CASE STUDY – Arcadis – February 2024

M1 Junction 15 | Safer Hand back Inventory Provision

Introduction

In accordance with National Highways requirements, at the handover stage of any network upgrade or improvement, the contractor has a responsibility to provide a revised inventory of the civil and technology asset database, within the extents of the scheme, compliant with the current version of the Asset Data Management Manual (ADMM). Subsequently, the inventory is uploaded into the National Highways asset class-specific prime systems, reflecting the change to the asset database, to enable effective cyclic inspection and planned maintenance intervention of the new assets throughout their lifecycle, whilst preserving the maintenance history of existing assets and minimising impact on the travelling public.

Overview

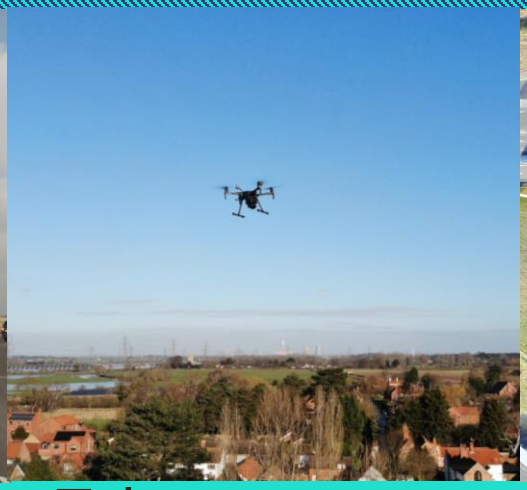
Given the size and nature of the M1 Junction 15 scheme, National Highways standardGG 182 Major Schemes: enabling handover into operation and maintainance, applied. Therefore, there was a need to not only provide National Highways with as-built and health and safety information, but also the contractor was required to provide an updated inventory of the asset database, indentifing assets with no change, those that we had decommissioned or modifed, and those which had been newly constructed, or installed. To minimise impact on the SRN, and faciliate inventory update, the Arcadis Digital Asset Management Group utilised existing datasets, as-built data from the existing prime systems, and our Remotely Piloted Aircraft System (RPAS) (drone), and vehicle-based surveying platforms to support, validate and assure the inventory.

Challenges

Several challenges were identified for this scheme as follows:

- The scheme was required to minimise the impact on road users in terms of risk and delay, so far as reasonably practical.
- Challenges associated with obtaining permission to operate a drone safely and efficiently over complex multi-modal infrastructure.
- The need to meet National Highways requirements i.e. GG 182, GG 954 (Drone Operations) and the ADMM.

"Arcadis provide an invaluable solution to updating the assets we hold in our prime systems at the point of handover of a scheme update, which gives us a level of confidence that is required without having to perform a full update of our systems" – National Highways Data Manager




Action Taken

Arcadis collaborated closely with the Winvic Construction team to agree the outputs, appropriate technology and process to update various asset class prime systems. It was agreed that given the complexity of the survey area of interest, both a vehicle and drone-based survey would be required, using imagery sensors, to ensure all required assets could be visualised by the safest means possible.

Whilst the route was primarily surveyed by a vehicle driven at prevailing traffic speed, the drone flights required further consideration, in that all drone operations on, or above, the National Highways network, are subject to the GG 104 Safety Risk Assessment (SRA) process, to ensure drone operations are appropriate, and that, so far as is reasonably practical, the impact on the survey team, road users and third parties is minimised.

Each GG 104 SRA; regardless of categorisation, must be reviewed by the Drone Safety Control Review Group for acceptance prior to any flights being undertaken. The extensive past experience Arcadis has of drone operations and the GG 104 SRA process, ensured our assessment was approved in a timely manner and without comment.

The survey team attended the site and undertook both surveys in accordance with the scope and process as defined within the GG 104 SRA and the agrred timeliness metric. On completion, the captured imagery data was processed and utilised to assure the required inventory updates, in accordance with the ADMM. This was then passed to the Operations Directoriate regional representative for them to load the inventory into the various prime asset systems.

Results

The outputs provided to the client were:

- A spatially referenced data set in ESRI shapefile format
- Data provided and uploaded to NH Confirm data management system
- An image bank of all uniquely referenced point assets

The benefits of commissioning Arcadis to perform hand back inventory updates were as follows:

- Increased value through speed, accuracy, and consistency
- Up to date and accurate inventory of the asset base following on from network improvements
- Inventory validated without the need to put workers on the network or increase risk or delay to road users
- The Arcadis methodology is faster than conventional methods with minimal hazard exposure to the survey teams
- The use of driven and remote systems in combination is significantly more cost-effective when compared with traditional methods
- Significant contribution to the Zero Harm objective by reducing worker exposure to live traffic environments

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home safe and well