

**Cardno**  
Dion Mead

CLIENT: Whitby Coastal Estates Ltd

**SCOPE:**

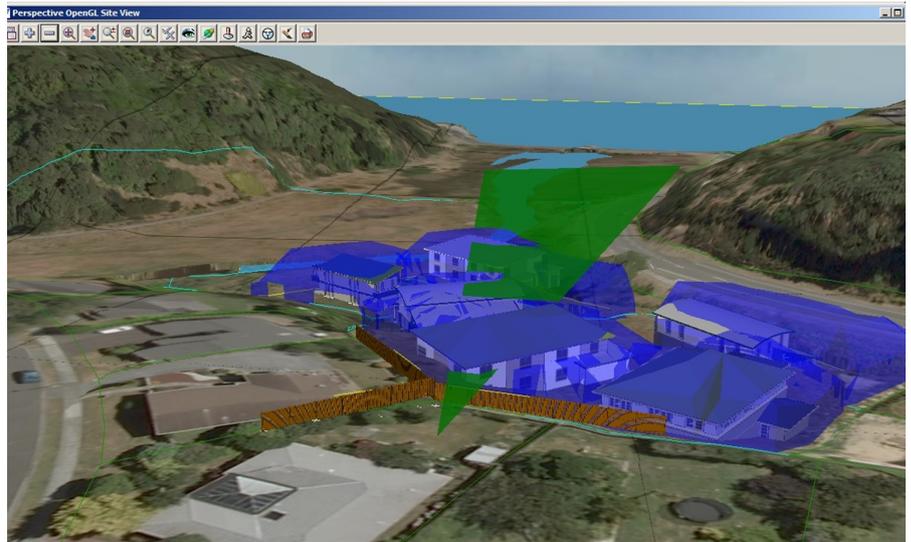
Subdivision to create six residential lots and balance land including, earthworks, construction of a new bridge, and integration of an existing sewer main within the development.

**12d DIMENSIONS:**

- Subdivision
- Drainage

# Shoal Place

Whitby, Porirua City



LOT 1450 DP 54453 – AERIAL VIEW. PERMITTED BASELINE & PROPOSED VIEW CORRIDOR (LOTS 1-6 SHOAL PLACE )

## Summary

Subdivision to create six residential lots and balance land including, earthworks, construction of a new bridge, and integration of an existing sewer main within the development.

## Project Outline

The aerial photograph shows the approximate location of the proposed six residential lots to be established on the site. These will be accessed from a bridge constructed over the informally named “James Cook Stream” which runs parallel with James Cook Drive. The Stream is piped immediately upstream of the site and flows as a constructed stormwater drainage channel on the site.

Duck Creek joins the James Cook Stream just to the north of the proposed development area (refer top left of photo).

There are established residential properties to the south, west and east, and undeveloped former golf course land, reserve land and Pauatahanui Inlet to the north.

The overall application site was formerly part of the Duck Creek Golf Course, and previously referred to as the Lower Nine. The land remains undeveloped with grass cover and is gently undulating, similar to the former golf course. Many of the existing contours on the parent title were created by the earthworks to form the original golf course. Trails for maintenance and access through the former golf course are also visible.

Duck Creek flows through the former golf course site. Bush reserves are located to the north and east, with connecting walkways around the application site.

The proposed development is located near a regionally significant stream (Duck Creek) and therefore requires Public notification under the Resource Management Act 1991 to determine suitable Consents for the project.

## The Challenge

A neighbour objected to the subdivision adjoining his property due to concerns over his view being blocked, despite the land being zoned for residential development. The objector required certainty over preserved views from his dwelling through to the nearby inlet. To address the concerns of the submitter, the Carno team utilised 12d Model to demonstrate how the development would integrate into the existing topography and residential properties. Not resolving the objection would result in the project being deferred to a planning hearing, with little benefit to both parties as such a process takes time and as a high cost.

The team prepared and presented visual images to the adjoining neighbour of the consent notice

## 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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parameters (height restrictions) proposed on the proposed new lots. This approach with 12d Model was a clear and simple way to demonstrate to the objector that his view would be protected.

With the Client wanting to minimise the cost associated with the objector, making use of the Visualisation module within 12d Model was seen as a simple, cost-effective way to clearly demonstrate the visual impacts of the development.



*Duck Creek in flood, 2016 (Image credit: stuff.co.nz)*



*The former Duck Creek golf course, with the beginnings of the housing development (Image credit: stuff.co.nz)*

## Result

With the visual images and 'live' viewing of the 12d Model projects, the objector was easily able to see the impacts and be satisfied that, with the addition of a height restriction covenant, his view would be protected to his satisfaction, meaning a costly planning hearing could be avoided.



*Pauatahanui Inlet (Image credit: WellingtonNZ.com)*

## The Solution

Manual surfaces were created to represent maximum permitted building height and height to boundary restrictions.

The parameters of the view shaft the objector would like to have protected were surveyed in the field and reduced within 12d Model.

12d Model was then used to create a TIN surface of the existing ground surface which had previously been captured via topographical survey. The objector's property was surveyed and view shaft angles captured. A TIN surface representing the plane of the view shaft was created and the impact of this corridor assessed against the permitted building envelope.

The information captured and modelled allowed a perspective view to be generated from specific rooms in the dwelling to compare various development scenarios, being existing views, permitted views and proposed view with height restriction covenants.



## 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.

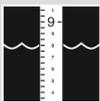
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



## 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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