PUBLIC

DERBYSHIRE County Council

MATERIALS POLICY

July 2021

AN ELEMENT OF THE HIGHWAY INFRASTRUCTURE ASSET MANAGEMENT SYSTEM

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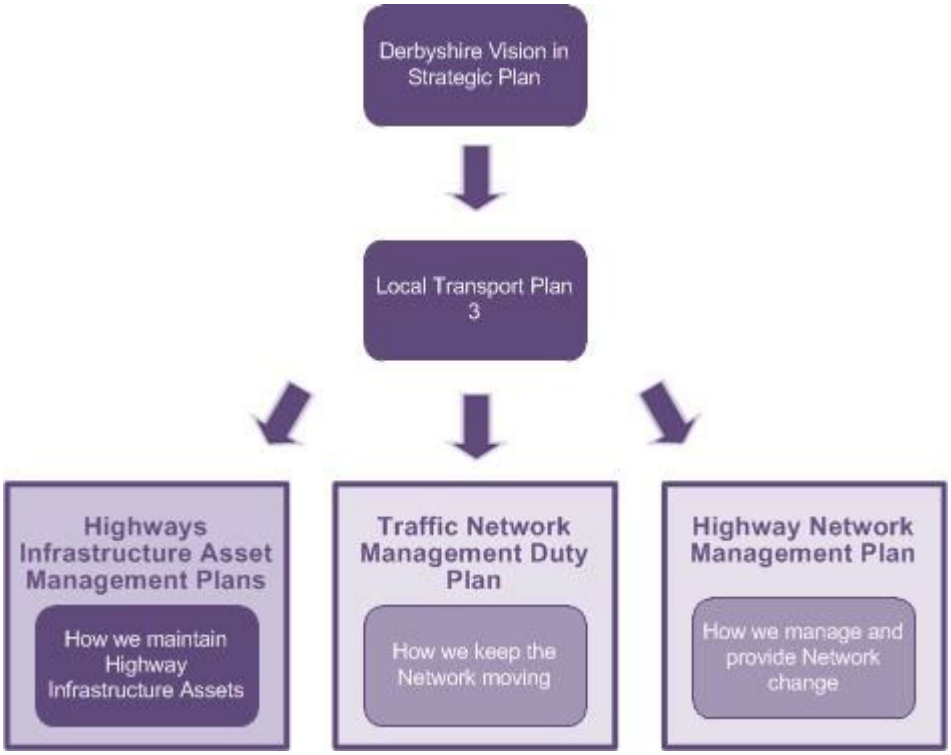
INTRODUCTION

This document provides the technical details that supports the Highways Infrastructure Asset Management Strategy and Plan and forms part of the Highways Infrastructure Asset Management suite of documents. It is a working document that provides the processes and information used internally by staff undertaking roles in delivery of service.

The following figure shows this document in context with other key documents in how the network is managed, maintained and changed:

DIAGRAM 1: PLANS AND POLICIES FRAMEWORK



This document will be reviewed by the FHM Planned Maintenance Group as and when required but as a minimum annually and will be signed off via delegated powers.

POLICY DETAILS - CARRIAGEWAYS

1) This policy is intended to ensure a consistent approach to the resurfacing of carriageways throughout the county and is aimed at using materials that provide good durability in relation to the relevant hierarchy to avoid unexpected early intervention ensuring achievement of life cycles and ongoing resilience.

2) As part of the council's commitment to carbon reduction the materials in this policy shall be Warm Mix Asphalt (WMA) except where this is not achievable due to either proprietary material specification OR concerns about coated chippings embedment.

However, it is also recognised that in some cases warm mix asphalts (WMA) are not recommended in winter due to cooler ambient temperatures and in such cases the admixture for warm mix asphalt can still be added for compactability but the material can be mixed at a

higher temperature following advice from the Highways Laboratory and relevant material supplier. Note: Asphalt should not be laid or compacted below the recommended minimum temperatures or exceed the maximum temperatures specified in the SHW and/or BS594987.

3) The Standard material should be chosen as the default. Roundabouts are deemed to include short lengths of adjacent splitters where the changing of material would be impractical.

4) The second option to be chosen only where site conditions and engineering judgement dictates otherwise and in accordance with the Departures Process.

Site conditions may be one or more of the following: Steep gradients, tight bends, known RTC site, Road width (causing chipper problems where HRA), Drainage/flooding (durability of some materials), Bridge decks, etc.

All materials outside of this policy shall be used only in agreement with Technical Services using the departures process.

5) Clause 911 High Stone Content HRA not to be used on hierarchies NH1 to NH4 as this material exhibits a low surface texture which coupled with the traffic flows experienced on these hierarchies will lead to early loss of skid resistance.
In addition, the use of this material is limited to NH5, NH6 & NH7 roads with speed limits of 40mph or less.

6) To ensure durability, the use of 100/150 and 160/220 PEN binders for carriageway materials will no longer be permitted (including binder and carriageway base courses). For small areas of hand laid patching a 40/60 or 70/100 PEN binder (dependant on type of material) shall be used with a workability additive.

7) A surface course is only as good as the structure it is laid on. Particular attention should be given to the condition and depth of the existing bituminous layer from the coring information and the appropriate structural strengthening shall be carried out. In-situ recycling is the default treatment for full width strengthening involving two or more layers of construction and contributes to the council's policy of reducing carbon emissions.

8) For HAPAS/BBA Proprietary PMB surface courses the company laying the material shall be NHSS 16 Accredited and also approved by the material supplier unless otherwise agreed by Technical Services.

9) Isolated planned patching works should be carried out using the materials specified in this policy irrespective of existing adjacent materials. Temporary small-scale reactive safety repairs will be exempt.

10) PPSD will be carried out using a hardstone (min PSV 55) aggregate, utilising a single layer/single pass multi surface/binder course with a PMB or 40/60 paving grade bitumen. and surface sealed with sealing grit as appropriate.

11) For durability purposes the thickness of HAPAS/BBA surface courses shall be increased to a minimum of 50mm at high stress sites.

12) ALL Igneous aggregates MUST utilise an adhesion agent when used in bituminous mixtures.

13) A bond coat must be applied to the receiving layer prior to the new asphalt layer being laid with the application carried out in accordance with BS594987, it is imperative that the bond coat is allowed to break before the asphalt layer is laid.

14) All joints and ironworks must be treated in accordance with BS594987 using a combination tanker with vertical hot joint painting arms to negate the application being carried out manually. Hot applied Paving Grade 40/60 or 70/100 is the only option, unless agreed otherwise with the Project Engineer or the Highways Laboratory.

15) Any areas of reconstruction that are planned out using cold milling machines can be carried out up to 120mm from top of surface course without requiring GPR (ground Penetrating Radar). Any areas of reconstruction that are in excess of 100mm depth from top of surface course level and are not planned out using cold milling machines require a non-invasive ground penetrating radar survey.

16) PSV requirements will be calculated using table 3.1 in HD36/0.

TABLE 1: CARRIAGEWAY TREATMENT AND MATERIALS OPTIONS

Network Classification	Safety Inspection Frequency	Standard Material	2nd Option (Departure Required)	1st Option (Roundabouts& Concrete Roads)	Preventative Treatment	Preventative (Roundabouts & Noise Sensitive High Speed Duals)
Resilient Network	1 month	As per underlying NH classification				
Network Hierarchy 1	1 month	Cl 943 (Performance Spec) HRA 35/14 F PMB (Softening point EN14023 Class 2 to 4) PD6691 Table C.4 Classification No 2 (45/50mm thick as appropriate)	HAPAS/BBA Proprietary PMB (Softening point EN14023 Class 2 to 4) Surface Course (German style) (40/50mm thick)	HAPAS/BBA Proprietary PMB (Softening point EN14023 Class 2 to 4) Surface Course (German style) (50mm thick)	Surface Dressing Compliant with Road Note 39	Asphalt Preservative treatment.
Network Hierarchy 2	1 month					
Network Hierarchy 3	1 month	Cl 910 HRA 35/14 F 40/60 (45/50mm thick as appropriate)				
Network Hierarchy 4	1 month					
Network Hierarchy 5	3 months	40mph or less: Cl 911 HRA 55/10 F or C 40/60 Above 40mph: Cl 912 AC 10 close surf 40/60 (40/45/50mm thick as appropriate)	N/A		Surface Dressing Compliant with Road Note 39 or Micro Asphalt (40mph or less)	
Network Hierarchy 6	1 year					
Network Hierarchy 7	1 year					N/A

POLICY DETAILS – FOOTWAYS

1) The standard footway materials will be chosen unless in a conservation area where existing or alternative materials may be proposed for amenity reasons.

2) Any alternative materials outside this policy shall be used in consultation and agreement with Technical Services using the departures process.

3) As part of the council's commitment to carbon reduction the materials in this policy shall be warm mix except where this is not achievable due to proprietary material specification or ambient temperatures.

4) To achieve a more durable finish materials shall be machine laid except where site constraints prevent this.

5) For small areas of hand laid work in footways a 70/100 PEN binder or Polymer Modified Binder (dependant on the type of material) shall be used with a compactability additive.

6) Use of AC 6 dense surf can be specified in an inlay/overlay situation without requiring a departure.

7) To ensure durability, the use of 160/220 PEN binders for footway materials will no longer be permitted in footways.

TABLE 2 FOOTWAY TREATMENT AND MATERIALS OPTIONS

Network Classification	Description	Safety Inspection Frequency	Standard materials	Preventative Treatment
All	All Footways	All	Clause 906 AC 20 Dense Bin 40/60 (50mm thick) Clause 909 AC 6 Dense Surf 70/100 or 100/150 (20mm thick) or Proprietary 10mm surface course with Polymer Modified Binder designed to be laid in a single layer (70mm thick or as directed)	Micro Asphalt

POLICY DETAILS – PUBLIC RIGHTS OF WAY (PRoW)

1) All asphalt PRoW shall be treated in compliance with the Footway Treatment Policy above.

2) The standard materials shall be chosen unless alternative materials are proposed for amenity or durability reasons.

3) Any alternative materials outside this policy shall be used in consultation and agreement with Technical Services using the departures process.

4) Materials shall be chosen to complement and maintain visual amenity and natural ecology.

5) Compaction of the Subbase material shall comply with the guidance in Clause 802 in the Schedule for Highway Works (SHW).

6) In accordance with the council's commitment to carbon reduction, recycled materials are encouraged subject to note (4) above.

TABLE 3 PUBLIC RIGHTS OF WAY (PRoW) TREATMENT AND MATERIAL OPTIONS

PRoW Network Classification	Description	Standard materials
All	Asphalt PRoWs	Clause 906 AC 20 Dense Bin 40/60 (50mm thick) & Clause 909 AC 6 Dense Surf 70/100 or 100/150 (20mm thick) or Proprietary 10mm surface course with Polymer Modified Binder designed to be laid in a single layer (70mm thick or as directed)
	Non-asphalt PRoWs	Clause 803 Type 1 Subbase (Limestone/Gritstone*) to BSEN 13285 (150mm thick) Clause 807 Type 4 Subbase (asphalt arisings) to BSEN13285 (150mm thick) “Tarmac Ultitrec” type material or similar.
		Blinding of the surface for the purpose of sealing the subbase (if necessary) shall be Limestone, Gritstone or Basalt* aggregates to the following gradings 0 to 6.3 to BSEN13242 0 to 4 to BSEN 13242 0 to 10 to BSEN 13242

*To correspond with local environment

SCHEDULE OF RATES APPENDIX 7.1

TABLE 4: HIGHWAY MAINTENANCE TERM CONTRACT - APPENDIX 7/1 – ROAD PAVEMENTS PERMITTED PAVEMENT OPTIONS – FLEXIBLE, FLEXIBLE COMPOSITE AND SURFACING FOR RIGID COMPOSITE CONSTRUCTION & SURFACE TREATMENTS

Description	**Requirements**
Location (eg: Chainage, Road Name):	As described by the Service Manager on the work instruction
Grid for checking surface levels of pavement courses Longitudinal dim: Transverse dim:	10m Channels, lane line and mid-point of lanes
Surface Regularity (Table 7/2): Road Category A: Road Category B:	Exceeding 30mph Not exceeding 30mph
Maximum air void content required:	7% or less for binder and base course mixes as specified on the work instruction. 5% or less for surface courses.
Temporary Storage Hot Bins:	Only with the approval of the Service Manager
Coated Chippings (915) Nominal size: Minimum PSV: Maximum AAV:	14/20mm or 08/14mm 60/63/65/68 as described in the contract 10
Measurement of Surface Texture (921): (Tables 9/3 and 9/13)	By TM2 Texture Meter or by volumetric patch method to BS EN 13036-1 (In cases of dispute this will be the reference)
Requirements for regulating course (907):	As described in the Contract
Recycled Asphalt Pavement (RAP) content: Surface course mixtures Binder and base course mixtures Polymer Modified Binders	 ≤ 10% ≤ 30% Not Permitted

TABLE 4: HIGHWAY MAINTENANCE TERM CONTRACT - APPENDIX 7/1 – ROAD PAVEMENTS PERMITTED PAVEMENT OPTIONS (CONTINUED)

Pavement Schedule:

Pavement Course	Clause	Material	Grade of Binder	Thickness (mm)	Special Requirements
Sub-base	803	Granular Type 1	N/A	As Directed	BS EN 13285 BS EN 13242 BS1377-2
Base	906	Asphalt Concrete (Recipe mix)	40/60 (MC/HD)**	100	BS 594987 BS EN 13108-1 (Dense Base 32mm nominal size aggregate)
Base (Design Mix)	929	Asphalt Concrete	40/60 (MC/HD)**	100	BS 594987 BS EN 13108-1 (Design Mix Dense Base 32mm nominal size aggregate)
Binder Course	905	Hot Rolled Asphalt	40/60 (MC/HD)**	Minimum 60	BS 594987 BS EN 13108-4 (HRA Binder course 20mm nominal size aggregate)
Binder Course	906	Asphalt Concrete	40/60 (MC/HD)**	Minimum 60 (20mm agg) Or 100 (32mm agg)	BS 594987 BS EN 13108-1 (Dense Binder course 20mm or 32mm nominal size aggregate)
Binder Course (Design Mix)	929	Asphalt Concrete	40/60 (MC/HD)**	Minimum 60 (20mm agg) or 100 (32mm agg)	BS 594987 BS EN 13108-1 (Design Mix Dense Binder course 20mm or 32mm nominal size aggregate)

Pavement Course	Clause	Material	Grade of Binder	Thickness (mm)	Special Requirements
Surface Course	910	Hot Rolled Asphalt (Recipe Mix)	40/60 (MC/HD) **	45/50	BS 594987 BS EN 13108-4 BS EN 13043 (HRA 35/14 F surface course Recipe Mix 14mm nominal max aggregate size)
Surface Course	911	Hot Rolled Asphalt (Design Mix)	40/60 (MC/HD)**	40/45/50 (55/10)	BS 594987 BS EN 13108-4 BS EN 13043 (HRA 55/10 F or C surface course Design Mix AKA High Stone Content HRA)
Surface Course	912	Close Graded Asphalt Concrete	70/100 (MC)**	40	BS 594987 BS EN 13108-1 (Close surface course 10mm nominal aggregate size)
Surface Course	943	Hot Rolled Asphalt (Performance Related Design Mix)	PMB (MC/HD)**	45/50	BS EN 13108-4 BSI PD 6691 BS EN 13043 (HRA 35/14 F surface course Performance Related Design Mix to PD6691 Table C.4 Classification No 2 14mm nominal max aggregate size)
Surface Course	HAPAS/ BBA/ CE/ UKCA*** Certified Proprietary material	Proprietary Surface Course* (Also known as German style SMA)	PMB (MC/HD)** as described on the HAPAS/ BBA certificate	40/45/50 (10mm agg)	BS 594987 BS EN 13108-1 BS EN 13108-2 BS EN 13108-5 BS EN 13043 (Proprietary surface course 10mm nominal aggregate size) Maximum air voids of 5%.

MC = Machine Lay HD = Hand Lay

*The proprietary surfacing material will be HAPAS/BBA/CE/UKCA Certified and will possess high levels of crack resistance, high levels of durability, low air voids, low noise characteristics and better early life friction performance than conventional SMA type surfacing materials.

** A compactability additive will be needed to enable laying by hand.

*** CE Certification will be recognised until 01 January 2022 after which UK Conformity Assessed (UKCA) Certification will be required.

Note: The Overseeing Organisation Engineer may select one or more of the above permitted alternatives together with thicknesses where applicable.

TABLE 5: HIGHWAY MAINTENANCE TERM CONTRACT SPECIFICATION – SERIES 700: PERMITTED PAVEMENT OPTIONS CONTINUED SURFACE TREATMENTS

All high friction surface treatments shall comply with Clause 924 and have current HAPAS or equivalent product acceptance certification and comply with the requirements in the table below:

Site location:	As described on the *Task Order*

High Friction Surface Treatments

Classification:	Type 1
PSV Category:	≥ 70 (aggregate to be calcined bauxite)
AAV Category:	≤ 8
Colour:	Buff or grey as described on the *Task Order*
Thickness:	3 to 5 mm

Coloured Surface Treatments

Classification:	Type 1		
PSV Category:	≥ 60 (aggregate to be granite or gritstone)		
AAV Category:	≤ 10		
Colour:	Colour code (BS 381C) Buff – Ref No 366 (Light Beige) Green – Ref No 225 (Light Brunswick) Red – Ref No 564 (Bold Red) As described on the *Task Order*		
Thickness:	4 to 6 mm (each layer)		
Dimensions of rumble strips (width):	Type - DL100 Type - SL100 Type - DL150 Type - SL150 Type - DL500 Type - SL500	Double layer Single layer Double layer Single layer Double layer Single layer	100mm + 60mm 100mm 150mm + 60mm 150mm 500mm+ 300mm 500mm

SCHEDULE OF RATES APPENDIX 11.1

Kerbs, Footways & Paved Areas (Clauses 1101 & 1105)

Table 6: Flexible Surfacing:

Pavement Course	Clause	Material	Grade of Binder	Thickness (mm)	Special Requirements
Binder Course	906	Asphalt Concrete	40/60 (MC)	60/100	BS 594987 BS EN 13108-1 (Dense Binder course 20mm nominal size aggregate)
Surface Course	909	Dense Asphalt Concrete	70/100 (MC) 100/150 (HD)	20	BS 594987 BS EN 13108-1 BS EN 13043 (Dense surface course 6mm nominal size aggregate)
Surface Course	N/A	Proprietary 10mm surface course*	PMB (MC)	70	BS 594987 BS EN 13108

*The proprietary footway surfacing material shall be a polymer modified asphalt surface course designed to be laid in a single layer to thicknesses up to 70mm. Its grading and heat retention will deliver enhanced compactability, low air voids and high durability.

Note: The Engineer may select one or more of the above permitted alternatives together with alternative thicknesses where applicable.

MC = Machine Lay
HD = Hand Lay

APPENDICES

APPENDIX 1: PROCESS MAP FOR PLANNED WORKS DEPARTURE FROM STANDARDS

This will be added once the End-to-End Process for Planned Works has been signed off.

APPENDIX 2: STANDARD FORM FOR DEPARTURE FROM STANDARD

https://edrm.webapp.derbyshire.local/livelink/llisapi.dll/open/117396189

APPENDIX 3: EXAMPLE OF DEPARTURE FROM STANDARD FORM FOR MATERIALS

Derbyshire County Council – Place

Submission Form for a Departure from Standard

Please fill in all relevant boxes or indicate N/A where input not required

Project Name	B5057 Sydnope Hill (Ladygrove Rd to Back Ln, Two Dales)
Departure Ref	B5057/01
Client / Developer's Details	DCC Network Planning, North West Maintenance
Design Organisation's Details	DCC Consultancy & Contracting, Maintenance Design
Date Submitted	22/06/21
Design Stage	Detailed

1. Project Details

1.1	Site Location	B5057 Sydnope Hill, Two Dales
1.2	Brief Description of Scheme	Carriageway resurfacing
1.3	Network Hierarchy	NH4
1.4	Resilient Network	No
1.5	Speed Limit/Design Speed	30mph
1.6	Traffic and NMU flows	Not known

2. Details of the Departure

2.1	Discipline	Material
2.2	Type	Surface course
2.3	Relevant Standard(s)	DCC Materials Policy
2.4	Clause(s)	Clauses 910, 915 & 942
2.5	Has a Road Safety Audit been done	N/A
2.6	Difference between Standard(s) and Proposed Design	DCC materials policy specifies the use of Cl. 910 HRA 35/14 F surf 40/60 with applied pre-coated chippings to Cl. 915 45mm thick. The proposed departure recommends the use of a Clause 942 HAPAS/BBA UKCA Certified 10mm PMB surface course 40mm thick

2.7	Reason for Departure (Overview)	Site is steep with tight bends and has no verges to run a chipper on.
2.8	Associated Project Departures	N/A
2.9	Other Options Considered	N/A

3. Justification for Departure (Potential positive and negative impacts)

3.1	Safety	N/A
3.2	Environmental	Dependant on time of year work carried out the HAPAS/BBA material can be supplied as warm mix
3.3	Accessibility	N/A
3.4	Network Resilience & Maintenance	Potential earlier intervention due to less durable material.
3.5	Congestion/Delay	N/A – Site requires road closure irrespective of treatment
3.6	Cost	N/A
3.7	Design Organisation's Mitigation	Asphalt preservative treatment recommended around year 3 and regularly thereafter to prevent deterioration as site unsuitable for surface dressing

4. Attachments and Other Information

4.1	List of Attachments	Location plan - see below
4.2	Consultations	Discussion with Contractor as part of ECI and Highways Laboratory
4.3	Other Information	N/A

5. Design Organisation's Concluding Remarks

Use of DCC standard material for this road is difficult without hand laying of chippings leading to inconsistent rates of spread with possible over-chipping/plucking out or under-chipping/loss of skid resistance on these tight bends.

With the mitigation measures recommended in 3.7 the lifecycle should be consistent with the standard material.

6. Decision

Name		K Gilbert	Role	Lab Manager
Signed		*K Gilbert*	Date	22/06/21
Name			Role	
Signed			Date	

	1- Approved	**X**	**2 – Approved with Comments**		**3 - Rejected**	
	Comments or Reason(s) for Rejection (*delete as applicable)					

Hazard Identification and Risk Assessment for Departures from Standards

Project Name	B5057 Sydnope Hill (Ladygrove Rd to Back Ln, Two Dales
Departure Ref	B5057/01
Design Organisation's Details	DCC Consultancy & Contracting, Maintenance Design
Date Submitted	22/06/2021
Checked by	R Moore

Risk Assessment before and after control measures:

Ref	Hazard Description	P	S	R	Mitigation/Control Measure	P	S	R
1	Resurfacing operation carries equal risk irrespective of material.				N/A			
2								
3								

Risk classification and required action:

Probability (P)*		Severity (S)*			Risk Classification (R)
		1	2	3	
		Low	Med	High	
1	Low	1	2	3	Low (1 to 4) – Ensure assumed control measures are maintained and reviewed as necessary
2	Medium	2	4	6	Medium (6) – Additional control measures needed to reduce risk rating to a level equivalent to a test of "as low as reasonably practical"
3	High	3	6	9	High (9) – Activity not permitted. Hazard to be avoided or risk to be considerably reduced

*P = Probability that harm will occur due to departure		
1	Low	Unlikely or highly unlikely
2	Medium	Likely
3	High	Extremely likely/Almost Certain

*S = Expected potential severity of any harm		
1	Low	Slight or no injuries, Minor or moderate damage or loss
2	Medium	Serious injury, Substantial damage or loss
3	High	Fatal or multiple fatal injuries, Major damage or loss

Guidance Notes

1) The Departures Process applies to both DCC internal works and external Developer works and will cover departures in the design standards and/or the materials policy.

2) All Sections must be completed. Any non-relevant sections should be indicated as None or N/A as appropriate.

3) For Departures from Design Standards the appropriate DCC sign-off will be at Senior Project Engineer level.

4) For a Materials Departure from Standard DCC sign-off will be by the Senior Project Engineer - Highways Laboratory.