



# OpenGround

Tutorial TSF1

How to Create a Borehole Log Template

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## 2. Introduction

This guide has been developed to assist users in producing a basic borehole log template and will demonstrate the basics of creating the template and using the functions of the Template Studio application.

This will be done in the format of a tutorial, which can be followed along with to produce a replica output while introducing core concepts and ideas.

This guide can be followed from the beginning to create a finalised output or can be used to jump to a specific section along with the accompanying files that have been provided as a 'jumping in' point.

Users are expected to have a basic understanding of how OpenGround is setup and how configurations function within the scope of configuration packs.

Note that this guide has been created with the US market in mind, hence the dimensions and outputs being suited to a US output. Due to this, the [US configuration pack](#) has been used.

However, this guide can be adapted to users across the world if needed.

### 3. Accompanying Files

Note that the following downloads are also available to help users compare the output at the end of each section, or to allow users to skip to the section that they wish to work through.

The example project used has the Project ID of SEQ-BEN-000 and can be found [here](#):

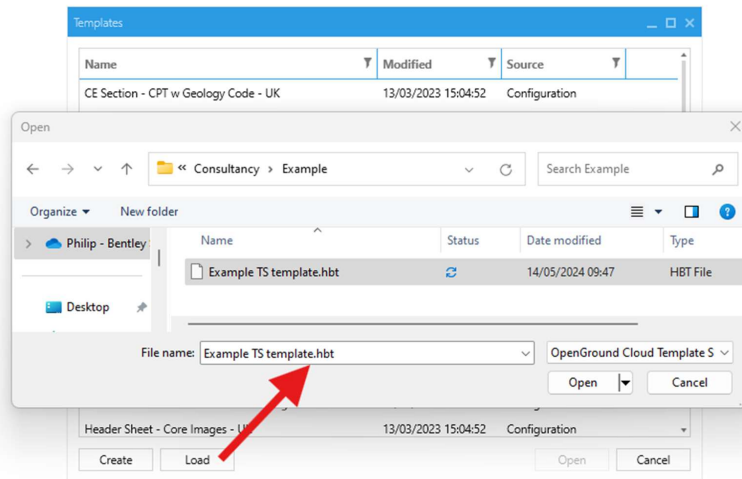
1. SEQ-BEN-000.zip

The templates that can be used along with this guide can be found [here](#):

2. Tutorial 1 - Blank Template After Setup.hbt
3. Tutorial 1 - Template after Header Setup
4. Tutorial 1 - Template after Header and Footer Completion.hbt
5. Tutorial 1 - Template after Depth Columns Setup.hbt
6. Tutorial 1 - Template after Depth Header Format.hbt
7. Tutorial 1 - Final Template.hbt

Templates can [be saved](#) as an external file to allow them to be distributed. To load such a template file (.hbt) click the Load button and browse to the file:

**Commented [SE1]:** Files stored in my TS Basics Tutorial Folder for now



Note that you will need to save the template manually to store it on the system.

## 4. Setting up a Borehole Log Template

At the end of this tutorial, a user should be able to setup a borehole log template so that it includes the relevant sections at the right dimensions and be ready to then start designing individual areas of the template.

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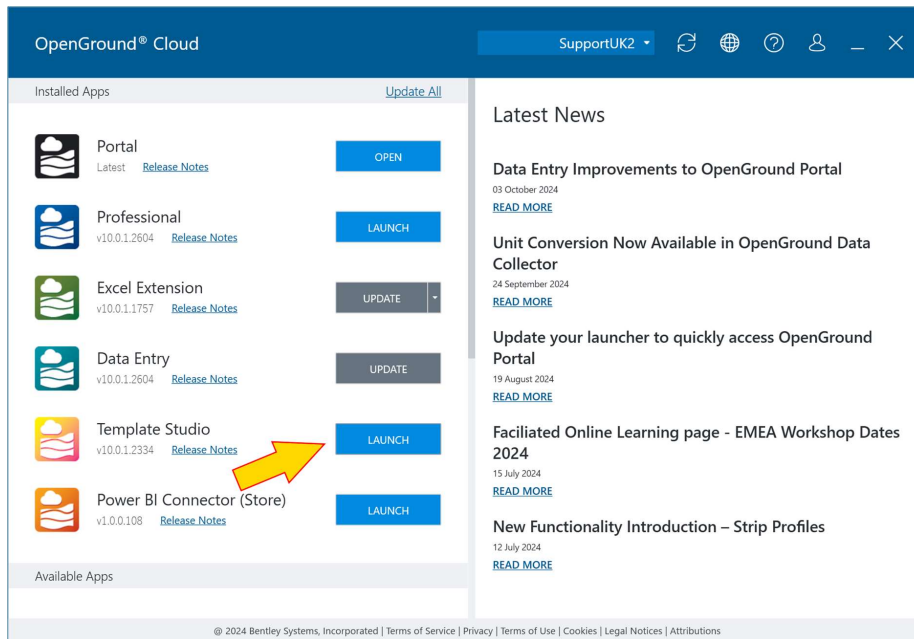
*Please note that the SEQ-BEN-000 example project is used in this tutorial.  
Please see this guide on how to setup [this project](#) if following along and not  
using other data.*

---

**Commented [SE2]:** Need a how to setup my project tutorial

### 3.1 Starting Template Studio

Template Studio is launched from the [OpenGround Launcher](#). Assuming that no updates are available for the application, press the Launch button next to the Template Studio application to launch the software.



### 3.2 Selecting a Project

Template Studio works on the basis that a user will be creating a template with the use of project data, therefore it allows for a project to be selected once it has been launched. Any data that is then previewed within Template Studio will use the live project data to give a preview that is indicative of what the finished template would look like. To select the relevant project, simply find the project in the list, select it by clicking on it, then double click on it or click the Open button to advance to the next window.

Projects

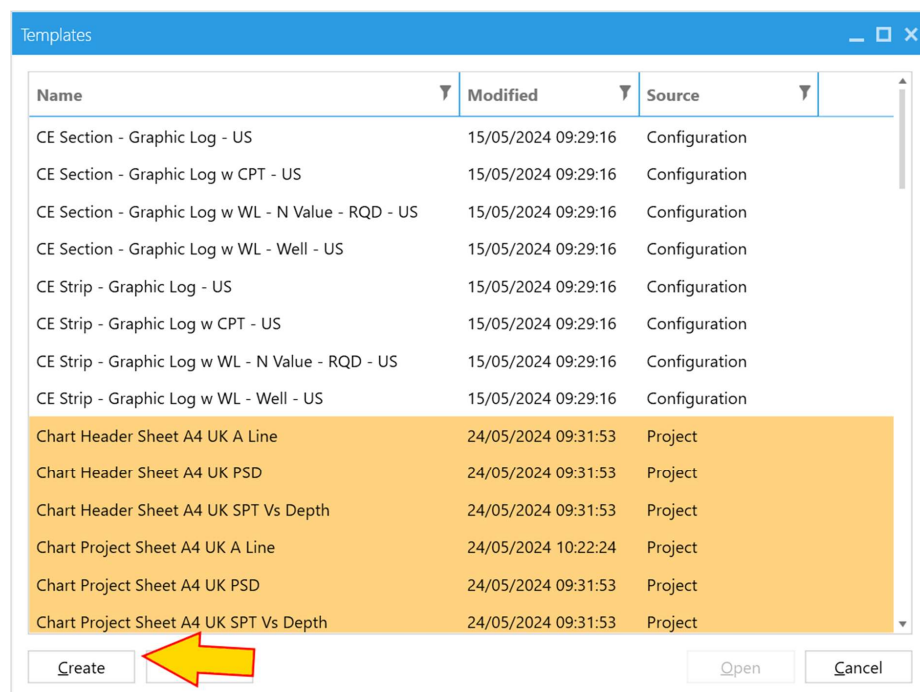
| ID          | Title             | Location       | Engineer         | Client           | Contractor       |
|-------------|-------------------|----------------|------------------|------------------|------------------|
| SEQ-BEN-000 | Hawthorns Red     | Birmingham Ro  | Jeff Jordan      | Aston Homes ar   | Bigger and Digc  |
| SEQ-BEN-001 | Wale Sky          | Autumnvale     | Emily Clarkson   | TerraFirm Soluti | Earth Probes     |
| SEQ-BEN-002 | Harbc             | Amethyst Harbc | Oliver Smith     | GeoConstruct A   | Soil Search Spec |
| SEQ-BEN-003 | Arbor Cres        | Arbor Flats    | Isabella Johnsor | EarthTech Innov  | Terra Test Team  |
| SEQ-BEN-004 | Aqua Vista Aurc   | Aqua Vista     | Ethan Taylor     | SubSurface Dyn   | Ground Info Grc  |
| SEQ-BEN-005 | Alphacrest Nebi   | Alphacrest     | Sophia Brown     | RockSolid Engin  | Dirt Detectives  |
| SEQ-BEN-006 | Angel's Haven S   | Angel's Haven  | Liam Davis       | GroundPioneer    | Geostudy Crew    |
| SEQ-BEN-007 | Apex Grove Celr   | Apex Grove     | Ava Wilson       | StrataPro Consu  | Solid Survey Sol |
| SEQ-BEN-008 | Aetherwind Hor    | Aetherwind     | Noah Miller      | CoreDepth Strat  | Land Insight Exp |
| SEQ-BEN-009 | Arcane Falls Pini | Arcane Falls   | Mia Moore        | SoilSecure Desig | Rock Research F  |
| SEQ-BEN-010 | Ashwood Bluff     | Ashwood Bluff  | Jacob White      | Bedrock Builde   | Subsurface Anal  |
| SEQ-BEN-011 | Azure Meadow      | Azure Meadow   | Amelia Harris    | GeoNex Solutic   | Terra Probe      |
| SEQ-BEN-012 | Albatross Bay I   | Albatross Bay  | William Martin   | TerraLogic Surv  | Earth Eyes       |
| SEQ-BEN-013 | Ascot Ridge Ze    | Ascot Ridge    | Harper Thomps    | StratumWorks I   | Ground Grasp     |

Open

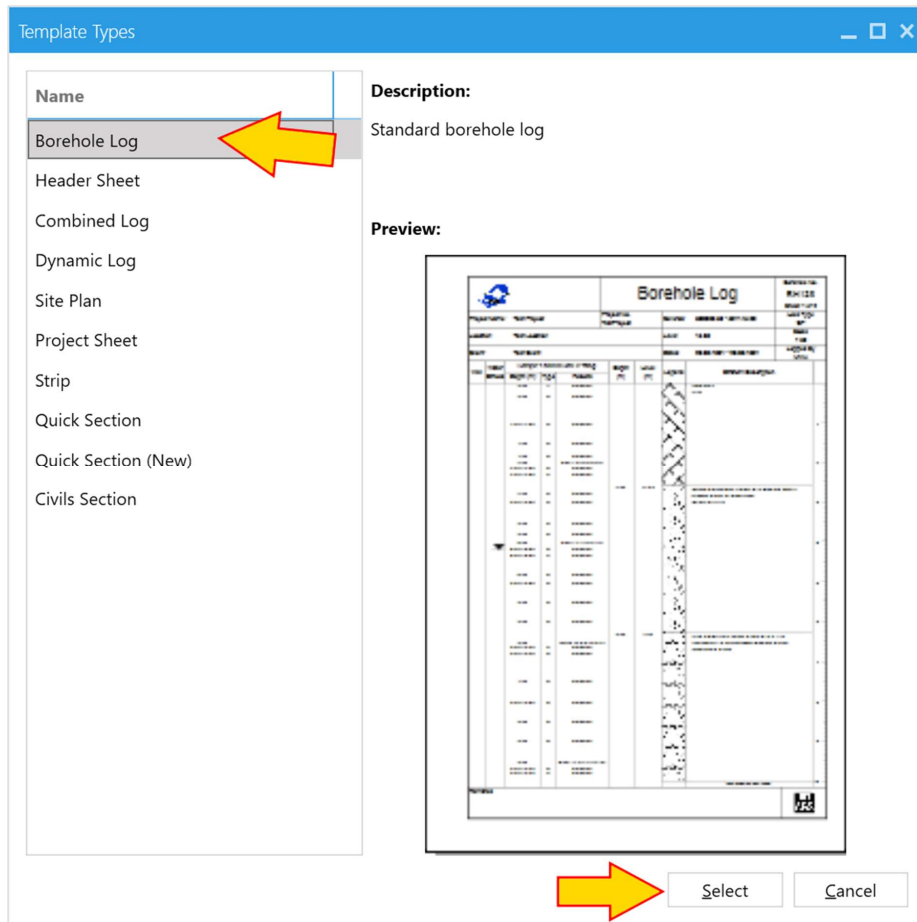
Cancel

### 3.3 Creating a Template

The [next window](#) shows a list of available templates within your project. This will include templates that are stored at configuration pack level, and any that are stored at project level (these will be in orange). In this tutorial, a new template will be created. Press the Create button to proceed.



The [Template Types](#) dialogue will then appear. This dialogue allows a user to select the type of template that will be created. In this instance a [Borehole Log template](#) will be created. Select The Borehole Log option and then select the Select button to continue.



The template has now been created. In the next step users will be shown how to configure the templates' properties and dimensions.

### 3.4 Template Setup

The [Template Setup dialogue](#) is the window that allows for the template dimensions to be set. Note that Template Studio primarily works in millimeters when designing templates. This is to allow for greater precision to be used for placing items on the template when using the grids. Using millimeters does not prevent US paper sizes from being used and being output to.

In this tutorial, a template will be created with the following properties;

1. Paper Size – Letter
2. Orientation – Portrait
3. Use Master Font – Not Selected

---

Master fonts are used to force all fonts in a template to use the same font. Later in the tutorial, different fonts will be used so this setting should be left not enabled for this guide.

---

4. Grid Size – Small

---

Grid Sizes are set as Large (4mm x 4mm), Medium (2mm x 2mm) and Small (1mm x 1mm). For the majority of templates we recommend that a small grid is used to allow for greater precision when placing items on the template.

---

5. Measurement Units – Metric

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This is the measurement units for designing the template. When logs are produced, they will use the measuring system that is setup within the configuration pack. Therefore North American users will still see their outputs in feet and inches rather than Metric, even with this item set as Metric.

---

6. [Use True Font Sizes](#) – Enabled

---

This option forces all library items to use the correct True Font scaling, similar to how Microsoft Word and other applications calculate font sizes. Older templates may have this setting unchecked and some library items may appear at different sizes. For new users we recommend leaving this item enabled for all new templates.

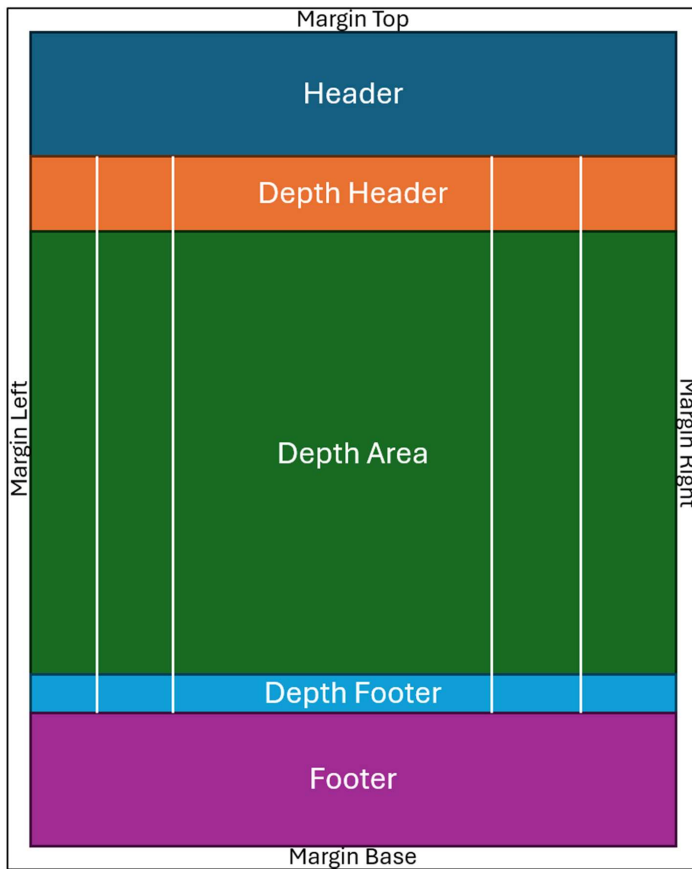
---

7. Margins – 10mm each side
8. [Follow on Mode](#) – Not Selected

---

This is for advanced users who wish to use a different header and footer size on the front page of a template compared to following pages. This is not covered by this part of the tutorial.

---



9. Header – 20mm
10. Footer – 10mm
11. Depth Header – 10mm
12. Depth Footer – 3mm

---

*This is where any unused space will be used up with the template. Commonly known as the 'gutter' in some areas, this can be used to put information on page transitions or to ensure that there is enough space for certain items to plot.*

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13. Plot Area – 216mm
14. Scale – 42.33

---

*Note that in this example, the Scale option is selected. This function works in a way that the selected item gets autocalculated based off of the other*

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selections. For example, in this case the plot area and Units per Page are to be entered with the scale then being autocalculated.

15. Units Per Page – 30.00
16. [Units Per Page Expression](#) – Blank

The screenshot shows the 'Template Setup' dialog box with the following settings:

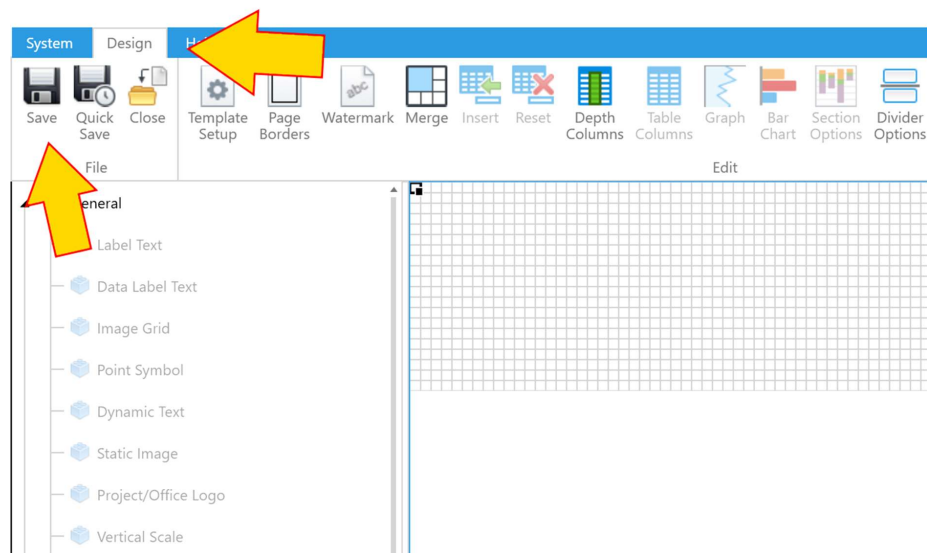
- General**
  - Paper Size: Letter (11" x 8.5")
  - Orientation: Portrait
  - ☐ Use Master Font
  - Grid Size: Small
  - Measurement Units: Metric (Millimetres/Metres)
  - ☒ Use true font sizes
- Margins**
  - Top: 10 mm
  - Bottom: 10 mm
  - Left: 10 mm
  - Right: 10 mm
  - Unused space will be allocated to bottom margin.
  - ☐ Follow-on Mode
- Sections**
  - Header: 20 mm
  - Footer: 10 mm
  - Depth Header: 10 mm
  - Depth Footer: 3 mm
- Depth Area**
  - ☐ Plot Area
  - ☒ Scale (1:n)
  - ☐ Units per Page
  - Plot Area value: 216 mm
  - Scale (1:n) value: 42.33
  - Units per Page value: 30.00
  - Units per Page Expression: (empty text box)
  - 279mm of 279mm used

Buttons: OK, Cancel

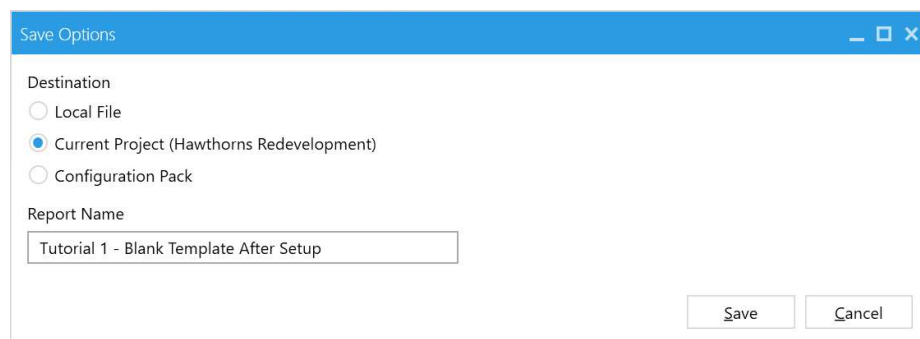
Once all the items are set as above. Select the OK button to close the dialogue.

### 3.5 Saving the Template

As is the case when designing anything, it is always best practice to save the work being done at regular intervals to ensure that no work is lost. To save a template, select the Design tab on the ribbon, then select the Save option.

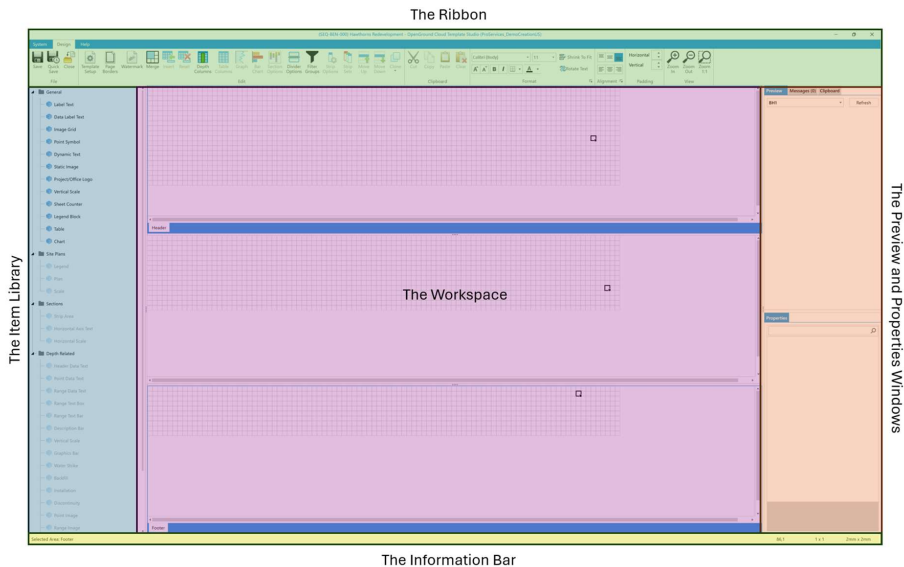


The Save Options dialogue will then appear. Within here, it is possible to save the template either to a local file (This will be a HBT format, the same as in the example files), or you can save the template into either the project or the configuration pack. In this tutorial, it is recommended to save into the project so that there is a copy to be loaded if needed, which does not appear in all other projects in the configuration.



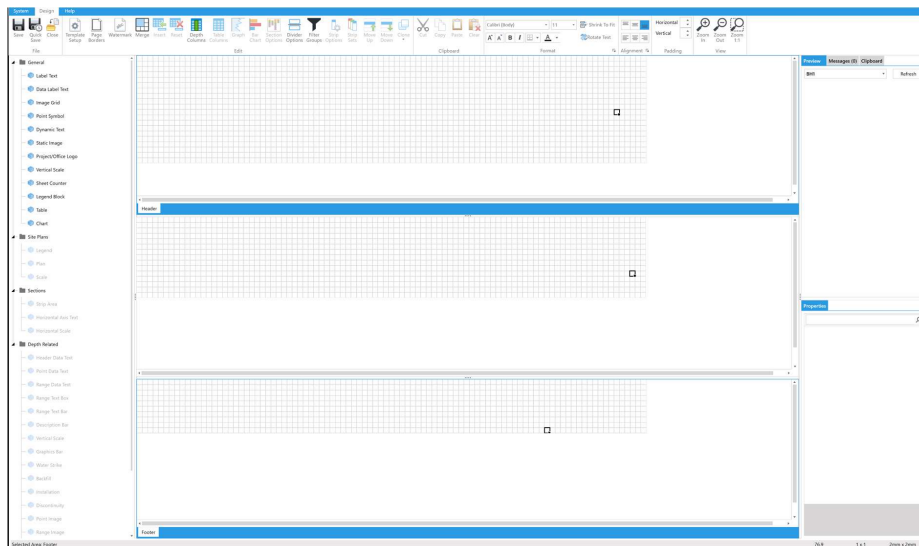
### 3.6 Saving the Template

At this stage, it is best practice to move parts of the Template Studio interface around to ensure the best experience when designing the template.

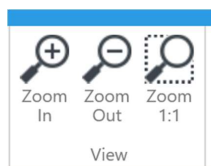


1. [The Ribbon](#) – This is where all of the options for formatting other features are available. This will be used a lot in this tutorial to perform actions on cells and edit items as needed.
2. The Item Library - This is where all of the items that show information on a log template are stored and can be used. These pull data out from the current project into the borehole log. Items that are not available for this template type are greyed out.
3. The Workspace – This is where the template is actually designed and is made up of 1 or more grids. Each cell in the grid is the size of the grid setup in the Template Setup dialogue. In the borehole log template, there are 3 grids – 1 for the header area, 1 for the footer area and 1 for the depth area in the middle. Cells in the Header and Footer areas can be merged together to provide space for a Library Item to be placed. In this tutorial a small grid size has been used, so the cells will be 1mm x 1mm in size.
4. [The Preview and Properties Windows](#) – This area is to provide context for the currently selected cell or to show a preview of the template.
5. The Information Bar – This shows the currently selected area of the workspace on the bottom left hand side of the application, along with the currently selected cell location, grid size and amount of cells on the bottom right.

Each part of the application can be resized by dragging the outer borders to the intended location.



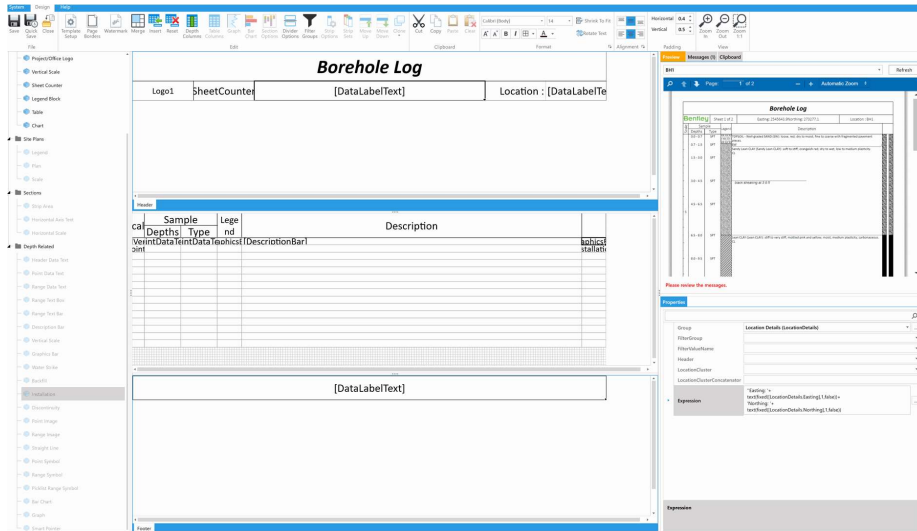
Each grid in the workspace can also be zoomed into and out of by either holding the Ctrl button and scrolling up and down on the mouse wheel, or by pressing the relevant buttons on the ribbon.



### 3.7 Dealing with Issues

When previewing a log template, if an error is present, or the template can not load, a message will appear in the Messages window. The Messages window may appear behind the Preview window so the Messages tab may need to be selected.

Double click on any message to have the cursor focus on the problematic item.



### 3.8 Merging Cells and Inserting Static Text

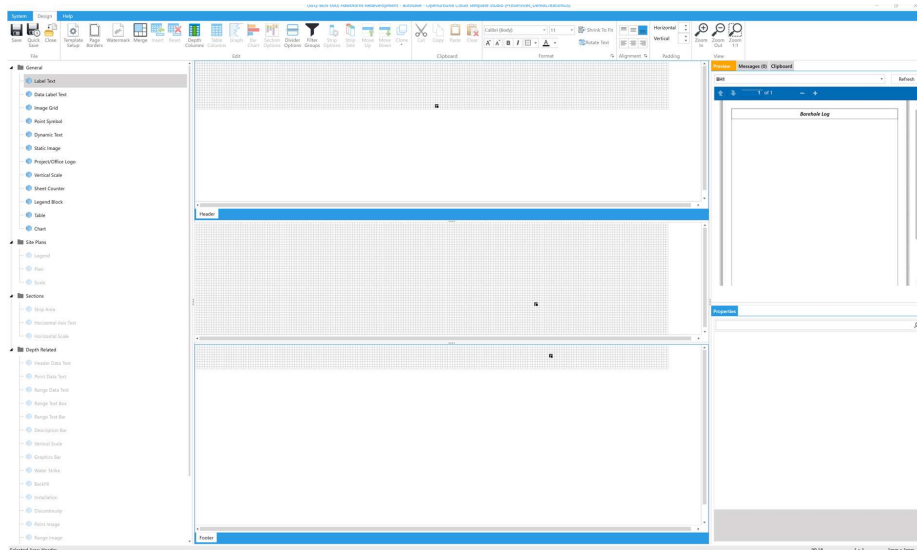
---

*Note that this is the point that the example file 'Tutorial 1 – Blank Template After Setup.hbt' has been created. If starting the tutorial from this point, this file can be used to start from here.*

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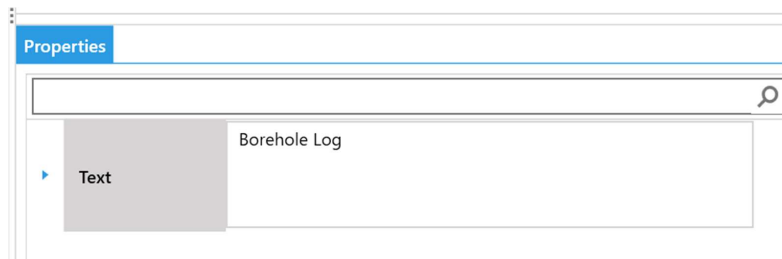
Now that the template has been created and setup in the correct dimensions, it is now possible to start adding items into the template.

In this first example, the top 12 rows of the header grid will be merged together to put a space that the title of the log will be able to go into. Select the very top left cell, click and hold, and drag the cursor all the way to the far right hand side of the grid with 12 rows selected (195mm x 12mm). The cell counter in the bottom right of the information bar can help count the cells. Once done, select the design section in the ribbon, then the Merge Option from the ribbon (or press F4) to [merge the cells](#) together.

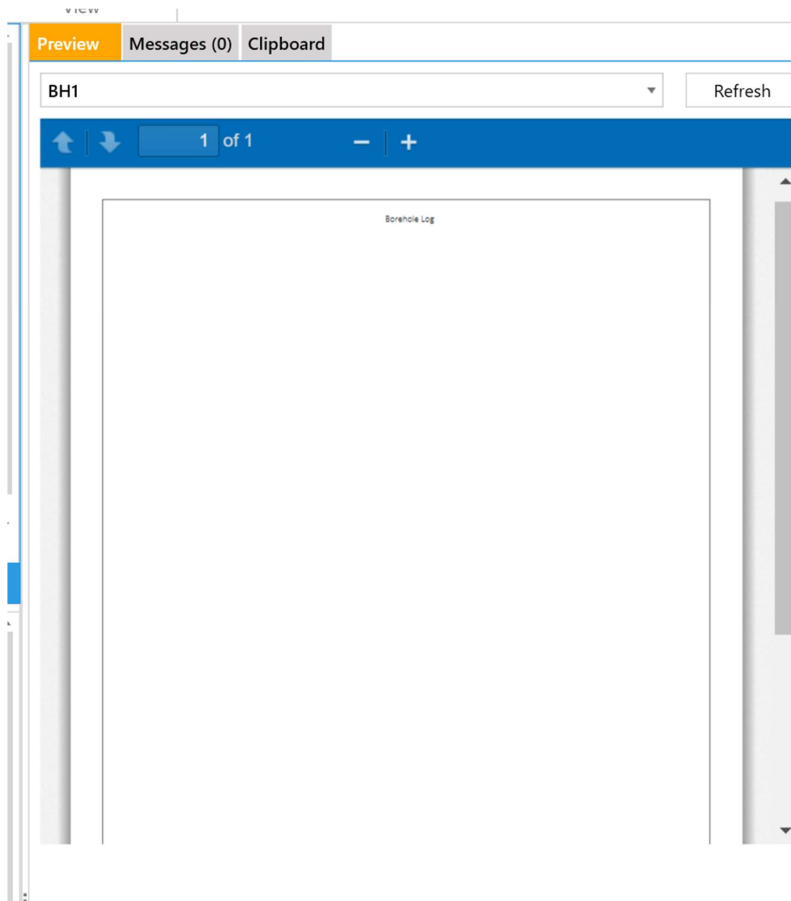


Then double click on the [Label Text item](#) to insert this into the area that has just been merged together. This will put the Label Text in that space and new properties (on the bottom right hand side of the screen) will become available in the properties window.

By default, the text will simply say 'Text', this can be changed to whatever static text is needed. In this case, enter the text as 'Borehole Log'.

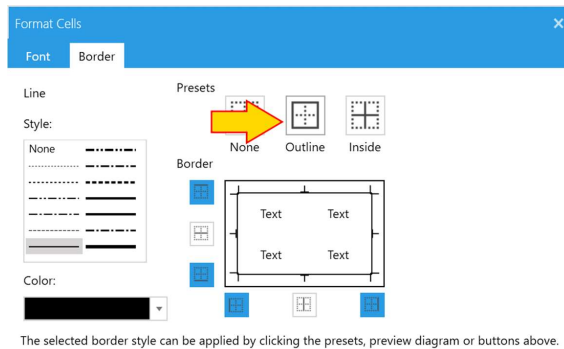


Press the Refresh button in the Template Preview window to see how this will appear.

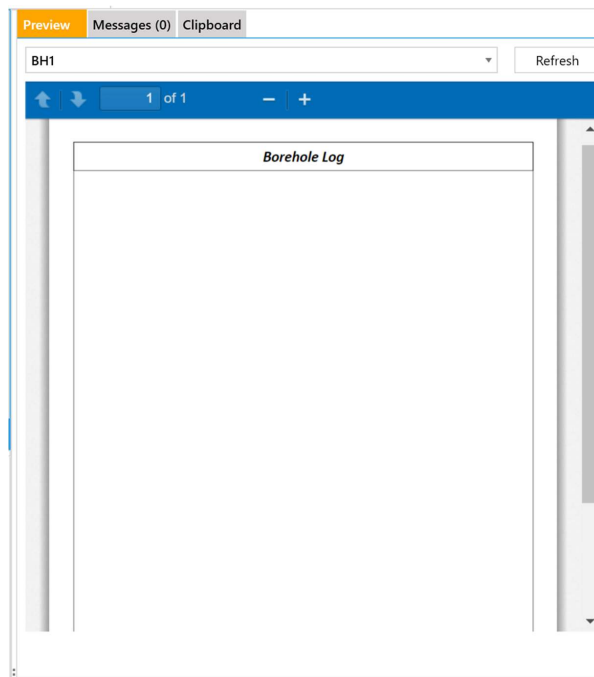


The text will appear but will be small and have no extra styling applied. Firstly, select the merged area in the header grid again, then select the [text font size option in the ribbon](#) and change the value from the default of 11 to size 24 and select the options for Bold and Italic.

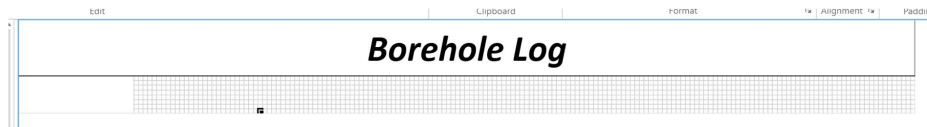




Press the Refresh button in the Template Preview window to see how this will appear.



Next, repeat the above process to select the cell 0,12 and highlight, then merge an area 25mmx8mm to give another merged area at the top of the template. The header area in The Workspace should then look like this.



Merge another 25x8mm area next to this, followed by another that is 95x8mm, and then another 2 which are 25x8mm. This should make the header area look this this.



### 3.9 Inserting a Static Logo

---

*Note that this is the point that the example file 'Tutorial 1 – Template After Header Setup.hbt' has been created. If starting the tutorial from this point, this file can be used to start from here.*

---

A [logo](#) can be used to show a companies details on a borehole log. Template Studio allows for logos to be inserted.

Select the left hand merged area, then double click on the Static Image library item. This will put a label in The Workspace Header area stating the image that will be shown. In this case, this will be the default logo labelled Logo1. If the logo has not been changed in the configuration pack, this will be the default Bentley logo. Previewing this will give the following output.



---

*Note that there are other ways of selecting a logo in OpenGround. In this instance a simple logo using the Bentley example is used. This can be changed in the configuration pack and then the template changed to point at this logo instead. Alternatively, a project or office logo can be used that will pull the logo from the settings there instead.*

---

### 3.10 Inserting a Sheet Counter

[A sheet counter](#) can be inserted to allow for users to view a borehole log and find out which part of the log is being viewed.

Select the next unoccupied merged area next to the logo that was just inserted and then then double click on the Sheet Counter library item. This will put a [SheetCounter] item in the merged area. Change the font size of this merged area to size 14 then note the properties that are available in the properties window. Change this to have a prefix of 'Page ' (note the space at the end of page) and a Separator of ' – ' (again noting the spaces at the start and end of the dash). Preview this and this should be the outcome.



### 3.11 Inserting an Aligned Label Text

Library items can be aligned both vertically and horizontally to allow for data to appear in different places within a merged area.

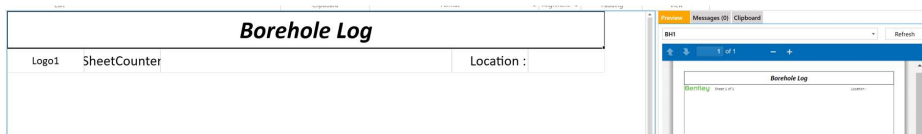
In the 2<sup>nd</sup> to right hand side at the following location, select this location and then insert another label text as done previously.



This time, set the font size to 14 and the properties to 'Location : '. This text will be used as a label for the adjacent data label text that will be covered in the next part of this tutorial. Once done, select the alignment option for right hand aligned.



This will make it appear as if this item, and the next item are part of one string.



### 3.12 Inserting a Data Label Text Item

Template Studio allows for users to pull data out from the current project into the borehole log. The simplest way of doing this is putting data as text into an area on the template.

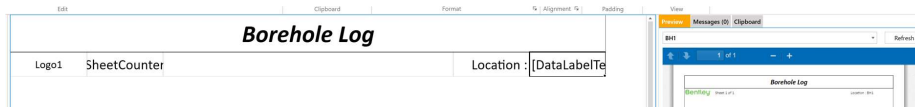
Select the furthest right hand side empty area and then double click on the Data Label Text option. This will put in a [\[DataLabelText\]](#) label in the Header area of the Workspace. Set this merged area to be left hand aligned and size 14.

In the properties window, note that a number of settings have become available. For this tutorial section, focus on the Group and Header. In this example we are selecting the Group to be Location Details and the Header to be Location ID.

- Group – Location Details
- Header – Location ID

This means that the template will pull out the Location ID from the current project and selected location in the drop down when previewing.

The other properties for the Data Label Text can be used to filter or combine data together. Expressions will be shown next but the rest of the items can be ignored for now.



### 3.13 Using an Expression in a Data Label Text Item

[Expressions](#) are used to fully customise the output of the log templates to combine information together or in different formats. This simple example will pull out the easting and northing from the location and combine this together into one readable string.

Select the remaining blank merged area in the Header area and double click on the Data Label Text item, making this a font size of 14. In the properties dialogue, set the Group to be Location Details.

This time, the Expression option will be used instead of selecting a Header. The expression will query the information entered to pull out a result. Enter the following expression;

```
'Easting: '+text(fixed([LocationDetails.Easting],1,false))+ 'Northing: '+text(fixed([LocationDetails.Northing],1,false))
```

This expression may seem complicated so lets break this down into its components;

```
'Easting: '+text(fixed([LocationDetails.Easting],1,false))+ 'Northing: '+text(fixed([LocationDetails.Northing],1,false))
```

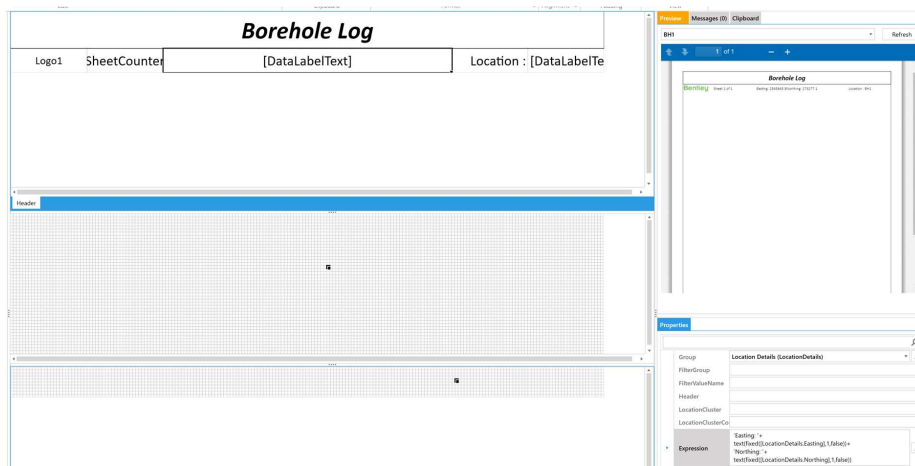
The black parts, simply the plus symbol, just joins different data together into one string.

The red parts are simply plain text. This is separated from other things by being surrounded with single quotes.

The green parts are simply a function that converts a number into a text string. Template Studio requires values to be text when joining them together (otherwise it would try and do a mathematical addition of a text item and a number).

The blue parts are another Template Studio function that makes the data appear to a certain format. In this case, it is one decimal place and not including 1000 separators (ie making data appear as 1000 or 1,000).

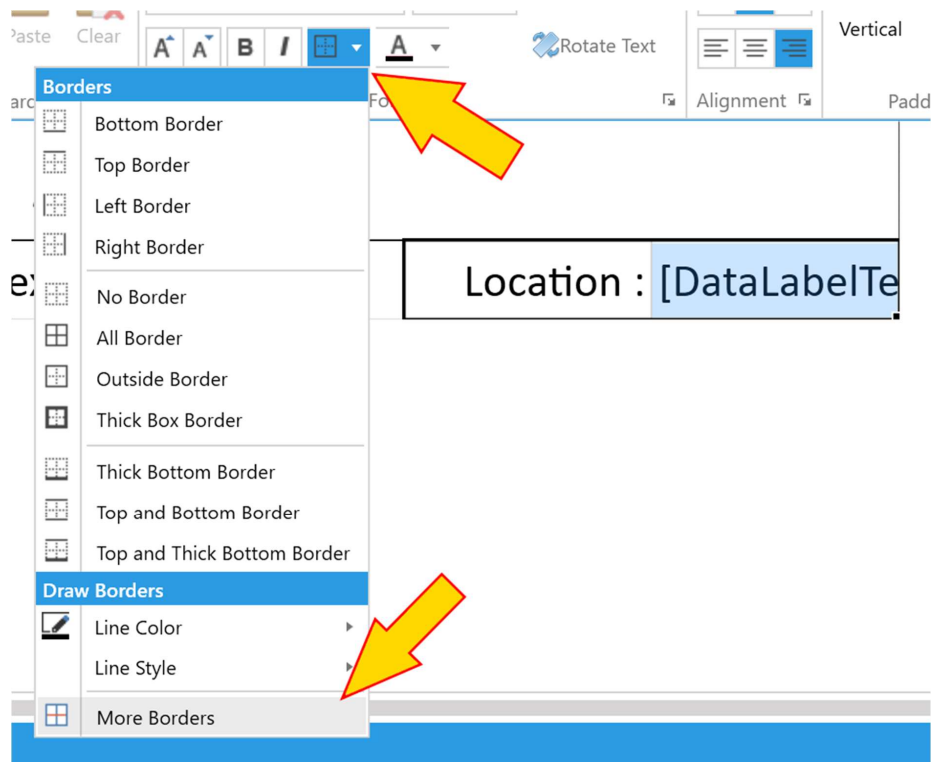
Finally, the purple part is a table and field from the database that is available within the project. In this case, this is the Easting and Northing field from the Location Details group.



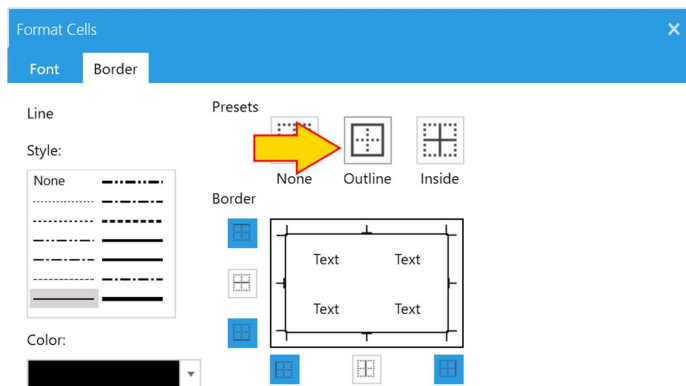
### 3.14 Formatting Multiple Areas at Once

Template Studio allows for users to update the format of multiple cells at once.

Select the right hand two merged areas containing the Location Label Text and the Location ID Data Label Text. Select the Borders option and then More Borders.



Select the Outline option and then select OK.

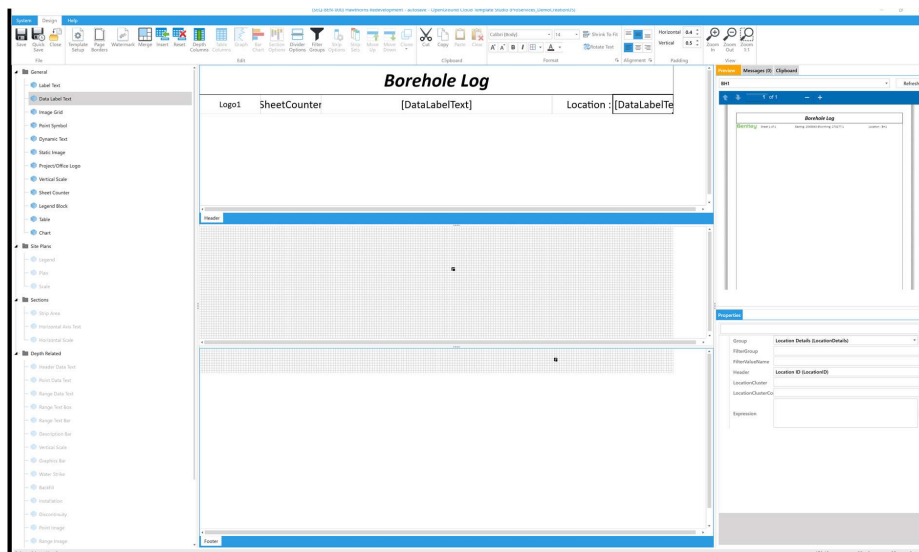


The selected border style can be applied by clicking the presets, preview diagram or buttons above.



Select the 3 remaining unformatted cells and then select the same Borders option, then more borders.

This time, select the option for Outline and Inside, then select OK. This will apply a border inside of each area combination and on the outside.



Previewing this template will now show the header as a finalised and formatted output.

PreviewMessages (0)Clipboard

BH1

Refresh

1 of 1

-

+

Borehole Log

Bentley

Sheet 1 of 1

Easting: 2545643.9Northing: 273277.1

Location : BH1

### 3.15 Adding an Advanced Expression into the Footer Area

The Footer area works the same way as the Header area in that you can select cells, merge them and enter library items in the spaces created. In this example, we will merge all of the cells in the footer area into one merged area and then put in an advanced expression.

Select all of the cells in the footer area by selecting the top left hand cell and then dragging across all of the cells to the bottom right hand cell (195mm x 10mm), then press the Merge button (or press F4), then double click on the Data Label Text library item and set the font size to be 14 and set an outline border (ensure that the selected area is set as Footer in the information bar).

This time, an advanced expression will be used to pull in different information. Copy and paste the following information into the merged area and set the Group to be Location Details.

'Equipment used : '+joinDistinct([Aggregate.DepthRelatedExploratoryInformation.PlantUsed], 'F2', '+')+'\n'+ 'Template Name: '+[Paging.TemplateName]+' Log Produced: '+text(now(),'MM-dd-yyyy hh:mm')

This expression does a few extra things.

'Equipment used : '+joinDistinct([Aggregate.DepthRelatedExploratoryInformation.PlantUsed], 'F2', '+')+'\n'+ 'Template Name: '+[Paging.TemplateName]+' Log Produced: '+text(now(),'MM-dd-yyyy hh:mm')

The part in **purple** is performing what is called an aggregate. This means that it is pulling data from the child group of the one selected. In this case, the group was set to be Location Details and we are pulling out all of the equipment used across that location. In the example data, there is only one equipment used, but if there is multiple, it will be listed and separated by a plus symbol. The F2 will force any numeric data into 2 decimal places if this is applicable.

The part in **green** will force a new line in the string, this time separating the equipment line with the template information line.

The part in **red** shows an example of a run time function. A run time function will pull out some data relevant to the current template or its state. In this case we are bringing out the Template Name. In my example below, the template has not been saved yet, hence the Unsaved document label.

The part in **blue** shows an example of another function, this time the now function. This brings out the current date and time which is then being formatted into a required format.

|  |
|--|
| Equipment used : CME75   |
| Template Name: Unsaved document Log Produced: 11-12-2024 04:22 |

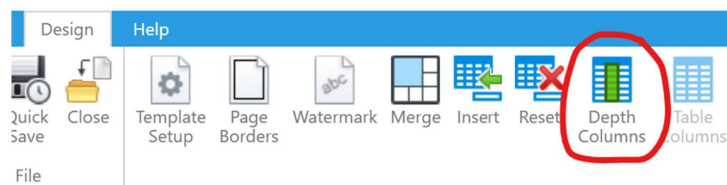
### 3.16 Setting up the Depth Area

---

*Note that this is the point that the example file 'Tutorial 1 – Template after Header and Footer Completion.hbt' has been created. If starting the tutorial from this point, this file can be used to start from here.*

---

The middle section of the Workspace works differently to the other parts and is mainly handled by the [Depth Columns](#) window, the button for this is found in the ribbon. In this section, we will setup the middle part of the template and include a number of columns which can then be used to add more library items to.



Select the Depth Columns button to show the Depth Columns window. Press the Add button 5 times to add 5 columns to the log template.

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

2

1

10mm

2mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Column

Column

Column

Column

Column

Add

Delete

Name

Header

Split Item Placement

Width

Group

Order

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Section centre column

Hide column if empty (Quick section only)

Hide column condition (Quick section only)

Add

Borders

Footer

OK

Cancel

50 of 195 columns used.

Select the first column in the list, the settings in the right hand side of the window will then become active. This column will become the scale bar column.

Change the name to be Scale Bar.

---

*The name of the column does not effect anything with how the template functions and is solely presented to help a user differentiate between the different columns on their log.*

---

Change the Header to be Scale.

---

*This is the header that will appear in the Depth Header part of the column.*

---

Change the width to be 5mm and check the option for Vertical Header. This will make the column thinner and make the text appear sideways in the Depth Header.

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

2

1

10mm

2mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Column

Column

Column

Column

Name

Scale Bar

Header

Scale

Split Item Placement

First page only

Width

10

10mm

Group

1

Order

1

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Add

Delete

Add

Borders

Footer

50 of 195 columns used.

OK

Cancel

Select the second column in the list and change the name to be Sample, then set the Header to be Sample too. Then set the Width to be 30mm. This time however, select the other Add button (highlighted in the image below) twice to add 2 sub columns.

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

2

1

10mm

2mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Column

Column

Column

Name

Sample

Header

Sample

Split Item Placement

First page only

Width

30

30mm

☐ Group

1

Order

1

☐ Expand to fill available space

☐ Vertical header

☐ Distinct sequential records

☐ Display divider border for combined logs

☐ Strip set column

Add

Delete

Add

Borders

Footer

65 of 195 columns used.

OK

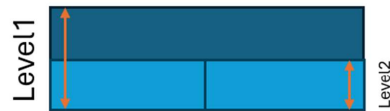
Cancel

This will enable the 2<sup>nd</sup> level of header in the top left hand corner of the window. Set this to be 5mm.

*The levels work as sections of the previous level. So if level 1 is 10mm and level 2 is 5mm. This means that any sub columns of the first column would*

take up half the space available. This also works across the whole template rather than individual columns so all subcolumns will need to be the same height.

---



Select the 1<sup>st</sup> Sub Column and set the Name to be Depths, the Header to be Depths and the width to be 15mm.

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

5

1

10mm

5mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Depths

Column

Column

Column

Column

Name

Depths

Header

Depths

Split Item Placement

First page only

Width

15

15mm

Group

1

Order

1

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Add

Delete

Add

Borders

Footer

60 of 195 columns used.

OK

Cancel

Select the 2<sup>nd</sup> subcolumn, set the Name to be Type, the Header to be Type and the width to be 15mm.

OPENGROUND | Tutorial – TSF1 – How to Create a Borehole Log Template

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

5

1

10mm

5mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Depths

Type

Column

Column

Column

Name

Type

Header

Type

Split Item Placement

First page only

Width

15

15mm

Group

1

Order

1

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Add

Delete

Add

Borders

Footer

70 of 195 columns used.

OK

Cancel

Select the next column and set the Name to be Legend, the Header to be Legend and the width to be 10mm.

OPENGROUND | Tutorial – TSF1 – How to Create a Borehole Log Template

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

5

1

10mm

5mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Depths

Type

Legend

Column

Column

Name

Legend

Header

Legend

Split Item Placement

First page only

Width

10

10mm

☐ Group

1

Order

1

☐ Expand to fill available space
☐ Vertical header
☐ Distinct sequential records
☐ Display divider border for combined logs
☐ Strip set column

Add

Delete

Add

Borders

Footer

65 of 195 columns used.

OK

Cancel

Select the next column and set the Name to be Description, the Header to be Description and then select the 'Expand to fill available space' option. This will automatically use up all of the remaining width on the template.

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

5

1

10mm

5mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Depths

Type

Legend

Description

Column

Name

Description

Header

Description

Split Item Placement

First page only

Width

10

10mm

Group

1

Order

1

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Add

Delete

Add

Borders

Footer

55 of 195 columns used.

OK

Cancel

Select the final column, set the Name to be Monitoring, ensure that the Header is blank and that the width is set to 10mm.

OPENGROUND | Tutorial – TSF1 – How to Create a Borehole Log Template

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

5

1

10mm

5mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Depths

Type

Legend

Description

Monitoring

Name

Monitoring

Header

Split Item Placement

First page only

Width

10

10mm

Group

1

Order

1

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Add

Delete

Add

Borders

Footer

55 of 195 columns used.

OK

Cancel

Select OK to save the changes and the middle part of the template should update to show the changes made.

Preview the template to see how this currently looks.

OPENGROUND | Tutorial – TSF1 – How to Create a Borehole Log Template

PreviewMessages (0)Clipboard

BH1

Refre

1 of 1

-

+

Bentley

Sheet 1 of 1

Easting: 2545643.9

Northing: 273277.1

Location : BH1

|  | Sample |      |        |             |  |
|--|--------|------|--------|-------------|--|
|  | Depth  | Type | Legend | Description |  |
|  |        |      |        |             |  |

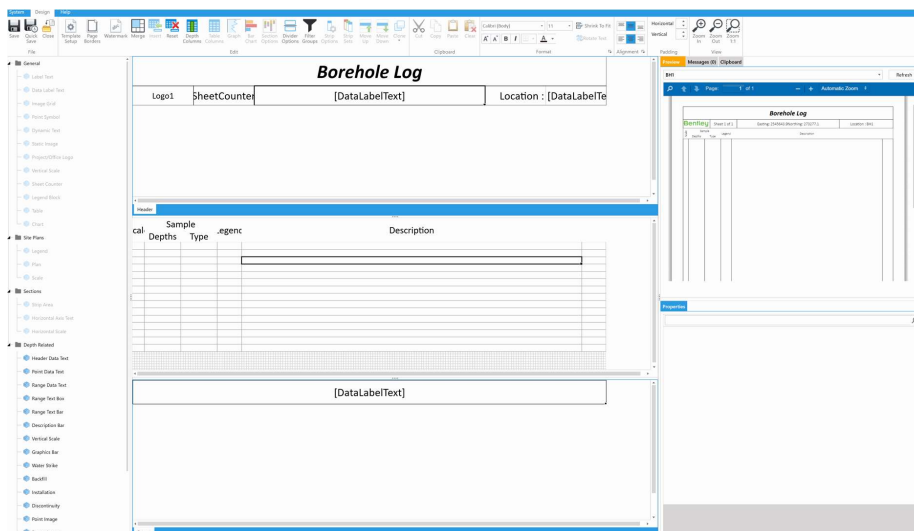
OPENGROUND | Tutorial – TSF1 – How to Create a Borehole Log Template

### 3.17 Formatting the Depth Header Area

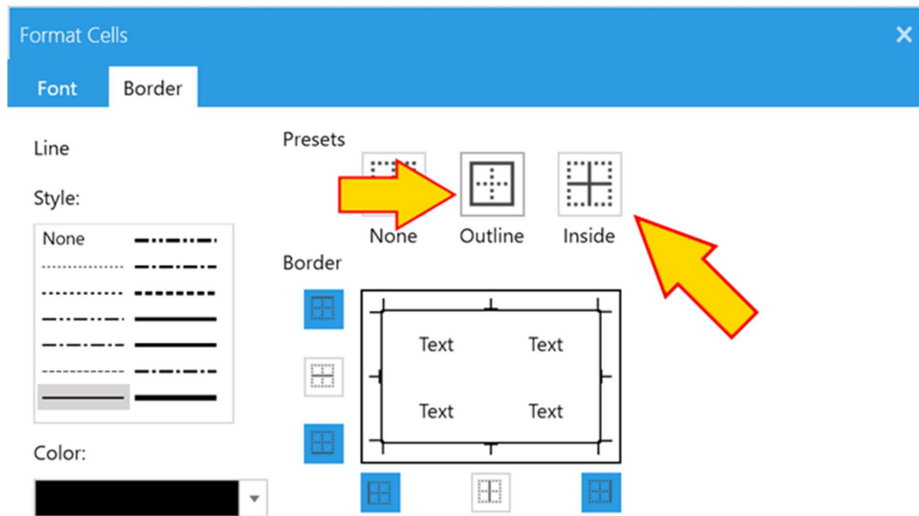
*Note that this is the point that the example file "Tutorial 1 – Template after Depth Columns Setup.hbt" has been created. If starting the tutorial from this point, this file can be used to start from here.*

The Depth Header area, or the top of the columns, works quite similarly to how the grids work within the Header and Footer areas, with the difference being that it isn't possible to change the merged areas (this is handled by the Depth Columns dialogue). In this tutorial, formatting, such as editing the text sizes and the header borders will be changed.

Select the scale column header which is the first header column and then drag across all of the other column headers, then set the font size to be size 14.



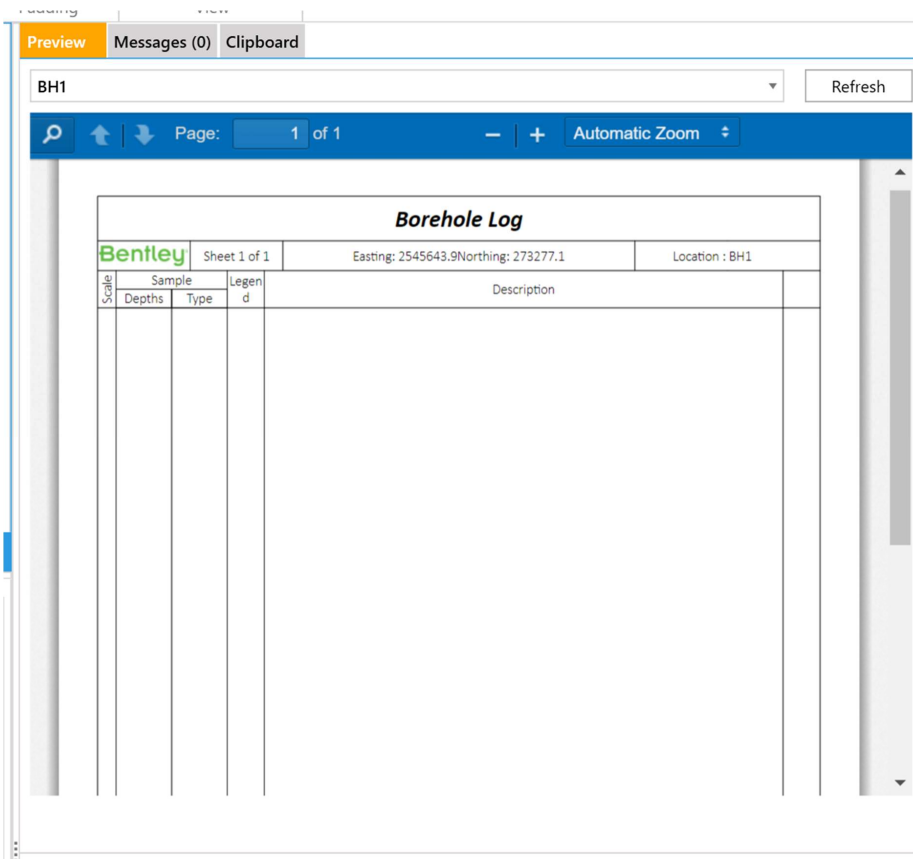
Next, select the borders button on the ribbon and then select more borders, then select inside and outline borders and click OK.



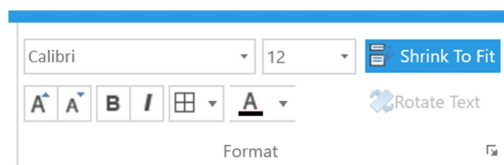
The selected border style can be applied by clicking the presets, preview diagram or buttons above.



Refresh the template and it should be noticeable that the Legend column wraps around 2 lines.



This can be fixed by selecting the Legend column header and then setting the font size to be 12.



This will shrink the text to make sure that it fits on one line.

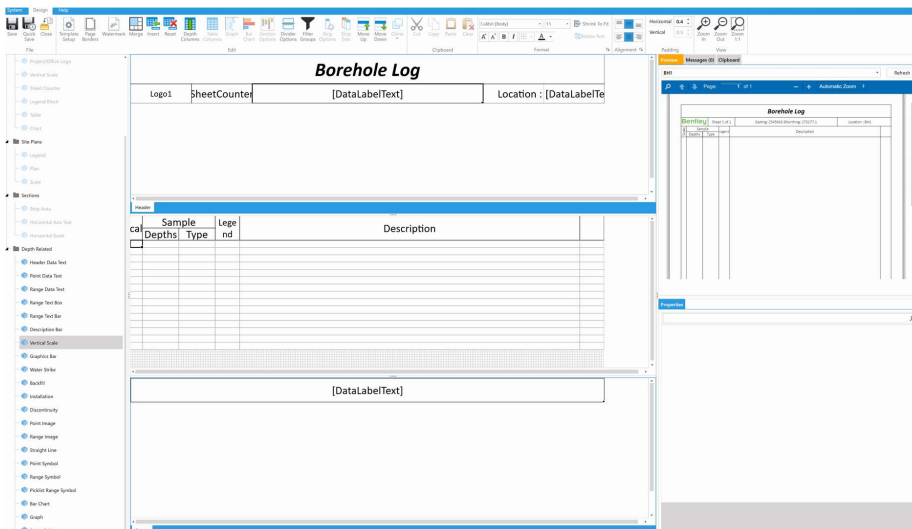


### 3.18 Inserting a Scale Bar

Note that this is the point that the example file 'Tutorial 1 – Template after Depth Header Format.hbt' has been created. If starting the tutorial from this point, this file can be used to start from here.

The depth area of the template works slightly differently to the rest of the parts of the workspace, although workflows such as formatting are similar. In this case, a scale bar will be placed on the template.

Click on the top empty cell in the depth area under the Scale header, then double click on the [Vertical Scale Bar library item](#) to insert this. This will update the workspace to show an item has been inserted and the Properties window will update with further settings.



The Vertical Scale Bar works slightly differently to most other library items in that the ability to control the font used and the font size is controlled in the properties dialogue instead.

Set the Font to be Calibri and the Font Size to be 12 and change the following properties (settings not changed aren't listed);

- Decimal Places – 0
- Increment – 5
- Long Marker Length – 1
- Middle Marker Length - 0.5
- Short Marker Length – 0
- Scale Alignment – Left
- Number Alignment – Centre
- ShowLastNumber – True

After setting these settings, preview the template.



### 3.19 Inserting a Point Symbol

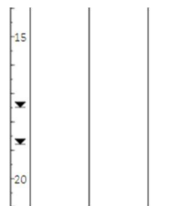
It is possible to add more than one item in a depth column. In this case, a water strike will be plotted in the scale column.

Select the next empty cell in the scale column, which should be the 2<sup>nd</sup> row down, then double click on the [Point Symbol Library Item](#). The workspace should update to show a point symbol item in the relevant space and new options appear in the Properties window.

Change the following properties (settings not changed aren't listed);

- Group – Water Levels and Boring Drilling Progress By Time
- Depth – Depth water value
- Symbol – Water Strike Filled
- Scale X – 50
- Scale Y – 50

After setting these settings, preview the log template.



### 3.20 Inserting a Point Data Text

One of the most common workflows for showing data on a log is to show it in text format. There are 2 main ways of doing this, either through plotting text at a certain point, or across a range of depths. In this tutorial, only point data text will be used.

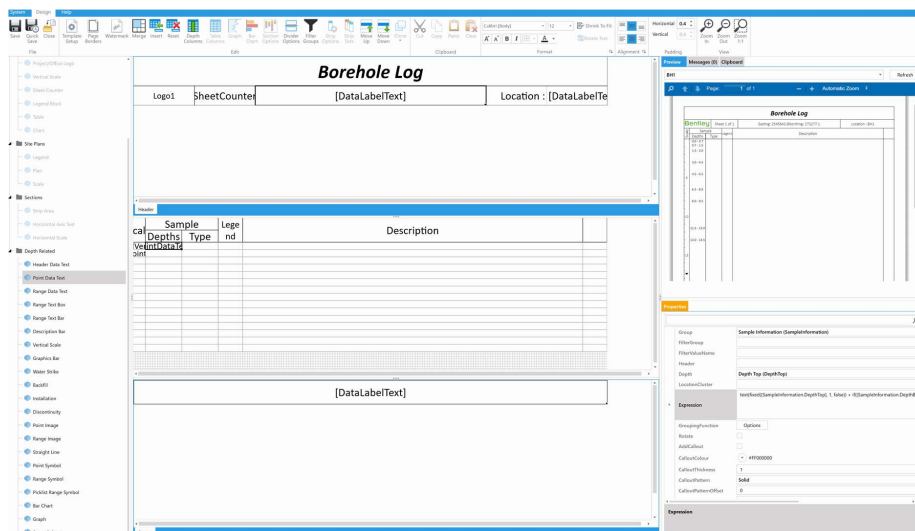
Select the top cell in the Sample Depths column and then double click the [Point Data Text Library Item](#). The workspace should update to show a point data text item in the relevant space and new options appear in the Properties window, update the font size to be size 12.

Change the following properties (settings not changed aren't listed);

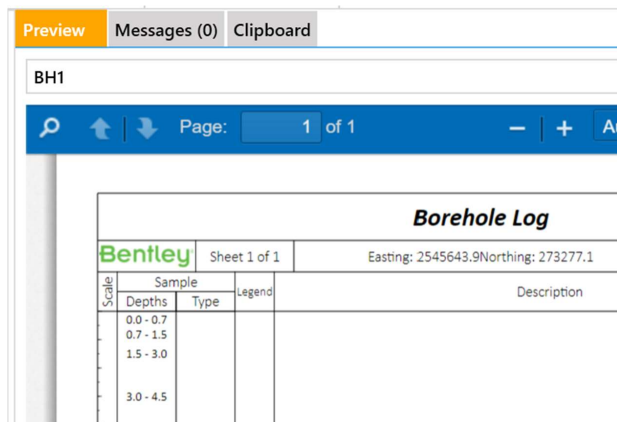
- Group – Sample Information
- Depth – Depth Top

For the expression, this time, the [expression library](#) will be used to pull out an example expression. The expression library is a set of example expressions that can be used anywhere on the template to pull out the required data.

Press on the browse button that is on the right hand side of the expression box. Note that this can be hidden if the properties dialogue box has expanded, so it may require a scroll to the right in the window. Once loaded, select the Sample Depth Range 1DP item and select the Select button and close.



This will place the expression into the expression box. Preview the template to see the expression at work.

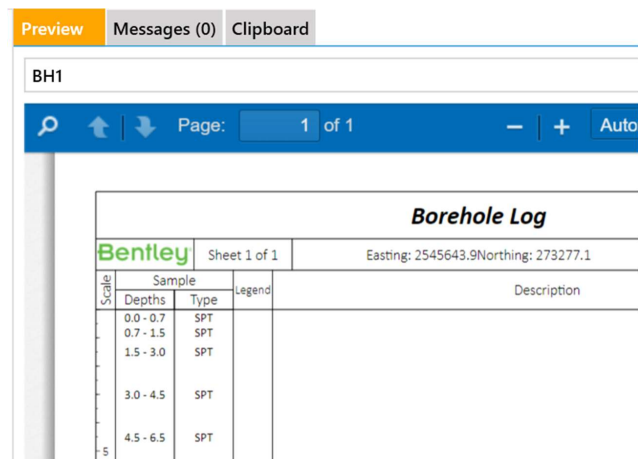


Select the top cell in the Sample Type column and then double click the Point Data Text Library Item. The workspace should update to show a point data text item in the relevant space and new options appear in the Properties window, update the font size to be size 12.

Change the following properties (settings not changed aren't listed);

- Group – Sample Information
- Depth – Depth Top
- Header – Type

Preview the template to see how the data is shown on the template.



### 3.21 Grouping Data Across Columns

The point text data that was placed on the template in the previous step is a basic example of how to plot data in a column. In more advanced templates, where multiple different data points can be brought in, such as samples, test results and other information, the text that should appear together can end up in different places. To prevent this, it is possible to group columns together and set an order. This will not effect the data on this template but is worth applying as good practice.

Select the Depth Columns option in the ribbon and then select the Sample – Depths sub column. In the window, select the Group check box to enable it.

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

5

1

10mm

5mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Depths

Type

Legend

Description

Monitoring

Name

Depths

Header

Depths

Split Item Placement

First page only

Width

15

15mm

Group

1

Order

1

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Add

Delete

Add

Borders

Footer

55 of 195 columns used.

OK

Cancel

Following this, select the Sample – Type sub column and then select the Group button and change the Order to be 2.

OPENGROUND | Tutorial – TSF1 – How to Create a Borehole Log Template

Depth Columns

Row Heights

Level 1

Level 2

Level 3

10

5

1

10mm

5mm

1mm

Continuation Text

Header

Next Page

End of Borehole

Style

Style

Columns

Scale Bar

Sample

Depths

Type

Legend

Description

Monitoring

Name

Type

Header

Type

Split Item Placement

First page only

Width

15

15mm

Group

1

Order

2

Expand to fill available space

Vertical header

Distinct sequential records

Display divider border for combined logs

Strip set column

Add

Delete

Add

Borders

Footer

OK

Cancel

55 of 195 columns used.

Select OK to close the dialogue.

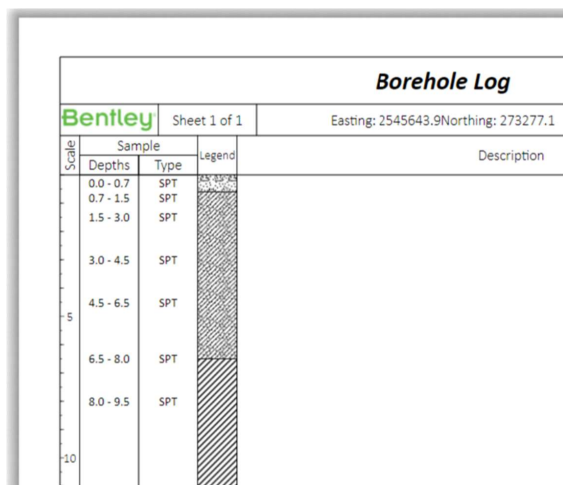
OPENGROUND | Tutorial – TSF1 – How to Create a Borehole Log Template

### 3.22 Inserting a Graphics Bar

Template Studio allows for hatch patterns to be plotted between the depth ranges of an item. This can be used for plotting data such as geology legend codes.

Select on the top cell in the Legend column and then double click the [Graphics Bar Library Item](#). The workspace should update to show a graphics bar item in the relevant space and new options appear in the Properties window.

In this case, no further changes are going to be made (showing the Stratum Details - Legend Code). Preview the template to see how the graphics bar shows the data.



### 3.23 Inserting a Description Bar

Description Bars work similarly to standard text items, however will draw a line at the base of the text, with provision for the lines to 'bend' around the text if there is not enough space for the base line to be drawn. The Description Bar is also limited to the Field Geological Descriptions group.

Select the top cell in the Description column and then double click the [Description Bar Library Item](#). The workspace should update to show a description bar item in the relevant space and new options appear in the Properties window, update the font size to be size 12 and set the text alignment to be left.

Change the following properties (settings not changed aren't listed);

- Expression – [StratumDetails.Description]+if(len([StratumDetails.Description]) > 0 and len([StratumDetails.USCS]) > 0,"n,")+ [StratumDetails.USCS]
- Boundary – Boundary

Preview the template to see how the template has been updated with the Description Bar.

| Borehole Log |              |                                      |         |  |
|--------------|--------------|--------------------------------------|---------|--|
| Bentley      | Sheet 1 of 1 | Easting: 2545643.9Northing: 273277.1 |         | Location : BH1   |
| Scale        | Sample       |                                      | Legend  | Description  |
|              | Depths       | Type                                 |         |  |
| 5            | 0.0 - 0.7    | SPT                                  | AS 45/4 | TOPSOIL - Well-graded SAND (SW): loose; red; dry to moist; fine to coarse with fragmented pavement pieces.   |
|              | 0.7 - 1.5    | SPT                                  |         | SW   |
|              | 1.5 - 3.0    | SPT                                  |         | Sandy Lean CLAY (Sandy Lean CLAY): soft to stiff; orangeish red; dry to wet; low to medium plasticity.       |
|              | 3.0 - 4.5    | SPT                                  | CL      | black streaking at 3.0 ft  |
|              | 4.5 - 6.5    | SPT                                  |         |  |
|              | 6.5 - 8.0    | SPT                                  | AS 45/4 | Lean CLAY (Lean CLAY): stiff to very stiff; mottled pink and yellow; moist; medium plasticity; carbonaceous. |
|              | 8.0 - 9.5    | SPT                                  |         | CL   |

### 3.24 Setting Continuation and End of Borehole Text

The Description Bar has an extra setting within the Depth Columns dialogue that allows for next page and end of borehole text to appear.

Select the Depth Columns dialogue in the ribbon.

In the Header section of the [Continuation Text](#) part select the Description column. Enter the following for the other 2 options.

- Next Page – 'Continued on Next Page'
- [End of Borehole](#) - 'End of Borehole at  
' + text(fixed([LocationDetails.FinalDepth],1,false)) + 'ft'

---

*Note that the single quotes in the above expressions are needed as these two fields are expression fields rather than plain text.*

---

Press the Style buttons under each option and change the font size to be 12. Press OK to save the changes and return to the workspace.

To see the next page text, it maybe necessary to change the units per page in the Template Setup dialogue.

Select the Template Setup button on the ribbon and then change the units per page, change the units per page to be 15 and select OK. Press refresh on the Template Preview to see the changes in the description.

|  |  |  |  |
|--|--|--|--|
| Continued on Next Page   |  |  |  |
| Equipment used : CME75   |  |  |  |
| Template Name: Unsaved document Log Produced: 11-13-2024 03:25 |  |  |  |

| Depth | Sample |      | Legend   | Description               |
|-------|--------|------|--|---------------------------|
|       | Depths | Type |  |                           |
| 15    |        |      | Clayey GRAVEL (Clayey GRAVEL): dense; reddish brown; moist; coarse; angular. |                           |
|       |        |      | EC   | olive gray below 15.0 ft  |
| 20    |        |      |  | End of Borehole at 20.0ft |

### 3.25 Adding Backfill and Monitoring Graphics

In Template Studio it is possible to layer 2 different types of data output on to each other to produce a combined outcome. In the last column the backfill graphic will be used with the installation on top. It is important to note that, items are drawn in the order that they appear in the column, with the top ones drawn first. For text, this means that the first text will be drawn and then following text will be drawn underneath with Template Studio ensuring text collision does not occur. For graphical items, these will be drawn on top of each other so it is important to make sure these are in the correct order.

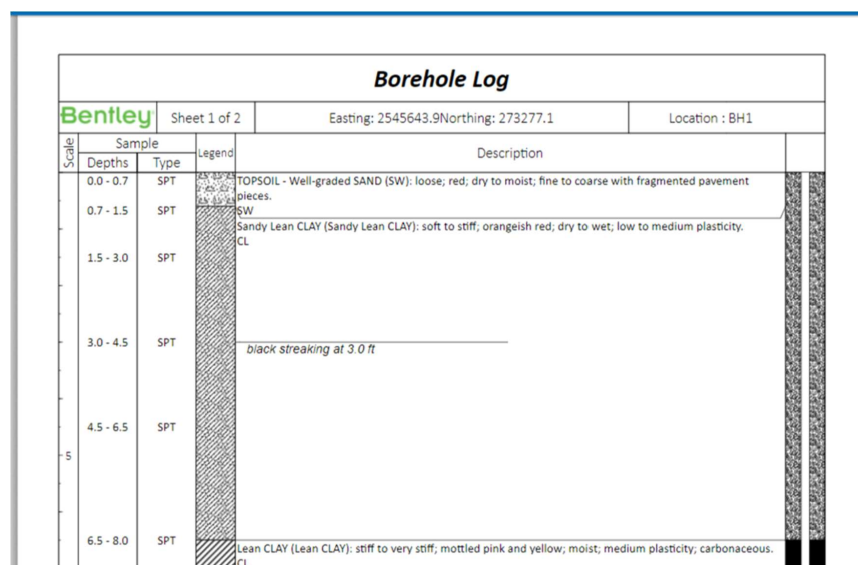
Select the top cell in the last column and then double click the Graphics Bar Library Item. The workspace should update to show a graphics bar item in the relevant space and new options appear in the Properties window.

Change the following properties (settings not changed aren't listed);

- Group – Backfill Details
- Reference – Legend Code

Select the next cell in the last column and then double click the Installation Library Item. The workspace should update to show an installation library item in the relevant space and new options appear in the Properties window.

There is no need to change any of the properties for this library item in this tutorial. Preview the log template to see the output and how the graphics have been combined together.



### 3.26 Adding a Watermark

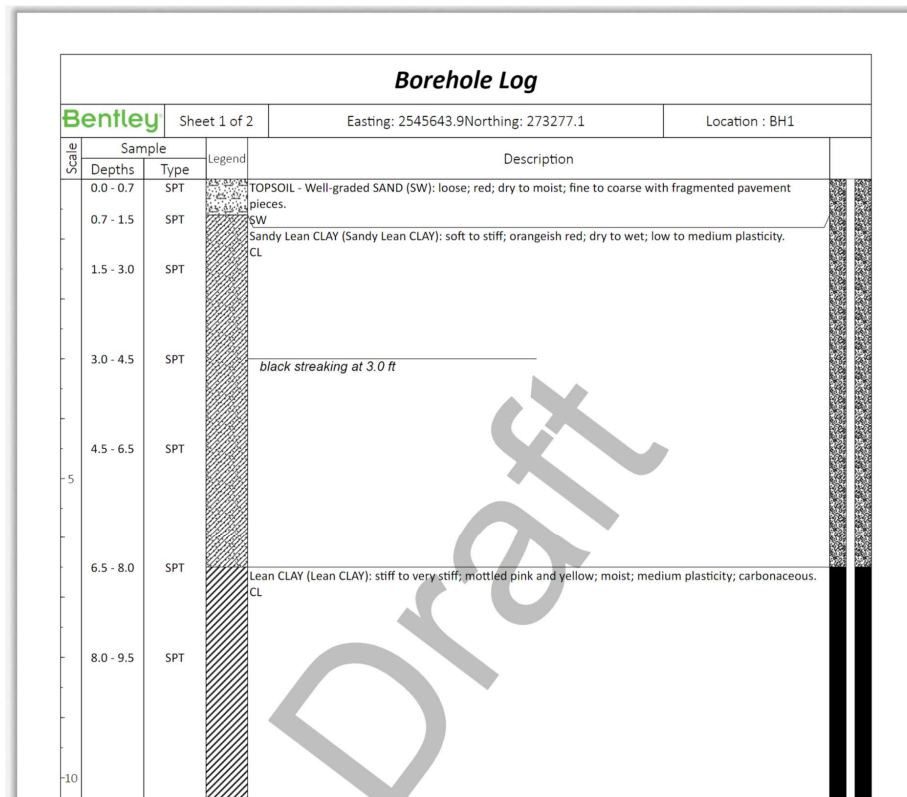
In Template Studio, it is also possible to apply a watermark to a template to show its current status.

Select the [Watermark](#) option in the ribbon and then enter the following expression in the Expression option.

```
if([LocationDetails.Status]='DRAFT','Draft',')
```

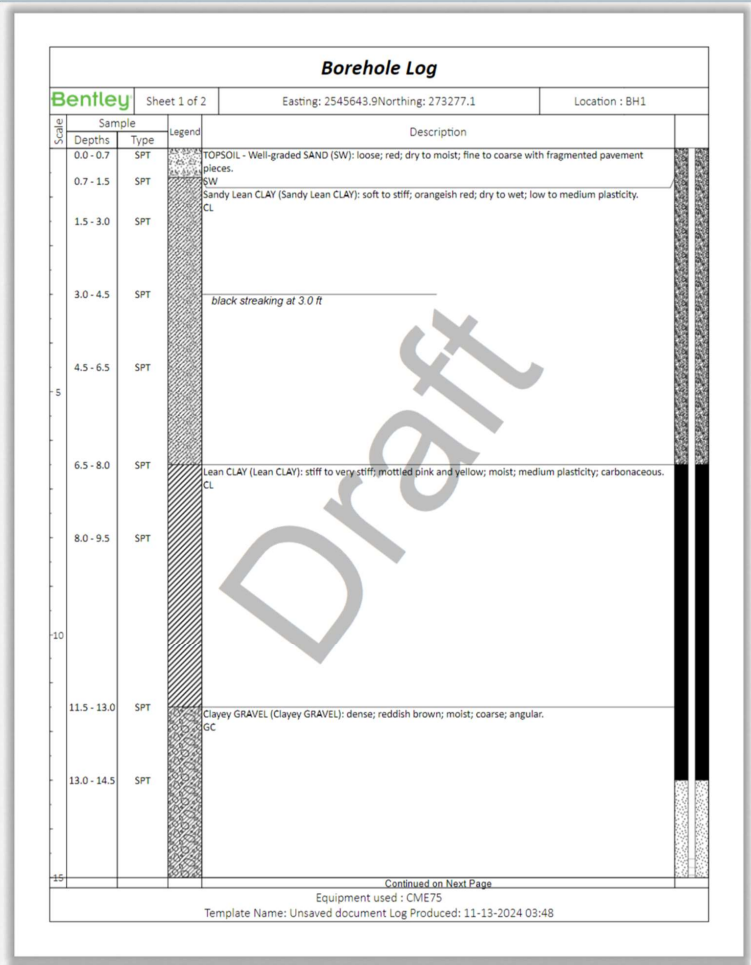
This expression will look at the Status field in the Location Details table and if the value is set as DRAFT, it will plot a Draft mark, if not, then it will plot no value.

Preview the template to see the Watermark.



## 5. Final Template Output

Note that this is the point that the example file 'Tutorial 1 - Final Template.hbt' has been created. If comparing the final output with an output produced by a user, use this file.



| Borehole Log |        |              |  |                |
|--------------|--------|--------------|--|----------------|
| Bentley      |        | Sheet 2 of 2 | Easting: 2545643.9 Northing: 273277.1  | Location : BH1 |
| Scale        | Sample |              | Legend   | Description    |
|              | Depths | Type         |  |                |
|              |        |              | <div> <div></div> <div>Clayey GRAVEL (Clayey GRAVEL): dense; reddish brown; moist; coarse; angular.</div> </div> <div> <div></div> <div>GC</div> </div> <div> <div></div> <div>olive gray below 15.0 ft</div> </div> |                |
| 20           |        |              | End of Borehole at 20.0ft  |                |
| 25           |        |              |  |                |
| 30           |        |              |  |                |

Equipment used : CME75  
 Template Name: Unsaved document Log Produced: 11-13-2024 03:48