisation of the document.

## 3. General

An overview of the general amendments includes:

- Front cover: this has been amended to include updated information.
- Foreword: this has been amended to include DfT’s vision of the document.
- Editorial review: the text has been reviewed and amended to provide clarity and avoid misunderstandings. This includes updating standards, removing typos and choosing consistent wording. This editorial review does not include technical amendments. Editorial review was also undertaken by DfT.
- Formatting: the document has been formatted for consistency between sections. Numbering has been included in each paragraph for ease of referencing.
- Drawings: all drawings have been reviewed and updated in line with the new text. An effort has been made to provide consistency throughout all the sections and accuracy, removing inconsistencies.

Specific amendments undertaken in the 4<sup>th</sup> Edition of the SROH are listed versus SROH section reference.

#### 4. Amendments to definitions

##### Inclusion of new definitions:

- Composite footway, footpath or cycle track: this was included to provide specific provision for the reinstatement of composite footways, footpaths and cycle tracks.
- DMRB and MCHW to refer to updated documents.
- FCR and PMMA: to include foamed concrete and polymer modified mastic asphalt as standard materials. Requirement identified for the Strategic Review.
- Large diameter core and micro trench: to include these techniques in the specification.
- NRSWA: for clarity.
- Other openings: included for completeness.
- Product Acceptance Scheme: as substitution to BBA HAPAS certification linked to corresponding update to the MCHW.
- UKAS: amended for clarity.

##### Definitions deleted from the 3<sup>rd</sup> Edition:

- BBA/HAPAS
- ETA
- HD
- Permitted
- PTV
- SHW
- Tack coat
- Traffic sign
- TRL
- Urgent works

##### Amendments of definitions:

- “Major projects” to “Major works” for clarity.
- Restricted area and small features: amended for clarity.
- Surface treatment: amended for clarity.
- Small openings up to 2 m<sup>2</sup> or 4 m<sup>2</sup> (excluding the apparatus surface area) depending on road category, as agreed by the Reference Group.

“SROH WP Advice Note [Reference No. 2017/SROH-002]” was included within the review and within the 4<sup>th</sup> Edition with the exception of the proposed definitions for “performance compliance” and “specification compliance”.

## 5. Amendments to S sections

### S0. Preamble

Editorial amendments only.

### S1. Operational principles

#### S1.1 General

Text from SROH WP Advice Note [Reference No. 2017/SROH-002] was reviewed and text included to clarify the following points:

- If, at any time during a guarantee period, the reinstatement fails any relevant requirements in S2 of this Code, then the undertaker must carry out remedial action to restore it to a compliant condition. An interim reinstatement must normally be made permanent within six months.
- When it is discovered at any time that the reinstatement does not conform to a requirement in this Code, other than those detailed in S2, then remedial work must be assessed in accordance with S12. In this case the guarantee period will not commence until the remedial works have occurred.

#### S1.3 Road categories

The requirement to determine the classification of the road by the undertaker has been removed. This issue was highlighted during Public Consultation as classification of the road by the undertaker is impractical.

#### S1.5 Excavation and trench categories

Trench categories have been amended to include large diameter cores and micro trenches.

All categories definitions have been simplified for ease of understanding.

The definition of Small openings has been updated to an area up to 2 m<sup>2</sup> or 4 m<sup>2</sup> depending on road category. This was based on consultation via the Reference Group. The decision to split by road type is linked to the risk of rutting (especially for multiple layers of HRA surf) in heavily trafficked roads.

### S2. Performance requirements

#### S2.1 General

Size of modules have been changed from 300 mm to 305 mm to include the nearest imperial equivalent of a 300 mm module.

#### S2.2 Surface profile

Text regarding combined defects has been simplified and reference to the corresponding table, for ease of understanding.

#### S2.6 Skid resistance

Table for the texture depth of concrete surfaces has been included in line with the version of the MCHW current at time of drafting the 4<sup>th</sup> Edition.

As highlighted during the Strategic Review, values for PSV were out of date compared to those in the DMRB. Table S2.7 was updated in this regard.

Table 2.8 (AAV) has been amended to include all materials, not only SMA.

#### S2.8 Undertaker's works in deteriorated or distressed areas

An issue with the reinstatement of “sub-standard” roads was highlighted during the Strategic Review. The concern was linked to potential increased likelihood of this being an issue on the network (linked to authority spend) and that A12.4 covered the topic for modular reinstatement, but not for reinstatements in other types of pavement construction.

It was agreed to move this text to a new section S2.8 and update it to be applicable to all reinstatements, maintaining the philosophy used for modular reinstatements.

### **S3. Excavation**

#### S3.6 Shallow or aborted excavations

This section has been amended to include aborted micro trenches. Requirement identified during the Strategic Review.

### **S4. Surround to apparatus**

Hydraulically Bound Materials (HBMs) conforming to BS EN 14227 are considered standard materials and not “alternative”; therefore, it was agreed to remove them from A9 (innovation) and include them in the relevant sections for use. HBMs have been included as standard materials for surround to apparatus.

### **S5. Backfill**

#### S5.1 Backfill materials classification

Foamed Concrete for Reinstatements (FCRs) and Hydraulically Bound Materials (HBMs) conforming to BS EN 14227 are considered standard materials and not “alternative”; therefore, it was agreed to remove them from A9 (innovation). FCRs and HBMs have been included as standard materials for backfill.

“160413amr\_Use of FCR in Reinstatements \_ HAUC (UK) SROH WP Clarification \_ Publication Issue” was reviewed and taken into consideration within the 4<sup>th</sup> Edition.

Compaction of backfill materials in restricted areas was identified as an issue during the Strategic Review. The use of a “Modified type 1F unbound material” has been included to minimise potential compaction issues and segregation. This was progressed via consultation with industry; including the Reference Group and the Mineral Products Association.

## **S6. Flexible and composite roads**

### S6.1 Reinstatement methods

This section has been amended to include reference to the relevant sections for the reinstatement of small excavations and narrow trenches, micro trenches, large diameter cores and work around iron work.

The opportunity to undertake reinstatement using alternative materials has been included and signposted to A9.

### S6.2 Sub-base reinstatements

The Strategic Review identified a gap of guidance for the reinstatement of composite roads in narrow trenches. The option to use “CBGM base” as sub-base has been included for this scenario.

### S6.3 Base reinstatement

The specification for “CBGM base” has been updated to align with the MCHW and an additional option aligned with the concrete standard was included. The requirement to wait for 7 or 3 days has been removed allowing early trafficking/overlay when appropriate mixtures are used. These include mixtures where the immediate bearing capacity is suitable for early life trafficking/overlay.

### S6.4 Surface reinstatement

A requirement identified for the Strategic Review was to make the SROH more open to the use of suitable materials in different circumstances. This includes consideration of safety, in-service performance (including durability) and aesthetics. The following amendments have been included to allow this:

- HRA surface: the difference between road categories were removed and a reference to A2.1 has been included. How to reinstate high friction surfaces, coloured surfaces or other specialist surfaces (as surface treatments) are explained in "Other bituminous materials" and "surface treatments".
- SMA and TSCS surface: inclusion of the option to reinstate with HRA by agreement with the authority; option to reinstate 20 mm and 14 mm with 10 mm when hand-laying TSCS; and text included to support the appropriate use of TSCS.
- Other bituminous materials: text added to specify that "standard" SMA can be used in areas surfaced with "specific" SMAs unless the authority contacts the undertaker with other instructions.
- Surface treatments: text amended to reinstate with HRA and apply the treatment only if the authority requires it and if it is practicable. Different procedure depending on road category.
- Text regarding High friction surfacing has been simplified for ease of understanding and to avoid laying limitations, as requested during the Strategic Review.
- The reinstatement of surface traffic calming structures by agreement was included as required during Public Consultation.

### S6.5 Reinstatement of small excavations, narrow trenches and access to chamber covers

Air voids non-compliance in restricted areas (“very narrow trenches”) was identified as an issue to be considered during the Strategic Review. Section S6.5 now includes the possibility to use hand compaction and flowable materials when the



reinstatement is too small to use conventional mechanical compaction equipment. The objective is to provide suitable options without the need for local agreements. "SROH WP Advice Note [Reference No. 2017/SROH-001] Use of Flowable Mastic Asphalt within 350mm of access chamber covers in Flexible and Composite Roads" was reviewed in this regard.

#### S6.6 Micro trenching

This technique was identified as a reinstatement technique which has not historically been included in the SROH. Work had been underway in HAUC on a technical note to cover this topic. The procedures and associated reinstatement materials were included in this Edition to avoid the need to go via A9. "HAUC(UK) Advice Note No. ANUK - 2014/04 Reinstatement of Micro-Trenches" was considered in this process. The technique can be used by agreement in the absence of track record. This could be reviewed in the future, post better understanding of applicability.

#### S6.7 Large diameter cores

This technique was identified as a reinstatement technique which required inclusion within the SROH based on successful track record of use; therefore, the procedures and materials have been included in this Edition to avoid the need to go via A9. "SROH WP Advice Note [Reference No. 2017/SROH- XXX] Large diameter coring (>150 mm up to 600 mm) and associated vacuum excavation techniques in the carriageway" was considered in this process.

#### 6.8 Base and edge preparation.

This section has been updated in line with good practice in the MCHW. In addition, overbanding has been added as an option, but not as a mandatory measure. If overbanding is used it falls under the guarantee period for the works. This has been highlighted by the utilities side as a barrier to the use of overbanding. It is understood that this will have a potential consequence of reduced uptake of this option; however, no authority has rejected this approach.

The requirement of having edges "as square as possible" was identified as a barrier to use large diameter cores; therefore, this requirement was deleted.

Text was clarified when the trim-back is confined to the surface course (proximity to road edges and fixed features). If the binder course is not damaged, then the surface course should match existing thicknesses. If the binder course is damaged, then the reinstatement should be to full depth and in compliance with the Code.

### **S7 Rigid and modular roads**

For the Strategic Review, it was required to review and amend this section to avoid misunderstanding, facilitate undertakers works and keep quality reinstatements in rigid roads.

#### S7.1 Reinstatement methods

Micro trenching in rigid and modular roads will required A9 approval.

#### S7.3 Concrete road slab reinstatement

This section has been amended to include more details on how to carry out a reinstatement in concrete slabs.

#### S7.4 Large diameter cores

This technique (see S6.7) was identified as appropriate for unreinforced rigid roads. For reinforced rigid roads, it was agreed to allow excavation using this technique; however, the reinstatement should be in accordance with S7.6. This requirement is linked to consideration of reinforcement and load transfer.

#### S7.5 Edge support and preparation

This section has been amended to allow the use of taper support or dowel bars depending on the road category or by agreement. Details on how to install the dowel bars has been included. The amendment included allows the use of taper support only by agreement in roads Type 2. This was to set the optimum load transfer method for heavily trafficked carriageways as the default reinstatement method (using dowel bars). It is recognised that this may have limited technical benefit (versus time to install dowels) in evolved rigid Type 2 carriageways; especially if deteriorated. In this scenario, it is anticipated that the new requirement for dowels can be removed by agreement on the basis of lack of technical benefit versus reduced reinstatement time (linked to congestion).

For narrow trenches and small excavations, the use of pre-bent dowel bars is now permitted to minimise the requirement to enlarge excavations.

#### S7.6 Reinforcement

This section has been re-organised to specify the different circumstances where reinforcement may be needed and if this has to be lapped to the existing reinforcement. The amendments are linked to a pragmatic approach to minimising impact of the excavation and reinstatement on the asset, and for the performance of the reinstatement itself.

### **S8 Footways, footpaths and cycle tracks**

#### S8.1 Reinstatement methods

This section has been amended to include reference to the relevant section for the reinstatement of small excavations, narrow trenches, micro trenches, large diameter cores and work around ironwork.

Reinstatement of alternative materials has also been included in this section signposting section A9.

#### S8.2 Sub-base reinstatement

Guidance for composite footways, footpaths and cycle tracks has been improved, including the specification for the use of HBM and CBGM base. Requirement identified for the Strategic Review.

#### S8.3 Surface reinstatement

Clarification on how to reinstate high duty and high amenity areas has been included to avoid unintended consequences and to encourage dialogue/collaboration.

Edge requirements was moved from this section to S8.6 to aid understanding.

#### S8.4 Micro trenching

This technique was included for flexible and composite footways, footpaths and cycle tracks, and below modules in modular footways, footpaths and cycle tracks. The procedure is the same as in S6.6.

#### S8.5 Large diameter cores

This technique has been included in the SROH 4<sup>th</sup> Edition following the procedure specified in S6.7. (see S6). The bound layer depth required for footways, footpaths and cycle tracks to allow this technique is 60 mm instead of the 100 mm required in roads.

#### S8.6 Edge requirements

It was highlighted during the Strategic Review that there was lack of guidance for base and edge preparation and sealing requirements in footways, footpaths and cycle tracks. This section has been updated to include these requirements.

Also, the extended trim lines section has been aligned with S6.8, so when the trim-back is confined to the surface course (proximity to road edges and fixed features), if the binder course is not damaged, then the surface course should match existing thicknesses. If the binder course is damaged, then the reinstatement should be to full depth and in compliance with the Code.

### **S9 Verges and unmade ground**

No technical amendments were undertaken to this section.

### **S10. Compaction requirements**

#### S10.2 Compaction of materials

Air voids requirements for the new materials have been included in this section.

During the Strategic Review several concerns were highlighted regarding air voids requirements and testing methods.

This topic was extensively discussed, and the following strategy was adopted:

- Air voids:

Additional asphalt surface options were added (see A2) which, if used, are likely to reduce non-compliances linked to air voids. In turn, these should have a positive benefit on the in-service life of the asphalt reinstatement.

Air voids targets would not be modified or removed. The exception to this was the lower air void content for AC mixtures which was amended to avoid the potential unintended consequence of limiting uptake of modified mixtures (enriched binder contents) which may be desirable for use in street works reinstatements.

- Testing:

During the Strategic Review concerns were raised regarding the variability of results obtained when air voids are measured using the range of permitted different test methods. There was a commercial/contractual driver to limit the test variables to a point where this perceived issue was mitigated. Consultation

during the review enabled this objective to be mainly met, up to the point of a single preferred test method. Guidance on the test methods link to asphalt material types was also added to the NG. Further refinement of the method may be possible; however, it was agreed that this would require consultation with the BSi on the topic of the BS EN standard.

Also, concerns were raised regarding the measurement of air voids when the base of the core is irregular, as this can give unrealistic results. Trimming the bottom part of the core is permitted by the British Standard in these circumstances; therefore, this has been included in the specification.

Guidance on testing aged specimens has been added to the NG.

#### S10.3 Equipment operation and restrictions

The use of mechanical Pole tampers has been included as suggested during Public Consultation and agreed with the Reference Group.

### **S11 Ancillary activities**

#### S11.5 Ironwork and apparatus

This section needed to be reviewed as the SROH was silent on the topic of iron work and apparatus in footways, footpaths and cycle tracks. In addition, the dimensions included as examples were misinterpreted as minimum dimensions required.

The title of this section has been amended to include footways, footpaths and cycle tracks, to avoid misunderstanding. Also new examples have been included to reflect how to reinstate ironwork in footways, footpaths and cycle tracks.

Current text has been amended to avoid misunderstanding regarding the reinstatement minimum dimensions and more materials options have been included to avoid non conformities related to compaction in restricted areas.

Compaction has been clarified adding the possibility to hand compact in footways, footpaths and cycle tracks when there are restrictions that prevent mechanical compaction.

#### S11.7 Overbanding

This section was identified as misleading on overbanding application; therefore, it was deleted. The use of overbanding is specified in the corresponding clause for edge preparation.

### **S12 Remedial works**

#### S12.1 General

Wording from SROH WP Advice Note [Reference No. 2017/SROH-002] has been included.

#### S12.3 Repair of cracking

This area has been updated in line with the requirements of the MCHW.

## 6. Amendments to Appendices

### A1 Backfill materials

#### A1.1 Class A – Graded granular materials

The “modified type 1F unbound material” has been included as an option for class A graded granular material. The benefit of this mixture is anticipated to be reduced segregation and better compaction versus Type 1 unbound mixtures.

### A2. Key to materials

As already stated, one of the requirements identified for the Strategic Review was to make the SROH more flexible and allow the use of different materials in different circumstances. The following amendments have been included to allow this:

#### A2.1 HRA mixtures

- Surface:

Guidance on the rate of chipping has been included, as requested during the Public Consultation.

Wheel track requirements have been amended in line with the MCHW.

For road type 2, HRA 35/14 surf 40/60 rec has been added as an option.

For road types 3 and 4 the preferred option has been identified as HRA 35/14F surf 40/60 and the permitted options as HRA 30/14 F and C surf 40/60, HRA 30/10 or 30/14 F surf 40/60, HRA 55/14 F surf 40/60 or 100/150 and HRA 55/10 F surf 40/60 or 100/150. These last options were included to allow the use of High stone content HRA, requirement identified during the Strategic Review. “131117GB\_SROH Working Group - HRA Footways Footpaths etc (GB - 12th - Nov)” was considered for the inclusion of high stone content HRA and the update of Table A2.1.

For footways, footpaths and cycle tracks the preferred option has been identified as HRA 15/10F surf 100/150 and the permitted options as HRA 30/10F surf 70/100 or 100/150 or 40/60.

It was considered to include a HRA option with 100/150 binder for roads (other than high stone content); however, it was rejected due to the risk of rutting.

- Binder:

Wheel track requirements have been amended in line with the MCHW.

#### A2.2 SMA mixtures

- Surface:

The reference to HAPAS has been removed and new text included in line with the MCHW.

For road type 2, 3 and 4 the wheel track requirements have been removed.

The use of SMA 6 surf is still by agreement as per previous version of the SROH. This was not reviewed or amended. This was not previously discussed or highlighted during the Strategic review.

### A2.3 AC mixtures

- Surface:

To allow the use of a “universal material” (requirement of this review) the use of AC10 in footways, footpaths and cycle tracks has been permitted if the trench extends from the carriageway to the footway, footpath or cycle track for a maximum total of 10 linear m or 4 m<sup>2</sup>.

Compaction of AC was identified as an issue during the Strategic Review. To improve this situation, the option to increase the binder content in these mixtures has been included via agreement with the authority.

- Binder:

AC14 has been included as an option for binder course in footways, footpaths and cycle tracks to improve compaction.

### A2.5 Flowable materials

This section has been added to include the specification for FCR and Polymer Modified Mastic Asphalt (PMMA).

### A2.6 Reinstatement materials for micro trenches

This new section includes the specification of the materials allowed to be used in micro trenches.

### A2.8 Compacted lift thickness

New allowed materials have been included in the table for completion.

## **A3-A7**

Drawings have been amended to include new materials.

## **A8 Compaction requirements**

This section has only gone through editorial amendments.

## **A9 Alternative reinstatement materials and technologies**

This section has been reviewed based on challenges linked to balancing an increased desire for uptake of innovation (both in materials and technologies) versus assurance of performance. “Advice Note No. 2009/01 (Update of 2007/01) The Use of Alternative Reinstatement Materials” and “HAUC (UK) Innovations Group Notes for Guidance – Understanding and Interpretation Appendix A9 of the SROH 3rd Edition (Pages 143 – 156)” were reviewed in this regard.

It has also been amended to make sure all the materials used under this section are “alternative” and not standard materials.

The specific amendments are as follow:

### A9.1 Introduction

FCRs and HBMs complying with BS EN 14227 have been removed from this section and the definition of alternative technologies has been included.

“160413amr\_Use of FCR in Reinstatements \_ HAUC (UK) SROH WP Clarification \_ Publication Issue” was reviewed and taken into consideration in this regard.

### A9.3 SMRs

This section has been amended for ease of understanding.

### A9.4 TMFs

SMFs have been renamed to TMFs (i.e. the term “stabilised” was replaced with “treated”) to avoid misunderstandings, as some of the materials that may be used as TMFs (historically SMFs) are not stabilised. Also, the use of the term treated aligns more closely with terminology in the British Standards.

Notes for guidance have been included to ensure historical reinstatement materials classified as SMFs are not prohibited for use due to the change in terminology.

### A9.5 Outline scheme for approval trials

This section has been updated to include trials for technologies.

The trial length has also been amended depending on the data provided and the type of innovation: from no trial needed if agreed or if demonstrated in other authority (unless there are engineering concerns) to 5 years if there is no data to demonstrate performance before carrying out the trial.

Notes for guidance have been included to define what can be considered an engineering reason for not accepting a successful trial from other areas.

## **A10 Additional standard materials**

This appendix now includes the specification for the Modified type 1F unbound mixture and the HBMs complying with BS EN 14227. The HBMs in A10 are limited in range of permissible strength (based on the A9 SMR options). It is important that A10 HBMs are produced and supplied with comparable quality assurance to other mixtures (e.g. concrete, and asphalt) as per the requirements in A10. If not, they should be progressed via the historic A9 route.

The A10 HBMs should not be confused with “CBGM base” which is a specific type of HBM and has a higher strength requirement. CBGM base (see S6.3) has specifically been included for use for the reinstatement of composite pavements.

## **A11 Bitumen binder equivalency**

This appendix has been deleted as it gave conflicting advice on layer thicknesses. Inconsistencies between A2.4, Figures in A3 and the table in this appendix were highlighted during the Strategic Review. The consensus was that Table A11.1 was not commonly used and that it could be deleted.

Wording related to the EU legislation previously included in the foreword has been moved to this appendix. The aim of this new text is to avoid barriers to trade within the EU.



## **A12 Reinstatement of modular surface layer**

### A12.2 Permanent reinstatement

The use of infills in modular roads was identified as a topic for discussion during the review. During Public Consultation it was agreed that infills should only be subjected to a 1-year guarantee period if the need to use them is the result of an uneven surface, existing before commencement of the works.

The use of PMMA as an alternative option to the use of infills has been included subject to an agreement with the authority.

### A12.5 Pre-existing surface damage outside limits of undertaker's works

Section moved to S2.8 and renamed to include all types of reinstatements, not only modular.

## **7. Amendments to Notes for Guidance**

The notes for guidance have been reviewed to align with the new sections and amendments in the main document. Other amendments include:

### **NG1 Operational principles**

Table NG1.1 has been updated and guidance on the use of recycled materials has been included as requested during the Strategic Review.

NG1.6 has been amended to include guidance on recycling materials containing tar, as requested during the Strategic Review.

### **NGA2 Key to materials**

Table NGA2.2 has been included to support the selection of surfacing materials depending on the existing surfacing. This was requested by the Working Party.