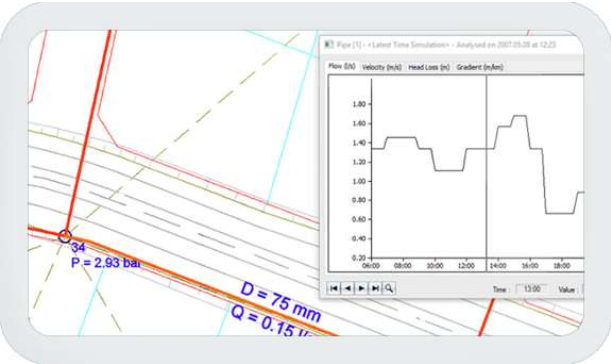
CIVIL DESIGNER Water

Civil Designer's Water module allows for the full analysis and extended time simulation of fluid handling networks. This includes reservoirs, pressure release chambers, pump stations with multiple pumps, boreholes, valves, air valves, scour valves and all pipe types that are fully editable and can link to external consumption data tables. The program calculates water losses based on various factors.

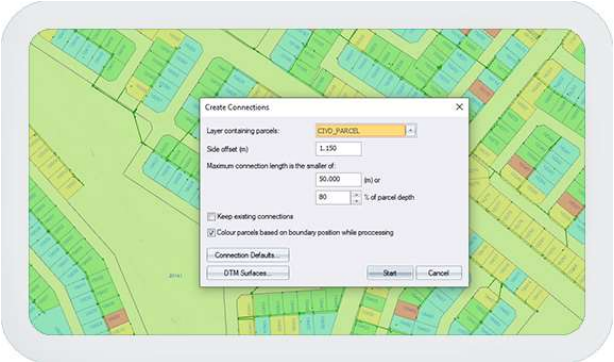
Demand Patterns for Large Cities, Villages & Rural Communities

The demand for water in a water supply system varies with time - the usual terms are hourly and seasonal fluctuation in demand or consumption. You can base the water daily demand pattern on user defined intervals over a user defined period, which can then be multiplied by the seasonal peak factor if required. Typically, hotels experience variation in water demand during the holiday season, while rural areas see the seasonal increase in water usage corresponding with the dry period, etc.



Automatic House Connection Placement

Water property connections are automatically created in the best suited corner at customisable offsets from the property's boundaries, in order to efficiently supply future dwellings. Connection types, including short doubles, long doubles, short single and long single, are created according to user-defined order preferences. They are indicated via a colour map during creation, with 5000 connections created in 25 seconds.



Borehole Hydraulic Modelling

Manage borehole hydraulic modelling through a single user-interface that incorporates detailed:

- Borehole depth information.
- Drawdown curve characteristics (optional).
- Column and shaft dimensions.
- Pump delivery specifications from a customisable pump catalogue.
- Operational requirements including pressure, reservoir level, time or delayed start.

The relevant hydrological report properties are listed in a separate data page for design review.

Link External Data Tables Such as Consumption and Tariff Details

Import data from various sources, such as ASCII tables, spreadsheets, DBase or MS Access tables, as well as DWG/DXF files. Attach external water consumption tables and compare the measured usage to the modelled consumption in order to calibrate the demand or identify problem areas in the network.

Advanced Analysis Options

Base your analysis on the average, minimum or peak demand, with an optional seasonal peak factor. We also support advanced analysis options, such as linking the consumption to pressure.

Air and Scour Valve Placement

Automatically place air and scour valves:

- Where they are unconditionally required on high (apex) points
- When negative pressure occurs during scouring
- On slope changes (where air valves will be placed when a set percentage exceeds a user defined value)

Customisable Pipe Database with Definable Pipe Types

Our Pipe Catalogue contains a user-definable list of pipe types and sizes, with attributes for maximum pressure and roughness (friction losses).

Plotting, Sheetfiles (Drawing Templates)

Use our drawing templates (sheetfiles) to define what the final production drawings will look like, thereby avoiding post-production CAD editing. You can generate production drawings with detailed title blocks, north signs, grids, company logos, annotations, data lists, scale bars and more, so your plotting requires little, if any CAD editing. Flexible sheetfiles allow for precise placement of all the design elements in your title block with customisable settings, so you don't need to cut and paste any design information into a title block.

Hydraulic & Pressure Contour Plotting

Generate hydraulic grade contours using pressures as modelled at the time of creation. Once generated, you can use different display options, as with any other generated contour. You can also combine pressure contours with height shading or slope shading.

Proximity & Collision Clash Analysis Between any Design or Existing Elements

Check for clashes between any two services, such as sewer, storm, water, road layers or other existing services defined in the crossing services database.. Problem areas display on the layout drawing and you can display a long section of the chosen branch, as well as the crossing services, in the longitudinal section window. You can then adjust the invert levels and slopes of the affected culverts.

SABS 1200 Quantities with Bedding Material/Selected Backfill

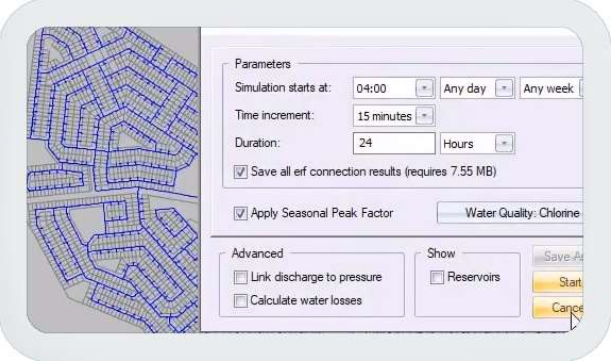
Culvert trench quantities are calculated with user-defined depth increments, according to SABS 1200. Quantities include excavation lengths, excavation volumes with extra over for intermediate and hard material, culvert lengths, bedding material volume and selected backfill volume. This ground profile information is automatically extracted from the shared, supporting digital terrain model.

Generates Layout Plan with Pipe Schedule and Long Sections

Production drawings, such as plans with pipe schedules and long sections with title blocks and company logos etc, can be created with no or little CAD editing. The layout of production drawings is completely customisable according to your specific company standards. Crossing services from the other modules can also be displayed automatically on long sections and cross-sections.

Water Quality Analysis

Perform a Water Quality Analysis to determine the spatial and time-based distribution of a given chemical (e.g. chlorine) in a water network, in order to determine the proper source dosage and potential top-up point requirements. You can also use this function to determine the age of water at any point, or to trace water spread from any given point to other parts of a network.



Pump Stations with Up To 8 Pumps in Parallel with Various Controls

Each pump station can handle up to eight pumps in parallel. Pumps can be controlled by pressure or reservoir water level, or they can be time-based (on/off at certain times). You can configure pumps as sump pumps with a defined pump elevation, or as an inline booster that assumes the pipe level.

Pump Catalogue

Customise the Pump Catalogue, which contains a list of available pumps and allows you to view the pump curve and details of each pump. The pump curve page shows the relationship between the flow, head and efficiency of the selected pump.

Fire Hydrant Flow Analysis

Assign multiple project specific Fire Risk Categories including:

- Minimum fire flow (all simultaneously active hydrants)
- Minimum flow per hydrant (individual)
- Number of simultaneously active hydrants
- Minimum residual head
- Minimum placement radii distance
- Fire duration (in hours)

You can then place hydrants graphically, using the specified placement distance radii to ensure adequate firefighting coverage. Results of the fire flow analysis show flow and residual head at each hydrant, and display in a colour map to indicate problem areas.

Graphical Functions

Graphically define and modify pipes and nodes. With the click of a mouse, you can easily make changes to an existing layout, change the flow direction or query a node or link. You can draw pipes parallel to CAD entities and represent nodes with user-defined symbols.

Crossing Services Displayed on Plan, Long & Cross-Sections

Existing services databases (sewer pipes, storm water culverts, water networks, electrical layouts and telecommunication cables, etc) can be imported or added into Civil Designer to indicate crossing positions of the pipes/cables on road, sewer, storm and water services.

Reservoirs with Inlet/Outlet Control

Specify reservoirs with full and floor supply levels, storage-depth profile, capacity and inlet and outlet pipes that are controlled by inlet valves operating at specified water levels. There is no limit to the capacity of a reservoir, so you can model dams by entering large capacity values.

Display Results Graphically, in Tables or on Time-Based Curves

Display the results of an analysis in various formats:

- Graphically, by colour, according to calculated results.
- In tables, at specified time increments, using the Results browser.
- On time-based curves displaying flow, velocity, head loss or hydraulic gradient.

Water Objects on Longitudinal Sections

Plot water objects, such as reservoirs, pump stations, valves, etc, on longitudinal sections in the correct position and scale.

Multiple Valve Types

We support multiple valve types to regulate flow, including valves to reduce or sustain pressure and valves that control the flow based on water level.

Dynamic Updating of Production Drawings

Production drawings are dynamically updated as you change your design. If you want to create archive copies, simply use the Publish function.

BIM IFC File Export

Our Industry Foundation Classes (IFC) support allows geometric and attribute information to be customised according to the requirements of the recipient, thereby improving efficiency in any BIM workflow. Prior to export, you can set up custom IFC files, assign the appropriate northern or southern coordinate system and specify the extents of the shared data. Data can be allocated to one or more IFC files and can incorporate all or selected portions of the proposed infrastructure services associated with a project.

Bitmaps and Cadastral Backdrops

View the network with a bitmap or cadastral data backdrop. Alternatively, display the site contours and slope shading to decide on an optimum network layout.

Full Compatibility with DWG & Other Formats

As a founding member of the Open Design Alliance, our inside knowledge of the DWG drawing structure ensures high compatibility when loading and saving DWG and DXF drawing formats. We also support the loading of Caddie CEX, Arcview SHP, Microstation DGN and Ultimate CAD UCX files, which gives you unprecedented flexibility to move between drawings without worrying about incompatibilities and data exchange problems.

Did you know:

- We have a library of FAQ support videos for your reference: **www.civildesigner.com/videos/**
- You can book online Civil Designer training: **www.civildesigner.com/training-centre/**
- We provide introductory self-learning videos: **www.civildesigner.com/training-centre/**

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