



ShipWeight™

USER GUIDE

Version 11.61

ShipWeight 11.61 User Guide

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Bold and *Italic*

Bold is used when referring to names of menus, menu options, dialog boxes, buttons, tabs, field labels, keyboard and mouse buttons and other named items in the user interface.

Italic is used for text to be typed in by the user.

File / Menu Paths

We try to orient the user by starting with the first thing the user needs to look for.

For example:

From the **Items** menu, select **List Items > All...**

not:

Select **List Items > All...** from the **Items** menu.

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1 Introduction

1.1 About the user's guide

This user's guide is divided into four main sections.

The first is showing the basic steps of Weight monitoring.

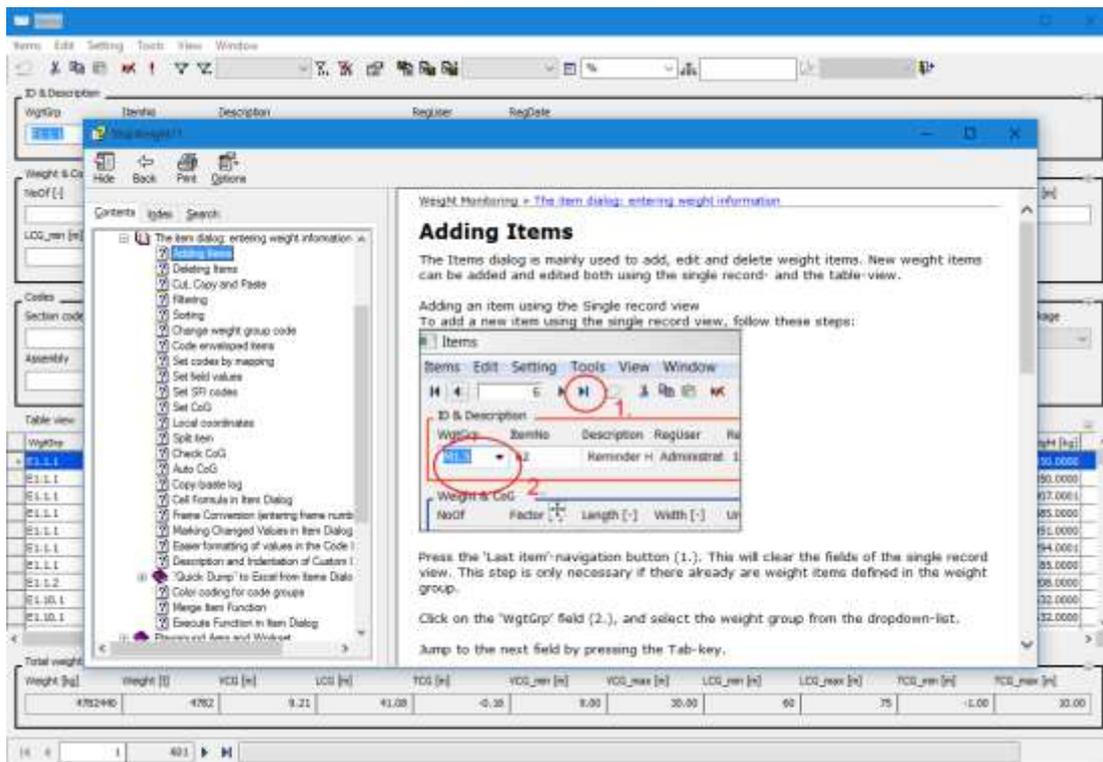
The second part handles the basic steps of Estimating Weight and CoG.

The third section gives information on some of the additional features beyond the basic estimation and weight monitoring.

The last part of the guide deals with the administration of ShipWeight.

1.2 Context sensitive help

ShipWeight comes with context-sensitive help. Pressing the **F1** key in a dialog box will bring up help for that dialog box. Pressing **F1** on the main window will bring up generic help.



1.3 Contact information

If you have any questions regarding ShipWeight, please do not hesitate to contact us.

BAS engineering AS
Myrabakken Næringscenter
N-6010 Ålesund
Norway

Phone: + 47 70 15 03 60
Fax: + 47 70 14 24 91
Email: office@bas.no

For our representatives outside Norway, please see www.shipweight.com

1.4 General overview of the ShipWeight system

The ShipWeight system serves two main purposes: Weight monitoring and estimation. During the weight monitoring process, data from weight take off during construction is structured and stored together with relevant parameters for the items.

When the vessel is complete and the weight data is corrected according to the results from the inclining test report, the ship is ready to be exported to the ship database.

As long as the weight monitoring of a project is ongoing, the data is stored in a project database, and cannot be used for estimation. The project database can contain several projects, and is separated from the ship database to prevent doing estimates based on incomplete vessel data.

When a project in the project database is complete, the data should be exported to the ship database. The ship database should contain data from all completed projects. When a new estimation project is started, estimation can be done on basis of the past ship data in the ship database.

Usually the estimation progress continues until a construction contract is signed and there is a contract weight to relate to. Then a new ShipWeight project should be created and you can start weight control activities and weight take off.

During the weight control activities, the project file can be compared to the design project file to find deviations and to measure the progress in the project.

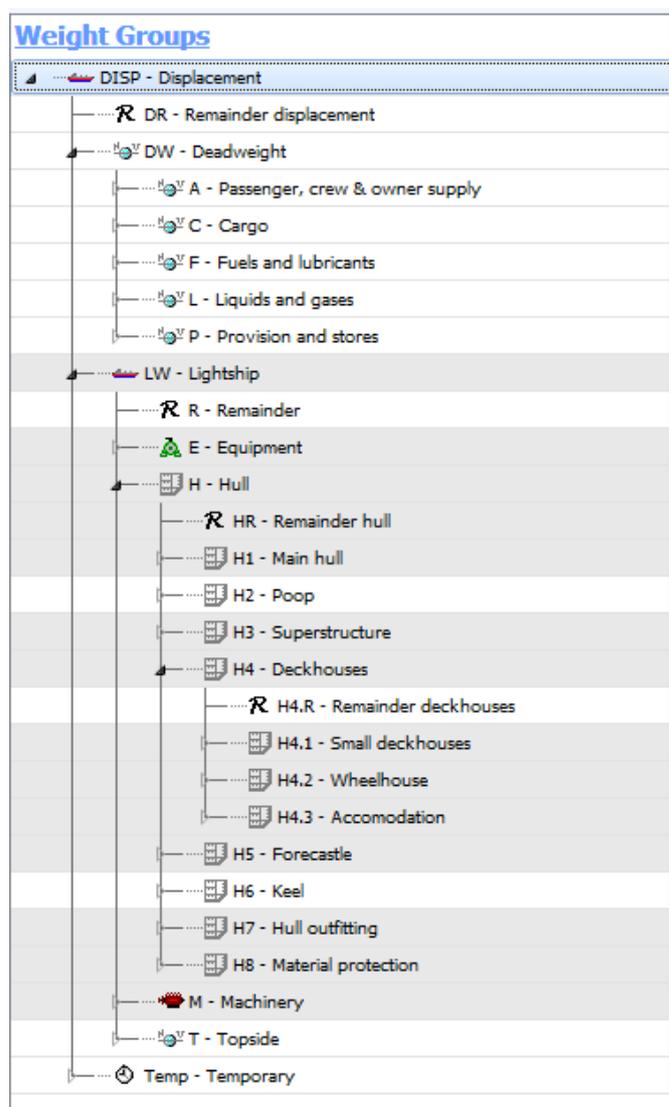
When the project is complete, a new file is ready to enter the ship database, and the experience basis of past ship data has increased. As more and more projects are exported to the ship database, the better the system will be to estimate new vessels.

1.4.1 The breakdown structure systems

All available breakdown structures in ShipWeight are hierarchical. The reason for breaking up the ship is to make more accurate estimations by trying to isolate weight groups that can more easily be compared from ship to ship.

Also breaking up the ship gives statistical cancellation effects. This means that the different errors in the estimation of weight groups will sometimes give a higher -and sometimes a lower weight. Thus the errors will to some extent erase each other.

The figure below shows the four top levels in the standard ShipWeight breakdown structure. The total structure contains more than 300 weight groups divided into six levels.



The ShipWeight standard structure is the default structure. Also the US Navy “Ship Work Breakdown System” (SWBS) comes with ShipWeight. In addition Rig estimation breakdown system and General offshore breakdown structure can be delivered upon request.

1.5 Definitions

CoG	Center of gravity
VCG	Vertical center of gravity
LCG	Longitudinal center of gravity
TCG	Transversal center of gravity
VCG_min / Lower	The lowest vertical point of the weight item
VCG_max / Upper	The uppermost vertical point of the weight item
LCG_min / Aft	The longitudinal aft point (starting point) of the weight item
LCG_max / Fore	The longitudinal fore point (endpoint) of the weight item
TCG_min / PS	The minimum transverse point of the weight item
TCG_max / SB	The maximum transverse point of the weight item
Weight item	A steel part, a machinery part or an equipment unit that has a specific weight.
Weight group	A post in the breakdown structure that can contain weight items
Breakdown structure	The system describing the vessel by breaking it into several parts, ordered hierarchical in groups. (See Chapter 1.4.1 The breakdown structure systems)

1.6 Unicode Compliance

ShipWeight 11.60 is Unicode compliant. This means that all input fields, reports and output data will be able to handle all types of regional character systems, such as far-east characters.

2 Weight Monitoring

2.1 Starting ShipWeight

ShipWeight can be started by clicking the icon on the desktop.



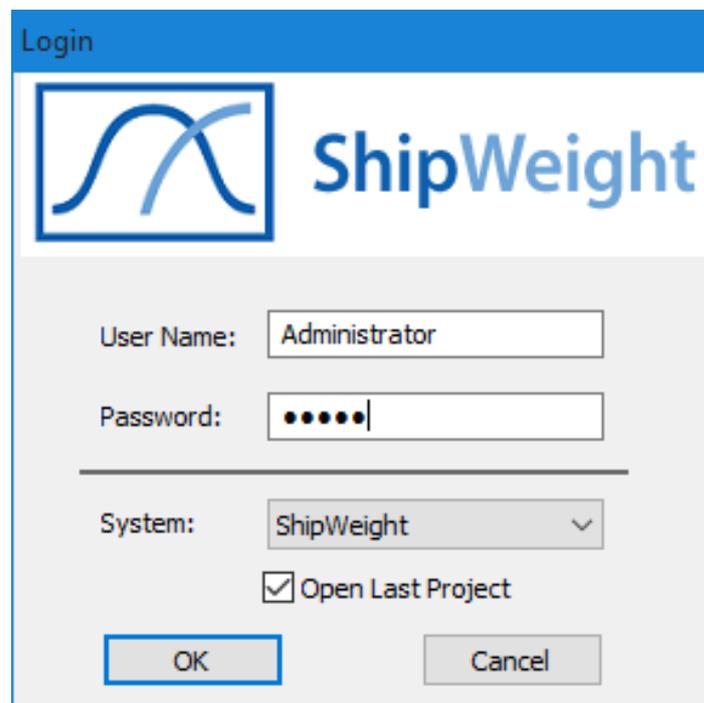
Alternatively, open the Windows Start menu and select All Programs. Then navigate to the ShipWeight Enterprise folder and select ShipWeight.

When starting ShipWeight, the **Login** dialog box will appear. To start working with ShipWeight you need to enter a valid user name and password. The first time ShipWeight is started, you must log on with the following user name and password:

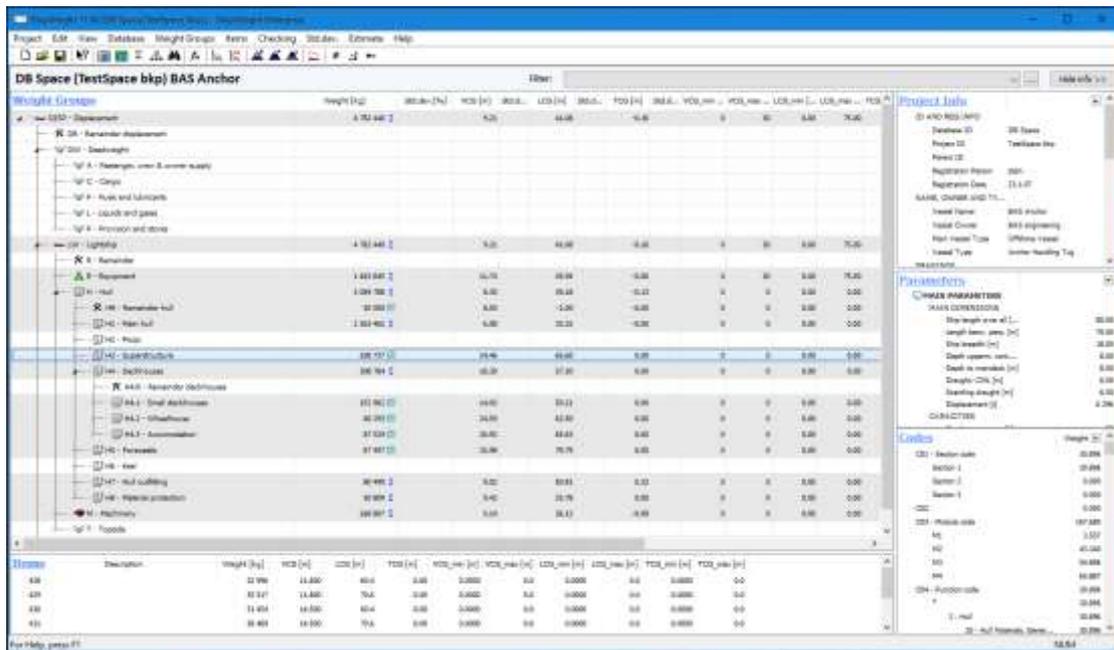
User name: Administrator
Password: admin

Next, use the **System** dropdown list to select the appropriate system breakdown structure. Click **OK** to continue. The main window of ShipWeight will now be opened.

The **User name** and **System** fields are preset with the values from the previous session.

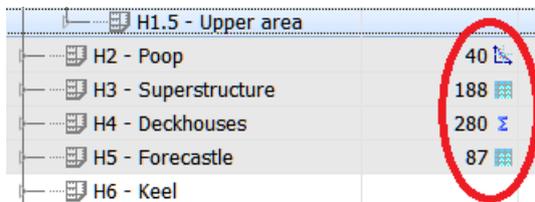
A screenshot of the ShipWeight Login dialog box. The dialog has a blue title bar with the word "Login" in white. Below the title bar is the ShipWeight logo, which consists of a blue square containing a white line graph with two curves, followed by the text "ShipWeight" in a blue, sans-serif font. Below the logo are two text input fields: "User Name:" with the text "Administrator" and "Password:" with six black dots. A horizontal line separates these from the "System:" dropdown menu, which is set to "ShipWeight" and has a downward arrow. Below the dropdown is a checked checkbox labeled "Open Last Project". At the bottom are two buttons: "OK" and "Cancel".

ShipWeight 11.60 main window improves user friendliness and increase flexibility on the work breakdown structure.



Picture 1: ShipWeight main window

In the main window the grids and the weight group hierarchy have been merged. The result is a more intuitive way of navigating in the weight group hierarchy, and also the number of weight groups on the same level of the structure is no longer restricted by the grids – there is no limitation to this anymore.



Picture 2: Icons indicate value origin

Icons are used in the new main window to inform the user about the origin of the weight group summary.

A **Grid** icon indicates that the weight group is a summary of weight items in that weight group.

A **Sigma** icon indicates that the value is a summation of subgroups – not items. Finally, a **Graph** icon will indicate that the value is estimated by parametric formula.

Grid and **Graph** icons are also clickable and will open the **Items** dialog box and **Graph** dialog box respectively.

In the right part of the main window, several information windows are shown. This shows **Project Info**, **Parameters**, and **Codes**. This area can be hidden all in one by clicking the **Hide info >>** button, in case maximum space is required for the weight group hierarchy. Each individual window may also be hidden by clicking on the **Show/Hide** button (small arrow) to the right in the heading. Clicking this button will show/hide the area for every second click. The heading title itself is also clickable and works as a hyperlink to open up windows for editing the information in the area.

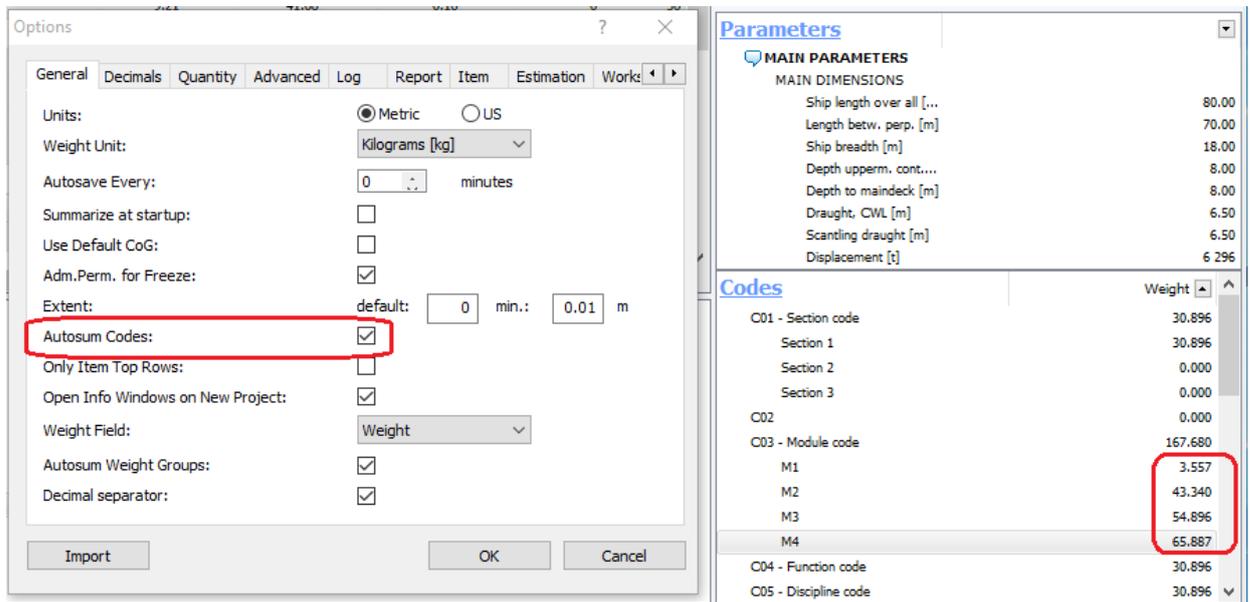


Picture 3: Information areas



An extended submenu has also been added to the new main window, available by right-clicking the mouse button. The submenu includes various selections for expanding and collapsing weight groups, resetting column widths and copying the information to the clipboard.

In addition to displaying the values for parameters, the **Codes** window will also show a summary of the weight per code. This can potentially slow down speed on very large projects, so there is an option in the **Options** dialog box to turn off this summation.



Picture 4: Summary per custom code

The icons showing weight group types are:



Remainder



DeadWeight



Lightship / LightWeight



Machinery



Hull



Equipment



Temporary

The icons showing status of a weight group may be set to:



Checked



Unchecked

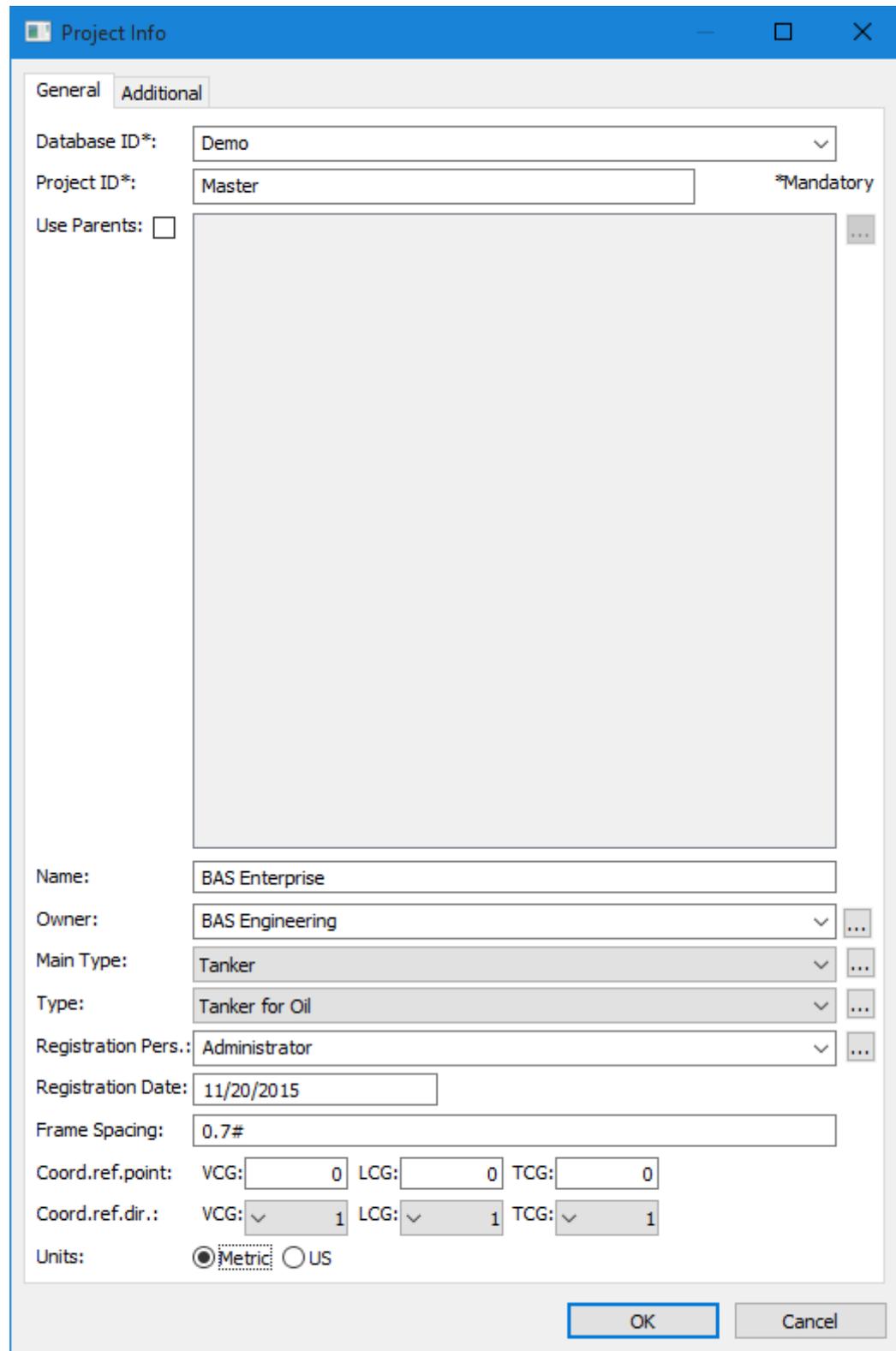
(No icon) Neutral

To set the status, select one of the options on the **Checking** menu.

2.2 Creating a new project

To start a new project, from the **Project** menu, select **New** or click the **New project** button on the toolbar: 

The **Project Info** dialog box appears. First you can enter **General** data:



The screenshot shows the 'Project Info' dialog box with the 'General' tab selected. The dialog has a title bar with a close button. Below the title bar are two tabs: 'General' and 'Additional'. The 'General' tab contains the following fields:

- Database ID*: Demo (dropdown)
- Project ID*: Master (text input, marked as *Mandatory)
- Use Parents: (checkbox)
- Name: BAS Enterprise (text input)
- Owner: BAS Engineering (dropdown)
- Main Type: Tanker (dropdown)
- Type: Tanker for Oil (dropdown)
- Registration Pers.: Administrator (dropdown)
- Registration Date: 11/20/2015 (text input)
- Frame Spacing: 0.7# (text input)
- Coord.ref.point: VCG: 0, LCG: 0, TCG: 0 (text inputs)
- Coord.ref.dir.: VCG: 1, LCG: 1, TCG: 1 (dropdowns)
- Units: Metric, US (radio buttons)

At the bottom of the dialog are 'OK' and 'Cancel' buttons.

And then, you can also fill in **Additional** data:

The image shows a 'Project Info' dialog box with two tabs: 'General' and 'Additional'. The 'Additional' tab is active. The fields and their values are as follows:

Field	Value
Build Year:	2015
Plan File:	C:\ShipWgt\Database\GA\sectionplan.bmp
Arrangement File:	C:\ShipWgt\Database\GA\GA.dxf
Designer:	BAS Engineering
Construction Site:	BAS Yard
Design:	BAS Design
Class:	
Comment:	Dummy ship - example only

At the bottom of the dialog, there are two buttons: 'OK' and 'Cancel'. The 'OK' button is highlighted with a blue border.

The fields **Database ID** and **Project ID** have to be filled in, the others are optional. The available fields are:

Database ID: This is the name of the SQL database. The ID cannot be changed after the project has been created. Please note that one database can contain several projects.

Project ID: The name of the current project. Default: Master



Important!

From version 7.5 and onwards, a project is defined by a database ID and a project ID. This means that you can store any number of projects on a single project-database.

Use Parents: The name of an existing project (in the same database) from which the current project will inherit weight items.

All weight information read from the database is read from the project and the parent project, i.e. **Items** dialog box, main window, summaries and reports.

All weight information that is written is written to the project only. The weight items inherited from the parent project cannot be edited from within the current project. To change information in the parent project, the parent project must be opened separately.

Name: The name of the ship needs to be maximum 30 characters.

Owner: Enter the name of the ship owner or select one of the previously registered ship **Owners** from the dropdown list. Alternatively, click the **Browse** button  to open the **Owner library**. Maximum 50 characters.

Main type: Select one of the available **Main types** from the dropdown list, or use the **Browse** button to open the **Select Shiptype** dialog box.

Type: Select one of the available **Types** from the dropdown list, or use the **Browse** button to open the **Select Shiptype** dialog box.

Registration pers.: Maximum 50 characters.

Registration date: Maximum 10 characters.

Frame spacing: Definition of the frame spacing. The syntax is:

DX1#FR1; DX2#FR2; DXn#FRn

Where DXn is the frame spacing from FRn-1 to FRn

FRn is the frame number where the spacing changes, given in the order of increasing frame numbers

Example 1: A ship with a frame spacing of 0.7 m. up to frame number 10, 0.8 m. up to frame 120 and 0.7 m. further ahead is specified as following:

0.7#10;0.8#120;0.7#

Example 2: A ship with constant frame spacing of e.g. 0,6 m. is specified as following:

0.6#

If #0 and X=0 are not congruent, this is adjusted by setting $\pm\langle\text{distance}\rangle;\langle\text{frame spacing}\rangle$ where $\langle\text{distance}\rangle$ is the distance between X=0 and #0 and $\langle\text{frame spacing}\rangle$ is frame spacing defined as above.

Example 3: X=0 resides in AP and #0 is located 0.2 meter ahead of AP (positive direction towards FP). Frame spacing is as in Example 1. Frame spacing definition would then be:

+0.2; 0.7#10;0.8#120;0.7#

Coord. ref. point: By entering data for **Coord. ref. point** and **Coord. ref. dir.**, a secondary coordinate system is defined. **Coord. ref. point** is the origin of the secondary coordinate system:

VCG: Global reference point in z-direction
LCG: Global reference point in x-direction
TCG: Global reference point in y-direction

Coord. ref. dir.: Set the positive direction of the axis of the secondary coordinate system:

VCG: Sign for the z-axis. If positive upward 1, if positive downward -1
LCG: Sign for the x-axis. If positive forward 1, if positive backwards -1
TCG: Sign for the y-axis. If positive toward starboard 1, if positive toward portside -1



Tip!

To activate the alternative coordinate system, from the **Weight Group** menu select **Show reference CoG**. Alternatively, click the **Show reference CoG** button on the toolbar: 

Units: Metric or US

Build year

Plan file: The name and path of the section drawing file. The drawing must be of type bmp or jpg. Maximum 255 characters.

Arrangement File: The name and path of the GA drawing file. The drawing must be of type dxf or dwg. Maximum 255 characters.

Designer: The name of the Ship designer, maximum 50 characters.

Construction Site: The name of the Shipyard, maximum 50 characters.

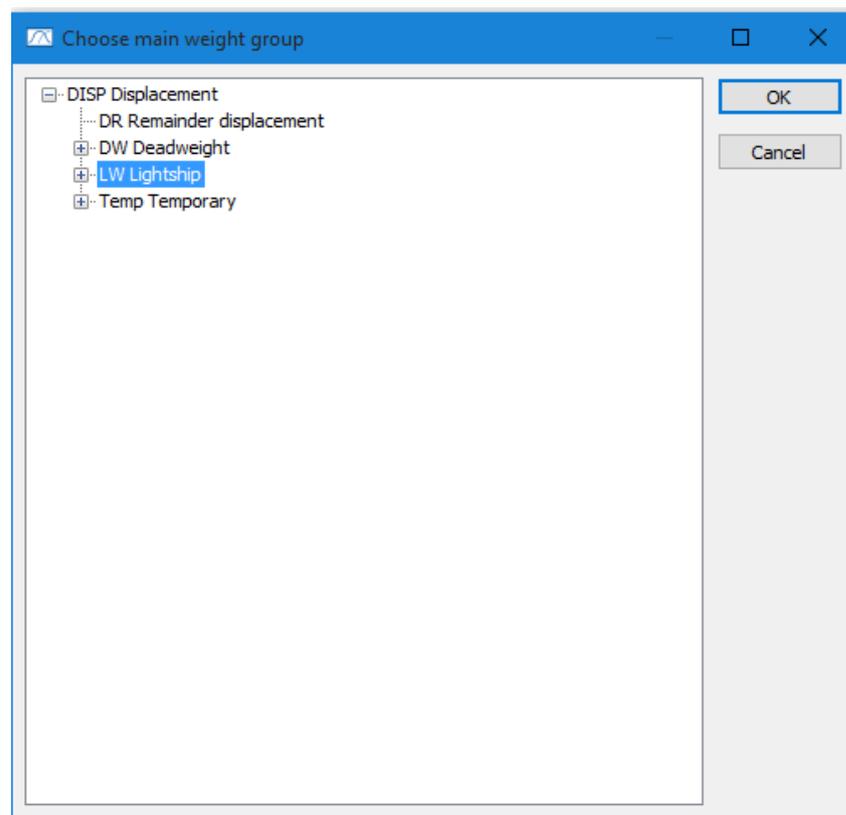
Design: The name of the design, maximum 255 characters.

Class: The name of the class, maximum 255 characters.

Comment: A comment field, maximum 255 characters.

Click **OK** when you are done.

Next you are asked to specify the top-level weight group (post). In most cases this will be **LW Lightship**.



Select **LW Lightship** and click **OK**.

Next the **Parameters** dialog box pops up, with the **Main Parameters** tab activate, and you should fill in all the ship particulars that are available.

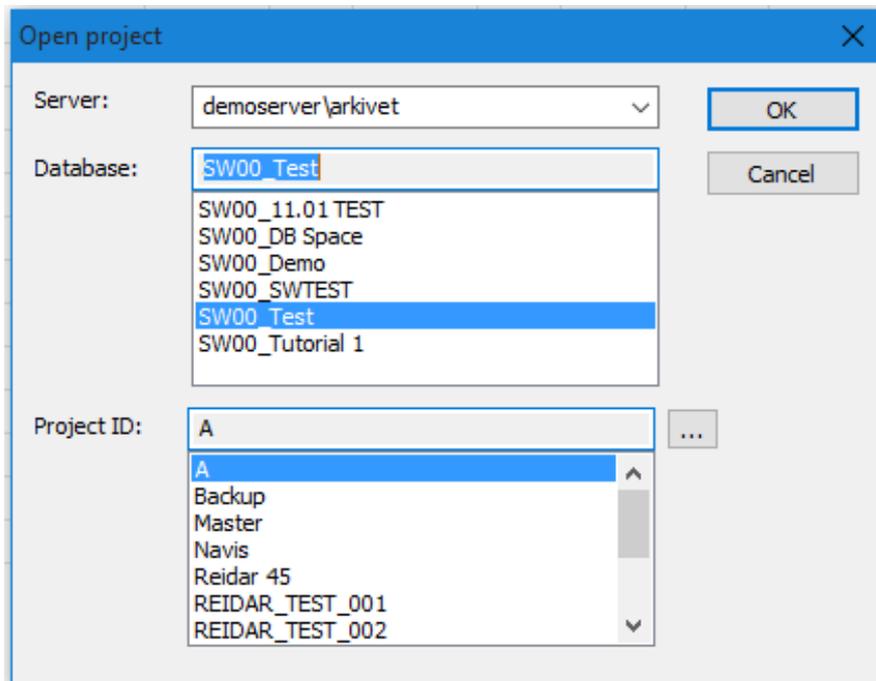
The Parameters dialog box is shown with the 'Main Parameters' tab selected. The table below represents the data visible in the dialog:

Parameter	Value	Std.dev. [%]
MAIN DIMENSIONS		
Ship length over all [m]	255	
Length betw. perp. [m]	215	
Ship breadth [m]	32	
Depth upperm. cont. deck [m]	18	
Depth to maindeck [m]	18	
Draught, CWL [m]	12.5	
Scantling draught [m]	13	
Displacement [t]	0.000	
CAPACITIES		
Numb. passengers [-]		
Numb. crew [-]	26	
Numb. cars [-]		
Numb. containers [-]		
TONNAGE		
Gross tonnage [GT]		
Net tonnage [NT]		
Deadweight [t]	62000	
MACHINERY		
Main-engine power [kW]	9500	
Numb. main engines [-]	1	
Rot.speed main-engine [rpm]	120	
Maximum speed [knot]	15	
Propeller diameter [mm]		
HULL		
Main-hull material		
Ice-class		
Block-coefficient [-]		

At the bottom of the dialog, there is a checkbox labeled 'Defined Only' which is currently unchecked. Below the table are three buttons: 'Print', 'OK', and 'Cancel'.

2.3 Opening an existing project

To open an existing project, from the **Project** menu, select **Open** or click the **Open project** button on the toolbar 



In the **Open SQL database** dialog box, set the following properties:

Server Select one of the available SQL servers.

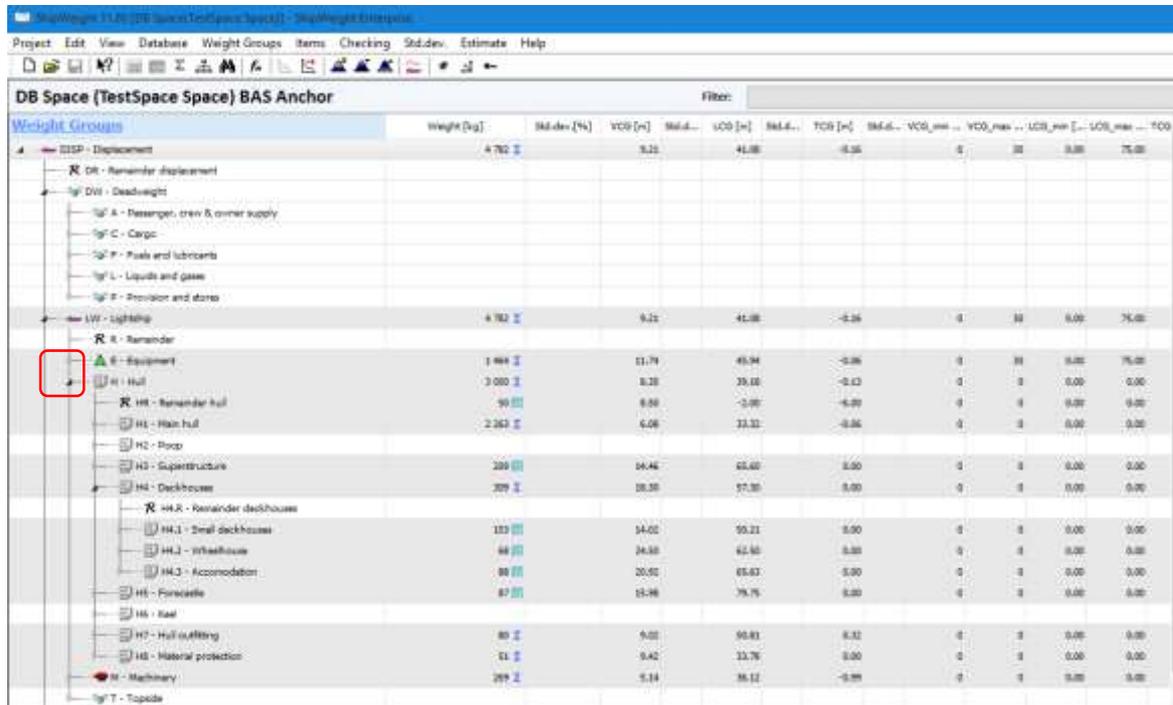
Database Select database.

Project ID Select project.

Click **OK** to open the project.

2.4 Moving through the hierarchy

The way to move through the hierarchy is simply by expanding and collapsing the tree view. This is done by clicking in front of the weight group.



The screenshot shows the ShipWeight software interface. The main window displays a tree view on the left and a data table on the right. The tree view is titled "DB Space (TestSpace Space) BAS Anchor" and shows a hierarchy of weight groups. The data table has columns for Weight [kg], Balder [%], VCO [m], Balder, TCG [m], Balder, VCO_max, VCO_min, LCG_max, LCG_min, and TCG. The "E - Equipment" group is highlighted with a red box in the tree view.

Weight Group	Weight [kg]	Balder [%]	VCO [m]	Balder	TCG [m]	Balder	VCO_max	VCO_min	LCG_max	LCG_min	TCG
DISP - Displacement	4 762	5.21	41.88	-0.26	0	31	0.00	75.00			
DR - Remainder displacement											
DW - Deadweight											
A - Passenger, crew & owner supply											
C - Cargo											
P - Fuels and lubricants											
L - Liquids and gases											
F - Provision and stores											
LW - Lighting	4 762	5.21	41.88	-0.26	0	31	0.00	75.00			
R - Remainder	1 464	11.71	45.94	-0.26	0	31	0.00	75.00			
E - Equipment	3 000	6.28	39.18	-0.13	0	3	0.00	0.00			
H - Hull	90	8.88	-0.00	-0.00	0	3	0.00	0.00			
HR - Remainder hull	2 263	6.08	22.32	-0.26	0	3	0.00	0.00			
H1 - Main hull											
H2 - Prop											
H3 - Superstructure	289	34.46	62.60	0.00	0	3	0.00	0.00			
H4 - Deckhouses	309	28.38	57.30	0.00	0	3	0.00	0.00			
HR - Remainder deckhouses											
H4.1 - Small deckhouses	133	34.02	50.21	0.00	0	3	0.00	0.00			
H4.2 - Wheelhouse	68	24.38	62.90	0.00	0	3	0.00	0.00			
H4.3 - Accommodation	98	20.02	65.63	0.00	0	3	0.00	0.00			
H5 - Forecastle	67	15.36	78.76	0.00	0	3	0.00	0.00			
H6 - Keel											
H7 - Hull outfitting	80	9.02	58.81	0.32	0	3	0.00	0.00			
H8 - Material protection	11	9.42	22.76	0.00	0	3	0.00	0.00			
M - Machinery	299	5.14	36.12	-0.29	0	3	0.00	0.00			
T - Topside											

When this is done the actual weight group will expand or collapse.

ShipWeight 11.60 [DB Space(TestSpace Space)] - ShipWeight Enterprise

Project Edit View Database Weight Groups Items Checking Std.dev. Estimate Help

DB Space (TestSpace Space) BAS Anchor Filter:

Weight Groups	Weight [kg]	Std.dev.[%]	VCG [m]	Std.d...	LCG [m]
DISP - Displacement	4 782		9.21		41.08
DR - Remainder displacement					
DW - Deadweight					
A - Passenger, crew & owner supply					
C - Cargo					
F - Fuels and lubricants					
L - Liquids and gases					
P - Provision and stores					
LW - Lightship	4 782		9.21		41.08
R - Remainder					
E - Equipment	1 464		11.74		45.94
ER - Remainder equipment					
E1 - Equipment for cargo	93		12.40		23.55
E2 - Ship equipment	825		11.32		44.40
E3 - Accommodation	328		14.66		55.01
E3.R - Remainder accomodation					
E3.1 - Lifes., prot., & med. eq.	7		16.88		47.47
E3.2 - Insul., pan. etc. in acc.	140		15.81		66.12
E3.2.R - Remainder insul., pan. etc...					
E3.2.1 - Insulation & panels	80		18.01		65.32
E3.2.2 - Internal deck covering	60		12.89		67.17
E3.2.3 - Ladders, steps & railing					
E3.3 - Doors, windows, skylights	33		20.00		59.62
E3.3.R - Remainder doors, windows...					
E3.3.1 - Doors	13		15.09		53.45
E3.3.2 - Side scuttles & windows	20		23.32		63.79
E3.3.3 - Skylight					

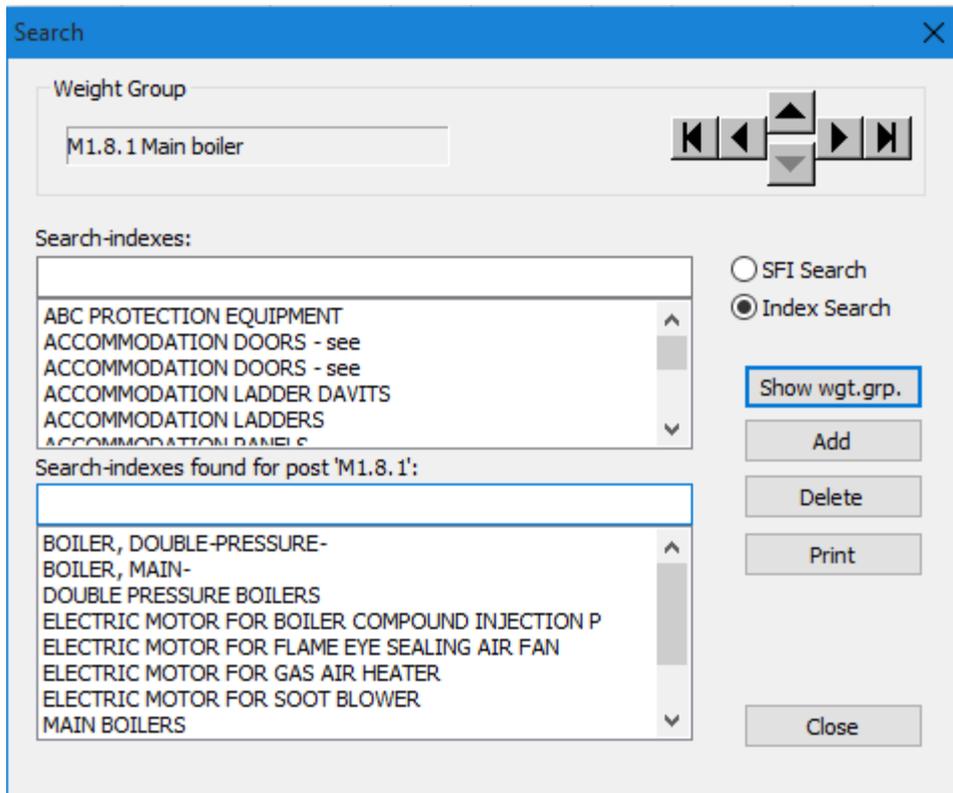


Important!

The logic of summarizing in ShipWeight is based upon the rule that a weight group is the sum of the weight groups below. This means that if you split one weight group to fill in weight items on a lower level, you will lose the value in the weight group above. However the value can be saved in **Comment...** dialog box (found on the **Weight Groups** menu) for history tracking.

2.5 Finding the right weight group

You are now set to start entering weight information into the different weight groups (posts) in the breakdown structure. There are two ways of finding the right weight group for the weight item that you want to store. The first one is by using the **Search** dialog box, which can be found under **Weight Group** on the menu bar.



In this **Search** dialog box you can choose between **SFI-search** and **Index-search**. Either way you enter the SFI number or the item name into the edit box, and by clicking **Show wgt.grp.**, the lower window shows the suggested weight groups for this item. If you accept the suggested groups you can double-click right on the suggestions, and you will be taken to this weight group automatically.

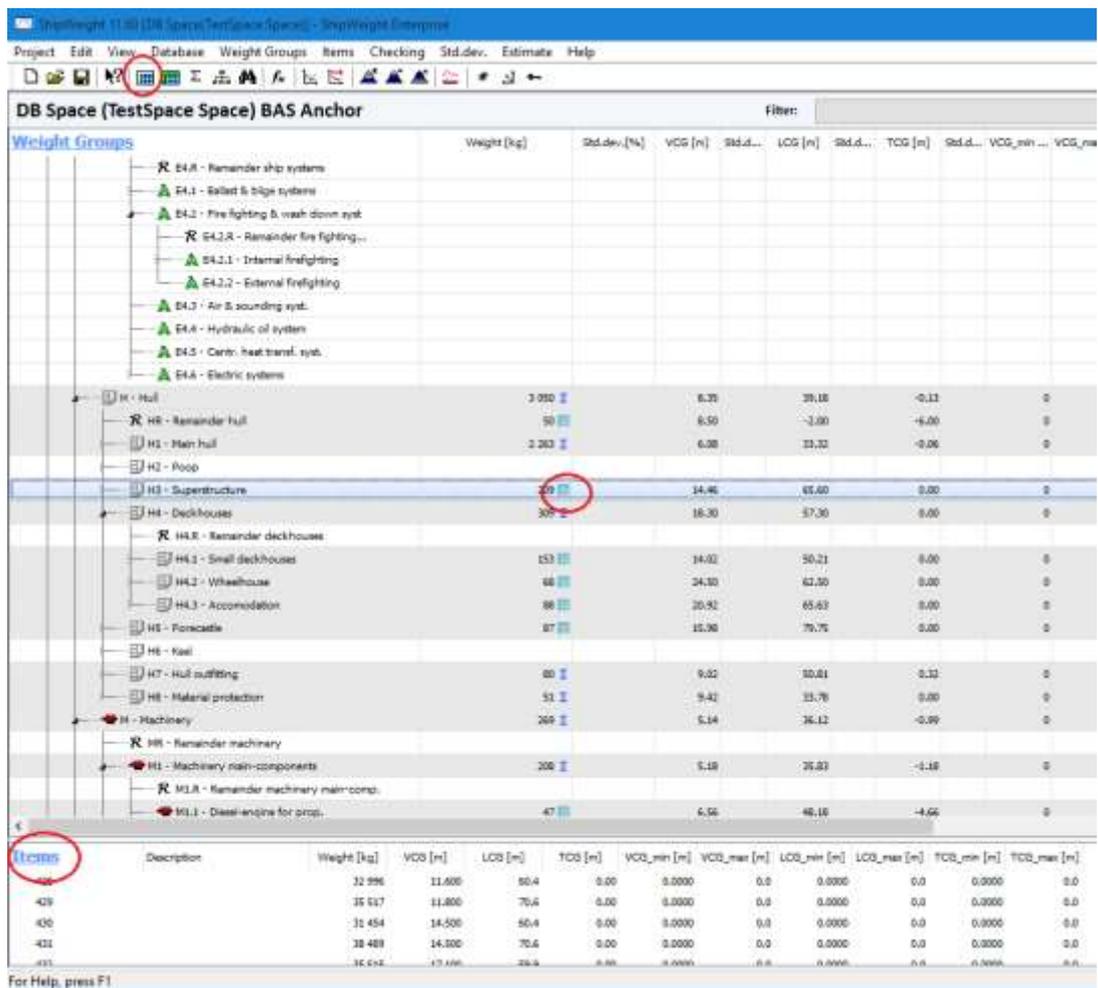
Currently this is implemented for the ShipWeight work breakdown structure only.

2.6 The Items dialog box: entering weight information

The **Items** dialog box is used to add new and edit existing weight items.

The **Items** dialog box can be accessed in several ways. Make sure to navigate to the desired weight group. Then do one of the following:

- On the toolbar in the main window, click the **Item level** button 
- From the **Items** menu, select **List Items > All...**
- In the tree-view, click the **Item level** button 
- In the lower grid in the main window, click on **Items**



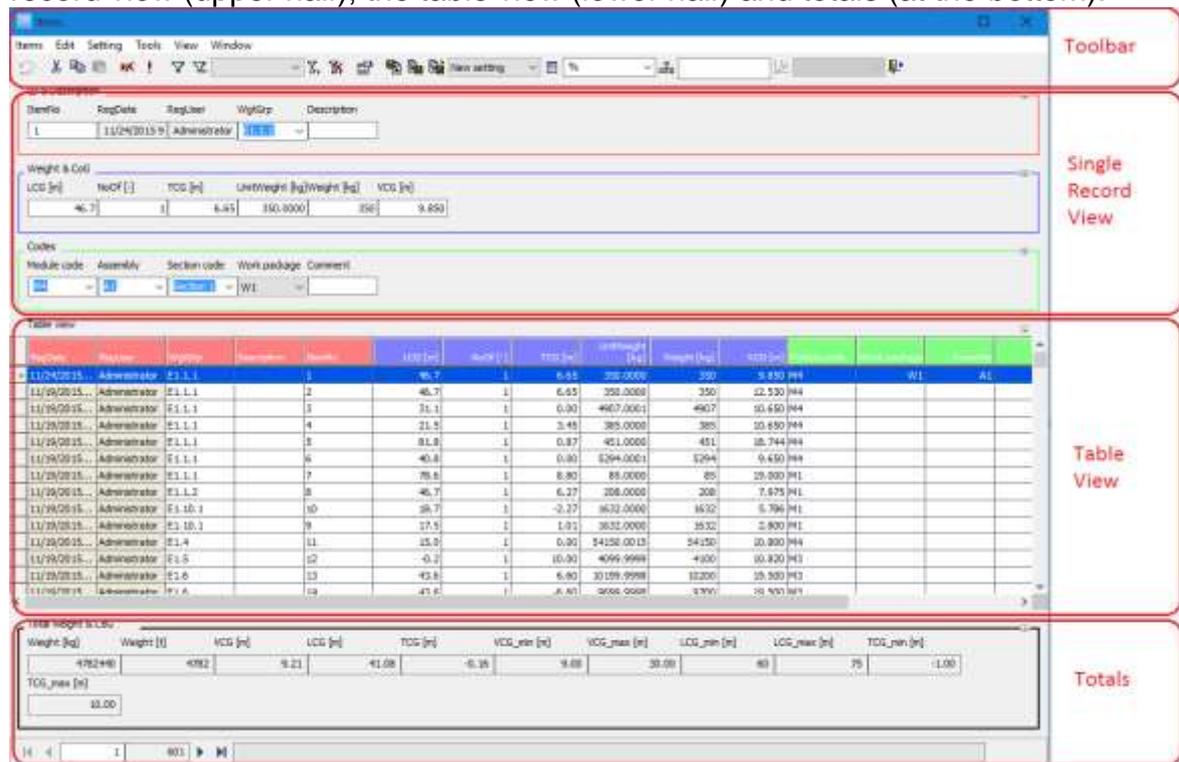
Weight Groups	Weight [kg]	Std.dev. [%]	VCG [m]	Std.d...	LCG [m]	Std.d...	TCG [m]	Std.d...	VCG_min [m]	VCG_max [m]
E4.0 - Remainder ship systems										
E4.1 - Ballast & bilge systems										
E4.2 - Fire fighting & wash down syst										
E4.2.R - Remainder fire fighting...										
E4.2.1 - Internal firefighting										
E4.2.2 - External firefighting										
E4.3 - Air Sounding syst.										
E4.4 - Hydraulic oil system										
E4.5 - Centr. heat transf. syst.										
E4.6 - Electric systems										
H - Hull	3 050		6.70		39.18		-0.12		0	0
H.R - Remainder hull	50		6.50		-1.00		-6.00		0	0
H1 - Main hull	2 263		6.58		33.32		-0.06		0	0
H2 - Poop										
H3 - Superstructure	209		14.46		65.60		0.00		0	0
H4 - Deckhouses	305		16.30		37.30		0.00		0	0
H4.R - Remainder deckhouses										
H4.1 - Small deckhouse	153		14.02		50.21		0.00		0	0
H4.2 - Wheelhouse	66		24.30		62.50		0.00		0	0
H4.3 - Accommodation	86		20.92		65.63		0.00		0	0
H5 - Forecastle	67		15.36		76.76		-0.00		0	0
H6 - Keel										
H7 - Hull plating	60		0.02		30.81		-0.12		0	0
H8 - Material protection	51		9.42		33.76		0.00		0	0
M - Machinery	206		5.14		36.12		-0.89		0	0
M.R - Remainder machinery										
M1 - Machinery main-components	206		5.19		35.83		-1.18		0	0
M1.R - Remainder machinery main-comp.										
M1.1 - Diesel engine for prop.	47		6.56		46.16		-1.66		0	0

Description	Weight [kg]	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]	LCG_min [m]	LCG_max [m]	TCG_min [m]	TCG_max [m]
429	32 996	11.600	50.4	0.00	0.0000	0.0	0.0000	0.0	0.0000	0.0
428	35 517	11.800	70.6	0.00	0.0000	0.0	0.0000	0.0	0.0000	0.0
420	31 454	14.500	50.4	0.00	0.0000	0.0	0.0000	0.0	0.0000	0.0
431	38 489	14.300	70.6	0.00	0.0000	0.0	0.0000	0.0	0.0000	0.0
433	34 042	17.100	39.8	0.00	0.0000	0.0	0.0000	0.0	0.0000	0.0

The information which is normally tagged to a weight item can be categorized as following:

- Id and description
- Quantities, weights, position and extension
- Various codes and drawing references
- Calculated fields

The **Items** dialog box contains four main parts: a toolbar (at the top), the single-record view (upper half), the table view (lower half) and totals (at the bottom).



The **toolbar** includes the following buttons:

 Undo last action

 Cut selection

 Copy selection

 Paste selection

 Delete selected items

 Re-query record set – refresh data

 Filter – create a filter using the **Filter** dialog box. Only items corresponding to the selection in the **Filter** dialog box will be listed in the table-view.

 Clear filter

 Sort – items in the table-view will be sorted according to the rules given in the **Sort** dialog box.

 Clear sorting

 Options

 Load setting... – Load a custom dialog box setting (layout).

 Save setting – Save the current dialog box setting.

 Save setting As... – Save the current dialog box setting with a different name.

Dropdown list to select dialog box layout. Same function as the **Load settings...** button.

 Dialog box settings... – opens the **Item settings** dialog box.

Dropdown list to select **item weight group**.

 Open the **Select Item Weight Group** dialog box.

Dropdown list to select **Local coordinate system**.

 Open the **Local coordinates** dialog box.

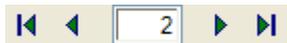
 Close **Items** dialog box

The **single-record view** displays information of the selected weight-item. The single-record view is divided into groups. Each group contains different fields.

This way similar information can be grouped and presented together. E.g. all information concerning weight and center of gravity is collected in the group **Weight & CoG**.

The **table view** shows all the items of the selected weight-group.

The **totals** field shows the sum of the item weights and centers of gravity. In addition, all calculated code fields are summarized.



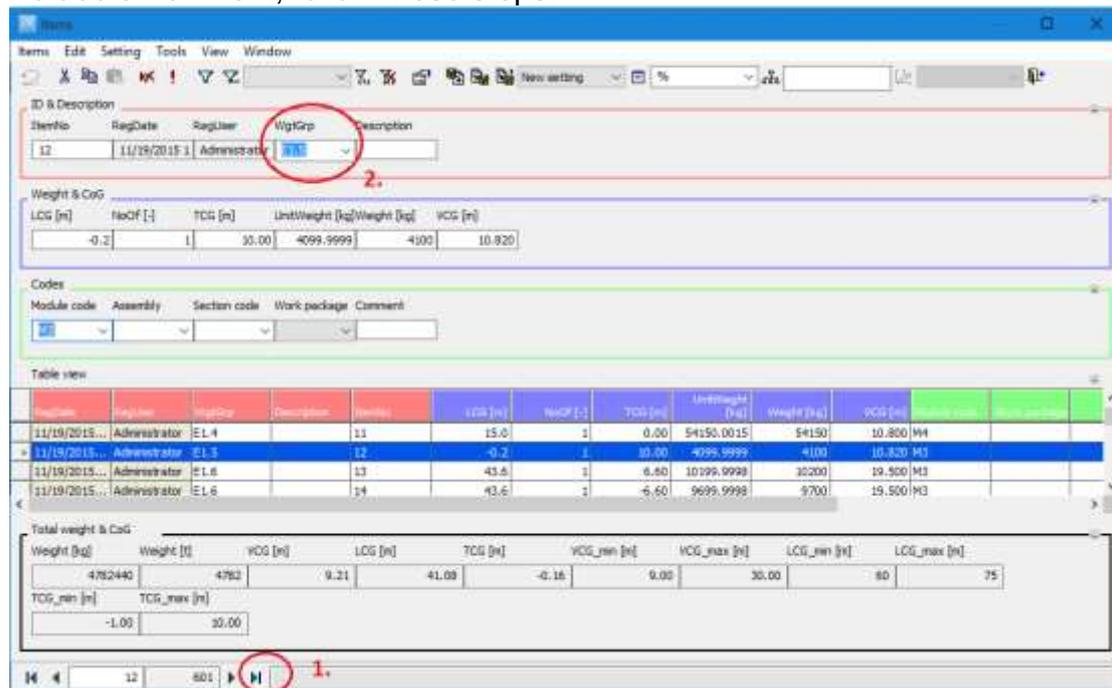
Navigation – go to first, previous, next or last item.

2.6.1 Adding Items

The **Items** dialog box is mainly used to add, edit and delete weight items. New weight items can be added and edited both using the **Single record view** and the **Table view**.

Adding an item:

To add a new item, follow these steps:



Click the **Last item** button (1.). This will clear the fields of the single record view. This step is only necessary if there already are weight items defined in the weight group.

Click on the **WgtGrp** field (2.), and select the weight group from the dropdown list.

Jump to the next field by pressing the **TAB** key.

Enter a unique number in the **ItemNo** field, e.g. 11001, 1100ABCd.

Press the **TAB** key to jump to the **Description** field. Enter a description, e.g. 'Shell Plates'.

Continue jumping to the next fields pressing the **TAB** key and add data to the weight item.

When you have completed entering data, click one of the **Navigation** buttons (First, Previous, Next or Last) to finalize the registration of the item.

Adding an item using the **Table view**

Alternatively, new items can be added using the table view.

Select the **last record** in the table using the mouse, or click the **Last item** button on the toolbar.

Activate the **WgtGrp** cell in the table by clicking on it with the mouse or by pressing the **ENTER** key. Select **weight group** from the dropdown list.

Press the **TAB** key to jump to the **ItemNo** cell, and enter a unique item number, e.g. 11002

Press the **TAB** key to jump to the **Description** cell and enter a description.

Continue entering data for the item by jumping to new fields pressing the **TAB** key.

After you have finished entering data for the new weight-item, select a different item (click another row in the table). This will ensure that the weight-item is properly registered.

The screenshot shows a software window with a menu bar (Items, Edit, Setting, Tools, View, Window) and a toolbar. Below the toolbar are several input fields: 'ID & Description', 'WgtGrp', 'ItemNo', 'Description', 'Register', 'RegDate', 'Weight & Cost' (with sub-fields: Unitweight [kg], Weight [kg], VCG [m], LCG [m], TCG [m]), 'Codes' (with sub-fields: Assembly, Module code), and 'Table view'. The 'Table view' section contains a table with columns: ItemNo, Description, Register, RegDate, WgtGrp, Unitweight [kg], Weight [kg], VCG [m], LCG [m], TCG [m], and a 'Status' column. The table has four rows, with the last row (ItemNo: 603, Description: Shell Plates) highlighted in blue. Below the table is a 'Total weight & Cost' section with fields for Weight [kg], WgtGrp [I], VCG [m], LCG [m], TCG [m], VCG_min [m], VCG_max [m], LCG_min [m], and LCG_max [m]. At the bottom of the window is a navigation bar with buttons for 'First', 'Previous', 'Next', and 'Last'. Red circles and numbers 1, 2, and 3 are overlaid on the image: 1 is on the 'Next' button, 2 is on the 'WgtGrp' cell of the last row in the table, and 3 is on the 'Description' cell of the last row in the table.

2.6.2 Deleting Items

Using the mouse, select the item in the table. You can either select one single item or several items. To perform a multiple selection, press the **SHIFT** key on the keyboard while selecting. Pressing the **CTRL** key adds or subtracts items in the selection.

Click the **Delete** button on the toolbar. Alternatively, right-click the mouse above the selection and select **Delete Record** from the menu. The **Delete Record** command is also available on the **Edit** menu or by pressing **CTRL+D**.

2.6.3 Cut, Copy and Paste

The **Items** dialog box has Cut, Copy and Paste functionality for the items listed in the table. Items can be cut or copied from ShipWeight and pasted into a spreadsheet, e.g. Excel. Select one or several rows in the table. Click the **Cut** or **Copy** button on the toolbar or from the **Edit** menu select **Cut** or **Copy**. Alternatively, press **CTRL+X** to cut or **CTRL+C** to copy.

Seemingly, large numbers are rounded when copying from ShipWeight to Excel. For example, the unit weight 7777777.7777 in ShipWeight will display as 7777778 in Excel.

To display the correct value in Excel, the proper Cell-formatting must be set. Mark all the cells containing numbers, right-click the mouse, and select **Format Cells....** In the **Format Cells** window, the cells are of the category **General**. This should be changed to **Number**. Also set **Decimal places** to **4**. Excel will now correctly display 7777777.7777.

Data can be copied from a spreadsheet to ShipWeight. Before copying data into ShipWeight, make sure the item numbers are not duplicated. Also verify that the order of the data in the spreadsheet is the same as the order of the columns in the table of the **Items** dialog box. To check that the order of the data is correct, it can be useful to use the **Copy Heading** option from the **Edit** menu of the **Items** dialog box. Now, the heading of the table view can be pasted into the spreadsheet to verify the order of the data.

To copy the data back into ShipWeight, select and copy the data in the spreadsheet. In ShipWeight, select **Paste** either on the toolbar, the **Edit** menu or by pressing **CTRL+V**. The items will now be pasted into the table.

Please note that it is not advisable to copy very large figures from Excel to ShipWeight without first formatting the cells in Excel to **Number** with a proper number of decimal places.

2.6.4 Filtering

The **Item Filter** dialog box is used to create a filter to control which items to list. The dialog box can be accessed from the **Tools** menu by selecting **Filter > Apply...** Alternatively, click the **Apply filter** button on the toolbar.

The **Item Filter** dialog box is divided into three areas; **Filter name** frame, **Expression** area and **Filter** textbox.

The **Filter name** frame is used to save and load filter settings. To save the current setting, enter a **Name** and click the **Add** button.

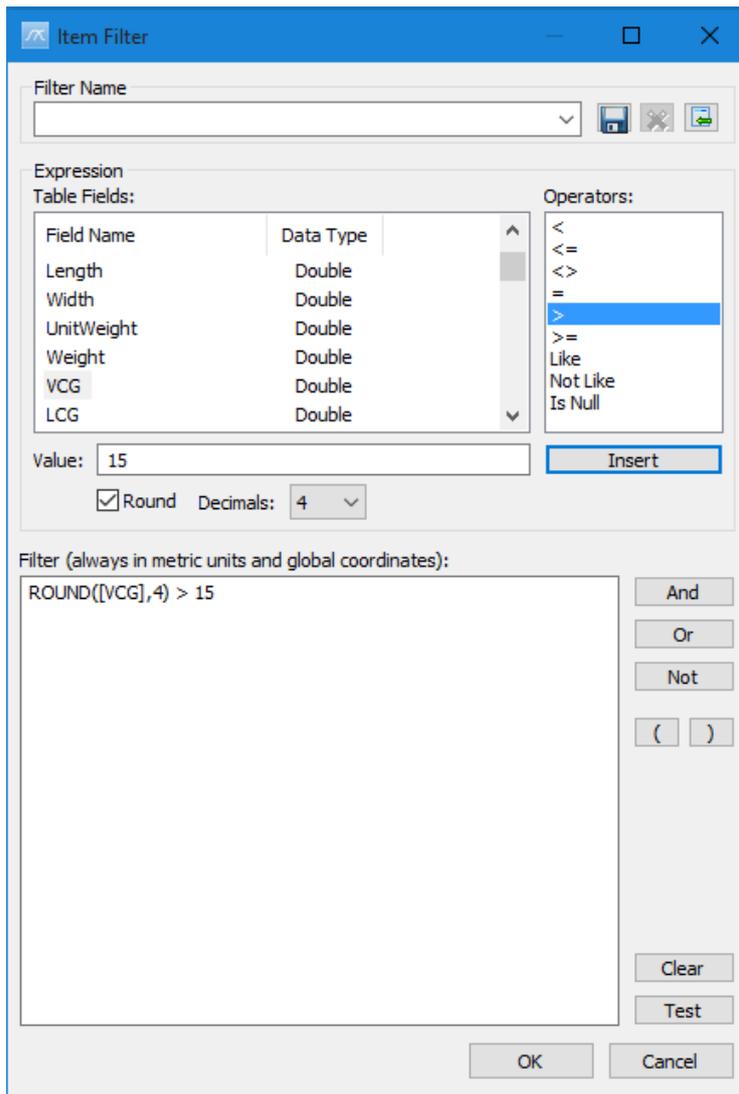
To load a saved filter, simply select it from the **Filter name** dropdown list.

The **Expression** area is used to create the filter. First, select a **Table Field** and an **Operator**, e.g. **VCG** and **>**. Next enter a **Value**, e.g. **15**. As default, **Round** has been checked **On**, and **Decimals** are set to **4**.

Finally, click **Insert**. The filter **ROUND ([VCG], 4) > 15** will now show in the **Filter** text box at the lower half of the dialog box.

The filter can be extended using the **And**, **Or**, **Not**, **(and)** buttons at the right side of the **Filter** text box.

To apply the filter, click **OK**. Now only items matching the filter will be listed in the table-view.



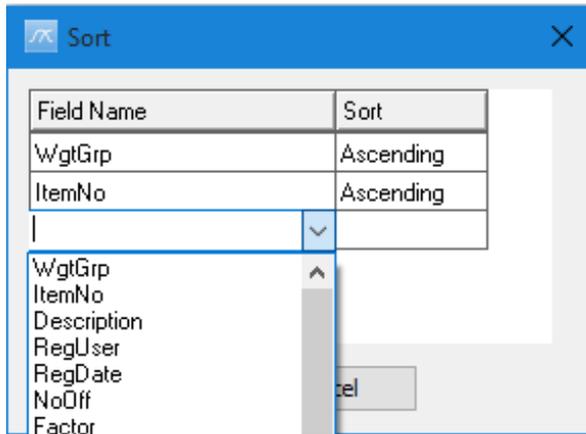
2.6.5 Sorting

The **Sort** dialog box is used to apply rules for sorting the items of the table-view. The dialog box is available from the **Tools** menu, select **Sort > Apply...** Alternatively, click the **Apply sort** button on the toolbar.

To add a new line in the table, click the last record (empty line) with the mouse. The cell will now include a dropdown list. Click the **Arrow** button to display the list. Select one of the **Field Names**, e.g. **RegUser**. Similarly, to set the order of the sorting, click the **Data Type** column to display a dropdown list. Select **Ascending** or **Descending** in the **Sort** column.

Click **OK** to apply the rules for sorting.

It is also possible to perform a quick sorting by clicking the column header of the table. To change the sorting from ascending to descending or vice versa, simply click the column header once more.



2.6.6 Change weight group code

The easiest way of moving weight items from one weight group to another is to use the **Change Wgt.grp Code...** function. Select the desired items in the table, and from the **Items** menu select **Change Wgt.grp Code....** The **Select item weight group** dialog box will appear. Choose a weight group and click **OK**.

2.6.7 Code Enveloped Items

From the **Items** menu, the function **Code Enveloped Items...** will tag selected items to a code structure according to given CoG limits. Select a set of items and choose **Code Enveloped Items....** The **Select code type** dialog box will be opened. Select one of the available code types, which have defined CoG limits, and click **OK**. Now the items will be tagged to codes according to its CoG.

2.6.8 Set Codes by Mapping

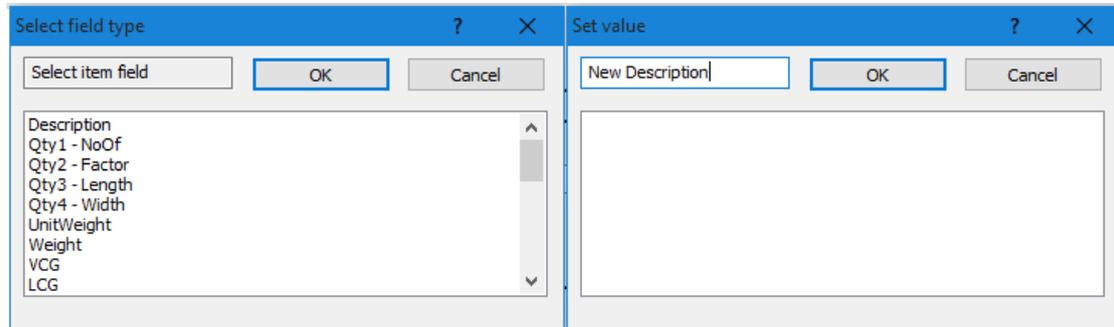
Selected items can be tagged to a code structure in compliance with a defined mapping between two different code structures. This requires that the mapping between the two code structures has already been defined. First you must select which code type should be updated. Next, select which code type the update should be based on.

2.6.9 Set field values

You can use the **Set Field Values** function to edit several weight items in one operation. The fields available for editing are:

- Description
- Quantities
- Weight (if not read-only)
- CoG
- Extensions (CoG_min and CoG_max)
- Codes

Select the desired items, and from the **Items** menu, choose **Set Field Values...** Next, choose the field to be changed in the **Select field type** dialog box and click **OK**. The **Set value** dialog box will appear. Type a value into the field at the upper left corner of the dialog box or select one of the available values in the list below. Click **OK** to apply the changes.



2.6.10 Set SFI Codes

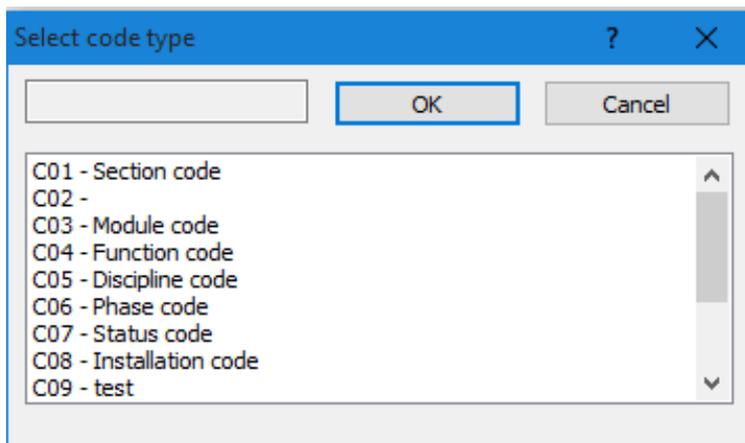
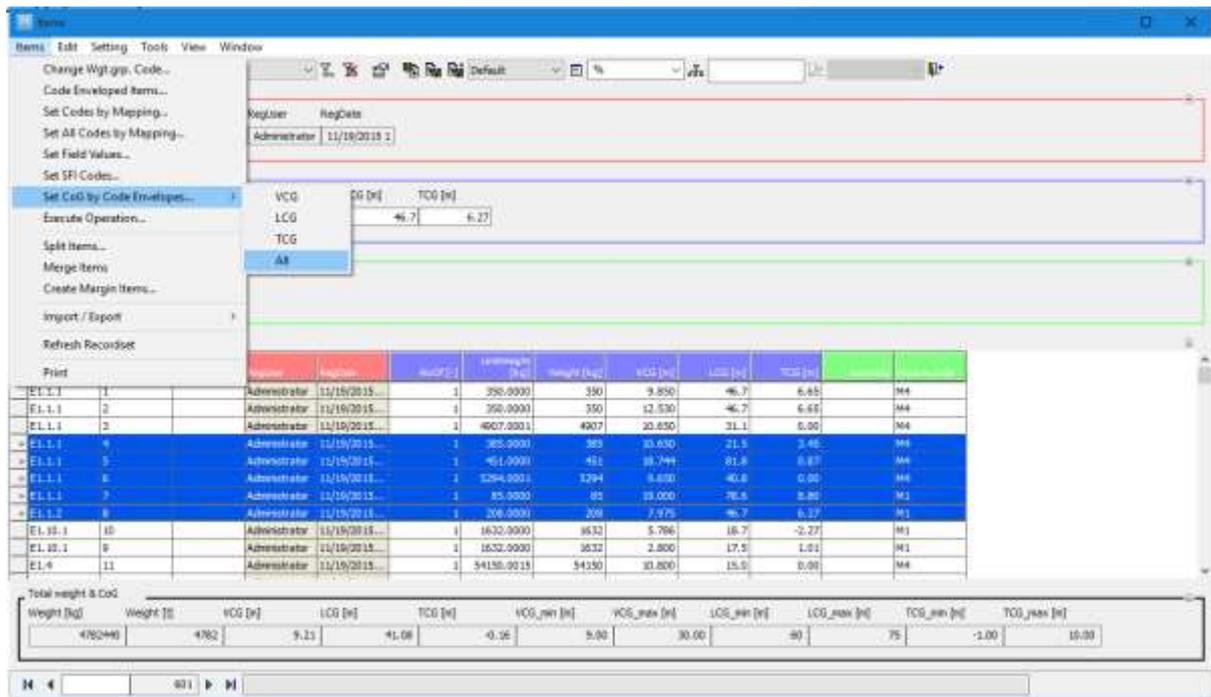
From the **Items** menu the function **Set SFI Codes...** will add the complete SFI code to the selected code structure.

2.6.11 Set CoG by Code Envelopes

The **Set CoG by Code Envelopes** function enables multiple definitions of CoG based on codes. This function is found on the **Items** menu of the **Items** dialog box.

In the table-view, select the weight items to update. Alternatively, press **CTRL+A** to select all items. Next, select **Set CoG...** on the **Items** menu and choose **VCG**, **LCG**, **TCG** or **All**.

Next, a dialog box asking for code type will pop up. Select the **code type** to be used for setting the CoG and click the **OK** button. CoG for the selected items will now be calculated as halfway between CG_min and CG_max for the selected code type.



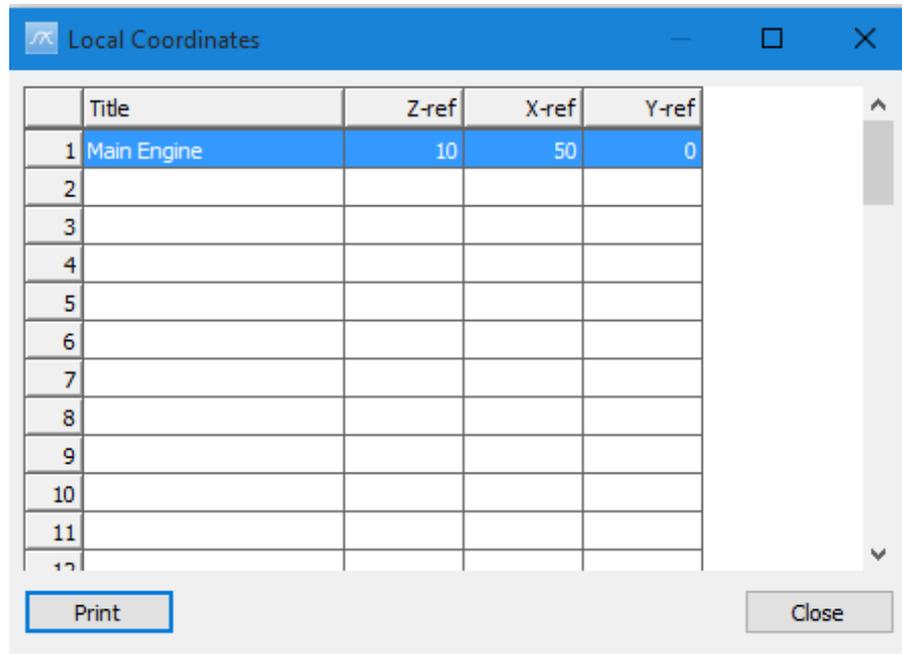
2.6.12 Local coordinates

Local coordinate systems are only available in the **Items** dialog box. To set up a local coordinate system, click the **Local coordinates** button on the toolbar, or from the **Setting** menu select **Local coordinates**.

The **Local coordinates** dialog box includes a grid with four columns. To create a local coordinate system, simply fill in the fields:

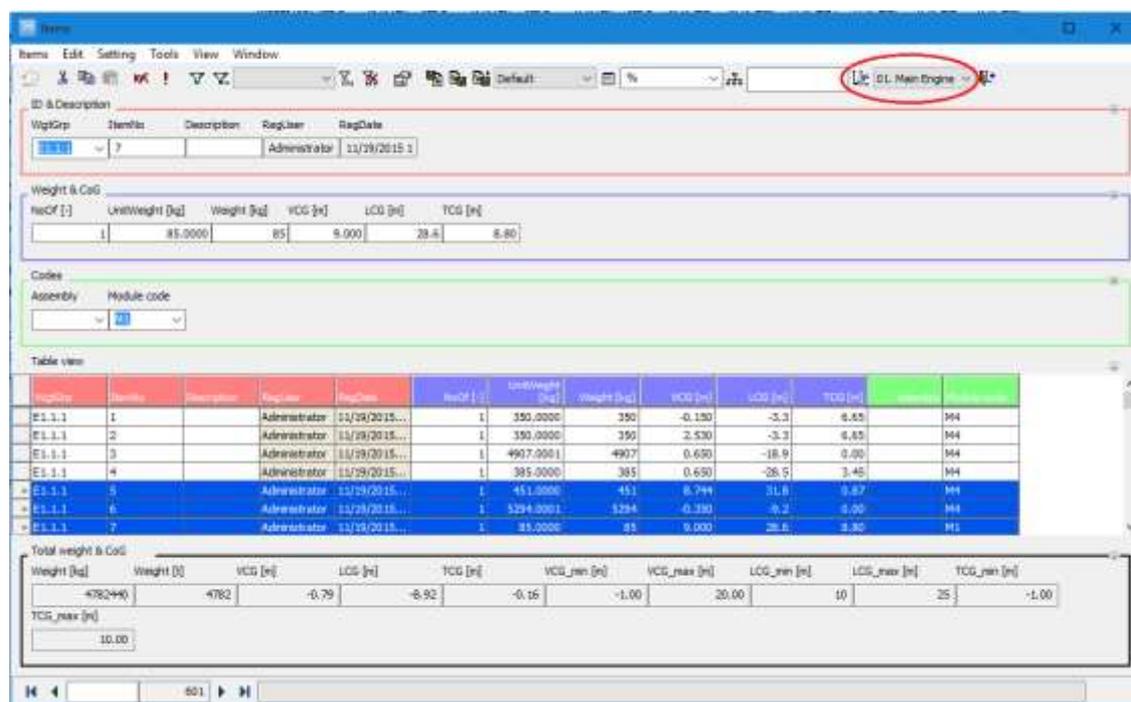
Title	Name of the local coordinate system
Z-ref	Vertical reference point
X-ref	Longitudinal reference point
Y-ref	Transverse reference point

Up to ten different local coordinate systems can be defined. The unit of the VCG, LCG and TCG reference points is determined by the Units selected in the **Options** dialog box: meters when Metric units are selected and feet when US units are selected. Please note that the reference points are not converted when changing Units from Metric to US units and vice versa.



When you have finished adding/editing local coordinate systems, click the **Close** button to close the dialog box.

To activate a local coordinate system, simply select it from the **Local coordinates** dropdown list on the toolbar of the **Items** dialog box.



2.6.13 Split item

The **Split item...** dialog box is used to divide an item into two or more parts. In the **Items** dialog box, select a weight item. From the **Items** menu, choose **Split item....**

Next, select the number of sub-items to split the item into. Choose whether to split the weight or not. Select how to treat the original item: **Delete**, **Keep remainder** or **Keep unchanged**.

Click the **OK** button to create the new items and close the dialog box.

Split Item...

Split Into Number of: Split Items Equally Do Not Split Weight

Split CoG & Extension: VCG LCG TCG

No.	ItemNo	Description	Weight	Percentage
1	5_01	: Split item no. 01	225.500	50%
2	5_02	: Split item no. 02	225.500	50%

E1.1	5		451.000	100%
------	---	--	---------	------

Original Item: Delete Keep Remainder Keep Unchanged

E1.1	5		451.000	
------	---	--	---------	--

2.6.14 Check CoG

Selecting **Check CoG** in the **Options** dialog box on the **Item** tab, will enable automatically checking of sanity between CoG and given extension. The CoG check is only active in the **Items** dialog box.

The user gets a warning if:

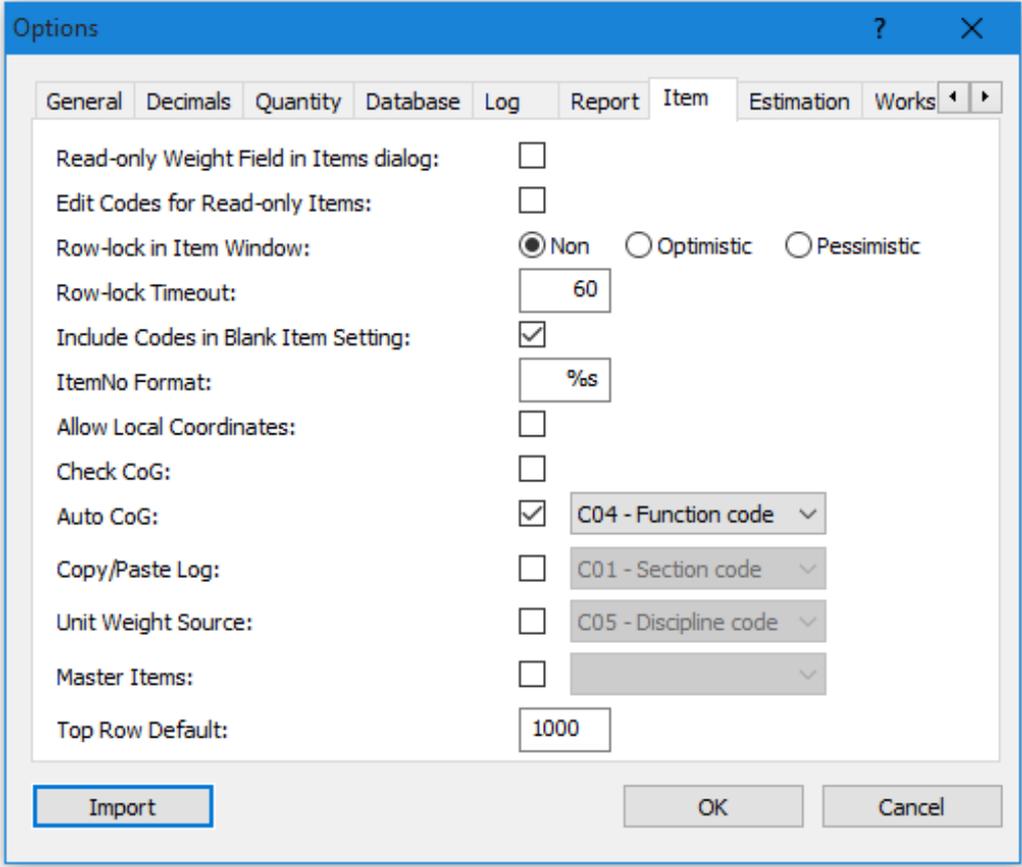
- CoG is set outside CoG_min / CoG_max
- CoG_min is set fore of CoG
- CoG_max is set aft of CoG

Please note that this is only a warning. The user will not be prevented from setting an incorrect CoG.

2.6.15 Auto CoG

The **Auto CoG** function will automatically define CoG and extension for weight items. The CoG and extension values are based on code-values.

The **Auto CoG** function is turned on/off on the **Item** tab of the **Options** dialog box. In the **Options** dialog box you also specify which code type the CoG will be calculated from.

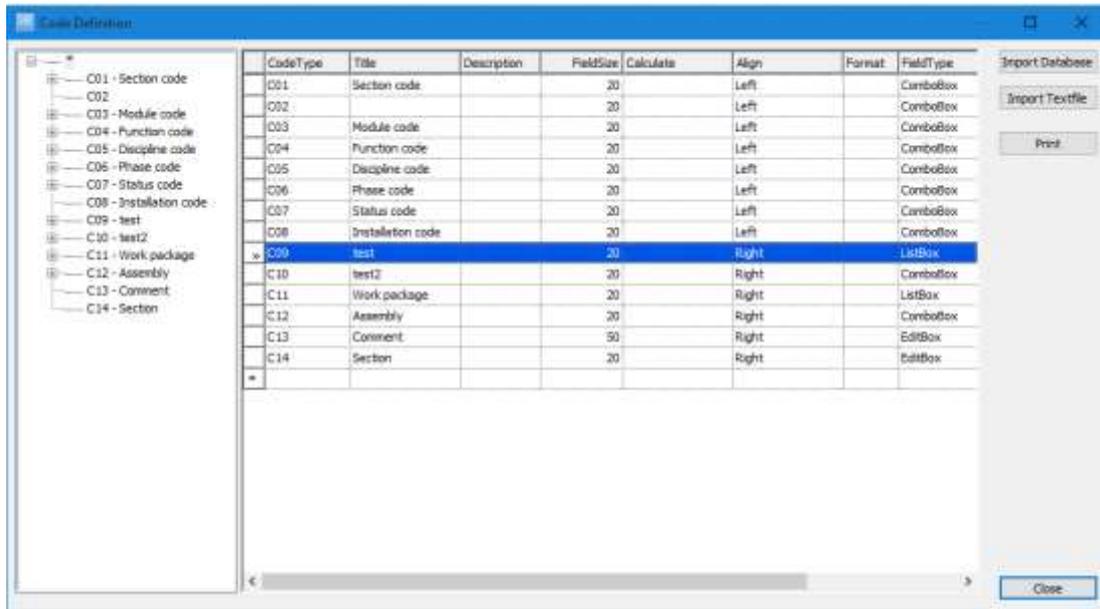


The screenshot shows the 'Options' dialog box with the 'Item' tab selected. The 'Auto CoG' checkbox is checked, and the dropdown menu next to it is set to 'C04 - Function code'. Other settings include 'Row-lock in Item Window' set to 'Non', 'Row-lock Timeout' set to '60', and 'Top Row Default' set to '1000'. The 'Import', 'OK', and 'Cancel' buttons are visible at the bottom.

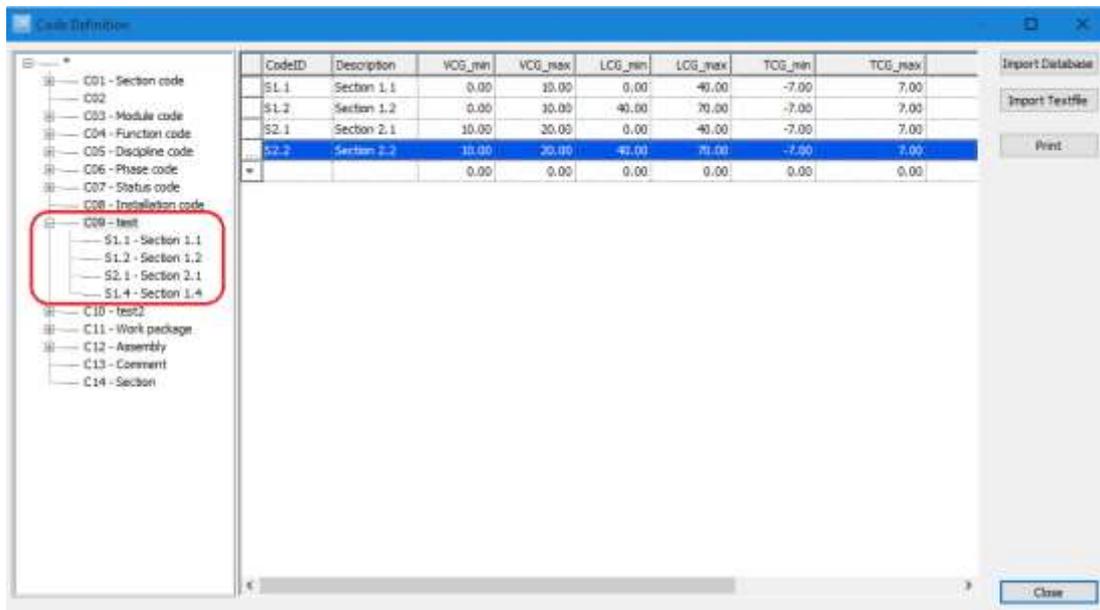
Option	Value
Read-only Weight Field in Items dialog:	<input type="checkbox"/>
Edit Codes for Read-only Items:	<input type="checkbox"/>
Row-lock in Item Window:	<input checked="" type="radio"/> Non <input type="radio"/> Optimistic <input type="radio"/> Pessimistic
Row-lock Timeout:	60
Include Codes in Blank Item Setting:	<input checked="" type="checkbox"/>
ItemNo Format:	%s
Allow Local Coordinates:	<input type="checkbox"/>
Check CoG:	<input type="checkbox"/>
Auto CoG:	<input checked="" type="checkbox"/> C04 - Function code
Copy/Paste Log:	<input type="checkbox"/> C01 - Section code
Unit Weight Source:	<input type="checkbox"/> C05 - Discipline code
Master Items:	<input type="checkbox"/>
Top Row Default:	1000

For the **Auto CoG** function to work properly, the code type selected as basis for **Auto CoG** must include code values. For each code value, VCG_min, VCG_max, LCG_min, LCG_max, TCG_min, TCG_max must be defined.

To define an **Auto CoG** code, open the **Code Definition** dialog box. Add a code type, e.g. C05. Make sure FieldType is set to ListBox.

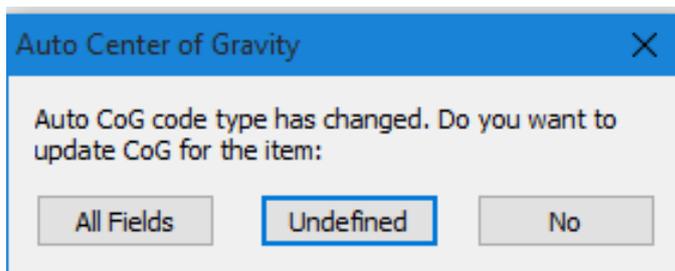
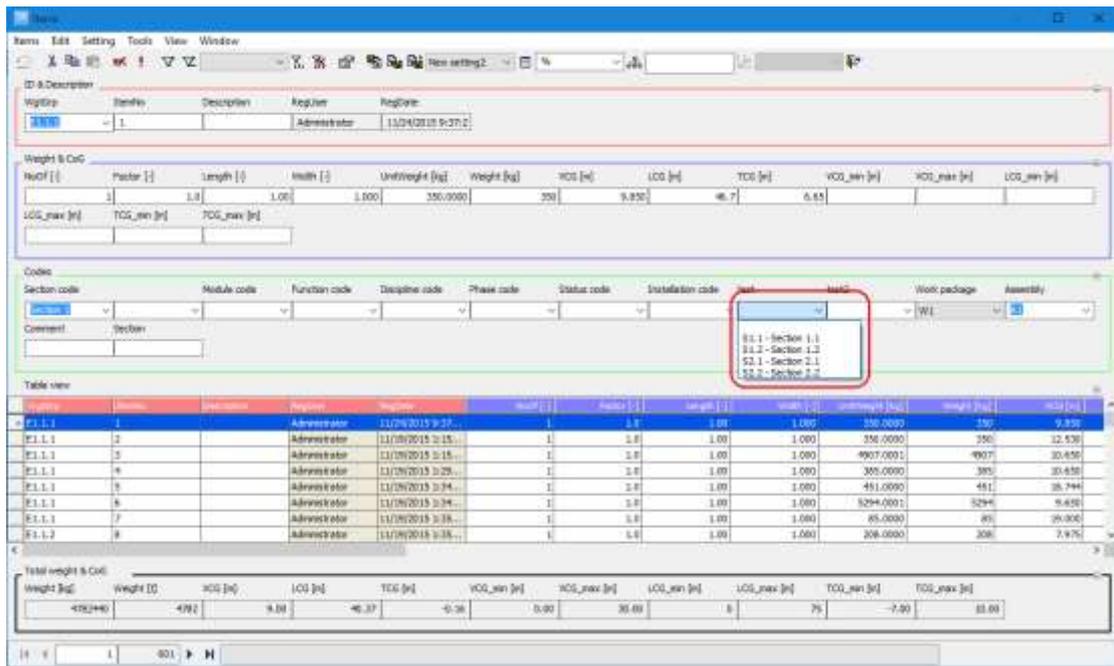


Click on the new code type in the tree view, in this case C09. In the table at the right side of the dialog box, add a set of code values. Make sure to define the VCG_min, VCG_max, LCG_min, LCG_max, TCG_min, TCG_max values for each code value. For more information on creating codes, please refer to Chapter ['5.3 The Code Definition dialog box'](#).



In the **Items** dialog box, when this code is changed for a weight item, the user is asked whether to update CoG for undefined CoG, all or none.

CoG for the item will be calculated as halfway between CG_min and CG_max for the selected code type.



2.6.16 Copy/paste log

The **Copy/paste log** function, allows you to automatically track copy and paste operations in the **Items** dialog box. When a weight item is copied from or pasted into the **Items** dialog box, the following data is logged:

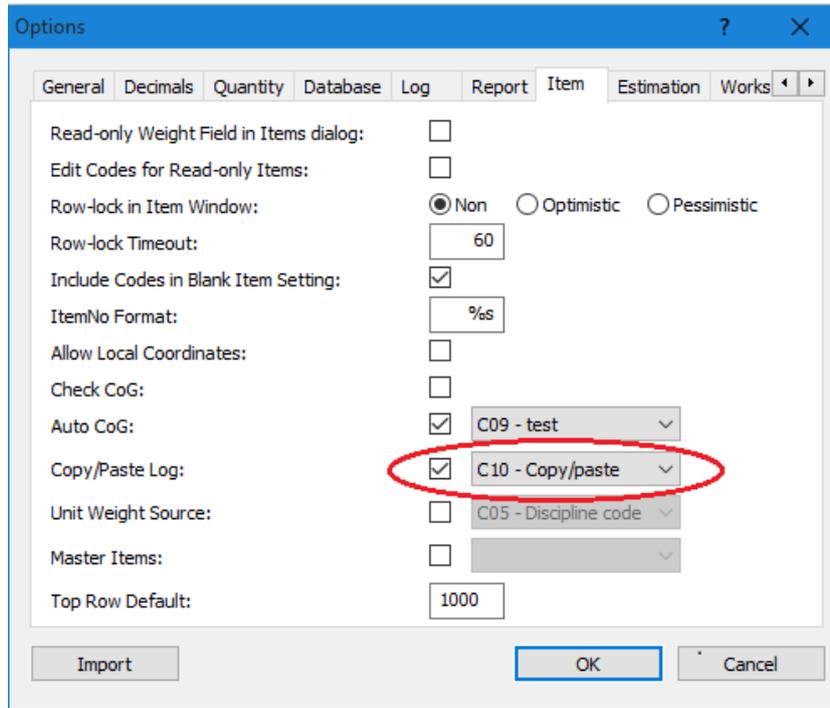
- Operation (Copied or Pasted)
- User
- Date & Time

Example of copy/paste logging:

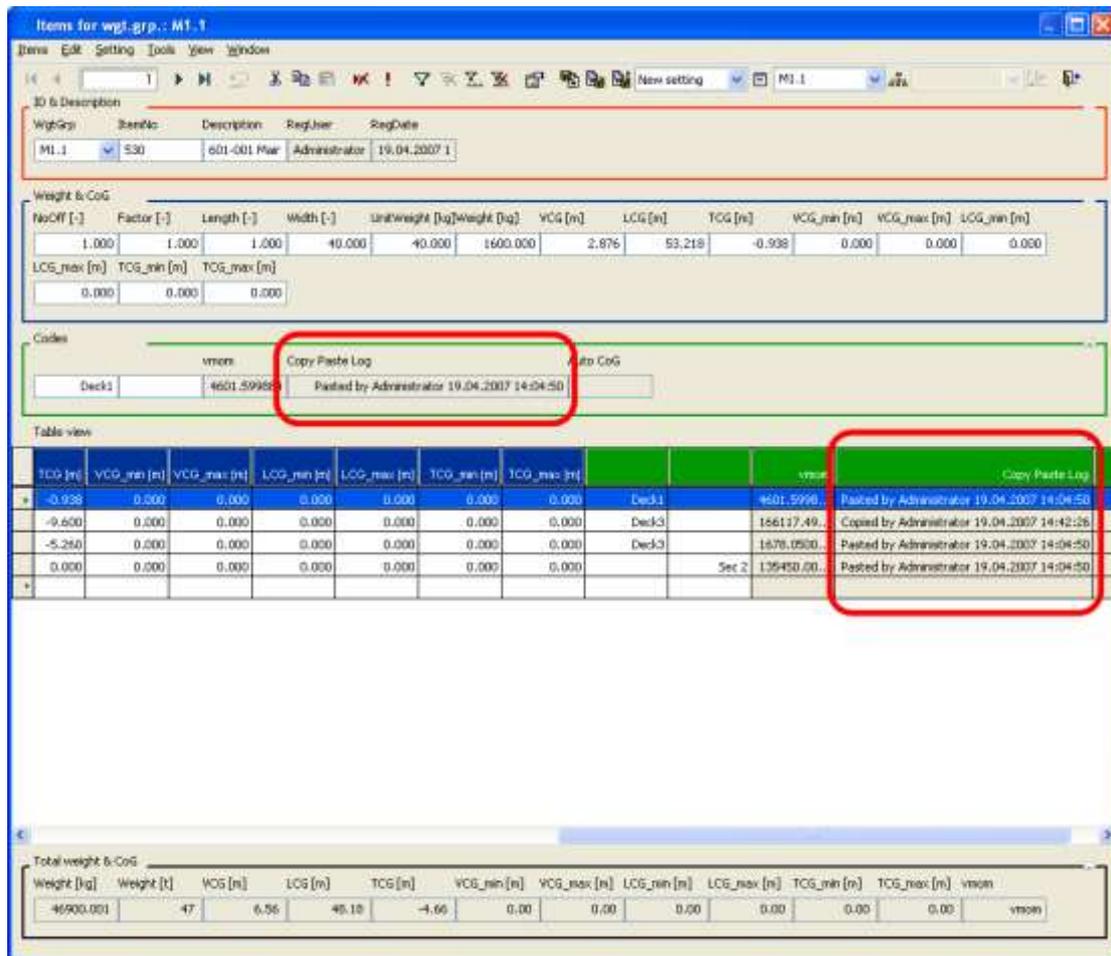
Copied by Administrator 19.04.2011 13:55:21
 Pasted by Administrator 19.04.2011 13:55:32

The copy/paste log data is stored in a code-field. To activate the Copy/paste log, you must first define the code to hold the Copy/paste log data. It is recommended to use field-type 'ReadOnly' for this code.

Next, you must go to the **Item** tab of the **Options** dialog box and select **Copy/paste log**. Select a code from the **Copy/paste log** dropdown box.



In the **Items** dialog box, make sure to select an **item setting** showing the **Copy/paste log** code.



2.6.17 Cell Formula in Items dialog box

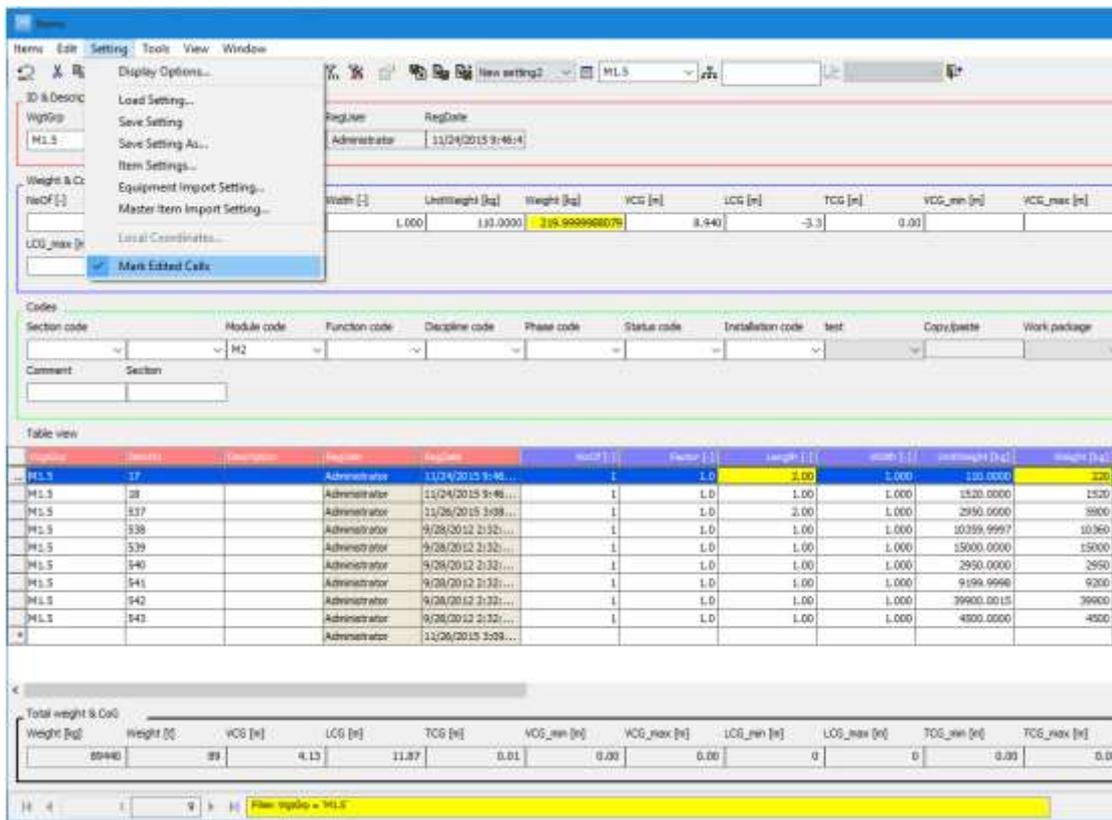
A formula typed into a grid cell in the **Items** dialog box (i.e. =5*4+2) is stored for later use. If a grid cell value is calculated from such formula, this grid cell will show the formula in a tooltip when the mouse pointer is resting on the cell. When editing the grid cell later, the calculated result value transforms back to this formula in the cell.

2.6.18 Frame Conversion (entering frame numbers in Items dialog box)

UnitWeight [kg]	Weight [kg]	VCG [m]	LCG [m]
40.0000	1600	2.876	53.2
150.0000	22500	7.383	50.9
15.0000	225	7.458	55.5
22575.0008	22575	6.000	45.0
22.0000	22	2.600	#15

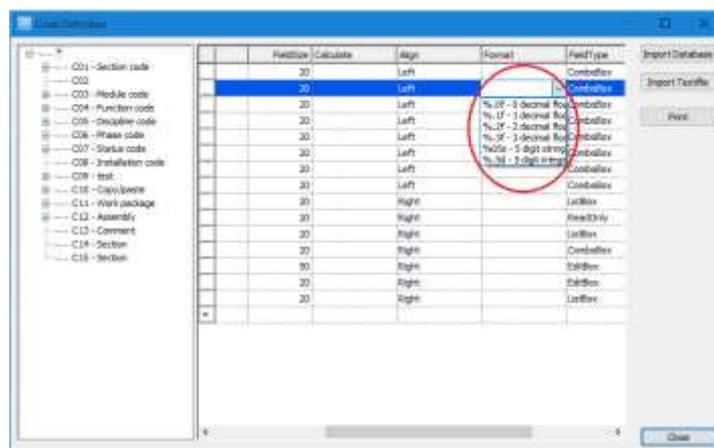
If **Frame spacing** is defined in **Project Info** dialog box (menu **View > Project Info...**) then frame number can be entered into the LCG, LCG_min and LCG_max field of the **Items** dialog box by typing a # sign in front of the value. The frame number will then automatically be converted to Metric or US units (depending on **Units** setting) according to the **Frame spacing** defined.

2.6.19 Marking Changed Values in Items dialog box



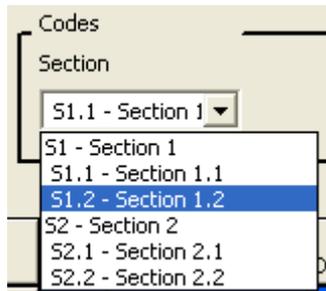
If the selection **Mark Edited Cells** has been set in the **Setting** menu in the **Items** dialog box, every cell that gets edited is marked yellow when working with a weight item. Moving to another item will reset the coloring of the edited cells back to white.

2.6.20 Easier formatting of values in the Code Definition dialog box



The **Format** column in the **Code Definition** dialog box has a set of predefined formats that can be selected from the dropdown list appearing when a cell in this column gets focus.

2.6.21 Description and Indentation of Custom Codes in dropdown lists



The description of the sub code (in addition to the Code ID) is shown in dropdown lists in the **Items** dialog box for custom codes defined as ListBox or ComboBox. The description is only shown in the dropdown list for reference purposes; it is not brought into the field when selection is done. Furthermore, the sub codes will be shown indented according to their defined hierarchy structure.

2.6.22 “Quick Dump” to Excel from Items dialog box

The screenshot shows the 'Items' dialog box with the 'Import / Export' menu open. The 'Export Excel' option is selected. The main window displays a table of items with the following data:

Code	RegUser	RegDate	Weight [kg]	VCG [m]	LCG [m]	TCG [m]
E1.1.1	Administrator	11/24/2015 9:37...	350.0000	350	9.850	46.7
E1.1.1	Administrator	11/26/2015 2:21...	350.0000	350	9.850	46.7
E1.1.1	Administrator	11/19/2015 1:15...	350.0000	350	9.850	46.7
E1.1.1	Administrator	11/19/2015 1:29...	350.0000	350	9.850	46.7
E1.1.1	Administrator	11/19/2015 1:34...	350.0000	350	9.850	46.7
E1.1.1	Administrator	11/19/2015 1:34...	350.0000	350	9.850	46.7
E1.1.1	Administrator	11/19/2015 1:35...	350.0000	350	9.850	46.7
E1.1.2	Administrator	11/19/2015 1:35...	350.0000	350	9.850	46.7

The 'Total weight & CoG' summary table at the bottom shows the following values:

Weight [kg]	Weight [t]	VCG [m]	LCG [m]	TCG [m]	VCG_min [m]	VCG_max [m]	LCG_min [m]	LCG_max [m]
4789472	4789	8.99	-40.32	-0.18	0.00	30.00	0	.79
TCG_min [m]	TCG_max [m]							
-7.00	30.00							

2.6.22.1 Export

The **Items** dialog box has a function for exporting and importing the **table view** data to and from **Excel**. This function is currently limited to table views that contain 30.000 or less items. The **Export** will use the current **item setting** for the **table view** as definition to which columns to export and export the weight items that are loaded into the **Items** dialog box at the time of export.

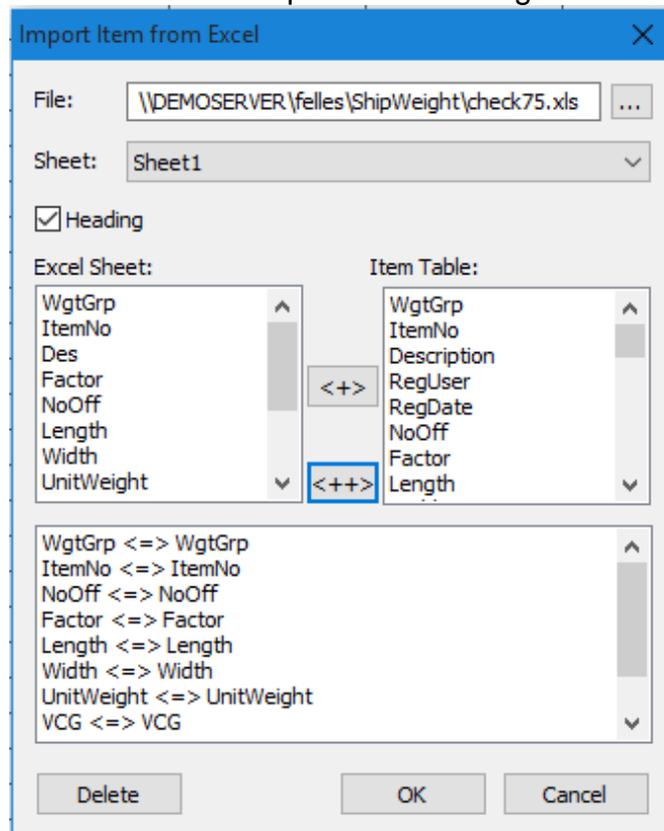
The **Export** function is on menu **Items > Import / Export > Export Excel** in **Items** dialog box.

2.6.22.2 Import

When importing, the **Import Item from Excel** dialog box pops up and lets you specify the **Excel file** and **sheet** to import from, but also set up **mappings** between the columns in the **Excel sheet** and the columns in the **table view**. This mapping can be set up by selecting a column from Excel in the left list of the dialog box and select the corresponding column in the right list (representing the table view columns) and map these by clicking the **<+>** button.

If the columns to be imported are exactly the same as the one in table view (as would be the case if importing an Excel produced by the same **Items** dialog box setting), clicking the **<+>** button will set the mapping for all columns correct at once.

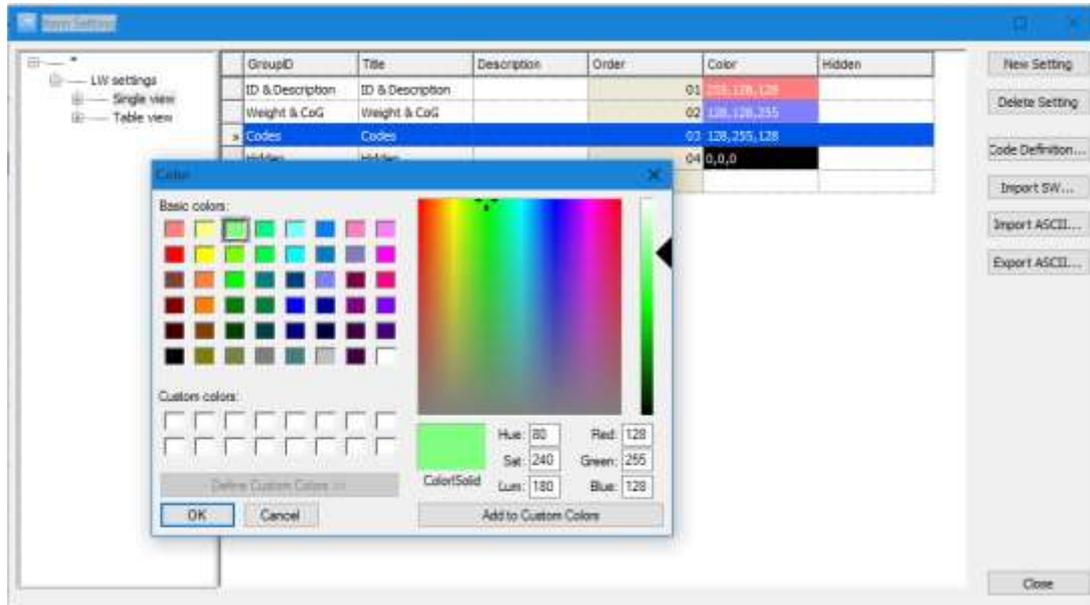
The lower part of the dialog box will show the current defined mappings. Click **OK** to start import when settings are correct.



The **Import** function is on menu **Items > Import / Export > Import Excel** in **Items** dialog box.

2.6.23 Color coding for item groups

Assigning color codes to the item groups in the **Items** dialog box can be done by double-clicking the **Color** column in the **Item setting** dialog box. This will pop up a **Color** dialog box for color selection.

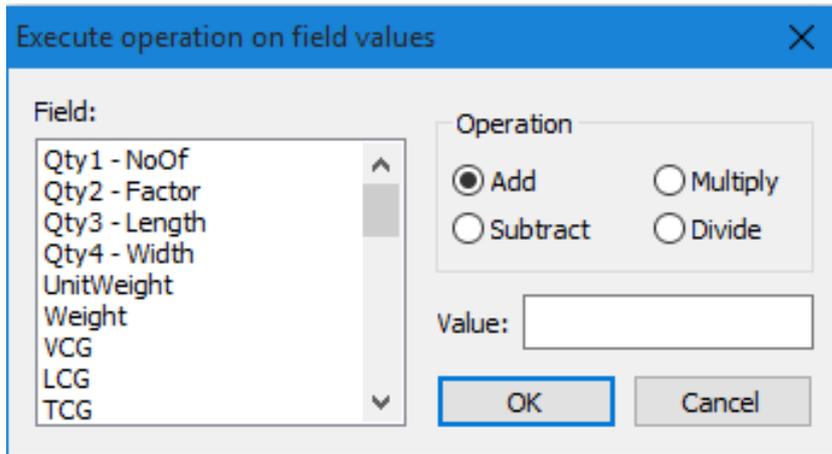


2.6.24 Merge Items

In the **Items** dialog box, several items can be merged into one single weight item by selecting (marking) weight items in the table view and from the **Items** menu select **Merge Items**.

2.6.25 Execute function in Items dialog box

Mathematical operations such as adding, subtracting, multiplying and dividing can be performed on item values in the **Items** dialog box, on a single item or on a multiple selection of items. From the **Items** menu, select **Execute Operation...** to open a pop up dialog box that lets you select the column you want to carry out the mathematical operation on, specify type of operation and function value for the operation.

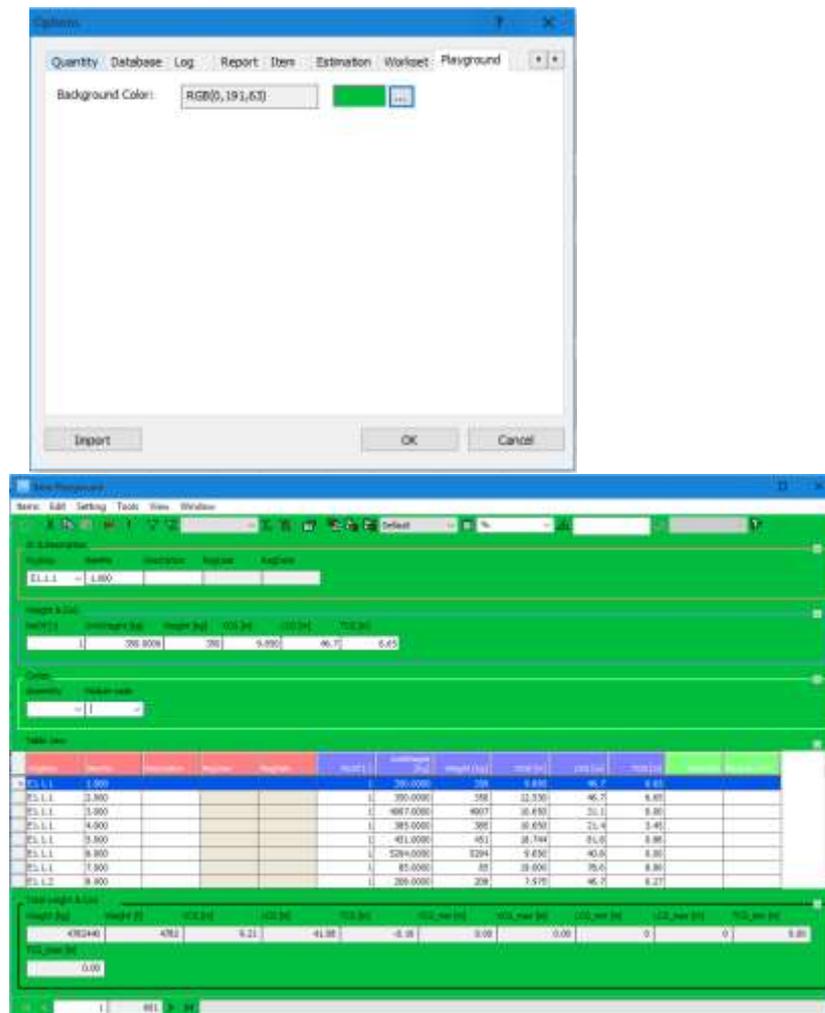


When clicking **OK**, the selected operation will be carried out on the marked weight items in the **Items** dialog box.

2.7 Playground Area and Workset

The new **Playground Area** in ShipWeight provides a sandbox environment where weight data can be changed, added, or deleted without affecting the weight data in the project. Only when the data is transferred from the playground area and back into the project, are changes included in calculations and output. The **Playground Area** can be used in two modes; with and without **Worksets**. Data in the **Playground Area** is a copy of the data in the main area.

The graphical user interface for the **Playground Area** is similar to the **Items** dialog box. To distinguish and clearly mark the **Playground Area** from the normal **Items** dialog box, a color (by choice of the user) can be selected in the **Options** dialog box.



The **Playground Area** may be opened from the **Items** menu in the main window by selecting **List Playground Items...** and then **All**, or by selecting the **Playground Area** button on the toolbar.



2.7.1 Using the Playground Area without Worksets

If the **Playground Area** is used without **Worksets**, weight items may be transferred from the project data to the playground environment by marking the items to be copied and selecting **Copy to Playground** from the **Edit** menu in the **Items** dialog box.

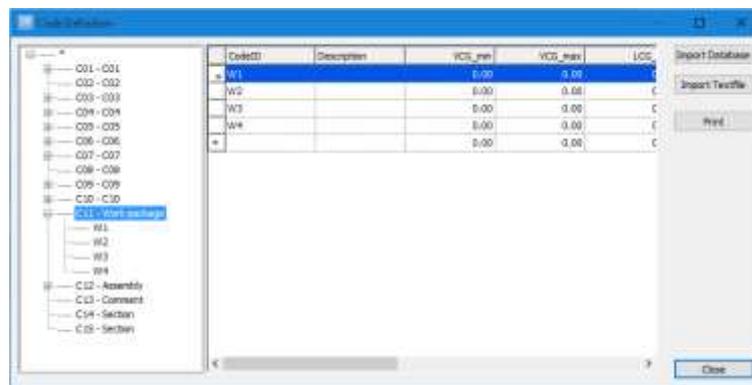
Items in the Playground Area, which have been manually added to this area, or copied in from the project data, may be transferred back to the project by marking the items to be transferred and select **Move back to Item** from the **Edit** menu while in the **Playground Area** dialog box.

Working like this is quite similar to copying items to and from Excel® or other spreadsheet tools.

2.7.2 Using Worksets with the Playground Area

When Worksets are used in ShipWeight, this sets up a stricter and more controlled way of transferring items between the Playground Area and the project.

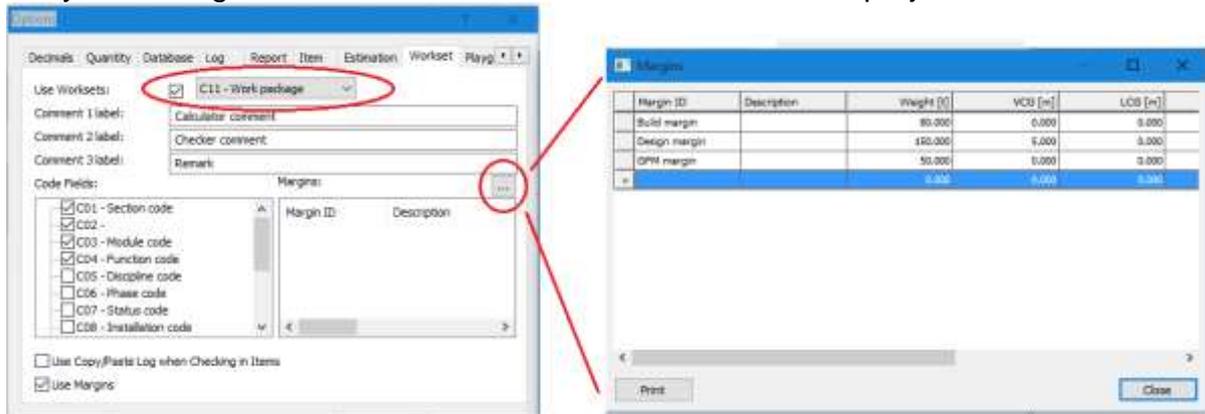
To start working with Worksets a custom code needs to be defined (in the **Code Definition** dialog box) to hold the identifier of the Workset. This custom code must be of the type **ListBox** and a list selection code must be added, each one intended to group weight items to be checked in and out of the Playground Area.



Picture: Custom Code defined to group weight items for Playground Area

Once the custom codes have been defined, Worksets must be enabled and proper settings for the Playground Area must be defined in the **Options** dialog box. In the **Workset** tab in the **Options** dialog box, Worksets are enabled by checking the checkbox **Use worksets**, followed by selecting the custom **Code** that was set up to identify the Worksets. This is done in the dropdown list to the right of the checkbox. Other settings include selecting codes to be tracked

for the Workset, titles for comment fields, and setting up margins to be used to carry net changes when a Workset is checked back into the project.



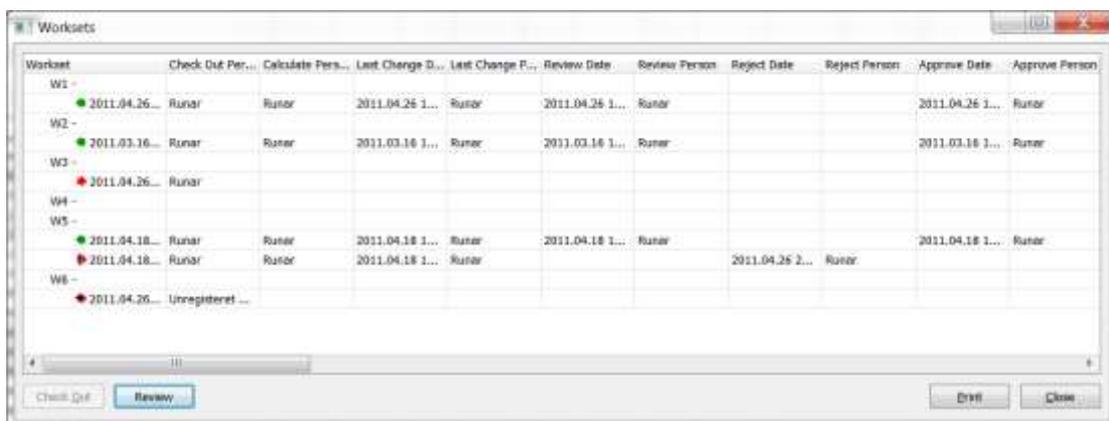
Picture: Setting Workset options and defining margins

The margins can be freely defined, including the number of margins, their names, and values. Click the **Browse** button (...) to open the **Margins** dialog box.

2.7.3 Checking a Workset with Weight Items out to the Playground Area

When the Worksets have been set up and defined, weight items tagged to the various Workset Codes can be checked out into the Playground Area. The checking of items in and out of this area is controlled in a separate **Worksets** dialog box. You can access this dialog box by selecting **Worksets...** in the **Items** menu in the main window. The **Worksets** dialog box will show a list of the defined Codes for the Workset and you can check weight items tagged to this Code by selecting the Code and click the **Check Out** button.

The **Worksets** dialog box gives an overview of the status and history of the items that have been checked out or in of the Playground Area. Columns give time and user responsible for the operations belonging to the Workset such as checking, reviewing, rejecting and/or approving.



Picture: The Workset dialog box gives an overview of status

The status and icons in the **Worksets** dialog box can be as follows:

- Red arrow means the Workset has been checked out

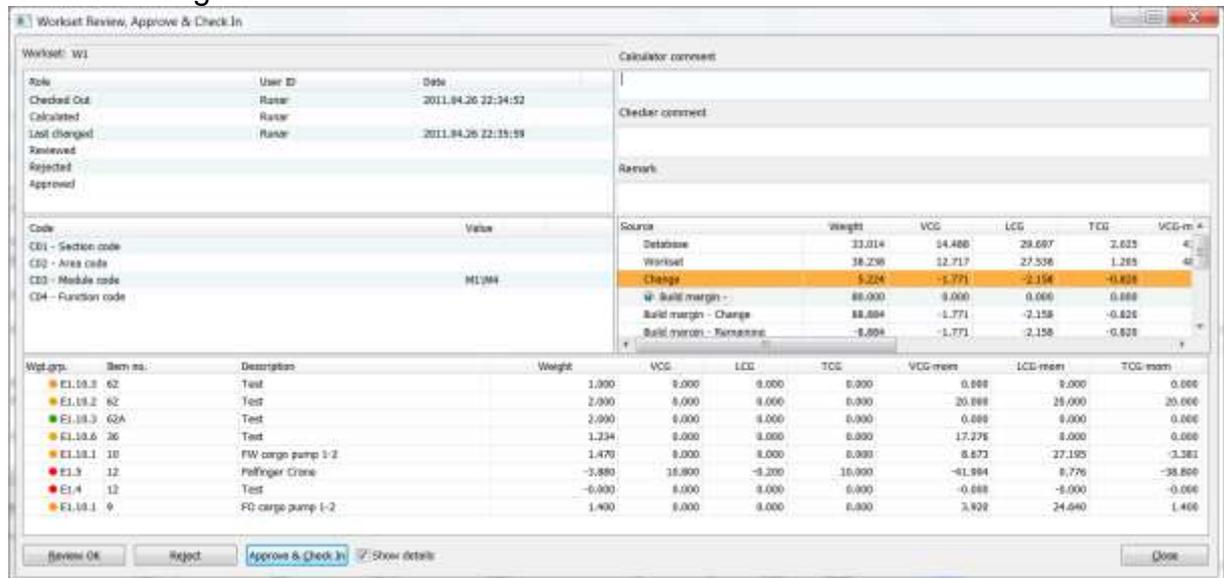
- Red arrow with exclamation mark means the Workset has been reviewed and rejected
- Red arrow with plus sign means a new Workset, previously not existing in the main data, has been imported or added manually in the Playground Area
- Green arrow means the Workset has been checked in and approved

2.7.4 Working with Checked Out Items in the Playground Area

The weight items that have been checked out through the **Worksets** dialog box can be opened in the Playground Area and changes can be made to the Workset. Weight items can be changed, added, and/or deleted. It is important to tag new items added with the correct Workset Code to make sure it is accounted for when the Workset is up for review.

2.7.5 Reviewing Worksets (Rejecting or Approving Worksets)

When a job on a Workset is finished, the change details and net change may be reviewed and the Workset may be rejected or approved. From the **Worksets** dialog box, the Workset can be reviewed by selecting the Workset marked as **Checked Out** and click the **Review** button, this will open up a **Review** dialog box.



Picture: The Review dialog box

The upper left area of the **Review** dialog box contains information about the current Workset that is up for review. This includes information about who checked it out and when it was checked out, as well as whom and when changes last were made to the Workset. Further, information is displayed for Codes belonging to the items in the Workset as selected in the **Options** dialog box.

The upper right part of the dialog box gives the opportunity to add comments (titles are defined in the **Options** dialog box) to be saved in the **Worksets** dialog box along with values for the net changes. Further in this area, information about the net change, and selection of the margin for which the net change will be deducted from is made. All of this information will be stored in the **Worksets** dialog box for future reporting when/if the Workset is approved and checked back in.

The lower part of the dialog box shows the details of the changes that have been made to the Workset. If a weight item has been changed in the Playground Area, the net change for the item will be shown in the lower area. A checkbox **Show details** is available to enable or disable the detailed information. The disabling of the detailed information will prevent slow performance of the dialog box in case of a very large number of changes in the Workset.

Colors in front of each change line indicate the type of change. Green means an added item; red means a removed item, while orange means a changed item. Once the details have been reviewed, the user has the option to:

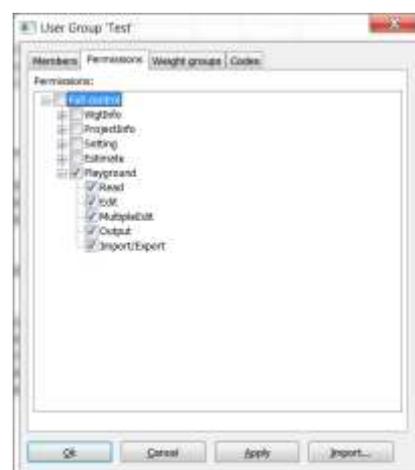
- *Reject the Workset* – in which case the items will not be checked back into the main data
- *Review the Workset OK* – in which case the change is reviewed OK but not checked back in
- *Approve and Check the Workset back into the main data*

2.7.6 Running a Report of the Net Changes

When the **Review** dialog box is closed, actions taken in this dialog box are logged in the **Worksets** dialog box. The **Worksets** dialog box has a **Print** button that will produce a simple report of all net changes that have been handled through Worksets.

2.7.7 User Permission Settings for Playground Area

A new branch in the **Permissions** tab in the **User Group** dialog box has been added to control access to the Playground Area. This makes it possible to set up user groups that are only allowed to access the Playground Area. The permission setting works in a way similar to the **Items** dialog box when run in normal mode.



2.8 Making the project ready for export to the ship database

When all the weight items are entered into the breakdown structure and the lightship weight is complete, the weights can be exported to the common ship database. However, the main objective is not to export the weights alone. In order to establish an estimation coefficient, the estimation parameters should be exported together with the weights.

To enlighten this, look at the following example:

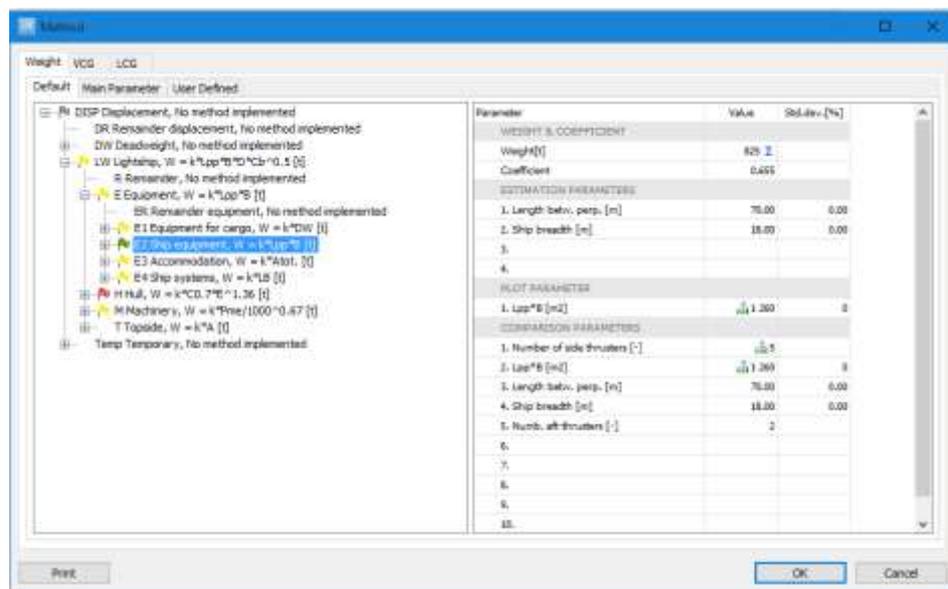
In the cargo area the weights has summed up to 300 tons. An estimation formula is attached to the cargo area weight group.

The formula goes: $W = k * V$

The weight equals a coefficient multiplied with the volume of the cargo area.

If we export just the weight and not the volume parameter, a coefficient cannot be established for later estimation. Therefore we would like to register the volume parameter. After registering all possible parameters the project will be ready to be exported.

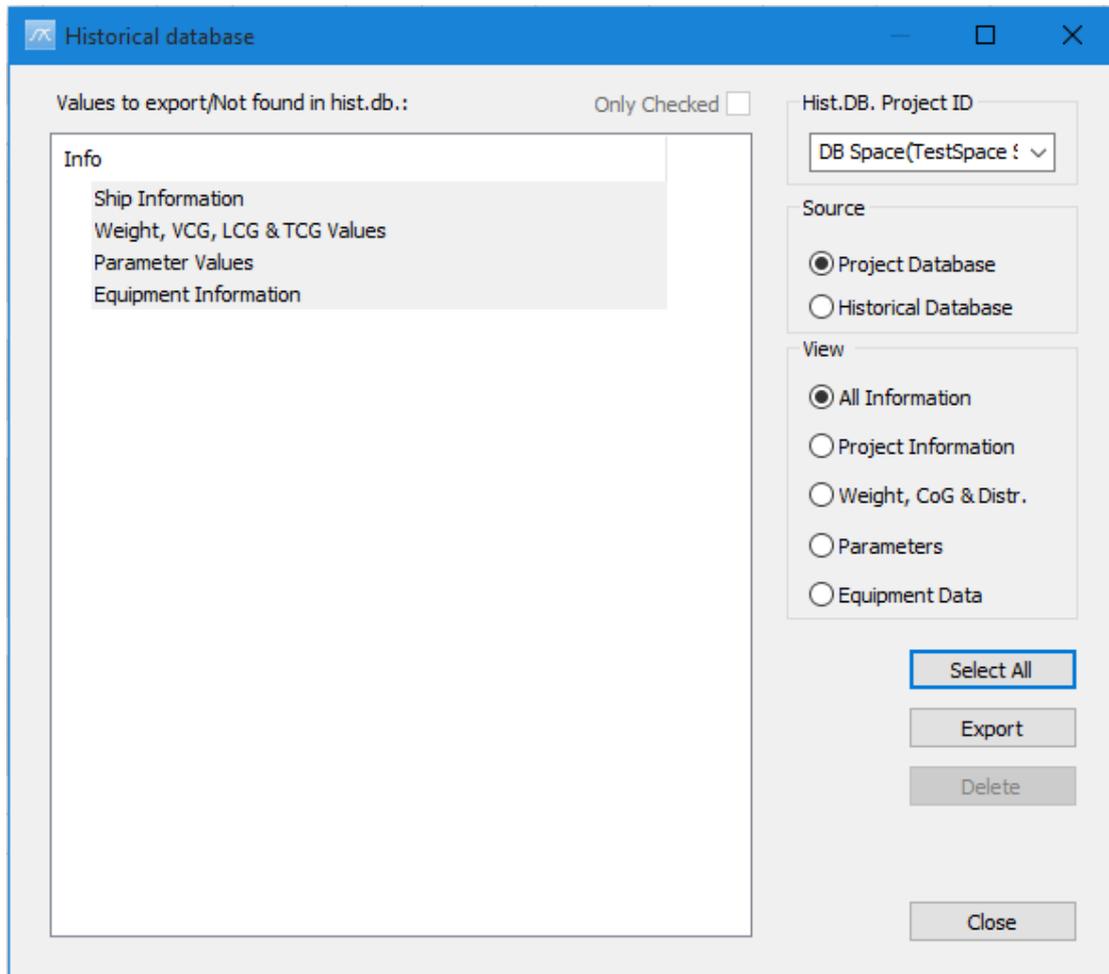
2.8.1 Filling in missing parameters



In the Parameter list, the user has the possibility to pick the desired parameter and then input the corresponding value in the Power column.

2.9 Exporting to the ship database

When the project is ready to be exported, the export itself is quite simple. From the **Project** menu, select **Export > Historical database...** to open the **Historical database** dialog box. Click the **Select all** button and then click the **Export** button.



Now all information from this project can be reused in estimation.

2.10 Log activities and results

Documentation is often a key word when working, and the log feature in ShipWeight will help you with this.

Selecting **Comment...** from **Weight Groups** menu in the menu bar will provide a dialog box useful for logging. This dialog box can be opened at any time.

From the **Wgt.grp.** dropdown list, select the current weight group. By clicking the **Get Weight groups** button the weight information for this weight group will be available in the comment field.

User: Administrator Wgt.grp.: E1.10.4 - L/D tank system

Codes

Comment:

Weight group	Weight[t]	VCG[m]	LCG[m]	TCG[m]	VCG_min[m]	VCG_max[m]	LCG_min[m]	LCG_max[m]	TCG_min[m]
E1.10.4 - L/D tank system									

Date/Time	User	WgtGrp	Comment
2015.11.27 15:56:31	Administrator	E1.10.4	Weight groupWeight[t]VCG[m]LCG[m]TCG[m]VCG_min[m]VCG_max[m]LCG_min[m]LCG_max[m]TCG_min[m]

Any notes can be written in the **Comment** text field, in addition to the weight information.

By clicking the **Add to log** button, the text in the **Comment** field will be stored in a log file together with the date, time, name of user and the code values.

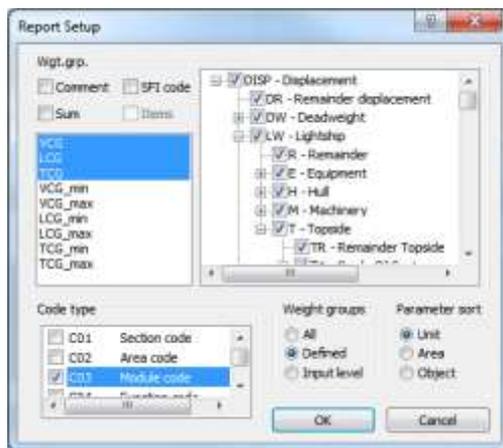
The dialog box has also buttons for editing, deleting and printing the log.

2.11 Reports and documentation

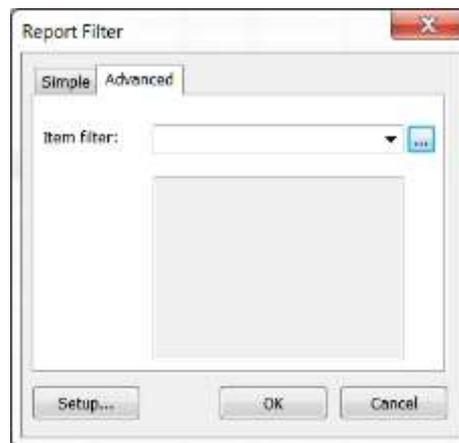
2.11.1 Standard reports

From the **Project** menu you can select **Report Setup...** to specify the options for a standard report.

The **Report Setup** dialog box has a work breakdown tree where selections can be made which weight groups should be included or not in these weight reports. When the reports are run, the **Report Filter** dialog box has extended capabilities for filtering; the general filter dialog box has been added on a separate tab in the report filter screen, and is opened by the **Browse** button.



Selection can be made to decide which weight groups are to be included in the weight reports



A general filter has been added to the filter screen of the standard reports

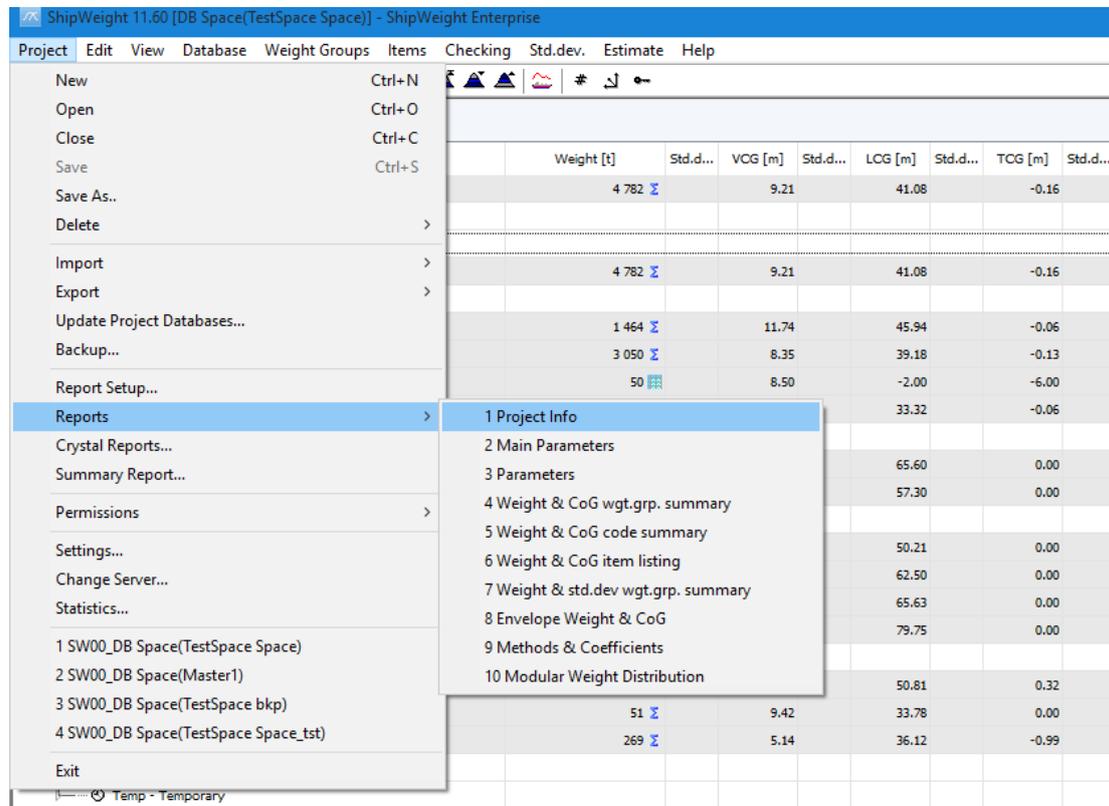
The user can decide which columns to be included in the report. In a list window inside the **Wgt.grp.** frame **VCG**, **LCG**, **TCG**, **Aft** and **Fore** are listed and selected. This means that the report will include columns containing values for these quantities. By selecting or unselecting the quantities in the list, the user can decide whether to include or exclude them in the reports.

The **Wgt.Grp.** frame also contains checkboxes for **Comment**, **Sum** and **SFI code**. Selecting **Comment** will make reports include comments tagged to the different weight groups (using the **Log** dialog box). Selecting **Sum** will make reports with summarized lines after each level instead of setting the report up in a hierarchical way as default. Checking the **SFI code** box will include corresponding SFI codes in the report in addition to the weight group codes.

In the **Weight groups** frame the user can choose which weight groups to include in the report. The options are: **All**, **Defined** and **Input level**. Selecting **Input level** will make reports only with weight groups at the lowest level where values exist. This means that the summarized weight groups will be excluded.

The report can be sorted by **Unit**, **Area** or **Object**. This can be set in the **Parameter sort** area.

The selection of **Code type** determines which code structure to be reported in the **Codes** report.



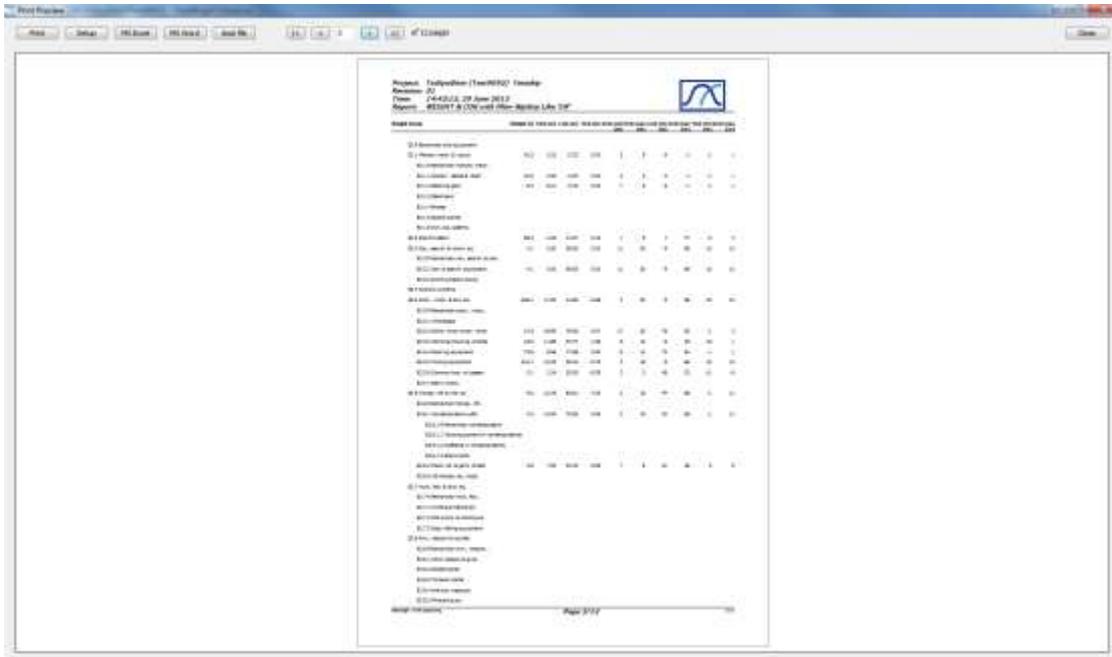
After setting the desired options in the **Report Setup** dialog box, from the **Project** menu by selecting **Reports**, reports can be opened in the **Print Preview** dialog box. The 10 available reports are:

Project Info	1-page report with Project Info
Main Parameters	1-page report with Main Parameters
Parameters	1-page report with Parameters
WgtGrp summary	Summary report of Weight & COG per WgtGrp
Code summary	Summary report of Weight & COG per Code
Item listing	Listing report of Weight & COG of all Items
WgtGrp Weight & std.dev.	Summary report of Weight & Std.Dev. per WgtGrp
Envelope Weight & CoG	Listing report of Envelope Weight & CoG per Code
Methods/Coefficients	Report of Methods & Coefficients
Modular Weight Distr.	Report of ...

In addition you can print reports from many of the dialog boxes in ShipWeight, and get special reporting from that task. Click the **Print** button in the specific dialog box.

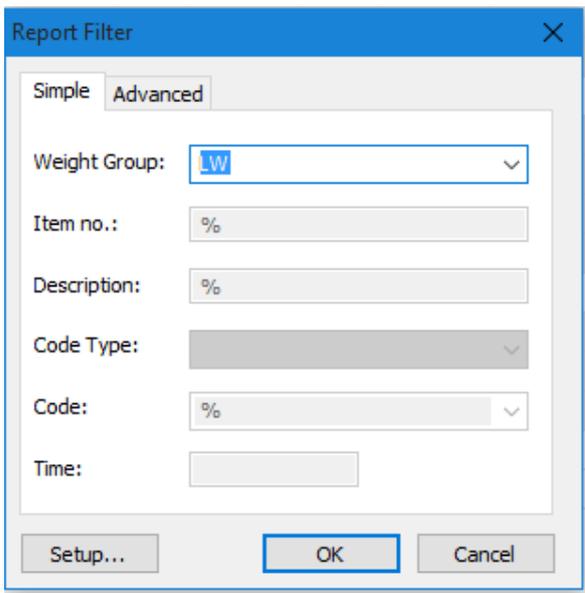
Clicking a **Print** button or opening a report will always open the **Print Preview** dialog box. This dialog box presents a preview of the output and offers different ways of handling it. By clicking on the preview area, the user may zoom in a

part of the page. Clicking the **Print** button will send the report to a print device. The **Setup** button will open a dialog box for selecting a printer and setting its properties. Further there are options for output to **MS Excel**, **MS Word** and **Ascii file**.



2.11.1.1 Filter Settings on Standard Reports

The standard reports **4. Weight & CoG wgt.grp.summary** and **6. Weight & CoG item listing** which are executed from the menu **Project > Reports...** will open a **Report Filter** dialog box upon report selection for selecting the weight items and/or groups to be included in the report.



Filters can be set for any combination of weight group, item number, item description and/or code. A blank filter field means no filter setting for this quantity, while a percentage sign (%) can be used as wildcard.

Report Filter

Simple Advanced

Weight Group: E%

Item no.: %

Description: %

Code Type:

Code: %

Time:

Setup... OK Cancel

Report Filter

Simple Advanced

Weight Group: H%

Item no.: %

Description: %

Code Type:

Code: %

Time:

Setup... OK Cancel

2.11.2 Special reports: The ShipWeight Reports dialog box

ShipWeight includes a powerful report engine, the **ShipWeight Reports** dialog box. To start ShipWeight Reports, from the **Project** menu, select **Crystal Reports....**

The **ShipWeight Reports** dialog box is built on Crystal Reports by Business Objects. Crystal Reports is a tool for designing reports. Custom reports can be designed using Crystal Reports and run/viewed in the **ShipWeight Reports** dialog box.

The dialog box contains a Toolbar and a Report Viewer.

Item	Description	Unit No.	Weight	U/G	Vertical Moment	LCG	Longitudinal Moment	TCG	Transverse Moment	
E1.1.1 Cargo hatch cov., weather d.										
E1.1.1	3 201-323 Hatch to pipel incorp.	4807.00	1	4.907.00	10.65	52203	31.10	152690	0.00	
E1.1.1	4 201-327 Hatch to main deck	385.00	1	385.00	10.65	4100	21.45	8250	3.45	
E1.1.1	5 201-325 Hatch to C-deck	451.00	1	451.00	18.74	8454	31.85	3819	0.67	
E1.1.1	6 201-324 Hatch to ROV moonpool	5294.00	1	5294.00	6.65	8167	40.80	215985	0.00	
E1.1.1	7 201-325 Reefer hatch	85.00	1	85.00	18.08	1615	78.00	6681	0.80	
E1.1.1 Subtotal	Cargo hatch cov., weather d.			11.122.00	10.57	157515	37.30	420490	0.22	2486
E1.1.2 Cargo hatch cov., tween d.										
E1.1.2	8 201-328 Hatch to Eng. room	12.00	1	12.00	7.07	96	46.69	580	6.27	
E1.1.2 Subtotal	Cargo hatch cov., tween d.			12.00	7.07	96	46.69	580	6.27	75
E1.1.3 Reefer hatches										
E1.1.3	9 201-321 Hatch to Eng. room	350.00	1	350.00	6.85	3448	46.69	16341	6.85	
E1.1.3 Subtotal	Reefer hatches			350.00	6.85	3448	46.69	16341	6.85	2327
E1.10.1 L/D pump										
E1.10.1	11 201-032 Fil cargo pump 1-2	1632.00	1	1632.00	5.79	9443	18.73	26564	-2.27	
E1.10.1	9 201-051 Fil cargo pump 1-2	1632.00	1	1632.00	3.88	4573	17.46	18436	1.81	
E1.10.1 Subtotal	L/D pump			3.264.00	4.28	14016	18.09	44999	-0.46	2813

To view a report, either select a report from the **Select report** dropdown list or locate a report file with file extension .RPT by clicking the **Browse** button. Next, click the **Run report** button.

If the report requires parameters, a dialog box will appear, asking for the proper parameters.

The report will now be displayed in the View-area.

The View-area consists of two parts: a group tree (at the left side) and the main area for displaying the report.

The group tree is a hierarchical tree view showing the weight groups. The group tree can be used for navigating through the report. You can jump to any part of the report by clicking the branches of the tree.

The toolbar includes buttons for viewing, printing and exporting reports.



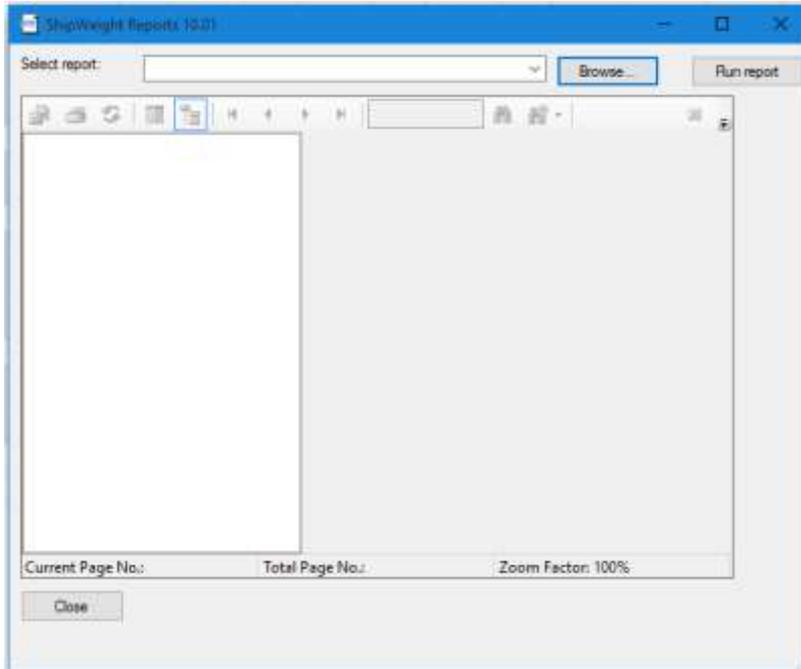
These are:

Export Report	Export the report to PDF, Excel or Word
Print Report	Open the Print dialog box
Refresh	Refresh the report
Toggle group tree	Show or hide the group tree structure
Navigation	Jump to first, previous, next or last page
Goto page	Specify a page number to go to
Search	Find text
Zoom	Zoom in/out

2.11.3 Tutorial: Run a Log report

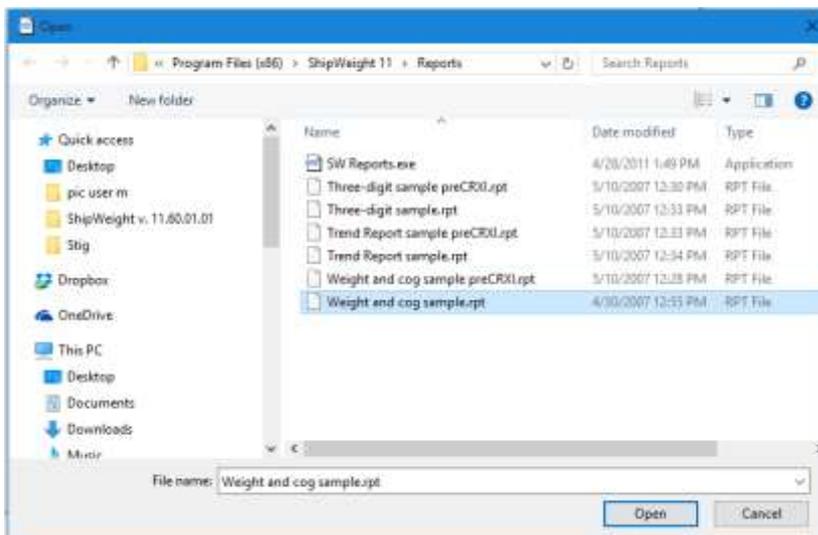
In this tutorial we will run a Log report using the **ShipWeight Report** dialog box. The log report shows the weight items of a project at a given time.

From the **Project** menu, select **Crystal Reports...** to start ShipWeight Reports.



The first thing to do is to select the report you want to run. In this example we will use the report **Weight and cog sample.rpt**. Select the proper report from the dropdown list.

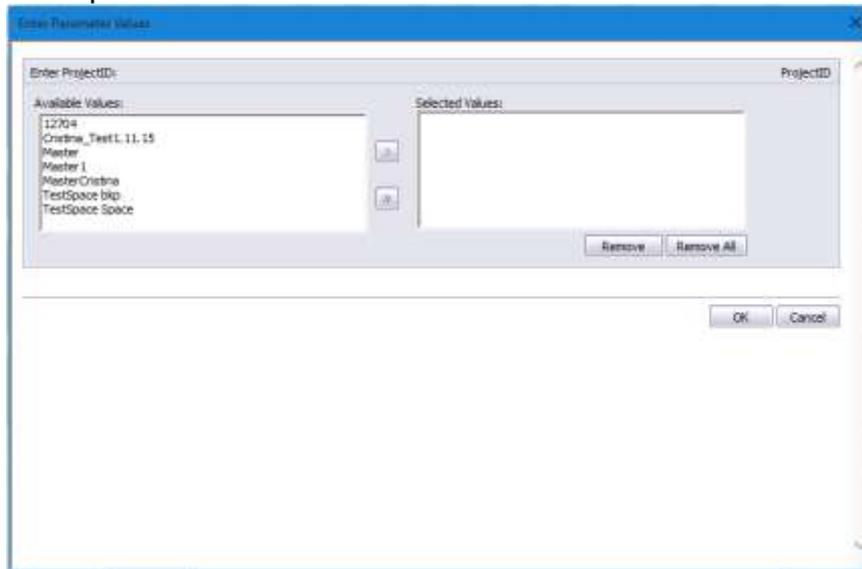
Alternatively, you can locate the report file on your hard drive. Click the **Browse** button to open the **Open** dialog box.



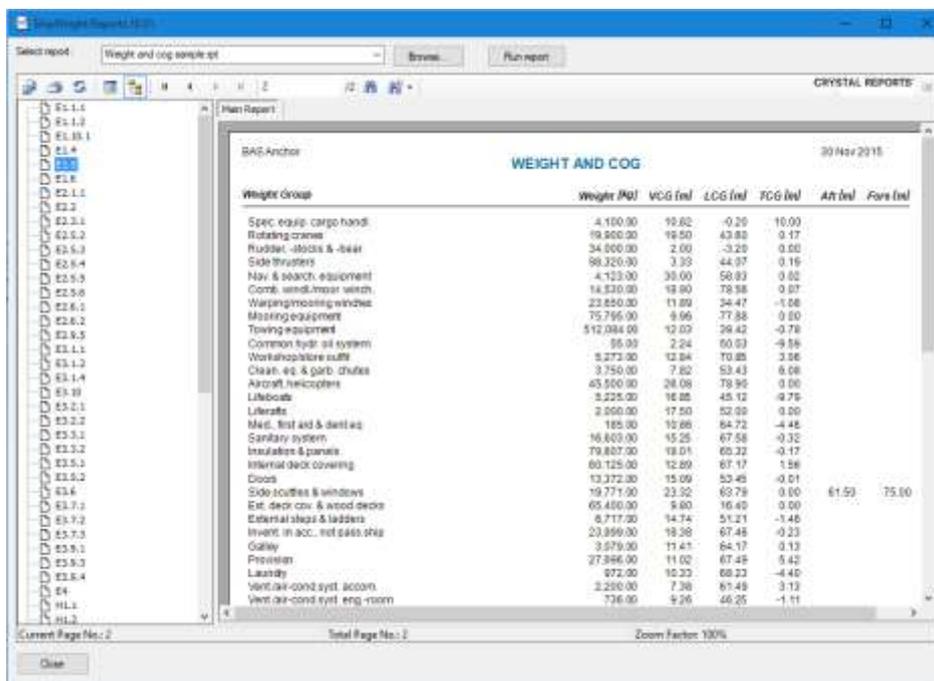
Normally you find the .rpt report files on **C:\ShipWgtDatabase**. When you have located and selected the file **Weight and cog sample.rpt**, click **Open**. Now **Weight and cog sample.rpt** will show in the **Select report** field.

Next, click the **Run report** button.

Now a new dialog box will pop up, asking you to set the parameter values for the report.



You must select the project ID from the list. To display the report, click the **OK** button.



Now, use the toolbar or the group tree to navigate through the report. Also try sending the report to printer (warning: reports may contain a vast number of pages) or exporting it to portable document format (PDF), Word or Excel.

2.11.4 Weight tracking report

A customizable Weight tracking report is available using the **Weight Report Setup** dialog box. To open this dialog box, from the **View** menu, select **Summary Report...**

The **Weight Report Setup** dialog box is divided into four tabs: **Input**, **Comments**, **Settings** and **Graphs**.

The **Input** tab

The **Input** tab is used to specify the data presented in the report. This includes two frames:

The **Current** frame

Revision number of the current project. Important: This must be a number between 01 and 10.

Revision date. The date can be given in any format.

The **Project databases** frame

Path: Name of the server, database and projects containing the previous revisions. Add a new path by right-clicking the list with the mouse and select **Set database...**

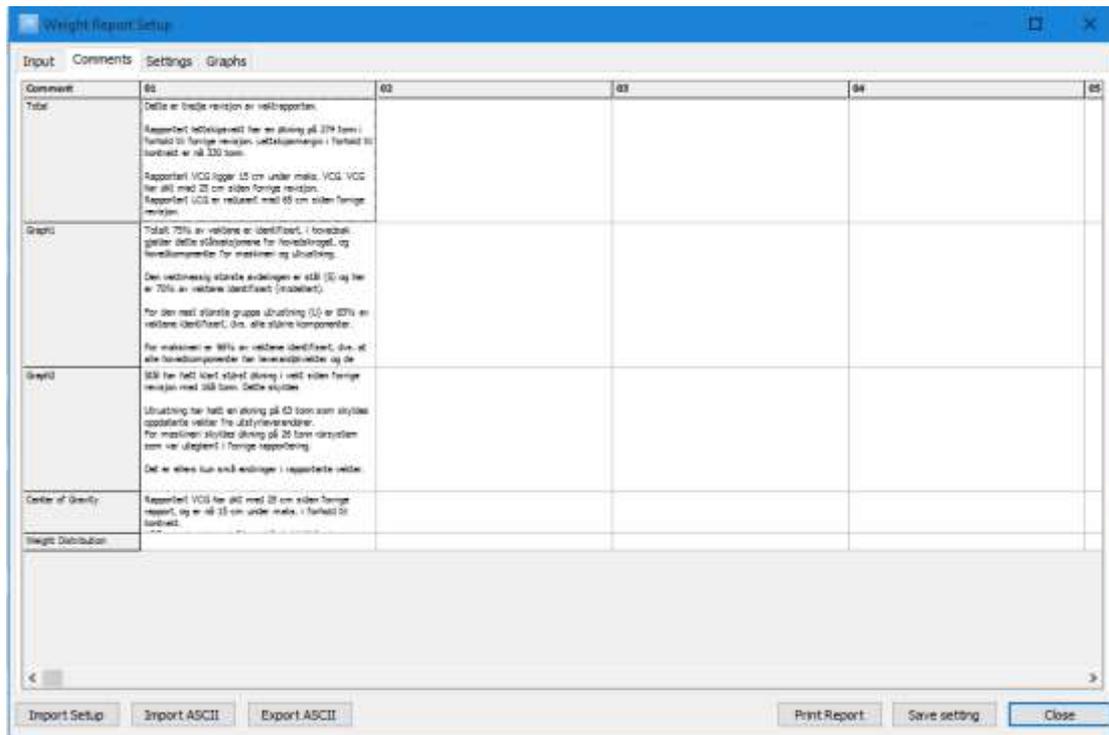
Date: the dates of the previous revisions. Add a date by right-clicking the list with the mouse and select **Set date...** Please note that you cannot set a date for the Estimate.

The screenshot shows the 'Input' tab of the 'Weight Report Setup' dialog. It includes a 'Current' section with 'Revision' set to '01' and 'Rev. Date' set to '15.09.2006'. Below this is a 'Project Databases' table with columns for 'Rev.', 'Path', and 'Date'. The table lists several entries, including 'Estimate' and revisions 01 through 05. At the bottom of the dialog is a large data table with columns for 'Description', 'Estimate', 'Contract', and five revision columns (01-05). The bottom of the dialog features buttons for 'Import Setup', 'Import ASCII', 'Export ASCII', 'Print Report', 'Save setting', and 'Close'.

Rev.	Path	Date
Estimate	D:\Showpg\DATABASE\DESIGN\BAS-AH01.dgw	
01	D:\Showpg\DATABASE\ASBULT\BAS-AH01_1.dbw	15.05.2005
02	D:\Showpg\DATABASE\ASBULT\BAS-AH01_2.dbw	15.07.2005
04		
05		

Description	Estimate	Contract	01	02	03	04	05
Electro (E)			13.09.2006				
HVAC (H)			0.000				
Inroeding (I)			30.896				
Maskiner (M)			0.000				
Maling (R)			0.000				
S&I (S)			0.000				
Ultrating (U)			0.000				
Total Endringar (godkjent) (CD)			30.896				
Electro (E)			0.000				
HVAC (H)			0.000				
Inroeding (I)			0.000				
Maskiner (M)			0.000				
Maling (R)			0.000				
S&I (S)			0.000				
Ultrating (U)			0.000				
Total Identifisert (I)			0.000				
Electro (E)			0.000				
HVAC (H)			0.000				
Inroeding (I)			0.000				
Maskiner (M)			0.000				
Maling (R)			0.000				
S&I (S)			0.000				
Ultrating (U)			0.000				
Total Identifisert (estimat) (R)			0.000				
Electro (E)			0.000				
HVAC (H)			30.896				
Inroeding (I)			0.000				
Maskiner (M)			0.000				
Maling (R)			0.000				
S&I (S)			0.000				
Ultrating (U)			0.000				
Total weight		3796.000	4782.440				

The **Comments** tab



The **Settings** tab

The **Settings** tab is used to customize the report. The layout of the **Settings** tab follows the layout of the Weight-tracking report. It is divided into six frames:

1. The **General** frame
 - Report language: default is English
 - Company name
 - Path to the company logo
2. The **Contract figures** frame
 - Lightship
 - VCG
 - LCG
 - TCG
 - Deadweight 1
 - Draught 1
 - Deadweight 2
 - Draught 2
3. The **Total section**
 - Include total Toggles the Total-frame on/off
 - Force new page Toggles the New page on/off
 - Spacing
 - Title

Footnote 1
Footnote 2

Change order frame

Correct: Toggle CO-correction on/off
Code type: Set code type containing CO code
Code: Set CO code
Title
Weight
VCG
LCG
TCG
Comment

4. The **Graph 1 section**

Include graph: Toggles the Graph-frame on/off
Force new page: Toggles the New page on/off
Show total: Toggles the total-curve of the graph on/off
Show estimate line: Toggles the estimate line on/off
Show graph labels: Toggles the graph labels on/off
Spacing
Title: Graph title
Code type: Select Code to plot
Codes
Graph height

Table frame

Show table: Toggles the table containing data for Graph1 on/off
Footnote

Percentage frame

Show percentage: Toggles the percent-columns on/off
Code type: Code type for percent calculation
Code: Code for percent calculation

Comment

5. The **Graph 2 section**

Identical with Graph 1 section.

6. The **Centre of gravity section**

Include XZ CoG: Toggles the XZ CoG-frame on/off
Force new page
Spacing
Title
Show estimate: Toggles the plot of the estimated CoG on/off
Show labels: Toggles the curve labels on/off
Graph height
Show YZ CoG: Toggles the YZ CoG-frame on/off

Table frame

Show table: Toggles the table containing CoG data on/off

Footnote

Comment

7. The **Weight Distribution section**

Include Weight Distribution XZ: Toggles the XZ CoG-frame on/off

Force new page

Spacing

Title

Show weights

Show polylines

Show profile

Plot height

Include Weight Distribution YZ: Toggles the XZ CoG-frame on/off

Table frame

Show table

Footnote

Comment

8. The **Total Revision History section**

Include revision comment history: Toggles the comment history on/off

Force new page

Spacing

Title

9. The **Graph1 Revision History section**

Include graph1 comments

Force new page

Spacing

Title

10. The **Graph2 Revision History section**

Include graph2 comments

Force new page

Spacing

Title

11. The **CoG Revision History section**

Include CoG comments

Force new page

Spacing

Title

12. The **Weight Distribution Revision History section**

Include weight distribution comments

Force new page

Spacing
Title

13. The **Contact** section

Show contact

Spacing

Title

Force new page

Text

Name

Telephone

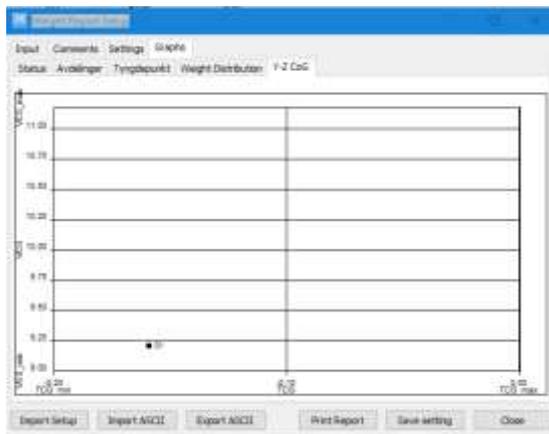
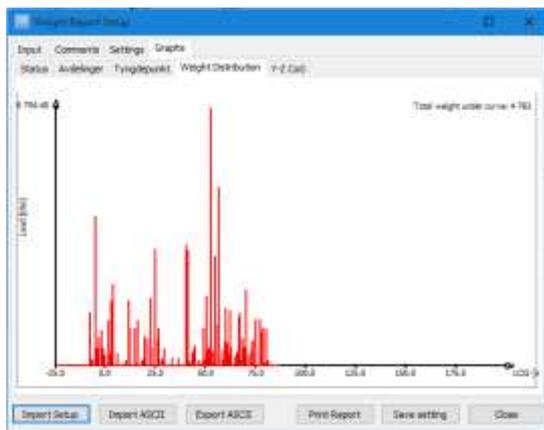
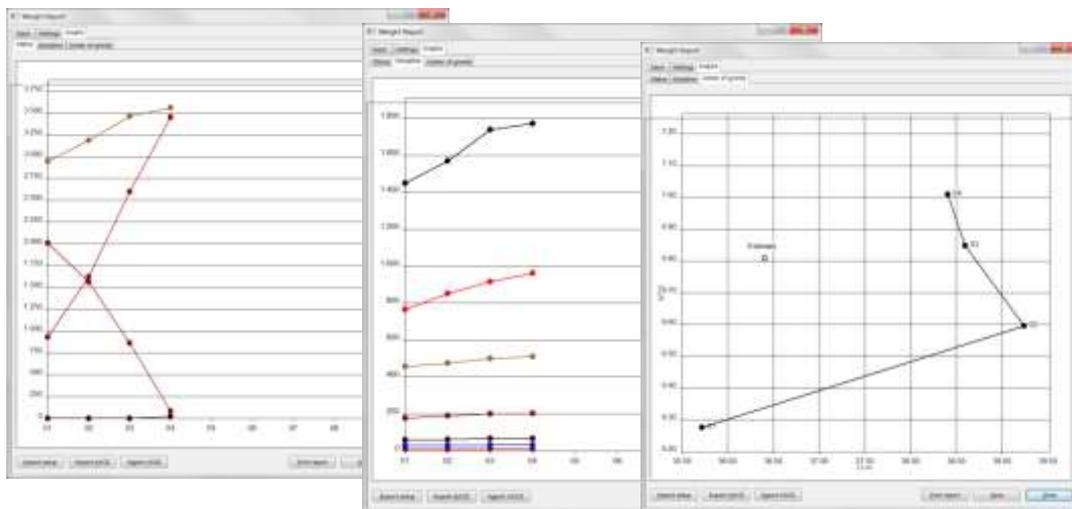
Email

Property	Value
General	
Language	Norwegian
Company	BAS engineering
Company logo	D:\Stein\BAS\Markedsføring\Visittkort\logo_stor.jpg
Contract figures	
Lightship	3796
VCG	7
LCG	36.5
TCG	0
Deadweight 1	2500
Draught 1	6.5
Deadweight 2	
Draught 2	
Total section	
Include total	<input checked="" type="checkbox"/>
Force new page	<input type="checkbox"/>
Spacing	
Title	Total
Footnote 1	*Korrigert for CO
Footnote 2	*Krav til dødvekt og dødvekt i forhold til rapportert lettskipsvekt
Change order	
Correct	<input checked="" type="checkbox"/>
Code type	C07
Code	CO
Title	
Weight	
VCG	
LCG	
TCG	
Comment	<p>Dette er tredje revisjon av vektrapporten.</p> <p>Rapportert lettskipsvekt har en økning på 274 tonn i forhold til forrige revisjon. Lettskipsmargin i f</p> <p>Rapportert VCG ligger 15 cm under maks. VCG. VCG har økt med 25 cm siden forrige revisjon.</p> <p>Rapportert LCG er redusert med 65 cm siden forrige revisjon.</p>
Graph 1 section	
Include graph	<input checked="" type="checkbox"/>
Force new page	<input type="checkbox"/>
Show total	<input checked="" type="checkbox"/>
Show estimate line	<input type="checkbox"/>
Show graph labels	<input checked="" type="checkbox"/>
Spacing	
Title	Status
Code type	C07
Codes	
Graph height	

Import Setup Import ASCII Export ASCII Print Report Save setting Close

The **Graphs** tab

The **Graphs** tab contains five new tabs with a preview of the curves **Graph1**, **Graph2**, **Centre of Gravity**, **Weight Distribution** and **Y-Z CoG**



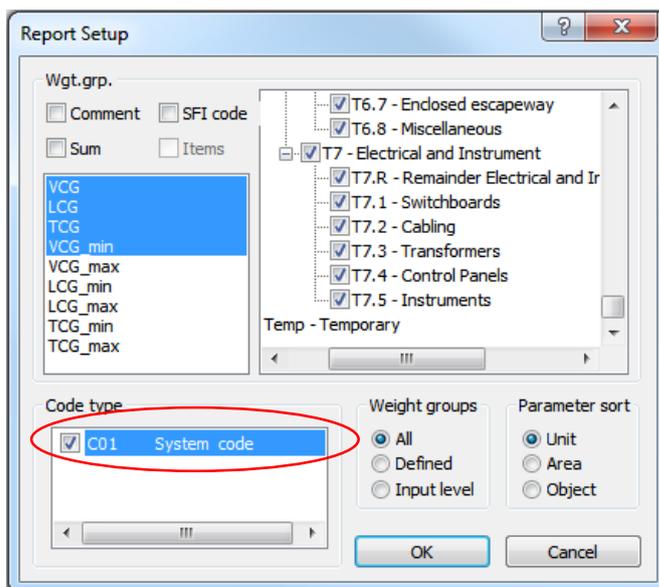
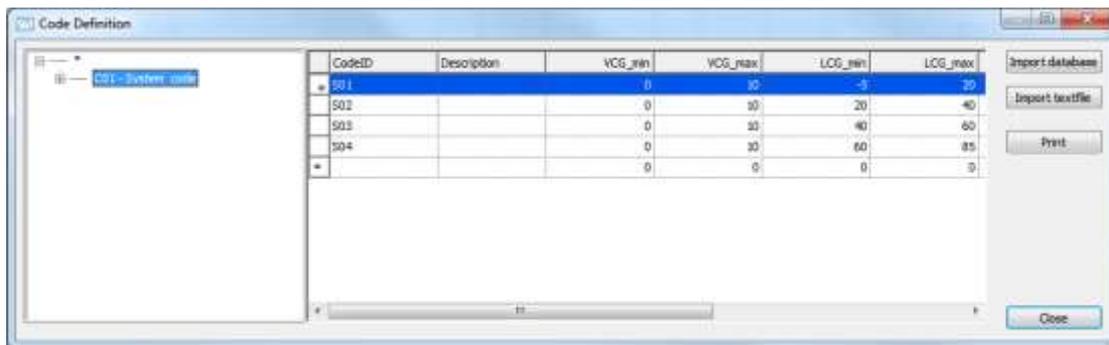
2.11.5 Modular Weight Distribution Report

The **Project > Reports > Modular Weight Distribution** menu item will start a report that calculates three-dimensional mass distribution of weight items within the defined boundaries of a unit/module to obtain the weight, center of gravity and mass distribution of each unit/module.

Calculations are based on the SAWE paper no. 785 – “Mass Distribution Requirements for Modular Ship Construction in the Preliminary Design Phase” by Norris L. Wood and Charles M. Mead, 1969

The report is showing weight and center of gravity contribution (portion) for each weight group / line item on the defined block units (rectangles) and visualization of each weight group / line item portion contained within the block units can be shown in ShipWeight’s **Code Envelope** dialog box (menu **View > Code Envelope...**)

To make the report, a custom code must be assigned as the module code, and min/max values for the VCG, LCG and TCG must be defined for the sub codes of this code in the **Code Definition** dialog box (menu **View > Code Definition...**).



Next, the custom code holding the unit/module data must be set in the **Report Setup** dialog box (menu **Project > Report Setup...**) before the report finally can be run (menu **Project > Reports > Modular Weight Distribution...**).

2.12 Adding comments to specific weight groups

Using the **Comment** dialog box, you can store logging information belonging to a specific weight group. From the **Wgt.grp.** dropdown list, select **weight group** and click the **Get wgt.grps.** button. Current values for weight and CG will be added to the **Comment** field. Enter a note in the comment field and click the **Add to log** button.

The screenshot shows the 'Comment' dialog box with the following details:

- User:** Administrator
- Wgt.grp.:** H1.2.5 - Decks
- Codes:** (Empty text area)
- Comment:** (Empty text area)
- Buttons:** Get Wgt.grps..., Clear Comment, Add to Log, Edit, Delete, Print, Close
- Table:**

Weight group	Weight[t]	VCG[m]	LCG[m]	TCG[m]	VCG_min[m]	VCG_max[m]	LCG_min[m]	LCG_max[m]	TCG_min[m]
H1.2.5 - Decks									

This way logging information that is not general can be tagged and sorted to the relevant weight group only. This also makes it possible to produce reports where weight group specific comments are included along with the weight values for the weight group.

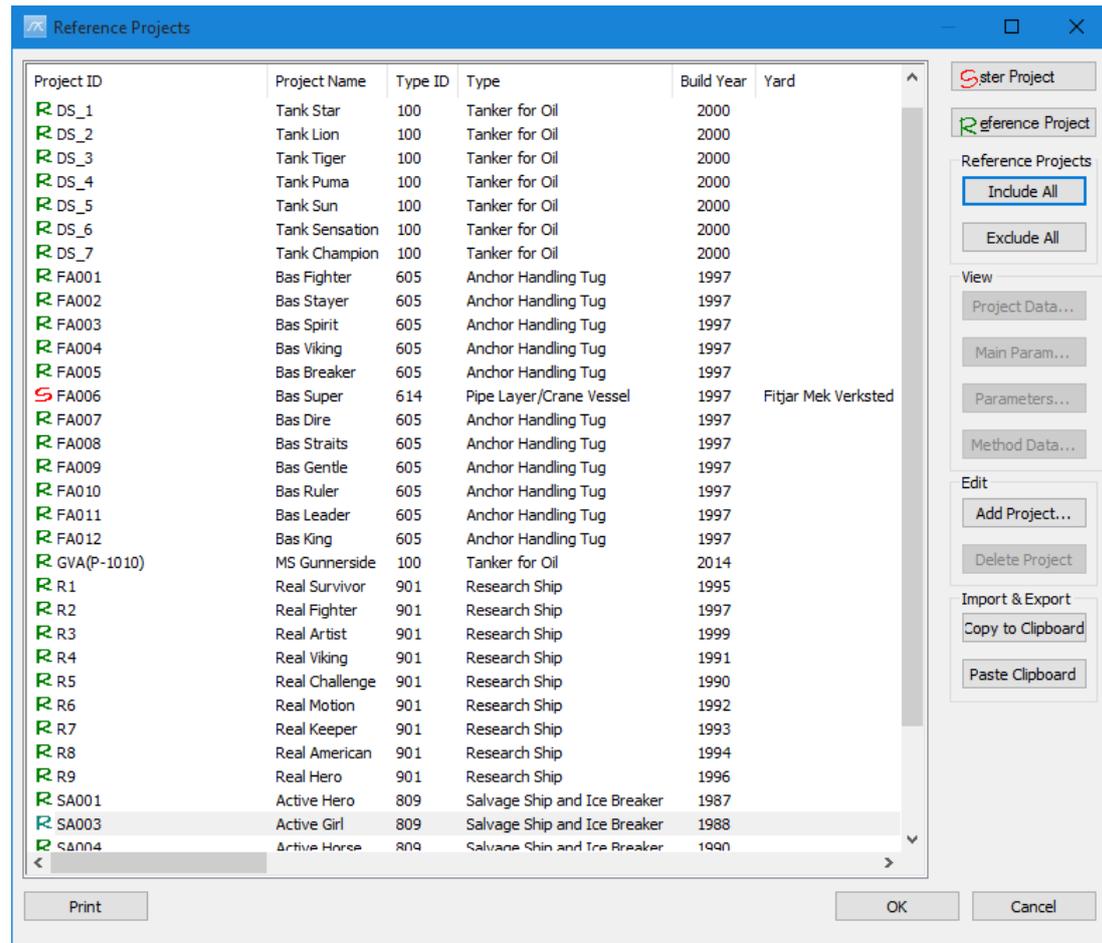
The **Comment** dialog box opens from the **View** menu by selecting **Comment** and then **Project Comments... / Wgt.grp. Comments...** or from the **Weight Groups** menu by selecting **Comment....**

3 Estimating Weight and CoG

3.1 Starting a new estimation

Start a new ShipWeight project. The next step in a new estimation in ShipWeight is to select the vessels to be included in the basis for estimation.

From **Estimate** menu, select **Reference Projects....** It can also be opened from the **Estimation** dialog box menu bar under **Graph**.



By using the **Reference Project**, **Include all**, **Exclude all** buttons ships to be included in this basis can be selected. By selecting a ship and then click on the **Reference Project** button a ship is included. Click once more and the same ship will be defined as excluded. Also by selecting a ship and clicking the **Sister Project** button, the user can select a ship to be traced particularly in the **Estimation** dialog box.

A green **R** represents a ship chosen to be in the basis.

A gray **X** indicates a ship excluded from the basis.

A red **S** marks the chosen Sister Project.

The **Reference Projects** dialog box has sorting capability for the columns. Sorting ascending/descending is activated by clicking on the header columns.

The information in this dialog box may also be copied to and pasted from the clipboard, in example to do editing in Excel. Mark the vessels to be copied in the ship list by selecting them with the mouse and select **Copy project(s)** from the submenu when right-clicking the mouse from the ship list in the **Reference Projects** dialog box.



Important!

This initially selection of vessels in the Reference Projects dialog box is only a rough selection of ships. It is therefore advised to include all ships that you have weight data you rely on, and then do a more refined selection of vessels and coefficient filtering in the Estimation dialog box.

3.2 The Estimation dialog box

From the **Estimate** button on the toolbar or from the **Estimate** menu, select **Weight**, the **Estimation** dialog box will pop up.

The screenshot shows the Estimation dialog box with the following components:

- Graph (Upper Left):** A scatter plot of Hull weight [t] vs. a parameter. The regression equation is $W = 0.0077E-136 \cdot x + 0.0160$. The plot shows 12 reference ships.
- Parameter Table (Upper Right):**

Parameter	Value	Std.dev...
Adjusted block coefficient [-]	0.338	
Watson E-parameter [m]	2.275	
- Coefficient Table (Middle Right):**

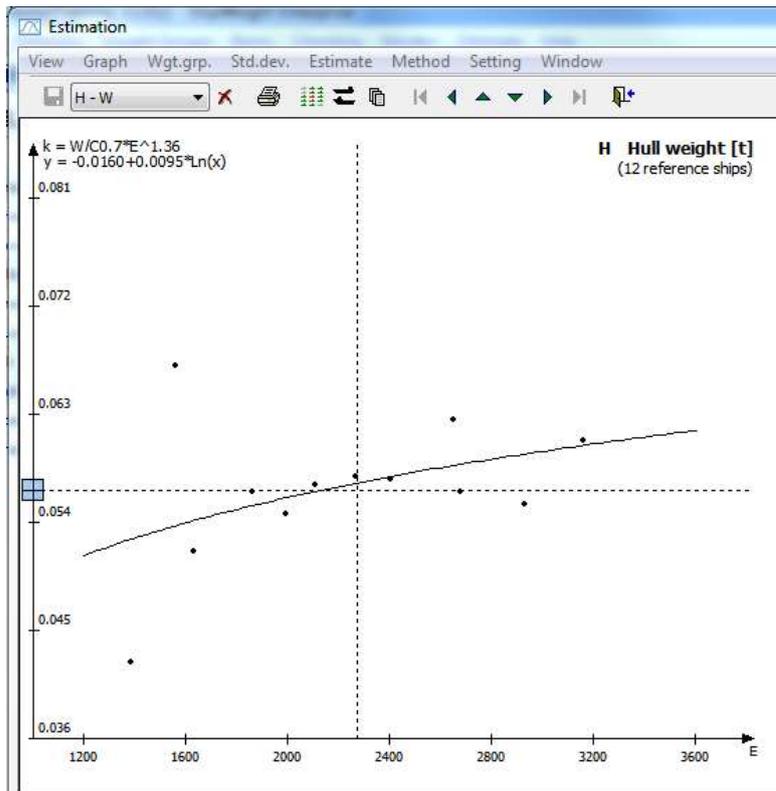
Coefficient type	Coeff...	Std.dev...	Value	Std.dev...
Subjective	0.000	0.00	2.125	0.00
Regression	0.0077	13.37	2.043	0.00
Default	0.000	11.11	2.125	0.00
Select ship	0.000	0.00	0	0.00
Adjust ship	0.000	0.00	0	0.00
Factor	0.0047	11.11	2.124	0.00
- Reference Ships Table (Lower Right):**

Include ID	Name	Shiptype	Built	Value	Block...	Coeff...	App...	E/D [-]	W
FA005	Bas Breaker	Anchor Handling T...	1997	1.473	1.562...	0.007	3.90	2.05	
FA006	Bas Super	Anchor Handling T...	1997	2.488	2.457...	0.001	3.40	2.43	
FA007	Bas One	Anchor Handling T...	1997	1.200	1.436...	0.002	3.81	2.24	
FA008	Bas Shyft	Anchor Handling T...	1997	2.892	2.936...	0.008	3.31	2.54	
FA009	Bas Gerda	Anchor Handling T...	1997	1.589	1.964...	0.007	3.87	1.99	
D0_1	Tank Star	Tanker (Ex-Off)	2000	0.949	0.201...	0.000	0.00	0.77	
D0_2	Tank Lora	Tanker (Ex-Off)	2000	0.170	0.116...	0.000	0.00	0.71	
- Comparison Parameters (Lower Left):**

Parameter	Value	Dev	MS	Bress
Built year	1990-2012			2003
Ship type	Anchor Handling Tug			Anchor Handling Tug
1. app [-]	0.000-1.000			2.74
2. B/D [-]	0.200-1.000			2.11
3. Numb. decks, main-hull [-]	0-20			
4. Ice class	0			
5. Block coefficient [-]	0.000-1.000			0.740
6. Numb. water-balled/healing tanks [-]	0-50			
7. Watson E-parameter [m]	0.000-1.000			2.275
8. Length betw. pers. [m]	00.00-60.00			71.00
9. Ship breadth [m]	0.00-100.00			00.00
10. Depth uppers. cont. deck [m]	0.00-100.00			0.00

The **Estimation** dialog box contains four major areas, the **Graph** area at upper left, the **Parameter** and **Coefficient** dialog boxes at the upper right, the **Reference Ships** dialog box in the middle to the right and the **Comparison** area in the lower part of the dialog box.

3.2.1 The graph area in the Estimation dialog box



In the **Graph** area coefficients from vessels in the common ship database are plotted. The coefficients are plotted as black dots. The coefficient values can be read out of the vertical axis and they are plotted against a set of plot parameters on the horizontal axis. A regression line is plotted through the coefficients.

The vertical dashed line represents the plot parameter value for the project to be estimated. To examine a coefficient represented by a dot, the dot can be clicked, and this ship's parameters will be shown in the **Comparison** area.

The way of selecting the coefficient in the **Graph** area is to use the **Coefficient type** dialog box.

Parameter		Value	Std.dev...
Adjusted block coefficient [-]		1.038	
Watson E-parameter [m ³]		2.275	
Coefficient type			
Coefficient type	Coeff.v...	Std.dev...	Value Std.dev...
<input type="radio"/> Subjective	0.0568	0.00	2.125 0.00
<input type="radio"/> Regression	0.0572	10.07	2.143 0.00
<input type="radio"/> Default	0.0568	11.13	2.125 0.00
<input type="radio"/> Sotar ship	0.000	0.00	0 0.00
<input type="radio"/> Adjuster ship	0.000	0.00	0 0.00
<input type="radio"/> Factor	0.0567	11.13	2.124 0.00
Calculation: $W = k * 0.7 * E^{1.36}$ (Weight)	Coeff.v...	Std.dev...	Value Std.dev...

3.2.2 Explanation to the standard selection coefficients

The regression coefficient is the value calculated in the intersection between the regression line in the graph and the plot parameter for the weight group.

The default coefficient is shown by the dotted line in the graph. This coefficient is stored in the coefficient database (see Chapter [5 Additional databases/libraries in ShipWeight](#)), and are to be used if the basis for the other coefficient are none-existing or not satisfactory.

The sister ship coefficient is the coefficient for the ship selected as sister ship in the **Reference Ships** dialog box.

The adjusted sister ship coefficient is the coefficient for the ship selected as sister ship in the **Reference Ships** dialog box, but adjusted according to the trend in the regression line.

The average coefficient is the average value of the coefficients in the graph. All coefficients are weighing equal when finding the average.

3.2.3 The plotted ships list in the Estimation dialog box

The plotted ships list displays information of all vessels in the historical database, even the vessels are not plotted in the graph. Through the checkboxes the user can easily include or exclude single projects.

Include	ID	Name	Shiptype	Built	Value	Plotv...	Coef...	Lpp/...	B/D [-]	Nur	▲
<input checked="" type="checkbox"/>	• FA005	Bas Breaker	Anchor Handling T...	1997	1 473	1 562....	0.067	3.98	2.05		
<input checked="" type="checkbox"/>	• FA006	Bas Super	Anchor Handling T...	1997	2 688	2 657....	0.063	3.40	2.43		
<input checked="" type="checkbox"/>	• FA007	Bas Dire	Anchor Handling T...	1997	1 210	1 636....	0.052	3.82	2.24		
<input checked="" type="checkbox"/>	• FA008	Bas Straits	Anchor Handling T...	1997	2 892	2 936....	0.056	3.31	2.54		
<input checked="" type="checkbox"/>	• FA009	Bas Gentle	Anchor Handling T...	1997	1 589	1 864....	0.057	3.87	1.99		
<input checked="" type="checkbox"/>	- DS_1	Tank Star	Tanker for Oil	2000	8 849	9 256....	0.035	5.58	1.77		
<input checked="" type="checkbox"/>	- DS_2	Tank Lion	Tanker for Oil	2000	14 178	13 16...	0.033	5.83	1.71		

The yellow color is added to the parameters that are not fulfilling the current vessel selection criteria and thus excluded from the graph.

3.2.4 The comparison area in the Estimation dialog box

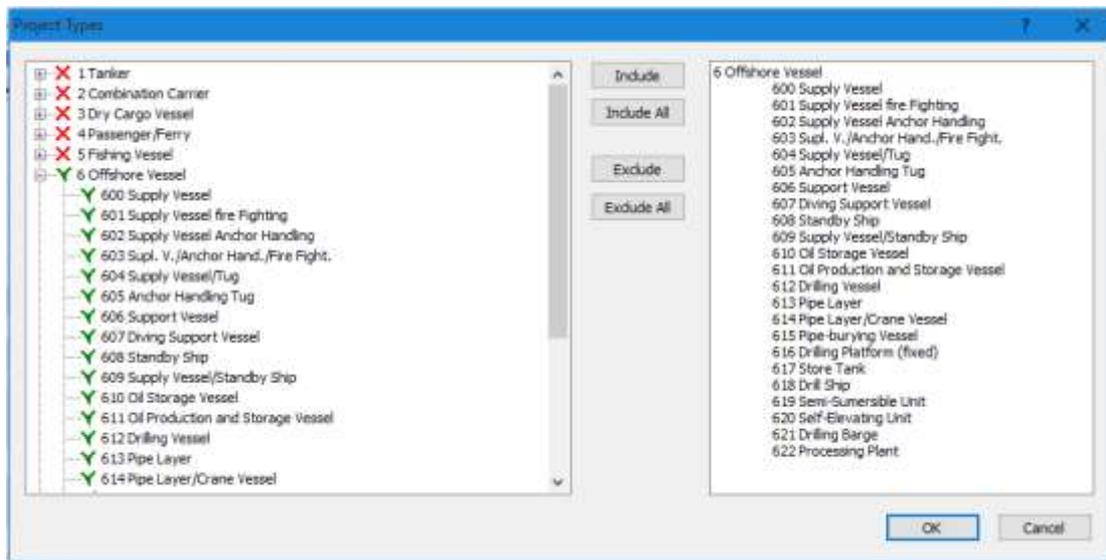
Comparison parameter	Filter	Demo MS Bases	(1) PA202 Bas Steer	(2) PA204 Bas Viling	(3) PA205 Bas Steer...	(4) PA206 Bas Super	(5) PA208 Bas Steer	(6) PA209 Bas Berke
Build year	1888-2012	2012	2007	2007	2007	2007	2007	2007
Ship type	Anchor Handling Tug	Anchor Handling Tug	Anchor Handling Tug	Anchor Handling Tug	Anchor Handling Tug	Anchor Handling Tug	Anchor Handling Tug	Anchor Handling Tug
1. Lpp [m]	0.000-1.000.0...	2.24	1.71	3.21	3.90	3.40	3.16	3.87
2. BTD [-]	0.000-1.000.0...	2.11	3.04	2.64	2.85	2.40	2.94	2.99
3. Numh. decks, main-hull [-]	0-22	0	0	0	0	0	0	0
4. Dcr class	AJ							
5. Block coefficient [-]	4.000-1.000.0...	0.740	0.700	0.500	0.700	0.600	0.700	0.700
6. Numh. water-tight/feeding tanks [-]	0-50	0	0	0	0	0	0	0
7. Watex-R-parameter [m]	0.000-1.000.0...	1.27	1.96	1.843	1.843	2.857	1.917	1.865
8. Length beam, pers. [m]	50.00-60.00	75.00	46.10	82.75	99.75	75.10	76.00	65.80
9. Ship breadth [m]	4.00-16.00	19.00	17.00	25.00	15.00	22.10	25.00	16.50
10. Depth upperm. cont. deck [m]	4.00-10.00	9.00	8.30	9.40	7.30	9.10	9.30	8.30
Weight [t]			1.681	7.127	1.473	7.688	7.892	1.589

When clicking on a coefficient dot in the **Graph** area that vessel's parameters will be shown in the **Comparison** area compared to the project's parameters. These parameters also represent the parameters that can be used to set constraints on the coefficients to be plotted in the graph.

3.3 Filtering the coefficients in the graph

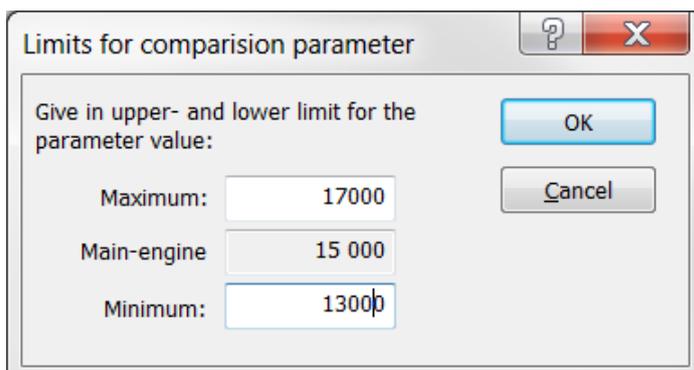
One of the strong features of ShipWeight is the possibility to do logical selections of the coefficients to be plotted in the graph. This makes it easy to plot only the relevant coefficients in the graph and thus obtain a good regression line and a good coefficient for estimating.

The first and natural way to filter the coefficients is to select which ship types are to be plotted. Selecting **Ship Types...** under **Graph** in the **Estimation** dialog box menu bar let you do this. Alternatively, click the **Shiptype** button in the **Estimation** dialog box. 



As a default, all the ship types under the main ship type equal to the project's main ship type are selected. By navigating in the tree-structure, using the **Include** and **Exclude** buttons, ship types can be selected or deselected from the plot. When you are set, click **Close** to go back to the **Graph**.

The other way to put constraints on the coefficients to be plotted is to select a comparison parameter in the grid fields in the **Comparison** area, and then select **Filter limits...** under **Graph** in the **Estimation** dialog box menu bar.



In this dialog box you can set the upper and lower limit for the comparison parameter you have selected. Only ships with parameter value within the given limits will be plotted.

Remember to set both upper and lower limits.

When you are satisfied with the selected coefficients and have estimated the weight and standard deviation you can go on with the estimation by one of the following options:

Estimate VCG and LCG for that weight group by selecting *VCG* or *LCG* in **Estimate** in the menu bar.

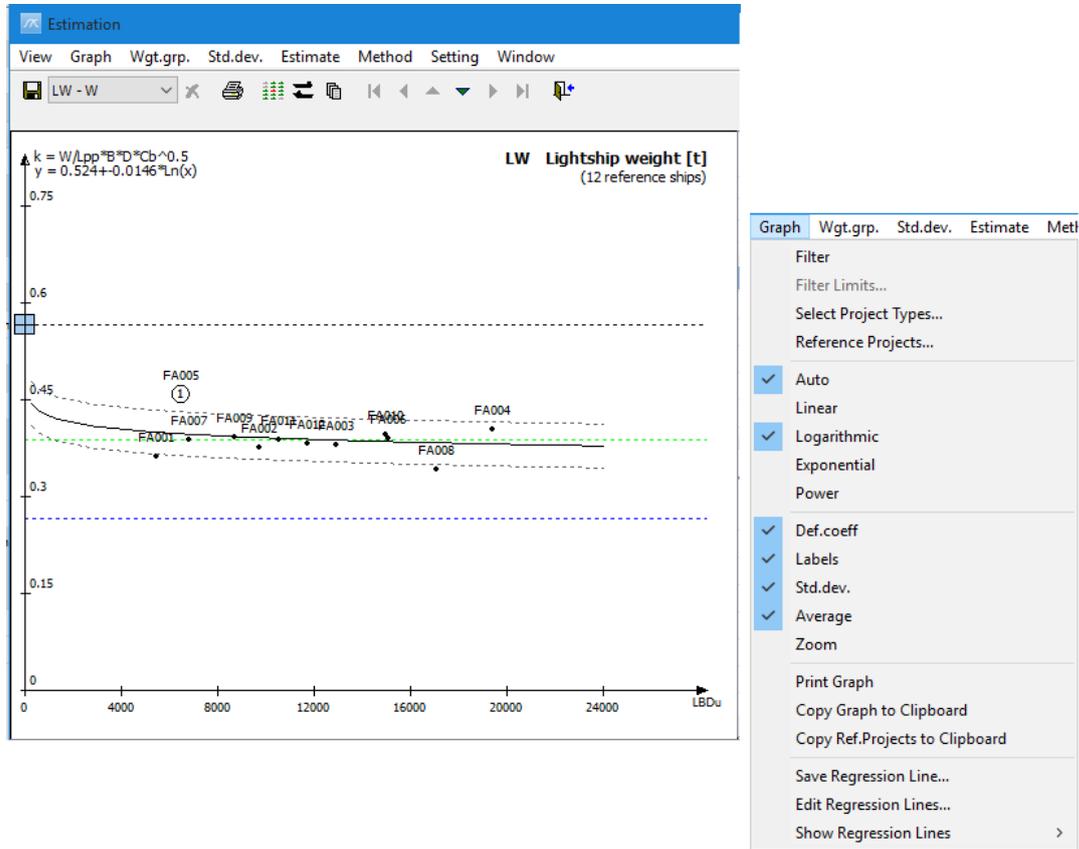
Do estimation on another weight group by navigating by selections in the **Weight group** menu in the **Estimation** dialog box.

Return to the main window by closing the dialog box, navigate to another weight group in the main window, and then open the **Estimation** dialog box again, now with the new weight group in focus.

To ensure an efficient use of time, selecting the **Most uncertain** function from **Weight group** in the menu bar in the main window will guide you to a new weight group. Further splitting and estimation on lower levels of this weight group will give the greatest impact on the total lightweight. This works only if standard deviations have been calculated for each weight group estimated earlier.

3.4 Graph options

Under the **Graph** menu in the **Estimation** dialog box, many options are available for displaying different information in the graph.

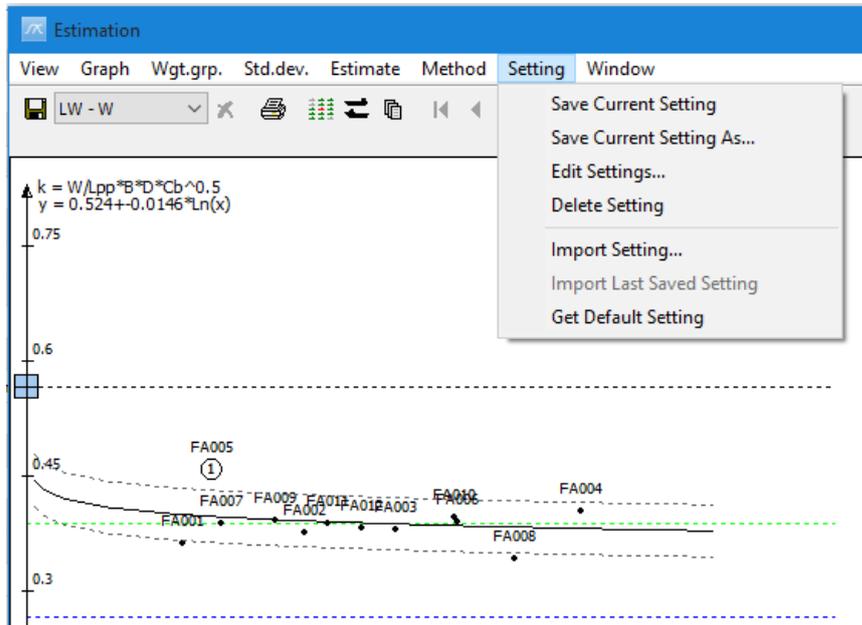


Most important are the regression line and the choices regarding the regression type. If **Auto** is checked in the menu, the system chooses the regression line that gives the lowest standard deviation coefficient. However, it is important to remember that if the number of coefficients is low, it might be wise to judge yourself if other types of regression line are more appropriate. By ticking off the **Auto** option, the user is free to decide whether linear, logarithmic, exponential or power regression should be used.

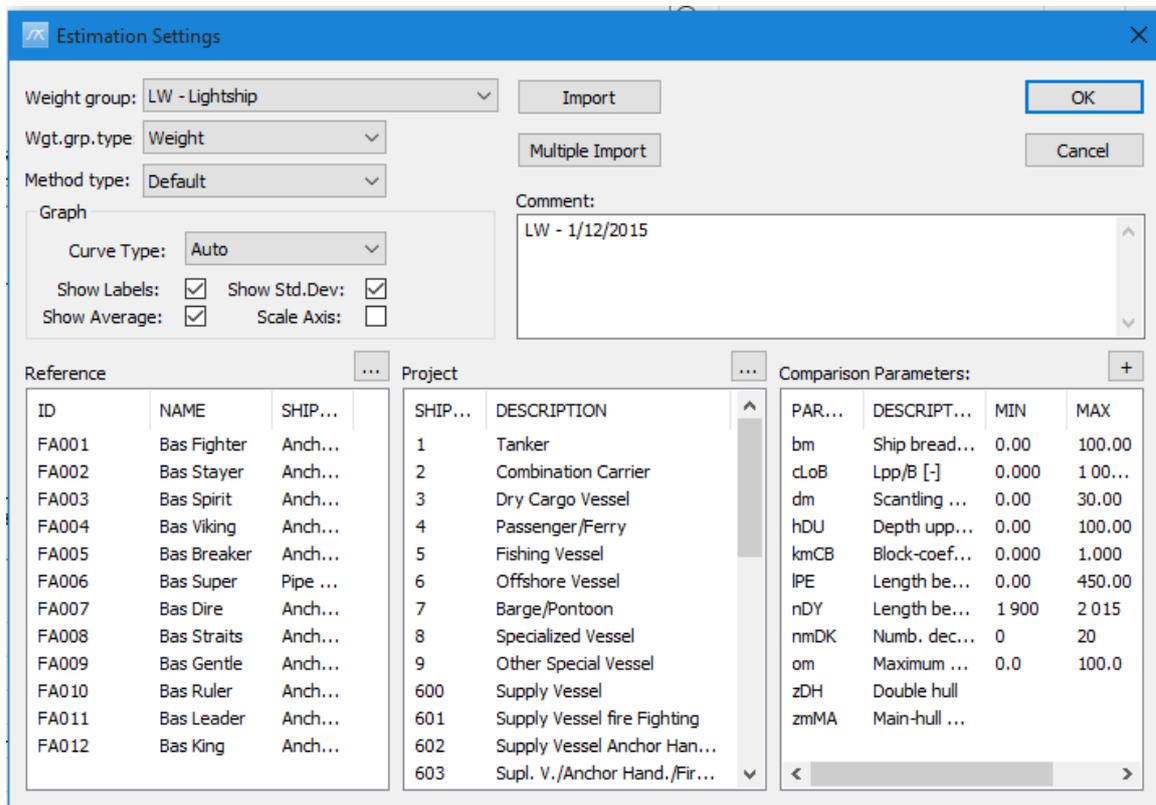
Other useful options in the **Graph** menu are options to view default coefficient, labels, standard deviation and average coefficient. A blue- and a green dotted line in the graph display the default and average coefficient. The label option will label the coefficients plotted in the graph with the ID (filename) of the project. The two gray lines display the standard deviation.

3.5 Saving your settings in the Estimation dialog box

In the **Estimation** dialog box you will find the **Setting** menu:



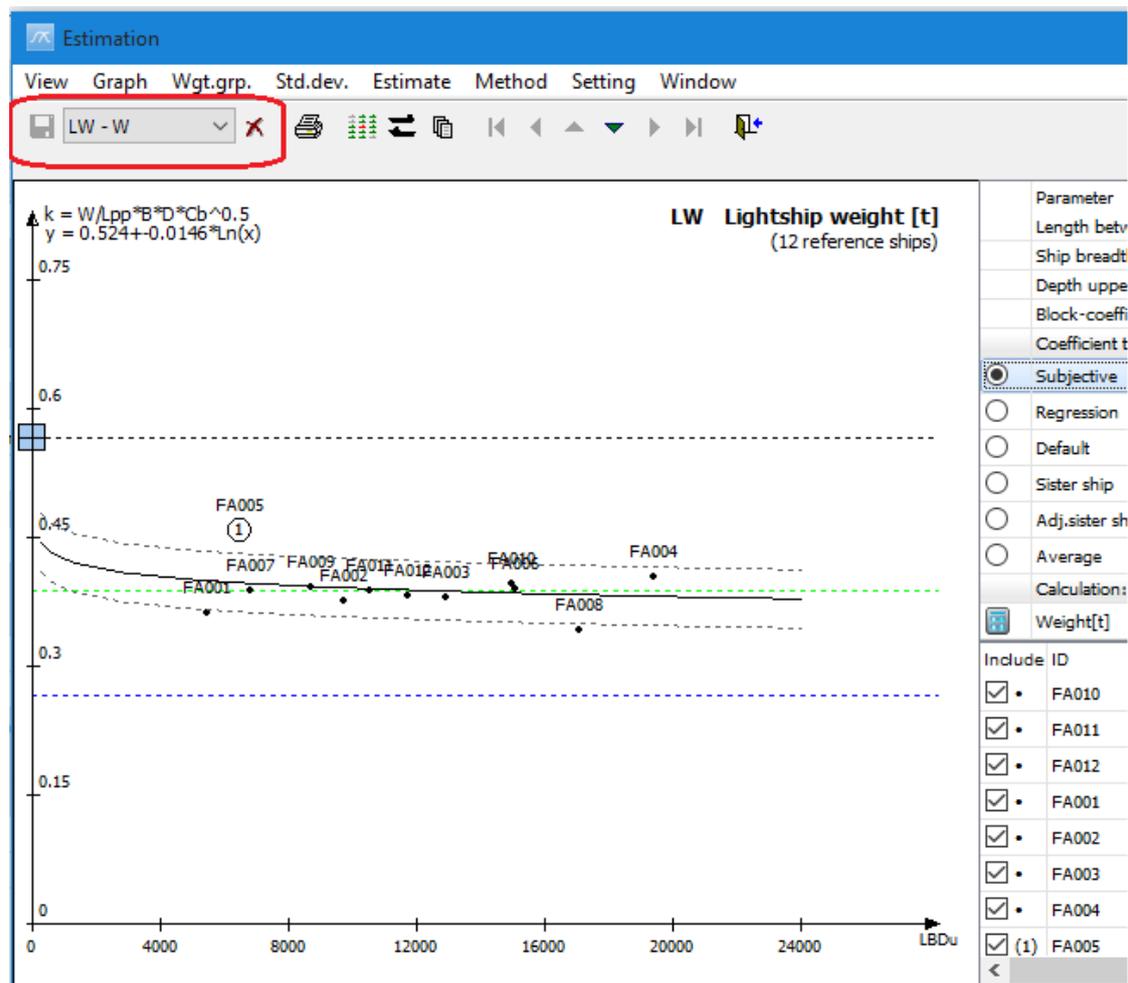
The menu makes it possible to save settings in the **Estimation** dialog box so that the next time you enter the weight group you retrieve the same settings in the dialog box as you had when you last saved your settings.



Saving settings after estimation makes it easier in future to understand why a certain coefficient was picked during estimation. It is also possible to save a special setting by a name and then retrieve this setting later. This is done by selecting **Save Current Setting As...**

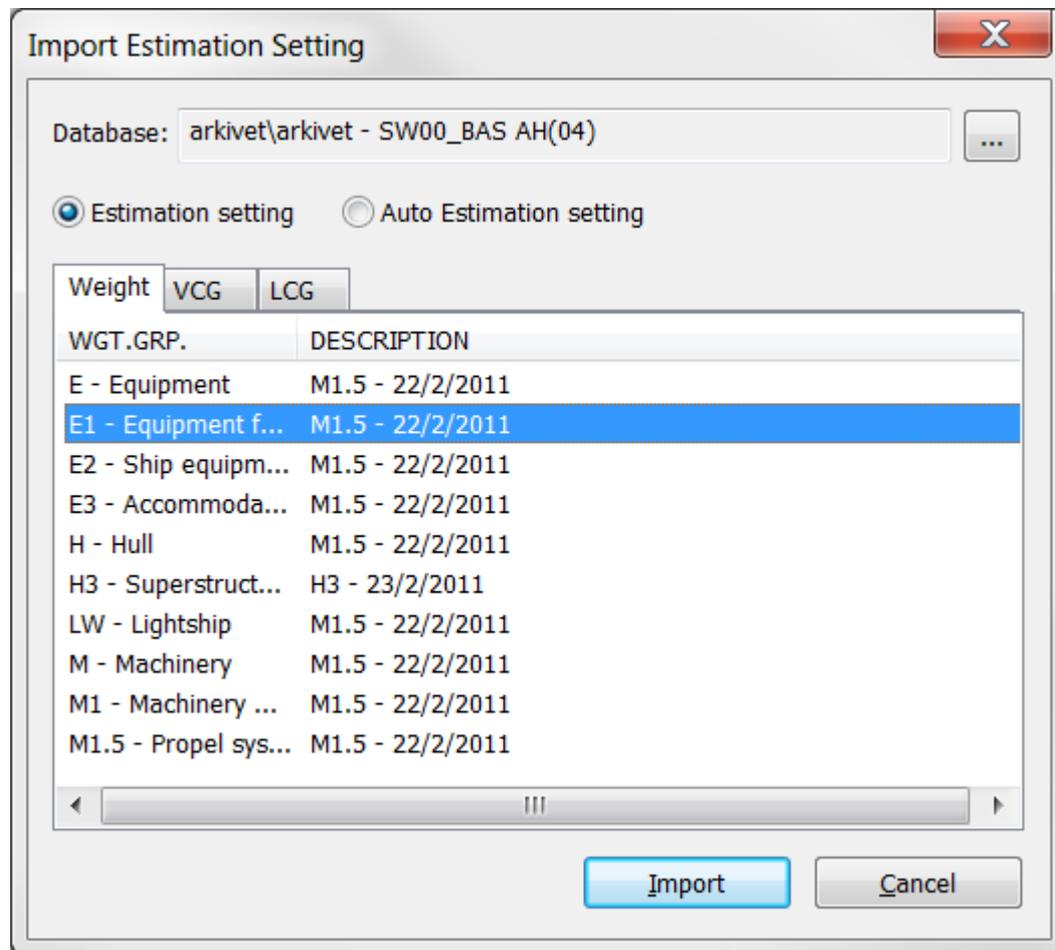
3.5.1 Quick Load/Save of Estimation Settings

Settings that have been set in the **Estimation** dialog box can be saved and deleted from the leftmost buttons on the toolbar. A setting previously saved for a weight group can easily be copied on to a different weight group by selecting the name of this weight group from the dropdown list on the toolbar.



3.5.2 Importing estimation settings

Import Estimation setting enables you to import a previously saved estimation setting.



Select the setting you want to import and click **Import** to use the setting in the current weight group. If you have settings in other databases you want to use, you can browse and select this.

The **Get default setting** option in the menu will restore the setting regarding vessel type to default (vessels included = same main type) and reference ship equal to the one that are picked in the main window.

3.6 Taking uncertainty into account

In the estimation area, the right-hand column contains information about the standard deviation. The standard deviation can be given either as an absolute value or as a percentage. To switch between these ways of showing the uncertainty, select the **Std. Dev.** in the **Estimation** dialog box.

The deviation of the selected estimation coefficient is calculated from the spread of the coefficients around the regression line. If the number of coefficients is less than three, the deviation cannot be calculated. Then a value based upon subjective judgment can be manually entered into the grid.

If some of the other parameters are uncertain, an uncertainty value should be entered into the grid to the right parameter value. When all parameters have got appropriate uncertainty value attached, clicking the **Calc.std.dev** button in the Estimation area gives the total uncertainty for the weight in this weight group, and this value is stored.

By the use of successive calculation the uncertainty for a weight group containing subgroups, will be calculated on the basis of the uncertainty of the subgroups.

Even though the uncertainty is an approximate method to obtain the uncertainty for a weight and even if you have to set the values yourself for most weight groups, there are several reasons to take the uncertainty into account. First of all you will be able to use your resources where they are most needed. When selecting **Most uncertain** under the **Std. Dev.** menu in the main window, ShipWeight will take you to the weight group where a further estimation and splitting of the group will give the greatest impact on the total result. This will help you to focus on the weight groups that really matter at any stage of your estimation. Secondly, taking uncertainty into account will give you a basis to compare the uncertainty between different projects.

3.7 Using the Remainder group in estimation

3.7.1 Combining known and estimated weights

It is possible to estimate weight groups consisting of sums of sub-weights. This is particularly useful when some of the weights are known while others must be estimated. If an estimate is carried out on a weight group containing data in any of its subgroups, the difference between the estimated value and the values of the subgroups automatically will be added to the Remainder-subgroup.

For example: you are to estimate the weight group M1 (Machinery), but already know the weight of some of its subgroups e.g. M1.1 (Diesel-engine for propulsion). Make sure to enter the known weights of the subgroups. Then estimate the weight group M1. The difference between the estimated weight for the group and the weight of the subgroups is added to M1.R (Remainder machinery).

3.7.2 Dynamic Remainder: Freezing the above weight-group

It is possible to keep the value of the above weight group unchanged while estimating. This is done by adjusting the Remainder according to the new estimate.

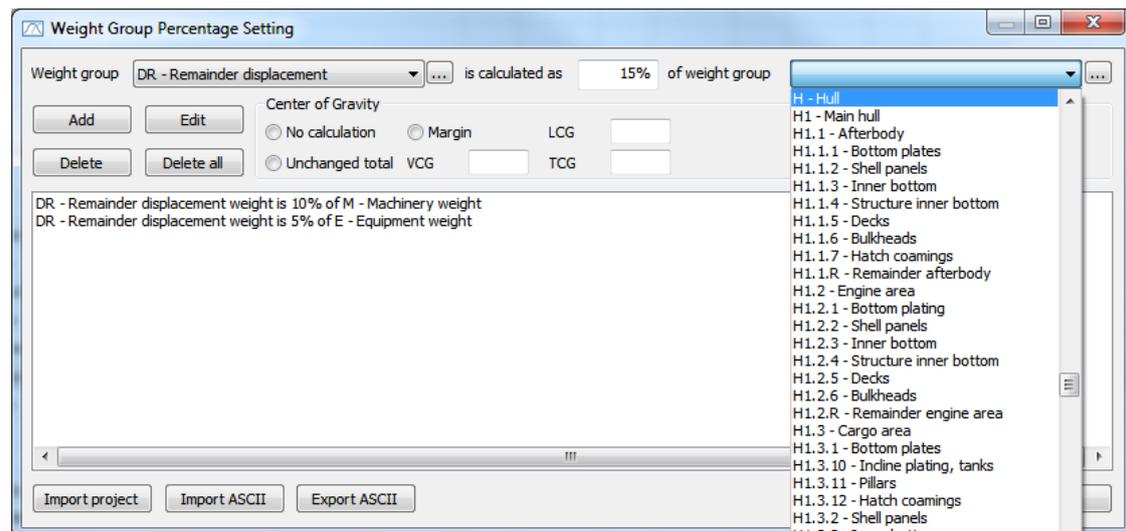
The screenshot shows the SWTEST software interface. The 'Estimate' menu is open, and the option 'Freeze Wgt.Grp. Over' is selected. The main window displays a tree view of weight groups and a table of their values.

Weight Group	Wt	Wgt	CG [m]	Std.d...	TGG [m]	Std.d...	VCG_min...	VCG_max...	
DR - Remainder displacement			32.13	0.05					
DW - Deadweight			26.98	0.05		5.35	30.00		
W - Lightship			32.13	0.05					
R - Remainder			0.00	0.00					
E - Equipment			31.18	0.06		0.00	135.10		
H - Hull			34.26	0.01		0.00	132.83		
HR - Remainder hull									
H1 - Main hull			30.23	0.00		0.57	6.83		
H2 - Poop									
H3 - Superstructure			41.00	0.06		2.78	13.21		
H4 - Deckhouse			74	13.78		40.57	0.00	3.29	25.50
H5 - Forecasts			83	16.97		55.30	0.00	5.13	85.01
H6 - Keel									
H7 - Hull outfitting			58	7.42		24.13	0.04	0.00	27.02
H8 - Material protection			27	11.86		31.24	0.00	5.83	132.83
M - Machinery			327	2.05		28.20	0.18	0.00	22.19
MR - Remainder machinery									
M1 - Machinery main-components			288	2.20		26.88	0.21	0.00	10.34
MLR - Remainder machinery main-comp.									
M1.1 - Diesel-engine for prop.									
M1.2 - Steam-engine for prop.			174	3.46		33.38	0.09	0.00	13.00
M1.3 - Other engine for prop.									
M1.4 - Gear system			41	2.02		21.42	0.05	0.00	3.91
M1.5 - Propul system			54	1.82		8.67	0.00	0.00	4.66
M1.6 - Fast naval prop. syst.									
M1.7 - Foil, sail, rig & mast									
M1.8 - Soller, steam & gas gen.			2	5.07		43.40	-1.19	0.34	5.90
M1.9 - Aggr. & gen. elprod.			17	2.82		27.99	-0.51	0.23	10.34
M2 - Machinery system			39	4.02		37.46	-0.94	0.09	22.19

To activate this mode, select **Freeze Wgt.Grp. Over** on the **Estimate** menu or click the corresponding button in the main window (key):

3.8 Automatic Calculation of Weight Groups as Percentage of other Weight Groups

In some cases it may be desirable to have a weight group calculate itself automatically based on another weight group or based on *several* weight groups. An example of this would be to have a margin group calculate its own weight as 5% of the lightship weight. This is possible to achieve by using the **Weight Group Percentage Setting** dialog box. This dialog box is opened from ShipWeight main window menu **Wgt.Grp > Percentage setting...**



- *Add a relationship between groups*
Select the weight group to be automatically updated from the left dropdown list in the dialog box. Next to the dropdown list, type the percentage to be used when calculating the weight automatically. Select the weight group which value the calculation should be based upon from the dropdown list to the right. Click the **Add** button to register the relationship. The relationship will be listed in the list below.
- *Delete a relationship between groups*
Select the relationship to be deleted from the list. Click the **Delete** button to remove the automatic calculation relationship. You may also delete all defined relationships at once by clicking **Delete all** button.
- *Edit a relationship between groups*
Select the relationship to be edited from the list. Make the appropriate changes in the dropdown lists and percentage field and click **Edit** button to update
- *Import relationship from other projects*
Click **Import project** button to open up a project selection dialog box and select the project from where you want to import relationships.

- *Export and Import relationships through text files*
Use **Export ASCII** and **Import ASCII** buttons to create and import relationships through text files between projects on different servers.

3.9 Starting a new project based on the results from the estimation

When the weight activity turn from estimation into a weight take off (WTO) activity, we establish a new project.

There are two philosophies for the weight control activity;

Start with an empty project and enter weights toward 100%

Start with the estimate and continuously replace weights with more exact (reliable) ones.

In the last-mentioned case, we will always have 100% in the database.

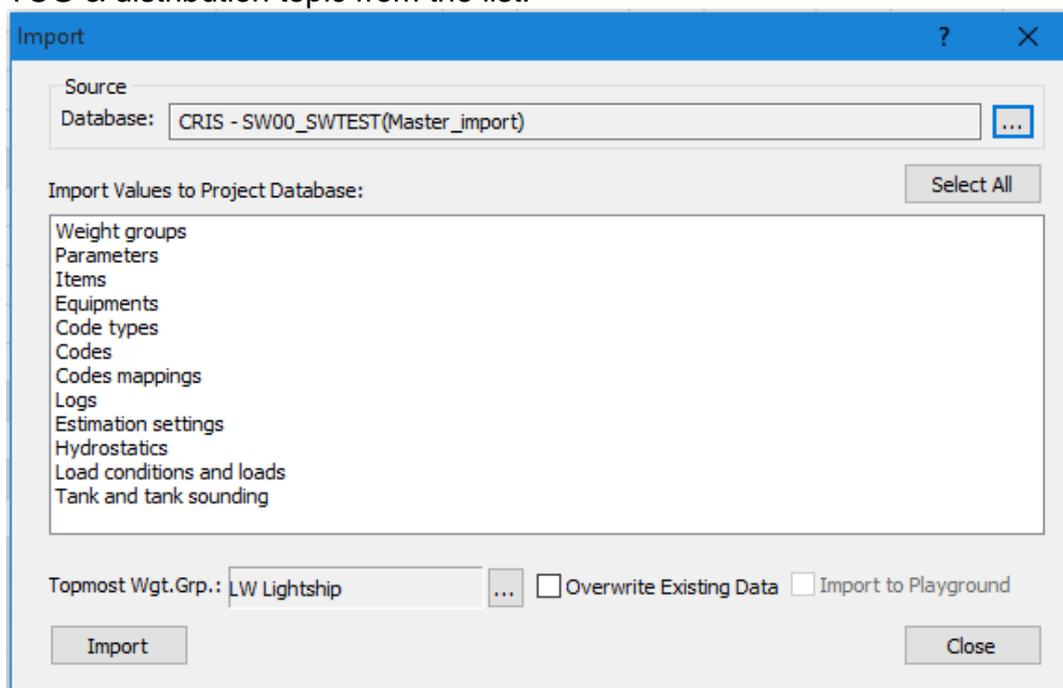
In both cases it will be useful to reuse a certain amount of the information stored in the estimate database.

An import function is available from the **Project** menu by selecting **Import > ShipWeight 11.0 Data...**

First you select from which project database and project you want to import information from.

In the *Import Values to Project Database* you specify what kind of information you want to import.

If you just want to import the parameter-values from the design project, you just select Parameters from the list and then click the **Import** button. If you also want to import weight and CoG information, you select the Weight, VCG, LCG, TCG & distribution topic from the list.



4 Additional features

4.1 Weight distribution

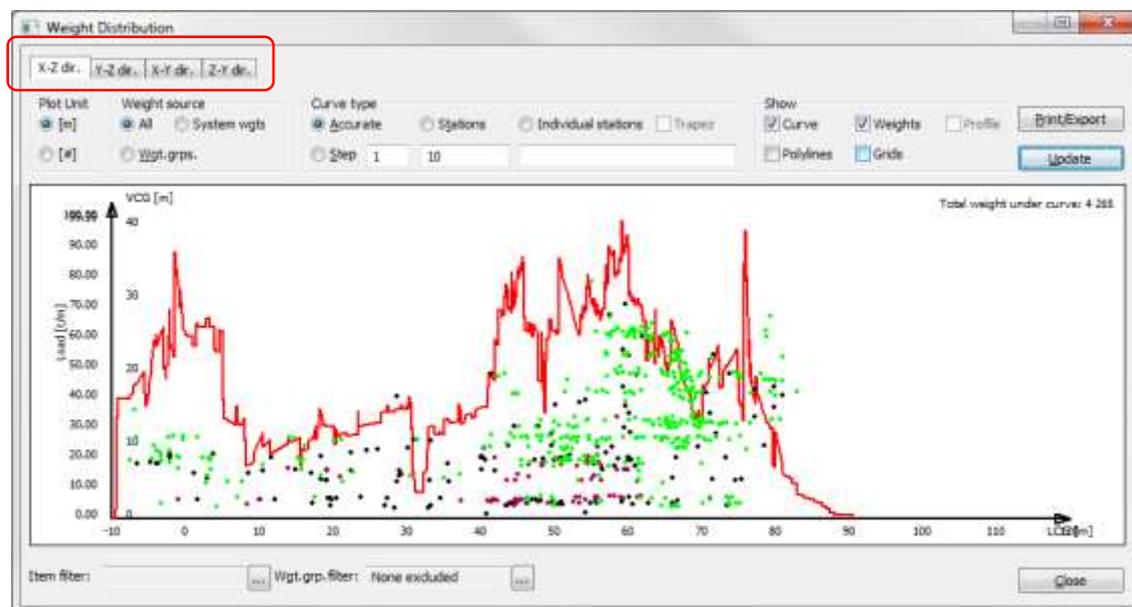
The **Weight Distribution** dialog box is opened from the **View** menu by selecting **Weight Distribution... > Curve...**. Alternatively, click the **Weight Distribution Curve** button on the toolbar: 

When you are estimating or registering weight items, the extension of the item can be given:

LCG_min (Aft)
LCG_max (Fore)
VCG_min (Lower)
VCG_max (Upper)
TCG_min (PS)
TCG_max (SB)

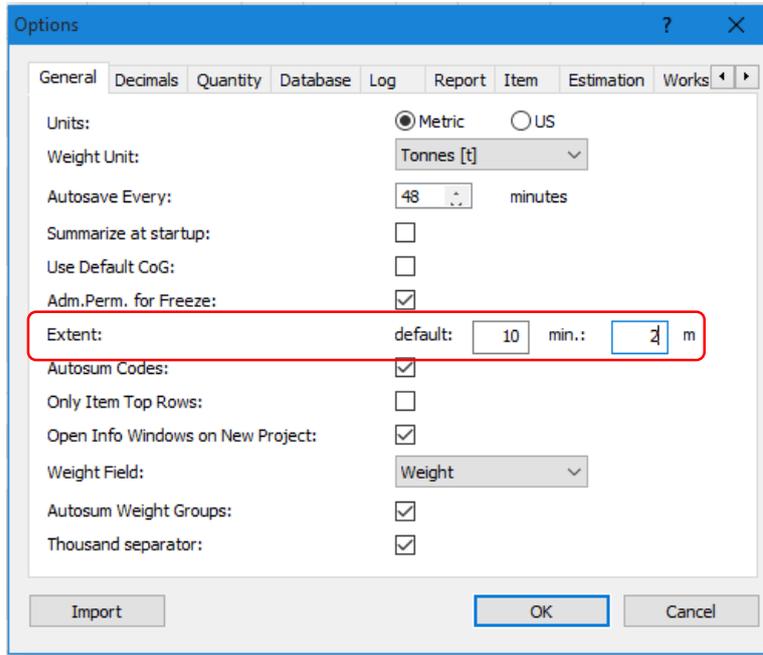
Together with the Center of Gravity of the weight item, this will make a trapezoid approximation to the weight distribution for that single item.

When summarizing all the approximated distributions, a weight distribution curve for the total ship is obtained.



Weight distribution curves can be plotted in longitudinal, transverse and vertical directions. To change the direction of the weight distribution curve, simply click one of the tabs **X-Z-dir**, **Y-Z-dir** or **Z-Y-dir**.

It is important that all items are given values for the start point and end point of the item: LCG_min, LCG_max, TCG_min, TCG_max, VCG_min and VCG_max. If an item lacks one of these values, the default value for extension will be applied. The default extension value is set in the **Options** dialog box, on the **General** tab.



Two values can be given for Extent: default and min.

The default value is applied if any of the values LCG_min, LCG_max, TCG_min, TCG_max, VCG_min and VCG_max are missing.

Example: The 'default' extension value is set to 10 m:

	Given value:	Value used in wgt.dist. curve:
LCG	20 m	20 m
LCG_min	Not given	15 m
LCG_max	Not given	25 m

The min value will be used if the given extension of a weight item is less than the minimum value.

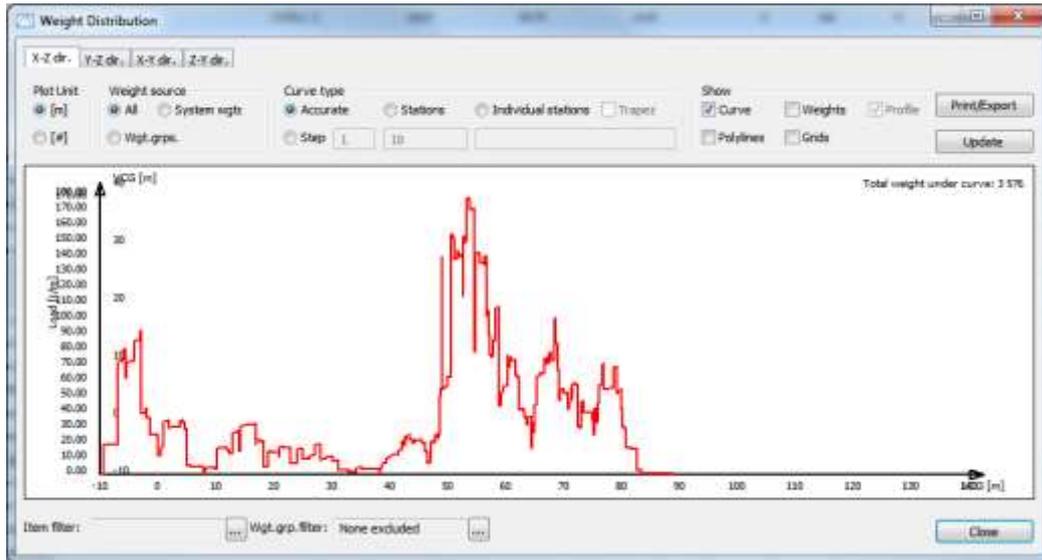
Example: The 'min.' extension value is set to 2 m:

	Given value:	Value used in wgt.dist. curve:
LCG	25 m	25 m
LCG_min	24.8 m	24 m
LCG_max	25.2 m	26 m

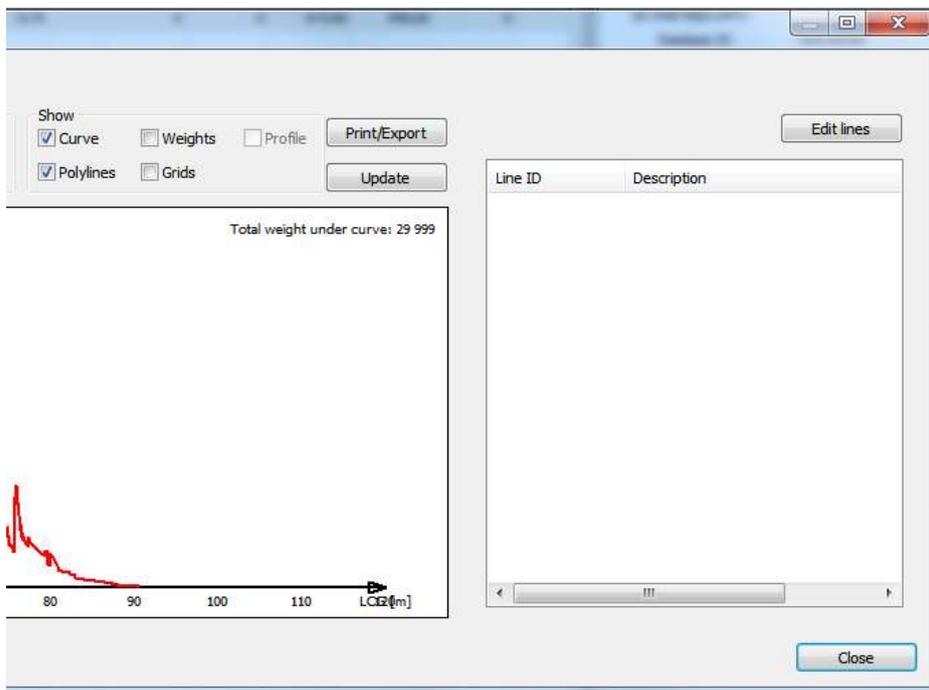
If the **Weights** checkbox in the dialog box is checked, then all weight items will be plotted into the distribution area as a visual check.

Each point in the graph will symbolize an item and its position. The green points are equipment items, the black points are steel items and the red points are machinery items.

By clicking on one of the points and holding the mouse button down, the user will get short information about the item. This way you can check any suspicious looking items and find errors.



If the **Polylines** checkbox is checked a sidebar pops up.



The dialog box will extend to the right when **Polylines** is checked. In the tree structure that appears to the right, the appropriate parameters can be entered or edited by clicking the parameter in the window.



The weight distribution curve can be plotted either with metric/US or frame spacing as plot unit.

There are four ways of plotting the weight distribution curve:

Accurate: Plot the curve as accurately as possible.

Wgt.grps.

Step: Set the minimum step for the curve.

Station: The curve is plotted with a given number of stations

The **Update** button updates the curve if changes have been made to the project after the distribution dialog box has popped up.

4.1.1 Weight Distribution Calculations in ShipWeight

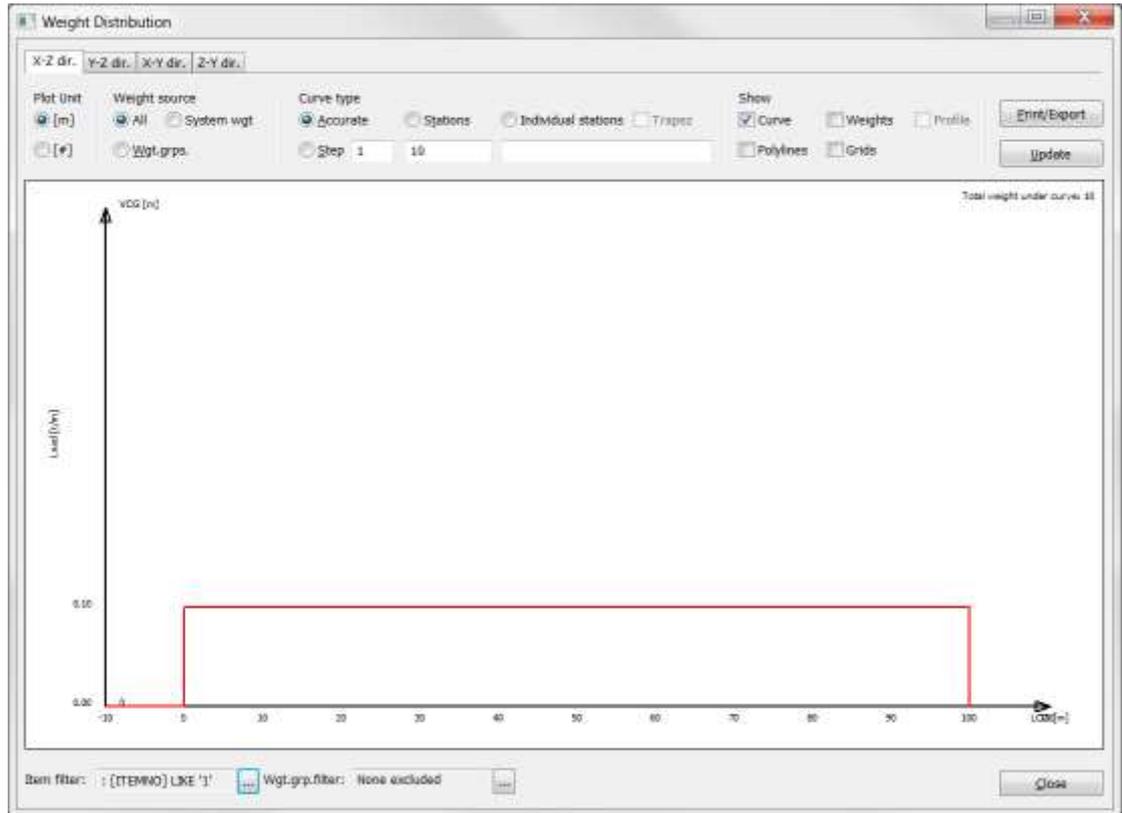
The following attempts to describe how weight distribution is calculated in ShipWeight. In general, ShipWeight approximates the distribution for each individual weight item to either a uniform, triangular or trapezoid distribution. These individual items are then added together making up the total “accurate” distribution. The accurate distribution can be converted to a distribution of stations or bars.

Consider the following weight items:

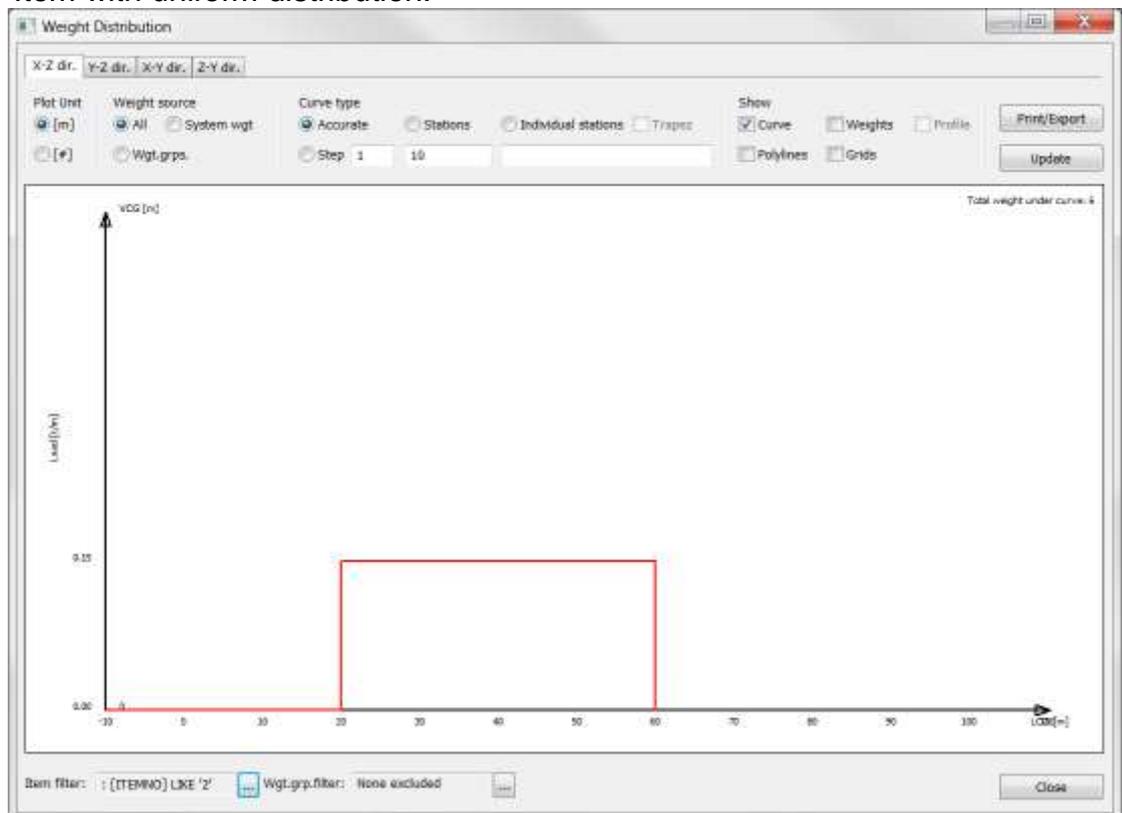
Nr	Weight	LCG	LCG_min	LCG_max
1	10000	50	0	100
2	6000	40	20	60
3	2000	30	10	40
4	2000	58	50	70

In ShipWeight, the distribution of these items will individually be represented like this:

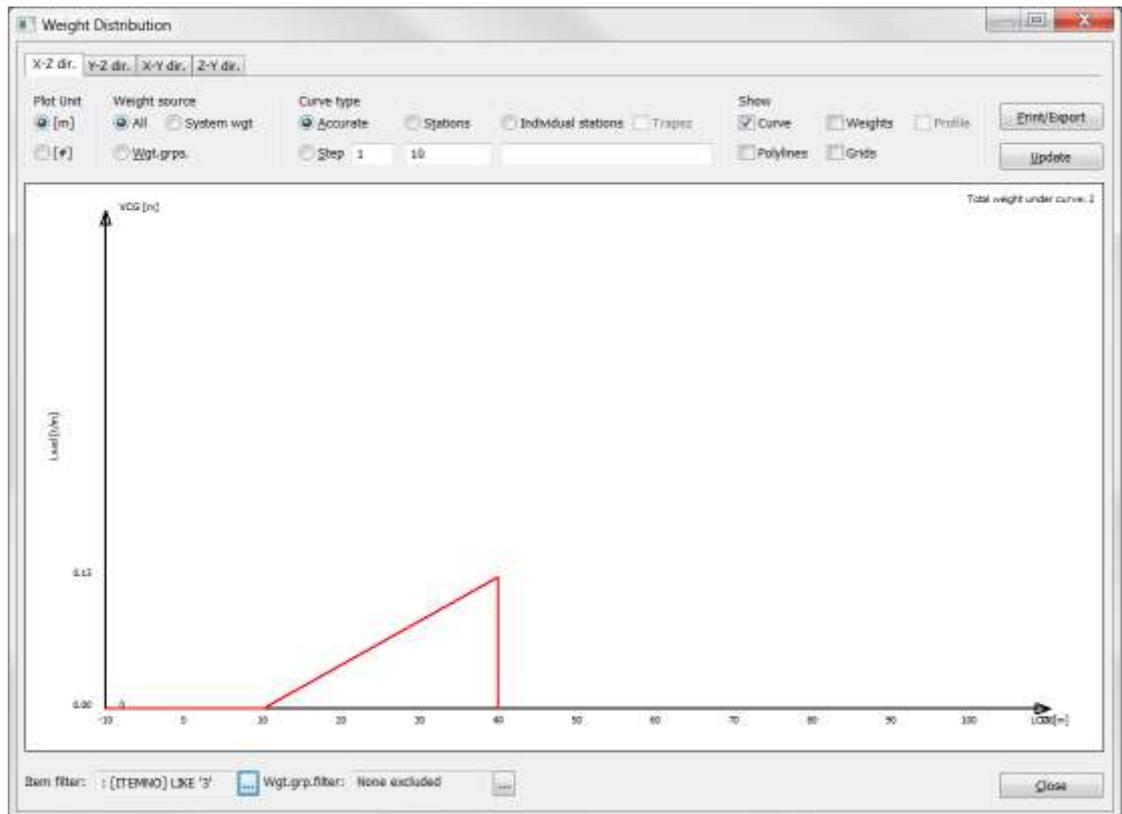
1. Item with uniform distribution:



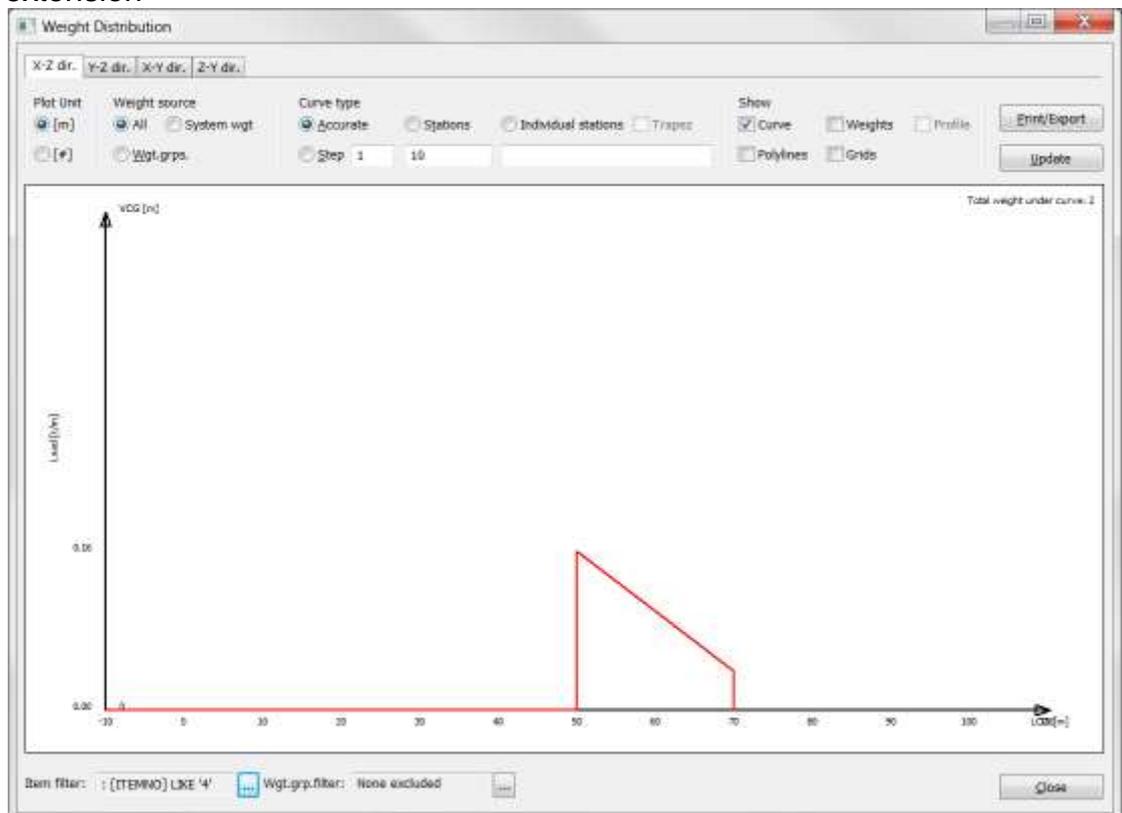
2. Item with uniform distribution:



3. Item with triangle distribution – LCG located at 2/3 of the items extension

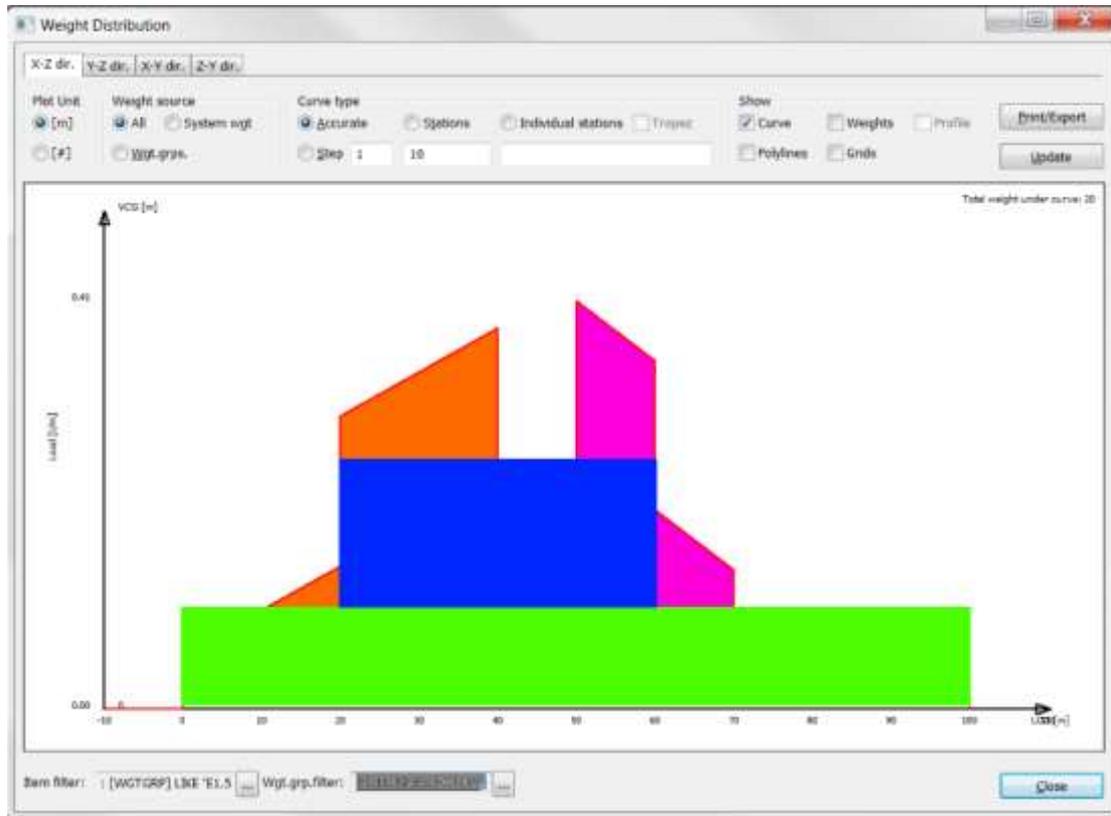


- Item with trapezoid distribution – LCG between 1/3 and 1/2 of the items extension



When ShipWeight calculates its “accurate” distribution, the items are added together. Compare the colors in the individual representations with the colors

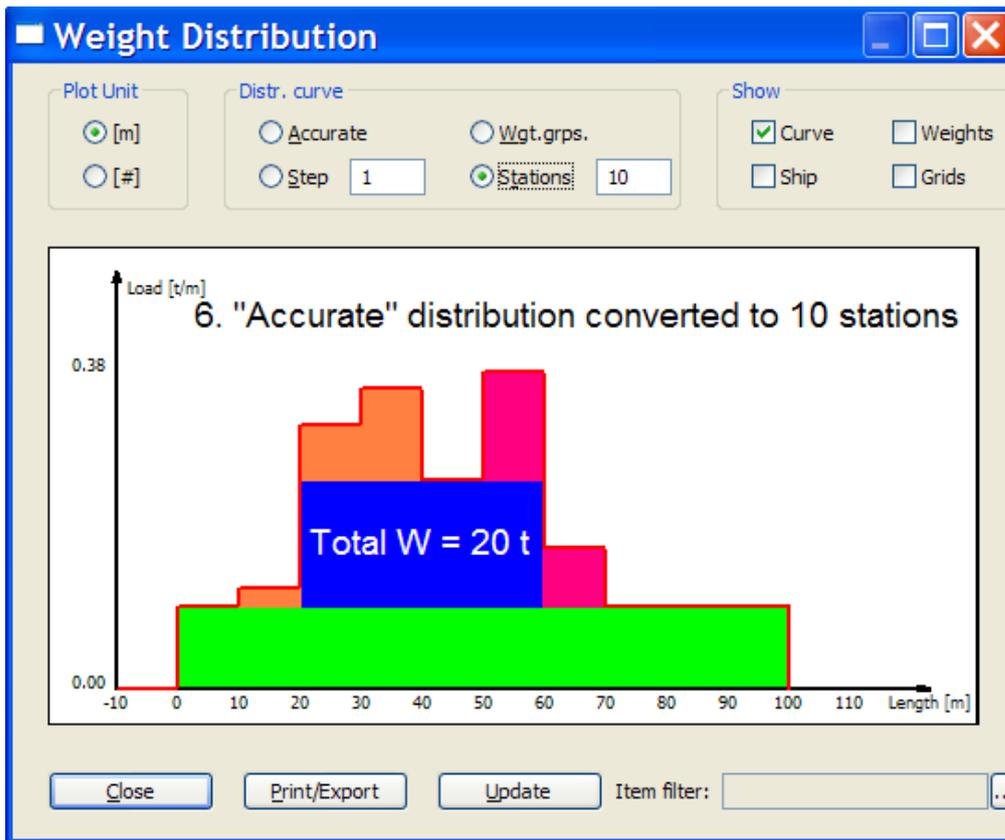
of the “accurate” representation to locate each weights item’s contribution to the total curve.



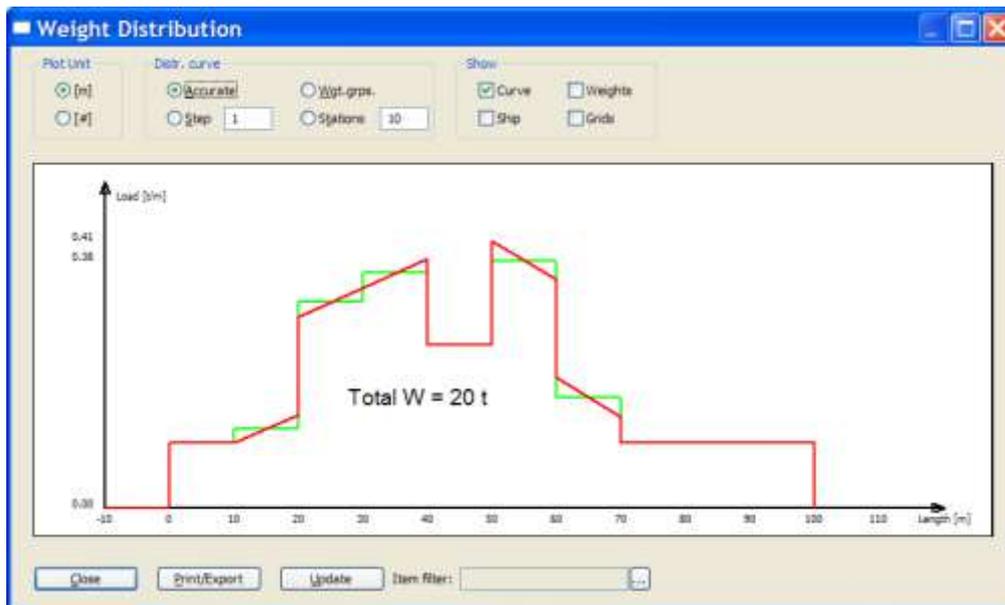
The user may choose to represent this curve in stations. ShipWeight calculates the stations by dividing the “accurate” curve into the number of stations to be plotted. Each share of the “accurate” curve is integrated giving the area under the curve between the stations. Next this area will be represented by a station or bar with the same area as the curve area it replaces.

This secures a one to one relationship in area between the “accurate” curve and the station curve. Further, this means that the area contribution from individual items which distribution is covering more than one station will be split into appropriate parts in each station. This secures the best possible conversion between “accurate” and station curve.

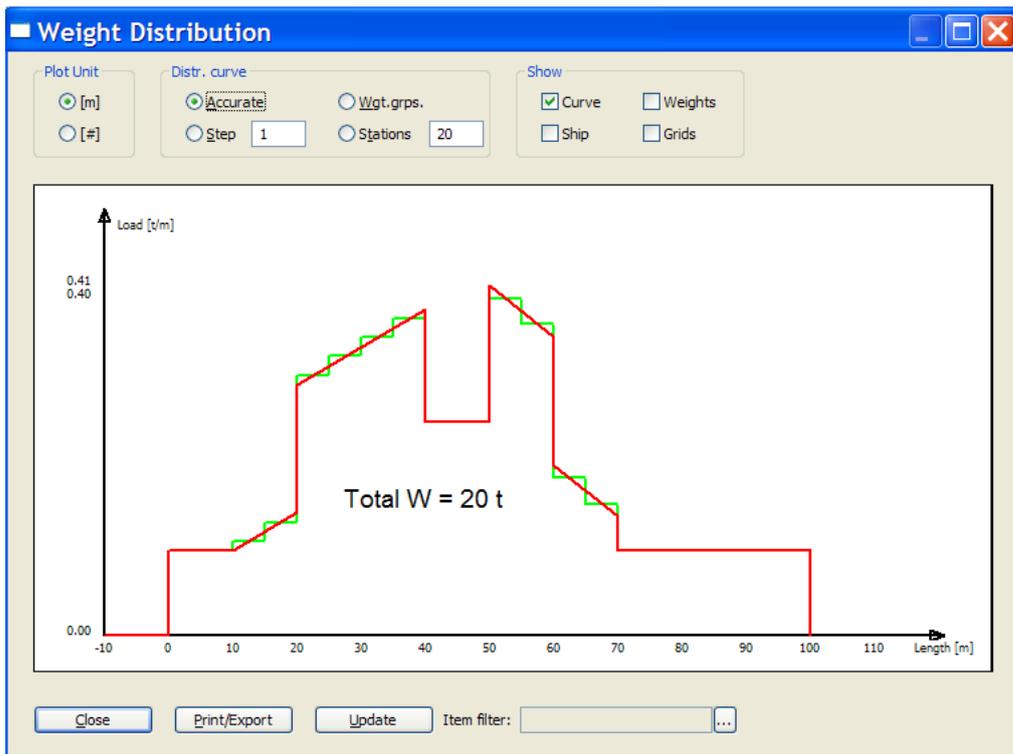
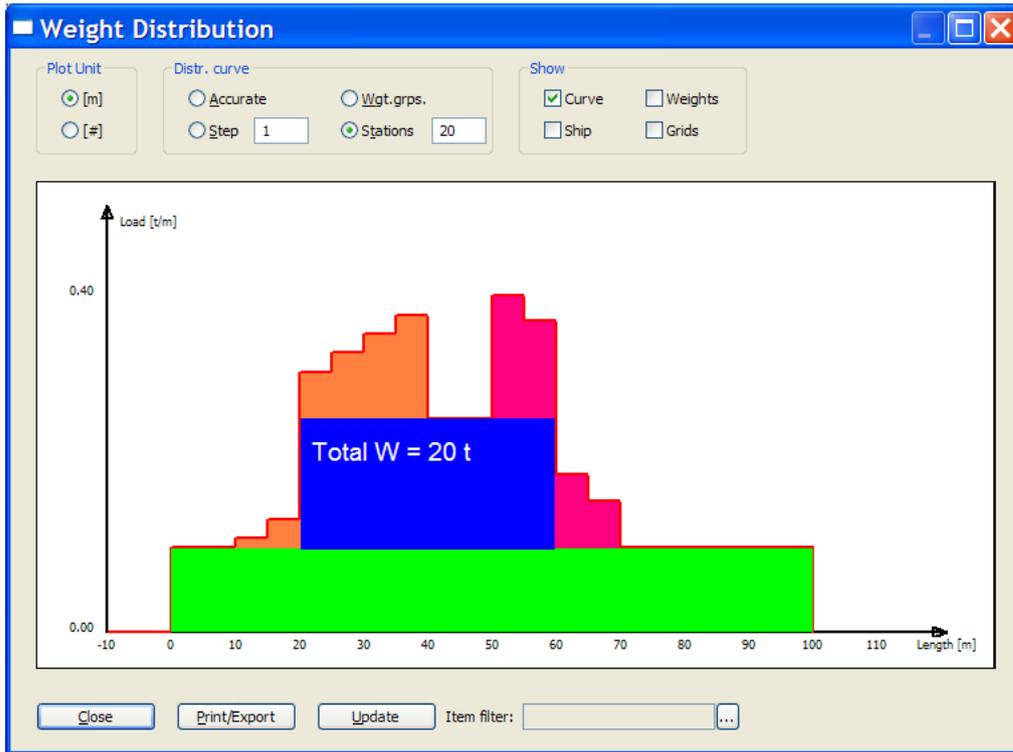
See figure on next page representing the station version of the curve. Again, the colors will help compare the curves to visually inspect how conversion takes place.



In both cases, the area under the distribution curve equals 20 tons. The figure below shows the "accurate" curve drawn in red with the station curve superimposed and drawn in green. This shows how the curve is transformed and the area preserved.

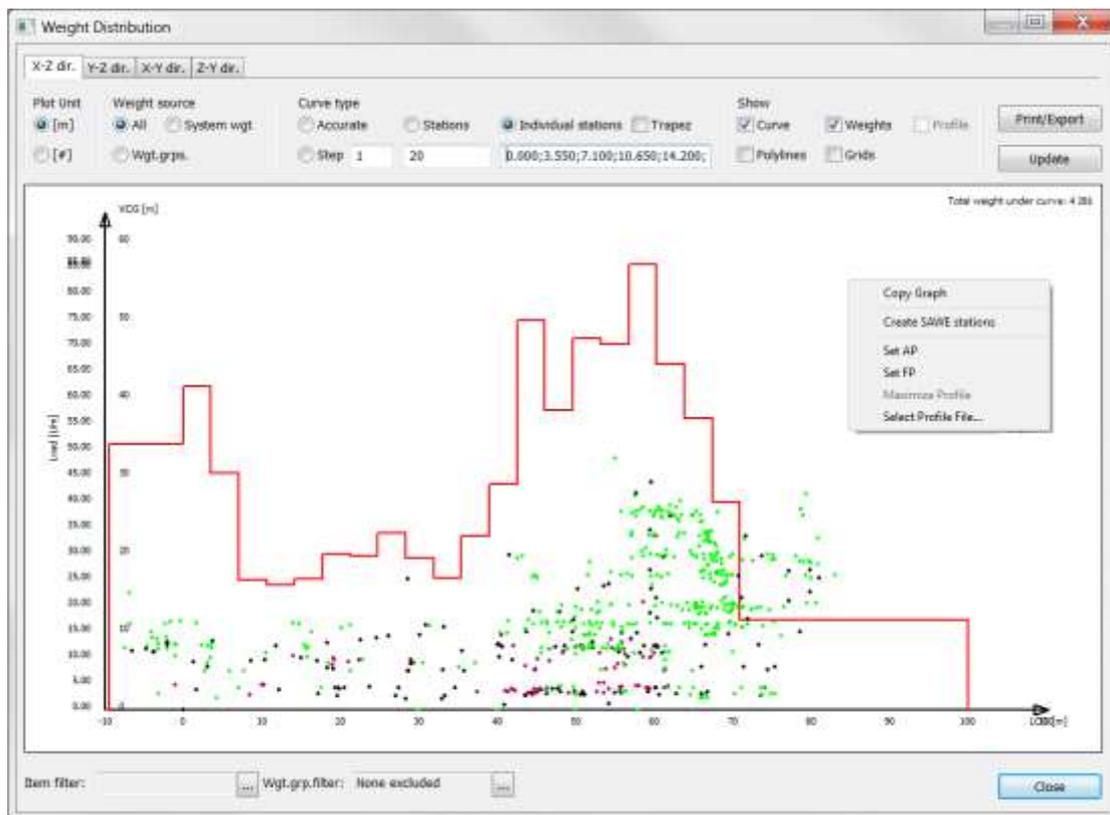


Of course, the same reasoning is also valid with any other number of stations, not just 10. The figures below shows same principles for the distribution curves as discussed above, only this time with a 20 station curve.



4.1.2 Individual Station Settings in Weight Distribution dialog box

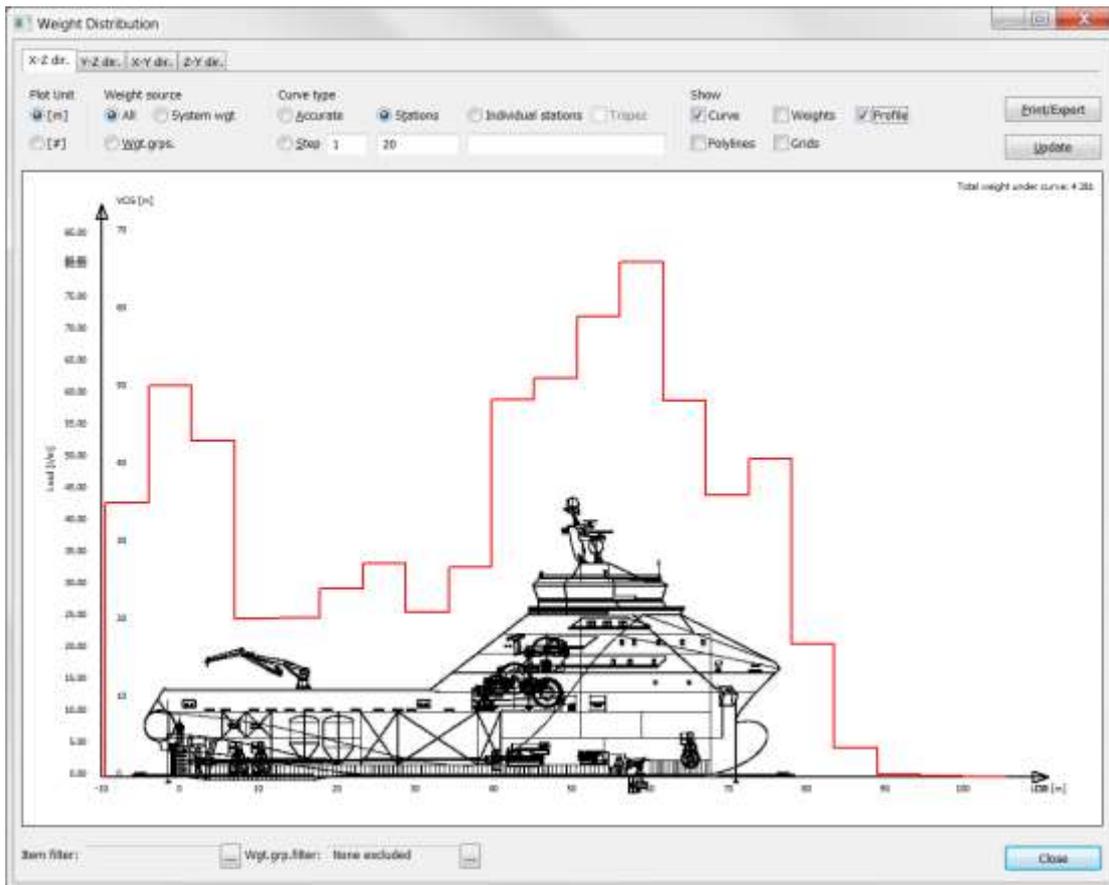
By setting **Curve Type** to “**Individual Stations**” you may individually set the start and stop points for the different stations of the weight distribution curve. The station setting is set on the format X1;X2;X3;...Xn where X is the LCG endpoint of each station (except the last station).



4.1.3 Creating a SAWE RP12 station profile

To automatically create a station profile that complies with SAWE (www.sawe.org) recommended practice 12, right-click the **Graph** area with the mouse and select **Create SAWE stations** from the submenu.

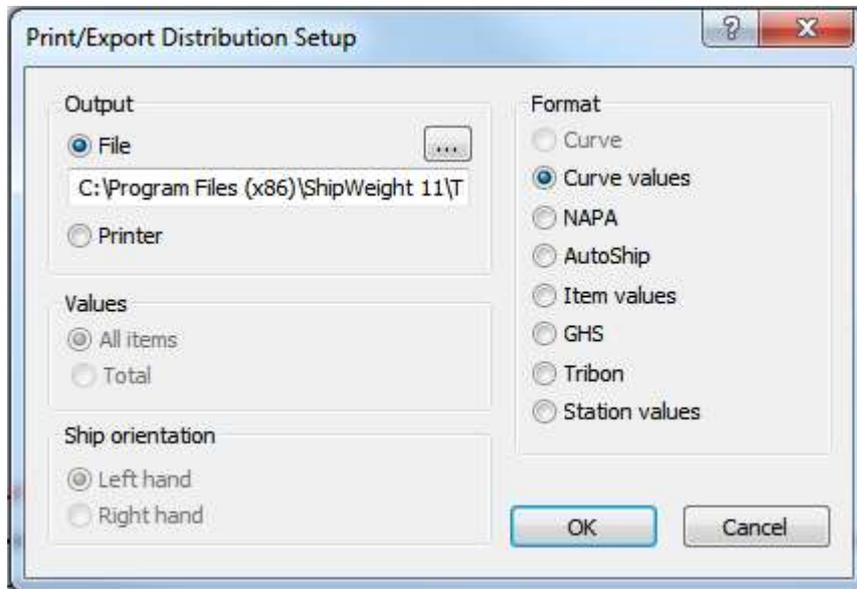
4.1.4 Inserting a Vessel Profile from a JPG file



If a JPG file has been added to the Graphic Drawing field of the **Project Info** dialog box (menu **View > Project Info...**) then this file can be applied to the weight distribution curve. **Profile** checkbox must be checked in the **Weight Distribution** dialog box. Use the mouse to right-click the **Graph** area and select **Maximize Profile** and next **Set AP** and **Set FP** to indicate on the drawing where the aft and fore perpendiculars are located. This way ShipWeight is able to scale the drawing correctly into the weight distribution curve.

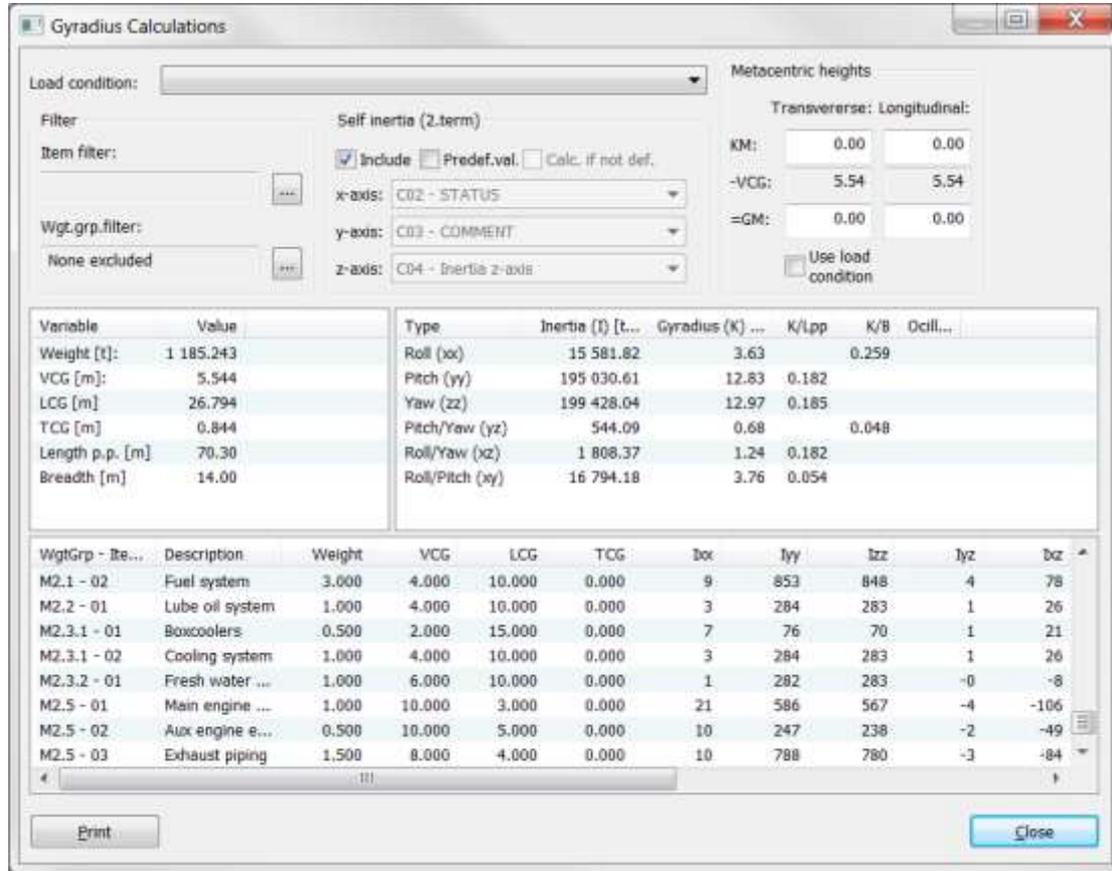
4.1.5 Exporting weight distribution

Clicking the **Print/Export** button in the dialog box makes it possible to send the curve to a printer or file, either graphically or numerically. It is also possible to export the weight curves in formats to be read by GHS, Tribon, NAPA and AutoShip.



4.2 Gyradius

When selecting **Gyradius...** under the **View** menu, approximated key values for gyradius can be obtained.



The following formulas are used for calculation of Roll gyradius:

$$K_{xx} = \sqrt{\frac{I_{xx}}{\Delta}}$$

$$I_{xx} = I_{tx} + I_{ox}$$

$$I_{tx,ox} = \sum i_{tx,ox}$$

$$i_{tx} = w(x^2 + y^2)$$

$$i_{ox} = \frac{w}{12}(a^2 + b^2)$$

K_{xx} = gyradius

w = weight of item

Δ = displacement

I_{tx} = sum of transference inertia of elements i_{tx}

I_{ox} = sum of item inertia of elements i_{ox}

(= 0 when 'Include 2.term of Steiner theorem' is not selected)

x,y = location of the item with respect to CoG

a,b = extension of the item

Similar formulas are used for Pitch and Yaw calculations.

For Pitch/Yaw calculations, the following formula applies:

$$i_{yz} = w \cdot (y \cdot z)$$

Similar formulas are used for Roll/Yaw and Roll/Pitch calculations.

If **Include 2.term of Steiner theorem** is selected, the following rules will apply when calculating moment of inertia:

If a weight item is defined with extension in all 3 dimensions, self-inertia will be calculated for that item and included in the total moment of inertia

If a weight item is defined without extension in all 3 dimensions, self-inertia will be neglected for that item.

When calculating the self-inertia, the shape of the weight item will be approximated to a box

The **Gyration** dialog box buttons **Item filter** and **Wgt.Grp. filter** enables the calculation of gyration for parts of the vessel defined by the filter specifications. Clicking these buttons will pop up the standard filter dialog box as used in **Items** dialog box and **Weight Distribution** dialog box.

The **Gyration** dialog box will list gyration contribution from each single weight item in the details list of the lower part of the dialog box. The canned print report from this dialog box also has the option of whether or not to include the item details in the report.

The **Gyration** dialog box gives the opportunity to include self-inertia defined in custom codes by checking the **Predef.Val.** checkbox and referring to the custom codes holding self-inertia values by selecting these from the corresponding dropdown lists x, y, and z –axis.

4.3 Comparing projects

Projects can be compared on weight group level basis. The dialog box is opened from the **View** menu by selecting **Compare...**. You will be asked to open another project and this can now be compared to the project you were working in. The different property sheet tabs in the dialog box are used to select which of the user defined different codes structures the projects will be for compared according to.

Code & Description
 Weight [t] | VCG [m] | LCG [m] || ImportTest | ImportTest | ImportTest |
DISP - Displacement	21.873.920	9.144	39.393
LW - Lightship	21.873.920	9.144	39.393
E - Equipment	5.721.860	11.487	44.925
E1 - Equipment for cargo	505.200	12.121	19.076
E1.1 - Hatches	1.050	7.900	45.700
E1.1.2 - Cargo hatch cov., tween d.	1.050	7.900	45.700
E1.4 - Equip. for cargo, holds/deck	355.580	10.900	14.800
E1.5 - Spec. equip. cargo handf.	19.400	10.800	-0.200
E1.6 - Rotating cranes	93.650	19.545	42.938
E1.10 - L/D syst. lg. cargo	35.520	5.612	8.704
E1.10.1 - L/D pumps	14.350	4.388	18.061
E1.10.2 - L/D deck syst.	5.000	10.000	10.000
E1.10.3 - L/D pump-room syst.	10.000	0.000	0.000
E1.10.6 - Stripping systems	6.170	14.000	0.000
E2 - Ship equipment	2.687.660	10.646	42.926
E2.1 - Manoev. mach. & equip.	156.150	3.470	-3.257
E2.1.1 - Rudder, stocks & bear.	120.000	2.000	-3.200
E2.1.2 - Steering gear	36.150	8.351	-3.448
E2.2 - Side thrusters	703.360	3.409	42.666
E2.3 - Nav., search. & comm. eq.	19.150	30.255	57.933
E2.3.1 - Nav. & search. equipment	19.150	30.255	57.933
E2.5 - Anch., moor. & tow. eq.	1.568.750	12.368	42.307

 The dialog box also has 'Print' and 'Close' buttons at the bottom."/>

Several options in the dialog box let the user do different comparisons:

List can be done for all weight groups or only for the ones containing values

Sort sort the listing either by hierarchy order or by deviation

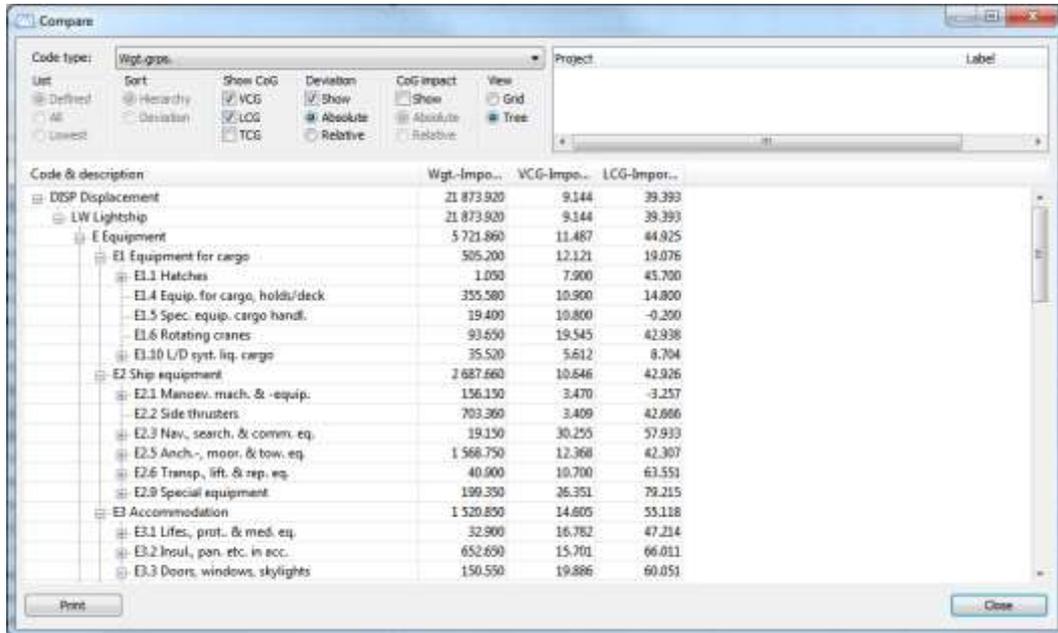
Show CoG the user can specify if VCG, LCG or TCG should be included

Deviation can be shown in absolute values or in percentage

Predict linear prediction will assume the total weight if the deviation in the project continues with the same percentage deviation for future weight registering as up to now. Constant prediction will predict total weight if the rest of the project has no deviation.

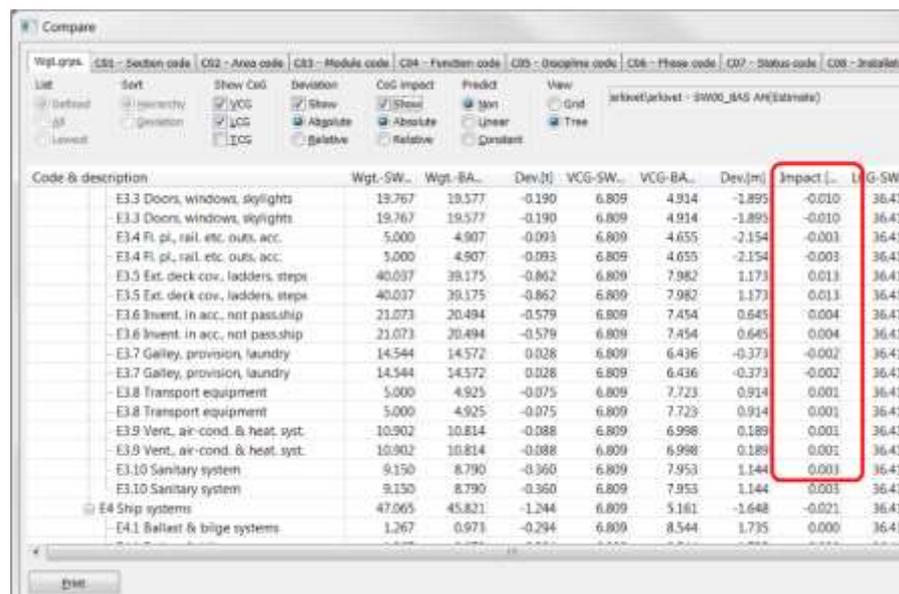
4.3.1 Tree view in Compare dialog box and Total CoG Impact from Changes

The **Compare** dialog box may be switched to an explorer tree mode by selecting **Tree** in the **View** frame of the dialog box. This way it is easier to navigate and compare weight groups between projects.



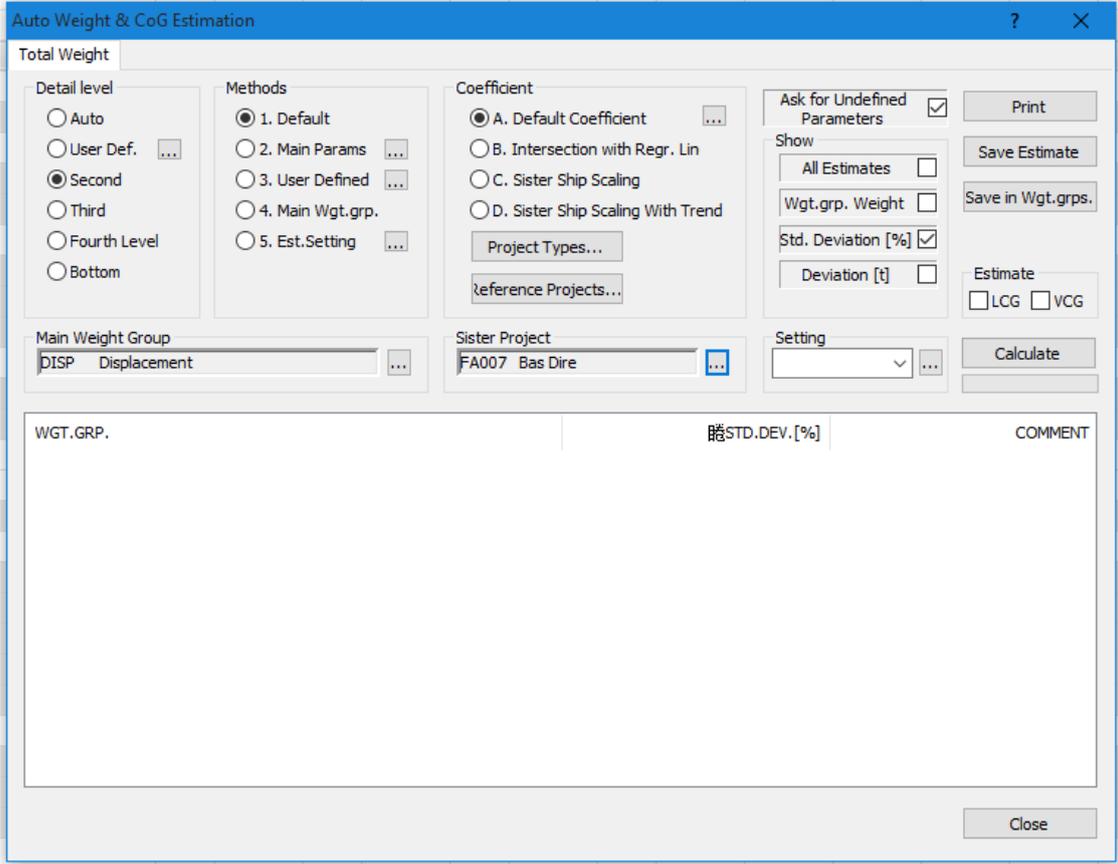
4.3.2 Column for Checking Change Impact

When checking the checkbox **Show** in the **CoG impact** frame in the **Compare** dialog box, a column named **Impact** will appear next the center of gravity Deviation columns and show the impact each single deviation has on the total center of gravity for the project.



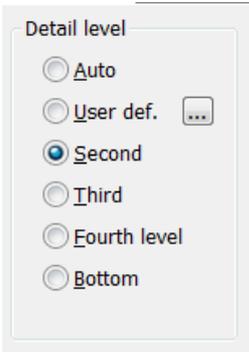
4.4 The Auto estimation... dialog box

The **Auto weight & CoG estimation...** dialog box is a three step quick estimate providing automatic results based upon the ship database. The dialog box is found under the **Estimate** menu by selecting **Auto estimation...** Alternatively, click the **Auto Estimation** button in the main  view:



The first step is to choose which detail level to calculate.

If you select **Auto**, the system will detect the weight groups to estimate.



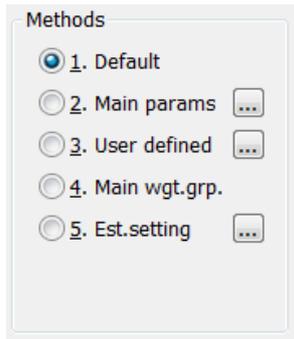
User defined lets the user define which weight groups to be included in the estimate. By clicking the **Browse** button (...) to the right of the radio button, the user can define the weight groups to be included by ticking them in a tree resource.

Second, Third, Fourth and **Bottom** gives calculation on all weight groups for the level chosen.

Next the user specifies which estimation methods should be used.

Next, you should select **Method** of estimation.

Default makes the standard ShipWeight methods active.

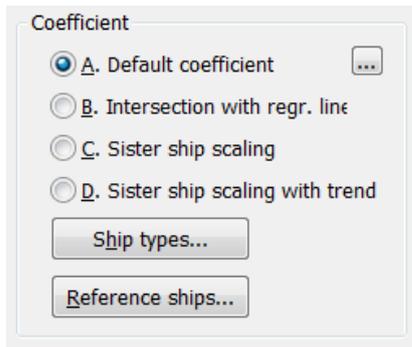


Main parameters use only methods containing main parameters. This option can be used when very few of the ship's parameters are known. Use **Browse** button (...) to inspect the methods.

User defined will calculate using the user-defined methods. These methods can be checked and edited by clicking the **Browse** button (...) to the right of the option.

Main wgt.grp. will use methods connected to this groups to estimate the weights.

Then the **Coefficient** to be used is specified in the last step.



Default will use the default coefficient saved for that ship type and weight group. By clicking the **Browse** button (...) the dialog box for checking and editing default coefficient is opened.

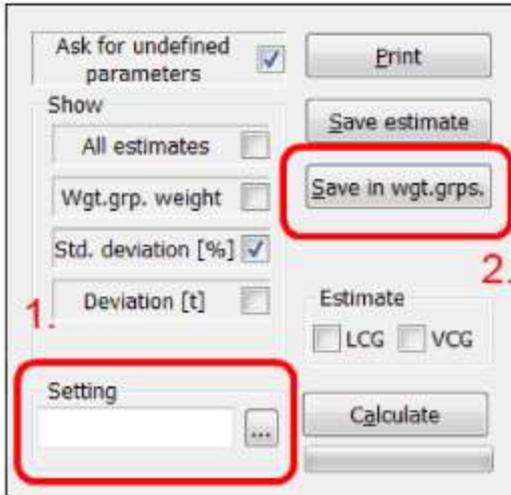
Intersection with regr. line will use the coefficient calculated at the intersection between the regression line in the graph and the plot parameter for the ship.

Sister ship scaling will use the coefficient for the ship selected as sister ship.

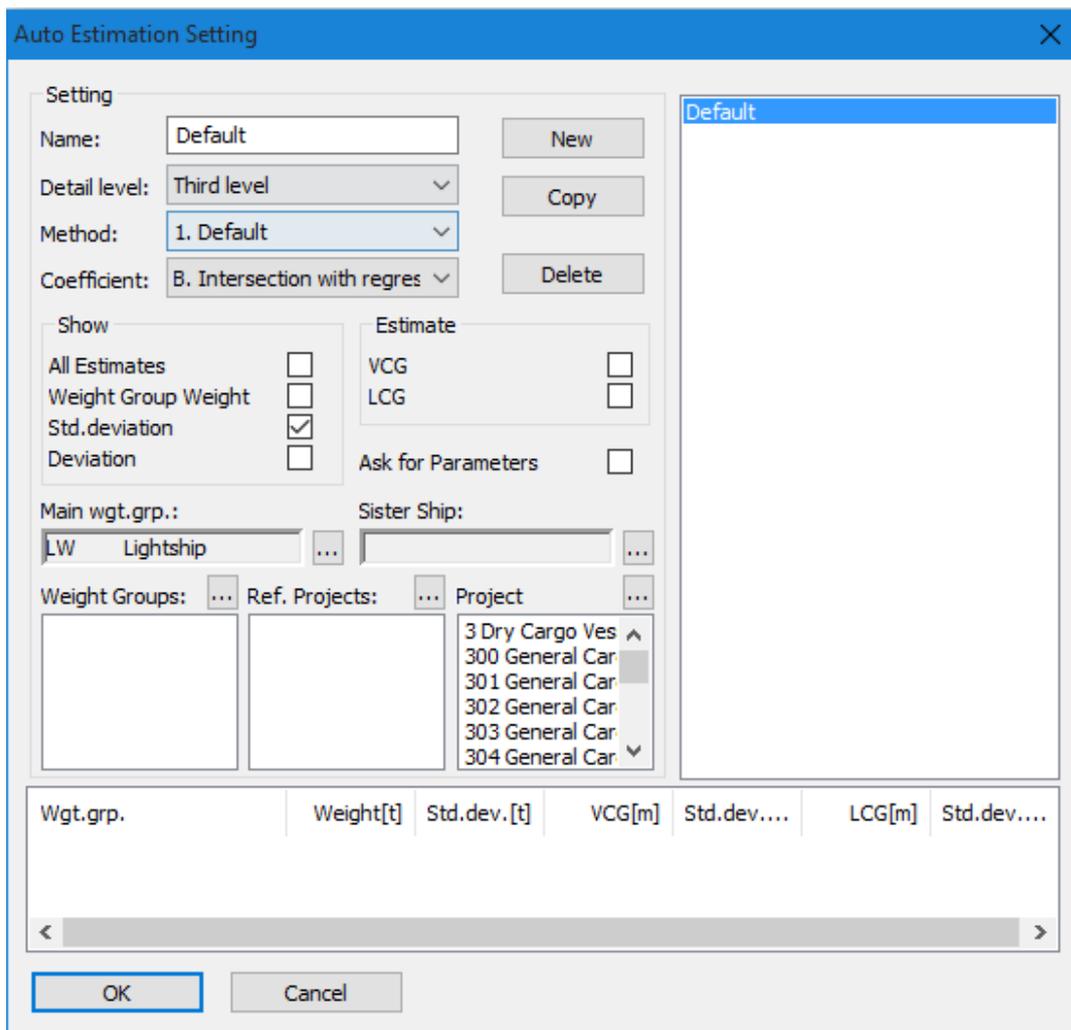
Sister ship scaling with trend will use the coefficient for the ship selected as sister ship, but adjusted according to the trend in the regression line.

By clicking the **Calculate** button the calculation is executed and the results will show in the list at the lower half of the dialog box.

The settings of the **Auto estimation** dialog box can be saved for later use. First enter the name in the **Setting** field (marked with circle 1), then click the **Save estimate** (marked with circle 2).



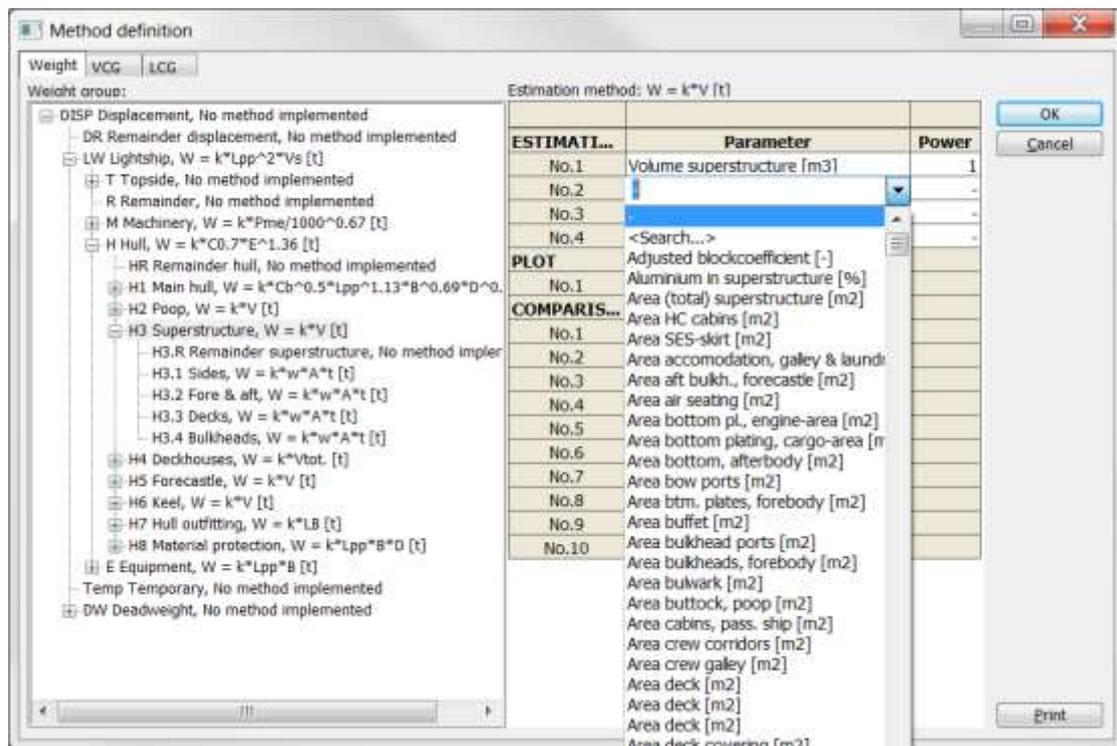
To retrieve a saved setting, click the **Browse** button  (...) by the **Setting** field. This will open the **Auto estimation setting** dialog box. Select one of the saved settings from the list to the right, and click **OK** to apply the settings to the **Auto estimation** dialog box.



4.5 User defined estimation methods

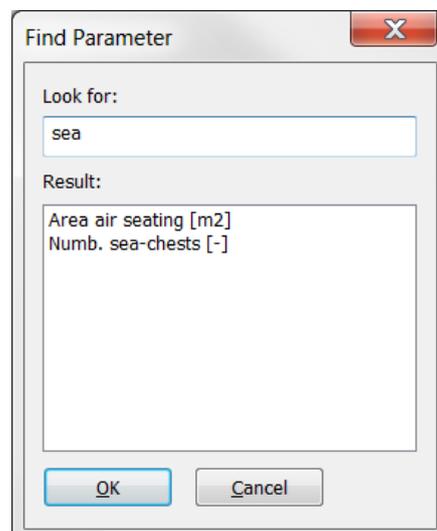
The user can define own methods and store them as a user defined set of methods. The user-defined methods are defined in the **Method definition** dialog box, which can be found under the **Estimation** menu. By default the ShipWeight methods are included. The user can edit these to customize own methods.

This dialog box makes it possible for the user to define own estimation methods for the parametric estimation as an alternative to the default formulas. Formulas can be defined for **Weight**, **VCG** and **LCG** by selecting the appropriate tab in the dialog box.



You can navigate through the weight groups in the WBS in the tree to the left in the dialog box. When selecting a weight group in the tree, the user defined method (estimation formula) for this weight group can be defined in the grid to the right by adding estimation, plot and comparison parameters.

You select the parameters by clicking twice in the grid. This will open a dropdown list from where you can select the parameter of choice. Notice the first item in the list - <Search...>. A double-click on this will open up a search dialog box that helps you find the parameter you



are looking for. Select <Search...> and press **ENTER** to open the dialog box and start typing in the keyword for the parameter.

The new defined estimation methods can be used in the **Auto estimation** dialog box by setting the radio button to **User defined** in the method dialog box, or by selecting **User defined** under the **Estimation** menu in the main **Estimation** dialog box.

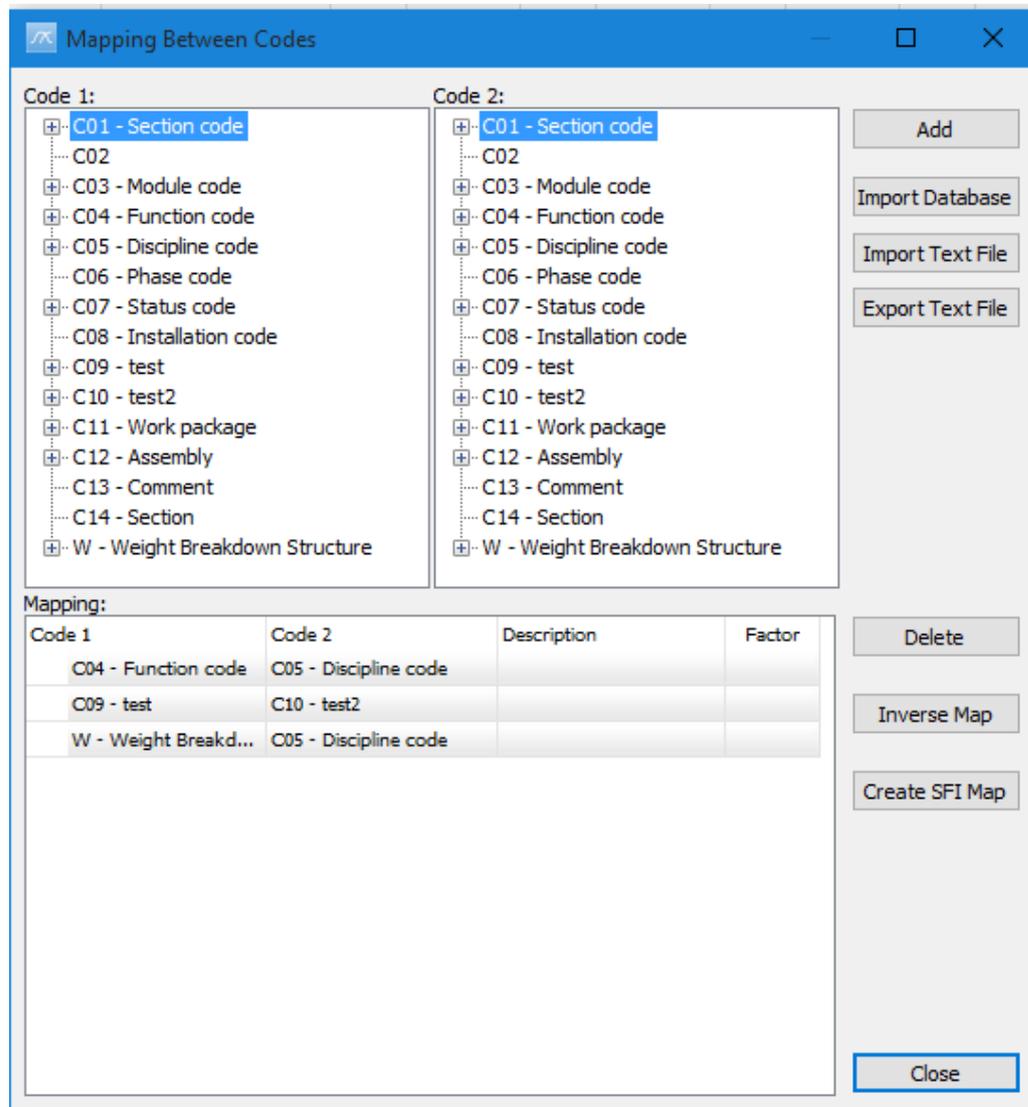
4.6 Mapping between code types

From the **View** menu select **Code Mapping...** to open the **Mapping between codes** dialog box. This dialog box enables the user to create a mapping between any of the code types.

To create a mapping, first select the two code types: **Code 1** and **Code 2**, e.g. **Module** and **Section** codes. Then select the values that are to be connected. Pairs of linked values can be added, edited and deleted by the buttons at the right-hand side of the dialog box.

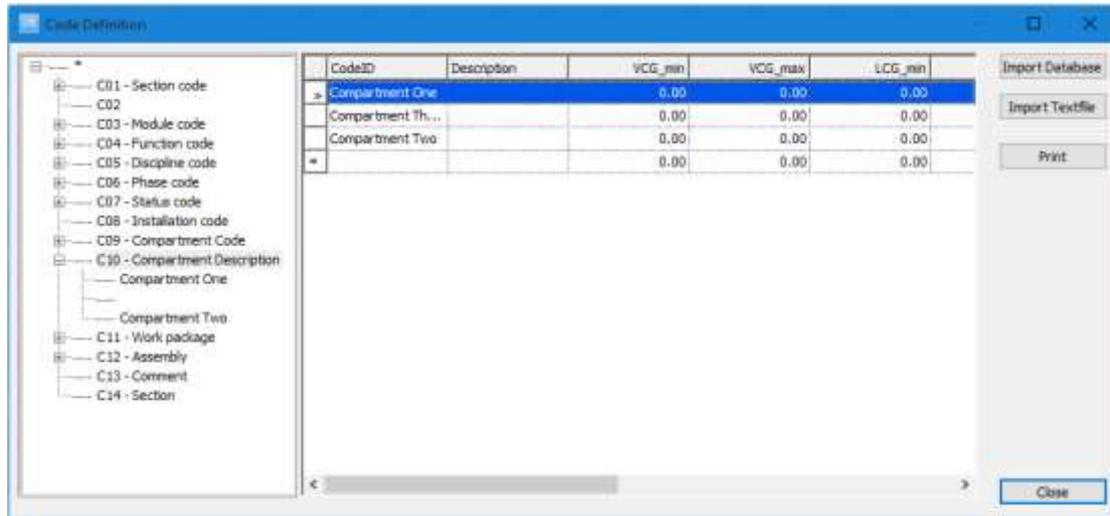
Code mappings can either be imported directly from other ShipWeight projects or via an ASCII-file.

Please note that the mapping is not two-way. In the example below, modules are linked with corresponding sections. To create a mapping that works the other way round, click the **Inverse map** button.

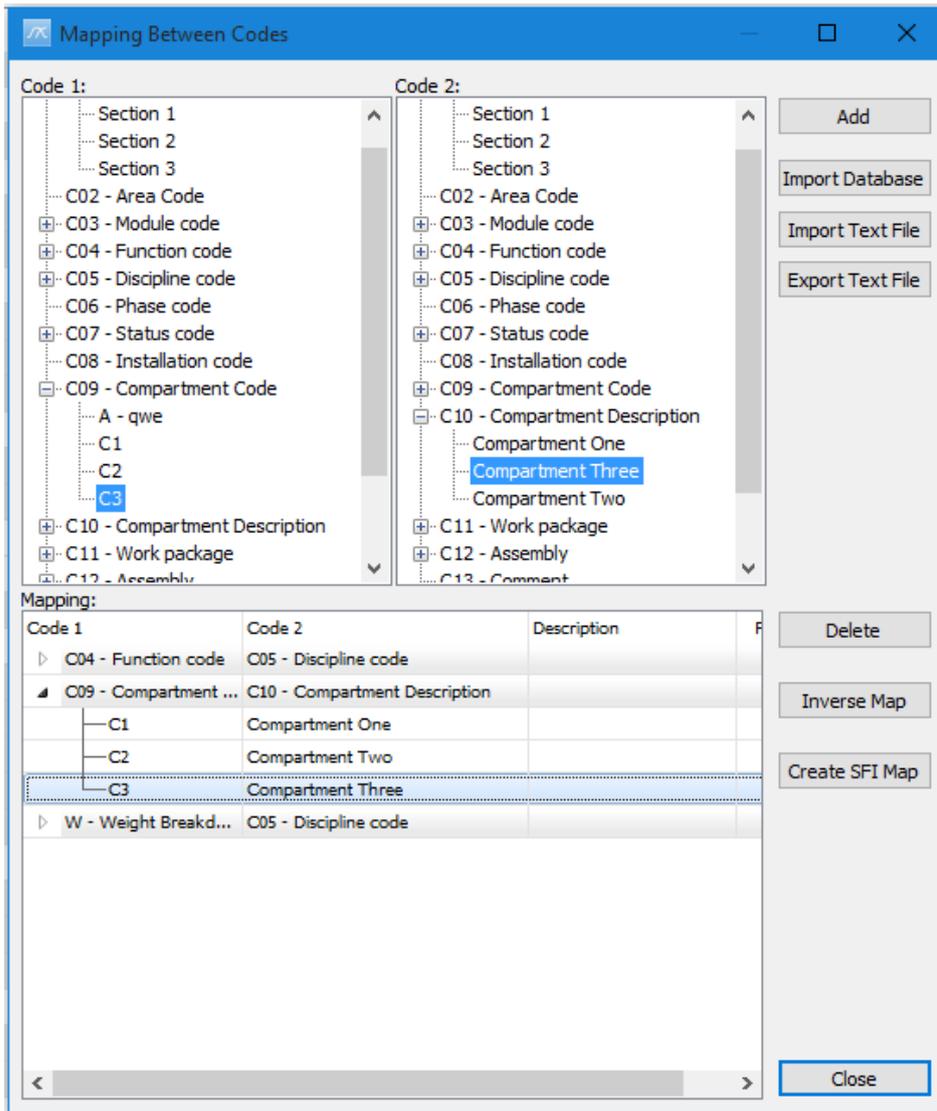


4.6.1 Code Mapping Sample

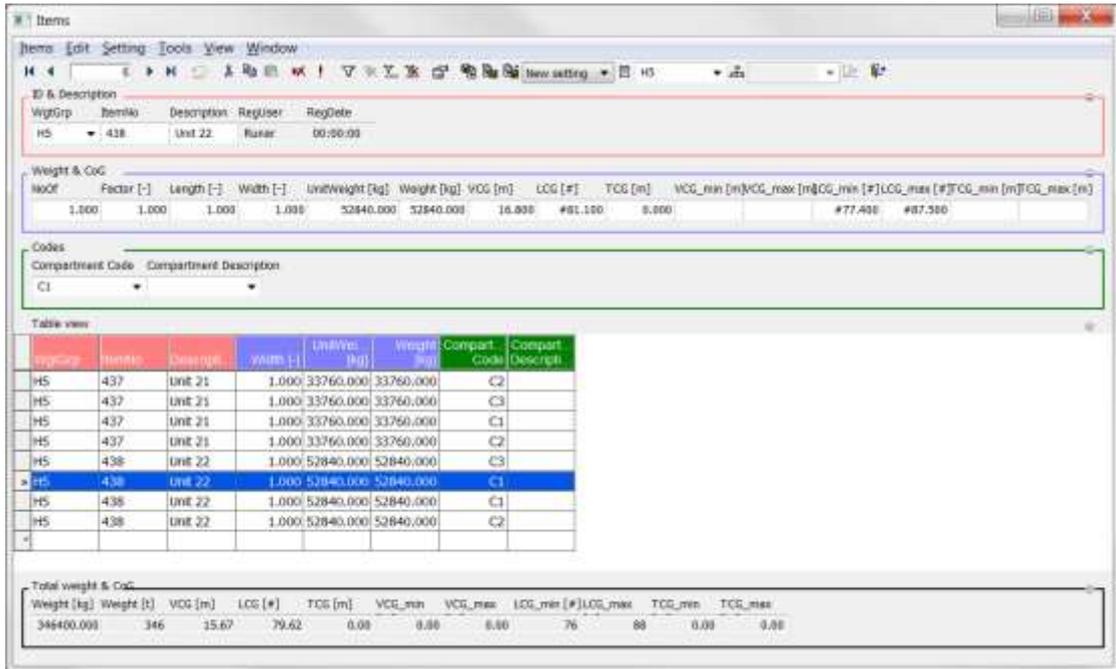
First make two codes: “C09 – Compartment code” and “C10 – Compartment description” in the **Code Definition** dialog box.



In the **Code Mapping** dialog box, select **C09** and then **C1** value in **Code 1**. Then select “**Compartment One**” under **C10** in the **Code 2** column. Then click **Add** button. Do the same for C2->Compartment Two and for C3->Compartment Three. This creates the mapping. Now close the dialog box.

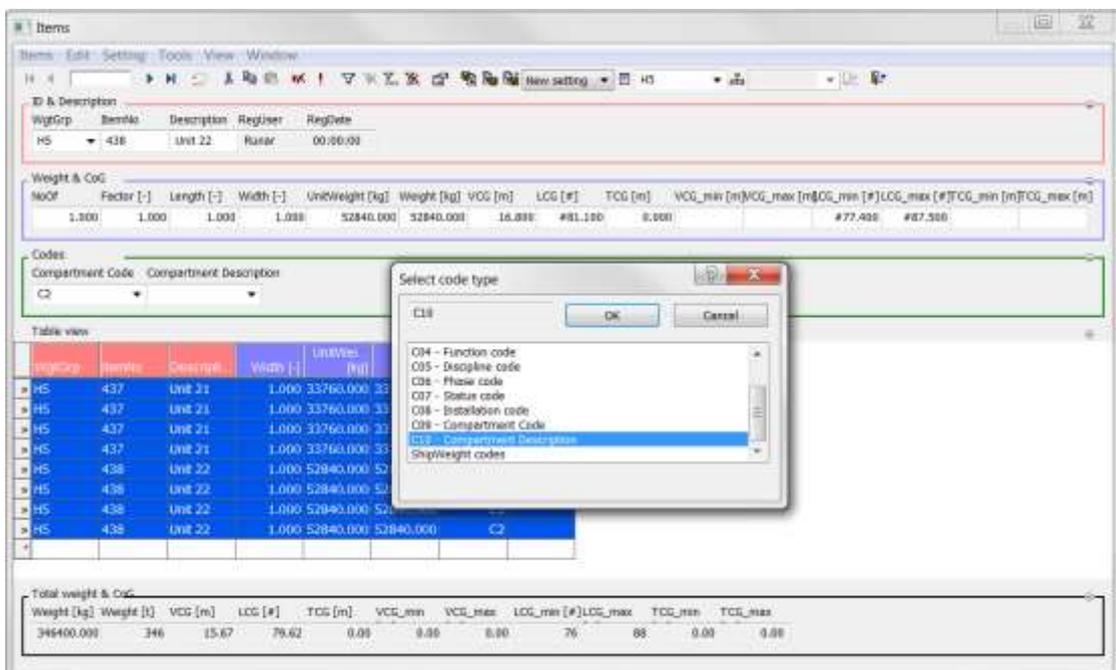


In the **Items** dialog box, weight items are assigned compartment code (C09), but not compartment description (C10):

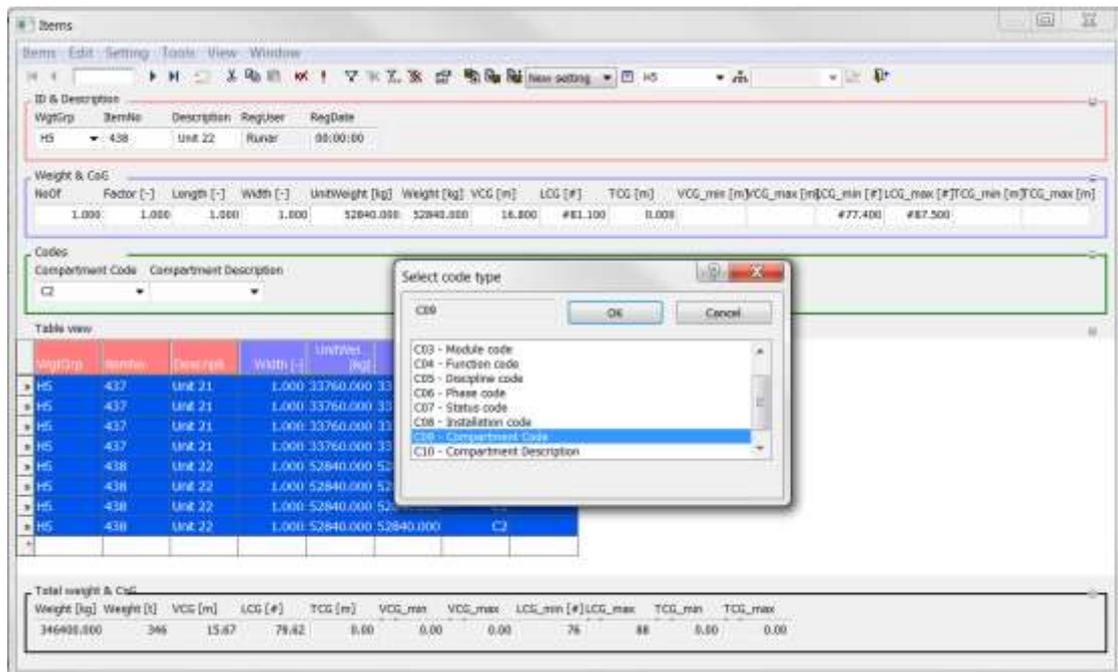


All items to be assigned “**Compartment description**” through “**Code Mapping**” must be selected in the **Table view**, and go to **Items** menu in the **Items** dialog box and select **Set Codes by mapping....**

Click **OK** on the message pop-up and then select “**C10**” in the pop-up dialog box to pick the code to be updated:

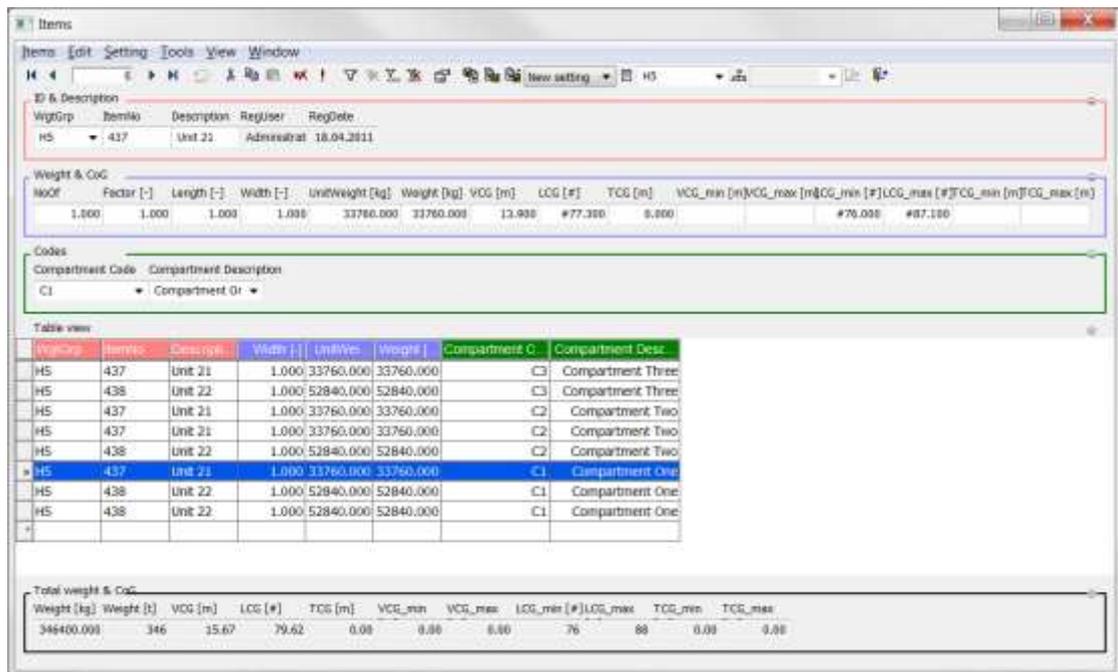


When “**C10**” is selected in the list click **OK** and once more click **OK** to pass the message pop-up and then select “**C09**” in the pop-up dialog box to select the code the update should be based on:



Click **OK** again and code C10 should be updated based on the mapping.

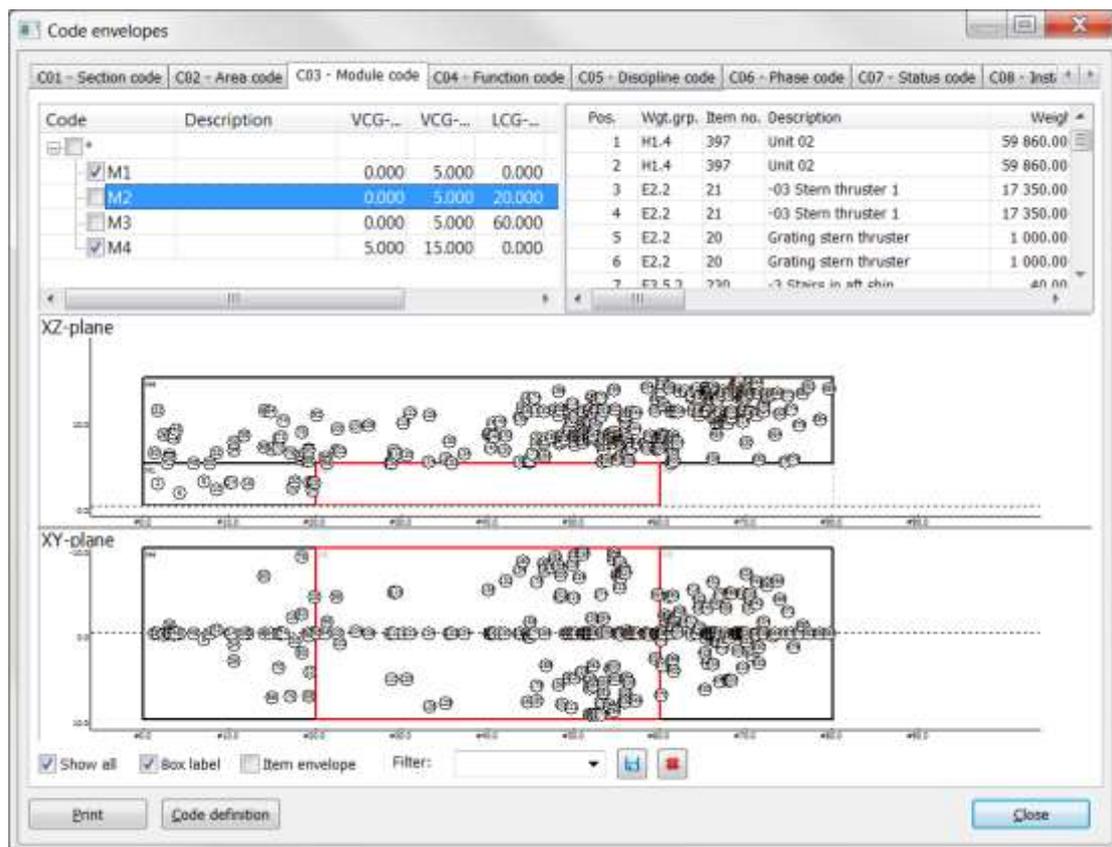
You're done:



4.7 The Code Envelopes dialog box

The **Code envelopes** dialog box offers a convenient way of checking the items tagged to a user defined code structure. To open the dialog box, from the **View** menu, select **Code Envelopes....**

The dialog box is divided into two parts: a tree view for browsing the code structure on the upper part, and the plot area on the lower part. By selecting one of the groups in a code structure, the items tagged to this group will be plotted both in the XY-plane and the XZ-plane. In the plot each item is represented by a number. The items are also listed.

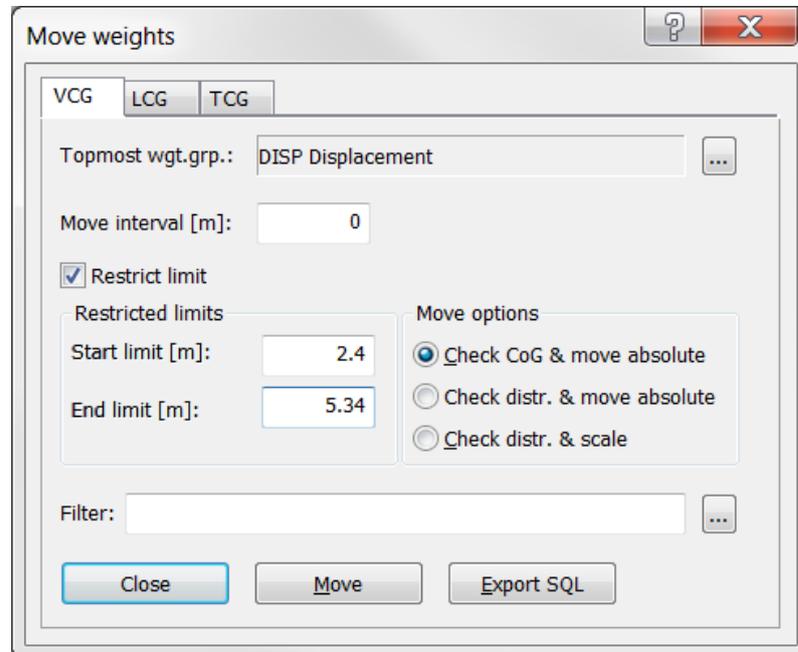


4.7.1 Plotting multiple envelopes in Envelope dialog box

The **Code envelopes** dialog box has checkboxes to the left of the custom codes holding definitions for envelopes. Checking these boxes will include the envelope and attached items for the code. The code selected in the list will get the envelope and items marked red to distinguish the current selected envelope from other envelopes plotted.

4.8 Move CoG

If you want to move certain weight groups quickly to see the result on the center of gravity of the total lightship, from the **Weight group** menu, select **Move CoG....**



First select in which direction to move the weights by selecting one of the tabs at the top of the dialog box (**VCG**, **LCG** or **TCG**). Then click the **Browse** button [...] at the right of the **Top post** field to select the weight group to be moved. Next set the interval for the groups to move.

To set the start and end limit for weight items to be included in the move, tick off the option **Restrict limit**, and fill in the edit boxes.

The Move Options provides three ways of moving the weight-items:

Check CoG & move absolute – this will move the VCG, VCG_min and VCG_max of all weight items with VCG within the move limits.

Check distr. & move absolute – this will move the VCG, VCG_min and VCG_max of all weight items with either VCG, aft or fore within the move limits.

Check distr. & scale – this will move the VCG, VCG_min and VCG_max of all weight items with either VCG, VCG_min and VCG_max within the move limits. Items partly within specified limits will be scaled depending on VCG_min and VCG_max values.

Optionally, you can add a filter to select the weight items to be moved.

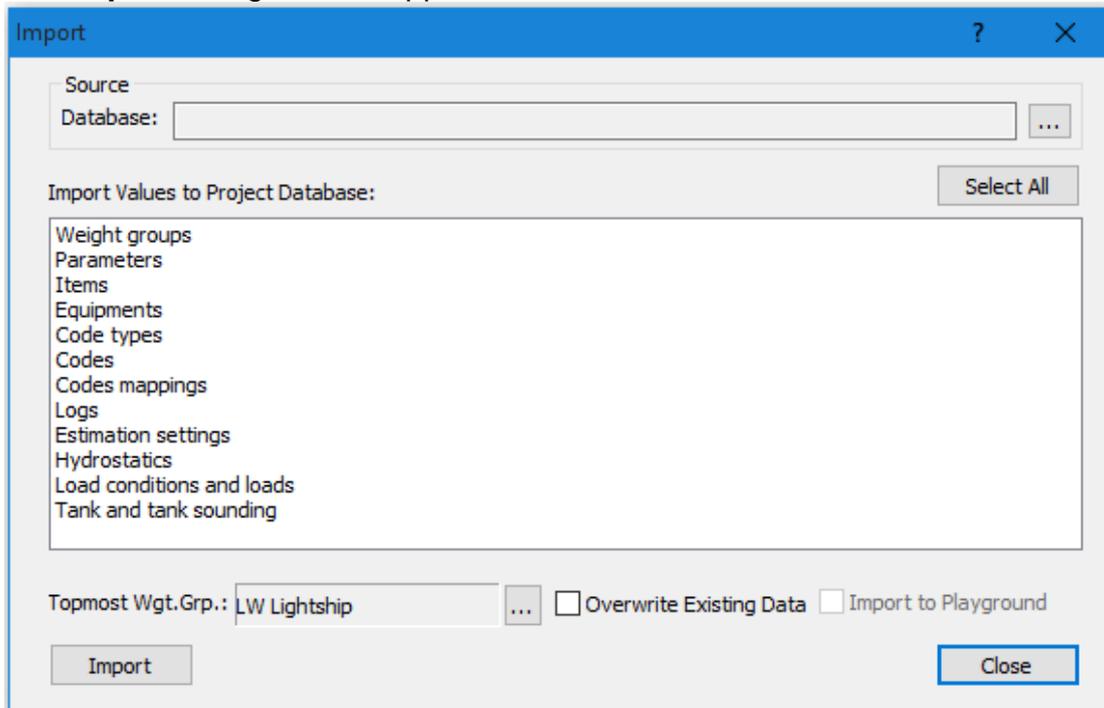
Finally click the **Move** button to execute the move.

4.9 Importing data to ShipWeight

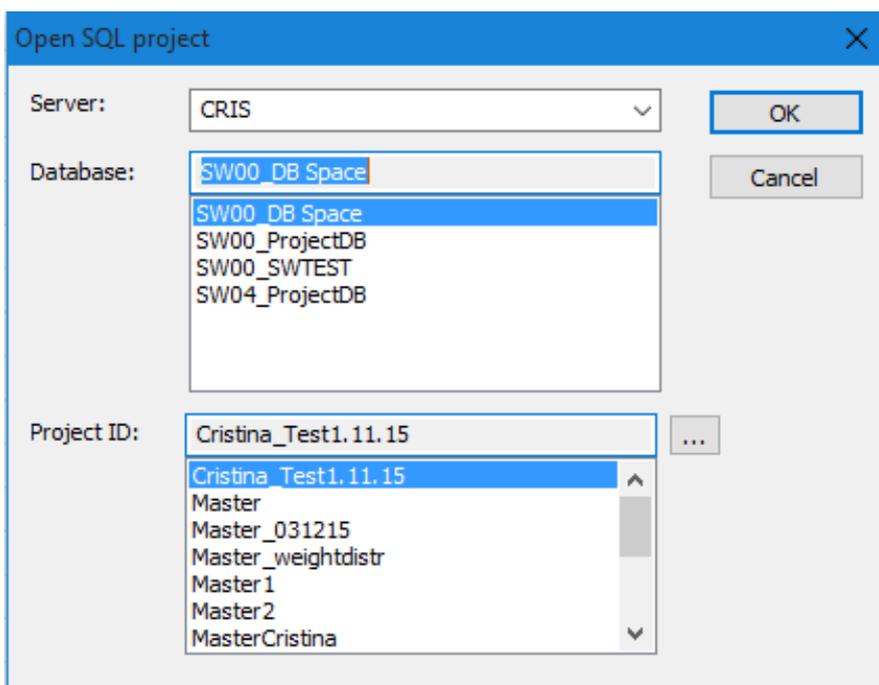
4.9.1 Importing from a ShipWeight database (SQL)

You can easily import data from other ShipWeight databases. Select **Project > Import > ShipWeight 11.0 data** from the menu of the ShipWeight main view.

The **Import** dialog box will appear.

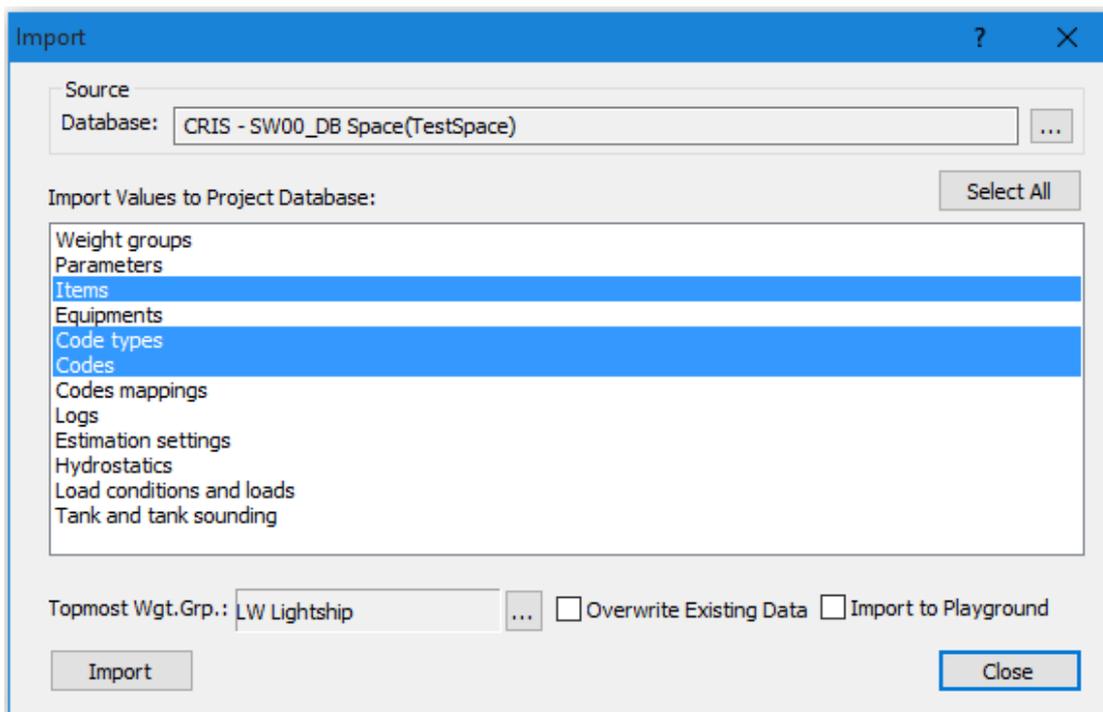


Now you have to select from which **Database** you want to import data. The **Open SQL project** dialog box appears. Please choose a database and a Project ID to use for import and click the **OK** button.



The **Import** dialog box includes a list of data to be imported:

Weight groups	Import Weight and CG data for weight groups. Important: No weight items are imported, only total Weight and CG for each weight group.
Parameters	All defined parameters. To check which parameters are imported, please open the Parameters dialog box (View > Parameters) of the source project.
Items	Weight items. Please note that the Weight items imported are limited by the 'Topmost wgt.grp.' selected at the bottom of the Import dialog box.
Equipment Code types	All defined code types, e. g. C01, C02. Important: both Code types and Codes must be selected to import the complete code definition.
Codes	All defined codes.
Logs	Log entries (View > Log > Project log...)



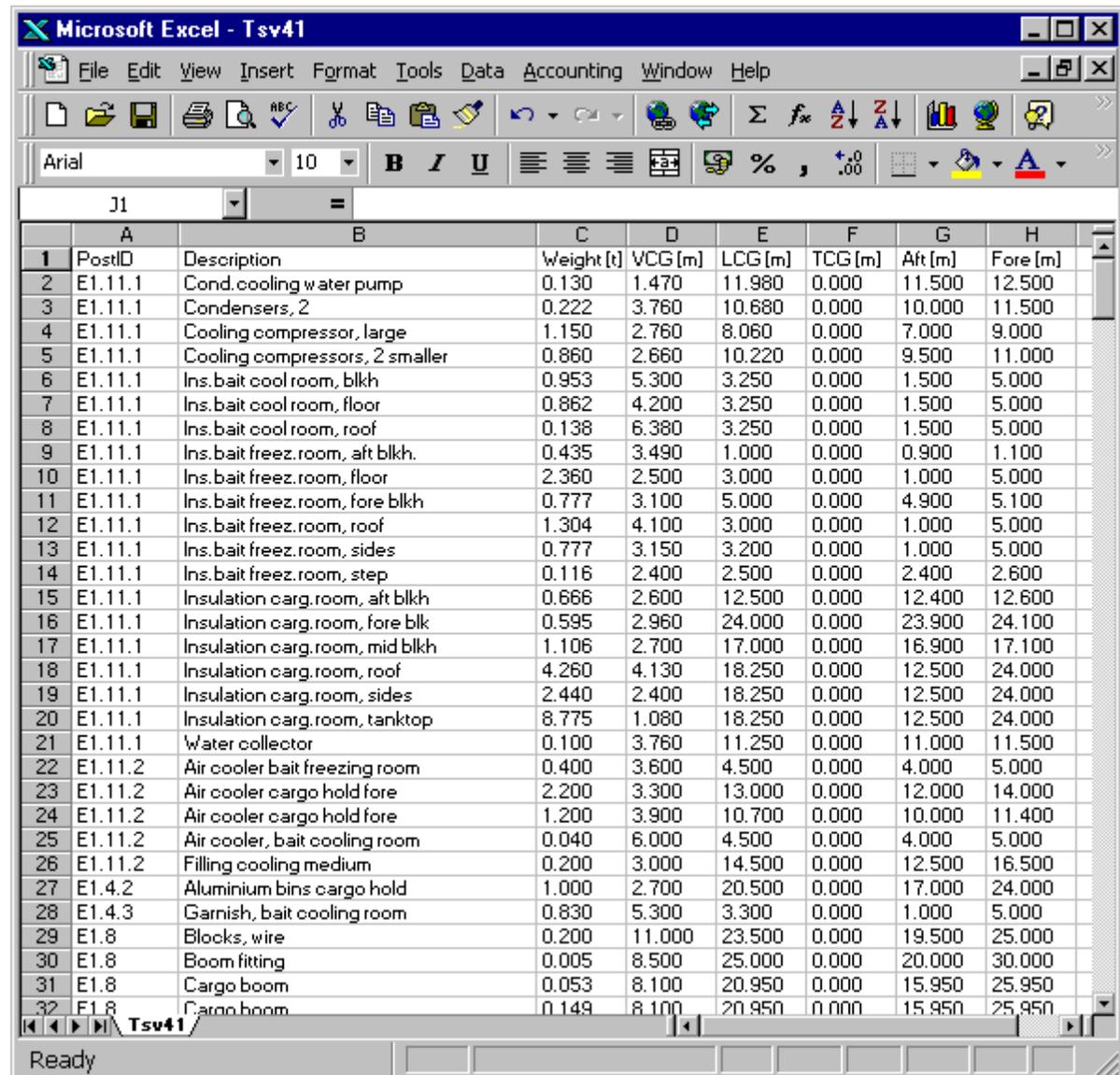
Click the **Select all** button to import all available data. To select two or more items from the list, press **CTRL** or **SHIFT** when clicking in the list with the mouse.

Make sure to set the proper **Topmost wgt.grp.** Please note that the import of weight items are limited by the weight group selected as **Topmost wgt.grp.**

If appropriate, select **Overwrite existing data**. To start the import process, please click the **Import** button. Click the **Close** button to exit the **Import** dialog box.

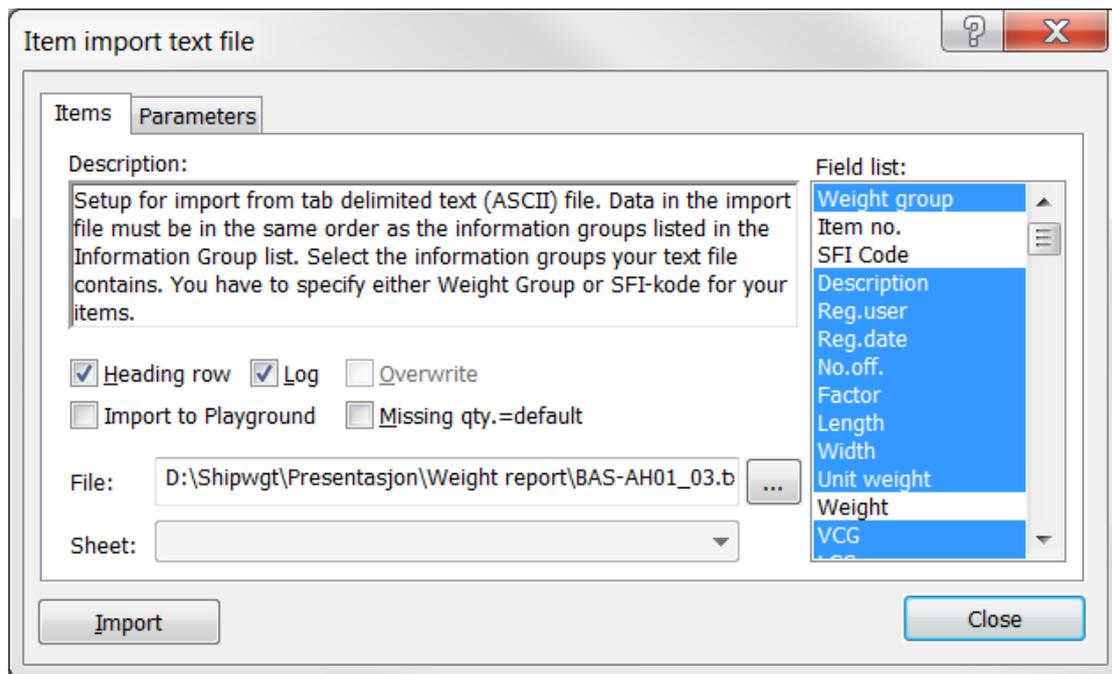
4.9.2 Importing weight items from a spreadsheet

To import weight items into ShipWeight from a spreadsheet, the spreadsheet first has to be organized in such a way that ShipWeight is able to import it. The weight data in the spreadsheet should be organized in columns. The spreadsheet might also have a heading row. The picture below shows an example on how a spreadsheet can be organized.



	A	B	C	D	E	F	G	H
1	PostID	Description	Weight (t)	VCG (m)	LCG (m)	TCG (m)	Aft (m)	Fore (m)
2	E1.11.1	Cond.cooling water pump	0.130	1.470	11.980	0.000	11.500	12.500
3	E1.11.1	Condensers, 2	0.222	3.760	10.680	0.000	10.000	11.500
4	E1.11.1	Cooling compressor, large	1.150	2.760	8.060	0.000	7.000	9.000
5	E1.11.1	Cooling compressors, 2 smaller	0.860	2.660	10.220	0.000	9.500	11.000
6	E1.11.1	Ins.bait cool room, blkh	0.953	5.300	3.250	0.000	1.500	5.000
7	E1.11.1	Ins.bait cool room, floor	0.862	4.200	3.250	0.000	1.500	5.000
8	E1.11.1	Ins.bait cool room, roof	0.138	6.380	3.250	0.000	1.500	5.000
9	E1.11.1	Ins.bait freez.room, aft blkh.	0.435	3.490	1.000	0.000	0.900	1.100
10	E1.11.1	Ins.bait freez.room, floor	2.360	2.500	3.000	0.000	1.000	5.000
11	E1.11.1	Ins.bait freez.room, fore blkh	0.777	3.100	5.000	0.000	4.900	5.100
12	E1.11.1	Ins.bait freez.room, roof	1.304	4.100	3.000	0.000	1.000	5.000
13	E1.11.1	Ins.bait freez.room, sides	0.777	3.150	3.200	0.000	1.000	5.000
14	E1.11.1	Ins.bait freez.room, step	0.116	2.400	2.500	0.000	2.400	2.600
15	E1.11.1	Insulation carg.room, aft blkh	0.666	2.600	12.500	0.000	12.400	12.600
16	E1.11.1	Insulation carg.room, fore blk	0.595	2.960	24.000	0.000	23.900	24.100
17	E1.11.1	Insulation carg.room, mid blkh	1.106	2.700	17.000	0.000	16.900	17.100
18	E1.11.1	Insulation carg.room, roof	4.260	4.130	18.250	0.000	12.500	24.000
19	E1.11.1	Insulation carg.room, sides	2.440	2.400	18.250	0.000	12.500	24.000
20	E1.11.1	Insulation carg.room, tanktop	8.775	1.080	18.250	0.000	12.500	24.000
21	E1.11.1	Water collector	0.100	3.760	11.250	0.000	11.000	11.500
22	E1.11.2	Air cooler bait freezing room	0.400	3.600	4.500	0.000	4.000	5.000
23	E1.11.2	Air cooler cargo hold fore	2.200	3.300	13.000	0.000	12.000	14.000
24	E1.11.2	Air cooler cargo hold fore	1.200	3.900	10.700	0.000	10.000	11.400
25	E1.11.2	Air cooler, bait cooling room	0.040	6.000	4.500	0.000	4.000	5.000
26	E1.11.2	Filling cooling medium	0.200	3.000	14.500	0.000	12.500	16.500
27	E1.4.2	Aluminium bins cargo hold	1.000	2.700	20.500	0.000	17.000	24.000
28	E1.4.3	Garnish, bait cooling room	0.830	5.300	3.300	0.000	1.000	5.000
29	E1.8	Blocks, wire	0.200	11.000	23.500	0.000	19.500	25.000
30	E1.8	Boom fitting	0.005	8.500	25.000	0.000	20.000	30.000
31	E1.8	Cargo boom	0.053	8.100	20.950	0.000	15.950	25.950
32	F1.8	Cargo boom	0.149	8.100	20.950	0.000	15.950	25.950

To know which columns to include and what order to put them, the **Import** dialog box can be checked to find out. The **Import** dialog box can be opened from the **Project** menu by selecting **Text file...** from the **Import** submenu.



In the **Weight Group list** at the right side of the dialog box, possible import columns are shown, and what order they should appear in. The columns should be in the same order as the vertical order of the quantities shown in the dialog box.

You are free to choose whichever columns you like as long as the **Weight group** column is included. This has to be included because the ShipWeight import routine needs to know which weight groups to store the imported weight items in. If **Weight group** is selected, the weight groups are connected to the weight item directly. If you are using the standard ShipWeight breakdown structure, you can choose the **SFI Code** instead of the Weight group column. If the SFI Code is selected, a mapping table in the ShipWeight database will translate the SFI code to ShipWeight weight group code. The mapping between ShipWeight codes and SFI codes can be checked in the **Search...** dialog box under the menu **Weight Group**.

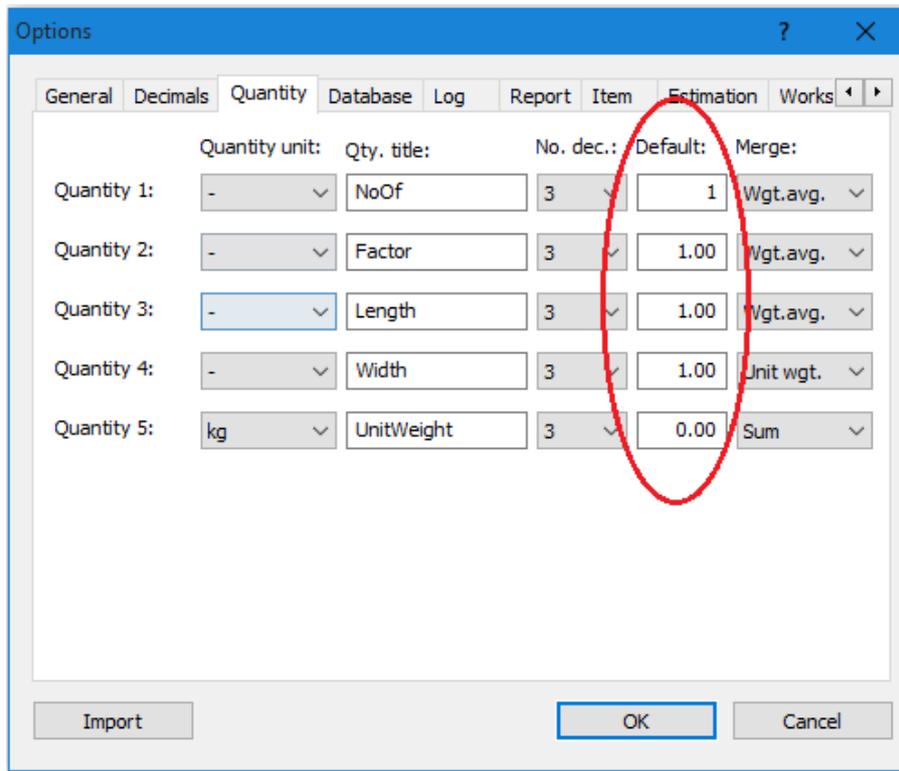
After setting up the columns and filling in data so that the spreadsheet is organized properly, the spreadsheet file has to be saved as a text file (ASCII) with tab delimiter. Give the file the extension **.txt** if this is not done automatically when saving.

Now you are ready to import the file to ShipWeight. If not already done, close the spreadsheet file. Select the dialog box **Text file...** on the submenu **Import** on the ShipWeight **Project** menu. Enter the path to the import file (the saved text file) in the edit field, or find it by clicking the **Browse** button [...].

If the text file contains a heading row, check the **Heading row** option.

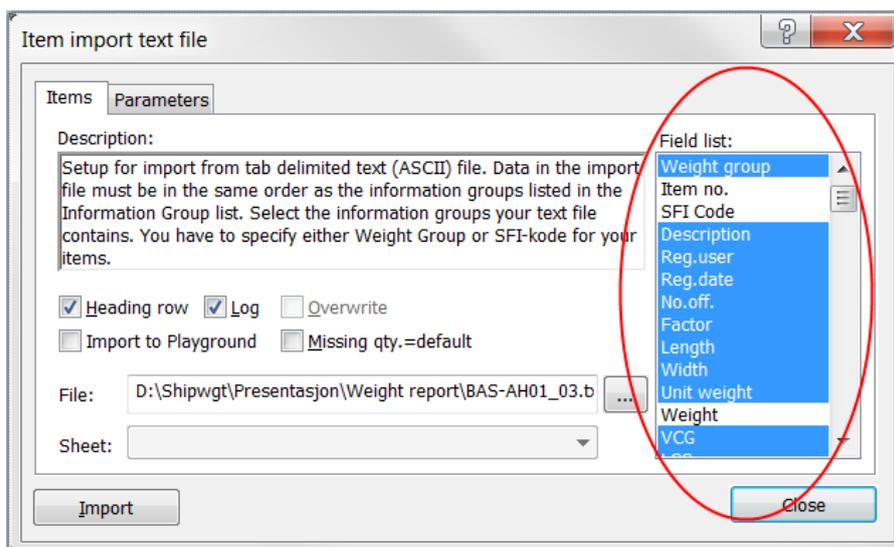
To replace missing quantity values with default values, make sure to check the option **Missing qty.=default**. The default values for each of the Quantities can

be set on the **Quantity** tab in the ShipWeight **Options** dialog box. The **Options** dialog box can be accessed from the **View** menu by selecting **Options....**



To include the imported items in the log database, make sure to check the **Log** checkbox. With logging enabled, the import is more time consuming than without. However, logging is needed to be able to create log-reports.

In the dialog box resource 'Weight group list', select the same quantities as the columns in the text file.

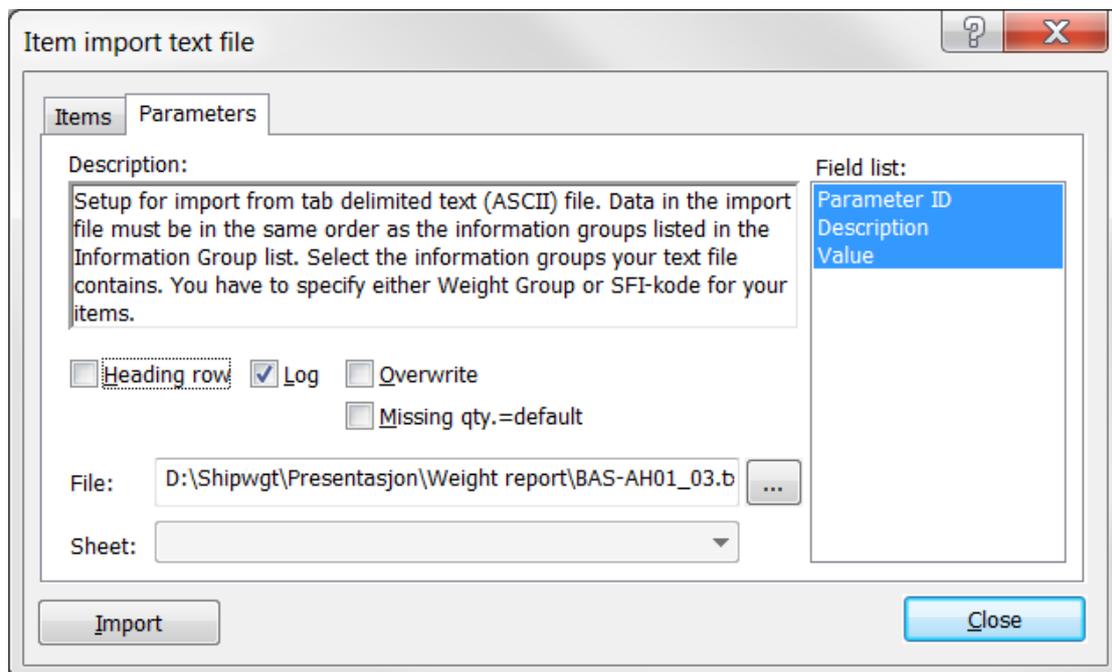


Finally, click the **Import** button to start importing the weight items. Click the **OK** button to close the dialog box.

4.9.3 Importing parameters from a spreadsheet

Importing parameters from a spreadsheet is analogous to importing weight items. Make sure the spreadsheet is organized in the columns **ParamID**, **Description** and **Value**. The spreadsheet must be stored as a tab delimited text file (ASCII).

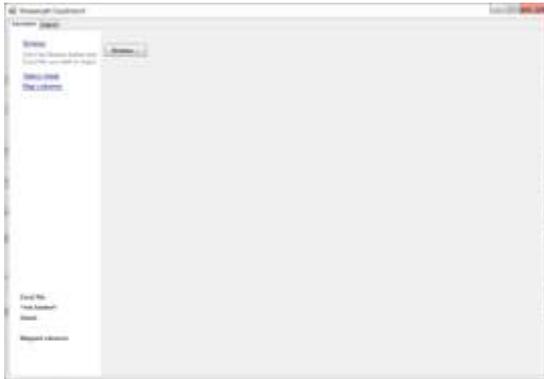
Open the **Import text file** dialog box and select the **Parameters** tab. Enter the path of the file to be imported, tick off **Overwrite** and **Heading row** (if the spreadsheet contains a header row) and click the **Import** button. *Warning: If the import file contains parameters without value, existing parameters in the project will be erased.*



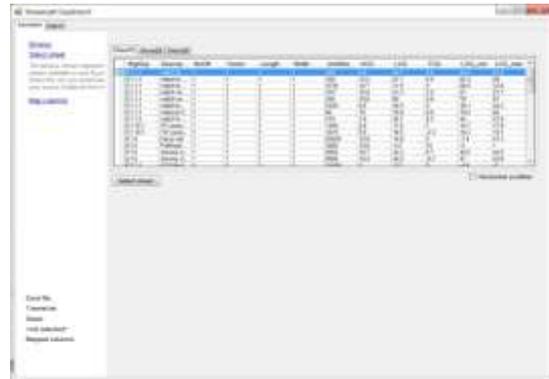
4.9.4 ShipWeight EasyImport

The **Data File Import** dialog box (menu: **Project > Import > Data File...**) now has an extra layer called EasyImport which is designed to provide a wizard-like user interface to guide the user through setting up and carry out the import step by step of Excel files.

The first step is to browse and select the spreadsheet file (the **Data File import** dialog box now supports import of XLSX files in addition to XLS files.).



Picture 5: Browse to find Excel file

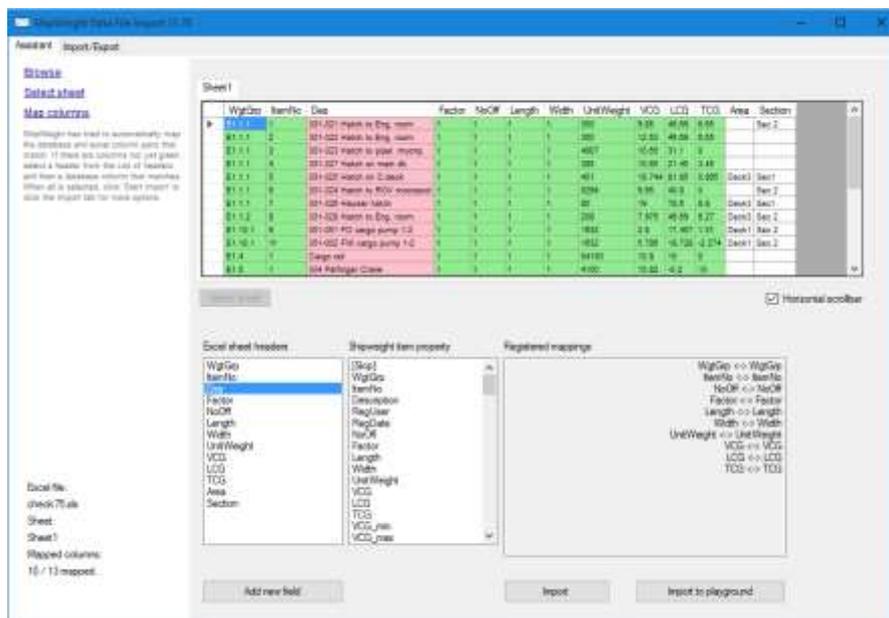


Picture: Select Sheet

Once the Excel file has been selected, a preview of the sheets included in the file will be shown. The next step is to select the sheet to import.

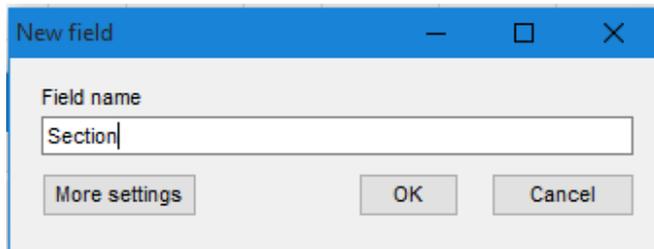
When a sheet is selected, the **Import** dialog box will try to guess the mapping between the columns in the spreadsheet and ShipWeight fields, based on the column headings in the spreadsheet. Columns where mapping have been found automatically will get a green color and the mapping will be shown in the list below. If this mapping is wrong, you can deselect the column either in the sheet preview or in the list of linked columns.

To manually add columns not automatically mapped, click on the column either in the preview sheet or in the column list and select the corresponding ShipWeight field from the ShipWeight list.

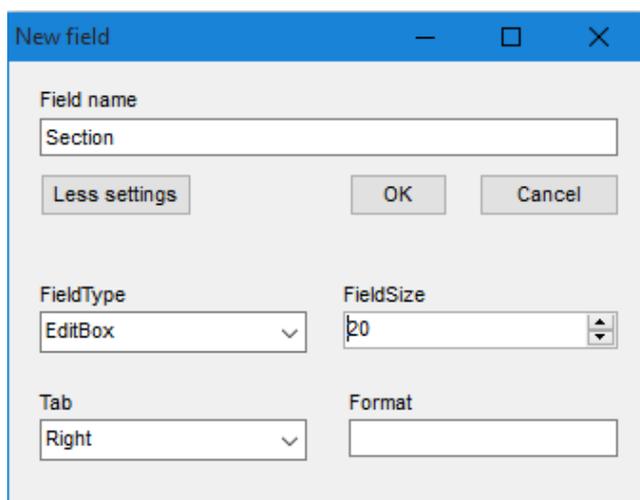


While a green column indicates a mapped column, a white column indicates an unmapped column and a pink column is a selected but not yet mapped column.

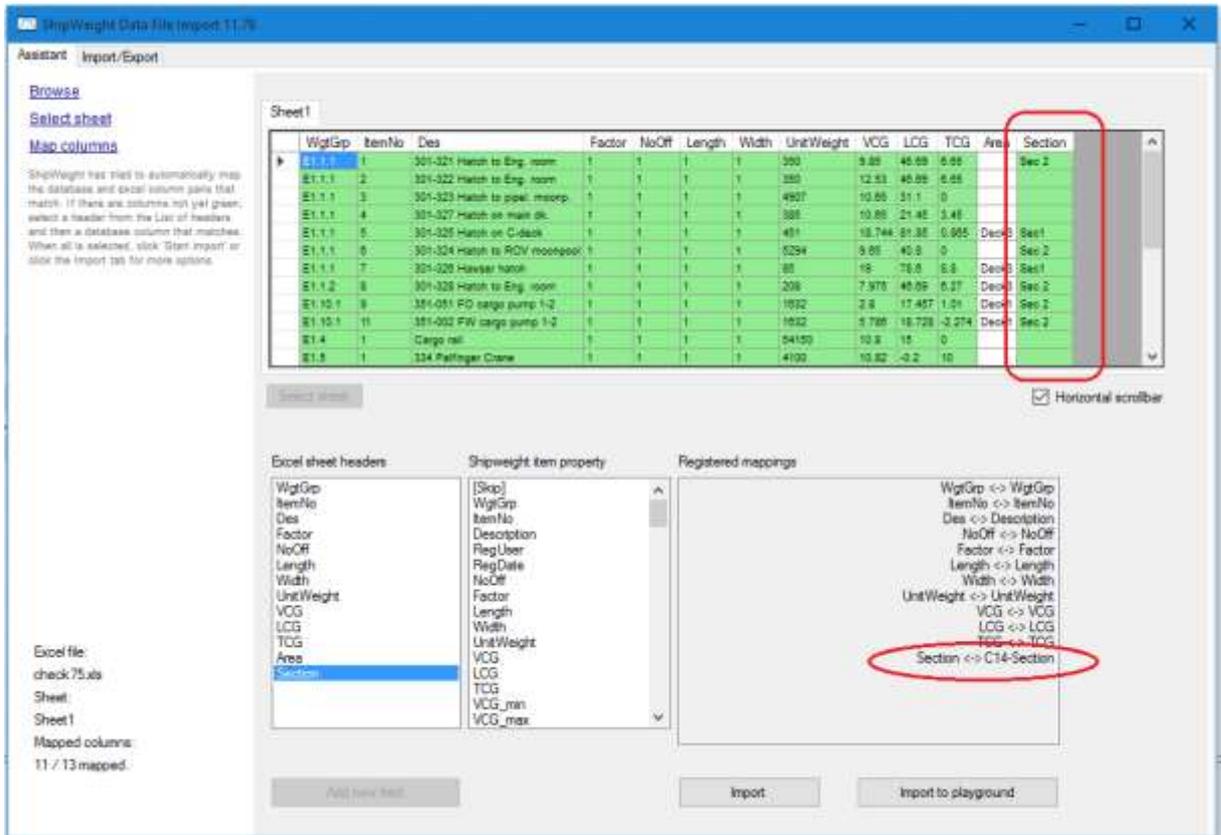
For items not found in the ShipWeight list, you click the **New field** button. A custom code will then be generated and a new window will pop up suggesting the same name for the item as in the spreadsheet, but if wanted the user can edit the name.



If you click the **More settings** button, the dialog box will expand and give the user some options to define the settings for this parameter. For more details on these settings and how to edit them, see 4.11 The Code Definition dialog box. Note that there is no need to edit the code to make the import succeed, this can also be done after the import.

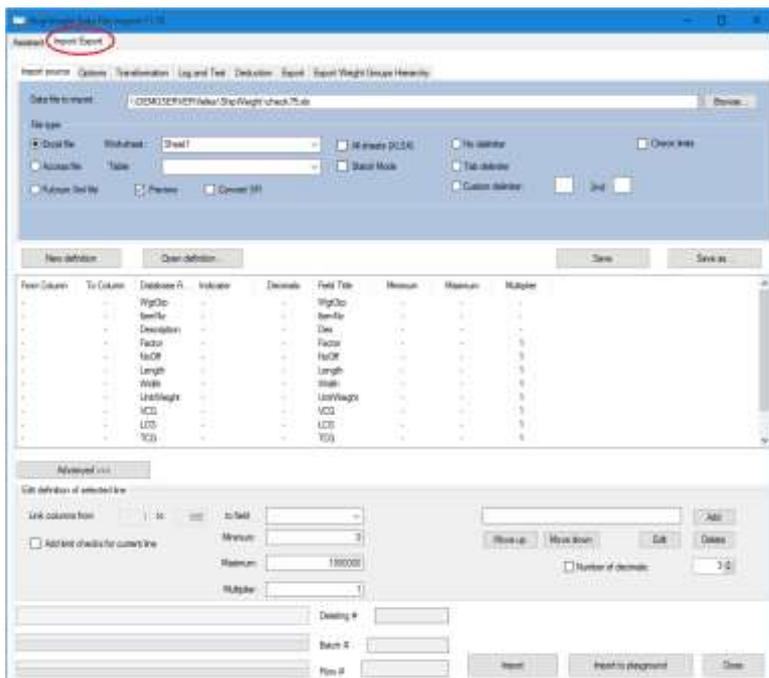


Click **OK** and the **“Section”** column turns green and Section has been mapped within the Registered mappings.



If you chose not to map a column this will not be imported into ShipWeight. In the example above the data in the **Area** column will not be imported.

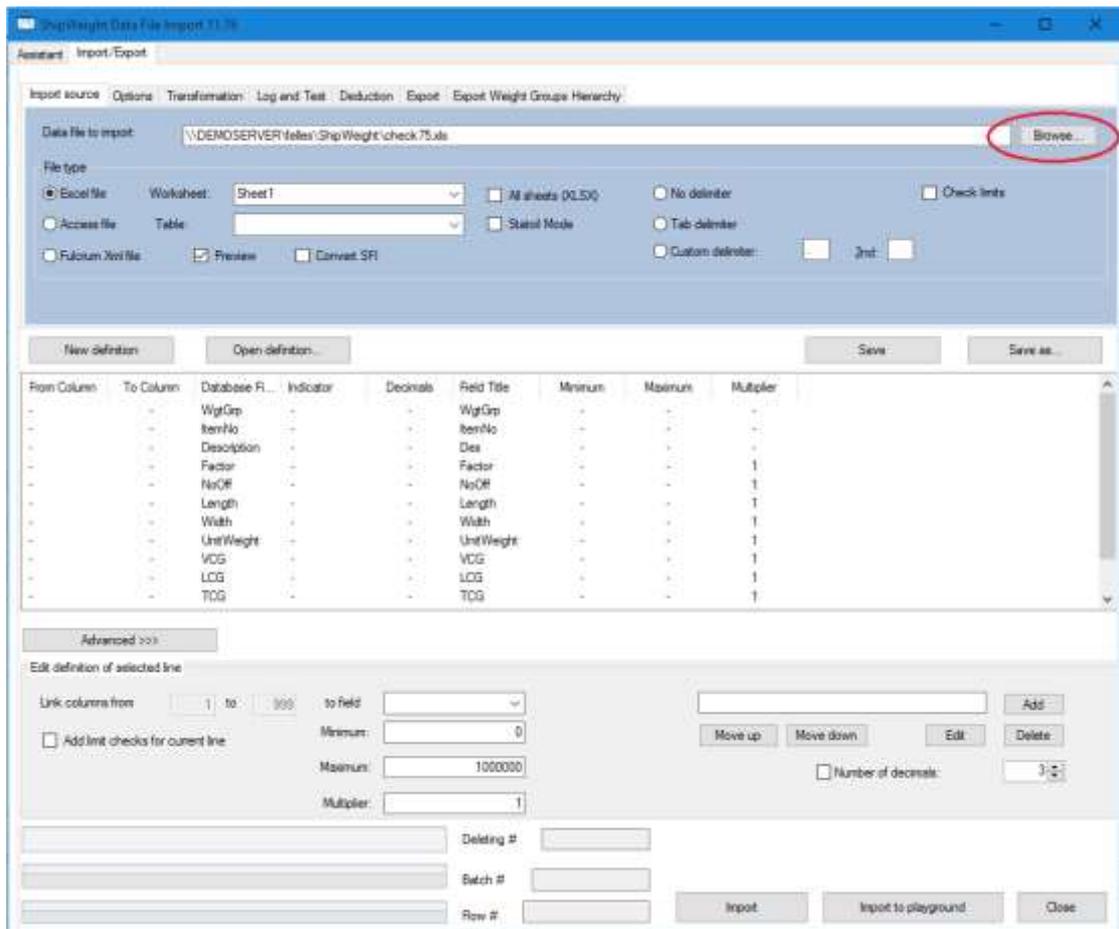
An import can be run directly from this tab (either to main database or to Playground Area), or the mappings and settings can be transferred to the normal data file import for more advanced settings and checking.



4.9.5 The EasyImport dialog box

If you want to do more advanced settings importing an Excel file or want to import a file in another format, from the **Project** menu, select **Import** and then **Data File...** to open the **ShipWeight EasyImport** dialog box.

The **ShipWeight EasyImport** dialog box can import all kinds of text files (flat files, tab-, comma- and semicolon- delimited files) as well as Excel files and Access files. In addition, it can export weight items to Excel format (.XLS) or as a Comma Separated Textfile (.CSV).



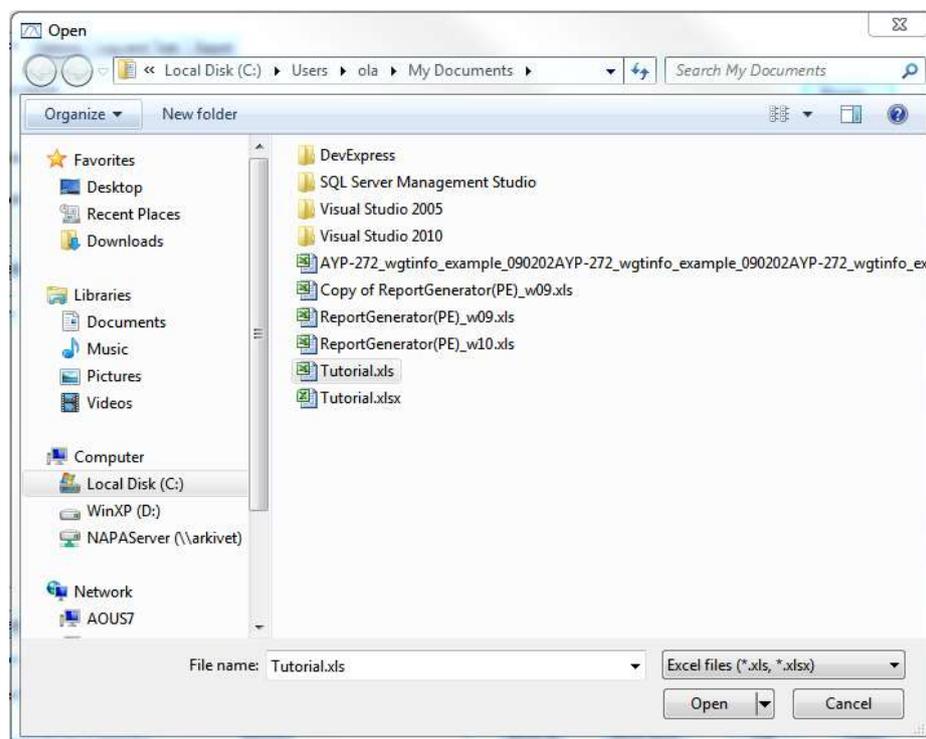
Importing

First of all, make sure you have selected the **Import source** tab at the upper part of the dialog box. Choose file type to import:

- No delimiter (flat file)
- Tab delimiter
- Excel file
- Access file
- Custom delimiter

If you have selected **Access file**, please enter the name of the table to use.

Click the **Browse** button next to **Data file to import**. Now the **Open** dialog box will pop up. Select the file to import and click **OK**.



Next, select the **Options** tab.

At the left side of the **Options** tab, there are three checkboxes. The **Log imported items** option is used to choose whether the import will be logged or not. Logging of weight items is necessary to be able to produce reports based on the Log database.

There is an option **Update items** to allow overwriting of existing items. **WARNING: ALL INFORMATION ON EXSITING ITEMS WILL BE DELETED WHEN ITEMS ARE REPLACED.**

If the **Trim spaces** option is checked, spaces in front of or behind of a value will be removed during the import.

Next, you can define the number of header rows in the import file. For Excel files one header row is assumed.

Make sure to set the proper units in the file, SI (metric) or US. Default units are SI.

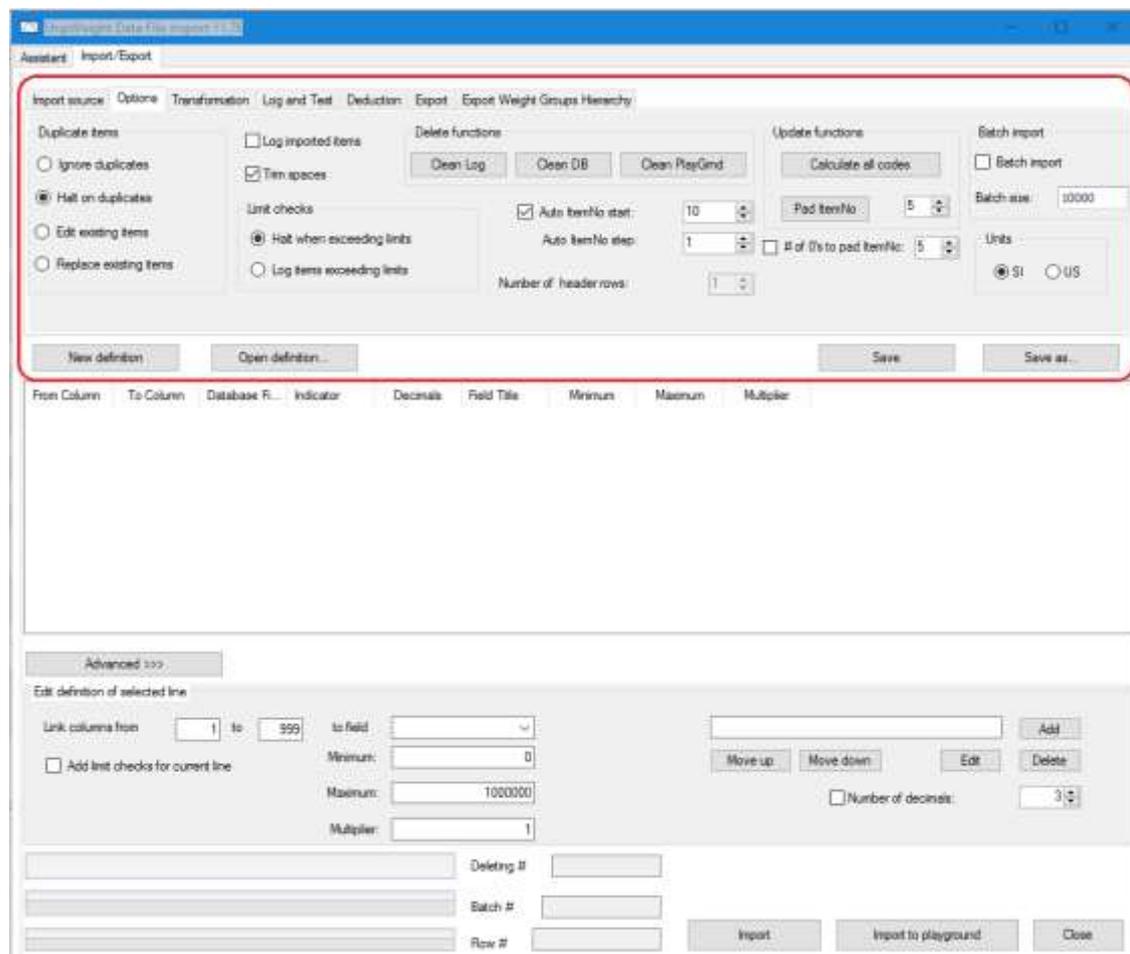
The **Options** tab also includes buttons for deleting and updating weight items.

To delete old weight items, you can use the **Clean Log** and **Clean DB** buttons. The first will delete all weight items in the Log-database and the second will delete the weight items in the project database.

WARNING: ALL INFORMATION ON EXISTING ITEMS WILL BE DELETED FROM THE DATABASE. THIS ACTION CAN NOT BE UNDONE.

In the **Update functions** frame, there is a button for updating calculated codes quickly after import. The **Calculate all weights / Calculate all codes** menu selection in the **Items** dialog box is currently using old (slow) methods for update – The **Calculate all codes** button in the new **Flat File Import** dialog box uses new and quick methods.

The **Pad ItemNo** button will change the format of the item number of existing items. First set the number of characters the item number should include. Clicking the **Pad ItemNo** button will add the digit 0 in front of the item number so that the item number includes the proper number of characters. Example:
123 → 000123

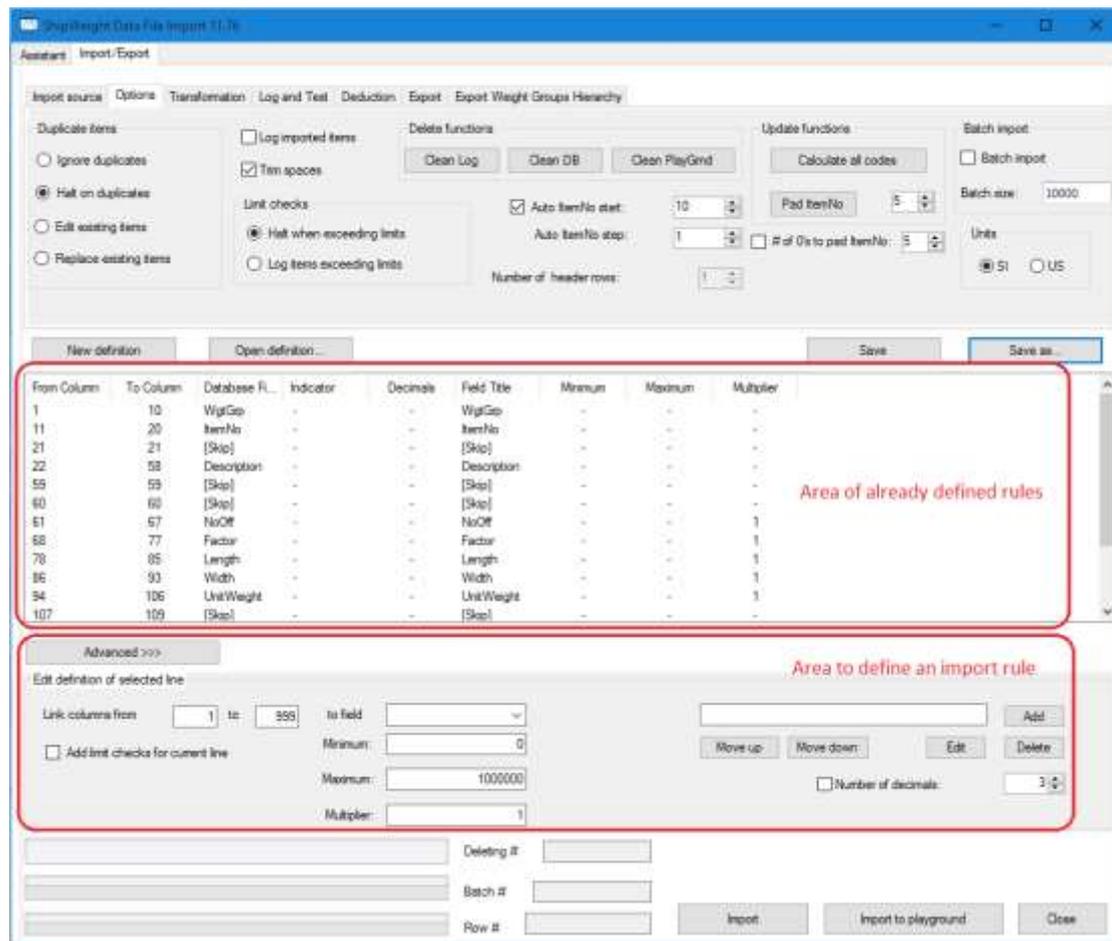


To start a Flat File Import, you first need to define a ShipWeight Import (SWI) format – or load an already existing one.

A defined SWI format contains a set of import rules, and each import rule tell what data from the flat file goes into a specific field in the database.

To start a new import definition, click the **New definition** button. This will clear the dialog box of any previous definitions.

The definition of an import rule is done in the lower area of the window.



In the **Edit definition of selected line** frame, the first two edit boxes are used to tell which character positions to be retrieved from the import file. Next, to specify which field in the database the information in this character field is going into, select from the dropdown list of the ComboBox. The ComboBox only spells the ID of the field since this title may change from project to project. In the field right to the ComboBox, however, you can read the title for this field as defined in the project the data will be imported to.

Directly below this, there is a checkbox to tell if the value has decimals not separated by a dot. If so, there is also a spin box to indicate the number of decimals.

To show or hide advanced settings for the data file, click the **Advanced>>>** button. The advanced settings are used to define is the indicator field. An indicator field means that we have a number followed by a character, i.e. 23.4A, where the character indicates if the value should be read in as negative or positive value. If there is no indicator field, you simply select '**None**'. Otherwise, you should select the direction and the character of the indicator field. The default indicators are:

X-direction: F (fore) = Negative

A (aft) = Positive

Y-direction: S (starboard)= Negative

P (portside) = Positive

Z-direction: B (below) = Negative

A (above) = Positive

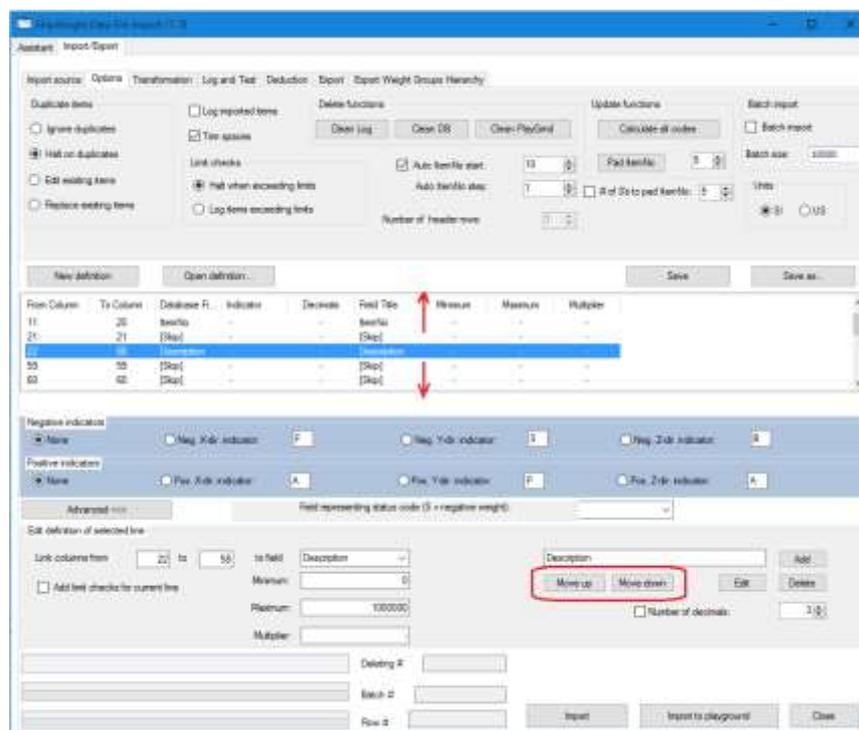
At the bottom of the Advanced settings area, you can specify a code e.g. [C01] to hold the value 'S' to indicate negative weights.



When all the correct settings have been selected, click **Add** button to register the import rule.

Any selected row in the definition can be delete by selecting the **Delete** button or edited by the **Edit** button.

To change the order of the rows, select a row and click the **Move up** or **Move down** buttons.



When all necessary import rules have been defined, the definition can be saved by clicking the **Save** or **Save as...** buttons.

An already saved definition can be retrieved by clicking **Open definition...**

The import is executed by clicking the **Start Import** button.

Exporting

The **ShipWeight Data File Import** dialog box also supports exporting weight items. Weight items can be exported to an Excel file (XLS, max. 1 048 576 rows), Excel file (XLS, max. 65 536 rows), a Comma separated text file (CSV) or a Flat text file.

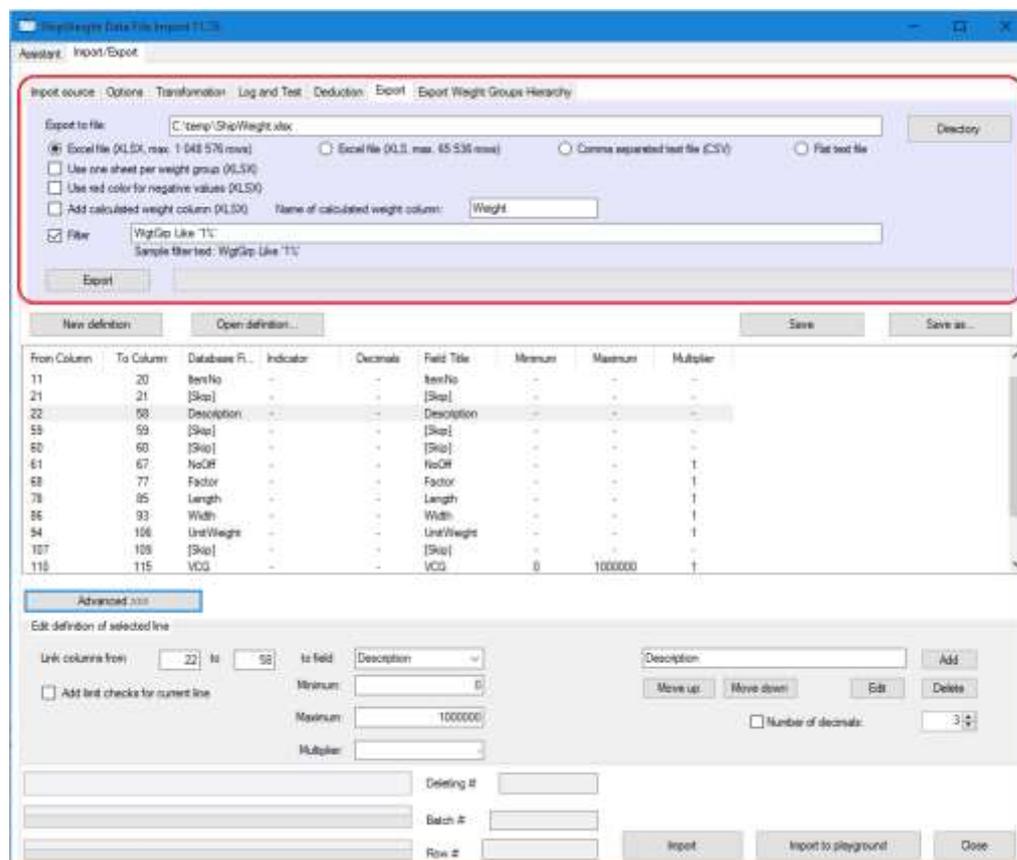
Select the **Export** tab. Enter the path and filename of the file to be created. Choose format for the export file, XLS, CSV or Flat text file.

To filter the data to be exported, check the Filter box. Next to the Filter box, you can add a filter string. The filter string follows the same syntax as the **Filter** dialog box in the **Items** dialog box.

In example, to export weight information from all 100 weight groups, the filter syntax to enter is: *WgtGrp Like '1%'*

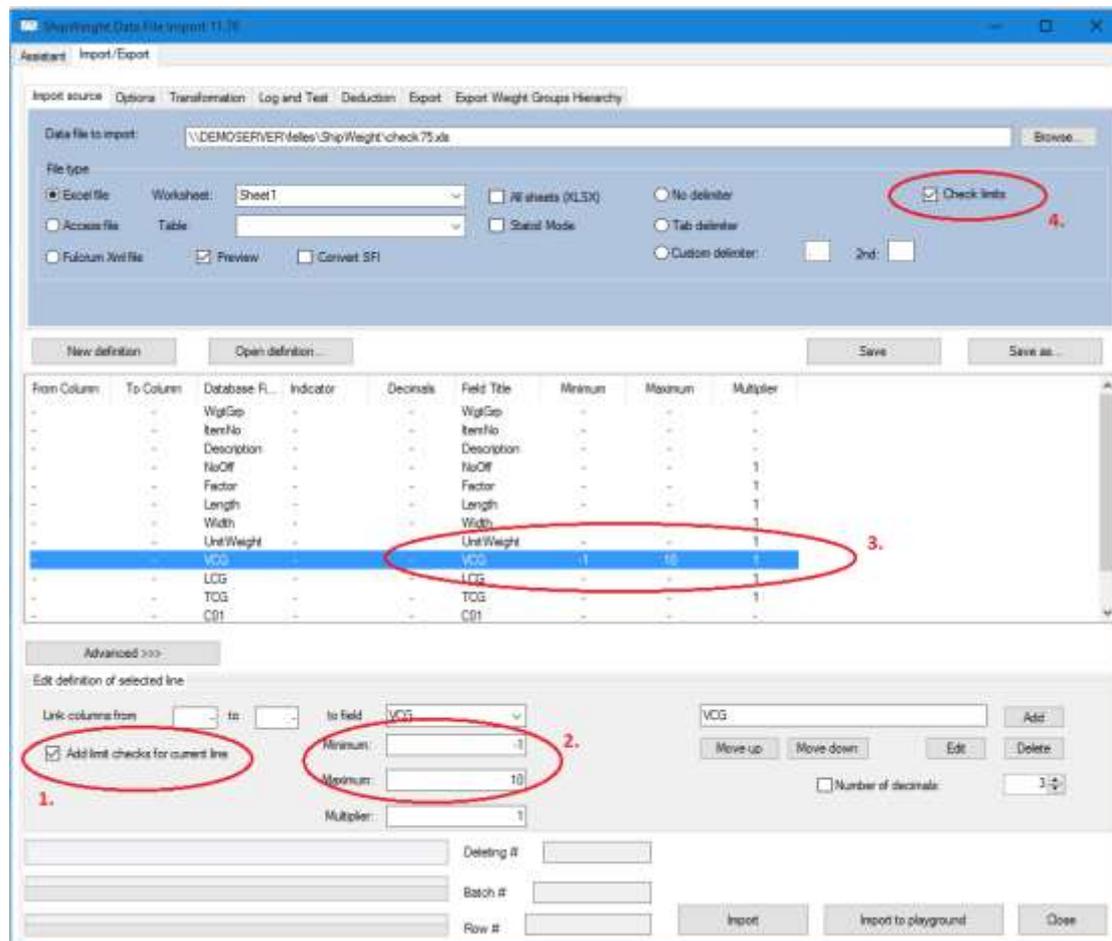
Next, you must define a set of export rules; i.e. which columns to be exported. This is done in the same way as defining import rules when importing.

The export is executed by clicking the **Export** button.



4.9.6 Checking Values during Data Import

A value range may be specified for the import quantity to do runtime value checking during import.

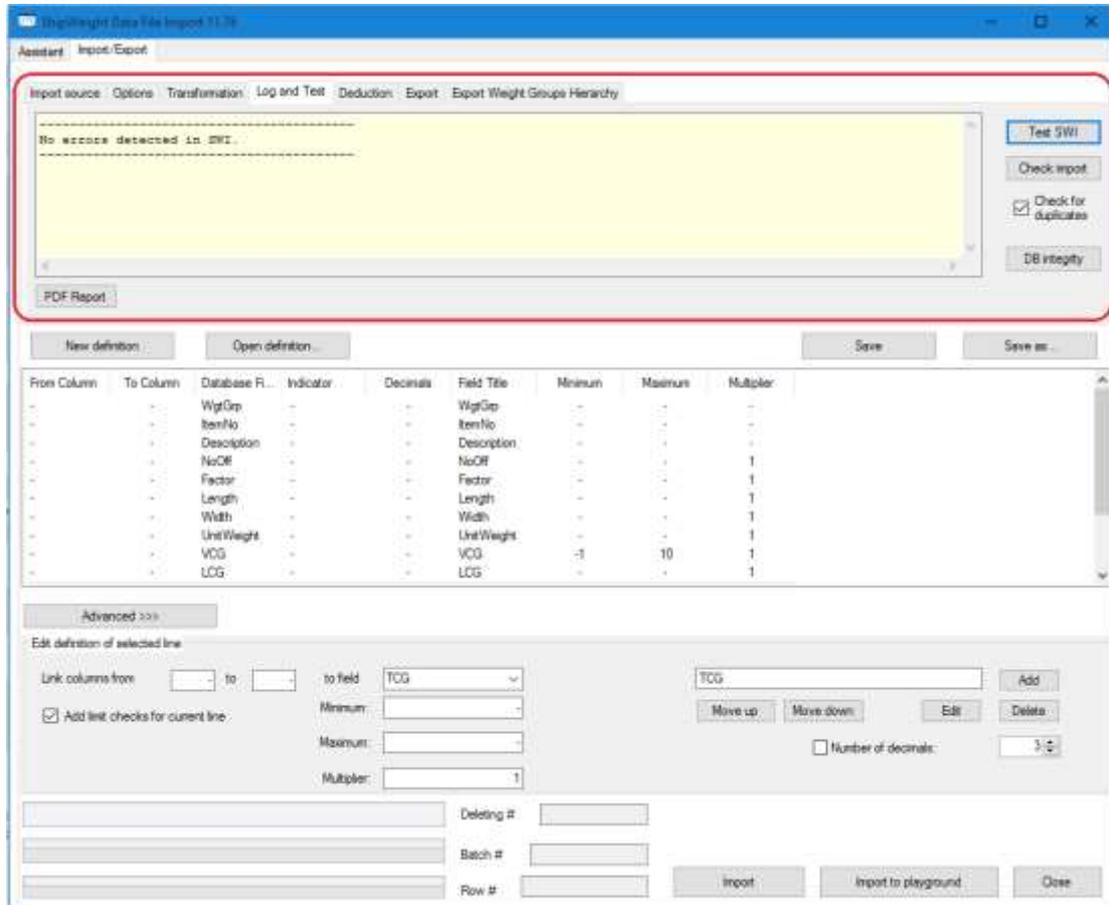


To specify a value range for a quantity, check **Add limit checks for current line** (circle 1). As long as this is checked, all definition rows added or edited will as specified in the **Minimum** and **Maximum** fields (circle 2). Added range values can be seen in the columns **Minimum** and **Maximum** in the definition list (circle 3).

Prior to running the import **Check limits** (circle 4) must be checked to let know that range values are to be checked. If a quantity is outside the given range, the import will halt and give information about of this value and quantity.

4.9.7 Test Import for Data File Import

The **Data File Import** dialog box can perform a test of the SWI file and a test of the file to import. This is done on the **Log and Test** tab of the **Data File** dialog box:



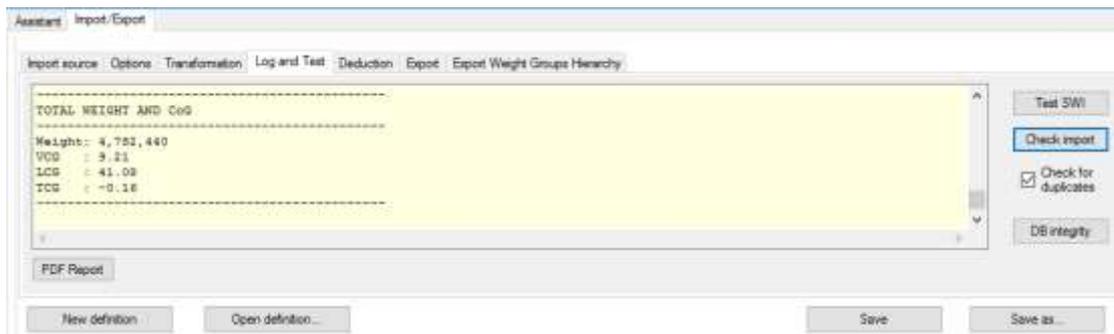
On this tab you can test your SWI file for potential errors by clicking the **Test SWI** button. This should inform of any mandatory fields missing and actions needed to be carried out in order to fix the SWI file.

4.9.7.1 Checking the import

Clicking the **Check Import** button will perform a run-through of the import without actually writing any data to the project. You may use the **Check for duplicates** checkbox to indicate whether or not the test should ignore or report duplicate weight items (items already existing in the project).

The check will report any errors and/or duplicates detected in the import files and finally give a summary of the total weight and center of gravity for the items to be imported and separate the contributions from duplicates/non-duplicate items.

This log may be marked and copied out for further investigation.



In the same way you can check the DB integrity.



5 Additional databases/libraries in ShipWeight

5.1.1 Equipment database

The **Equipment database** dialog box is a library of equipment weights and other relevant information that can be maintained by the user. The library is project independent, but a project can import weight data from (and export data to) the equipment database.

For maintenance, the **Equipment database** dialog box is opened from the menu **Database > Equipment...** in ShipWeight main window.

Supplier	Description	Group code	Weight	Length
ABB Industrie	PNCB 400 m6	404 005	2.540	1 080.0
ABB Industrie	PNCB 450 LB06...	404 005	3.810	2 160.0
Atlas Copco	GA 132 W Turn	404 001	0.000	3 450.0
Boll & Kirch Filterbau ...	1.03.02.340.50...	351 055	0.000	0.0
Brunvoll A.S.	AR-55-LNC	404	0.000	0.0
Bryne	220 AGSC-KP, I...	637 001	3.185	1 475.0
Golor	V4-2-5	326 022	0.070	0.0
Golor	V4-2-5 Test	326 022	0.070	0.0
Herborner	4/HK 50-F	582 017	0.049	278.0
Herborner	4/HK 50-F test	582 017	0.049	278.0
Hydramaskin AS	HMC 1077 PT 2...	563 001	6.500	16 800.0
Porsgrunn Steering G...	370-50/2	403 001	5.500	1 370.0
Porsgrunn Steering G...	425-80/2	403 001	7.400	1 370.0
Porsgrunn Steering G...	425-95/2	403 001	7.600	1 370.0
Porsgrunn Steering G...	450-125/2	403 001	9.700	1 760.0
Porsgrunn Steering G...	465-140/2	403 001	9.900	1 760.0
Porsgrunn Steering G...	550-165/2	403 001	14.800	1 880.0
Porsgrunn Steering G...	550-175/2 IMO	403 001	17.500	1 880.0
Porsgrunn Steering G...	550-200/2	403 001	15.200	1 880.0
Porsgrunn Steering G...	550-200/2 IMO	403 001	17.500	1 880.0
Porsgrunn Steering G...	650-250/2	403 001	23.000	2 200.0

Maintaining the Equipment library:

To add a new equipment item, type the equipment data in the information fields to the left and click the **Add** button.

To edit an existing equipment item, select the item to be edited in the list to the right, change the data in the information fields to the left and click **Edit** to store the revised information.

To delete an equipment item, select the item to be deleted in the list to the right and click the **Delete** button.

5.1.2 Import/export weight data between Equipment database and Items dialog box

Prepare the Equipment database for import/ export to the **Items** dialog box.

Depending of the definition of custom codes in the **Items** dialog box, the various information fields for equipment weights will belong to different custom codes for different settings. Therefore the user is able to define the relationship between custom codes and equipment information fields in the **Equipment import setting** dialog box. This window is opened from the **Items** dialog box menu: **Setting > Equipment Import Setting...**

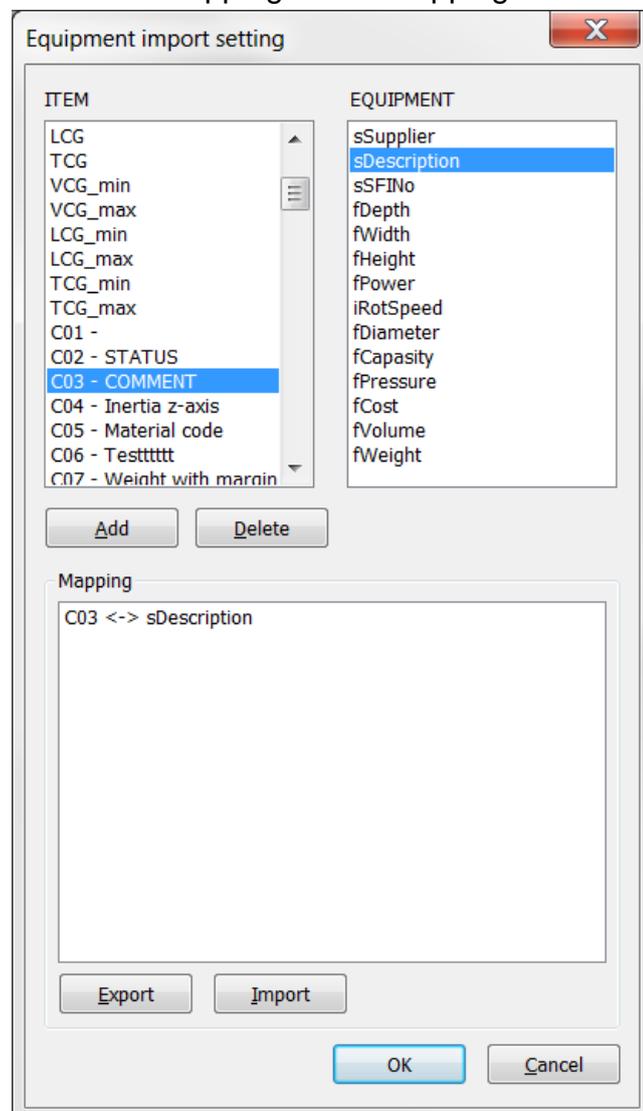
In the dialog box, **ITEM** codes are selected in the left list and the corresponding **EQUIPMENT** field is selected in the right field. By clicking the **Add** button, the mapping is registered and listed in the mapping area below the selection lists. To delete a registered mapping, select the mapping in the mapping area and click **Delete**.

A defined mapping can be shared between projects by using the **Export** and **Import** buttons in the dialog box.

Import Equipment Weights

To import an equipment weight from the **Equipment** dialog box to the **Items** dialog box, the following steps must be followed: First select the item in **Items** dialog box to receive the equipment weight and equipment information as specified in the **Equipment import setting** dialog box. Next, from the **Items** dialog box menu, select **Items > Import from Equipment Database...**

When the Equipment database pops up, select the equipment weight you would like to import by selecting it in the equipment list to the right. To navigate in the equipment list, sort by clicking the list headers and use the scrollbar to scroll the list. Once the correct equipment is selected, click the **OK** button and the import will be executed.



Export Item Data into Equipment Database

To employ the equipment database with a new weight from the **Items** dialog box, simply select the item you want to export from the **Items** dialog box and select **Items > Import / Export > Export to Equipment ...** from the menu in the Items dialog box. This will bring data from the item into the information fields of the **Equipment** dialog box according to the defined mapping. Additional information may be typed in. Click **Add** in the **Equipment** dialog box to add the new information to the database.

5.1.3 Addresses

On the **Addresses** submenu under the **Database** menu in the main window, information on suppliers, owners, yards, designers and ShipWeight users can be stored.

With the **Add**, **Edit** and **Delete** buttons this database can be customized to fit the user organization.

The **Print** button can be used for printing the information.

The screenshot shows a 'Supplier' dialog box with the following fields and buttons:

- Supplier: Bergen Diesel AS (Add button)
- Address: P.O.Box 924 (Edit button)
- Postcode & City: 5002 Bergen (Delete button)
- Country: Norge
- Phone: 47-5-19 90 0
- Fax: 47-5-19-91-0
- Email: (empty field)
- Contact name: (empty field)
- Contact phone: (empty field)
- Info.: (empty text area)
- Print button (bottom left)
- Close button (bottom right)

The list view on the right contains the following data:

Name	Address	Postal c...
Bergen Diesel AS		

5.1.4 Default coefficient library

The **Coefficient...** library to be found on the **Database** menu is a very important database in ShipWeight. This database contains the default coefficients for all the weight groups in the hierarchy.

By using the arrow buttons, you can navigate through the structure. Default coefficient for the different ship-types and methods can be specified in this dialog box.

The default coefficient value will be shown in the estimation graph as a dotted line, and can be chosen automatically from the coefficient dialog box under estimation.

The screenshot shows the 'Coefficients' dialog box with the following fields and values:

Default method	Main parameters method	
Weight	VCG	LCG

Weight: H7 Hull outfitting

Type: Offshore Vessel

Sub Type: Supply Vessel

Method: $W = k \cdot LB [t]$

Coefficient: 0.0189576

Std.dev.: 26.336009

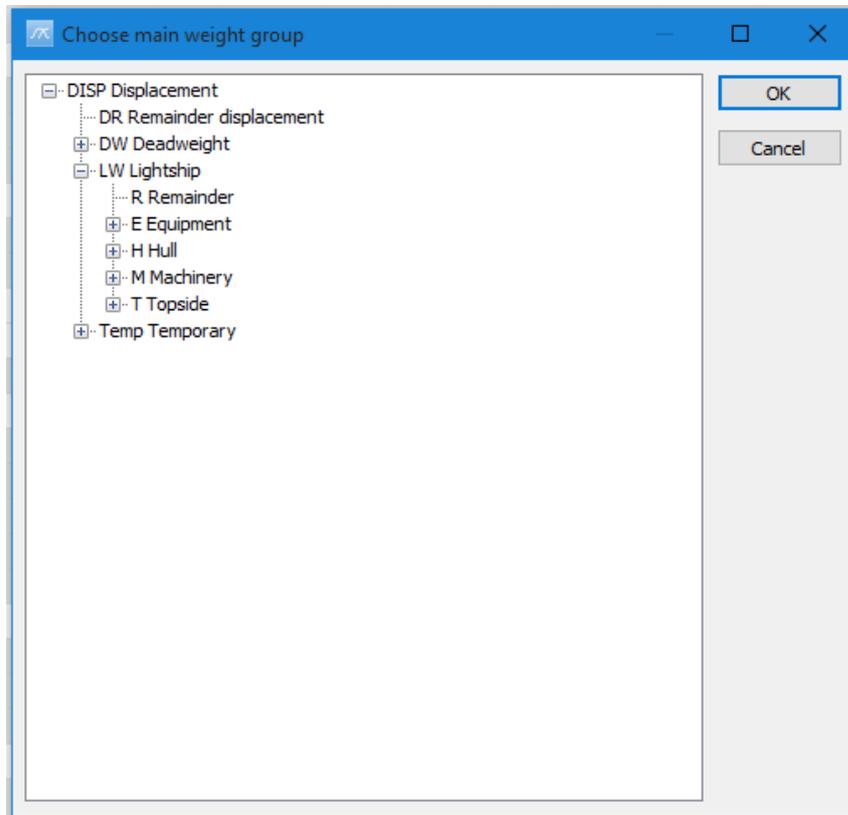
Date: 12.Feb 07

Source: Coefficient calculated by stein using 7 reference shij

Buttons: Save, Delete, Print, Close

5.2 Changing the top weight group

In the **Main...** found in the **Weight group** menu in the main window, the user can select the main group to work on.



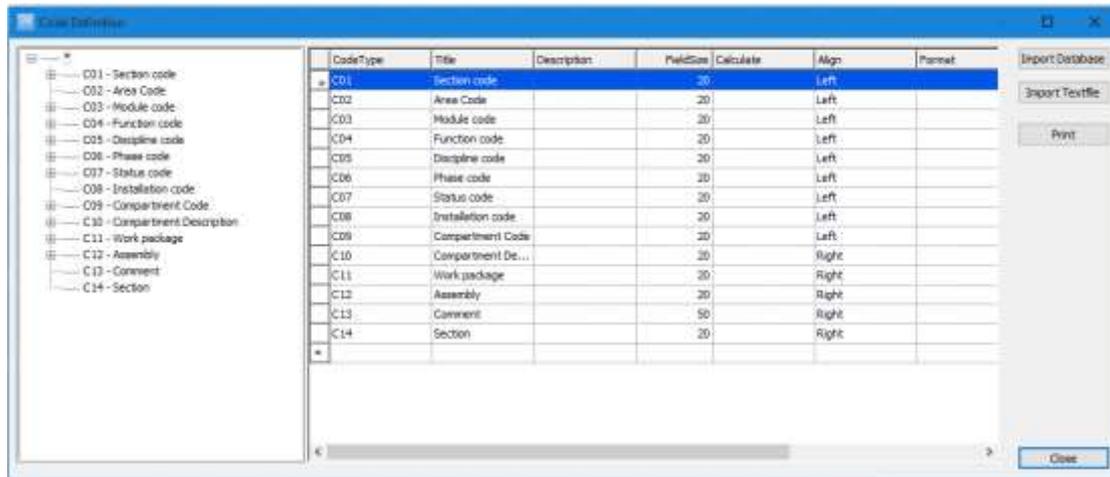
Usually the Lightship or Displacement will be the top weight group, but in some cases as when dividing the ship on several project, one project might only work on Machinery and other just on Equipment or Hull. Selecting the appropriate level in the **Main...** dialog box will reduce unnecessary clicking in the breakdown structure.

Also selecting another top weight group than lightship/displacement will affect many other functions in the program, for example weight distribution. Selecting Hull as the top weight group, and viewing the weight distribution, will give a distribution only for the hull.

5.3 The Code Definition dialog box

The purpose of the **Code Definition** dialog box is to define a set of codes and code-values which can be tagged to a weight item. It is possible to define up to 99 different codes (C01-C99).

The **Code Definition** dialog box can be accessed from the **View** menu in the main window, from the **View** menu of the **Items** dialog box or by clicking the **Code Definition** button in the **Item setting** dialog box.



The layout of the **Code Definition** dialog box is analogous to the **Item Setting** dialog box: a tree-view at the left side, a table in the middle and four buttons at the right side.

The tree may have one or more levels:

Name of the codes
Code values

The table displays information of the level below the one selected in the tree.

5.3.1 Create a new code

Select the topmost level of the tree. In the table, select the last line. Click on the **CodeType** cell. Expand the dropdown list and choose one of the available codes (C01-C99). Press the **TAB** key to continue entering data:

Title	shown in the Items dialog box
Description	explanation of the code
FieldSize	maximum number of characters
Calculate	define a calculation rule for the code, e.g. $[Weight]/1000*[LCG]$ or $[Weight]*[C21].[Factor]$
Tab	align text (left, right or center)

Format	control the format of calculated fields, e.g. for a three decimal digit, type %.3f
FieldType	set how the code is presented in the Items dialog box, either: EditBox (default), ComboBox, ListBox, CheckBox or ReadOnly.

5.3.2 Add a code value

If the **FieldType** of a code is set to ComboBox or ListBox, code values should be defined. Select the code in the tree. The table will change to show the code values for this code. In the table, select the last row. Enter **CodeID** and **Description** of the code-value.

Optionally you can enter minimum and maximum values for VCG, LCG and TCG. This may be applicable for area codes. You also can enter a **Factor** and **UnitWeight** for the code.

Back in the **Items** dialog box, the dropdown list of the **Code** now includes the new code-value.

5.3.3 Calculated codes

The value of a code can either be input from the user or calculated. If a code is to be calculated, the calculation rule must be defined in the **Calculate** field in the **Code Definition** dialog box.

When defining a calculation rule, you can use any numerical database field for a weight item. Please note that database field names must be written in brackets, e.g. the database field **Weight** must be written [Weight]. The following database fields can be included:

[Weight]	[VCG_min]	[NoOff]
[VCG]	[VCG_max]	[Factor]
[LCG]	[LCG_min]	[Length]
[TCG]	[LCG_max]	[Width]
[C01] to [C99]	[TCG_min]	[UnitWeight]
	[TCG_max]	

The database fields [NoOff], [Factor], [Length], [Width] and [UnitWeight] correspond to Quantity 1 to Quantity 5. These are defined in the **Options** dialog box. When including one of these quantities in a calculation formula, please refer to its default title:

Quantity 1	=	[NoOff]
Quantity 2	=	[Factor]
Quantity 3	=	[Length]
Quantity 4	=	[Width]
Quantity 5	=	[UnitWeight]

Codes [C01] to [C99] can only be used in the calculation formula if the values are numerical.

Usually a code with field type ComboBox or ListBox has predefined code-values. Each code value can hold information of VCG_min, VCG_max, LCG_min, LCG_max, TCG_min, TCG_max, Factor and UnitWeight. These fields can be included in a calculated code formula using the following syntax:

[Code].[Field] Example: [C03].[Factor]

The calculation rule accepts the operators + (add), - (subtract), * (multiply) and / (divide).

The ABS() function is available for calculating the absolute value of a database field. Examples of usage:

```
ABS([TCG])  
ABS([WEIGHT]*[TCG])
```

An example of a commonly used calculated code is the Vertical Moment:

Vmom = Weight * VCG → [Weight]*[VCG]

Please refer to Chapter [5.3.6 Tutorial: Add custom codes](#) and [5.3.7 Tutorial: Define calculated codes](#) for more detailed examples.

5.3.4 Default value for custom code

You may set a default value for a custom code to be filled in when a new weight item is added in the **Items** dialog box. The default value is set by typing =“<default value>” (including the equal sign and hyphens) in the **Calculate** field of the custom code in the **Code Definition** dialog box.

5.3.5 Formatting codes

You can use the **Format** field to set the output-format of code fields. The format specification consists of optional and required fields:

%{Width}.{Precision}type

Both the percent-sign and the type-field are required.

<i>type</i>	Required. Determines how the argument is interpreted:
d	Integer (lowercase)
f	Decimal digit (lowercase)
S	String (uppercase)

Please note that the *type* field is case-sensitive.

width Optional. Specifies the minimum number of characters output. If width is prefixed with 0, zeroes are added until the minimum width is reached.

precision Optional. Specifies the number of characters printed or the number of decimal places, depending on the type:
type = d → Precision = minimum number of digits printed.
If the number has less digits than given by precision, the number is preceded by zeros.
type = f → Precision = number of digits after the decimal point
type = S → Precision = maximum number of characters printed

Examples:

%05s String with at least 5 digits. Zeroes are added if less than minimum width: 123 → 00123

%.3f 3 decimal digit: 123,456789 → 123.456

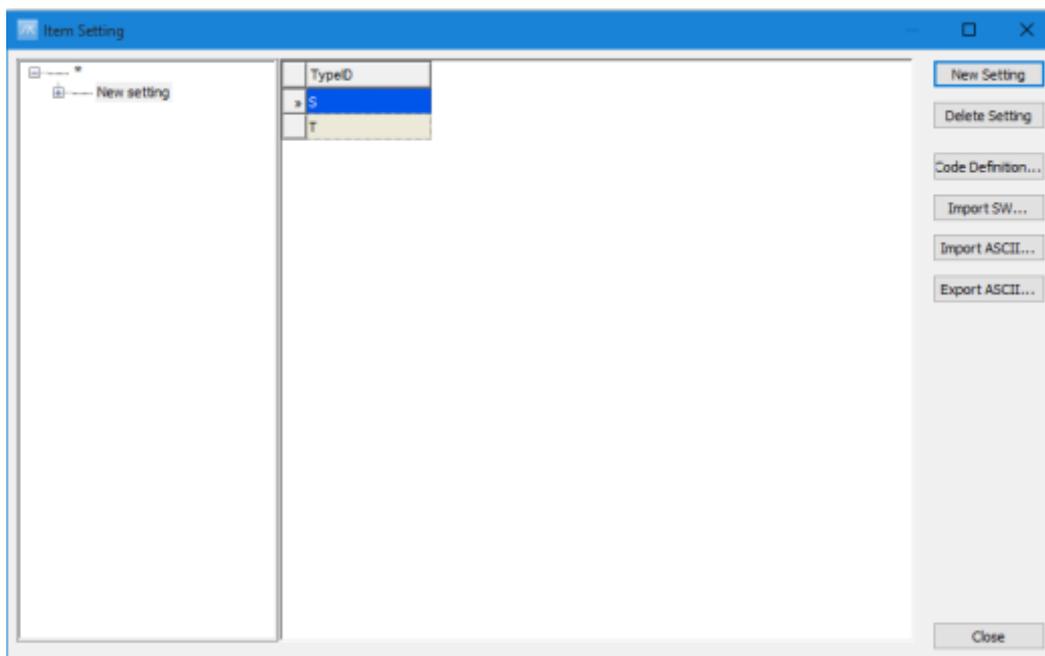
%.5d Integer with at least 5 digits: 123 → 00123

5.3.6 Tutorial: Add custom codes

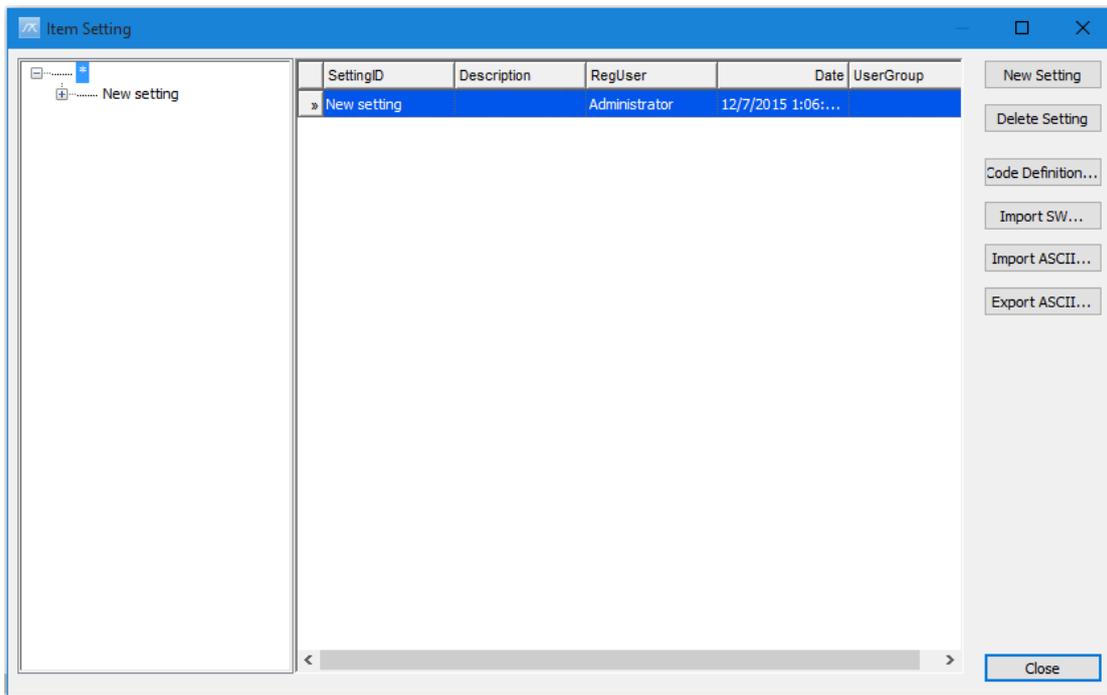
In this tutorial we will make two codes: 'Drawing Number' and 'Weight Status'

Start a new project and open the **Items** dialog box (click **Items** and then **All Items**). From this dialog box, click on **Item Setting**.

When the **Item Setting** dialog box pops up, hit **New Setting** button to create a new setting. In the tree-view on the left side, click the **plus-sign** next to the asterisk to expand the tree. A setting named 'New setting' has been created. Your dialog box should then look like this:

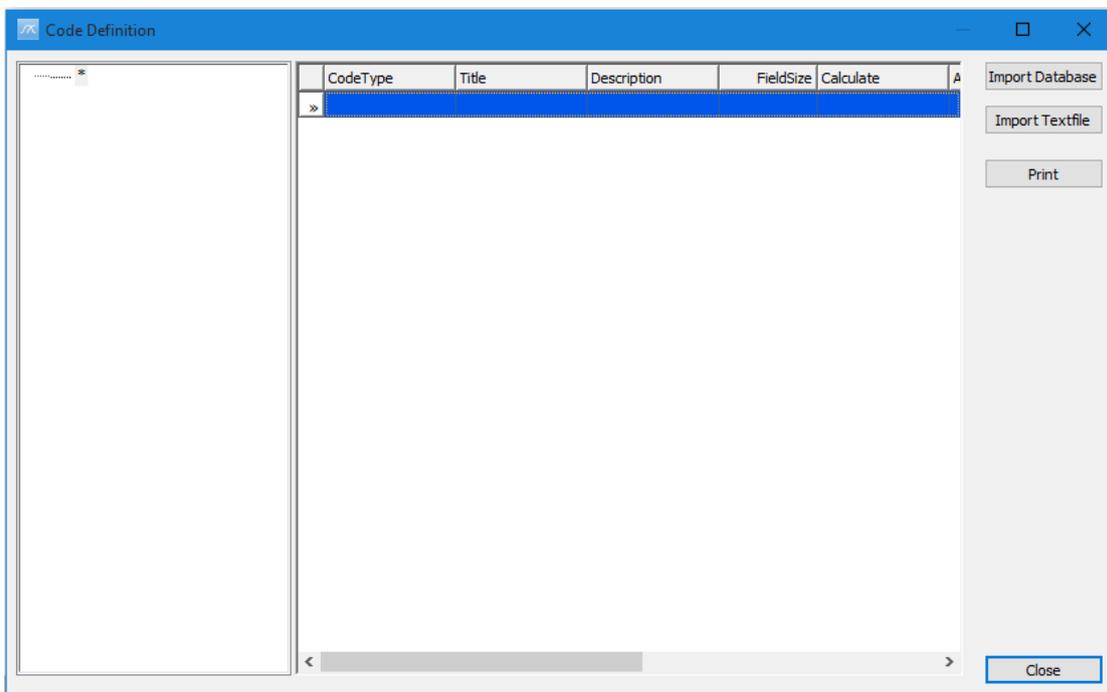


By minimizing the tree view you will see the following dialog box

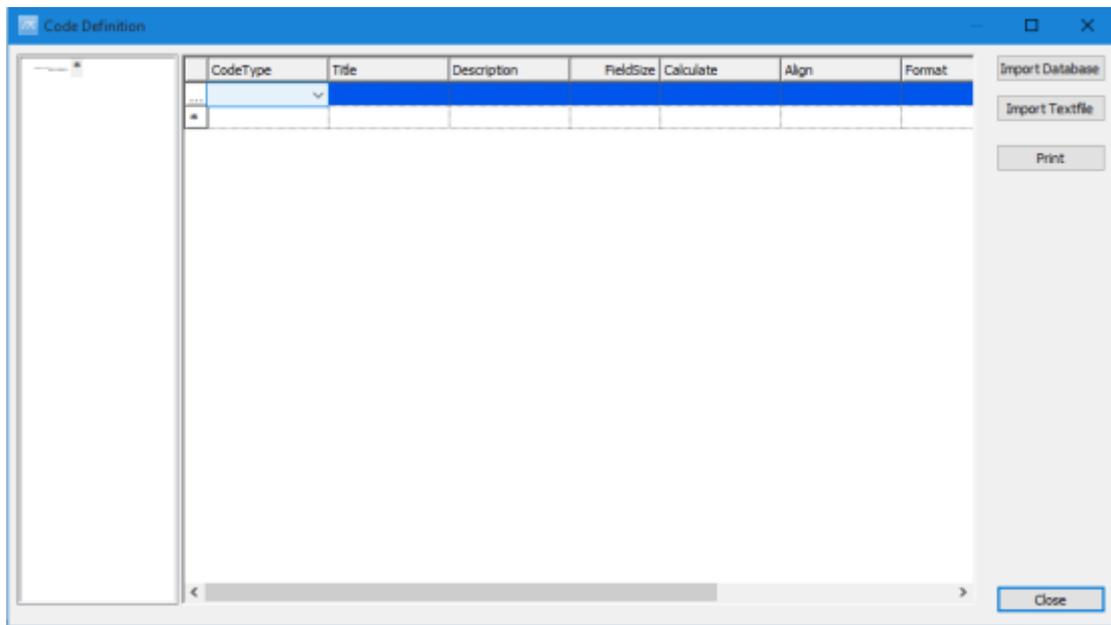


Next, hit the **Code definition...** button. This opens up the **Code Definition** dialog box.

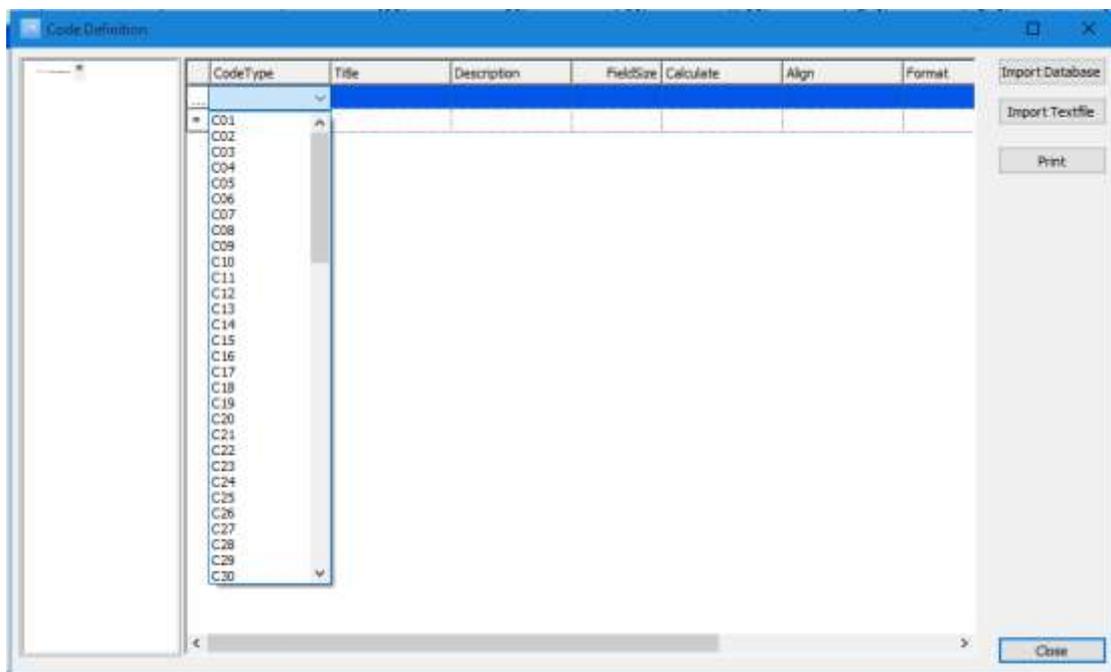
In a new project, the **Code Definition** dialog box is empty.



Next, please select the cell in the column **CodeType** so it becomes activated and editable. A new row should then automatically be added, and the cell should turn into a ComboBox (dropdown list).

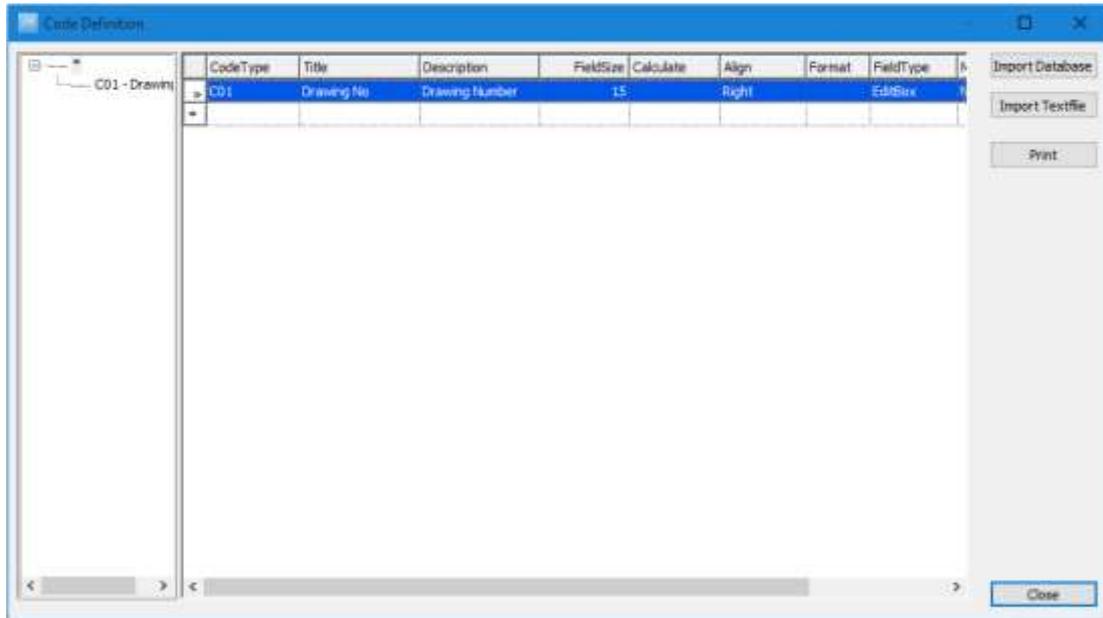


Next, activate the dropdown list of the ComboBox and select the ID of the custom code you want to make i.e. C01.



Then, fill in the following fields:

Field	Value	Description
Title	Drawing no.	Title will show above field in Items dialog box.
Description	Drawing number	<i>Information only, no effect</i>
FieldSize	15	Number of characters allowed in field
Calculate		Formula for calculated codes (Leave empty)
Tab	Right	Alignment of value in Items dialog box.
Format		Formatting of calculated fields (Leave empty)
FieldType	EditBox	Specify a standard editable field

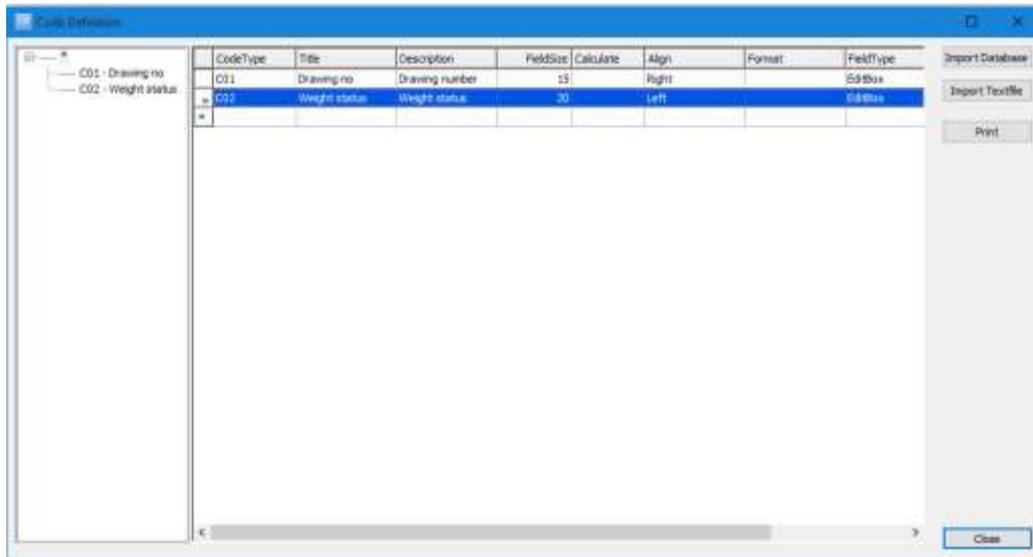


You can make sure that the code has been registered by checking that it is added to the tree left of the grid.

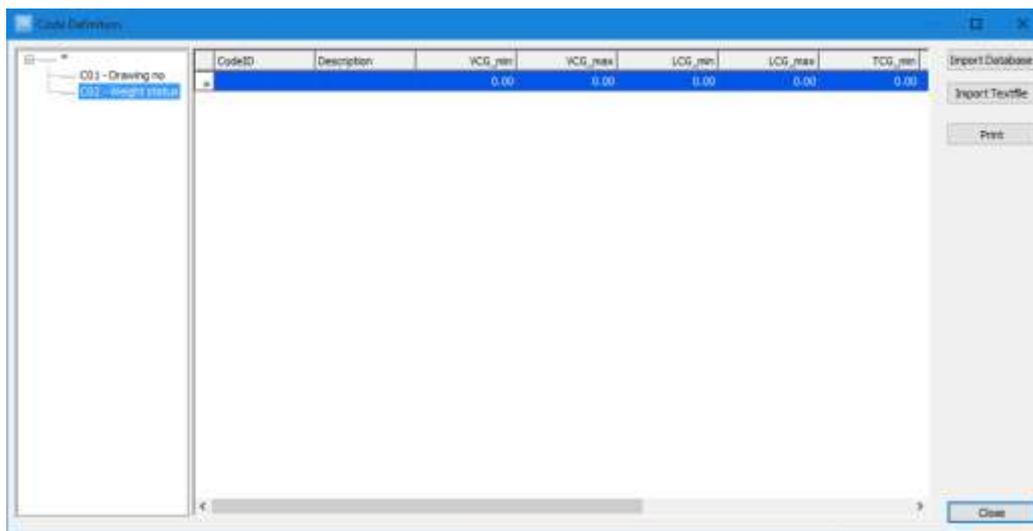
In the same way, add the code C02 with the following values:

Field	Value
Title	Weight Status
Description	Weight Status Code
FieldSize	20
Calculate	(leave empty)
Tab	Left
Format	(leave empty)
FieldType	ListBox

To finish off the registration of code C02, click with the mouse on the empty line in the table.



Next, we will add code values to the Weight Status code. In the tree-view, select code '**C02 – Weight Status**'. An empty table for adding code values will appear on the right side of the tree-view.



Select the bottom row of the table and fill in these values:

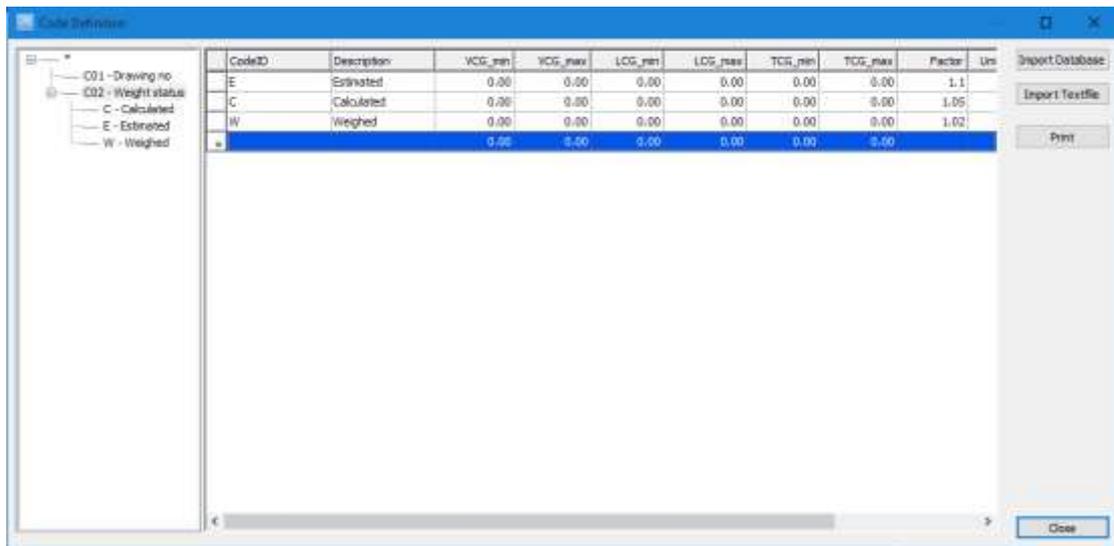
Field	Value
CodeID	E
Description	Estimated
Factor	1.1

Leave the rest of the fields empty, and click on the next row in the table. Enter two more code values:

Field	Value
CodeID	C
Description	Calculated
Factor	1.05

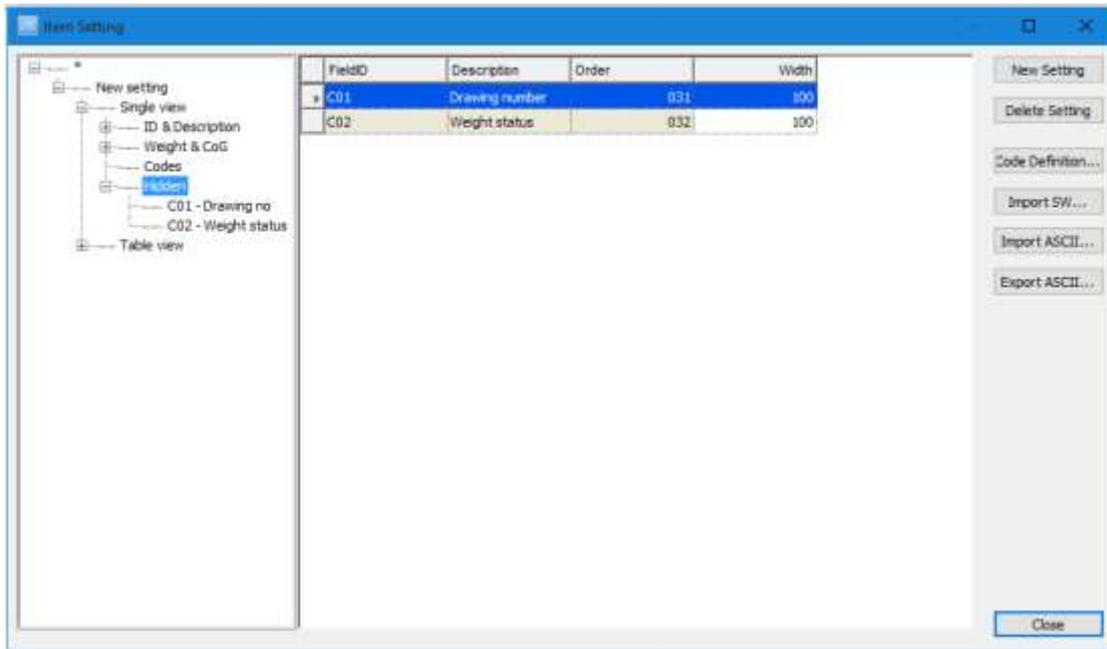
Field	Value
CodeID	W
Description	Weighed
Factor	1.02

Finish off registering the code value by clicking the last row in the table with the mouse.



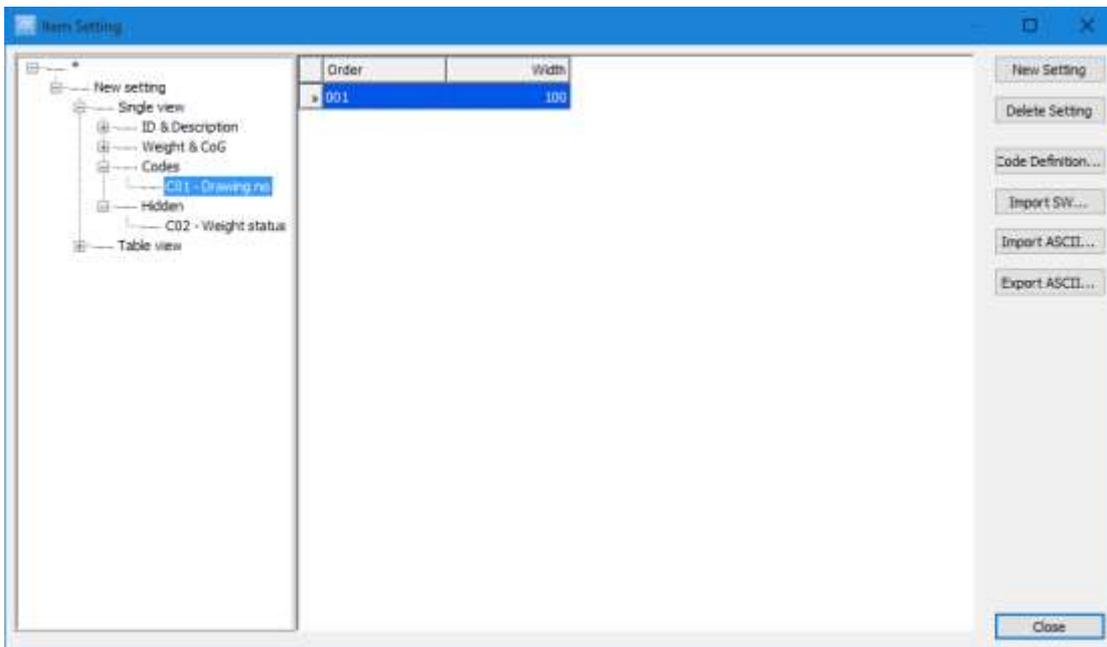
Click **Close** to close the dialog box and go back to the **Item Setting** dialog box.

Back in the **Item Setting** dialog box; expand the **Single view** branch of the tree by clicking the plus sign. Then expand the **Hidden** group. The new codes have been added to the **Hidden** group. All new codes are by default added to the **Hidden** group and need to be moved from this group to the actual one.



We want to move the codes from the **Hidden** group to the **Codes** group. To move the code we use “drag & drop” in the tree-view. Click and hold the mouse-button on the code C01 so it is selected in the tree-view.

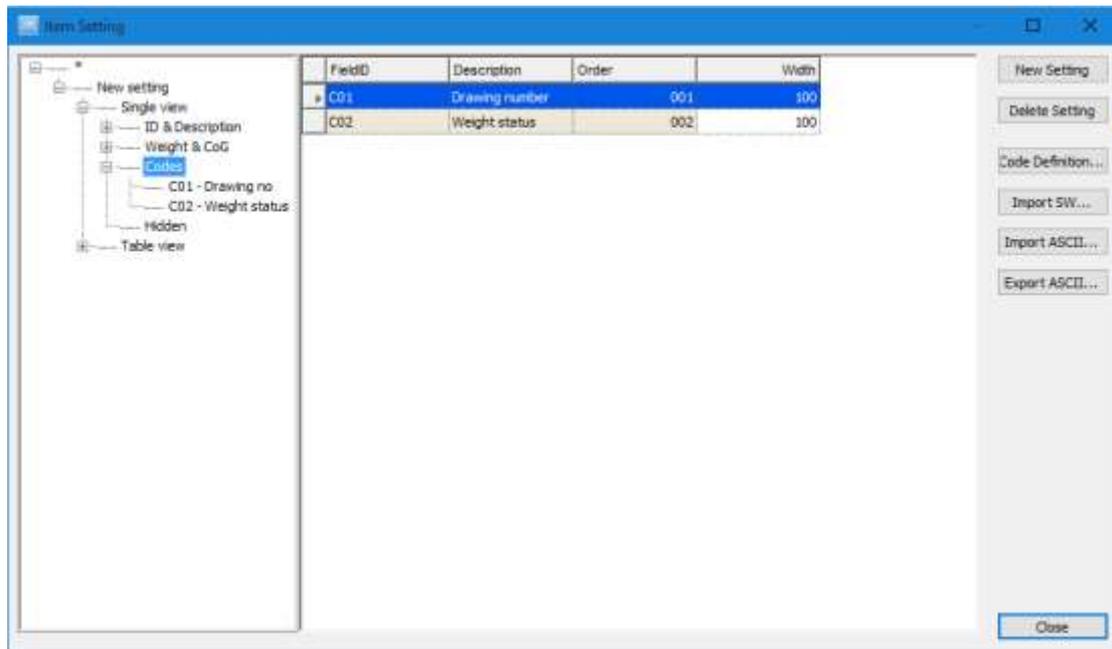
While you are holding the button down, drag the code by moving the mouse to the group **Codes**. Then release the mouse button. Now it should look like this:



In the same way, drag and drop code C02 from the **Hidden** group to the **Codes** group. To place the C02 code beneath C01, make sure to drop it on the C01 code.

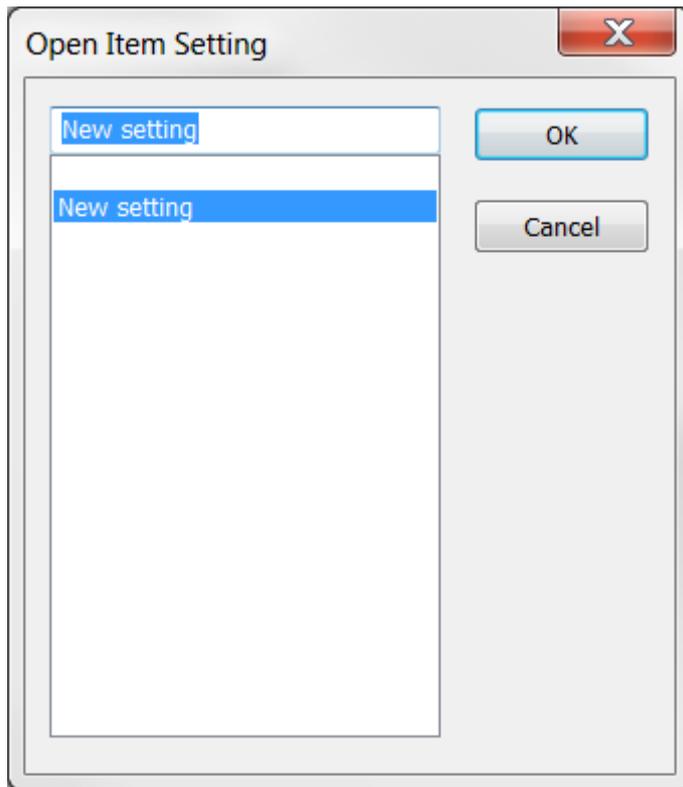
Also, expand the **Table view** branch and move the codes C01 and C02 from **Hidden** to **Codes**.

Next, select the group **Codes** in the tree-view. In the table you can set the width that the code will have in the **Items** dialog box. Set the width of C01 to 100.

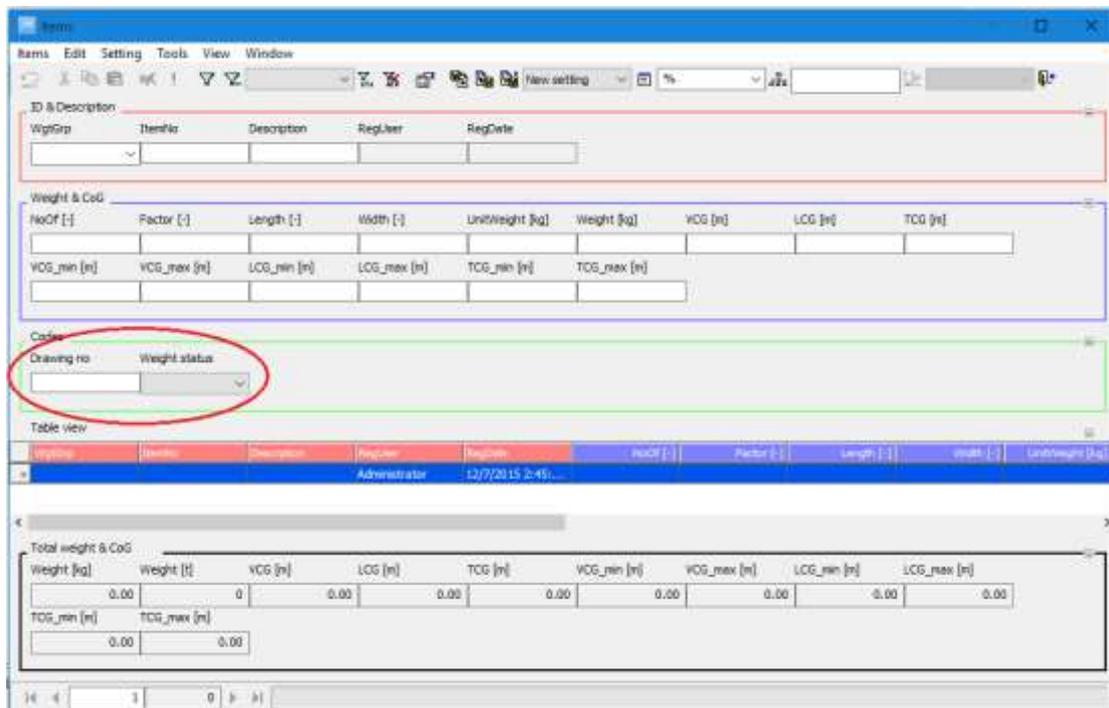


Click the **Close** button to go back to the **Items** dialog box.

In the **Items** dialog box, select **Load Setting** from the **Setting** menu and select **New setting**. Click **OK**.



Then your new setting should load and you should be able to see your new custom **Drawing No.** code in the **Items** dialog box in the **Codes** group:



5.3.7 Tutorial: Define calculated codes

In this tutorial we will define two calculated codes: 'Vert. Mom.' and 'Weight with Margin'. This tutorial builds on Chapter [5.3.6 Tutorial: Add custom codes](#).

Open the **Items** dialog box and load the setting **New setting**.

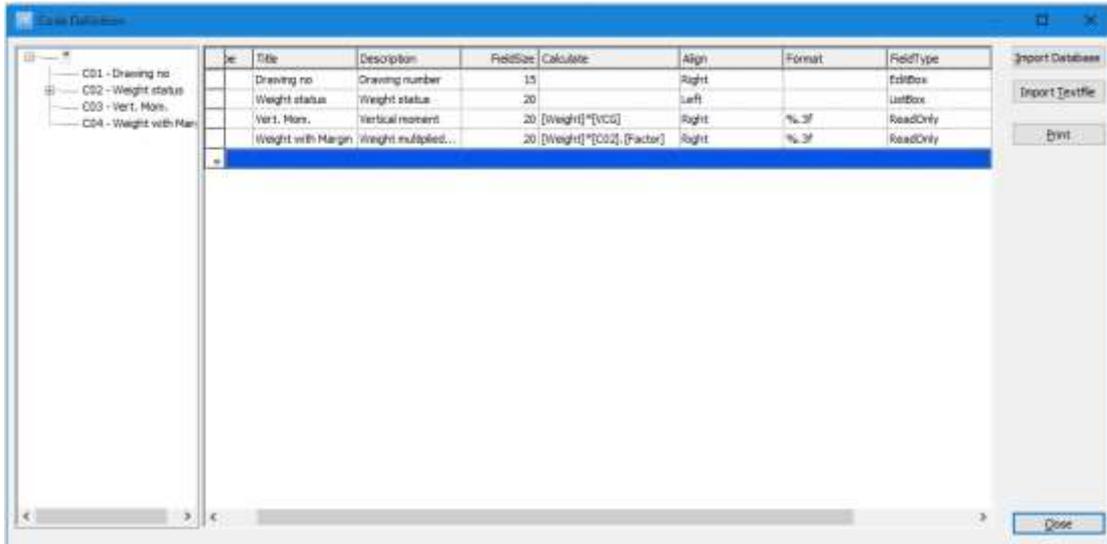
Next, open the **Code Definition** dialog box by selecting **Code Definition...** on the **View** menu.

Add code C03 with these values:

Field	Value
CodeType	C03
Title	Vert. Mom.
Description	Vertical moment
FieldSize	20
Calculate	[Weight]*[VCG]
Tab	Right
Format	%.3f
FieldType	ReadOnly

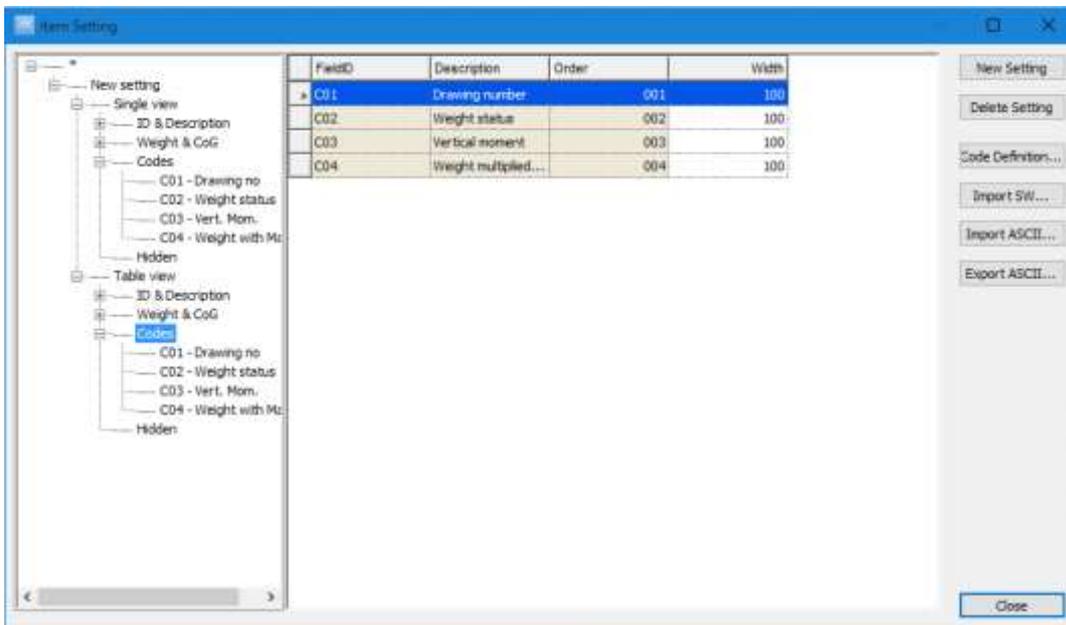
Next, add code C04:

Field	Value
CodeType	C04
Title	Weight with Margin
Description	Weight multiplied with margin based on Weight Status code
FieldSize	20
Calculate	[Weight]*[C02].[Factor]
Tab	Right
Format	%.3f
FieldType	ReadOnly



Click the **Close** button. Back in the **Items** dialog box, select **Items settings** on the **Settings** menu.

In the **Item setting** dialog box, expand the **New setting, Single view** branch and the **Hidden** group. Move the codes C03 and C04 from the **Hidden** group to the **Codes** group. Also, expand the **Table view** branch and move the codes C03 and C04 from **Hidden** to **Codes**.



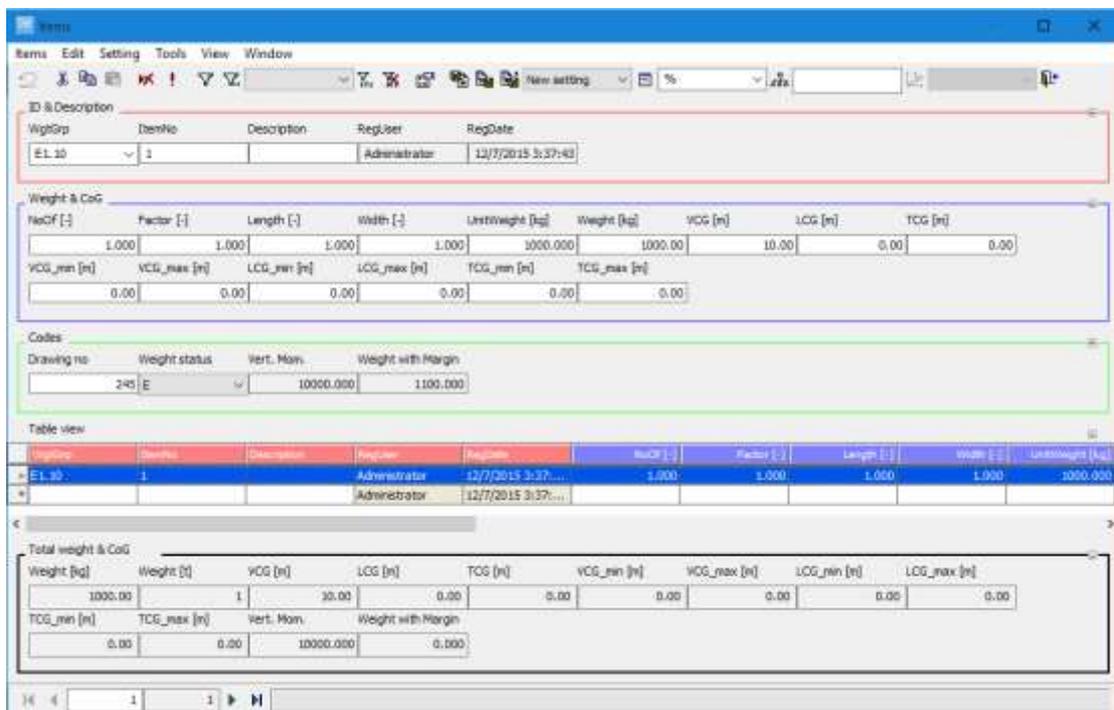
Close the **Item setting** dialog box.

Back in the **Items** dialog box; add a weight item with these values:

Field	Value
UnitWeight	1000
VCG	10
C02 – Weight Status	E

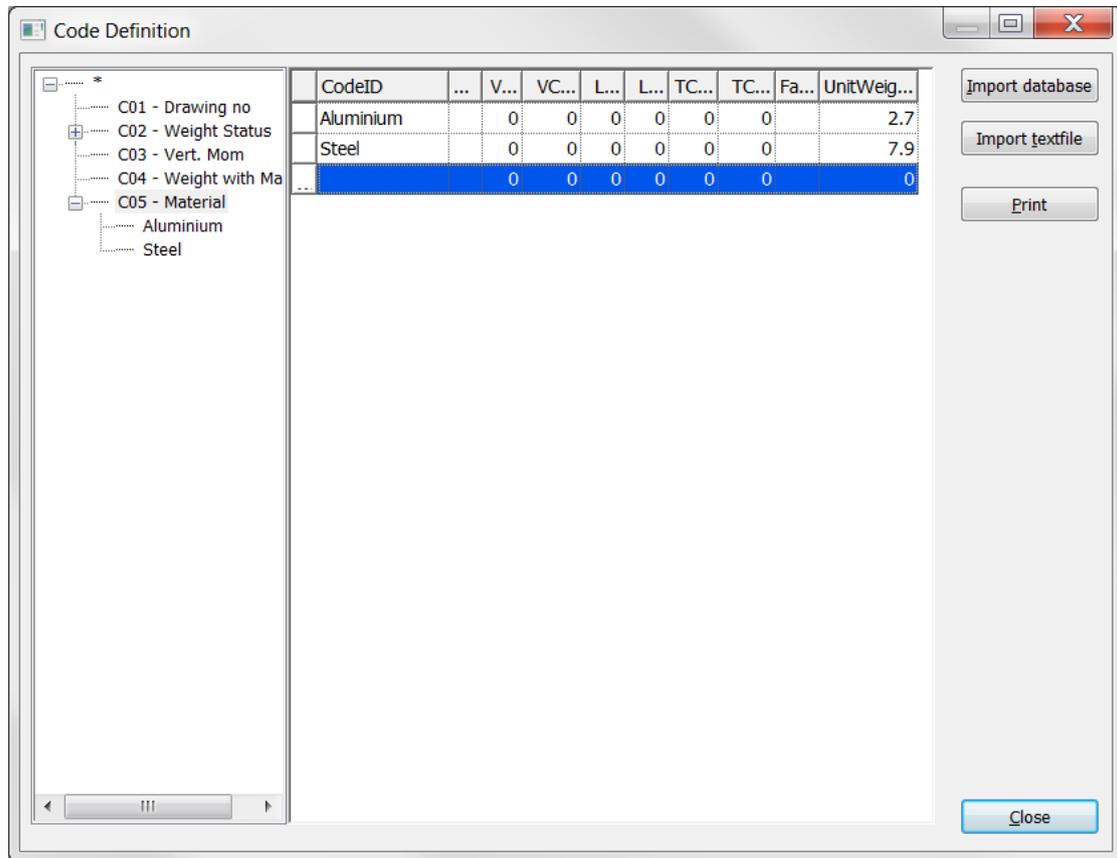
Now, the calculated codes should be:

Field	Value
C03 – Vert. Mom.	10000
C04 – Weight with Margin	1100



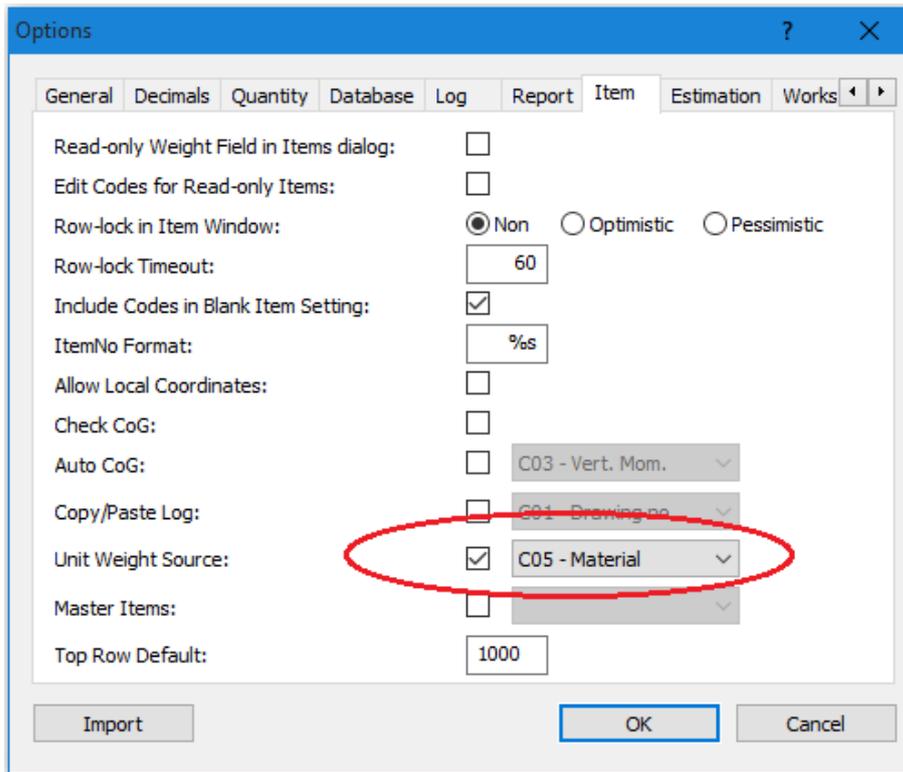
5.3.8 UnitWeight Function

The **Code Definition** dialog box has a column for sub codes where a UnitWeight can be defined for a sub code.



This value set in this UnitWeight column can be utilized for automatic setting of the UnitWeight quantity field in ShipWeight **Items** dialog box.

To activate a custom code to automatically set UnitWeight based on selection of sub code, the custom code intended for this use must be set in the **Options** dialog box (menu **View > Options...**) in the **Item** tab.

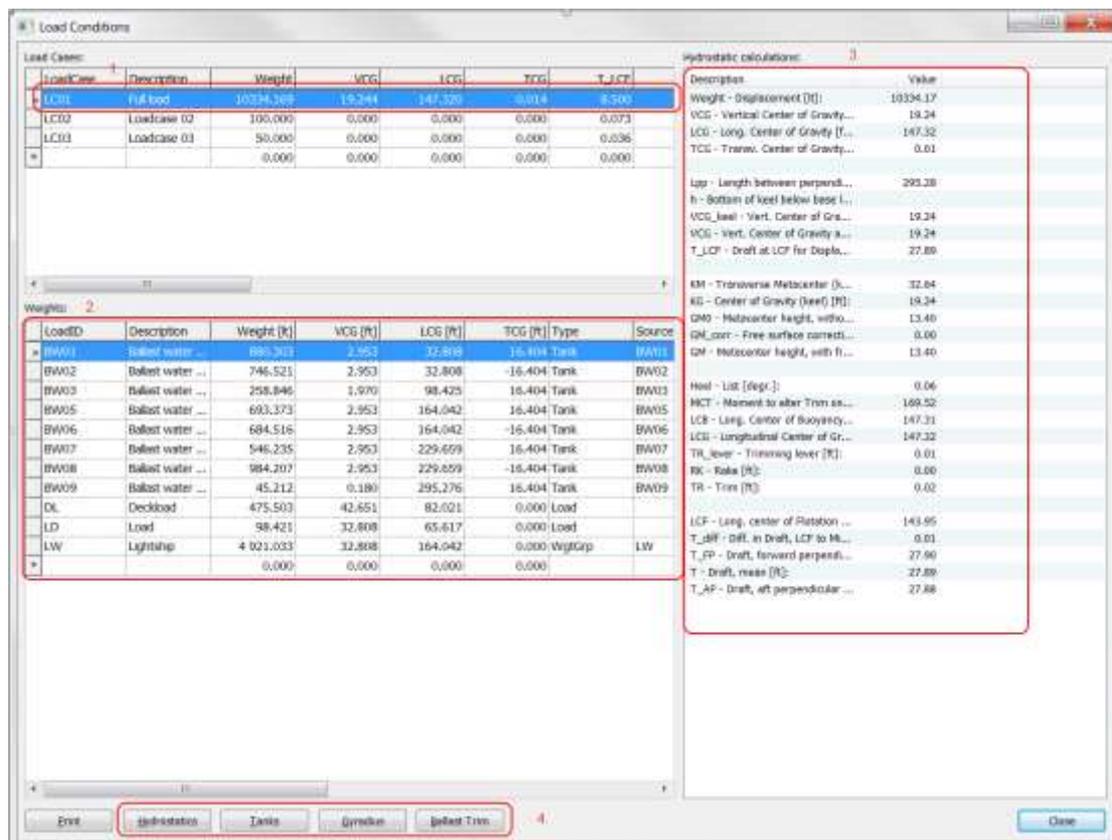


Hence a sub code selected from the custom code in the **Items** dialog box will automatically fill in the UnitWeight quantity of the weight item.

5.4 Loading Conditions and Hydrostatics

From the menu **View > Load Conditions...** a dialog box can be opened to handle loading conditions and hydrostatic values. This dialog box can be used for calculation of total weight and center of gravity for various loading conditions and calculation of hydrostatic values for loading conditions.

The results can be printed through a canned report, and the results are stored in a table and can be used in a custom Crystal Report.



The **Load Conditions** dialog box contains tables for input of values to define the loading conditions. In the area 1 in the figure above, each row represent a loading condition. To define a loading condition, add a line to this table and enter name of condition (LoadCase) and description. The other fields in this table will be calculated as more information is given on the loads and hydrostatics.

When a specific loading condition is selected in the **Load Case** table, the **Weights** table (area 2 in the figure above) can be used to define the loads for this condition. Each line in the loading condition represents a single load for the selected **Load Case** and may be of the type **Tank**, **Load** or **Weight Group**. The **Hydrostatic Calculations** list (area 3 in figure above) gives a summary of the results of the loading calculations. For the hydrostatic results to be calculated, the **Hydrostatics** button must be clicked for input of hydrostatic values.

5.4.1 To Input Values and Import Values

Values in all tables in the loading condition and hydrostatic task may be added manually, but input can also be done by importing the values from tab delimited text files. To input data from text files, right-click the appropriate table and select **Import Text File...** The text files must have columns similar to the columns of the table you are about to import to and for importing to the **Weights** area (importing loads), the text file needs to have an additional first column with Load Case to know which Load Case to connect the loads to.

5.4.2 Setting the Load Type

The screenshot shows the 'Load Conditions' dialog box with two tables. The 'Load Cases' table is at the top, and the 'Weights' table is at the bottom. The 'Weights' table has two red boxes around the 'Type' and 'Source' columns. A red '1.' is below the 'Type' box and a red '2.' is below the 'Source' box.

LoadCase	Description	Weight	VCG	LCG	TCG	T_LCF	KMT
LC01	Full load	10334.169	19.244	147.320	0.014	8.500	9.950
» LC02	Loadcase 02	100.000	0.000	0.000	0.000	0.073	0.150
LC03	Loadcase 03	50.000	0.000	0.000	0.000	0.036	0.075
*		0.000	0.000	0.000	0.000	0.000	0.000

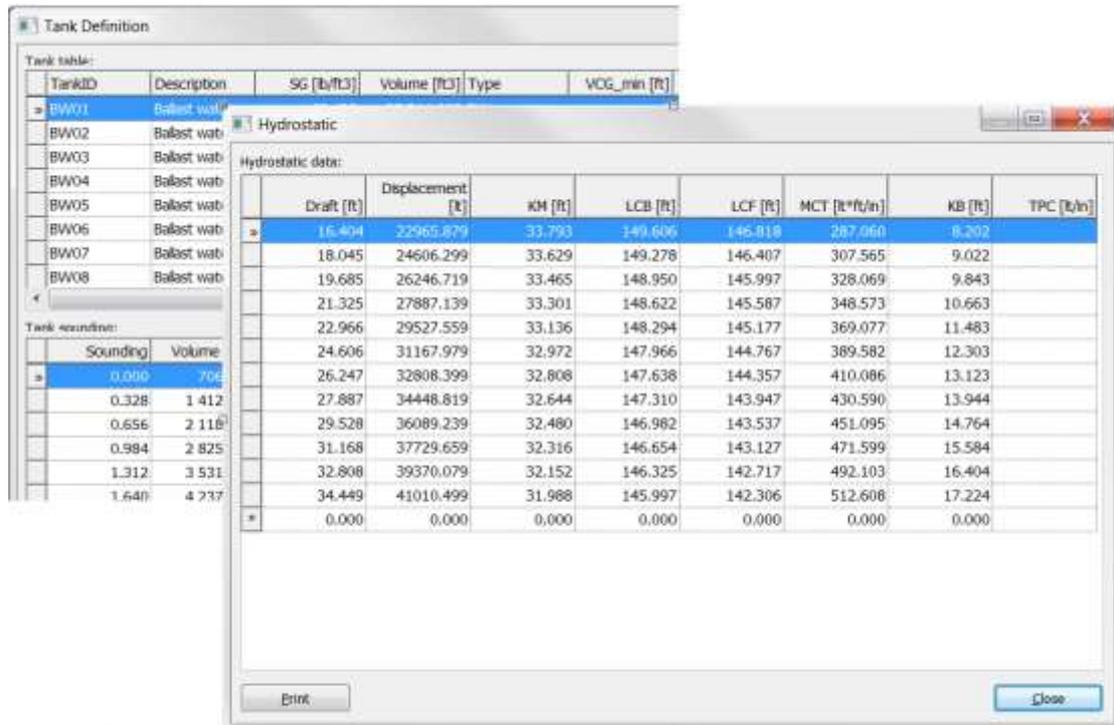
LoadID	Description	Weight [t]	VCG [ft]	LCG [ft]	TCG [ft]	Type	Source
W1		100.000	0.000	0.000	0.000		
... Lightship	Lightship fro...	4921.033	32.808	164.042	0.000	WgtGrp	LW
*		0.000	0.000	0.000	0.000		

In the **Weight** area in the **Load Conditions** dialog box you may select between load types **WgtGrp**, **Tank** or **Load**.

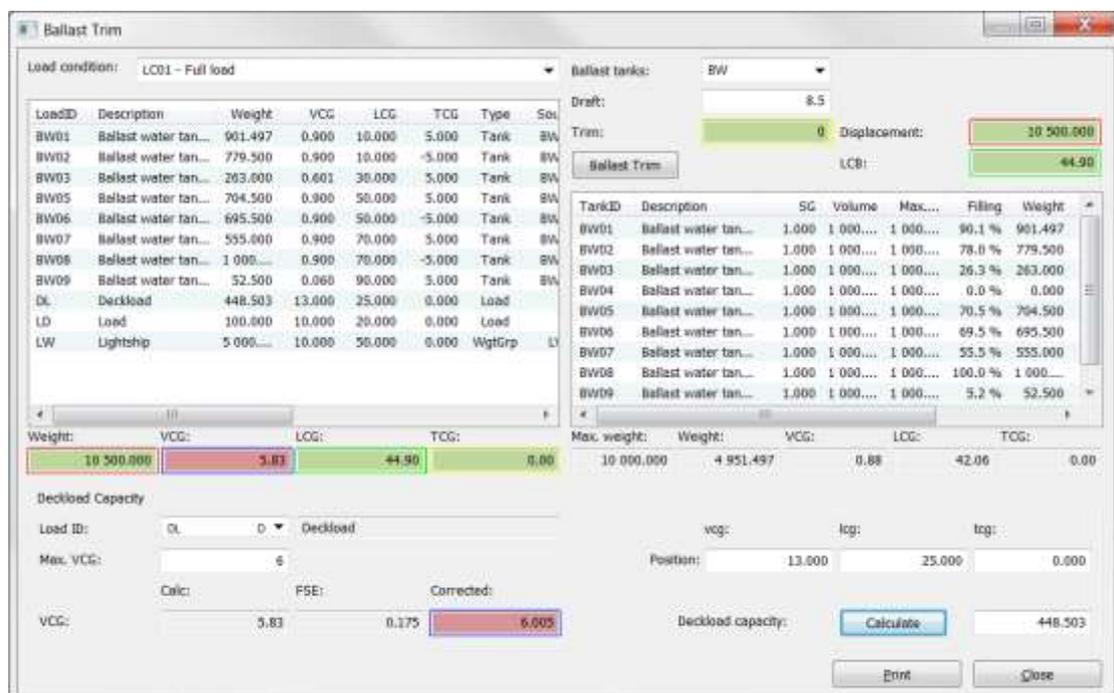
A **WgtGrp** load type gives you the opportunity to refer to any weight group in ShipWeight and get the weight and center of gravity from here. This may be the Lightship, a deadweight group or any other SWBS in ShipWeight. The weight group you want to refer to is written in the **Source** column of the **Weights** table. See marks 1 and 2 in the figure above. When assigning a **WgtGrp** load it is important an update it needed to initialize the value. This is done by right-clicking the table and selecting **Update item(s)** from the submenu.

A **Tank** load type represents a tank that can be defined with content and sounding table.

A **Load** type is a defined static mass load to be included in the loading condition.

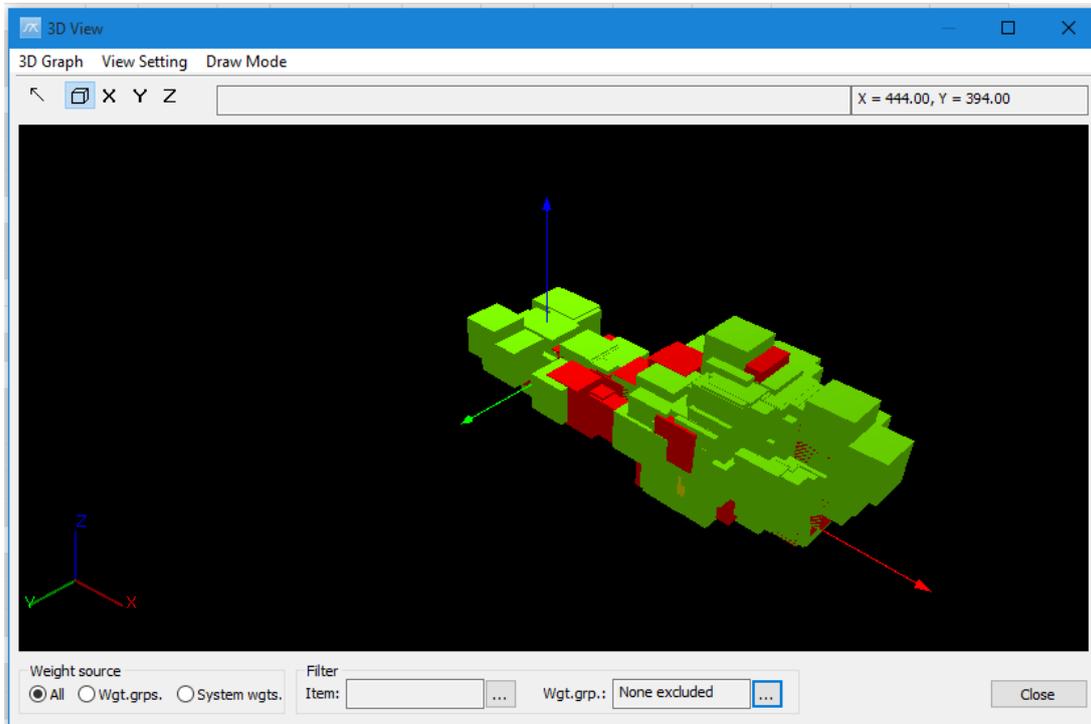


The picture above shows the input tables for hydrostatic properties, tank definitions and sounding tables, both dialog boxes are shown by clicking the corresponding buttons in the **Load Conditions** dialog box.

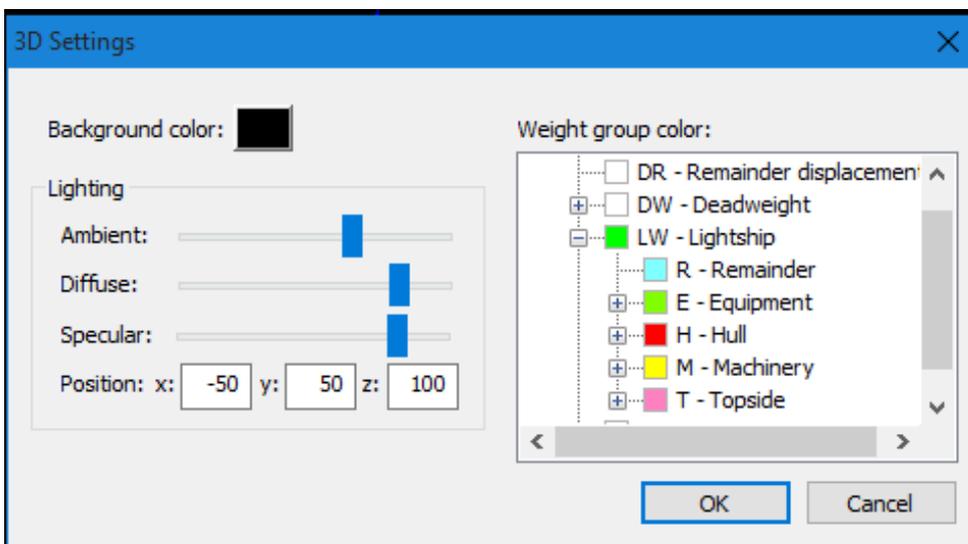


5.5 3D Plot of Weights

A 3D plot of the weights where items are plotted as cubes according to their given extension and their position according to their center of gravity can be obtained from starting the **3D view** dialog box to be found on the menu **View > 3D Plot...**

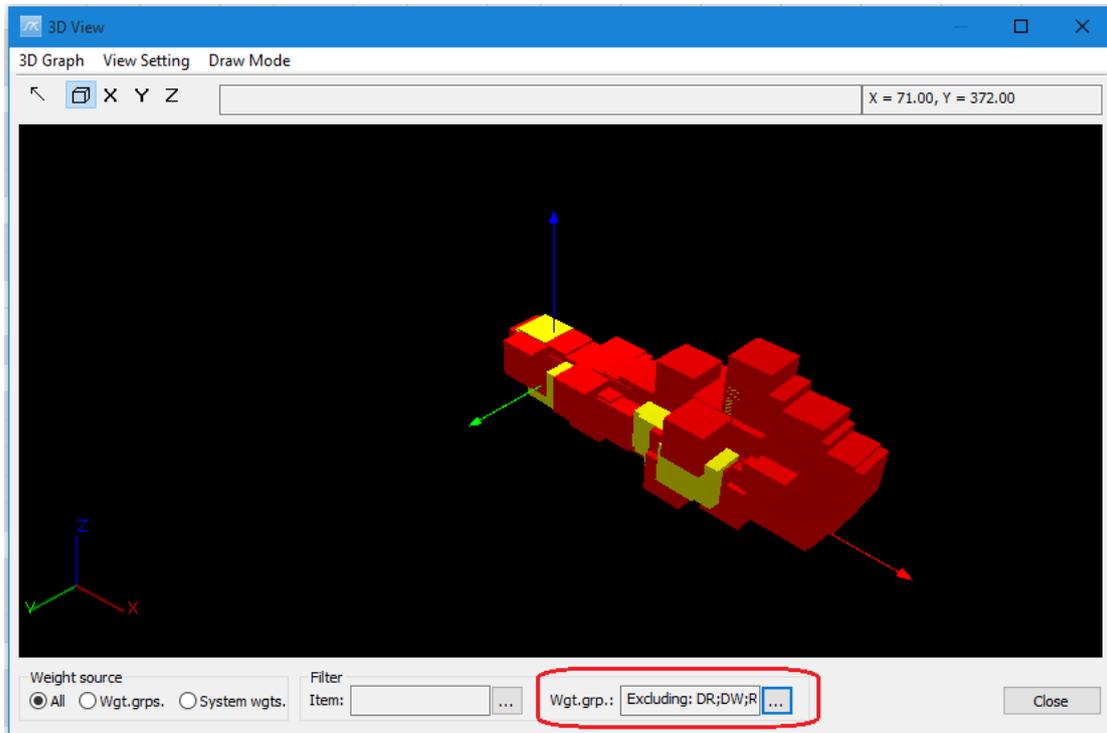


Custom colors can be set for weight groups to color items by their weight group. These colors can be set by selecting menu **View Setting > Settings...** in the dialog box. This brings up the **3D Settings** dialog box where you can pick a weight group in the work breakdown structure and set color from the submenu (right-click the WBS) by selecting **Set Color** or **Color all subgroups**. In the same dialog box you may also change the background color.



This dialog box has also filter options, for weight groups and the general item filter, similar to filters in **Items** dialog box, **Weight Distribution** dialog box and **Gyration** dialog box.

When the weight items are plotted, the user can zoom and rotate the model interactively by using the mouse in the plot area. Standard projection settings can also be found on the menu and on buttons in the dialog box.



6 Administration

6.1 The Options dialog box

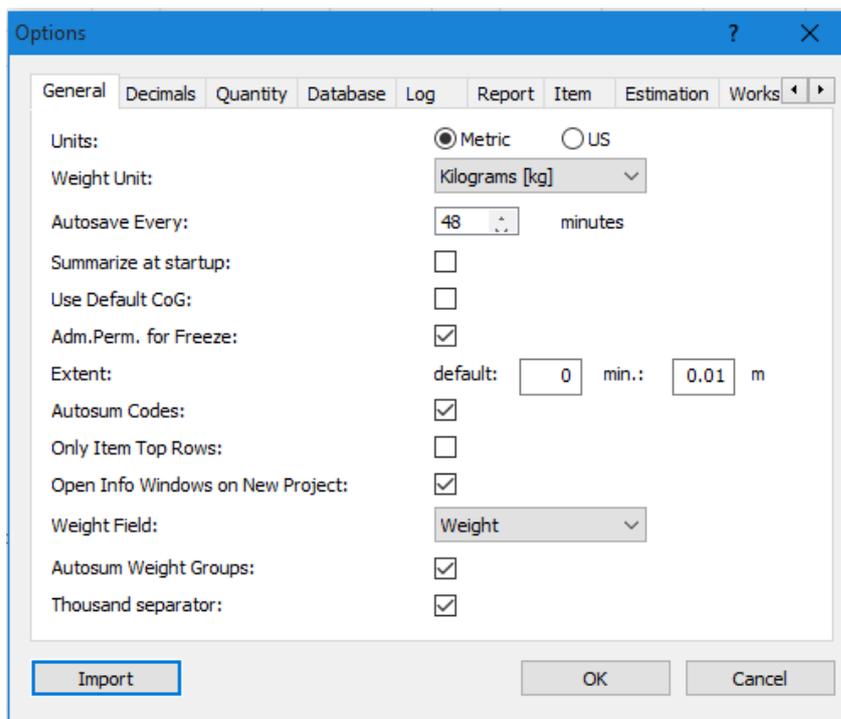
The **Options** dialog box is found on the **View** menu. It includes ten tabs:

- General
- Decimals
- Quantity
- Database
- Log
- Report
- Item
- Estimation
- Workset
- Playground

All users will by default inherit settings in the **Options** dialog box made by the sysadmin user. Special settings can still be set per user if necessary.

Settings in the **Options** dialog box can be imported from other projects by clicking the **Import** button and select the database and project from where you want to import settings. The settings from the project you select to import from will overwrite the existing settings of the current project.

6.1.1 General

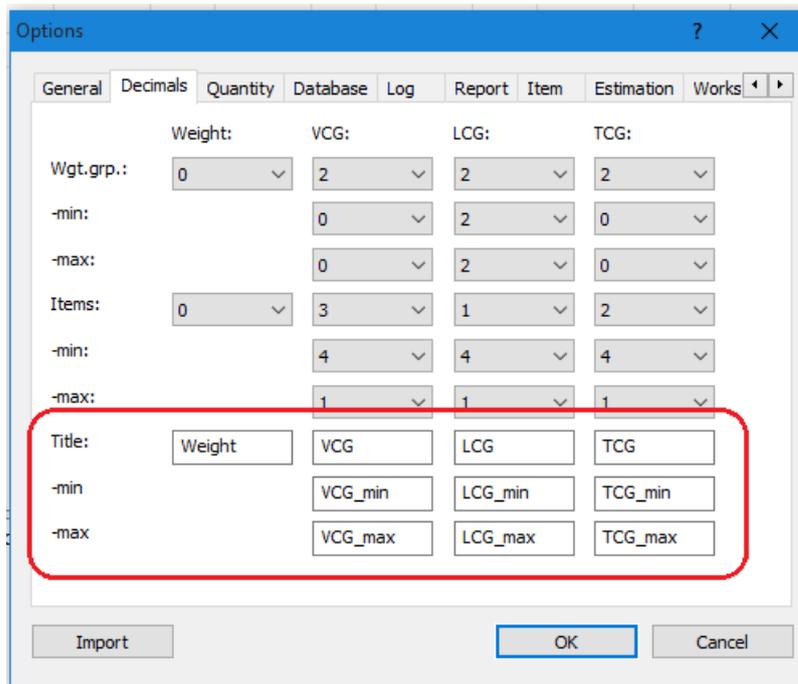


The **General** tab includes these options:

- Units:* Switch between Metric and US units.
- Weight Unit:* Select the appropriate weight unit.
- Autosave every:* Set the time period between AutoSave.
- Summarize at startup:* Set whether weight-groups should be summarized at the start of a new session or not.
- Use default CoG: (not in use)
- Adm.perm. for Freeze:* set if the user needs administrator privileges to use the option **Freeze wgt.grp. over** on the **Estimate** menu.
- Extent:* 'default' is the default extension used for a weight item if any of the values VCG_min, VCG_max, LCG_min, LCG_max, TCG_min, or TCG_max are missing.
'min.' is the minimum allowable extension for a weight item. The min value will be used if the given extension of a weight item is less than the minimum value.

- Autosum Codes
- Only Item Top Rows
- Open Info Windows on New Project
- Weight Field
- Autosum Weight Groups
- Thousand separator

6.1.2 Decimals



This tab is used to set the number of decimals for Weight, VCG, LCG, TCG, VCG_min, VCG_max, LCG_min, LCG_max, TCG_min or TCG_max.

Wgt.grp. Control the number of decimals in the main window of ShipWeight
Items Set the number of decimals in the **Items** dialog box.

The labels for center of gravity position (VCG, LCG and TCG) may be renamed. This will affect the label for center of gravity in the main window, the **Items** dialog box, and standard (embedded) reports.

6.1.3 Quantity

	Quantity unit:	Qty. title:	No. dec.:	Default:	Merge:
Quantity 1:	-	NoOf	0	1	Wgt.avg.
Quantity 2:	-	Factor	1	1.0	Wgt.avg.
Quantity 3:	-	Length	2	1.00	Wgt.avg.
Quantity 4:	-	Width	3	1.000	Unit wgt.
Quantity 5:	kg	UnitWeight	4	0.0000	Sum

The **Quantity** options define the five quantities.

Quantity unit: Dropdown list for selecting a unit. The available units will vary depending on the type of units selected in the **General** tab. (Metric or US units).

Qty title: Set the name of the quantity.

No. dec.: Control the number of decimals shown.

Default

Merge

6.1.4 Database

The screenshot shows the 'Options' dialog box with the 'Database' tab selected. The 'Path Historical Database' field is set to 'CRIS - Demo'. The 'Project Database Prefix' field is empty. The 'Log DB' section has three checked options: 'On', 'Import', and 'Calc.codes'. The 'Connection Timeout' and 'Record Buffer' fields are both set to '10000'. At the bottom, there are three buttons: 'Import', 'OK', and 'Cancel'.

Path historical database: It is important to notice the Path historical database, which gives the file containing your past ship data. When estimating or exporting a project to the historical database, always make sure that you are working towards the right historical database.

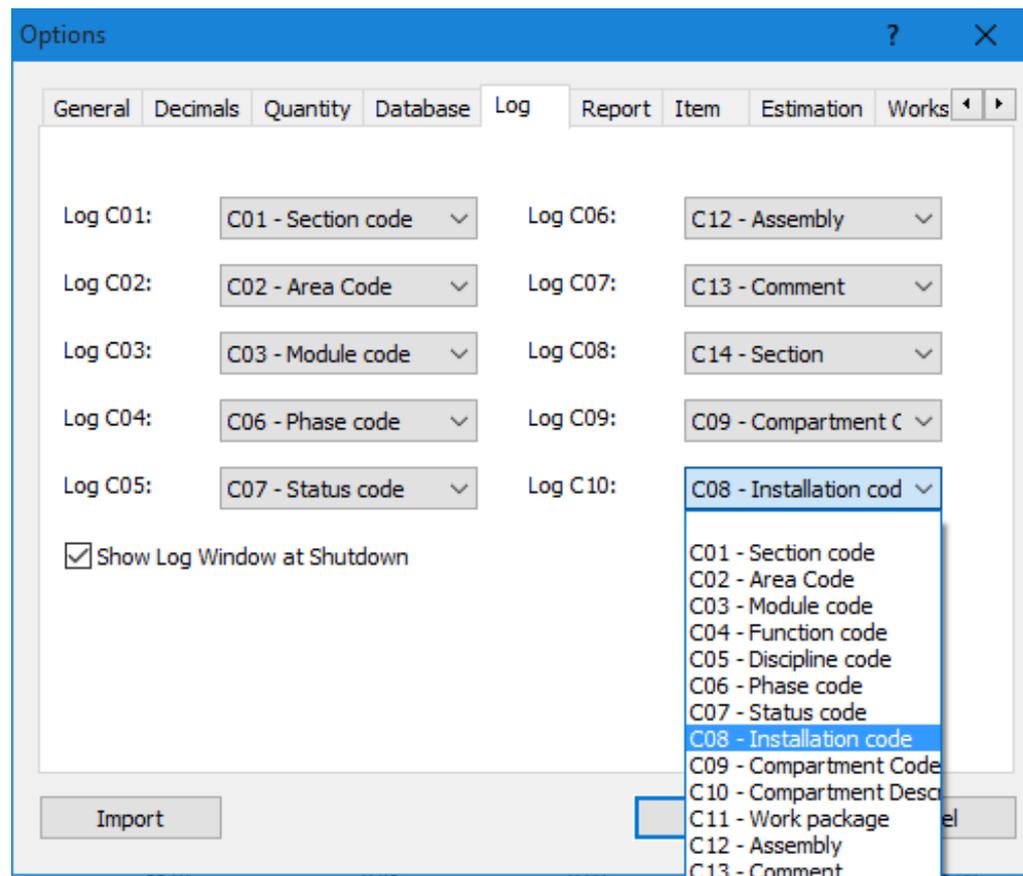
Project database prefix: Set a prefix for the database names.

Log DB

Connection Timeout

Record Buffer

6.1.5 Log



Controls which code fields to display in the **Log** dialog box. Use the dropdown list to select from the existing codes.

Now the selected codes will be available in the **Log** dialog box for commenting. See Chapter [2.9 Log activities and results](#).

6.1.6 Report

Options

General Decimals Quantity Database Log Report Item Estimation Works

Line Distance: 300

Header Font Size: 70%

Report Font Size: 50%

Summarize Calc. fields in Item Report

Report Logo: ...

Print SW logo:

Use Phase Code:

Import OK Cancel

The Report options controls the appearance of the Standard reports.

Line distance: Controls the spacing between the lines.

Header font size: Set the font size of the header.

Report font size: Set the font size of the report.

Summarize calc. fields in Item report

Report logo: browse and select logo report

Print SW logo: select to print or not the ShipWeight logo

6.1.7 Item

The screenshot shows the 'Options' dialog box with the 'Item' tab selected. The settings are as follows:

- Read-only Weight Field in Items dialog:
- Edit Codes for Read-only Items:
- Row-lock in Item Window: Non Optimistic Pessimistic
- Row-lock Timeout:
- Include Codes in Blank Item Setting:
- ItemNo Format:
- Allow Local Coordinates:
- Check CoG:
- Auto CoG: C09 - CG
- Copy/Paste Log: C10 - Copy/Paste
- Unit Weight Source: C05 - Discipline code
- Master Items:
- Top Row Default:

Buttons: Import, OK, Cancel

Read-only Weight field in Items dialog box: If this selection is checked, the weight field/column in the Items dialog box will be locked for editing. At the right side of this checkbox you can set the number of decimals for weight and CoG shown in the **Items** dialog box

Row-lock in Items dialog box: Activates the row-lock. This prevents two users to edit the same item simultaneously.

Row-lock timeout: Set the maximum time an item can be locked.

Include codes in blank Item setting: Control whether all codes should be included when a blank Item setting is selected.

ItemNo format: Define the format of the item number fields, e.g. '%05s' for '00001'.

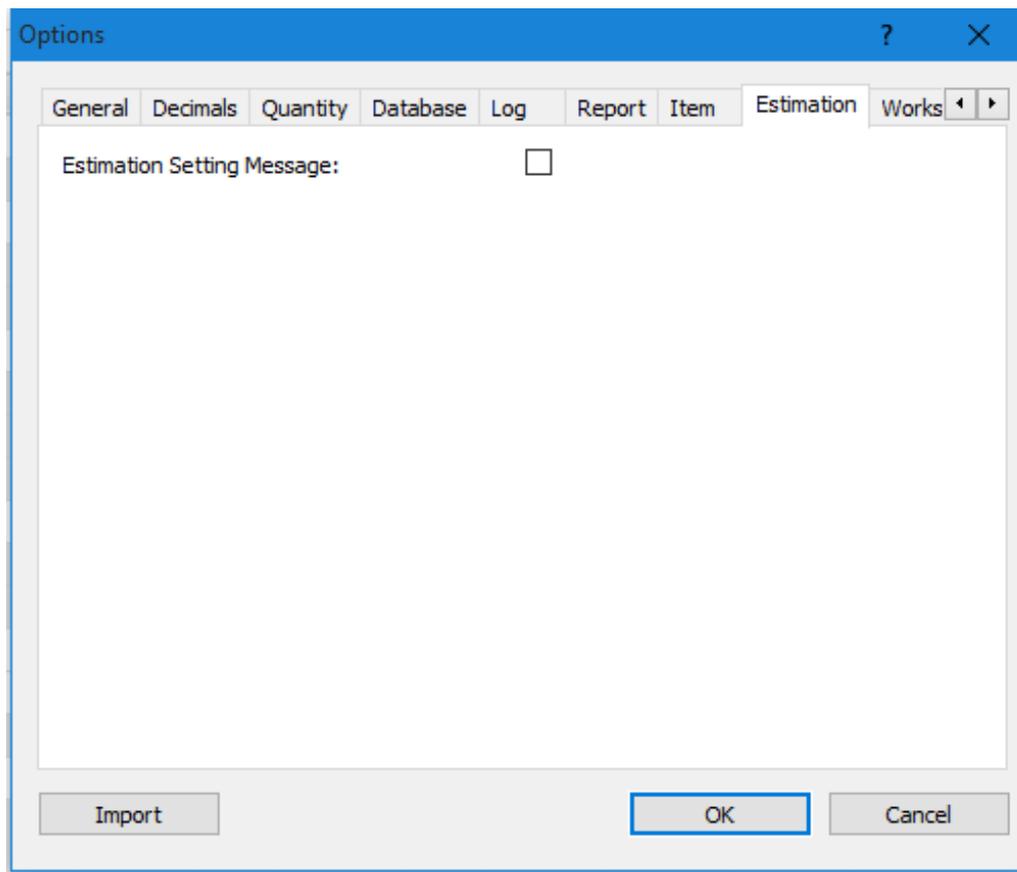
Allow local coordinates: Enables the user to activate local coordinate systems in the **Items** dialog box.

Check CoG: activate automatic check of sanity between CoG and given extension.

Auto CoG: enable automatic definition of CoG and extensions for weight items based on code values.

Copy/paste log: enable logging of copy/paste operations from the **Items** dialog box. The log-data is stored in a code-field.

6.1.8 Estimation



For the Workset and Playground option this is described in Chapter [2.7 Playground Area and Worksets](#).

6.2 The SWLogin-dialog box – managing permissions

The **Permissions** dialog box is used to manage user-groups and user-accounts.

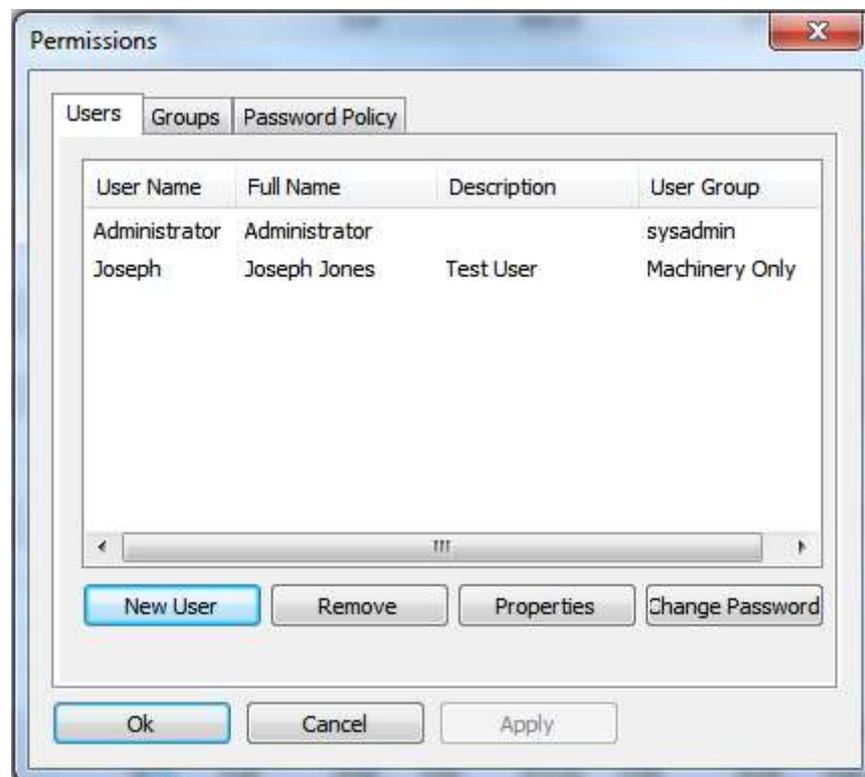
Permissions are assigned to user-groups. All users are assigned to a user-group and thus inherit the permission from the group. Any number of user-groups can be defined and permissions are set custom for each user-group. Any number of users can be assigned to a single user-group.

The only default user-group is the **sysadmin** group. At least one user must be assigned as a sysadmin user. Only the users of the sysadmin group are allowed to access the **Permissions** dialog box.

From the **Project** menu, select **Permissions > Administration...** to open the **Permissions** dialog box.

The **Permissions** dialog box is divided into three tabs: **Users**, **Groups** and **Password Policy**.

6.2.1 The Users tab



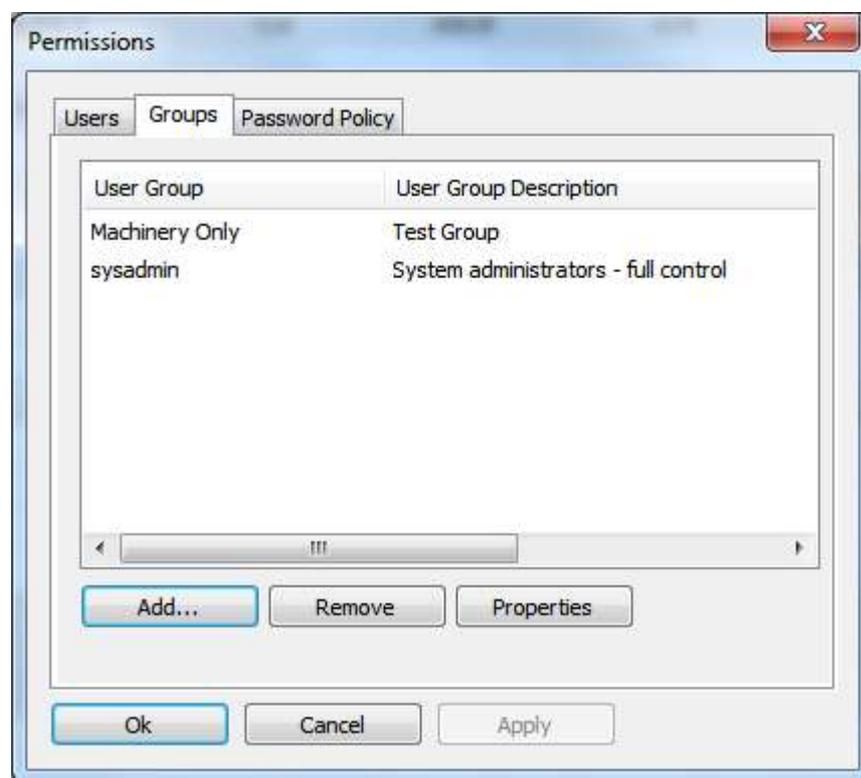
The **Users** tab contains a list-view where the users are listed with username, full name and description.

There are four command buttons:

New User	add a new user
Remove	delete the selected user definition
Properties	view and edit the user definition
Change Password	set password

The buttons **New User** and **Properties** will open a dialog box displaying the properties of the current user. See Chapter [6.2.4 The Create New User dialog box](#). Clicking the **Change Password** button will open a dialog box for setting the password.

6.2.2 The Groups tab

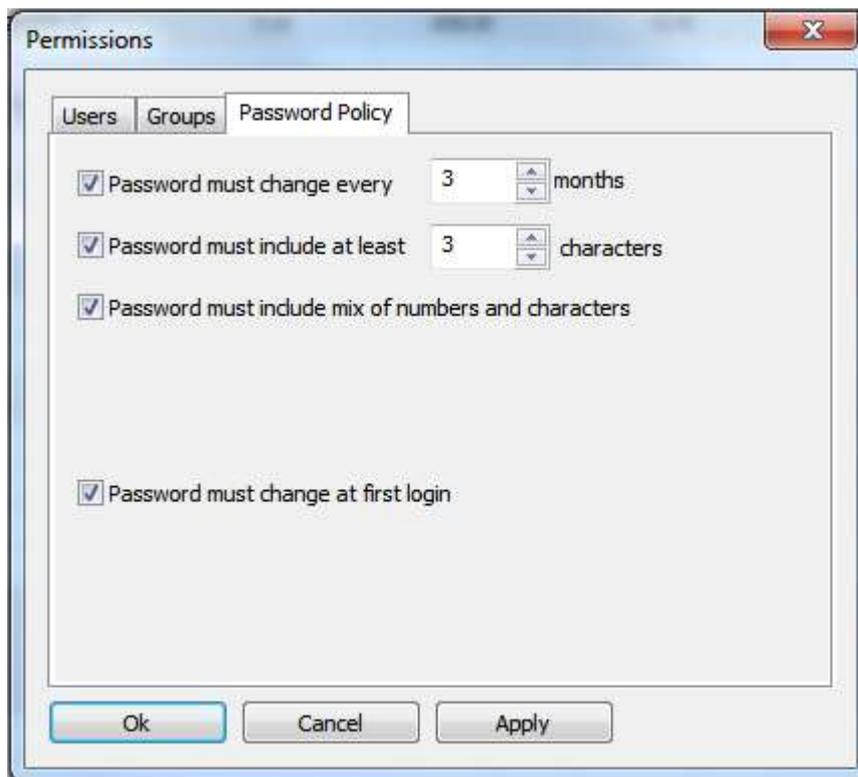


The **Groups** tab lists the name and description of all available User-groups. In addition, there are three command buttons:

Add	add a new user group
Remove	delete the selected user-group
Properties	view and edit the properties of a user-group

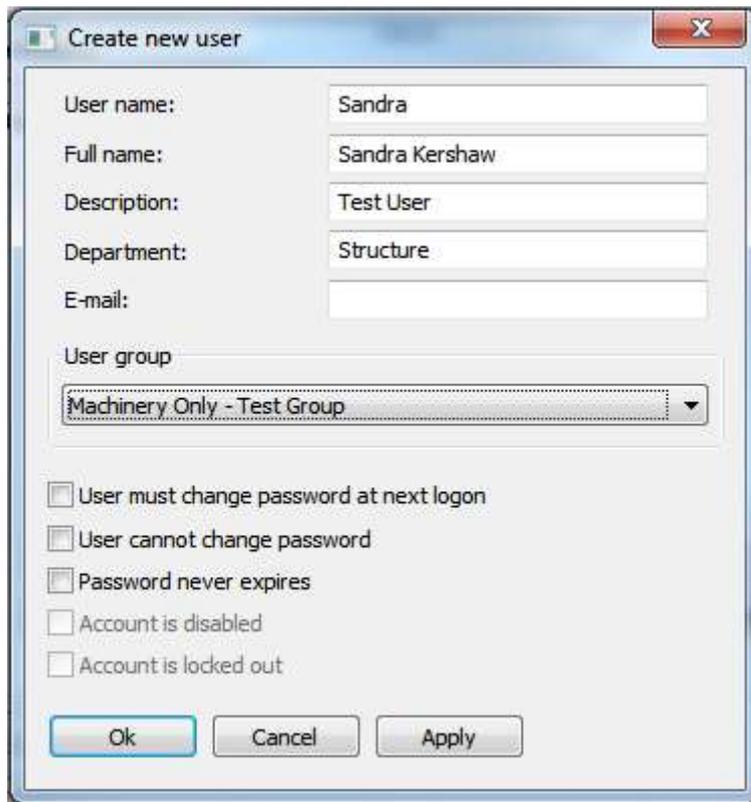
Clicking either the **Add** or the **Properties** button will open a dialog box showing the properties of the User Group. See Chapter [6.2.6 The New User Group dialog box](#).

6.2.3 The Password Policy tab



The **Password Policy** tab is used to set accepted password properties. The system will only approve setting password according to these properties.

6.2.4 The Create New User dialog box



The **Create new user** dialog box opens when clicking either the **New User** or the **Properties** button on the **Users** tab.

The **User name** and **User group** fields are mandatory. The fields **Full name**, **Description**, **Department** and **E-mail** are optional.

At the lower half of the dialog box, there are five check-boxes:

User must change password at next logon

User cannot change password

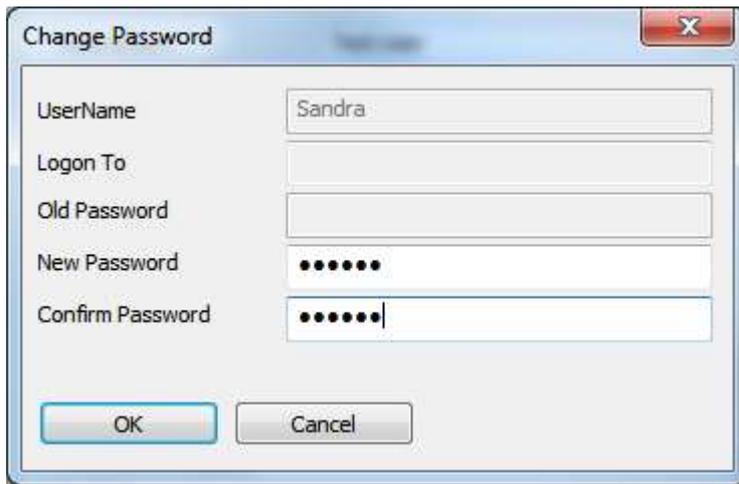
Password never expires

Account is disabled

Account is locked out

The latter two are disabled when creating a new user, but will be available when viewing the user properties.

When you have finished entering user information, click the **Ok** button to create the user. The **Change Password** dialog box will appear.



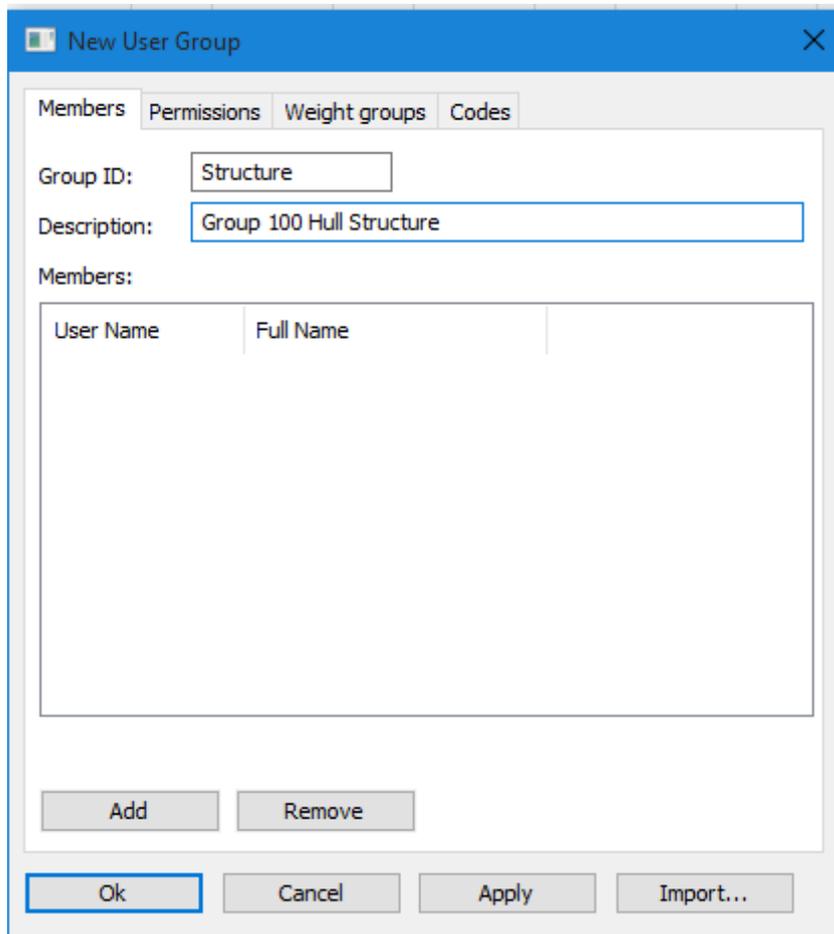
6.2.5 Change your password in ShipWeight

From the ShipWeight main window menu **Project > Permission > Change Password...** you can open a dialog box that allows you to change your ShipWeight password at any time.

6.2.6 The New User Group dialog box

The **User Group** dialog box opens when clicking **Add** or **Properties** button from the Groups tab. The dialog box is divided into three tabs: **Members**, **Permissions** and **Weight groups**.

The **Members** tab



The screenshot shows the 'New User Group' dialog box with the 'Members' tab selected. The dialog has a blue title bar and a close button. Below the title bar are four tabs: 'Members', 'Permissions', 'Weight groups', and 'Codes'. The 'Members' tab contains two input fields: 'Group ID' with the value 'Structure' and 'Description' with the value 'Group 100 Hull Structure'. Below these fields is a table with two columns: 'User Name' and 'Full Name'. The table is currently empty. At the bottom of the dialog are four buttons: 'Add', 'Remove', 'Ok', and 'Apply'. The 'Ok' button is highlighted with a blue border.

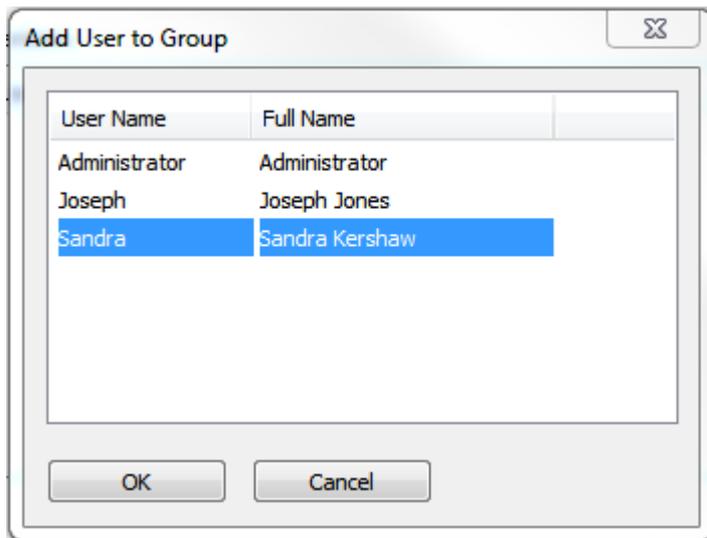
The **Members** tab contains two input-fields: **Group ID** and **Description**. The **Group ID** field is the only mandatory field. **Description** is optional.

Below the input-fields, there is a list of the members belonging to the group, showing User Name and Full Name.

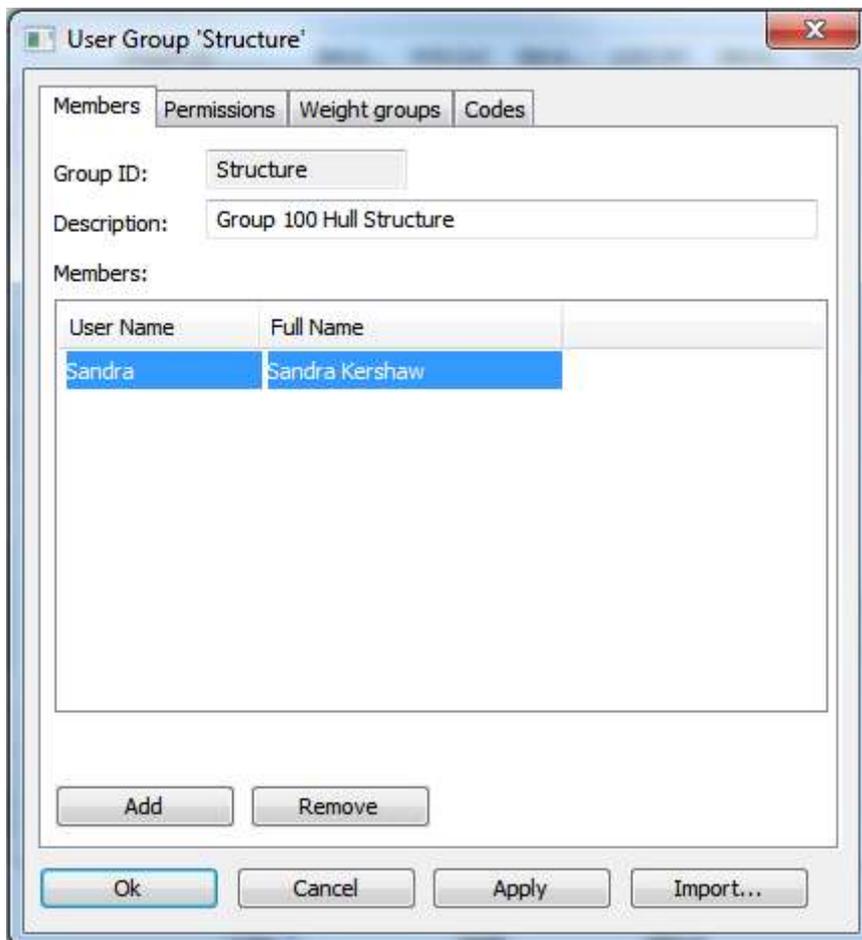
In addition there are two buttons:

Add add a user to the current user group
Remove remove a user from the current user group

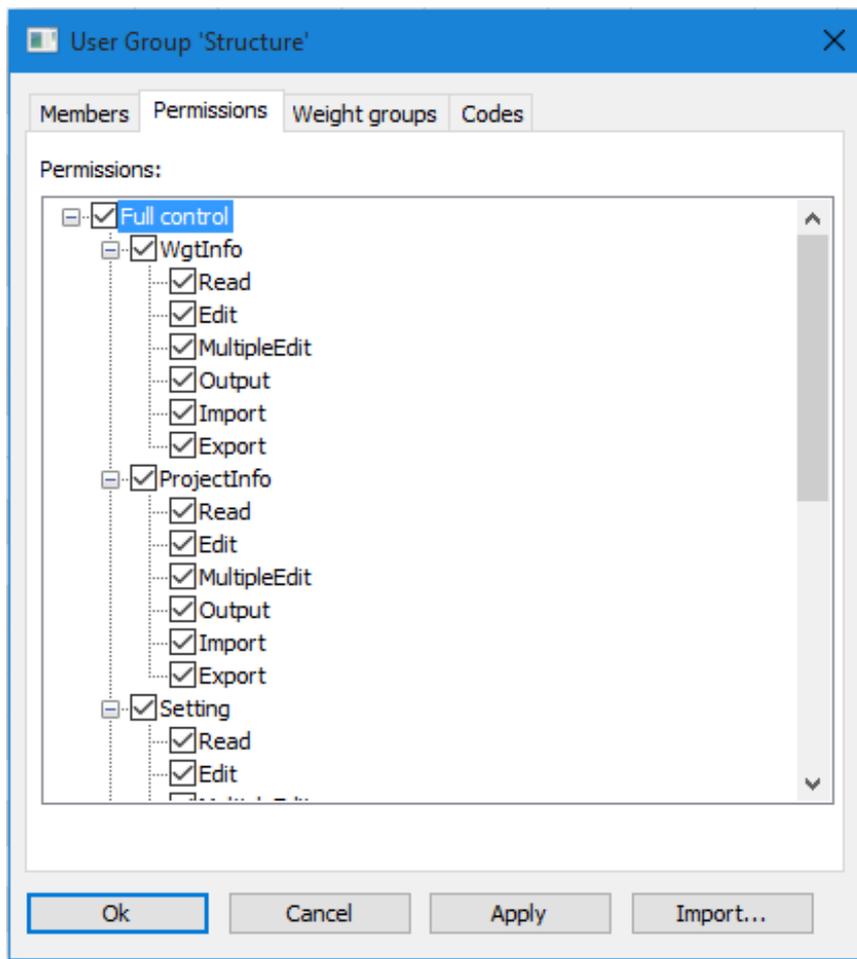
Clicking the **Add** button opens the **Add User to Group** dialog box.



Back in the **User Group** dialog box, the user has been added to the Members list:



The **Permissions** tab



The **Permissions** tab in the New User Group dialog box, contains a tree-view. The tree-view is used to limit the actions of the current user group.

Clicking a box in the tree will check or uncheck an element or a branch. Double-clicking an element on the first or second level of the tree, will expand or collapse a branch.

The topmost level in the tree is **Full control**. If you tick off this box, all the boxes below will be ticked off as well, giving the user group maximum control of ShipWeight.

The second level of the tree-structure divides ShipWeight into four main areas:

WgtInfo

Items dialog box, **Code Wgt.&CoG** dialog box

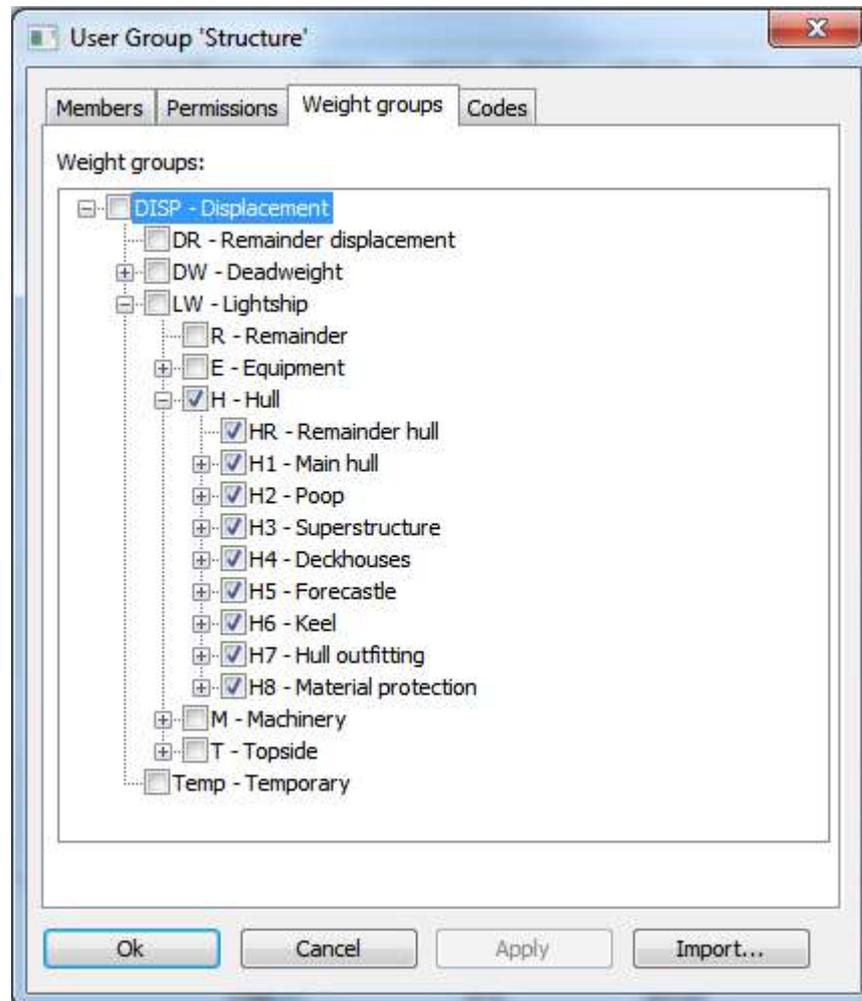
This represents the permission that implies everything from weight items and weight information following the weight item.

ProjectInfo	This is the permission for project information and project Parameters, basically it is the information entered in the Project and Parameter dialog box. Project Info dialog box, Main Ship Parameters dialog box, Parameters dialog box, Methods dialog box
Setting	Is the permission for the Code Definitions , Item Setting and Options dialog box.
Estimate	Is the permission for the Estimation dialog box (graph), Auto Estimation dialog box
Playground	It is similar to the WgtlInfo permission, but implies the Playground Area

For each of these areas you can control the following actions:

Read	
Edit	Changing one Item at the time
MultipleEdit	Permission to make a change to several items at once
Output	

The **Weight groups** tab



The **Weight groups** tab shows a tree-view of the work-breakdown structure. A branch can be expanded or collapsed by double-clicking it with the mouse.

Checking the boxes in the tree-view will restrict the users of the current group to only operate within certain parts of the work breakdown structure.

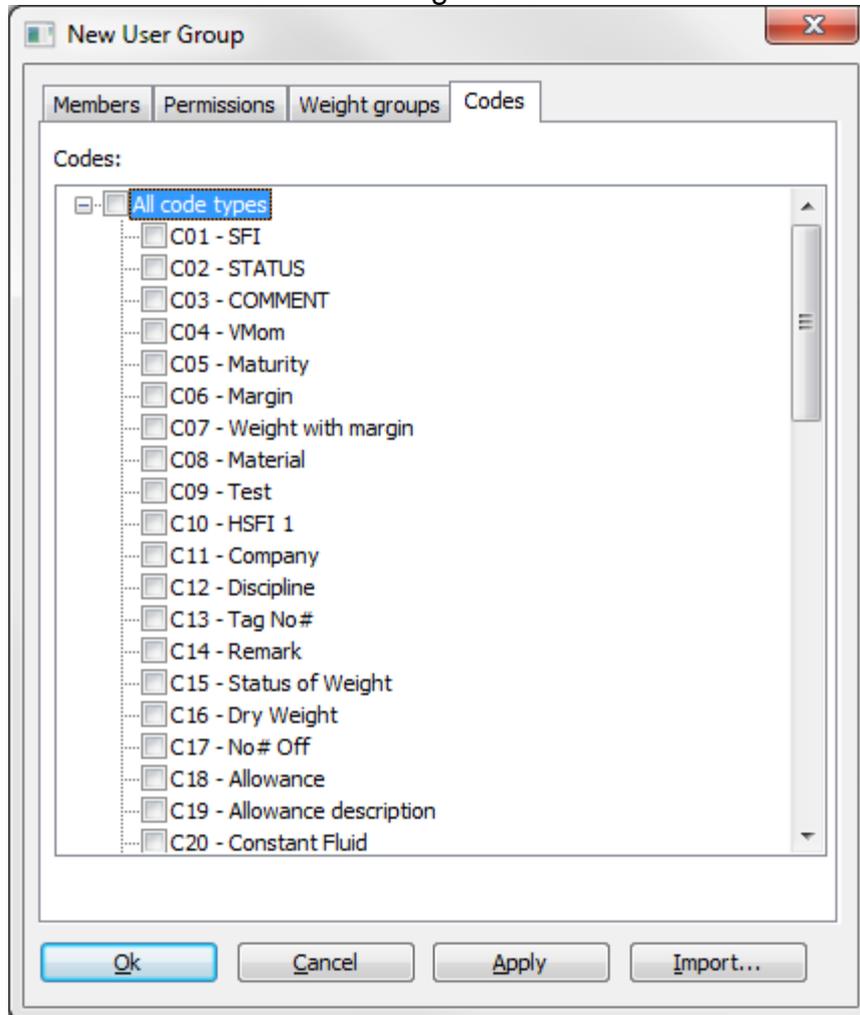


Important!

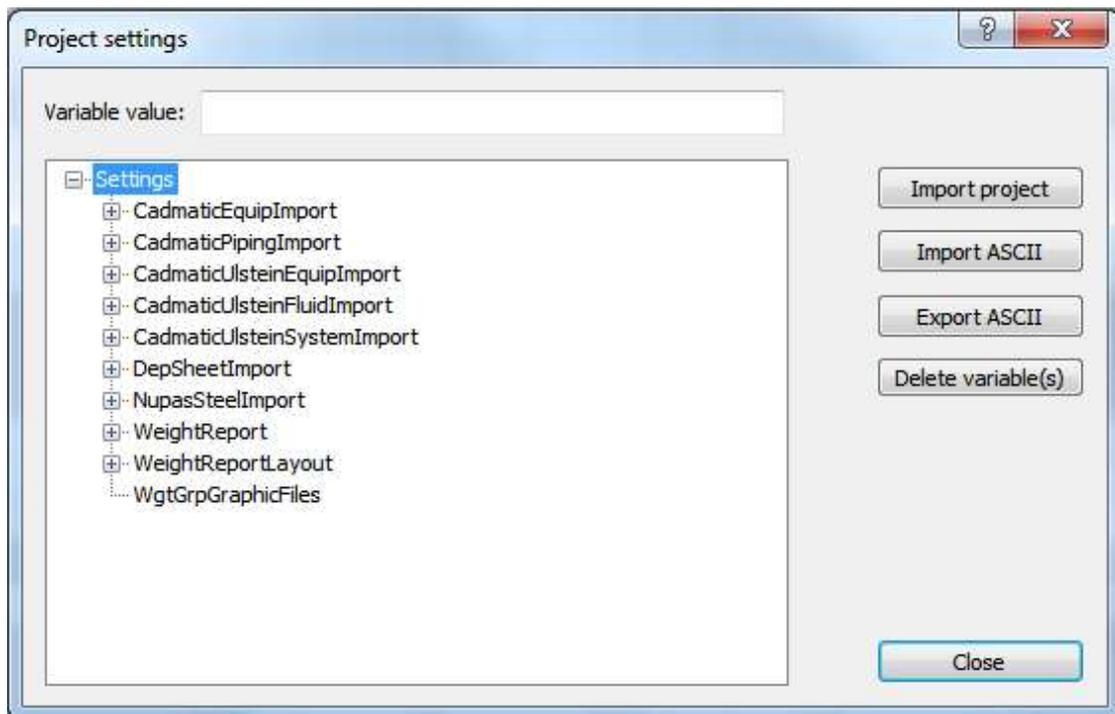
Changes made on the **Permissions** and **Weight groups** tabs will be valid for the current project only! This enables the administrator to set different user group permissions for each project.

6.2.7 Permission Settings per Custom Code

The **Codes** tab in the permission settings dialog box allows for ShipWeight administrators to specify access to custom codes on a single code level by checking boxes to the left of the code ID to grant access. By default, all codes are checked and thus access granted.



6.3 The Project Settings dialog box



From the **Project** menu, select **Settings...** to access the **Project Settings** dialog box.

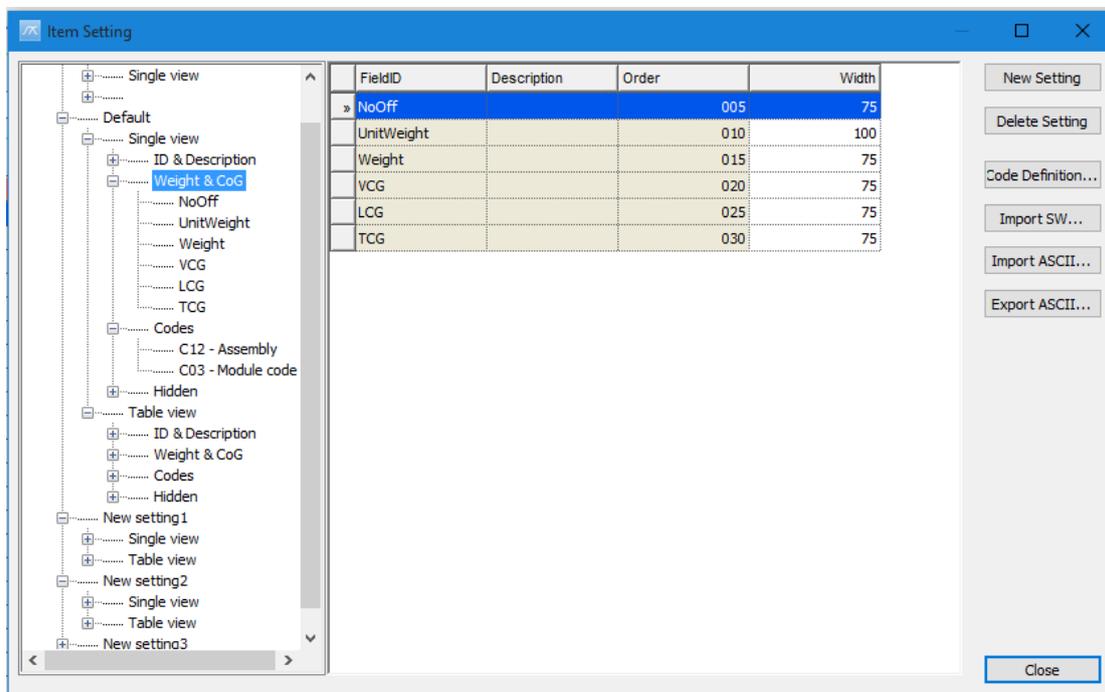
6.4 The Item setting dialog box

The **Item setting** dialog box is used to administrate the layout of the **Items** dialog box, both **Single view** and **Table view**.

Mainly, the **Item setting** dialog box is used to select and group the data which is displayed in the **Single view** and **Table view** of the **Items** dialog box. It is also possible to specify color codes for groups. This makes it easy to recognize the groups and see the relation between the **Single view** and **Table view**.

The **Item setting** dialog box is opened by clicking the **Item settings...** button  in the **Items** dialog box. Alternatively, select **Item settings...** on the **Setting** menu.

The dialog box consists of a tree-view at the left, a table-view in the middle and five buttons at the right.



The tree has four levels:

- Name of the setting
- Single view or Table view
- Groups
- Fields

The table displays information of the level below the one selected in the tree.

The seven buttons at the right side of the dialog box have the following functions:

- New setting – to start a new item setting
- Delete setting – to delete an existing item setting
- Code definition – open the code definition setting for these item setting
- Import SW
- Import ASCII
- Export ASCII
- Close

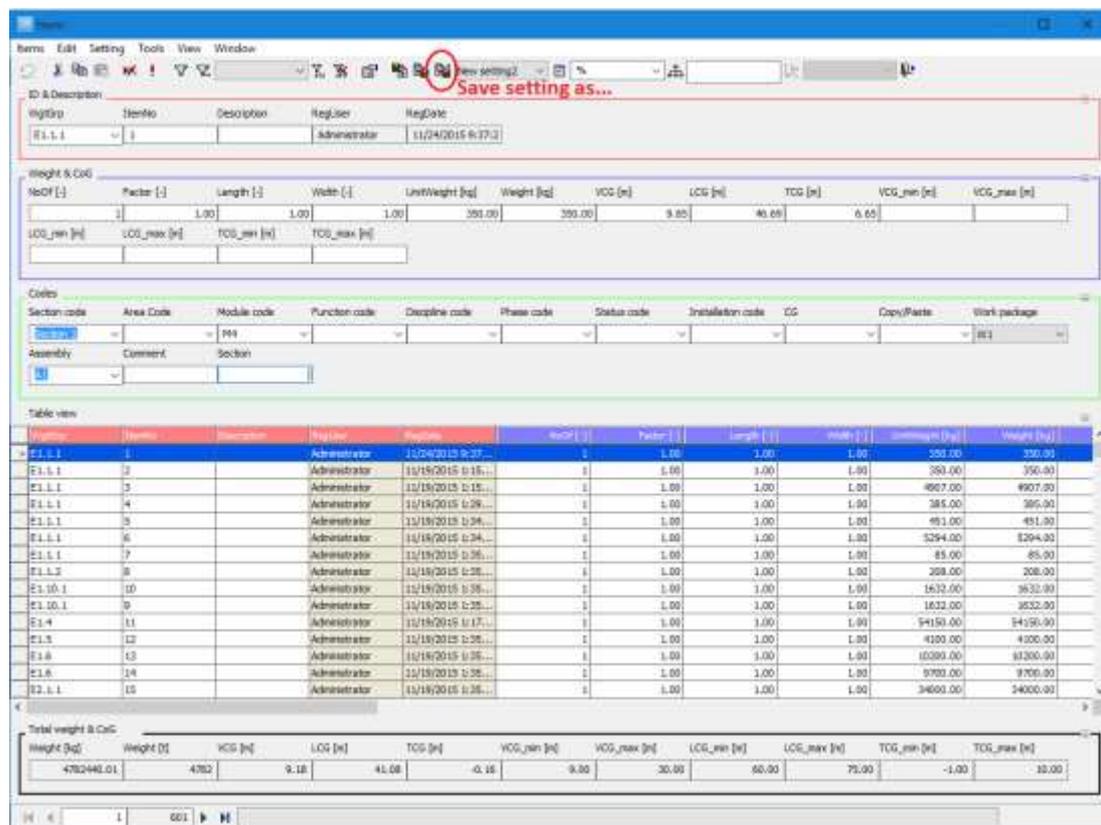
6.4.1 Using the Item Setting dialog box

Create a new dialog box setting

There are two ways to create a custom dialog box-setting:

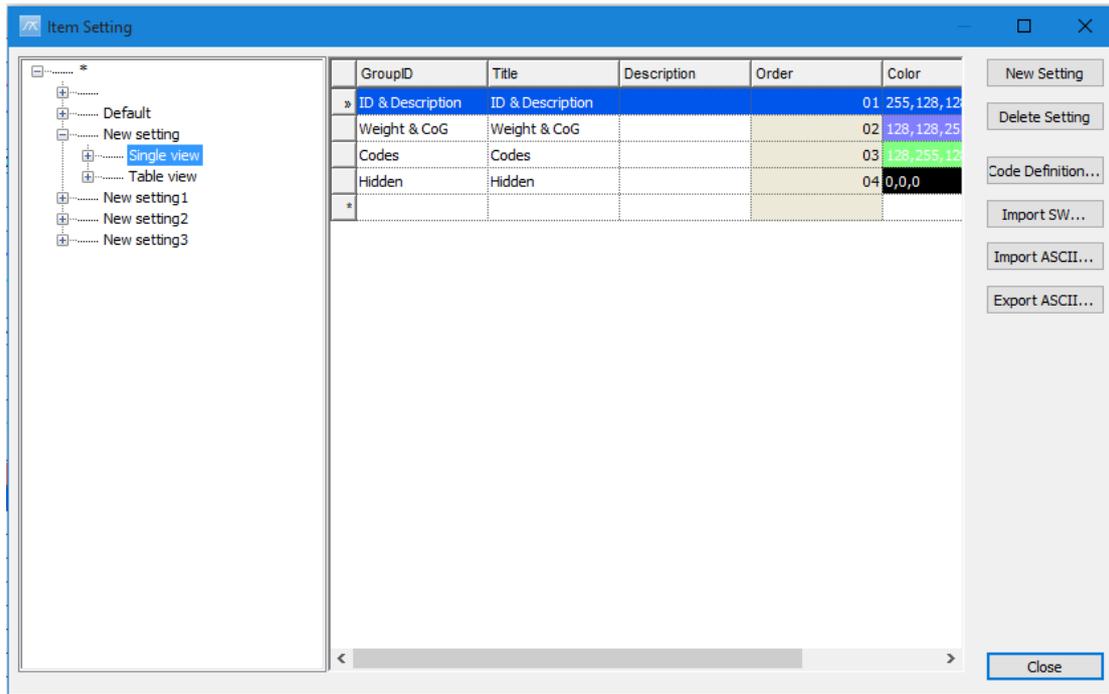
Save the current dialog box setting: In the **Items** dialog box, click the **Save setting as...** button on the toolbar. Enter a name of the new setting, e.g. 'New Setting', and click **OK**. Next, open the **Item setting** dialog box. The saved setting will show in the tree.

Create new: Click the **New** button in the **Item setting** dialog box.



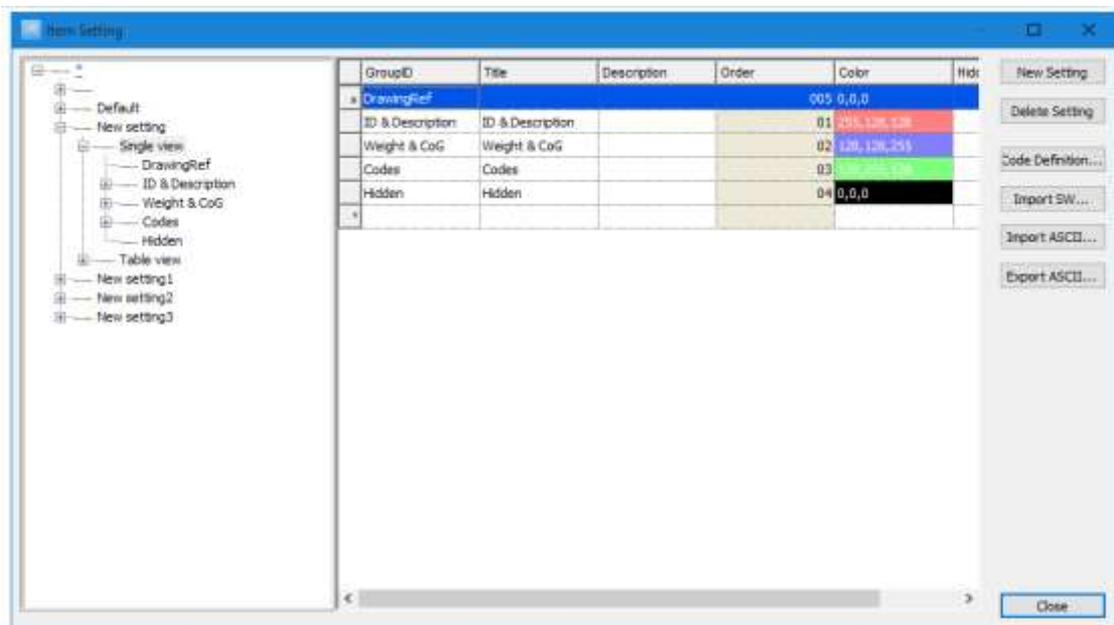
Browse the tree

Now you can browse the setting. Click the '+'-sign at the left of e.g. 'New Setting' to expand the tree. To work with the **Single view** settings, click the '+'-sign at the left of **Single view**. Now the groups in **Single view** will show.



Add a new group

To add a new group, select **Single view** in the tree. Now the groups of the **Single view** will show in the table. Select the last line of the table, and click the **GroupID** cell. Type in the group id, e.g. **DrawingRef**. Press the **TAB** key to move to the next column. Enter a Title, e.g. **Drawing References**, and description.



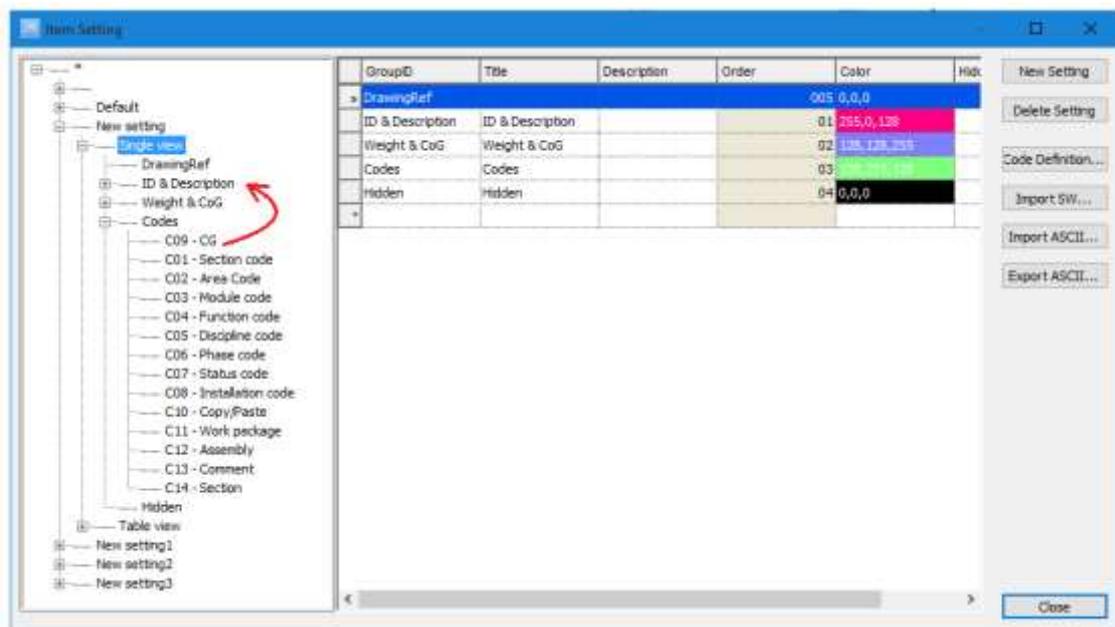
To set the color of group, go to the color column and enter a color code. The color code is on the form xxx,xxx,xxx , where xxx is an number from 0 to 255. The first number is the amount of red, the second green and the third blue.

For instance: 255,0,0 is red, 0,0,255 is blue, 0,0,0 is black and 255,255,255 is white.

To create a group in the **Table view**, select **Table view** in the tree and repeat the same procedure.

Move fields

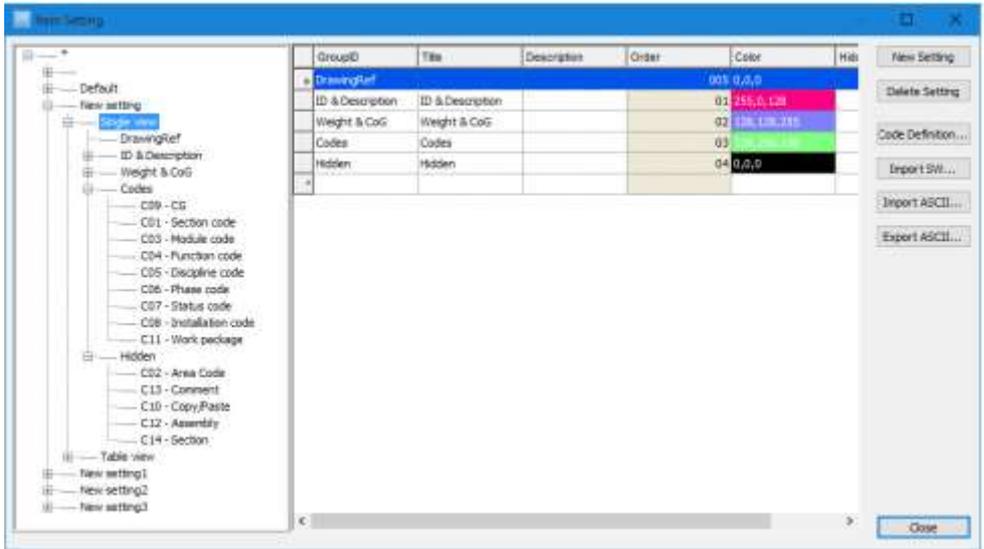
Fields can be moved between the groups by dragging and dropping the fields in the tree. Expand the desired group in the tree, e.g. **Codes**. Click and hold one of the codes, e.g. C01 with the left mouse-button. Drag the code to the desired group, e.g. **Drawing References**, and release the button.



The order of the fields within a group is controlled in the same way, by dragging and dropping the fields in the tree.

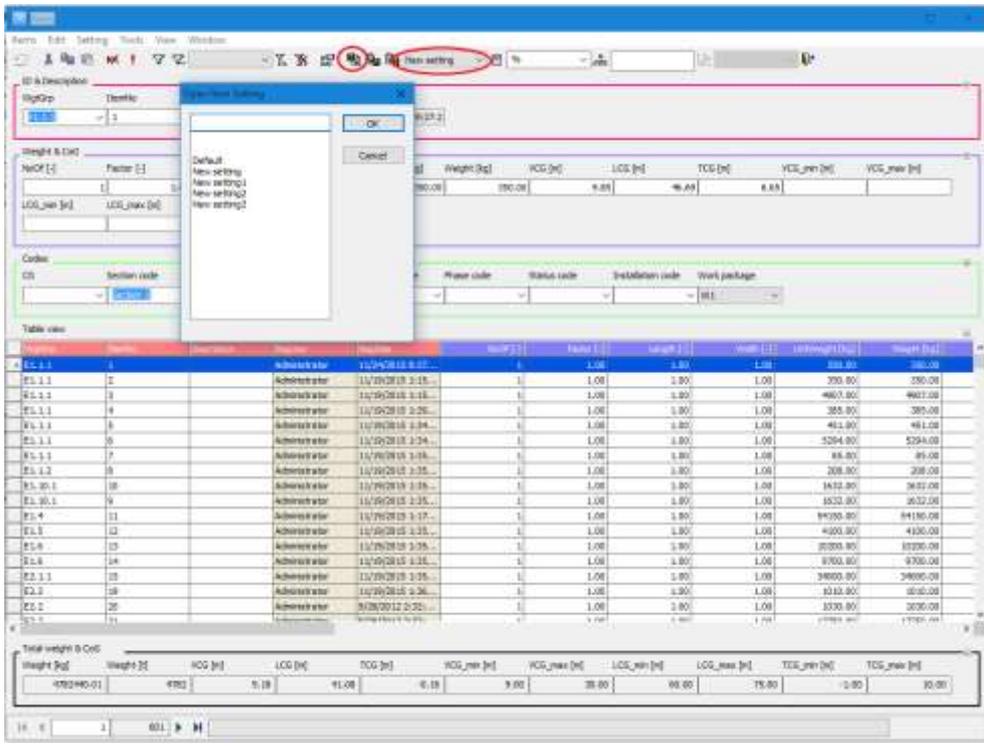
Hide fields

Codes can be hidden by dragging and dropping them into the **Hidden** group. E.g. drag and drop the field C02 from the group **Codes** to **Hidden**.



Load a custom dialog box-setting (**Items** dialog box)
 To see the result, go back to the **Items** dialog box. Select **Load Settings** (either the button on the toolbar or the selection on the **Setting** menu), marked 1. Now the **Open Item Setting** dialog box will appear. Select the custom setting, in this case **New Setting**, and click **OK**.

Alternatively, you can select the dialog box setting to be used directly from the **Dialog box Setting** dropdown list on the toolbar, marked 2.



Now the new **Items** dialog box setting is active. In the **Single view** the group **Drawing References** has been added. The code (field) C01 has been moved

from the group **Codes** to **Drawing References** in **Single view**. The field C02 has been hidden.

6.4.2 Import settings

Dialog box settings can be imported from other projects. Click the **Import settings** button to open the **Import item settings** dialog box.

To select a SQL Server project to import from, click the **Browse** button in the **Source** frame. If there are Item settings defined in the selected project, these will appear in the list at the bottom of the dialog box.

Next, specify a prefix or extension to the setting ID. This is optional. Select the **Overwrite** option if there already exists settings with the same id as those you are to import.

In the list, select the settings to import. Finally, click the **Import** button.

Import item settings

Source

SQL Server project: arkivet\arkivet - SW00_TstSystDistr(Anders2) ...

Import setting

Prefix: Extension: Overwrite Import

SettingID	Description	RegUser	Date
New setting		Administ...	06.04.20...

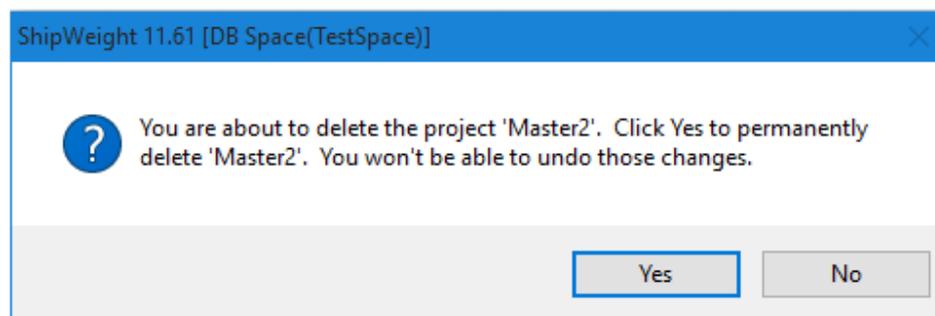
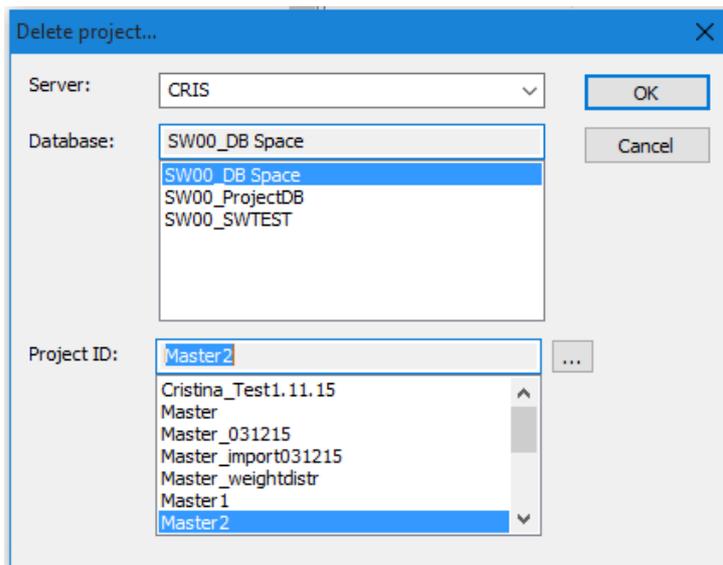
Close

6.5 Database administration

6.5.1 Delete project / database

ShipWeight Administrators can remove a project from a database or remove an entire database directly from within ShipWeight.

To delete a project from a database, select **Project > Delete > Delete Project** from the menu bar. The **Delete Project** dialog box will appear. Select the proper database and then the Project ID of the project to be removed. When clicking **OK**, a warning will appear. Click **Yes** to confirm that you want to delete the project permanently.



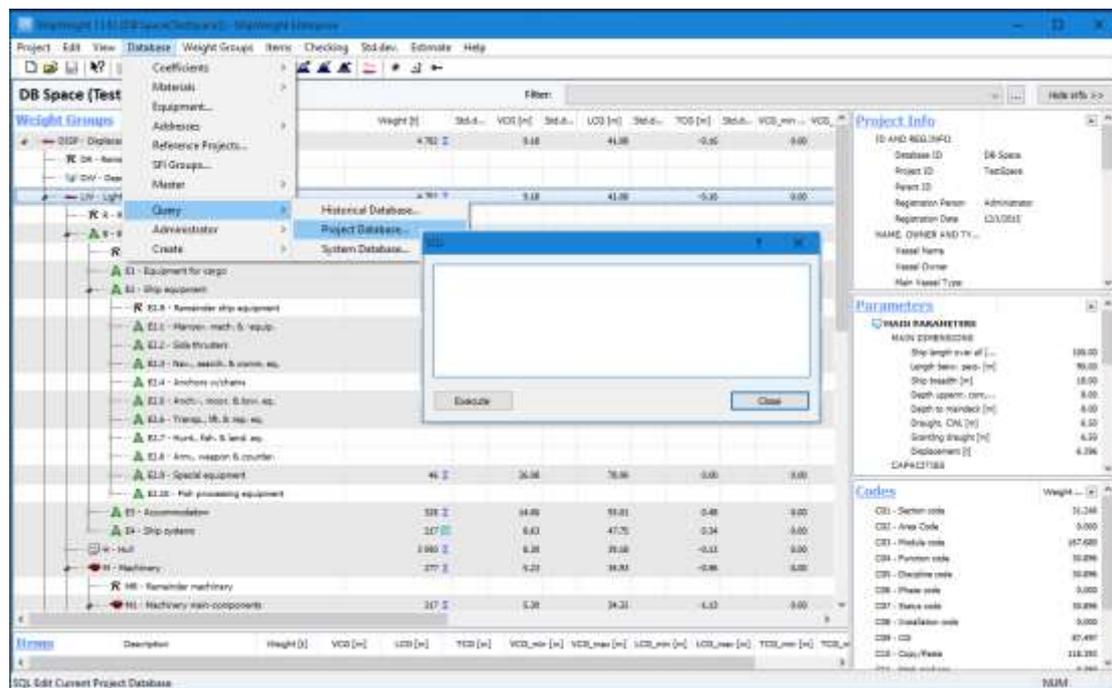
To delete a complete database, including all projects on the database, select **Project > Delete > Delete Database** from the menu bar. In the **Delete Project** dialog box, select the database to be deleted and click **OK**. You will need to confirm that you want to permanently delete the database.

WARNING: WHEN DELETING A PROJECT OR DATABASE, THE DATA IN THE PROJECT/DATABASE WILL BE PERMANENTLY REMOVED. IT IS NOT POSSIBLE TO RECOVER DATA FROM A DELETED PROJECT/DATABASE OR TO UNDO THE CHANGES.

6.5.2 Execute SQL commands on database

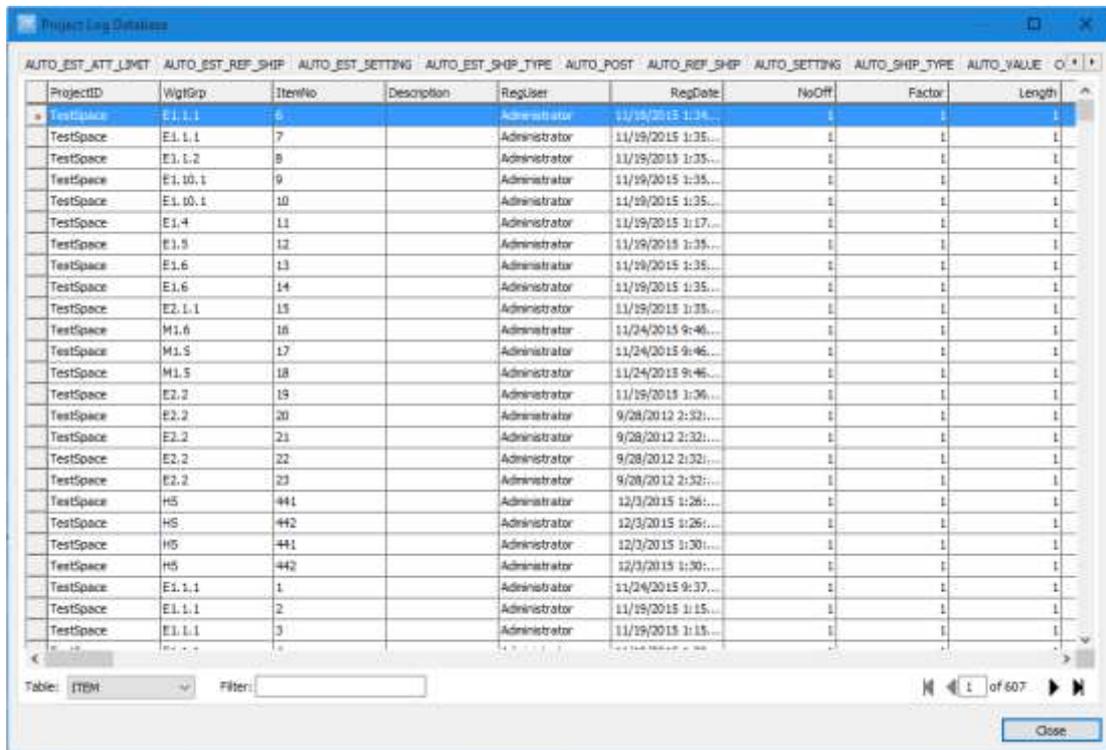
From the **SQL** dialog box, administrator users can execute SQL commands on the databases directly from ShipWeight. To open the **SQL** dialog box, select **Database > Query > Project Database**. SQL commands can be executed either on the historical database or the current project database.

WARNING: INCORRECT USE OF SQL COMMANDS ON THE DATABASES MAY DESTROY THE DATABASES, CAUSE LOSS OF DATA OR PREVENT SHIPWEIGHT FROM FUNCTIONING PROPERLY. GREAT CARE SHOULD BE TAKEN WHEN EXECUTING SQL COMMANDS ON THE DATABASE. EXECUTING SQL COMMANDS ON THE DATABASE SHOULD ONLY BE CARRIED OUT BY PERSONS EXPERIENCED IN THE USE OF SQL COMMANDS AND WITH THE PROPER KNOWLEDGE OF THE SHIPWEIGHT DATABASES. IT IS RECOMMENDED THAT A COMPLETE BACKUP OF THE DATABASES IS MADE PRIOR TO EXECUTING ANY SQL COMMANDS ON THE DATABASES.



6.5.3 Project and Log Database Table View

A ShipWeight sysadmin can access Project or Log database through a GUI where each table in the project database is shown complete with all columns. These functions are located on the menu in ShipWeight main window **Database > Administrator > Project Database/Project Log Database**.

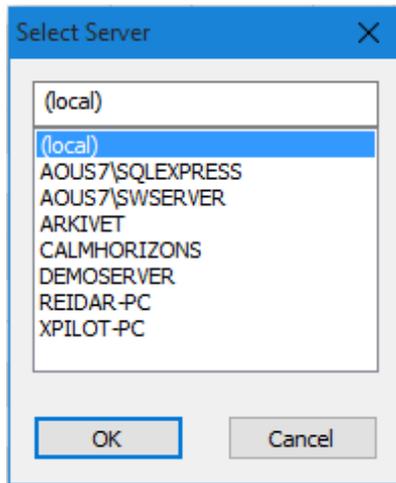


ProjectID	WgtGrp	ItemNo	Description	RegUser	RegDate	NoOff	Factor	Length
TestSpace	E1.1.1	6		Administrator	11/19/2015 1:34...	1	1	1
TestSpace	E1.1.1	7		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	E1.1.2	8		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	E1.10.1	9		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	E1.10.1	10		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	E1.4	11		Administrator	11/19/2015 1:17...	1	1	1
TestSpace	E1.5	12		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	E1.6	13		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	E1.6	14		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	E2.1.1	15		Administrator	11/19/2015 1:35...	1	1	1
TestSpace	M1.6	16		Administrator	11/24/2015 9:46...	1	1	1
TestSpace	M1.5	17		Administrator	11/24/2015 9:46...	1	1	1
TestSpace	M1.5	18		Administrator	11/24/2015 9:46...	1	1	1
TestSpace	E2.2	19		Administrator	11/19/2015 1:36...	1	1	1
TestSpace	E2.2	20		Administrator	9/28/2012 2:32:...	1	1	1
TestSpace	E2.2	21		Administrator	9/28/2012 2:32:...	1	1	1
TestSpace	E2.2	22		Administrator	9/28/2012 2:32:...	1	1	1
TestSpace	E2.2	23		Administrator	9/28/2012 2:32:...	1	1	1
TestSpace	H5	441		Administrator	12/3/2015 1:26:...	1	1	1
TestSpace	H5	442		Administrator	12/3/2015 1:26:...	1	1	1
TestSpace	H5	441		Administrator	12/3/2015 1:30:...	1	1	1
TestSpace	H5	442		Administrator	12/3/2015 1:30:...	1	1	1
TestSpace	E1.1.1	1		Administrator	11/24/2015 9:37...	1	1	1
TestSpace	E1.1.1	2		Administrator	11/19/2015 1:15...	1	1	1
TestSpace	E1.1.1	3		Administrator	11/19/2015 1:15...	1	1	1

In the database window, there is one tab per table and all tables are shown with all columns and rows. Cells are editable in this view and a small edit box at the bottom of the window allows for simple filter settings (i.e. WgtGrp like '111') to retrieve subsets of the data.

6.6 Changing the SQL Server in ShipWeight

By selecting the menu item **Project > Change Server...** from ShipWeight's main window, a popup dialog box showing all available SQL Servers on the network will allow for changing the SQL Server instance. ShipWeight databases must be installed on any SQL instance selected for ShipWeight to work properly on the SQL instance. ShipWeight must be restarted for the change to take effect.

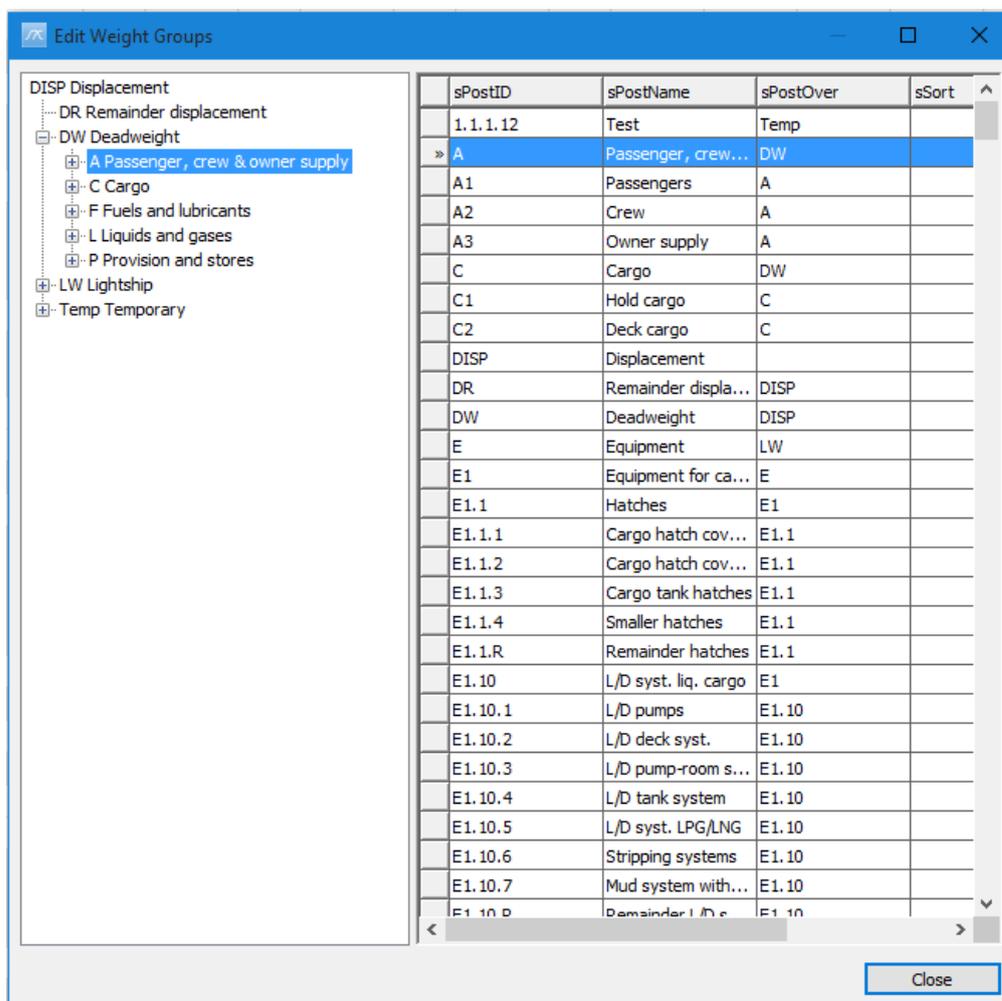


Alternatively, the SQL Server instance may be changed by entering Windows Register directly and modify the **ServerName** string in **HKEY_LOCAL_MACHINE\SOFTWARE\BAS engineering\ShipWeight\7.0\Database**.

6.7 Edit Weight Groups in the main Work Breakdown System

The main Work Breakdown System (WBS), such as the ESWBS and ShipWeight WBS, should ideally never be edited as these systems should lay firm to preserve consistency between weight groups in historical data. This is especially important when utilizing the parametric estimation in ShipWeight. It is crucial to the reliability of the parametric estimation that historical data in weight groups are comparable and on a “one-to-one” relationship in terms of definition.

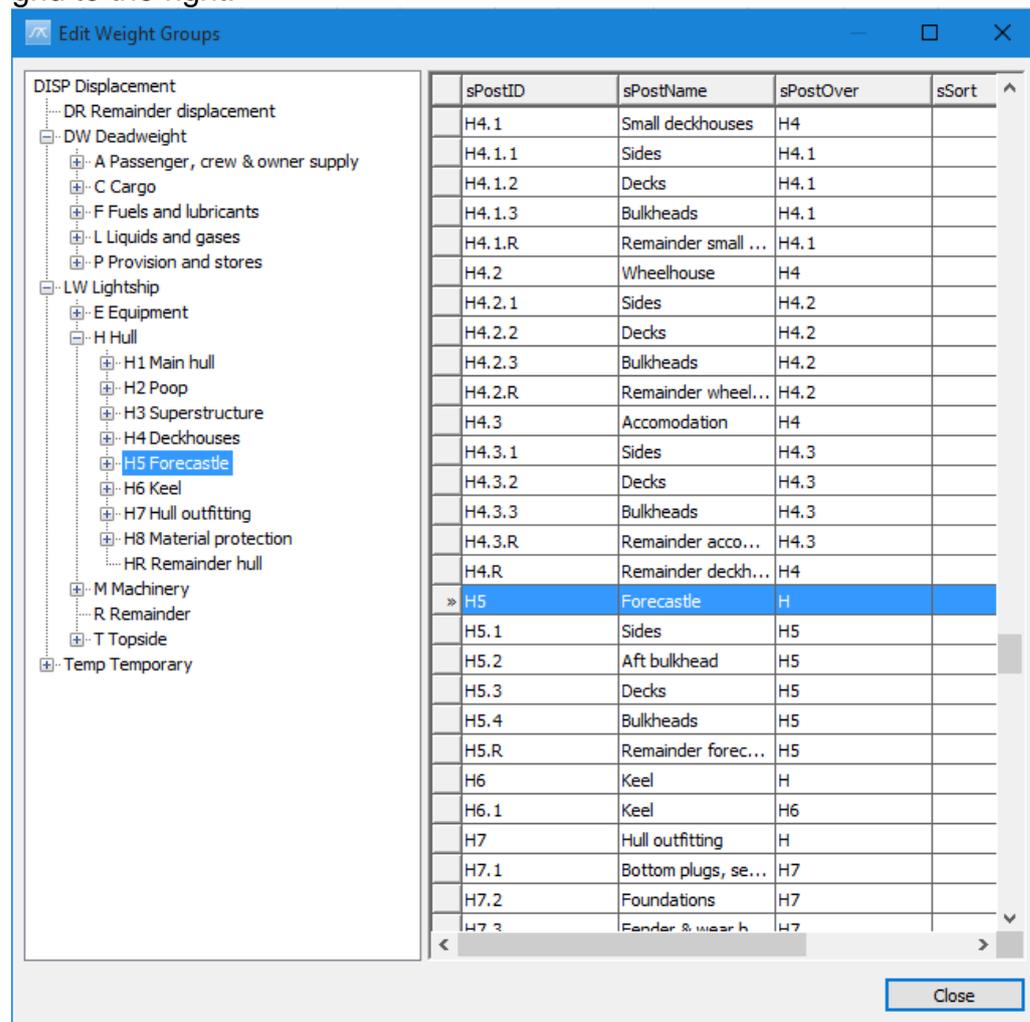
Still, there may be occasions when editing and/or expansion of the WBS is needed. For this, the Edit Weight Groups dialog box has been made. It is opened from the ShipWeight main window menu **Database > Administrator > Wgt.grp. Definition...**



6.7.1 Navigating in the WBS

The WBS is structured in the explorer tree to the left in the **Edit Weight Groups** window and you may navigate through the WBS by expanding and collapsing

the tree nodes. Clicking on a tree node will bring up this weight group in the grid to the right.



6.7.2 Understanding the grid columns

The grid list contains 3 columns: **sPostID**, **sPostName**, **sPostOver**.

- sPostID represents the WBS id of the weight group
- sPostName represents the name of the weight group
- sPostOver represents the id of the parent WBS. The WBS is located as a child node in the hierarchy to this weight group
- sSort represents the order in which the weight group is sorted
- sIcon represents the icon for the weight group

6.7.3 Changing Sort Order and Icons in the WBS

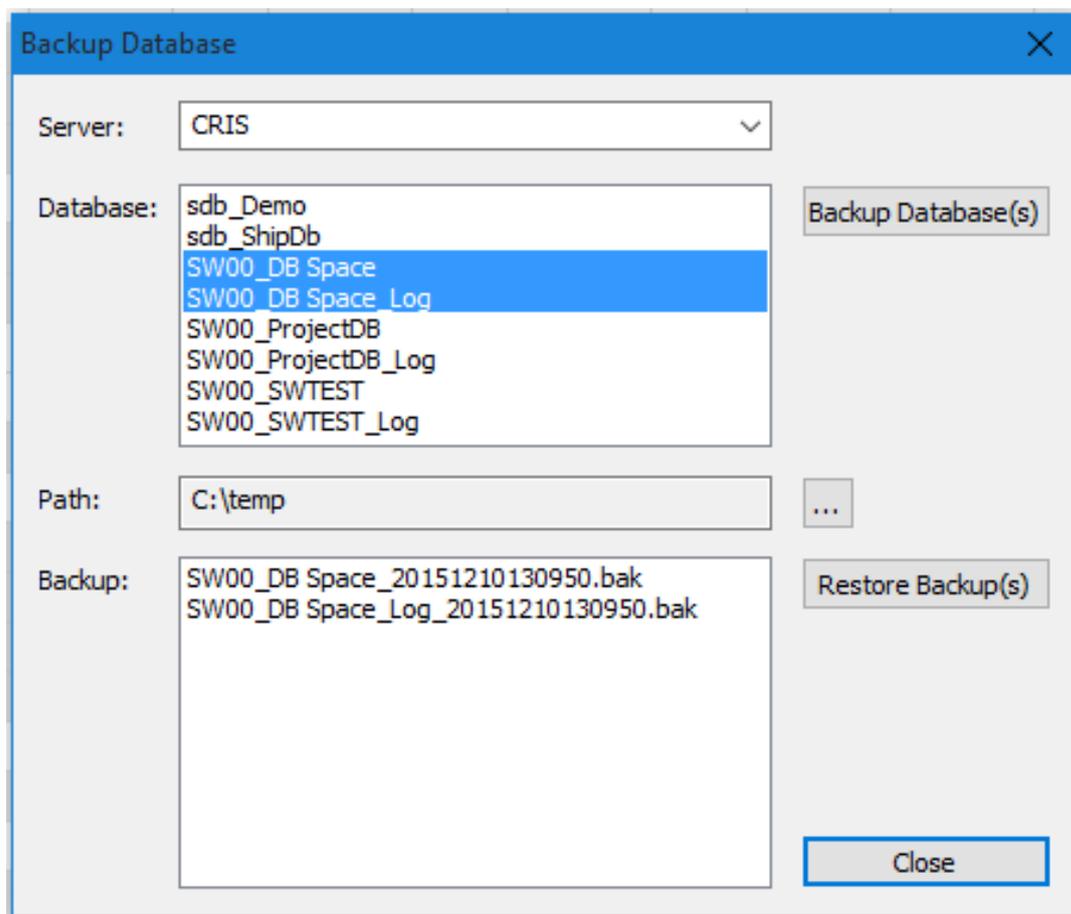
Sort order and Icons in the main work breakdown structure can be set. The columns **sSort** and **sIcon** can be used to override the normal sorting. In the example below, 3 subgroups can be sorted by typing 1, 2, 3 in the **sSort** column to specify the order for these. Further you can use numbers 0 through 6 to

- *To copy a weight group*
Navigate and select the weight group you want to copy in the grid list. Use the mouse to right-click the weight group in the grid list and select **Copy** from the submenu.
- *To paste a weight group*
Navigate and select the weight group you want to paste in the grid list. Use the mouse to right-click the weight group in the grid list and select **Paste** from the submenu.

Close the dialog box and restart ShipWeight for the changes to take effect.

6.8 Backup and Restore Projects from within ShipWeight Executable

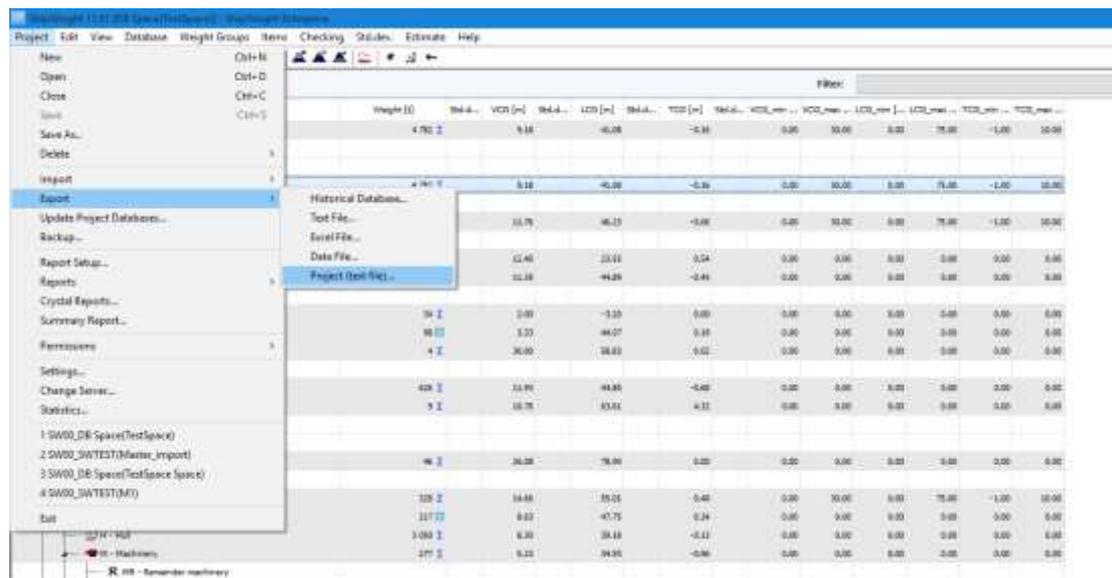
Given backup permission for the windows user on the SQL Server you may backup and restore ShipWeight databases to a folder of choice from within ShipWeight. Open the **Backup Database** dialog box from ShipWeight main window menu **Project > Backup...**



- *To backup a ShipWeight database*
Select the database(s) you want to backup in the Database list. Next, select the folder where you want to store the backup files by clicking the **Browse** button [...] next to the Path field. Click the button **Backup database(s)** to create the backup files. The backup file will show in the Backup list at the bottom of the dialog box. The date and time of the backup creation will be stored in the file name.
- *To restore a backed up database*
Select the file(s) corresponding to the database you want to restore the backup from in the Backup list. Click **Restore backup(s)** button.

6.9 Exchanging ShipWeight Projects (Import/Export complete projects)

ShipWeight can export and import complete projects through a project text file (dump file). A typical use of this is for transferring projects between physically separated networks.

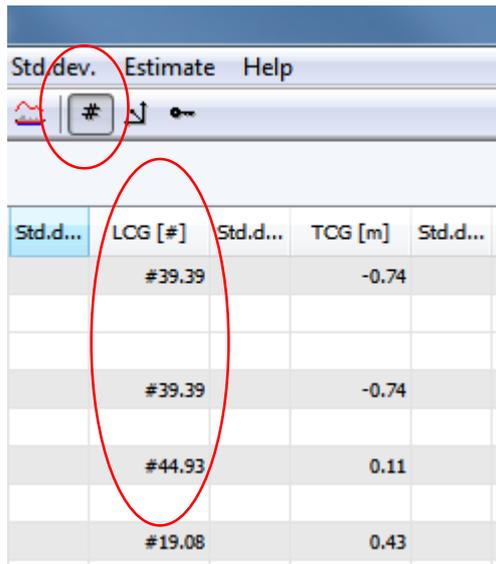


The function is found in the menu **Project > Export > Project (text file)...** and opens up a dialog box for saving (export) the dump files.

7 Hints and tricks

7.1 Show Frames

A useful feature in ShipWeight is to view and edit longitudinal measurements relative to the frame-system. To activate this, from the **Weight Groups** menu, click **Show Frames** or click the equivalent button on the toolbar (marked with a circle in the figure below). The # -symbol is used to indicate frame-number, e.g. frame number 39.39 will be written #39.39.



The screenshot shows a software interface with a menu bar containing 'Std.dev.', 'Estimate', and 'Help'. Below the menu bar is a toolbar with several icons. One icon, a square with a hash symbol '#', is circled in red. Below the toolbar is a data table with columns 'Std.d...', 'LOG [#]', 'Std.d...', 'TCG [m]', and 'Std.d...'. The table contains four rows of data, with the first two rows circled in red. The first row shows '#39.39' and '-0.74'. The second row shows '#39.39' and '-0.74'. The third row shows '#44.93' and '0.11'. The fourth row shows '#19.08' and '0.43'.

Std.d...	LOG [#]	Std.d...	TCG [m]	Std.d...
	#39.39		-0.74	
	#39.39		-0.74	
	#44.93		0.11	
	#19.08		0.43	

7.2 Convert to item / Convert to weight group sum

After estimating the weight, VCG or LCG of a weight-group, it is possible to convert the result of the estimate to an item. The advantage of this is the possibility of tagging items to a user-defined report. See Chapter 4.6 for information about user-defined reports.

To convert an estimate to an item, from the **Weight Groups** menu, select **Convert to Item**. The **Items** dialog box will pop up.

To convert all the estimates belonging to a weight group to items in one operation, simply highlight the weight group of interest and from the **Weight Groups** menu select **Convert All to Items**.

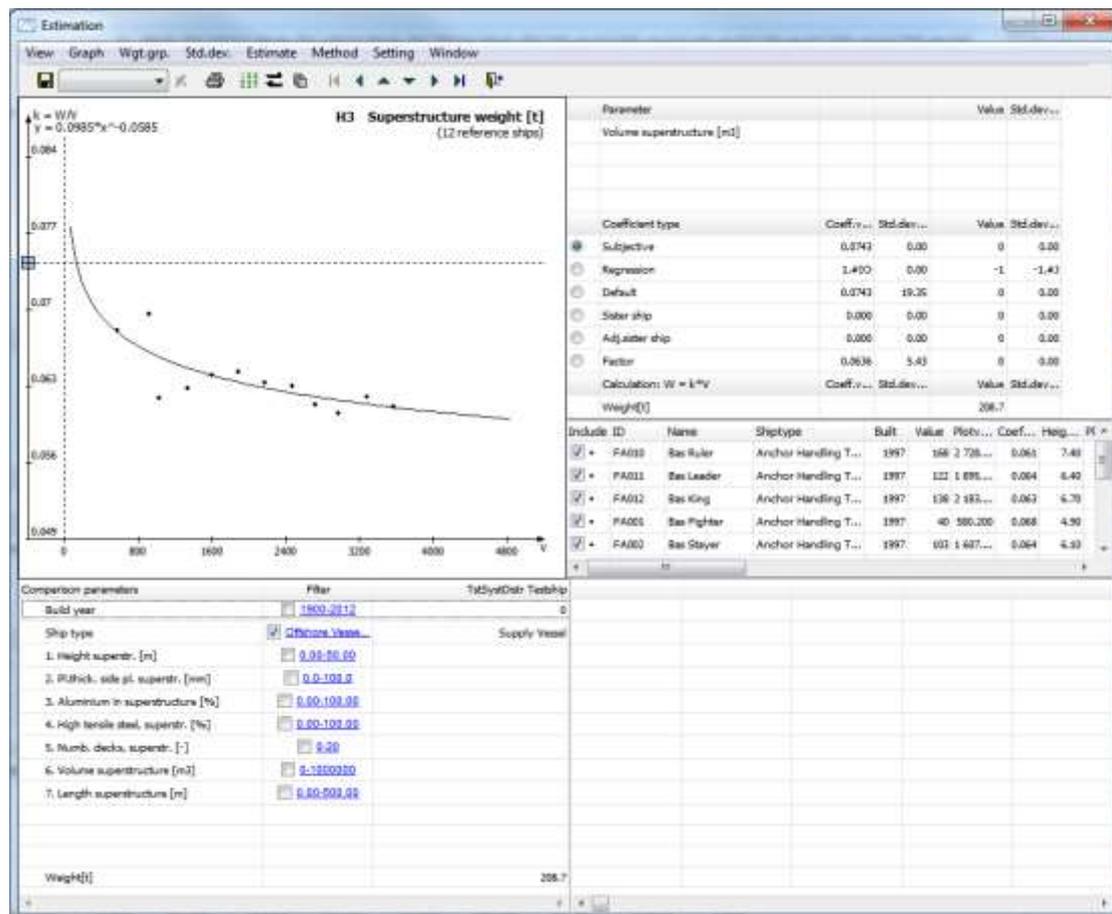
Likewise, a weight group made up by items may be converted to a weight group sum from the **Weight Groups** menu by selecting **Convert to wgt. grp. sum**.

7.3 Calculating parameters

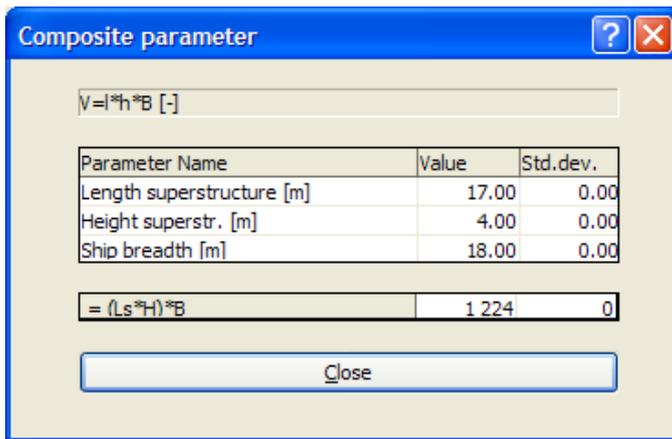
A dialog box for calculating area- and volume-parameters needed for estimation is available in the **Auto Estimation** and the **Define Methods** dialog box. The intention is to give a reasonable estimate of unknown parameters.

The following example will show how this feature can be used.

We want to estimate the weight of H3 Superstructure. Open the **Estimation** dialog box. Notice that the parameter **Volume Superstructure** is empty. This parameter is needed to do an estimate of the weight. To calculate this parameter, type 'calc' in the *Value* field.



The **Composite Parameter** dialog box pops up. By filling in the length, height and breadth, the volume is calculated. Now it is possible to continue the weight estimation.



This dialog box can also be accessed from the **Methods** dialog box.

7.4 Fix item weight group coding

The function **Fix Item Wgt.Grp Coding** is found on the **Items** menu. This function moves items with incorrect weight group code to the *Remainder* weight group. Parameter values may be lost in the process.

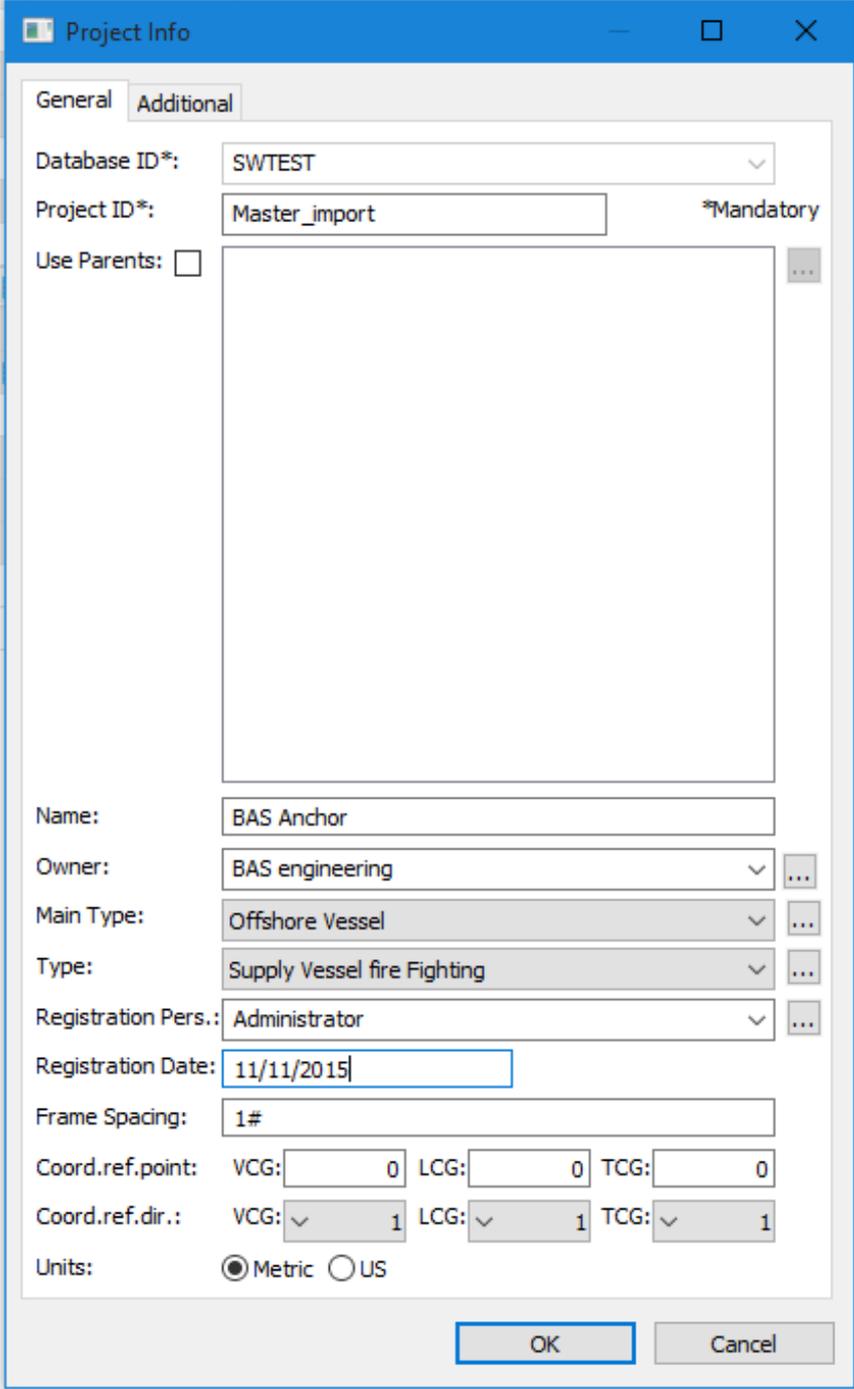
It may be useful to run this function after importing items from a spreadsheet.

The screenshot shows the ShipWeight Enterprise interface. The 'Items' menu is open, and the 'Fix Item Wgt.Grp Coding' option is highlighted. The background shows a tree view of weight groups and a table of items.

Weight Group	Item	Weight	VCG1 [m]	Std.d...
DR - Remainder displacement				6.03
DW - Deadweight				6.67
LW - Lightship				6.03
R - Remainder				0.00
E - Equipment				7.74
H - Hull				6.43
HR - Remainder hull				
H1 - Main hull		486		3.73
H2 - Poop				
H3 - Superstructure		48		10.51
H4 - Deckhouses		74		13.78
H5 - Forecastle		83		10.97
H6 - Keel				
H7 - Hull outfitting		56		7.43
H8 - Material protection		27		11.66
M - Machinery		328		2.51
T - Topside				
Temp - Temporary				

7.5 Using the secondary coordinate system

By entering data for Coord.ref.point and Coord.ref.dir in the **Project Info** dialog box, a secondary coordinate system may be defined. The Coord.ref.point X, Y and Z values define the origin of the alternative coordinate system. The positive direction of the axes is set by Coord.ref.dir.



The screenshot shows the 'Project Info' dialog box with the 'Additional' tab selected. The 'Database ID*' is set to 'SWTEST' and 'Project ID*' is 'Master_import' (marked as mandatory). The 'Use Parents' checkbox is unchecked. The 'Name' is 'BAS Anchor', 'Owner' is 'BAS engineering', 'Main Type' is 'Offshore Vessel', and 'Type' is 'Supply Vessel fire Fighting'. 'Registration Pers.' is 'Administrator' and 'Registration Date' is '11/11/2015'. 'Frame Spacing' is '1#'. The 'Coord.ref.point' fields are VCG: 0, LCG: 0, TCG: 0. The 'Coord.ref.dir.' fields are VCG: 1, LCG: 1, TCG: 1. 'Units' are set to 'Metric'. 'OK' and 'Cancel' buttons are at the bottom.

Database ID*:	SWTEST	
Project ID*:	Master_import	*Mandatory
Use Parents:	<input type="checkbox"/>	
Name:	BAS Anchor	
Owner:	BAS engineering	
Main Type:	Offshore Vessel	
Type:	Supply Vessel fire Fighting	
Registration Pers.:	Administrator	
Registration Date:	11/11/2015	
Frame Spacing:	1#	
Coord.ref.point:	VCG: 0 LCG: 0 TCG: 0	
Coord.ref.dir.:	VCG: 1 LCG: 1 TCG: 1	
Units:	<input checked="" type="radio"/> Metric <input type="radio"/> US	

To turn on the secondary coordinate system, select **Show Reference CoG** on the **Weight Groups** menu or click the equivalent button on the toolbar. While the reference CoG is active, the CoG values in the grid will turn red.



8 Introduction to the databases

The following is a short explanation of the databases used by ShipWeight (SQL-version). The purpose is to show where to find information on weight and main parameters of a ShipWeight project. A basic knowledge of the databases is necessary e.g. for using Crystal Reports to create custom ShipWeight reports.

8.1 Overview of the databases

Basically, ShipWeight needs three SQL-databases to run:

SW00_ProjectName: For storage of project specific information, e.g. weight, CoG and defined parameters.

The name of the database is made up of a prefix and the Project name.

The prefix is used to determine which Work Breakdown Structure the project belongs to.

Prefix	Work Breakdown Structure
SW00_	ShipWeight
SW01_	RigWeight
SW02_	PBSWeight
SW03_	MaradWeight
SW04_	SWBSWeight
SW05_	IMPWeight
SW06_	ESWBS_Carrier
SW07_	BSCI_Carrier
SW08_	ESWBS_Submarine
SW09_	ESWBS_Submarine_2
SW10_	BSCI_Submarine

wdb_WeightDB: Contains general information used by all projects, e.g. information of the work breakdown structure, estimation methods, definition of parameters.

The database containing the standard ShipWeight work breakdown structure is named wdb_WeightDB. Following is a list of the database names of the available Work Breakdown Structures:

Database Name	Work Breakdown Structure
wdb_WeightDB	ShipWeight
wdb_NGNNC1	ESWBS_Carrier
wdb_NGNNC2	BSCI_Carrier
wdb_NGNNS1	ESWBS_Submarine
wdb_NGNNS2	ESWBS_Submarine_2
wdb_NGNNS3	BSCI_Submarine

sdb_ShipDB: This is the historical database containing information exported from completed projects. The historical database is used for estimation. This database will not be explained.

8.2 About the SW0x_Project database



Important!

A project database can hold any number of projects. Each project is uniquely identified by a ProjectID. The ProjectID is found in every table of the Project database.

Project Info

The information found in the **Project Info** dialog box of ShipWeight can be found in the SHIP-table. This includes Name, Owner, Main type, Sub type, Build year, Frame spacing etc.

Weight, Center of Gravity and Extension

Information of Weight, Center of Gravity and Extension for each weight item can be found in the ITEMS-table.

The ITEMS-table contains 123 columns/fields. These are:

WgtGrp	The name of the weight-group the weight-item belongs to.
ItemNo	An id-number for the weight-item (unique within the weight group).
Description	Name of the weight-item.
RegUser	Name of the user who created the weight-item.
RegDate	Date of registration.
NoOff	Quantity #1
Factor	Quantity #2
Length	Quantity #3
Width	Quantity #4
UnitWeight	Quantity #5
VCG	Vertical center of gravity

LCG	Longitudinal center of gravity
TCG	Transversal center of gravity
VCG_min	Minimum vertical extension
VCG_max	Maximum vertical extension
LCG_min	Minimum longitudinal extension
LCG_max	Maximum longitudinal extension
TCG_min	Minimum transversal extension
TCG_max	Maximum transversal extension
C01-C99	Code-field number 01-99
EditUser	Used for Row-lock in the Items dialog box
EditDate	Used for Row-lock in the Items dialog box
UniqueNo	An integer to uniquely identify each weight item. The UniqueNo field is automatically assigned.

The total weight and CoG for each weight-group is available in the SHIP_POST-table. The SHIP_POST-table contains five fields. The three most important are:

ProjectID	ID to uniquely identify each project in the database.
sPostID	The name of the weight-group, e.g. LW
sType	Type of information. A = Aft, F = Fore, L = LCG, V = VCG, T = TCG, W = Weight, P=port side (TCG_min), S=starboard (TCG_max), B=bottom (VCG_min), U=up (VCG_max)
fValue	Value. Records of type V, L, T, P, S, A, F, B and U are given in meters, while records of type W is given in tons.

Parameters

Various parameters, such as lengths, areas, volumes etc. can be found in three tables: SHIP_FATT (float parameters), SHIP_IATT (integer parameters) and SHIP_TATT (text parameters).

The SHIP_FATT-table includes two columns/fields:

ProjectID	ID to uniquely identify each project in the database.
sFattID	ID of the parameter
fFattValue	Value of the parameter.

Likewise the SHIP_IATT and SHIP_TATT include a field for ID and a field for value.

The full name of the parameter can be found in the WeightDB database (see next page).

The parameters found in the **Main ship parameters** dialog box are:

lm	Ship length over all
IPE	Length betw. perp.
bm	Ship breadth
hDU	Depth upperm. cont. deck

hDM	Depth to maindeck
dCW	Draught, CWL
dm	Scantling draught
wDP	Displacement
nPA	Numb. passengers
nCR	Numb. crew
nCS	Numb. cars
nCO	Numb. containers
vGO	Gross tonnage
vNT	Net tonnage
wDW	Deadweight
eME	Main-engine power
nME	Numb. main engines
iME	Rot. speed main-engine
om	Service-speed
dPR	Propeller diameter
zmMA	Main-hull material
zIC	Ice-class
kmCB	Block-coefficient

Parameters

Parameters Main Parameters Special equipment

Parameter	Value	Std.dev. [%]
MAIN DIMENSIONS		
Ship length over all [m]	80.00	0.00
Length betw. perp. [m]	70.00	0.00
Ship breadth [m]	18.00	0.00
Depth upperm. cont. deck [m]	8.00	0.00
Depth to maindeck [m]	8.00	0.00
Draught, CWL [m]	6.50	0.00
Scantling draught [m]	6.50	0.00
Displacement [t]	6 296	0
CAPACITIES		
Numb. passengers [-]	50	0
Numb. crew [-]	0	0
Numb. cars [-]		
Numb. containers [-]		
TONNAGE		
Gross tonnage [GT]		
Net tonnage [NT]		
Deadweight [t]	2 500	0
MACHINERY		
Main-engine power [kW]	15 000	0
Numb. main engines [-]	4	0
Rot. speed main-engine [rpm]	750	0
Maximum speed [knot]	15.0	0.0
Propeller diameter [mm]	4 000	0
HULL		
Main-hull material	Steel	
Ice-class	Ice C	
Block-coefficient [-]	0.750	0.00

Defined only

Print OK Cancel

8.3 About the wdb_WeightDB database

Work breakdown structure

The ShipWeight work breakdown structure is defined in the POST-table. The post table contains three fields:

sPostID	ID of the weight-group, e.g. H1.1
sPostName	Name of the weight group, e.g. Afterbody
sPostOver	ID of the parent weight-group, e.g. H1

Parameters

The parameters available in ShipWeight are found in the tables FATT (float), IATT (integer) and TATT (text). The FATT-table contains the following fields:

sFattId	ID of parameter
sFattName	Name of parameter
sUnit	Unit
sFattSymb	
fASIFak	Factor
fMax	Maximum allowed value
iDecimals	Number of decimals

The parameter-ID consists of two to four characters and is subject to strict naming rules. The syntax of the ID is:

{unit}{area}{object}

The first character in the id, the "unit", is always small letter. It tells what type of parameter this is. The most important are:

a	Area	[m ²]
b	Breadth	[m] / [mm]
d	Distance	[m] / [mm]
e	Power	[kW] / [kVA] / [t]
f	Percentage	[%]
h	Height	[m] / [mm]
n	Number of	
l	Length	[m] / [mm]
q	Capacity	[t/h] / [m ³ /h]
s	Specific weight	[t/m ³]
t	Thickness	[mm]
v	Volume	[m ³]
w	Weight	[t]

A complete list of the unit-codes is found in the UNIT-table in WeightDB

The “area” code of the id is optional. If present, it is also a second small letter. It tells which area of the ship the parameter belongs to. The most commonly used are:

- a Afterbody
- c Cargo-area
- d Deckhouse
- e Engine-area
- f Forebody
- g Galley
- i Small deckhouse
- k Keel
- m Main hull
- n Accommodation
- o Forecastle
- p Poop
- s Superstructure
- u Upper area
- w Wheelhouse

The full list of area-codes can be found in the table AREA in the WeightDB database.

The “object” code consists of two capitalized letters and is also optional. If present, it tells which object the parameter belongs to. The most common abbreviations are:

- BP Bottom plating
- BW Bulwark
- DK Deck
- DS Double sides
- ER Engine room
- FO Foundations
- HC Hatch coamings
- HT Hatches
- IB Inner bottom
- LB Longitudinal bulkheads
- LT Longitudinal and transverse
- SH Shell
- SP Side plates
- TB Transverse bulkheads

A complete list of available object-codes can be found in the OBJECT-table in WeightDB.

Examples of parameters:

- lk → length keel
- aBW → area BulWark
- acLB → area cargo-area Longitudinal Bulkheads

teSH → Plate thickness engine area Shell

In addition to the float-, integer- and text parameters, ShipWeight includes a set of calculated parameters. The definition of these can be found in the CATT-table. The CATT-table contains four fields:

sCAttID	ID of calculated parameter
sCAttName	Name of parameter
sUnit	Unit
sCAttExp	Formula for calculating the parameter

9 Introduction to Crystal Reports

There are two ways of reporting from ShipWeight: by using the standard reports and Crystal Reports.

The standard reports includes a Weight Item report, a Code report, a Weight Distribution report and a Weight tracking report to mention some. They are easily accessible from ShipWeight.

The standard reports are built into – or “hardcoded” into ShipWeight. This means that they are included in the Shipweight-executable file. Therefore, a ShipWeight user cannot do any changes to these reports. The layout and the information to be included are locked.

Naturally, many ShipWeight users need custom made reports. To meet this need, ShipWeight includes a powerful reporting engine based on Crystal Reports.

Crystal Reports by Business Objects is the industry leading report-software created.

ShipWeight includes a Crystal Reports viewer.

Basically, the ShipWeight Reports dialog box does three things:

1. reads a predefined report formatting file
2. extracts data from the current database
3. displays the report on screen

Once your report is displayed on screen, you can send the report to a printer or export the report to various file formats. This includes formats such as Microsoft Word DOC and RTF and Adobe PDF.

ShipWeight only comes with the viewer part of Crystal Reports. To be able to create your own reports, you must purchase the full version of Crystal Reports.

The full version of Crystal Reports is a powerful, yet easy-to-use, tool for designing reports. Using Crystal Reports, you set up a report template specifying:

1. what data the report should contain
2. the order the data should appear
3. the format of the report

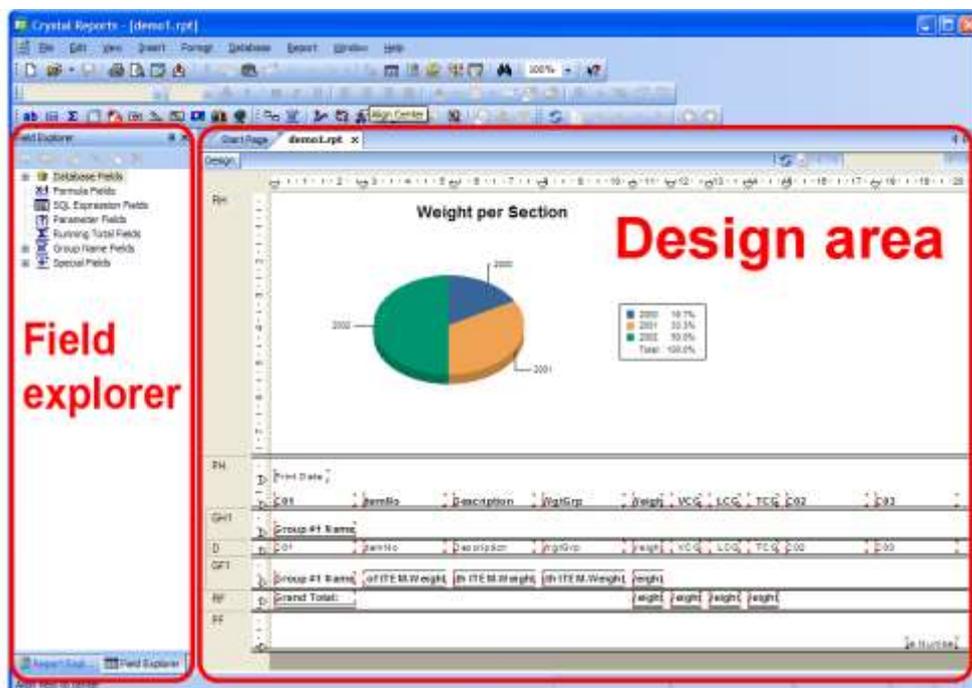
You can easily insert graphics, such as your company logo, into the report. Also a variety of charts are available for use in your report.

When you created a report template, you save it as a .RPT file. Make sure to set up Crystal Reports so that data are not saved with the report. This means that the .RPT file will not contain any data – only the formatting of the report.

Now you can easily share your .RPT file with any ShipWeight user in your organization. Any user authorized to access the ShipWeight Report Viewer can run, view and print the report.

9.1 The main window of Crystal Reports

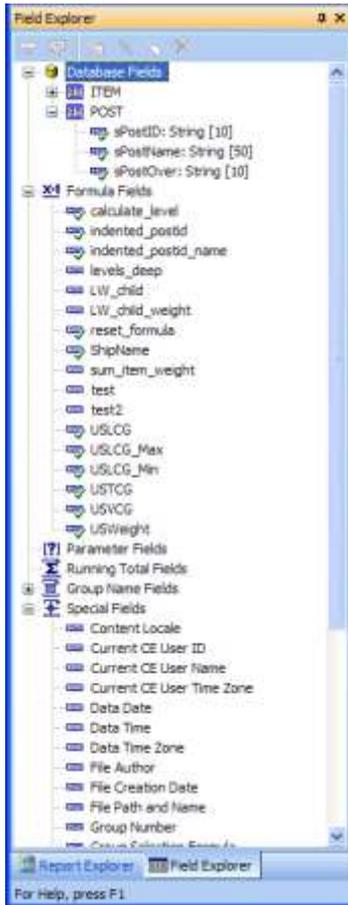
The Crystal Reports main window includes two main parts: The 'Field Explorer' and the Design Area.



The Field Explorer includes all data that is available for use in the current report. This includes:

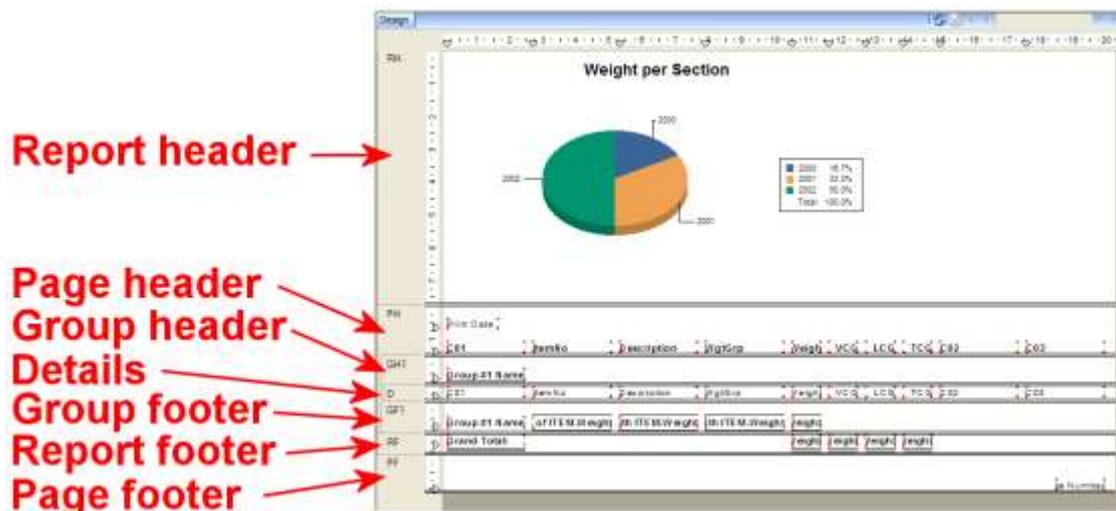
- Database Fields
- Formula Fields (calculated data)
- Parameter Fields (user input)
- Running Total Fields
- Group Name Fields
- Special Fields (page number, date etc.)

The easiest way of adding data to the report, is to simply drag it from the 'Field Explorer' into the Report.



The design area at the right side is divided into several sections:

- Report Header First part of the report – For report title, chart, etc.
- Page Header Repeated on top of every page – For logo, date, etc.
- Group Header Repeated at the beginning of a group – For group title
- Details The main data of the report
- Group Footer Repeated at the end of a group – For group summary
- Report Footer Last part of the report – For report summary
- Page Footer Repeated at the bottom of every page



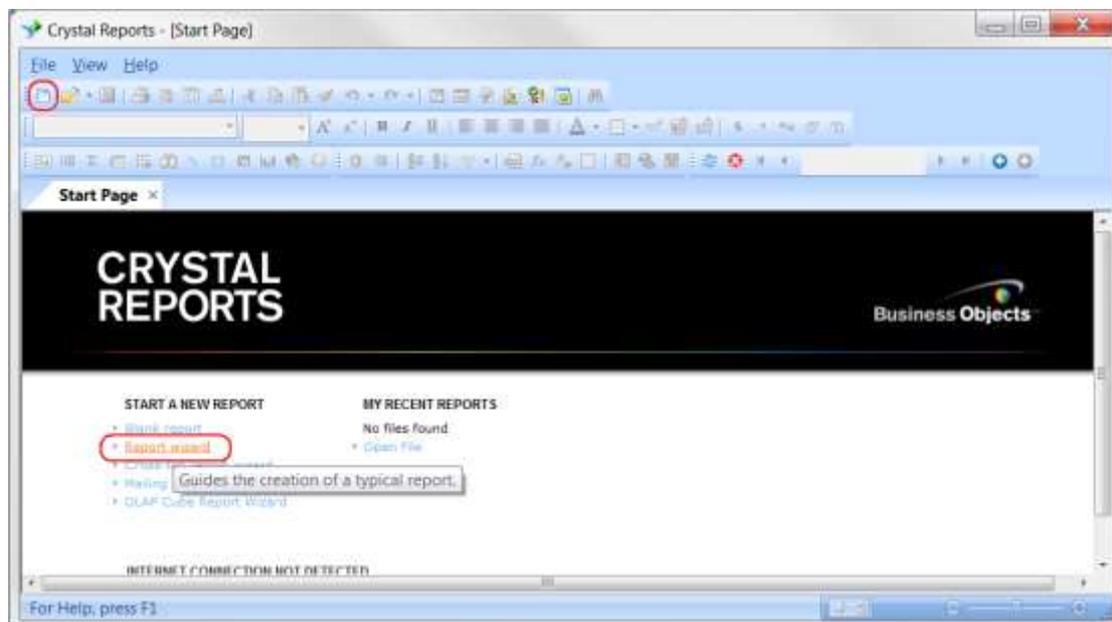
9.2 Developing Own Crystal Reports

9.2.1 The Report Creation Wizard

ShipWeight is delivered with a set of sample reports to be used with the Report Viewer. In many cases, the easiest way of creating your own report will be to modify one of the sample reports. This is especially useful if you just want to do minor changes such as inserting your company logo or change the formatting of a report.

In this session, we will create a new report from scratch using the 'Report Creation Wizard'.

To start the wizard, you need to click the **New Report** button on the toolbar:

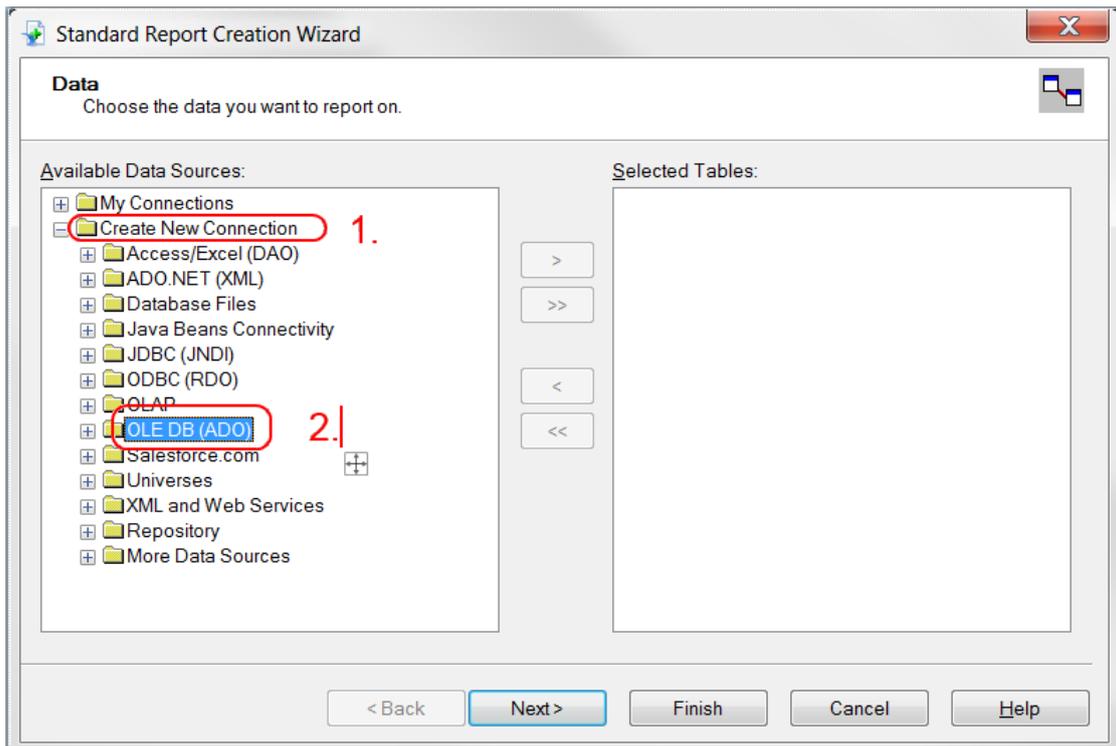


Now, the '**Report Creation Wizard**' will appear. This wizard will guide you through the process of creating a report.

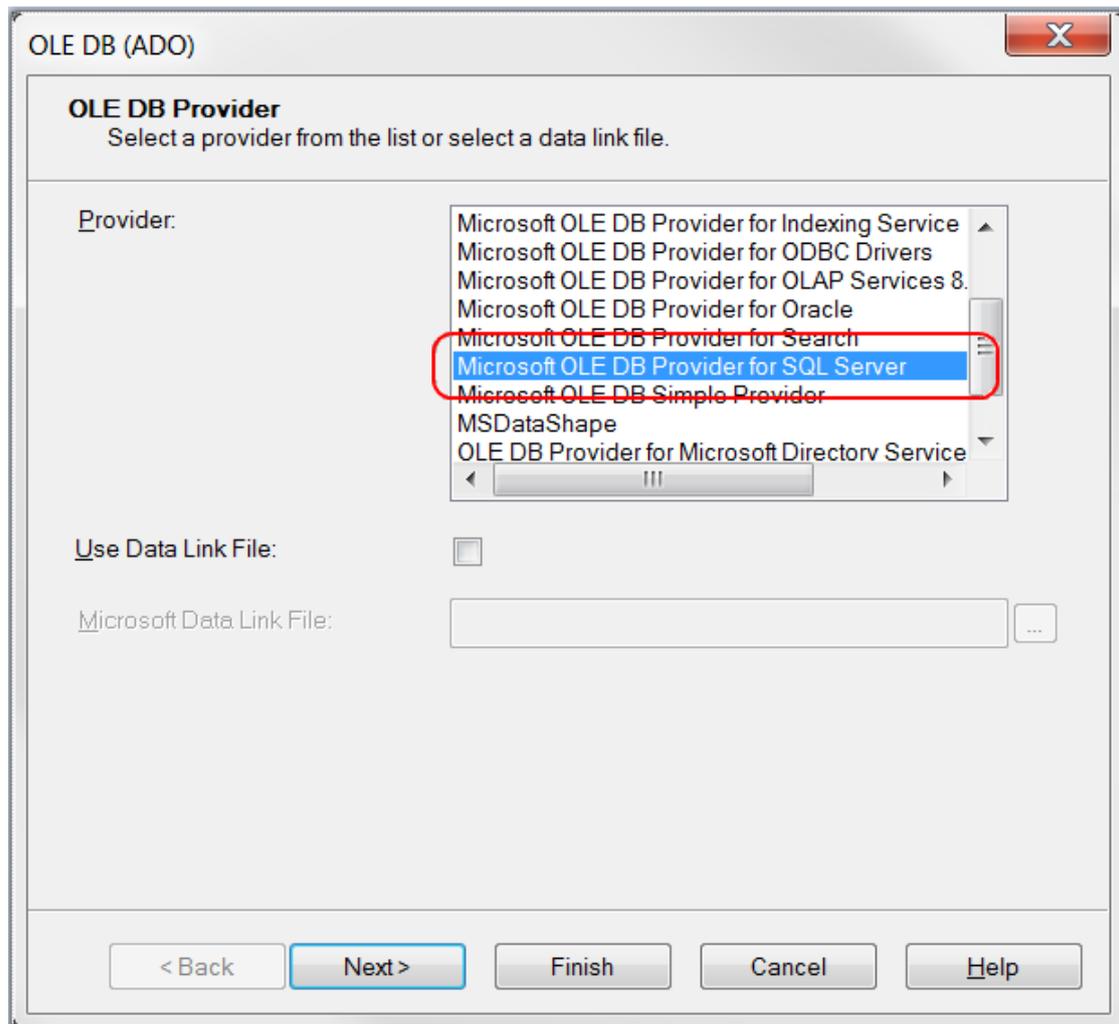
The first step is to choose the data you want to report on. Basically, this means choosing the database and tables to use in the report.

The Data window of the wizard contains a list of '**Available Data Sources**' on the left side, and '**Selected Tables**' on the right side.

In the list of '**Available Data Sources**', you first expand the branch named '**Create New Connection**'. This is done either by clicking the small plus sign or by double-clicking it with the mouse.



Next, you should expand the 'OLE DB (ADO)' branch. A new dialog box-window titled OLE DB (ADO) will appear. This window is used to set up the connection to the database.



In the '**Provider**'- list, you should select 'Microsoft OLE DB Provider for SQL Server'. Click the **Next** button to continue.

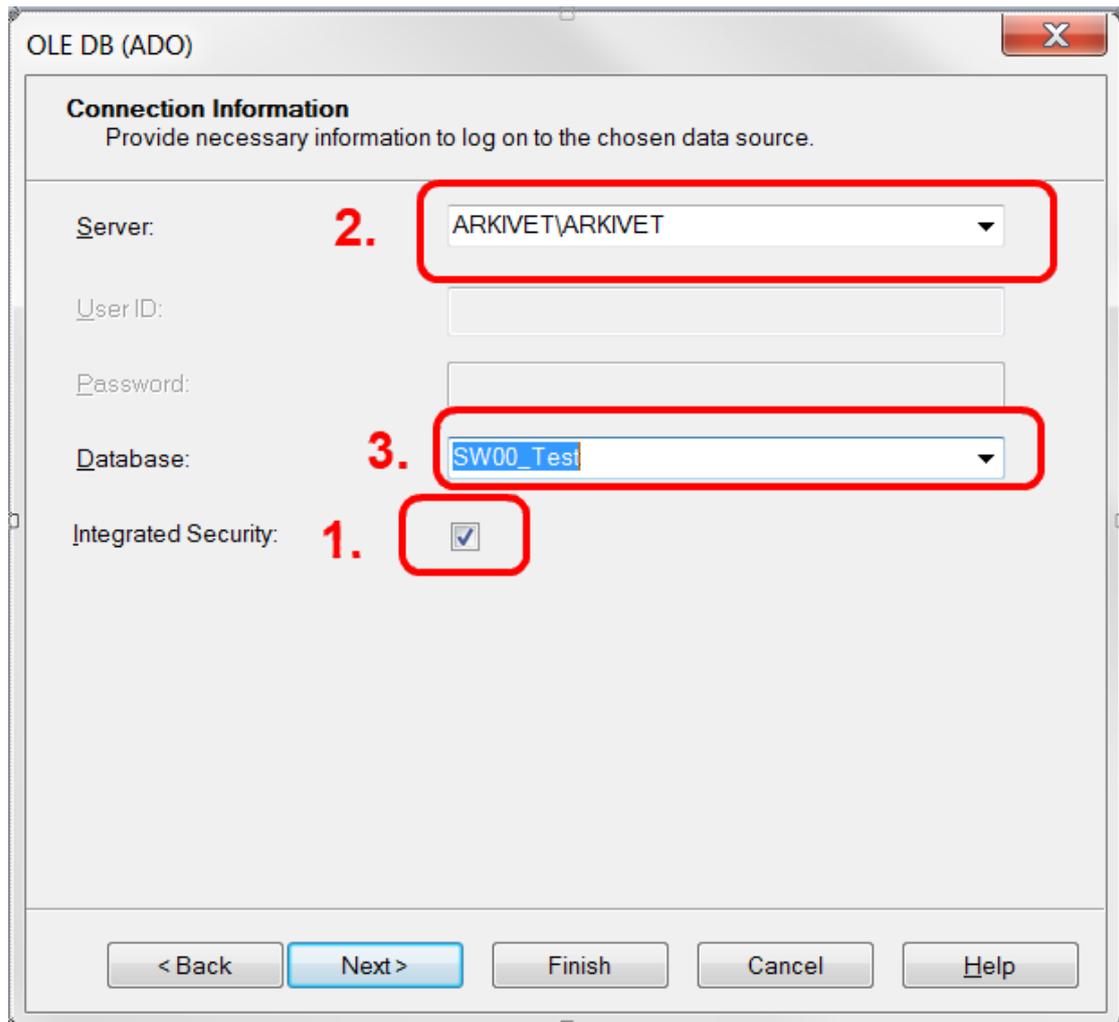
Now you will be asked to provide the necessary information to log on to the data source.

The first thing you need to do is to check the '**Integrated Security**' button. When 'Integrated security' is selected, Crystal Reports will connect to the SQL database using your Window username and password. Now you will not need to enter the '**User ID**' and '**Password**'.

Next, you should enter the name of the SQL server in the '**Server**' field. Make sure to ask your database administrator for the name of the server containing the ShipWeight databases.

Now, select one of the available databases from the '**Database**' dropdown list. Databases starting with SW0 are project databases.

For more information on the databases used in ShipWeight, please refer to the Chapter [8 Introduction to the databases](#).

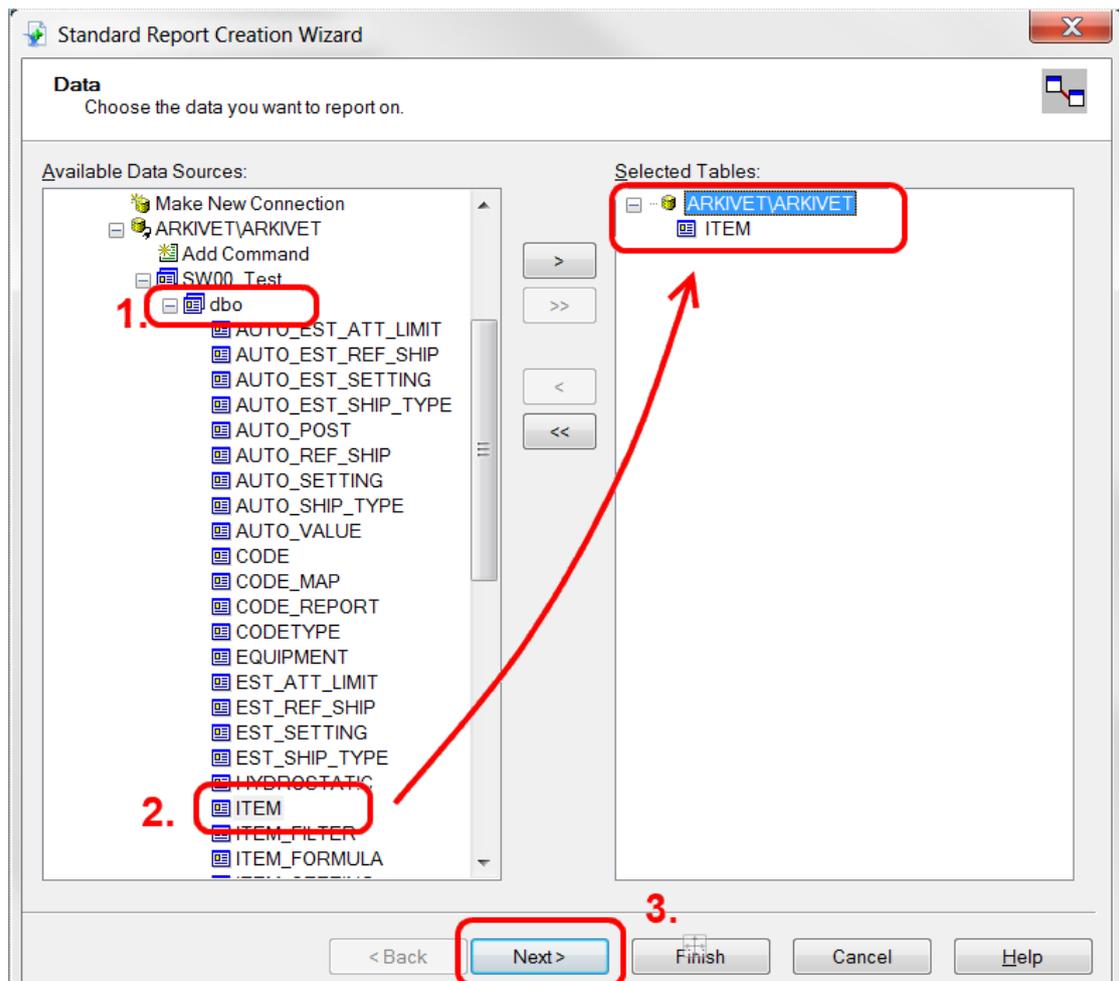


Click the **Finish** button to close the 'OLE DB' window.

Back in the wizard, you will now find the database in the 'Data Sources' tree.

Double-click on the database name to expand the branch. Next, expand the 'dbo' branch. A list of the available tables will appear.

Now you need to drag-and-drop the 'ITEM'-table to the 'Selected Tables' list at the right side.



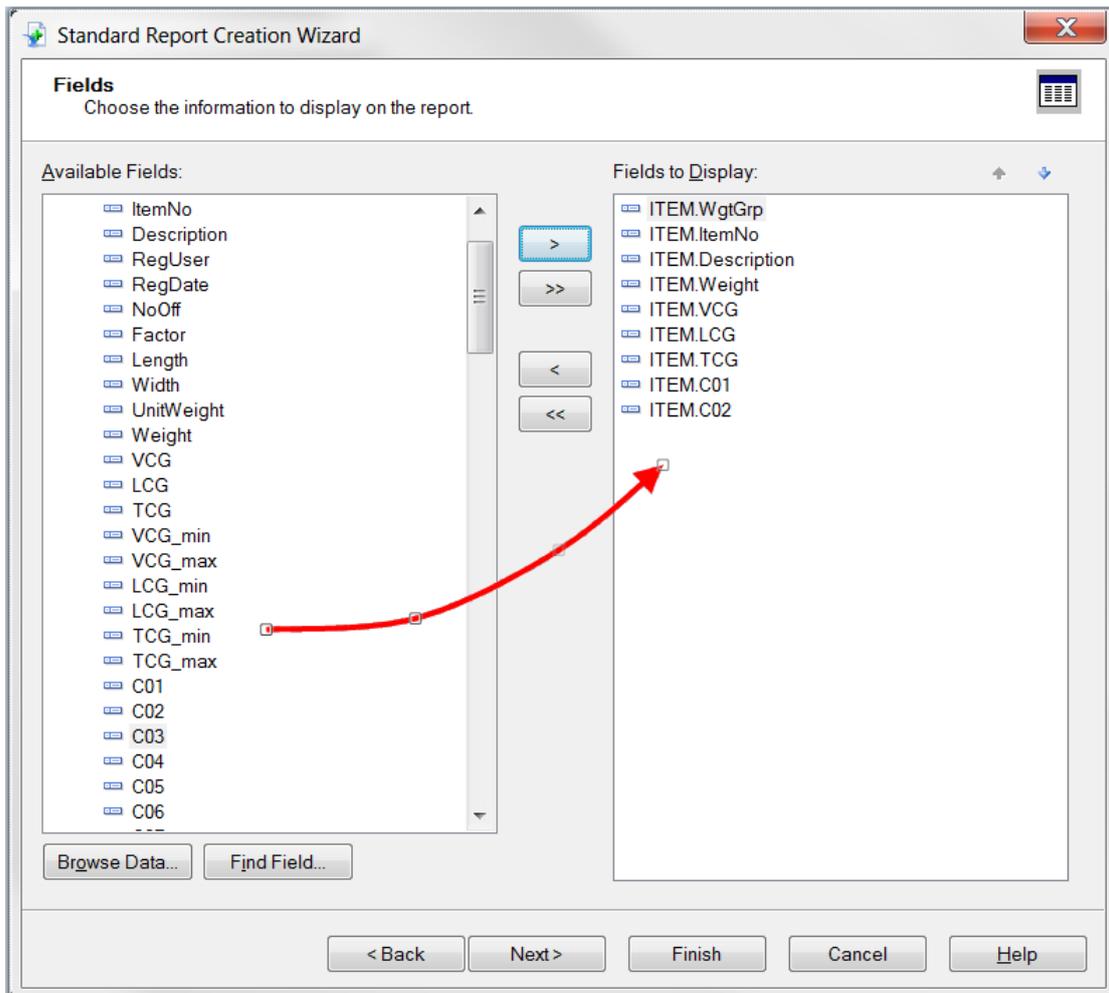
Click the **Next** button.

The next step of the wizard is to choose the fields to display in the report.

The wizard now shows two lists: '**Available Fields**' and '**Fields to Display**'. The **Available Fields** list shows all the fields in the **ITEM** table.

To include fields in the report, simply drag-and-drop them to the '**Fields to Display**' list.

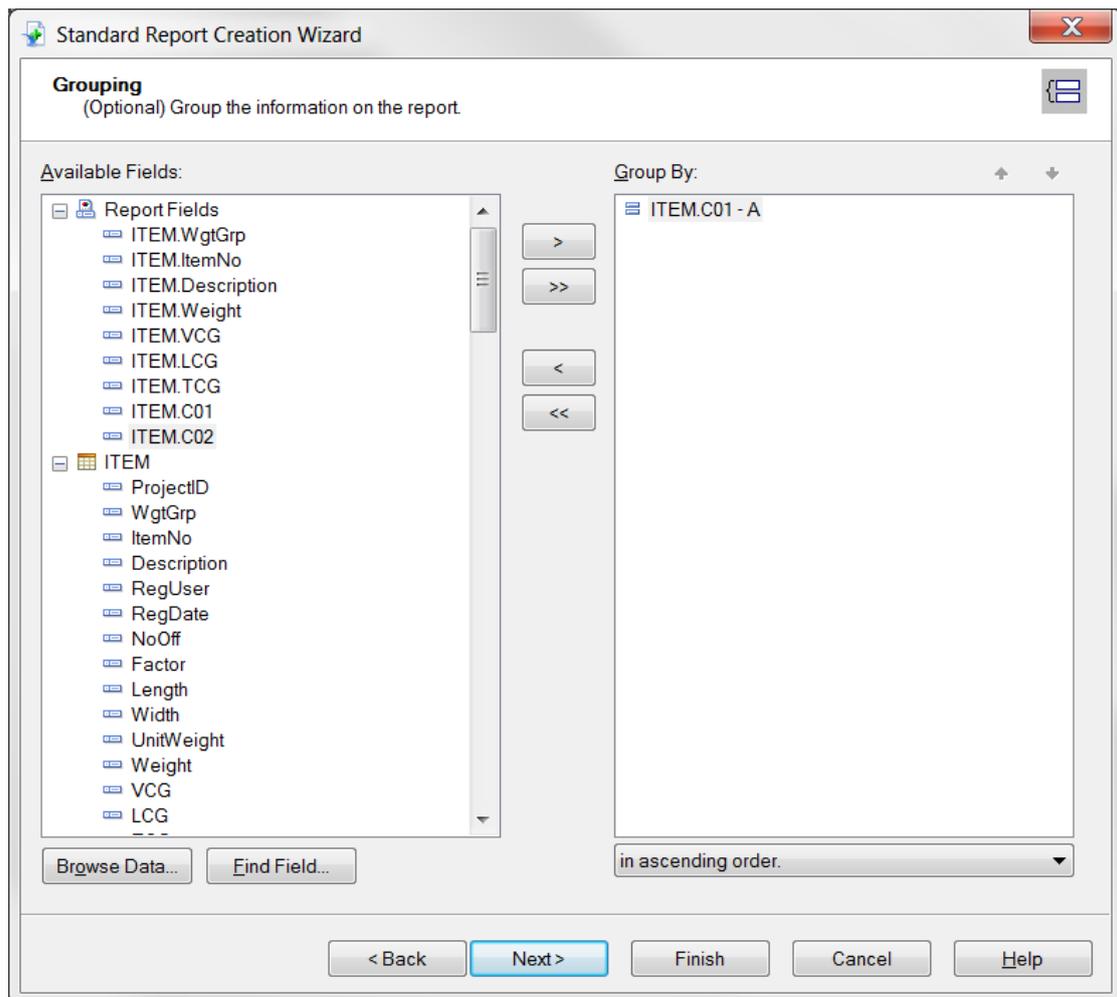
You can re-arrange the order of the selected fields by simply dragging them to a new location in the '**Fields to Display**'-list.



When you have selected the data you want in the report, click the **Next** button to continue to Grouping.

If you want to group the data in the report, simply drag-and-drop this field from the '**Available**'-list to the '**Group By**' list.

In this example we will group on code C01, which is a Section code.

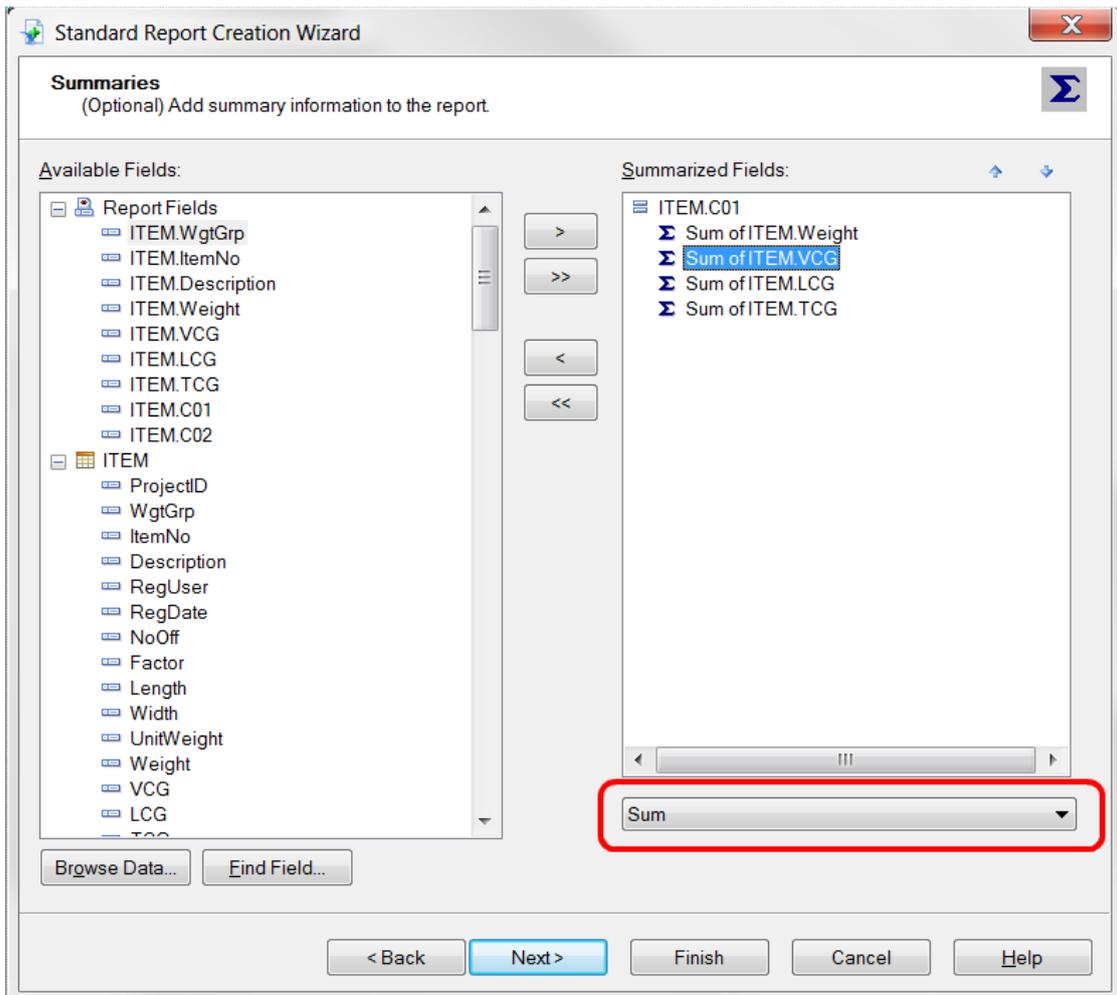


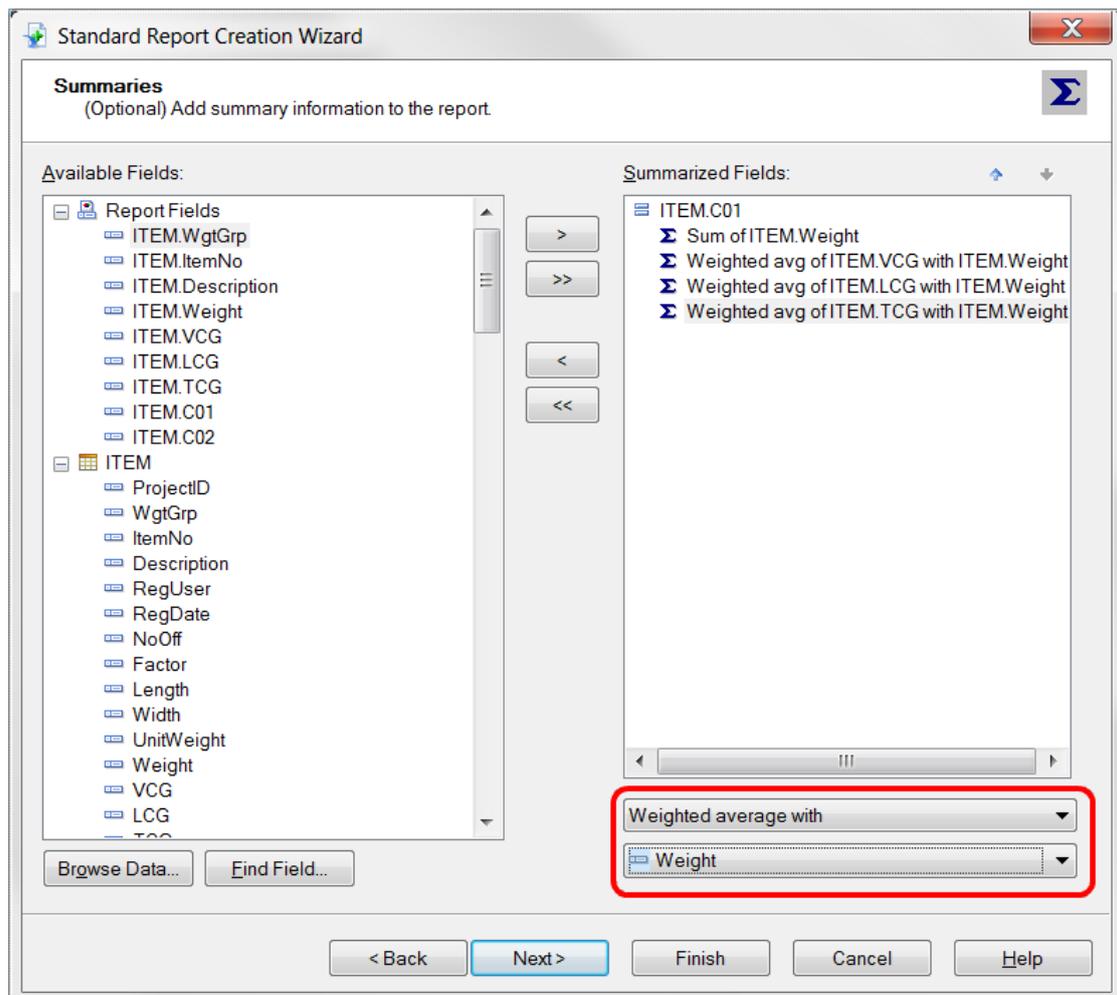
Click **Next** to go to the Summaries-part of the Wizard.

To add summary information to the report, simply drag-and-drop the field to the 'Summarized Fields'-list.

All numerical fields in the report are automatically added to the 'Summarized Fields'-list.

Please note that the default type of summary is Sum. Make sure to change summary type for VCG, LCG and TCG from 'Sum' to 'Weighted average with Weight'.





When you click the **Next** button, you come to the **Group Sorting**. We will not use group sorting in this example, so you should click the **Next** button once more to go to the **Chart-section** of the Wizard.

We will include a Pie Chart showing the Weight of each section. Select **Pie Chart**. Optionally you can change the **Chart title**.

Make sure the **On change of** field is set to **ITEM.C01**, which is our Section code in this example. Also check that **Show summary** is set to **Sum of ITEM.Weight**.

Standard Report Creation Wizard

Chart
(Optional) Include a chart on the report

What kind of chart would you like to see?

No Chart Bar Chart Line Chart Pie Chart

Chart title:
Weight per Section

On change of:
ITEM.C01

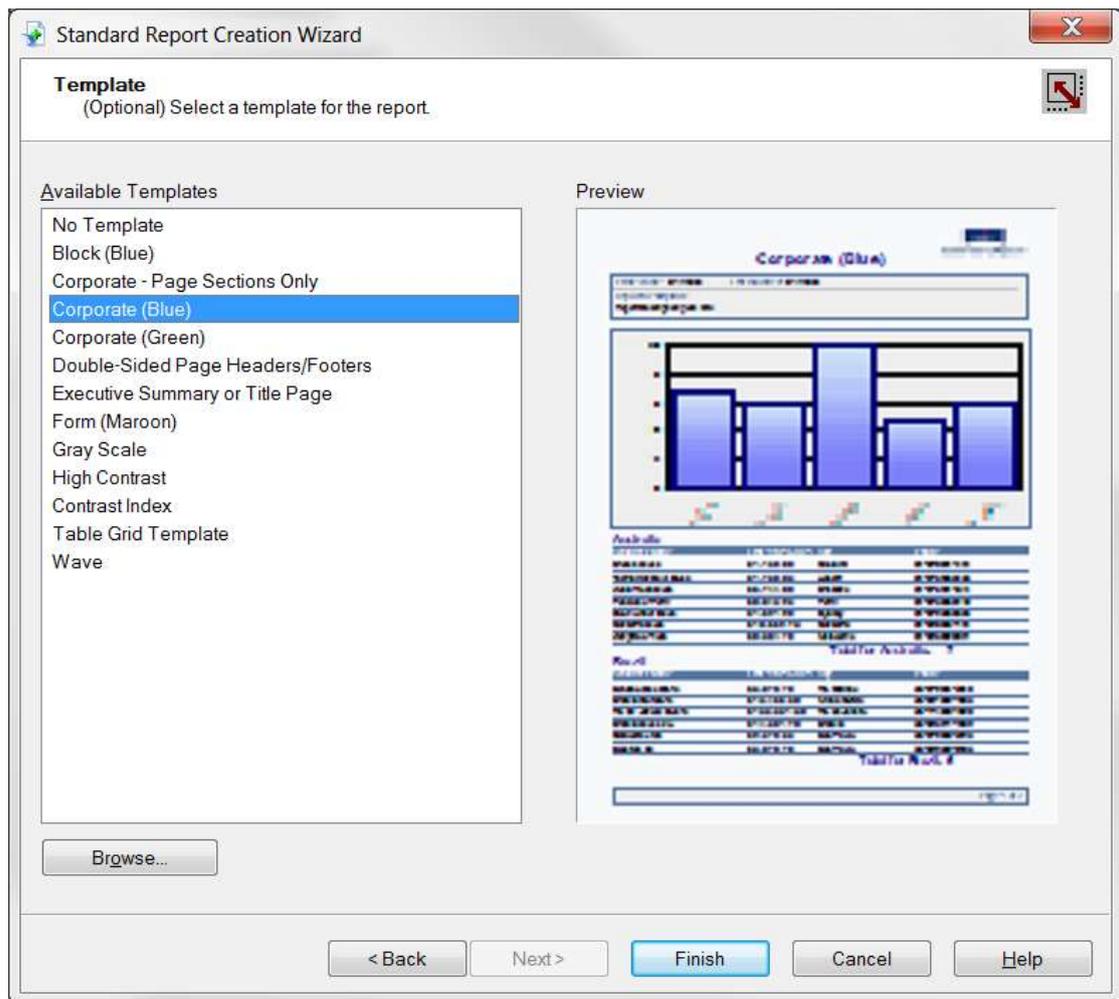
Show summary:
Σ Sum of ITEM.Weight

< Back Next > Finish Cancel Help

Click **Next** to go to **Record Selection**. You can use record selection to include only a part of the data from the database in the report.

We will not be using record selection in this example. Click **Next** to continue to the last item in the wizard: **Template**.

Crystal Reports comes with a set of predefined templates. You can use one of these to quickly change the look of your report.

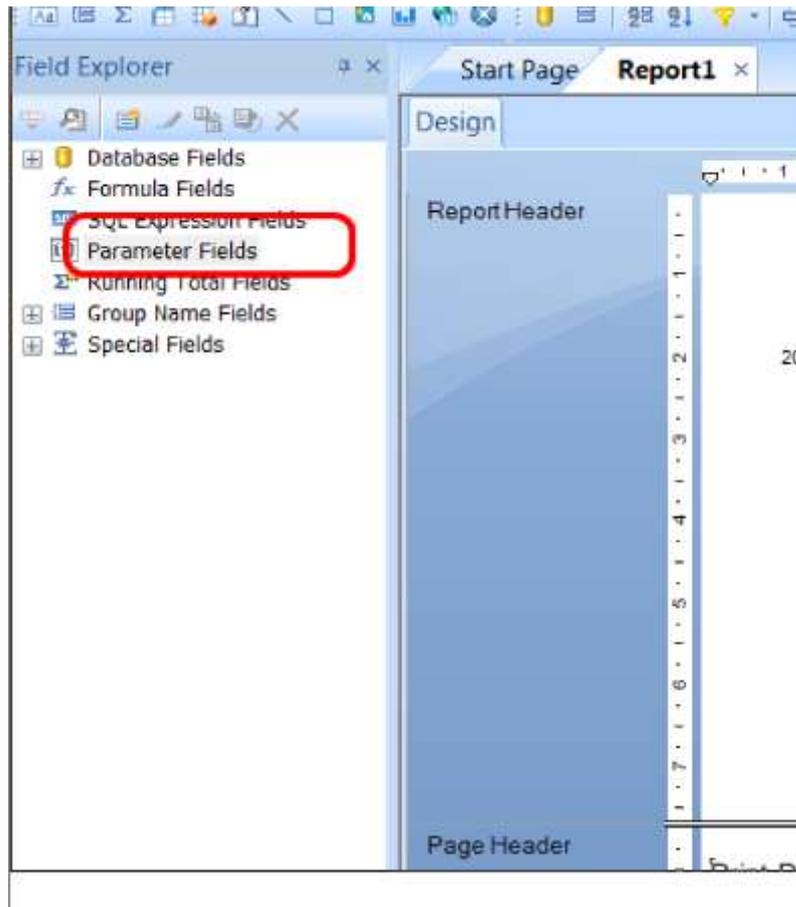


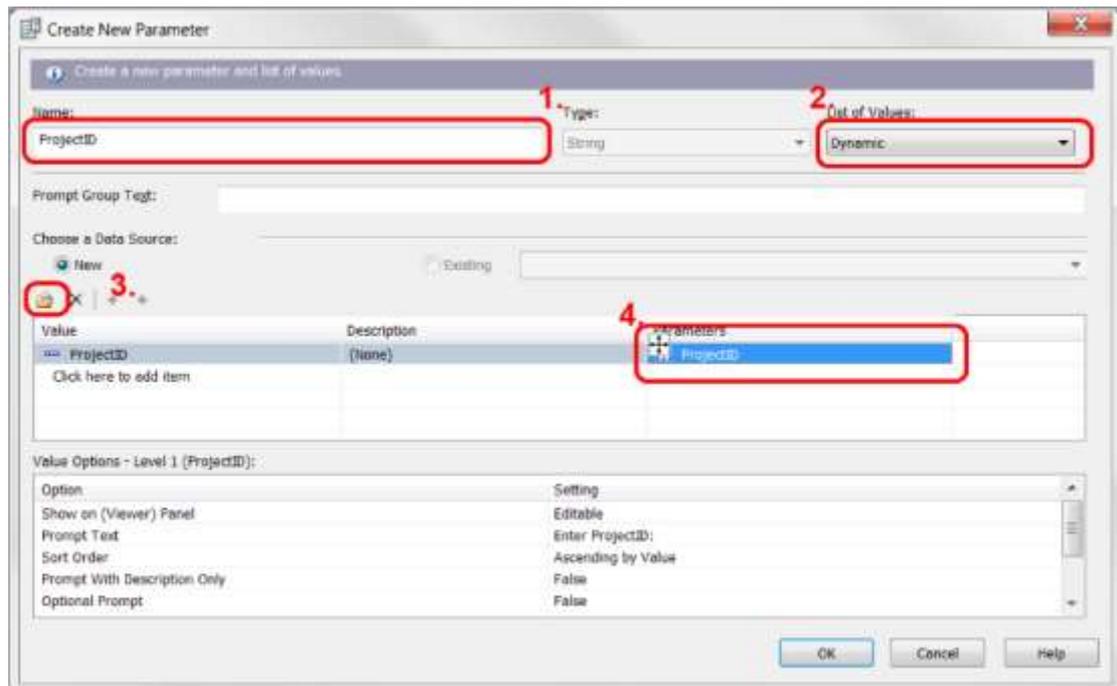
Click the **Finish** button to exit the Report Creation Wizard.

9.2.2 Filtering data on ProjectID

Each project database can contain several projects. The report will now include data from all projects on the database. To list data from the current project only, it is necessary to insert a filter.

First, we will insert a parameter field to prompt for the current project name. Click **Parameter Fields** in the **Field Explorer** with the **right mouse** button. If the **Field Explorer** is not present, get it from the **View** menu. From the right-click menu, select **New...**





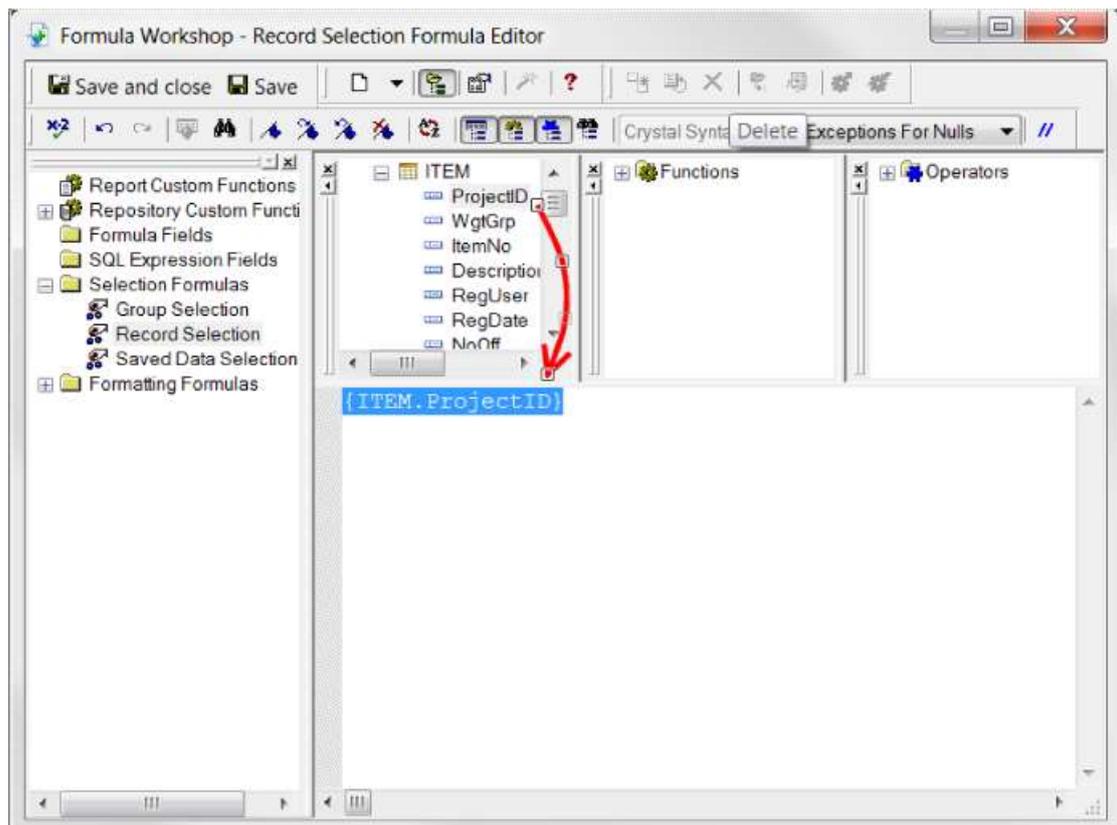
In the **Create New Parameter** dialog box, enter **ProjectID** (1.) as the name of the parameter.

To add a dynamic list of values to the ProjectID parameter, select **Dynamic** (2.). You then click the **Insert** button (3.), and select **ProjectID** from the dropdown list. In the **Parameters** column, click on the text **Click to create parameter** (4.). The text will change to ProjectID.

Click the **OK** button to close the **Create New Parameter** dialog box.

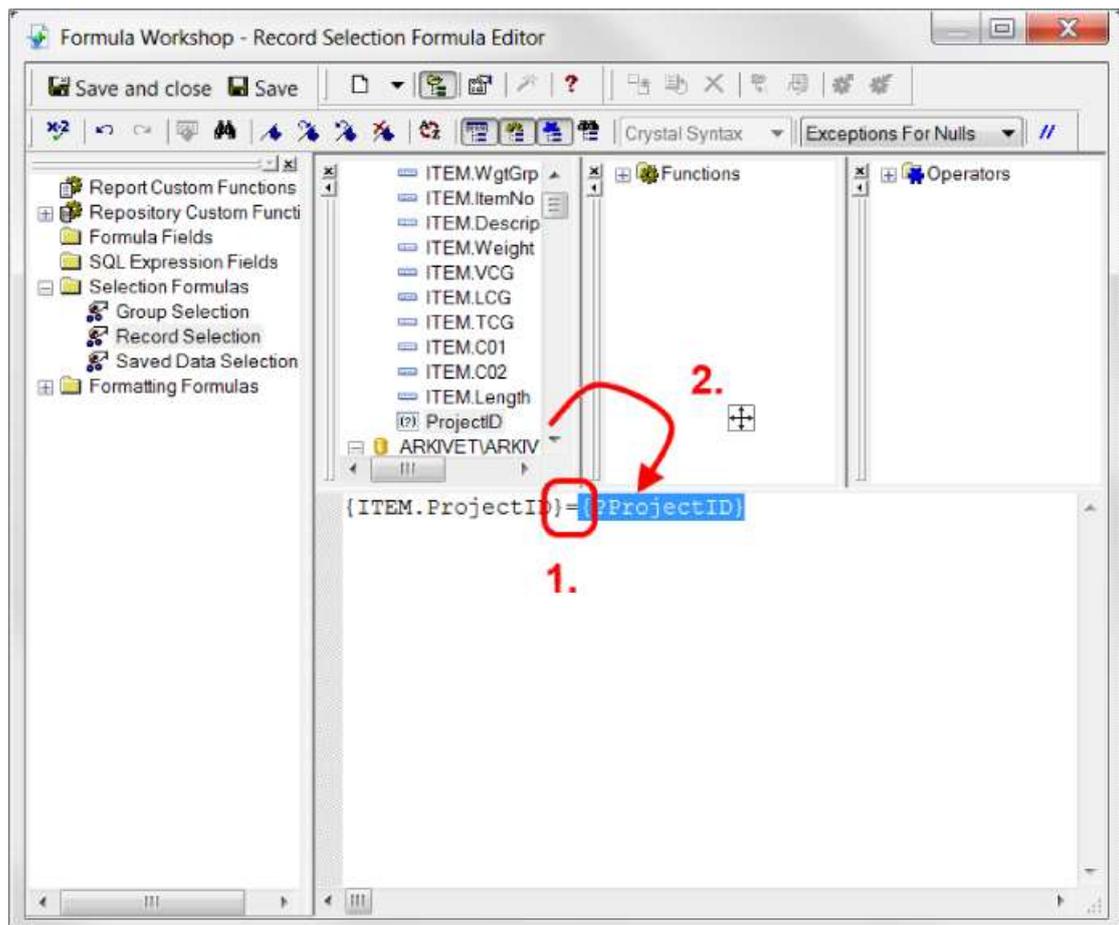
Now we are ready to create the data filter. This is done by creating a Record Selection formula. **Choose Selection Formulas** and then **Record...** on the **Report** menu.

In the Report Fields list of the Formula editor, expand the database and the item table. Select the database field ProjectID with the mouse, and drag it into the formula text window.



In the formula text window, type the sign of equality (=) after the text {ITEM.ProjectID}.

Select the parameter named ProjectID (marked with a question mark icon in the list) in the 'Report Fields' branch. Drag and drop it to the formula text window (2.).

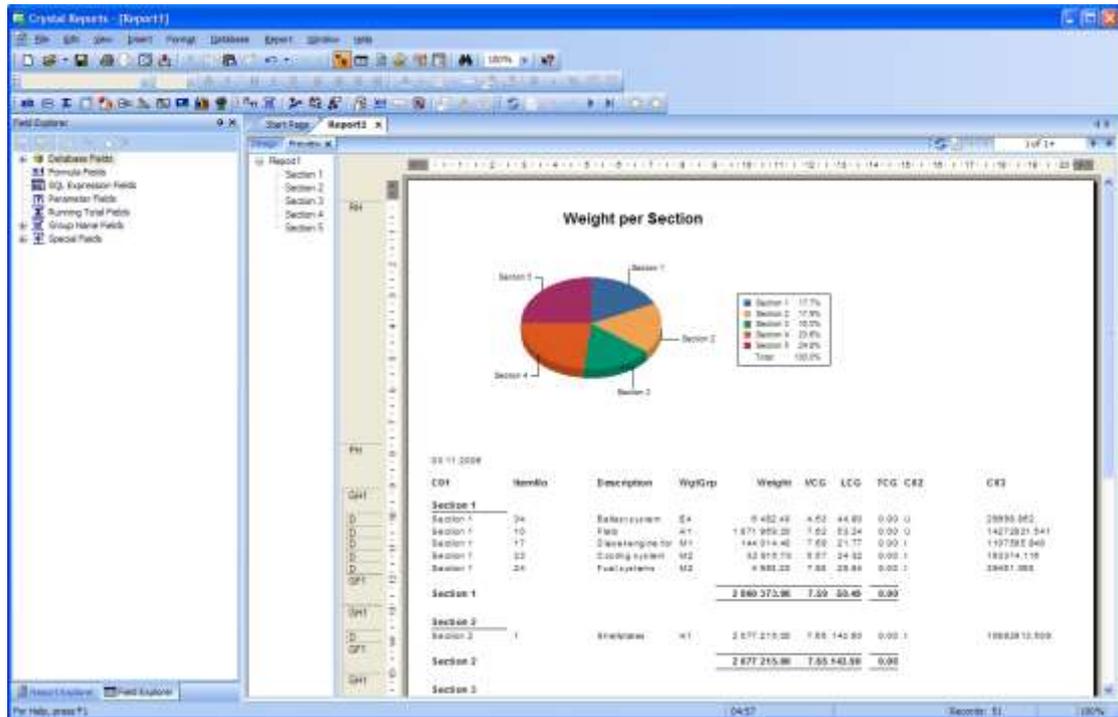


The selection formula should look like this:

```
{ITEM.ProjectID}={?ProjectID}
```

Click the **Save and close** button. The report data will now be filtered to include the selected ProjectID only.

9.2.3 Formatting a report



The preview shows that the report needs some formatting.

Some of the fields are too short to display the number. The easiest way to fix this is to click on the field in the preview area and expand it using the mouse.

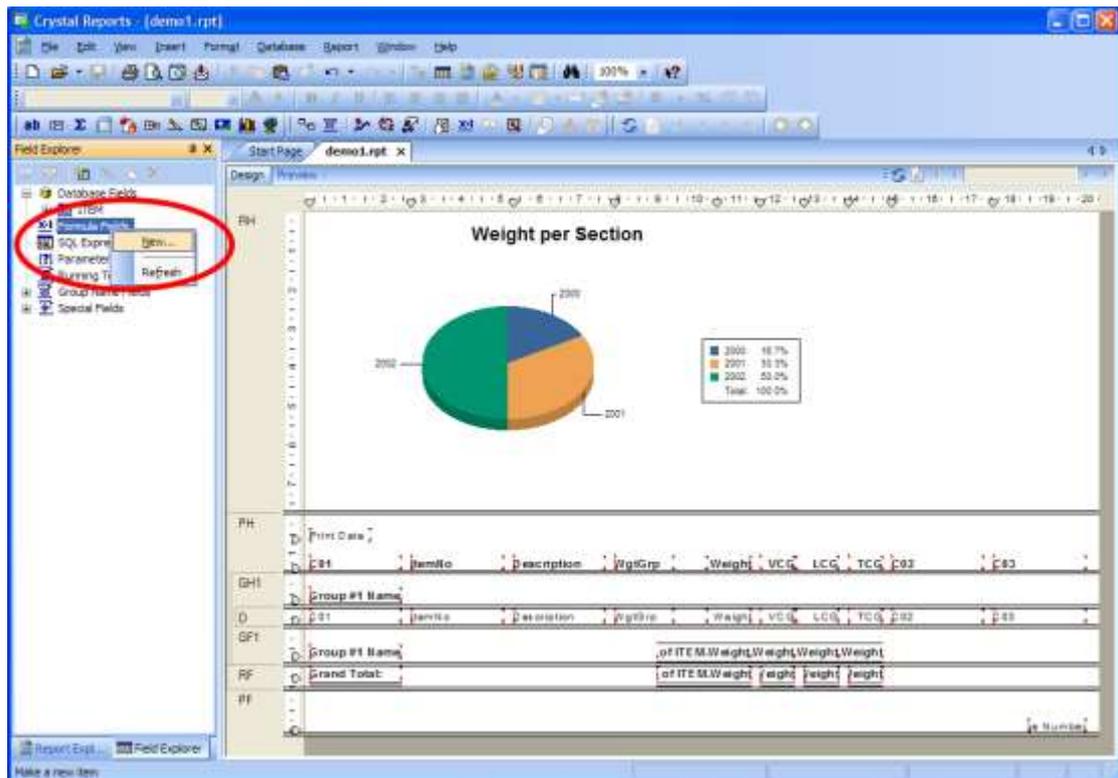
The group summary fields are in the wrong position. Drag and drop them into place.

To switch between preview and design mode, simply click the tab in the top left corner of the preview/design area.

9.2.4 Displaying data in US-units

Next, we want to display the data in US-units. In the database, all data are stored in metric units.

Since the database does not contain any data in US-units, you need to create a formula to convert the value from metric to US units.



To create a new formula, you can right-click the **Formula Fields** in the **Field Explorer**. Select **New...**

Enter the name of the formula: *'US Weight'*.

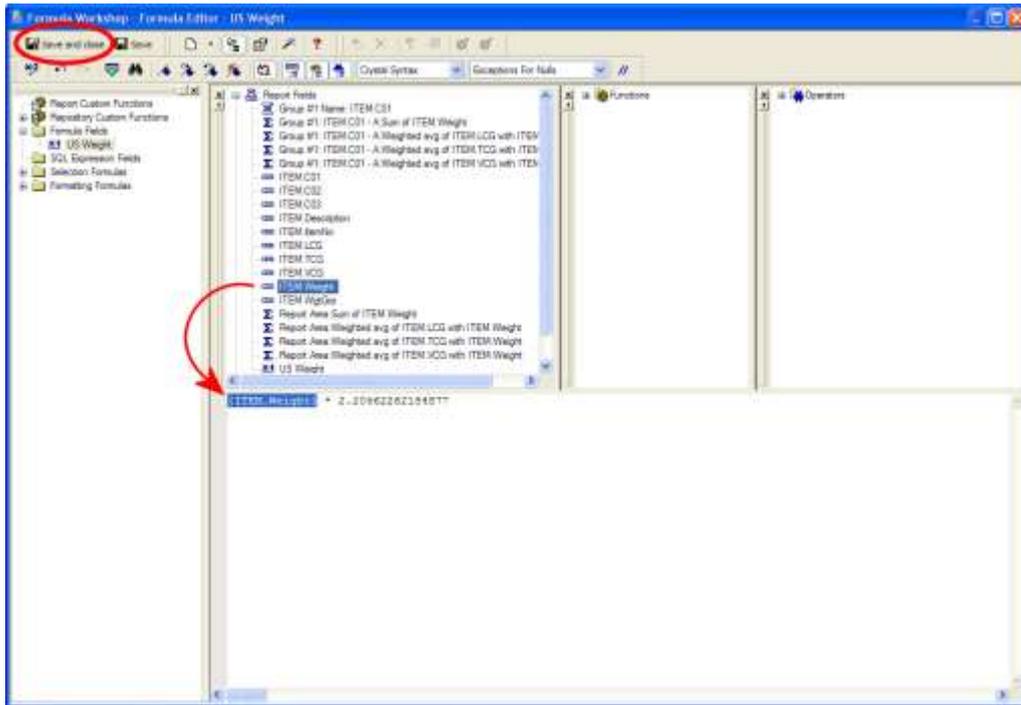
Now the **Formula Editor** will appear.

In the Formula editor, you will find a list of the available fields. Expand the branch **'Report Fields'**. Drag-and-drop the field **'ITEM.Weight'**, into the formula editor.

Finish the formula by entering the multiplication sign (asterisk) and the conversion factor. The formula to convert from kg to lb should be:

{ITEM.Weight} * 2.20462262184877

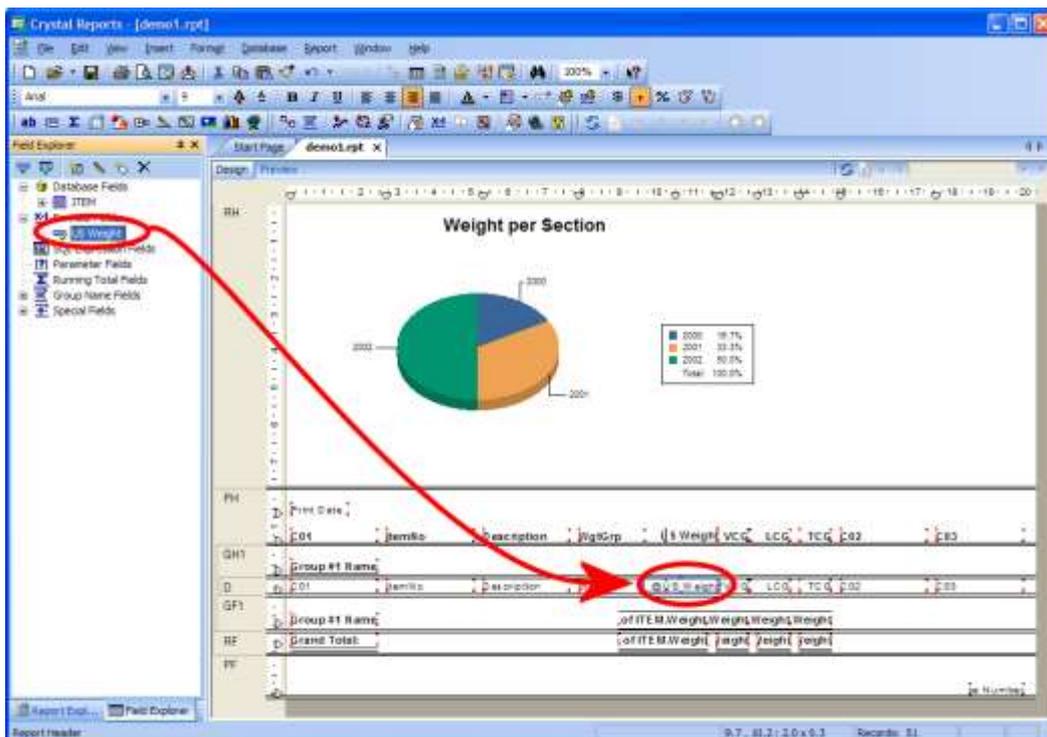
Click the **Save and close** button on the toolbar.



Back in the main window of Crystal Reports, you will find the new formula under **'Formula fields'** in the **'Field Explorer'**.

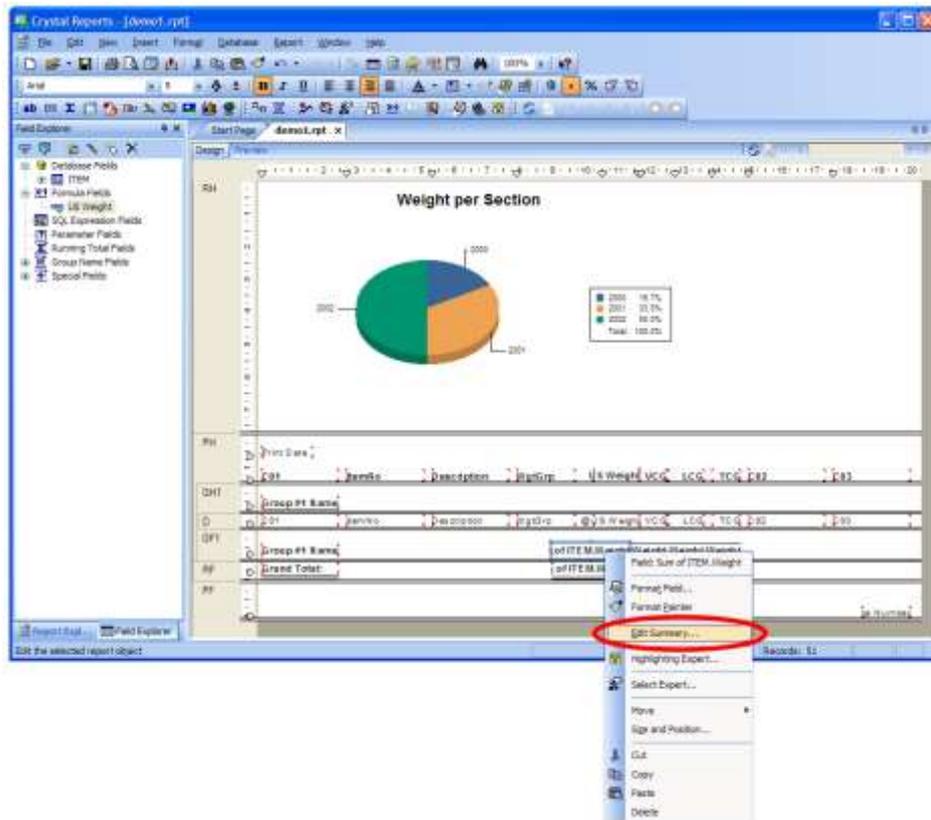
Before you insert the **'US Weight'** field, you need to delete the original weight field from the report. Simply select the field in the design view, and click the **Delete** button.

Now, you need to drag-and-drop the **'US Weight'** formula into the **Details** section of the report.

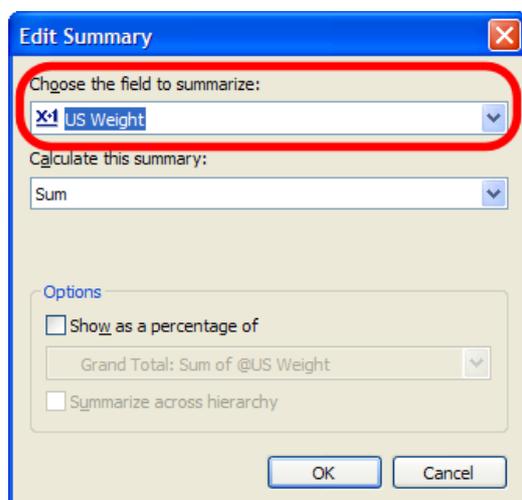


Finally, you must change the summary fields to summarize the 'US Weight' formula instead of the 'Weight' database-field.

To do this, select the **Group Summary** field in the design view, and click on it with the **right mouse button**. Select **Edit Summary** from the dropdown menu.



The '**Edit Summary**'-window pops up. Select **US Weight** in the **Choose the field to summarize** ListBox. Click **OK** to close the window. Repeat this for the Report Summary.



The report now shows the weight in pounds instead of kilograms.

9.2.5 Summarizing a Code-field

In the project we have used, Code C03 is the Vertical Moment. We would like to summarize the moments.

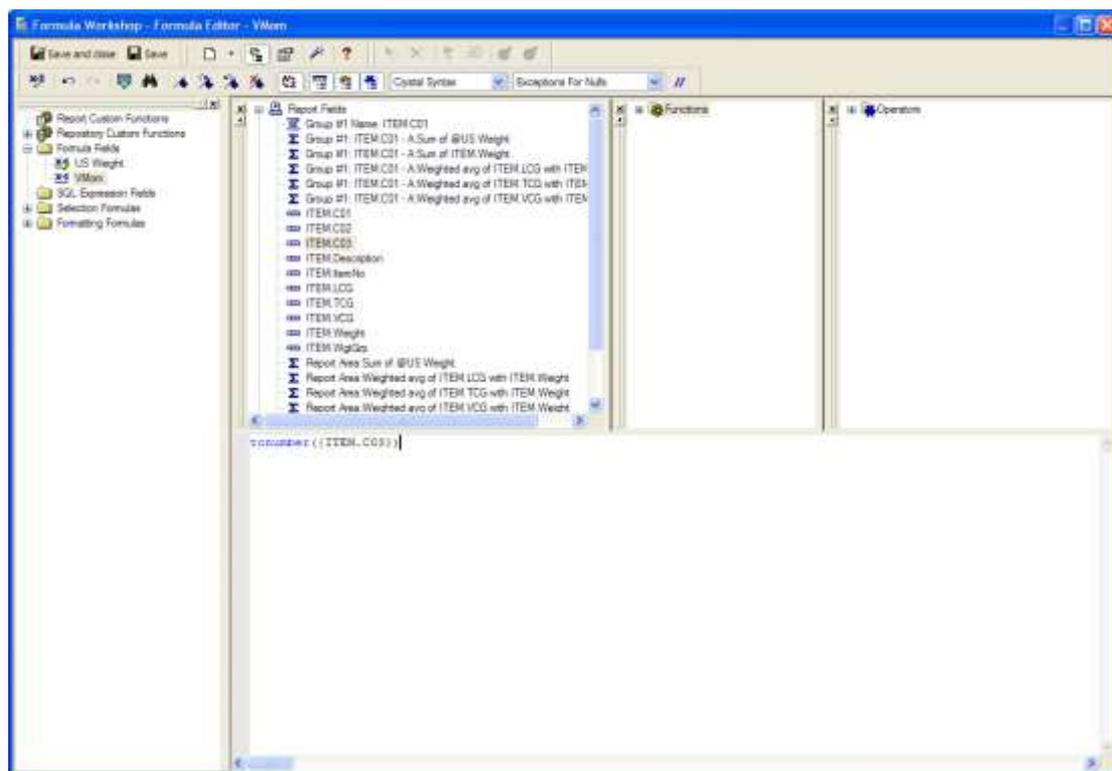
Crystal Reports can only summarize numerical fields. And since ShipWeight stores the code values as strings, you cannot summarize code values directly.

The solution is to create a formula that converts the string C03 into a numerical value.

Create a new formula named 'VMom'. In the Formula Editor drag-and-drop the field ITEM.C03 into the editor.

To convert a string to a number, you need to use a Crystal-Reports function named TONUMBER(). The formula should look like this:

```
tonumber({ITEM.C03})
```



Now, the formula 'VMom' is available in the 'Field Explorer'.

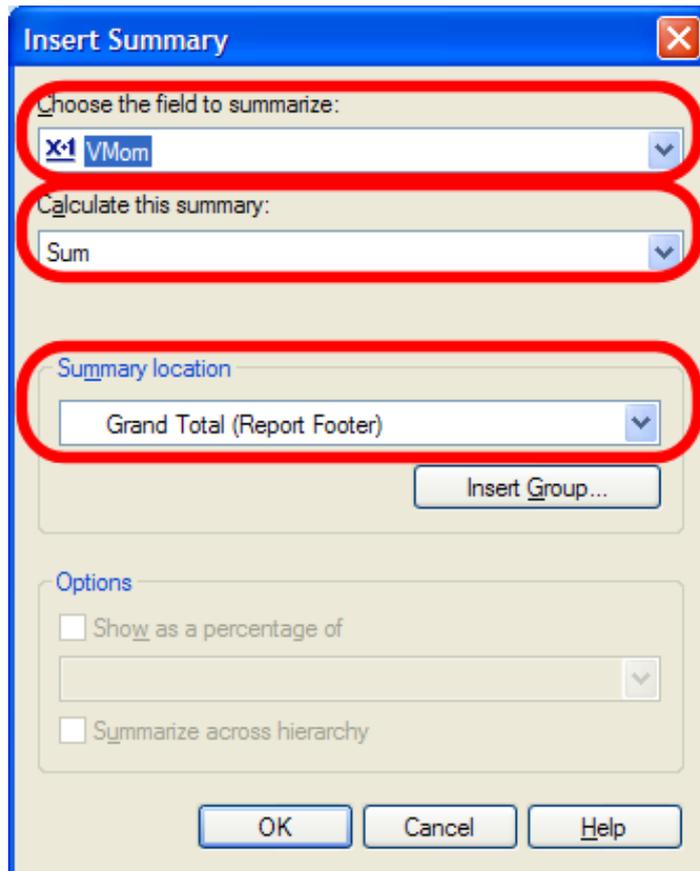
In the design area, select and delete the field 'C03'. Then drag the formula 'VMom' into the report.

To insert a summary of the Vertical Moment, choose **Insert Summary** from the **Insert** menu.

Now the **Insert Summary** dialog box will appear. First, select **'VMom'** in the **'Choose the field to summarize'** list box.

Then make sure the **Calculate this summary** option is set to **'Sum'**.

Finally, set **'Summary Location'** to **'Grand Total (Report Footer)'**



In the same way, insert a Group summary. Hint: in the 'Insert Summary' window, you will need to set the 'Summary location' to 'Group #1: ITEM.C01 – A'

Now, you successfully have inserted a summary of code values into your report. Click the **Preview** tab to see the result.

Crystal Reports - [Report.rpt]

File Edit View Insert Format Database Report Window Help

Crystal Reports - [Report.rpt] 200%

Design Preview X

Design: Preview X

2 of 1

21-11-2008

CR#	RevNo	Description	Qty/Pr	BS Weight	VOL	LOS	TGO	CR2	WMon
Section 1	8	Stalulines	H1	376 280	87 22 28	186 19	0 00	1	3 831 807 84
Section 1	11	Fals	H1	239 289	80 20 12	16 18	0 00	1	1 973 896 28
Section 2	12	Fals	H1	312 058	28 18 20	188 20	0 00	1	2 768 230 70
Section 3	30	Power equipment	E4	183 881	73 18 24	32 80	0 00	1	788 248 10
Section 3	8	Deck	H1	287 881	00 22 81	22 17	0 00	1	2 006 670 80
Section 3	9	Deck	H1	337 872	88 18 98	172 83	0 00	1	2 918 617 77
Section 3	14	Deck house	H4	180 180	71 18 83	186 83	0 00	0	8 186 465 70
Section 3	16	Deck house	H4	804 761	43 28 88	18 82	0 00	1	12 882 283 13
Section 3	43	multicutting	H7	186 118	38 18 83	73 48	0 00	1	1 064 220 38
Section 3	47	multicutting	H7	177 247	28 18 44	78 83	0 00	1	1 481 240 84
Section 3	8	Subheads	H1	81 467	78 18 83	21 12	0 00	1	788 438 88
Section 3	8	Subheads	H1	178 884	88 18 33	186 20	0 00	1	848 883 88
Section 3	40	Insert in wall	E3	88 142	18 24 21	23 88	0 00	1	428 810 84
Section 3	50	Galley provision	E0	81 124	04 25 86	23 38	0 00	1	718 834 78
Section 3	38	Power Cable	E4	241 884	88 17 88	28 88	0 00	0	3 888 428 88
Section 3	42	wal fittings, Roof	E1	238 784	82 21 27	83 18	0 00	1	2 319 122 88
Section 3	37	Ship equipment	E0	78 218	88 28 74	38 48	0 00	1	1 248 881 44
Section 3	32	Ship equipment	E2	145 188	88 21 25	35 84	0 00	1	1 828 118 38
Section 3	41	Ship equipment	E2	33 488	88 17 78	18 28	0 00	1	237 110 77
Section 3	81	Ship equipment	E2	18 488	88 18 88	28 18	0 00	1	148 841 88
Section 3	18	Accommodation	E3	828 882	88 21 27	27 84	0 00	1	8 878 888 78
Section 3	33	Ship equipment	E0	138 277	48 21 88	18 38	0 00	1	1 878 822 81
Section 3	46	L&M, 2011 & 108	E3	88 911	22 21 88	1 82	0 00	1	1 211 788 17
Section 3	44	Pl of, rad. w/c	E3	288 284	48 28 73	28 81	0 00	1	8 888 287 22
Section 3	45	Ladders & steps	E3	78 828	88 17 28	81 87	0 00	1	748 841 88
Section 3	21	Rad. Rys	M2	88 882	18 28 88	72 18	0 00	1	1 188 728 81
Section 3	30	Preparation comm	M2	88 845	58 18 87	27 88	0 00	0	848 882 88
Section 3	39	Machinery system	M2	22 748	88 28 88	23 84	0 00	1	888 88 77
Section 3				8,384,824.48	25.52	68.84	0.08		66,821,184.48
Grand Total:				28,428,838.88	52.78	88.48	0.08		148,177,280.88

Group #1: ITEN C01 - 6

2007

Records: 81

100%

9.3 Upgrading existing reports to include ProjectID

From ShipWeight version 7.5 and onwards, any number of projects can be stored on the same project database. To identify which project the data belongs to, every table in the project databases now have a ProjectID-field.

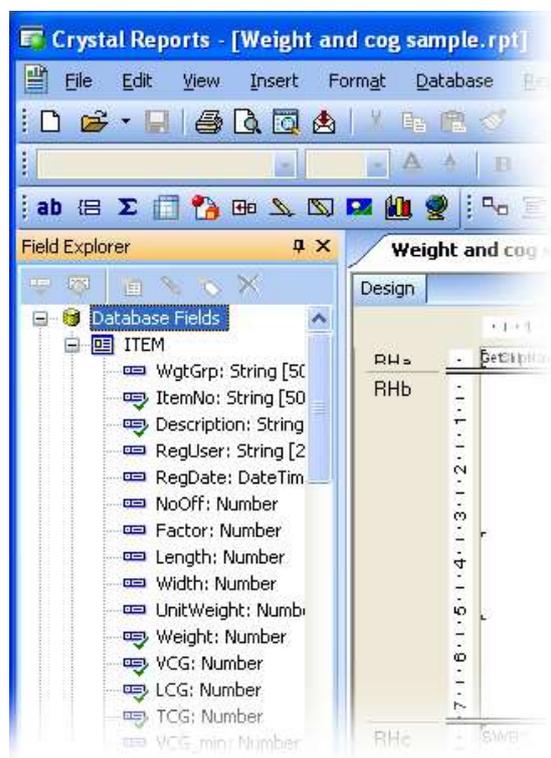
Crystal Reports created for ShipWeight versions prior to version 7.5 does not take the ProjectID into account. Therefore data from all projects on the same project database are reported.

To correct this, the data listed in the report must be filtered to include data from the current project only. In order to accomplish this for an existing report, there are three steps to follow:

- Refreshing the Datasource
- Creating a Record Selection formula
- Change Subreport links

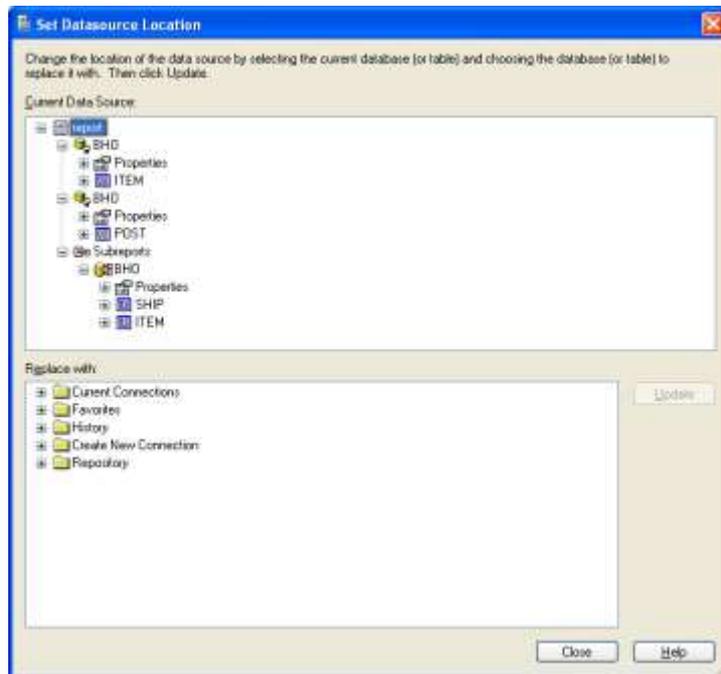
9.3.1 Replace Datasource

When you open an existing pre-ShipWeight 7.5 report in the Crystal Report designer and expand the Database Fields in the Field Explorer, you will notice that the ProjectID field is missing. To be able to create a Record Selection formula based on project ID, the ProjectID-field must be present in the Database Fields list.

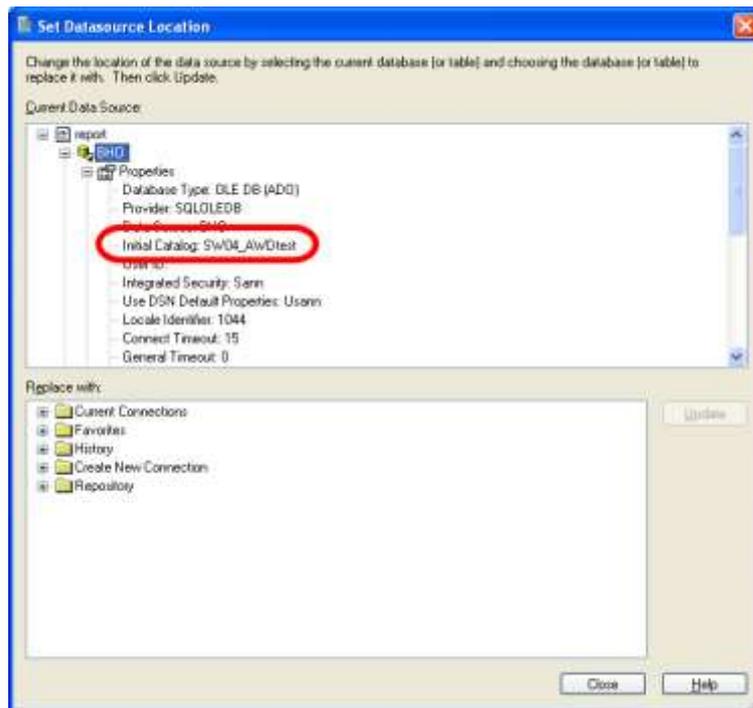


To achieve this, the Datasource must be replaced with an updated database. On the database menu, select **Set Datasource Location**.

The **Set Datasource Location** dialog box is used to change the location of the data source. This is done by selecting a database in the 'Current Data Source' list, and choosing a database to replace it with from the 'Replace with' list. Then click **Update**.

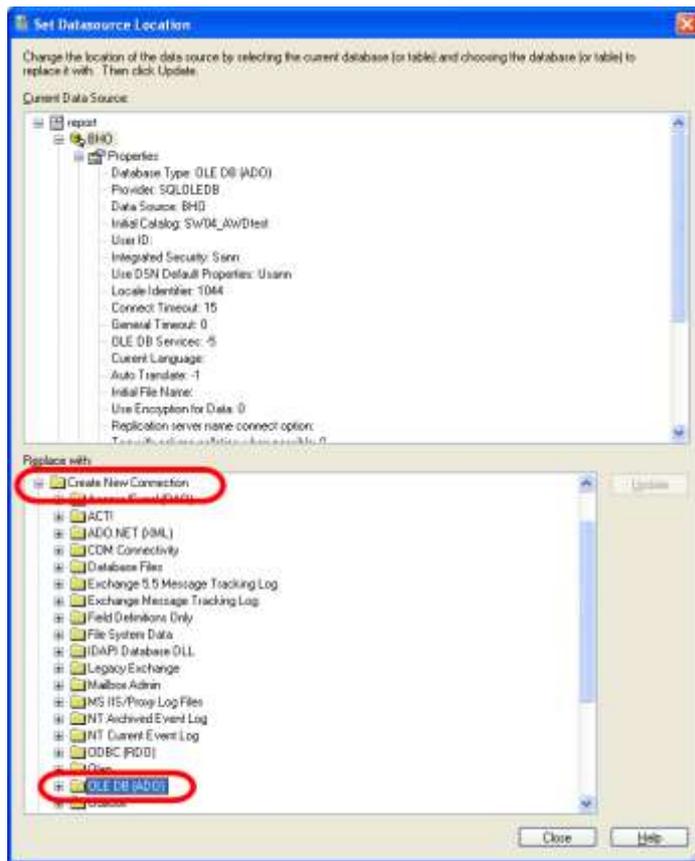


The report used in this example, is connected to three databases. To view the details of the database connection, please expand the Properties branch in the 'Current Data Source' list.

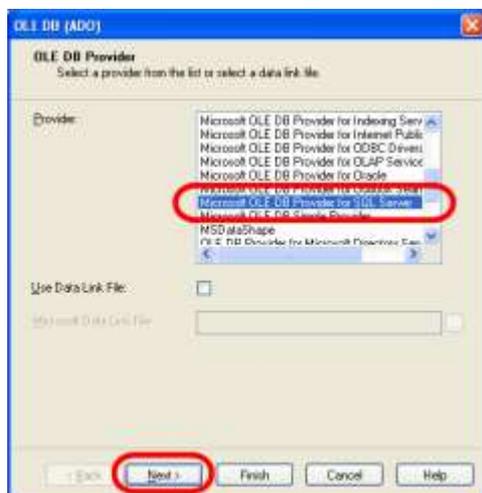


The Initial Catalog entry of in the properties list, shows the name of the database. In this case, the database name starts with SW0, indicating that this is a project database.

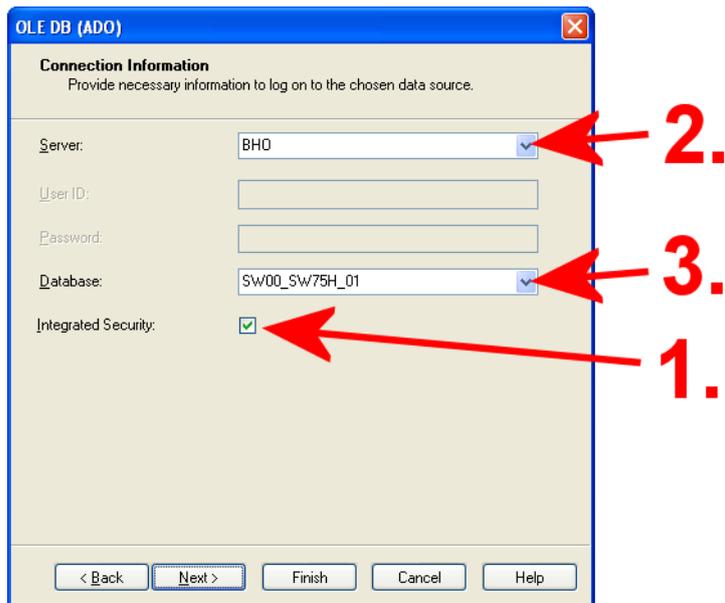
Next, you must locate a project database to replace it with. In the '**Replace with**' list, please expand the '**Create New Connection**' branch either by double-clicking it with the mouse or by clicking the plus sign next to it. Locate '**OLE DB (ADO)**' in the list and double-click it with the mouse.



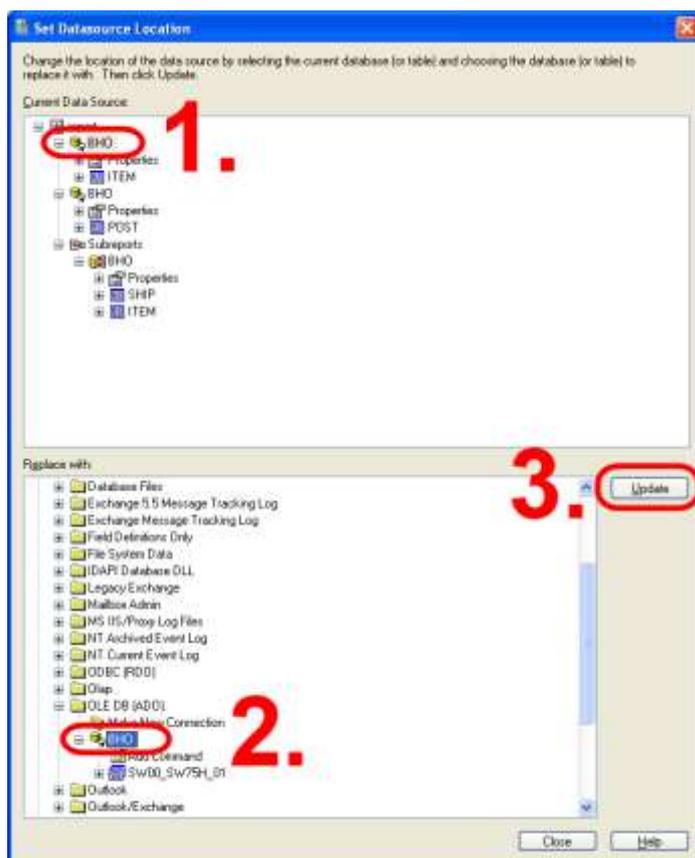
The 'OLE DB (ADO)' window will open. Select 'Microsoft OLE DB Provider for SQL Server' in the Provider list. Click the **Next** button.



On the next screen, check the **Integrated Security** option. Select or type in the name of the SQL server and choose a database to replace the current database. Click the **Finish** button.



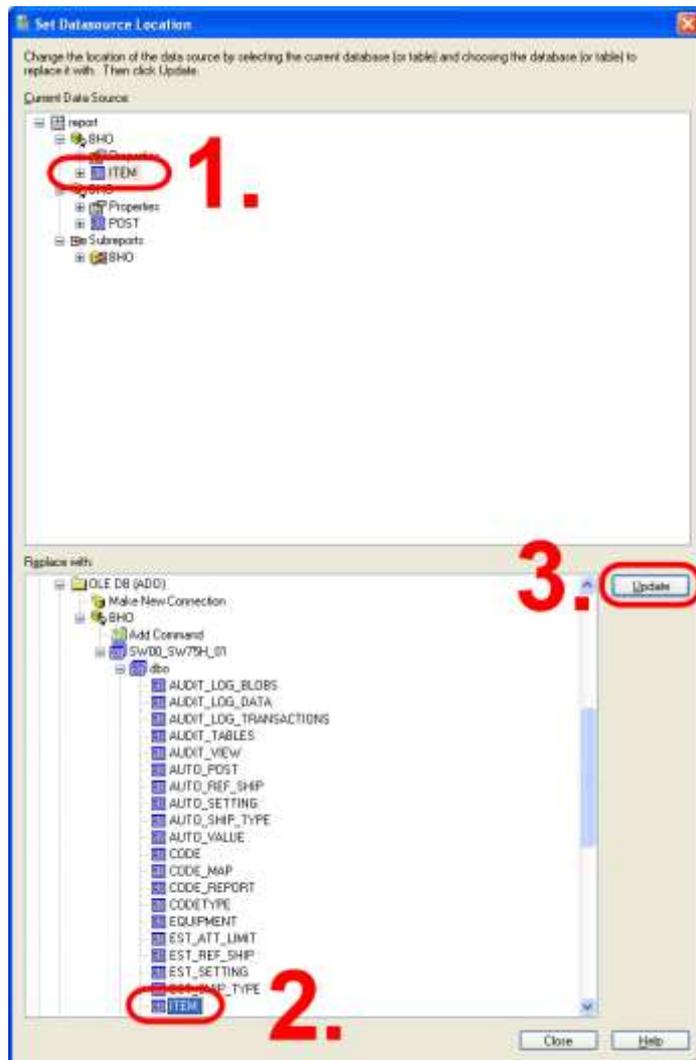
Back in the 'Set Datasource Location' window; make sure the correct database is selected in the 'Current Data Source' list. Select the newly created database connection in the 'Replace with' list. Click the **Update** button.



Now the database connection is updated. Next, we need to replace each database table listed below the data source connection.

In the 'Current Data Source' area, click the table to be updated, in this case the item table. In the 'Replace with' area, expand the database branch and then the

dbo branch. Now a list of the available database tables will appear. Click the table to replace with and click the **Update** button.



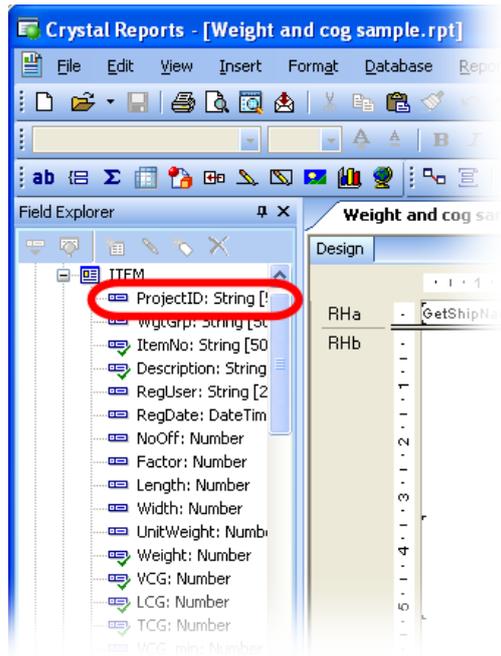
Repeat this procedure for all database connections and database tables in the '**Current Data Source**' list. This must also be done for database connections and database tables used by Sub-reports.

Please note that you only have to replace project databases and project log databases. These have names starting with SWXX_, where XX can be any number between 00 and 10.

When you are done, close the **Set Datasource Location** window. On the **Database** menu of the Crystal Reports designer, select **Verify Database**. A message saying 'The database is up to date' should appear.



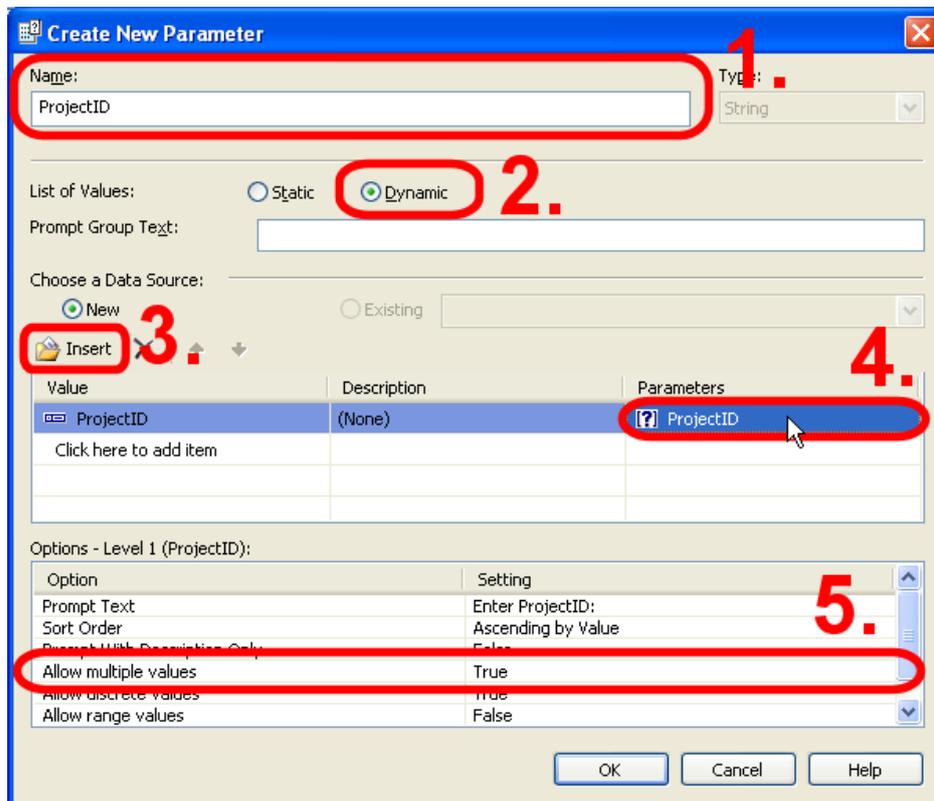
In the Field Explorer, you can see that the ProjectID field is available.



9.3.2 Adding a ProjectID parameter field

In order to filter the data on the current ProjectID, we need to ask for the project name at run-time. This is done by inserting a parameter field into the report. The parameter field will cause a dialog box to open when the report is run, asking the user to enter the required parameter values.

To insert a parameter field, click **Parameter Fields** in the **Field Explorer** with the **right mouse** button. From the right-click menu, select **New...**



In the 'Create New parameter' dialog box:

Enter the name of the parameter (ProjectID). Make sure that **Type** is set to **String** (default).

Set '**List of Values**' to **Dynamic**.

Click the **Insert** button, and select ProjectID from the dropdown list.

Click on the text **Click to create parameter** in the table. The text will change to ProjectID (name of the parameter).

Optionally, set **Allow multiple values** to **True** in the options list. This will enable the user to include several ProjectIDs in the selection. This could be useful when creating a report to include data from a project and its master-project.

Click **OK** to close the dialog box.

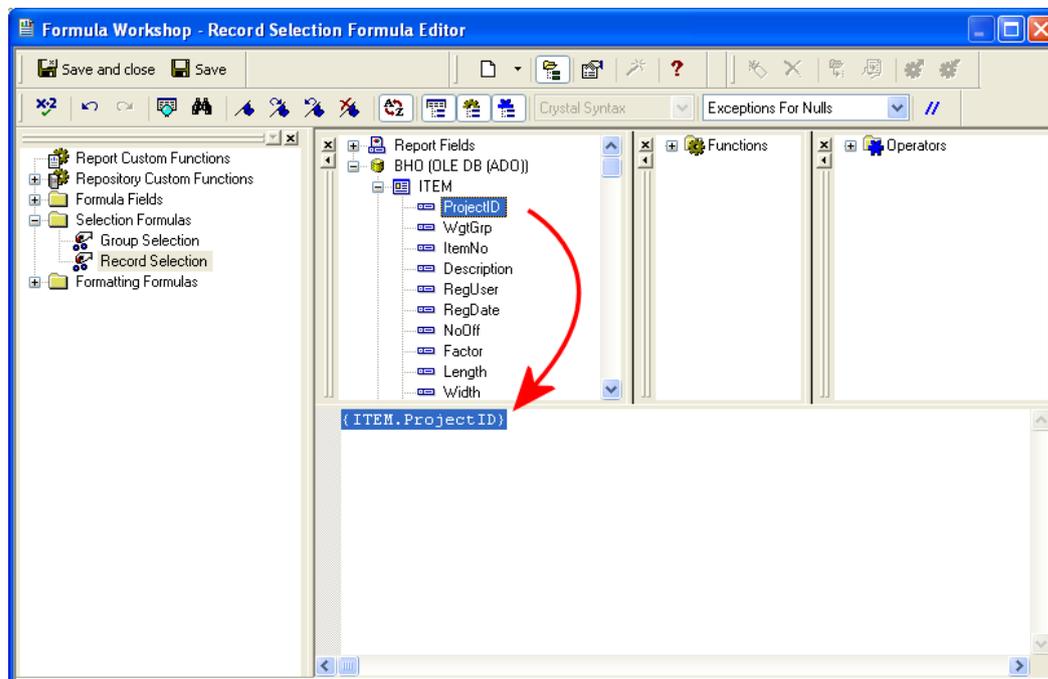
IMPORTANT: You can only add a dynamic list of ProjectID-values to a parameter if you have installed Crystal Reports version XI. Users of earlier versions of Crystal Reports must skip step 2, 3 and 4 above.

9.3.3 Create Record Selection Formula

Now we are ready to create the data filter. We want to create a filter that selects only data with ProjectID equal to the current project name.

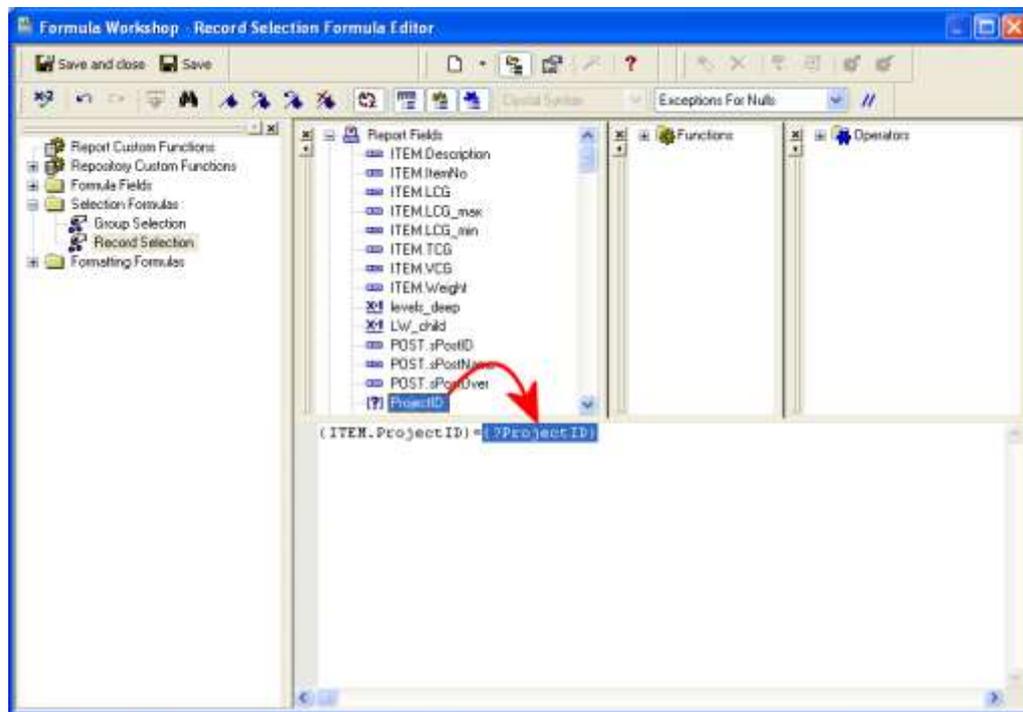
Filtering of data is done by creating a Record Selection formula. On the **Report** menu, choose **Selection Formulas** and then **Record...** Now the **Formula Workshop** window opens.

In the Report Fields list, expand the database and the appropriate database table, in this case the item table. Select the database field **ProjectID** with the mouse, and drag it into the formula text window.



In the formula text window, type the sign of equality after {ITEM.ProjectID}.

Next, expand the **Report Fields** branch. Locate the parameter named **ProjectID**. Drag and drop it to the formula text window. Parameter fields are marked with a question mark icon in the list.



The selection formula should look like this:

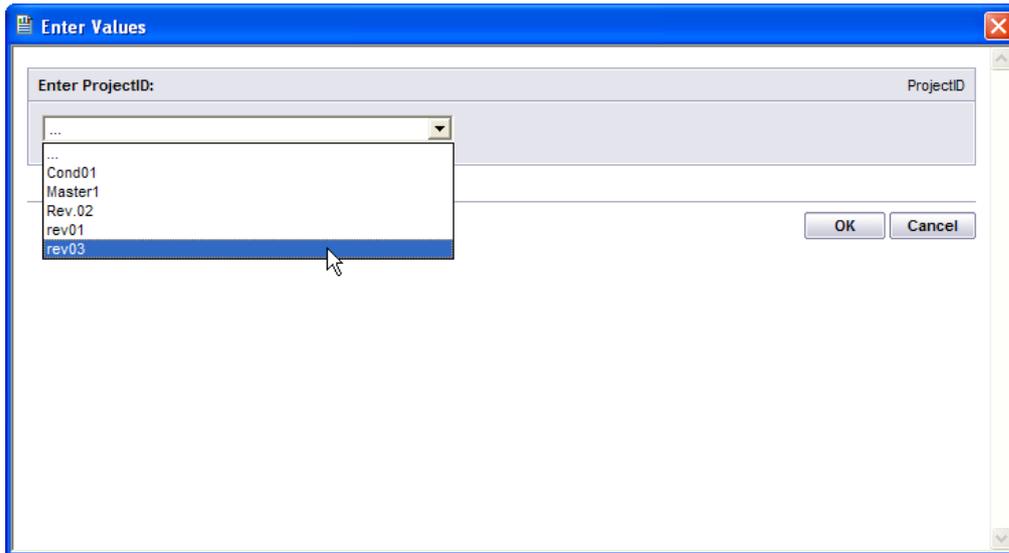
```
{ITEM.ProjectID}={?ProjectID}
```

Click the **Save and close** button.

To view the effect of the filter, preview the report in the Crystal Reports designer. Select **Print preview** on the **View** menu.

Now a prompting dialog box appears, asking you to enter ProjectID. Select a **ProjectID** from the dropdown list and click **OK**.

Please note that users of Crystal Reports version 10 and earlier will not be able to display the available ProjectIDs in a dropdown list. The ProjectID must then be entered manually.

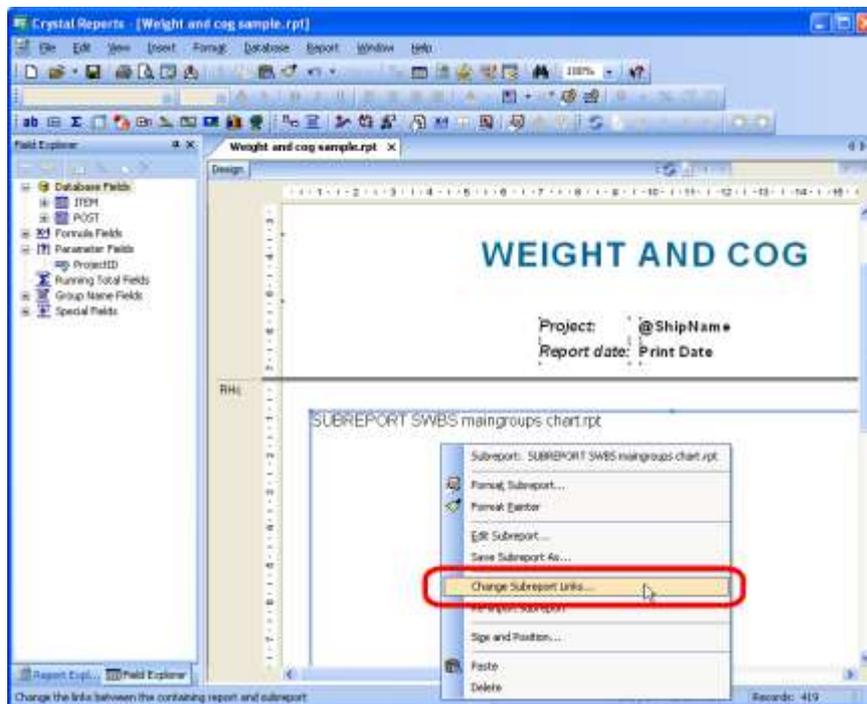


If there are no sub-reports in your report, you can save and close the report.

9.3.4 Change Sub-report Links

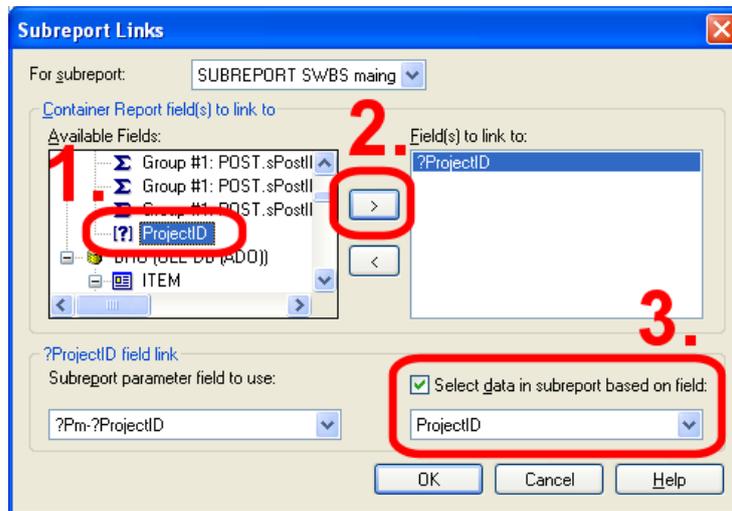
If your report contains sub-reports, you most likely will need to filter the data used in them to include data from the selected project only.

In the Crystal Reports designer, select the **sub-report** and right click on it with the mouse. Choose **Change Subreport Links...** from the right-click menu.



The **Subreport Links** dialog box opens. In the 'Available fields' list, locate and select the **ProjectID** parameter (marked by a question mark icon). Click the

right arrow button. The ProjectID parameter is now moved to the 'Field(s) to link to' list.



Make sure '**Select data in subreport based on field**' is checked, and that the field '**ProjectID**' is selected.

Click **OK** to apply the changes.

Repeat this for all sub-reports included in the report.

The report now contains data from the selected project only. Finally, save the report before closing it.

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