



Create accessible Tables with axesWord[®]

V01.2023





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1 Basics

1.1 Requirements for accessible tables

Tables should always have marked header cells. For accessible tables, header cells, so-called "Table Header Cells", have to be correctly labeled, so that the important reference for understanding the content can be established for each data cell. Correctly marked header cells can be recognized by screen readers and be read in conjunction with the content of the related data cells.

In PDF, as with HTML, there is the Scope attribute. It is used to define, if a header cell is related to a column or a row. It makes it clear to which data cells the respective head cell refers.

For complex tables, the Scope attribute is not sufficient. There, an association between data cells and header cells must be set by using header IDs.

1.2 Checking tables

You can use the PAC Preview to verify that the table was created correctly with table headers.



2 Understanding the basic principle

2.1 Mapping paragraph styles to PDF tags

axesWord® relies on additional information that can be attached to paragraph styles. This additional information is set to the appropriate styles by mapping paragraph styles to PDF tags (including essential attributes). We call this combination of tag and essential attributes “role”. Check or change this mapping in the **Dialog box: Document Settings**: go to the **Ribbon Tab: axesPDF**, click the **Button: Document Settings**. In the **Dialog box: Document Settings** in the **Ribbon tab: Role Mapping** is a list of all paragraph styles available in the document.

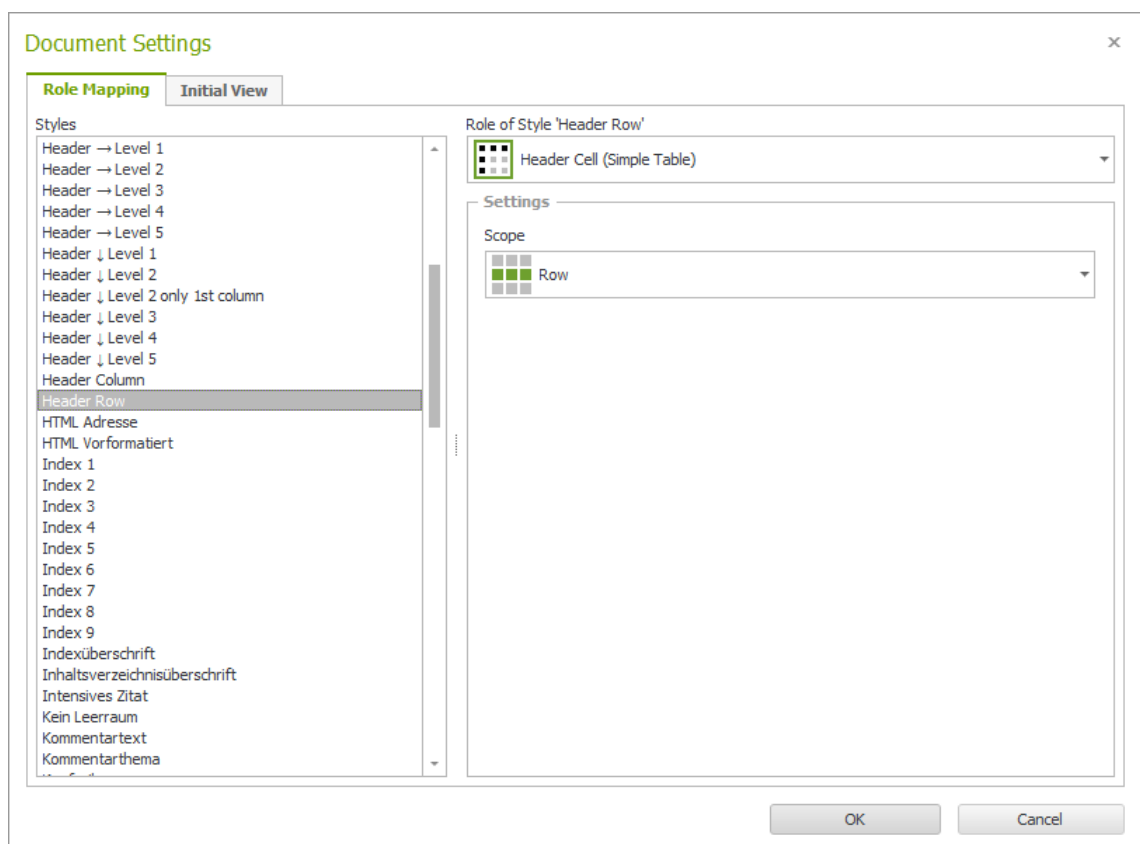


Figure 1: Dialog box "Document Settings" > Tab "Role Mapping"

Clicking on a paragraph style displays the corresponding role mapping and settings in the right part of the dialog box. Both can be edited.

For example, for the paragraph style "Header Row", the **role: Header Cell (Simple Table)** with the **Scope: Row** is set. This mapping allows you to assign the scope attribute "Row" to a style.

Always use this style now when you create a row heading in a simple table. Similarly, the style "Header Column" was created in this example document.

For complex tables, there are separate styles: for example, "Header → Level 1" stands for a row header at outline level 1, "Header ↓ Level 2" for a level 2 column header.

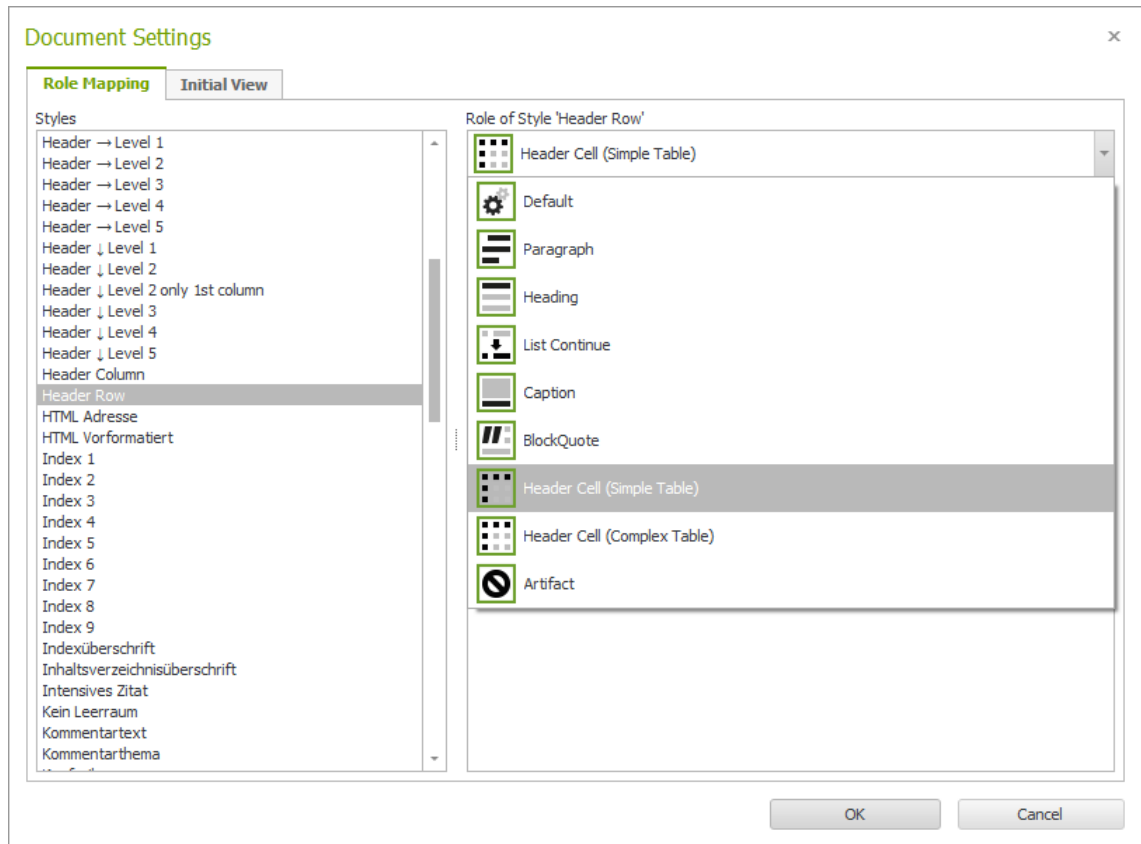


Figure 2: Dialog Box: Document Settings > Selecting the role for a style

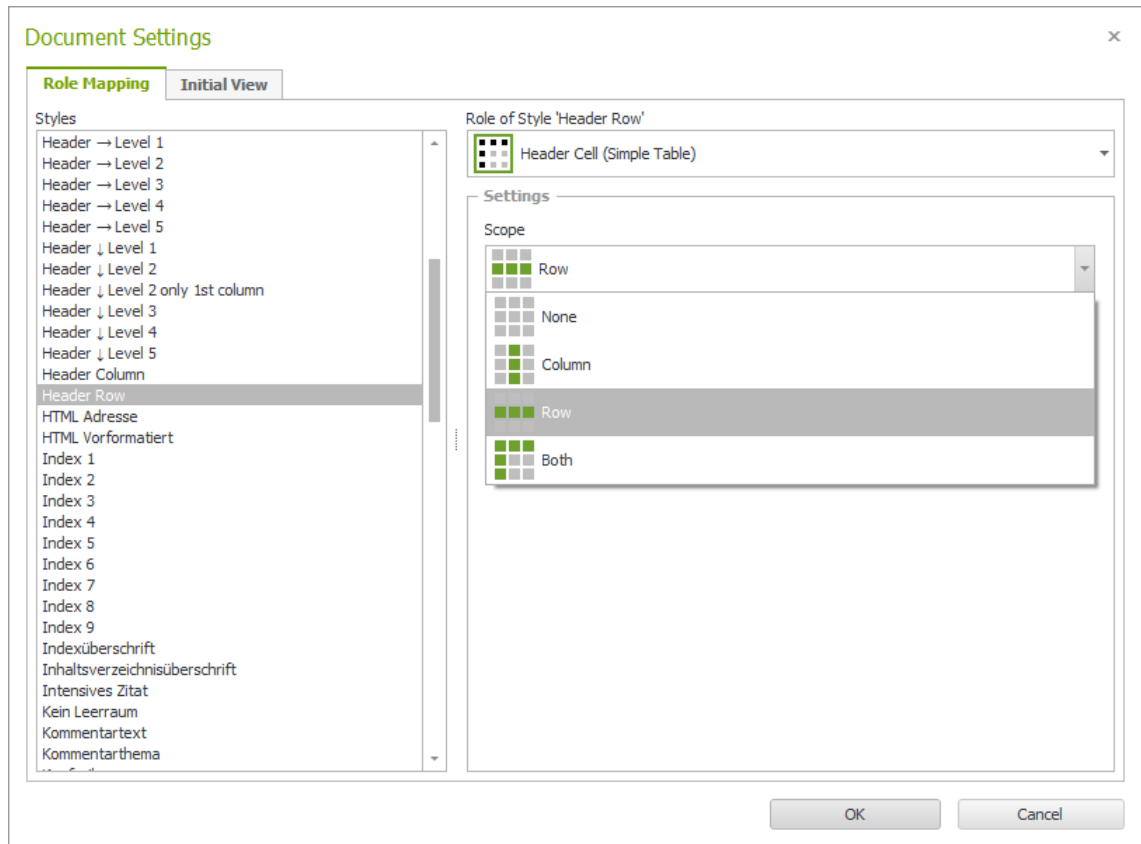


Figure 3: Dialog Box: Document Settings > Select the Scope attribute.



3 Procedure

3.1 Checklist

1. Check if the table is a data table (as opposed to a layout table)

Identify the header cells (marked in yellow here). Styles for header cells usually start with "Header".

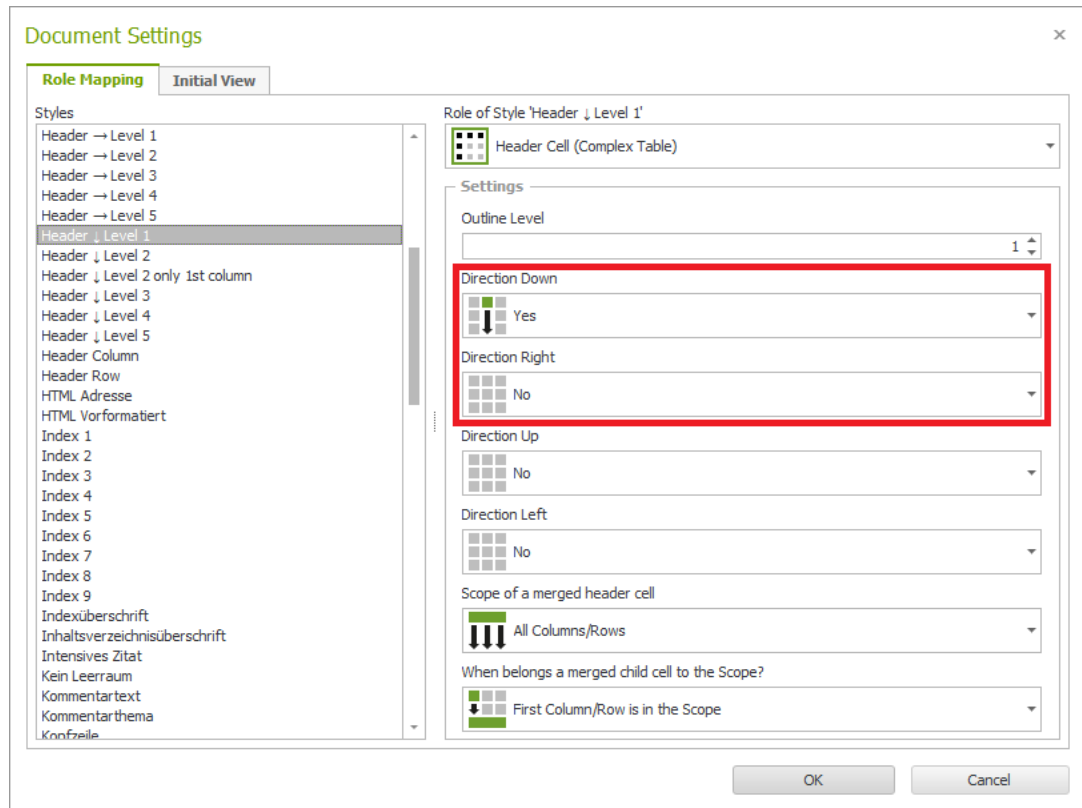
Location	Date	Temperature		Weather
		Maximum	Minimum	
Bern	29.04.2020	20 °C	10 °C	sunny
	30.04.2020	18 °C	9 °C	light rain
Lugano	29.04.2020	21 °C	14 °C	cloudy
	30.04.2020	20 °C	13 °C	light drizzle
Zürich	29.04.2020	23 °C	13 °C	cloudy
	30.04.2020	20 °C	11 °C	light rain

2. Determine if there are column and/or row headers (identified in the names of the styles by the down arrow "↓" for the column- and the right arrow "→" for the row-headers).

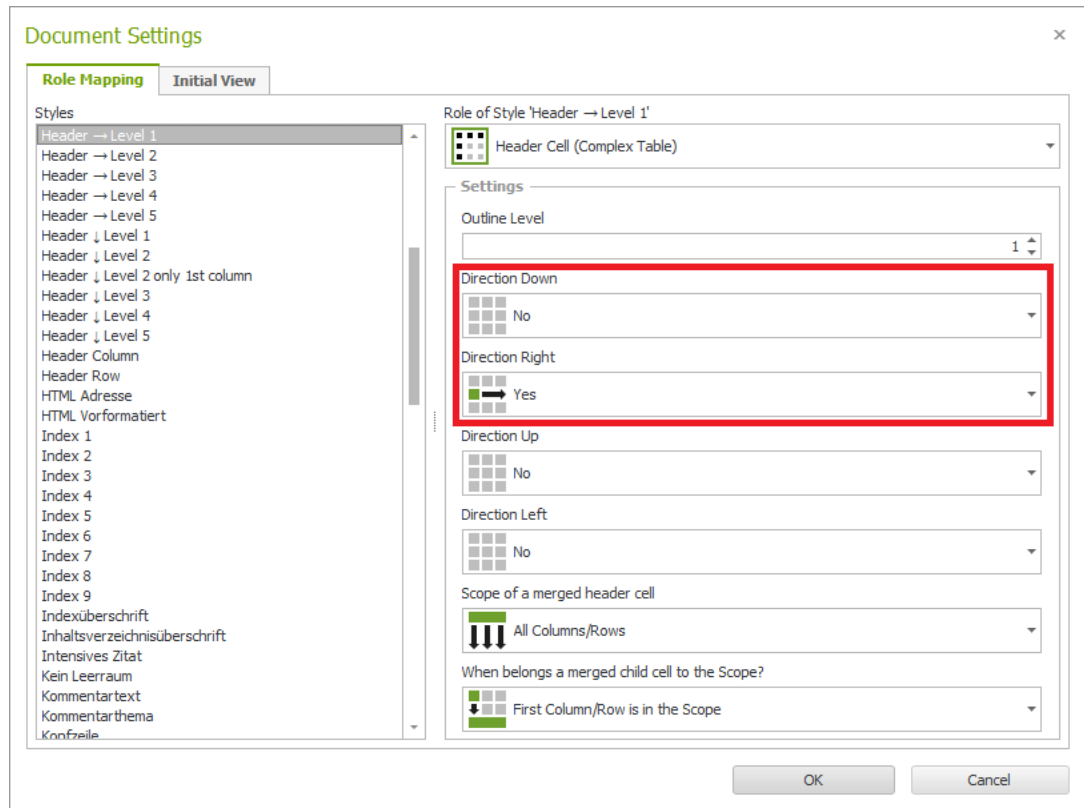
Location↓	Date↓	Temperature↓		Weather↓
		Maximum↓	Minimum↓	
Bern→	29.04.2020→	20 °C	10 °C	sunny
	30.04.2020→	18 °C	9 °C	light rain
Lugano→	29.04.2020→	21 °C	14 °C	cloudy
	30.04.2020→	20 °C	13 °C	light drizzle
Zürich→	29.04.2020→	23 °C	13 °C	cloudy
	30.04.2020→	20 °C	11 °C	light rain

The setting, whether it is a column or row header, is made in the **Dialog box: Document Settings** in the **Drop-down list box: Direction Down** and in the **Drop-down list box: Direction Right**.

For a column heading, the setting **Direction Down** is set to **Yes** and the setting **Direction Right** is set to **No**.



For a row heading, the setting **Direction Down** is set to **No** and the setting **Direction Right** is set to **Yes**.



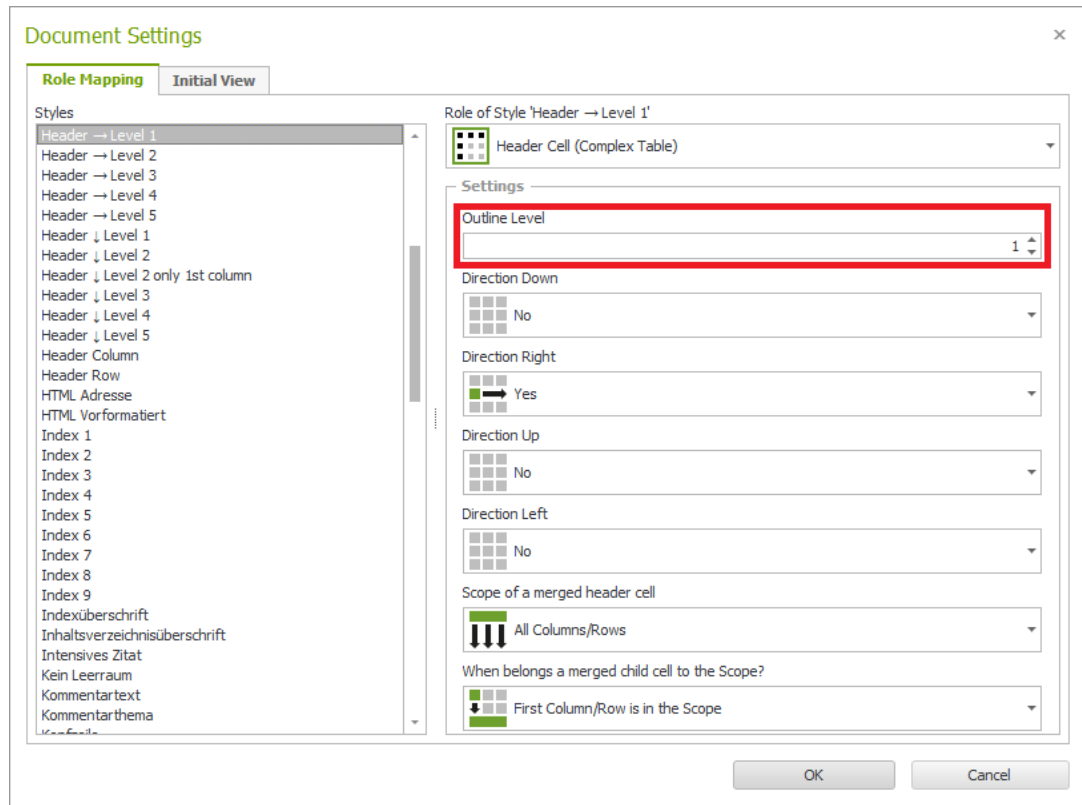
- 3. Determine outline level: Please note: This has to be done for all header cells, regardless of whether they apply to rows or columns (the corresponding outline levels are indicated by a number in the following figure).

You always start counting from the hierarchically highest (usually either from above or from the left) and go to the hierarchically lower header cells (see green arrows). The counting method in the red arrow is not allowed, otherwise an incorrect value is determined here. As a rule of thumb, you always have to use the **highest** count value as the outline level for different counting directions.

"Bern" has the "Header → Level 2" style in this example

Location	Date	Temperature	Weather	
		Maximum	Minimum	
Bern	29.04.2020	20 °C	10 °C	sunny
	30.04.2020	18 °C	9 °C	light rain
Lugano	29.04.2020	21 °C	14 °C	cloudy
	30.04.2020	20 °C	13 °C	light drizzle
Zurich	29.04.2020	23 °C	13 °C	cloudy
	30.04.2020	20 °C	11 °C	light rain

The outline level is set in the **Dialog box: Document Settings** in the **Spin box: Outline Level**.



4. Deduce which styles and document settings are required
 - a. Is it a header cell that is not merged?

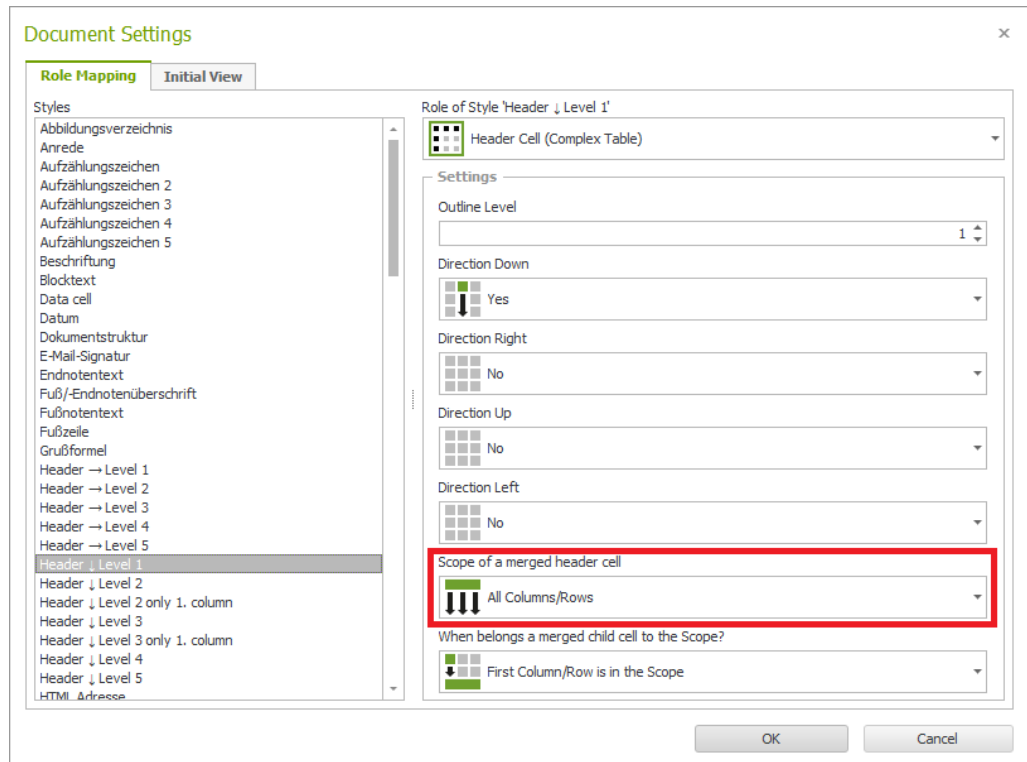
Then the styles specified in point 4 with the default settings are sufficient.

Example:

	Highest temperature	Lowest temperature	Weather
29.04.2020	23 °C	13 °C	Cloudy
30.04.2020	20 °C	11 °C	Rain
01.05.2020	19 °C	8 °C	Cloudy

In this example, there are no merged header cells. All header cells apply to either one column or one row.

In the **Dialog box: Document Settings**, the default values can be retained (in the **Drop-down list box: Scope of a merged header cell** this is the **Menu option: All Columns/Rows**).



- b. Is it a merged header cell that applies to all hierarchically deeper columns/rows?

Then the styles specified in point 4 with the default settings are sufficient.

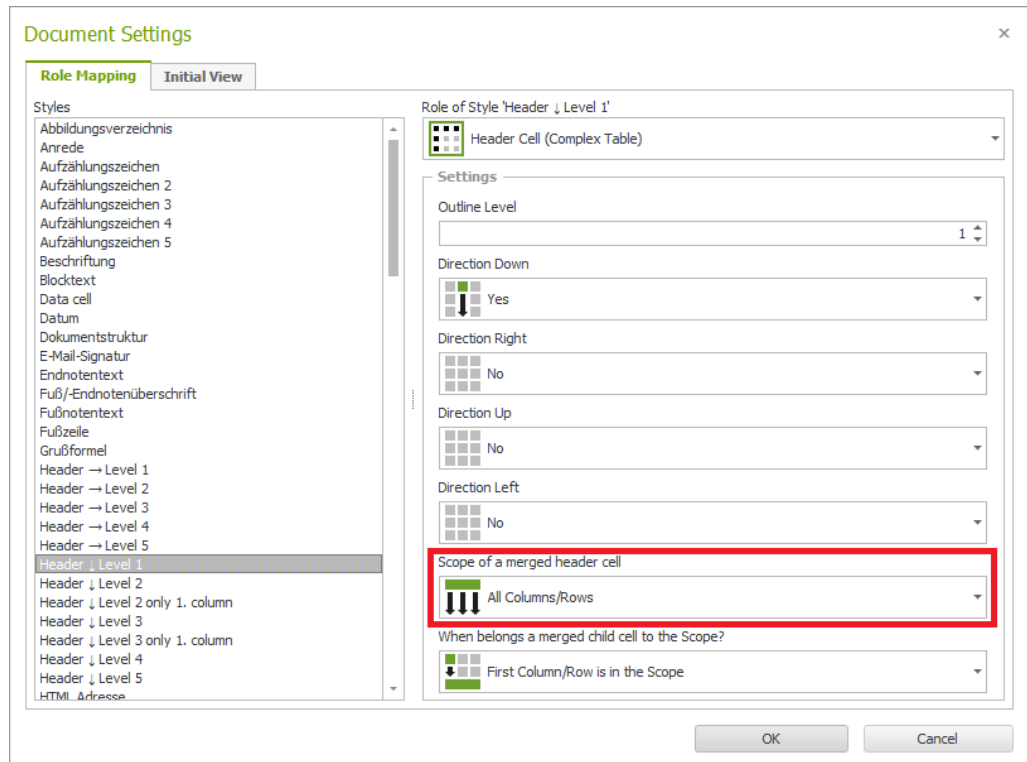
Example:

Both the header cell "Temperature" and "Bern" apply to the two hierarchically lower cells.

Location	Date	Temperature		Weather
		Maximum	Minimum	
Bern	29.04.2020	20 °C	10 °C	sunny
	30.04.2020	18 °C	9 °C	light rain
Lugano	29.04.2020	21 °C	14 °C	cloudy
	30.04.2020	20 °C	13 °C	light drizzle
Zürich	29.04.2020	23 °C	13 °C	cloudy
	30.04.2020	20 °C	11 °C	light rain

The correct style is: **Header ↓ level n** or **Header → Level n**.

In the **Dialog box: Document Settings**, the default values can be retained (in the **Drop-down list box: Scope of a merged header cell** this is the **Menu option: All Columns/Rows**).



- c. Is it a merged header cell that applies only to the first column/row?

Then a style with the following special setting is required.

Example:

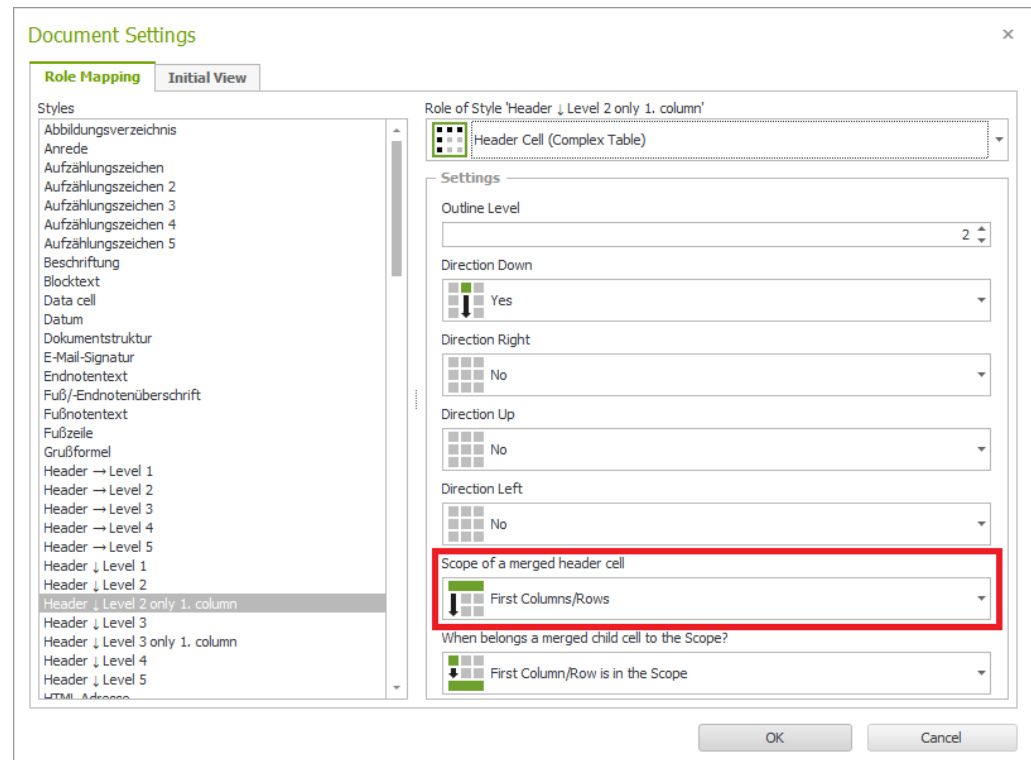
Both the header cell "Switzerland" and "Germany" applies only to the first column.

Location	Date	Temperature		Weather
		Maximum	Minimum	
Switzerland				
Bern	29.04.2020	20 °C	10 °C	sunny
	30.04.2020	18 °C	9 °C	light rain
Lugano	29.04.2020	21 °C	14 °C	cloudy
	30.04.2020	20 °C	13 °C	light drizzle
Zurich	29.04.2020	23 °C	13 °C	cloudy
	30.04.2020	20 °C	11 °C	rain
Germany				
Munich	29.04.2020	21 °C	10 °C	cloudy
	30.04.2020	20 °C	9 °C	light rain
Frankfurt	29.04.2020	19 °C	13 °C	sunny
	30.04.2020	17 °C	10 °C	cloudy
Berlin	29.04.2020	19 °C	12 °C	cloudy
	30.04.2020	17 °C	9 °C	light drizzle



The correct style is: **Header ↓ Level 2 only 1. column** or **Header → Level n only 1. line**.

The scope is set in the **Dialog box: Document Settings** in the **Drop-down list box: Scope of a merged header cell**. The **Menu option: First Columns/Rows** must be selected here.



- d. Is it a header cell whose subcells are merged? And does the merged subcell belong to the scope of any of the head cells?

Example:

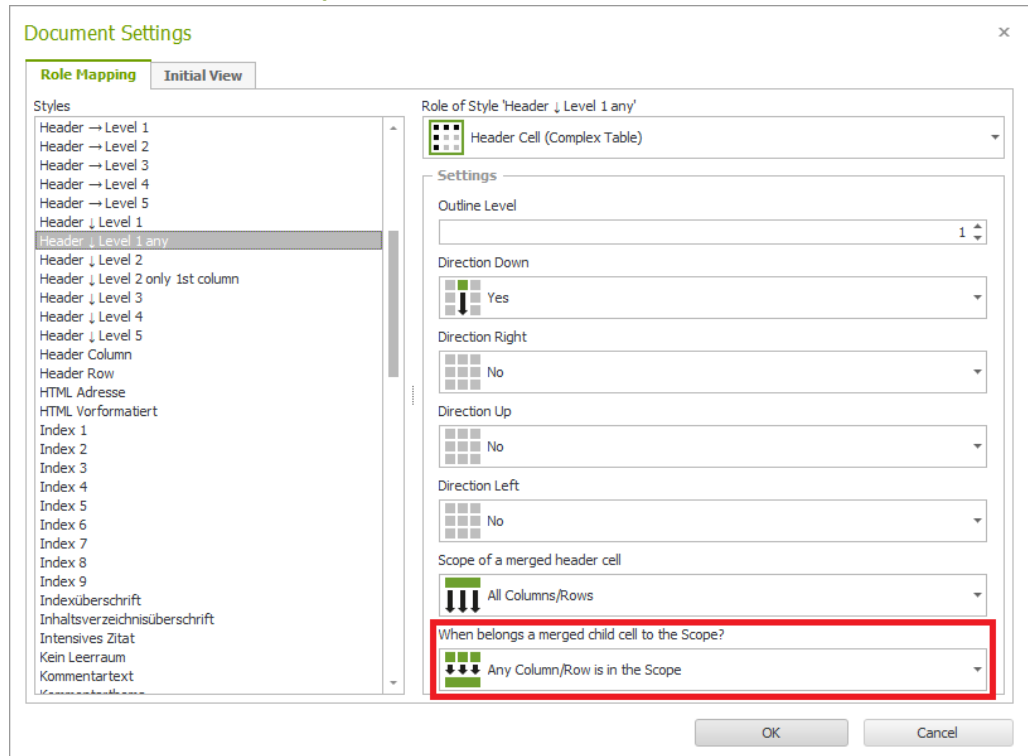
The merged subcell "Header ↓ Level 2" falls within the scope of each header cell "Header ↓ Level 1 any".

Header ↓ Level 1	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any	Header ↓ Level 1 any
	Header ↓ Level 2									
Header → Level 2										
Header → Level 2										
Header → Level 2										
Header → Level 2										
	Header ↓ Level 2									
Header → Level 2										
Header → Level 2										
Header → Level 2										
Header → Level 2										

The correct style is: **Header ↓ Level n any** or **Header → Level n any**.



This setting is displayed in the **Dialog box: Document Settings** in the **Drop-down list box: When belongs a merged child cell to the Scope?** The **Menu option: Any Column/Row is in the Scope** must be selected here.





4 Example tables with simple headers and columns

4.1 Variant 1: Table with a header line at the top

Table 1: Weather forecast for the next 5 days for Zurich

Date	Max. Temperature	Min. Temperature	Weather
29.04.2020	23 °C	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	19 °C	8 °C	cloudy
02.05.2020	21 °C	13 °C	slightly cloudy
03.05.2020	20 °C	11 °C	slightly cloudy

4.1.1 What styles are used with which role mapping?

Date	Max. Temperature	Min. Temperature	Weather
29.04.2020	Style: Header Column	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	19 °C	8 °C	cloudy
02.05.2020		12 °C	slightly cloudy
03.05.2020	Style: Data cell	C	slightly cloudy

Figure 4: Identification of the used styles in the sample table

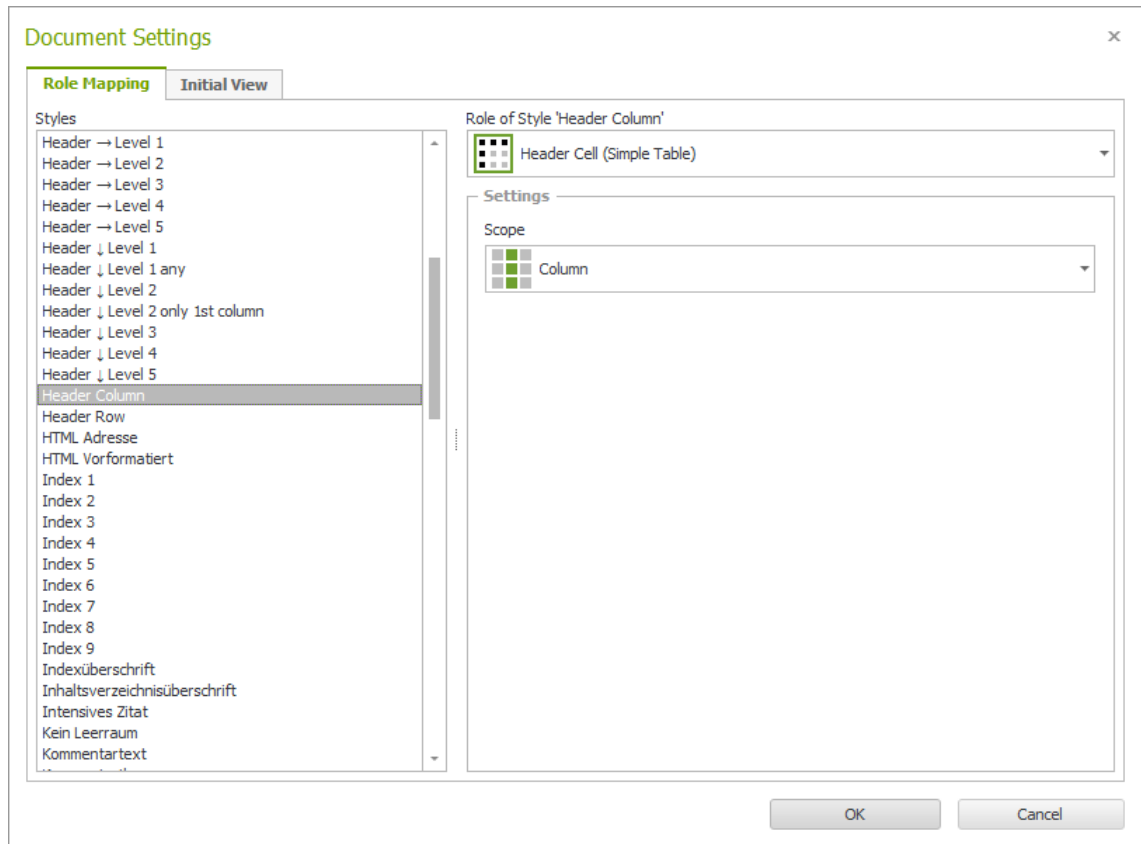


Figure 5: Role Mapping of the style "Header Column"

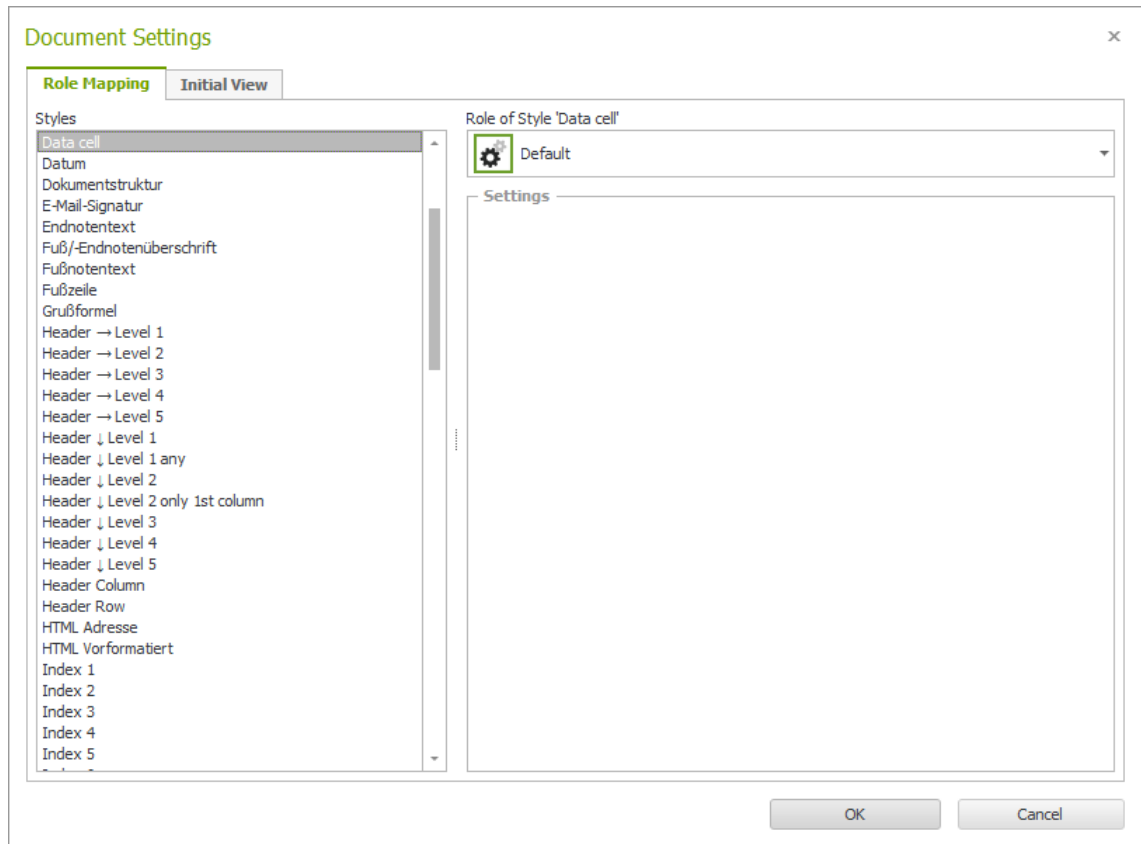


Figure 6: Role mapping of the style "Data cell"

4.2 Variant 2: Table with a header column on the left

Table 2: Weather forecast for Zurich for the next 5 days

29.04.2020	23 °C	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	19 °C	8 °C	cloudy
02.05.2020	21 °C	13 °C	slightly cloudy
03.05.2020	20 °C	11 °C	slightly cloudy



29.04.2020	23 °C	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	20 °C	11 °C	cloudy
02.05.2020	21 °C	13 °C	cloudy
03.05.2020	20 °C	11 °C	slightly cloudy

Figure 7: Identification of the used styles in the sample table

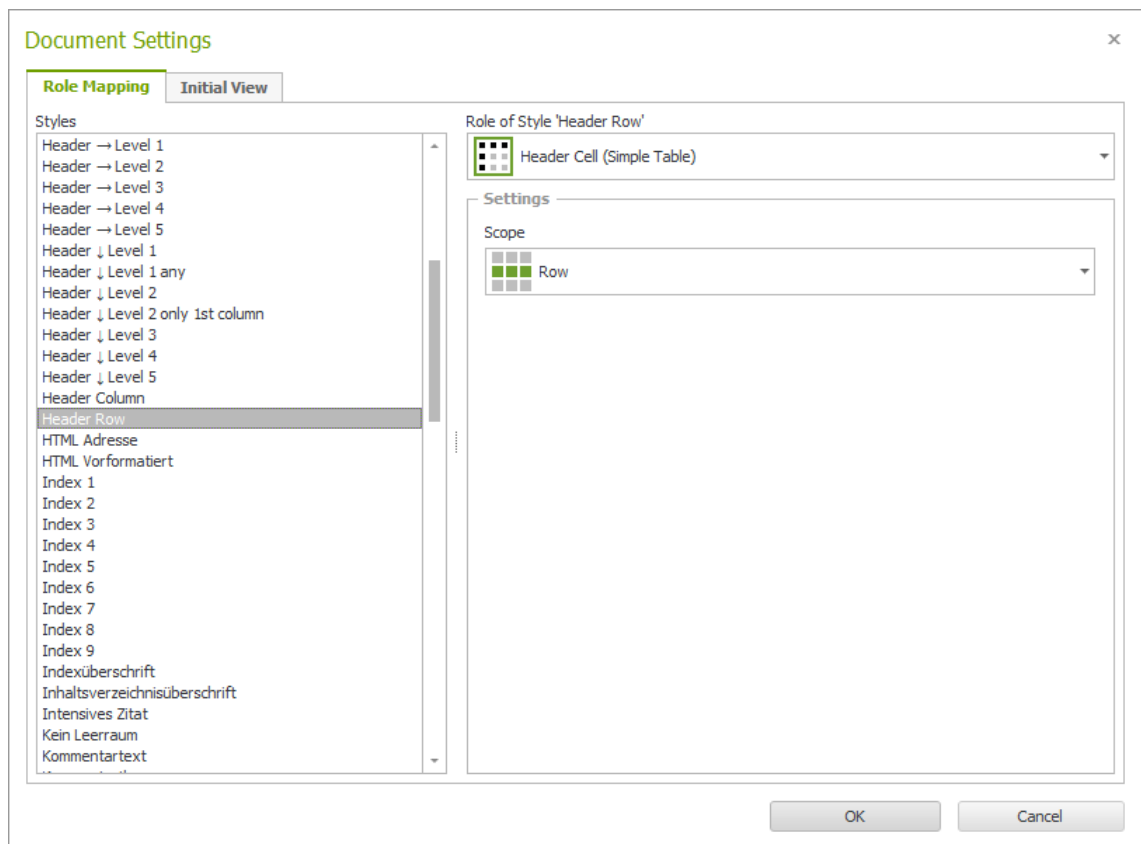


Figure 8: Role Mapping of the style "Header Row"

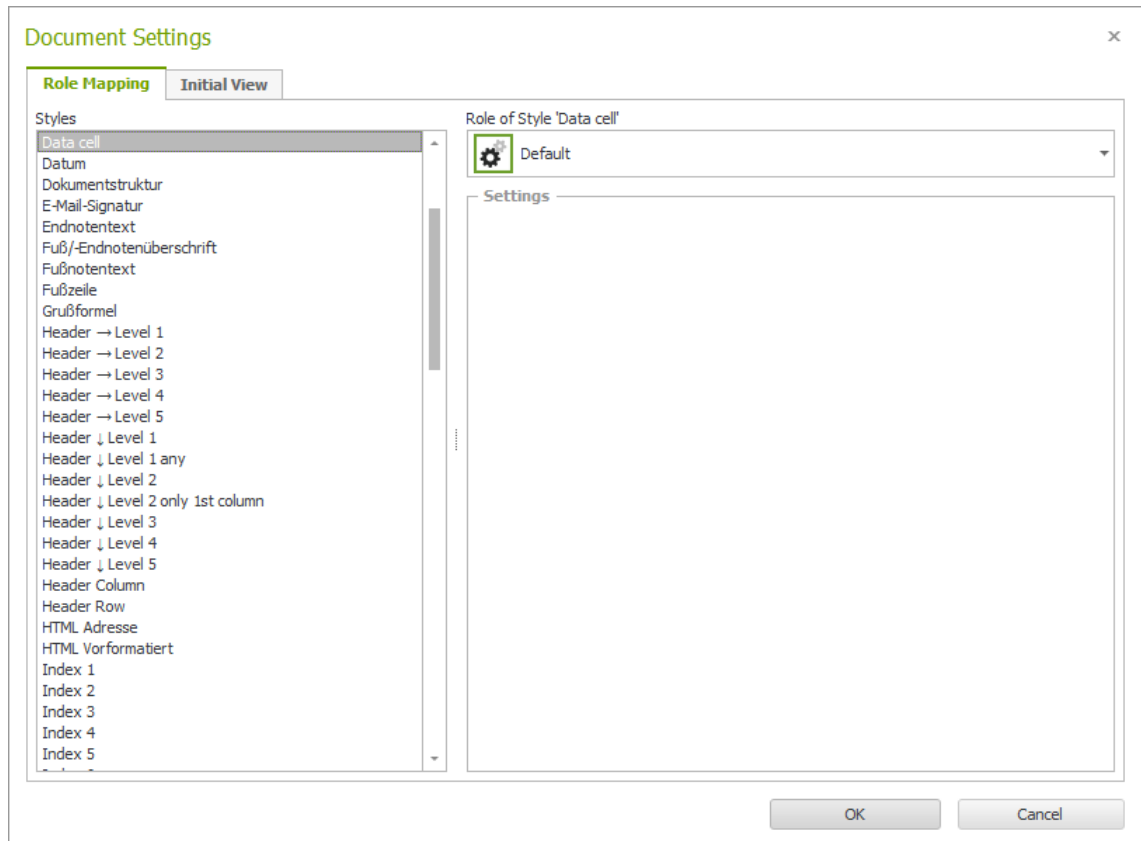


Figure 9: Role mapping of the style "Data cell"

4.3 Variant 3: Table with a header at the top and header column on the left

Table 3: Weather forecast for Zurich for the next 5 days

Date	Max. Temperature	Min. Temperature	Weather
29.04.2020	23 °C	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	19 °C	8 °C	cloudy
02.05.2020	21 °C	13 °C	slightly cloudy
03.05.2020	20 °C	11 °C	slightly cloudy



Date	Max. Temperature	Min. Temperature	Weather
29.04.2020	13 °C	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	19 °C	8 °C	cloudy
02.05.2020	12 °C	12 °C	lightly cloudy
03.05.2020	10 °C	10 °C	lightly cloudy

Figure 10: Identification of the used styles in the sample table

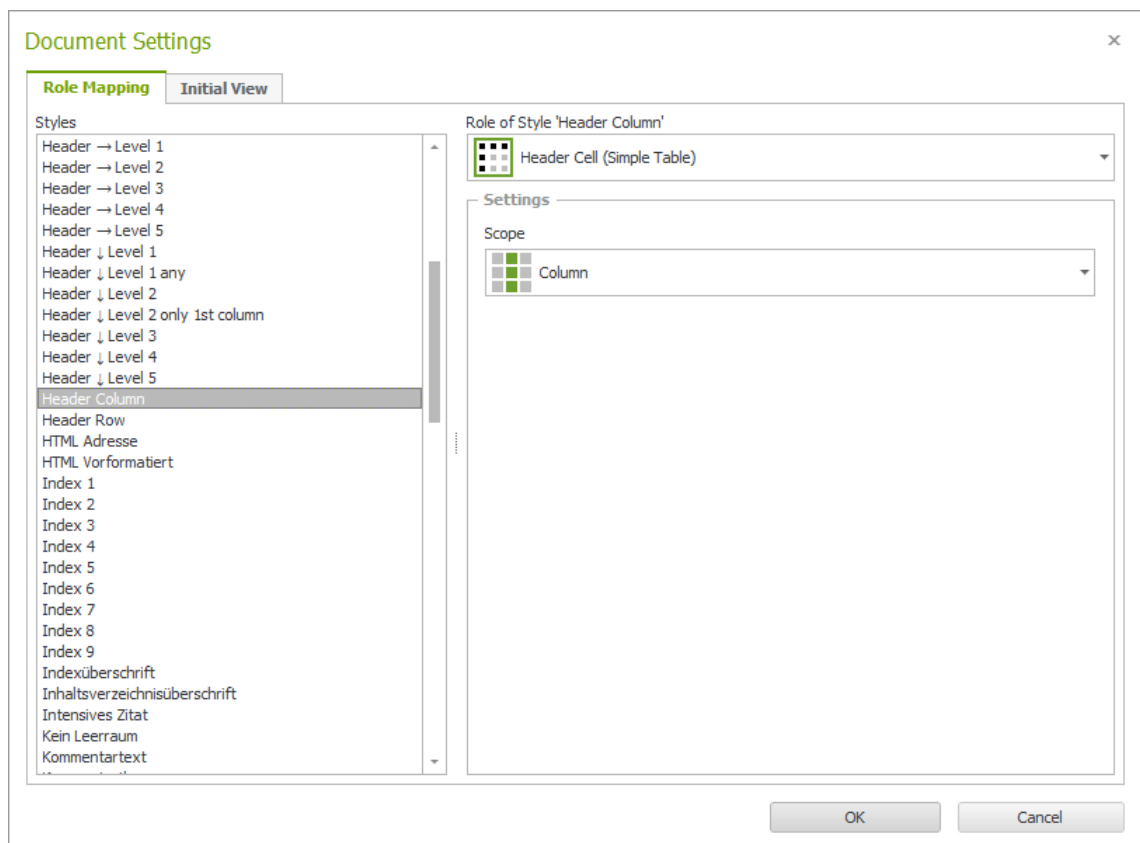


Figure 11: Role Mapping of the style "Header Column"

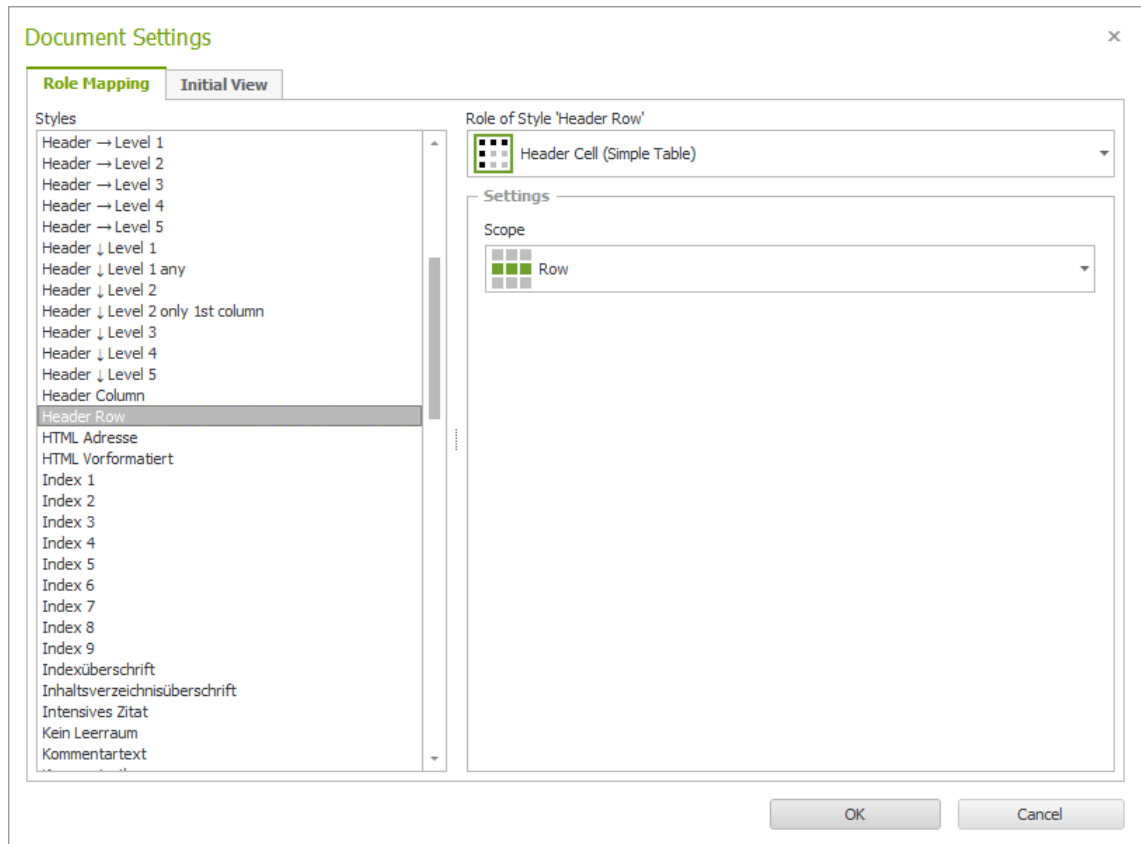


Figure 12: Role Mapping of the style "Header Row"

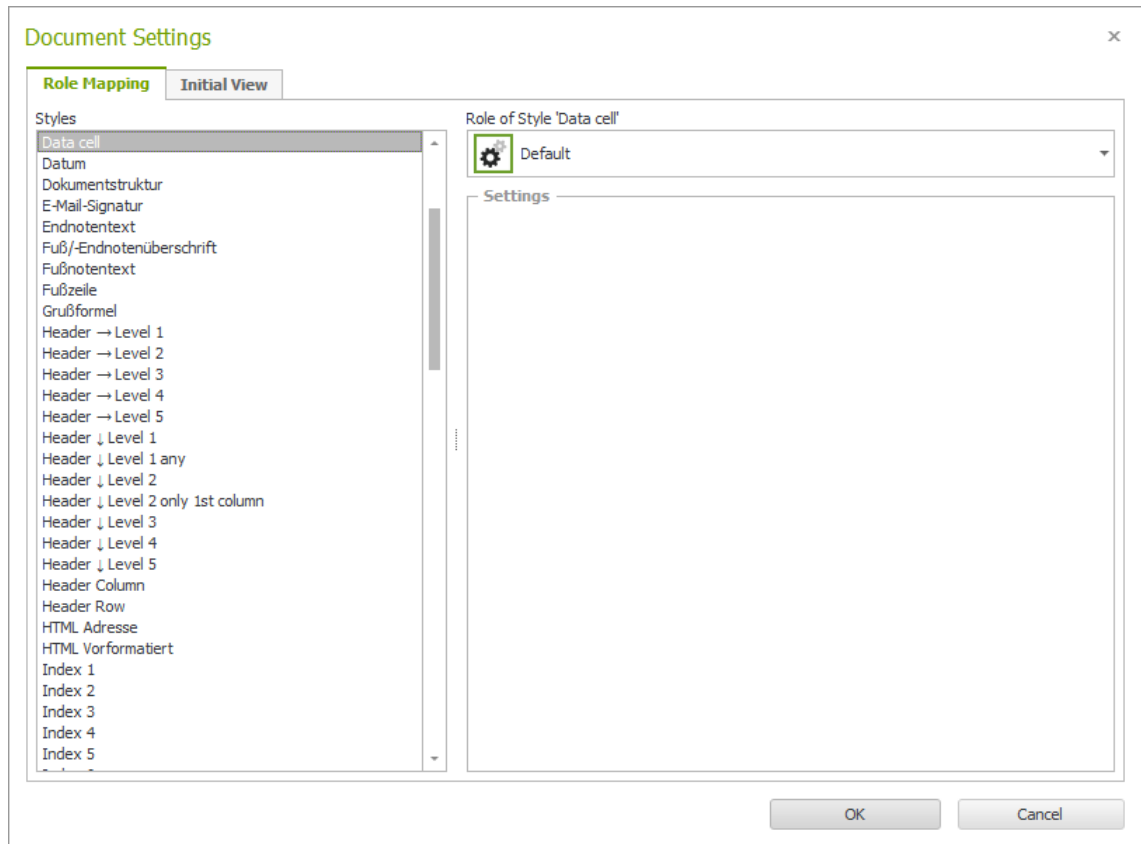


Figure 13: Role mapping of the style "Data cell"



5 Example tables with multiple headers

5.1 Variant 4: Table with multiple headers at the top and one header column on the left (marked via Scope attribute)

Table 4: Weather forecast for Zurich for the next 5 days

Date	Temperature		Weather
	Maximum	Minimum	
29.04.2020	23 °C	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	19 °C	8 °C	cloudy
02.05.2020	21 °C	13 °C	slightly cloudy
03.05.2020	20 °C	11 °C	slightly cloudy

Date	Temperature		Weather
	Maximum	Minimum	
29.04.2020	23 °C	13 °C	cloudy
30.04.2020	20 °C	11 °C	light rain
01.05.2020	19 °C	8 °C	cloudy
02.05.2020	21 °C	13 °C	slightly cloudy
03.05.2020	20 °C	11 °C	slightly cloudy

Figure 14: Identification of the used styles in the sample table

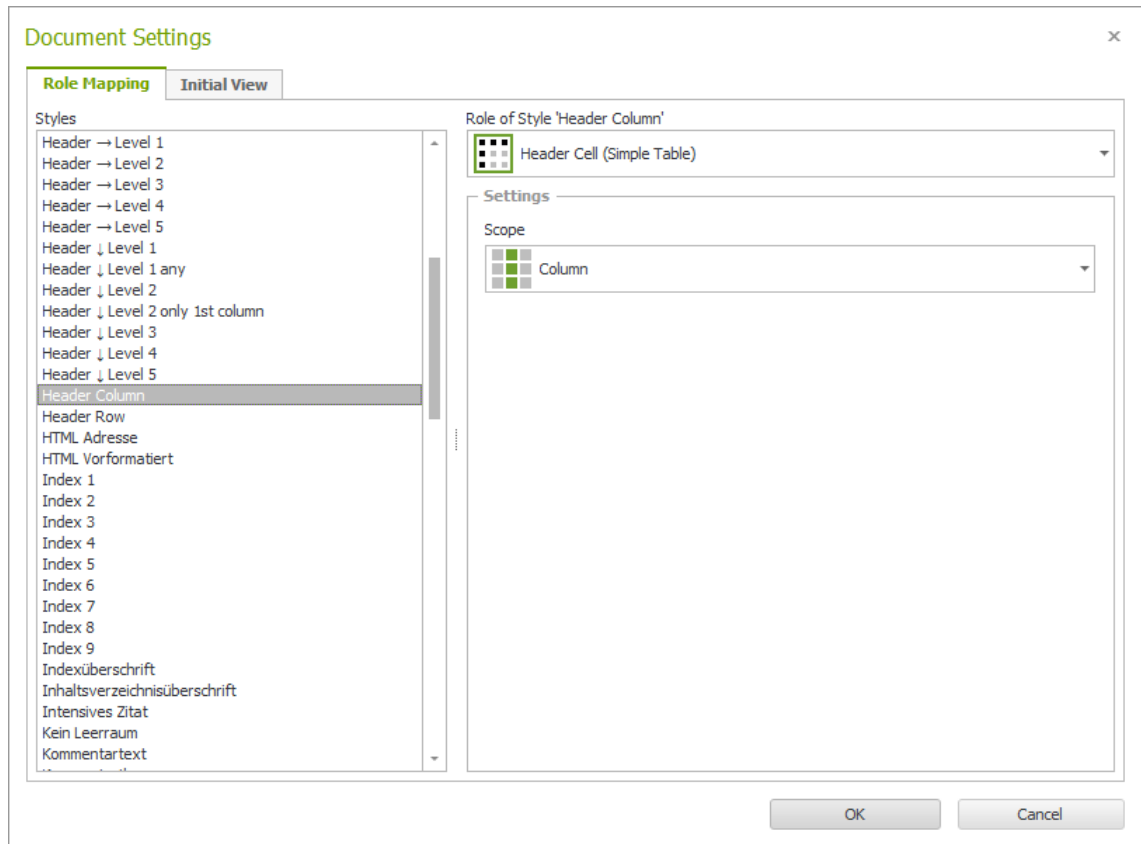


Figure 15: Role Mapping of the style "Header Column"

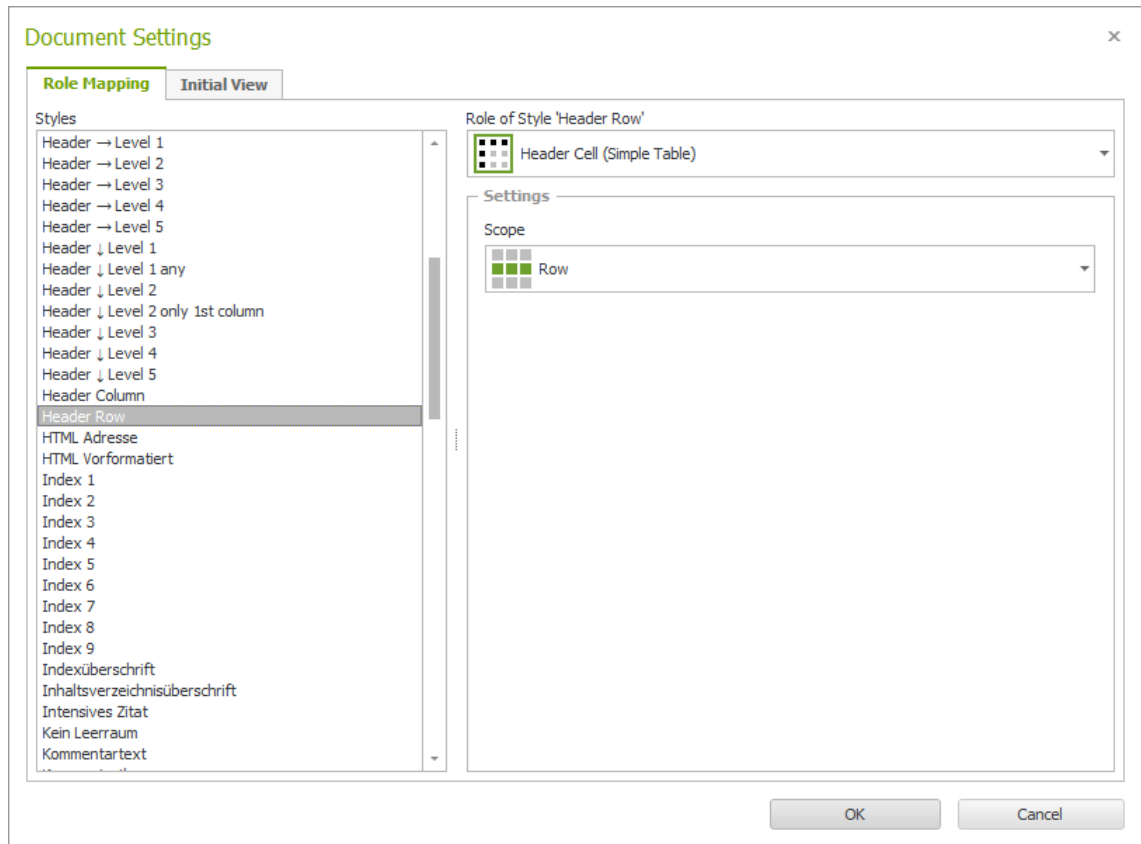


Figure 16: Role Mapping of the style "Header Row"

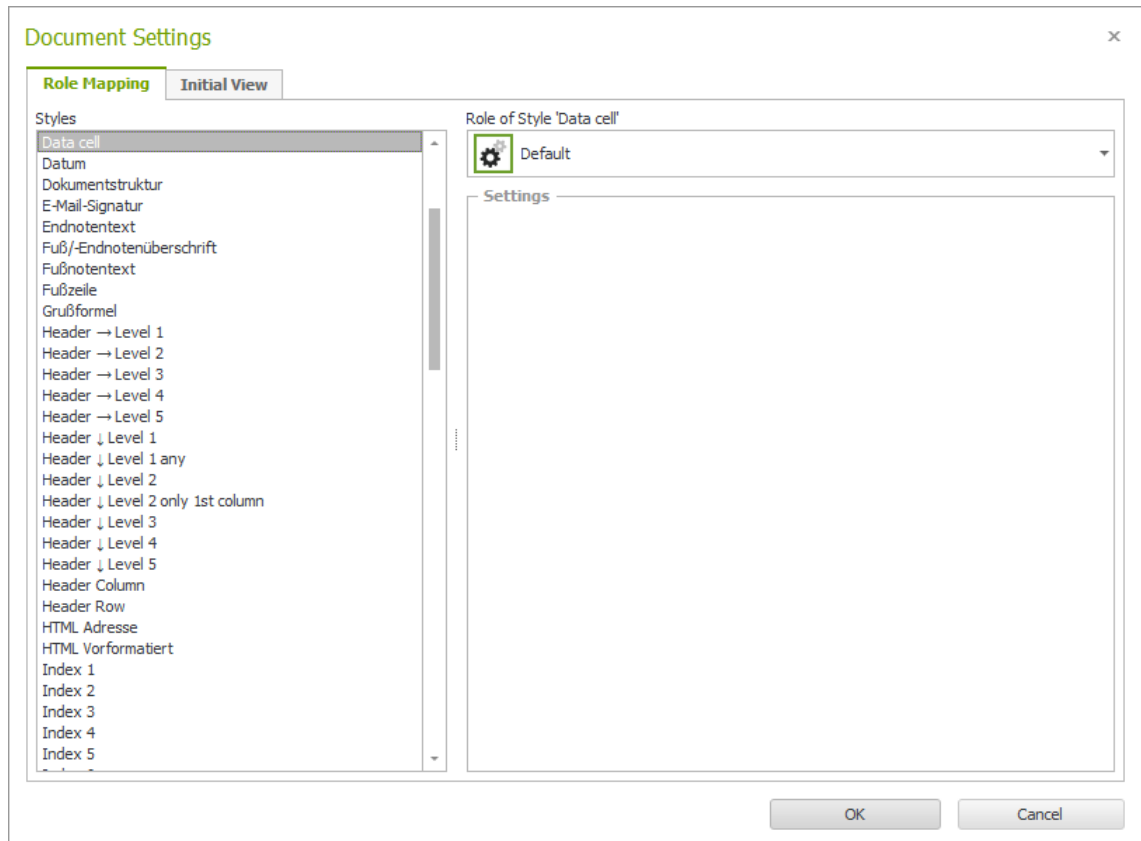


Figure 17: Role mapping of the style "Data cell"

5.2 Variant 5: Table with multiple header lines at the top and header columns on the left (identified via header IDs)

Table 5: Weather forecast for the next 2 days for selected locations in Switzerland

Location	Date	Temperature		Weather
		Maximum	Minimum	
Bern	29.04.2020	20 °C	10 °C	sunny
	30.04.2020	18 °C	9 °C	light rain
Lugano	29.04.2020	21 °C	14 °C	cloudy
	30.04.2020	20 °C	13 °C	light drizzle
Zürich	29.04.2020	23 °C	13 °C	cloudy
	30.04.2020	20 °C	11 °C	light rain

Consider which column and row headings are required for this table and which outline level:

This table requires 5 styles:



Location	Date	Temperature		Weather
		Maximum	Minimum	
Bern	29.04.2020	20 °C	10 °C	sunny
	30.04.2020	18 °C	9 °C	cloudy
Lugano	29.04.2020	21 °C	14 °C	light drizzle
	30.04.2020	20 °C	13 °C	cloudy
Zurich	29.04.2020	20 °C	12 °C	cloudy
	30.04.2020	18 °C	11 °C	cloudy

Figure 18: Identification of the used styles in the sample table

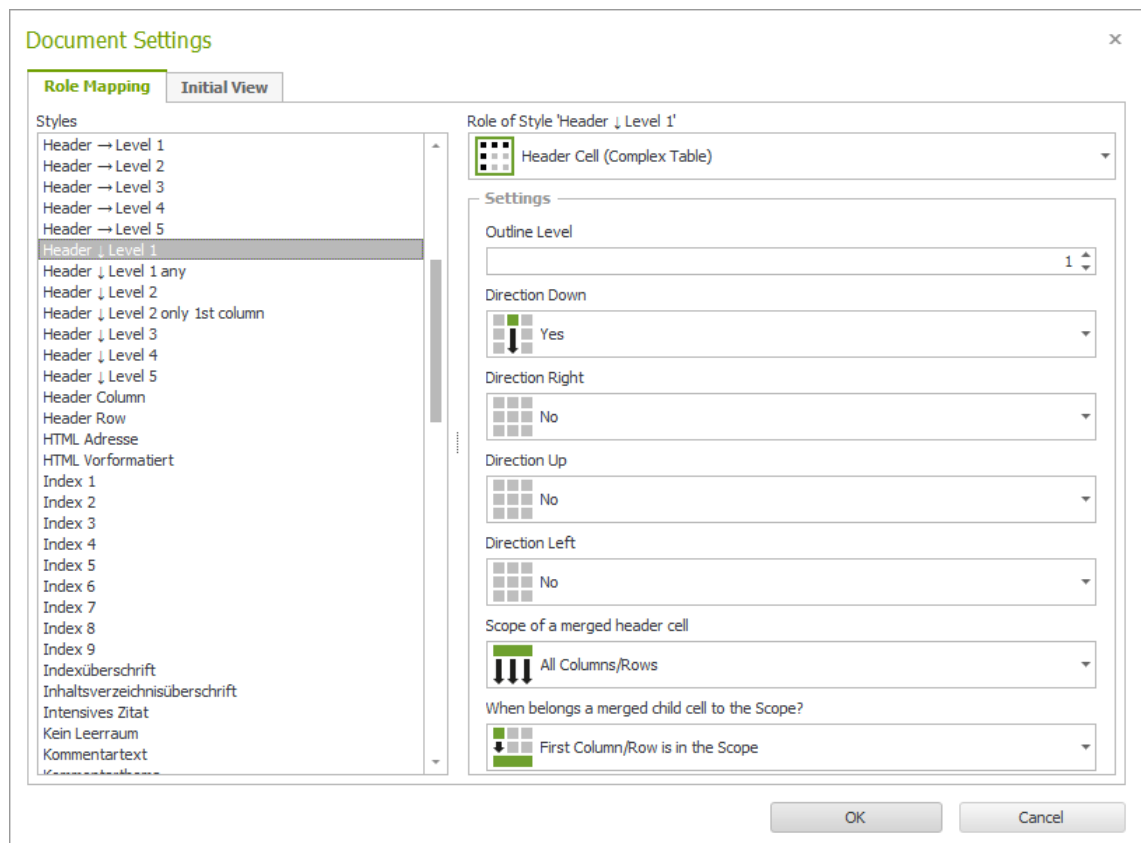


Figure 19: Role Mapping of the style "Header ↓ Level 1"

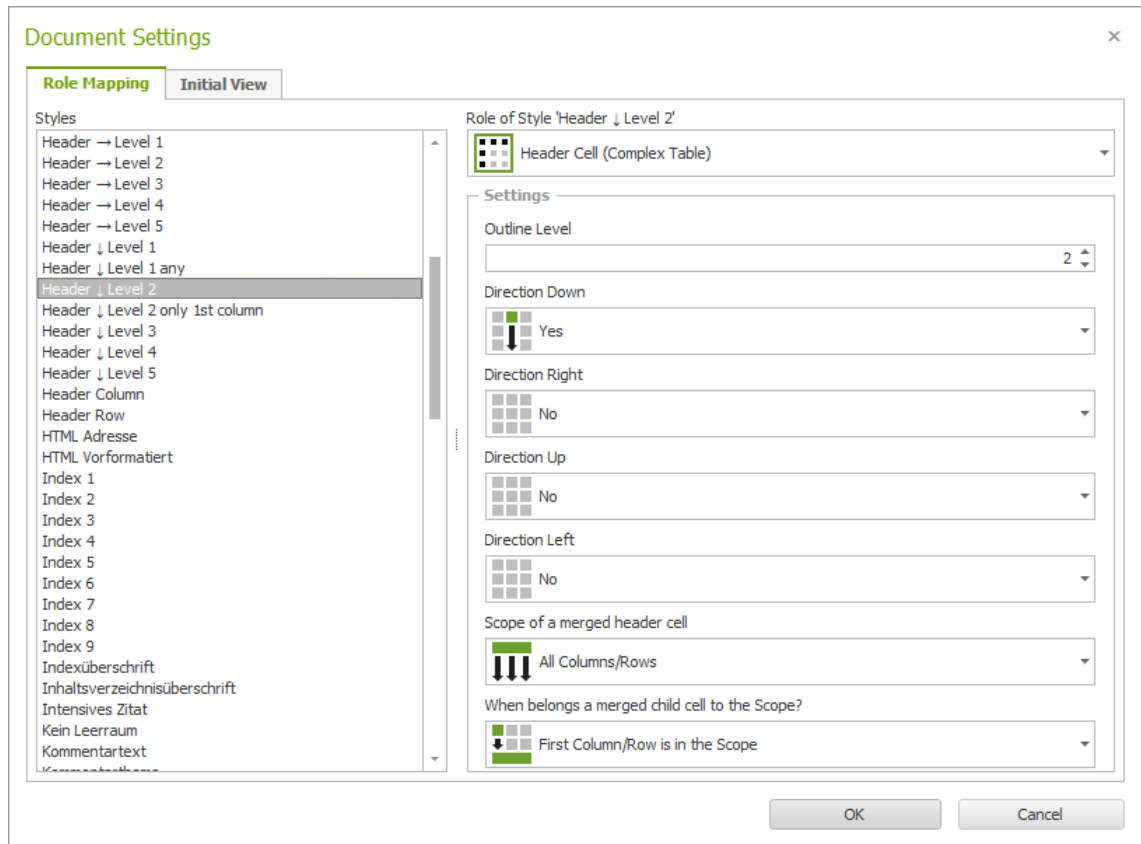


Figure 20: Role Mapping of the style "Header ↓ Level 2"

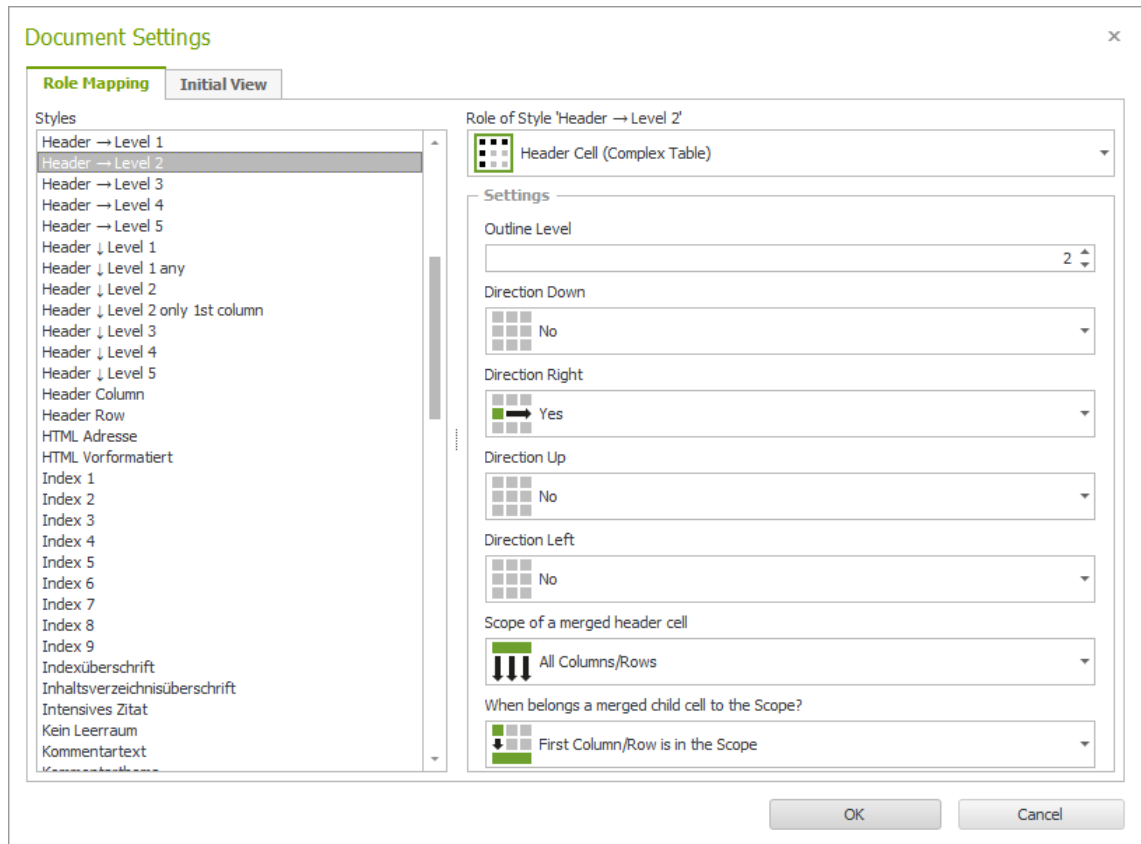


Figure 21: Role Mapping of the style "Header -> Level 2"

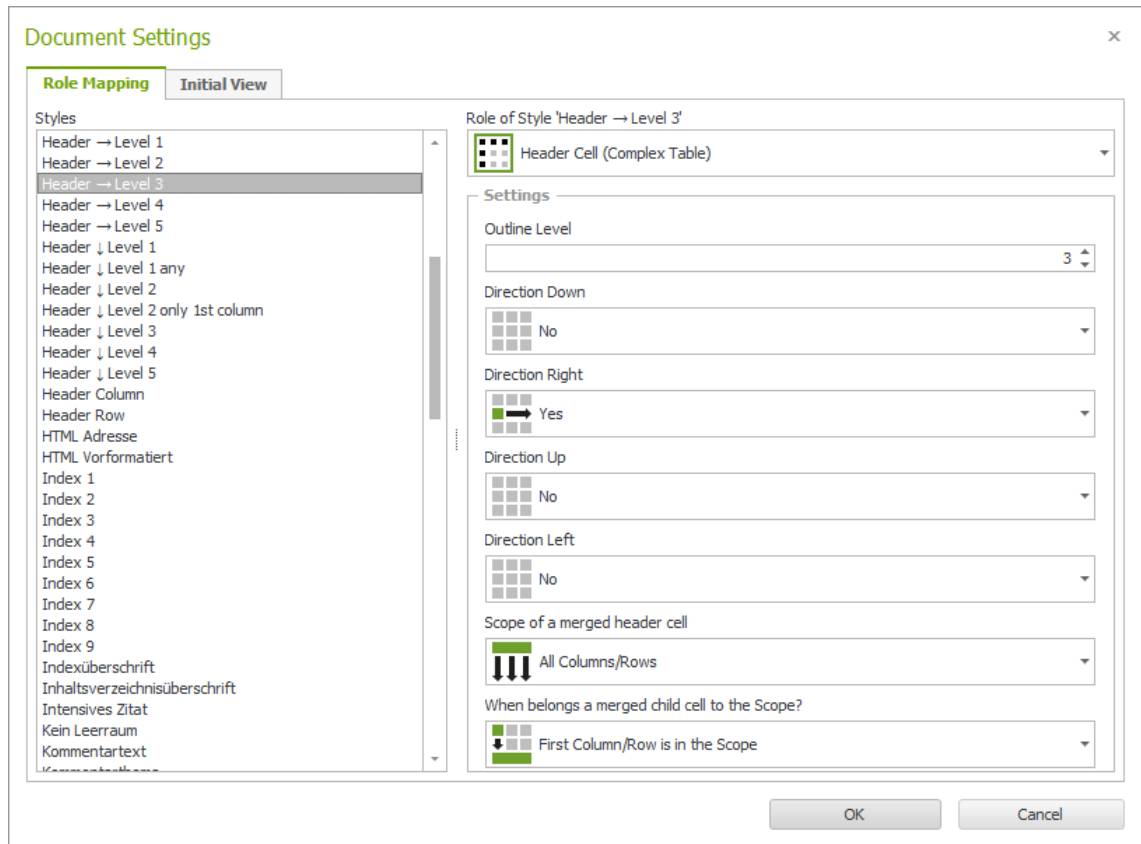


Figure 22: Role Mapping of the style "Header -> Level 3"

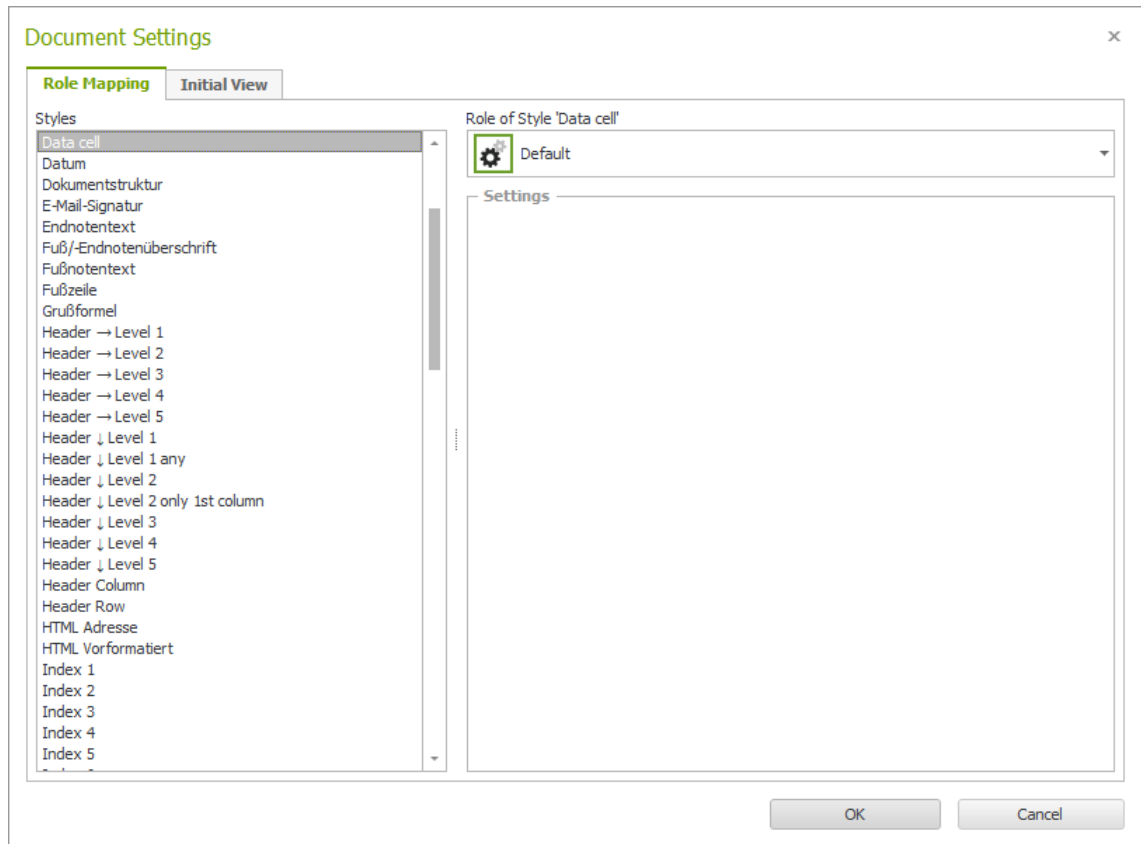


Figure 23: Role mapping of the style "Data cell"



6 Complex tables

6.1 Nested table

Table 6: Weather forecast for the next 2 days for selected locations in Switzerland and Germany

Location	Date	Temperature		Weather
		Maximum	Minimum	
Switzerland				
Bern	29.04.2020	20 °C	10 °C	sunny
	30.04.2020	18 °C	9 °C	light rain
Lugano	29.04.2020	21 °C	14 °C	cloudy
	30.04.2020	20 °C	13 °C	light drizzle
Zurich	29.04.2020	23 °C	13 °C	cloudy
	30.04.2020	20 °C	11 °C	rain
Germany				
Munich	29.04.2020	21 °C	10 °C	cloudy
	30.04.2020	20 °C	9 °C	light rain
Frankfurt	29.04.2020	19 °C	13 °C	sunny
	30.04.2020	17 °C	10 °C	cloudy
Berlin	29.04.2020	19 °C	12 °C	cloudy
	30.04.2020	17 °C	9 °C	light drizzle



Location	Date	Temperature		Weather
		Maximum	Minimum	
Switzerland				
Bern	29.04.2020	20 °C	10 °C	light rain
	30.04.2020	21 °C	14 °C	cloudy
Lugano	29.04.2020	25 °C	11 °C	rain
	30.04.2020	20 °C	11 °C	rain
Germany				
Munich	29.04.2020	21 °C	10 °C	cloudy
	30.04.2020	19 °C	13 °C	light rain
Frankfurt	29.04.2020	19 °C	13 °C	sunny
	30.04.2020	19 °C	13 °C	cloudy
Berlin	29.04.2020	19 °C	13 °C	cloudy
	30.04.2020	17 °C	13 °C	light drizzle

Figure 24: Identification of the used styles in the sample table

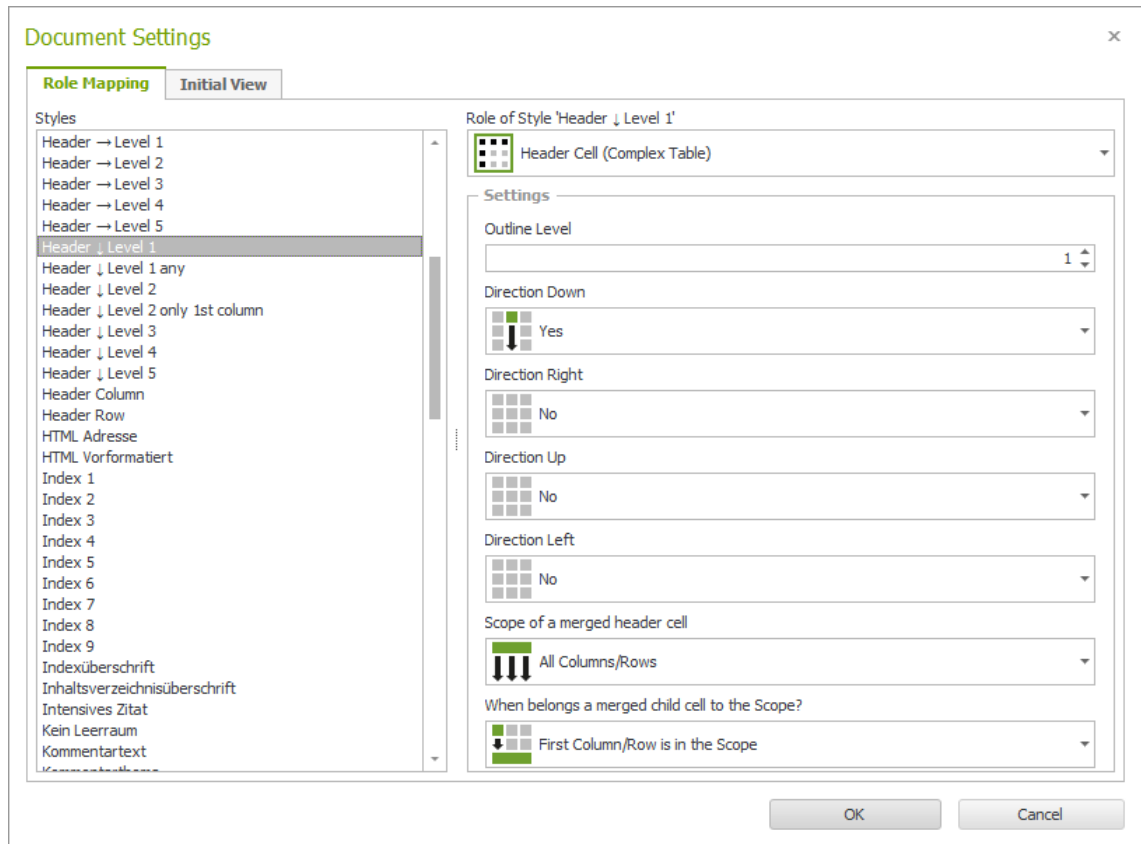


Figure 25: Role Mapping of the style "Header ↓ Level 1"

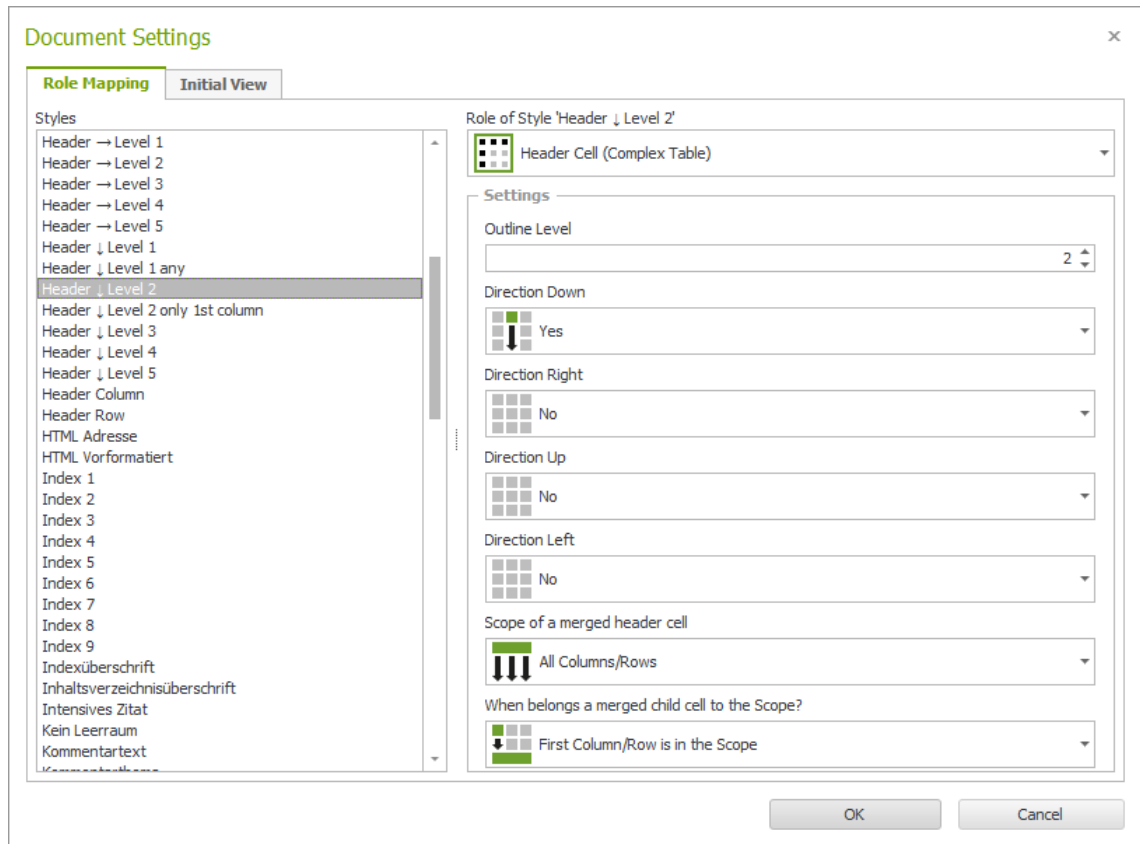


Figure 26: Role Mapping of the style "Header ↓ Level 2"

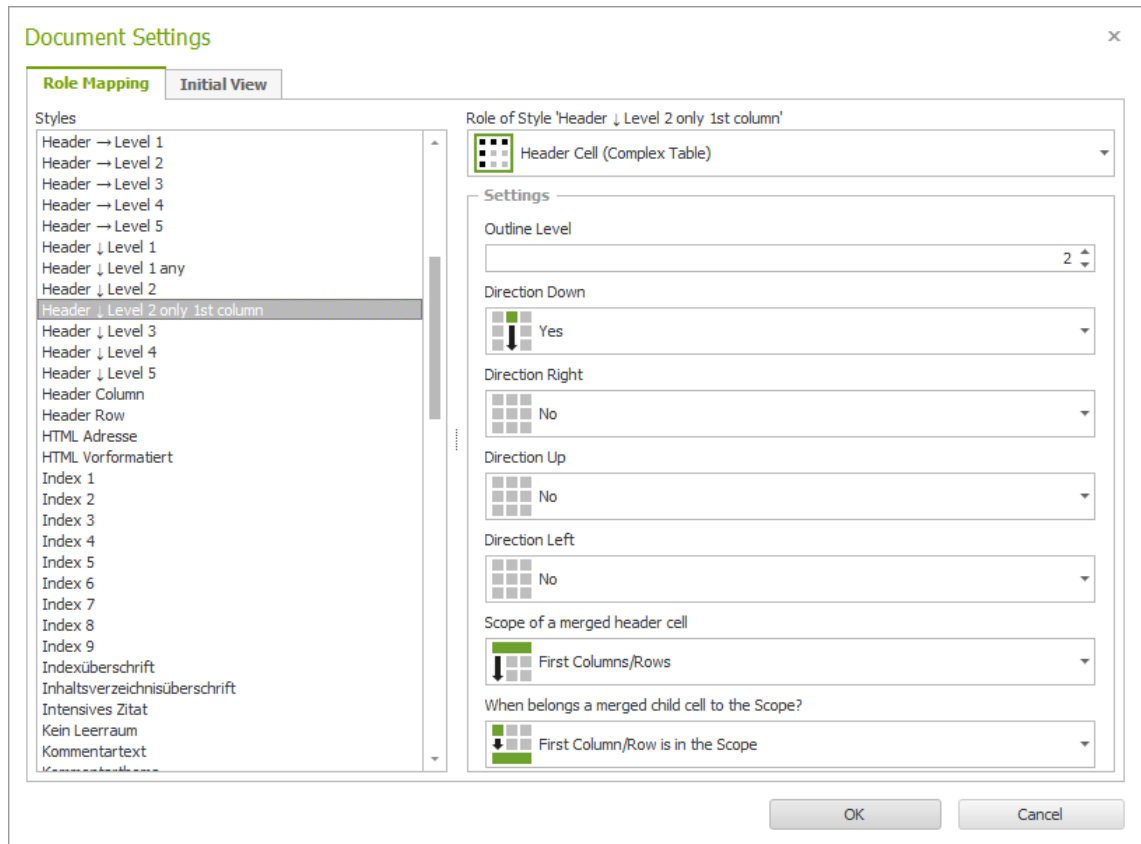


Figure 27: Role Mapping of the style "Header ↓ Level 2 only 1st column"

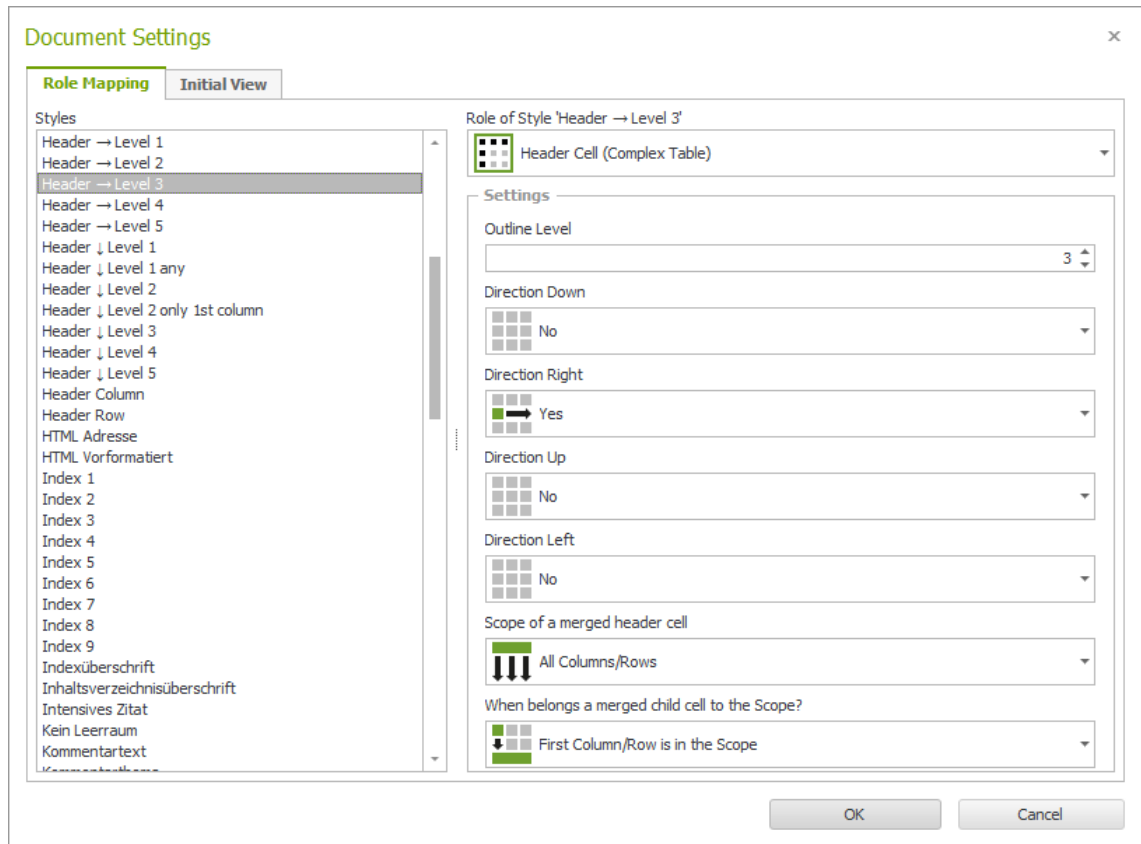


Figure 28: Role Mapping of the style "Header -> Level 3"

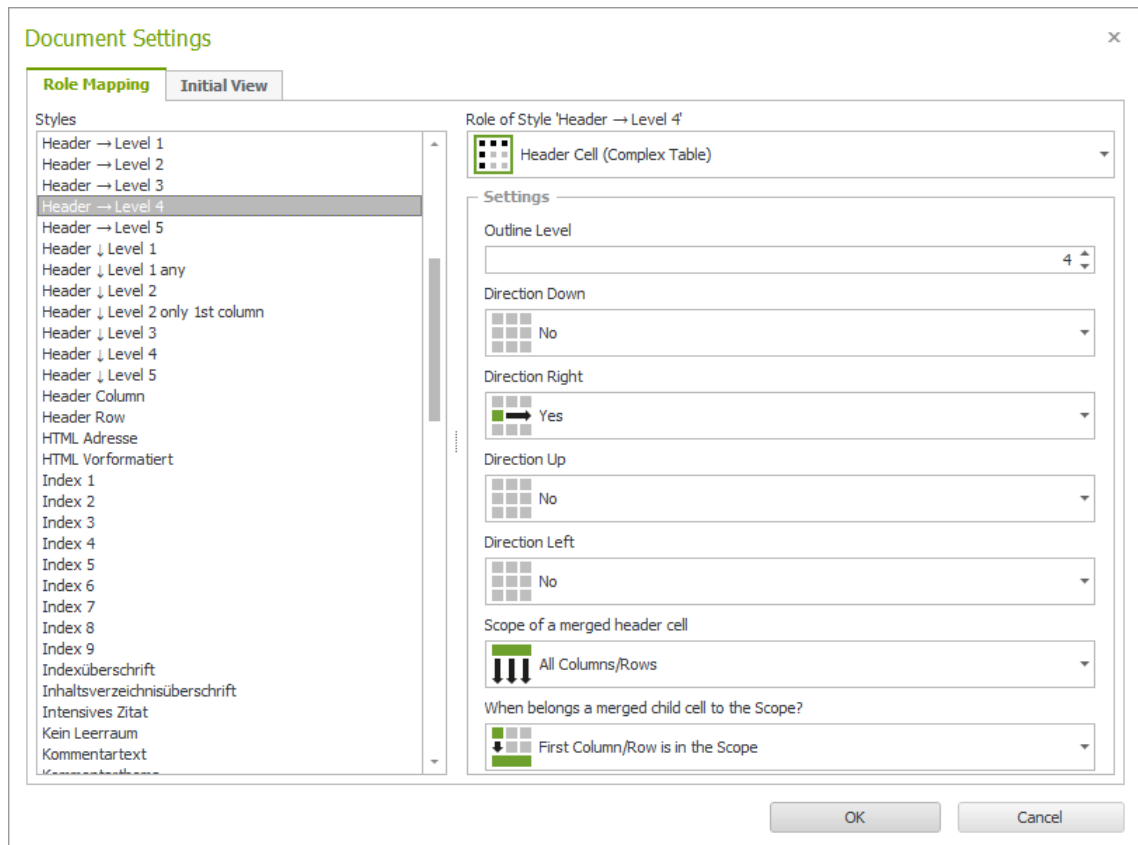


Figure 29: Role Mapping of the style "Header -> Level 4"

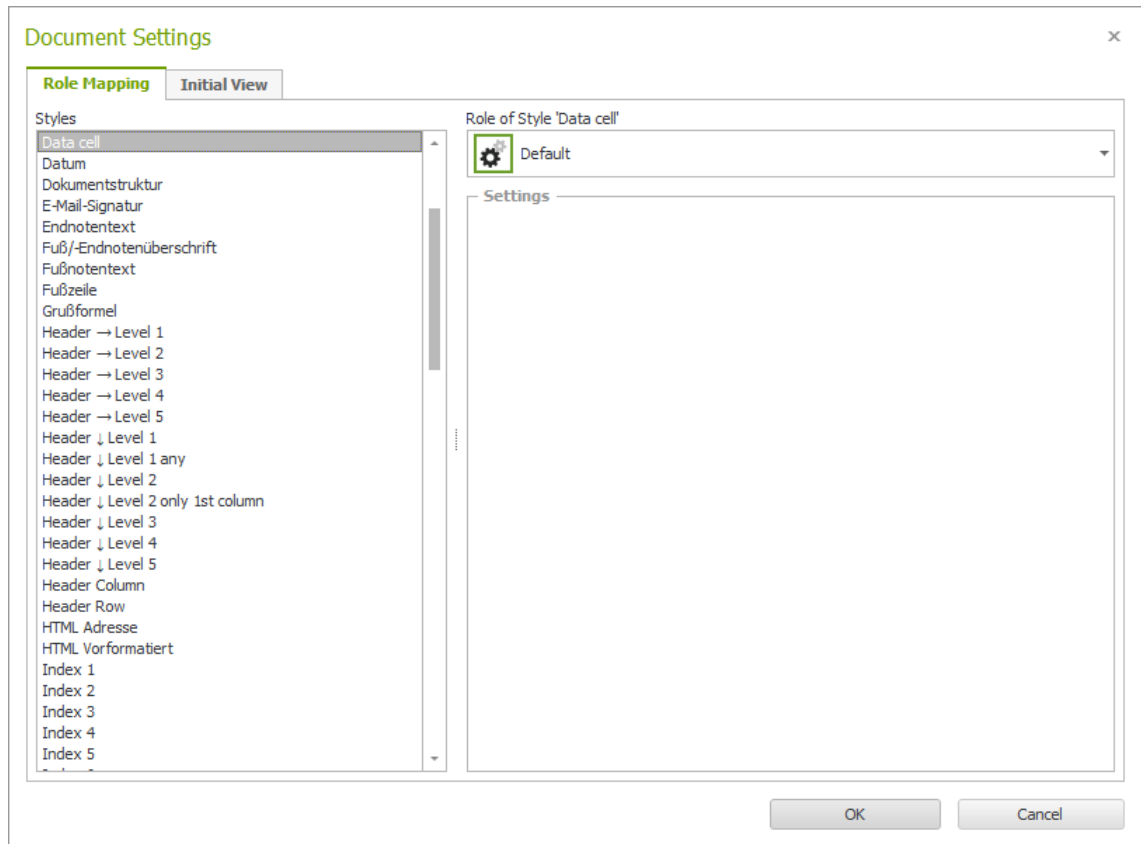


Figure 30: Role mapping of the style "Data cell"



7 Keyboard shortcuts for table navigation with screen reader

Function: Tables	Screen reader JAWS	Screen reader NVDA
Dialog window with listing of all tables	Key: CTRL+Insert+T	---
Jump to next table	Key: T	Key: T
Jump/read to next cell on the left	Key: CTRL+ALT+Arrow Left	Key: Arrow Top
Jump/read to next cell on the right	Key: CTRL+ALT+Arrow Right	Key: Down arrow
Jump/read up within the column	Key: CTRL+ALT+Arrow Top	---
Jump/read down within the column	Key: CTRL+ALT+Arrow Bottom	---