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case study: Donington Park
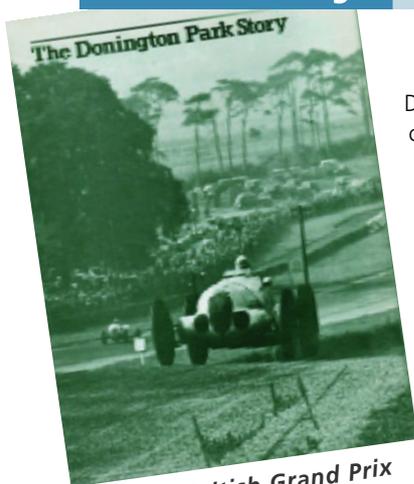
Figure 1: British Grand Prix 1937.

DONINGTON PARK is one of the oldest motor racing circuits in the UK – racing started in 1931. It was the "mecca" for grand prix racing and saw the arrival of the German teams with the Mercedes and Auto Union cars, which dominated the sport in the late 30s (Fig 1). It was an army depot during the war but reverted to a race track and was bought by **Tom Wheatcroft** in 1971. It thrived for over thirty years culminating in being awarded the British Formula 1 event for 2012. However, the site operators were not able to secure funding and the business went into administration with the site reverting to the Wheatcroft family.

In early 2011 Jeremy Murfitt was appointed to deal with property and planning matters but had to start from scratch. The administrators had seized all of the contents of the site offices. Nothing was left, no

client who would purchase a single user licence and train one individual to operate the software. The project started with Esri ArGIS 9.3 but with an expectation that the final version should move to 10.0. This would of course require some retraining and support during a critical implementation phase.

The Initial Property Terrier The terrier was to include all owned property, tenants and occupiers, building information, listed buildings, planning records, tree preservation orders, SSSI's, rights of way, helicopter landing pads, and car parks. Ordnance Survey MasterMap and aerial imagery were acquired, geo-databases set up and within a couple of weeks a "base" system was up and running.

At this point, Jeremy realised his need for further application training and hadn't considered online

GIS goes motor racing! Over the past year, **Jeremy Murfitt** has implemented a GIS for managing Donington Park Race Circuit. GIS was the obvious solution – a compact site with no existing asset data. The technology has proved vital for big events, coexistence with the international airport next door and for bringing the circuit out of administration and back to profitability. But there was a lot to learn! He was supported throughout by access to e-learning and technical guidance from GIS247.

paper work, maps, plans, nothing. Luckily, the estate manager had a separate office with some of the relevant documentation.

The only maps and plans available were hard copies showing ownership, leases and contracts, planning permissions, utilities and drawings of building details and site surveys. There was quite a pile of maps and plans varying in size, quality and scale.

Jeremy proposed a GIS solution to organise all of the information concentrating on building a property database initially and thereafter to include services. Once complete this would be transferred to the

training until he discovered GIS247. He decided to start from the beginning of the course and work through all of the modules. These are broken down into logical sections and can be taken as a whole or as individual components. An immediate benefit was finding better ways of using the software and finding shortcuts or simpler options which all improved efficiency.

Site Services The next phase of implementation was capturing the services to and within the property. There were some CAD surveys, most recently from 2008 and these contained useful, but "unintelligent"

Right: Figure 2 – Donington Foul and Surface Drainage.

Far right: Figure 3 – An extract from the World Super Bikes Masterplan.

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casestudy Donington Park
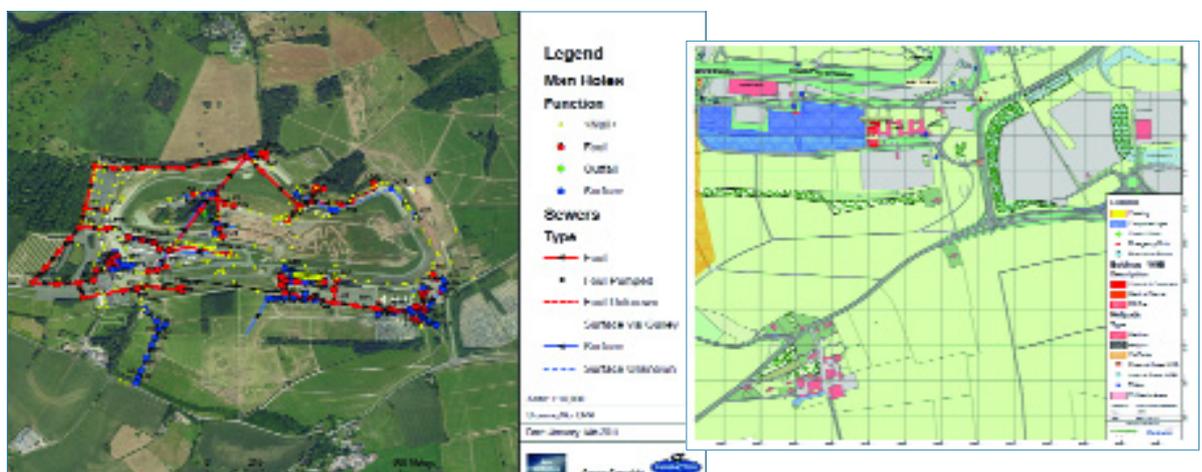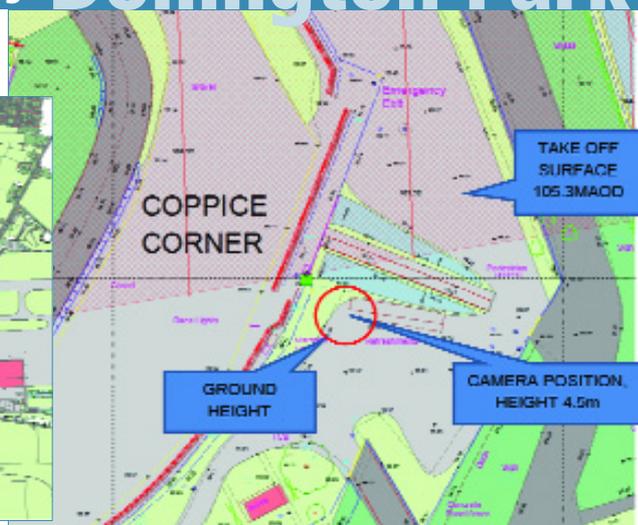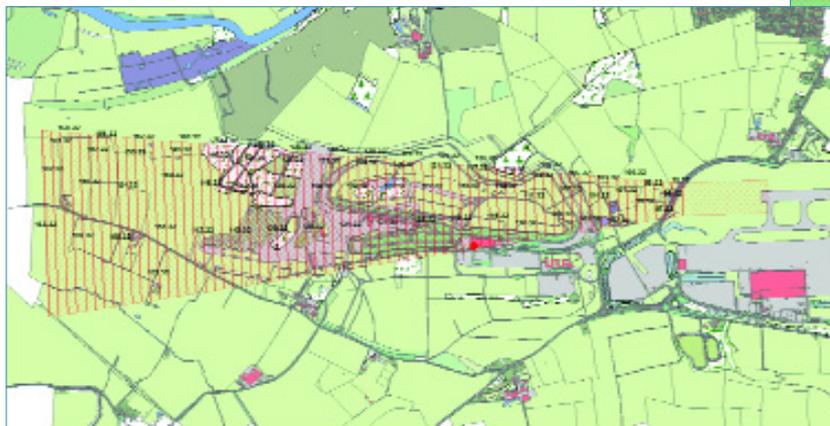
data. This included manholes and inspection chambers (location but not use), power lines, water supplies, hydrants, data lines, telecomms infrastructure, water mains, surface and foul drainage.

Two geo-databases were created – one for water supply and drainage and the second for electrics & telecomms. Populating these was more complex requiring many hours on site identifying and categorising all of the features. The estate manager's local knowledge was critical and, from a large number of A0 drawings, a service plan was pieced together (see Fig 2).

By now the benefits of the GIS were becoming obvious – the management team could visualise all the information and financial justification was evident. Presentation with the GIS in meetings makes best use of attendee's time and enables everyone to see and use the same information. This was particularly useful when discussing issues relating to site services – this was the first time that comprehensive plans of the whole site were available.

The first big event of the 2011 season was the British Superbikes Championship at the end of March. For such major events, the circuit is required to have an event management plan covering everything from waste management to lost property. Interested parties include all the blue light services, East Midland Airport and the race organisers. This was another opportunity to use the GIS – at previous events these key participants had never had access to the same information at the same time or in such consistently mapped form. The list of locations to be captured included: external and internal gates, ticket offices, medical points, marshals' stations, CCTVs, loud speakers, large screen TVs, satellite uplinks, temporary mobile telephone masts, camera locations, tower lights, and lots of campsite details. These were organised into three geo-databases: Event Data, Track Data and Health & Safety information.

The flexibility for fast display enabled the various interested parties to speed up decision making, hard copy plans were produced on the fly. Previously this required a third party CAD provider to recreate plans offline over a few days. A simple local grid was added and seemed to be welcomed. However, it soon transpired that the police and fire services immediately revert to national grid in an emergency and they were delighted to watch the OS Grid appear at the flick of a switch! See Fig 3.

Planes Donington Park lies at the western end of East Midlands Airport (EMA) and the end of the runway is only 800m from the site boundary. A standard airport safety procedure requires determination of the minimum take-off and landing slopes. These are different with take-off slopes being less steep than the landing glide path. Although the theoretical slopes are set for the worst case (fully loaded take off on one engine) any structure along the line of the runway must not protrude above this surface. The airport provided CAD drawings for these slopes and these were used to create polygons and lines in the GIS for the circuit. See fig 4.

All structures on the site were already coordinated and their heights above ground known. From the site survey there were also ground levels so the clearance between any structure and the take-off surface could be calculated. However, a problem arises when cameras are mounted on movable access platforms – these are up to 45 metres high! Any protrusions would have to be notified to the authorities and could result in restrictions on flying from the airport. This could prove costly to the circuit!

People The final element of the planning process related to people. The GIS enabled easy visualisation of where people would be located during the event. This is needed to obtain a motor racing licence from the Federation Internationale de l'Automobile (FIA). Their inspector visited the track two weeks before the event to confirm and agree all details about the track including all safety aspects and where all personnel would be located during the event – marshals, doctors, ambulance crews, emergency response bikes,

Above Left: Figure 4 – The East Midlands Airport (EMA) Take Off Surface.

Above: Figure 5 – Determining the Clearance Heights.

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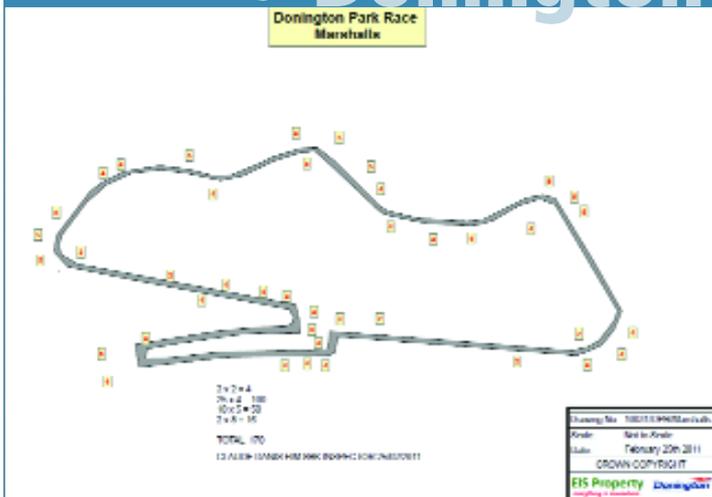
Above: Figure 6 – The Marshals positions for race day.

security, gate and ticketing teams etc.

The inspection takes place over a day and plans were provided the previous week for all these locations with suitable symbols. The inspector did make a number of changes to these locations which were instantly updated using drag and drop. Revised plans were quickly produced, printed and signed off. These were simple circuit outlines with appropriate symbols but no base data. See Fig 6.

With the big event over it was an opportune time to upgrade to ArcGIS 10 and the GIS247 service were there to help. Purchasing and using new software can be a bit like a new toy at Christmas! Open it; glance at the manual and then just start playing! In this case an easy download from Esri and away you go. Using the application before embarking on formal training can be useful anyway. Prior knowledge helps to get the best out of the training. Jeremy confirms this; he used GIS247 to work through the modules for version 10 with the aim of completing all three levels of training. He then spent some time and effort tidying up datasets for the various applications and entering some Metadata. GIS247 particularly stress the importance of keeping datasets well structured and organised.

Jeremy is an experienced GIS user and deals mainly with property based information. Datasets are therefore relatively static and there is little need to work with complex mapping or with scripts. However, Jeremy wants to be able to "present clients with simple and functional applications that will enable them to use the data themselves". He is looking at various options including using Arc Publisher along with Arc Reader. Online projects are also of interest and he knows that GIS247 will be ready to help.

What next? At the circuit there will be improvements to the data including a new survey of the water mains and of the miles of electric and data cabling. More excitingly there are discussions about the real time mapping of vehicles using the track to help with noise modelling and collating data on spectators to assist with traffic management. It sounds like Christmas may be coming round again?!

Final thoughts Jeremy believes that GIS is going to achieve a much higher profile in commerce and business – it has yet to filter down from the public sector and the large corporations. Google Earth/Maps and many other websites have raised the profile of mapping. However, there is a knowledge gap for many people between what can be achieved with Google Maps (for example) and that of full GIS applications such as ArcGIS or MapInfo.

He believes however that large-scale mapping prices (typified by OS MasterMap) are a deterrent to many potential GIS users. Some clients believe it is prohibitive and this is particularly true for rural areas where recent price changes have resulted in 20% hikes for some users. Similarly, although the latest ArcMap 10 from Esri has been a significant release and he would not now wish to go back to the previous version, he cannot justify the cost of some of the extensions which he would like to use for some clients.

Jeremy will also continue to use GIS247 to further his knowledge and skills with the benefit that he has the flexibility to use the online training as needed.

Jeremy (right) won the GIS247 competition for users' stories and was awarded the iPad 2 prize by Steve Soloman, GIS Co-ordinator, GIS247. The picture shows the prize presentation in the motor museum at Donington Park Race Circuit.

About the Author
Jeremy Murfitt is a Chartered Surveyor with over 20 years experience and has always had an interest in mapping. His company EiS Property provides advice on property, planning and providing GIS solutions with clients including Donington Park, Breedon Aggregates and Sandicliffe.

About GIS247
GIS247 is a comprehensive e-training solution for GIS users, with full courses and instructional technical modules that support GIS projects worldwide. Its internet-based solution provides valuable tools for all users whether they are new to GIS or seasoned professionals. GIS247 is one of the many solutions offered to the GIS community by Sological Solutions.

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