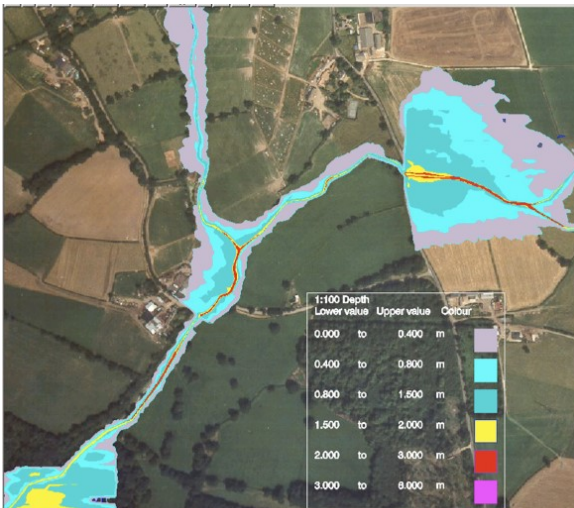


12d RoadFlow, Drainage 2D and TUFLOW Interface

Surface flow analysis is critical to creating a safe environment during flood events. 12d Model with Drainage 2D gives you the tools to make our environment safer.

12d RoadFlow Module

12d RoadFlow gives 12d Model users the power to easily create a preliminary 2D investigation using the TUFLOW engine in a matter of minutes with no limit to the number of cells and running from your 12d dongle. Identifying flood hazard areas and surface flow patterns enables designers to produce a safer design.



Users of the module can completely take advantage of 12d Model's ability to easily handle large datasets (including TINS and LIDAR). 12d Models 1d dynamic drainage is easily integrated with the surface flows.

This is achieved with incredible speed and displayed in 12d Model's 3D perspective view. Hazard areas and flooding depths are displayed in 12d Model's 3D perspective view. Multiple water level profiles are shown in section views and scaled velocity vectors in plan views.

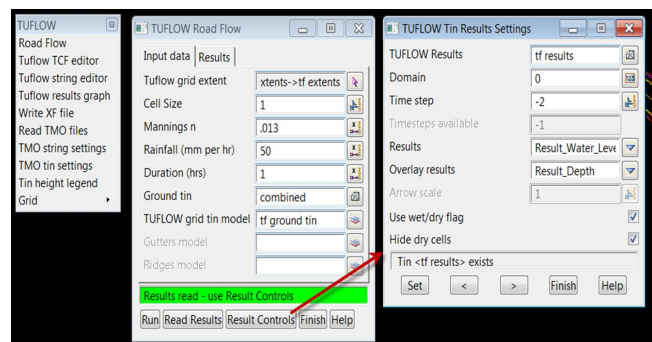
This gives civil designers the freedom to run their own

preliminary 2D analysis prior to passing on results to another department or organisation for further analysis.

With the RoadFlow module, 12d Model now provides users with the required tools to analyse and address the critical area of surface flooding in civil design.

Create TUFLOW projects in minutes

Creating a 12D RoadFlow project is essentially the quickest way a user can create a TUFLOW project. With a simple to use interface and selected crucial input variables, users can quickly analyse data and setup the required files for an advanced 2D modeller.



All of your aerial/ground survey and design data housed in one package

12d Model is well regarded in the industry as being a package that can handle large data sets in a stable manner. With the power of TUFLOW, users can now house all of their design data in a single and intuitive software package.

Use 12d Model's powerful file and error checking capability

'Check Files' are TUFLOW's method of confirming the modelled surface and alerting users to potential problems.

12d Model presents the 'check files' so that modeller can quickly identify problem areas in their model.

Message Files

- Select a message and the model location is identified in 12d
- Use the message time step controller to display next



Identifying flood hazard areas and surface flow patterns enables designers to produce a safer design

12d RoadFlow, Drainage 2D and TufLOW Interface

time step messages with results. No endless stepping through irrelevant time steps

- Identify trends in instability. View current, previous and next message simultaneously for each cell.

Cell Elevation Check files

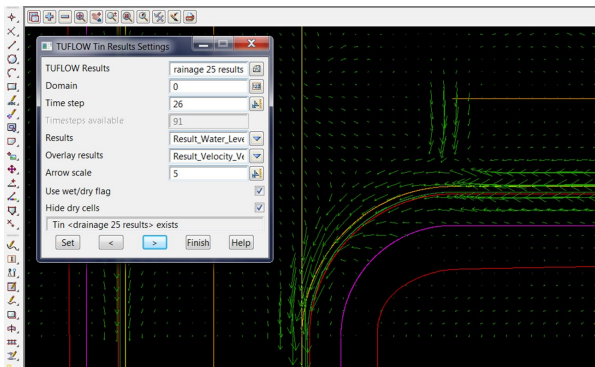
Altered cells elevations are displayed with new z values and raise/lower triangle symbols

This simple feature has had a huge impact on the efficiency of identifying and reviewing error files.

2D modellers (with the Drainage 2D & TUFLOW Interface modules) can then unleash the power of TUFLOW to make additional modifications to the model.

Automatically create TUFLOW Control Files and all associated files

RoadFlow seamlessly leads into the 12D/TUFLOW module by creating all the required files for a 2d flood modeller to pick up where a road designer has left off and delve into further analysis which only a specialist could do.



This bridge between the two disciplines helps designers to better collaborate and achieve accurate results in an efficient manner.

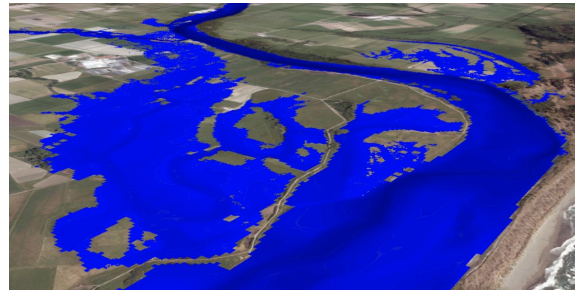
Designers never have to leave 12d Model

That's correct, no more to-ing and fro-ing between various programs to receive and analyse rainfall results on a surface, this can now be completed in 12d Model using the power of both 12d Model and the TUFLOW engine in the native 12d Model environment.

Analyse road flow in minutes, independent of surface complexity

Whether you are looking at a flat highway, a roundabout on a hill or an intersection in a valley, analysing road flow takes minutes (not hours) no matter how complex the

surface model is.

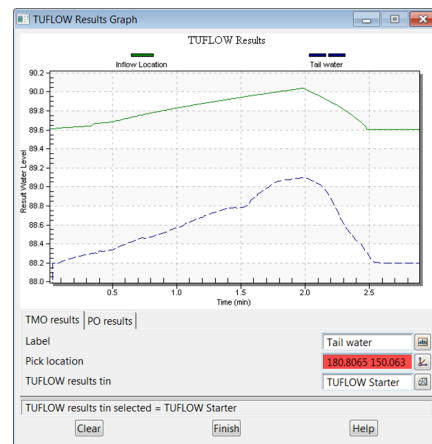


Easily setup the analysis variables within 12d Model

12d RoadFlow has been designed to allow anyone who works in 12d Model to easily analyse rainfall on grid. This means that you need to only input a handful of variables to create with what used to take hours.

Easily read in and visualise your results as an animated 3D presentation

The RoadFlow module is powered by 12d Model's Visualisation module. Depth or hazard colouring of the water surface in 3d allows the designer to quickly identify critical flood areas. Watch the rise and fall of the flood event as you move through the project pausing at critical areas using a customised flight paths. Record this presentation to a video file to present it directly to your client.



Visualise flow patterns with scaled velocity vectors

Step through the flood event using scaled velocity vectors to identify the movement of flow patterns and high velocity areas. This visualisation helps to identify modelling errors

12d RoadFlow, Drainage 2D and TufLOW Interface

and critical hazard zones.

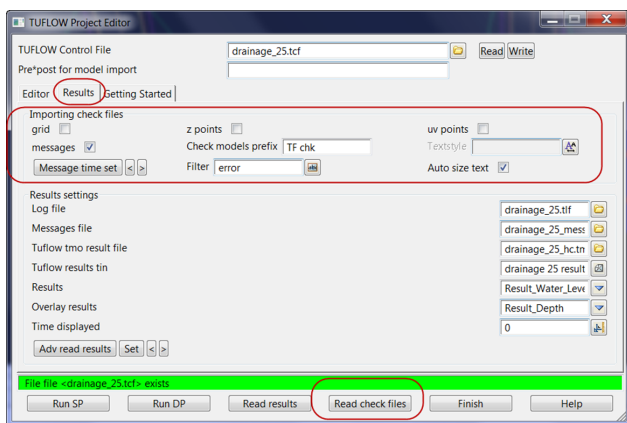
Time graphs can be produced on demand

The points of interest to be graphed can be selected after the TUFLOW run is complete. Hazard, velocity, depth and water level data can be displayed at various locations for comparing results.

TUFLOW Interface Module

With all of the power of RoadFlow, the TUFLOW Interface module builds on both the extended capability in RoadFlow whilst harnessing all of the power of the 12d Model and TUFLOW engines in one simple interface. The interface uses either your existing TUFLOW dongle or your 12d dongle via the Drainage 2D module.

12D Solutions has been in a development partnership with the TUFLOW team to create a simple interface that allows designers to easily create a 2D model natively within 12d Model.



12d Model is known in the industry for easily and quickly processing large datasets. This means TUFLOW users can now start a project and create reports quicker than ever before within 12d Model. All the benefits and no commitment. The TUFLOW project is not locked to 12d Model. All files can be taken to a non 12d environment.

See results in greater detail

Through the development of a new binary format by the 12D/TUFLOW teams, users can now see their results in greater detail and store their results faster.

Navigate and amend models easily with the 'TUFLOW Control File Editor'

The 'TUFLOW Control File Editor' is an intuitive, clear and easy to use interface unique to 12d Model and

relinquishes the need for users to work on their model through editing a text file.

Users can easily add commands from a simple drop-down menu. Once the specific command is chosen, then only the required fields are shown for population. This simplicity saves users looking through a manual to understand the definition of the specific command to know what fields are required.

Increase collaboration between disciplines

Civil designers, Surveyors and project managers of various disciplines can now share entire project files and be working from the same project as other 12d Model users. This improves communication with clients, departments, offices and project partners as conversations can be had with specific areas of a project housed within the same software package.

Non 12d Model users are not locked into using 12d Model and the same sharing options that users have known and feel comfortable with still exist in this option of the software.

Enjoy 1D and Drainage 2D in the one package

Users can take advantage of 12d Model's Drainage Design, Drainage Analysis, Sewer and Dynamic Drainage functionality (as well as RoadFlow of course!).

This means that users can still perform functions within the 'Drainage Network Editor' and perform a storm analysis with 1D and Drainage 2D in the one model. Users don't have to limit themselves and can run one or multiple storms.

Very simply, users can see the effects of storms flows with pipes and culverts and how the system works prior in containing these flows and eventually their effects on the terrain.

Existing TUFLOW clients

Existing users of TUFLOW that do not require 12d Model's drainage options are not limited to purchasing the whole suite and can simply purchase the 12d Model Interface.

Existing users of TUFLOW (without the 12d Model interface) and 12d Model users with TUFLOW can still work on TUFLOW projects together with no data exchange issues.



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.

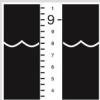
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



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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