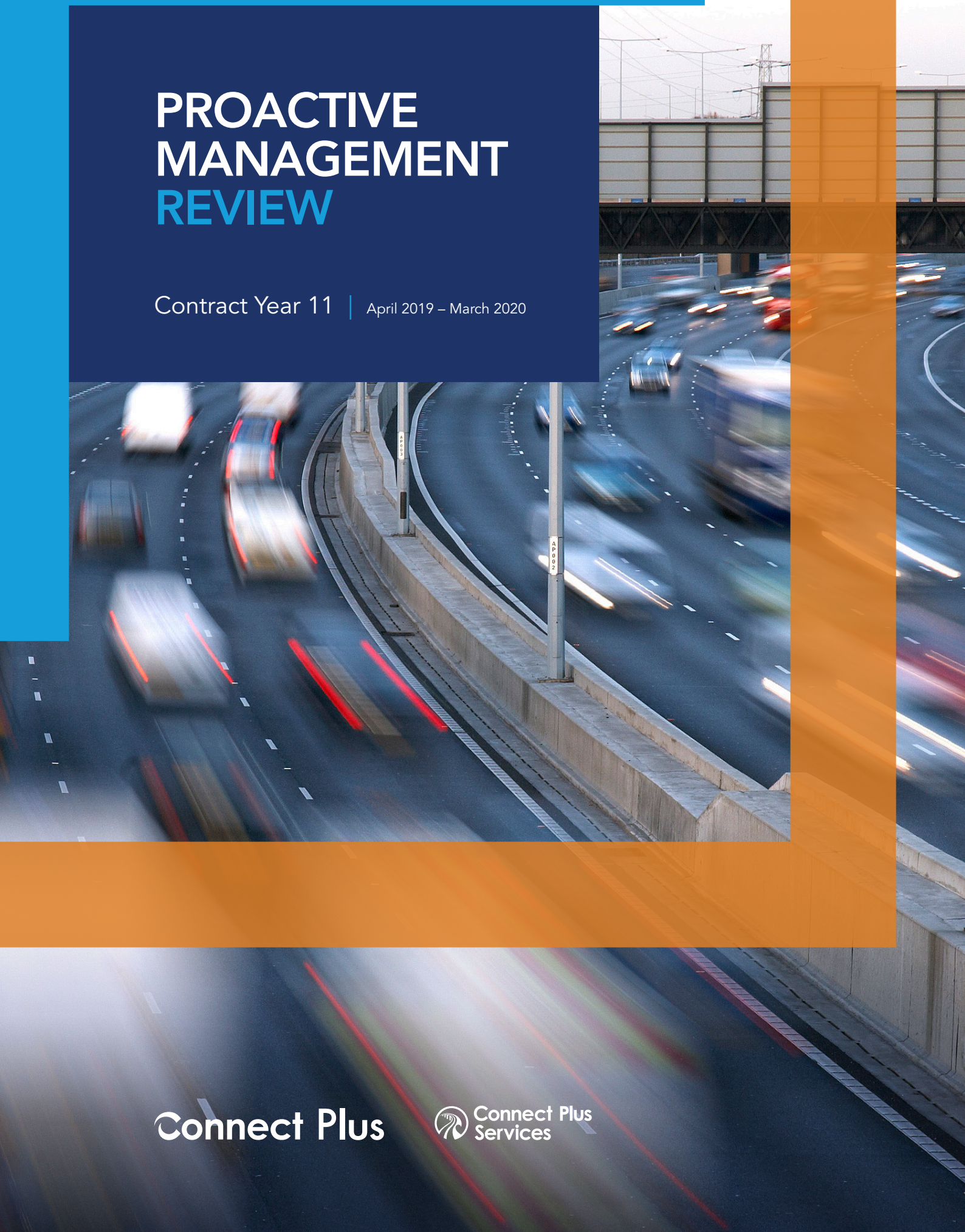
PROACTIVE MANAGEMENT REVIEW

Contract Year 11 | April 2019 – March 2020



Connect Plus

Connect Plus Services

CONTENTS

EXECUTIVE SUMMARY

To celebrate our 10-year anniversary, we have decided to produce this supplementary PMR brochure, in order to highlight the case studies that we are submitting to the PMR panel for this qualifying year (CY11 April 2019 – March 2020).

Also included is a progress update to some of the case study submissions from last year, and a snapshot of what we are considering submitting in the future.

Every year we are required under the Contract to submit Proactive Management Review evidence for the PMR Panel to review and score. The PMR is one element of the Payment Mechanism that aims to encourage and reward our commitment to managing and improving the Project Road through the adoption of best practice, innovation and new technologies. It also encourages us to:

- Understand the current and future political, economic, social, technical, legal and environmental influences that impact on the network and its safe operation.
- Understand and plan for the current and future needs of the Project Road and its adjacent networks.
- Develop and programme activities to enhance the Operations and the Project Road, and promote business and network improvements and solutions.
- Deliver enhancements to the Operations and the Project Road, and evaluate the benefits / improvements / solutions in a manner that benefits both our customers and the local communities.

Our systematic approach to innovation is led by the continual identification of innovative techniques, products, systems and tools that could contribute towards improvements across the business and the Project Road, including:

- New long life asset materials, including equipment research.
- New inspection, maintenance and operational techniques, including information technology.
- Environmental, sustainability and energy saving initiatives.
- Health, safety and wellbeing initiatives.
- Digital transformation.
- Adoption of ISO and Lean industry standards including whole life asset management and collaborative working.
- Network occupancy efficiencies.

Our approach continues to include evaluating, studying and trialling methods, products and techniques that:

- Have been used in the UK, but not before on the Project Road;
- Are in use internationally, but have not previously been adopted in the UK;
- Have not been used within the highways sector before.

To further formalise our approach to innovation, in CY09 we formed the Innovation Steering Group (ISG). The group is now well-established and includes representatives from Connect Plus, Connect Plus Services, our framework contractors and Highways England. The primary purpose of the ISG is to create and maintain a sustainable and supportive innovative community culture by creating the time, opportunity, tools, relationships and communications. A bespoke scoring system was introduced for all asset and maintenance based innovative initiatives in CY10.

In addition to the ISG we also have in place a Change Board who consider other innovations, ensuring we are constantly adapting and challenging the way we work, so that our business remains sustainable throughout the Contract.

The case studies included in each years PMR submission are just a sample of the many innovations, new products and industry best practices that we are continually assessing, trialling monitoring and adopting as BAU. The more we can share our learning from these innovations with our M25 Community and Highways England, the wider the potential benefits for the whole of the SRN and the travelling public.

It is anticipated that when we are able to demonstrate our ability to lead and set best practice standards, we will be acknowledged as an advisor to Highways England, providing sound stewardship of the M25 Project Road.

UPDATE FROM LAST YEAR

In this section of the brochure, we take a look back at some of the case studies we submitted in the last PMR and provide an update on how they are progressing.

We're continually exploring new and innovative ways to deliver safer, more reliable journeys for our customers. We're also dedicated to improving the way we work which means we're constantly looking at our existing tools and techniques and identifying how they can be improved.

- M1 Concrete Trial
- Bridge Bearing Replacement
- Road Mender
- Agile Assets – FieldGO
- Central Planning Office

M1 CONCRETE TRIAL CONTINUES TO PROVIDE VALUABLE INSIGHTS

The aim of the concrete surface treatment trials is to provide definitive data to assess the compliance and performance of a range of surface treatments for exposed concrete pavement.

The trial site is located on the M1 between junctions 6 and 5, and treatments are being undertaken using the following techniques:

- **Longitudinal Diamond Grinding** – the creation of longitudinal grooves using diamond tipped saw blades. The closely spaced blades cut longitudinal grooves at a pre-determined width and depth. This process follows the profile of the road surface.
- **Fine Milling** – making use of a standard planer with enhanced milling bits to enhance texture depth.
- **Shot Blasting** – an abrasive system that impacts the surface of the pavement with high velocity steel particles, improving the macro texture of the road.
- **Application of two types of thin surface course system** – one with a 35mm thickness of overlay and another, ultra-thin surface course system with a 20-30mm overlay thickness. Both will restore surface characteristics and reduce traffic noise.

UPDATE

The trials are progressing well and providing valuable insights on viable options. At the current time, the overlay treatments are the top performers for noise reduction, closely followed by longitudinal concrete grinding. We are closely monitoring this to understand how it could change over time.

We've received positive feedback from Highways England after presenting our findings. The trial is continuing and we look forward to ultimately identifying a sustainable solution to the management of exposed concrete on the strategic road network.

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BRIDGE BEARING REPLACEMENT

On the M25 we're pioneering different approaches to obtain optimal whole life from bridge components.

We understand that maintaining bridges is essential, so we have been pushing the boundaries to implement technically robust assessments, which will enable better use of resources across the SRN. In line with the national challenges relating to expensive bridge rehabilitation, we have developed an innovative solution for the assessment and replacement of bridge bearings.

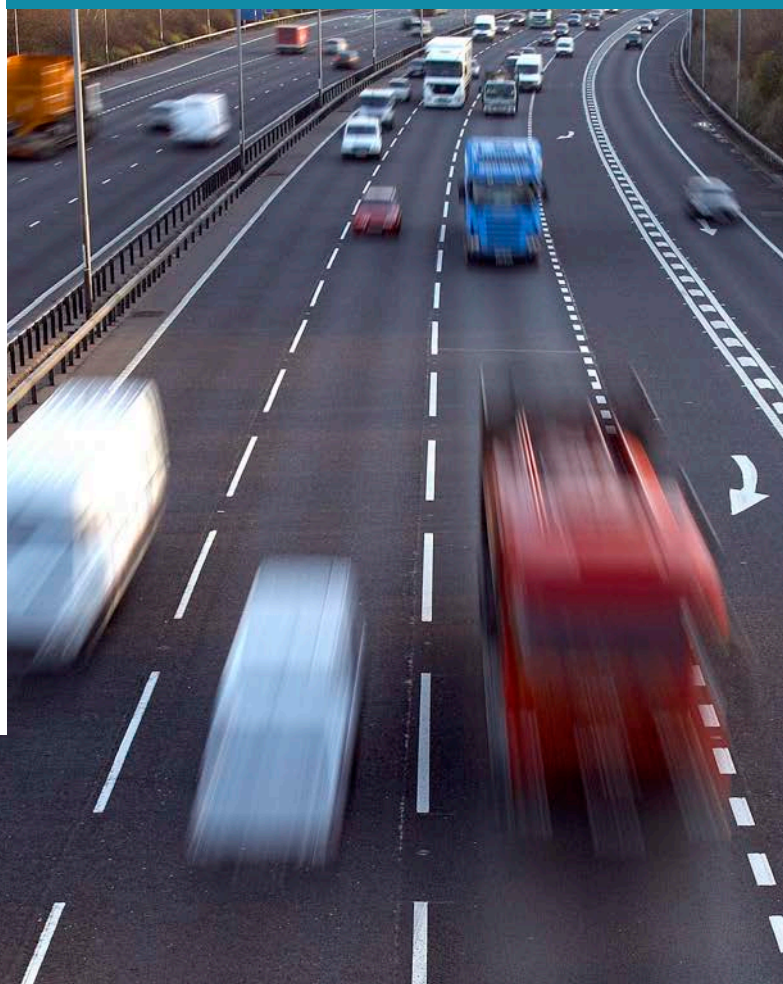
Historically, if a bearing was at the end of its theoretical service life, the default position would be a potential replacement. This is resource-intensive due to the temporary works required and that older bridge design (pre-CDM) tended not to include jacking points.

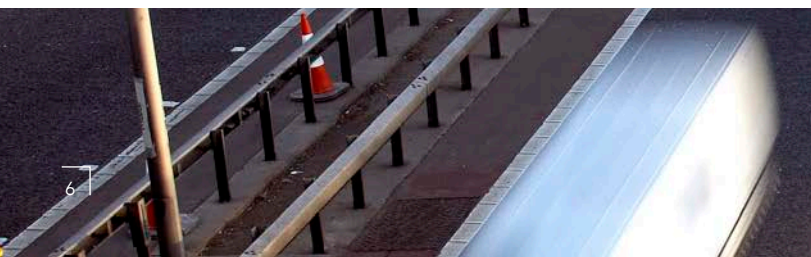
In response to this challenge, we have developed an approach to identify in detail the types and locations of bearings within a particular bridge to assess the in-service functionality of any particular bearing and whether the bearing actually does need to be replaced based on its role within the bridge structure. This approach involves characterising precisely the type and extent of deterioration present in order to define an intervention strategy for each bearing on the bridge. Different intervention scenarios influenced by inspection items are analysed and can lead to undertaking an intelligent live and dead load assessment, to understand the exact requirements of each of the bridge bearings, which in turn enables more informed decision making.

In 2019/20 this technology was used on Woodford Viaduct in parallel to another Digital Image Correlation Tool and confirmed the possibility to reduce scope, therefore generating savings on the works. This approach has extensive benefits, which include limiting the impact on the customer experience as a result of disruption caused by TM, reducing health and safety hazards associated with temporary works, and potentially delivering significant savings positively contributing to the national affordability challenge.

We continue to work closely with the supply chain to establish a strategic approach to identifying the appropriate intervention (treatments and/or protection) at the right time, that provides a real benefit to the service life of a bearing. A detailed network-wide strategy review commenced in 2019. The bearing "toolkit" has been further developed with Atkins to support understanding of the criticality and priorities for bearings renewal, and protection works across the Specified and Strategic Structures categories.

We're continuing to work with Highways England to further progress this approach and ultimately feed into a national Highways England strategy for bearing replacements across the SRN.





ROAD MENDER

The road mender was developed as the result of a Don't Walk By submission, which suggested a more efficient way to carry out permanent repairs on the carriageway.

It is a mobile and volumetric piece of plant producing good quality hot-mix asphalt for pavement defect repairs in all weather conditions.

Following a successful trial period, it has been rolled out across the network.

UPDATE

We have recently enhanced our in-house pavement patching capability, with the introduction of two infrared recyclers.

Working with the roadmenders, the infrared recyclers have two main advantages to the original design. Firstly, there is a significant reduction in the amount of break out needed in order to complete the patch. This means the exposure to HAVS for our workforce is much reduced, with the additional benefit of using less material to complete the patch.

The resultant patch is also of a much higher quality and therefore less likely to fail in the time between making the repair and before a major renewal scheme is undertaken.

The recycler heats the existing asphalt road surface to temperatures in excess of 150C. The heated surface is agitated with additional material added as required, and the patch is then rolled and sealed.

A typical patch will take 25 minutes to complete: 10 minutes to heat and 15 minutes to agitate, lay, roll and seal.

25 mins

A typical patch will take 25 minutes to complete.

AGILE ASSETS – FIELDGO

Following the decommissioning of Confirm and the implementation of Agile Assets, we have also invested in an app platform called FieldGO, as detailed in last year's PMR submission.

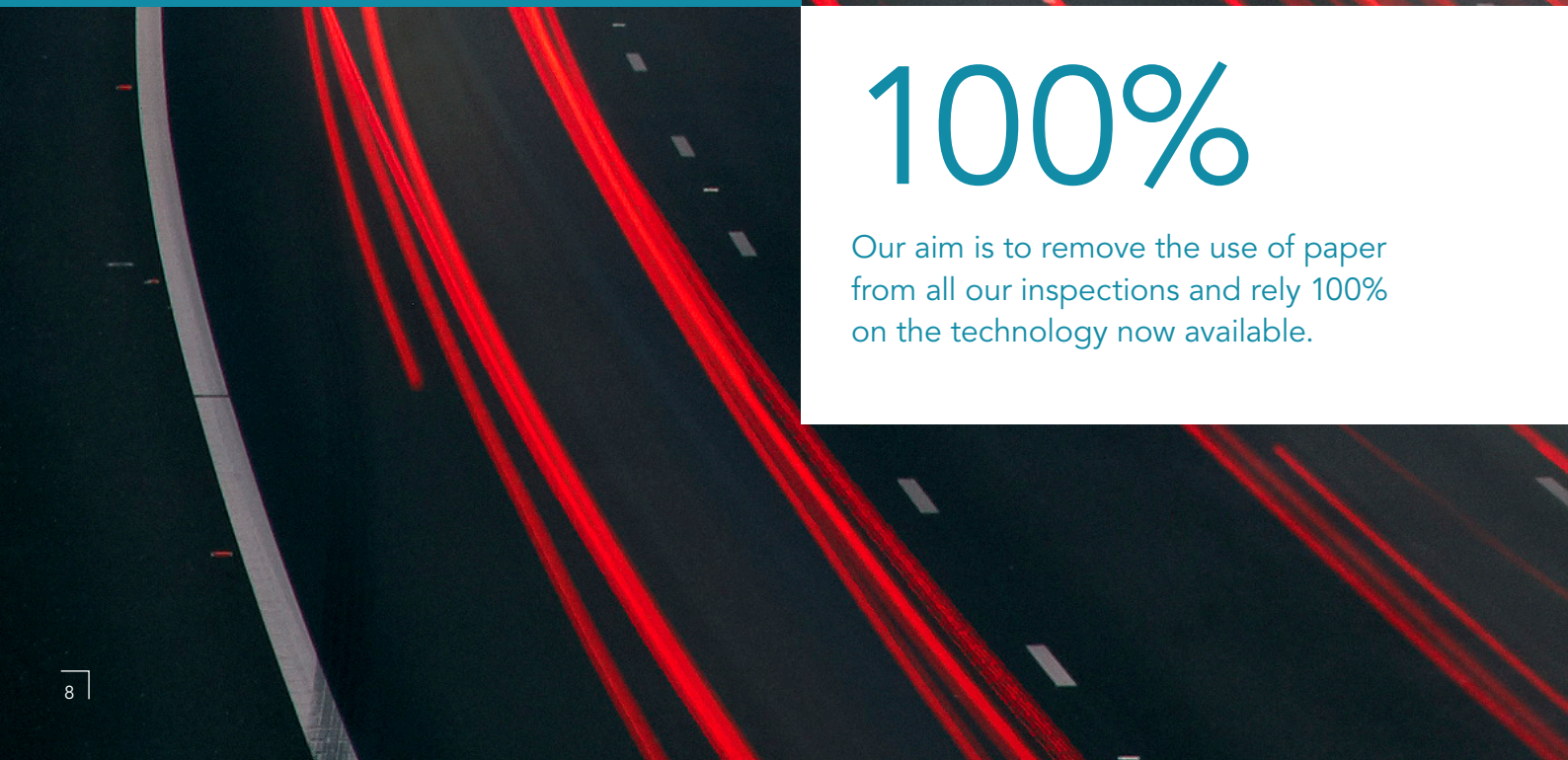
FieldGO runs alongside AgileAssets and enables direct data entry into our system through a selection of apps available on the FieldGO platform.

Equipping our on-site teams with mobile devices featuring the FieldGO apps, means images, location, coordinates, hazards, and positive and negative observations can be captured. This ensures a higher level of detail and accuracy, which pen and paper inspections cannot accomplish.

Thanks to the direct communication between AgileAssets and FieldGO, the data captured on site is quickly accessible to the rest of the business in near real-time.

So far, the FieldGO apps have been rolled out to support our Lighting and Structures Inspections teams and to support our Service Delivery teams with operations & maintenance defect detection, scouting and briefings.

Our aim is to remove the use of paper from all our inspections and rely 100% on the technology now available.



100%

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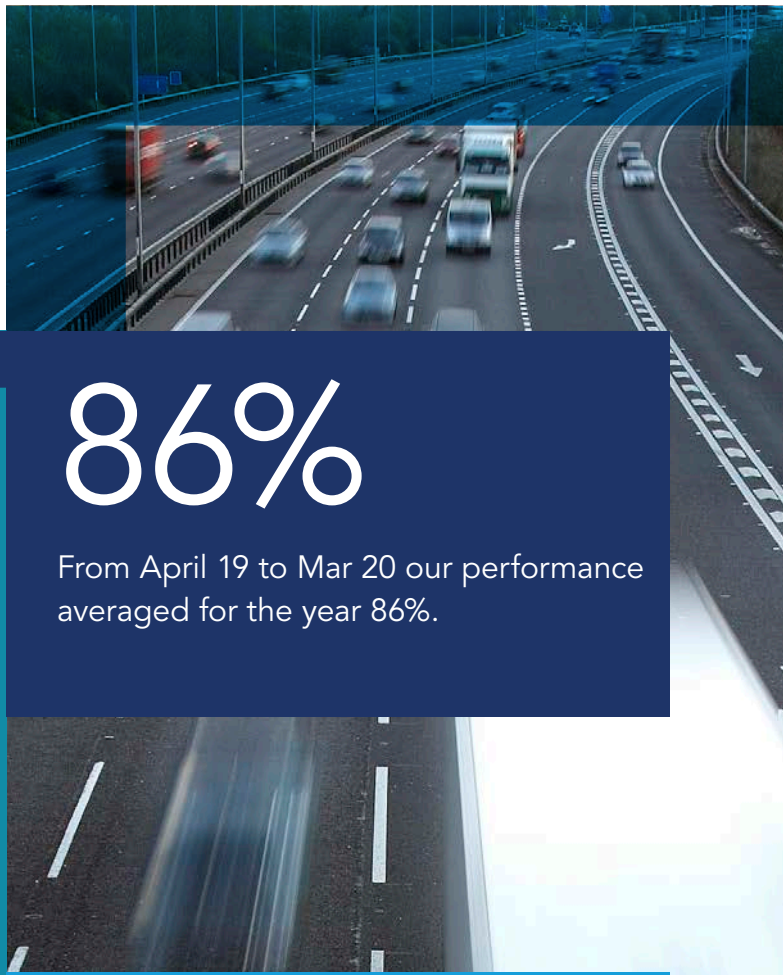
THE CENTRAL PLANNING OFFICE

The M25 network can be a challenging highways maintenance environment, with many specialist organisations undertaking work at any one time.

The network hosts over 73 million journeys per year, therefore, identifying opportunities for collaborative closures is essential in reducing disruption for our customers.

The Central Planning Office (CPO) was developed to encourage engagement between all stakeholders and across all works, including maintenance activity, ensuring road space is strategically planned and utilised.



UPDATE

This structured and collaborative working has enabled us to support Highways England by providing more accurate information regarding network closures, enabling our customers to better plan their journeys. Accuracy reporting is crucial to Highways England together with advanced notification of planned road closures. Both are key in enabling effective planning for our customers – be that for leisure or logistics purposes.

We've seen a significant improvement in our daily accuracy reporting. From April 19 to Mar 20 our performance averaged for the year 86% with a steady improvement in the last 6 months. For the first quarter of this financial year our accuracy rating has been consistently at, or just above, Highways England's target of 90%.

We know that we can improve on this further, and the CPO team have undertaken analysis of the data, to determine areas where the greatest amount of improvement can be gained.

During 2019 there were 1,158 coordinated closures, minimising disruption while maximising network availability.

Our workforce spent 59,000 fewer hours working on a live network, reducing handling of traffic management by 9,264 tons. The traffic management vehicles were accessed and exited on 138,960 fewer occasions, significantly reducing the risk of injury.

Coordinated closures are regularly implemented on the network to ensure the best use of roadspace.

86%

From April 19 to Mar 20 our performance averaged for the year 86%.

A recent coordinated closure highlighted the positive impact this approach can have. The closure saw lanes 4 and 3 of the M25 junction 3 to 2, closed and extended into the A282 East Tunnel closure, which was closed for routine maintenance. This resulted in our teams being able to strim 7,100m2 of grassland, collect 194 bags of litter, clean 160 gullys and sweep an area measuring 4,200m2.

THIS YEAR'S 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.

From using data analytics to inform our decisions about resurfacing, to building a safe habitat for a rare species of bee, these case studies give an example of the incredibly varied work we're undertaking.

- Using Data Analytics To Inform Seasonal Resurfacing
- State-Of-The-Art Thin Surface Course Trials On The Strategic Road Network
- Health, Safety and Wellbeing
- Social Value Baseline
- Sustainability Roadmap
- Nurturing Nature – An Insight Into Our Initiatives
- Project Shield II
- Lean Working

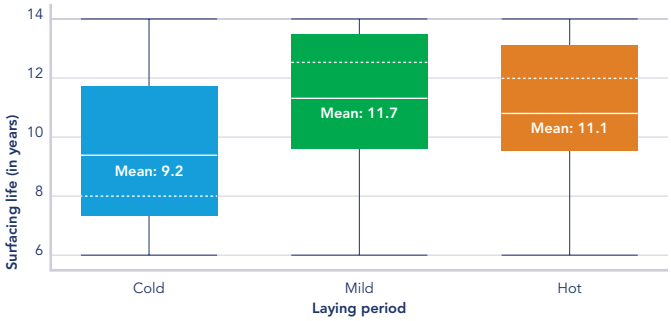
USING DATA ANALYTICS TO INFORM SEASONAL RESURFACING

Materials laid in adverse conditions, such as low air temperature and wind chill, are unlikely to provide the same serviceability and durability as those laid in ideal conditions (BS 594987, Section 6.2), and could affect the long-term performance.

Therefore, a study was conducted to acknowledge and quantify the impacts of weather patterns on pavement surface life, and also the long-term benefits that seasonal resurfacing could generate until the end of the DBFO contract.

As the UK is subject to important climate changes, building community climate resilience is imperative and implies the adoption of a flexible and proactive pavement strategy, embracing environmental laying restrictions.

Surfacing Life per Laying Period



This study was approved through our R&D innovation register process. Each year we analyse which projects we believe have the potential to succeed and bring positive outcomes to the contract, and so should be taken forward as a trial. We then include them in our Asset Management Forward Plan (AMFP), which is presented to our board for endorsement and funding approval.

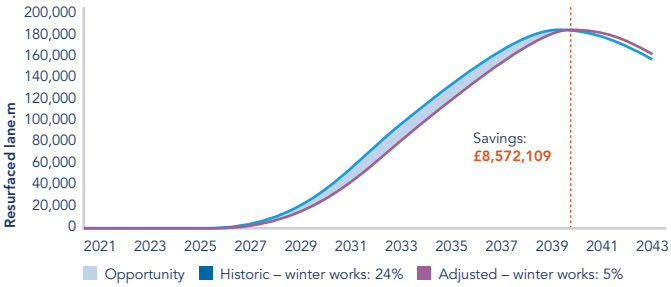
The study was conducted to statistically acknowledge the adverse impacts of winter laying. The results can be built upon to support asset management strategic changes and develop a climate resilient mindset at the community level.

A reduction in the number of pavement interventions on the SRN will have a positive impact on the disruption caused to the travelling public from the necessary road closures. In addition, fewer interventions will also result in financial savings, helping to improve the long-term sustainability of the contract.

Historically, circa 24% of yearly volumes of resurfacing were realised during cooler months – January, February, March, November and December. This represents on average 26 lane. km per year. In order to minimise these adverse works as much as possible, a step-by-step approach is required to build climate resilience within the Community, include and prepare all stakeholders (e.g., contractors), and bypass potential blockages (e.g., roadspace bookings).

A probabilistic-based business case was built to quantify the long-term benefits that seasonally adjusted resurfacing could generate until the end of the DBFO contract in September 2039. The business case compared volumes to be resurfaced until 2039 in baseline scenario (i.e., historic-based distribution) and seasonally adjusted scenario, considering the average surface service life of the given distributions. The seasonally adjusted scenario realises only 5% of volumes in winter and 65% of volumes in mild months and did not change summer volumes. At the end, using this model, operational and project management changes to enable seasonal resurfacing would generate circa £8.5m long-term savings to contract end, to which we could add a provision for Paymech risks.

Historic Scenario versus Seasonally Adjusted Scenario



Whilst the methodology we've used in this analysis is sound and robust, we are still in the early stages of the project and further refinement and development may be needed. Initial data will be shared with Highways England, with the long-term aim of applying this methodology across the rest of the SRN.

The results of this study will be presented to Highways England during our next quarterly technical meeting in August 2020. After this meeting and once the data has been finalised we will share with a wider external audience.

STATE-OF-THE-ART THIN SURFACE COURSE TRIALS ON THE STRATEGIC ROAD NETWORK, CONTAINING 50% RECLAIMED ASPHALT

Connect Plus continues to explore new and innovative techniques that will provide significant economic and environmental benefits to the M25 network.

The 50% reclaimed asphalt trial marks a step change in the use of reclaimed material on the Strategic Road Network (SRN), demonstrating that it can be used in the highest value application. In addition, by maximising the re-use of resources already available on the network, we're reducing the demand for precious, primary resources.

The trial has been subjected to significant testing to date and has demonstrated high levels of safety for road users. It is being continually monitored and subjected to significant traffic loading of more than 7,500 commercial vehicles per day.

The M25 has a proven history and culture of promoting sustainable surfacing solutions using reclaimed asphalt (RA). Several trials have been undertaken since 2007, with increasing levels of RA incorporated into surface course materials.

We were keen to minimise the environmental impacts of operating, maintaining and improving the SRN, and developed a business case for further increasing the levels of RA incorporated into surface course. Current specifications limit the percentage of reclaimed asphalt incorporated into surface course materials to 10%, however, our team designed and manufactured a surface course mixture that incorporates 50%.

Maximising re-use of resources already available on the network means a big reduction in the demand for primary resources such as high-quality primary aggregates and bitumen, providing significant economic and environmental benefits. We are committed to delivering Highways England's sustainable development action plan and a 'circular' economy.

High-quality polished stone value (PSV) aggregate is not just a natural resource, it's a precious one and is in short supply across the UK. The few quarries where it is available are some considerable distance from the M25 network, incurring substantial transportation costs. For the trial, we're using material which has been reclaimed from the M25 and stored locally.

We initially undertook investigations to identify suitable "donor" sites on the M25 in accordance with best practice. This was followed by detailed processing, characterisation of the RA and an extensive mix design process conducted by our supply chain.

High-quality polished stone value (PSV) aggregate is not just a natural resource, it's a precious one and is in short supply across the UK.

In order to deliver the trial, we had to overcome a number of technical challenges relating to the assessment of the reclaimed asphalt (RA), to ensure the durability and skid resistance of the new surface course. Our innovative approach determined the performance characteristics and long-term durability, giving Highways England confidence to approve a Departure from Standard.

The surface course was successfully produced at one of the leading plants in the country, with the process conducted to the highest quality standards. All aspects of the donor site selection, RA processing, production and installation were conducted in accordance with the manufacturing plant's quality management systems and quality plan.

In September 2019, the state-of-the-art thin surface course containing 50% reclaimed asphalt was installed between junctions 26 and 25 on the M25 – the first using 50% on the SRN.

This innovative trial has delivered a carbon footprint saving from a reduction in the primary aggregate required, a reduction in bitumen imported and extensive transport savings. In addition, by using aggregates already available on the network, we have generated cost savings which can be reinvested into the M25.

A reduction in the use of primary resources has generated a:

50% reduction

in high PSV aggregate demand (limited resource)

61% reduction

in Polymer Modified Bitumen through utilisation of bitumen from the RA

58% reduction

in embodied carbon

We have significantly reduced transportation through the use of existing RA on the M25, therefore:

Eliminating 730km of shipping associated with aggregate importation.

Eliminating 38km of road haulage.

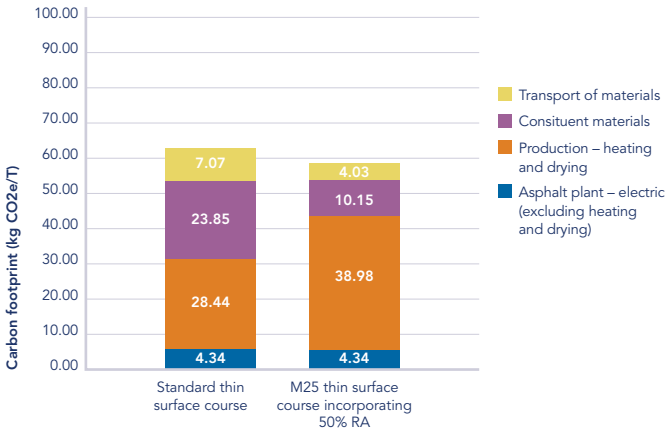
Reducing shipping associated with bitumen importation.

Reducing carbon footprint associated with transportation by 43%.

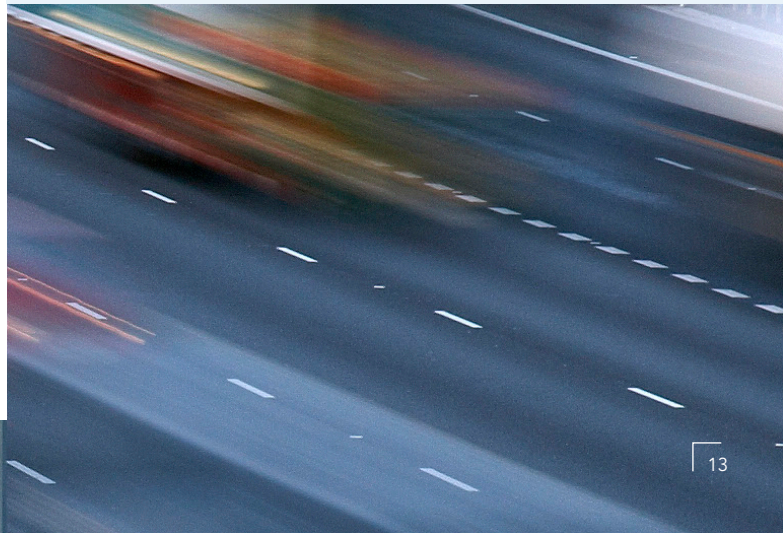
In September 2019, the state-of-the-art thin surface course containing 50% reclaimed asphalt was installed between junctions 26 and 25 on the M25 – **the first using 50% on the SRN.**

Carbon footprint calculations using the industry endorsed asPECT calculator demonstrate a 9.46kg CO2e/T saving compared to traditional mixes, as detailed below.

Carbon Footprint Benefits (graph excludes future recyclability)



9.46kg CO2e/T saving measured using asPECT.



Analysis undertaken after one year in service demonstrates equivalent skid resistance to the control, with data indicating that the texture, ride quality and durability is consistent or directly comparable to a surface without reclaimed aggregate. The finished surface is also visually the same as any other on the network and unnoticeable to road users. The surface complies with the end performance requirements of the Manual of Contract Documents for Highways Works 942 (MCHW 942).

As an additional benefit, we've helped to protect and enhance the quality of the surrounding environment by reducing the demand for primary materials at quarries and refineries.

We are closely monitoring the performance of the trial and will be producing a report for review. This will be shared with Highways England and, if successful, we're confident it will be used in other areas across the SRN.

The trial was a winner in the CIHT/ Ringway Climate Change Award and was a finalist in the Highways England awards, supply chain category.

HEALTH, SAFETY AND WELLBEING

Given the undisputed importance of health, safety and wellbeing, we have taken an industry-leading approach to develop a collective M25 Community-led health, safety and wellbeing strategy, which has been rolled out across the network.

Through the embedment of this strategy, we have already achieved several successes. One of the successes is a series of unique safety innovations, which wouldn't have been possible without this approach and are now being trialled on the Strategic Road Network.

This unique strategy focuses on a number of core areas including safeguarding our depots and sites, leading in safety, promoting health and wellbeing, learning from incidents, planning safety and engaging our customers.

The importance of health, safety and wellbeing across the M25 Community remains our number one priority. By continuing to bolster our approach to instilling this mindset, we strive to create a trusted, safe and supportive environment for all employees.

It is essential that we bring our ideas, perspectives, thoughts and innovations together to develop solutions to support this ethos. All of the innovative solutions that we develop must go through our innovation process. This process includes approval by the innovation board, culminating in being granted innovation funding to further develop ideas.

INFLATABLE SAFETY BARRIERS

Our collaborative approach supports developing new products and systems. An example of this is the development of a new inflatable barrier system.

During the past 12 months, 172 incidents involving traffic management (TM) incursions were recorded on the M25, one of which was a serious high-speed incursion in a Tarmac worksite.

This led our community to develop a suitable replacement for the existing lightweight plastic airlock system was developed, that would offer a greater visual deterrent and reduce worksite breaches.

The barriers developed are made from grey, heavy-duty plastic to maximise their lifespan and withstand significant impact, while giving road users the impression that they are rigid. They are 1.2m in height and 3.8m wide – the width of a standard lane. They can be joined together by strong Velcro where multiple lane closures are required. The units also have sandbag pouches to add weight, which allows for easy removal and storage when not in use.

Each unit has an inflation pipe to connect to a second or third barrier if required, allowing one flow of air to fill all connected units in one go. Inflation takes 2 minutes per barrier and the sections weigh c.25kg, allowing them to be transported using standard Traffic Management vehicles. This saves the need for additional transport and mitigates the associated carbon output.

The lightweight barriers also minimise manual handling requirements involved with installation and therefore the risk of injury to our workforce.

The design of the extra thick base allows the unit to be dragged without causing damage, for instance, when emergency vehicles require access through enclosures. The inflatable barriers can be curved to accommodate grassy verges on the sides of the carriageway and the central reservation, making them suitable for use anywhere on the network.

As the units are modular, they can be repaired or replaced without having to change the entire system. They have a comparable lifespan to the existing plastic barriers of c.3 years.

The inflatable barriers offer concrete-look barriers for a fraction of the price of a real concrete block. In addition, they offer reduced costs associated with the installation of a concrete block, such as mitigating the need for a low loader for delivery.

We really do believe that this system will make a difference and help to reduce the number of traffic management incursions. Where a member of the public would previously move a barrier, or risk driving through the plastic airlock system, these imposing inflatable barriers greatly minimise the chances of this happening.

Currently the inflatable barriers are only being utilised on the M25, however they are being further developed as we work towards a wider commitment on providing the industry with a safer alternative to conventional barrier systems. Once the design is finalised it will be shared with the wider highways industry.

GADE VALLEY

Our Gade Valley site is an unusual construction project with our teams undertaking difficult and challenging work in confined spaces. Thinking about the long-term effects of dust inhalation, the team are using air-fed helmets rather than regular disposable dust masks. It's a fully integrated powered air respirator, that offers four of the highest levels of protection in one head-mounted unit. It gives the wearer complete above the neck 4 in 1 protection against dust.

This aligns with our healthier highways campaign in the fight against respiratory diseases associated with dust inhalation and is a great example of using the latest technologies to protect our teams.

Because of the unusual working environment and the need to monitor the location of lone workers, a connected safety device is also being used on site. Designed to provide real-time information to enable a quick and efficient response in case of an emergency, location beacons are positioned within each section of the structure, as well as on the scaffolding. The system can detect a range of events including location, lack of movement and sudden impact in the event of a collapse or fall. The device also incorporates a panic button and direct communication to the rescue team, together with gas detection equipment for confined space working.

CONNECTED ROADWORKS

We have introduced 'connected roadworks' such as smart taper and real time beacons to our network. This system connects traditional traffic management (TM) equipment to the internet, allowing it to be monitored in real-time. If the taper is struck or there's an incursion, the crew will immediately be alerted. The data the system provides, also provides information regarding roadwork installation time, and the average speed of traffic travelling through the works. This system is now being used on all full closures operated by our One Community framework.

In addition, we're trialling illuminated signs to increase visibility on the approach to road works and at the site access.

So far, we've received positive feedback from our supply chain in the areas where these have been installed.

KNOWLEDGE SHARING

Knowledge sharing is fundamental to increasing awareness of and helping combat safety risks. One of the benefits of our collaborative approach to health and safety has been the forums and working groups that have been set up. Our Traffic Management working group was set up to help reduce TM incursions and develop a suite of best practice measures that can be used across the M25 community.

We're proud to say it's been a great success and is a fantastic example of our community working together.

As a result of the group, we're now working closely with Highways England Regional Control Centre at South Mimms, to use the overhead gantries as signalling during roadworks, in addition to looking at more effective alternatives for diversion route signage.

SAFETY STAND-DOWNS

In January 2020, the M25 Community came together to hold a joint, One Community safety stand-down event. The day-long programme was held over four locations around the M25 network.

A total of 301 people attended the event including representatives from Highways England, Connect Plus, Connect Plus Services, our supply chain partners and the framework contractors.

The day was split into two sessions with the first consisting of a series of presentations looking at:

- Safety statistics across the network.
- Protecting health – our healthier highways campaign.
- Mental health and wellbeing.

After lunch the group was split into 4 smaller groups, each attending 4 break-out sessions.

- Break-Out Group 1: Healthier Highways.
- Break-Out Group 2: Back to Work Basics.
- Break-Out Group 3: Golden Rules.
- Break-Out Group 4: Traffic Management – Minimum Standards.

We ended the day with a discussion around safety innovation, finishing off with questions and feedback.

Throughout the day attendees were able to contribute using Slido, an easy to use Q&A and polling platform. This allowed the speakers to ask questions and get immediate feedback, as well as giving attendees the opportunity to comment on what was being discussed.

With regard to the safety stand-downs, we received fantastic feedback from all those who attended the event. In particular the mental health and healthier highways sessions were very well received with good engagement and questions, helping to raise awareness of the issues. Following the launch of the healthier highways initiative, over 100 attendees signed up to receive further information and expressed an interest in in becoming healthier highways champions. We have also started to see a gradual increase in the submission of health related Don't Walk Bys, which we believe are attributed to the launch.

TM incursions impact everyone who works on a live network and this was a big area of focus in terms of discussion and feedback. More and more solutions are being trialled, more full closures are being utilised and following the event and feedback we'll be reviewing our TM strategy.

Another important area that came out of the discussions was around tackling fatigue and the broad range of tools used throughout the community to manage this issue. Moving forward, companies agreed to share best practise and come together to develop a one community standard.

Attendees felt very strongly that the community should use a common induction platform. Following the event this has now been escalated to the Connect Plus strategic forum. In addition, Highways England recently announced a renewed interest in introducing the HE Induction Passport.

Given the positive feedback the event received, we recognised that getting everyone together to discuss community-wide issues was incredibly powerful.

The event had such a positive impact on those who attended that we are not only in the process of planning the next one, but are also aiming to use a similar format for other areas of the business.

Overall, the culture of safety within the community is changing. More incidents are being recorded as awareness grows and as a result, over the past year, we've seen a reduction in the number of LTIs and RIDORs.

We work closely with Highways England in developing our health and safety innovations, and the majority of them feature in our monthly newsletter – Motion.

Those initiatives that are currently being trialled will be shared with a wider audience once the findings have been established and a decision has been made on the future progression of the innovation.

SOCIAL VALUE BASELINE

The purpose of measuring the M25 project's Social Value is to effectively demonstrate our contribution to society through our projects and establish a structured process for target setting, measurement and reporting on social, economic and environmental impact.

We have been working to achieve a consistent and replicable approach with robust KPIs to understand and manage the positive legacy we are able to leave in local communities.

Measuring our Social Value allows us to understand and manage the contribution that our organisation and supply chain make to society, according to the principles laid out within the Public Services (Social Value) Act 2012. Our social value approach aligns with Highways England's imperatives as follows:

Safety: Measures within our social value plan identify our commitment to work practices that improve staff wellbeing, recognise mental health as an important issue and reduce absenteeism due to ill health.

Customer: Measures included identify our commitment to increasing work placements and apprenticeships, with a focus on those who are not in employment, education or training (NEETs) and rehabilitating young offenders. There are also measures for the amount spent with local and small to medium sized enterprises.

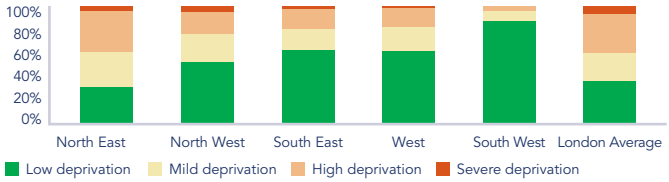
Delivery: Measures included identify our commitment to a reduction in waste to landfill, operational carbon emissions and water use.

ESTABLISHING A BASELINE

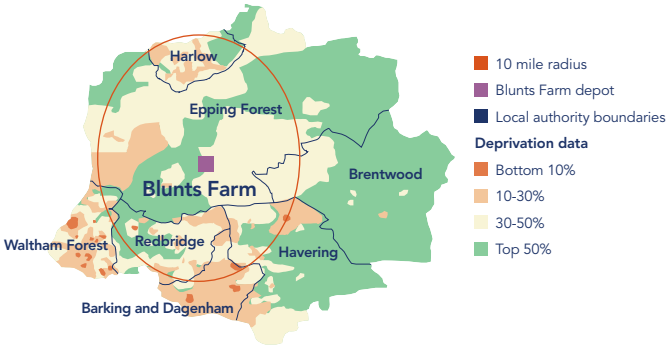
The Social Value baseline for Connect Plus Services was established in summer 2019 – this was valued at £14.4million of social value. The data collected to determine the baseline is from January 2017 to the end of June 2018. We are currently collecting the data for the last 18 months (up to the end of 2019), which will add to the baseline.

To enable us to accurately focus our efforts moving forward, deprivation levels have been calculated for a ten-mile radius around each depot. Deprivation levels differed depending on the depot location, as shown below:

Deprivation within a 10 Mile Radius of Connect Plus Services M25 Depots



We found that Blunts Farm had the highest level of local deprivation. The deprivation levels were then broken down by local authority for each depot, an example is shown below for Blunts Farm:



By identifying where there are areas of greatest need around the M25 network, we will now look to develop a process to target our measures where there is most need.

PLANS FOR THE FUTURE

Now that we have developed a baseline, comparisons with other projects will be possible and a target can be set to improve the social value target. The target will be defined as part of the 5-year strategy we are working to finalise across the business. This will encourage a business wide commitment to enhancing our local communities for years to come.

Based on the first set of data the CPS Board has approved another 3 years of investment in the Social Value Portal (the tool used to calculate the value delivered) and subsequent initiatives.

We have already been undertaking social value activities around the network as we understand the value this brings to our local communities. Now we have a baseline, we will work to further target deprived areas moving forward. Here are some examples of our contribution last year.

MARCH 2019

World Water Day: A Shower timer was distributed to staff to raise awareness on water consumption.

'Not a Plastic Cup' Initiative: We substituted plastic cups for 'I am not a plastic cup' tumblers, which are made from renewable cornstarch. Made from this renewable resource, they give off no toxic chemicals associated with conventional plastic and in addition they have been certified compostable.

APRIL 2019

Local schools – Year 8 Options Carousel: Members of our Environment team participated in the Year 8 Options Carousel at Wilmington Academy, to promote CPS and the career opportunities in our industry.

Crisp Packet Recycling Scheme: We have joined forces with Highways England on the journey to reducing the impact of packaging.

Diabetes training: Working collaboratively with a first aid training company, specialising in dealing with diabetic episodes, training sessions were delivered to our staff to equip them with the skills to confidently assist someone, whether at work or home, experiencing a diabetic episode.

MAY 2019

Mental Health Awareness Week: The communications team delivered a campaign to the business aimed at bringing topics such as healthy eating, sleep, exercise and mindfulness to the forefront, and encouraging our staff to 'start the conversation'.

Buzzing About Bees: May saw our Ecologist, host lunch and learn sessions around the network exploring the ins and outs of the world of bees. During the Lunch & Learn sessions, attendees got their hands dirty making seed bombs (a mix of wildflower seeds, sifted soil, clay and water) and created hibernation and nesting spots for bees by tying a bundle of canes together.

Social value activities delivered in contract year 2019-20.

We have already been undertaking social value activities around the network as we understand the value this brings to our local communities. Now we have a baseline, we will work to further target deprived areas moving forward. Here are some examples of our contribution last year.

JUNE 2019

International Women in Engineering Day: As part of International Women in Engineering Day, the global awareness campaign to raise the profile of women in engineering, we visited the Leigh UTC and Wilmington Academy, in Dartford. Our female Business Improvement Lead, and female Leatherhead Operations and Maintenance Manager, visited both schools to speak to groups of female students about the roles available in our industry and how a truly diverse workforce can transform the future.

JULY 2019

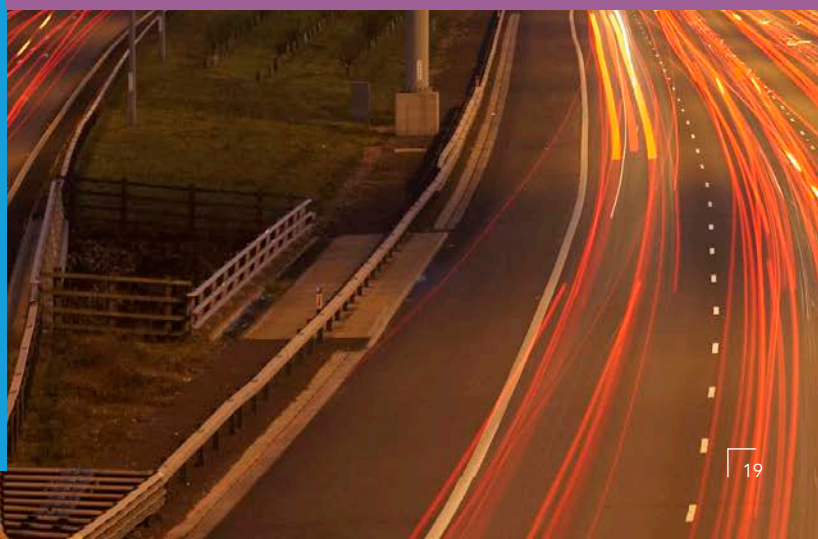
Mock Interviews: We took part in a mock interview exercise with Year 10 students in Therfield School, Leatherhead helping them to prepare for the world of work.

Leigh UTC Careers Convention: The Young Professionals Group attended the Leigh Academies Trust Year 10 Careers Convention, near Dartford to speak to school pupils about their future career choices.

AUGUST 2019

M25 community challenge: For 4 weeks our M25 community was challenged to exercise and raise money for two charities in celebration of our contract's 10-year anniversary. Together we raised £4236 and collectively exercised a distance of 13,114km!

Earlsmead School Project: As part of our Adopt a School Initiative, our Scratchwood depot engaged with Earlsmead School to turn an overgrown area of the playground into an area where the children could learn and play.



M25 Retrospective Measurement 2017-2018

£14,477,626
Total Social Value

An additional **13.71%** of social value on top of the contract

Improved Staff Wellbeing Social Value Add	Apprenticeships Social Value Add	Local Supply Chain Spend Social Value Add
£79,787 SVA	£119,986 SVA	£14,217,543 SVA

Delivered between 1st January '17 and 30th January '18

Employment, Skills & Local

676 weeks Apprenticeship opportunities on contract, levels 2 & 3

50 weeks Training opportunities on contract

Supporting Local Business & Economy

£18,397,454 total local spend
£15,758,937 total local spend
£5,338,010 total local spend

Employment, Skills & Local

19 people Participated in diversity training

1 NEETs employed on contract

18% Female staff on contract

Protect our Environment

440.67 tCO2e
Reduction in carbon emissions

100%
Suppliers commiting to the Balfour Beatty Procurement Policy

Community Engagement

Time invested in staff wellbeing	795 hrs
Volunteering in the local community	200 hrs
Local school/ college visits	34 hrs
Supporting young people into work	6 hrs
Investment in local charities	£1,620

Connect Plus Services, M23 2017-2018 Report | 01/03/2019

SEPTEMBER 2019

Paddleboarding: The YPG went Paddleboarding around Paddington Basin in September, where the group to carried out litter picking, and contributed to keeping the waterways of London clear.

Atkins Early Career Forum: The YPG hosted the Atkins Early Careers Forum in Dartford, where our teams talked about what it is like to work on the M25 project and all the amazing projects we deliver. The group also took the opportunity to visit the Dartford tunnel and QEII Bridge making this an even greater networking experience.

National Inclusion Week: An awareness day campaign was delivered business wide, discussing the importance of diversity and inclusion in the workplace.

OCTOBER 2019

MacMillan Coffee Morning: Continually supporting MacMillan coffee morning in our depots and offices.

Investing in our team: The YPG organised a training day on Effective Interaction, which took place in Dartford. It was a great opportunity to gain new skills and techniques, which will support their professional development.

DECEMBER 2019

Euston Food Bank: Our volunteers had a productive day supporting the Euston Food Bank, stacking shelves and sorting food donations in the lead up to Christmas.

JANUARY 2020

Awareness Weeks: signs and support: In January we delivered an awareness campaign on Breast Cancer awareness and Cervical Cancer awareness week.

FEBRUARY 2020

Leigh UTC Apprentice and Careers Event: Our Structures team represented the M25 at the Leigh UTC Apprenticeship and Careers event, allowing students to ask questions and be inspired.

MARCH 2020

International Women's day: A series of interviews with some of our inspiring women across the M25 were captured and shared across the community.

Maths 25: A member of our structures team brought a really engaging activity to our Dartford adopted school. The children had to work as a team and build a bridge keeping both sides perfectly balanced! It was a fun way to learn about the application of maths, numbers and shapes in the real world, as well as the importance of good communication and teamwork.

School engagement: Our Scheme Development Manager had a wonderful time inspiring the children at Thorpenede Primary School. He said that "the feeling of 'giving back' is amazing, everyone should do this."

Hidden Disabilities – Living and working with a long-term disability: Our Third Party Works coordinator, kindly shared her story of living with a disability with colleagues at her Hidden Disabilities talk, raising awareness and understanding.

SUSTAINABILITY ROADMAP

The aim of the sustainability roadmap is to set out the sustainability objectives for the M25 network, and to ensure all parties involved in the contract are working to the same plan.

It supports us in upholding our environmental and social responsibilities, whilst at the same time maintaining a healthy business.

The roadmap is reviewed on a yearly basis, however, the overarching design and the strategy that supports it, has been re-written in contract year 11 to ensure it is relevant to the business, the industry and all parties contributing to the DBFO.

Sustainability is becoming the focus of many companies' agendas as we learn the importance of our environmental and social responsibilities beyond business as usual. A good sustainability plan is structured to represent the UN sustainable development goals, which ensure that every aspect of our work can be analysed and improved upon.

Safety is represented in development goal 3 on the roadmap – good health and wellbeing. This translates to a business that nurtures employees mental wellbeing, putting huge importance on promotion of good mental health for everybody working on the M25.

Our customers are the focus of multiple goals and actions, including reducing the number of environmental incidents and designing new ways for scheme designers to reduce the carbon that their projects produce.

Delivery of the M25 DBFO maintenance contract has been elevated in this contract year with the introduction of the measurement of social value. This is to ensure that in multiple ways our customers are at the forefront of our activities, resulting in higher community engagement in the geographical areas that need it the most.

One of the actions, deemed to be a focus for the community, was analysing the carbon return data. This would enable us to create meaningful targets for reduction, create carbon assessments for our schemes and devise a training plan to be delivered to all staff across the M25 network.

The new strategy and roadmap have been approved by Highways England and the community continues to work on all of the measures. We're in the process of developing a dashboard that will help us to communicate and better understand the complex and vast data that is being collected in relation to our schemes. This dashboard will allow analysis, and therefore target setting, to be realised.

A carbon assessment form has been designed and is currently being added to the appropriate software for future use, and work also continues with various disciplines to adjust the assessment for each scheme as appropriate.

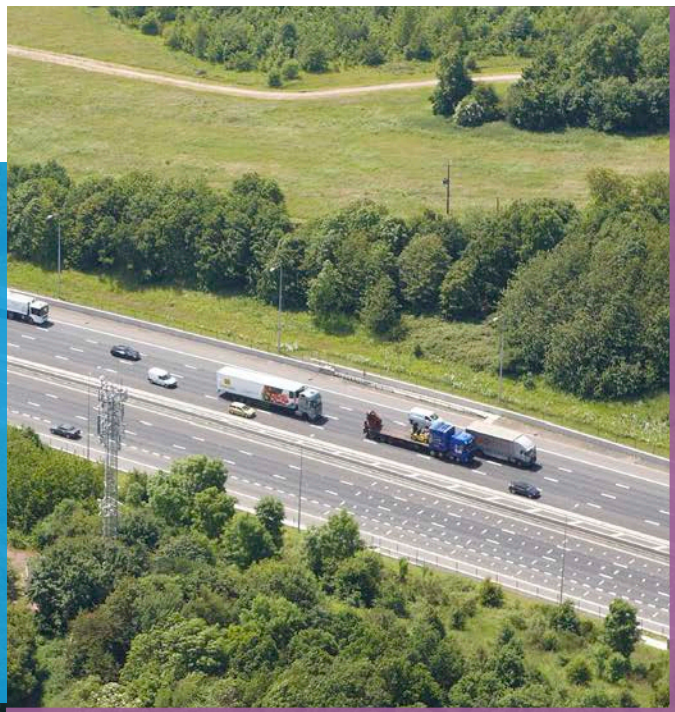
The training plan has been delayed due to the coronavirus pandemic and is now scheduled for the second half of contract year 12.

While this project is specific to the M25 network and our framework community, the methodology could be applied to other parts of the SRN.

The strategy and roadmap have been approved by Highways England.

Throughout contract year 11, we've been holding sustainability forums, where our team has worked with the framework community to redesign the roadmap.

The forums are held on a quarterly basis and involve discussions around future planning, including a separate workshop session where we were able to prioritise actions that the community could best achieve together.



Our Targets

Target/Action from Roadmap	Benchmarked Data	Aspirational Target	How target is implemented	Current Progress
Identify water savings in depots.	Water consumption has been monitored across all depots since contract commencement.	Identify a depot that could implement a water saving measure.	By engaging with depots to find one that is supportive of the project.	Liaising with Leatherhead and Blunts Farm to identify most appropriate depot. Target 19/20 – 15m3 per £100k spend. Actual 19/20 – 10m3 per £100k spend.
Stop using environmentally damaging products to clear up hydrocarbon spills and for sign cleaning.	Spills in depots are monitored via the Don't walk by system. 163 recorded spillages in 2019/20.	2020/21: Extend trial of Spillaway products for sign cleaning to all depots.	By implementing the products in all depots.	Senior Project Manager to investigate use of Spillaway beyond trial.
Publish DBFO Green Travel Plan.	Staff travel data and the use of virtual conferencing facilities have been monitored since January 2019 to date.	This data can be used to create business cases for more efficient working practices; for example, increased home working, relocation to closer depot.	Formal changes to working practices to represent changes that have occurred during the Covid Pandemic.	Green Travel Plan currently being structured/drafted. To be included in MOEMP submission 2021/22.
Work with Skanska to create a carbon assessment for EA Bays scheme.	This action has been altered to create a template for a carbon assessment for all schemes.	By the end of 2020/21 to have the carbon assessment template complete and being utilised by the business.	All schemes completing carbon assessment as part of their design.	Form currently under construction. To be in place by December 2020.
Social Value Plan to be continued and improved.	Initial baseline completed to mid 2018 (13.71%). Currently collecting remaining data to end of 2019. Strategy being written simultaneously to be included in CPS Business Strategy.	Increase in Social Value 2020: 17%, 2021: 18.5%, 2022: 20%, 2023: 21.5%, 2024: 23%, 2025: 25%	By all parts of the business contributing to their measures.	Strategy currently being written, in conjunction with relevant parts of the business.

NURTURING NATURE – AN INSIGHT INTO OUR INITIATIVES

The intense nature of the M25 means we must be strategic in our approach to enhancing our local environment.

We have been working hard to implement many environmental projects across the network, with a view to achieving Biodiversity Net Gain.

These projects have included creating species rich grasslands, protecting rare and declining bumblebees, enhancing water vole habitats, creating interconnected wildlife havens, and educating colleagues and local communities on the importance of our green spaces.

Highways England's Biodiversity Plan provides the principal means for identifying and prioritising interventions to improve biodiversity. Key areas of focus are defined in the Biodiversity Plan and include the following initiatives that can be supported through the Environment Designated Fund:

- **National Pollinator Strategy:** A commitment to deliver 3500 hectares by 2021. EnvIS shows that Highways England has an area of approximately 9,075 ha of grassland available for conversion. 71 hectares have been allocated to Area 5.
- **Maximising habitat connectivity:** Enabling species to move between core wildlife areas, by reconnecting habitats and ecosystems to deliver restoration and connection on a significant (landscape) scale.

To assist Highways England in delivering its Biodiversity Plan, we have approached our biodiversity improvements in two phases. Phase 1 saw species rich grassland conversion take place over Sumer/Autumn 2019 across the main M25 and trunk roads (aligning to the National Pollinator Strategy), followed by phase 2, which saw the delivery of species-specific enhancement of features for rare bee species, birds and water voles mostly at the Greater Thames Marshes in Dartford (aligning to maximising habitat connectivity).

Further information on these initiatives is detailed below:

- **Existing Open Grassland enhancements to Species Rich Grassland.**

  Over 18.8 hectares of species rich grassland were completed in 2018, 2019 and 2020 through vegetation clearance and the sowing of species rich mixtures. The Greater Thames Marshes plots make up approximately 4.4 hectares of this total.

  Highways England's target for Area 5 is 71 hectares and in 2018-19, we achieved over 10% of that target. In 2019-20 we achieved a further 15% of the target (equating to over 18 hectares).

By using our expertise to identify hidden gems, which possess great environmental opportunity, we are committed to leaving a positive legacy for the generations of people, mammals and insects to come.

Greater Thames Marshes
Pre-Works – Some of the Lower quality grassland habitat (May 2018).

Bank clearance and coir roles pre-seeded with riparian vegetation to improve conditions for water voles (Jan 2020).

Maximising habitat connectivity

The prominence of built up areas around the M25 network enhances the importance of creating interconnected wildlife havens. This enables flora to cohabit with a busy motorway network, and fauna to move between core wildlife areas by reconnecting habitats and ecosystems to deliver restoration and connection on a significant (landscape) scale.

We delivered an approximate linear corridor improvement of over 12km in 2019-20.

Bumble B&B

The Dartford Marshes represents one of two remaining strongholds of the Shrill Carder Bee. These bees all have very specific habitat requirements and habits which are thought to be the primary reasons for their extreme declines. They are known to mostly nest at or near ground level in the bases of 'tussocky' grasses, as well as in disused mammal burrows. To meet this very particular need, we have been creating bee banks, with a mosaic pattern of grasses, giving a balance between bare earth for burrowing and laying eggs, and grasses for nesting. Wildflower meadows were also seeded nearby to provide a holistic 'bed and breakfast' environment to help regenerate their declining populations.

Improved habitats for water voles

The creation of improved habitats for water voles has been delivered through vegetation and ditching works, which will open up the ditches in a way designed to enhance, rather than simply maintain the ditches. Additional riparian (which is the interface between land and a river) species will be planted as currently there is only a single species of rush leading to poor diversity in food sources. There will also be some modification to the banks to allow better opportunities for burrowing.

ENGAGING THE GRASSROOTS

Educating and engaging our stakeholders is essential to the success of our environmental initiatives. When considering external stakeholders, local school children are a key audience and we are committed to regularly attending schools through our 'Adopt a School' initiative, which takes place around the network.

This programme sees representatives working in partnership with schools to attend classrooms and assemblies to discuss topics such as endangered species, how we can work together to protect the planet, as well as the career opportunities available from an environmental perspective.

We're now proud to say we've helped develop many environmental advocates by speaking with hundreds of children over the course of the past year.

EMITTING POSITIVE ENERGY FROM THE INSIDE, OUT

The importance of sustainable practices has been acknowledged since the beginning of our contract and by creating a positive environmental culture inside our organisation, we can ensure it is embedded into everything that we do.

Alongside our regular environmental initiatives such as car sharing, cycle to work schemes and recycling campaigns, we are constantly on the look out for something a bit different.

The past year has seen a number of innovative ideas rolled out to our colleagues. This included a paddle boarding litter picking event for our Young Professional Group, helping to keep London's waterways clean and clear, as well as lunch and learn sessions, with our environmental team offering the opportunity for staff to create their own bee 'bombs' packed full of bee and insect friendly wildflower seeds.

BENEFITS

Species Rich Grassland conversion takes time to establish and demonstrate visible change therefore a 3-year Aftercare / Establishment period is an integral part of each scheme. For this reason, there is not an instant change and a second re-seed will occur in late 2020. However, similar works carried out in 2018-19 are now starting to show a greater range of grasses and flowering species.

For water voles, new plantings are starting to develop, and water vole surveys have been carried out and have proven that water voles are in the area. Peregrine falcons have also been spotted visiting the site.

Partnership benefits – as we develop these schemes across the SRN, partners and potential partners are beginning to grow and establish. Future schemes may become partnership schemes which could have greater overall biodiversity benefits.

Feedback from Highways England has been positive, and the local bee conservation specialist has indicated that the works could have a positive benefit to a rare carder bee species, which can currently only be found in two locations, one of which is adjacent to the Dartford site.

SURREY IRON RAILWAY

The Surrey Iron Railway, which opened in 1803, was the first independent horse drawn railway, linking Wandsworth and Croydon. The earthworks were a channel dug out of the landscape to create space for the trains to pass and are one of the few Scheduled Monuments on the M25 network. In 2019 clearance of trees and scrub was funded out of the Cultural Heritage Designated Fund out to improve their appearance and to safeguard the earthworks.

In 2020, we funded the installation of an information plaque to explain its historical importance.

Whilst this is a relatively small improvement project, it has wide ranging benefits, which include:

- Increasing the value of the immediate area by highlighting this historic feature, whilst providing an opportunity for people to learn about their local history.
- Keeping members of the public from straying onto unsafe land.
- A potential increase in interest in the area thus driving down the possibility of illegal activities such as fly tipping.

PROJECT SHIELD II

The purpose of project shield II is to ensure that both Connect Plus and Connect Plus Services have up to date management systems – plans and processes which clearly describe how the business will deliver all contractual obligations and Highways England's service and design requirements, thereby embedding a culture of compliance, delivery and continual improvement.

The initiation of Project Shield II was as a direct result of receiving a significant award of performance points around our structures inspection service. This highlighted an opportunity for us to take stock and evaluate all our contractual obligations, ensuring continual improvement and contract compliance.

As an organisation, we need to ensure we have clear roles of responsibility and accountability for all aspects of the DBFO Contract and Highways England's service and design standards; and that contractual obligations are fully embedded into the processes and procedures of both Connect Plus and Connect Plus Services.

We must ensure that all employees fully understand the contract and that it describes in detail what we are here to deliver on behalf of Highways England for the 30-year concession period.

In addition, we need to demonstrate to Highways England, the senior lenders and our shareholders that we are robustly managing compliance risks and that we have in place the right balance of control layers to self-police the contract. The number of performance points awarded to Connect Plus in any 12-month rolling period should be in line with those self-policing targets with a robust auditing procedure.

Although initially will see an increase in performance points, the long-term benefit will be an overall reduction. As a minimum, we must ensure the business remains below all contract performance point thresholds, whilst delivering a comprehensive service.

Looking forward, project shield II will be reviewing all existing process maps to verify relevance and compliance with business owners. This exercise will promote the embedment of project shield II, broadening contract knowledge whilst ensuring compliance and continual improvement. In addition, we will be producing a handbook which details high-level contractual obligations, providing a strong foundation for both new and existing employees.

A questionnaire was compiled to be completed by the owners of each of the contractual obligations. The questionnaire was discussed during a pre-workshop and returned seven days before the main workshop, allowing a desktop review prior to the meeting.

To make the process as efficient as possible and minimise the amount of text for appraisal, a full review of the M25 DBFO contract and associated schedules was undertaken by the project shield team. As a result, it was agreed that only the current, conditional and future contractual obligations were required for this process.

To simplify the process further, the relevant contractual obligations were categorised into 5 levels:

- General obligations
- High level project obligations
- Specific obligations
- Prescriptive obligations
- Process or procedural requirement

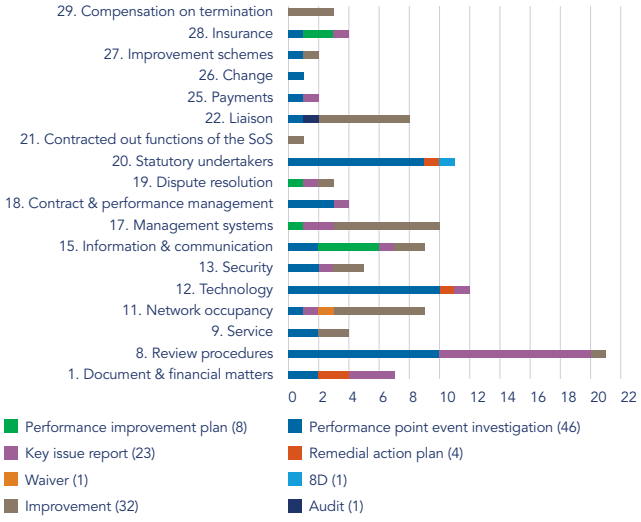
We conducted over 50 pre-workshops, totalling 110 hours of review. The project shield team met with more than 55 employees who were responsible for over 5000 deliverables in compliance to the contract schedules. Each review focused on checking that each obligation had a robust process, procedure, plan and tools. Sample evidence was then reviewed to confirm compliance at that point in time.

In total we have evaluated 18 schedules and identified 70 actions for continual improvement.

There are additional benefits to be gained from project shield, such as educating new joiners about our contractual deliverables, as well as acting as a reminder to existing employees.

We're aware that in the short-term performance points are increasing, however this is to be expected as awareness amongst employees increases. We're now self-policing more than ever before, which is vital in ensuring we continue to improve and grow as a result of our findings. In the long-term, because of this increased awareness, our performance points will come down – that is the success of project shield.

Project Shield Findings



The workshops were all well received by attendees. It is fair to say that some people were apprehensive before attending a workshop, however they soon felt at ease and fully embraced the activity.

Some feedback from the workshops:

"I found the whole project shield experience eye opening and enlightening. It enabled me to review where we are with regards to network occupancy and where we should be contractually. This will enable us to get back on track if we have deviated. I thoroughly enjoyed the experience."

Martin Beale

"I was given sufficient time to prepare for a review of my contractual responsibilities before the meeting. During the review meeting, a logical approach to questioning teased out the complexities and ambiguities of the contract. Importantly, the process succeeded in clarifying the scope of my contractual obligations and provided an opportunity to share an understanding of how they are being delivered."

David Edwards

The approach we have taken to evaluate our contractual obligations has been shared with Highways England and could be of huge benefit if applied to other contracts.

Connect Plus and Connect Plus Services have been working together closely on project shield II. Prior to the start of the project, various meetings were held with Highways England's compliance team to discuss how the project would be taken forward, and to identify the right course of action for any findings.

LEAN WORKING

The adoption of Lean is a critical element for us, as it provides the opportunity to engage with the service leads and all staff on their lean journey ensuring best practise is shared with Highways England, our parent companies and our supply chain.

We fully embrace Highways England's Lean Maturity Assessment (HELMA), which is completed annually and is part of our continual improvement cycle. The assessments are essential to monitor how Lean is evolving in our business and help us to identify areas for improvement. The assessment is centred around 10 areas including Lean Leadership, Use of Methodologies and Tools, and Integration of Lean into the Business Strategy.

Our first assessment took place in 2016 when we received a score of 1.8. Since then Lean has matured and grown within the business, so much so that in 2019 we achieved an industry-leading score of 3.1, which at the time was the highest score Highways England had awarded.

There is no contractual requirement to practice Lean or use HELMA to provide us with an annual assessment for operational excellence.

It is essential to continue sharing Lean knowledge across the M25 business and implementing the methodologies and tools to support continuous improvement on the contract.

While we achieved a high HELMA score of 3.1 in 2019, as is the Lean way, we continue to strive for excellence.

The elimination of waste, and the identification and delivery of improvement is essential to ensure we are effectively providing efficiencies that will benefit the traveling public, the people within our business, Highways England and our parent companies.

Lean is part of the culture on the M25, this is a snapshot of some of the great work Lean has delivered between April 2019 and March 2020.

Two hundred and fifty five improvement ideas were put forward from the business of which 20% were approved for implementation. Ideas ranged from waste management, equipment and material storage, improved vehicle aids and a reduction in paper useage by going digital.

Nine employees from a range of directorates completed internal Lean Practitioner training in September 2019. Certifications were awarded following a successful presentation to Dave Neal, (Connect Plus Service Managing Director) and Kelly Burdall, (Connect Plus Service Head of Performance & Quality).

The application of Lean using Kaizen workshops has been an essential part of a proactive, solutions driven initiative called a 'Trigger Event'. Activation of a trigger event is where we have had:

- Three months of decline in performance.
- Three months of red performance.
- Single award of 10 or more performance points.
- Six occasions where performance points have been incurred in a 12-month period.
- More that £25-30k cost to paymech.

Eight workshops were delivered between April 2019 and March 2020. Subjects included analysis of failure to remedy defects to time, a process review of uploading information to a system called AIRSweb and analysis of primary response to time.

Lean Practitioners

Lean Practitioners Completed!

The 'Class of 2019' Lean Practitioners have started to deliver their Lean Projects which included a presentation of their project displaying the lean tools and techniques used to bring CPS benefits.

Helen Bradley (left) successfully demonstrated her Lean skills by delivering a lean project that has provided considerable improvement to the number of performance points received within the Project Delivery department. Helen worked closely with Gavin Armstrong to focus on reducing the number of performance points received for administration failures. Administration failures often occur simply by not having the required paperwork in place – something that a change to the process has helped reduce. Well done, Helen!

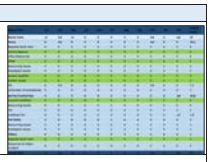
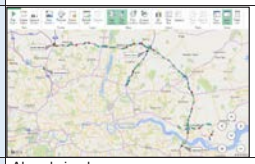
Gabriella Margherita (left) shared her Lean Project on Scheme Communications. Scheme communications are important as CPS are required to ensure local residence and businesses are fully informed of changes on the network that may impact them. Gabriella has engaged with Project Managers and other stakeholders to ensure the relevant information flows through to the comms team as part of the process; thus saving time and effort. Well done, Gabriella!

Connect Plus Services

Root Cause Analysis Summary

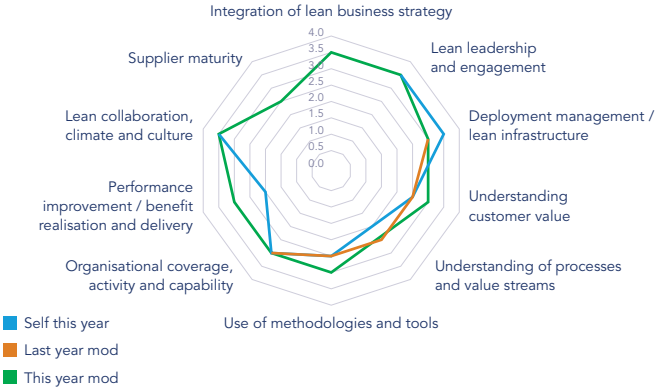
RCA Title	Category 1 Workshop (Focus: Blunts Farm)	Date	4th April 2019
Problem Statement	Performance Points received for failure to close out Category 1 work within permitted timescales in 2018 totaled 144.6 points (Blunts Farm 52 points); this is higher than company expectation.		
Desired State	Performance Points received for Category 1 jobs are reduced to minimal occasions only across the network (e.g. under 100)		

Facilitated by	Matt Stedman (Efficiency Manager)	Team Members	James Irwin (Service Delivery Manager) Carl Snell (O&M Manager, Blunts Farm) Helen Bradley (BI Analyst)

Analysis Completed		
Review of Cat 1 defects review for 2018	A review of all the Category 1 failures that have received performance points in 2018 in the NE of the network took place to understand root-causes. Themes of Resources, Sub-contractors, Blind Signs, Road space and Late information added to Inform were identified. 	
Reviewing locations of Cat 1 defects for 2018		Locations were reviewed to understand constraints and complications of the network. This included 'All-Lane-Running' sections, Managed Motorways, and Trunk Roads. Other challenges included boundaries of TfL roads (diversions) and approach to Dartford Crossing (TM restrictions due to tunnels).
Improvement opportunities currently being delivered	Already in place: 1) ALR – Blind Sign Issues now resolved by utilizing hard signage and digital signals for roadworks. 2) Lateness of comment into Inform – PDR targets and weekly monitoring is now in place 3) Improved working relationship with Framework community – Collaboration with closures is underway on a more frequent basis	
Actions	Description	Owner (due date)
1	Dashboard for Cat 1s to be updated – **Completed**	James I
2	Set up meeting to review Mega Rail stock (Safe road) with Finance and Procurement - **Completed**	Helen B
3	Brief ISU Operatives regarding the importance of accurate photos of damage **Completed**	James / Carl
4	Run the same session with the North West Quadrant - **Completed**	Matt / Helen
Next Review Date	2nd May 2019	

The use of Lean tools and techniques on the M25 is maturing as is the lean culture, we have come a long way since our first Highways England Lean Maturity Assessment (HELMA) in 2016 where we received a score of 1.8. We have demonstrated how we are continually improving having scored a 3.1 in the 2019 assessment.

Highways England Lean Maturity Assessment



We are proud to attend and present at events such as the 'National Lean Practitioners Event' which took place in November 2019 at the Cotton Centre in London. Events like these give us the opportunity to share lean methods used on the M25 and to collaborate with like-minded people from a diverse and fast-growing industry.

We communicate on a regular basis with Highways England with frequent attendance to Lean events hosted by Highways England.

Lean that compliments Safety is the future!

LEAN has simply become part of the culture and how we go to work here on the M25. In fact so much so, many of our peers outside of the project look to us as setting the industry standard in many ways. This reputation recently lead to us receiving an invite from Highways England to attend and present at the annual National Lean Practitioners event in London.

With an audience containing many of the leading Lean experts in our industry Kelly Burdall & Helen Bradley delivered a punchy presentation focusing on Behaviors and Leadership on the M25 highlighting just some of the fantastic Lean projects we are delivering as part of our business as usual approach to Lean.

CPS spread the word at National Lean Practitioners event

Events like this give us the opportunity to show case what we are doing and how we are doing it however, none of this is possible without us all as a project buying into the ethos of making our work place as Lean, Safe and Collaborative as possible.

LOOKING AHEAD

In this section we'd like to share some of our future case studies. The following stories are an overview of projects that we believe will evolve over the coming months, so have presented a snapshot of some of the fantastic things that are happening across the network.

- Covid 19 – Contingency Planning
- Healthier Highways
- Wheel of Wellbeing
- Developing a Digital Twin of the M25
- Optasense
- Omnicom
- Emergency Area Bays
- Automatic Cone Laying Machine
- Mutual Aid

COVID 19 – CONTINGENCY PLANNING

The past few months have been challenging and unprecedented, with continually changing situations the like of which most of us have never experienced before.

Long before lockdown, our COVID resilience teams were planning for a range of scenarios to ensure we would be in the best possible position for what was to come. Keeping the network in a safe and serviceable condition was never more important than during this time and we had to ensure that we had a robust business continuity plan in place, that supported our staff and provided our customers with the reassurance that for the M25 it was business as usual.

Communication was key during this time and we issued regular updates via email and a dedicated webpage. Site offices were kept up do date with posters and anomaly boards.

Working closely with Highways England, this thorough planning allowed us to continue with our day to day business planning and operational commitments. It was suggested by Highways England that our business continuity plan should be adopted by others on the SRN.

HEALTHIER HIGHWAYS

Covid-19 has thrown the issue of workplace health into the spotlight. Exposure controls such as social distancing and correct hand washing are hot topics across construction right now, however, control of workplace health risks has, for a long time, taken second place to accident prevention. The Health and Safety Executive estimates that annually 4000 construction workers die from occupational lung diseases and there are 5500 new cases of occupational cancer in construction each year.

In 2019 we began a new collaboration with Steve Perkins Associates to work towards a culture transformation in health, based on the vision of Everyone Protected at Work. During 2019 the focus was on raising awareness throughout the community, however moving forward the team will look at specific highways tasks for measurement and control improvement – the first being dust and noise exposure levels. We're looking forward to reporting on the findings and, more importantly, how we can change working practices for the better. We're very excited about the long term benefits this collaboration will bring.

WHEEL OF WELLBEING

The wheel of wellbeing programme at our Gade Valley site was a great success, and this year we're following up on that success with several other projects. Led by Temporal Consulting, our cultural experts, advisors and training providers, we offered a four-week course in meditation during lockdown.

We felt it was particularly important during this time to support our people in building a greater sense of wellbeing, helping them to learn how to manage stress levels, and to grow their self-awareness and self-confidence. The aim of the programme was to encourage people to create a space for meditation and provide an experience of meditation practice. Meditation is used to great success throughout our community and is an integral part of our leadership training and development. It is used as a tool to support self-awareness and development and ultimately, self-care and wellbeing. The M25 leadership community have become strong advocates of this approach, its philosophy and practices.

During the summer, we introduced a wheel of wellbeing intervention programme, again led by Temporal Consulting. The aim was to create a conversation in support of wellbeing, and work with a cross section of the community in improving their own personal awareness of wellbeing. In addition, the programme will also support leadership in tracking the cultural climate of wellbeing during the prolonged period of isolation and lockdown.

We aimed to target up to 100 people from a wide range of roles, working throughout our M25 community. This intervention will support leadership in identifying policies that will strengthen the wellbeing cultural climate, and we're looking forward to sharing our learnings and using them to inform our future thinking.

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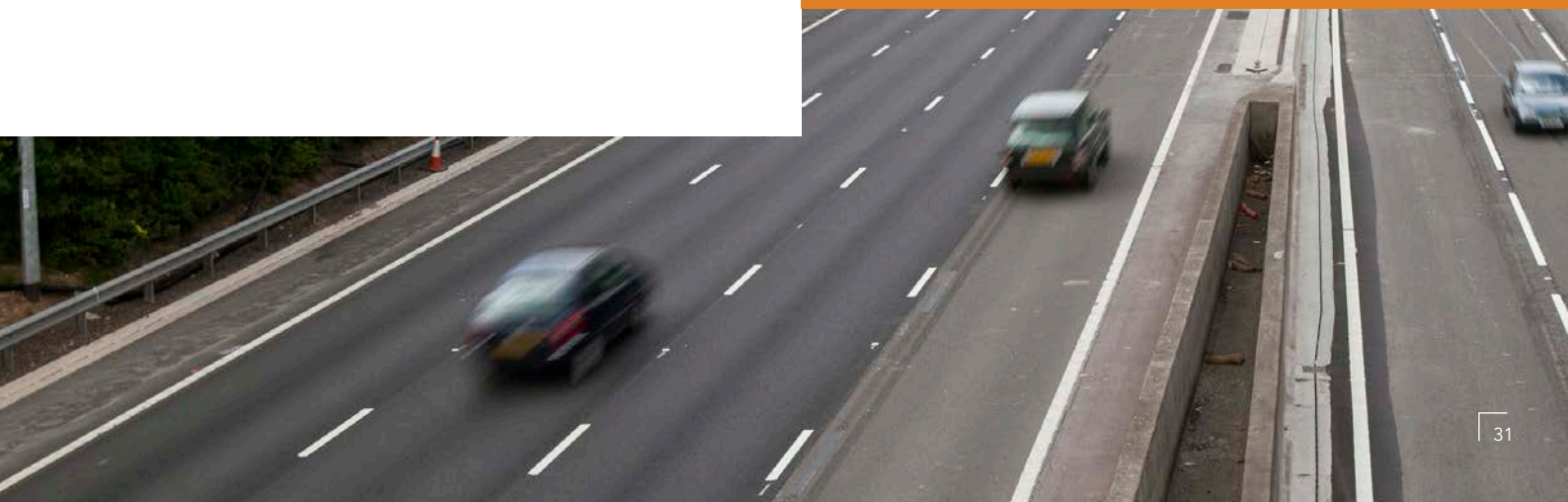


DEVELOPING A DIGITAL TWIN OF THE M25

Together with Sensat and Osborne, we have been working to create a digital twin for the M25. This digital representation has many benefits and will provide the M25 Community with access to a single source of the truth for the maintenance and upkeep of the asset.

An initial scan of the network is currently being undertaken using UAVs to produce a high resolution 2D and 3D model of the M25 highway. This model will extend to the boundaries of the managed highway and will enable all teams to visualise and assess the highway without needing to visit site.

By creating the digital canvas and base layer, we are taking a step closer to having a Digital Twin of the M25.

Training is currently underway for teams across the M25 Community.

Key benefits

An accurate, accessible data set for the supply chain to plan work more effectively.	A safer method of data collection and ongoing inspections, reducing the need for boots on the ground and putting people in hazardous environments – capture once, measure multiple times.	Decreasing carbon emissions by more than 95% by reducing vehicle movements and using drones.
Decreasing asset survey costs.	Increasing team collaboration by using and downloading survey data.	Increasing the lifetime value of the asset through more proactive maintenance.

In the short term, we have already identified various ways in which this data could be used, for example: ecology, road maintenance, clearance heights, EA bay progress and more.

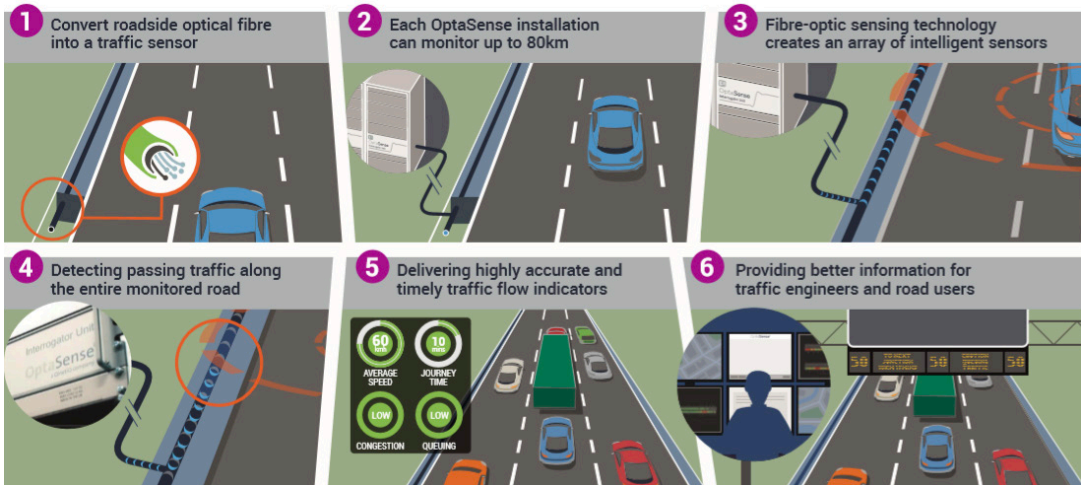
OPTASENSE

We are currently exploring the use of OptaSense on the M25 network, which works by converting fibre optic cable into an intelligent traffic sensor. The sensing system detects when moving traffic starts to build in density, speed lowers and occupancy increases, indicating there is congestion on the network.

The OptaSense system uses a permanent laid dark fibre (a fibre not used for any other transmission) in both sides of the highway or tunnel. The sensors update once every second, which is a 30-45 second improvement over an induction loop system.

Traffic flow monitoring, management of incident detection and hard shoulder monitoring are all achievable with the whole OptaSense "network" which can be interfaced in real-time to traffic command and control systems.

The system is operational on the A55 in North Wales, but not yet in England.



OMNICOM

The M25 team continually works to identify improved ways of working to provide the best possible customer experience on the M25 network.

We have been exploring the use of artificial intelligence technology in partnership with a Network Rail specialist provider with a view to using it as a monitoring tool for bridge joints as well as assessing the carriageway condition if proven. The technology would be installed in either a fixed in position on a structure such as a gantry, or attached to a vehicle such as a gritter.

The LIDAR technology would monitor bridge joints and waterproofing for any movement and early signs of deterioration, and create a 3D representation of the condition. This would allow preventative works to be carried out ahead of any issues arising, which would in turn reduce possible disruption to the travelling public.

There will be some challenges involved in adapting the technology for use in a highways environment, and the team is currently in the process of specifying what this piece of technology could look like and how feasible it would be for use in the highways setting.

EMERGENCY AREA BAYS

During 2018 we upgraded the EA bays within the ALR sections of the M25, working to incredibly short timescales to retrofit the bays so they complied with the new Highways England standard. This included changing the colour of the surface using a longer-lasting paint and updating the signage. Later that year a decision was taken to open a further ten new bays by December 2020 – this was again a shorter than usual timeframe.

We started the process of engaging designers and contractors by April 2019, and together with the commercial team, they formed the project team. Early engagement and collaboration were key in order to accelerate the programme, and deliver the design for construction in a shorter time frame than would normally happen when taking a more conventional approach. This was helped by the project team – including Highways England – working together as one to allow activities to run in parallel.

The contractors were involved from the onset to feed into the design process and site selection. They were mobilised from the start, working with the design team to conduct surveys and design workshops. By maintaining continuity of contractors from the earlier phases, they were able to draw on lessons learnt during the design of the following phases.

Design and build started in CY11, with completion expected in CY12. Four bays are planned to open to the travelling public in June 2020 and the remaining six in November / December 2020.

AUTOMATIC CONE LAYING MACHINE

With a view to improving safety and efficiency on the SRN, we are expecting to implement an automatic cone laying machine on the M25 network in the near future. This follows research into possible solutions across the industry and a number of collaborative sessions with Highway Care.

A machine centric approach to this task is necessary due to the time crews are exposed to live highways environments whilst laying traffic cones. Depending on the length of the road or lane closure, hundreds of traffic cones may need to be positioned before works can commence.

Technology of this kind has many benefits including:

- Eliminating exposure of Traffic Management (TM) operatives working on the rear of TM vehicles.
- Eliminating manual handling of cones.
- More efficient use of resource – less TM crew needed for closures.

MUTUAL AID

In late December 2019, we were asked by Highways England if the Area 5 COFA Framework could be successfully applied to deliver fifteen urgent schemes in Area 4, before the end of March 2020.

Highways England described this as a "sizeable, but achievable challenge" that was to be completed:

- Without compromising safety.
- Whilst maintaining good customer communications.
- By adopting a lean approach to design and preparation.

There were 15 schemes identified with a combined capital value estimated at £5.6m.

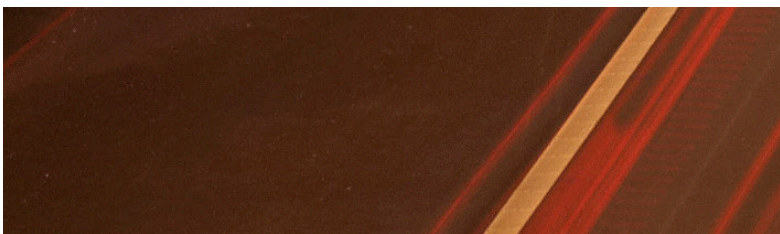
Osborne was selected as our COFA contractor and Connect Plus Services (CPS) as our project manager and contracts administrator. Atkins were appointed under our design framework and A One+ kindly agreed to undertake communications and assist with road space booking etc. A nighttime supervisor was provided by Balfour Beatty.

An initial scope workshop was held on the 10th January 2020, and attended by Highways England, Connect Plus, Connect Plus Services, Osborne, Atkins and A One+. Each scheme was discussed, and its relative ranking refined as required. This process also led to the removal of two schemes from the programme.

This initial workshop identified that immature scope, lack of design, and the difficulty in obtaining road space alongside other activity planned by A One+ and local authorities, would see the delivery of schemes extending beyond the initial end of March deadline.

By mid-February 2020, we had negotiated a contract waiver which set out which specific requirements of the Area 5 contract would and would not apply for this temporary activity within Area 4.

A "relationship workshop" facilitated by Temporal Consulting was held on 3rd March with all parties, including Highways England and A One+ in attendance.



Work started on site on the 9th March 2020, and already the traditional boundaries of “client”, “contractor” and “designer” have been blurred to create one cohesive unit, where every member of the team is working closely together to ensure the successful delivery of the schemes.

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