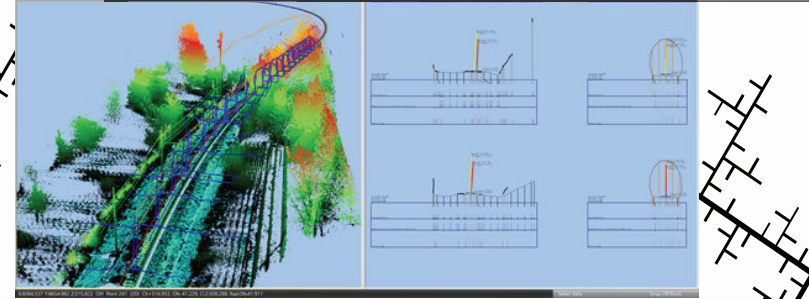
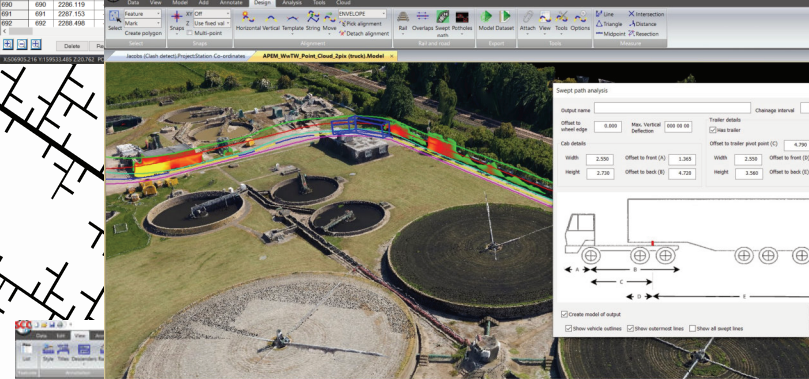
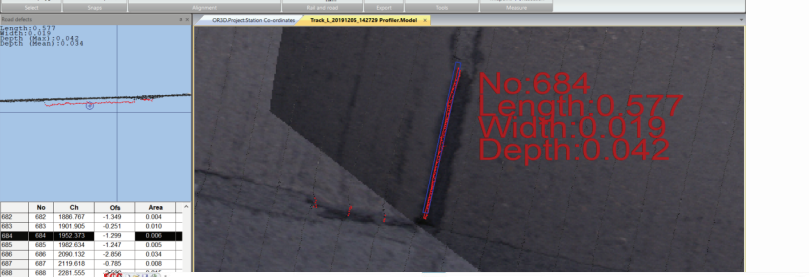
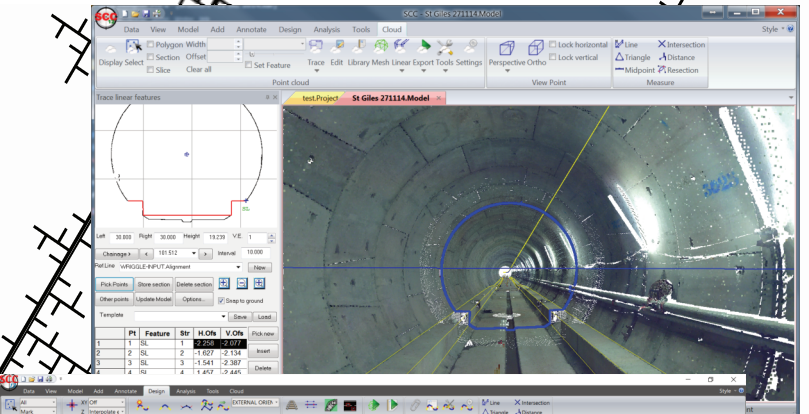


# SCC

Survey Control Centre





SCC is a comprehensive geomatics solution for the modern survey office, supporting data collection, reduction, and adjustment, through modelling, point cloud analysis, sections, volumes, design, to drawing production, 3d visualisation, setting out and quality assurance. Available for 64 bit Windows 10 and 11, SCC can handle the most demanding of jobs including multi-billion point clouds, and TIN models with hundreds of millions of triangles, with a huge range of industry specific tools for rail, roads, tunnels, OLE & power lines, tree surveys, buildings and rivers as well as traditional topographic survey.

## **Benefits**

### ***Maximum 'Field to Finish' Productivity***

SCC has been designed to provide the highest level of automation required by the modern survey office while meeting the most demanding cartographic and modelling standards of the modern survey client for topography, sections, volumes, design, roads, rivers, tunnels and rail.

### ***Small learning curve***

Support for a wide range of existing field practices and coding standards. Fast, streamlined, modelling, analysis and drawing production. Highly customisable report generation with rich content via Crystal reports, including your company logo and contact details on all reports.

### ***User friendly***

Choice of ribbon and toolbar Windows user interfaces with extensive online tutorials, help, web and local telephone support. Shared remote desktop based support also available for all users with an internet connection.

### ***Compatibility***

Supports all major instruments, including Scanners, Mobile LIDAR, UAVs, Total Stations, GPS, and levels, from all major manufacturers, including Leica, Geomax, Trimble, Faro, Amberg, Topcon, Sokkia, and Nikon, using a wide variety of field coding techniques.

### ***High Speed***

Exceptionally fast point cloud and terrain modelling, contour generation, sectioning and surface analysis. Support for multi-million point models and multi-billion point clouds on low cost PCs.

### ***Interoperability***

SCC services AutoCAD, Microstation, MX, ESRI and Google Earth with a minimum learning requirement. Bi-directional transfer of data in most modern standards including DWG, DGN, LandXML, SHP, 3DS, MX GENIO, and IFC, as well as support for legacy formats such as Panterra PXT, LandScape, and SDRmap. Support for a range of grids including Irish Grid, ITM, OSGB, HS2 NTV2 and ETRS89 with optional support for SnakeGrids.

### ***Quality Assurance***

SCC includes a wide range of tools for checking surveys, comparing model revisions and analysing survey quality to user defined standards. All errors and reports are stored in separate files for subsequent checking, verifying and validation in QA procedures.

# Survey functionality

Input of survey, control, levelling, tunnelling and GIS data and output of setting out, design and models to and from data loggers, total stations, GPS, machine control, & scanners including Leica (DBX, HeXML, SDB and GSI), GeomMax, Trimble (DC, JXL, Geodimeter and SCS900), Amberg (GRP & AR2), Gedo, ScanLaser, Topcon, Sokkia, MDL, and Nikon

Support for multiple field survey coding standards across supported loggers including Captivate, Viva, XPAD, MX, LandScape, NRG, TDS, TopSurv, TSCE, LSS and SDRmap. Support for GIS data capture from survey controllers.

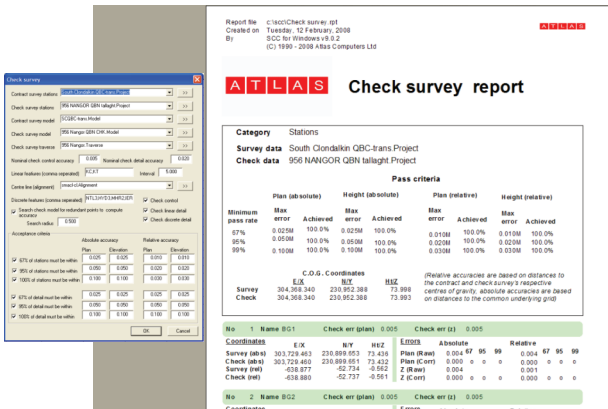
Feature wizard, to greatly simplify the process of setting up multiple mapping, annotation, layering and QA standards for different clients

Check survey tool to verify the accuracy of a contract survey against a specification using a check survey with user defined tolerances for control, hard and soft detail, and linear and discrete features

Support for a wide variety of survey measurements including

- ⊕ Radial (total station), coordinate, and GPS Lat/Long observations
- ⊕ Taped measurements, intersections and resections
- ⊕ Radial, feature, and height offsets
- ⊕ Curves, circles, arc, squares, rectangles and triangles
- ⊕ Multiple object dimensions
- ⊕ Extruded linear features such as walls and ditches
- ⊕ Copy parallel in plan and elevation

Bi-directional transfer between most CAD, GIS and design packages in standard formats including AutoCAD DWG, Bentley DGN, ESRI shape files, MX GENIO, ArcInfo grids, most point clouds, and multiple LandXML design and model formats



Comprehensive least squares survey and level network adjustment. Including support for constraints, absolute and relative error ellipses at multiple confidence intervals, chi squared statistical analysis and residuals for both coordinates and observations

Blunder detection, analysis and correction

Plotting and annotation of traverse route / network in plan. Detailed 2d and 3d customisable reporting via Crystal reports. Export of control observations to STAR\*NET and MOVE3

User definable 2D and 3D (7 parameter) transformations, to allow you to work in multiple grid systems, without having to re-edit your survey or models. Tools to move data between national and all geodetic grid systems including Irish Grid, ITM, OSGB, **HS2 NTv2**, UTM, ETRS89 and ED50 using in-built Grid Inquest and PROJ based functionality. Optional support for SnakeGrid transformations



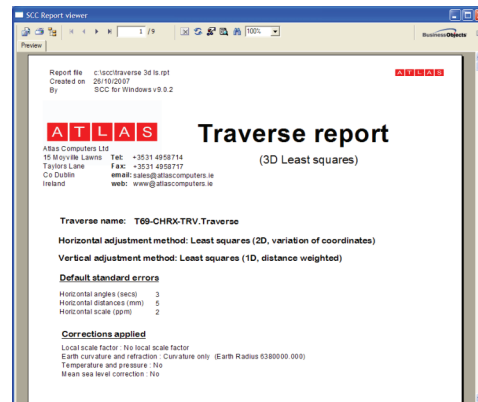
⊕ Streamlined integration with Leica Captivate, Trimble and Geomax Zoom series for easy, efficient and comprehensive field to finish. Full GIS data capture for utility works.

Modern Windows application;

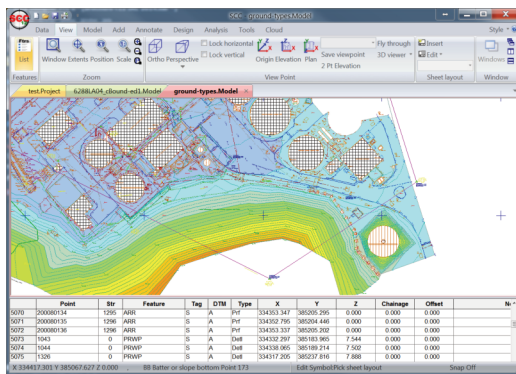
- ⊕ Choice of ribbon and or tool bar based user interface
- ⊕ Tabbed access to multiple windows
- ⊕ User customisable menus, toolbars and keyboard shortcuts
- ⊕ Fully OLE compliant
- ⊕ User programmable

Multiple spreadsheet formats for easy checking & editing of data;

- ⊕ Customisable layouts
- ⊕ Excel cut & paste facilities
- ⊕ Search and replace with ranges and mathematical operators



# Model creation and editing



High speed modelling with unparalleled ease of use - Download, reduction, triangulation, contouring and map formation from a single menu option

Work in plan, elevation and full 3d view ports

Comprehensive drawing capabilities including hatching, user defined symbol, line and macro line creation and manipulation, and fully user definable colour relief mapping

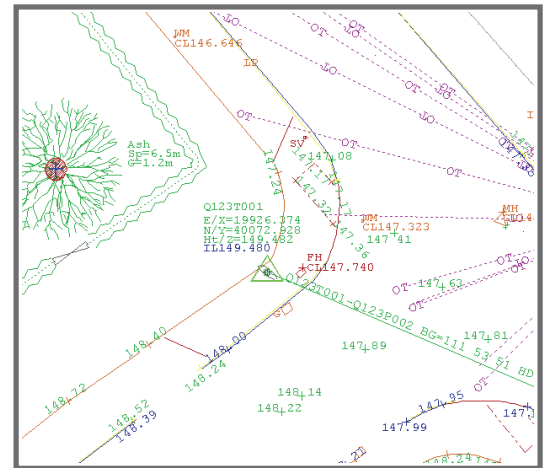
Support for multi-million point models on modest PCs

Extensive graphical model editing functionality with 'on the fly' model and contour updating and full 3D support across all tools including editing in plan, elevation and user defined viewports

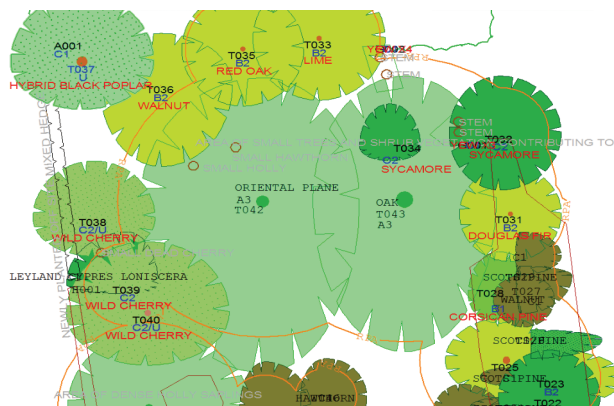
- ⊕ Trim, Extend, Fillet and Join strings in 2D and 3D
- ⊕ Move, Copy, rotate, scale and parallel strings or selected data
- ⊕ Enter tape measurement, bearing and distance measurements
- ⊕ Generate slope lines / hachures from existing strings
- ⊕ Single, multi-point and best fit arc / circle / rectangle generation
- ⊕ Measure lines / areas / triangles / slopes / intersection / bisection / resection
- ⊕ Extensive symbol and complex line style creation / insertion and editing

Wide range of annotation and text manipulation tools including;

- ⊕ Optional automatic placement of up to 15 annotators per point, including level, point number, position, chainage & offset, line direction, bearing & gradient, included angle, and lat/long
- ⊕ User definable position and justification of all annotators relative to the survey point, with orientations relative to string, grid and sheet, user definable prefixes, suffixes, and CAD layering
- ⊕ Tools to quickly group text, left and right align text groups, box groups and draw leaders from text back to the annotated point
- ⊕ Facility to automatically delete overwriting text, with priority control by feature and annotator type



Numerous productivity tools designed to allow you to create the highest quality of output in the minimum amount of time, including

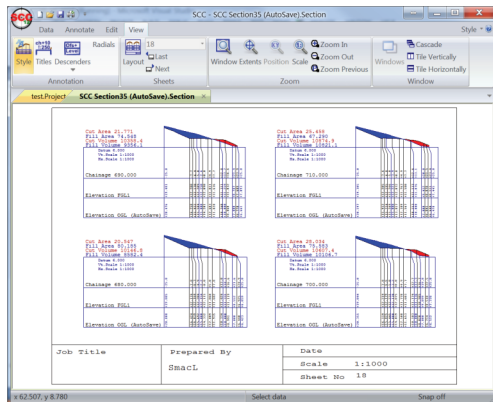


- ⊕ Extract elevations from plans
- ⊕ Tree surveys to BS 5837:2012 with root protection area outlining
- ⊕ Convert 2d drawings to 3d models
- ⊕ Search and correct potential errors such as crossing strings and duplicate points
- ⊕ Compare model revisions
- ⊕ Attach and use reference models

Cut and paste 3D elements between models. Cut and copy models to any other OLE compliant program such as Microsoft Office

# Sections and profiles

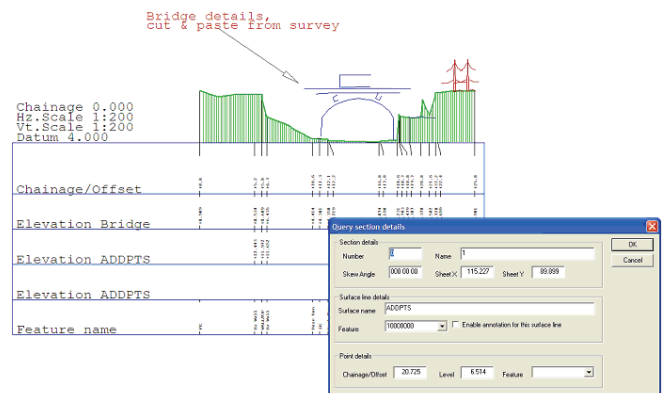
High speed generation of fully annotated and sheeted sections & profiles, with minimal user input



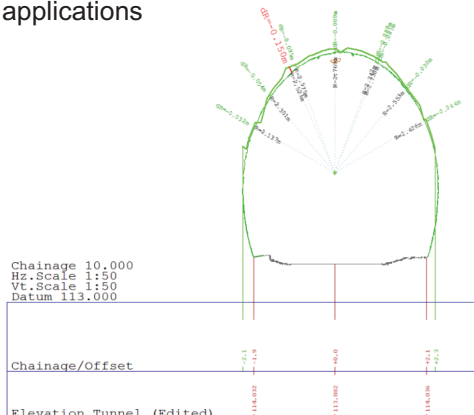
- ⊕ Create long sections and cross sections through an unlimited number of surfaces
- ⊕ Long and cross-sections generated on screen via cursor, from existing surveyed strings, from co-ordinate data files and from alignments
- ⊕ Create sections from all points within a given bandwidth, for river sections
- ⊕ Facilities for automatic annotation of chainage, offset, level, gradient, plan position, cut feature / string name, surface to surface height difference, slope distance, and partial chainage

Comprehensive section editing functionality;

- ⊕ Add, delete, move and edit points, surface lines, strings and entire sections, with a wide range of pre-selection and snapping tools
- ⊕ Add, delete and edit text and symbols, with options to move, resize, rotate, and change fonts
- ⊕ Query and edit points, surface information, and section details
- ⊕ Cut and paste 3d strings from surface models into one or more sections
- ⊕ Hatch between section lines



Fully configurable section drawing style, colouring, layering, and text positioning. Place annotators on either side of the section point, or centred underneath. Automatically shift annotators to prevent overlapping text, or automatically delete overlapping annotators. Save and restore section drawing styles to file, to accommodate multiple drawing styles for different clients, scales and survey applications



- ⊕ Create long sections from multiple strings projected onto an alignment (parallel string sections)
- ⊕ Subdivide long sections either at a regular interval or specified chainages to suit the selected sheet layout
- ⊕ Create skew sections relative to an alignment, snapping all survey points in a bandwidth to a desired section position in plan
- ⊕ Create complex 3d sections from scans, showing radial separation, movement and monitoring information.

Real time section and profile creation using split screen section and model view.

Attach cross sections to plans and annotate with chainage, offset and section details

Full bi-directional link to most popular CAD and design packages, including AutoCAD, Microstation, MOSS / MX, InRoads, and Civil3D for models, sections and alignments and import from SC0

User defined export of sections and models to text files and customisable Crystal reports



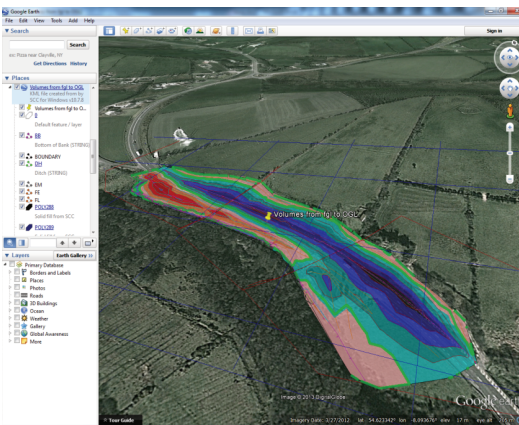
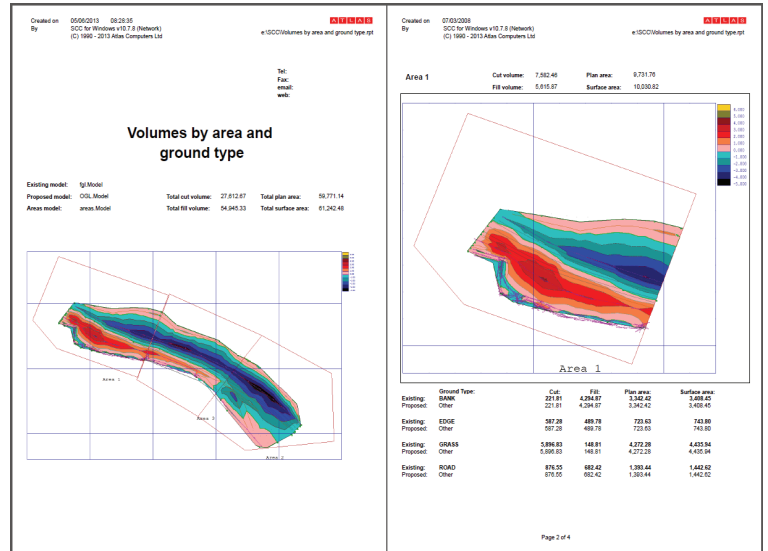
# Areas and volumes

Volume calculation using prismatic (isopach), grid and section methods, between TIN surfaces, point clouds, or TIN surfaces and point clouds

- Volumes broken down by areas and ground type with rich graphical reporting, automatic creation of single combined or multiple isopach models with export of results to a range of packages such as CAD and Google Earth

- Material volumes by area and depth, with user defined depths, colour schemes, and annotation

- Spoil heap volumes, for automatic calculation and annotation of multiple heaps or pits in a given model



- Sectional volumes with cut and fill highlighting, area and volume for each section, and cumulative cut and fill volumes by chainage

- Volumes by ground type to a given depth or datum

- Plan and slope areas by ground type, gradient, and contour height

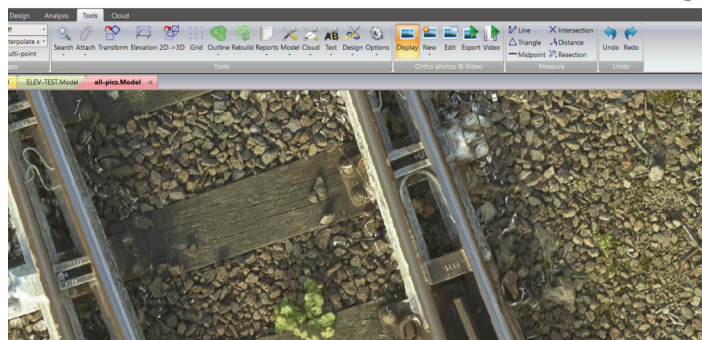
- Tunnel volumes with underbreak and overbreak comparisons to design model

- Reservoir volumes with breakdown by depth

# Images, video, publish and plot

- Import hi-res orthophotography in model coordinates, with support for georeferenced photography and direct computation of photograph position and orientation using ground control. Ideal for survey backcloths for inspection and digitising purposes.

- Create fully geo-referenced orthoimages from combined point cloud and survey data, in plan and section, with enhanced colouring and shading and direct export to DWG format



- Quickly create high resolution video fly-throughs of your survey based on key points or alignment chainage.

- Publish your combined survey and point cloud models to POTREE for interactive viewing across the web and on you phone or iPad

- Extensive sheet design facilities for creating, editing and plotting. Create

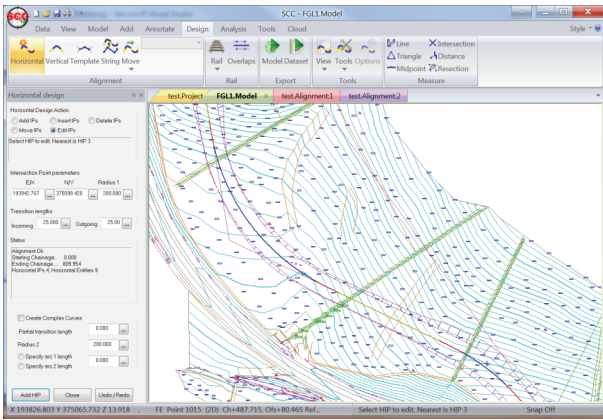
your sheet layouts in SCC using all available editing facilities or import them from CAD

- Support for multiple fully interactive sheet views in models and sections

- Support for placement of grids, scales, station coordinate tables, feature keys, bitmapped company logos and text macros



# Design and roads



Interactive design of;

- ⊕ Horizontal and vertical alignments
- ⊕ Section templates with multiple surfaces with cut/fill specific elements.
- ⊕ Creation of alignments from existing survey strings
- ⊕ Import of design geometry from LandXML, MX & DOER.
- ⊕ Building footprint design
- ⊕ Real time side slope analysis

Volume optimisation functions including cut and fill balancing, and section optimisation to minimise cut

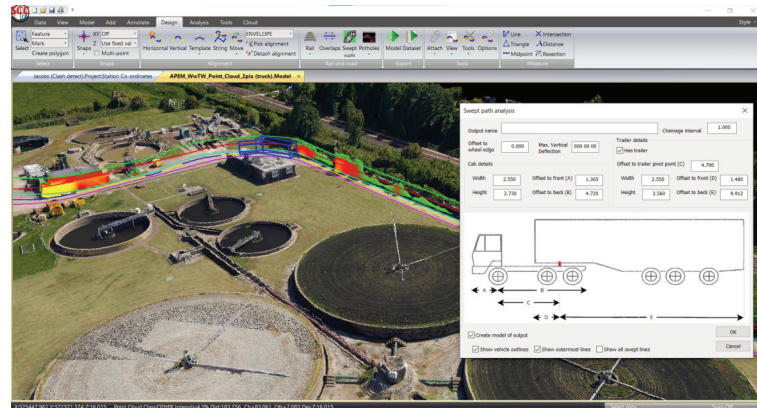
Many string design tools including setting gradient between points and along strings for drainage purposes, create offset strings from existing strings based on an alignment copy parallel to existing strings to extend existing variable side slopes

Export of geometric information to supported loggers, machine control systems and roading programs

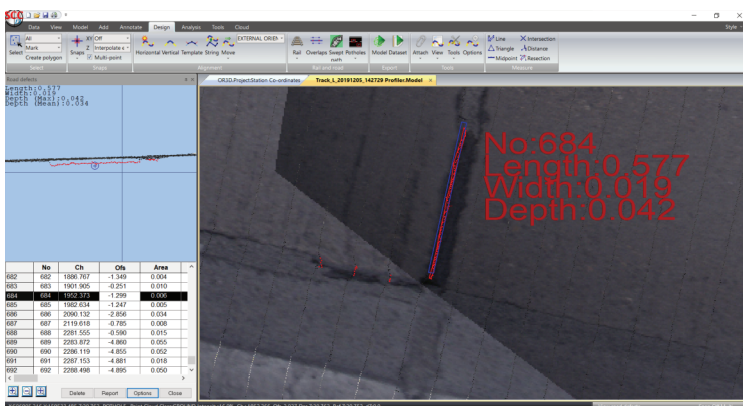
Merge survey and design models for visualisation and analysis purposes

Comprehensive access to design chainage / offset system for modelling and spreadsheet functions, including extraction of sub-models and data sets by chainage / offset range

Full swept path clearance analysis with clash detection. Create complex 3d kinematic envelope models with support for articulated vehicles, road / rail curvature and super-elevation / cant. Use these models for 3d clash detection with surveyed point clouds, with CAD results available in plan and section. Applicable to road and rail applications, tunnels, platforms and areas with tight turning circles



Vertical shaft and tank design with modelling and comparison to scanned point clouds. Support for unwrapping and rewrapping, with analysis and annotation of deviation between design and measured models. Support for both circular and template based designs across simple and complex alignments.



Comprehensive road defect / pothole detection and analysis tools. All defects are numbered by chainage and offset and analysed by area, depth and volume. Defects can be scrolled through in a combined section and plan view. Full output to CAD and reports with full analysis and supporting graphics.

Visual intrusion analysis (ZVI), ideal for environmental impact studies.

Highlight all the areas in a model where specific objects are visible or hidden from the ground or a specific viewer height above the ground.

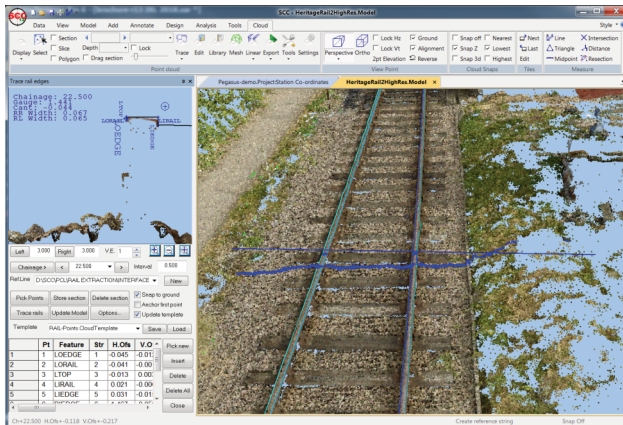
Optimize large models and massively reduce their size while preserving accuracy.





# Rail surveying

Streamlined surveying tools specifically for rail surveying, analysis and QA

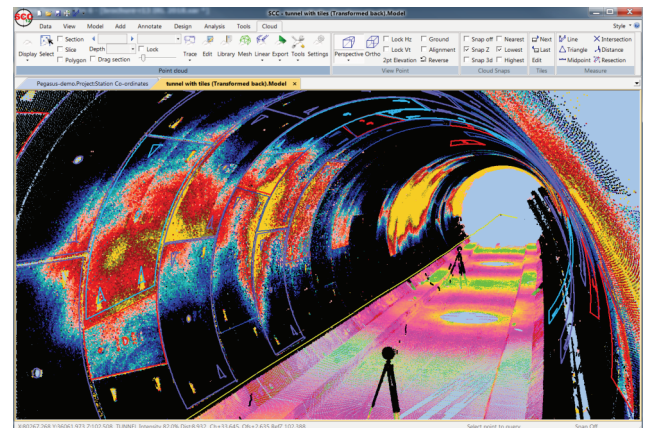


- ⊕ Import and export rail designs from MX, LandXML, and CAD including alignment, profile, cant, string and surface data
- ⊕ Import data directly from Amberg and GEDO rail trolleys, including strings, profiles and rings, and rails
- ⊕ Compare, merge and report overlapping rail strings, with support for survey and scanned data, and creation of best fit alignment
- ⊕ Compute, compare and report lift and slue differences between design and survey models
- ⊕ Compute, compare and report cant and gauge differences between design and survey

- ⊕ Automatic extraction of theoretical running edge from rail point clouds by user defined QA tolerances. Support for 'hidden rails' and comprehensive noise detection and correction to produce optimal results from all data.
- ⊕ Extensive tools for measuring height and stagger, including booms and REFOS, with detailed analysis and reporting in section and profile

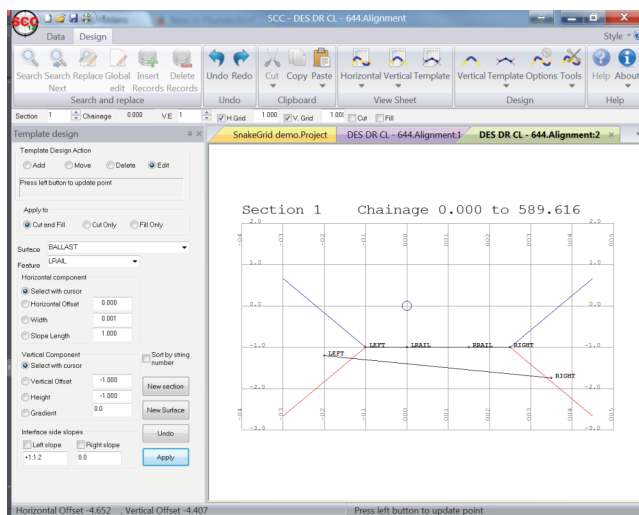
Tunnel and wriggle survey processing;

- ⊕ Wriggle survey computations - compute tunnel bearing, grade and radius from discrete points or large scans across multiple rings
- ⊕ Import from conventional survey or scanned rings from Amberg trolley with automatic radial stringing
- ⊕ Automatically detect and remove outliers and check deformation tolerances while processing
- ⊕ Fully customisable reports, including computed radii, grade, and design difference with highlighting of out of tolerance values
- ⊕ Output annotated sections comparing design with survey, models, and generated alignment



- ⊕ Un-roll and re-roll cylindrical and box tunnel models, and highlight and annotate design differences

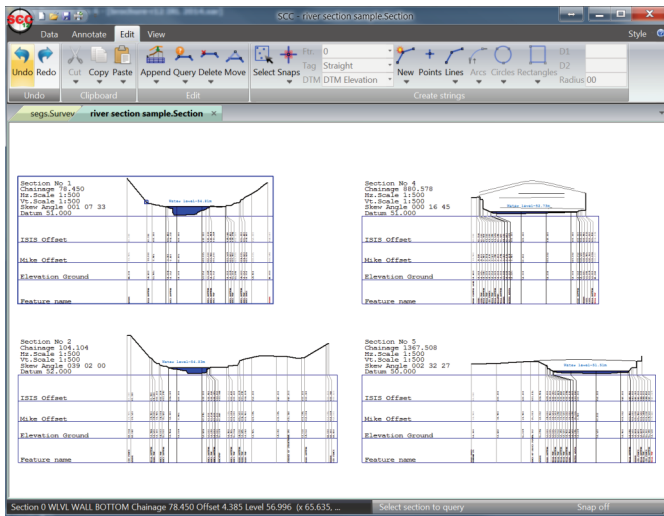
Develop ballast and formation surfaces for export to machine control systems



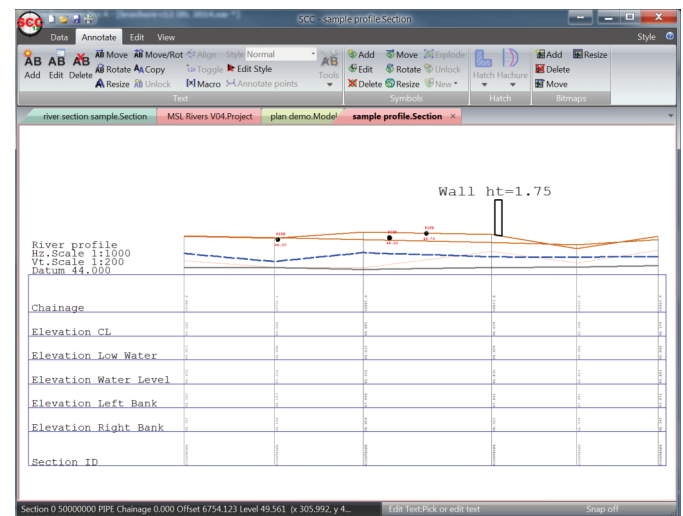
- ⊕ Import 3d alignment data from LandXML or MX, or create directly in SCC
- ⊕ Enter gauge and compute and report cant
- ⊕ Enter ballast and formation details, with support for widening by chainage range
- ⊕ Verify the results in plan, 3d and section
- ⊕ Export model and alignments to Scan Laser machine control via LandXML
- ⊕ Check and adjust formation levels to control depth between low sleeper or rail and top of formation
- ⊕ Snake Grid transformations (optional)

# Rivers, drainage and beaches

Automated creation of river cross sections and profiles with multiple outputs

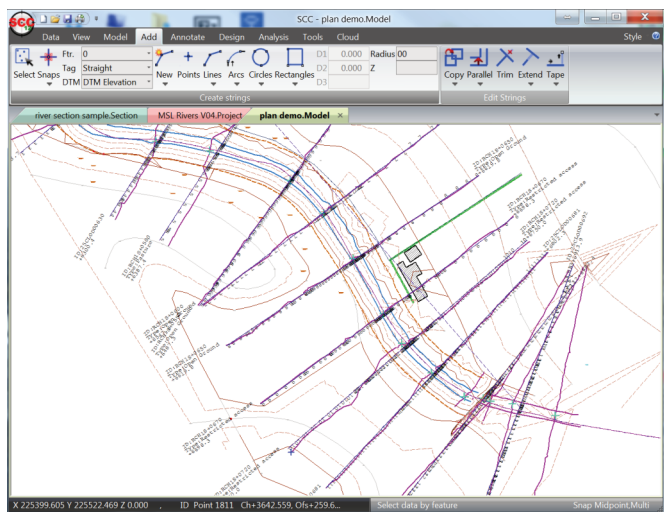


- ⊕ Create multiple river cross sections, profiles, and QA reports, all from a single dialog selection
- ⊕ Cut & paste structures, pipes, roads and other features from plan onto river cross sections and profiles
- ⊕ Automatically develop and annotate water level surfaces on sections from a single point, and silt surfaces from one or more points
- ⊕ Query and edit river information in section and / or plan to correct any survey errors



⊕ Support for creation of sections suitable from export to multiple hydrology systems, including **EACSD**, **ISIS**, **HECRAS** and **MIKE-11**, without the need to re-process the sections. This includes detection of low bed level point for ISIS centre line and re-orientation of sections where required

⊕ Automatic creation of river profile including banks, low bed-level, water level and design centre line, showing cross section position and IDs. Additional profile data can be cut & pasted from plane, including support for annotation of pipes with dimensions



- ⊕ Report of difference in water level between section and audit of any missing required information by section for QA purposes
- ⊕ Overlay river sections on surveyed data in plan / background maps, and annotate with ID, section type and chainage
- ⊕ Import data from any survey logger or raw data in MBS river format
- ⊕ Output sections with attributes to ESRI ArcInfo shape files
- ⊕ Tools to process and output canal surveys for **British Waterways MOC** software

⊕ Create natural drainage model showing flow direction, magnitude and sink points for any 3d surface. Annotation and drawing style for lines and sinks based on number of convergent flow lines

⊕ Automatically correct position and height over sloping terrain for vehicle mounted GPS observations for beach surveying

⊕ Hydrographic drawing and annotation styles supported for bathymetric contours



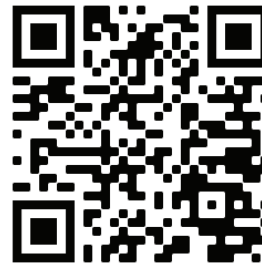
# Installation

To install SCC, download and run the current release from our download page here, <http://atlascomputers.ie/download/> You will need to have administrator privileges in order to complete the installation

If you are using SCC with USB hardware lock, insert the lock into an available USB port prior to starting the installation procedure.

If you are installing without a USB key or network license, you will be given the option to request a trial license, either via email or fax. The first option sends an email request directly from SCC, the second puts the same information in a text file you can send manually. Once we've received this license request, We'll send a license key (either viewer only, demo or timed) by return email.

If you have a previous version of SCC installed, please back up all your SCC data prior to installing this version. If you need any help with installation, phone Atlas support at +353 (1) 4958714 or email [support@atlascomputers.ie](mailto:support@atlascomputers.ie) Note that you cannot upgrade to a newer version of SCC without a current maintenance agreement, and the software will not work if you attempt to do so.



Once you have installed SCC, please go to <http://www.atlascomputers.ie/smf/index.php> to register an account on our user forum. Once registered you will automatically be notified by email of any on-going updates to the SCC software, and provided with links to download new versions.



We also have a Linked-In forum for SCC users, which may also be used to receive notifications of any updates, see <http://www.linkedin.com/groups/SCC-users-4971870>



To see SCC in action, have a look at our youtube channel <https://www.youtube.com/user/smacl6301> where you will find an extensive range of both demo and tutorial videos. To keep updated please hit subscribe. If there is any additional content you'd like to see added, or you'd like to see one of your own surveys showcased on our channel, please let us know.



# Who uses SCC ?

SCC is used in a variety of companies, ranging from small land survey companies to large international consultancies in the public and private sector with thousands of licenses deployed across many hundreds of organisations. SCC has been in continuous development since 1990 and enjoys an extensive user base in Ireland and the UK, Europe, the Middle East, and the rest of the world. A small sample of our clients are highlighted below.

A. E. Faulks, Abbey Holford Rowe, Access Building Design, Acute Engineering Surveys, Adenstar Construction, Adept Consulting Engineers Limited, ADS,



CHARTERED LAND SURVEYORS



ENGINEERING WITH PASSION



## ATLAS

Atlas Computers Ltd  
15 Moyville Lawns  
Taylors Lane  
Rathfarnham, Dublin 16  
Republic of Ireland

Ph: + 353(0)1 4958714 (Irl)  
+44 (0)2075588973 (UK)  
Fax: + 353(0)1 4958717  
[www.atlascomputers.ie](http://www.atlascomputers.ie)  
[sales@atlascomputers.ie](mailto:sales@atlascomputers.ie)