

CFIHOS Use Case 2 –Document-to-Tag Relationship Validation

Contractor or Principal quality assurance workflow validating document-to-tag relationships and consistency between engineering document metadata and tag register information. Aligned to CFIHOS v2.0 Core Reference Data Library structures.

Introduction

Contractor or Principal quality assurance workflow validating document-to-tag relationships and consistency between engineering document metadata and tag register information.

This user guide demonstrates how to use Rihal Data eXtract (RDX) and Rihal Data Refine (RDR) to:

- extract tags and metadata from submitted engineering drawing and document files
- compare extracted document relationships against tag register information
- validate document-to-tag relationships against Principal reference data requirements
- identify missing, inconsistent or invalid relationships
- generate relationship validation outputs for submission or further review

The workflow can be performed by Contractor Document Control before information is transferred to the Principal, or by Principal Document Control as part of received-submission quality assurance.

These instructions assume that RDX extraction rules and RDR properties, reference data, transformation rules and Excel templates have already been configured for the applicable project standard.

Rihal Data eXtract – Import Files and Extract Metadata

1. Prepare files for tag extraction into one folder for upload to RDX
2. Log in to RDX using the instance URL and login credentials provided by your organisation
3. Select **Projects** from the left-hand menu and select the appropriate project

Rihal Data eXtract

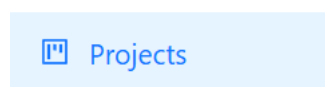


Figure 1. Projects

4. Where required, remove files from a previous run before uploading the new submission. Confirm that the files are no longer required before deletion. Remove previously uploaded files by selecting the delete button next to each file



Figure 2. Delete previously uploaded files

5. Select the **Upload** button



Figure 3. Upload button

6. Navigate to the prepared folder and select files to open

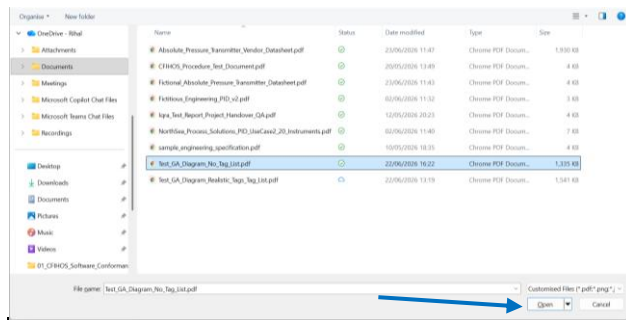


Figure 4. Select all files then Open for upload

7. Select **Start** to begin the extraction process



Figure 5. Start extraction

8. Wait for the Extraction status to show “Completed” then select **Results** view

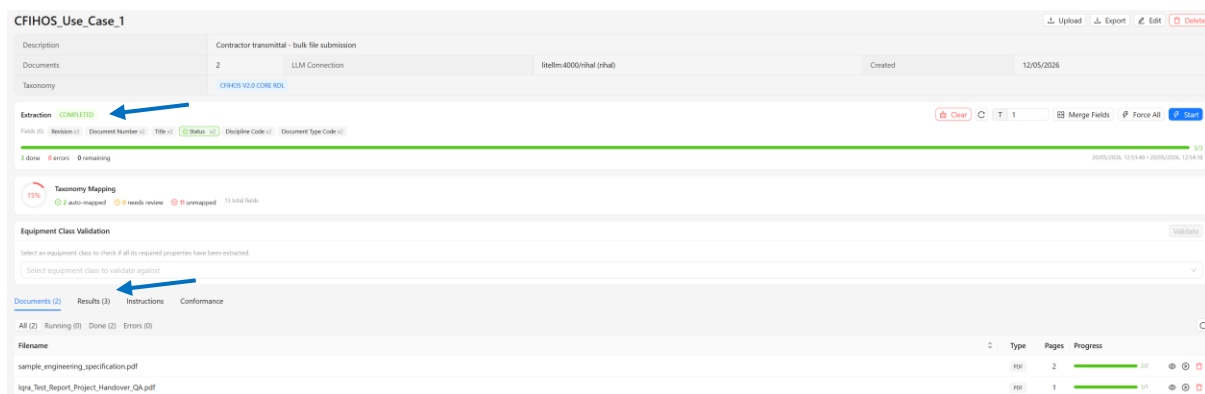


Figure 6. Extraction completed, select Results view

9. The Results view shows extracted fields and each document page as a record, extracted fields are organised into columns for each page

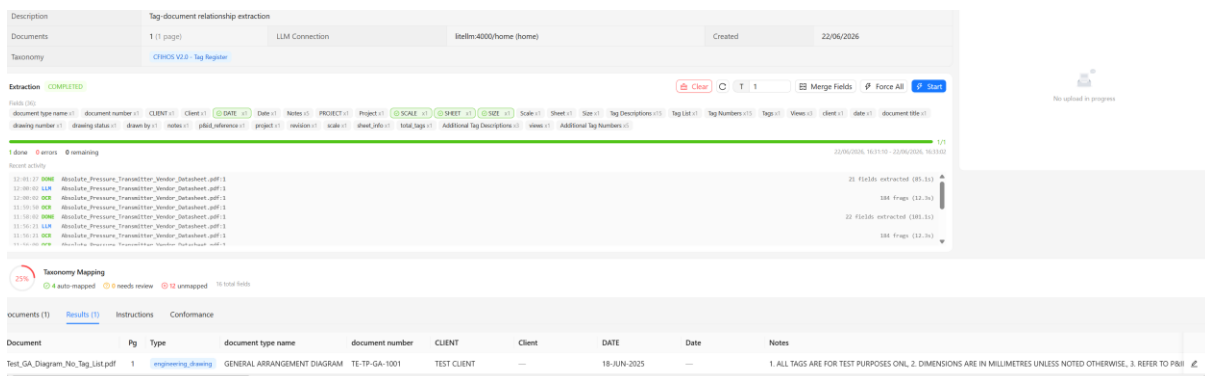


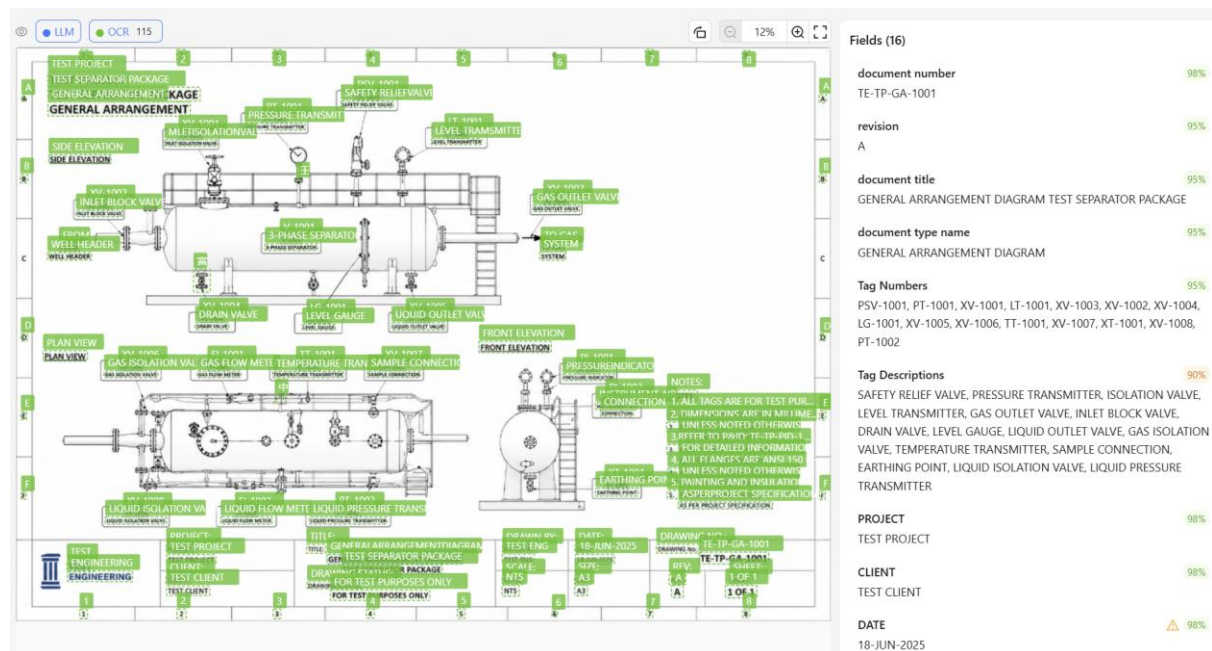
Figure 7. Results view

10. Select the Edit icon to view the file

Document	Pg	Tag Numbers	Tags	View
Test_GA_Diagram_No_Tag_List.pdf	1	PSV-1001, PT-1001, XV-1001, LT-1001, XV-1003, XV-1002, XV-1004, LG-1001, XV-1005, XV-1006, TT-1001, XV-1007, XT-1001, XV-1008, PT-1002	—	

Figure 8. Open the Document Viewer

- The Document Viewer provides a visual quality assurance interface that displays extracted document metadata and tag relationships directly against the source engineering drawing or document. Users can verify extracted tags, review confidence scores and confirm document-to-tag relationships before validation and transformation activities.



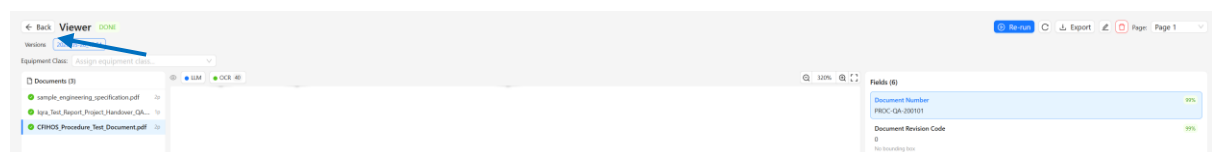
The Document Viewer interface displays a technical drawing of a test separator package. The drawing includes various components labeled with tags such as PSV-1001, PT-1001, XV-1001, LT-1001, XV-1003, XV-1002, XV-1004, LG-1001, XV-1005, XV-1006, TT-1001, XV-1007, XT-1001, XV-1008, and PT-1002. The interface also shows a sidebar with extracted metadata and tag relationships.

Fields (16)

- document number: TE-TP-GA-1001 (98%)
- revision: A (95%)
- document title: GENERAL ARRANGEMENT DIAGRAM TEST SEPARATOR PACKAGE (95%)
- document type name: GENERAL ARRANGEMENT DIAGRAM (95%)
- Tag Numbers: PSV-1001, PT-1001, XV-1001, LT-1001, XV-1003, XV-1002, XV-1004, LG-1001, XV-1005, XV-1006, TT-1001, XV-1007, XT-1001, XV-1008, PT-1002 (95%)
- Tag Descriptions: SAFETY RELIEF VALVE, PRESSURE TRANSMITTER, ISOLATION VALVE, LEVEL TRANSMITTER, GAS OUTLET VALVE, INLET BLOCK VALVE, DRAIN VALVE, LEVEL GAUGE, LIQUID OUTLET VALVE, GAS ISOLATION VALVE, TEMPERATURE TRANSMITTER, SAMPLE CONNECTION, EARTHING POINT, LIQUID ISOLATION VALVE, LIQUID PRESSURE TRANSMITTER (90%)
- PROJECT: TEST PROJECT (98%)
- CLIENT: TEST CLIENT (98%)
- DATE: 18-JUN-2025 (98%)

Figure 9. Document Viewer

- Select **Back** to return to Documents view



The screenshot shows the Document Viewer interface with the 'Back' button highlighted in the top left corner. The interface also displays a sidebar with extracted metadata and tag relationships.

Figure 10. Back button to return to documents view

- Select the **Export** button



The screenshot shows the CFIHOS Use Case 2 interface. The 'Export' button is highlighted in the top right corner. The interface also displays a sidebar with extracted metadata and tag relationships.

Figure 11. Export button

14. Select **Excel (wide – fields as columns)**

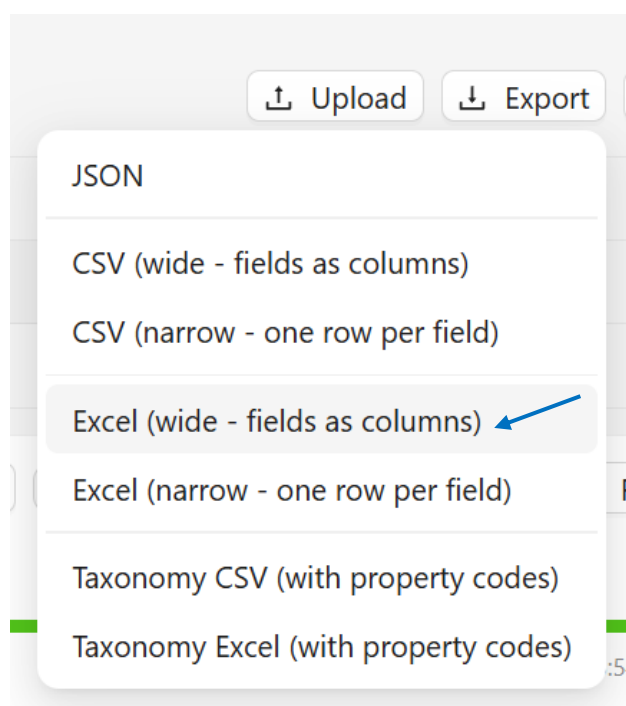


Figure 12. Select export format

15. Use Save As dialog box to rename file, navigate to save location then select **Save**

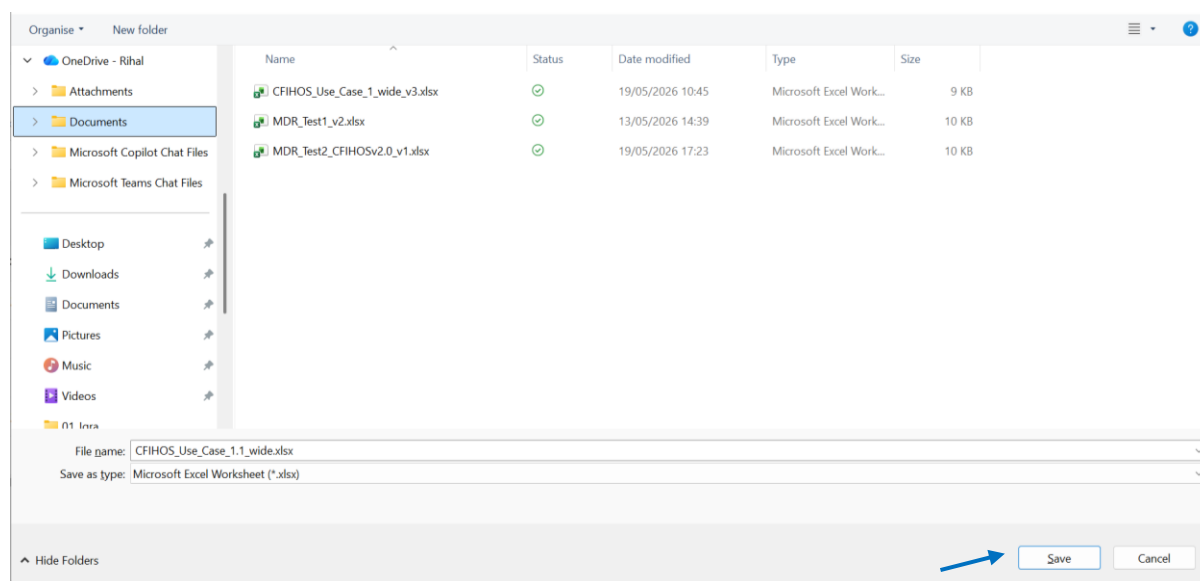


Figure 13. Save As dialog box

RDX output: structured metadata export including document-to-tag relationships ready for comparison to document-to-tag relationships derived from tag register in RDR.

Rihal Data Refine – Comparing Extracted Metadata to Tag Register

1. Prepare extracted metadata Excel workbook from RDX and document-to-tag relationship register workbook into one folder for upload into RDR
2. Log in to RDR using the instance URL and login credentials provided by your organisation
3. Ensure correct project is selected

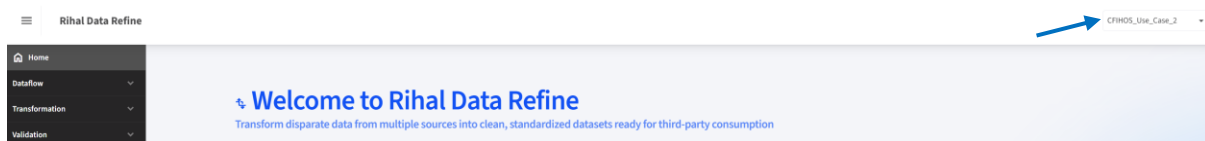


Figure 14. Select project

4. On the left-hand menu select **Dataflow** then **Upload Data**

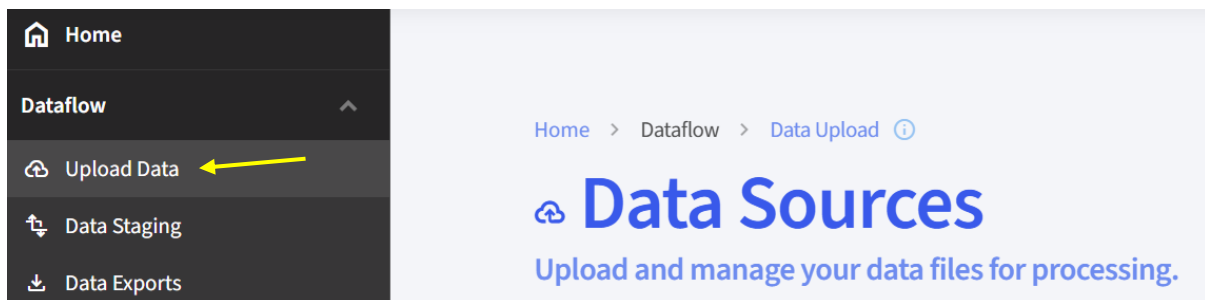


Figure 15. Upload data

5. Where required, remove files from a previous run before uploading the new submission. Confirm that the files are no longer required before deletion. To clear previously loaded files, select the Select All checkbox then select **Delete Selected**

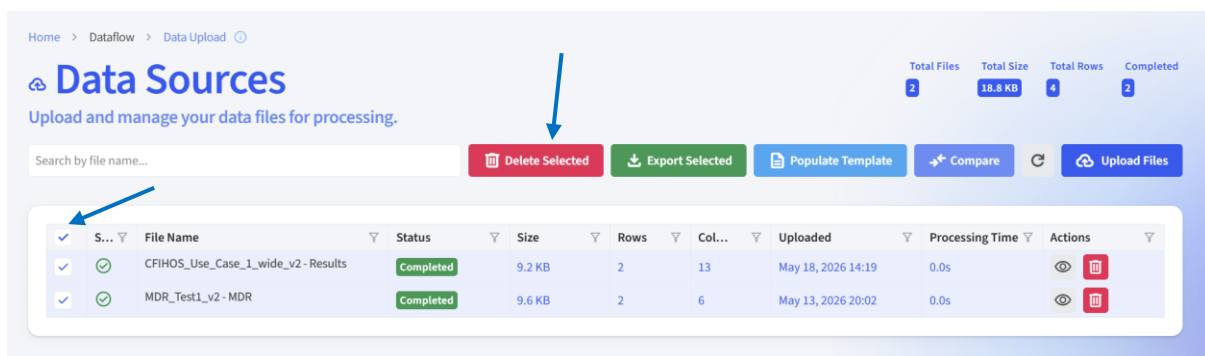


Figure 16. Delete selected files

6. Confirm delete selection

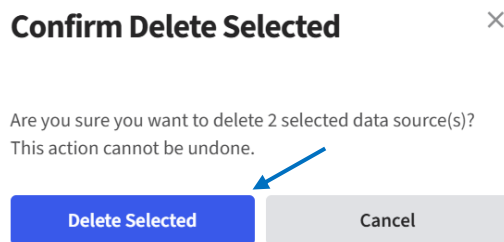


Figure 17. Confirm delete selection.

7. Wait for files to be deleted

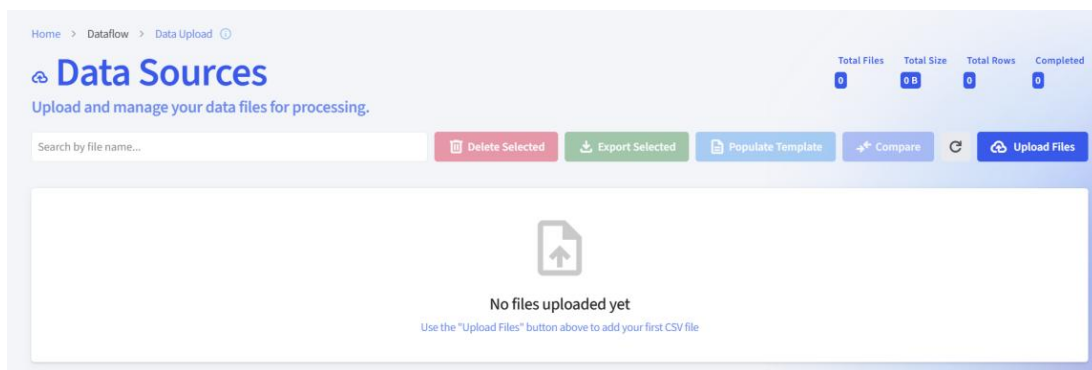


Figure 18. Data sources cleared

8. Select Upload Files

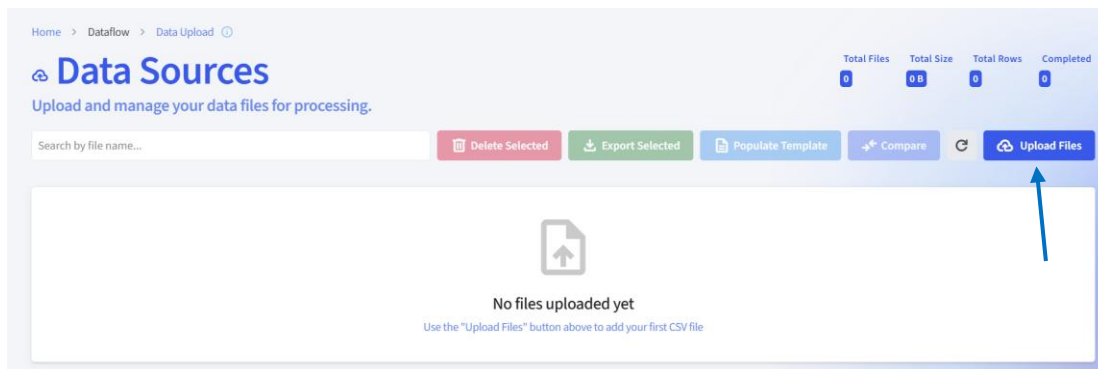


Figure 19. Upload files

9. Navigate to folder with extracted metadata and document-to-tag relationship register workbooks then press **Ctrl+A** to select all files, then select **Open**

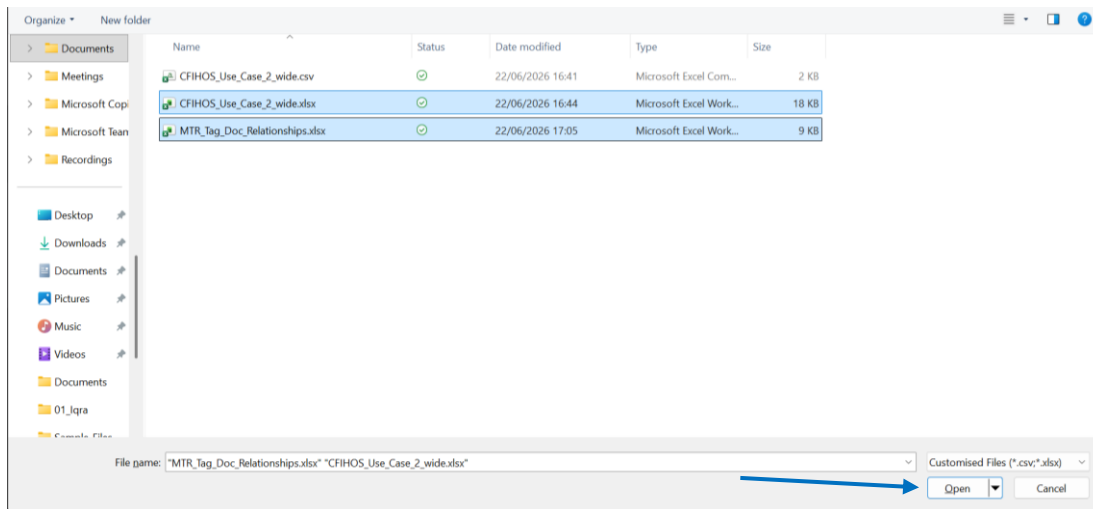


Figure 20. Open files

10. The files will display as Data Sources on Upload Data page

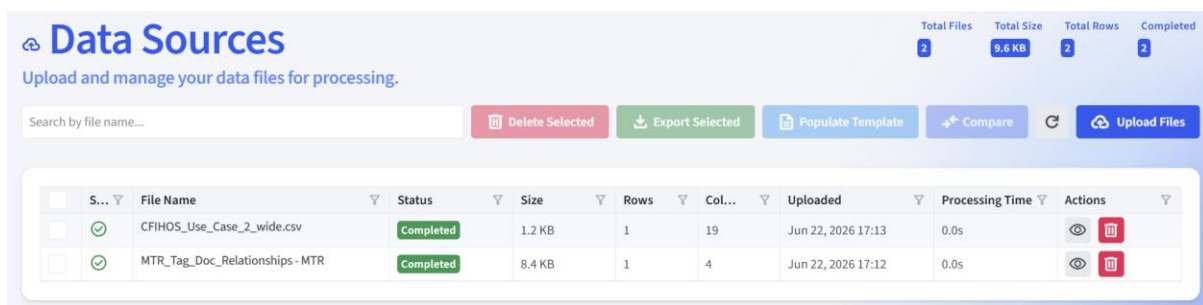


Figure 21. Uploaded files

11. Expand the Tools menu and select **Data Comparison**



Figure 22. Data comparison

12. Select a **Left Data Source** (Tag register) and **Right Data Source** (Extracted metadata) then select **Compare**

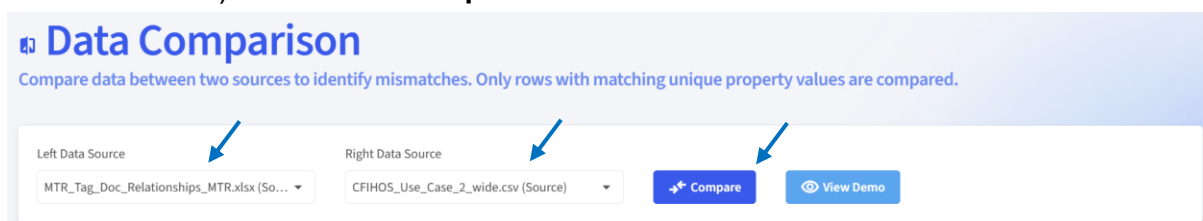


Figure 23. Select data sources for comparison

- Under Property Mismatch Summary, select the relevant property mismatch, then select **Click to view affected unique items**

The screenshot shows the 'Data Comparison' interface. At the top, it says 'Compare data between two sources to identify mismatches. Only rows with matching unique property values are compared.' Below this, the 'Left Data Source' is 'MTR_Tag_Doc_Relationships_MTR.xlsx' and the 'Right Data Source' is 'CFIHOS_Use_Case_2_wide.csv'. The 'Comparison Results' section shows '1 mismatches found'. Under 'Property Mismatch Summary', there are two properties: 'data_source' and 'Tag Numbers'. The 'Tag Numbers' property is selected, showing a list of tag numbers: 'PSV-1001; PT-1001; XV-1001; LT-1001'. A blue arrow points to the 'Click to view affected unique items' link below the list.

Figure 24. Click to view affected unique items

- Review the side-by-side comparison shown for each unique document

The screenshot shows the 'Data Comparison' interface with the 'Tag Numbers' property selected. The 'Left Value' is 'PSV-1001; PT-1001; XV-1001; LT-1001' and the 'Right Value' is 'PSV-1001; PT-1001; XV-1001; LT-1001; XV-1003; XV-1002; XV-1004; LG-1001; XV-1005; XV-1006; TT-1001; XV-1007; XT-1001; XV-1008; PT-1002'. Below this, a search bar for 'document number' is shown. The 'Showing 1 of 1 affected items' section displays a side-by-side comparison for document number 'TE-TP-GA-1001'. The comparison shows columns for 'data_source', 'Tag Numbers', 'worksheet_name', 'Additional Tag Descriptions', 'Additional Tag Numbers', 'CLIENT', and 'DATE'. The 'Tag Numbers' column shows a mismatch between the left and right values.

Figure 25. Side by side column comparison

- Go to **Data Staging** under the **Dataflow** menu heading

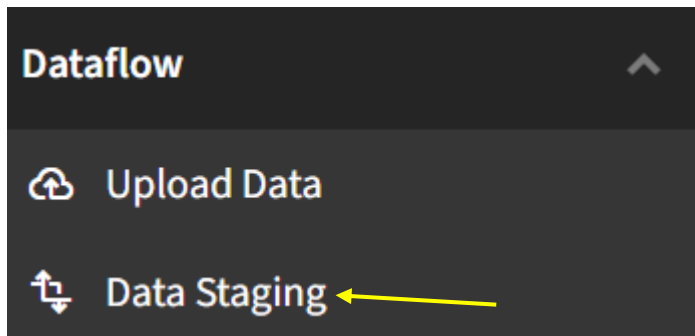


Figure 26. Data staging

16. Select **Run Transformation**

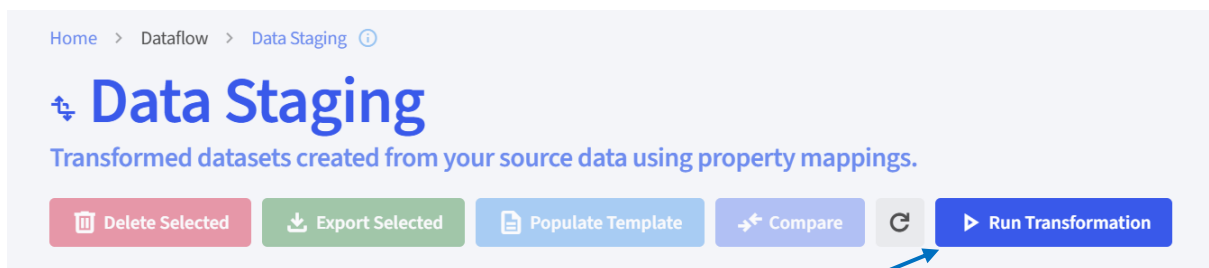


Figure 27. Run transformation

17. Once transformation is completed a staging dataset is created, select the eye button to view

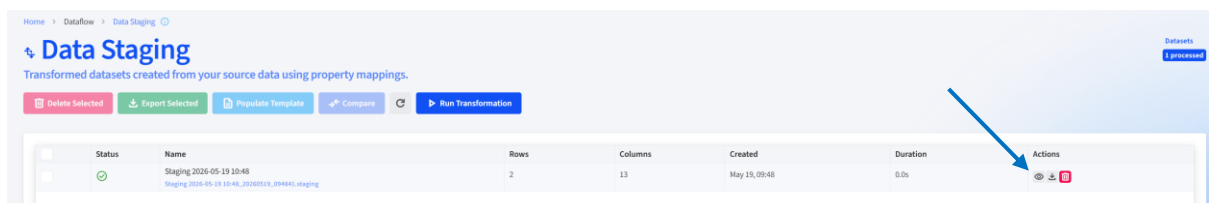


Figure 28. View staging dataset

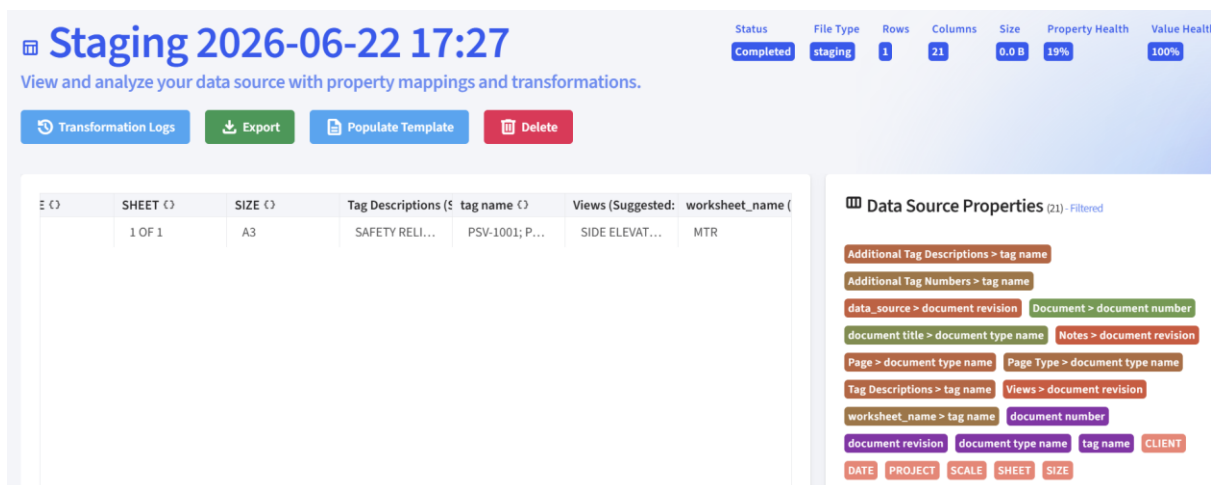


Figure 29. View staging dataset

18. Review the transformation results

WHILST REVIEWING THE STAGING DATASET REFER TO RESOLVING INVALID VALUES SECTIONS BELOW

19. Select **Populate Template**

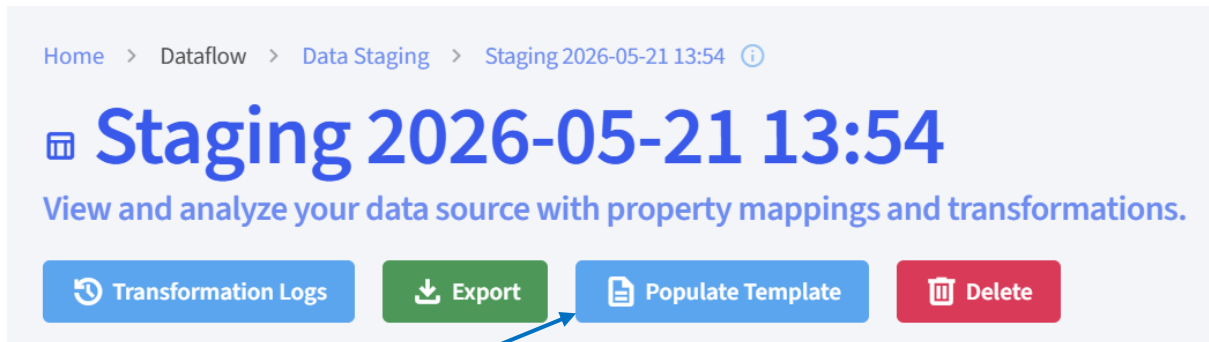


Figure 30. Populate template

20. Select the correct Tag-Doc Relationships Register template and staging source then select **Populate Template**

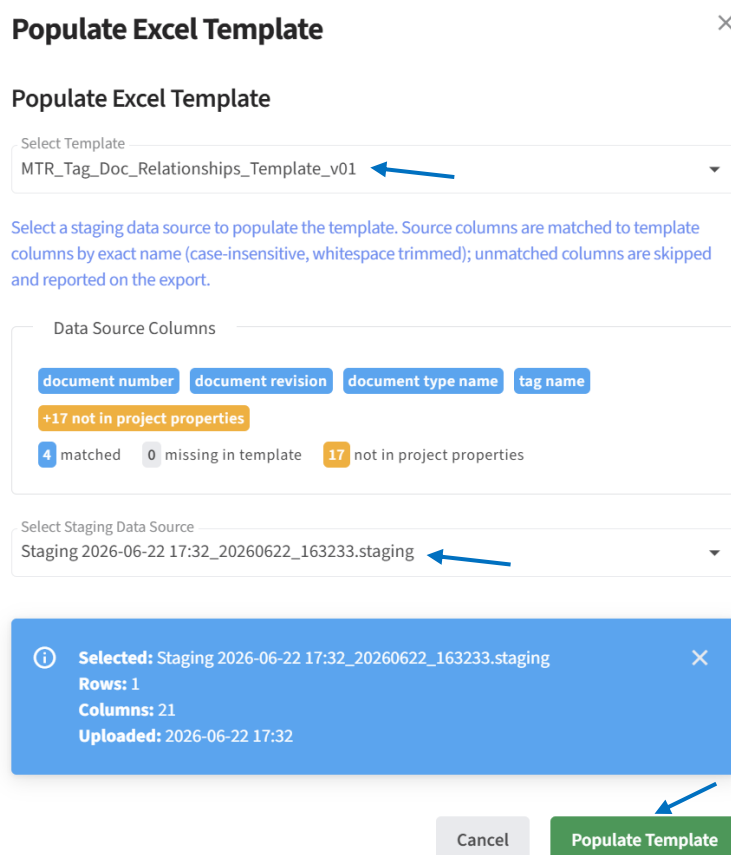


Figure 31. Populate template

21. Navigate to **Data Exports** under **Dataflow** section of menu

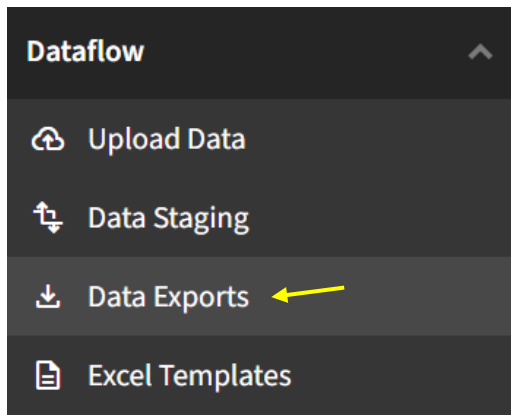


Figure 32. Data exports

22. Select the Download Export button under the Actions column for the required data export

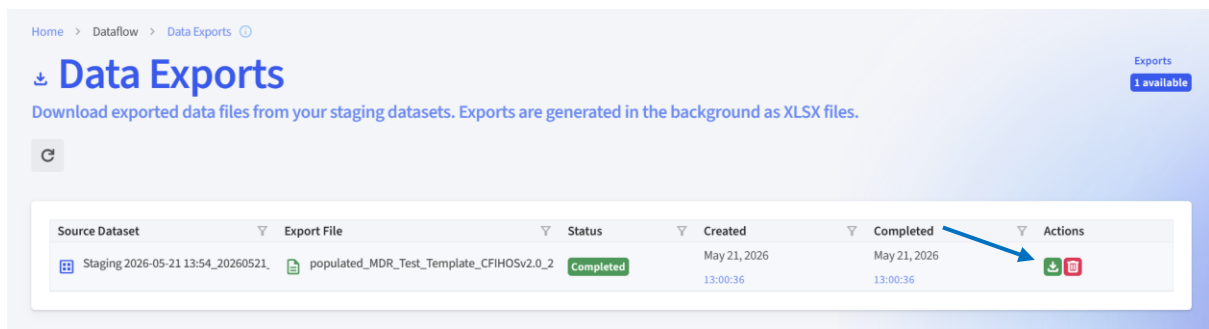


Figure 33. Download export file

23. Use the Save As dialog box to rename the populated template file, select a save location and select **Save**

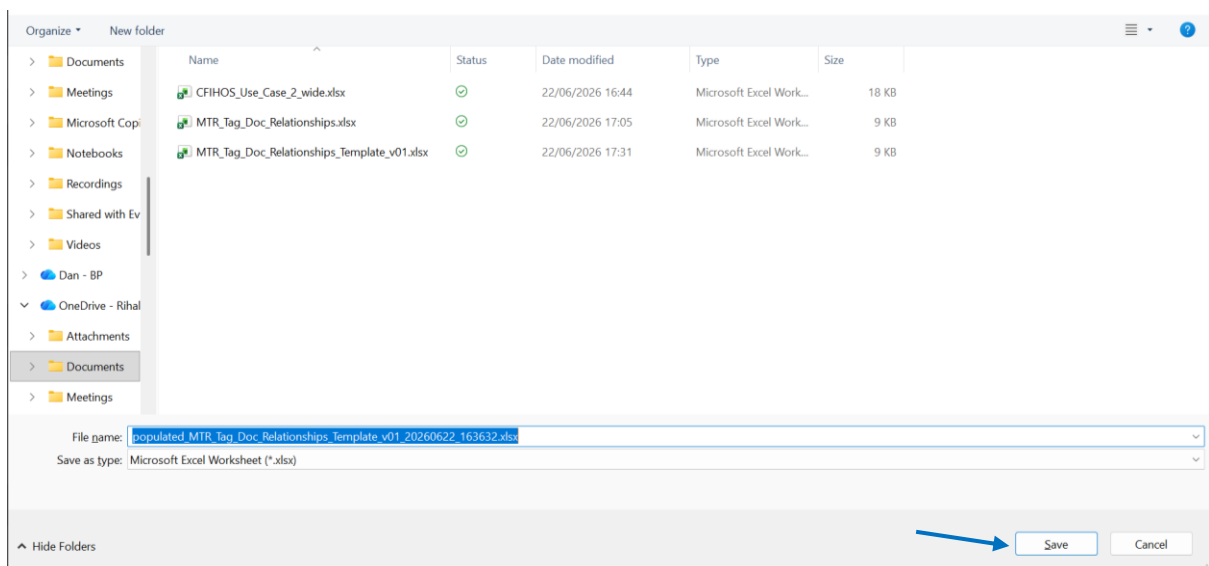


Figure 34. Save As for populated template

24. Open the populated template Excel workbook for review

document number	document revision	document type name	tag name
TE-TP-GA-1001	A	GENERAL ARRANGEMENT DIAGRAM	PSV-1001; PT-1001; XV-1001; LT-1001 PSV-1001; PT-1001; XV-1001; LT-1001; XV-1003; XV-1002; XV-1004; LG-1001; XV-1005; XV-1006; TT-1001; XV-1007; XT-1001; XV-1008;

Figure 35. Sample populated document-to-tag relationship register

RDR output: validated and transformed document-to-tag relationship register populated in the required Principal template for transmittal to Principal or further transformation.

Resolving Invalid Values – RDR (Preferred)

1. Select **Property Mappings** from the **Transformation** section of left menu

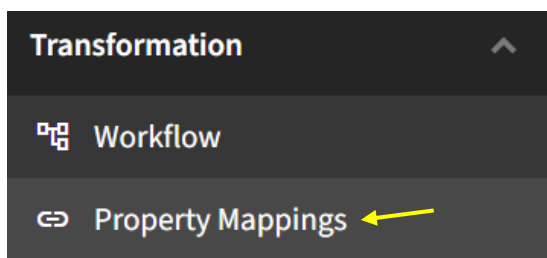


Figure 36. Property mappings

2. Select a property highlighted in purple in the Data Source Properties section and choose **View Values** to review (review each mapped target property shown in purple)

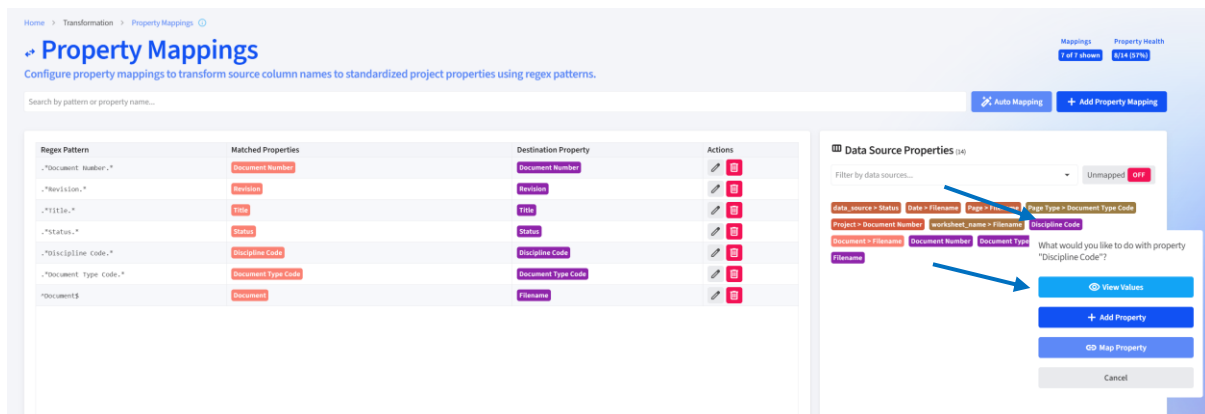


Figure 37. Select data source properties tagged in purple then view values

- Where an invalid or unresolved value is shown in red, select the value for review

Property Values - Revision

2 unique values from 2 total records → Mapped to: Revision

Invalid Only **OFF**

CFIHOS_Use_Case_1_wide_v3 - Results

A (1) A. (1)

Figure 38. Property values

- Enter a replacement value to create a reusable value mapping correction for the property then select **Create**

Create Value Mapping for 'Revision' - Value: 'A.'

Staging Data **OFF** Data Sources CFIHOS_Use_Case_1_wide_v3 - Results MDR_Test1_v2 - MDR

Properties Regex Pattern ^Revision\$ Valid regex pattern

Matched Properties Revision > Revision

Values Regex Pattern ^(?<VALUE>A\.)\$ Valid regex pattern

Matched Values

Replacement Value A

Suggested Lookup Values No suggestions available

Replacement Preview with Validation Revision: A

Description (Optional)

Cancel Create

AI Assistant

Start a conversation

Ask questions or get assistance with your data mapping tasks.

Type your message...

Send

Figure 39. Create value mapping to make correction (in this example, revision “A.” will be transformed to “A”)

- Go to RDR step 15 to re-run transformation with updated rules

Resolving Conflicting Values – Excel (Alternative)

- Open the populated template in Excel
- In Excel use Ctrl & F to find cells containing the pipe delimiter to review conflicts

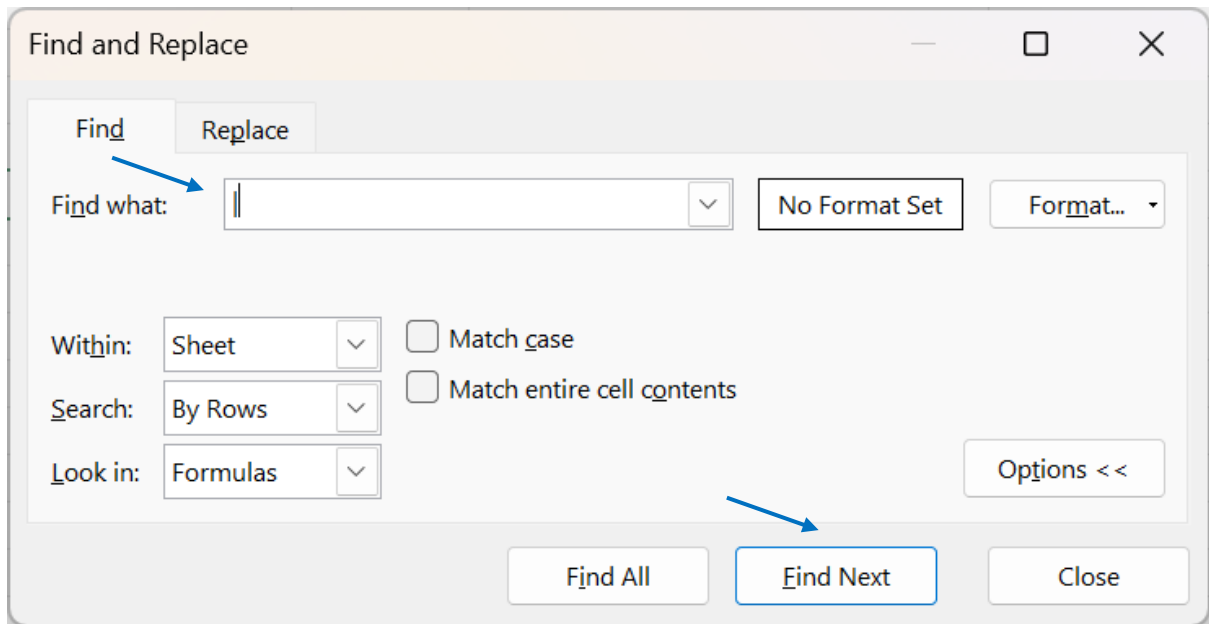


Figure 40. Find cells with conflicting values

3. Resolve each conflict by replacing with the correct value

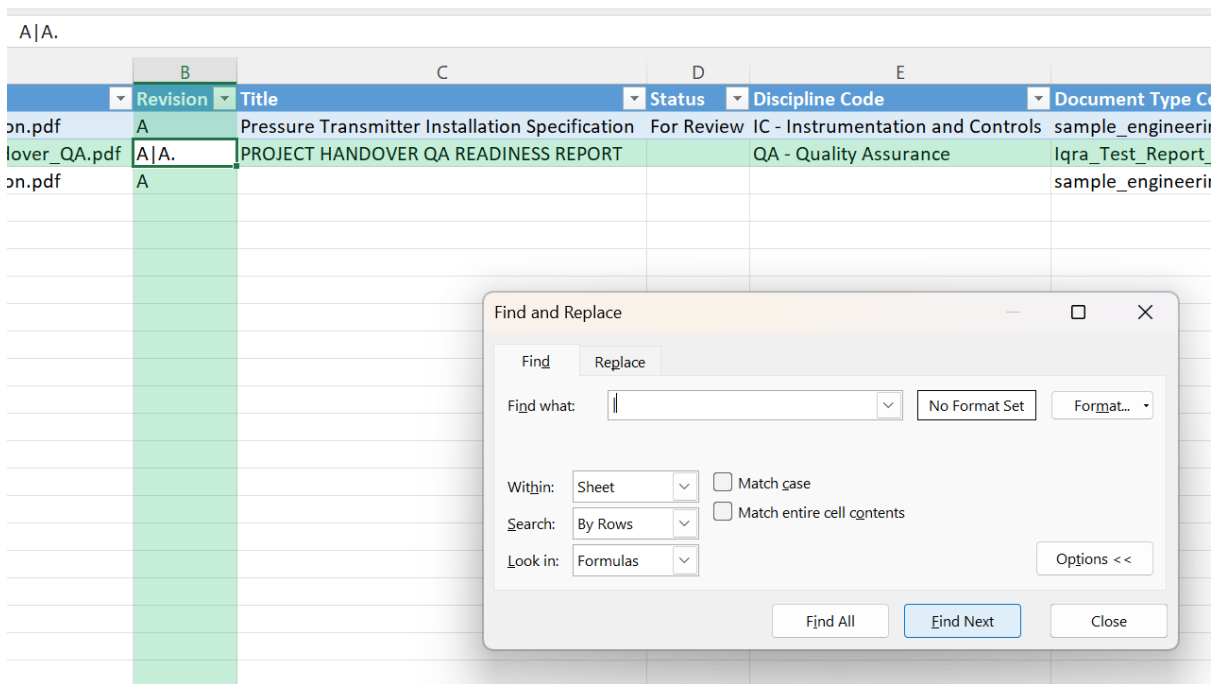


Figure 41. Example value conflict

Document Number	Revision	Title	Status	Discipline Code	Document Type Code
ENG-SPEC-PT-001	A	Pressure Transmitter Installation Specification	For Review	IC - Instrumentation and Controls	SPE - Specification
REP-QA-OPS-0002	A	PROJECT HANDOVER QA READINESS REPORT		QA - Quality Assurance	REP - Report

Figure 42. Example resolved conflict value

Once all values have been corrected and the populated register has been fully reviewed, the information deliverable is ready for the next stage:

- a. Contractor workflow: submit the validated register and associated document files to the Principal through the agreed project information management process.*
- b. Principal workflow: proceed with received-submission quality assurance and review through the Principal's agreed information management process and systems.*