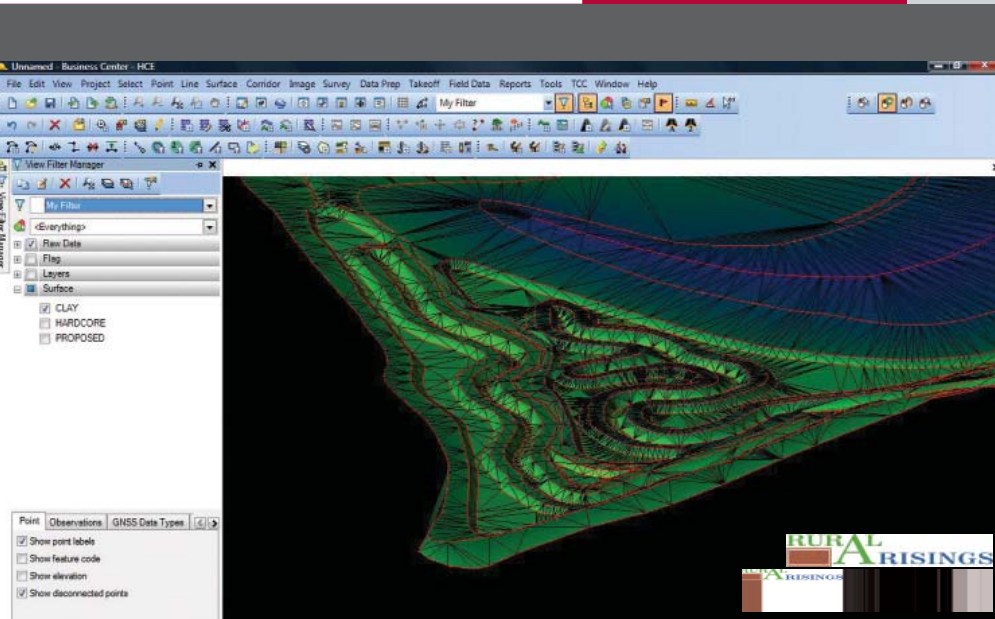


Case Study

Customer:
Going Green Restoration Ltd

Project:
Transformation of Little Belhus
former Landfill Site

Solution:
Trimble GCS900 Machine Control



viable solution was to provide an engineered cover. The constituent parts of this cover would be layers of regulating material made up of the inert waste soils suitable for remediation from the local area that we were still taking in, then a layer of clay at least 0.5m – 1m in depth as our waterproof layer and then above that, a topsoil layer to create a planting medium. The end result would be a cover over the entire landfill that will be for the most part, 2m deep.”

The partnership also knew that as well as shifting large amounts of material (1.6million m³ over the ten year period), the earthworks would also involve extensive contouring to further aid drainage, the creation of gentle slopes to reduce the visual impact of the M25 and the execution of some complex design work to meet stringent environmental requirements.

Martin continues, “This scheme is about delivering on many different criteria; it is about ensuring water runs off the surface and not into the ground; it is about creating a consistent depth of clay throughout the site; it is about creating natural looking hills that don’t show the wave effect we have to incorporate for drainage and it is about reproducing complex ecological friendly designs on the site. If we were to deliver efficiently on all these levels, the obvious solution was for us to install a machine control system on our CAT D6T dozer.”

Martin was already familiar with both the Trimble name and machine control technology following a visit to Caterpillar’s Demonstration Centre in Malaga. During the 2010 Futuresource Exhibition at Excel in London he met up with KOREC’s Machine Control Sales Manager, Peter Brooks, on the Trimble Environmental Solutions (TES) stand (together TES and



▲ Trimble GCS900 system on Going Green Restoration’s CAT D6T dozer

Continued overleaf ►►

Going Green in Essex

Just off Junction 31 of the M25 near the Essex town of South Ockendon lies Little Belhus, a former Landfill Site and now home to an ambitious project which will see it turned into a country park with cycleways, walks and bridleways open to the public. The park will also be home to an ecologically diverse landscape that is both attractive and healthy.

The transformation is being undertaken by Rural Arisings Ltd, a firm of engineers and ecologists specialising in the innovative recovery and re-use of wastes such as construction and demolition rubble to create environmental enhancements on complex projects.

Working closely with Rural Arisings on this project is Going Green Restoration Ltd who will manage the earthworks – a proven partnership that has already undertaken a successful project at Church Marshes Country Park in Sittingbourne in Kent.

Site History

The Little Belhus site had historically been used for the extraction of gravel and sand dating back to the 1940’s and the resultant pits filled with household waste and commercial/industrial waste. This process of infilling was completed by the mid 1970’s and as the standards and

enforcement procedures at the time were limited, no environmental protection occurred. Restoration purely involved a thin cover of soil and no planting was carried out.

The history of the site presented the partnership with an immediate challenge – an 86 hectare area that was now despoiled contaminated land with all the associated health and safety implications.

Martin Dace, Managing Director of Going Green Restoration explains how the partnership approached the problem. “Our primary concern at Belhus was making the site safe. The surface landfill had just a shallow covering of soil over it and there were leachate* and gas problems to contend with. This was not helped by the permeable nature of the current surface covering, if there even was one. Potential contamination of water resources both on and off site, was a real threat and the only

KOREC provide specialised solutions for the environmental industry) where they discussed what KOREC and Trimble's GCS900 machine control system could bring to the project. A demonstration was arranged and following a month long trial, the partnership purchased a Trimble single GPS GCS900 3D Grade Control System for the dozer and a Trimble SPS852 base station to provide the GPS infrastructure to cover the whole site.

How the System Works

The Trimble GCS900 system was installed on Going Green's Caterpillar D6T dozer. Using a single GPS Smart Antenna mounted on the blade, it is a full 3D control system that puts the site plan - design surfaces, grades and alignments - inside the cab. From the single GPS antenna mounted on the blade, the position and blade slope is measured. The single SPS852 base station was mounted on the site cabin roof and provides sufficient RTK GPS coverage for the whole site.

The on-board computer uses this position information, and compares it to the design elevation to compute cut or fill to grade. This information displays on the Trimble CB430 screen- in plan, profile, cross-section view, or text. The cut/fill data is also used to drive the valves for automatic blade control. Additionally, the cut/fill data is passed to the GCS900 lightbars, providing additional visual guidance to the operator for up/down to grade and right/left to a defined alignment.

Early Progress

Martin Dace reports that the most obvious advantage of using the Trimble GCS900 system is that they were able to remove all the pegs from the site. "This is a heavily contoured site with a huge amount of setting out required. The site is not secure and we had been putting out profiles time and time again only to have kids pulling them up. Rural Arising's engineers are now freed up to spend more time managing data and assisting on other projects. From an operational point of view, our foreman Dave Frost says that the drivers have all found the system both straightforward and productive and in particular the perfect solution for eliminating the over fill problems that had occurred when they were working blind. Everyone on site tells me it's a good bit of equipment and that without the need to rely on an engineer, they can now work more independently."

Design Data

The data for the project is prepared by Rural Arising's engineers in AutoCad which is then easily processed in Trimble Business Center for use in the machine. Data is prepared in sections as the park progresses. "Ecology has defined a lot of what we do on this project," explains Principal Engineer, Neil Gibbens. "For example, we have a large area where we are constructing a water vole habitat. It's an intricate design that requires the construction of a channel that is just 1.25m

in depth but 4m wide at the bottom and 9m wide at the top with shallow reeded areas on either side. Using the GCS900 system, the dozer can accurately construct the complex profile of this area. Similarly, the system is also perfect for the undulations we require across the remainder of the park. This is a country park and whilst we require a 'gently rolling' landscape, we also need to direct rain water into ponds and streams. The GCS900 system allows gradients and undulations to be constructed, some of which may not be discernible to the human eye. Without the GCS900 system, this would definitely be more of an art than a science!"

Site ecology also means that the GCS900 system has come into its own in the East field which is home to an important invertebrate population. The field has been divided into ten sections with just one section being worked on in each year of the project's duration. This will ensure that there is minimum disruption to the existing wildlife. The design for this area incorporates 'avoidance zones' which means the cab operator will receive an audible warning if he comes within close proximity of a new or previously worked section boundary in the field. Avoidance areas have also been built into the design for sections where ground nesting birds need to be avoided.

Whilst Rural Arisings' overall design demands just +/-100mm tolerances, the GCS900 can provide an accuracy of 15-30mm which is vital for the critical laying of the drains. The higher accuracies will also come into use towards the end of the project when a new playing field will be created for an adjacent school. Sports surfaces must be smooth, level, free draining and able to withstand regular use and these crucial requirements demand that excavations, sub-base and drainage must be installed correctly and to precise levels if undulations and depressions where water can gather are to be avoided.

Whilst it's still early days for Going Green Restoration, Martin Dace is impressed with the system. "The GCS900's accuracy means that we have total confidence that we are working exactly to Rural Arising's design and that the surface and sub soil drainage, so critical to this project, is exactly as it should be. Our machine operators can work independently and now that this site is pegless, the engineers can use their time more productively in other areas. The system has been straightforward and easy to use and KOREC staff very helpful - they've been just great."

*Liquid that has dissolved or entrained environmentally harmful substances which may then enter the environment



▲ Clear screen display in the cab

Contact us:

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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