

Proactive Management Review

**Contract Year 15** April 2023 to March 2024





# Contents

3 Executive summary

#### Updates

- 5 Project Boat
- 6 Improving collaborative planning and implementation of Optimatics
- 7 Continuing the development of our soft estate management system
- 8 Enhancing our environment

#### **Case studies**

- 11 Understanding and managing drainage performance
- 13 Using remote survey techniques to support asset management
- 14 Implementing a new strategy for binder course on the M25
- 16 Protecting our network
- 18 Continuing our digital roadmap
- 20 Supporting National Highways net zero plan
- 27 Working sustainably to improve our environment
- 35 Working better together
- 38 Becoming customer focused
- 41 Healthier Highways on the M25
- 43 Working to eliminate slips trips and falls on our network

#### Looking ahead

- 45 A digital forward look
- 46 Measuring social value
- 46 Vaisala Road AI
- 47 Our M25 tree strategy
- 47 Improving working conditions for women in service delivery roles



# Executive summary

Our supplementary PMR brochure highlights the case studies that we are submitting to the PMR panel for this qualifying year (CY15 April 2023 – March 2024).

Following the format of previous years, the brochure also includes a progress update on four of our submissions from last year including: progression of Project Boat; improving collaborative planning and implementing Optimatics; the ongoing development of our soft estate management system; and our continued work around species -focused ecology projects.

Also included in the brochure is an overview of some of the projects that are just at the start of their implementation journey, and therefore the benefits have not been fully realised. This section encompasses our work to improve conditions for women in service delivery, our new approach to tree management and some of our digital projects, including Vaisala Road AI – an artificial intelligence-based analysis solution for monitoring the performance of pavement assets. We are confident that these projects will progress throughout the year and therefore be featured more prominently in future submissions.

We're incredibly proud of what we have achieved over the year with the support of National Highways, our one community of framework contractors, and our supply chain. The Better Together leadership transformation programme is a great example of our organisations working more collaboratively to be more effective and efficient, and this is reflected in many of the case studies included in the brochure.



## **Project updates**

This section of the brochure provides an update on several of the case studies that featured in last year's PMR brochure, demonstrating the ongoing progress being made.

- 5 Project Boat
- 6 Improving collaborative planning and implementation of Optimatics
- 7 Continuing the development of our soft estate management system
- 8 Enhancing our environment

# **Project Boat**

2023/2024 was a year of implementing the initiatives that were planned during 2022/2023 to start delivering on their forecasted savings. Several of these initiatives are covered separately in more depth, but an overview of each of the areas is as follows:

- Planning Boat: This work, a key focus for the Project Boat leadership team, has been covered more fully on the following page.
- Innovation Boat: During 2023/2024 the focus for this Boat was to implement the long-life pavement strategy. This focuses on the use of two life-extending materials. During this year, targets were exceeded for the installation of both these material types. As part of the project, follow-up testing was completed, as well as trials for alternative aggregates.
- AMFP Certainty (maximising outputs): For 2023/2024 all pavement surfacing shifts were optimised wherever possible to ensure they exceeded 200 t per shift. This principle has also been applied in 2024/2025 works.
- Contract Boat: Focused on finding innovative ways to procure traffic management. This work continues with proposals being reviewed.
- Time and Space: This is an enabling boat and continues to meet to review initiatives that support the creation of time and space for improvement projects. The group are currently reviewing proposals for shared meeting spaces at various locations around the network.

# With many of the areas now maturing into BAU, Project Boat is continuing to track and support these projects. There is also a new focus area for this year around delivery certainty.

A session was held on 1st Feb 2024 with the Project Boat Leadership Group to agree how this group could support delivery certainty and the following focus areas were determined:

- Moving along projects that have become 'stuck'.
- How to measure delivery leading indicators.
- Understanding how we can adjust the AMFP to support delivery of the integrated plan.

# Improving integrated collaborative planning to support delivery certainty, co-ordination with major schemes and implementation of Optimatics

Over the coming year, the M25 network is particularly busy with major schemes detailed in the 2024/25 AMFP, such as J28, the NEAR programme, and the major improvement works around J10 at Wisley.

To be able to assess the impact of these schemes and develop a deliverable Asset Management Forward Plan; new ways of assessing deliverability and supporting co-ordination were required. Given the importance of improving road space booking accuracy, improved planning tools are essential for driving performance on this measure.

In November 2023, a comprehensive cross-community session was held to map each junction of the network and evaluate the deliverability of forthcoming work within the 2024/25 timeframe. Confidence levels varied, ranging from excellent confidence to major concerns.

In follow-up sessions we focussed on the critical areas of concern, identified as junctions 27 to 30, Dartford to J3, J10 and the M4. Our aim was to highlight schemes that could potentially be at risk so that we could adjust our gateways to maximise delivery, while considering the impacts from other major schemes. Insights from these meetings have been integrated into the AMFP document.

Following these sessions, a plan has been developed for the entire M25 network, junction by junction with regular weekly reviews. This ongoing process addresses several key objectives:

- To improve roadspace sharing.
- To reduce the number of closures, thereby mitigating disruption to our customers.
- To monitor our planning phase to ensure alignment with planned start dates, so improving our 7-day road space booking accuracy.

The plan is stored and managed through an online collaborative platform (Miro), allowing wide access, and providing a clear and simple view of the integrated plan. The Miro integrated plan is shared widely and has become a critical tool in co-ordination with National Highways major projects. This manual system has supported coordination dialogue with both NEAR and J10, giving a more accurate forecast of the required closures across the network for the forthcoming year. Furthermore, it provides a framework to enable a phased integration of the Optimatics tool, so that we can programme our works in a more optimised way.

With the volume of integration required to accommodate NEAR, J10 and J28, the full implementation of the Optimatics programme optimisation tool is planned for later in 2024. However, steps have been taken in the past year to refine the quality of the algorithms underpinning the tool, to ensure higher quality outcomes. We are now confident that planned closures from Optimatics align with the M25 planning criteria and drive suitable sharing opportunities. Our intention is to transition our integrated planning approach to Optimatics later this year.



Connect Plus and Connect Plus Services were recognised at the 2023 Highways Awards for our work on Programme Optimisation on the M25, we were proud to receive the Maintenance Efficiency Award.

Additionally, a software tool developed in collaboration with Alchera Technologies to explore extended working windows, has been successfully implemented and rolled out across the entire M25 network. Trials conducted at Dartford in May 2023 demonstrated tangible benefits. Over a 2-week period, an additional 7.5 hours (approximately the equivalent of 1 shift) was made available for maintenance works to be undertaken.

Opportunities to deploy the tool are being explored throughout this year and the tool has already been fully integrated within the Road Space Booking System (NOMS), to ensure visibility of additional working window opportunities for all teams who are booking road space.

# Continuing the development of our soft estate management system

Throughout 2023 and into 2024, we have continued to develop the soft estate GIS management system, streamlining the oversight of our operations.

#### New dashboards

We've introduced a new injurious weeds dashboard empowering contractors to efficiently sign off on completed tasks. The tool triggers timely alerts for site audits by our landscape supervisor, ensuring the effectiveness of treatments and desired outcomes.



Figure 1: Excerpt from injurious species treatment tracker

#### **GIS functionality**

We've enhanced the system by adding GIS functionality to track the progression of plots throughout the works planning process. From defect identification to works instruction issuance and completion, every stage is meticulously recorded. Even in cases of deferred work, our system maintains comprehensive records, facilitating future planning and prioritisation.



Figure 2: Excerpt from soft estate work status dashboard

#### Identifying live cables

Cables and pipework inadvertently left behind on the network by major projects schemes pose significant hazards to workers along the verge. They are not documented on statutory undertaker plans, therefore, workers are unaware of the presence of these potentially live cables until they are already on-site. To address this critical issue, we've developed a system, led by our electrical team, to identify and verify unknown cables. This data layer has been integrated into the soft estate works planner, acting as an alert mechanism for our soft estate contractors, effectively mitigating potential risks.

#### Work prioritisation

In our planning for the vegetation cuts along the verge edge, we have plotted the stop vehicle detection (SVD) locations, ensuring these areas are prioritised and the sightline connectivity between posts is maintained.

Moving forward, we're looking to replicate the success of our cable alert system in safeguarding protected species and habitats during verge works, improving our environmental protection efforts. Furthermore, ongoing enhancements to our GIS system will introduce a dashboard to monitor routine tasks such as swathe cutting and amenity grassland maintenance. These upgrades, coupled with contractor-friendly features like the collector app for streamlined task sign-offs, will improve efficiency and accountability across the board.

Other benefits include:

- Improved visibility for the Landscape and Arboriculture Manager of the works lifecycle and oversight of the works programme.
- Health and Safety benefits by improving the visibility of the risk of finding unchartered cables on site.

These changes not only offer improved visibility for our landscape and arboriculture manager throughout the works lifecycle, but also significantly enhance health and safety measures by mitigating the risk of encountering uncharted cables on-site.

#### Enhancing our environment

#### Species focused ecology projects

This year we have delivered species-focused ecology projects around the network for several species, this has included plot enhancements, planting of herbaceous plants, installation of nest boxes and surveying for nationally scarce/rare species.

In the summer of 2023, we undertook regular surveys of the land below the Dartford Bridge focussing on rare bee species, particularly the endangered shrill carder bee. In August we were pleased to be accompanied by a representative from the bumblebee conservation trust, and whilst we didn't find any bees during the survey, they confirmed the site was ideal habitat and, because of recordings in surrounding areas, it was highly likely the shrill carder was present there. The Trust will be assisting us as we continue to survey the site throughout the year.

Despite not seeing the shrill carder bee, we did record several scarce species of solitary and social bee over the summer at this site, affirming the site's biodiversity.

These included:

- Moss carder bee nationally rare
- Brown-banded carder bee – nationally rare
- Pantaloon bee nationally scarce
- Silvery leaf-cutter bee – nationally scarce

Additionally, this year saw diligent monitoring of our small blue (cupido minimus) butterfly site, located within a balancing pond site between junctions 22 and 21a on the M25. Despite initial setbacks with kidney vetch planting in 2022, we have now replanted with larger, sturdier plants. Kidney vetch is the only larval food plant of the near-threatened small blue, the smallest butterfly in the UK and it is incredibly important that we continue with our work to attract them to the site.

At J16 on the M25, our focus shifted to creating habitat for the striped lychnis moth, listed in the UK Biodiversity Action Plan as a priority species and as nationally scarce A. It is only found in Oxfordshire, Buckinghamshire, Berkshire, Hampshire, West Sussex and, recently, a single sighting in Wiltshire. The nearest colony to our site is six miles to the North.

Despite initial challenges such as premature mowing in 2023, we replanted dark mullein, it's only larval food plant, and implemented protective measures to ensure the survival of this rare moth species. Later this year we'll inspect the flower spikes for the stripey larvae.

In Dartford, our initiative to plant marsh mallow plants aimed to create suitable habitat for the red data book species, the marsh mallow moth. This moth is one of the UKs rarest and is found at only a limited number of sites in Southeast Essex and Kent. With an abundance of its only larval food plant, we remain optimistic about attracting this rare moth to the site.



We also enhanced the biodiversity of a woodland area and ditch within an off-network adjacent area, close to J11. The woodland is close to a canal and, as it is damp year-round, we've planted wetland herbs, sedges and rushes close to the ditch area. These species will both enhance diversity and, potentially, suppress bramble growth making inspections easier and safer. In addition to felling the invasive cherry laurel, we also thinned the wet woodland and planted trees that were more suitable to this habitat, such as alder buckthorn and elder.

These enhancements should also support the declining downy emerald dragonfly, which has been recorded nearby. In the drier areas at the woodland edges, we have planted common dog violets, the only larval food plant of the silver-washed fritillary.

To assess moth populations at our improvement sites, we have invested in a moth trap. The trap works by attracting the moth via light, which then falls into a gap at the top of the trap and settles in amongst egg cartons placed within. The following morning, we open the trap and record the moths or any other insects, before safely releasing them, unharmed.

We've implemented a recording system for invertebrates on our GIS platform and are currently expanding it to include a dedicated layer for moth trapping records, and a botanical survey recording system. Anticipating comprehensive data collection, we expect to document over 300 moth species across our network throughout the year. We've strategically positioned five Kestrel nesting boxes across our network, carefully selecting locations with rough grassland ideal for these birds to hunt small rodents. As the year progresses, we'll closely monitor these sites, with the hope of seeing some fledglings later in the year. Our chosen locations include:

- A1M J4-5
- M25 J28
- M25 J20-21a
- M25 J22-21a
- M23

Additionally, at the M25 J11 enhancement site, we've installed 15 smaller nest boxes, with five specifically designed to accommodate tree creepers, further enriching the habitat diversity and supporting avian biodiversity in the area.



# Case studies

The following case studies highlight some of the many innovations, industry best practices and new products that we are implementing and trialling across the network.



# UNDERSTANDING AND MANAGING DRAINAGE PERFORMANCE

Our teams have been exploring recent advancements in understanding and managing drainage performance, signalling a significant shift towards a more effective approach.

This enhanced strategy is now transitioning into the implementation stage, with targeted measures already deployed across the network. Key improvements include enhancements in strategic drainage management, detailed analysis of flood-prone areas, the introduction of advanced maintenance measures, and the introduction of remote monitoring devices for greater intelligence gathering.

#### The need

The performance of highway drainage systems is crucial for managing water on trafficked areas, reducing the risk of flooding, and controlling water flows from adjacent areas. However, with significant changes in weather and rainfall patterns, existing drainage networks are under increasing pressure.

Consequently, the risk profile relating to water management is changing and there's a recognition that an evolving, intelligence-driven approach to drainage management is becoming more necessary.

The current drainage system incorporates a very large and complex asset base, much of which is a legacy from original construction. Through various audits we identified potential unintended impacts on the Project Road Objectives due to uncertainty, ambiguity or conflict in the obligations of all parties involved (National Highways, Connect Plus and CPS) concerning these assets.

Reactive mitigation measures to flood events have potential to cause significant network disruption and can contribute to driver behaviours or accidents. Therefore, the approach considers greater focus on targeted proactive inspection and maintenance to reduce the likelihood of flooding, together with network surveillance to allow more rapid incident response. Specific issues that required improvement include:

- Clarity of requirements and areas of good practice.
- Greater performance understanding and aligning proactive actions to anticipated performance.
- Use of data to inform intelligent planning and decision making, and to accurately record what has been achieved.
- Enhanced clarity on roles and interfaces – what is required and by who.
- Focusing on end-to-end processes across the asset lifecycle.
- Teams working together and sharing information to successfully meet all obligations.

This supports our vision of making better use of data and risk management practices by taking an asset-led, intelligence-based management approach that ultimately results in enhanced outputs for the network and our customers.

#### Deliverables and benefits

We have developed a strategic business improvement programme incorporating a multi-stage process driven by asset service and operating specifications (ASOS). These documents comprehensively pull together requirements, activities, good practice aspects, roles and required outcomes, to inform our management plans and processes.

# Each ASOS document serves to clarify and confirm the asset obligations and responsibilities:

- Defining technical and operational requirements.
- Providing clear definitions of legal, contractual and service standard obligations.
- Outlining key activities and expectations for maintenance, operation and lifecycle renewal.
- Identifying 'who' is responsible for each obligation (or part obligation).
- Specifying data requirements to support intelligence-led maintenance.
- Clarifying interfaces between parties who needs to do what before the next activity can begin.
- Identifying key obligations and their respective 'owners'.

#### Additionally, each document encompasses:

- The principal asset strategy and primary objectives for the operation, maintenance and lifecycle renewal of each asset type.
- Minimum operating requirements for each asset.
- Maintenance obligations for each asset, including how they contribute to asset renewal and hand-back commitments.
- Defect management obligations including thresholds and rectification methodologies.
- Lifecycle investment principles.
- Inspection requirements and guidelines.
- Basis for risk methodologies.
- Core processes, working practices and RACI (responsible, accountable, consulted, informed) for asset activities.
- A common and consistent approach across all asset types.

To complement the ASOS drainage document, a suite of supporting documents and procedures has been crafted for implementation.

These include:

- Comprehensive drainage inspection methodologies.
- A risk-based management approach.
- Tailored maintenance plans for vulnerable locations.

In the process of developing these resources, we have further reviewed our approach to managing the drainage asset. As a result, we've identified and implemented the following improvements, which are being formally introduced into our integrated management systems.

- Enhanced the drainage routine maintenance management system (MAP16) to collect data for better informed, risk-based maintenance decisions.
- Developing the maintenance plan (maintenance requirements plan) to reflect varying levels of drainage performance risk across the network.
- Improved drainage contractor's maintenance training manuals to improve consistency and quality of data recorded.
- Developed and implemented a procedure for the identification and management of heavy rain vulnerable locations (HRVLs).
- Implemented bespoke location-specific operation and maintenance plans for identified HRVLs.
- Developed and enacted risk-based data driven methodology to identify additional locations with increased vulnerability.
- Deployed water level sensors at specific HRVLs; these have already been used to identify new and previously unknown blockages within the system preventing further instances of surface water.
- Introduction of a road safety and accident dashboard to identify clusters and trends in accident records associated with water on the carriageway.
- Developed a structured process for the identification of root causes at HRVLs.

This revised approach is supporting detailed investigation into current vulnerable locations, challenging proactive measures in place, and critically evaluating areas where additional focus may be required.

This enhanced approach has significantly strengthened the collaboration between the drainage asset manager and the drainage maintenance manager, who are more closely aligned in driving forward a holistic approach. As a result, a number of targeted improvements to drainage maintenance and management have been achieved, leading to a significant reduction in local issues.

While this process remains ongoing, it has demonstrated a commitment to continuous improvement and added value to the travelling public.

In April 2023 CPS shared details of this approach with National Highways' SES drainage asset leads. We understand that they were impressed with the approach we are taking. The development of a road safety dashboard to support the end-to-end management process has been developed in conjunction with National Highways safety team and shall be presented nationally in May this year.



# USING REMOTE SURVEY TECHNIQUES TO SUPPORT ASSET MANAGEMENT

# We are leveraging drones/remote survey techniques to support engineering, design and asset management across the network.

The adoption of these techniques has streamlined surveying processes, improved safety and accessibility, and enabled the creation of detailed 3D models for desktop assessments and design development.

#### The need

The use of drones/remote survey techniques will:

- Improve safety and accessibility by reducing the need for working at height, in confined space work and remove lengthy network closures.
- Enhance survey accuracy by obtaining real-time, detailed survey data to support design and construction processes.
- Streamline maintenance planning by developing coordinated models to integrate surveys and support future project requirements.
- Future-proof technology to ensure flexibility and agility to accommodate technological advancements over the contract duration.

#### Deliverables and benefits

The strategic use of drones/remote survey techniques has proven highly effective across a range of projects, showcasing versatility and reliability. For instance, in the Dartford substandard structures scheme, we were able to navigate confined spaces, providing crucial data where traditional access methods would have been impractical or unsafe. This information will be used to supplement the Dartford Tunnel principal inspection.

Additionally, deployment for bridge inspections and bearing remedials has streamlined operations, reducing the time and resources required while enhancing safety for workers.

Other examples where drones/remote survey techniques have been used successfully include:

 The overhead tunnel services at Dartford and complex interaction with Network Rail infrastructure.

- QEII Bridge models/surveys were used to gain details of inaccessible places at height and assess the paint condition.
- The model from the remote survey at Merstham Viaduct Interchange is being used to plan bearing replacements where road space restrictions make it difficult to obtain detailed measurements.
- At the Dartford Tunnel West, we used an indoor (basket) drone in the internal exhaust shaft trial survey. (Note: This was pre-drone hub instruction.)

The adoption of drones/remote survey techniques has revolutionised surveying practices, elevating the quality and precision of the data collected. Unlike conventional methods, which often necessitate multiple visits to a site for additional measurements, drones/remote survey techniques provide real-time access to comprehensive data. This accelerated workflow provides designers and contractors with immediate access to each dimension required, enabling more informed decision-making, and reducing design iterations. Moreover, the enhanced accuracy of drones/remote survey techniques instils confidence in offsite manufacturing and procurement processes, minimising errors and delays.

#### **Geospatial coordinated model**

Sensat has provided a firm foundation of point source information across most of the M25 network. We are currently working to integrate further detailed information into one single M25 coordinated model. This consolidated model of up-to-date surveys that align geospatially to one another, will serve as a valuable resource for future projects.

This 3D network model will position itself so that it can also receive all future major project engineering models, ensuring valuable data from Junction 10 and Lower Thames Crossing, for example, can be properly integrated and help support future operational and maintenance requirements.

Software and hardware are currently being trialled for the M25 geospatial coordinated model so to create the minimum working specifications that are required to meet the needs of all parties. Moreover, the aim is to design the model to be agile to the developments in technology that we expect to see over the coming 15 years of the contract.

By centralising data in a geospatially aligned model, we can optimise operational efficiency and maintenance planning, minimising discrepancies and maximising resource utilisation.

As technology evolves, we are committed to staying at the forefront of innovation to meet the dynamic needs of the contract. Ongoing trials of software and hardware aim to establish minimum working specifications adaptable to emerging technological advancements over the remainder of the contract. This forward-thinking approach ensures that the M25 coordinated model remains agile and responsive to future developments, safeguarding its relevance and effectiveness in supporting operational and maintenance requirements for years to come.



### **IMPLEMENTING A NEW STRATEGY FOR BINDER COURSE ON THE M25**

The M25 motorway, a critical component of the UK's transportation infrastructure, encircles London and supports millions of commuters daily. Historically, the management of the motorway's binder course relied on reactive maintenance strategies, where assessments were conducted only when visible signs of deterioration appeared.

This approach often led to premature road failures and escalated maintenance costs. Recognising the inefficiencies of such methods, the M25's managing consortium undertook a strategic initiative to revolutionise the assessment and maintenance practices for the binder course.

#### The need

Over time, sections of the M25's binder course had surpassed 30 years of usage, leading to concerns about embrittlement and reduced bonding capabilities with new surface layers. The primary challenge was the absence of a systematic method to evaluate the residual life of the binder course effectively. Without accurate assessments, significant damages could escalate unchecked until substantial repair was necessary, thus risking the safety and flow of traffic. Additionally, the lack of predictive maintenance tools exposed the network to higher operational risks and potential disruptions, which could affect the long-term viability of the road infrastructure.

#### Deliverables and benefits

To address these challenges, the consortium implemented a comprehensive, proactive strategy comprising several key components:

- Collaborative core sampling: In partnership with contractors such as Tarmac and Milestone, the strategy included taking core samples during planned maintenance closures. This effort aimed to provide a detailed cross-section of the binder course conditions throughout various segments of the network, offering insights into both intact and potentially failing sections.
- Advanced testing techniques: A novel partnership with Shell introduced cutting-edge testing technology capable of analysing small binder samples for detailed properties. This collaboration not only facilitated precise assessments but also opened avenues for research opportunities with academic institutions, marrying practical applications with academic research.
- Utilisation of ground penetrating radar (GPR): To complement the physical sampling efforts, GPR technology was employed to detect potential voids or weaknesses in the binder course without invasive procedures. This technology aided in preemptively identifying areas at risk of failure.
- Development of a risk sssessment matrix: Utilising the data collected from the testing and GPR analyses, a risk matrix was formulated. This tool was instrumental in predicting potential failure points within the binder course, allowing for targeted and timely maintenance interventions.

The strategic enhancements in the management of the binder course yielded substantial improvements:

- Early detection: The new strategy enabled the detection of underlying issues before they manifested on the surface, significantly reducing the need for extensive repairs and thereby extending the lifespan of the roadway.
- Reduction in maintenance costs: By accurately assessing the condition of the binder course, unnecessary resurfacing efforts were minimised, resulting in notable cost savings in the overall maintenance budget.
- Enhanced road safety and reliability: With a proactive approach to maintenance, the road's safety and reliability were markedly improved, ensuring a smoother and safer experience for the daily users of the M25.

#### Challenges and lessons learned

The case of the M25 binder course strategy underscored the importance of integrating advanced technology and fostering collaborative research to enhance infrastructure management. The project demonstrated that traditional reactive methods, while somewhat effective, could be significantly optimised through strategic partnerships and technological innovations. Key lessons included the need for continuous improvement in communication strategies to ensure all stakeholders understood the technical data and the significance of the maintenance efforts. The project also highlighted the importance of maintaining flexibility in project plans to accommodate unforeseen challenges and adapting strategies in response to real-time data and feedback.

Moving forward, our future strategy can be divided into three key areas:

#### 1. Risk assessment and management:

- Enhance our databases to better predict areas with poor binder-surface bonding.
- Continue to refine the use of GPR for preliminary screening and identification of potentially compromised sections of the binder course.

#### 2. Research and development:

- Expand our collaboration with Shell and potentially other partners to keep advancing our testing capabilities.
- Consider establishing a dedicated DS facility in the UK, possibly within a university setting to leverage academic collaboration and PhD research opportunities.

#### 3. Operational enhancements:

- Integrate new pavers that ensure complete removal of all layers during resurfacing, leaving no residual thickness that could impair bonding.
- Standardise procedures across all sites to maintain consistency and quality of the binder course repairs and replacement.

Our work on the M25 binder strategy not only supports the PMR goals by developing a robust strategy but also ensures its effective implementation. We are setting a standard for innovative, data-driven road maintenance that can serve as a model for similar infrastructure projects globally. Further, this strategy document will aid in aligning all team members and stakeholders with our forward-looking vision, ensuring continuous improvement and innovation.

4

# **PROTECTING OUR NETWORK**

This case study explores the escalating concerns surrounding Lithium-fuelled vehicle fires within the Strategic Road Network (SRN).

With a focus on the safety implications, particularly within enclosed spaces like Area 5 tunnels, this case study looks into collaborative efforts aimed at mitigating risks and enhancing network reliability.

#### The need

In response to the increase in the use of Lithium-fuelled vehicles such as e-bikes and motor vehicles, and concerning incidents of Lithium-fuelled fires on UK motorways, a concerted effort was launched to address these pressing safety concerns. Extensive research was conducted drawing from a number of sources including international, national and local media, social media and also from personal investigations.

This research phase served as the foundation for informed decision-making and collaborative action, as well as underscoring the urgent need for a proactive response to mitigate potential risks to life, infrastructure and public safety, especially within the confines of Area 5 tunnels.



#### Deliverables and benefits

Collaborations were initiated with key stakeholders, including National Highways, emergency services—especially fire and rescue—and other relevant colleagues within Connect Plus and CPS, to address these safety hazards.

These partnerships were pivotal in formulating a comprehensive strategy to tackle the challenges posed by Lithium-fuelled fires. The aim was not only to address the immediate dangers but also to establish robust protocols for future incidents, thereby enhancing the overall reliability of the network.

Throughout the course of the year, significant progress was made in understanding the scale and complexity of the issues at hand. Engagement with other network and non-network global tunnel operators and fire and rescue agencies provided invaluable insights into effective response mechanisms and best practices. In addition, we reviewed our control room NTOC response to 'regular' fires vs lithium fires and how the response may differ, if any specific training is required etc., especially within the tunnels.

This exchange of knowledge culminated in the organisation of "Exercise Lithium", a collaborative effort involving our key stakeholders including environmental experts. The tabletop exercise, held at Dartford, simulated a three-stage scenario involving a Lithium-based fire within the Dartford East tunnel. Participants engaged enthusiastically, facilitating discussions and identifying areas for improvement. Insights gleaned from the exercise were instrumental in refining response protocols and enhancing training initiatives for both internal and external stakeholders. The outcomes of the excercise have been integrated into future training programs, ensuring that lessons learned are effectively circulated and applied across relevant teams and agencies.

The project's impact extends beyond its immediate range, with efforts underway to address Lithium-related fire risks across the Strategic Road Network (SRN). Collaborative initiatives have led to revisions in initial response protocols, reflecting a proactive approach to mitigating potential hazards. Plans are in motion to further spread knowledge and protocols related to Lithium fires, recognising their relevance and implications across various contexts within the SRN.

Specifically, the exercise has provided significant learning opportunities for the fire and rescue teams when attending Lithium-fuelled fires within the tunnels. These findings will be reflected in:

- Crew training.
- Fire and rescue fire college learning.
- Initial response on call into fire and rescue control room, responding crews, and liaison with NTOC on arrival.
- Site visits to tunnel closures with existing and new crews.
- Exercise Lithium being used by Kent Fire and Rescue for future training internally and externally.

Additionally, within the NTOC, CPS and National Highways, new protocols are in place as well as additional training.

This project is ongoing. We will be holding further meetings on Lithium related fires network wide, so not just related to enclosed spaces.

We are also working with vehicle recovery agents, as there is a risk of spontaneous fires following reignition. The environmental teams are also looking at the waste from fires of this kind and the potential high level of contaminates from the batteries etc.

National Highways have been active participants in project initiatives, underscoring their commitment to enhancing road safety and resilience. Their involvement in tabletop exercises and ongoing communication with the project team ensure that they remain abreast of developments and can contribute effectively to collective efforts aimed at safeguarding the road network. Through continued collaboration and knowledge-sharing, stakeholders are poised to address emerging challenges and uphold the highest standards of safety and reliability across the SRN. National Highways have been active participants in project initiatives, underscoring their commitment to enhancing road safety and resilience. Their involvement in tabletop exercises and ongoing communication with the project team ensure that they remain abreast of developments and can contribute effectively to collective efforts aimed at safeguarding the road network.



### **CONTINUING OUR DIGITAL ROADMAP**

We are continuing with a roadmap of digital initiatives to digitise manual activity on the network, and use more advanced technology to make works more efficient and remove employees from harm's way.

We are working with members of the wider community to learn from tried and tested technology, but also trialling new technology to accelerate benefits.

#### The need

As technology advances in wider society, the highways industry has traditionally been slow in following suit. However, there is now a strong desire to use technology to improve how works are undertaken and improve health and safety for our people. We are bringing advances that will reduce time taken to reopen the road following an incident, automate the identification and analysis of road defects and improve cyber security of critical national infrastructure data for our community. These are accompanied by lean initiatives, to make our processes more efficient, whilst utilising technology to improve further and reduce boots on the ground.

#### Deliverables and benefits

Throughout 2023/2024, we successfully brought 24 projects to completion. Among these, several concluded as part of our commitment to fostering innovation through a 'safe to fail' approach. This strategy emphasises our willingness to use innovation to improve the way we work across the business and experiment with new initiatives, while acknowledging that not all will be successful.

#### **Daily visual management**

Among our successes, one standout project involved implementing daily visual management across our depots. This initiative provides a real-time overview of daily activities, aligning them with predefined targets using a large screen display. As a result, we've streamlined operations by consolidating information into a single daily briefing, saving valuable time – approximately 2,600-man hours per year. Additionally, the enhanced visibility of tasks and expectations has contributed to improved safety practices, benefiting our team and operations alike.



#### **Deployment of mobile devices**

Another successful project on our digital journey, is the widespread deployment of mobile devices to all operatives within the M25 CPS team. This strategic move has changed how we operate by ensuring every colleague is digitally connected, equipped with a personalised digital profile, and has seamless access to all applications and data that are needed to fulfil their roles efficiently.

The adoption of mobile devices has realised a range of benefits for both our team members and our operational effectiveness. It has enhanced safety protocols by allowing for increased submissions of health and safety observations. In addition, with mobile devices, operatives can quickly report potential hazards or safety concerns, enabling proactive risk management and fostering a culture of safety awareness.

The deployment of mobile devices has streamlined communication and coordination efforts within the teams. Each operative can now be easily contacted, as well as able to report back on activities completed during each shift. This real-time connectivity enhances accountability, and also enables rapid response to changing circumstances, ultimately driving greater agility and responsiveness across our operations. We estimate an annual cost saving of £112,704, taking into account the time saved from contacting individual team members, and travel expenses associated with face-to-face meetings on site.

#### **Customer relationship management system**

Another example is the successful launch of our customer relationship management (CRM) system, powered by Microsoft Dynamics, for the administration of environmental land engagement. This additional use of our CRM system enables the team to carefully manage all interactions with landowners across the network.

# Microsoft Dynamics<sup>®</sup>365

By extending the functionality of our CRM system to include environmental land engagement, we've realised several significant benefits:

- We are able to ensure that all communications with landowners are properly recorded and handled promptly and efficiently.
- This has helped to foster positive relationships and build trust with our customers and stakeholders.
- The system's tracking capabilities have improved our reporting and enabled early identification of potential issues, which allows for a more proactive way of working.

#### **MSite**

Another significant improvement has been the adoption of MSite, a workforce management platform developed specifically for the construction industry. MSite uses a blend of hardware and software to digitise the worker journey onto site, benefiting subcontractors by providing a signing in and out method that saves time and effort. In addition, the platform offers a simpler approach to tracking hours worked, eliminating the need to rely on subcontractors for timely supply of this information.

The resulting time savings and enhanced efficiency translate into tangible cost savings, amounting to approximately £23,316.67 per year.

In addition to our successes, there are also examples of where we've taken a strategic decision to close down a project, such as Theia. Despite initial trials, we recognised the need to explore alternative solutions to effectively deliver the desired solution and associated benefits. These decisions show our commitment to continuous improvement, ensuring that we remain open to finding the best solutions. Learning from these experiences, strengthens our ability to overcome challenges and innovate across all parts of our operations.

The local National Highways team are aware of the programme and initiatives through briefings. The programme and initiatives have also been presented as part of the HELMA Lean review.

# SUPPORTING NATIONAL HIGHWAYS NET ZERO PLAN

The UK Government has committed to a net zero economy by 2050. In support of National Highways net zero plan, Connect Plus and CPS launched our own carbon strategy in 2022 which aligns with National Highways'.

Our sustainability team are driving change throughout the business and focusing on carbon emission analysis and reporting. The carbon management plan and carbon roadmap were created in 2023, to support the carbon strategy. Both AtkinsRéalis and Balfour Beatty carbon teams have supported us in creating the plan, to ensure it aligns with PAS 2080, highlighting the collaboration between our parent companies.

Over the past year we have been focused on predicting our carbon emissions, using our new carbon tool for design, as well as our 30-year carbon profile as part of the asset management forward plan (AMFP).

#### The need

The M25 is already experiencing climate change impacts and we recognise that we need to drastically change the way we work to be able to limit global warming. To support National Highways with their road to net zero, as well as it simply being the right thing to do, we are driving change within the business to reduce our carbon emissions.

Limiting our GHG emissions is of critical interest to all our stakeholders, who expect us to have a comprehensive sustainability and carbon strategy in place. In delivery terms, reducing carbon emissions can also reduce costs and time spent on the network - for example, more warm mix asphalt can be laid in a single shift compared to hot mix, because of the reduced cooling times.

We recognise the importance of setting a carbon strategy that enables us to act now, but we also realise that it must be done in a sustainable and planned way; it is what our people, our supply chain and customers expect of us.

#### Deliverables and benefits

2023 focused on our overall carbon management, continuing the work we started in 2022, as well as implementing and capturing data for the carbon strategy. Our carbon approach focuses on emissions reductions, we aim to be net zero and near zero carbon for many of our operations, as well as in the materials we use. We have set ourselves a net zero target, rather than a carbon neutral goal. This will ensure we focus on using innovation to reduce our emissions, so that we can be as close as possible to near zero schemes.

Our carbon commitment recognises we are on a journey to reduce emissions to net zero. As new products and solutions become available the road will become clearer. Our carbon strategy and management plan provide a snapshot of where we stand today, however we commit to continually improving so that we can refine our course into the future.

#### Carbon management plan

The carbon management plan (CMP) sets the current and future direction for carbon management in implementation of the M25 DBFO. The CMP is one component of reducing carbon emissions and therefore reducing the contribution to climate change. The general concepts for implementing the CMP are:

- Following the carbon reduction hierarchy
- Implementing a carbon management process to meet PAS 2080
- Supporting the process of reaching the carbon strategy targets
- Collaboration between the value chain members to reach net zero

The CMP collates all the information regarding how we are managing carbon through various methods. The purpose of the CMP is to organise and evidence all efforts to maximise carbon reduction, and to pursue the best possible carbon reduction ambition using the best possible carbon footprint data recorded.

The CMP addresses five core themes, that will form the basis for on-going carbon management for the project. The themes align closely with the chapters of PAS 2080.

- Culture, leadership and responsibilities
- Data (targets, baselines, monitoring and reporting)
- Quantification
- The process
- Engagement and communication

Introduction			
J - Introduction			
1.1 Document Purpose	ension and future direction for carbon management is involvementation of the National Histoways Area 5 (1/25) Design Build Einance, and Operate (DBEO) of	optract This Carbon Manage	ment Plan (CMP) has been prepared for the remainder of th
management strategy and proce	isses to be undertaken by CPS. The DBFO contract runs from 2009 for 30 years to 2039. Connect Plus Services hold this DBFO contract and are a Joint Ver	ture between Atkins, Balfou	Beatty and Egis. Key stakeholders for CPS are considered
This Carbon Management Plan is	s one component of reducing carbon emissions. Other components consist of tools, documents, processes, the community and culture. The Carbon Manage	ement Plan sits within the Su	stainability Team who are part of the wider Environment Te
Connect Plus/Connect Plus Sen	vices which sets out ambitious targets to reduce climate and carbon impacts from the DBFO activities. As part of the maintenance and construction section, the use of the CPP Content in the Mational Extension Development to Mat Zero values have been been been been been been been be	there is a strategy for CPS to	implement carbon management compliant with the PAS 2
	1.2 Document Structure		
	1.3 Background		
	1.4 Scope		
	1.5 Objectives and Target		
	1.6 Continual Improvement		
	1.7 Core Carbon Management Themes		
	2 Carbon Culture, Leadership and Responsibilities		
	2.1 General		
	2.2 Carbon Culture		
	2.3 Roles and Responsibilities		
	2.4 Training		
	2.5 Carbon Management Team support		
	3 The Carbon Management Process		
	3.2 Design and Construction Planning Process		
	3.3 Construction Delivery Process		
	4 Targets, Baselines, Monitoring and Reporting		
	4.2 Aligning with relevant policies		
	4.3 Targets and Objectives		
	4.4 Baselines		
	4.5 Monitoring and reporting		
	4.6 Continual Improvement		
	5 Quantification		
	5.2 Uptions testing		
	5.3 whole project quantification		
	b value chain Engagement and Communication		
	C Ollateral Communication 9 Engagement		

#### Carbon culture, leadership and responsibilities



The business recognises that carbon management is not just a part of the sustainability team's role, but that it's the responsibility of everyone involved on the project. There is still work to be done to raise awareness, however, huge progress has been made over the last few years.





The carbon strategy includes baselines, targets and objectives that have been designed to align with National Highways' net zero plan.

#### Quantification

A robust and repeatable approach to carbon quantification is required to achieve a reliable and accurate carbon management process.

Two ways that carbon quantification will be carried out as part of the carbon management process are:

- 1. Options testing
- 2. Whole project reporting



#### The process



The carbon management process is recognised as being the ground level mechanism for continually driving down carbon throughout the remaining duration of the contract. The process is applicable to all areas of the business and all stages of works carried out.

It consists of the application of the carbon reduction hierarchy and the decarbonisation principles of PAS 2080 such as: the whole life carbon framework for decision-making; aligning to net zero carbon transition; and implementing appropriate governance.

We are aware that the process is driven by the whole company, the system (including contractors) and the network (including National Highways), and not just the sustainability team. It requires everyone to understand the carbon management process to manage the whole life project carbon performance.

#### **Engagement and communication**

Sharing information externally and internally to all value chain members is key for creating and maintaining a 'carbon culture', and maintaining a successful carbon management system. Therefore, focusing on engagement and communication are essential to drive the carbon management process. There is already a strong relationship with value chain members, specifically the framework contractors, with engagement and collaboration taking place on a regular basis to reduce carbon emissions across schemes.



#### **Carbon roadmap**

The carbon roadmap has been created to monitor the progress of the carbon strategy. It will ensure regular updates on the targets, forecasting for future savings and baselining for the targets. It is broken down into the following sections.

#### **Target and baseline definitions**

This section explains the definitions. To ensure accurate baselining, we need to be transparent about what exactly is included. This also allows the target calculations to be in line with the baselines.

#### Tracker

The tracker within the roadmap outlines the goals, objectives, strategies and tactics that form the carbon strategy. Quarterly updates are recorded in the tracker to monitor progress towards the tactics.

Carbon Strategy - Plan, Tracker and Roadmap							
Goal	Objective Year	Objective	Strategy Year	Strategy	Tactics		
Business Operations							
	2022	Depot energy usage 100% renewable energy	2023	CPS Gain PAS2080 carbon management system	Roll out Better Driving Campaign		
	2022	Lighting usage 100% renewable energy	2022-2024	Fleet infrastructure (EV Charging), alternative fleet	Reduce idling		
	2026	Reduce depot energy usage by 50%	2022	Implement a Network energy reduction plan	Comms Plan to roll out Net Zero Strategy		
	2027	Reduce energy usage for lighting by 50%	2022	Implement a Depot energy reduction plan	Change light vehicles to electric		
2039 CP/CPS operational emissions Net Zero compared to 2019	2028	75% of fleet powered by alternative fuels			Change heavy vehicles to hydrogen		
	2039	50% of network lighting uses			Electric hand tools		

#### Baseline

This section covers the data and calculations that form the baselines for the targets. Currently it includes carbon emission and the energy consumption baselines data.

#### **Targets and actuals**

This section has been created to track progress of the targets. It outlines the baselines, the baseline measurement units, and then the measure from the baseline dates. It includes the progress of the target to date, and a year on year calculation to highlight what we need to do each year to meet the targets. Some are sooner than others, and others are more reliant on things like technology and industry change.

		Baseline	Baseline						
Business Operations		Year	Measurement	Baseline	Units	2020	2021	2022	2023
2039	CP/CPS operational emissions Net Zero compared to 2019	2010	Carbon Emissions	13,162.06	tCO2e	11,018.74	21,762.76	43,864.10	41,164.10
			Percentage Diffe	baseline	%	-16%	65%	233%	213%
2026	Reduce depot energy usage by 50%	2010	Energy Consumption	1,023,255.00	kWh	1,070,761	1,109,884	999,561	893,644
2020		2013	Percentage Diffe	rence from 2019 baseline	%	5%	8%	-2%	-13%
2027	Reduce energy usage for lighting by 50%	2019	Energy Consumption	27,669,824.60	kWh	27,495,880.30	23,096,202.40	22,138,066.40	20,788,531.00
			Percentage Diffe	rence from 2019 baseline	%	-0.6%	-17%	-20%	-25%
2028	75% of fleet powered by alternative fuels	2019	Fleet Composition	186.00	No. of fleet powered by alternative fuels	0	0	0	1
			Percentage Diffe	rence from 2019 baseline	%	0%	0%	0%	1%
2020	FOR a first listing up I FDs	2019	Lighting Composition	18,910.00	No. Luminaires			2185	3379
2039	50% of network lighting uses LEDS		Percentage Diffe	rence from 2019 baseline	%			12%	18%
2039	100% of HGVs electric or hydrogen	2019			No. of HGVs				
			Fleet Fuel Usage	105.00	or hydrogen	0	0	0	0
			Percentage Diffe	rence from 2019	e/	00/	00/	00/	00/
				paseline	70	0%	0%	0%	0%

#### **Potential savings**

The potential savings section is to determine the predicted savings in energy, carbon etc. from the future projects. An example of this is calculating the energy saved from switching off network lighting in the future. This allows to track potential future progress to the targets and if they will be met in time.

#### **Carbon tool for design**

In 2023 we launched the new carbon tool for design. This in an interactive excel tool (similar to the National Highways carbon calculator) and is based around materials, energy transport and waste. Using these categories, we can identify higher carbon factors, and seek lower carbon materials or methods of working. The tool has a homepage that displays various graphs to show the carbon hotspots within schemes and also quantifies the carbon emissions.

As the year progressed, we made several improvements, one of which was to add different scheme scenarios to allow the comparison of scheme emissions depending on materials used etc. Below shows two different scheme scenarios based on different materials and transportation.



#### 30-year asset management forward plan

For this year's AMFP submission, we continued with the scope of information presented including:

- Energy reduction. Capturing the energy reduction on the contract so far through network lighting, depot energy use and tunnels, as well as plans for future energy reduction.
- Climate vulnerability. Capturing a summary of the potential risks and impacts for the assets.
- Carbon strategy and accounting. Capturing the new strategy, supporting National Highways with their net zero plan, avoiding emissions from long-life pavement and road user emissions.
- Road user emissions. Emissions from road users and the transition of passenger fleet.
- Long life enhanced material profile. This includes the benefits of using long life materials such as durable enhanced asphalt (DEA) resulting in fewer interventions and therefore less carbon emissions over the rest of the contract period.

In addition, we have updated our 30-year carbon profile for materials used on the network. The cumulative embodied carbon emissions have decreased by 154 tCO2e for the remaining contract period, from the 2023-2024 profile created last year. This is due in part to increased quality of data, but also to using long life material which reduces the need for interventions.

To further increase the carbon profile alongside the 30-year plan profile of embodied carbon, additional analysis has been undertaken with the support of Balfour Beatty. A profile for pavements and traffic signs has been created which includes the materials, fuel and labour of the asset renewals. The materials and fuel have much high carbon emissions than the labour. A focus for Connect Plus and CPS in the future will be working with contractors to reduce fuel consumption.



#### **Forward view**

#### **Carbon reduction timetable**

Planning carbon engagement is essential to changing the culture of the business, this is highlighted in the carbon management timeline which details timescales for training, workshops, accreditations and document launches.

Carbon Management Timeline					
2022	<b>Q4</b>	<b>—</b>	Launched Carbon Strategy		
2023	<b>Q</b> 4	~~	New Sustainability KPIs Launch (e.g. fuel usage)		
	01	<u>ن</u> ية ا	Carbon Roadmap and Baselines		
	QI	X V X	Carbon Management Plan Launch		
2024	02	2	Launch of IEMA Net Zero Training to CPS and CP		
	QZ	© •	Carbon Workshop		
	Q3	****	Audit for PAS 2080 Accreditation		
2025	Q2	ø	Implement Science Based Targets		

We believe that we are leading the way in the South East with our carbon strategy and, following a request from National Highways, we will be working with the region to share our findings. Moving forward, the work we have undertaken could be shared across the SRN.



# WORKING SUSTAINABLY TO IMPROVE OUR ENVIRONMENT

To align the business across the diverse subject of sustainability, we have created the sustainability action plan as part of the maintenance and operation environmental management plan (MOEMP).

The MOEMP's purpose is to lay out how environmental management is undertaken and the sustainability action plan forms part of this. Across the business, sustainability does not sit as an independent business function but is integral to how the business operates and develops. We recognise that sustainability must be owned and delivered by every business function and become 'business as usual'.

The action plan includes the following sections:

Introduction

- Operational sustainability
- Sustainability forums and engagement Social value and carbon

#### The need

The sustainability action plan has been aligned to the National Highways environmental sustainability plan. There are three strategic outcomes to this plan: nature, carbon and communities, and nine priority areas define the short to medium-term building blocks of their vision. The sustainability roadmap consists of over 35 goals and tactics, and each one is aligned to one of the nine priority areas within the National Highways environmental sustainability plan.

Our sustainability action plan is in direct response to the need for a 'M25 sustainable development action plan' and includes:

- Sustainable consumption of resources
- Protection and enhancement of the environment
- Corporate social responsibility
- Tackling climate change

Schedule 9, states: 'The MOEMP shall reflect the DBFO Co's environmental objectives for the project, which are to comply with the following in relation to the operations: reduce use of virgin raw materials; adapt to climate change; reduce, re-use and recycle waste; use sustainable materials and techniques to reduce waste sent to landfill; reduce the carbon footprint. As far as possible these provisions are embedded into the approach we are taking. Some examples below show where these objectives have been aligned in the sustainability action plan.

Schedule 18 requirement	Schedule 9 environmental objective	Strategy/objective in roadmap
Sustainable consumption of resources	Reduce use of virgin raw materials	Identifying where raw materials are being used in the supply chain and working with stakeholders to reduce this.
Tackling climate change	Adapt to climate change	Holding annual climate workshops and identifying incidents caused by climate change.
Corporate social responsibility	Reduce, re-use and recycle waste	Create a waste and materials management plan.
Sustainable consumption of resources	Use sustainable materials and techniques to reduce waste sent to landfill	Continue to develop the sustainability library which contains examples of sustainable materials and techniques.
Protection and enhancement of the environment	Reduce the carbon footprint	Gain PAS2080 carbon management system

#### Deliverables and benefits

The sustainability team have been actively developing strategies aimed at reducing our environmental impact by creating meaningful change in our business operations. We work closely with designers, our service delivery team and supply chain to develop new ways of working and using new materials to reduce our carbon footprint. We are also developing our understanding of how climate change may affect our assets and devising plans to mitigate potential impacts.

To ensure involvement from across the business, we have worked closely with the asset and design teams. This is a new approach that hasn't previously been included in our plan.

This case study talks in detail about some of the initiatives we have been working on, including:

- Asset management approach
- Integration with scheme design
- Integration with engineering (long term scheme design decisions)
- Objectives and performance indicators
- Supplier waste locations
- Idling KPI
- Energy management
- Building management
- Supply chain scoring

#### Asset management approach

The following hierarchy has been applied to the asset management approach to sustainability:

#### Avoid

Evaluate whether asset intervention is required to avoid activities that generate environmental disbenefits and unnecessary carbon emissions.

#### Minimise

Minimise the use of materials and carbon emission through targeted maintenance.

#### Reduce

Reduce impact of asset renewals through the consideration of low impact materials, local resources, optimised works methodologies and lowered carbon emissions.

This principle guides the entire asset lifecycle, starting from initial scoping, progressing through design development, and into works delivery. Given the nature of asset management, environmental implications must be carefully considered at each stage, in relation to the following:

- Material durability and long-term performance.
- Existing design and material specification (including the specification for highways works).
- Works methodologies and programmes.
- Impact to network disruption and user safety (both short and long term).
- Future operation and maintenance.

All stages in the asset management design and delivery process, incorporating inspection, maintenance, renewal (life cycle) and improvement, shall consider the environmental and carbon impact. This should include proactively considering where reductions can be generated.

Consideration includes:

- Use of materials with lower embedded carbon.
- Use of local suppliers to reduce carbon emissions generated by travel and transport.
- Optimised scope of works to minimise non 'value-adding' works and associated environmental impacts.
- Use of sustainably sourced timber from accredited FSC sources.
- Optimised whole life carbon solutions (e.g. minimise future interventions).

#### Integration with scheme design

To improve the integration of environmental considerations into scheme design and development, it is essential that every lifecycle proposal form (LPF) demonstrates environmental considerations. While this process may sometimes confirm that environmental benefits cannot be improved on all schemes, it is crucial that it is formally recorded at asset need identification stage.

Throughout governance gateways, there will be opportunities to challenge and mitigate the environmental impact, as well as carbon emissions associated with lifecycle schemes. These efforts will be recorded in the change log within each LPF, ensuring transparency and accountability.

Environmental review forms part of each options study. For schemes that have multiple options with varying embedded carbon levels, a high-level estimate of carbon shall be undertaken by the design team, utilising the carbon tool for design, and incorporating it into the options scoring.

For these schemes, teams will capture and report to the sustainability team the approximate difference in carbon emissions between the chosen option, and the initial concept anticipated at asset need identification stage.

Where a detailed optioneering stage is not required or applicable, the design team will continue to capture environmental and carbon considerations and subsequent decision making in the design control document. There is a specific section for environmental and carbon management risk.

At the start of the AMFP year, the design team will hold carbon reduction meetings for each portfolio or sub portfolio. These sessions, attended by the sustainability, asset and design teams, together with our contractors, aim to identify opportunities for targeted savings across the portfolio for the upcoming year.

Furthermore, we will aim to improve/circulate feedback from our contractors regarding previous year's schemes. This information will then be integrated into the planning of the next year's schemes.



Design lifecycle proposal form

#### Integration with engineering (long term scheme design decisions)

As part of our integration across the business, we will undertake whole life impact analysis.

The impact of network interventions is a key factor that we consider at the start of a scheme. These interventions not only disrupt the traveling public, but also have carbon implications due to traffic delays and, in some cases, increased journey distances.

To address this, we're evaluating our long-term commitments. This involves deciding whether to opt for a solution requiring construction/maintenance every 10 years or to invest in a more durable scheme with an extended design life and the use of premium materials.

An example of this is the Dartford West Tunnel lighting scheme. An increased investment in materials and long-term design will mitigate a network intervention requirement in 10 years' time. This will generate significant carbon savings from reducing the congestion impact to the travelling public, to reducing quantities of material investment and construction interventions.

In addition to this, we are integrating energy considerations into the initial design phase, particularly for lighting and technology. When choosing new technology or lighting, we calculate the entire lifespan's energy requirement. This approach allows us to make strategic decisions to allocate more resources at the project's outset, maximising long-term carbon savings by reducing energy consumption throughout the M25 network.

#### Grouping network interventions by location

- By considering a shift in delivery approach based on location, our goal is to enhance the value derived from each network intervention. This may mean more complex worksites, where pavement, structures, and environmental aspects are worked on simultaneously within a single site location and under one traffic management plan. The primary advantage of this approach is the reduction in the need for multiple interventions, consequently reducing the carbon footprint associated with our network maintenance and operations.
- Optimatics is a programme review tool that focuses on grouping work by network location, whereas typically work has been planned and implemented based on asset type.

#### The changing environment

In addition to addressing our carbon footprint in maintaining and operating the M25 network, we
also recognise the changing physical environment in which we operate. Increased rainfall volumes
and temperature variations are impacting our assets. To adapt, the design team is revisiting design
codes and standards for new projects. They're also ensuring that design assumptions are cognisant of
changing weather patterns and data on extreme weather events.

#### Designing within a 3D environment

 By further developing the ability for 3D asset data capture, we are reducing the need for network inspections and thus minimising network disruption, congestion, and carbon generation. As 3D information improves accuracy and accessibility, our design process is becoming more efficient.
 3D design tools are improving our right first-time design and construction, reducing the need for network interventions, and limiting project material wastage.

#### **Objectives and performance indicators**

In National Highways Objective 5 "Respect the Environment", objectives for each asset have been identified. To support this, we have identified supporting asset management and detailed design considerations across the short, medium and long term.

#### **Supplier waste locations**

In the previous contract period, we asked our supply chain to complete waste audit forms to ensure compliance with LA 110 - material assets and waste. It is encouraging to note that many of our suppliers' waste facilities and depot locations are within the inner and 20-mile boundary lines, although there are some that sit outside of the social value boundary areas.

In the upcoming contract year, we aim to enhance our efforts by conducting in-person audits and mapping material sites alongside the waste sites. This approach will allow us to explore opportunities for improvement from a circular economy perspective.

#### **Idling KPI**

By leveraging the fleet telematics system, we've been able to pinpoint the extent of idling during operational activities. The graph below illustrates idling hours from January 2022 to December 2023. In 2022, idling decreased from April to September, spiked in October, and was higher in the winter months of January, February, and March. In 2023, idling levels appear to be higher than in 2022 across all months except for October. Idling was notably higher in January, February, March, and November in 2023, with other months similar to 2022 levels. These trends indicate an increase in idling during winter and a decrease during summer.

In the previous contract period, we secured approval for a new fuel KPI, set to launch in April 2024. This KPI aims to raise awareness across the business regarding fuel idling, and encourage change to reduce fuel consumption.



### **Energy management**

We achieved our target of a 20% energy reduction by 2021/22 compared to the 2009 baseline, excluding depot energy consumption, ahead of schedule. This underscores our commitment to sustainability and the implementation of innovative practices into our standard operations. Additionally, since the beginning of CY14, further reductions in energy usage on the network have been realised, attributed to updates in the un-metered supply inventory and removal of lit assets. Currently, energy consumption breakdown stands at 62% for lighting, 35% for tunnels, and 3% for depots, all sourced from 100% renewable sources. As fossil fuel costs escalate, our reliance on alternative energy sources positions us well to manage energy supply expenses.

We support National Highways in their net zero strategy, aiming to upgrade 70% of the strategic road network (SRN) to LEDs. In line with this, by September 2023, we had installed 1000 LEDs across the network, saving approximately 1.5 M kWh. Led by the central National Highways nationwide project delivery team, the first two phases of this project were successfully completed within the agreed timelines, achieving cost savings per luminaire replacement that surpassed most other National Highways regions. This efficiency prompted the national project team to entrust us with further replacements, with additional funding made available in January this year.

During a collaborative workshop hosted by National Highways in October 2023, each region was given the opportunity to share best practices and lessons learned. During the event, we provided an update on the LED replacement project and discussed our energy reduction strategy that will drive ongoing energy savings - the 3 R's - Remove, Reduce, Replace. This strategy emphasises the importance of switching off lighting in alignment with TA501 principles, supported by evidence-based research.

An additional 450 LEDs have been marked for installation between February and April 2024, saving approximately 1 M kWh. Furthermore, around 34km of lighting has now been switched off, resulting in savings of approximately 3.5 M kWh. To further support energy reduction efforts, we are removing lighting from lit signs where it is no longer needed. Whilst this doesn't have huge energy/carbon savings per sign, it does contribute to overall energy savings.

#### Renewable energy in depots

We are also exploring opportunities to enhance sustainability efforts by considering renewable energy generation within depots. As part of this initiative, we're investigating the installation of a wind turbine at our Dartford depot, and other energy saving opportunities at other depots. We are applying for environmental designated funds from National Highways for this opportunity to support their net zero targets by supplying renewable energy to their sites.

#### Optimising tunnel energy usage

Further reductions in network energy consumption will be achieved by optimising tunnel energy usage. In CY13/14, the Holmesdale Tunnel lighting was upgraded to LED, resulting in a remarkable 23% reduction in energy consumption within one year of installation, compared to the previous year. LED lighting installation is being phased in gradually, leading to continued declines in consumption.

Looking ahead, the Dartford Crossing tunnels are scheduled for LED lighting renewal in CY16/17, aiming for an estimated 50% reduction in energy use. Plans for upgrading remaining tunnel lighting, including the Bell Common Tunnel and the Hatfield Tunnel in 2031, are under consideration, with investigations into potential earlier renewals and energy savings currently underway.

#### Sharing our research

In November 2022, we undertook an independent study aimed at assessing the real safety benefit of lighting on the SRN. Following analysis, we arrived at an evidence-based conclusion that, in specific locations, lighting does not provide the predicted safety benefits. This study was shared with the National Highways delivery team, SES and other regions, as part of our LED upgrade project, to support them in their efforts to meet carbon reduction targets effectively.

#### **Building management**

In addition to removing, reducing, and replacing the lighting on the network, there are also plans to reduce the energy consumption of our operational depots. In CY14, the lighting at Leatherhead depot was upgraded, resulting in significant energy savings (estimated at 60%). In CY15, both Denham and Scratchwood depots underwent lighting upgrades. Furthermore, plans are in place for energy-saving upgrades at Blunts Farm and Swanley depots scheduled for Q2 2024. These refurbishments will include the installation of new heating and ventilation systems, as well as the implementation of LED luminaires.

In CY15, we trialled environmentally friendly cleaning products at our South Mimms office, which proved to be highly successful. As a result, we are set to roll out these products across our other offices this year. The benefits of using these environmentally friendly products are evident in the graphic below.



#### Supply chain scoring

Our supply chain is scored monthly using a system called Jaegger. Jaegger is a tool to measure and collect robust performance intelligence, whilst streamlining the sourcing and contract management process – generating a centralised data engine which removes duplication and stands up to audit. It is a tool that will promote fair and transparent competition. Further detail on the purpose is show below:

#### Benchmarking

A tool to help us identify high level performing subcontractors for tender lists

# Best practice capture

us identify areas of best practice demonstrated by high performing subcontractors

# Areas of improvement

A tool to help us identify areas of improvment needed by low performing subcontractors

# Upskilling supply chain

A tool to upskill underperforming subcontractors and assist with the development of action plans

#### **Risk mitigation**

A tool to help us identify failing subcontractors or subcontractors at risk of failure

PDA contractors are scored on a monthly basis on four different aspects of sustainability. Below you can see some examples of what is asked of the supply chain:

- Does the supplier support apprenticeship programmes.
- Do they engage in volunteering with the local community.
- Does the supplier have a dedicated point of contact to identify environmental opportunities such as lower carbon materials and/or work methods.
- Does the supplier attend the quarterly CPS sustainability forum.
- Is the supplier a member of the Considerate Constructors scheme.

The integration of sustainability efforts throughout our business operations has been pivotal in driving meaningful change and fostering a culture of environmental stewardship. By collaborating closely with departments such as asset management, design, engineering and supply chain, we have successfully incorporated sustainability objectives into performance and development reviews (PDRs). This inclusive approach has provided other departments with an opportunity to contribute their insights and ideas, thereby enhancing our collective efforts towards reducing our carbon footprint and mitigating the impacts of climate change on our assets. Moreover, by evaluating supplier waste locations and implementing supply chain scoring, we are fostering responsible practices across our entire value chain.

# **Restructuring the MOEMP**

Following feedback from National Highways regarding the 2023 maintenance and operation environmental management plan (MOEMP) submission, and the perceived disconnect from the other plans in the business, such as the services plan, revisions were made to better illustrate its alignment and integration within the wider business framework.

The purpose of the MOEMP is to communicate to the wider business how we aim to manage the environment, and how sustainability will be integrated into the wider business. It became evident that several key teams lacked familiarity with the document, and the approach to environmental and sustainability management was not effectively integrated into their respective fields of work.

#### In light of this feedback, the following key updates have been made:

- **1** We have revised our sustainability and environmental goals to align them with the National Highways environmental sustainability plan.
- **2** We've introduced an approach called goal, objective, strategy and tactics to the sustainability roadmap, and linked our goals to those of National Highways.
- **3** We've reviewed other plans across the business, for example, the services plan and the contingency plan. We then identified and documented the 'touch points' between those documents and the MOEMP, to provide a clear line of sight between them. We discussed the points of integration with the owners of these plans and identified areas where improvements could be made.
- **4** To improve understanding and support for the MOEMP, we've created a RACI chart outlining responsibilities, and talked to key owners about their roles. We've also started to have regular meetings with those teams who are key, such as the design team.
- **5** To underline the need for engagement with other areas of the business in order to elicit change, the sustainability plan documents responsibilities for specific teams, such as the design team.
- **6** We've reviewed objective five, in schedule 14: 'Respect the Environment', and mapped out actions we're already taking. This has helped us to identify areas where we need to do more, and make plans to improve.
- 7 Training has been reviewed and improved, including identifying a need to train operational staff in environmental awareness on site. Depot supervisors and shift managers will also receive training.
- **8.** We've reviewed and updated our KPIs to make them more relevant and effective in driving environmental change across the business, such as introducing a KPI for reducing fuel consumption.

So far, the main benefit in making these changes has been an increased awareness of the requirements of the MOEMP, in the wider business and its integration with other plans. This foundation sets a solid platform for further progress in 2024/25, enabling us to build upon this understanding and integration to drive even greater alignment across our operations.

The work we've undertaken this year demonstrates our commitment to sustainability, and highlights the significant strides we have made in creating a more resilient future for our business, and our customers.



### WORKING BETTER TOGETHER – A LEADERSHIP TRANSFORMATION PROGRAMME

Better Together is the leadership transformation programme between National Highways, Connect Plus and Connect Plus Services that will enable us to work in collaboration more effectively and efficiently to deliver the Project Road Objectives for the benefit of the network and the customers we serve.

"The opportunity for us to tangibly improve the project outcomes, be efficient and have effective delivery must be founded upon a collaborative environment. Essentially, success comes when we act together as **we can only truly succeed if we all succeed**. Our **integrated leadership** and **alignment on mission and commitments** is a meaningful step towards achieving our Better Together transformative vision"



Christine Allen Regional Director National Highways

#### The need

The tri-party Integrated Leadership team who oversee the M25, and consist of Leaders from National Highways, Connect Plus and Connect Plus Services, developed the Better Together leadership transformation programme in response to several critical observations:

- The ever-evolving external environment including factors such as climate change and rapid technological advancements, made us aware of the increasing need for a more cohesive approach, recognising that no party could tackle these challenges alone to the benefit of safety, our customer and delivery.
- The complexity of design, build, finance and operate (DBFO) contracts requires collaborative interpretation to operate effectively and deliver the Project Road Objectives.
- Aligning the vision, mission and objectives across all three organisations is key to the collective prioritisation of actions in the project's best interest, by focusing on what is right for safety, the network and our customers, and on reducing wasted effort and energy spent in resolving issues.
- Improving trust and fostering a shared understanding (including shared responsibilities) would improve the effectiveness and efficiency of decision making.
- There is an aspiration from everyone to leave a lasting legacy and take pride in working on, and contributing to, what is viewed by many as a successful project.

Put simply, we wanted to make it easier to work together and take enjoyment from what we do.

#### Deliverables and benefits

The Better Together programme was officially launched in June 2023 and is comprised of 4 workstreams:

#### **Leadership**: Leadership culture and building critical mass.

#### **Collaborative working:**

3-way relationships, balancing consensus and challenge.

#### **Objectives management:**

Setting, managing and reporting with success focus.

Continuous improvement:

Efficiency and effectiveness.

# Under the programme we have already achieved significant milestones:

We have developed a project charter with a common vision, mission, goals and leadership values:

**Our vision** is to be recognised as industry leaders for network operations and development.

**Our mission** is to achieve the Project Road Objectives for our customers and deliver value for money for our key stakeholders.

The **joint goals** that we have committed to, encompass the Project Road Objectives.

We have essentially provided a 'golden thread' between the vision and the project road objectives, all the way through to our KPIs and how our leaders prioritise with a project-focus and become role models for others to do the same.

- We have developed a clear issues escalation process. As part of this, we have introduced a common issues management process to investigate and address the root cause of issues between the parties more quickly and effectively. Impact on the delivery of project road objectives sits at the heart of how issues get prioritised. We are already seeing progress in resolving longstanding issues by working together and focussing on both network and customer needs.
- We have streamlined regular governance meetings, such as operational performance meetings (OPMs) and monthly management meetings (MMMs), for increased effectiveness and efficiency. We have seen ownership of performance increase and key improvement actions (e.g. in relation to improving primary response and 7-day accuracy) coming out of the discussion.
- We have started developing a joint approach to risk understanding and management, which is project focused.

• We have developed a programme that aligns with other behavioural leadership training programmes that have already been successfully deployed to specific areas of the contract.

In addition, we have identified 50 individuals from across all three organisations as leadership role models for the Better Together programme.

Those identified have been brought together across four groups, or tranches, with each tranche taking part in a 2-day Better Together workshop. The workshops were a great success fostering communication and collaboration among the teams. Some great discussions took place with everyone feeling empowered to talk about a wide range of issues.

We have conducted comprehensive 360-degree feedback assessments, complimented by personalised coaching for individual development. These have provided development plans for individuals and also collective data for the business to understand our leadership strengths and development areas as well as how well we are acting in accordance with our leadership values.



We've held full-day training sessions on leadership skills and chairperson training, for effective meeting management. We've also established peer groups to empower a wider group of people to investigate and resolve some longstanding issues. This has resulted in tranches really taking ownership and leading on these issues, as well as capitalising on some untapped opportunities. For example, some tranches are currently working on initiatives that will:

- Embed the Project Road Objectives into the wider business
- Improve the efficiency and effectiveness of meetings
- Improve the interface with third party schemes to achieve safety and whole life benefits
- Improve enterprise risk management
- Improve consistency, efficiency and quality of reporting across the business

To further embed the transformation across all parties, we identified an additional 50 leaders who, together with the original tranches, took part in bespoke training modules. These models focused on advanced practical tools to enable them to operate in a high performance collaborative relationship.

This half-day, focused training covered essential topics including:

- Understanding self and others
- Self-management and self-control
- Influencing for collaboration
- Managing difficult conversations
- Building effecting trusting relationships
- Problem solving tools and techniques

The training culminated in a final session that brought everything together using practical, real-life, challenging scenarios that all three parties have historically encountered.

The overwhelmingly positive feedback received from attendees underscores the programme's effectiveness, with attendance rates consistently exceeding 85% from October '23 to March '24.

These initiatives collectively underscore the commitment to fostering a culture of collaboration and high performance across the board.



# 9

## BECOMING CUSTOMER FOCUSED: DELIVERING OUR NEW CUSTOMER STRATEGY

Our customers are the reason we are here. Many of our customers use our network every day to enable their daily lives, and we are committed to continually improving their experience.

How we manage and maintain the M25 network has a ripple effect, impacting road users and those living close to the network directly and indirectly.

Our new customer strategy is a proactive piece of work, built upon in-depth research across the company and customer data analysis, to identify customer experience improvements and bring a new way of thinking to the forefront of our minds. This includes each and every person contributing to the operations and maintenance undertaken on the M25.

#### The need

Our top priority is improving our customer experience. Our customer correspondence data and externally available data through the Strategic Road User Survey (SRUS) indicates that there are trends in customer correspondence, especially when it comes to seasonal trends and topical issues such as litter and congestion.

In addition to our customers, we also have a strong desire to improve in the following areas, further justifying the need for this improvement strategy:

- Alignment to National Highways Customer Strategy
- Alignment to Project Road objectives
- Productivity gain as a result of more effective stakeholder relationships (e.g. quicker decisions due to improved trust)
- Indirect cost saving (e.g. less cancelled works due to limited community and stakeholder engagement)
- Hunger by staff to feel proud of what they do: satisfied employees = reduced attrition and enhanced productivity

#### Deliverables and benefits

2023 saw the development of our customer strategy. Our approach was to follow the McKinsey model and understand:

- 1 The present Where are we now?
- 2 Future Where do we want to be?
- **3** Activity How will we make this happen?
- 4. Embedment How do we make this part of our culture?

The following sections detail how we have covered each of the above.

#### The present - understanding current customer perception

To understand 'the present' we undertook thorough analysis of our customer data, which dates back to the start of the contract. As an insight, top customer correspondence trends network-wide since January 2020 are as follows:

- Diversions 16% of all complaints
- Potholes/surface issues 14% of all complaints
- Litter 12% of all complaints

There is also a cyclical nature to complaints e.g. we will receive more enquiries about litter in the winter when vegetation has died back, and litter is more visible. More recently, available SRUS data also provides us with information to determine customer sentiment. The key trends as reported, are as follows:

- Congestion
- Road surface quality
- Journey times
- Management of roadworks
   effective delivery
- Litter
- Signage
- Stakeholder communications

#### Who can make this change...

We needed to determine how every role in our organisation impacts on the customer experience. Only by doing this could we review the touch points and opportunities for improvement.

We conducted extensive sessions with representatives from across the business and developed a spreadsheet detailing role, customer impact and a RAG rating for each role based on their impact or power to enhance the customer experience.

This then allowed us to prioritise our activity and align it with our customer data to determine which areas should be tackled first to make the biggest difference. Having reviewed the data and RAG ratings, it was determined that initially we will work most closely with project managers, our service delivery team, and our roadspace team, in addition to a company-wide campaign to embed 'a customer focused mindset'.

#### The future - where we want to be

#### **Our customer vision**

As part of this customer strategy, we have developed the following customer vision: To become a customer-centric organisation, whereby everyone working on the M25 has an inbuilt customer voice. Employees will feel empowered, customers will feel a priority, resulting in enhanced satisfaction for all.

Our target is to reduce complaints by 30% through a considered and more proactive approach to the delivery of works.

We would also like to change the perception of the M25 network and improve on the key trends identified in the SRUS and our customer data.

#### Implementation - making this happen!

There are many customer focused initiatives already underway across the business, which will be built upon. These include:

NH Theme	NH definition	What's already happening
Better journey times	Journeys will take the time that customers expect them to. We'll improve the ways we manage road works, incidents and to enable safer, stress free journeys and help drive the economy.	Optimatics and Alchera - monitoring traffic flows to reduce impact; More collaborations so less closures on network; Roadspace accuracy so people can plan journeys
Better end to end experience	Customers will trust that we care about their journeys as they travel seamlessly across our network, using varying modes of transport and linking to local networks.	Part of coordination groups – e.g. diversion routes often enter local authority/TfL networks – how can we improve these to reduce complaints; Coordination with other major transport hubs
Providing better information	Customers will be better informed and have trust in the information they access, ensuring that they feel safe and in control of their journeys.	Notifying people in advance around disruption – comms team has sent approx. 30k letters to residents in 2023
A well maintained and safe network	We'll proactively maintain, operate and enhance our network to reduce disruption and help our customers feel safe.	E.g. digital twin = less time on ground causing disruption; Optimatics/collaborative closures/Alchera
Developing better relationships	Our customers, communities and stakeholders will know who we are and what we do. We will listen to them and understand what they want and need.	In some cases using customer data to listen to customers. Regular customers who contact us for issues to be resolved
Empowering our people	Everyone in our organisation and supply chain will understand how they can improve customer experience and be empowered to do so.	This customer strategy!

#### **Timeline**

- Launched at the PMO conference, presented to the CPS SLT and approval received.
- Attendance at monthly service delivery management meeting.
- Workshop with service delivery managers arranged.
- Development of business wide communications launch.

Activity	Progress
SLT Approval on strategy	Complete!
Develop implementation plan based on SLT feedback – prioritise based on impact/effort	Complete!
Develop comms plan to facilitate embedment Implement throughout 2024	Complete! In progress
Continually monitor progress and update based on feedback loop	In progress

There is extensive scope for the initiatives and ways of working within this strategy to be adopted across the SRN. This may be especially relevant for RIS 3 when there is more focus on maintenance activities as opposed to major improvement schemes.

We regularly engage with customer teams across National Highways, discussing improvements, customer trends and incorporating suggestions into the strategy.

The project has also been covered at a high level with the National Highways stakeholder team as part of the best practice sharing exercise being undertaken. It also formed part of our HELMA submission due to the extensive efficiencies that it will bring across the business.

#### Customer strategy improvements

The following improvements have been identified as a result of the customer strategy development.

Tailored training for business departments e.g. interacting with customers face-to- face, considering the customer in planning etc.	Training on customer interaction (including dealing with confrontation), key principles do's and don'ts.	Adapting approach to planning based on customer feedback.
Contact cards, enabling our site teams to pass on contact details for more detailed responses.	Clear process on logging information from site liaisons (importance of feeding back what was discussed during meetings so there is a record e.g. when meeting customer in garden etc.)	More regular and comprehensive sharing of customer data to identify ongoing improvements.
Customer induction for all staff – setting out customer approach and business culture / expectations.	RAG rating of diversion routes based on customer impact and inclusion of GG907 drive through record on all RS bookings prior to approval.	Regular attendance at PM forum to embed customer perspective.
Stakeholder engagement plan (inc overhaul of liaison procedures).	Inclusion of customer data during AMFP and works planning.	Customer checklist for PMs.
Customer tours of outside sites/ pedestrian diversions – mystery shopper using (GG107 form potentially).	Clarification of roles & responsibilities through project lifecycle specifically items impacting customers e.g. diversion route analysis and clashes, other roadworks on strategic routes that may disrupt journeys.	Training for designers on vulnerable groups for consideration in planning.
New approach to comms planning process to enhance accountability at every stage of the project lifecycle.	Identification of improved ways of engaging with customer groups.	Development of customer induction for new and current staff.
Live customer correspondence dashboard - key trends/visibility of customer data on GIS	Improved visibility of customer commitments register.	Tailored workshops discussing the customer impact for teams across the business.



# PMO

Communications

Service delivery

**Business wide** 

Those delivering face to face with customer roles e.g. inspectors

# 10 HEALTHIER HIGHWAYS ON THE M25

We recognise the need to improve worker health protection in line with our strategic themes of 'Promoting Health' and 'Leading in Safety'.

Through a collaborative partnership with Steve Perkins Associates (experts in riskbased health leadership and culture transformation) we have developed a strategic health leadership framework to improve the protection of health for all M25 workers. The framework has five pillars:

Engage	
Educate	
Prevent	
Manage	
Lead	



ENGAGE our people

to raise **awareness** of health hazards

by delivering an innovative awareness campaign across our supply chain



EDUCATE

to improve health protection **competence** 

by delivering relevant high-quality training, coaching and experience



**PREVENT** ill-health

to **protect** our people and our business

by ensuring accurate assessment and effective control of exposure risks



MANAGE health protection

to enable a <mark>sustainable</mark> workforce

by embedding appropriate policies, contracts & leading health metrics



LEAD our industry

to **improve** worker health protection in highways

by demonstrating and sharing good health protection practice

#### The need

Safety is both an imperative and a value for National Highways. There is rightly a strong focus on work-related accident prevention across the SRN, but much more could be done on workrelated ill-health prevention. The Health and Safety Executive estimates that each year 3,700 construction workers die from occupational cancer; there are 5,400 new cases of occupational cancer; and at any one time there are 69,000 construction workers with work related ill-health ranging from musculoskeletal disorders to lung disease, and noise-induced hearing loss to stress. Highways construction and maintenance involves a wide range of health exposure hazards including respirable crystalline silica, other respirable dusts and particulates, noise, vibration, welding fumes, isocyanates, VOCs, manual handling, diesel exhaust emissions, solar radiation, fatigue and stress. Unfortunately, awareness of these hazards and their associated health risks is generally poor across the industry.

We recognised that this situation needs to be addressed and embarked on work to begin the journey to 'value health like safety' across the M25 network with our Healthier Highways initiative, which was launched in 2020. Since then, the programme has expanded to the 5 pillars and spread to the wider South East region of National Highways.

#### Deliverables and benefits

Over the past year, we have continued with various initiatives aimed at promoting health protection. Through a combination of innovative strategies, targeted training programmes and collaborative research efforts, we aim to address occupational health concerns by enhancing awareness and fostering a culture of well-being among our workforce.

The following details some of the initiatives undertaken:

**Continued communication efforts:** We have maintained a focus on health protection across the community through regular distribution of Healthier Highways messages via a range of communications channels, including e-newsletters, forums, presentations and digital platforms. We have held lunch and learn sessions and made resources available to the community through our dedicated Teams channel, keeping health protection at the forefront of all discussions.

**Recognition of excellence:** Continuation of the quarterly best health 'Don't walk By' awards, has not only celebrated exemplary practices, but has also resulted in four excellent case studies being published across the community. This provides awareness benefits and examples of good health protection practice.

**Targeted training on musculo-skeletal risks:** In collaboration with CPS and HW Martin, we developed and trialled a specialised awareness training course aimed at managers and supervisors. The course taught delegates how to use the HSE's manual handling assessment charts (MAC) tool for their own assessment of MSk risk. The trial was overwhelmingly popular with attendees; 100% reported that they would recommend it to colleagues. Furthermore, it provided an understanding of improvements that could be made ahead of a broader implementation in the coming year.

**Guidance on implementing successful health protection interventions:** Innovations in processes, equipment, monitoring and systems are continually emerging for health protection. However, experience of introducing such innovations on site has been mixed. This piece of research looked at the reasons why new interventions fail and what we can do to give it the best chance of success.

Data was gathered both from the M25 community and also from the wider experience of qualified occupational hygienists in other industry sectors across the UK. The final guidance, published in May 2024, will enable future interventions to be conducted more rigorously and avoid a range of potential pitfalls.

**Tailored toolbox talk for managing dust:** Addressing specific challenges, such as road planing dust, we developed a toolbox talk and visual standards sheets specifically tailored for road planing work as a conclusion to the road planing dust investigations we have undertaken. This has been distributed across the M25 community to all surfacing and planing contractors.

**Dust investigation at Dartford:** The ongoing Dartford bearing renewals dust investigation work continued, as the engineering programme permitted. This year we completed and reported on the hazard characterisation of the road film tunnel dust in the invert, following an exhaustive series of analyses for different constituents. The overall conclusion was that silica is the main element of concern and an in-house exposure limit has been set for safe working, during the bearing renewals programme. This will ensure maximum efficiency of working is providing appropriate health protection for the workers in the tunnel invert.

**Comprehensive fatigue management study:** A fatigue management study was conducted across CPS and the framework contractors to establish a baseline for current policy, practice and procedures. The study included in-depth interviews with subject matter experts, and leaders within each organisation using a nine-step approach taken from the rail industry.

It was found that generally, organisations have well-established policies and there were some examples of good practice using new technology. However, gaps were identified with training and education of workers and management, and assurance of the supply chain. These gaps will be addressed in a follow-up workshop programme next year. Opportunities for further improvement include:

- Exploring accident investigation questions to ensure fatigue is adequately evaluated.
- Encouraging sharing of technology-based solutions and exceedance management processes.
- Integrating fatigue management measures into task-specific risk assessment and method statements (RAMS).
- Developing a fatigue management maturity matrix to enable benchmarking and support assurance of the supply chain.

**Mental health planning:** A significant exercise was undertaken to develop a mental health plan for the community, encompassing a stress risk register (SRR) at a community-wide level. This involved data gathering from focus groups, interviews and a review of the H&S 'Don't Walk By database'.

Results were presented at HSW community forums before going through a process of further refinement. We now have a published plan that includes recommendations for improvement in wellbeing, occupational health, occupational hygiene and monitoring aspects of mental health. The SRR has been adapted into a stress risk assessment template for use by individual organisations.

The benefit of this work is that it sets out an evidence-based strategy that everyone across the M25 community can access. It will help to promote well-being and mitigate work-related stress risks, underscoring our commitment to supporting the mental health of our workforce.

We are incredibly proud that the pioneering work initiated on the M25 has garnered national recognition within National Highways. The adoption of our Healthier Highways programme by the South East region for FY2023-24 stands as a testament to the effectiveness and relevance of the concepts and tools originally developed here. It's a validation of our commitment to innovation and excellence in promoting health and safety. This recognition underscores the scalability of our initiatives and sets a benchmark for best practice nationwide.

National Highways teams in the South East region under Regional Director Christine Allen are aware through their own Healthier Highways programme.

- National Highways SES under Mel Clarke (HSW Director) are aware of this work.
- The wider National Highways supply chain also have some awareness of Healthier Highways through presentations made by Steve Perkins at the National Engagement Council and a Home, Safe and Well webinar, during 2023-24.



### WORKING TO ELIMINATE SLIPS TRIPS AND FALLS ON OUR NETWORK

Across the M25 community, over the past four years, seven out of the last ten lost time accidents have fallen under the category of slips, trips or falls, with the corresponding lost time and RIDDOR accident frequency rates rising.

#### The need

We have a steadfast commitment to the safety and well-being of every member of our workforce. We firmly believe that every individual has the right to work in an environment free from harm, and we spare no effort in ensuring this standard is upheld. Through proactive measures, comprehensive training, and a culture of accountability, we aim provide and maintain a safe and healthy workplace for all, ensuring people have the skills and equipment required to work safely.

The road network is an ever-changing environment, one that is subject to many external factors. We, therefore, agreed that we needed to take a different approach mitigate the risk of slip, trip or fall injuries. It is also worth noting that many structures across the road network were constructed at a time when consideration was not given for safe access and egress during maintenance activities.

#### Deliverables and benefits

Returning to basics and employing the principles of prevention and ERIC (elimination, reduction, isolation and control), a safe access and egress working group was established in April 2023. The group's mission was to identify opportunities for improvement and drive initiatives aimed at reducing the risk of slips, trips, and falls, ultimately ensuring the safety of our personnel.

These are some of the initiatives we have undertaken as part of that drive.

#### **Assessment of risk**

We undertook a comprehensive assessment to evaluate all risks associated with accessing and egressing the 752 bridges on the Area 5 network. This thorough evaluation aimed to identify potential hazards and vulnerabilities present in each bridge's design and layout that could pose risks to our workforce during maintenance activities.

Following the assessment, 50 structures were identified as high-priority targets for intervention. These structures were deemed to present elevated levels of risk due to factors such as age, design limitations, or other specific characteristics that impede safe access and egress for maintenance personnel.

#### **Elimination of risk**

We are leveraging remote survey techniques to reduce the need for 'boots on the ground'. Use of this technology will improve safety and accessibility.



#### **Reduction in risk**

The construction of new access steps to existing structures recognises the importance of safe access to network infrastructure, particularly in environments where traditional access methods may pose significant risks to our workforce.

The decision to invest in this project, which was jointly funded by Connect Plus and CPS, reflects a proactive approach to mitigating potential hazards during inspections and maintenance activities.



#### **Bespoke boot fitting**

The implementation of bespoke boot fitting and enhanced ankle support are another of the proactive measures we're taking to mitigate the severity of slip, trip, or fall incidents. This initiative, starting at our Denham depot, marks the beginning of a full rollout across our operations.



The rollout strategy is designed to prioritise personnel based on their level of exposure to risk, ensuring those active on the network on a daily basis receive their boots first, followed by those with lower risk profiles.

The advantages of bespoke fitting safety footwear are many, and include:

- Improving long term health conditions with bespoke fitting
- Reduce the impact on spinal muscles
- Improving posture
- Reducing impact on the knees
- Reducing the impact to those who may have arthritis
- Improved cushioning ankle protection and support
- Inserts in heel and forefoot for shock absorption
- Footwear for women is manufactured differently to allow for the difference in female and male feet

#### **Control of risk**

We undertake start of year and safety standdown briefings. These sessions serve as vital platforms for promoting situational awareness amongst our workforce. By emphasising the importance of vigilance and alertness in these briefings, we empower our team members to recognise and respond effectively to potential hazards in their work environment.

#### Point of work risk assessment tool (POWRA)

The digital POWRA tool provides a comprehensive overview of risks across the network, allowing us to proactively manage areas with higher risk. The simple interface allows teams to easily assess and record risks at their location, while also uploading and storing images for future reference. This functionality allows anyone revisiting the location, for inspections or maintenance visits, to review the stored information and remain alert to any potential hazards.

#### **Raising awareness of the risk**

Over the past year, we've led an active campaign to increase the number of Don't Walk By's (DWB's) raised across the business. These DWBs serve as vital tools for identifying and addressing potential risks and hazards across our network, particularly those that could lead to a slip, trip or fall.

Research consistently shows that businesses promoting a culture of active DWB reporting experience lower accident frequency rates. By encouraging our workforce to raise DWB's, we not only enhance safety awareness but also significantly reduce the likelihood of workplace injuries, creating a safer and healthier work environment for everyone involved.

	<b>2024</b> (To end Feb)	2023	2022	2021	2020
Total DWB's Raised	1435	7959	6000	4923	3680

The above graph shows the relationship between the number of DWB's raised against the all accident frequency rate (AAFR) for the business, and follows the theoretical model.

#### Results

Over the period of the campaign, we've had a large reduction in the number of lost time accidents within the business, which has seen the RIDDOR accident frequency rate become 0.0 and the lost time accident frequency rate become 0.04 from 0.20 and 0.28 respectively.

National Highways have been kept up to date with the ongoing progress through the monthly RSPT Team meeting.

### Looking ahead

This section of the brochure highlights additional projects and innovations our teams are currently engaged in, some of which may be smaller in scale.

We anticipate that some of these projects will evolve and progress throughout the year and be featured more prominently in future submissions.

- 45 A digital forward look
- 46 Measuring social value
- 46 Vaisala road Al
- 47 Our M25 tree strategy
- **47** Improving conditions for women in service delivery



# A DIGITAL FORWARD LOOK

#### Data lake technology

To enable further improvements in the usage of data, we are implementing data lake technology. This will enable the integration of complex datasets from various source systems, including incident capture, road space booking, asset records and finances. The technology is built on the experience of CPS' parent company, Balfour Beatty, and uses cloud technology to host the data lake.

Data modelling is then used to develop curated datasets that can be used across the business within Microsoft Power BI, to develop dashboards and data insights by combining these data sets. This ensures sustainable development of data dashboards with regularly updated datasets, providing near real-time information for informed decision-making.

#### **Operational control hub**

To enhance incident response and network management we are initiating the implementation of an 'operational control hub'. This hub will feature a suite of live dashboards, enabling a small team to monitor operations and direct service delivery teams across the network. These live insights will help to plan necessary works and ensure compliance with contractual SLAs for identified defects.

The team, working closely together in a collaborative environment, will sit side-by-side, examining the dashboards. They'll be empowered to make quick decisions to enhance performance and meet performance targets.

#### **MEASURING SOCIAL VALUE**

During 2023 we have been adding the data to the Balfour Beatty sustainability portal. This is the first full year the data has been handled in this way, previously it was being processed directly with social value portal. The graphs below show some of the results of this data collection.

#### Spend



#### Staff development



#### **Community engagement**



The social value project continues to be challenging, however as data collection and submission become more streamlined, we can start to shift our focus to improving interactions with our communities. Despite these challenges, there have been some notable positives, particularly the volunteering efforts of our staff and the funds raised for charity. These are a significant contribution which go above and beyond our business as usual.

In addition, CPS now attends and contributes to the quarterly National Highways SEA people and social value working group. Through this we assisted National Highways with a project for a school in Kent, helping to create a tyre mountain for the children to play on.

The work in this area runs across our M25 community network, it's a collaborative effort that will show benefits over the next contract year.

#### VAISALA ROAD AI

Over the coming year, we will deliver a significant milestone: the regular use of an artificial intelligence based analysis solution for monitoring the performance of pavement assets, identifying defects, and categorising their severity within the Area 5 network.

#### These cutting-edge technologies hold immense potential to transform pavement asset management. They will provide us with accurate and near real-time information, significantly enhancing our understanding of the asset and our ability to address emerging risks proactively

In 2023, we conducted a series of successful trials using the Vaisala Road AI system. These trials, which took place in the strategic road network environment, were highly encouraging. They demonstrated the system's efficient operation and a strong correlation with our historical data sets obtained through traditional survey techniques.

On the back of these strong trial results, we are now proceeding with a full service that will operate alongside, and complement, our existing longstop, scrim and TRACS surveys. The road Al solution will utilise windscreen mounted mobile phone devices in our network inspection vehicles and provide weekly pavement condition and defect analysis.

The data will be collected weekly and analysed using automated self-learning algorithms that provide intelligence reports to the pavement asset team to understand the asset's performance, support effective decision making and enable us to deliver the optimal service to our customers.

### OUR M25 TREE STRATEGY

Although there are many trees on land around the network, we have never had a documented approach to tree management. We have therefore written a strategy that sets out our approach to a range of tree-related issues, and identifies specific deliverables over the next four-year period (2023-2027).

The strategy covers areas such as legislative requirements, a standardised approach to tree work, tree root protection zones and an ash dieback action plan (ADB).

Ash dieback affection							
Health classes	Photo	Canopy condition	Target rate score	Actions	Monitoring		
Class 1			Target rate score ≤ 3	No Action	12 months		
		100%- 76% of the crown remains	Target rate score = 4	No Action, potential removal of deadwood or crown reduction	12 months		
	SHALL SHALL		Target rate score ≤ 2	No action	12 months		
Class 2		75%- 51% of the crown remains	Target rate score = 3	No Action, potential removal of deadwood or crown reduction	6 months		
			Target rate score = 4	Remove	-		
Class 3			Target rate score = 1	No action	12 months		
	50%- 26% of the crown remains	Target rate score > 1	Remove	-			
Class 4	W.	25%- 0% of the crown remains	Target rate score = 1	No action	6 months		
			Target rate score > 1	Remove	-		

As this is a relatively new strategy we're only just starting to realise the benefits, such as a more nuanced approach to ash removal. For example, where less than 50% of the canopy has died back, the trees are not removed. We've noted that some ash trees are showing signs of resilience to the ash die-back pathogen, so we want to give them a chance to recover if at all possible.

#### IMPROVING WORKING CONDITIONS FOR WOMEN IN SERVICE DELIVERY ROLES

In line with our commitment to drive equality, diversity and inclusion initiatives across our business, a particular focus has been placed on the wellbeing of women working in our service delivery teams, and those from our supply chain.

To this end, we have launched a series of women in service delivery events, the first two of which have already taken place. The events provide both a learning opportunity element and an opportunity to network, but most importantly, they enable frank and open conversations about the challenges that being a member of a site-based, shift working, and under-represented group brings. The sessions are designed as an opportunity to provide feedback on how we can work better together to raise standards across the industry.

The first session had a particular focus on career development and as a result of the discussion, two women requested to have mentoring, which is now underway. We were also able to help another attendee change roles, enabling her development while retaining CPS talent.

The second meeting raised the need to address the PPE provision for women working on the M25. As a result, all female operatives have been invited to an event that will have suppliers present and able to equip all operatives with the appropriate clothing for their roles.

The plan is to continue running these events on a quarterly basis, and keep them action-orientated so that our female communities can feel the importance we are placing on their wellbeing and development.

Longer term, we hope to report more detailed results as more benefits are realised. We are also looking to share our findings with the wider highways industry and increase our community of female contributors.

#### Connect Plus

Connect Plus House, St Alban's Road South Mimms, Potters Bar Hertfordshire EN6 3NP

0203 386 8500 enquiries@connectplusm25.co.uk www.connectplusm25.co.uk

