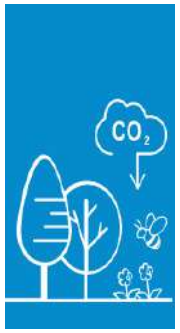
Strategic Procurement Strategy
Road Markings

Executive Summary – Road Markings

The permanent and/or temporary line markings and studs which are applied/removed to provide traffic direction. These provide safety through brightness and retro reflectivity. Products/methods of application include, thermoplastic, methyl methacrylate (MMA), glass beads, raised rib/rib lining, tapes and sprays.

Current Status:
Implement and deliver a strategy for Road Markings that supports all NH investment programmes, improving safety, productivity, innovation, standardisation, carbon reduction/environmental solutions, social value enhancements, efficiencies and cost savings.



Challenges:

- **Value for Money**: Drive better value for money (VfM) across whole life costs of Road Markings through innovation and early supplier engagement, resulting in cost savings and increased productivity within the supply chain.
- **Safety**: Raise the safety standards currently applied to Road Markings through the use of new materials and technology, and monitor these to deliver a safer experience to road users.
- **Demand:** Forecast in demand and visibility of programmes as early as possible for better planning and enable commitment.
- **Carbon Targets:** Risk of not achieving targets unless proactive measures and innovative opportunities are prioritised.
- **Early Engagement:** Early engagement with programme, project management & key stakeholders to endorse and promote Road Marking solutions.

To fully address the challenges and to align with our imperatives the strategy recommendations are as follows:

- **Drive Change** through supplier engagement, collaborative working with the Road Markings community, innovation within the sector and standardisation across the category.
- **Drive Innovation** by optimising supply chain experience and expertise to identify Road Markings opportunities and efficiencies. ECI and collaboration with SES & Lean innovation/improvement working groups.
- **Incentivise the supply chain** to drive change and improvements to safety and customer experience/satisfaction. Drive efficiencies through productivity (optimising the working windows), cost savings and reduced time on the SRN.
- **Standardisation** across the business and supply chain through engagement with SES and internal stakeholders. Utilising skill set from Road Markings community, Stakeholder Working group, Innovation Reapplied and sector improvement projects.
- **Shape the Market** by expanding and challenging the supply chain, accessing new alternative Road Markings materials and techniques. Engage with Tier 2/3 directly to embed category management within the supply chain and MP/OD communities to ensure continuous improvement & innovation is applied.

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High-Level Plan to Deliver Road Markings Goals

Short-Term
(RP2 Year 2)

- Embed in supply chain community
- Alignment across MP & OD
- Stakeholder Working Group to identify and test opportunities

Improve engagement by embedding within the supply chain, tier 1/designers and project teams. Review current Road Markings standards and generate opportunities for innovation and better VfM.

Medium-Term
(RP2 Years 2-3)

- Working with a wider supply chain to innovate and generate efficiencies
- Working with NH stakeholders to apply Road Markings approach, realise efficiencies and cost savings

Collaborative working with the supply chain and project teams that will develop opportunities across all investment programmes and drive innovation. Review of project scopes to define the outcome rather than instruct how to carry out the works.

Long-Term
(RP2 Years 4-5 & beyond)

- VfM realisation across whole life costs of Road Markings
- Application of Road Markings post-strategy management plan across whole supply chain and NH schemes

Whole life costs and increased productivity to demonstrate better VfM through innovation and collaborative working/sharing of best practice with the Road Markings community. New materials developed and used by incentivised supply chain.

Rollout of Short to Medium Term Solutions

RM01: Road Markings Supplier Community / Growth of Supply Chain

- Engaged and developed supply chain to deliver longer lasting innovative solutions.
- Enabling of early engagement (ECI) and increasing workforce productivity.

- **Other benefits:** Direct access to experienced suppliers allowing for innovation.
- Broken duopoly allows NH to influence the supplier market and achieve better Value for Money.

RM03: Align Strategies for MP & OD Investment Programmes

- RIP & CIP aligned to SMA/RM strategy to maximise supplier intelligence.
- Linking in with SDF community for alignment.
- Applying lessons learned & collaborative approach to deliver increased efficiency to meet NH targets with ORR.

- **Other benefits:** Alignment with NH main header contracts.
- Basis to grow market capacity, increasing SME capability through mature supply chain experience.

RM04: RM Stakeholder Working Group

- Internal stakeholders working collaboratively as part of RM Stakeholder Working Group.
- Testing of opportunities and efficiencies and aligning with outcomes of TRM project.
- By delivery through lean practices will enable us to achieve our outputs and efficiency targets.

- **Other benefits:** Collaboration working with suppliers and trade bodies to drive VfM and share best practice to improve the customer experience.

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Rollout of Medium to Long Term Solutions

RM05: Implement Cost Reduction Process	▪ Demonstrate cost reduction and better VfM of whole life costs through monitoring of results. ▪ Work with all suppliers and stakeholders to increase productivity and efficiencies.	▪ **Other benefits:** Increase productivity. ▪ Identifying solutions delivering through lean practices. ▪ Drive innovations that will help deliver to NH efficiency targets.
RM06: Safety & Innovation	▪ Review of standards and performance to support a safer network and safer customer experience. ▪ Better materials, technology and application promote carbon reduction, increased productivity and efficiency. ▪ Engage and deliver via innovation reapplied.	▪ **Other benefits:** Sharing of safety initiatives, improving quality and health & safety experience for the customer. ▪ Driving safety & innovation through industry awards and monitoring performance.
RM07: Carbon Reduction	▪ Working with SES & Lean to reduce negative environmental practices and wastes. ▪ Working with supply chain to support realisation of NH Net Zero Carbon.	▪ **Other benefits:** Delivery through lean practices will enable us to achieve our outputs & efficiency targets.

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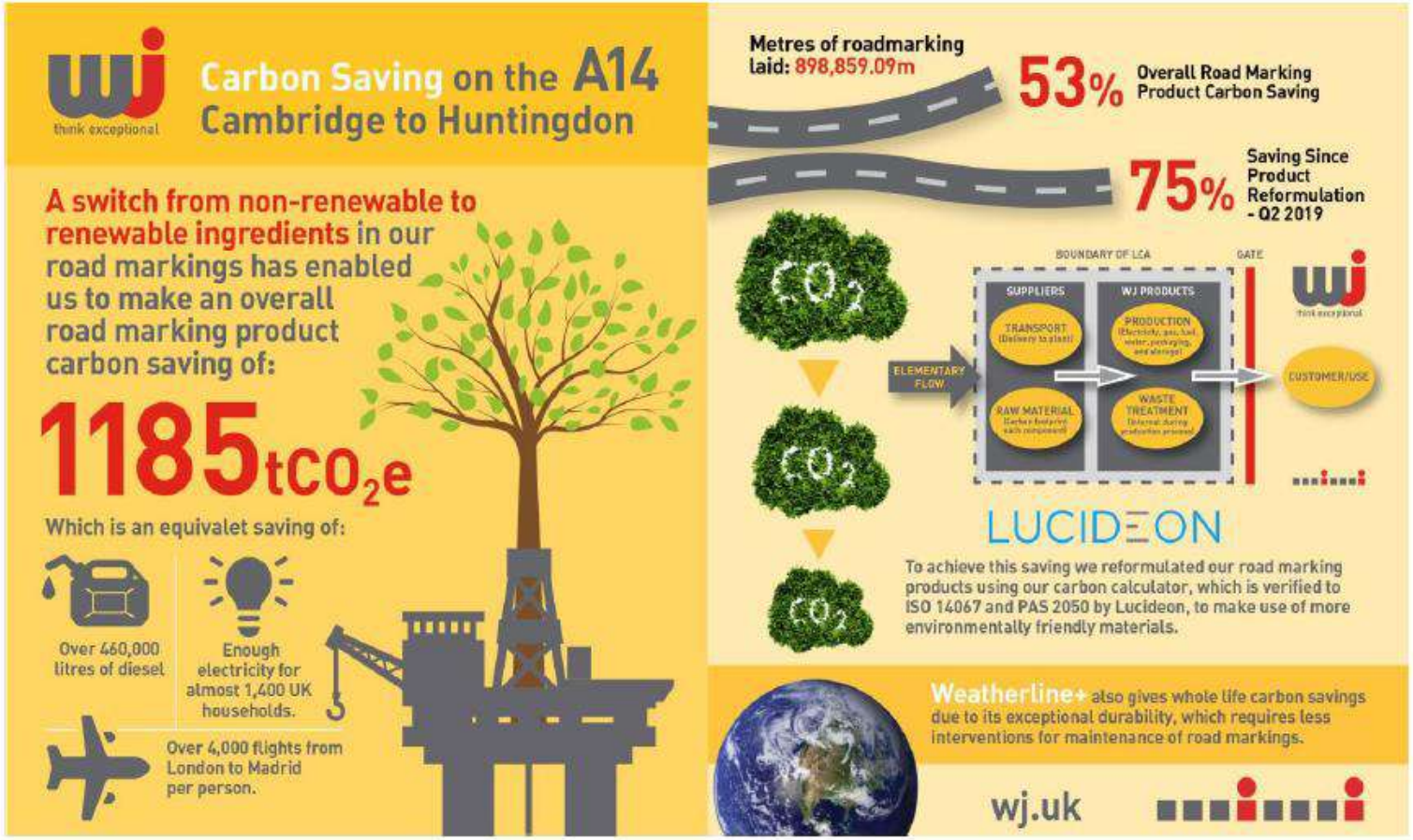
Carbon Reduction



Wilson & Scott

Drivers trained in techniques for reducing emissions and fuel use, with the potential to improve fuel efficiency by up to 15%.

Worked with our major material supplier achieving 100% use of recycled glass in the road marking thermoplastic products we install.

Environmental Management System certified to ISO 14001

- Commitment to waste prevention, re-purposing, recycling, other recovery and responsible disposal.
- Purchasing strategy of procuring vehicles to the highest Euro standards available.
- Effective management of operational resources to minimise vehicle mileage.
- Thermoplastic road markings:
  - 100% recycled glass content
  - Highest available recycled content
- Supply chain sustainability ensured through comprehensive vetting and monitoring procedures.
- Active engagement with supply chain to minimise or eliminate packaging.

Key Themes:

- Multifunctional vehicles for line application
- Recycling of materials
- Tree planting
- Electric/hybrid vehicles
- Cold plastics
- Sustainable materials with reduced maintenance

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Carbon Strategy

Key drivers of carbon emissions in category	Corporate emission	Maintenance & construction emission	Road user emission	Estimated Carbon emissions per year associated with key driver [tons of CO2]
Materials		X		Discuss with SES to identify – details pending
Design and Planning		X		Discuss with SES to identify – details pending
Fuel usage – vehicle and thermoplastic heating		X		Discuss with SES to identify – details pending

Identified measures to address key drivers in category	Expected impact / CO2 reductions [tons of CO2]	Timescale	What is needed to implement measure (investment/support, etc)?
Switch from non-renewable to renewable ingredients used in road markings.	On the A14 renewable ingredients were used and this had a saving of 1185tCo2e.	2022 – 2025	Technology investment, maintenance programme review of schemes (SDF/MP), SES support to embedded changes (eg standards / materials).
Use of recycled glass in road markings.	Potential to use 100% recycled glass in future road markings.	2022 – 2025	Technology investment, maintenance programme review of schemes (SDF/MP), SES support to embedded changes (eg standards / materials).
Driver training.	Techniques for reducing emissions and fuel use have the potential to improve fuel efficiency by up to 15%.	2022 – 2025	Industry support / buy-in. Continued investment (including future hybrid vehicles).
Transforming Road Markings Report.	The report looked at the application, durability and removal of products. However, ideas such as reducing the thickness of the road markings have not been found to be detrimental in certain circumstances and would reduce the carbon footprint.	2022 onwards	Next steps to be discussed with SES.

Snapshot on our Future Vision

Short-Medium Term

Collaborative Approach

impacts

Shaping the Market

- Working in collaboration with investment programmes and tier 1 partners will optimise programmes to improve safety and delivery.
- Influence the market to promote competition and reduce the duopoly, generating better VfM through turning opportunities into actual efficiencies.
- Early engagement is key and will help the supply chain shape bring innovations into reality.

Medium-Long Term

Improve Procurement Approach

impacts

Shaping the Future

- Develop the market to deliver NH initiatives for **Net Zero Carbon**, innovation and supply chain resilience.
- Alignment across the MP & OD will provide assurance of demand/spend and mitigate supplier capability and capacity concerns.
- Raise standards and enable innovation to deliver safer and more sustainable Road Markings with better VfM of whole life costs.

This is a high level overview. Key objectives will be delivered working with stakeholders across all solutions working with key focus groups like Road Markings Stakeholder Working Group.

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Road Markings Implementation Plan

1. **Supply Chain and Stakeholder Relationship Management**
2. **Standardisation**
3. **Working Community**
4. **Innovation/Environmental Solutions**

Benefits: Efficiencies & Cost Savings

- Longer lasting markings with reduced need for maintenance
- Increased productivity per shift
- Improved Value for Money (£m saving)

Benefits: Performance Improvement

- Updated specifications and ECI
- Review of safety and performance to refine standards
- Enabled innovation via materials and technology

Benefits: Service improvements

- Shift of market dominance opening the market to SMEs and more providers, allowing for innovation
- Engaged, capable and incentivised supply chain reduces the need for remedial reworks.

High Level Details of the Aligned Workstreams

1 Major Projects & Operations Engagement

- Objective: Align RM approach and support the communities to realise savings and efficiencies
- High level approach: Deliver better customer outcomes by influencing and improving standards. Regular engagement with Ops & MP to establish awareness, share knowledge and lessons learned. Encourage efficiencies and innovation through use of SMEs & ECI.
- Key stakeholders: SMA (Procurement) team, RDP, CIP, SDF & Road Markings Category team
- Benefits: Innovation, use of category expertise, safer working, increased productivity & cost savings

2 Supply Chain Management

- Objective: Embed category lead within supply chain community to identify opportunities for development & efficiencies
- High level approach: Engage with suppliers & supply chain to drive innovation and cost savings. Establish link between Ops/MP and the supplier community
- Key stakeholders: DIPs, RM Suppliers, SES, SCI & Road Markings Category team
- Benefits: Early identification of opportunities in the market & collaborative relationship with suppliers

3 Review of RM Standards

- Objective: Revise current safety & performance standards in line with outcomes of TRM project, innovative solutions and new technology
- High level approach: Review current standards, outputs and value for money. Issue updated standards to supply chain to deliver longer lasting products for Road Markings
- Key stakeholders: SES & Road Markings Category Team
- Benefits: Improved safety, improved markings durability, increased productivity, better VfM

4 Innovation / CO2 Incentivisation Schemes

- Objective: improved environmental ways of working through enabled innovation and carbon reduction efforts across the category
- High level approach: Access to designated funds for suitable innovative proposals. Monitoring of supplier-led initiatives
- Key stakeholders: Supply chain, SES & Road Markings Category Team
- Benefits: Safety, increased productivity, better VfM, net carbon zero

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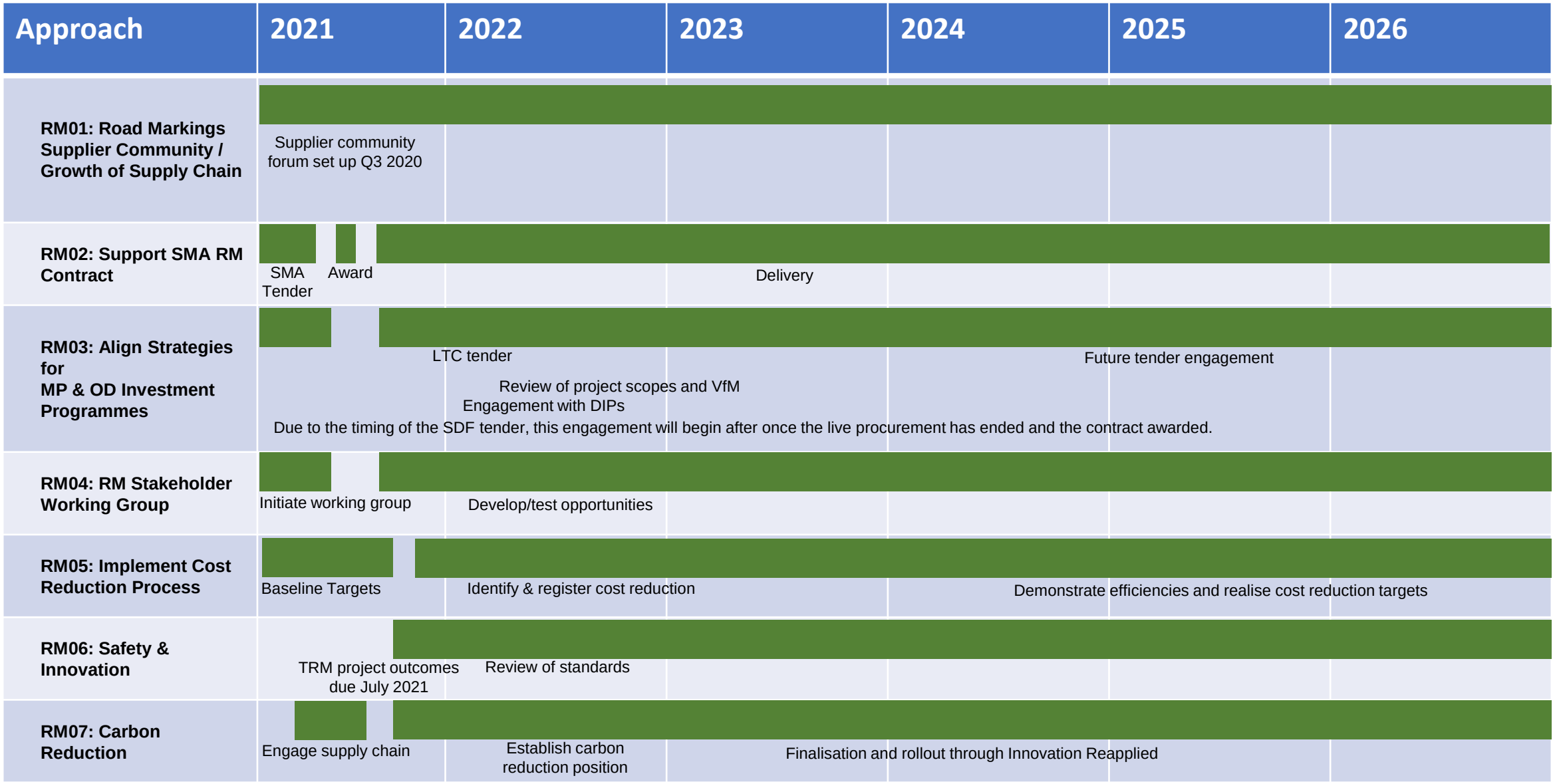
Implementation Plan Timeline



Category Profile

Vision:

To create a strategy that provides a sector leading service for delivery areas and programmes. Improving safety, the customer experience, as well as enabling efficiencies and encouraging innovation. Utilising technology to improve products/processes and reduce carbon emissions and environmental impacts.

Goals:

- Improve safety via innovative solutions, new products and new technology.
- Better customer outcomes by influencing and improving standards.
- Enhanced delivery methods and longer lasting products for Road Markings.
- Improved environmental ways of working.
- Improved quality for the workforce.

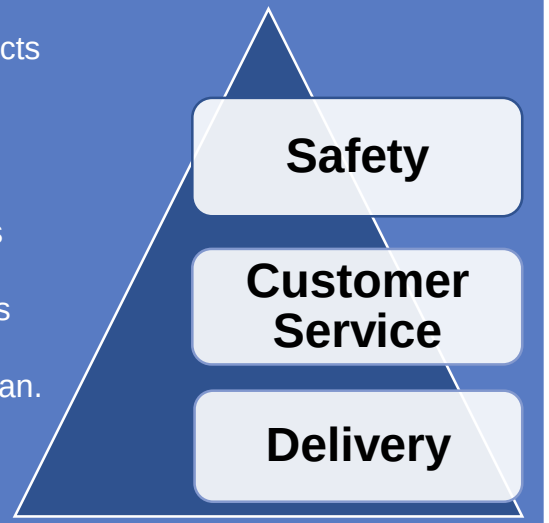
Scope:

Road markings are needed to convey road users information and guidance which might not be possible using upright signs, services and products include permanent marking, temporary marking, roads studs and removal.

Opportunities:

- Support SES on innovation and new products which enhance safety on the SRN.
- Work with SMA on RM tender. Align strategies leading to commercial efficiencies.
- Create post strategy creation management plan.
- Drive commitment from suppliers to reduce carbon emissions in line with the Net Zero agenda.

Business Need



Road Markings Category Strategy

Executive Summary

Landscape:

Limited Capable Suppliers with capacity for NH schemes
Generic (Performance Variations)
Substitutes are not readily available

Market Analysis

In progress and will continue to evolve

Objectives	Year 1	Year 2-3	Year 4+
Category Understanding	Quick immersive focused learning	Advanced	Expert
Supplier Engagement	Set up an engagement forum.	Community approach	Full collaboration
Commercial & Procurement Strategy	Intelligence & Strategic Input	Full contract management	Improved efficiency

Strategic Approach

Statement of Need

A Safer Network

Safety by use of durable and innovative solutions via new products and the further use of automation during delivery

Improving Customer Satisfaction

Customer outcomes by influencing road markings layout and improving the standards of reflectivity and durability

Delivering the RIS

Delivery of the RP 2 & 3 via improved delivery methods and longer lasting products for Permanent and Temporary Road Markings

The Requirements

- Develop supplier markets and assets to mature delivery
- Own the strategic contract management of the supply chain and their performance
- Allow the innovative suppliers and assets to enter the market to reshape delivery
- Implement a road marking strategy that underpins National Highways three imperatives

The Objectives

- Embed centralised procurement strategy
- Deliver efficiencies targets for delivery
- Develop efficient commercial models and contracts to manage resource demands
- Embed a joined cross directorate governance approach

The Challenges

- Concerns raised by commercial colleagues on premium prices from some suppliers
- Supply chain performance is current not measured due to subcontracting models in relation to Delivery Implementation Partners (DIP) and upcoming Smart Motorway Alliance (SMA)
- Procurement best practice/common approach not used to leverage the most value from the supply chain

The Outcomes

- Difficulties reported by operations regarding cost of maintenance and equipment quality
- Governance approvals for technology are not always adhered to by Major Projects
- Supply chain performance is currently not measured due to subcontracting models
- Procurement best practice not used to leverage the most value from the supply chain

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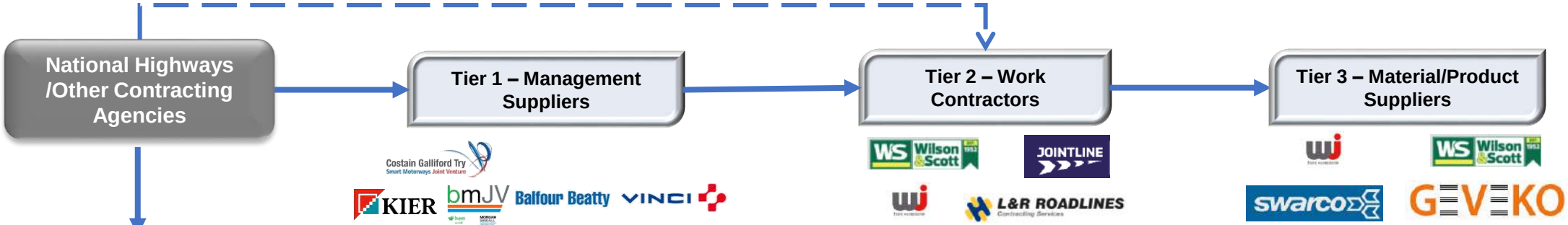
Supply Chain Mapping – value and objectives

1 Statement of Need
Define the outcome needed by the business and what is needed to deliver it

Road Markings and studs are needed to convey information and guidance to road users. Services and products include permanent marking, temporary marking, roads studs and removal.



- Such companies mainly offer project design and engineering services. The impact of Road Markings & Studs is minimal at this stage although different road layouts or traffic patterns will alter the necessity of the markings.

- Tier 1 management companies provide contract and project management services, and offer expertise to manage operational needs of the client.
- They primarily work as integrators, where they receive contracts from government/ contracting agencies, manage the project from scratch and sub-contract construction work to Tier 2 suppliers.

- The primary delivering organisations for Road Markings & Studs works.
- Their service offering can extend into various other surfaces e.g. Resin bound / bonded surfacing, pothole repair, joint sealing, traffic management.
- More established contractors tend to own a fleet of Plant asset, rather than need to insource.
- Two suppliers have been identified as manufacturing Road Markings vehicles; securing their supply chains.

- The enabling organisations for Road Markings & Studs.
- Includes plant hire and labour organisations. Plant examples include line marking trucks and road stud installers
- Manufacturers include Somerset Equipment (Part of Hitect international + L&R Roadlines) and WJ Group. Concentrating the vehicle supply base within established Road Marking suppliers.
- Many materials manufacturers are not NH contractors but want the opportunity to supply the market.

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Business Requirements and Objectives

Requirement	Low Importance	1	2	3	4	5	High Importance
Assurance of supply	Disruption to supply has a minor impact on operations and / or brand perception				X		Security of supply is critical, disruption will affect safety and damage reputation
Quality	Quality issues have minimal impact on operations and/or			X			Quality performance has a major impact on our operations and/or brand
Regulatory, Ethical, Environmental	Compliance to ethical, environmental or regulations have a minimal impact on our operations or our brand			X			Compliance to regulatory, ethical and environmental issues has high impact on our operations and/or our brand
Service	Flexibility in delivery dates and service levels can be accommodated with minimal impact.				X		Late deliveries / poor service has a major impact on operations / brand
Cost	Cost competitiveness is not a major requirements.		X				Cost competitiveness is highly important for the business as is the ability to understand costs drivers of product / service
Innovation	R&D capability or investments in innovation has minimal impact on operations and/ or brands.		X				Excellent R&D / product engineers and investments to innovate are critical to our operations and/or brand

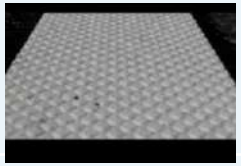
Conclusion: Road Markings is one of the most obvious elements on the road where deterioration can affect road user perception of how the road is being maintained as well as having a direct effect on safety. There are important environmental and sustainability elements to take in to account when delivering the service to ensure best value for money in relation to whole life cost.

HE Directorate	Specific Objectives
RIP	• Smaller supplier selection pool (2-3) per region • Programme allocation supported by performance management • Flexibility to mirror header contracts and cascade scheme incentives
SMA/P	• Standardised and right first time design (priority) • Manage project costs and the risk of programme delays • Focus on improving customer satisfaction • Collaborative and problem solving suppliers • Flexible contracting models for differing strategies and priorities
OD	• Responsive and flexible suppliers (for emergency situations) • 2-3 suppliers for area coverage and resilience • Ease of administration to manage costing and invoicing

Product Description – Techniques

Name	Description	
Road surface marking		Road markings are used on pavements to provide guidance and information to drivers. White lining can be temporary or permanent and are used to delineate traffic lanes, inform motorists, or even serve as noise generators when run across a road or used at the edge of the traffic lane. There are continuous efforts to improve the road marking system and technological breakthroughs include improving retro reflectivity, extending longevity, and improving durability.
Extrusion		Extrusion has become the most commonly used application method in the road marking industry nationwide and is the most effective technique for large scale road lining with minimal disruption to traffic flow. The thermoplastic output thickness is pre-selected and applied to the road through an extrusion mould. Glass beads are applied simultaneously with the thermoplastic to give instant retro reflectivity to the markings.
Studs		Road studs are integral to traffic safety at night, but can also serve a safety-critical role during temporary road works. Road studs can be temporary or permanent, but both need high levels of long term retro-reflectivity and excellent adhesion to the road service.
Raised Rib Marking / Rib Lining		The thermoplastic is applied by a screed technique, through a special shoe, which has a controlled shutter to create the distinctive rib pattern of the marking. In order to give good drainage characteristics, a drainage channel should be incorporated into the line at predetermined intervals. The degree of raised rib will also affect level of reflectivity.
Line Removal		The complete removal of a durable road marking from any surface is difficult without causing damage to the road surface. Thermal lance removal involves burning off road markings at incredibly high temperatures. This is the most cost-effective removal method, and can be performed swiftly to reduce disruption to traffic. This method however, does damage the pavement surface and this damage can create potholes and lead to resurfacing requirements. Hydroblasting is another method used to remove lines, however this has also been noted to damage some pavement surfaces. Water based paints also allow for removal via techniques such as precision dustless blasting using water and sand.

Product Description – Materials

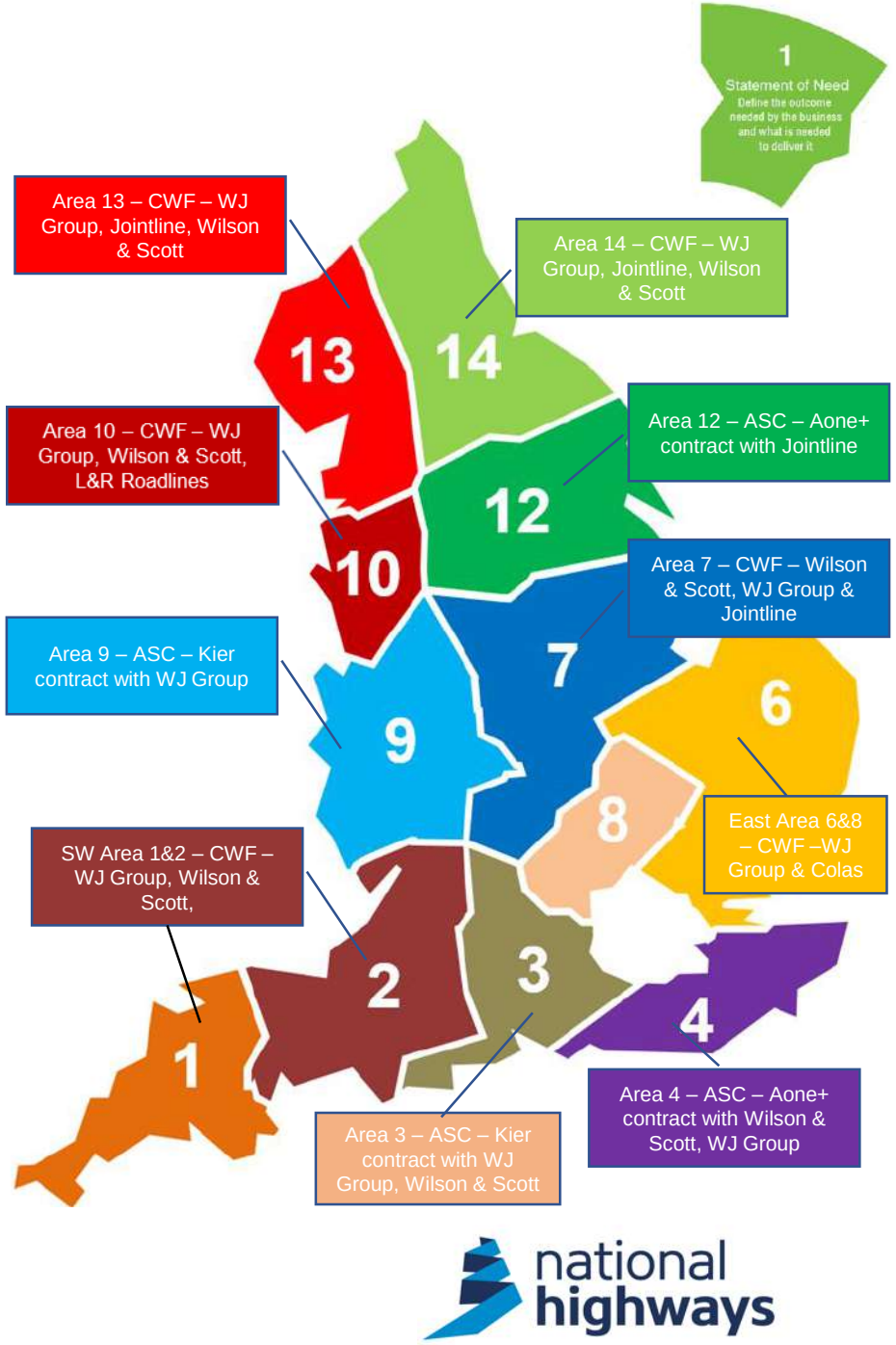
Name	Description	
Thermoplastic		Thermoplastic pavement marking material is a 100% solid, environmentally and user safe compound containing binder, pigment, filler and glass beads which liquefies when heat is applied. Thermoplastic markings are highly durable, and display excellent retro-reflective properties in day, night, and wet conditions.
Cold applied plastics		Cold applied plastic are particularly useful for areas with high traffic loads where high visibility is required. Products comes in both two-component and three-component versions and can be divided into four overall categories: Fine Plastic, Rough Plastic, RollPlast/RollGrip and Cold Spray Plastic. All of these products can be applied by hand, however, some are typically applied by machine. Well-known properties of cold plastics - high durability, low abrasion and low dirt pickup.
Water based paints		A waterborne paint is suitable for application of centre lines and edge lines on all roads, where traffic wear and number of cars is low. It can also be used for re-routing of roads where it can cover the permanent markings for a limited time period; or for events like marathons and exhibitions where a short term marking is required. It can be applied with both high pressure and low pressure equipment, which are easily cleaned with only clear water and a brush.
Tape		Road marking tape has long-term retained retro reflectivity, skid resistance and durable whiteness. Abrasion resistant ceramic beads and anti skid particles are bonded in a highly durable polyurethane topcoat, to create a tape that provides superior visibility and safety during wet weather conditions. Temporary Tape is also available which can be applied to cover existing road marking and then removed with no damage to the pavement.
Methyl Methacrylate (MMA)		Methyl methacrylate (MMA) based pavement markings are a particularly durable pavement marking material. MMA can be surface applied onto asphalt or concrete roadways or inlaid for longer service life, and is engineered for durable long line as well as transverse markings even in extreme conditions. Provides long life retro-reflectivity when matched with the proper glass bead.
Glass Beads		Glass beads perform an important function of traffic safety because of their retro-reflective properties. This property allows the motorist to clearly see the pavement line markings more clearly at night and in wet conditions. Paints that have glass beads in them have enhanced night-time reflectivity, higher visibility and safety for the driver.

Current Sourcing & Contract Options

Delivery Model	Procurement Method	Advantages	Disadvantages
Operations - Asset Delivery – CWF	**Lot 8 Suppliers allocated work annually**	Framework so low risk as no committed spend. Allocation of work removes need for secondary competition and lead to greater collaboration across suppliers. Schedule of rates used as baseline during target price setting.	Limited scope to procure externally post award, lack of contingency in the event of liquidation of a supplier.
Operations - Asset Support Contract & DBFO's	**Direct contract with ASC usually per project**	ASC free to contract on project or annual basis to address their needs. No direct contractual liability on HE. ASC can continue relationship throughout their contractual which could lead to collaboration and efficiencies.	HE cannot directly influence tier 2 supplier on innovation or new delivery methods. There is the commercial cost of the ASC's managing fee on top of the Tier 2 prices. Risk of low cost bias in supplier selection.
Major Projects - RIP	**Direct contract with RDP usually per project**	RDP free to contract on project basis to address their needs. No direct contractual liability on HE. RDP could leverage existing relationships for delivery, saving on mobilisation time and expense.	HE sacrifice to ability to directly drive standards and delivery, performance improvement or sector innovation. Risk of low cost bias in supplier selection and RDP may .
Major Projects - SMP	**Direct contract with principal contractor usually per project**	SMP free to contract on project basis to address their needs. No direct contractual liability on HE. SMP Alliance could leverage existing relationships for delivery, saving on mobilisation time and expense	Uncertainty around SMP alliance operating model and how it will manage performance or innovation. Risk of low cost bias in supplier selection rather than overall value.
Complex Infrastructure Projects	**Direct contract with principal contractor usually per project**	Principal Contractor (PC) free to contract on project basis to address their needs. No direct contractual liability on HE. PC could leverage existing relationships for delivery, saving on mobilisation time and expense.	Dependant on the principal contractor to source and manage. Risk of low cost bias in supplier selection.

Conclusion:

- Continue to monitor CWF & SDF contract performance and identify incremental changes. Look to amend future contracts to allow ASC and PAD access to arrangements prior to full AD rollout.
- Within Major Projects continue monitoring via Centres of Excellence look to implement an enabled framework on regional basis to leverage prices via aggregated demand and instil greater control over sector, possibility to combine with other public sector procurement agents



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Key Supplier Risks

Risk type	Risk Description	Impact	Priority	Mitigation/Action
Supply Chain	▪ The often-subcontracted nature of Road Markings works may reduce the Road Markings suppliers to their specialism, could prevent further expansion of the sector (Tier 1's maintaining preferred supplier lists) and reduce the opportunity to develop suppliers further e.g. expand into groundworks or foundations.	▪ Risk that Road Markings workers knowledge is overlooked in favour of Tier 1's preferred options, leading to inadequate exploitation of supply chain expertise.		▪ Encourage groupings of works, better forecasting of maintenance schedules to allow better resource utilisation ▪ Encourage collaboration of more established suppliers with SMEs to develop increased understanding of NH's requirements & influence opportunities to work directly.
Innovation	▪ Opportunities to combine types of work e.g. Traffic Management (TTM), Barriers with Road Markings not clearly taken up. ▪ Limiting supplier bids as part of a Lotting strategy; aimed at breaking up market dominance / encouraging SMEs may reduce innovations such as automatic temporary stud machines and marking robots.	▪ Opportunities for cost, process & time efficiencies are missed.		▪ Consider suppliers with a synergistic service offering to take advantage of Road Markings downtime. ▪ Working with SMA on building tender to align with Road Markings Strategy. ▪ Work with SES to identify new products and methods of application/removal. ▪ Align with other categories such as TTM to drive synergies.
Capacity	▪ Increased investment by UK Government in large infrastructure projects, such as HS2, is placing a resource and plant constraint on the market. ▪ Potential impact from Brexit could workforce. ▪ Staff shortages may arise due to the effects of Covid 19. ▪ Limited interconnectivity with other delivery suppliers to find better sequencing of works activities & shared benefits.	▪ Lack of skilled resource & plant available.		▪ Government level visibility of competing demands to co-ordinate resource requirement & avoid pinch-points. ▪ Adopt a works 'community' where suppliers on the scheme can actively engage & collaborate as the works progress.

Conclusion: Road Markings services could offer synergistic benefits if combined with e.g. barrier or traffic management delivery. Collaboration between Roadworks sourcing team and TTM is currently under way.

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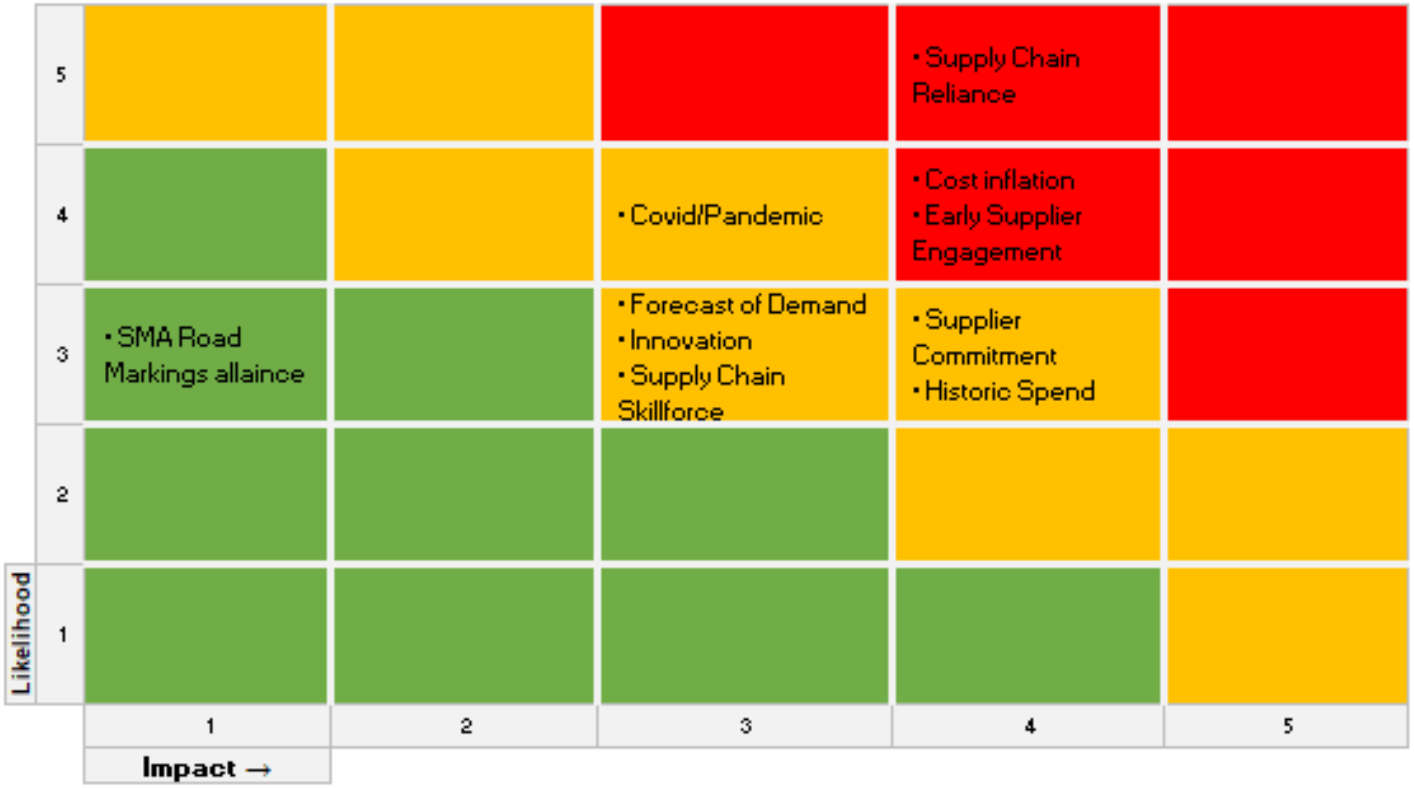
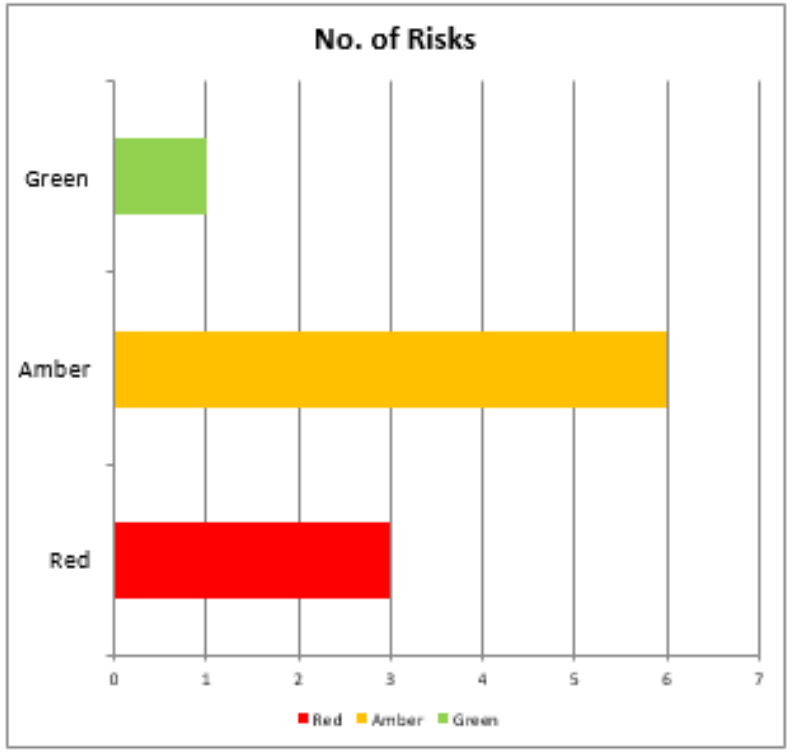
Key Supplier Risks



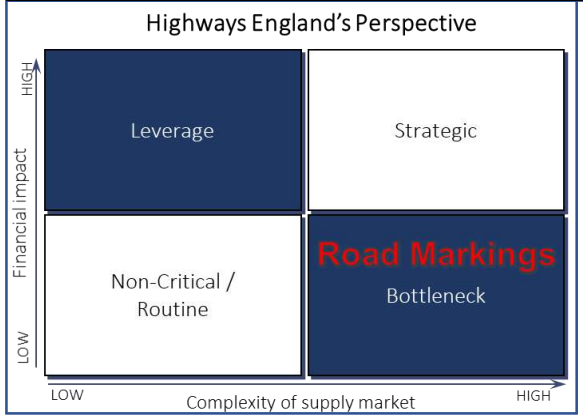


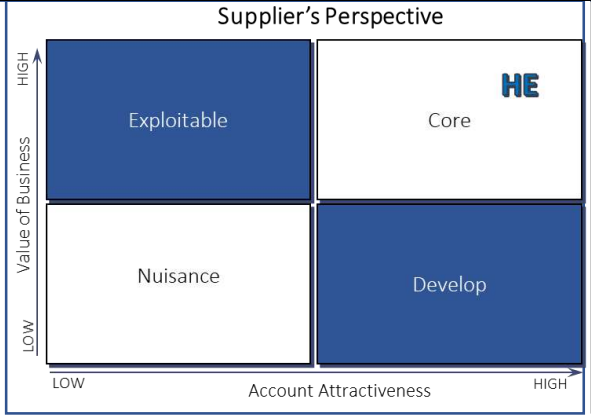
Conclusion: Given the low level of spend Road Markings has been a category that has not been prioritised previously - this means that NH's maturity around the category is low. Knowledge of the suppliers, their capabilities and working practices is now being brought together in order to reduce the overall risk. However, the dominance of the market leader in particular has left us vulnerable as a customer to a category where adequate delivery is important due to its safety and customer facing nature.

Supplier Analysis

Strengths	Weakness	Opportunity	Threat
• Established supplier relationships • Knowledge / expertise (good understanding of CWF suppliers) • Two suppliers actively involved in the Future of Road Markings Comp • Will by suppliers to innovate on materials and techniques • HE seen as client of choice	• Visibilty of our programme • No previous national category management approach • Confusion over inconsistencies in HE CWF procurement process • Some suppliers primarily regional in approach	• New materials and new removal techniques via the Future of Road Markings competition • Opportunity to improve collaboration through a community approach • Potential to revise Schedule of Rates in line with acutal use • Greater alignment with Road Safety Markings Association (RSMA) to understnad dynamics and levers for change	• Influence and impact of ageing populations driving re visibilty of lines • Use of lines in relation to autonomous vehicles and other safety autoamtion • Lack of new entrants to the market and large cost for intial set up • Competion from other sectors such as loacla authorities, airports etc.

PESTLE	Developments	Significance H / M / L
Political	• Meeting the SME expenditure aims • Creating employment opportunities and apprenticeships • Industry stakeholders – RSMA	M
Economic	• Roads Investment strategy • Economic impact when labour agencies are in high demand • Industry cost factors (oil, pensions, equipment materials) • Costs in extended supply chain	M
Social	• Creating sector skills and maintaining industry skills and Apprenticeships opportunities • Creating an attractive sector to work in despite Health and Safety risks and Antisocial working hours • Certainty of work, what is the Industry capacity and ability to retain resource during fluctuating demand	M
Technological	• Advancements to working practices – change to working methods • Industry innovation for safer working • New technologies e.g. autonomous vehicles	H
Legal / Regulatory	• IAN Notices that impact working practices • Health and Safety requirements • Contract alignment with others in the supply chain	H
Environmental	• Resource use efficiency (planning to maximise cost efficiency) • Plant and equipment use efficiency • Sustainable materials	L





Conclusion:

- Viewed by our organisation as a Bottleneck category. While the current spend is a low proportion of the budget, estimated at 0.66%, on Capital and Resource spend there is a clear reliance on the product to ensure the smooth movement of traffic and customer safety.
- Reliance is increased by low number of large suppliers and the lack of other opportunities for substitution particularly in relation to the supply of temporary road markings.
- Future opportunities through potential to push forward with a National CWF Suppliers approach as well as incorporating the learnings from the Future of Road Markings competitions.

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Supplier Engagement

Road Markings and Tier 1 Supply Chain Feedback

Procurement/Contracting

- NH to define the outcome, rather than instruct how to undergo the work.
- Specifications for Road Markings to be reviewed and updated to reflect current market and materials.
- RM suppliers to be involved early in the project to allow them to assess the best method of works/planning resources.

Operational Maintenance & Delivery

- Forecast in Demand and visibility of programmes as early as possible for better planning and enable commitment.
- Early contractor involvement is key to allow for innovations.

Workforce

- Explore Initiatives e.g. :Sustainability Supply Chain School initiative to get facility for whole supply chain to have free access to training & development.
- L&R provide global training on materials and wagons.
- Forecast and commitment of future demand allows for investment into the workforce, reduction in programme/lack of spend means resource needs to be re allocated or realised.
- Suppliers struggling to attract and retain workers. Demand for and cost of labour is increasing.
- L&R use multi-skilled workforce able to carry out anti-skid, drive the vehicle and install cats eyes.

Plant Operations/material supply

- Suppliers manufacturing own materials at own plant.
- Cost of container freight has risen due to Covid/Brexit profiteering. Suppliers like L&R looking for products manufactured in UK.
- Line marking vehicles owned by WJ/W&S.

Innovations

- Low level of plastic in thermoplastic mix.
- Water-based paint
- Use of LEDs
- Carbon / social value calculator
- Tack coat primer
- Boil in the bag bitumen
- L&R use of wagons with 3 boilers in order to fix potholes under linings and do the work simultaneously. Jointline vehicles carry out studs & lines.
- Jointline HiBrite AR as alternative to MMA suitable for all weather conditions.

Efficiencies

- Efficiency opportunities can be driven through better programming to increase productivity per shift.
- Utilising longer lasting materials will reduce the level of future maintenance required.
- Recycling of temporary studs / sustainable materials.
- W&S delivered £64m efficiency in RIS1 and wrote asset management plan to deliver this across all areas, however this has not been adopted.
- Suppliers moving towards electric/hybrid vehicles
- Suppliers using multi-use vehicles to reduce number of vehicles sent out per shift.
- Environmentally friendly supply chain providing bags of materials that can go straight into the boiler to melt and reduce waste.
- Refreshing all lines in area whilst patching work reduces the need to return to that area in 6 months.

Collaboration

- Early programming and collaboration with TTM can improve people and satisfaction to the customer by reducing site times and man hours.
- DIPs to align to RM strategic approach and be engaged with regularly. DIPs do not have a strategic approach to RM due to it being a smaller category but have been open to engagement and collaborative working.
- Best practice to be realised and shared among RM suppliers to drive efficiency and innovation.
- NH AD regions to align their way of working/scopes.

Design

- RM suppliers to be brought in early in the process to allow optimise the programme design and outline alternative RM methods/materials/technology.

Category Opportunities

Strategic Themes	Opportunities	Benefits	Obstacles
Supplier Relationship Management	▪ SME Engagement forums & 121s ▪ Support & Provide visibility to supply chain to promote innovation & efficiencies ▪ Provide link to support engagement between RDP, SMA & SDF supply chain ▪ H&S ▪ Opportunity to sense check current practices nationally and grow understanding of suppliers ▪ Realise H&S opportunities	▪ Develop supplier relationships and open conversations around innovation/carbon/safety ▪ Visibility of supply chain business models e.g. carbon agendas ▪ Assurance to suppliers for long term relationships	▪ Overreliance of 2 dominant suppliers. Suppliers don't want to see restriction/reduction of work from NH schemes ▪ Lack of innovation solutions & knowledge sharing from supply chain ▪ This approach would only strengthen existing relationships and may be confusing to WJ Group who already have existing Supplier Relationship Manager
Sourcing Strategy	▪ Incentivisation /alignment with SMA/SDF/RDP strategies ▪ Opportunities to embed category lead within supply chain/alliance community ▪ Tender aligned with RM approach, encourage SME inclusion ▪ Encourage DIPs scope & SME inclusion ▪ Identify the outcome in the scope to drive innovation, rather than how to carry out the works. ▪ Smaller lots can open the market to SMEs, shifting the market dominance	▪ Cost savings ▪ Breaking duopoly bottleneck may reduce costs ▪ Early engagement to help drive innovation & efficiency	▪ SDF procurement already live ▪ Bigger suppliers may buy out SMEs. ▪ Some materials not driven by SMEs as they don't have the materials/capability i.e. cold plastics. There is not a great demand for this so smaller companies have not invested, whereas Wilson & Scott have the materials.
Continuous Improvement	▪ Engage with trade bodies RSMA/REMA for greater alignment ▪ Review safety standards following TRM project outcome ▪ Cross-category working with TTM ▪ Review whether we are getting what we pay for ▪ Payment retention/performance bond ▪ Manage performance to improve quality	▪ Align contracts with current specifications (i.e. remove references to thermal lances, which are no longer used) ▪ Lessons learnt with project/ops/SES ▪ Support SES etc by facilitating widespread use of new products/methods	▪ TRM project write up due in July ▪ Aligning with SDF ▪ Payment retention not a current NH policy ▪ No widespread performance monitoring.
Innovation	▪ Global road markings ▪ Autonomous vehicles ▪ New tech ▪ Expanding market ▪ Encourage innovation through designated funds/innovation fund application	▪ Driving safety & innovation through industry awards.	▪ Current identified opportunities do not meet UK standards (orange paint) ▪ Difference in opinion among the suppliers as to which material is best in terms of quality, efficiency and sustainability.

Recommendations

Strategic Themes	Description	Recommendation See next slides for RM Strategy options
Supply Chain and Stakeholder Relationship Management Management of the supply chain/visibility of the market	**Supply Chain Management, Engaging Directly Supporting National Highways:** ▪ Increasing the visibility & application of insights of the Road Markings supply chain methods, practices and solutions. ▪ Prioritise significant risks with the ability to develop levers to aid management of scheme development and on site performance. ▪ Allows transparency and build supplier relationship/communications. ▪ Allows collaborative working and application of category best practice across the business.	▪ RM01 – Supply chain community engagement and development ▪ RM02 – RM strategic approach integrated and supporting SMA ▪ RM03 – Alignment of RM strategic approach across MP ▪ RM04 – Collaborative working with NH internal stakeholders
Standardisation Driving synergies, material and safety improvements/incentives	**Standardisation Across Investment Programmes** ▪ Standardisation with ability to drive synergies and commercial & environmental benefits. ▪ Alignment of commercial and contractual benefits (cost capture) ▪ Standardised Road Marking practices across regional areas. ▪ Ability to standardise material & technology options and review of safety standards.	▪ RM05: Implement Cost Reduction Process ▪ RM06 – Enablement of innovation for materials, vehicles and technology ▪ RM06 – Review of performance and safety standards
Working Community Delivery via mature supply chain	**National Highways Directly Manages RM Supply Chain** ▪ Approach optimises utilisation of capable and high performance supply chain with the willingness and drive to contribute and deliver NH objectives. ▪ National Highways ability to monitor and improve quality, safety and performance. ▪ Realisation and sharing of best practice and lessons learned ▪ Application of Health and Safety solutions.	▪ RM01 – Supply chain community engagement ▪ RM06 – Review of performance and safety standards
Innovation/Environmental Solutions Early contractor Involvement	**Incentivisation Across The Supply Chain** ▪ National Highways to encourage and reward high performing suppliers and innovation. ▪ Ability to drive innovation via value engineering and deliver sustainable material and technology options. ▪ National Highways to drive application of reviewed standards and alternative methods and technology.	▪ RM07 – Carbon reduction ▪ RM06 – Enablement of innovation for materials, vehicles and technology

Strategy- Short to Medium Term (continued on next slide)

RM Strategy Approach	Description	Benefit	Action
RM01: Road Markings Supplier Community / Growth of Supply Chain	▪ NH to embed category lead within the RM supply chain, DIPs & alliance communities. ▪ Established supplier community, building relationships and linking in with RIP, AD Community and supplier forums. ▪ Grow capability of the market place allowing more mature supplier members to share knowledge and upskill the supplier base (especially in respect to SME). ▪ NH projects to be accessible to wider supply chain (including SMEs).	▪ Access to an engaged supply chain, working closely to manage capability & capacity to deliver RP2. ▪ Directly engage with NH programme teams to provide supply chain forecast/visibility of programme that can enable suppliers to invest in people, facilities and innovation. ▪ Ability to share lessons learnt and best practice across all regional areas and investment programmes. ▪ Community can help drive change engaging with SES/designers through ECI which will help identify and deliver greater efficiencies and environmental successes. ▪ Develop and expand the supply chain.	▪ Manage RM community (suppliers & NH) with the ability to increase collaboration across the wider business (CIP/SDF etc) . ▪ Encourage early engagement within the business and utilise the community relationships to unlock value and efficiency opportunities. ▪ Hold community members accountable for key actions that will help deliver NH goals (Carbon and safety targets).
RM02: Support SMA RM Contract	▪ Identified through collaboration with SMA Supplier Relationship Leads that a more aligned and incentivised model required that could imbed RM expertise into the Alliance for the full RP2 and early RP3 period. ▪ Key prioritisation that supports growth in the market with contractual commitments of 35% delivery via SME. ▪ The alliance will provide the opportunity to allocate on a national and regional approach based on supplier capability and allow RM suppliers to be brought in during value engineering to help influence development phase.	▪ RM supply chain to form an integral part of the overall Alliance/ supply chain strategy ▪ Generate the opportunity to align RM strategy and will support and deliver to SMA alliance goals, objectives and values. ▪ Driver to increase efficiency targets through productivity & reduce cost. ▪ Early contractual involvement that will be able to help optimise and innovate the programme. ▪ Alignment with Header contracts/working directly under the alliance.	▪ NH Category Lead/Manager or Specialist to be embedded into the SMA community. ▪ Support the implementation, development of clear process to manage delivery of SMA and RM Strategic objectives. ▪ SMA to provide Category Lead/Manager/Specialist with live (or quarterly) data: visibility of supplier allocation, work package awards (supplier & price), actual cost, efficiencies & supplier performance. ▪ Category lead/Manager/Specialist to support the SMA to challenge and encourage the supply chain to bring forward innovation around environmental benefits improvements to safety and reduce impact to the customer by optimising the working window.

Strategy- Short to Medium Term - continued

RM Strategy Approach	Description	Benefit	Action
RM03: Align Strategies for MP & OD Investment Programmes	▪ Ensure RIP & CIP (LTC) also align to SMA/RM strategy. ▪ Engagement with SDF & LTC to identify and link strategy/approach to maximise supplier intelligence.	▪ Collaborative approach delivering increased efficiency to meet NH targets with ORR. ▪ Tier 1 sub-contracts and community approach requires no in-house NH procurement resource – allows alignment to incentivisation model & mechanisms in their Header contracts (i.e. SMA, RDP, CIP). ▪ NH to apply lessons learned and share best practice across RM schemes and TTM. ▪ Reduced implementation time due to better planning leading to customer satisfaction. ▪ Improving quality through performance management.	▪ Continue to engage with SSCG DIP representatives via RM regular supplier engagement forums. ▪ NH to realise cost savings and efficiencies across MP. ▪ Category Lead to work with T1s & Project Managers to ensure visibility of actual cost, efficiencies & supplier performance. Influence Tier 1s to include RM companies in ECI to try and get optimum time to do the best job possible rather than the best job they can manage in limited time. ▪ Category lead to engage with MP to apply category and market insight. ▪ Align contracts with current specifications (i.e. remove references to thermal lances, which are no longer used). Identify the outcomes in the scopes to drive innovation, rather than how to carry out the works. ▪ Future tenders aligned with RM approach, encouraging SME inclusion and innovation.
RM04: RM Stakeholder Working Group	▪ Collaborative working across the business to develop RM strategy approach and manage delivery of strategic objectives. ▪ Identify and test opportunities & efficiencies and share lessons learned. ▪ Engagement & RM strategy updates from SES, MP, Ops, Commercial & Procurement.	▪ Generate the opportunity to align RM strategy with NH goals and efficiency targets. ▪ Generate the opportunity to align with outcomes of SES Transforming Road Markings project. ▪ Increased Value – Working in closer collaboration with suppliers and trade bodies gives the opportunity to drive value for money and share best practice.	▪ Engage with NH internal stakeholders to develop working group. ▪ Further develop value stream opportunities. ▪ Drive workshops, assign action owners and follow up on actions and outputs. ▪ Engage with trade bodies RSMA/REMA for greater alignment. ▪ Cross-category working with TTM.

Strategy- Medium to Long Term

Strategy Approach	Description	Benefit	Action
RM05: Implement Cost Reduction Process	▪ Baseline, monitor and demonstrate cost reduction - work with all suppliers and stakeholders to increase productivity and efficiencies.	▪ Demonstrates cost reduction and VfM across whole life costs. ▪ Promotes increased productivity and efficiency.	▪ Engage and linked in with Roadworks Cost Reduction Lead on 'cost reduction' process and model – start using this as our reporting process.
RM06: Safety & Innovation	▪ NH to review current safety standards for the customer and the network. ▪ Identify and enable innovation across the category. ▪ Encourage T1s to work with RM supply chain and use alternative materials and technology. ▪ Review current standard and specifications relating to RM, identify durable and sustainable materials that are fit for purpose.	▪ A safer network and safer customer experience. ▪ New materials and technology promote carbon reduction, increased productivity and efficiency. ▪ Early engagement allows supply chain to apply innovation. ▪ Better prepared for external risks through demand modelling and supply chain knowledge share. ▪ Standardisation & collaboration across the wider business.	▪ Work with SES to review the specification and performance requirements for RM to ensure they are appropriate. ▪ Support SES on the implementation and rollout of standard materials and standards following TRM, encourage the supply chain to adapt. ▪ Regularly link with SES to identify new methods & technology. ▪ NH to establish whether we currently get what we pay for. ▪ Work with supply chain and SES to develop innovation opportunities (LED, spray application, certifications, vehicles) Designated Funds / Innovation fund application. ▪ Agree and baseline cost reduction/efficiency targets with SMA and other business areas. ▪ NH to run Virtual Innovation Roadshow.
RM07: Carbon Reduction	▪ Work with SMA, RIP, CIP, SDF, SES and supply chain to identify and develop solutions, including sustainable materials, vehicles and early engagement. ▪ Supply chain to support realisation of NH Net Zero Carbon.	▪ Supply chain commitment to NH carbon-neutral commitments. ▪ Reduce negative environmental practices/wastes.	▪ Work with SES & supply chain to develop materials and vehicles used in RM to help meet NH targets. ▪ Work with SES, MP and supply chain to measure and monitor carbon targets.

Value Chain Analysis

Value Chain	Value Factors	Current Situation/Continual Improvement	Step Change
Procurement Design Manufacturing Technology Installation Maintenance Removal	▪ Efficiency – savings from bulk procurement. ▪ Quality – durable and sustainable materials. ▪ Efficiency – some materials manufactured by the supply chain. ▪ Efficiency – vehicles developed to carry out dual lane marking / equipped to fill potholes and lay lining. ▪ Safety - reduced time on site & lower accident frequency rates. ▪ Environment – Capability to move away from traditional methods. ▪ Efficiency - reduced time through efficient methods (optimising working windows). ▪ Efficiency - improved interfaces with other parties. ▪ Network condition – Enhance the quality of our roads to meet customer demands.	▪ Suppliers instructed via outdated project scopes and specifications. ▪ Lack of early supplier engagement. ▪ Suppliers manufacture own materials and vehicles, not open to change so need to push alternative methods. ▪ Suppliers waiting for access to SRN and working within restricted working windows. ▪ Variety of installation method/materials. ▪ No formal process of monitoring/capturing efficiencies between programme delivery/OD to CM. ▪ Restricted demand planning and forecasting. ▪ Lack of high-level data analysis with regards to road marking reporting. ▪ Use innovative business tools such as Power BI for future reporting.	▪ Revise project scopes to define the outcome. ▪ Reduce variation by revising standards and gaining agreement across supply chain on the best solutions to deliver better whole life value and performance. ▪ Enable policing of quality through performance monitoring and setting certifications. ▪ Use of standardised materials to simplify/reduce maintenance. ▪ Improve the return on investment through deploying better cost intelligence and Lean practices. ▪ Optimise network occupancy to balance customer experience and efficient delivery. ▪ Elevate the status from white line to safety road markings. ▪ Through use of innovation increase the safety standard for safer roads.

Conclusion: The Road Markings Strategic Procurement Strategy (SPS) will ensure working with SES, Lean & the supply chain establishes revised standards and certifications for materials and technology in order to provide better whole life value. Early engagement with MP/OD & TTM will enable early supplier involvement and optimise the working window of each shift, enabling productivity. The strategy will lead to an improved alignment between all supply chain partners (Tier 1-3), and to NH goals and outcomes.

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