Wölfel

IMMI

Revisions & Amendments

Version 2009/02

YOUR Tool for Noise Mapping and Air Dispersion Modelling

Table of Contents

1. IMMI 2009/02: Revisions and Amendments

The following text described the changes, enhancements and corrections implemented in the latest release of IMMI 2009 (Version 2009/02).
For the sake of completeness this documents also contains all information relative to the 2 intermediate updates that had previously been made available for download on our Web pages.

1.1 Amendments

1.1.1 Amendments of the download-updates

- Module AUDINOM:
  From now on both the usual digital model terrain type "triangulation" and the "DTM grid" are supported in all segmented calculations.
- Hot-Spot Analysis: the night-time disturbance indicator recommended by EU WG HSEA "Highly Sleep Disturbed" has been added.
- Toolbox:
  Due to lack of free space, both the tool "control visibility of elements" (glasses) and the colour code are sharing the same screen area. From now on, a new button in the visibility control window enables the user to switch between the two. Use the "down arrow" to close the visibility control window without loosing the active visibility settings. If a colour code is active, it will then become visible.
- New table „Table Lw,A + penalties"
  This table has been added to the menu <Calculate | Control> as part of the sub-menu „Emissions for industrial sound sources". The table further enhances the documentation of emission values of industrial noise sources. Export to EXCEL is possible.

1.1.2 Recent amendments

- New report generator:
  The new report generator is the central new function of IMMI-2009/02. It is described in full in a dedicated chapter hereunder.
- New menu structure
  The advent of the report generator made a reorganisation of the menu system mandatory. This presented an opportunity to make further changes that make IMMI even easier to use. A chapter has been dedicated to explaining these changes.
- Expanded help system
  This a further major enhancement of IMMI: the help system has been reviewed, refurbished and expanded.
  Furthermore, the selection of the help texts has been simplified. The desired language version of the help files can simply be opened from a file list.
- Selection of receiver points for single point calculation
  For single point calculation individual points can be activated or deactivated prior to starting a calculation. In this selection dialogue both the user-defined element name and the IMMI key IPKTxxx are now displayed side-by-side.

- Coloured north indicators
  Display attributes for line and area elements can now be selected in the north indicator element. The user is thus free to change colour and line settings of this element.
- New colour scales compliant with the Austrian planning guideline have been added.

1.2 Changes

1.2.1 Changes implemented in the download-updates

- Messages displayed during the operations of saving and loading results have been reduced in their number and rephrased for better intelligibility.
- Invalid inputs in <Help | Activate update> will be intercepted and a message will be issued.
- More space has been reserved for the fields "… is active in" and "… is not active in" of the function "Element groups + Variants".
- Input dialogue for element coordinates:
  The input fields have been expanded to allow for proper display of negative Gauss-Krüger coordinates.
- Import/Export of ArcGIS-files: all files will be properly closed from now on. That way the function can be executed repeatedly without error messages.
- Calculation with rating methods: The element dialogue for the rating periods has been changed in a way that it is no longer necessary to scroll up/down on medium and large size computer screens.

1.2.2 More recent changes

- Pre-settings for calculations:
  - The calculation area or grid that has been marked as the „default" in the global list will now automatically be selected when a calculation is started.
  - Up to now, pre-selected colour codes were used for grid calculation only. This has now been expanded: these settings are also used for the two other calculation modes single point calculation and façade calculations.
  - Similar changes for default variants:
    This setting influences which information is shown in the map window. Exceptions are defined when switching between calculation modes in the calculation control centre.

- The parameter Cmet of ISO 9613-2 has been added to the „long list".
- Calculation of the terrain model:
  The VIP algorithm now automatically determines and sets the altitudes of the 4 corner points of the work area.
- Calculation of a terrain model using the method „DTM grid"
  It happens – especially in the case of aircraft noise calculations – that the available DTM grids do not cover all of the project area. IMMI can be used to extrapolate the terrain information in order to fill up the whole project area. Basically, IMMI simply copies the

outmost height data to fill up the area up to borders of the work area. However, if the distances between the last available altitude points and the work area borders were particularly long, the extrapolated values were simple set to -99 m.
From now, a different method will be used: The work area will be split up into quadrants. Missing altitudes will be set to the height that has been defined for the corresponding corner point Z1, z2, z3 or z4 closest to the quadrant.

1.3 Corrections

1.3.1 Corrections implemented in the download-updates

- Absorption loss of bridge elements
  Depending on circumstances, absorption loss was not properly assigned to bridge elements. Actually, the order sequence of nodes following the first node decided whether the absorption loss was properly assigned. The error has been removed.
- Special obstacles of type bridge and cantilevered barriers
  In the case of perfectly symmetric bridges, slight differences could be observed between receivers points positioned in perfect symmetry to the bridge centreline both sides of the bridge. The reason was a numeric uncertainty that could be resolved.
- Calculation of cantilevered barriers with SRM II:
  The calculation of cantilevered barriers with SRM II is a difficult task due to the special insertion loss algorithm used by this specific calculation method. In fact, SRM II uses an equivalent screen instead of the actual obstacle or obstacles. This approach is not directly compatible with cantilevered barriers where the main diffracting edge is above or on the opposite site of the sound source (as seen from the base of the barrier). Therefore the general approach implemented in IMMI did only work in very specific cases and had to be adapted to suit SRM II.
- Erroneous warnings after formal control of the calculation model
  After cancelling calculations of projects containing either bridge elements or cantilevered barriers or both, it happened that IMMI issued a series of warnings relative to bridges and cantilevered barriers at the beginning of the next calculation even if none of these elements was contained in the new calculation. The reason was that the internal subsidiary elements that are automatically generated to enable IMMI to calculate both bridges and cantilevers were not always removed on time.
- Mid-size list: phantom entry
  It happened in the mid-size list that sources were displayed with the wrong contributions, namely those of the previous list entry. This happened only if the efficiency setting "Limiting range of sound sources/minimum level difference" was activated. All sources that were effectively excluded from the calculation due to this efficiency setting were listed in the mid-size list with the data of the previous entry in the list.
- Long list: crash due to insufficient amount of memory
  From now on the availability of RAM space will be continuously monitored and displayed. In case of (too) scarce memory the production of the list will be cancelled and a message will be issued. Up to this point the list can be viewed.
- Empty element groups can now be deleted again.

- Frequencies are displayed when introducing spectra into the internal or the external database.
- The “map toolbox“ remains now reactive even if “visibility control of elements“ (glasses) is simultaneously activated.
- Calculation Control Centre:
  The function “calculate variants” can now be used if less than 4 variants have been calculated (but more than 1).
  The process of switching between calculation results has been optimised.
- <Calculate | Control | Emissions for industrial sound sources> does no longer crash.
- Element dialogue: Direct access to the list of element groups is now enabled. New element groups can be added. They are directly available for further use in the element dialogue.
- A button has been added to save grids that have been altered in the Calculation Control Centre using either a “Processing“ function or the hot-spot analysis.
- An error linked to the management of the directivities assigned to sources of type ISO 9613 has been corrected.
- A new input field to manage the priority/classification of receiver points and land-use areas has been added to the calculation parameter input dialogue of the Calculation Control Centre.
  As a consequence, the disturbing message/prompt during AUDINOM calculations is no longer displayed.
- Calculation of peak levels:
  Error messages that were sometimes shown when viewing a list have been removed.
  Limit values are now properly displayed.
- Long list/ Control of emissions of industrial noise sources
  Now they also work for rating methods with more than 4 rating periods.
- CCC: open grid without a project file:
  An empty work area (i.e. no elements have been entered previously) will be adapted to the grid dimensions automatically.

- If geometrical conflicts have been identified IMMI switches to a toolbox that enables the user to scroll through the list of identified conflicts. If one decided to remove an element in order to solve an identified conflict, then the proper sequence of the following elements was dislocated.
  The problem has now been solved. The entries in the list will be refreshed whenever the combobox unfolds to select a conflict.

1.3.2 More recent corrections

- Calculation Control Centre:
  - Calculation of a job list
    In certain cases warnings without a time-out counter were issued, effectively blocking the execution until the user intervened.
  - Disappearance of the toolbox „Map“.
    The aforementioned toolbox happened to disappear while editing the task list

  - Calculations using the template file „STARTUP.IPR“.
    In previous versions, the CCC did not allow these calculations.
  - Functions of the submenu „Extras: Calculate Grid | Specialties“
    Some of these function did not work properly in the CCC. In general, the global grid was modified but no access was granted to these changed results from within the CCC.
- Peak level calculation
  The output list could contain random entries whenever the peak level calculation was selected in a project where no peak level penalties had been defined for any of the sources available. This condition can be produced when sources are spread over distinct variants or when calculation settings are used to drop low-noise sources from the calculation (to improve calculation speed).

- Calculation with the terrain model „DTM grid“
  Correction of an error linked to the following conditions:
  - The distance between the receiver point and the sound source was smaller than twice the equidistance between DTM grid points
  - No single diffracting edge could be found on the propagation path.

  In these cases ground effect was not properly calculated.

- ArcGIS-Import:
  Impossible conditions can be created when several attribute fields of the import file are linked to the same single attribute field in IMMI. Up to now, IMMI issued the message „Error changing the data“ (or similar). This message was repeated for each element concerned. From now on, certain of these error conditions are intercepted automatically. If further errors of this type are encountered, individual messages describing the actual error will be issued. The user can then suppress all following messages.

- Hotspot-Analysis:
  Error when using squares as study areas: the double of the user-specified size length was used.

- Function „Calculate | Control | Emissions of industrial sound sources“
  In the following case, erroneous emissions were displayed:
  - For all line and area sound sources with emission levels Lw’ or Lw“, and
  - if rating methods had to be taken into account.

  In this precise case the length/area correction term was added twice.

- Optimisation of barriers:
  At the end of the plausibility tests for a usual calculation, IMMI issues a warning when inconsistencies have been found in the project data. This message was issued for each iterative step of the barrier optimisation calculation. This has been to a single message at the beginning of the iteration.

- Input data for calculations according to ISO 9613-2: correction of pre-settings.
  Both temperature and humidity have a small influence on the calculated value of A_{atm}.
  Each time a new project was created, the pre-settings for calculation according to ISO 9613 were set to T=15° and RH=50%.
  As long as the dialogue "Calculate | Calculation parameters | Parameters for element libraries" is **not** opened, these values will effectively be used for the calculation.

If the dialogue is opened after the calculation finished, the displayed pre-settings are erroneous: T=10° and RH=70%. However these values have NOT been used for the calculation.
For subsequent calculations T=10° and RH=70% or any user-defined combination of these two parameters will be used.

- SRM II calculations
  In certain cases numeric exceptions were generated during calculation runs. These errors were properly intercepted and the calculation continued with the remaining points. This error has been corrected.

2. The New Report Manager

2.1 Concept

The previous procedure for generating an IMMI printout allowed the user only a very limited amount of options. The design of the layout was not very flexible. Only a small number of components (map, texts, diagram) could be rendered in a printout. The design options for the individual components and thus for the entire report were limited as well.
It was another significant restriction that only the window currently displayed on the screen could be printed out. If, for example, the map of a project was to be accompanied by results of calculations, the user had to call these figures up before being able to print them out. With the list of map clipping, the process started to become more user-friendly as it at least allowed map clippings to be saved.

All these restrictions will now be remedied with the new Report Manager. To achieve this goal, some new concepts have been introduced which will be explained below, followed by a detailed description of the individual functions.

2.2 List of Project Views

The *List of map clippings*, plays a key role in combination with the Report Manager.
Now, entries in this list can save *calculation results* and *representation options* in addition to a geometric clipping (X-Y coordinates). This makes it possible to save the entire project as it is represented in the screen display, and to re-create it with a mouse click. In view of these extended options, it appeared justified to re-name this function.

When it comes to defining the reports to be printed, the advantages of the list of project views become particularly evident. Contrary to the previous function, you can now print out any number of projects views at the same time in one report and are no longer restricted to the view currently displayed on the screen. To do so, simply select the desired project view from the list.

2.3 Text Fields

To simplify the output of text on the printout, text fields have been introduced which are organized in a list, similar to many other IMMI objects. First, enter your text in the comfortable Text Editor. You can use all the usual text formatting in this editor.

Furthermore, you can copy the lists that appear in many places in IMMI (e.g. results lists, Project list, etc.) into a text field via the clipboard or an RTF file.
Then, these text fields may be represented in a report in any combination with other components. As the texts are saved to lists, they are available for all kinds of reports, also cross-project reports.

2.4 Reports

The concept for the reports is entirely new. Previously, it was only possible to print out the contents currently shown on the screen.
Now, it is possible to combine reports for printout and to save them to lists. These reports are saved to the project file together with the respective project. In this way, all reports defined once can be re-loaded and re-printed at any time. No extra work is required for compiling the report once more. It is also possible to print out several reports subsequently.
As another option, several reports may be compiled in a single print job. In this way, it is possible for example to combine several reports in a singe pdf document.

2.5 – Project Views (Previously called List of Map Clippings)

The list of project views saves a map clipping together with calculation results and representation options.

To add a new clipping, press ***Add***. Use ***Edit*** to edit an existing item.

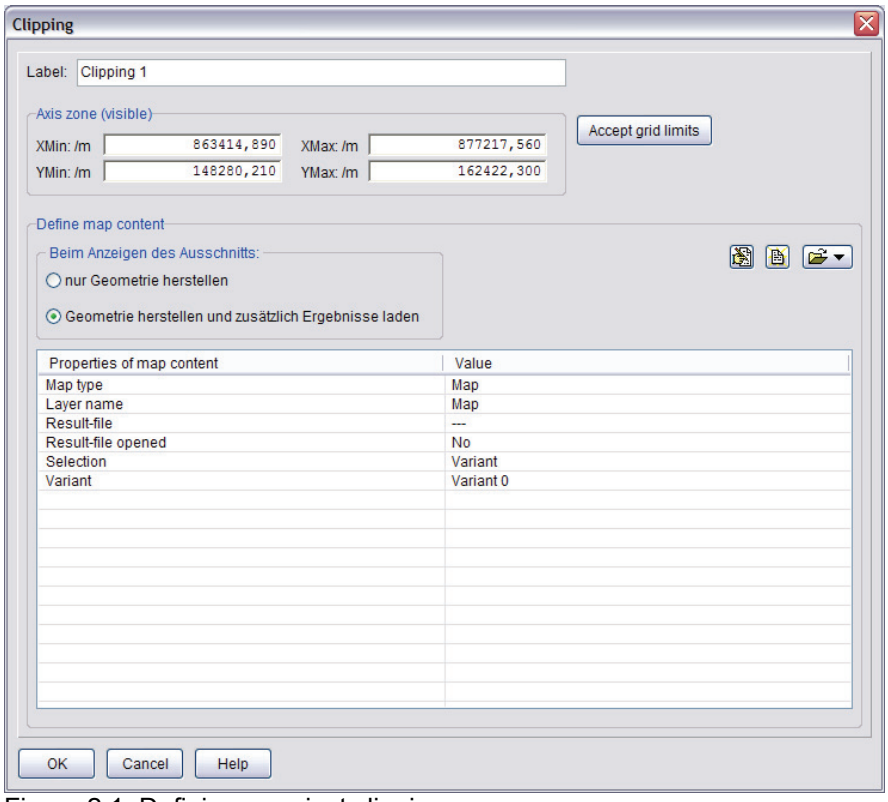


Figure 2.1: Defining a project clipping

Load & show map contents when displaying the clipping
When this option is enabled and a clipping is called up, the calculation results linked with this clipping are loaded and displayed together with the clipping. Furthermore, the representation options set for this clipping (f.e. the selected variant) are restored.

Note: When a project view is to be used in a report, this option must be enabled.

 – Calls up the dialogue for defining the map content of the displayed clipping. This function is also available in the Toolbox. The check box there has the same icon and the same function.

 – Click this button to assign the clipping a calculation result that was calculated by means of the job list of the new Calculation Control Centre (CCC).

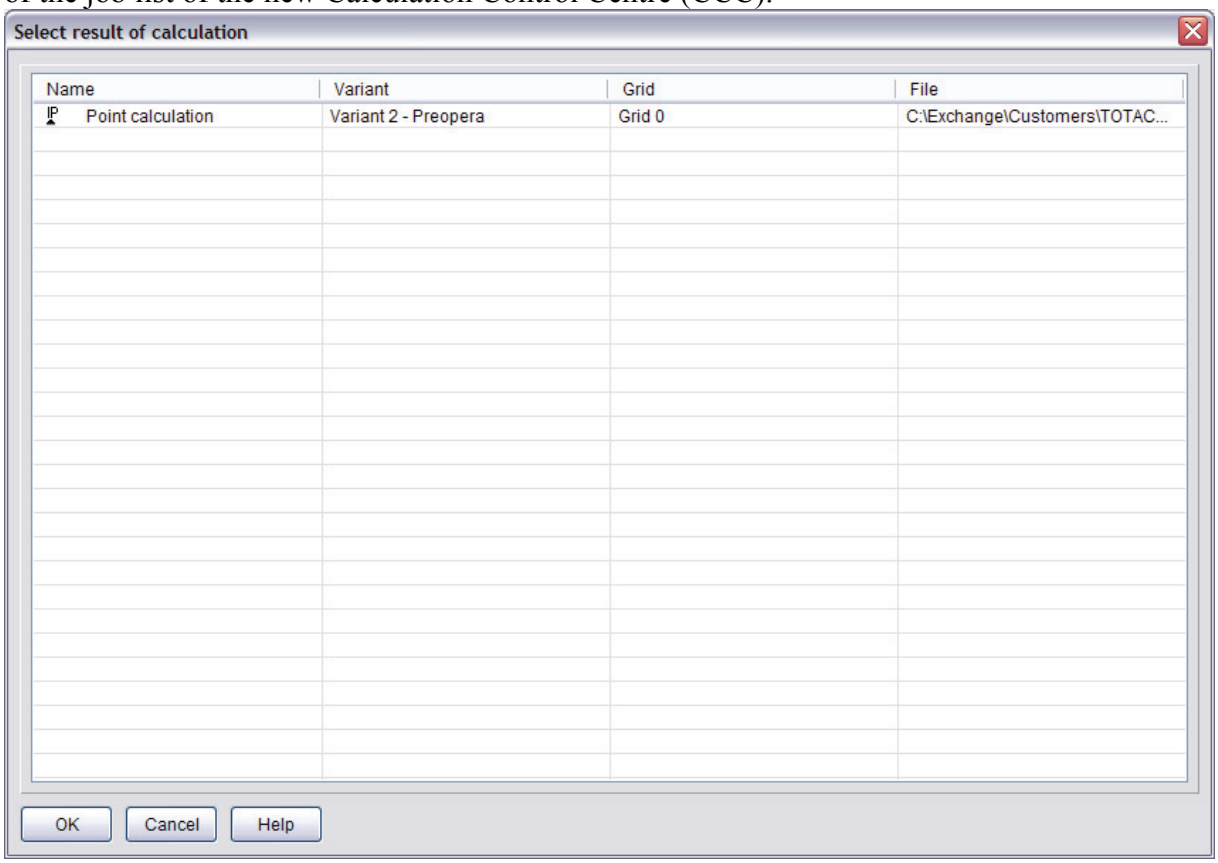
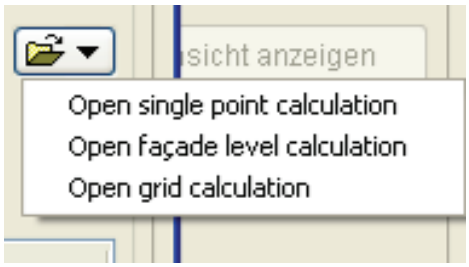


Figure 2.2: Selecting the calculation results for a project clipping

Select the desired result from a list of calculation results and click OK.

This selection is only enabled if the CCC actually manages calculation results in the job list. If not, an error message will be output.



If you wish to assign to the clipping a calculation result *not* generated with the job list of the CCC, use this button to select a result file and assign it to the clipping. First, select the type of desired result, and then opnen the result file.

Note: If a map view already displays a result together with the map, this result is automatically assigned to the clipping. You do not need to assign the result manually. However, the assigned result may be changed if necessary.

Do not forget to save the project so that the changes to the list of project clippings will not be lost.

2.6 Text Fields

Predefined text fields make it easier to use texts in the reports. Furthermore, the comfortable text editor allows you to enter formatted text.

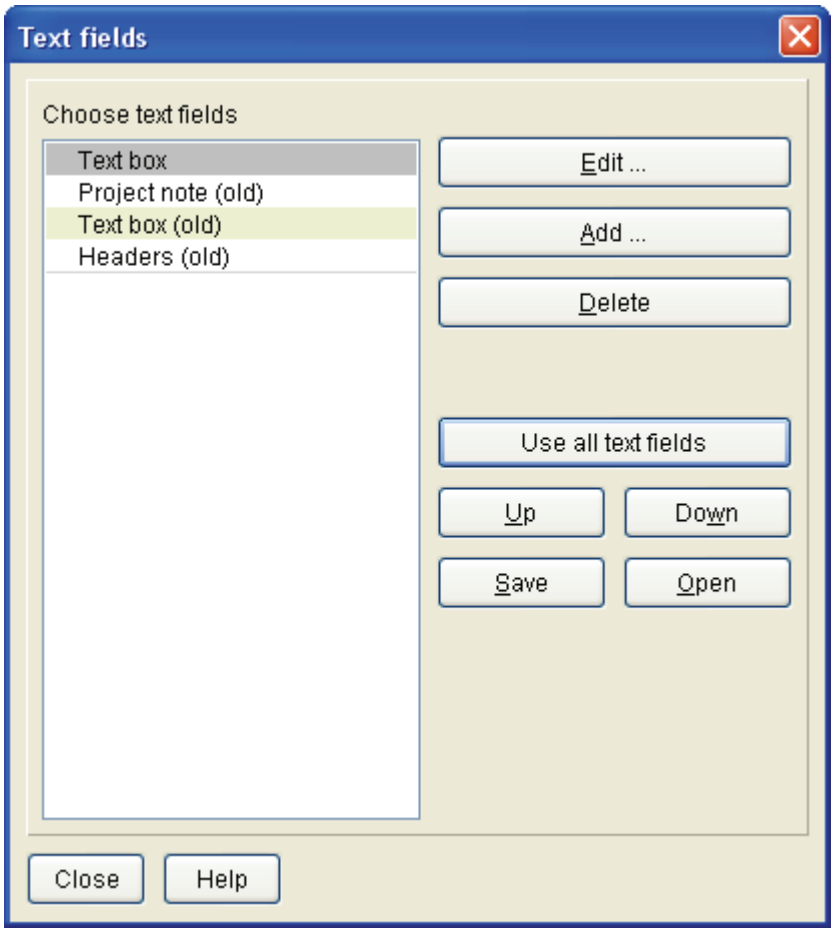


Figure 2.3: List of text fields

In addition to the traditional buttons for list administration, you will see the button:

Use old text fields
This allows you to copy from old projects the texts in the *fields Heading, Project note,* and the old and rather simple *Text field* to the list of text field. Now, you may edit them in the text editor. Previously, these old fields were to be found in the dialogue of *Project properties* on the dialogue tabs *Text field* and *Headers*. After introduction of the new text fields, these dialogue tabs have become obsolete.

Text editor

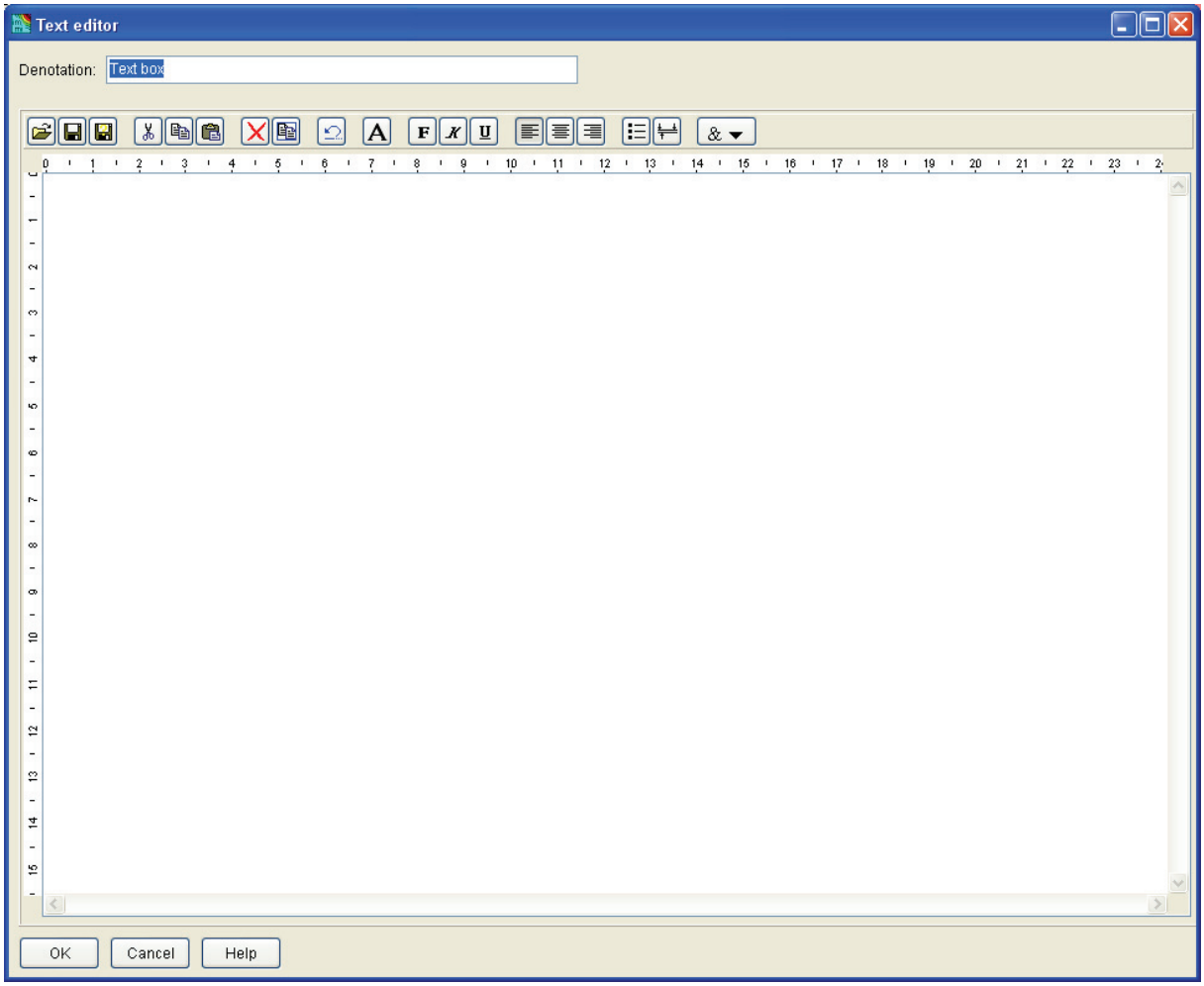


Figure 2.4: Text editor

The text is formatted by means of the buttons below the text input window, or via the local menu of the text window.

 – Loads an RTF or TXT text file.

 – Saves the contents of the text editor to an RTF or TXT file. Saving to a TXT file results in loss of the text formatting.

 – Saves the contents of the text editor under a new name.

 – Clips the selected text block.

 – Copies the selected text block to the clipboard.

 – Pasting of text from the clipboard.

 – Deletes the selected text block.

 – Selects all the text in the editor.

 – Re-does the *last* change in the text editor.

 – Opens the dialogue for selecting font type, size, style and colour.

 – Enables/disables bolt type.

 – Enables/disables italic type.

 – Enables/disables underlined font.

 – Selects left justification for the text.

 – Selects centre justification for the text.

 – Selects right justification for the text.

Note: Please note that the place of the actual text makeup in the final report depends on the size of the text components in the layout, not on the size of the text editor window where the text is input.

 – Enables/disables bullet listing.

 – Sets the margin spaces for the right and left margin, and for the indentation of the first line of a selected paragraph.

 – Use this function to automatically add field codes into the text. When the text field is output in a report, these field codes are replaced by the respective texts from the project. Field codes are defined sequences of characters starting and ending with the "&" symbol. They may also be entered manually.

&DATE&:	Current date (at time of printout)
&TIME&:	Current time of the day (at time of printout)
&FILE&:	Shows the name of the project file
&PAGE&:	Wild card for the page number
&VARI&:	Shows the name of the variant of the map assigned to the text block.

2.7 Definition of Layouts

Layouts are the graphic foundation of reports.
A layout defines the following:

- The components that will appear in the report
- The number of components of each type that will be indicated
- The size of the individual components
- The location of the individual components
- The print sequence if several components overlap
- Margins
- Sheet size
- Paper orientation (landscape or portrait format)
- Background colour and frames of a page

2.7.1 List of Layouts

A project may comprise any number of page layouts. These layouts are managed in a list (the 'list of layouts').

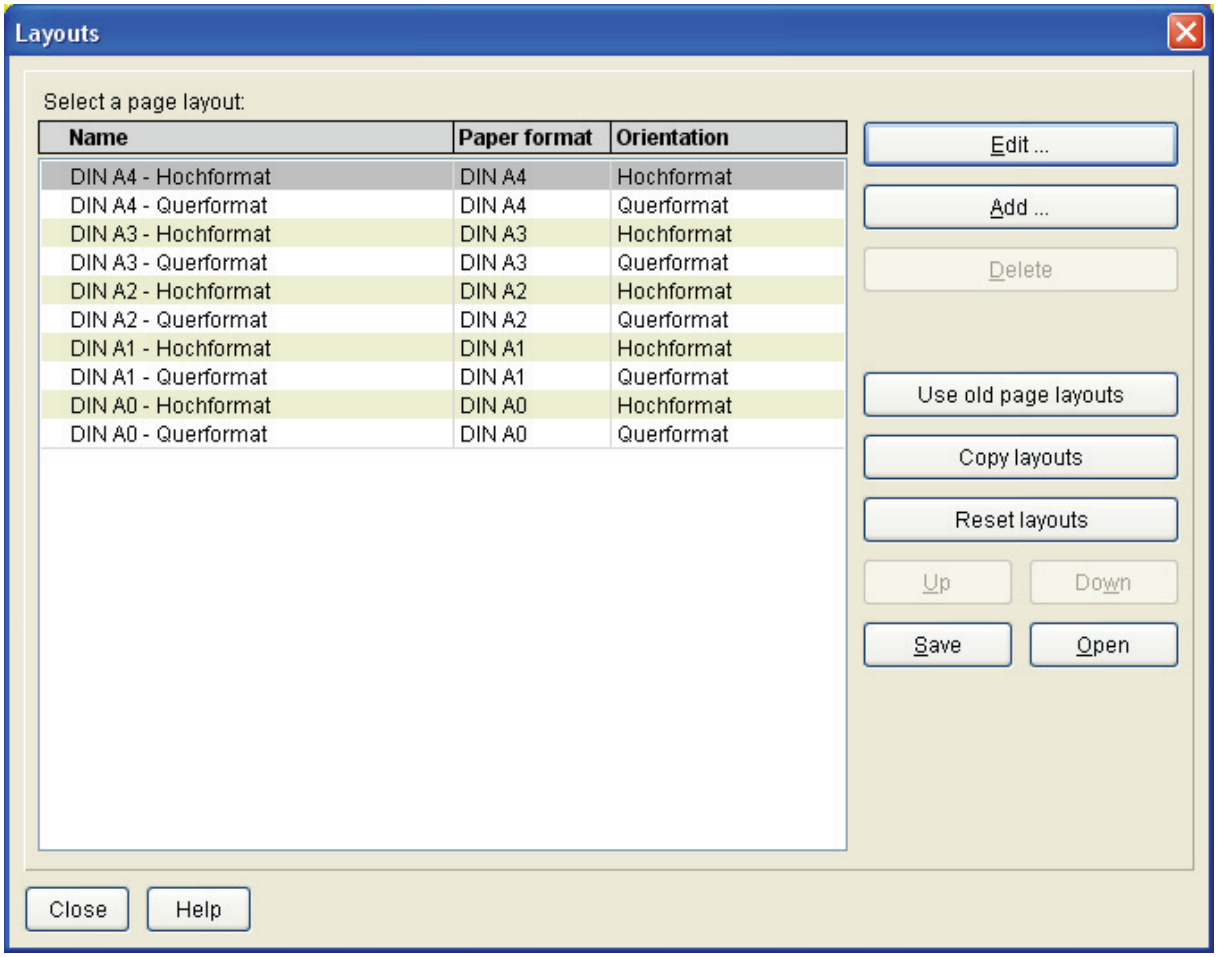


Figure 2.5: List of defined layouts

The buttons ***Edit, Add, Delete*** and ***Up/Down*** are self-explanatory.

Use old page layouts
This function allows you to use the layouts defined for the old print functions in the new format. After copying the old layouts, it is generally advisable to check the results.

Copy layout
The layout selected from the list by means of the cursor is copied, and the copy is pasted to the end of the list. This is a helpful function when you wish to generate a new layout that is very similar to an existing layout.
Also use this function to transfer a layout to a new paper size without executing any changes.

Reset layouts
You cannot delete the first ten entries in the list of layouts (these are the default entries), but you may change them. Furthermore, you may define new layouts of your own.

With this function, you may:

- delete the entire layout list and fill it with the default layouts. This will also delete any layouts you defined yourself.
- reset the first ten default layouts to the delivery status while leaving the self-defined layouts untouched.

Save layouts
Use this function to either save an individual layout or the entire list to a separate file.

Load layouts
This function loads layouts from a file written with the ***Save*** function and adds them to the list of layouts. You have two options for loading layouts:

- Delete the existing list and replace it by the one that is currently being loaded.
- Retain the existing list and add the loaded layouts to that list.

2.7.2 Generating Page Layouts

This is the dialogue used for generating a new page layout.

2.7.2.1 Layout Components

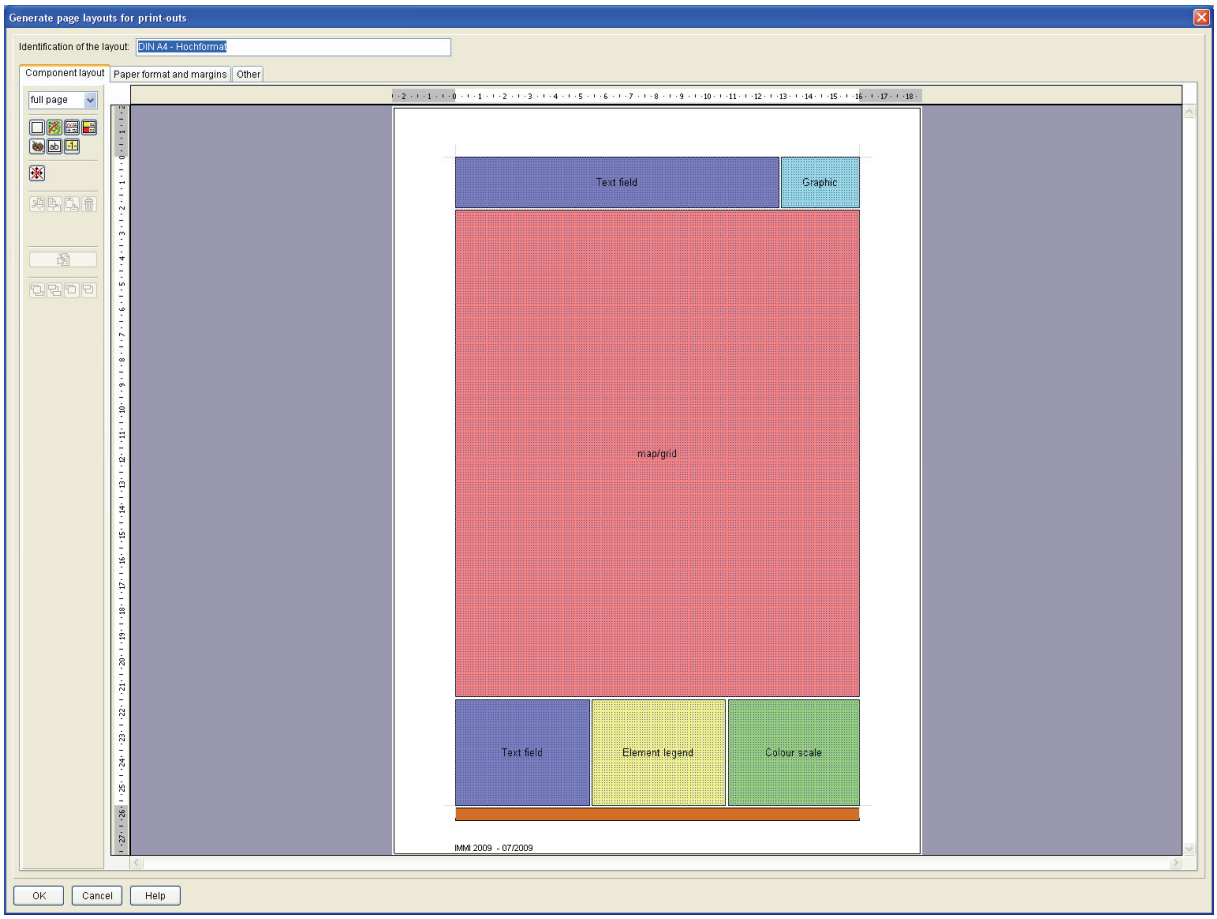


Figure 2.6: Generating page layouts

Layout component

The term 'layout component' is defined as follows: A layout component is a rectangular field in which certain contents can be displayed in the frame of a report. However, the content itself that is displayed in the component is only defined when the report is generated.

There are the following components:

 - Empty field: This field has no contents. It is merely used to show a coloured (or white) space enclosed by a frame.

 - Map/grid: Shows a map and additionally a calculation result (IPKT, façade level, or grid calculations).

 - Text field: Shows formatted text.

 - Element legend. Shows a legend for an element.

 - Colour code: Shows a colour scale that belongs to a grid, to a facade level or a reception point calculation.

 - Diagram: Shows a graphic file.

 - Header/footer: Shows specific information on a project (f.e. project file name, page number, etc.). Contrary to its name, the header/footer can not only be placed at the top or bottom of a page but at any position.

All types may be used simultaneously and in any number in one layout. To add a new component, click on the respective button on the left side of the tool bar. To select an added component, click on it with the mouse.
To change the size of a selected component, drag the marker at its edges in the desired direction. To prevent accidental changes to size or position, this function may be blocked.

 or 
If the four-arrow-button shows a red X, the function is blocked. Size and position of the components cannot be changed. If the four-arrow-button shows a green OK sign, size and position of the components may be changed. To enable or disable this function, click on this button.
Other functions are copying and pasting selected components by means of the clipboard.

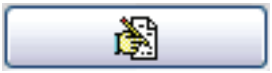
Zoom:
Components may be zoomed to facilitate accurate positioning. The following zoom levels are available: ***50%, 75%, 100%, 200%*** and ***500%.*** Furthermore, the layout may be adapted to fill the entire screen (***full page***) or to use the full screen width, irrespective of whether the full height of the layout can be indicated or not (***page width***).

 - Clip: Cuts the selected component out of the layout and copies it to the clipboard.

 - Copy: Copies the selected component into the clipboard without cutting the component out of the layout.

 - Paste: Pastes a component from the clipboard into the layout.

 - Delete: Deletes the selected component after a confirmation prompt.

 - Edit: Click this button to call up the dialogue for entering the size and position of the selected component.

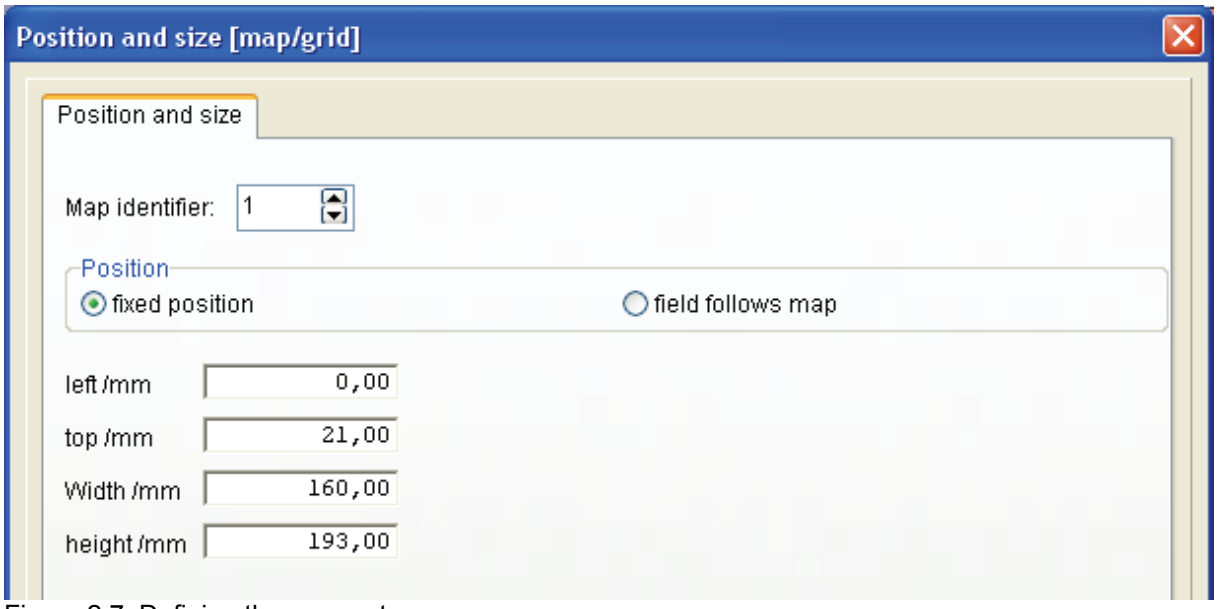


Figure 2.7: Defining the parameter

Identifier: Map components may be provided with a ***map identifier***. It is used to create a reference between another component and a map component.

An example for illustration of this principle:
A layout comprises two map components that are to indicate various grids with *different* colour codes. Furthermore, the layout is to comprise two components that indicate the associated colour codes. Now, you can assign two different identifiers to the two maps. The two colour codes now have an input field ***Identifier of the reference map*** that creates the connection between colour codes and map. In this input field, enter the identifier of the map whose colour code is to be indicated. This creates the connection between map component and colour code component.
This coupling also exists between map and element legend and between map and text field.

Left, top, width, height:
For all components, you can enter the ***top left*** corner, the ***width*** and the ***height*** of the components in mm. These spaces are calculated on the basis of the left and the top margin, not the edge of the sheet!

Position/fixed position: The component is positioned on the page pursuant to the information 'Left, top, width, and height'.

Position/field follows map: When this option is enabled, the component is positioned in accordance with one of the map components in this layout. The identifiers of the components and the identifier of the reference plan specify which map components the selected component is to follow.

An example for illustration:
An element legend is to be drawn *in* the field of the map component. The intended position for the legend is the top left corner of the map. As the map contains axes and captions, you cannot exactly define the absolute coordinates of the map position. Now, select ***Field follows map.*** In the ***Position*** selection list, enter the data for *left* and *top*. Finally, enter the identifier of the map in which the legend is to be drawn in the field ***Identifier of the reference map***.

Every time you now use this layout, the legend will always be drawn in the top left corner of the map, and this map component will always be positioned on the layout.

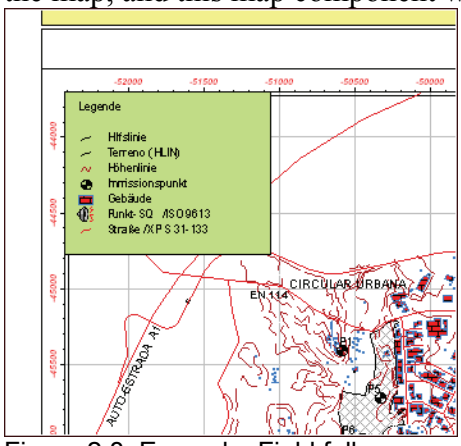


Figure 2.8: Example: Field follows map. The legend is positioned in the top left corner of the map.

When the option ***Field follows map*** is enabled, only the width and height of the component can be entered. The top left corner of the component is calculated when the map is printed.

Note: It is also possible that a map follows another map. Thus, you can for example possible show a clipping of the project together with a view of the entire section.

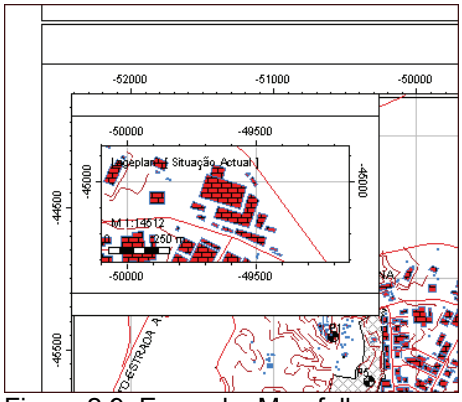


Figure 2.9: Example: Map follows map. A second map is shown in the top left corner of a first map.

Drawing sequence: Components can be placed on the layout so that they overlap each other. The 'Drawing sequence' defines how the components will overlap when actually drawn.

 – Places the selected component in the foreground. This component will be drawn last, overlapping all other components.

 – Places the selected component in the background. This component will be drawn first and will be overlapped by any other components.

 – Advances the selected component by one drawing level.

 – Moves back the selected component by one drawing level.

The two last options only apply when more than two components overlap each other.

2.7.2.2 Paper Format and Margins

On this dialogue page, you specify paper format, page orientation, and margins.

Paper format
You can select paper formats from DIN A4 to DIN A0, DIN B4 to DIN B0, or the US formats Executive, Legal, and Letter. Furthermore, you may select a user-defined sheet size. For this option, enter the width and height of the sheet.

Scale components when changing paper size
Select this option to use a layout on another sheet size while keeping the same relative size of the components in reference to the sheet size. This option greatly facilitates the task of transporting existing layouts to another paper size.
When you change the sheet size while this option is disabled, the components will keep their absolute size.

Orientation
Selects the paper orientations ***Portrait*** and ***Landscape***.

Margins
You can define the top and the left margin. These two margins are the basis for the calculation of the position of the components. The right and bottom margin are primarily used to indicate page labelling.
All components may be placed to overlap the side margins. Thus, to position a component 10 mm to the left of the right margin, enter '- *10*' in the field ***Left*** of a component.

Draw a page frame
Use this option to draw a frame of the desired line thickness around the page. The exact position of the frame is defined by the printable area of the respective printer.

Fill the page with a colour
Use this option to fill the page with the desired colour. Again, the filled space is defined by the printable area of the respective printer.

2.7.2.3 Miscellaneous

This menu comprises some settings that will help you to generate a layout.

Align components on a grid
When this option is enabled, the layout components may only be positioned in the step size defined in the fields ***Step size X/mm*** and ***Step size Y/mm.***

Note: When you press the ALT key while moving a component, this option is disabled for the current movement.

Show grid points
When this option is enabled, the grid points on which the components are aligned are indicated on the screen. With large-format layouts (e.g. DIN A0) and a small step size (e.g. 1 mm), having the grid points indicated may have the effect that the drawing of the grid points alone takes several seconds and that you will see nothing but the blue grid points in the end.

2.8 Generating Reports

A report is a combination of a layout and the description of the component content, i.e. what the components of the layout will show. Reports are organized in a list and saved together with the project. The concept of reports allows the user to combine project data and results in one graphical representation, to save them and to print them out together at any later time without having to combine them again, as was the case in the previous version.

The key aspect in generating a report is the assignment of ***content*** to the individual components of the layout. For example, you define here which text from the list of text fields will actually be indicated by a text component, or which clipping of the list of project views will actually be shown in a map component.

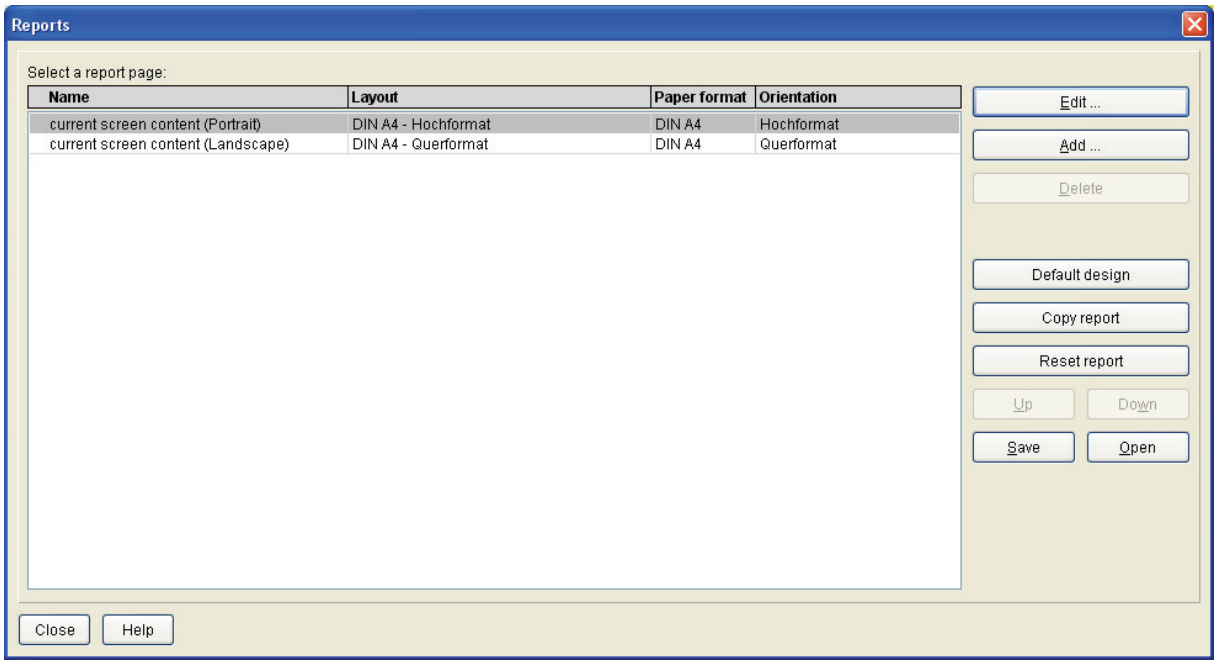


Figure 2.10: List of defined reports

The buttons ***Edit, Add, Delete, Up*** and ***Down*** are self-explanatory.

Default design
Click this button to select a file with design parameters to be applied to new reports. For more information on the report design, see section 2.8.32.8.3, Generate your own Design Specification as Default Value

Copy report
Generates a new report on the basis of the selected report.

Reset report
You can edit but not delete the first two entries (the default entries) in the report list. Furthermore, you can define new reports of your own.

This function allows you to:

- Delete the entire report list and fill it with new default reports. This will also delete any self-defined reports;
- Reset the first two default reports to the delivery status but leave the self-defined reports untouched.

Save
Allows you to either save a specific report or the entire list to a file.

Open
With this function, you add reports from a file written with the ***Save*** function to the report list. You can add reports to a list in two different ways:

- Delete the existing list and replace it by the one you are currently opening; or
- Retain the existing list and add the loaded-up reports to the list.

Note: Though it is possible to swap reports between different projects, it is of limited use as the content of a report obviously refers to the respective project.

2.8.1 Generating Reports

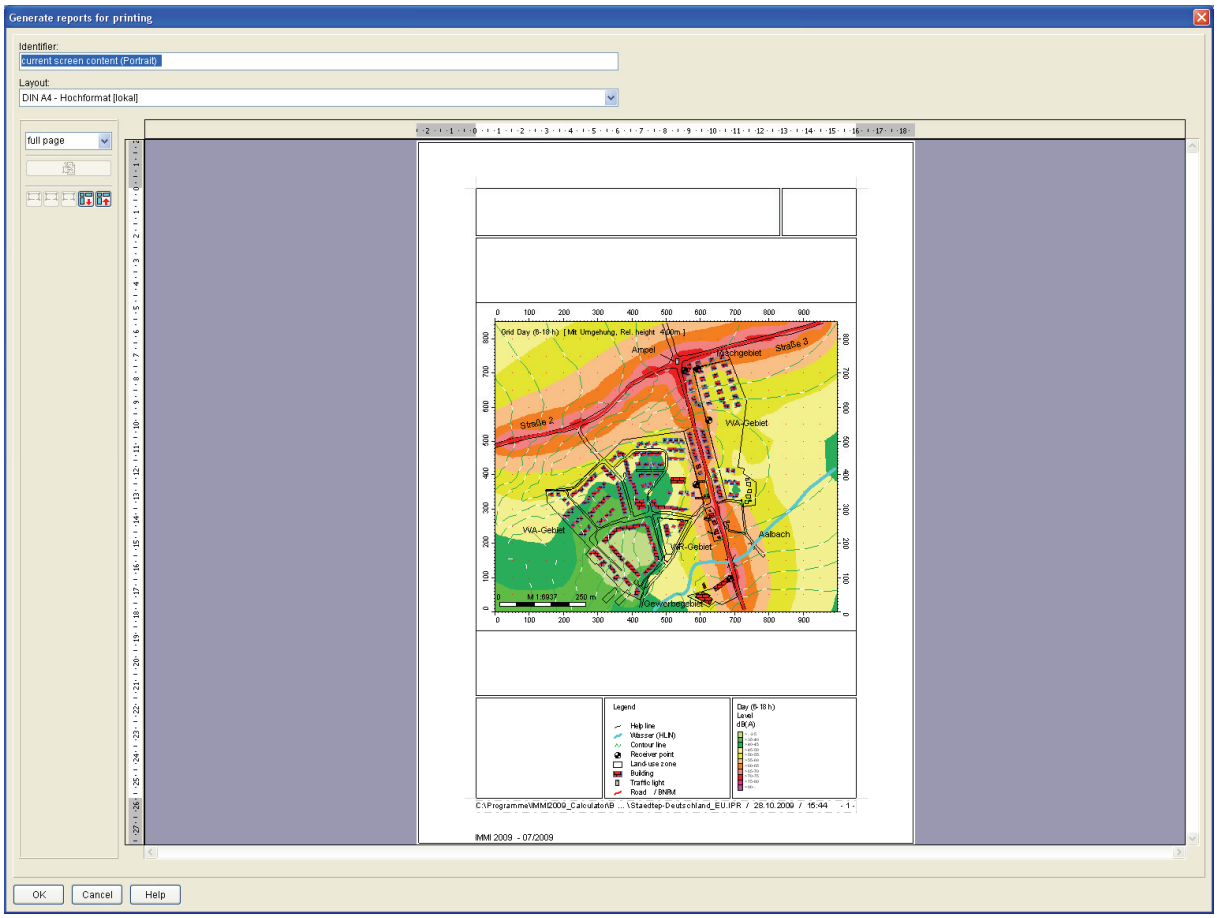


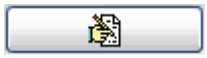
Figure 2.11: Generating a report

Identifier
Enter a name for the report.

Layout
Select the desired layout for the report. A copy of the selected layout is opened for the report. This is indicated by the additional ***[local]*** element behind the name of the layout. As a consequence, any future change to the selected layout will not be applicable for the report to which this layout was assigned.
If you wish a layout change to apply to a report, you must assign the changed layout to the report once again.
This may result in two different situations:

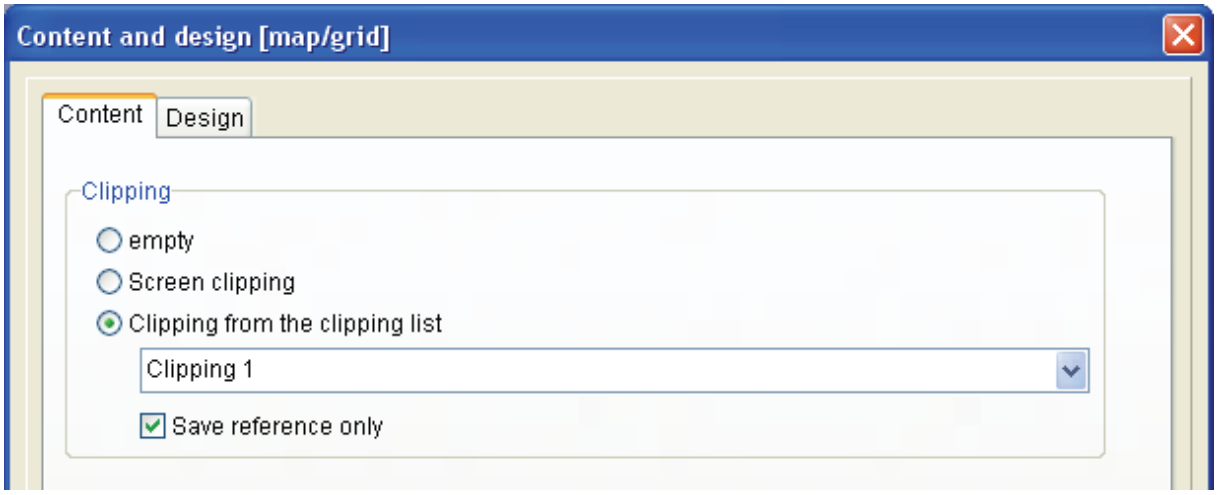
- The report only contains the new layout. Any allocations between contents and layout are lost.
- The report contains the new layout. In addition, it is attempted to transfer allocations to the content of the old layout components to the new layouts. This is only possible if the new layout consists of the same layout components in identical numbers as the old layout.

As described for the layout dialogue, the representation of the report may be zoomed. The same ***zoom levels*** as in the layout are available.

 – Assigns content to a layout component: Select a component with the mouse and click on the ***Edit*** button, or double-click on a component. The dialogue for assigning content to a component opens. Each component has a dialogue of its own. However, the basic structure of the dialogues is identical. Under the first tab, select the ***Content*** for the report. Under the second tab, additional display options, so-called ***Designs***, can be set.

2.8.1.1 Map/Grid

Map/grid – content

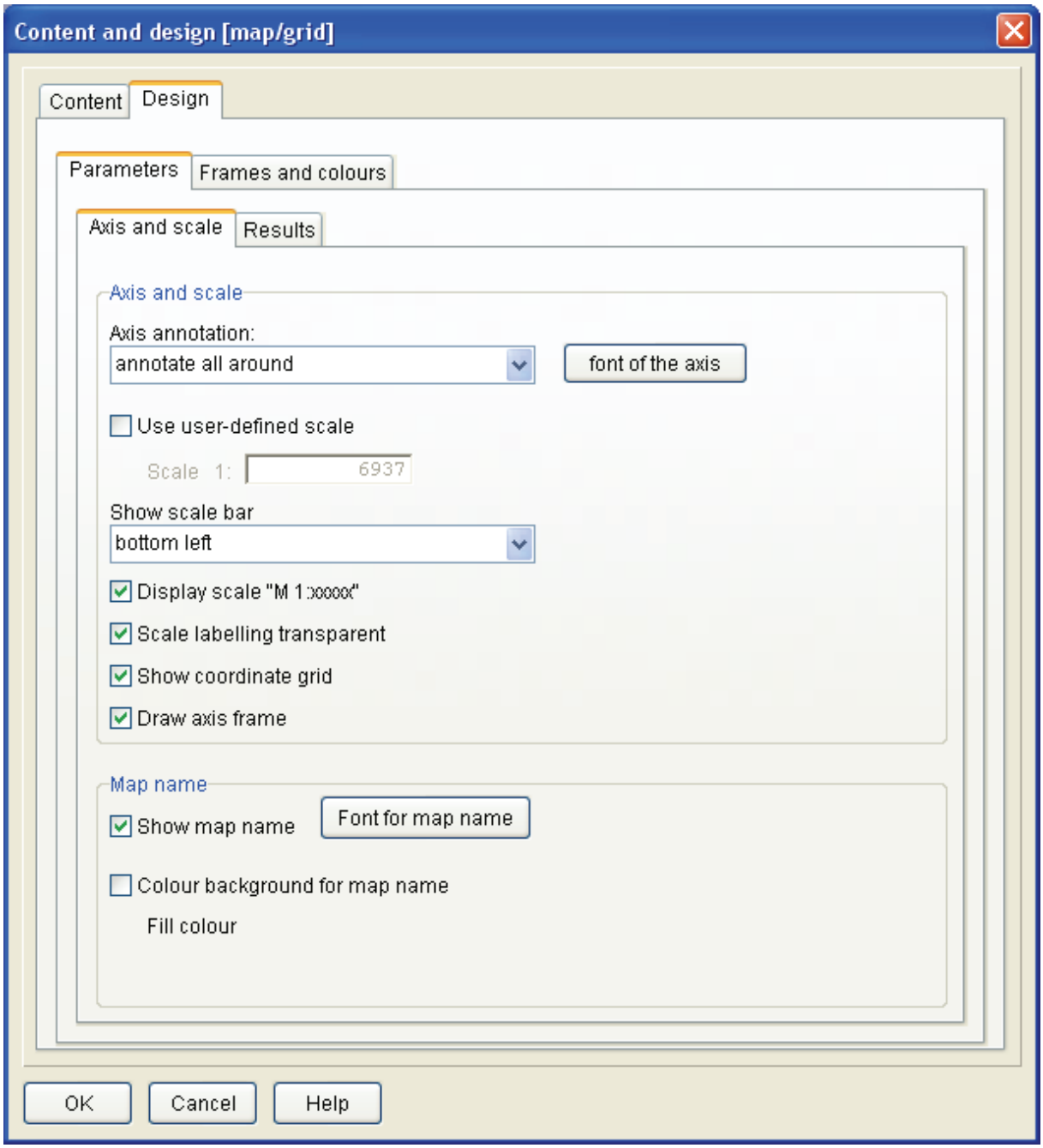


Empty
The component remains empty and contains no drawing.

Screen clipping
When the report is displayed or printed, the current screen clipping is indicated. The content of the map component changes depending on which section of the project or which calculation result is currently displayed on the screen.
This setting is analogue to the old procedure for making printouts.

Clipping from the clipping list
The selected clipping from the clipping list is shown.
When the option ***Save reference only*** is enabled, changes to the selected clipping are taken over from the clipping list immediately when the report is printed out. When this option is not enabled, the report is allocated a local copy of the clipping. Any changes to this clipping which are later made in the clipping list do not affect the report. If you want subsequent changes to apply to the report, you must allocate the clipping once more to the component.

Map/grid – design



Axis and scale
None
No coordinates axes are drawn

Classical annotation
The coordinates are written to the left of the Y axis and below the X axis. The annotation is placed horizontally. This is the classical annotation previously used for the axes.

Annotate all around
The axis annotation is shown all around the map.

Font of the axis
Selects a font for the axis annotation.

Show scale bar
Select here whether a scale bar is to be shown, and if so define its position in the map.

Display scale "M 1:xxxxx".
When this option is enabled, the currently used scale is shown above the scale bar (f.e. M 1:50000). It makes sense to hide the currently used scale when the diagram is embedded into another program where it is shown at a *larger or smaller* scale. In this case, the originally correct information 'M 1:xxxxx' would be false.

When ***Scale labeling transparent*** is enabled, the space for the scale symbol is not deleted before the scale is drawn. When the function is disabled, this space is deleted; this will possibly improve the legibility of the scale.

The option ***Show coordinate grid*** defines whether a grid is drawn in the map. The grid lines are drawn at the positions of the axis annotation.

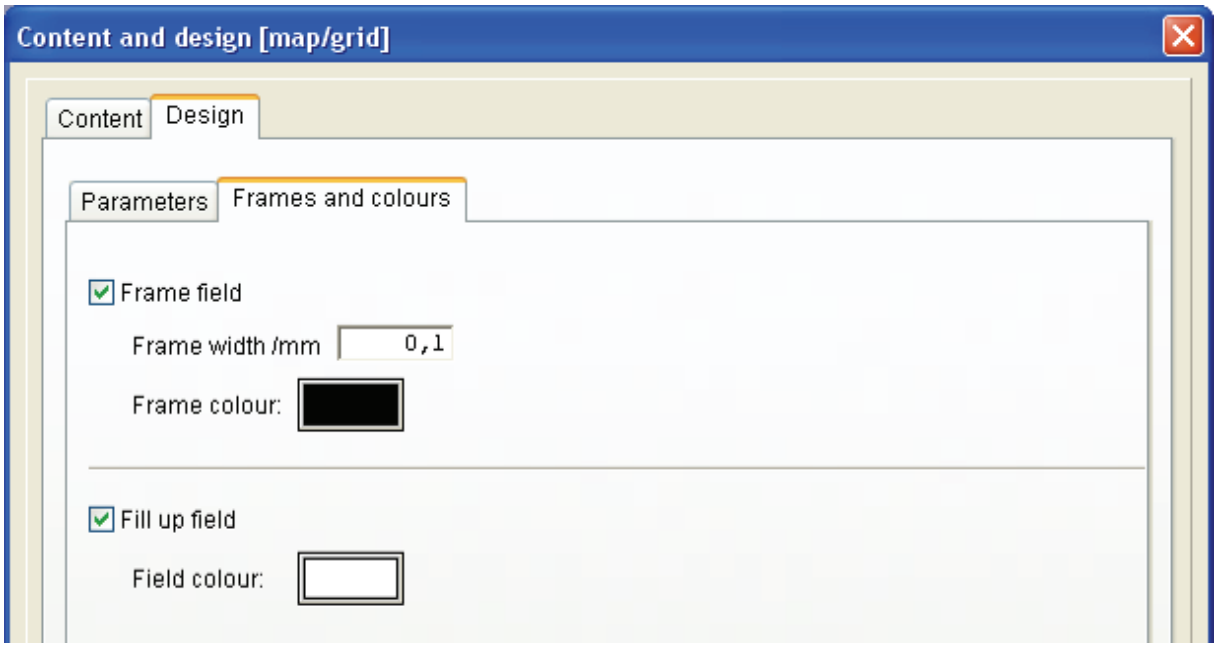
The option ***Draw axis frame*** generates an additional frame outside of the axes encircling the map component.

When the function ***Show map name*** is enabled, the map name is shown in the map. Additionally, a font may be selected for the map name.

Enable the function ***Colour background for map name*** to improve the legibility. The ***Fill colour*** can also be selected.

Results
Show calculation results in the preview
When this option is enabled, a calculation result (f.e. a grid) is loaded and shown when the content is defined, and in the print preview.
With very large grids, the loading and drawing may take rather long. If this is the case, it makes sense ***not*** to show the calculation results in the preview. Instead, a corresponding message will appear on the report side. In the final version of the report (in the printout or clipboard etc.), the calculation result will always be indicated.

Frames and colours



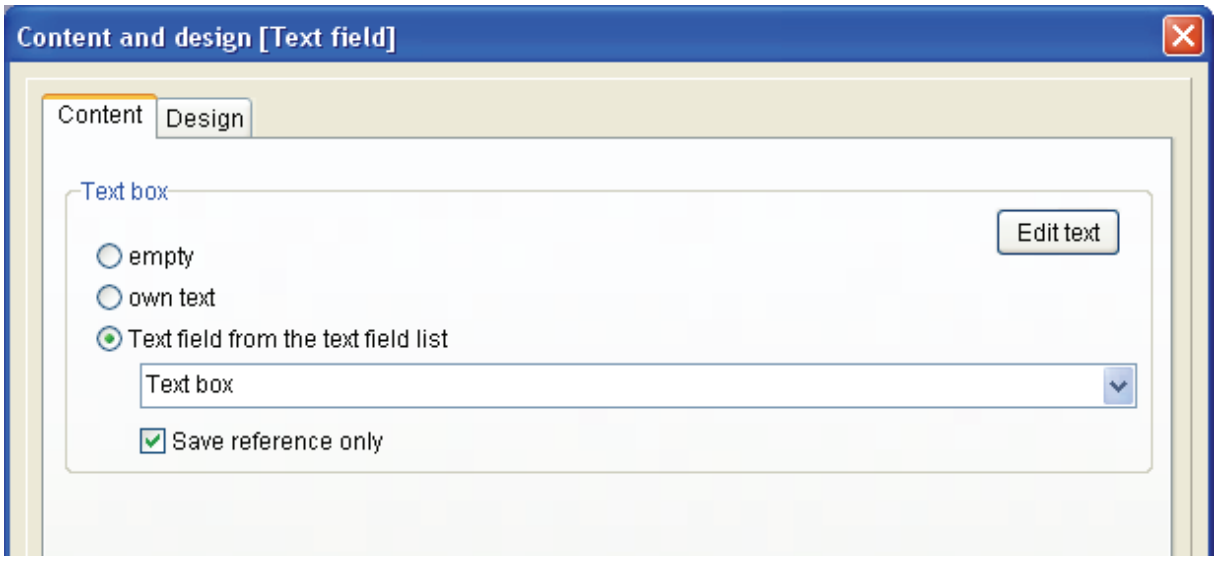
Each component may be enclosed by a ***frame***. Frame ***width*** and ***colour*** can be selected.

Note: When the option ***Frame field*** is disabled, the frame of the component is indicated by means of dotted lines in light gray in the screen display. No frame will appear in the final printout.

Furthermore, each field may be filled with a ***colour***.

2.8.1.2 Text Field

Text field - contents



Empty
The space in the text field component remains empty.

Own text
The text field component contains your own text. Click the ***Edit text*** button to open the Editor window where you may enter the text for the text field component.

Text field from the text field list
From the list of text fields, select a text field that is only shown in this component. When the button ***Save reference only*** is enabled as well, each change made to a text field in the text field list is immediately taken over into the component. When the button is disabled, the text is copied from the text field of the list into the component ***[local copy]***. To modify it in the text field, click on the ***Edit text*** button. However, these changes will not affect the content of the text field in the text field list.

Text field – design
Here, the distance between frame and text can be set (in mm).

Colours and frame
see above.

2.8.1.3 Diagrams

Diagram – content

Empty
The space in the graphic component remains empty.

Graphics file
Use this function to select the graphics file to be displayed. A wide selection of the common graphic formats is available.

Note: Just the name of the file is saved in the report, not the diagram itself. For this reason, the graphics file must always be available for report printout.

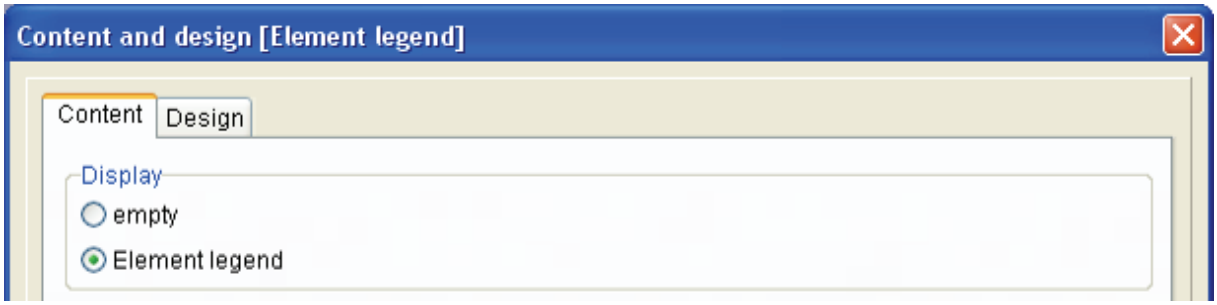
Diagram – content
Here, only one selection can be made: whether or not you wish to ***Retain the aspect ratio***.

If you do not wish to retain the aspect ratio, the diagram will be extended or compressed to fill up the entire space of the graphics component. Otherwise, the diagram will be inserted to fit into the diagram space as best as possible while the aspect ratio is retained.

Colours and frame
see above.

2.8.1.4 Element Legend

Element legend – content



Empty
The space in the element legend component remains empty.

Element legend
The Element legend is shown

Element legend – design
Fill in legend automatically before drawing.
When this option is enabled, the program checks the current project to see which elements exist before starting to draw the element legend. The legend is then automatically assembled from these elements. When the project has been changed by adding or deleting of elements, the legends will always be up to date.

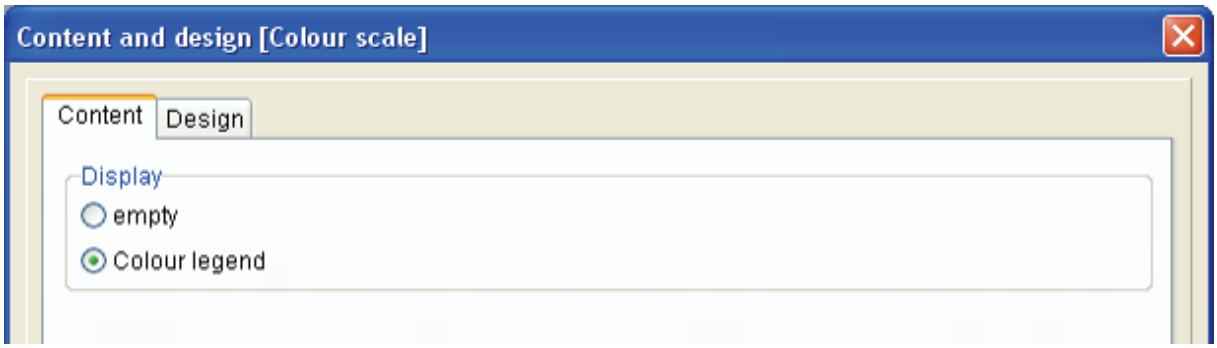
When this option is disabled, use the ***Legend entries*** button to define the content and appearance of the legend.
The dialogue in which you execute these settings is analogue to the elements *Legend* from the *Drawing* library.
When you design the legend manually, the project amendments will not be taken over into the legend automatically.

Using standard dimensions
Enable this option when you wish to draw the legend with the default dimensions for line spacing, margins, and symbol width and height.
When this option is disabled, you can define the values for these parameters yourself.
Again, refer to the *Legends* element in the *Drawing* library.

Colours and frames
see above

2.8.1.5 Colour code

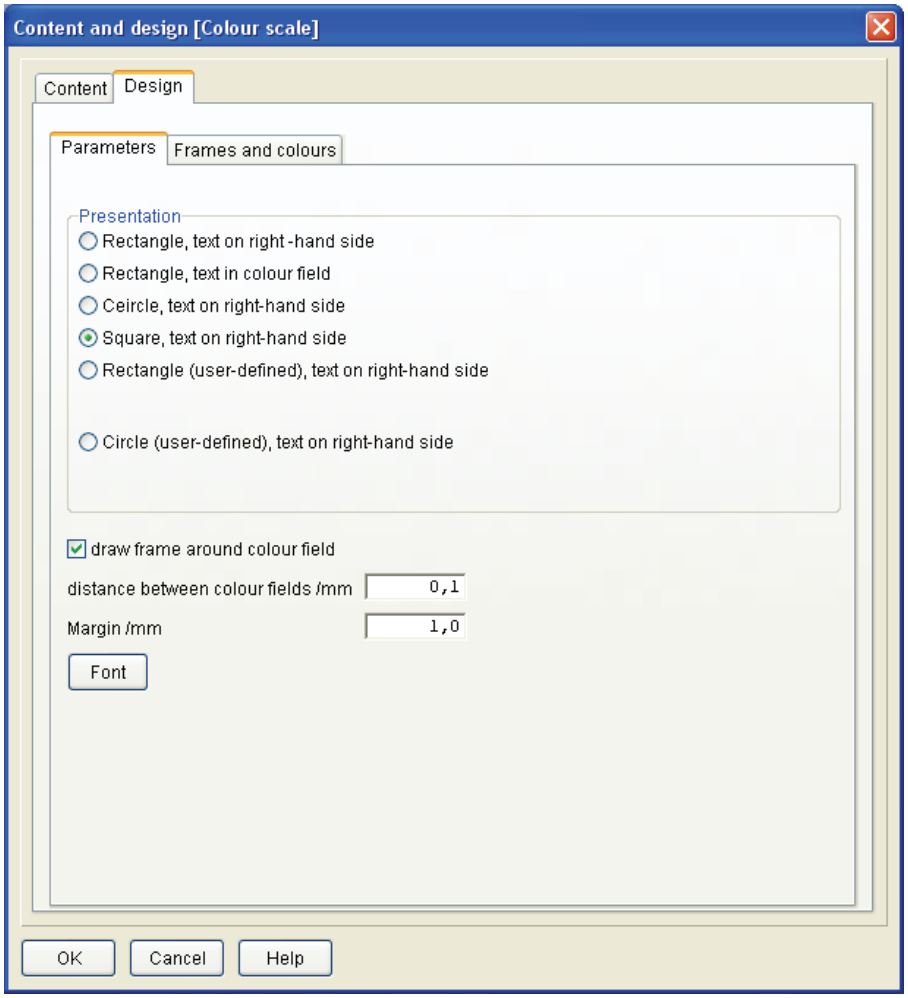
Colour code – contents



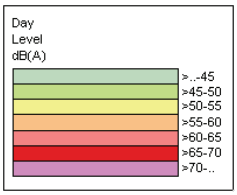
Empty
The space of the colour code component remains empty.

Colour code
The colour code is shown.

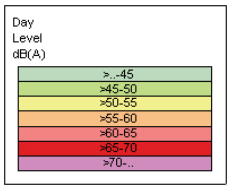
Colour code – design



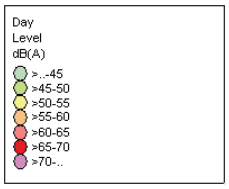
There are different options for the ***Presentation*** of a colour code.



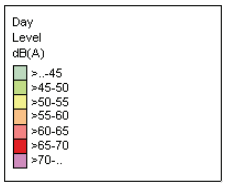
Presentation: Rectangular, text on right-hand side



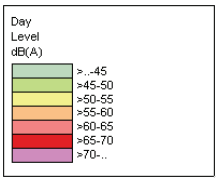
Presentation: Rectangular, text in colour field



Presentation Circles, text on right-hand side



Presentation: Square: text on right-hand side



Presentation Rectangular with user-defined width and height

Draw frame around colour fields
When this option is enabled, a black frame is drawn around each colour field.

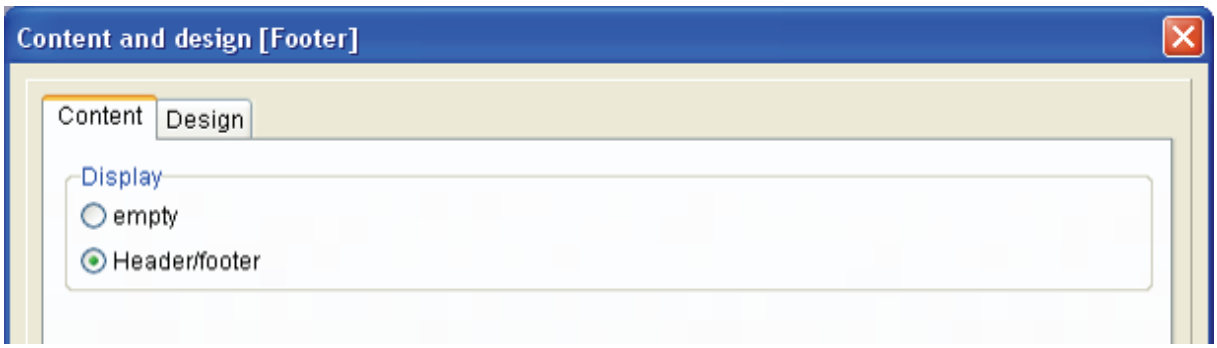
You can specify the ***Distance between the colour fields***. By default, this distance is set to 0.1 mm. In this way, the colour fields are directly attached to each other.

Use the ***Margin*** parameter to define the distance between the colour code and the margin of the space for the colour code components. The margin is set at the right- and left-hand sides, the bottom and the top. In this way, the width and the height of the actual drawing space are reduced by double the amount of the specified margin.

You can select the ***Font*** for the text in the colour code.

2.8.1.6 Header and Footer

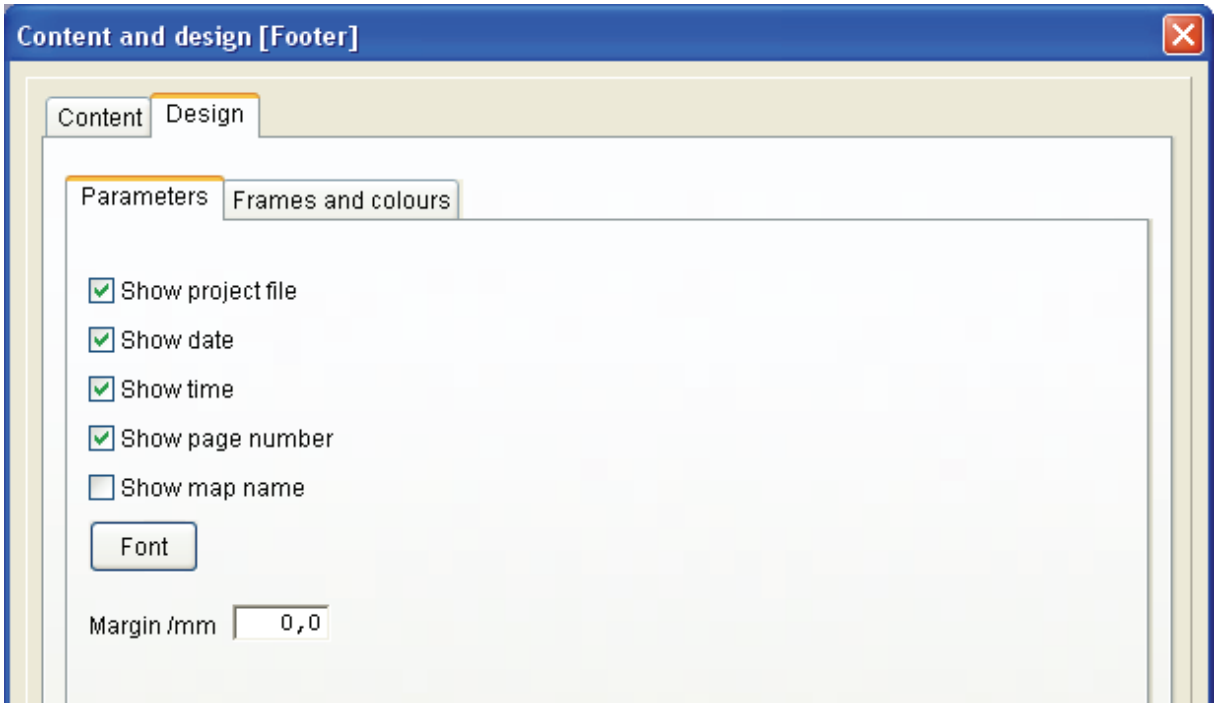
Header/footer – content



Empty
The space of the header/footer component remains empty.

Header/footer
The header/footer is indicated.

Header/footer – design



Parameter
The header/footer component can show various pieces of information:

- the name of the project file (with full path statement)
- the current date (at time of printout)
- the current time of the day (at time of printout)
- the page number of the report
- the name of the map

The information is always shown in one line in the sequence described above, with the exception of the page number that is always indicated right-justified in the component field. If there is not enough room for the full text, the path statement in the name of the project file is abbreviated first (provided it is to be indicated at all). If there still is not enough room, the excessive text will be cut off.

You may select the ***Font*** in which the text of the header/footer is to appear.

Use the ***Margin*** parameter to define the distance between the header/footer and the margin of the space for this component. The margin is set at the left and right-hand sides, the top and the bottom. In this way, the width and the height of the actual drawing space are reduced by double the amount of the specified margin.

2.8.2 Manage Components Design

As you learned in the previous section, you can specify various parameters to define the appearance of your reports. Some wizards are available to help you manage these settings. With these tools, it is very easy to

- give identical components an identical design,
- load and save settings for individual components,
- load and save settings for an entire report, and
- generate presettings for future reports.

 assigns all design parameters of the selected component to all other component that are of the same type as the selected component.

 saves the design parameters of the selected components to a file.

 loads the design parameters from a file and assign them to the selected component. Ensure that you are loading a suitable file.

 saves all design parameters of all components of the report. If a report contains several components of the same type that have different design parameters, the parameters of the most recent component are saved in this file.

 loads a file with design parameters If design parameters are saved in this file that suit the components in the current report, these components will take over the parameters in question.

2.8.3 Generate your own Design Specification as Default Value

It makes sense to use the same design parameters on all reports and deviate from this rule only in exceptional cases. If you do not like the presetting for the component design, you can generate your own design specification. This will be used automatically every time you generate a new report.
To create your own design specification, proceed as follows:

- Generate a layout which comprises exactly one component of every type.
  Size and position of these components are of no consequence here.
- Now, generate a report that uses this layout.
- Next, select for each component the design parameter that suits your taste.
- Save the parameters to a file via the  button.
- When you answer the question: ***Use this file as default design?*** with Yes, the file is saved as your default design.

2.8.4 Printing Reports

Use this dialogue to print out the defined reports, copy them to the clipboard or to a graphics file. In addition to some print options, all reports defined in the project are listed in this dialogue. Mark a check box to select and print or export one or several reports.

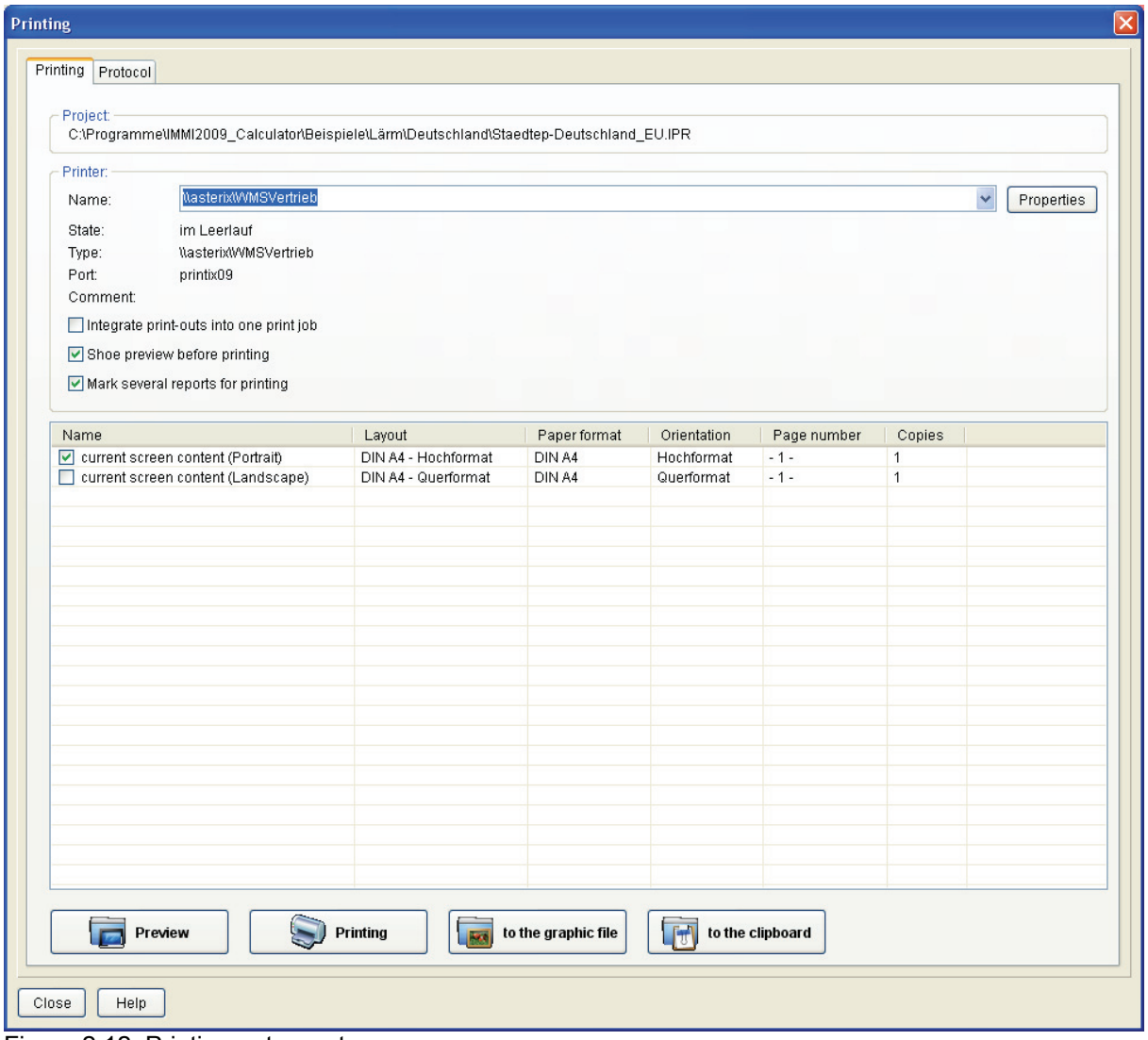


Figure 2.12: Printing out reports

Select the ***Printer*** for printing out the reports.

You can set some additional options for the printer by clicking on the ***Properties*** button. You do not need to select paper size and orientation in the printer properties. IMMI will set the printer automatically in accordance with paper size and orientation of the report layout. You only have to make sure that the printer supports the paper format of the layout. Thus, it is possible to print out reports with different paper sizes or orientations in one go without having to change printer settings.

You can integrate several reports (or several copies of one or more reports) ***in one combined print job***. This option is of no consequence when the files are sent for printout. However, if they are sent to a pdf printer (to create a pdf file), the combined reports are integrated into one single pdf. When this option is disabled, an individual pdf file is created for every report.

When ***Show before printing*** is enabled, the preview is shown before printout of one or several reports. This preview is also shown when the data is output to a graphic file.

Use the option ***Mark several reports for printing*** if you wish to print more than one report. Disable this option to prevent that too many reports are printed in one go; this helps you to save time and paper.

List of reports
The list of reports indicates all reports defined in the current project. To output a report (to a printer or a file), select it in the ***check box***. You may also select a report in the list with a mouse click when the check box is not enabled (in this case, the report will be highlighted in gray). Now, it is possible to open a local menu for the selected report. It offers the following functions:

Preview: Only shows the preview of the selected report.

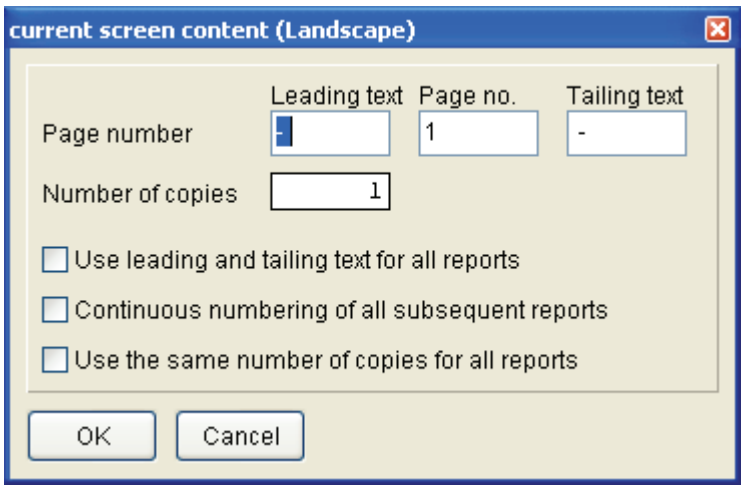
Select all: Selects the check box of all reports for printout of all reports. (Only possible when the option *Mark several reports for printing is enabled*)

Deselect all: Removes the selection in the check box. After that, no report is selected for printout.

Reverse selection: All checked reports are deselected and vice versa. When the option *Mark several reports for printing* is enabled when this action is carried out, only one report is actually selected, even if the reversal would result in printout of several reports.

Editing the contents: Here, the report can be edited once again (refer to 2.8.1 Generating Reports)

Page number and quantity: Opens a dialogue for setting the page number of the report and the quantity of copies.



The page number that appears on this report may consist of up to 3 elements: leading text, tailing text, and the numbers between the two. All three elements may consist of any text. Together with the options described in the following, this allows you to specify page numbers for one or for all reports.

Use leading and tailing text for all reports
All reports will have the same leading and tailing text.

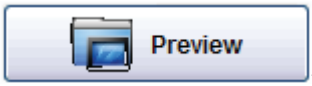
Continuous numbering of all subsequent reports
The report selected by a mouse click when this dialogue was called up receives the number entered in the **Page no.** field. The subsequent reports in the list are then numbered continuously. It is important that you make sure that the field **Page no.** contains a valid figure.

Use the same number of copies for all reports
The figure entered in the field ***Number of copies*** is assigned to all reports.

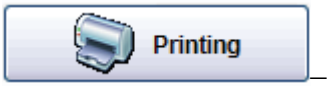
Examples for creating page numbers:

Leading text	**Page no.**	**Tailing text**	**Result**
-	1	-	- 1 -
Annex	2		Annex 2
Page:	4	a	Page: 4a
Page:	4	b	Page: 4b
Report (	2	)	Report (2)

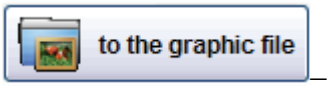
The buttons below the reports list have the following functions:



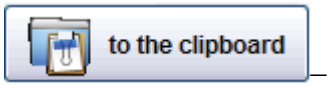
– Starts the preview for all reports with their check box selected.



– Prints out all reports with their check box selected. When the option ***Show preview before printing*** is enabled, a preview is first shown for every report. Then, you decide whether or not to print the report.



– Saves all reports with their check box selected to a graphics file. When the option ***Show preview before printing*** is enabled, a preview is first shown for every report. Then, you decide whether to save the report or not.
The name of the report is suggested as a file name.



– Copies the first selected report of the list to the clipboard. Only one diagram can be copied to the clipboard at a time. For this reason, only the first report may be copied.

Log
This dialogue tab keeps a log of all printing and output processes.

3. Changes to the Menu System

There have been some changes to the menu system.

This is primarily due to the implementation of the Report Manager that resulted in the introduction of the new sub-menu "Report".

In the context of this new feature, we took some additional measures to improve the clarity of the system layout.
In some places, we inserted dashes for better legibility; in others, we changed the sequence of menu items or moved rarely used functions with similar properties to a lower-ranking sub-menu.
Some functions that ensure backward compatibility with earlier IMMI versions have been renamed. Instead of the words "old" or "obsolete", we now use the term "classical". The buttons for presetting or enabling/disabling these functions have been combined in the "Settings | Environment" dialogue under a new tab "Compatibility".

The following sub-menus contain no or only minor changes:

- Edit
- Map
- Extras
- Settings

The following major changes have been made to the other sub-menus:

- Sub-menu "File"
  Here, the lower-ranking menus "Import" and "Export" have been tidied up and re-arranged.
- Sub-menu "Project"
  Here, the menu items "Project list (OLD)" and "Project list (NEW)" have been moved to new "Report" menu and renamed “List of Input data” and “List of input data (classical)” respectively.
  The function "Search for junctions" under "Input help" has been moved to the menu "Calculate | Control" because it is more logical to have it there.
- Sub-menu "Calculate"

  Previously, the "Terrain model" function that most users call up by clicking the  icon was to be found somewhat hidden in the lower-ranking "Control" menu. Now, we moved it one level up so that it now sits before "Control".
- Sub-menu "Report"
  This new menu has been placed between "Calculate" and "Extras".
  It comprises the functions of the Report Manager and the functions "Project list" and "Project list (OLD), previously included in "Project".
- The sub-menu "Help"
  Here, a function has been added to change the help file used, for example to activate another language for the help function.
  In previous versions, this required settings in the "Settings | Environment" menu.

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