



CASE STUDY



Costain | Automatic controlled plant crossing – 11-11-22

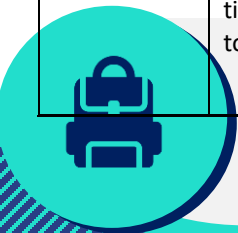
Introduction

The route of the new A30 bisects the old A30 close to the Carland Cross roundabout in Cornwall, a traffic hotspot. Large articulated dump trucks (ADT) and other plant are using a new crossing to facilitate the trans location of heathland from East to West of the old A30. Historically plant crossings would be controlled using two manned gates on each side of the crossing with operatives having to judge a suitable gap in the traffic to manually operate temporary traffic lights to stop traffic and lift the gates to allow plant to cross.

In addition to the heathland trans location, hundreds of thousands of cubic meters of excavated material are also being moved. Using the principles of the engineering hierarchy of control (Eliminate Risk) coupled to the technology, vehicle marshals are no longer needed. This removes the human element from the operation and the potential for a marshal to be struck by passing traffic.

The new crossing provides the following key benefits; meets a client requirement to have a 20% net gain in bio-diversity, reduces fuel usage, reduces the distances to haul, supports a decrease in the project's carbon footprint; removes the potential for marshals to be injured working in close proximity to a live carriage way and reduces the disruption to the public whilst maintaining a regulated controlled crossing.

	<p>Technical Overview</p> <p>The SRL Automated Barrier Control System provides complete control of over roads and private access. The system can be programmed with various timings and delays, giving it a site-specific configuration. This prevents the need an operative(s) to observe and control the system. All-red cameras create a safe area where the potential for conflicts can occur creating a safe area for workers and public. Multiple barriers can be used along with various timings and integration of ANPR and VMS signs to create a safe and fully automated system.</p>	 <p>Challenges</p> <p>Transporting excavated material using a plant crossing raises a number of challenges, i.e.,</p> <ul style="list-style-type: none"> ● Challenge 1. Ensuring the safe crossing of plant for members of the public and construction workers. ● Challenge 2. Minimise disruption to members of the public using the road being crossed. ● Challenge 3. Must allow a suitable number of crossings by Articulated Dump Trucks (ADT).
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Action Taken

The project reviewed and consulted on various methodologies to manage the safe crossing of highways by large plant and other earth moving vehicles. The project identified an innovative approach to plant crossings using the SRL automated barrier control system.

Leading up to the crossing concrete aprons were constructed to provide a safe clean surface to stop plant machinery before crossing. A road sweeper follows any plant crossing and having the concrete apron simplifies keeping the road surface clean. Due to the weight of plant machinery compared to road vehicles the section of road crossed was cut out and then reinforced concrete apron continued across the A30. Tarmac was overlayed over the apron to minimise the impact on road traffic on the A30. The SRL automated system has 4 way traffic lights linked with an automatic barrier system. Lights on the plant crossing remain red and barriers lowered to prevent plant or other vehicles using the crossing. On identifying plant wishing to cross the system initiates a traffic switch cycle- the lights on the A30 turn red to stop traffic, the barrier raises and plant crossing lights turn green. Plant crosses the A30 followed by a road sweeper and when the system recognises the plant and sweeper have successfully crossed the crossing lights switch to red, barriers descend and the A30 lights turn green. Each crossing takes around 45 seconds and allows one item of plant and sweeper to cross.

An initial trial took place with traffic management operatives in attendance to build a level of confidence in the system and to fine tune timings for the crossing of plant.



Results

The attached photograph shows the crossing point at Journeys End. This location was selected as an ideal place to showcase the effectiveness of the automated crossing system. After installation the translocation of protected heathland from the South side of the crossing at Journeys End to the North at Carland windfarm commenced. This has reduced the transport time of the environmentally important heathland thereby reducing the risk of damage to this environmentally important resource.

The use of the automated system has allowed the safe crossing of 3 tractor and trailer units hauling heathland sections for c2 months without incident. The crossing has allowed transplanted heathland to be re-located close to the Carland Cross windfarm.

The crossing has avoided the need to drive 6kms to the nearest access point.



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home
safe
and well

