

12d DIMENSIONS:

- Land Development

Project Summary

New Zealand firm Tomlinson and Carruthers Surveyors Ltd has been in operation for over 55 years. It operates in the Wairarapa region (approximately 100km north-east of Wellington) and covers a radius of about 150km around its Masterton office.

Traditionally, cadastral surveying has been the firm's main focus but in recent times Tomlinson and Carruthers has branched out into more extensive roading,

For more information

To find out more about how you can create better designs faster with the 12d Model solution for civil engineering design, visit www.12d.com.



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Masterson Development



engineering and subdivision designs.

Surveyor Derek Roberts said, "I think the engineering design work we're now doing is increasing due to a buoyant and expanding industry, combined with new staff and a new curriculum in the New Zealand Surveying degree that has covered changing technology such as using 12d Model and GPS."

"For example, 12d Model was used extensively on a recent project in the northern end of Masterton, near a big roundabout on the way out of town. The land concerned is known as 'the horseshoe', which was part of a significant local car park."

The Challenge

"The project started as a straightforward two-lot subdivision to provide a council-owned car park with the balance remaining in private ownership. On closer inspection it was found that a larger than normal percentage of the land was actually being utilised as

road. To formalise the situation these areas were vested as road in the ownership of the Local District Council. The back of the footpath was used to define the inside lot boundary with the outside being the existing Certificate of Title boundary (road carriageway). In conjunction with this, to the south-west there is part of a river with an open stream flowing through the area. The stream actually forms a natural boundary which we picked up to be compared with the underlying data in preparation for a future project."

The Solution

"We did absolutely everything in 12d for this job, including creating all cadastral data, design, CAD and plotting. We started by creating our scheme plan (plan of proposal) in 12d which was plotted out and used as part of the application, and then survey pre-calcs were completed within 12d before visiting the site. This information was uploaded into the GPS unit directly from 12d, so when on site we were able to walk directly onto these marks via

coordinates rather than having to use conventional methods. This in particular has meant a huge saving in time and also given us a different approach to the majority of our jobs.”

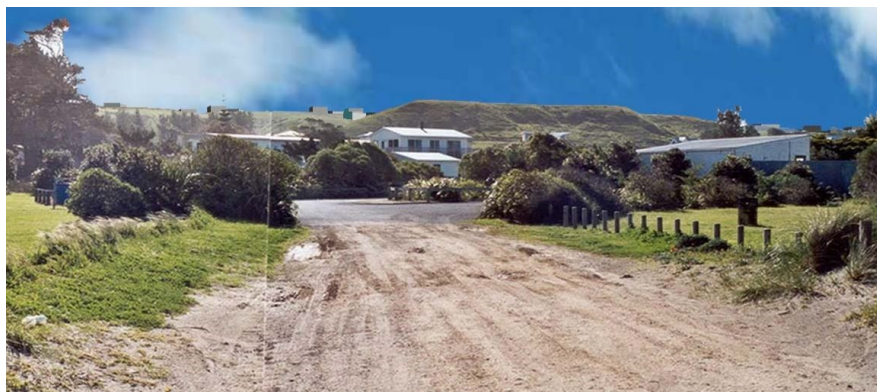
“The information gathered by GPS and also conventional

instruments was then downloaded into 12d Model. This data was used to form the basis of the 12d traverse spread sheets

through which the majority of the linework for the title and survey plans was prepared and submitted on A2 litho paper. As this project was done using GPS, we also had to use the transformation functions to work out and apply the appropriate scale factors. Using GPS combined with 12d Model’s interface for processing pre- and post-data has probably halved the time required on site. A project of this nature would take approximately two weeks’ worth of work spread over the different stages, including about three days in the field and five days’ worth of calculations and drafting. This is phenomenal compared with the time it would have taken using conventional methods!”

“For Tomlinson and Carruthers, the major benefits of using 12d on this and similar projects have come from the 12d traverse spread sheet – in particular the way it does all the line work, point symbols and annotation of the plan all at

once. This has the advantage over other software because 12d is able to calculate and annotate the true information rather than just the projected information.”



The Result

“Once the information is in the 12d traverse spread sheet, the drafting is done automatically. This means the potential for human error – which occurs mainly with reading and writing at the different stages – is

kept to a minimum while the whole process is simplified and sped up. We are finding that using 12d Model in conjunction

with GPS is saving us around 30-50% of our time spent on this and other projects. 12d’s ability to reduce errors has served us well, particularly with the use of GPS and electronic data recorders. Though you can never beat independent checks, the Traverse Spread Sheet Drafting has removed one of the more difficult areas to police.”

“Luckily, we have found that the training curve for 12d is very small, even for those with minimal CAD experience. For new users of 12d, probably half the learning time has been spent gaining an understanding of survey calculation methods rather than of 12d itself. Ease of learning was particularly facilitated by the ability to set up default files and screens to standardise procedures throughout the office and the whole firm.”

“Being a former SDR Map user, I found the 12d traverse spread sheet very appealing and easy to use overall. 12d has really

revolutionised our methods and our approach to the majority of our projects!”



Roads and Highways

12d Model's design option is the smarter solution for the design, modification and maintenance of Road and Highway projects.

Enjoy advanced 3D tools to design local and major roads, intersections, roundabouts, highways, interchanges and much more.



Ports and Dredging

12d Model is the solution for port infrastructure and dredging, easily managing the very large datasets and complex volume calculations often required by these projects.

A complete range of flexible and customisable volume calculation tools allow teams to extract and present the information quickly and easily.



Land Development

12d Model is the most versatile solution for the creation of sustainable land development projects, including residential, commercial and industrial developments, recreational areas, landfills, and agriculture projects.

Easily manage all aspects of your land development project from earthwork quantities, road design utilities and drainage design.



Airport Infrastructure

12d Model provides a solution for the design, construction and analysis of new airports, as well as the upgrade and maintenance of existing runways and airport infrastructure.

Easily manage large airport infrastructure projects and share data across multi-disciplinary teams.



Rail

12d Track has been specifically designed for the survey, design and construction of light, heavy and high speed rail projects.

Extensive railway tools in 12d Track allow the rail designer to quickly and easily design their projects. These options are built on the existing 3D modelling and design tools available in 12d Model.



Mining Infrastructure

12d Model's powerful set of exploration, site investigation, survey and analysis tools are crucial for the initial design, construction and ongoing operation of mining projects.

Comprehensive tools for the survey, design and construction of access roads, railways, earthworks and services allow for the coordinated design and management of mining infrastructure from within 12d Model.



Drainage, Sewer and Utilities

12d Model provides comprehensive tools for the design, analysis and optimisation of stormwater and sewer projects using rational, dynamic (hydrograph) and 2d drainage methods.

Powerful clash detection management allows for efficient 3D modelling of service networks such as gas, electricity, telecommunications and water prior to construction.



Surveying

12d Model is a complete surveying package providing the tools to manage all facets of surveyed data including LIDAR, topographical, as-built, conformance, traversing, geodetics, data mapping, labelling and much more.

The 12d Field option runs on a ruggedized tablet and gives the user access to full 12d Model functionality, allowing you to take the entire project into the field with the most comprehensive pick-up and set-out tools.



Oil and Gas

12d Model assists with the design, construction and mapping of oil and gas pipelines, original site exploration and the wide range of infrastructure required for oil and gas projects.

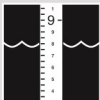
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



Construction

12d Model is the ultimate software for construction with powerful set-out options, direct interfaces to machine control and detailed conformance reporting and auditing.

Manage 3D data and control volumes, quantities and progress claims with 12d Model. Set-out your project and undertake conformance and as-built surveys live on-site using 12d Field.



Rivers, Dams and Hydrology

12d Model handles very large datasets and interfaces with a wide range of analysis packages, making it perfect for flood studies and the management of rivers and dams.

12d has partnered with industry leading analysis software, allowing users to apply 2D drainage analysis from within 12d Model.



Environmental

12d Model's ability to handle very large datasets combined with flexible and comprehensive 3D analysis and modeling tools make it perfect for a wide variety of environmental projects.

Existing workflows can adopt 12d Model easily as it allows users to directly interface with GIS systems and most software packages and file formats.

Why Choose 12d?

- Powerful data processing & intelligent functionality.
- Modular, easy to update & completely customisable.
- Seamless integration with major industry software and hardware.
- Used in over 55 countries worldwide.
- Friendly support & training from industry experts.

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