

## Parsons Brinckerhoff

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CLIENT: Various

SCOPE:

A number of large scale, high profile projects involving the design of roads, drainage, sewer, water and other associated infrastructure, as well as bulk earthwork modelling.

12d DIMENSIONS:

- Road design
- Drainage
- Sewer
- Earthworks

### Project Summary

Parsons Brinckerhoff has been involved in a number of large scale, high profile projects involving the design of roads, drainage, sewer, water and other associated infrastructure, as well as bulk earthwork modelling. Their project teams used 12d Model software to overcome a number of complex and 'non-standard' challenges, often requiring innovative solutions. Due to the size and nature of these projects, they were required to work closely with a number of other consulting engineering companies, with the need for their software of choice to interact seamlessly with the design software used by other companies working on the projects.

### 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](http://www.12d.com).



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# Victorian Major Projects



Melbourne's Yarra River at sunset (Image by Cindy Lever from Pixabay)

### The Challenge

It was imperative for the team to be able to check for clearance and possible clashes between services designed in 12d Model, and those designed in other packages. With limitations on compatibility of import/export mechanisms between various software packages, innovative methods were required to allow design data to be transferred from 12d Model to other packages, and vice-versa. This was required predominantly for transfer of three dimensional pipeline data elements between packages, for drainage, sewer, water and other services. Another innovation was the use of 12d to successfully model complex electrical and chemical box culvert systems, which the team had never previously considered attempting.

### The Solution

Creation of detailed procedures was important, in some cases with step-by-step user guides to allow any project team members to facilitate the transfer of data. The procedures enabled 12d Model to produce .csv (comma separated values) data in a format which

other software can use, as well as to read in .csv data in its original output format from the other package. A macro was developed to output three dimensional pipe data designed in 12d Model, into a .csv file which other packages can read. Electrical and chemical box culverts were created with an improvised approach using drainage strings, with the Drainage Network Editor used to specify the height and width of the culverts. The Drainage Plan Plot function (with a modified plot parameter file) was used to give the culverts the correct geometric representation showing actual internal dimensions of the culvert, allowing service clash checking to be undertaken in 12d Model.

### Result

Using 12d Model software, this innovative team was able to overcome a number of complex and 'non-standard' challenges, particularly on very large projects. They were able to work closely with a number of other consulting engineering companies, with 12d Model interacting seamlessly with the design software used by the other companies.



## 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.

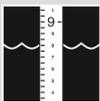
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



## 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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