

# Geo—What?

## Scandinavian cutting-edge Machine Control Success on a Major Project

**A**t the end of World War II the Central Coast of NSW, between Sydney and Newcastle, was a string of sleepy fishing villages and holiday cottages.

Robson Civil Projects has played a major role in the explosion of building that's seen this area develop into an integral part of the Sydney metropolis, with a population approaching 300,000 and a growth rate three times the NSW average. Locals say that Robsons have built half the Central Coast.

It was significant then, that this long-established company passed over the majors when they chose a machine control solution for their large Kooindah Waters project. Robsons opted for Brian Rowland's 3DX Australia (0412 477 997) and his package of GeoRog and Axiomatic BPS products from Scandinavia.

"We had a very careful look at the three main alternatives," says Kevin Rigg, CEO of Robsons. "We'd identified the Kooindah Waters project as a perfect opportunity for us to grasp the nettle and embrace GPS technology. Kooindah comprises an

18-hole golf course and 253 residential allotments, much of it built on low-lying marshy land that involved moving over 600,000 cubic metres of material. Large areas had to be pre-loaded, and we then had to shape the golf course to close tolerances."

### Scandinavian Collaboration

The 3DX package seamlessly marries two cutting-edge Scandinavian products. BPS ('bucket/blade positioning system') is the brainchild of Tommi Kauppinen's Finland-based Axiomatic Technologies Corporation. It's a 2D control system that's equally happy on an excavator, dozer, grader, or a range of other machine types—and that's a big statement.

"As a stand-alone product it has a remarkably sophisticated range of features, and to my knowledge is the only 2D product in the world that can be moved from say an excavator to a grader," says Brian Rowland. "And as a control platform it really excels when we package it with the GPS/total station solution offered by GeoRog."



**Brian Rowland (left) of 3DX Australia, with Tommi Kauppinen**

GeoRog is the secret weapon of the machine control community, produced by Svensk ByggnadsGeodesi AB (if that's a mouthful, let's settle for SBG) of Sweden. It's one of a family of products that have been refined for decades by Sven Vejde, a very hands-on CEO, and in a real sense, one of the principal pioneers of this technology. GeoRog adds the 3D dimension to the 3DX package, dealing with the computerised design model and interpreting GPS or total station inputs. In simple terms, GeoRog does the organising, and BPS does the interfacing with the earthmoving machine, relaying blade position information and issuing GeoRog's instructions.

### In-Depth Assessment

Robsons conducted detailed assessments of competing systems. "An important criteria for us was simplicity of operation and clarity of information," says Kooindah project manager Andrew Newberry.

"We have some great operators and we wanted them to be completely comfortable with this major technical commitment. The touch-screen controls of GeoRog seemed superior, and were rapidly mastered by our guys with little previous computer experience."

"Also the full 3D graphics, not offered by others, make the relationship of the machine to the design far more clear."





“Support was obviously critical, and we had a history of working closely with Brian Rowland on laser and related products. Having said that, we encountered remarkably few teething troubles—the systems worked well, pretty much from day one, and have proved highly reliable.”

One of the uniquely valuable features of GeoRog is its ability to detect data errors. The design model can be rotated in 3D on the machine’s display, even turned upside down to inspect the under-side. Errors appear as spikes. “Others can do a version of this in the office,” says Andrew Newberry, “But no-one else can do it on the machine itself. The problems occur when the data goes into the machine, and that’s when you need to identify and address them.”

For Kooindah Waters, Robsons deployed one 3DX package on their



D7R, another on a 140H grader, and a third on a 325C excavator with auto tilt bucket.

### GeoRog: In one Word, Versatile

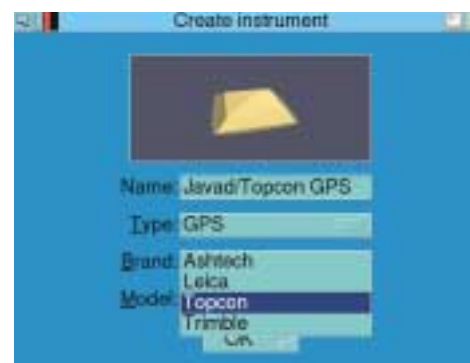
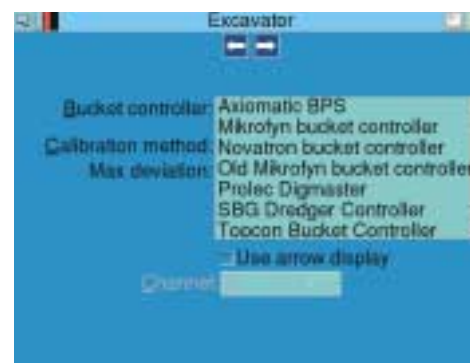
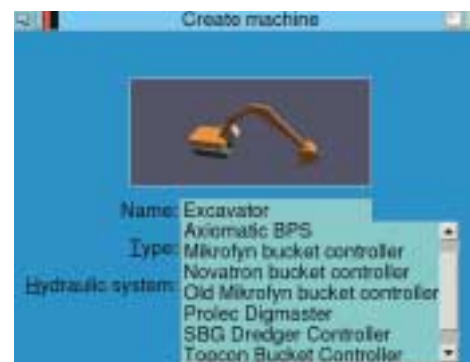
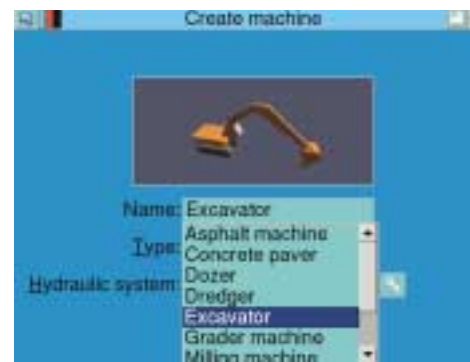
Sven Vejde has been refining GeoRog for twenty years, a time frame that comes as something of a surprise to those who see the technology as being only five or six years old. Over four hundred SBG systems are in use. Machine control is widely entrenched in Scandinavia, no doubt attributable in part to the high wage structure and consequent savings. SBG’s approach has been unique in two important ways.

One is the versatility of GeoRog. For years Sven wrote the software himself, and the objective from the beginning was for the same system to function on a wide range of earthmoving equipment. It’s quite remarkable to see how this is put into practice. Normally the dealer rather than the client would set it up, but using the touch-screen it’s as simple as answering a series of questions, and we show the sequence in our pictures at right.

GeoRog asks you to ‘create a machine type’ from a pull-down menu offering asphalt paver, concrete paver, dozer, dredger, grader, excavator, milling machine and others.

### Designed to Use any Brand of GPS/Laser

The next question/answer sequence highlights the second key feature, that of adaptability. Sven never saw himself as a supplier of bucket and boom sensors, laser gear, or GPS receivers. Recognising that many customers may already have their machines set up with something like BladePro or Mikrofyn, or may want to make their own evaluation of GPS



**Setting up GeoRog is as simple as answering questions from pull-down menus on the touch screen.**

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## Robsons at Kooindah Waters

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receivers and antennae, from the outset he created a system that would work with any of the major brands and most of the minor ones.

Thus, if you want GeoRog to handle a total station assignment, you might answer the question 'Create Instrument' by selecting a total station supplied by either Leica, Topcon or Trimble. Or if the assignment was GPS, you'd choose the appropriate input—Trimble, Ashtech, Topcon etc.

Interfacing with the actual machines, GeoRog is designed to work with all the better known 2D products, so after selecting 'excavator' as machine type, you'd then choose between Mikrofyn, Topcon, Novatron, or in the case of Rowland's package, Axiomatic's BPS.

"GeoRog cooperates well with all the 2D systems, but we've chosen Axiomatic's BPS because frankly we think it's far and away the best," says Rowland. "These two are so well integrated that it's uncanny how they feed off each other."


Both Sven and Tommi have been out to Australia many times to support their respective products, and are becoming familiar figures on job sites. Indeed that's how we first heard about 3DX, when we visited the Westlink M7 project in Sydney. We were aware that Brett Lehmann had employed all the major brands on this job, but when we were on site, no-one seemed to want to talk about anything but what a terrific job had been done by 3DX on automating Abigroup CMI slipform pavers. Others had said it couldn't be done.

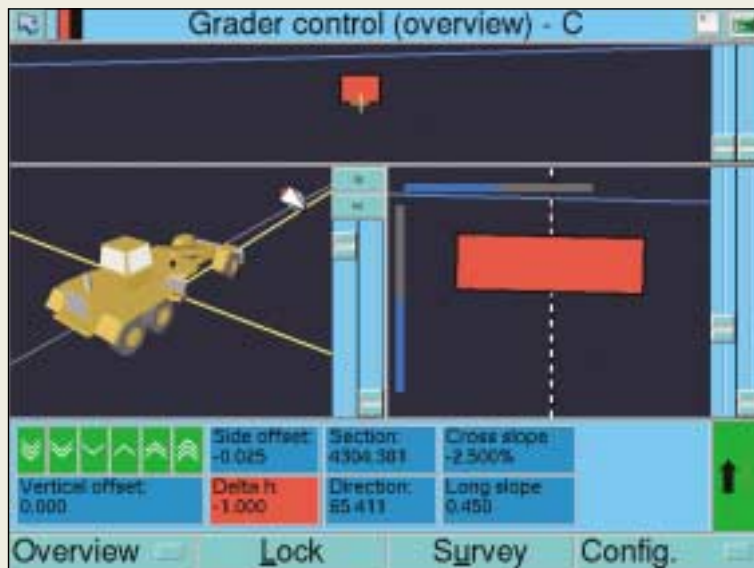
We spoke to both Sven and Tommi at Conexpo in the U.S. They're pleased at success of their products in Australia—3DX has over twenty systems installed, from a standing start less than two years ago. "We have a strong commitment both to 3DX and the Australian market," said Sven, who was on his way down under to enhance the compatibility of GeoRog with our popular home-grown design package, 12d Model. "Brian Rowland is our exclusive distributor, and he'll

have our full support as he develops a national sales and support network."

### Kooindah Waters Success Story

Robsons' confidence has been amply rewarded. "Frankly, the thought of tackling the golf course with conventional survey processes just makes me shudder," remarked Kevin Rigg. "Our first venture with GPS was trouble-free, and generated the benefits we had hoped for."

Apart from the satisfaction of a contract bonus, the project was completed three months ahead of schedule. Robsons gained themselves an extra quarter of a year to move on to other work and generate more income. That's what productivity is all about. 



**GeoRog operators found the touch-screen controls very user-friendly. Advanced 3D visualising of the screen display (below) aids considerably in knowing the machine's relationship to the design.**

