**Category: Best use of technology to improve health, safety and well-being**

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| 1 | **MHA+ member name** |
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|  | Balfour Beatty |
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| 2 | **other partners involved in the development of this product/project/nomination** |
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|  | West Northamptonshire Council |
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| 3 | **Please provide a brief description of what was done.** |
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|  | The Northampton North West Relief Road (NNWR) project was delivered through the MHA MSF3 framework. This £39.5m design and build project provides a link between two major roads in Northampton, easing congestion and serving growth by enabling the 3,000-home development at Dallington Grange to be delivered and improving access to the motorway and other strategic roads. The project included 1.5km single carriageway construction, 400m causeway, a rail bridge, a river bridge, 5 culverts, 2 roundabouts plus flood relief and storage. It featured a significant and complex earthworks strategy adjacent to a flood plain.The team overcame significant socio-economic challenges and severe weather events to deliver an exemplar project that included £3.2m value engineering savings, £346k monetary equivalent of social value and a CCS score of 44. The project demonstrates the benefits realised from a fully collaborative, one-team approach and sets a benchmark for collaboration and excellence in the highways sector.Throughout the project, numerous technological advancements have been employed to achieve exceptional health, safety, and wellbeing outcomes. |
|  | Innovative Use of Technology  1. Digital Management Systems:  • Implementation of digital tools such as Building Information Modelling (BIM) for real-time monitoring and management of the project. BIM has facilitated proactive risk identification and mitigation, ensuring the safety of workers and minimising hazards.  • Use of drone technology for aerial surveys, offering a safer alternative for site inspections and progress tracking. |
|  | 2. Safety Enhancements:  • Deployment of wearable technology for workers, including smart helmets and vests, which monitor vital signs and alert on-site safety teams of potential health risks.  • Utilisation of GPS and geofencing technology to restrict access to hazardous areas, reducing the risk of accidents and ensuring safe working zones. |
|  | 3. Environmental Monitoring:  • Installation of silt fencing and other protective measures utilising real-time environmental monitoring systems. These systems help track and control pollutants, safeguarding both the environment and the health of local communities.  • Advanced ecological mitigation measures, such as badger, bat, barn owl, and kingfisher friendly structures, ensure that construction does not adversely impact local wildlife, promoting ecological health and worker wellbeing. |
|  | Health and Wellbeing Focus  1. Mental Health Initiatives:  • Introduction of comprehensive mental health support programmes for workers. By employing mental health monitoring apps and offering counselling services, the project promotes the overall wellbeing of its workforce.  2. Health & Safety Training:  • Implementation of virtual reality (VR) safety training modules. VR technology has enhanced the induction process, providing immersive, realistic scenarios for workers to practice safe responses to potential hazards without real-world risks.  • Regular health and safety drills facilitated through augmented reality (AR) applications, providing instant feedback and continuous improvement opportunities.  Sustainability and Community Engagement. |
|  | Sustainable Practices:  • Efficient reuse of materials such as using excavated materials from adjacent developments for embankments, reducing the carbon footprint and enhancing sustainability.  • Adoption of sustainable drainage systems and watercourse diversions in harmony with natural water flows, ensuring minimal environmental disruption and promoting community health.  2. Community Health Initiatives:  • Active community engagement via public information boards and quarterly newsletters, keeping local residents informed of project progress and health and safety measures |
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| 4 | **Please provide a brief overview of what were the benefits of the digital deployment** |
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|  | Operational Efficiencies: Drones like Phantom 4 RTK and DJI Mavic 2 Enterprise Advanced transformed surveying, reducing time and hazards, while high-quality data expedited decision-making and monitoring. Accuracy Enhancements: RTK drones provided precise data, critical for accuracy near sensitive areas, with Site Scan achieving point cloud accuracy within 4.6 cm |
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| 5 | **Please provide a brief overview of why you should win an award** |
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|  | Key innovations included BIM for real-time risk management, drones for safer inspections, and wearable tech for monitoring workers' health. Environmental monitoring safeguarded communities and wildlife. Mental health support, VR safety training, and sustainable practices, such as material reuse and natural watercourse integration, were vital. |
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| 6 | **Please provide any other information that you feel needs to be included in the submission** |
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|  | The project was a collaborative effort involving Balfour Beatty (BB), West Northamptonshire Council (WNC), and WSP. The project team also engaged with longstanding partners such as Network Rail and the Environment Agency, leveraging relationships established from earlier Northamptonshire schemes. Approximately 80% of the supply chain was retained from previous projects, ensuring continuity and reinforcing a strong team ethos. Project Management On the project, productivity was maintained through strategic value engineering, material reuse, and effective procurement strategies. Detailed planning software, collaboration platforms, and earthworks modelling tools were pivotal in optimising schedules and resources. Notable initiatives included the strategic reuse of temporary works and repurposing quarried stone, directly contributing to cost savings and efficiency improvements. The key metrics used to measure performance included:  • Cost Savings: Over £383k saved through innovative material reuse and procurement strategies.  • Environmental Impact: Reduction in waste and off-site transport, highlighted by the repurpose of Type 1 stone, leading to savings of £133k.  • Risk Mitigation: Early Contractor Involvement (ECI) with supply chain partners reduced programme risks and identified cost-saving opportunities.  • Local Engagement: Achieved 1,402 days of local labour and a total local spend of £9.4m. Of this, £6.6m was spent with SMEs, reflecting successful community and economic engagement. The measures implemented were highly successful, illustrated by several outcomes:  • The project’s ability to save over £250k through the reuse of temporary works significantly improved productivity and resource efficiency.  • Using existing relationships to develop a utilities diversion strategy resulted in a £2.6m cost reduction.  • Rehabilitating the project schedule following site shutdowns and delays showcased strong resilience and effective planning. The blend of precise metrics and tailored productivity tools facilitated a robust approach to maintaining and enhancing productivity. The success is also highlighted by the extensive use of local resources, promoting economic benefits. The proactive and strategic methods employed on NNWRR stand as a testament to exceptional construction management. Environmental Considerations Environmental protection was prioritised from the outset. Measures included silt fencing to safeguard the River Nene, footpath realignment to preserve mature trees, and a ditch designed around a 200-year-old oak to protect its roots. Ecological mitigation included fish rescue and relocation during the River Nene diversion, saving 600–700 fish across several species. Early contractor involvement allowed us to agree with West Northamptonshire Council to install mains supply before work commenced, rather than using a generator. This change saved 600T of carbon. Further carbon reductions were realized through using telematics in all earthworks and site vehicles to reduce idling, and off site production of all culvert units. |
|  | Collaboration with West Northamptonshire Council and an adjacent developer allowed Balfour Beatty to utilise excavated materials from balancing ponds, avoiding the need to import 220,000m³ of embankment fill. Embedding Social Value Social value was measured in monetary terms: • £346,261 total social value. •£38,473.51 from existing |
|  | Embedding Social Value Social value was measured in monetary terms  • £346,261. total social value.  •£38,473.51 from existing apprenticeships.  • £20,948.93 from new apprenticeships.  •£286,839.37 from graduate days |
|  | The project generated significant social value by embedding apprenticeship, employment, and community engagement into its core activities. These efforts were meticulously tracked and measured, resulting in quantifiable and impactful outcomes benefiting both the local community and the wider social environment. Client Feedback Marie Kanayan, Major Projects Manager from WNC provided the following comment “Over the years, West Northamptonshire Council (WNC) and Balfour Beatty (BB) have es |
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| 7 | **Please provide contact details** |
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