

“AZA100” Operating Instructions

Version 1.0.4.16 and higher



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1 Introduction

1.1 General Information

Monitoring a section acoustically by means of wireless data transmission – AZ Wireless Zone Monitoring – has set a new benchmark for the network servicing business. At a leakage spot, the outpouring water generates a particular noise which travels on the water pipe. The noise-borne data can be picked up, evaluated, and saved by radio data loggers.

The shorter the distance is between the source of the leakage-borne noise and the location where the noise is picked up (e.g. valves, hydrants, water meters, or other fittings), the clearer and more intensive is the received signal. Radio data loggers are perfectly well suited to record such data.

The handy F.A.S.T. radio data logger considerably reduces the time required to locate a leakage spot as acquiring and evaluating the data on a regular basis enables the service team to detect any leakage at a very early stage. If the entire network section has been equipped with transmitters, one operator can check between 220km and 350km of supply pipes per day. The mobile unit (maintenance van, etc.) passing by acquires the data transmitted by the individual loggers by means of wireless technology, and the measurement results are displayed acoustically and optically indicating the exact location of a leakage spot. The operator then can interpret the data.

The mobile receiver unit supports the operator by determining the leakage status on the basis of the acquired measurement data and by indicating the results to the operator.

Of course, permanent operation of the AZ wireless loggers generates a great deal of measurement data, which cannot be saved entirely by the mobile receiver. Normally, the receiver is capable of saving such measurement data for a maximum of 21 days and of calculating the leakage status accordingly. Therefore, the measurement data needs to be filed in order to have the data at hand when required.

It is also reasonable graphically to prepare the data and to compare the results for a better overview concerning the noise level development at the particular logger locations. Furthermore, the leakage status, which results from the evaluation of the measurement data, must be visualized for the operator's convenience.

In order to meet all these requirements, to support the operator, and to implement the evaluation processes, F.A.S.T. GmbH has developed the AZA100 software. This software backs the evaluation and saving processes of the measurement data acquired by the radio loggers and accepted by the receiver through graphical administration and data analysis support. So the software allows managing the logger locations with maps, with these maps being divided into several logical areas, e.g. to separate different pressure zones on a map from each other. The network operator or service provider can then determine the locations for the loggers in these areas or pressure zones and allocate the measurement data to the particular logger locations.

1.2 Chapters

This manual has 4 chapters.

After this Introduction, you will find in Chapter 2 an overview of the various functions and components of the AZA100 programme.

In Chapter 3, the single menu positions and the particular sub-menus are explained. Chapter 3 also presents the Project Assistant and the Database Assistant, and it deals with the settings required to read out the data saved by the loggers.

In Chapter 4, the window functionalities of the programme, the menu bar, and the state bar as well as the area-related and location-related functions are explained. Chapter 4.5 finally contains the instructions to be followed when the data saved by the loggers has to be read out and when specific logger data relating to already established location files has to be added.

2 Programme Design

The following chapter offers an overview of the various functions and the most important components of the programme. First of all, the available menus are mentioned and explained in brief (Section 2.1). In Section 2.2, the window components (and their significance) visible in the programme are described. Section 2.3 then deals with the project features, and the two final sections will give you a concise overview of the loggers (Section 2.4) and of the graphical components of the programme (Section 2.5).

2.1 Menus

In order to control the single functions of the programme, there are two different menu options available. One option is the “Files“ menu, and the other one is the “Settings“ menu



Illustration 2-1: Files

In the “Files“ menu level you will find all relevant information about a project or about the AZA100 programme itself. Here the user can create a new project, open an already existing project, delete a project, or quit the programme. Illustration 2-1 above shows you the extended “Files“ menu.



Illustration 2-2: Settings

In the "Settings" menu level, you can vary some characteristics of the AZA100 programme. Especially the language-related settings can be changed here. Furthermore, the configuration of the serial interface can be set and the Database Assistant (section 2.3.2) can be called through this menu (see Illustration 2-2). For any details about these menu levels and their particular functionalities, please refer to Chapter 3.

2.2 Windows available to the User

The AZA100 programme offers five windows to the user. These five different platforms feature different functions, which are described below:

- **District**
- **Selected district**
- **Detailed pipe network plan**
- **List of readings**
- **Reading diagram**

2.2.1 District

The "*District*" window is used to mark or to delete particular districts on the map. The illustration of the created districts can be made either in a graphical or in a tabular way. In addition, the cartographical "District" window is the tool to use when certain districts have to be zoomed onto the map (see Illustration 2-3). For further information on this particular window, please refer to Section 4.1.

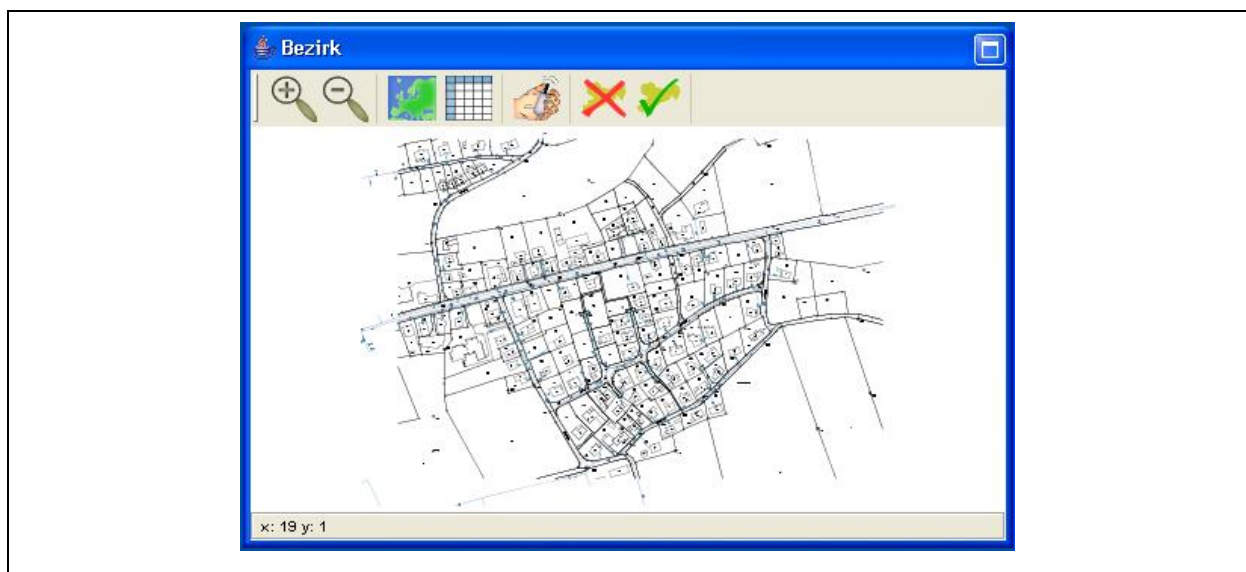


Illustration 2-3: Cartographical district window

2.2.2 Selected District

In this window, different locations in a particular selected district can be created or deleted. Here the user also sets the sensitivity level for the logger data evaluation process. The single locations can be marked with any name. Furthermore, you can switch between the tabular and the cartographical display format.

When the data acquired by the logger has been read out, it can be allocated to a location (see Section 4.5.2) after the data has been allocated to a certain district (see Illustration 2-4).

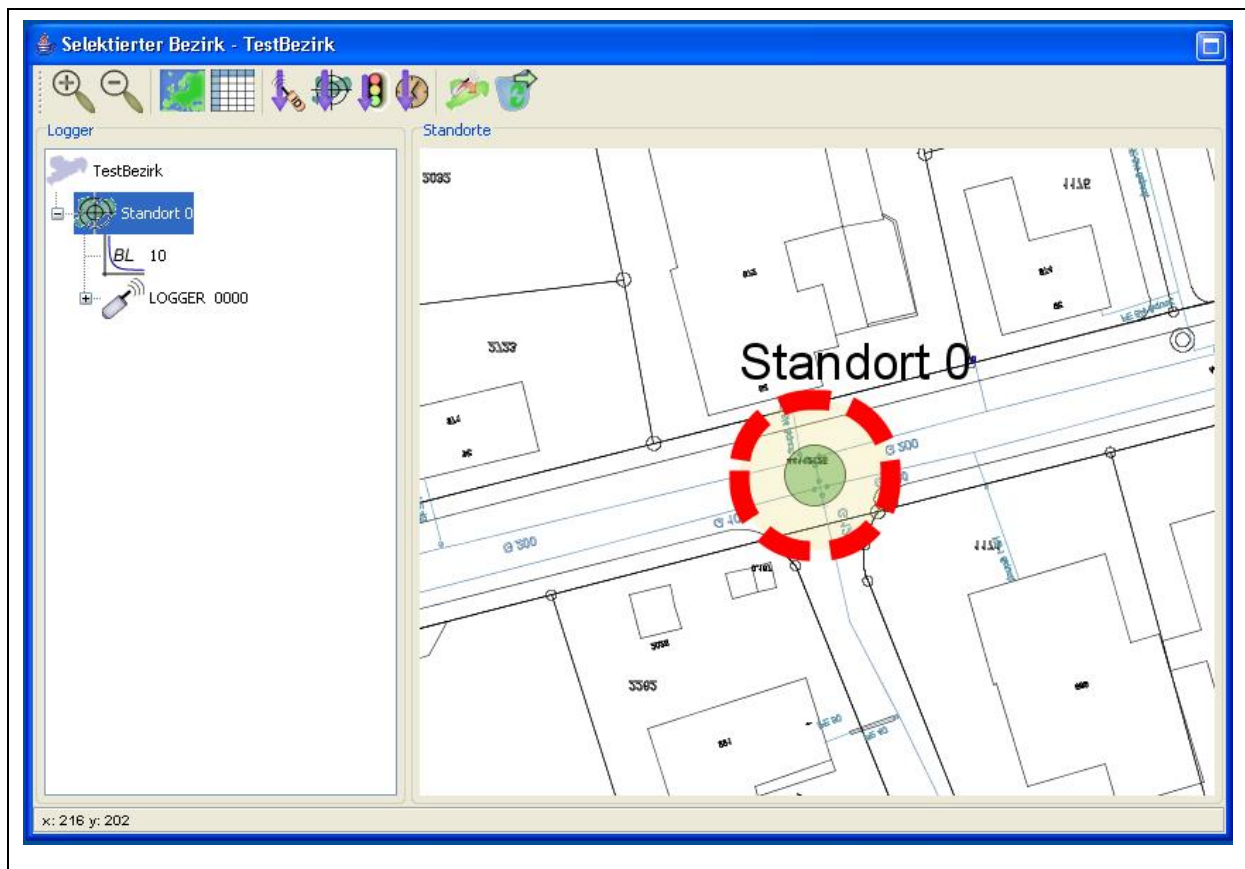


Illustration 2-4: Selected district

When the data has been allocated to a district or to a location, it will be evaluated while the particular location is being selected. The data is then displayed in the **“Reading Diagram”** window as a diagram and listed in a table in the **“List of Readings”** window. In addition, the location displayed in the graphical mode can be extended by clicking on the “+” symbol before the location name to show further information about the location itself and about the allocated logger. For further information on this window, please refer to Section 4.2.

2.2.3 Detailed Pipe Network Plan

The “*Detailed Plan*” gives the operator an enlarged and more detailed overview of the location currently selected in the “*Selected District*” window (see Illustration 2-5) if displayed in the cartographical format. When a logger has been allocated to a certain location, the serial number of the logger is displayed in the location icon. If the tabular display format has been selected in the “*Selected District*” window, the “*Detailed Plan*” window does not display any information.

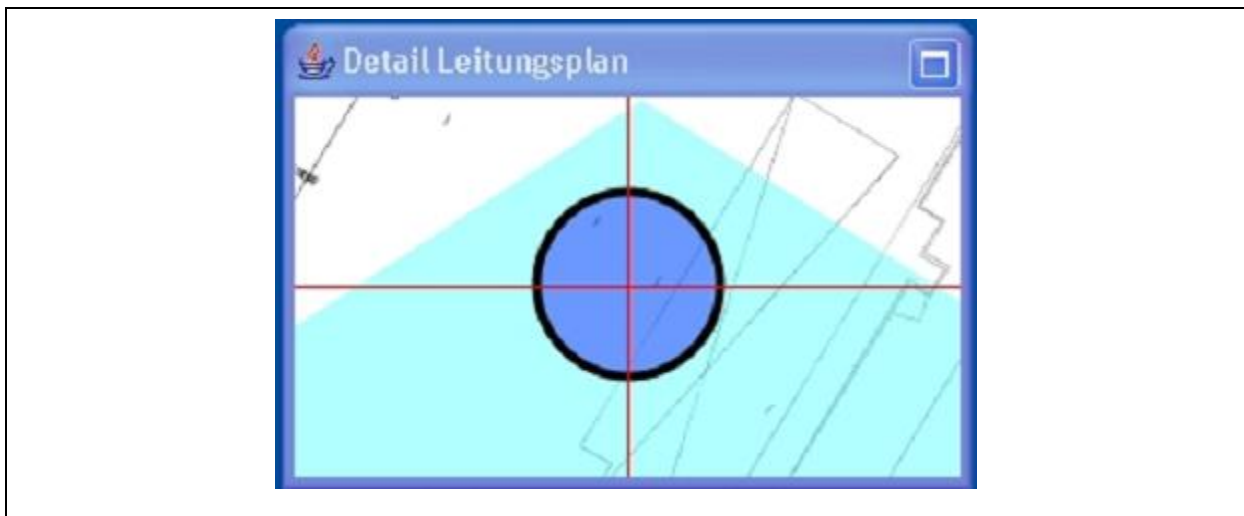



Illustration 2-5: Detailed view

2.2.4 List of Readings

The “*List of Readings*” shows in a tabular format the single measurement values acquired by a particular logger (see Illustration 2-6). The table holds some spaces for every measurement value for measurement-related information input: the date of the measurement, the noise level, the quality, and a description which contains further details, if requested. For further information on this window, please refer to Section 4.3.



| Datum | Pegel | Qualität | Beschreibung |
|------------|-------|----------|--------------|
| 08.08.2006 | 2 | 0 | |
| 07.08.2006 | 3 | 0 | |
| 06.08.2006 | 4 | 0 | |
| 05.08.2006 | 5 | 0 | |
| 04.08.2006 | 6 | 0 | |
| 03.08.2006 | 7 | 1 | |
| 02.08.2006 | 8 | 0 | |
| 01.08.2006 | 9 | 0 | |
| 31.07.2006 | 10 | 0 | |
| 30.07.2006 | 11 | 0 | |
| 29.07.2006 | 12 | 0 | |
| 28.07.2006 | 13 | 0 | |
| 27.07.2006 | 13 | 0 | |
| 26.07.2006 | 12 | 0 | |

Illustration 2-6: List of readings

2.2.5 Reading Diagram

In this *”Reading diagram”* section, the data acquired by the loggers chosen in the *“Selected District”* window is displayed graphically in a line diagram. The Y-axis shows the particular noise levels, and the X-axis shows the particular days (see Illustration 2-7). If the selected time unit is “days”, the noise levels will be displayed individually for the particular days, and the particular month and year are indicated (e.g. 11/2005). For further information on this window, please refer to Section 4.4.

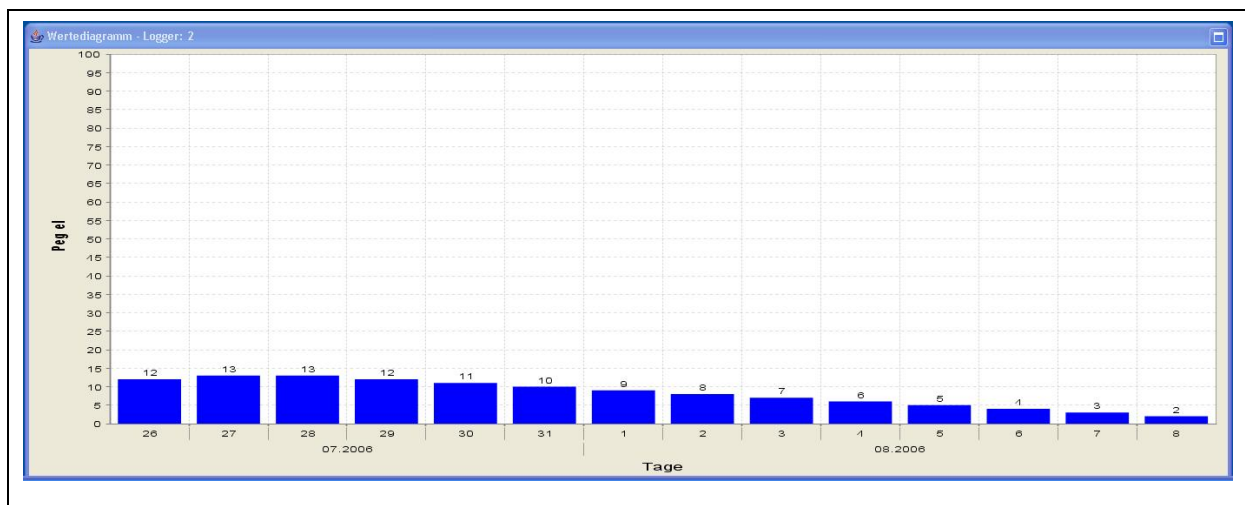


Illustration 2-7: Reading diagram

2.3 Assistants

The programme supports the project creation process and the database initialisation process with two Assistants, which are described briefly in the following sections. For further information on the single Assistants, please also refer to Section 3.1.2 concerning the Project Assistant and to Section 3.2.3 concerning the Database Assistant.

2.3.1 Project Assistant

The Assistant supports the project creation process by describing the major process points in 4 or 5 steps.

When a new project is created, a project name, a day version of your AZ-100 receiver, and a graphic-type map are required. The latter is not necessarily required if you intend to run the project in the tabular display mode. Please note that this tabular mode also allows the integration of graphics into the project at a later point of time. The graphic has to be provided either as a *Joint Photographic Expert Group (JPG)* format or as a *Scalable Vector Graphics*

(SVG) format. The only difference between the two format options is the available range of zooming features.

Raster graphics (JPG) consist of the description of single picture elements. The picture elements need to be subjoined during the enlarging process, which leads to a deterioration of the image quality.

Vector graphics (SVG) consist of the description based on characteristic values (coordinates). Any change in scale with this format does not result in a deterioration of the image quality as the graphic is composed of coordinates and can thus be zoomed without having to accept any drawbacks.

2.3.2 Database Assistant

If the installation process of the AZA100 programme generates any trouble concerning the creation of the database, this Assistant will help you to start the database creation process again. This Assistant can also be used to carry out any database updates.

Please note: You should use the Assistant only if any problems have occurred **during the installation process** as the original database will be replaced and the existing data will be deleted. If, however, the database is only updated, the data saved in the database will not be deleted.

2.4 Loggers

The data collected by the loggers can be read out and saved in a database. The particular data can then be allocated to the corresponding locations with the data being prepared and displayed in a table and in a diagram. The exact procedure on how to read out the data and on how to allocate the data to the single districts is described in Section 4.5.

2.5 Graphical Components

The districts are made out as polygons in the **“District”** window and can be marked with different colours. The district is filled with the desired colour and will be displayed as soon as it has been charted in the district window. The single locations are displayed as circles in the **“Selected District”** window. The special functions of these two features are described below.

2.5.1 District

Creating a district means subdividing a major project map into single zones. Different districts can be marked with different colours on the map and can be allocated to different locations (see Section 4.1.3 Characteristics of the District).

2.5.2 Location

A district can have several locations, and a location should reflect the physical location of the logger. The location can be selected freely on the map within the district, and a logger can be allocated to the location. The measurement values acquired by the logger will be saved on a location-related basis, and the operator can see at first glance whether or not the location shows a leakage or is likely to have a leakage as the location is displayed with particular colours depending on the acquired values (see Section 4.2.4 Characteristics of the Location).

3 Functionality of the Menu

In Chapter 3, the single menu levels and their particular sublevels are described in detail. First, Section 3.1 shows the functions of the "Files" level. This also comprises the Project Assistant, which is applied when a new project is to be created.

Section 3.2 then explains the "Settings" menu level where the read-out process for the data saved by the loggers is described.

3.1 Files

Here you can choose among the following steps: "Open a Project", "Create a Project", or "Exit".

3.1.1 Opening a Project

In order to open an already existing project, select "Files" → "Open" or shortcut "STRG" + "O" (see Illustration 3-1 below).



Illustration 3-1: Opening a project

You will see a menu from which you can select the particular file (see Illustration 3-2). Open the folder of the project to be dealt with and select the corresponding project file. Then click on "Open" to open the project.

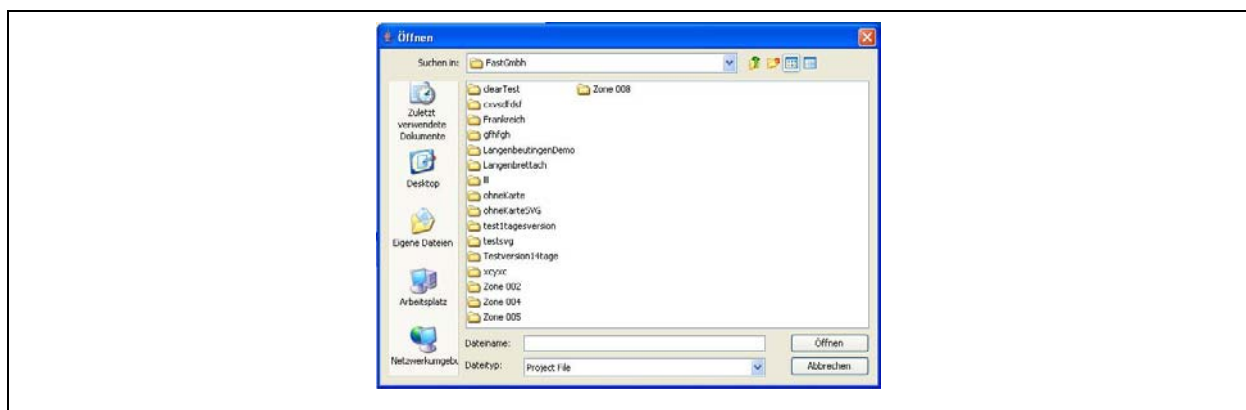


Illustration 3-2: Opening the project file

When the file has been opened, the map or table will be loaded in the “*Selected District*” window, and the districts (if charted yet) will be displayed. The operator can now chart additional districts or work on already existing ones.

3.1.2 Creating a new Project

To create a new project, select “Files“ → ”New Project“ or shortcut ”STRG“ + ”N“ (Illustration 3-3).



Illustration 3-3: Creating a new project

The Assistant will then guide you through the steps that are necessary when you intend to create a new project.

Assistant, Step 1:

First, a project name is required. Please note that the single project names can be allocated only once each (see Illustration 3-4). If a name has already been given to an existing project, an error message will be created by the system. In this case, double-click on “Back“ and change the project name. You can now change the project name accordingly. After the name has been changed, click on “Continue“ to proceed..

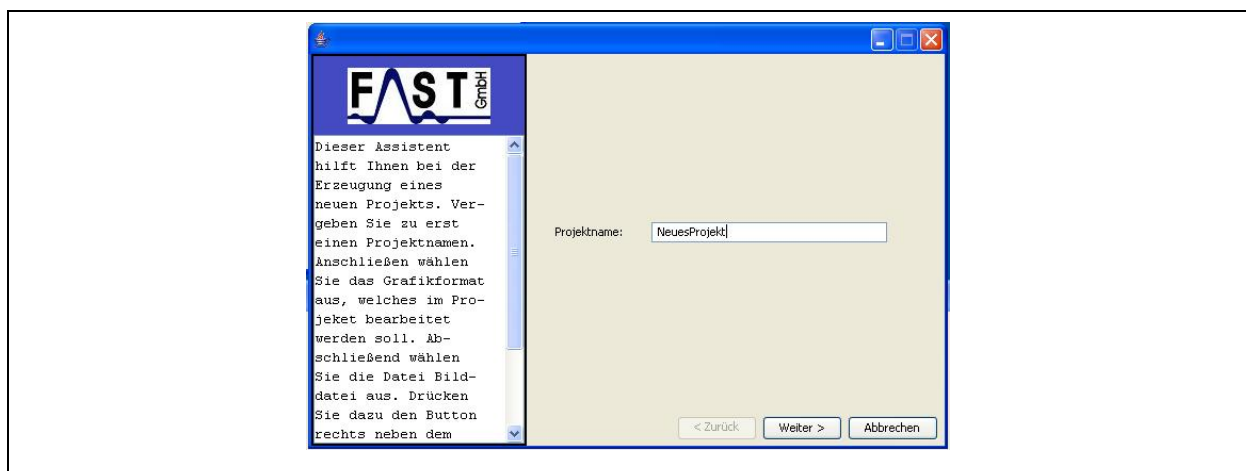


Illustration 3-4: Creating a project, step 1

Assistant, Step 2:

In the 2nd step, you are requested to select one of two possible formats of the drawing: SVG format or JPG format (see Illustration 3-5). On the left-hand side of the Assistant, you will find some information about every step you have to take in order to create a new project. Of course, you can also go back one step by clicking on “Back“ and modify your settings. If you want to create a project based on tables, this step is required to integrate graphics at a later point of time, i.e. the format of the diagram chosen at this point can be added to the project later on.

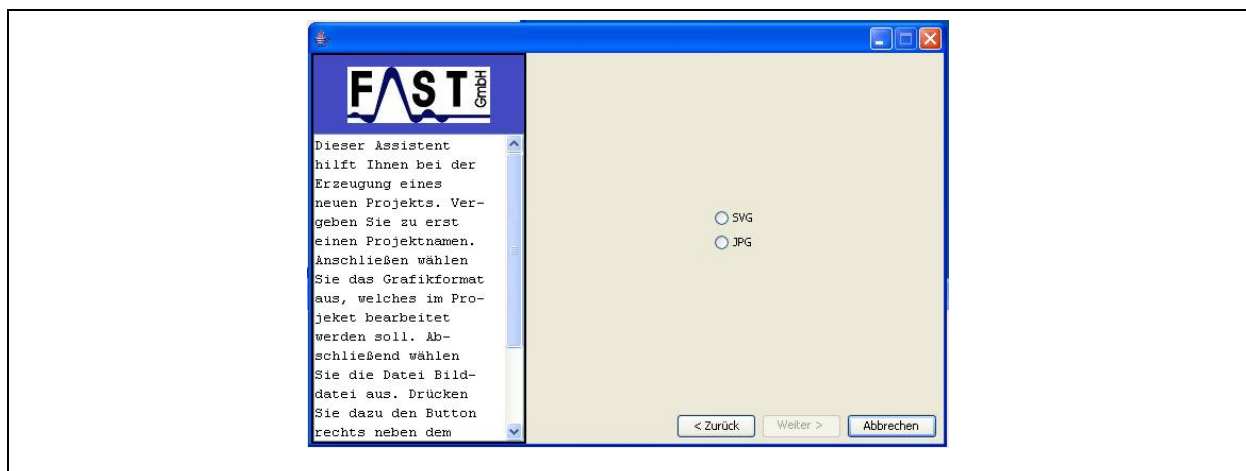


Illustration 3-5: Creating a project, step 2

Assistant, Step 3:

Step 3 is to determine the day version of your project (see Illustration 3-6). This version depends on the software version used for your AZ-100 receiver. If you use the 1-day software version for your AZ-100 receiver for the loggers, select "1-Day Version". For 7-day or 14-day software versions used for the AZ-100 receivers for the loggers, please select "14-Day Version". Please note that any projects supported by AZ-100 receivers for loggers running on a 21-day software version cannot be created.

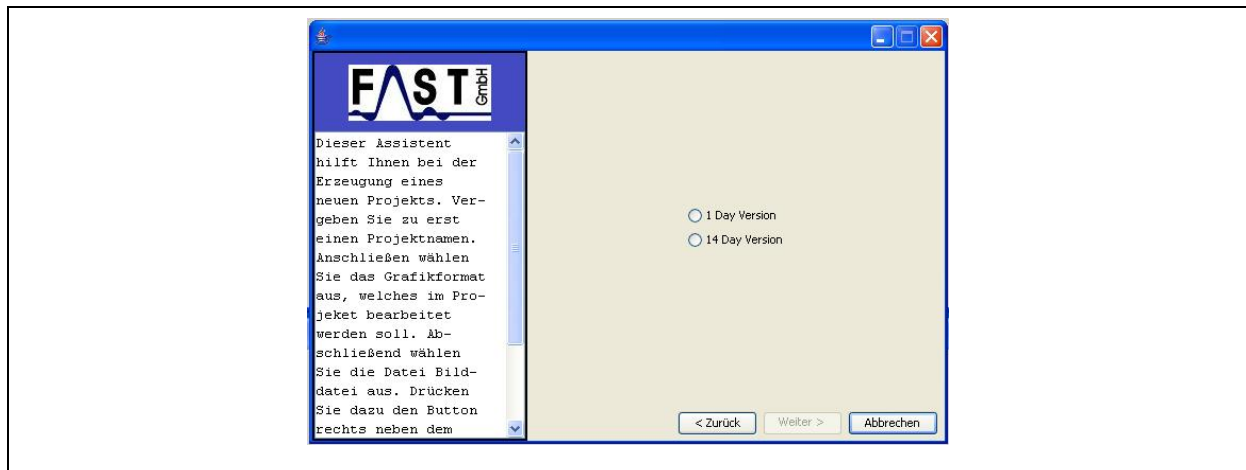


Illustration 3-6: Creating a project, step 3

Note: If the setting concerning the day version is incorrect, the system will not start the communication between the receiver and the AZA software. In this case, you should delete the project and create it with the corresponding parameters.

Assistant, Step 4:

If you want to create a project which is not based on maps but on tables, terminate the Assistant by clicking on "Finish" (see Illustration 3-7). The district-related table is now displayed in the "*Selected District*" window. The functions offered through the menu bar (see Section 4.1.1) will help you to work on the table (see Illustration 3-8).

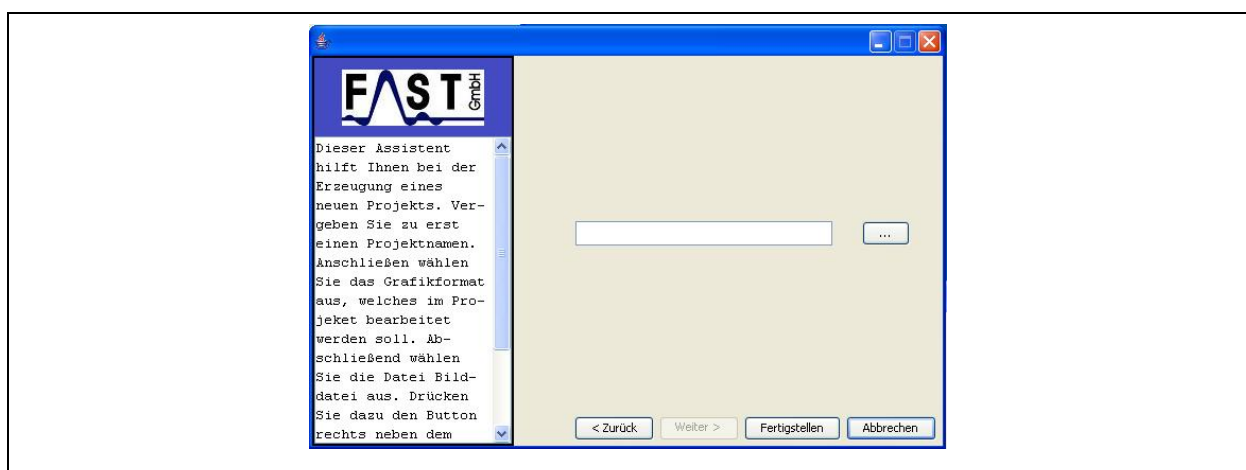


Illustration 3-7: Creating a project, step 4

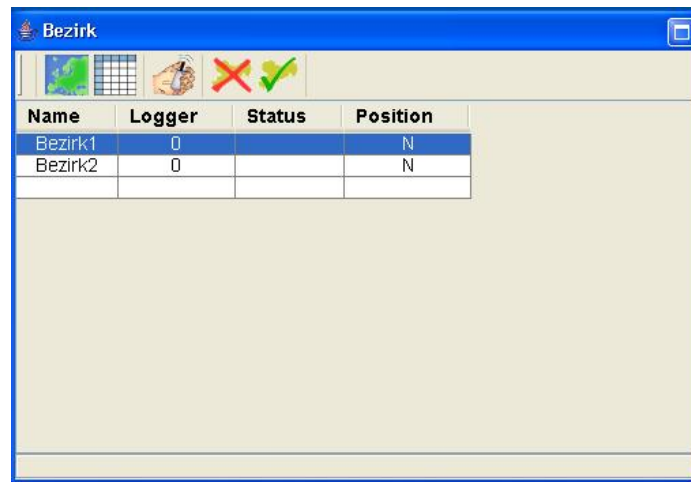


Illustration 3-8: District window, tabular display

In step 4, you will have to tell the Assistant the path to the particular district-related graphic. Click on the “. . .“ button next to the text input box to call the *”File Selection“* dialogue. Select the corresponding graphic as shown in Illustration 3-9 below.

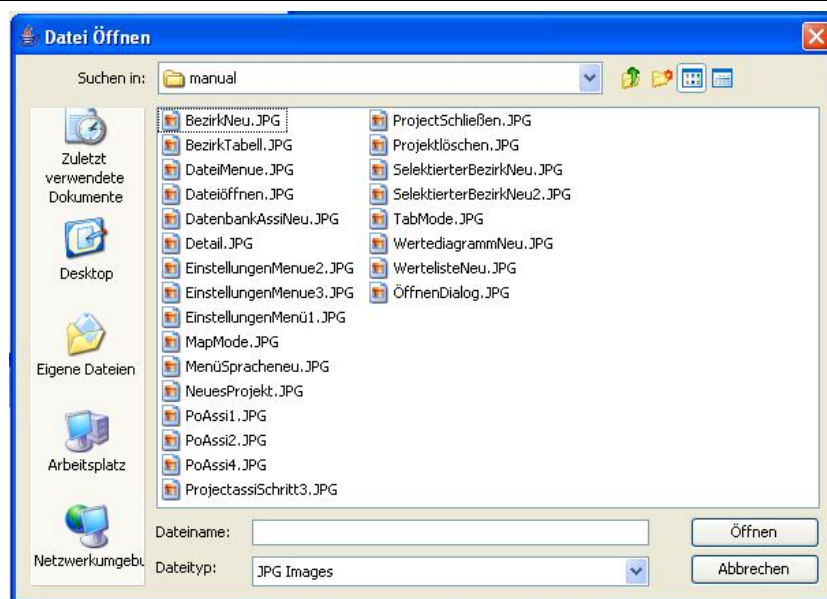


Illustration 3-9: Selecting a file

Assistant, Step 5:

You have now input all information relevant to create a new project. Click on “Finish“ (see (Illustration 3-10) to close the Assistant and to proceed with your work on the project.

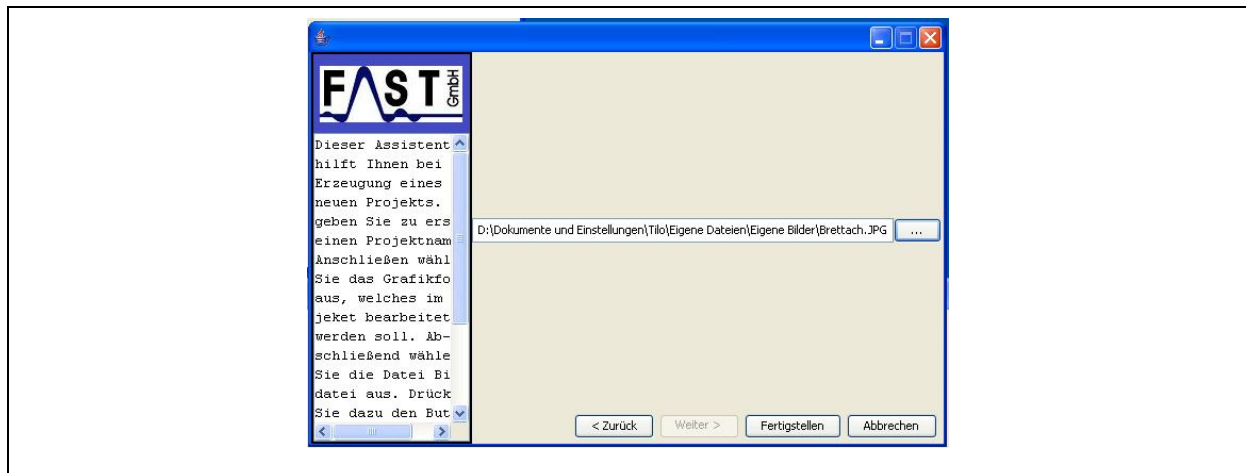


Illustration 3-10: Creating a project, step 5

The selected district graphic is now displayed in the *"Selected District"* window. Use the functions of the menu bar (see Section 4.1.1) to process the graphic, if requested (see Illustration 3-11).

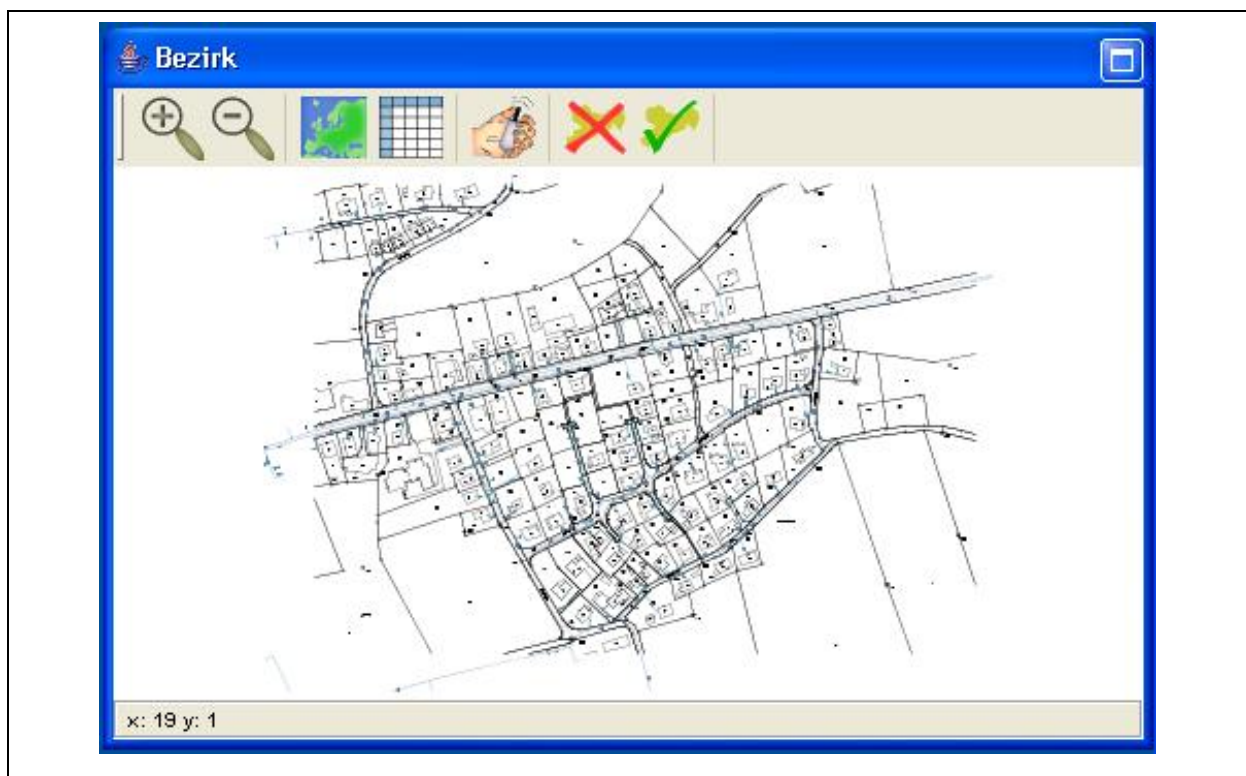


Illustration 3-11: Cartographical district window

3.1.3 Closing a Project

If you intend to close the project you are currently working on, select "Files" -> "Close Project" (see Illustration 3-12). The project including all the changes made on it will now be saved and closed.



Illustration 3-12: Closing a project

3.1.4 Deleting a Project

If you want to delete a certain project, click on “Files“ → ”Delete Project”. Please note: you can delete only those projects the files of which are currently open in the programme (see Illustration 3-13).



Illustration 3-13: Deleting a project

3.1.5 Closing the Programme

Click on “Files“ → “Close Programme“ or press “STRG“ + ”E“ to save the current project and to close the programme.

3.2 Settings

3.2.1 Language

You can select the desired language for all texts at “Settings“ -> “Language“. The software supports up to nine languages as shown in Illustration 2-2. As soon as the programme has been installed, English and German are available immediately as these two languages are firmly set in the programme and cannot be deleted.

Consequently, you can only select English or German in the “Language“ menu. If you want to select any other of the remaining seven languages available, a so-called language file has to be created beforehand. For your support, the programme generates a template for the language file in the ”lang“ folder while the programme is being installed. The ”lang“ folder is located in the setup directory of the AZA100 programme. For example, if you have installed the programme at “C:\Programmes“, the setup directory of the programme will be found at ”C:\Programmes\AZA100“, and the template for the language file will be found at ”C:\Programmes\AZA100\lang“.

Once you have opened the “lang“ folder, you will see the template called ”Sprache.properties“. This file can be opened and edited either with the “Editor“ programme or with the ”Wordpad“ programme. However, before you start editing the file, you will have to make a copy of the “Sprache.properties“ file and save this copy file in the folder as the original template must not be changed to prevent any programme errors. **Therefore, please never change the template, always change only the copy.**

You can create a copy of the file by clicking on and marking the file with the left mouse key. Then move the cursor across the marked file and press the right mouse key to open a so-called pop-up menu. Select “Copy“ and press the left mouse key again. Make sure that you insert the copy into the same folder by going to “Edit“ and selecting ”Insert“. You should now have another language file in the “lang“ folder called “Copy of Sprache.properties“. This copy can now be adapted to your language.

When the language has been adapted, the name of the language file has to be adapted so that the programme can identify and load the file. Please rename the copy of your language file (“Copy of Sprache.properties“) according to the following convention:

- French -> “Sprache_fr_FR.properties“
- Spanish -> “Sprache_es_ES.properties“
- Italian -> “Sprache_it_IT.properties“
- Danish -> “Sprache_da_DK.properties“
- Norwegian -> “Sprache_no_NO.properties“
- Swedish -> “Sprache_sv_SE.properties“
- Portuguese -> “Sprache_pt_PT.properties“

3.2.2 Communication

You have to determine the kind of data transfer in the “Settings“ -> ”Communication“ menu. You can select either the GSM mode or data transfer through the serial interface.

Reading out the data through GSM

This module is not yet available for the present software version.

Reading out the data through the serial interface

Before the data received by the AZ-100 receiver can be read out, the configuration for the serial interface has to be called: ”Settings“ -> ”Communication“ -> ”serial“.

The “Com1“ Port is selected as an ex works standard. Select the appropriate Com-Port which the AZ-100 receiver has been connected to. All other settings do not usually have to be changed. When you have changed all the required settings for the Com-Port, you can accept the changes by clicking on ”Save“. The pressure logger can then be read out as described in Section 4.5.1.



Illustration 3-14: Com-Port settings

3.2.3 Database

Start the Assistant at “Settings“ -> ”Database“ (see Illustration 3-15), and the Assistant main window will open.



Illustration 3-15: Settings & Database

Initialising the Database

Click on the “User“ button to enter the username and the keyword for database access purposes (see Illustration 3-16).

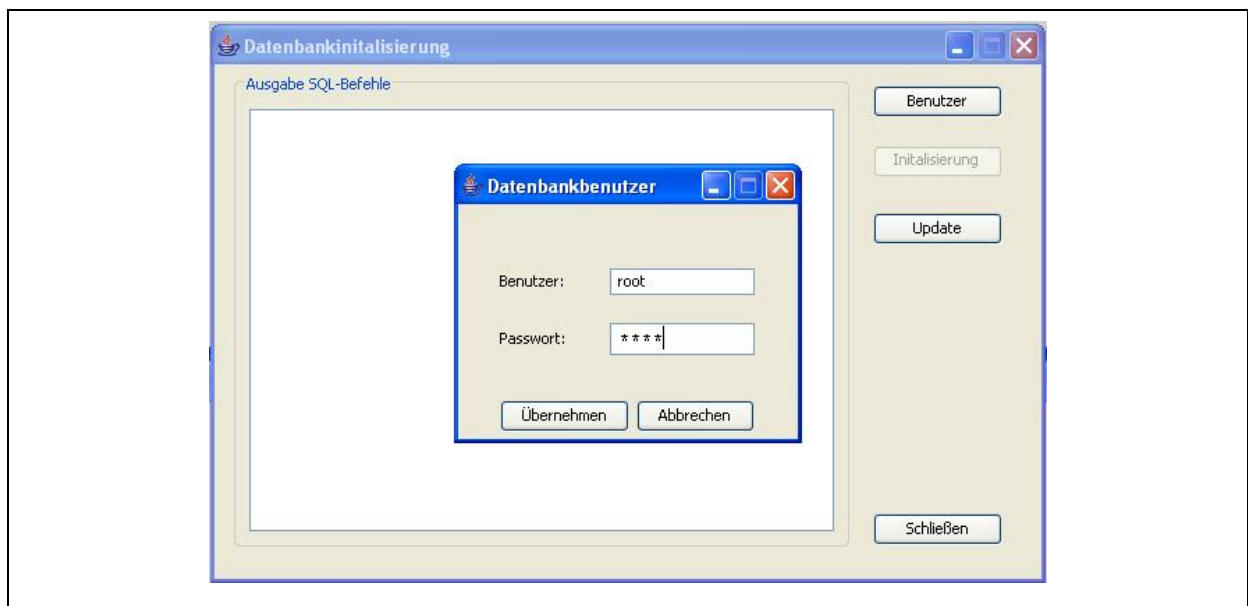


Illustration 3-16: Database Assistant

In order to initialise the database, please click on the “Accept“ button and then on “Initialisation“. This will start the creation of the tables (see Illustration 3-16). If you do not want to initialise the database, click on “Cancel“ and then on “Close“.

Note: Any existing data in the database will be deleted when you start the initialisation process. Therefore, initialise the database only if the system has generated any error or failure message(s) while the AZA100 programme was being installed. If, however, the database is updated at a later point of time, the data saved in the database will not be deleted.

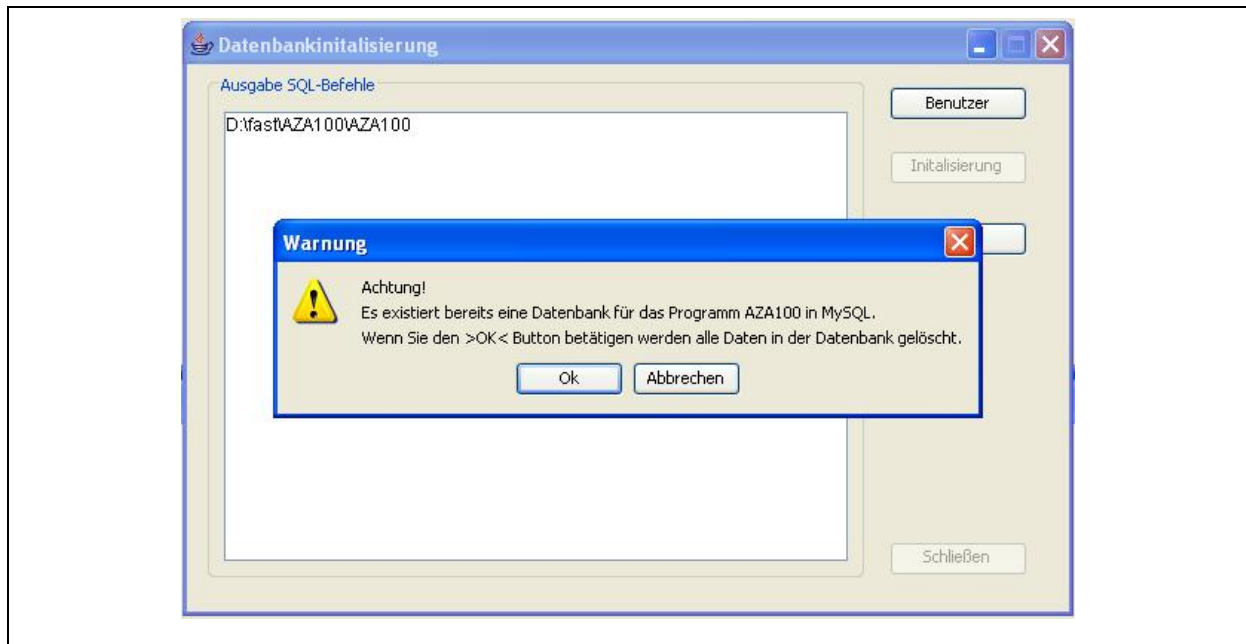


Illustration 3-17: Initialisation of database

If the database exists already, confirm the message as shown above by clicking on "OK" to proceed with the Assistant. Please note, that all data saved in the database will be deleted. If, however, you want to cancel the database initialisation at this point, click on "Cancel".

Updating the Database

Sometimes it is necessary to update the database when the entire programme has been updated. In this case, the Database Assistant will provide the functions required for the database update. If a programme updates has generated the message that the database has to be updated, the database update has to be started through the "Update" button as shown in Illustration 3-16. It is not required for a database update to key in the username or the keyword for the database. Also, there will be no data deleted during a database update

Possible Errors occurring during the Update process

The Assistant does not find the appropriate path. Please check whether or not the stated path exists (see Illustration 3-18). If the path does not exist, you will have to install the AZA-100 programme again or **contact F.A.S.T. GmbH**.

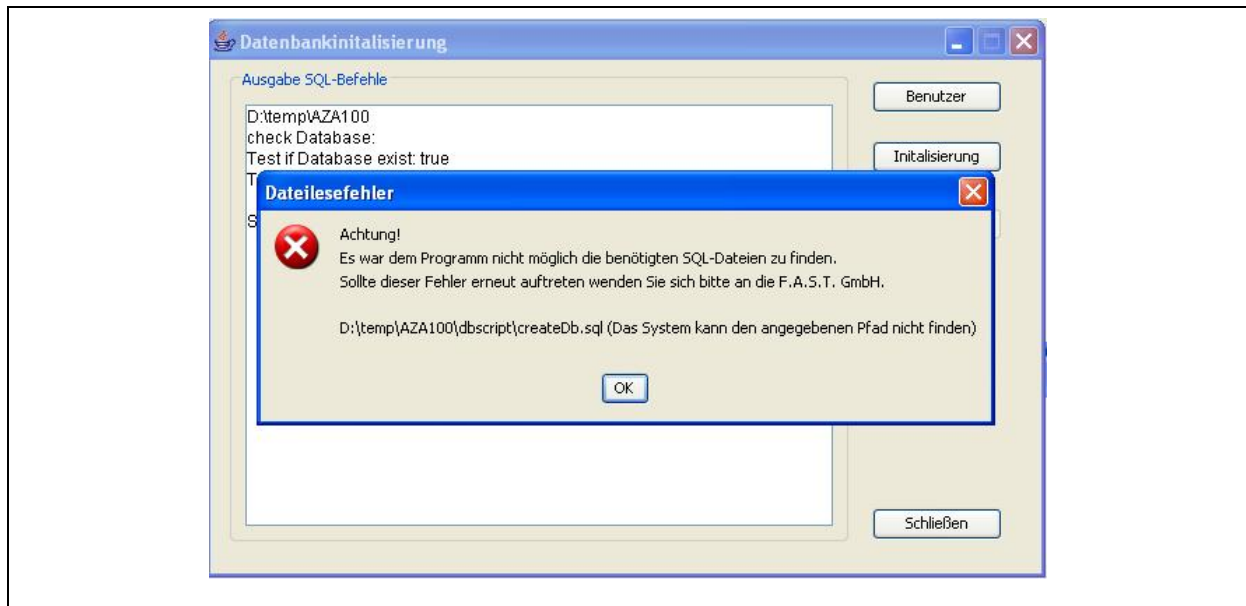


Illustration 3-18: Database error 1

The Assistant could not establish a connection to the database. A possible reason may be an incorrect keyword, or the “MySQL“ service was discontinued or incorrectly started, or the database is blocked by a firewall (see Illustration 3-19).

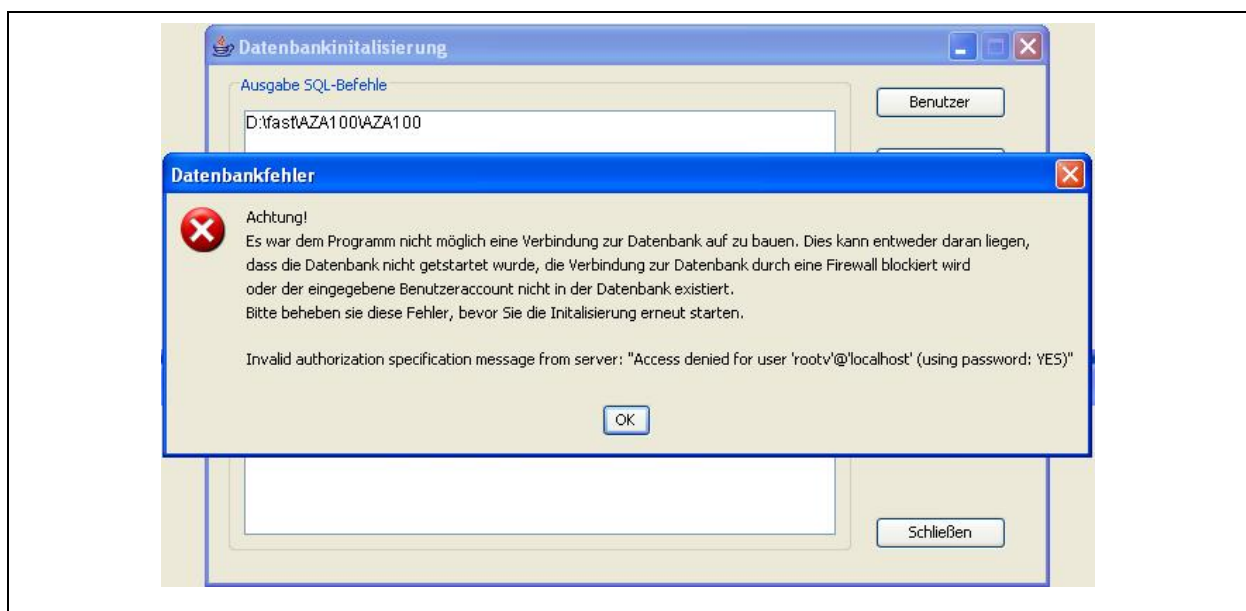


Illustration 3-19: Database error 2

Please check whether you have entered the correct keyword and if ”MySQL“ has been started. If you have installed a firewall, please keep this firewall deactivated during the entire update process.

4 Functionality of the particular Windows available


The following Chapter is to give an overview of the functionality of the windows of the programme. Section 4.1 describes the “*District*” window where the user can create and delete a certain district. Section 4.2 describes the “*Selected District*” window and how to proceed with SVG and JPG formats, how to save and to delete certain locations as well as the allocation of a logger to certain location. The remaining 3 sections of this Chapter are to give the user an overview of the “*List of Readings*” (Section 4.3) and “*Reading Diagram*” (Section 4.4) windows.

4.1 “District” Window


The “*District*” window enables the user to chart certain districts on the map or to delete such districts if the cartographical display mode has been selected. The following sections are to describe the particular functions of the District Window.

4.1.1 Functions of the Menu Bar

The “*District*” window menu bar has 7 buttons featuring different functionalities. Availability of the single functions depend on the particular display mode. The functions of the single buttons are as follows:

Enlarging the map scale 

With this function, the scale of the map in the “*District*” window can be enlarged. Alternatively, you can also enlarge the map by pressing “STRG” + “I”. If you want to change the position of the map, keep “STRG” pressed and just pull the map to the desired position.

Reducing the map scale 

Function to reduce the scale of the map in the “*District*” window. Alternatively, the scale of the map can also be reduced by pressing “STRG” + “O”. If you want to change the position of the map, keep “STRG” pressed and just pull the map to the desired position.

Selecting the map display mode



This function offers the option to change to the cartographical display of the “*District*” window if you are in a different mode. The Assistant will ask you for a map for the particular project to display this map, if required, unless a map was already selected during the project creation process.

Selecting the table display mode



This function will lead you to the tabular display of the “*District*” window, if requested.

Reading out the acoustic logger



This function assists the user in reading out the data acquired by the loggers and in allocating the loggers to a certain district.

Deleting a certain district



With this function, a certain district can be deleted on the map.

Creating a district



Here the user can chart new districts on the map.

4.1.2 State Bar

The state bar of the window displays the X-coordinates and the Y-coordinates as well as the zooming factor of the map in the cartographical mode. Please note that the state bar does not display any information when the map is shown in the tabular mode..

4.1.3 Functions of the Map

The map as used in the “*District*” window is used to chart certain districts on a map and thus offers the option to group the districts on the map. If some districts have been charted on the map, these districts can be loaded into the “*Selected District*” window by double-clicking on the particular districts. The locations can then be charted in the districts, and the loggers can be allocated (see the following section).

Charting a District

Click on the symbol with the green tick if you want to save a district on the map. 🟢

For your better overview and differentiation, you can then choose a colour for every district (see Illustration 4-1). If the range of colours is not displayed, the resolution of your monitor may be too low. In this case, maximize the window by clicking on the button in the upper right corner or pull the window larger.



Illustration 4-1: Selecting the colours

At least three points are required on the map to chart a district. Click on the desired area on the map with your mouse, and as soon as the spot has been fixed, you can draw a line from this spot to another spot. This second spot also has to be activated by a mouse-click (see Illustration 4-2).

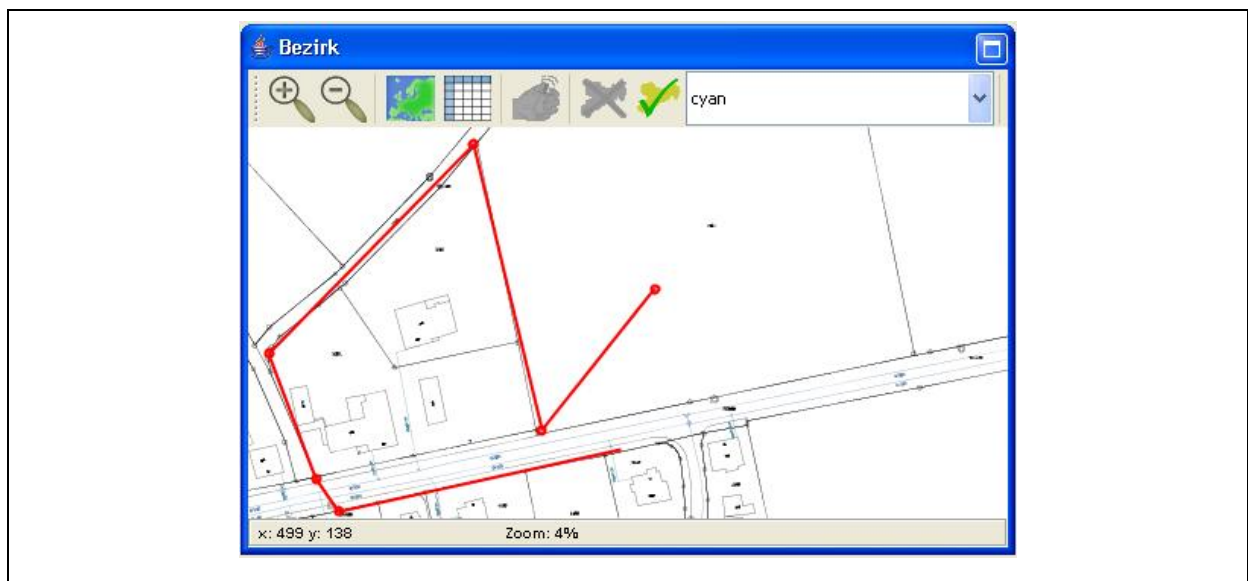


Illustration 4-2: Charting a district

When all three spots have been marked, a click on the right-hand mouse key will create a full district, even if the starting spot and the final spot are not identical. If you have marked only two spots and intend to save the district, the system will generate an error message (see Illustration 4-3).



Illustration 4-3: Error occurred while charting a district

You can cancel the error message by clicking on “OK“. Then fix the third spot and save the district again (see Illustration 4-4). The district will then saved under the chosen name and with the selected colour.

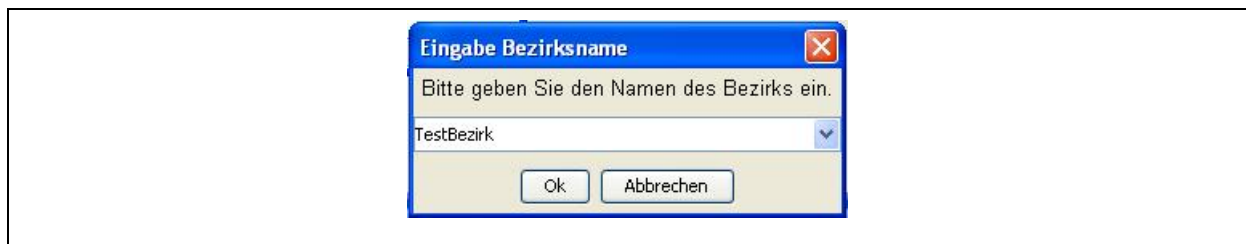


Illustration 4-4: Naming a district

If the name you have selected has already been allocated in the project, the system will generate a message as shown in Illustration 4-5 below. If you leave this dialogue window by clicking on “OK“, the already existing district will be fixed on the map at the new position. If you do not want the district to be saved, click on “Cancel“.

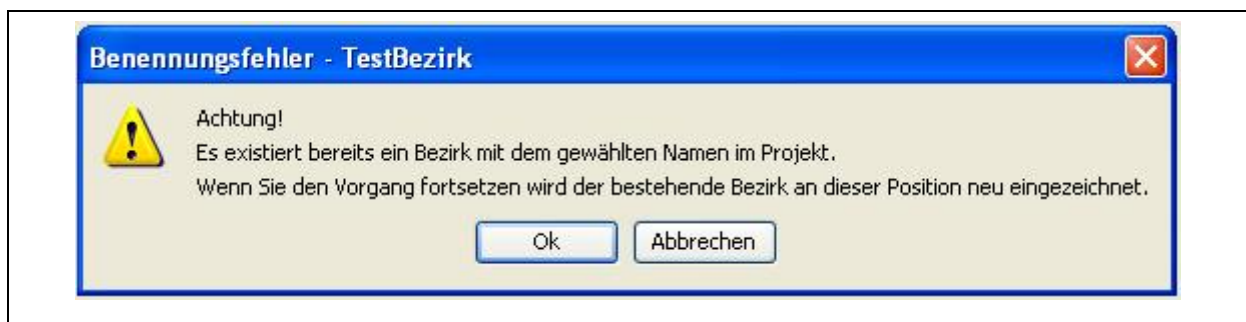



Illustration 4-5: Name of a district has already been given to another district

If you do not want to add any new districts, leave the menu by clicking on .

Deleting a District

If you want to delete a district, click on .

Then click on the particular district to be deleted in the *“District”* window. When a district is deleted, all locations and logger data related to this district will also be deleted. Press “OK” to confirm the deletion (see Illustration 4-6).

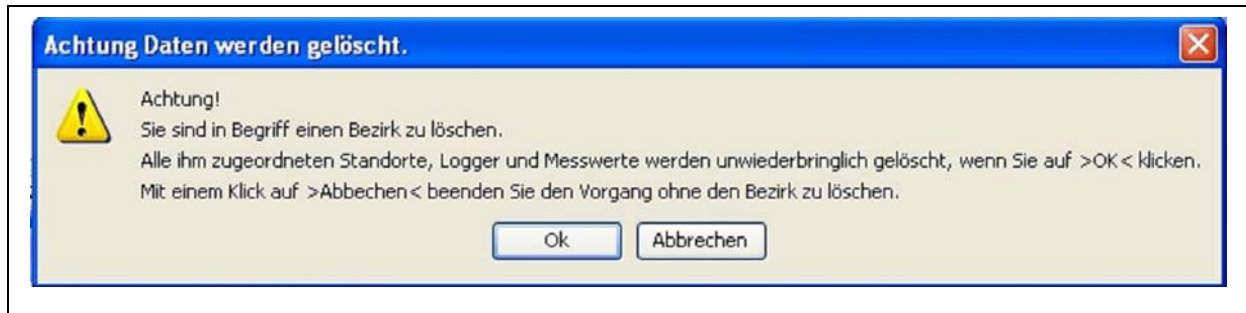




Illustration 4-6: Deleting a district

The location and all related information will be deleted from the map.

To leave the menu, click on  again.

Relocating a District

If you want to relocate a district on the map, click on . The box with the colour range will appear on your screen (see Illustration 4-2). This colour box, however, is not required for the relocating process as the colour selected beforehand is used for the charting process. When drawing the district borders, please proceed as described in Section *“Charting a District”*. When you have to name the district, please refer to Illustration 4-7. Clicking on the right mouse key will open the window as shown in the illustration below.

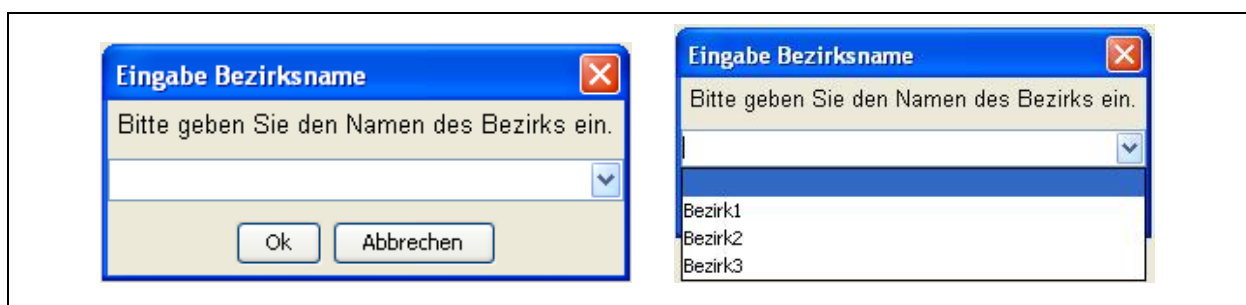



Illustration 4-7: Naming a district

Click on , if you want all the districts of the project to be displayed. Now select on the list the particular district which needs to be relocated and confirm the step by clicking on "OK". If you want to cancel the process, click on "Cancel".

Once you have confirmed your decision, the programme will generate the message as shown in Illustration 4-5 above to indicate that the name you have chosen is already allocated to another district. If you now click on "OK", you confirm that the already existing district will be deleted from the map and will be inserted on the map at the new position.

4.1.4 Functions of the Table

The functions available in the tabular view mode of the *"District"* window level do not significantly vary from those available in the cartographical mode. Only if you want to create a new district, there are minor differences: in the tabular mode, you have to click (right mouse key) on one line of the table where you intend to create the district. Then you will have to input the name of the district into the window which is opening up (Illustration 4-4). Confirm by clicking on "OK".

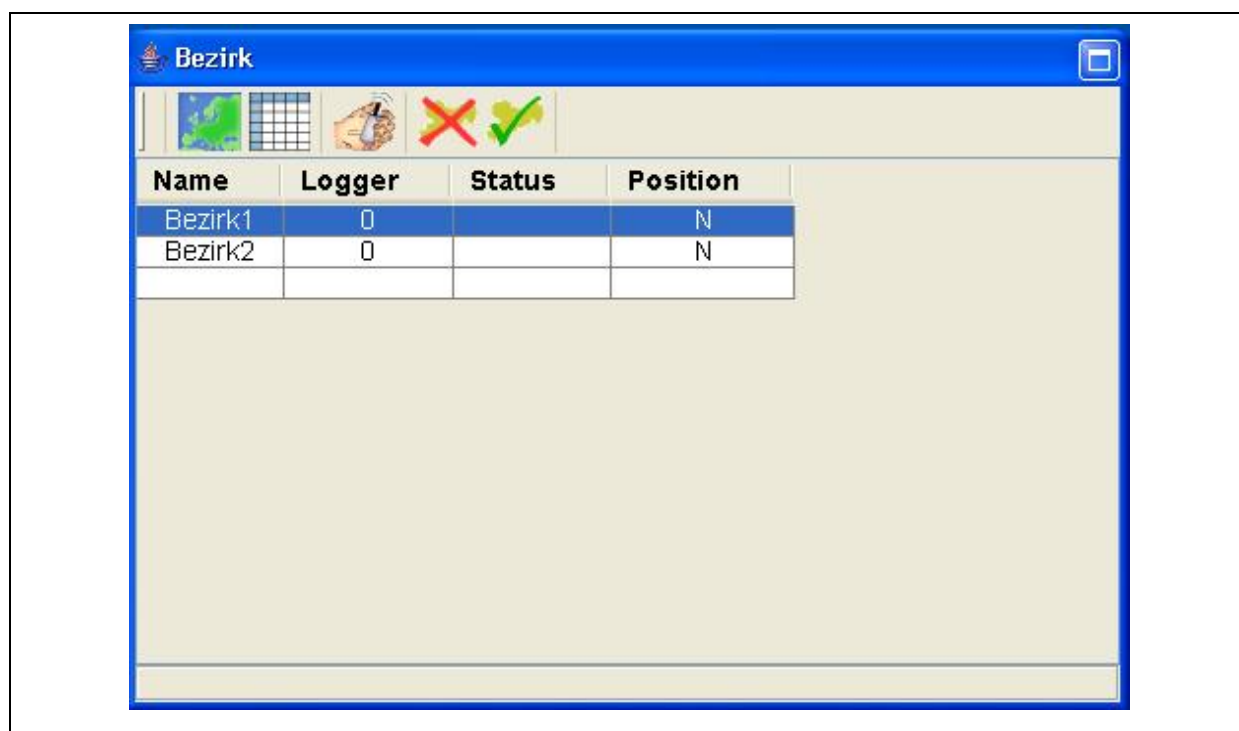



Illustration 4-8: Tabular view of the District Window


4.2 “Selected District“

Double-clicking on a district in the “*District*“ window will load the map into the „*Selected District*“ window if the cartographical mode has been selected beforehand. If the cartographical mode has not been selected, a table will be displayed, and you can create the districts in this window.

4.2.1 Functions of the Menu Bar

Enlarging the map scale 


With this function, the map in the “*Selected District*“ window can be enlarged. Alternatively, you can also enlarge the scale of the map by pressing “STRG“ + ”I“. If you want to change the position of the map, keep “STRG“ pressed and just pull the map to the desired position.

Reducing the map scale 


Function to reduce the scale of the map in the “*Selected District*“ window. Alternatively, the scale of the map can also be reduced by pressing ”STRG“ + ”O“. If you want to change the position of the map, keep “STRG“ pressed and just pull the map to the desired position.

Selecting the display mode for the map 

This function offers the option to switch to the cartographical view of the „*Selected District*“ window, if requested. If there has been no map chosen for the current project during the project creation process, the Assistant will ask for a map to be displayed and to be used for this particular project.

Selecting the display mode for the table 

With this function, the user can go to the tabular display mode of the ”*Selected District*“ window, if requested.

Sorting according to the serial numbers of the loggers 

With this function, the loggers on the table or in the ”Logger“ level can be sorted according to their serial numbers.

Sorting according to the location names



With this function, the table or the “Logger“ level can be sorted according to the location names used (function available in the cartographical display mode only).

Sorting according to leakage status



With this function, the loggers allocated to certain locations can be sorted according to the status of their leaks. Those loggers indicating a leak rank top, and the loggers indicating no leakage are stated at the bottom of the list.

Sorting according to read-out dates



The user can sort the table or the “Logger“ section according to the read-out dates of a particular logger by clicking on the above icon.

Shifting measurement values



This function enables the user to shift measurement values which have been incorrectly allocated to a certain district to other districts, projects, or into the bin. The reasons why values have to be shifted may vary. For example, the logger was operated in an incorrect way, or certain environmental influences may have affected the operational capability of the particular logger. Using the “Shift Measurement Values“ button is not possible unless you have selected a logger or a location in the cartographical display mode or marked a line in the tabular display mode in the “Logger“ level of the “*Selected District*“ window.



Illustration 4-9: Shifting measurement values

If certain measurement values have been selected, the window as shown in Illustration 4-9 on the left-hand side will be displayed. By ticking the first column of the table the user determines the measurement value to be shifted. As soon as you have selected the value, click on “Continue” to proceed to the next window. In the second window, mark either the bin or a certain district of a project and click on “Accept” to shift the selected values into the bin and to the particular district respectively. If you want to discontinue the process, click on “Close”.

Fetching the values from the bin



This function is to enable the user to restore any measurement values which have been shifted into the bin. Before the function is called, a logger or a location has to be selected so that the function can display the measurement values of the selected logger or location automatically. If, however, you want to display the entire contents of the bin, tick the “List up entire Contents of the Bin” button (see Illustration 4-10 on the left-hand side). The system will automatically display the entire contents if no logger was selected beforehand.

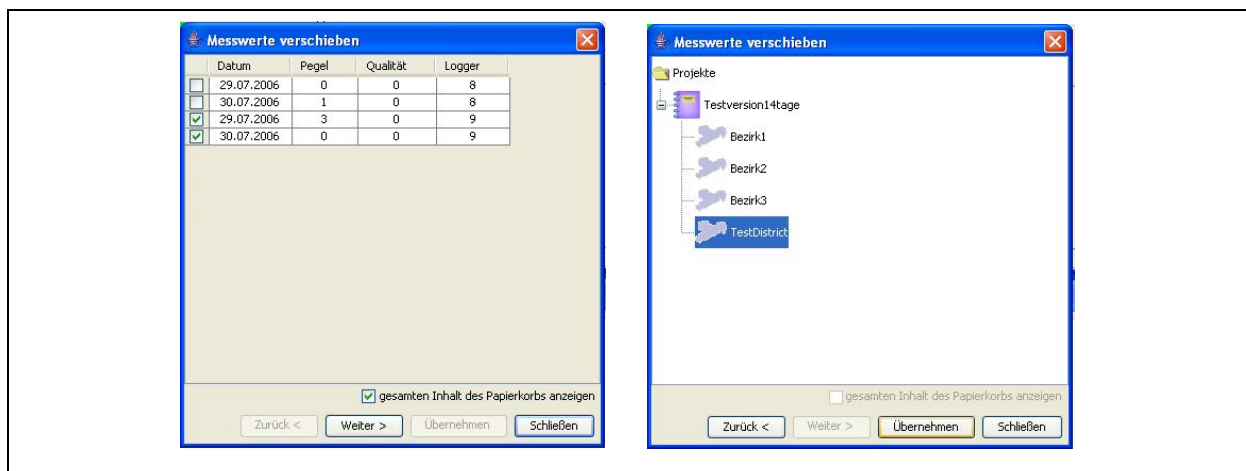


Illustration 4-10: Fetching measurement values from the bin

Once you have finished selecting the measurement values, click on “Continue” to proceed to the next window. There you have to select the particular district for which the values have to be restored. Then click on “Accept” to start the restoring process. If you want to discontinue with the process, click on “Close”.

4.2.2 State Bar

The state bar of the window shows the X- and Y-coordinates as well as the zooming factor of the map in the cartographical display mode. If the tabular mode has been selected, the state bar will not provide any information.

4.2.3 Functions of the Map

Certain location can be allocated to the map in the “*Selected District*” window for grouping purposes. If several locations have been allocated, these locations can be selected by clicking on the locations on the map. The „*Detailed View of the Pipe Section*“ window will then be updated with the new location.

4.2.4 Location-related Features on the Map

Creating a Location

If you intend to create a location in a certain district, first select the location’s name in the “Logger” level and press the right mouse key. A “*Context Menu*” will appear on the screen, and you can select “Create Location” (see Illustration 4-11). The new location will be added to the list.



Illustration 4-11: Popup-Menu Settings 1

Positioning the Location

The new location can be transferred to the district by means of “Drag & Drop”. Select the location and pull it to the desired section in the district. Keep the left mouse key pressed while pulling the location to the desired position. When the correct position is reached, the location will be fixed by releasing the left mouse key (see Illustration 4-12).



Illustration 4-12: Creating a location

For your convenience, you can also enlarge or reduce the scale of the graphic. Click on the graphic and zoom it in or out by using the shortcuts “STRG“ + ”I“ (enlarging the scale) and “STRG“ + “O“ (reducing the scale) respectively. You can also add further locations to the map in the same way.

Deleting a Location

If you want to delete a location, first select the particular location and call the context menu with the right mouse key. Select “Delete Location“ from the menu (see Illustration 4-13). If a logger has already been allocated to a certain location, the logger has to be deleted from the location before the location can be deleted.



Illustration 4-13: Popup-Menu Settings 2

Selecting a Location

To select a location, you can either click on the circle in the graphic or on the tree structure beside the graphic. The loggers have already been allocated to the particular location, the *”List of Readings“* and the *”Reading Diagram“* will be updated. When you click on “+” of the particular logger, the basic noise level acquired at the location will be displayed. The basic noise level represents the permanent noise level (e.g. generated by a pump, etc.) at a certain location. If a logger has already been allocated to the particular location, the basic noise level generated by the logger will be subtracted from the basic noise level value acquired at the location.

Renaming a Location

If you want to give a location a name different from the standard name, double-click on the location in the tree structure and input the new name. Confirm the name by clicking on “Return”.

4.2.5 Logger-related Features on the Map

Renaming a Logger

If you want to change the name of a logger, click on the name of the particular logger in the *”Selected District“* window. Then input the new name. Confirm your input by clicking on “Return”.

Logger-related Information

If a logger has been added to a certain district or location, the following information about the particular logger can be displayed by clicking on “+”.

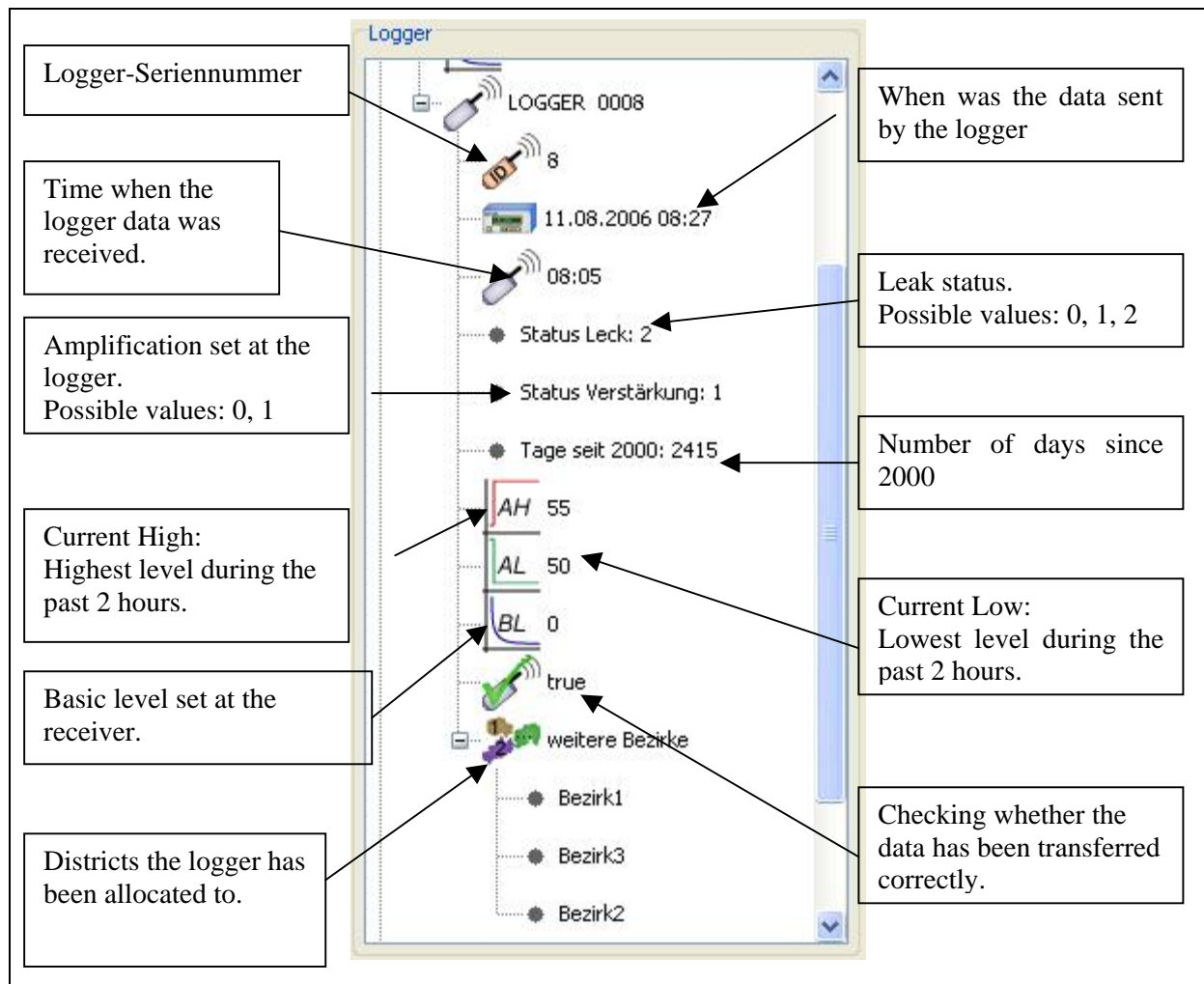


Illustration 4-14: Information about the logger

4.2.6 Functions of the Table

In the tabular display mode, the user cannot create a location without a logger. In the cartographical mode, however, a creation is feasible. So, if you want to create or change a logger location, you will have to click on a line in the "Location" level in the tabular mode (see Illustration 4-15). The same procedure applies to any changes in the logger name: just double-click on a line in the table ("Logger" level). The leakage state of a logger is displayed in the "Leak state" level of a line. This state, however, is not available unless a location has been created for the particular logger.

Selektierter Bezirk - Bezirk1

| | | |
|---|--|---|
| Logger: 9 Info: LOGGER 0009 | Standort Name: Standort 1 Grundpegel: 0 | Ausgelesen am: 11.08.06 08:27:05 Leckstatus: kein Leck |
| Logger: 8 Info: LOGGER 0008 | Standort Name: Standort 2 Grundpegel: 0 | Ausgelesen am: 11.08.06 08:27:05 Leckstatus: kein Leck |
| Logger: 7 Info: LOGGER 0007 | Standort Name: Standort 0 Grundpegel: 0 | Ausgelesen am: 11.08.06 08:27:05 Leckstatus: kein Leck |

Illustration 4-15: Working in the tabular display mode

4.2.7 Setting the Evaluation Sensitivity

The evaluation sensitivity for the logger data can be set in 6 steps of 10%, beginning at 50% up to 100%. The standard setting is 100 %.

If you want to change the sensitivity, click on the particular location and call the context menu with the right mouse key (see Illustration 4-11). Select “Evaluation Sensitivity“ and choose the desired value. Any change in the evaluation sensitivity will be adapted by all locations irrespective of the location the sensitivity of which has been changed.

4.3 List of Readings

Besides offering the tabular display mode for the measurement values, this window also enables the user to allocate his own descriptions to the single measurement values. In order to do so, double-click on the ”Description“ column of the table and add the information on the selected measurement value.

| Werteliste - Logger: 2 | | | |
|------------------------|-------|----------|--------------|
| Datum | Pegel | Qualität | Beschreibung |
| 08.08.2006 | 2 | 0 | |
| 07.08.2006 | 3 | 0 | |
| 06.08.2006 | 4 | 0 | |
| 05.08.2006 | 5 | 0 | |
| 04.08.2006 | 6 | 0 | |
| 03.08.2006 | 7 | 1 | |
| 02.08.2006 | 8 | 0 | |
| 01.08.2006 | 9 | 0 | |
| 31.07.2006 | 10 | 0 | |
| 30.07.2006 | 11 | 0 | |
| 29.07.2006 | 12 | 0 | |
| 28.07.2006 | 13 | 0 | |
| 27.07.2006 | 13 | 0 | |
| 26.07.2006 | 12 | 0 | |

Illustration 4-16: List of readings

The Quality column is marked with different colours for a 14-day project, with the colours conveying different messages. If the quality is about zero, the column will be marked green. This means that this measurement value will be used for the determination of the leakage state. If, however, the measurement shows a poor quality (at about one), those values will not be considered for the determination of the leakage state.

4.4 Reading Diagram

The “*Reading diagram*“ displays the logger-related data of a selected logger. The Y-axis shows the noise levels between 0 and 100, whereas the X-axis shows the particular dates of the measurements. The “*Reading Diagram*“ window is displayed graphically and offers additional functions, which are described below.

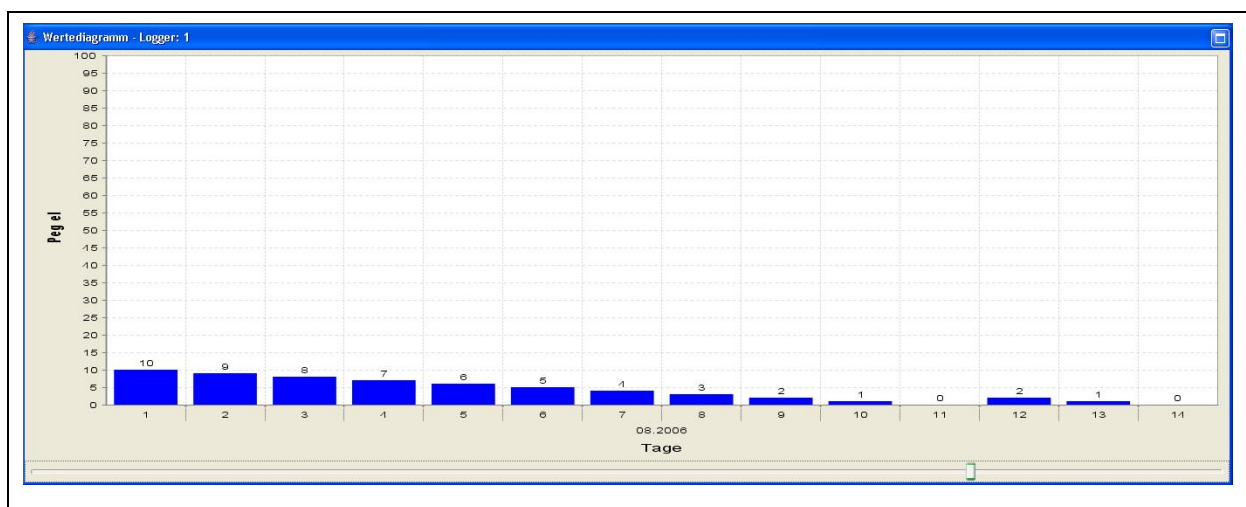


Illustration 4-17: Reading diagram

If the database has saved more than 14 measurement values for a certain logger, these values will not be displayed on the initial representation. The diagram displays the last 14 days, if available. If there are more values available, they can either be pushed into the field of view of the diagram through an elevator bar situated below the diagram or be made visible through the zooming function.


To enlarge or to reduce the scale of the graphic, click on the right mouse key and select the corresponding function in the context menu. You have the option of zooming out either only one the axes or both axes.

Alternatively, you can also enlarge the scale of the graphic by selecting a certain area with the left mouse key. Keep the key pressed while you are selecting the area. The selected area will then be enlarged and displayed.

4.5 “Logger Allocation” Window

Section 4.5 is to give you an overview of how to load new logger-related data and to save the data in the database (see Section 4.5.1). The following section (Section 4.5.2) describes how the logger data which has been read out can be allocated to one or more locations. Finally, section 4.5.3 describes the functionality of the menu.

4.5.1 Reading out the Acoustic Logger

If you want to read out new logger data at the AZ-100 receiver, click on “Load Logger Data” in the *”District”* window menu . The *”Logger Allocation”* window will open up, as shown in Illustration 4-18. If you have not yet read out any data or if you have already allocated all data, the “Logger Data” section in the *”Logger Allocation”* window will be empty. The same applies to the “Districts” section in the window. If you have not yet charted a district in the project, this section will be empty as well. Before you can load the logger data of the receiver, the receiver has to be connected to a Com interface of the computer and the settings for the Com interface in the programme have to be completed (Section 3.2.2).

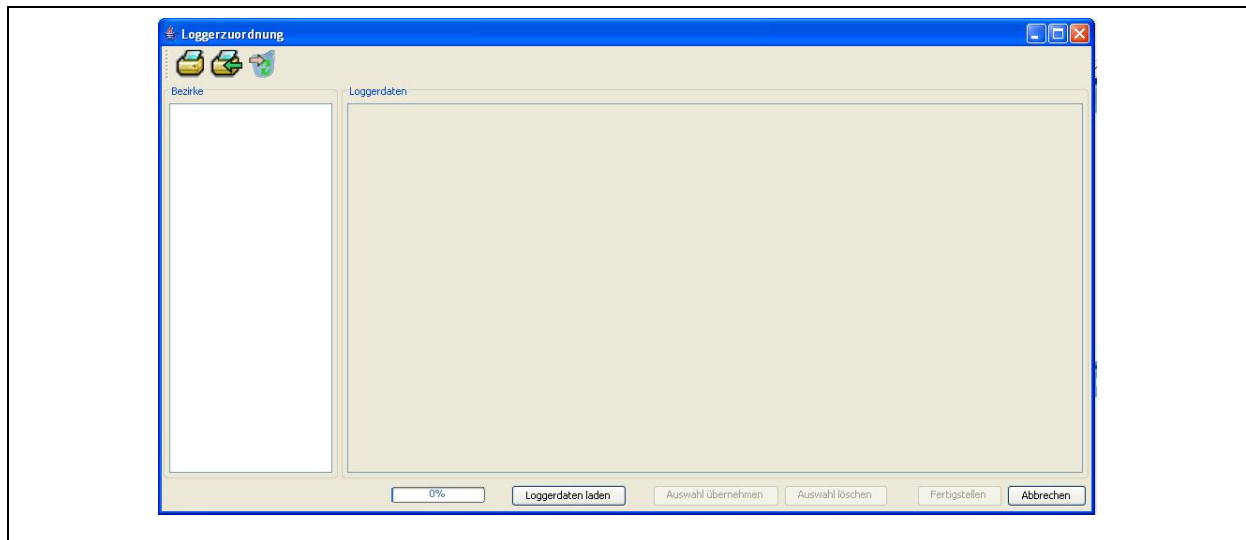


Illustration 4-18: Logger allocation

When everything as described above is set and done, you can read out the data of the receiver by clicking on "Load Logger Data".

The logger data will be added to the empty / current list. The figures indicate the noise level recorded on the particular day as stated in the headline of the column above. The data of a particular logger will be displayed in a horizontal line. The listed values indicate the noise levels acquired by the loggers on the particular day. On certain days, the logger may not have acquired any data. These days are marked with a broken line. The measurement values read out most recently are always added to the right end of the list. This means that the oldest data can be found on the left-hand side of the list. If a logger is to be read out which has not yet been listed, the particular device will be added to the list.

When the logger data has been read out, the data can be allocated to one or more districts as described in Section 4.5.2. If the logger data is to be allocated to a district at a later point of time, you can close the window by clicking on "Quit". The data remains saved in the database.

4.5.2 Allocation of the Loggers

Loggers are allocated to certain districts by clicking on "Read out Acoustic Logger", unless the "**Logger Allocation**" window has been opened yet. If the "Logger Data" section is still empty, the data stored at the receiver has to be loaded into the computer (see Section 4.5.1). The loggers can be allocated to any district. If any logger data has already been read out (see Section 4.5.1), the loggers together with the read out values will appear in the "Logger Data" section of the "**Logger Allocation**" window.

The left column holds the districts, the right column shows the loggers and the values. First select a district, and then you can allocate one or more loggers to this district by marking the values in the lines. Click on “Accept Selection“ to allocate the loggers (see Illustration 4-19). The highlighted values have the same colour like the district.

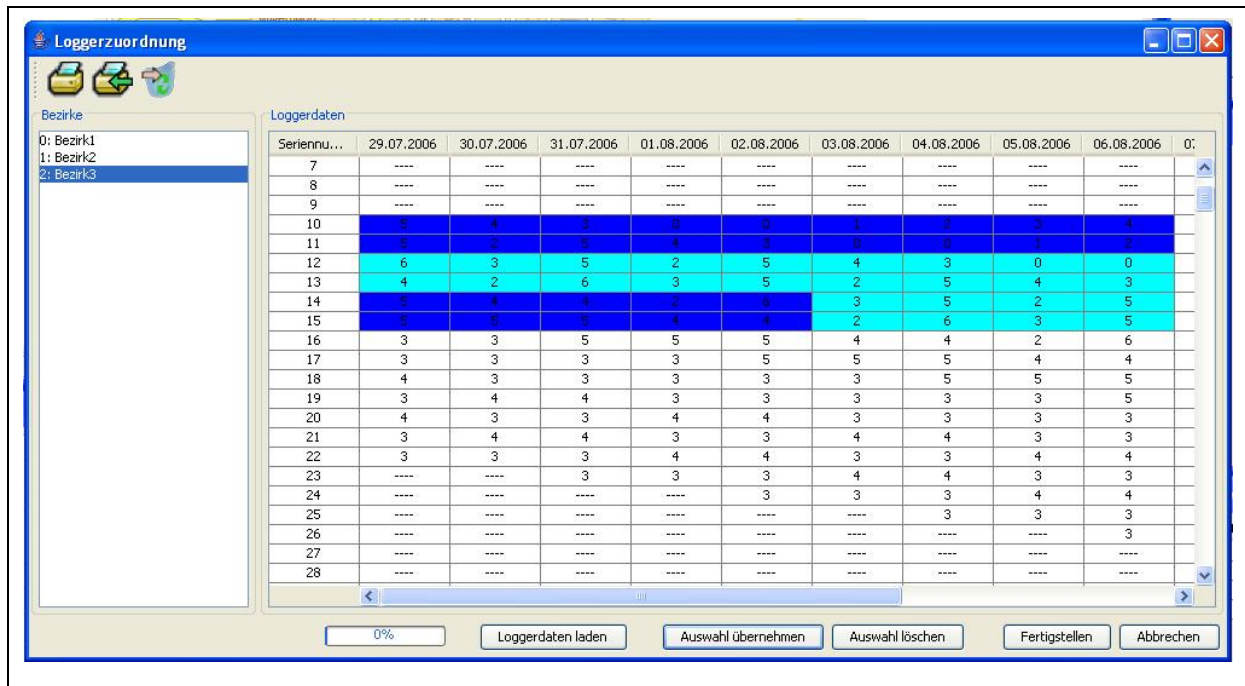


Illustration 4-19: Selection of logger allocation

If you want a logger to supply data to two or more districts, mark the corresponding values in the **“Logger Allocation“** window one after another while changing the district. The system will remember for which district the logger has been selected.

Click on “Finish“ to accept the selection. The logger data will now be added to the district(s) (see Illustration 4-20). If a logger has already been allocated to a certain location in the particular district, the new logger data will be added to the already existing data automatically and the status of the location will be updated. If a logger has not yet been allocated to a certain location in the district, the logger will be allocated to this district without being allocated to a specific location. In this case, the logger has to be allocated to a location at a later point of time.

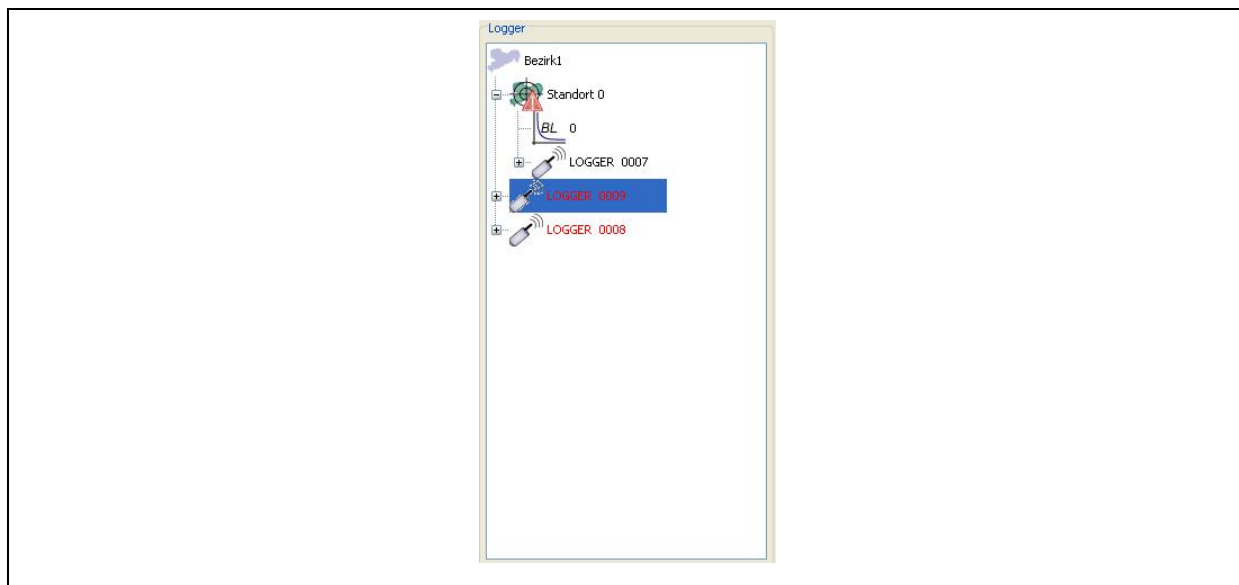



Illustration 4-20: Allocated loggers


In order to allocate a logger to a location, you have to select the particular logger and pull it to the desired location. If you click on the “+” of the particular logger in the “*Selected District*” window, the folder “Further Districts” will indicate, to how many districts the logger has been allocated.

4.5.3 Functions of the Menu Bar

The menu bar in the “*Logger Allocation*” window has three buttons featuring different functionalities. These single functions are described below:

Printing out the list 

This function enables the operator to print out a list containing all information about the “Logger Data” section in the “*Logger Allocation*” window (see Illustration 4-19). For further details concerning the single functions, please refer to the “Print Dialogue” section below.

Printing out the read-out protocol 

Similar to the function as described above (“Print out List”), a protocol containing the data about the logger that was read out last can be printed out. The programme distinguishes between a read-out process using the 1-day version or using the 14-day version. Both versions

have separate protocols. For further details about the functions of the print-out dialogue, please refer to the “Print Dialogue” section below.

Print Dialogue

When the Print Dialogue has been called through the functions “Print out List” and “Print-out the read-out Protocol“, the window as shown in Illustration 4-21 below will appear. This window primarily serves as a print preview of the document to be printed out.

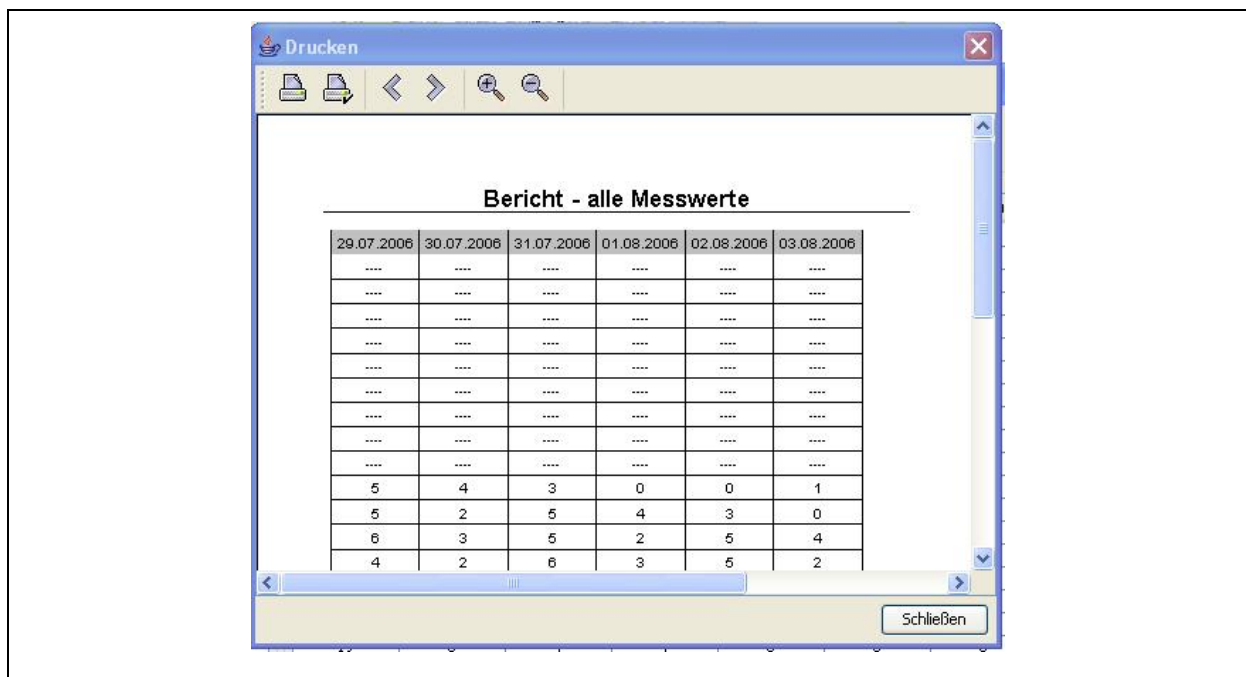



Illustration 4-21: Print-out dialogue

There are several functions for further document processing available at the menu bar (Illustration 4-22). With the buttons depicted by the magnifying glass, the user can zoom in or zoom out in the preview dialogue the document to be printed out. If the document to be printed out consist of more than one page, the user can leaf through the different pages by clicking on ”<“ and ”>“ respectively. The second box (Illustration 4-22, from left to right) opens up a dialogue where the user can set the parameters for the page to be printed out. Here the user can determine the size of the page and the format of the paper (horizontal or landscape format). Press the first button if you want to print out the document which is currently displayed on the screen.



Illustration 4-22: Print-out dialogue menu bar

Shifting the measurement values 

Measurement values which must not be allocated to a certain district can be shifted into the bin through these functions. There may be various reasons why certain values have to be shifted into the bin: operating errors or environmental influences may have made the data useless for evaluation. Using the “Shifting the Measurement Values“ button requires a prior selection of a logger in the first column of the “Logger Data“ section of the *”Logger Allocation“* window (see Illustration 4-19). If no logger has been selected, the system will generate an error message as shown in Illustration 4-23 below.

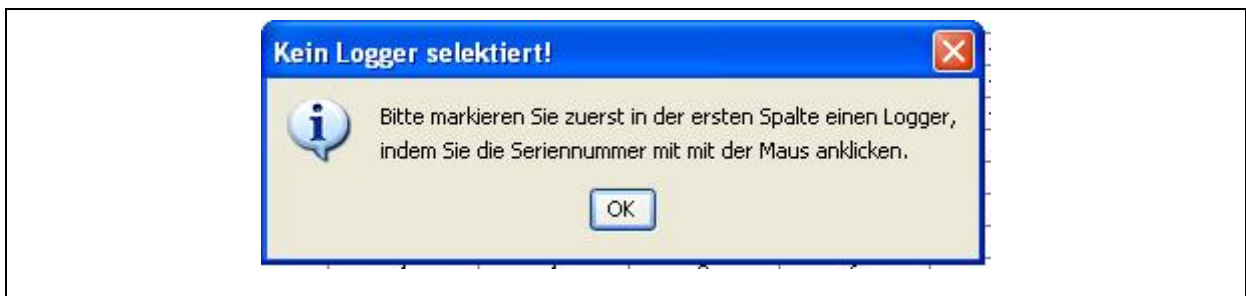


Illustration 4-23: Error: no logger selected

If you have marked a logger in the first column of the table, the window as shown in Illustration 4-24 (left-hand side) will be displayed. Ticking the first column of the table makes the particular measurement value be shifted into the bin. Click on “Continue“ to proceed to the next window, where you mark the “Bin“ with the mouse and click on ”Accept“ to shift the selected values into the bin. If you want to discontinue the process, click on “Close“.



Illustration 4-24: Shifting measurement values