

Gating Order and Innovative Traffic Control Scheme to Deter Illegal Car Cruising

Hams Hall Distribution Park - Warwickshire

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Project summary

To deliver a traffic control scheme that provides a long-term and sustainable resolution to deter car cruising and improve public safety at Hams Hall Industrial Estate whilst allowing the business community 24/7 safe access to the site.

Introduction

Hams Hall Distribution Park and surrounding villages had been suffering on-going problems with illegal car cruising events and subsequent vehicle related anti-social behaviour for over 10 years, which at their height became huge events with over 2000 participants and spectators.

Warwickshire Police were often unable to deal with the events because, without any notice, masses of cars and spectators arrived on site to participate in/watch the illegal car racing. Two consecutive High Court Injunctions were granted; the second only being granted with the proviso that a Gating Order be made and a permanent engineering solution to deter the racing of motor vehicles on the estate be found.

Since these types of events seriously affected businesses on the estate, the Hams Hall BID (Business Improvement District) Company Limited was formed in 2011 under government legislation to raise funds by means of a Business Rates levy. The BID Company worked in partnership with Warwickshire County Council, Warwickshire Police, local Councillors and the local MP to come up with a engineering solution.

The traffic control scheme, which was designed by Warwickshire County Council and funded by the BID Company, includes remotely controlled automatic barriers, electronic signs, traffic signals, CCTV and ANPR cameras. The web-based system is remotely monitored and operated by Warwickshire Police via the CCTV cameras as and when required.

The scheme, deemed to be the first of its kind in the UK, was installed in August 2013 and no reported illegal incidents have taken place since.

Background

Location

The industrial estate called Hams Hall Business Park used to be the site of a power station. It is located in the north of Warwickshire to the north of Coleshill; north-east of Birmingham.

It is situated off A446 Lichfield Road which is connected to major motorway junctions of the M42 and M6. This is a thriving business park attracting prestigious companies and businesses such as BMW Group, Sainsbury's, Eon and DHL;



Figure 1 - Location Plan

with the major road links being an important part of their everyday business. The business park is active 24/7 for their various business trade and requirements.

The geography of the park is a long straight dual carriageway 'distributor road' (Faraday Avenue) which is fed from the A446. The distributor road has a number of roundabouts along it which lead to other feeder roads on which the various businesses are situated.



Figure 2 - Layout of Hams Hall

The Problem

Over the past ten years, groups of racers have used the dual carriageway at Hams Hall for time trials and for showing off their racing vehicles. This resulted in a huge numbers of people, over 2000 on some occasions, travelling from all over the country most weekends during the summer months.

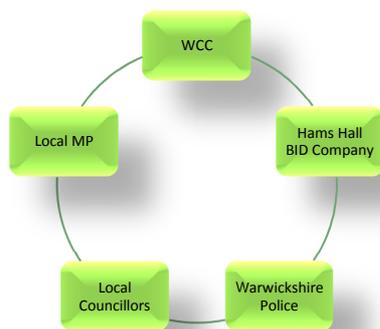


Figure 3 - Event at Hams Hall

Not only did they completely take over the carriageway into and out of the business park delaying and even preventing lawful business being conducted but they spilled out into the nearby villages. There are a number of businesses that require 24/7 access to their premises, including a pharmaceutical company which has to have 24 hour access for emergency deliveries, which were being affected by the events.

Warwickshire Police were unable to deal with the size of these events. They were given extra funds for dense policing at weekends but this could not continue due to the huge cost maintenance, which was not only not practical but had a negative impact on policing in the rest of Warwickshire.

Multi-Agency Partnership



A multi-agency partnership was formed between Warwickshire County Council (WCC), the Hams Hall BID Company, Warwickshire Police, MP Dan Byles and the local Councillors to find a permanent solution for the area.

Funding

Hams Hall Business Improvement District (BID) Company was set up in 2011 specifically to resolve the problem as it was seriously affecting their businesses. The BID Company managed, through levying their companies on site, to raise a considerable amount of money to resolve the problems and their funds financed the whole of the scheme. However, there was a time constraint on these funds. If they were not used by July 2013, or were in the course of being used to produce a permanent solution, they were liable to be returned to the Companies who had paid in to this levy.

High Court Injunctions

In 2010 an injunction was granted from the High Court to prevent car cruising. This was enforced by Warwickshire Police with Section 59 Notices being served and vehicles being seized and crushed. However, when the injunction finished in August 2011 and another one was sought by Warwickshire County Council Solicitors, it was predicated on a more permanent solution being provided; with a Gating Order being established and an engineering solution being furnished. Should a Gating Order not be in operation by the time of the injunction lapse date, it would have been very unlikely that a third injunction would ever be issued.



Figure 4 - High Court Injunction Sign

Objective

'To deliver a traffic control scheme that provides a long-term and sustainable resolution to deter car cruising and improve public safety at Hams Hall Industrial Estate whilst allowing the business community 24/7 safe access to the site.'

The Scheme

Numerous meetings were held between the members of the partnership to discuss what the BID Company wanted that was deliverable, affordable and safe. It was agreed that a Gating Order would be required to 'restrict public access over the highways' and this restriction would need to be enforced by a physical barrier across the carriageway.

Due to the layout of the site two barriers would be required, one on either side of the dual carriageway, to stop both traffic coming in and traffic going out of the business park.

Warwickshire Police raised concerns that by stopping the traffic on Faraday Avenue, queues would soon form and affect the surrounding network as the volume of traffic in the business park is very high throughout the day. Therefore a method of 'releasing' the vehicles if long queues formed was required.

We also had to consider the provision of surveillance; existing utilities on the park; the speed of the road; the volume of traffic including HGVs throughout the day; a method of stopping the traffic at the barriers; providing advanced warning for drivers; how to provide comms whilst keeping within the funds provided.

The Design

Gating Order

I worked alongside Warwickshire County Council Solicitors to arrange for a Gating Order to be made. Gating Orders are normally made to stop up footpaths / alleyways therefore significant work was required to tailor the Order to suit our requirements. This was the first Gating Order in the UK to be made on the highway which has the ability to restrict public access over the highway at any time and to enforce the restriction by the installation and operation of barriers at the points shown on the Order Plan.

The Order had to be consulted on and advertised and it was essential this order was in place before the works started.

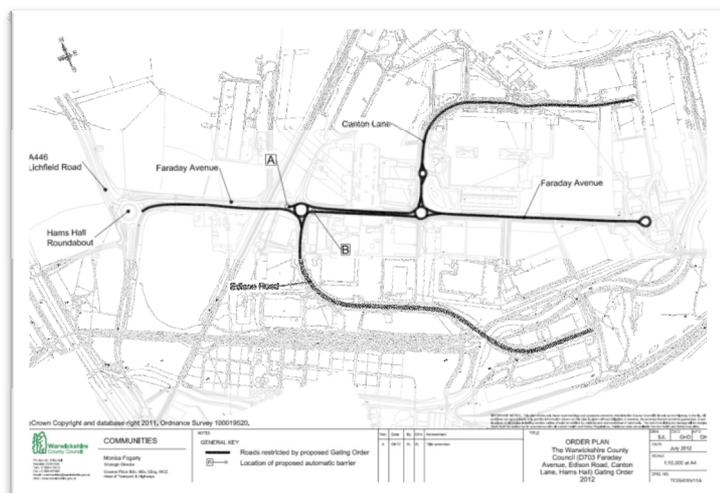


Figure 5 - Gating Order Plan

Automatic Barrier System

The provision of an automatic barrier (or barriers) to span the two lane dual carriageway was compulsory. Our initial design provided barriers on each side of the carriageway to the west of the Edison Road roundabout with a refuge island in the centre of each carriageway and an intercom system to raise the barrier. However an intercom system would have required a manned office, presented language issues and caused delays to motorists. We also had concerns with the close proximity of the west bound barrier to the roundabout and overhead cables; as well as the additional costs in installing two barriers and a manned intercom system.

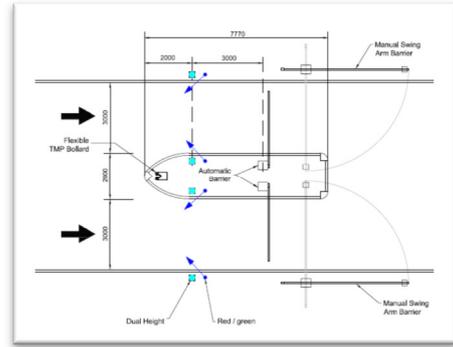


Figure 6 - Refuge island with barriers

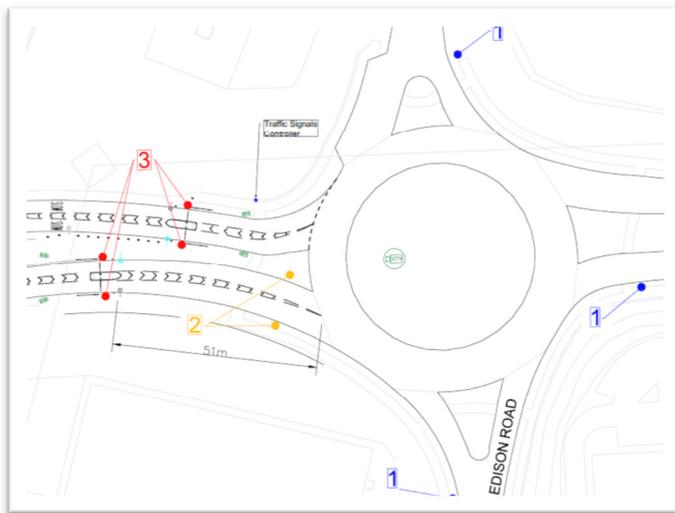


Figure 7 - Initial Design

Therefore I reconsidered the design to provide two single barriers across the carriageway on either side of the roundabout which would allow the side roads egress and reduce installation and maintenance costs (see Figure 8).

I also took into consideration that people may try to drive around the barriers when they are down so high 'trief' kerbs and anti-ram bollards were to be included in our design to prevent this.

Method of Stopping Traffic

Several methods of stopping the traffic at the barrier were investigated and presented to the BID Company; a manned barrier, wig wag signals, mast arm signs, matrix signs and traffic signals. The advantages and disadvantages of each method were presented to the partnership and the BID Company chose traffic signals as their preferred option. The design was amended so that traffic signals would provide 'indirect control' of the roundabout which meets design standards TD50. Part-time traffic signal control would be clear to all motorists especially seeing as the park sees a lot of drivers from different countries; they would not require any special authorisation from DfT; nor would they require 'staffing' 24hours a day.



Figure 8 - Amended Design

Advanced Warning Signs

Advanced warning signs, both fixed and electronic, would be required on each approach to the barriers to warn drivers of the part-time traffic signals, the road closure and the CCTV cameras. Electronic signs would be installed well in advanced of the barriers to provide plenty of warning of the 'road closed' ahead. An additional sign (VAS3) would be required on Hams Lane to warn any drivers coming onto the estate from this side road.

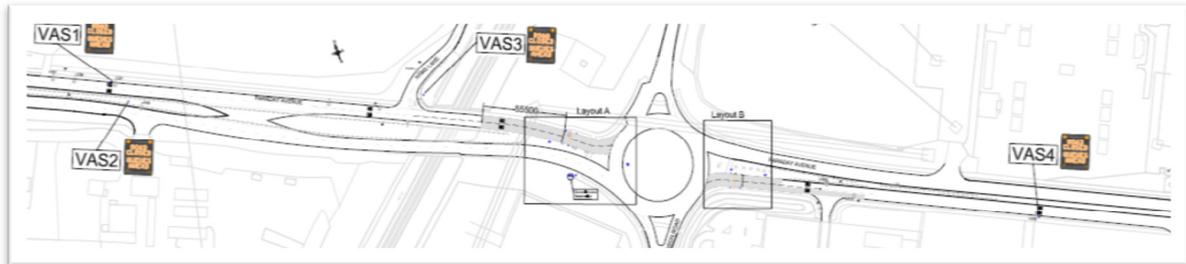


Figure 9 - Location of Electronic Warning Signs

Speed Limit

The speed limit of Faraday Avenue between the A446 roundabout and the Edison Road roundabout was 70mph. It was agreed by the partnership that this should be reduced to 40mph.

A Traffic Regulation Order (TRO) was sought after and I was required to carry out a full statutory consultation. No objections were received and the order was made. It was essential this order was made before any works started on site as it would reduce the traffic management (TM) costs during construction significantly and be safer for the work force.

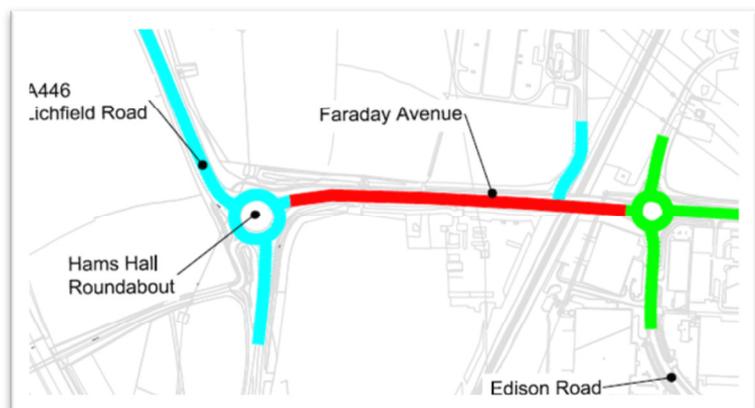


Figure 10 - Speed Limit Order Plan

Volumes of Traffic

The estate sees high volumes of traffic throughout the day including a significant number of HGVs, frequent buses to and from the airport parking, as well as emergency pharmaceutical deliveries 24/7. It was essential therefore that during construction the impact on traffic was kept to a minimum and traffic was kept moving as much as possible. It was written in the tender documents that any road closures during construction were carried out during off peak hours; and all diversion routes were kept to a minimum.

Surveillance

The partnership agreed that 24 hour surveillance was essential. Access would be provided to the Police to allow them to monitor the estate. Therefore we proposed to install a 10m Pan Tilt Zoom (PTZ) CCTV camera on the Edison Road roundabout to allow an overview of the area and approaches

to the barriers. Two additional CCTV cameras would be required to provide a clear view of each of the barriers to allow a remote user to check that no vehicle is under the barrier before it is lowered.

Warwickshire Police installed four ANPR cameras for policing purposes. This was not included in the main scope of works.



Figure 11 - Ducts in Bridge Deck

Queue loops

Due to the concerns of the Police regarding traffic backing up on to the A446, queue loops would be installed approximately 200m from each stop line which would require significant ducting. This would be expensive as a lot of Traffic Management would be required. In addition to this, I worked with our Bridge Maintenance team and we discovered that the existing ducts across the railway bridge on Faraday Avenue were very shallow and it would be difficult to install ducts at a suitable depth across the bridge deck.

Comms

Communications to allow remote access to the site was required and a service from BT was sought after. However BT could not provide a service that would be delivered in time or within budget due to the remote location of the site and there being no BT service nearby. This was overcome by one of the businesses on the industrial estate allowing us access to use their comms via MESH link.

Utilities

Hams Hall used to be the site of a power station and subsequently there are overhead high voltage cables and underground high pressure gas pipes throughout the park. I identified overhead cables and gas pipes at the locations I was proposing to install our equipment; therefore I arranged meetings with the relevant utility



Figure 13 - Trial holes



Figure 12 - Overhead cables

companies. I was advised by Western Power Distribution (WPD) that any equipment should be installed a minimum of 15m from any overhead cables.

I also arranged for trial holes to be carried out by National Gas to locate their underground pipes near the Edison Road roundabout. Subsequently I amended the design and relocated the barriers from the nearside of the carriageway to the central reservation to avoid any possible conflicts.

Tender

The scheme was tendered under the Government Procurement Service (GPS) Framework and the contract was awarded to Imtech Traffic & Infra UK Limited. We provided system specifications listing the outcomes required however this was coming in over budget. Imtech presented amendments to our initial proposed design to reduce the cost of the scheme and they provided a solution that met our criteria and was within budget. The two key changes to our design were the use of fixed text electronic signs and the provision of wireless communications. The fixed text signs would replace our proposed variable text signs; and the wireless solution would replace our proposed duct network to the queue loops which would significantly reduce installation and traffic management costs. Imtech confirmed that they did not anticipate any issues with regards to overhead power lines or electrified railway lines and the use of wireless communications.

The Finished Article



Figure 14 - Electronic signs and queue loops

The majority of the time the system is inactive i.e. the barrier is in the upright position and the signals and electronic signs are off. The system will only be operational when a problem is perceived. 'Implementation is the deterrent'.

The operation of the barriers will be controlled from the Controller via specific configuration. This will ensure that the barriers will only be lowered once the electronic signs are activated and the traffic signals are on red. As an additional safety measure loops were installed under the barrier to stop the barrier lowering if a vehicle is detected. Each barrier can be

The scheme was commissioned in October 2013. Electronic warning signs, traffic signals, automatic barriers and CCTV cameras were installed; as well as new permanent signs, queue loops, comms equipment, anti-ram bollards, high kerbs, road markings and high friction surfacing.

All the equipment installed on site is 'off the shelf' which is cost effective and easy to maintain and replace if damaged / faulty. The provision of indirect signal control of the roundabout meant that no special authorisation was required for the scheme.



Figure 15 - Equipment installed

controlled separately so just one barrier (and associated signals and electronic signs) can be activated at a time.

The Police can activate the system remotely if they perceive a problem is occurring via the CCTV cameras.

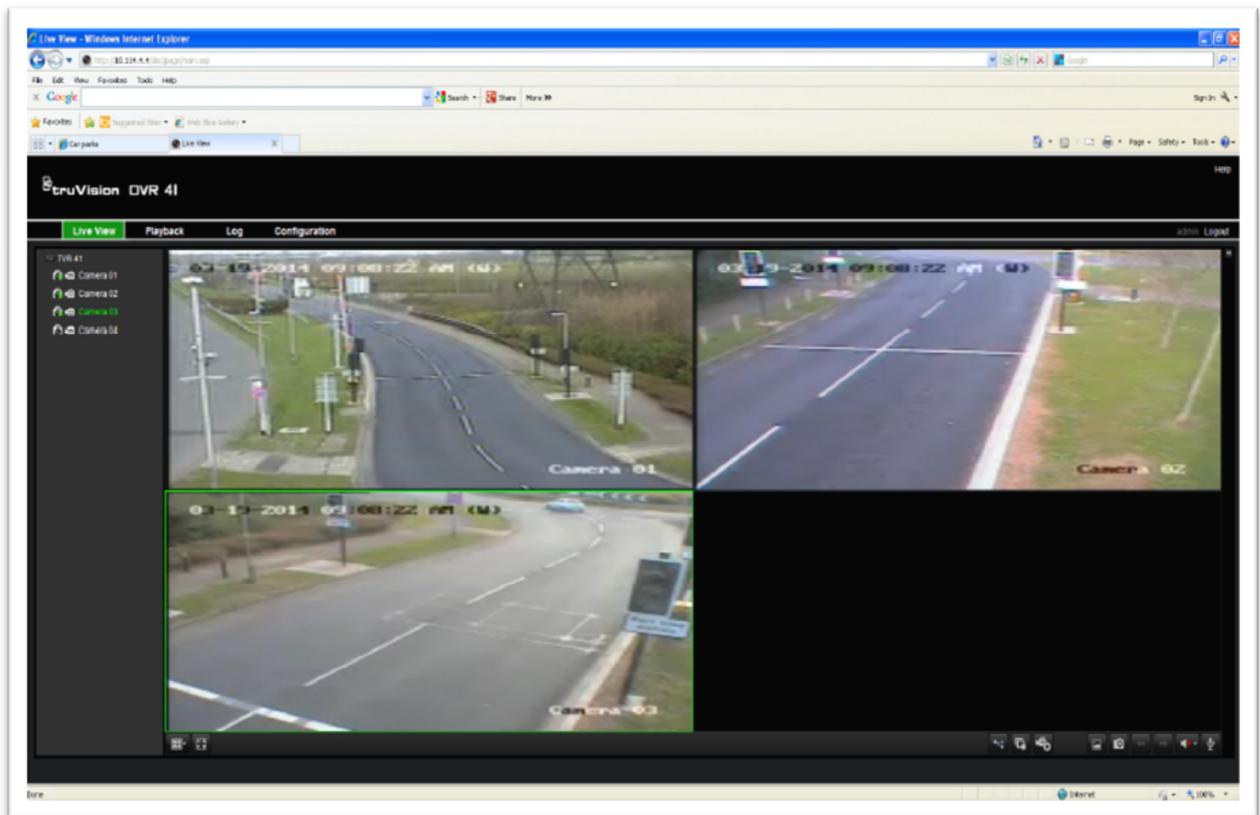


Figure 16 - CCTV cameras

Web-based System

It was essential that each system and application be fully integrated as one holistic system and be capable of being monitored and controlled by web based applications to multiple clients.

Access to the system is controlled by:

- User name password of the router
- IP address
- User lock out features e.g. after a number of attempts a user is locked out for a period of time
- VPN connection between WCC control room and the Controller

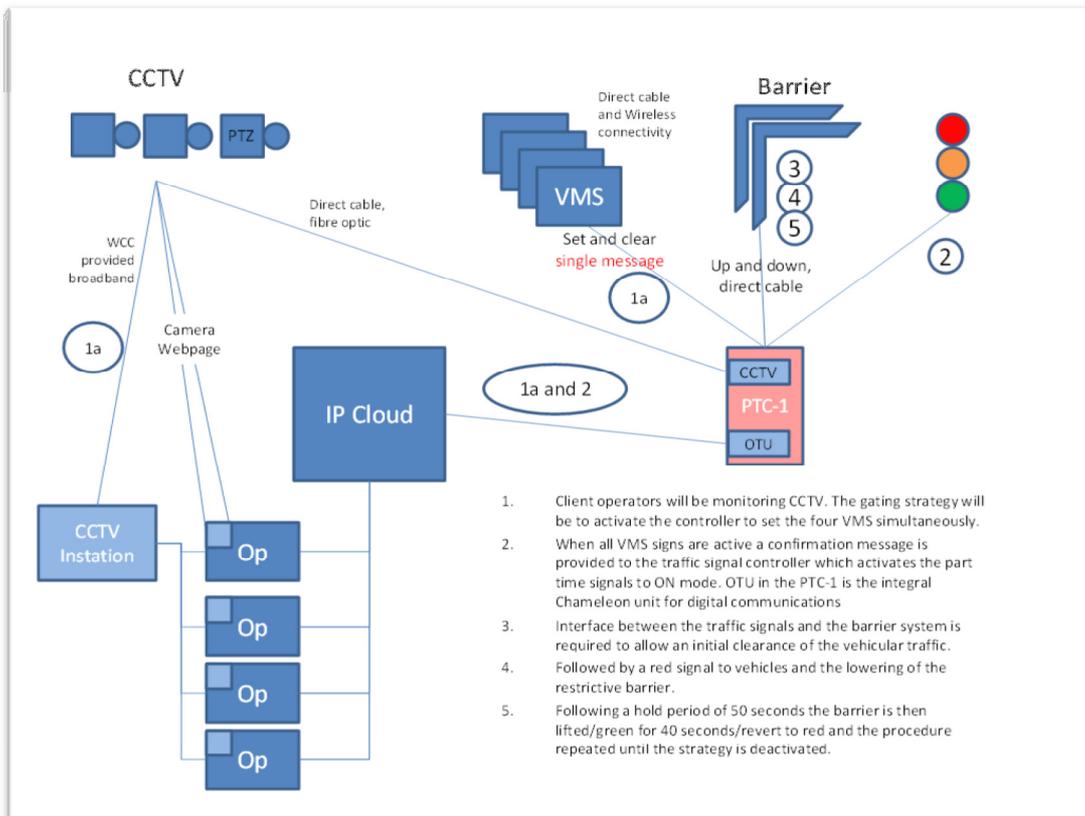


Figure 17 - Imtech's Proposed Structural Layout : Conceptual design of links and interfaces between the principal system elements, centred on Imtech T&I's traffic signal controller

Interface

The user interface (Figure 18) gives a real time view of the state of the electronic signs, the traffic signals and the barriers as well as the detectors.

This browser interface is a standard feature of the PTC1 Controller and therefore did not need any

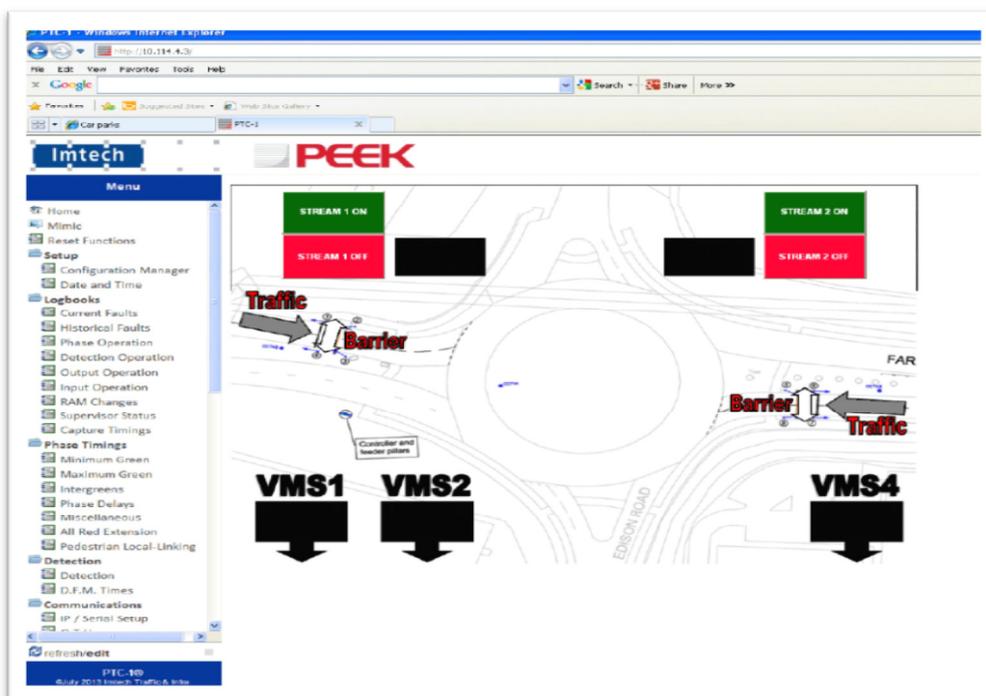


Figure 18 - User Interface

additional software within the PTC1 or on WCC computers. We worked with Imtech to define and agree the interfaces and they were reviewed and tested during the normal FAT / SAT process.

To implement the gating strategy the operator will activate the system as follows:

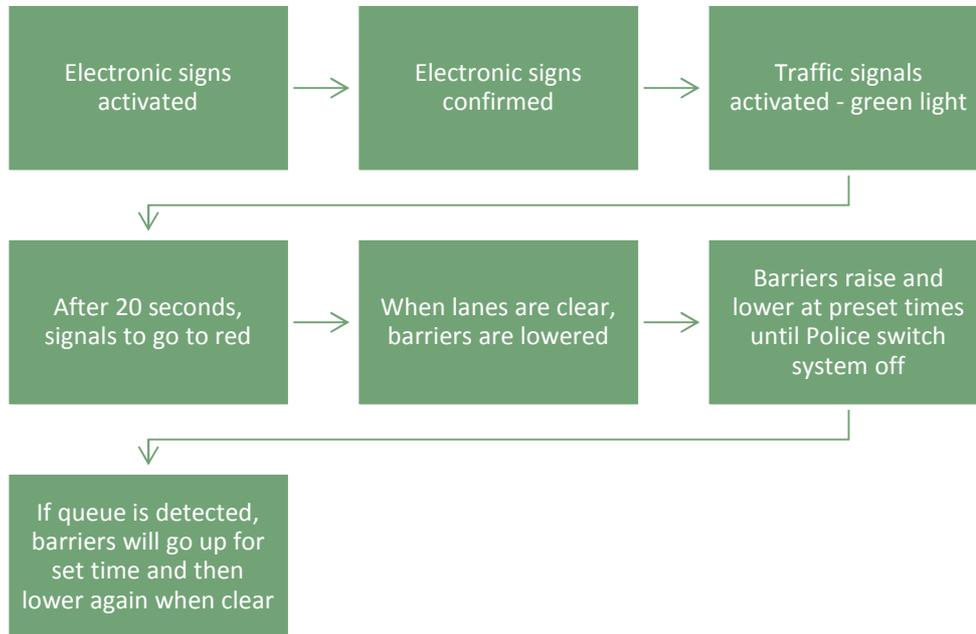


Figure 19 - System Operation

Summary

- The project brief has been met and a permanent, sustainable solution has been delivered.
- There have been no reported car cruising events since installation.
- Warwickshire Police are able to monitor the site remotely from their Control room using the CCTV cameras and operate the system as and when required.
- Businesses on the estate have safe access to the site 24/7.
- The BID Company, the MP and the local Councillors are all satisfied with the scheme and that it is proving successful.
- 'Implementation is the deterrent'.

