National Casemix Office

NHS Digital

User Manual

Prescribed Specialised Services 2019/20 Operational Tool

PS 19/20

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Grouper Installation and Uninstallation

This guide details the prerequisite system requirements for installing the Tool and provides a step-by-step guide for installing and uninstalling the Tool.

System Requirements

The Tool has been developed on a platform that supports Window Server 2008 onwards. This is in line with a Cabinet Office letter published on 8 April 2014 advising that NHS organisations could apply for a 12-month support extension for XP with the understanding that they would have plans in place for migrating from Windows XP by April 2015.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/314721/DHandCabinetOfficeMicrosoftXPupdate8April14.pdf

Therefore, in order to install the Grouper or Prescribed Specialised Services Tool onto your computer, it must be running Operating System (OS) Windows 7/Windows Server 2008 R2 or a more recent Windows OS. The software can be run on Windows Vista, but this OS is considered unsupported as it is no longer covered under Microsoft extended support.

The minimum specification advised to run the software products based on the minimum recommended PC specification to run Windows 7 as specified by Microsoft are as follows:

- 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
- 1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit)
- A minimum install (excluding example files) requires 47Mb of free disk space
- Microsoft Windows .NET Framework version 4.5 or above

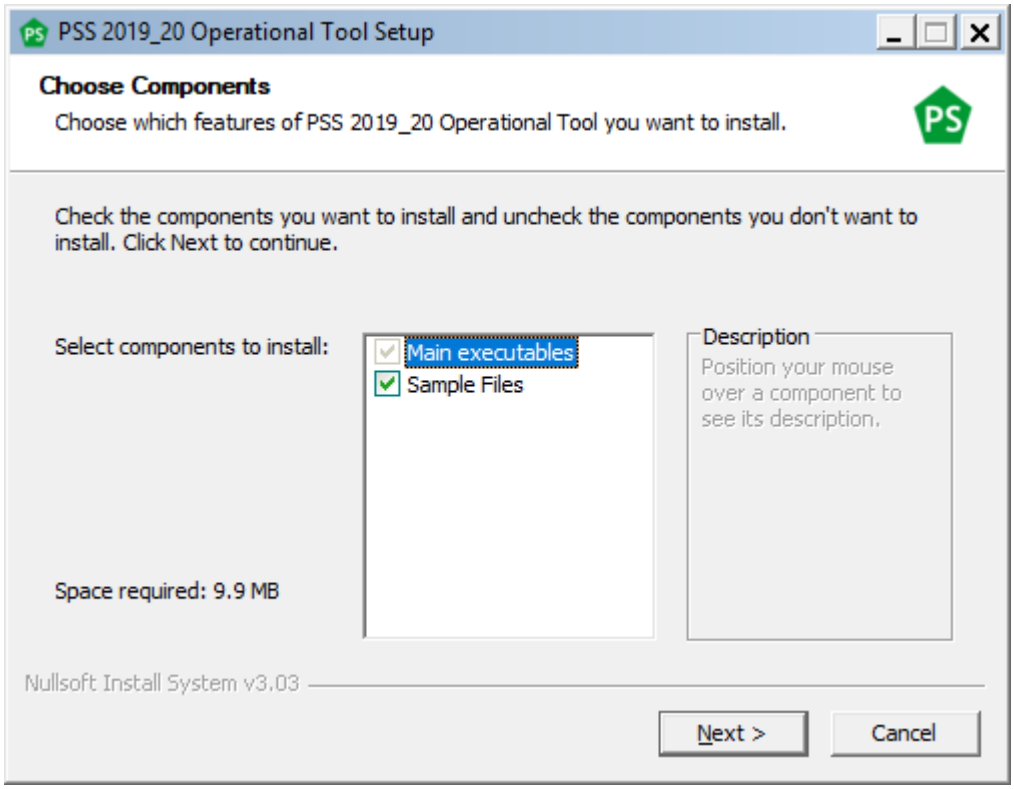
Previous OS are not supported, in line with the edict from the Cabinet Office.

Download and Install the Tool

- Go to https://digital.nhs.uk/national-casemix-office/downloads-groupers-and-tools.
- Click on Prescribed Specialised Services (PSS) Tool.
- There may be more than one version available. Older versions can be found in the “Archived material” section.
- Click on the relevant Tool.
- Click on the download link under the Summary text.
- Save the zip file to an appropriate location on your computer.
- Open the zip file and extract the installer.
- Double-click the installer file and follow the installation setup wizard. It is important to note that depending on your security settings, you may require elevated permissions or an administrator account to install this application. If this is the case, you will need to contact your IT department to secure the appropriate permissions.

Installation Setup Wizard

Double-click the installer file to open it. The Grouper setup wizard should automatically start. The first screen is shown below:



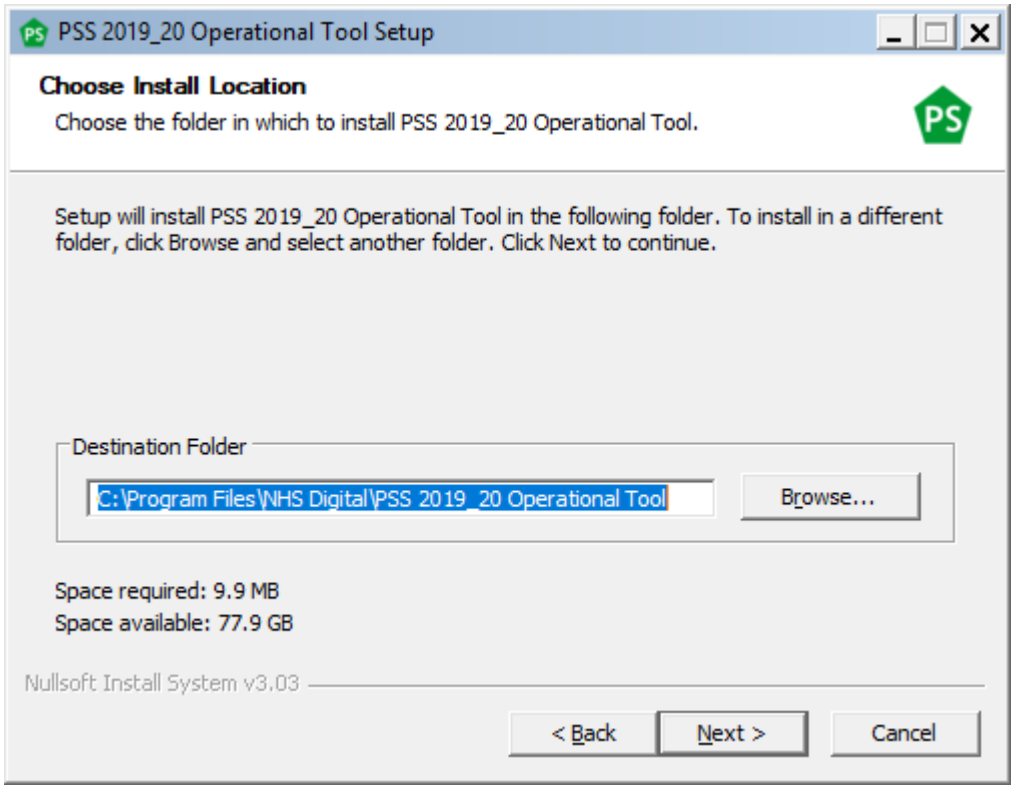
This screen allows the user to select the components to be installed. The **Main executables** component is selected for installation by default and cannot be unselected, but the user can choose whether to install a duplicate copy of the **Sample Files** as part of the installation process.

The **Sample Files** include the Sample Data as published on the National Casemix Office website and the Default RDFs that are installed as part of the main executable. These files allow users to see the minimum required format of the data that is required to run the products.

The sample data is provided so users can easily test the product. They also provide a quick and easy way of testing the install – this is explained at the end of this section.

The sample files in the **Main executables** may not be easily edited from the default install location due to administrative permissions, which is why we also provide the sample data to download from the web.

Once you have chosen the components to install, click **Next**.



The next screen allows the user to choose where they would like to install the software. By default, the destination folder is installed to "**C:\Program Files\NHS Digital\PSS 2019_20 Operational Tool**".

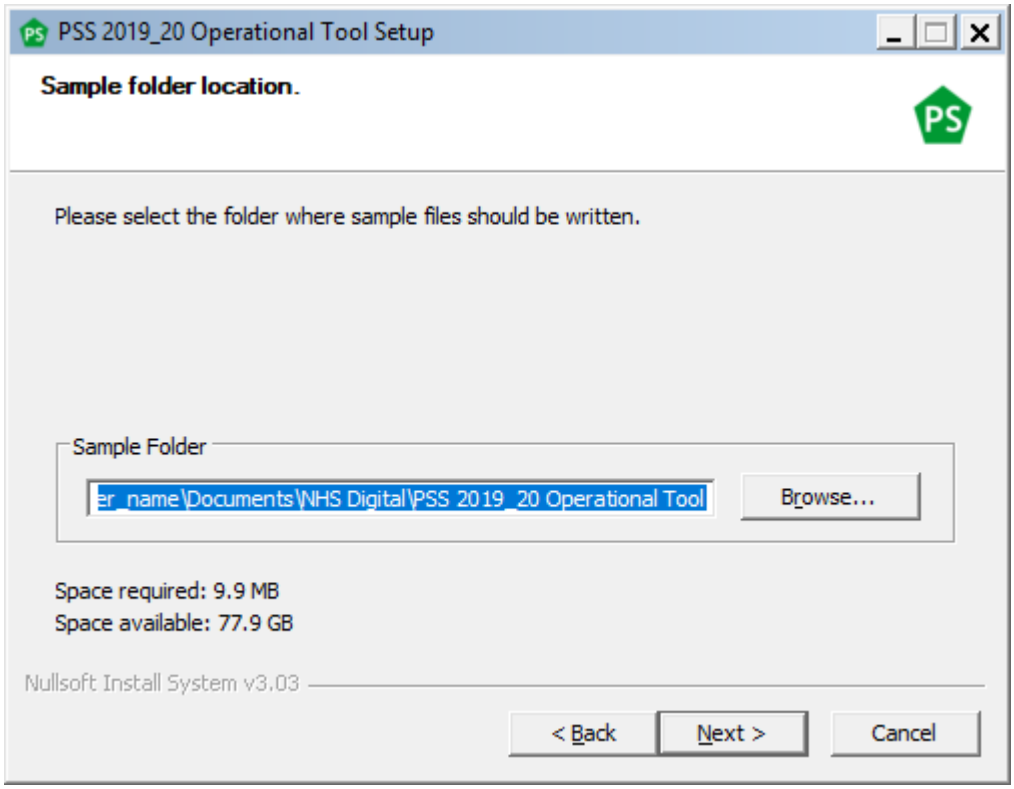
It is strongly recommended that you use this as the destination folder for the Grouper software, unless there is a need to install to another location.

The reason for this is that should an update to the same product be made available or should a user wish to reinstall the same product, the updated version will overwrite the previous version, thus avoiding unnecessary disk space being lost and ensuring all relevant files are in a same location.

If, however, you do wish to install to another location, then use the browse function and select another folder location. It is strongly advised that the standard 24 Tool application files, including 5 folders (3 folders if Sample Data and Default RDF folders are excluded), are extracted and maintained within a sub-directory.

As above, if you wish to reinstall the Tool, all you need to do is select the same location and provided there have been no name changes to the default folder location (e.g. *PSS 2019_20 Operational Tool*), the executable will simply overwrite the files as necessary.

When the appropriate destination folder is set, click **Next**.

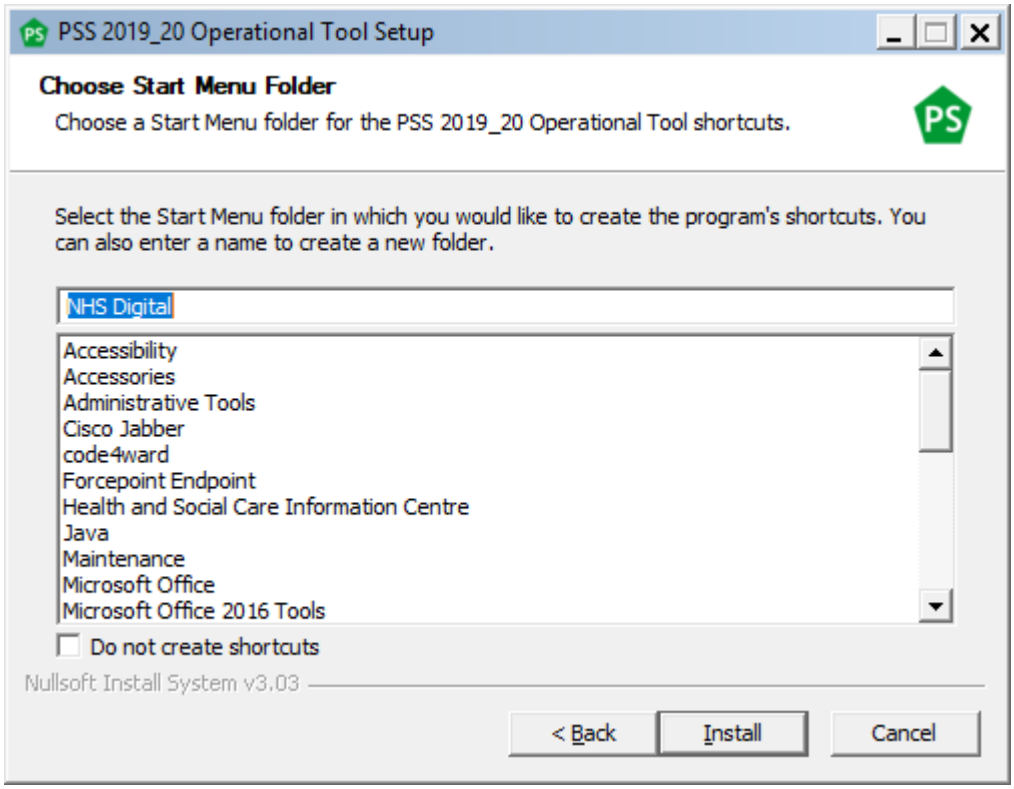


As stated above, users have the option (if selected) of installing a duplicate set of **Sample Files** as part of the installation process.

The default installation destination is set to a user's **Documents** folder. If you wish to install to another location, simply use the browse function and select another folder location.

If you did not select to install the **Sample Files** component on the first screen, this screen will not be shown as part of the installation process.

When the sample file folder is set, click **Next**.

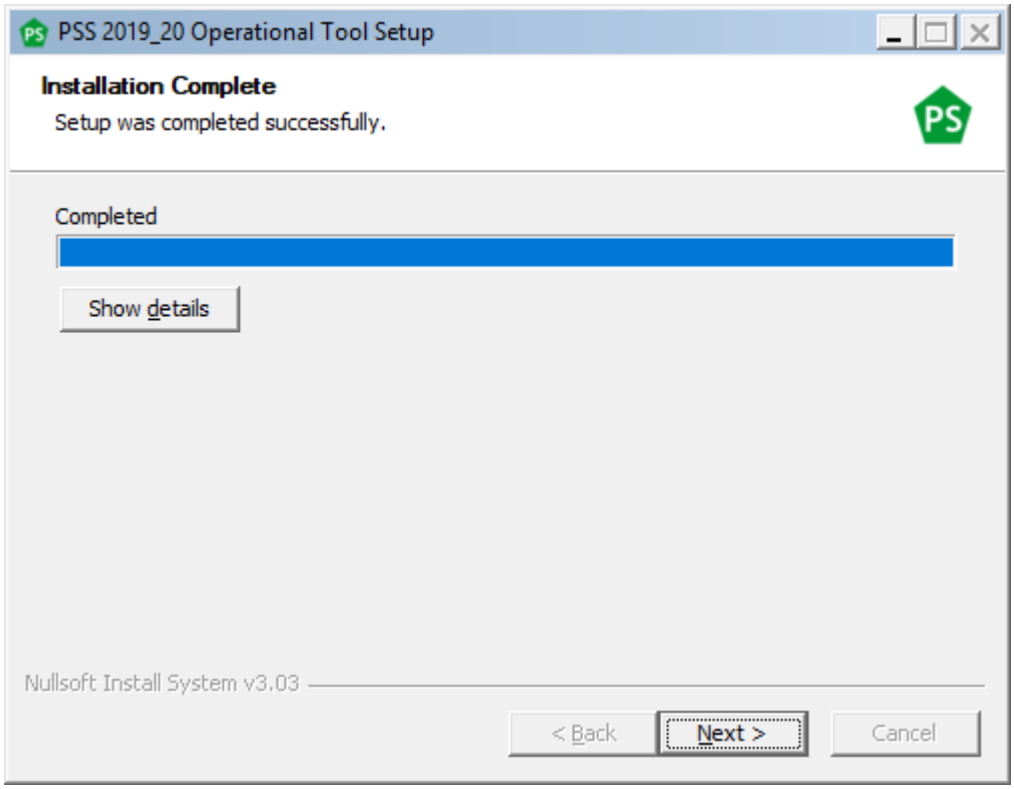


The next screen allows you to create a shortcut in the **Start Menu** folder. This defaults to a folder called *NHS Digital*, which is recommended, but a user can change the folder name if they wish, or depending on administrative rights, select an existing folder.

There is also an option not to create a shortcut by ticking the **Do not create shortcuts** tick box.

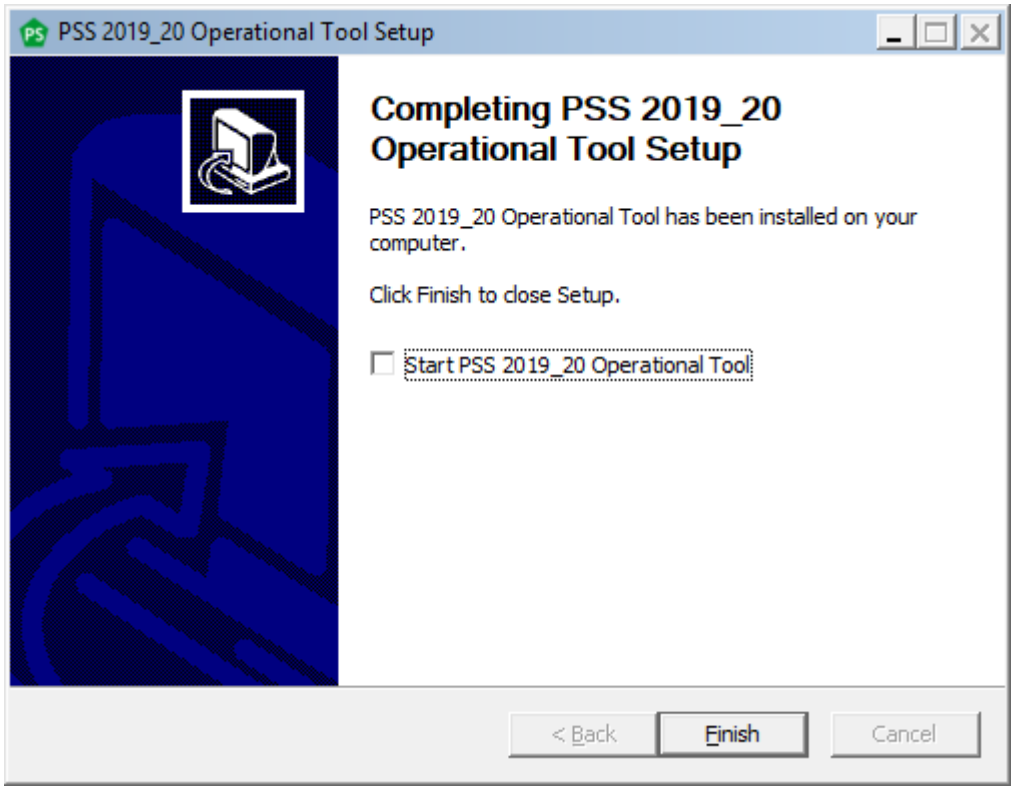
If at any point up to this stage you wish to alter any of the default or chosen file locations, you can use and navigate back through the process using the **<Back** button.

Once you have set a shortcut folder, click the **Install** button to complete the installation process.



The installation screen shows the progress of the installation. Once installation has completed click **Next**.

Users will then see the following screen, which confirms that the installation process is complete.



This final screen allows you to finish the installation process and close the installation wizard by clicking **Finish** or to open the Tool directly by ticking the **Start PSS 2019_20 Operational Tool** tick box followed by **Finish**.

In the above example, this will open the **PSS 2019_20 Operational Tool**, allowing you to immediately begin using the Grouper.

Alternatively (or after pressing finish), the product can be opened from the shortcut link in the start menu or by clicking on the **GUIShell** icon (which is the Tool application) in the destination folder selected as part of the install.

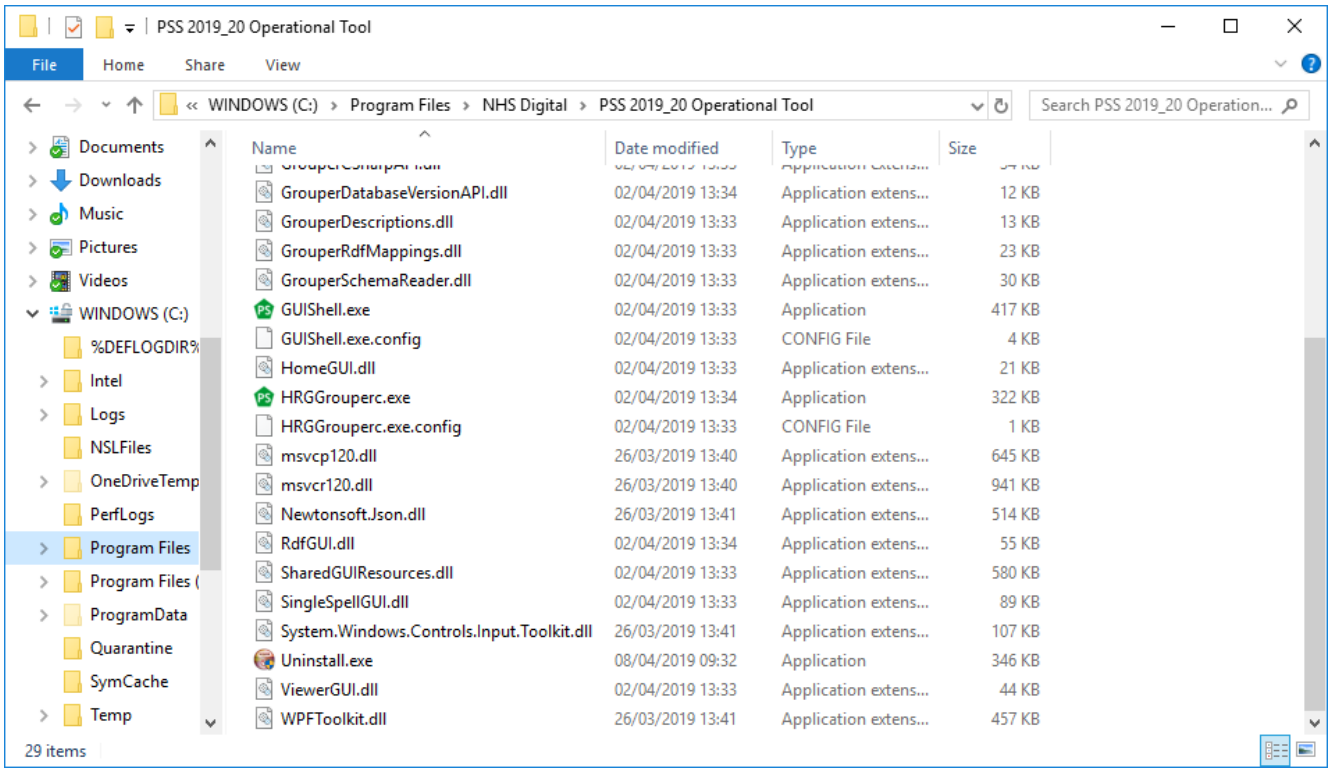
A simple test to ensure the application is working as expected is to open the Tool, select new Batch, load the default APC RDF and then sample APC data, and press process. If processing is successful, the Tool will show 90% grouped and 10% ungrouped.

It is important to note that the sample data as provided will always result in this ratio of expected results. Each sample data file is product specific and is specifically designed to result in this 90/10 ratio when run using the specific grouper for which it was created. If you do not obtain this result, but grouping has been successful, you may have altered the sample data in some way or you may be using sample data designed to work with a different tool.

If running the sample data has not resulted in the expected 90/10 ratio, re-download a clean copy of the sample data and expected results for the grouper you are using from the National Casemix Office (NCO) website. If this does not resolve your issue, please contact the NCO at enquiries@nhsdigital.nhs.uk, stating the relevant Tool name in the subject title. We will be happy to walk you through the testing process.

Uninstalling the Tool

The Tool installation pack comes with an uninstall executable, i.e. Uninstall.exe.



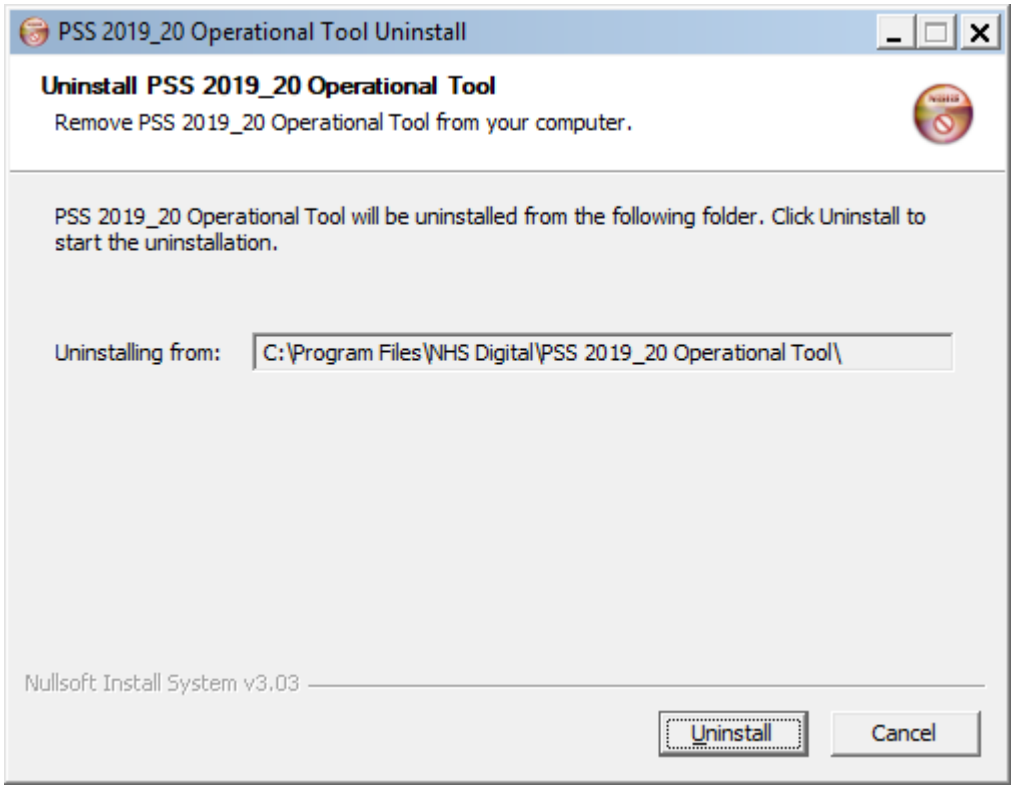
There is no need to uninstall the product if you are re-installing a fresh copy. Provided the file names have not been altered and the same destination folder is selected, the executable will overwrite the previous installation.

New products will similarly install as separate folders and will not affect previous products based on a different design.

If, however, you do need to uninstall the product, the only consideration before activating the Uninstall.exe is to ensure that the above files are contained within a distinct separate folder.

This only matters to users who have used the functionality to create bespoke destination locations or who have altered the names of the destination folders/file names or added files to the program file folder after the installation. In this circumstance, the files listed above need to be contained in a separate sub-folder before activating the uninstaller.

If you are ready to uninstall, simply double-click **Uninstall.exe**. This will bring up an uninstall dialogue box.

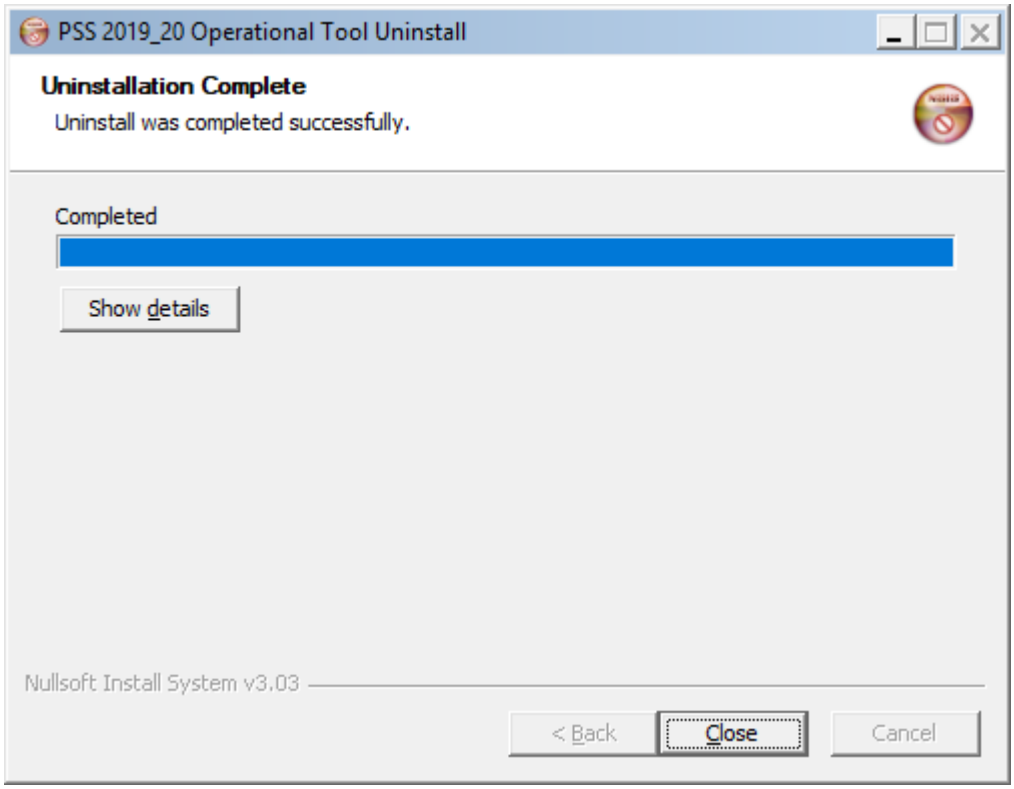


The uninstall screen confirms the folder and file path from which the software will be uninstalled.

Once you are happy that the folder and file path are correct, select **Uninstall**.

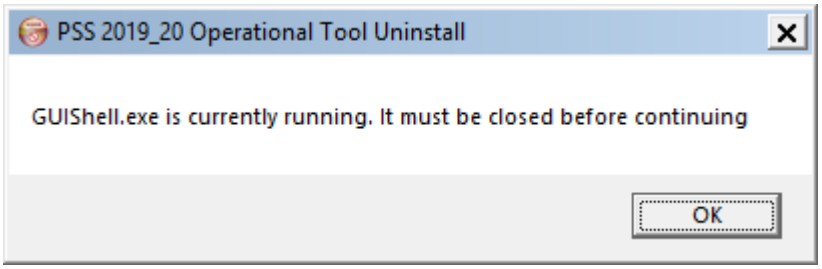
Whilst we strongly recommend that users use the default installation folder, we recognise that by giving users the flexibility to install the product as they wish, users may, in rare circumstances, wish to change the folder or file names, add files into the destination folders, or choose to not locate the Tool files in a distinct sub-folder location. In these circumstances, where a user has deviated from the default, the uninstallation process will not execute correctly. This can be resolved by ensuring the installation files are named as given above and are stored in a separate sub-folder, as per the standard install.

Any files remaining after the uninstallation process is complete will not have been created as part of the standard install or will have been altered. These legacy files/folders can be moved or individually deleted as deemed appropriate by the user.



The uninstallation screen shows the progress of the uninstallation. Once this process has completed, click **Close**.

If any of the Tool files are open during the uninstallation process, the uninstallation will be halted and the following message will be displayed.



To continue the uninstallation process, close all open Tool files and click **OK** to restart the uninstallation process.

Tool Functionality

This section will explain the different functionality available to users in the Tool. In order to help users understand how to use the functionality available, each section will use the default RDFs and sample data that are installed as part of the installation and the sample data and expected results available for download from the National Casemix Office website, i.e. the same site from which the Tool was downloaded.

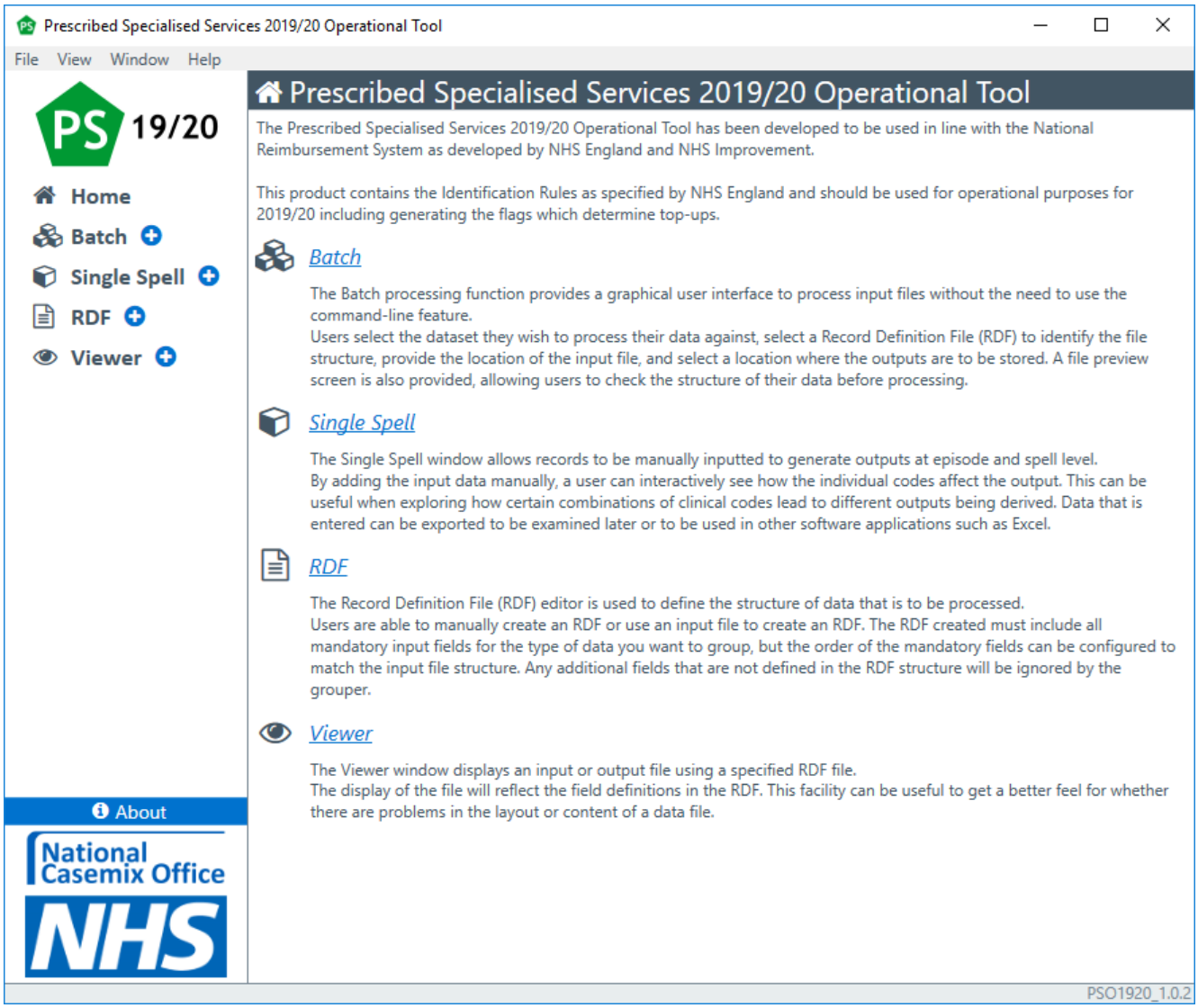
Batch Processing

Large amounts of data can be processed via the Batch screen or Command Line. This section covers processing data via the Batch screen.

Before walking through how to use the Batch screen, ensure you have access to the sample data that is installed as part of the installation or downloaded from the National Casemix Office website.

If the sample data was not installed as part of the installation process, then download the “PS 201920 Operational Tool Sample Data and Expected Results” zip file from the same page as the Tool and extract the contents of the zip file to a suitable location.

Open the Tool via the start menu or the GUIShell.exe within the installation folder.



Opening a Batch screen can be done in several ways:

- Select the ⊕ icon next to **Batch** on the navigation pane;
- Select the *Batch* title hyperlink or the icon on the main home screen;
- Select **File** on the menu bar, then **New** and then **Batch**; or
- Use shortcut keys **Alt+B**.

In order to process data, a **Record Definition File (RDF)** must be selected. An RDF tells the Tool the structure of the data you want to process, so input fields must match to the field position in the RDF. The Tool comes with a set of default RDFs; otherwise there is an RDF Editor within the Tool that allows users to create their own RDFs to match the structure of an input file.

To select an RDF, click the 🗁 icon to the right of the **Record Definition File** drop-down box. This will open the **Open Record Definition File** dialog box, allowing a user to search for the relevant RDF. The sample RDFs are located in the application's installation folder in a sub-folder called `Default RDF`.

Open the file `PS_default_APC.rdf`. The default RDF selected must match the database being used, e.g. if you are processing APC data, the default RDF specific to APC must be used.

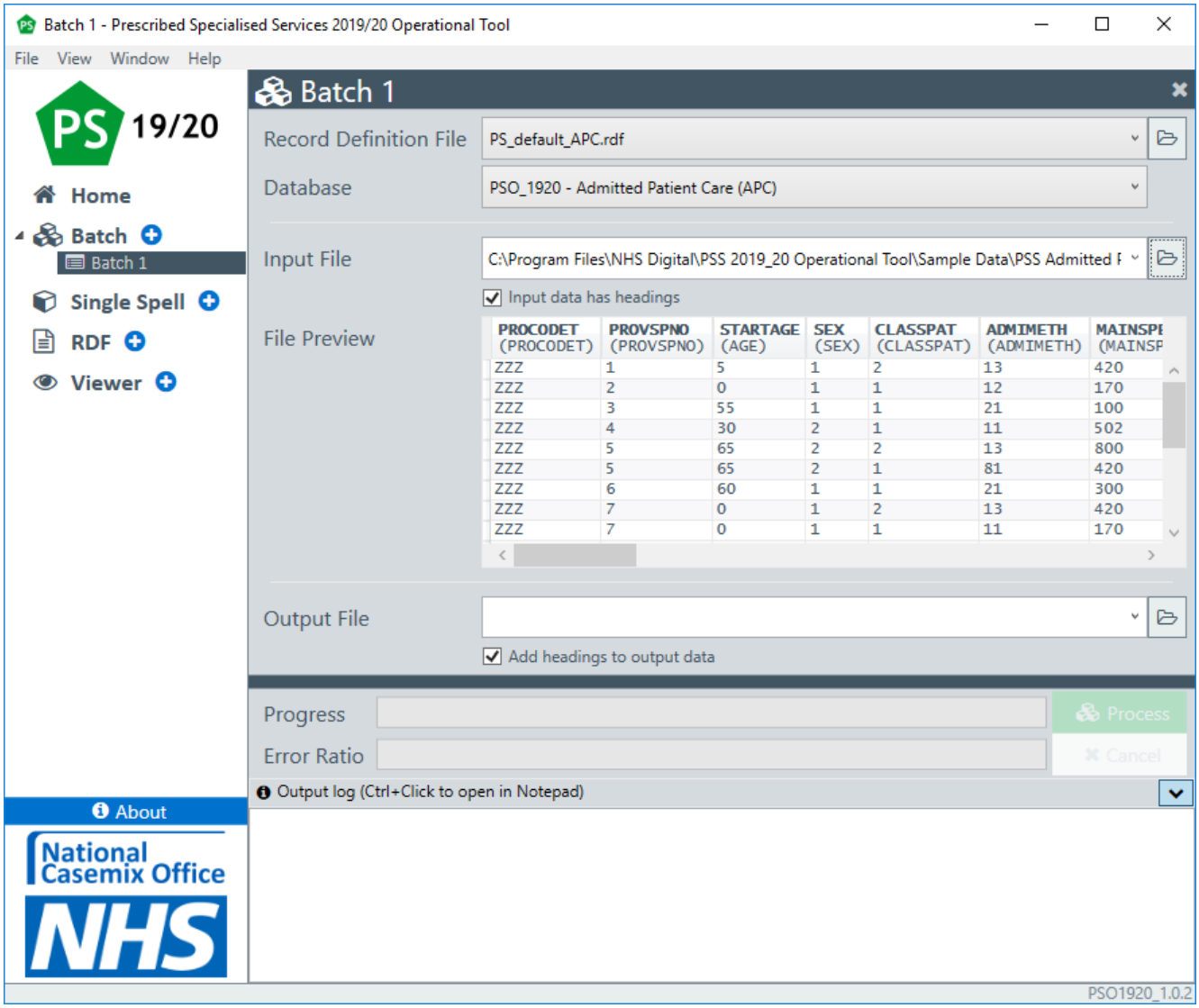
Alternatively, an RDF can simply be dragged and dropped from a file explorer window straight into the **Record Definition File** drop-down box.

When an RDF is selected, the **Database** drop-down box will automatically populate with one of the databases used for grouping. The Tool chooses the relevant database based on the fields defined in the RDF and processes the data with the correct algorithm.

The next step is to select an input file for grouping. To select an input file, click the icon to the right of the **Input File** drop-down box. This will open the **Open Input File** dialog box, allowing a user to search for the relevant input file for processing. The sample data files are located in the application's installation folder in a sub-folder called `Sample Data`.

Open the file `PSS Admitted Patient Care Sample Test Data.csv`. If you are using a different database, the sample data file specific to that database must be used.

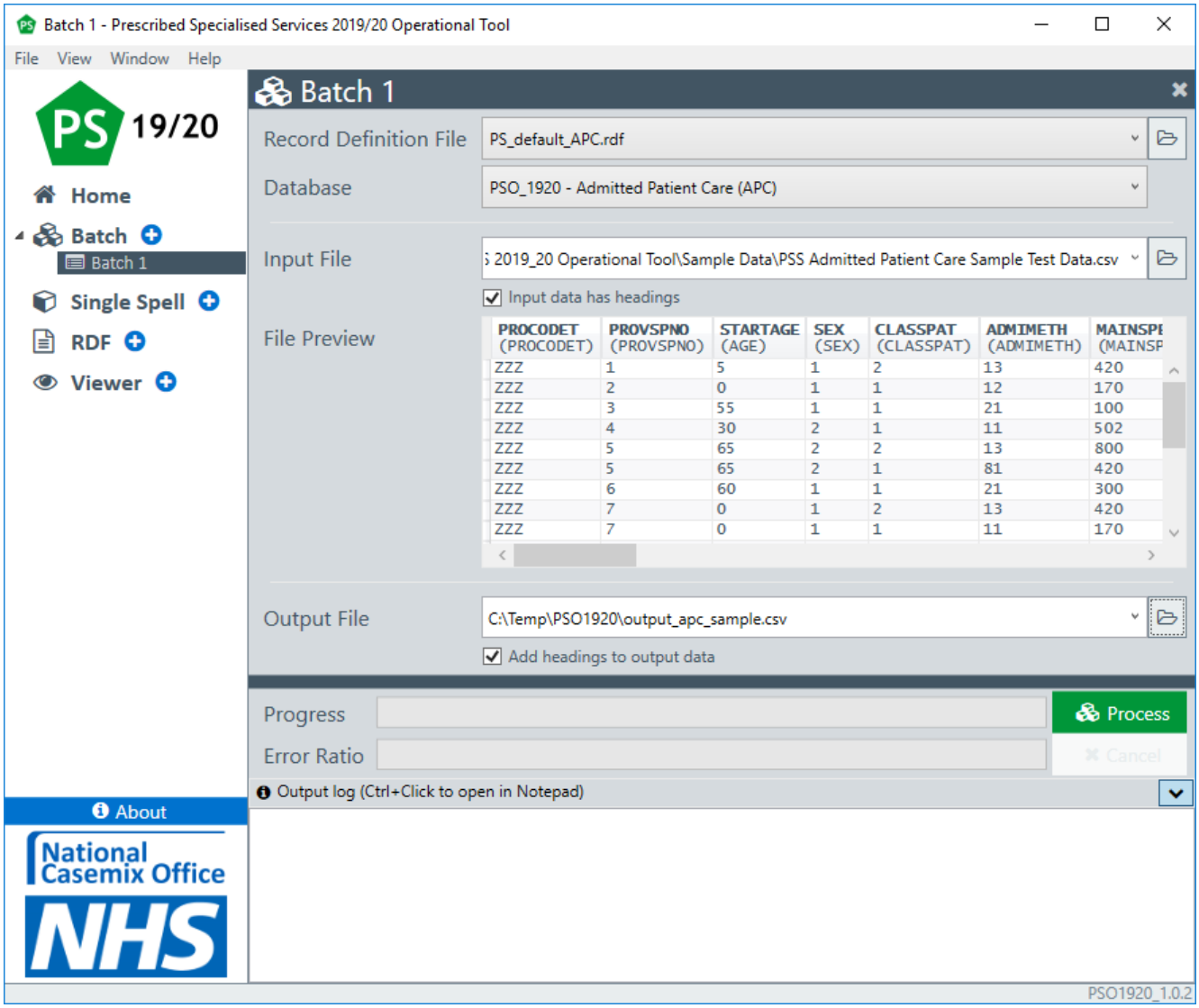
Alternatively, an input file can simply be dragged and dropped from a file explorer window straight into the **Input File** drop-down box.



Ensure that the **Input data has headings** checkbox is checked. This tells the Tool not to process the first line of the input file. If the first row of the input file does not contain headers, the checkbox should be unchecked.

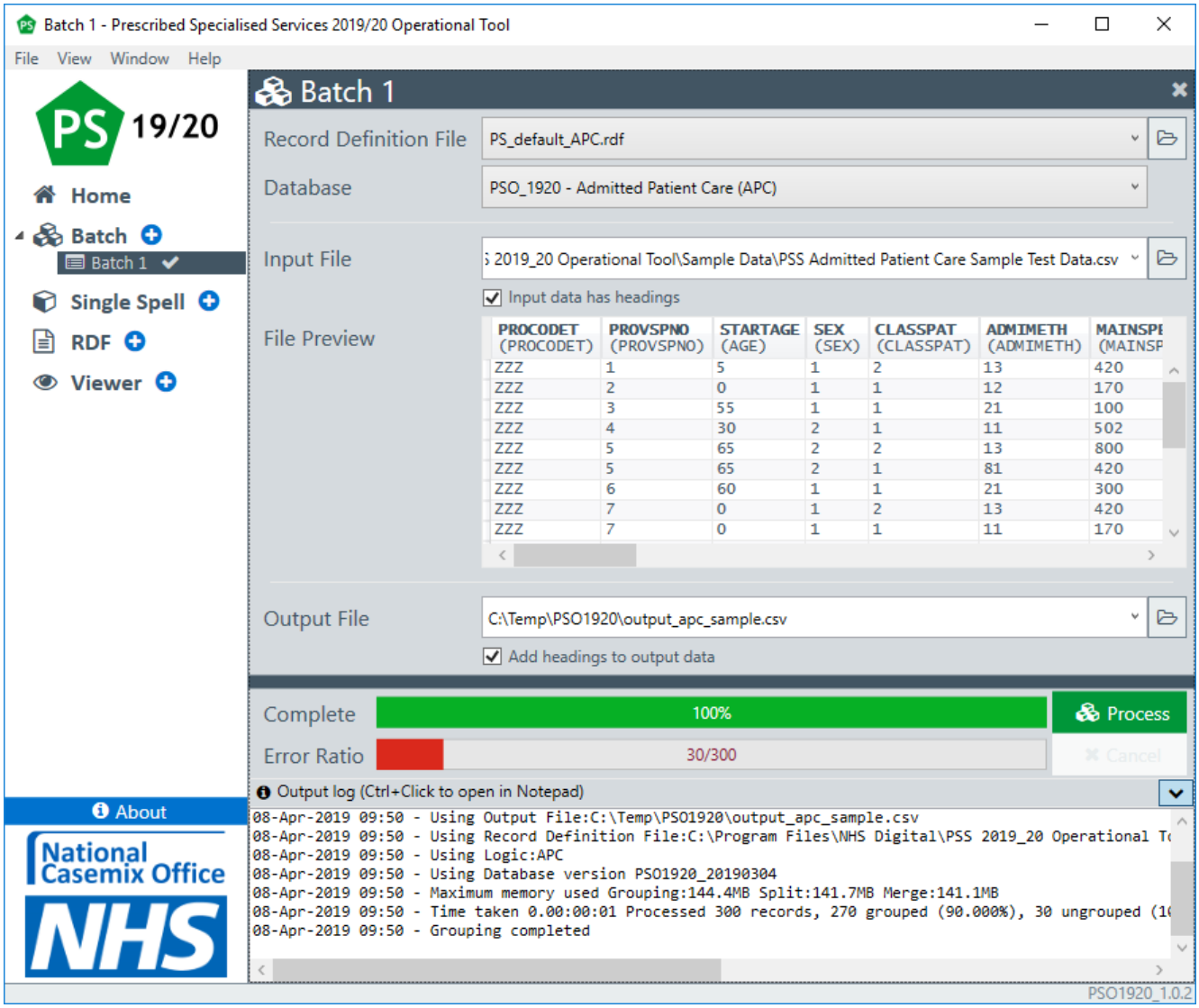
The Batch screen contains a **File Preview** window that allows users to check their input file data against the RDF to see if there are any problems in the layout or content of the input file.

The next step is to select the file location to which the output files are to be written. To select an output file location, click the icon to the right of the **Output File** drop-down box. This will open the **Save Output File** dialog box, allowing a user to navigate to the relevant location to which the output files should be written. Go to the folder containing the input file and type `output_apc_sample` (or anything similarly appropriate) in the **File name** box and click **Save**. The filename of the output file is displayed in the **Output File** drop-down box.



Ensure that the **Add headings to output data** box is checked. This adds column headings to the output files. A full list of output headings can be found in the **Output Files** section.

Once everything has been selected, the green **Process** button becomes active. To process the input file, click **Process**.



The **Complete** bar indicates how far the Tool has progressed in processing the file, and the **Error Ratio** bar indicates the number of errors detected in processing the data. If a user wishes to abort the process, the **Cancel** button can be used to stop processing.

When finished, the **Output log** display area shows information about the session, including the number of records processed. These details can also be found in the file `hrg.log`. To open the log file, select **Help** on the menu bar and then **View Log**.

The **Output log** display area can be expanded and collapsed using the buttons in the right hand corner of the screen

To view the output files, open Windows Explorer and navigate to the location specified for the output file. Open the file `output_apc_sample_FCE.csv` in Microsoft Excel. The file is a copy of the input file with service lines and other related columns appended.

Command Line Initiation

The alternative way to process large files is via command line. Command line refers to the character-based command shell user interface within Microsoft Windows, commonly known as the DOS Window. The Tool can process a file using the command line with parameters shown below.

The parameters consist of a hyphen followed by a lower-case letter and, where applicable, a value (shown in italics). All parameters are mandatory except for the optional parameters shown enclosed in square brackets.

The command line takes the following form:

```
HRGGrouperc.exe -i Input_File -o Output_File -d RDF_File -l
Grouping_Logic [-h] [-t] [-v] [-?] [> Log_File]
```

Command line parameters:

`-i Input_File`	The path and filename of the **i**nput file.
`-o Output_File`	The path and filename of the **o**utput file.
`-d RDF_File`	The path and filename of the record **d**efinition file.
`-l Grouping_Logic`	The grouping **l**ogic. The available values are: APC, NAC.
`-h`	Optional. Where present, indicates that the input file has a **h**eader row (field names). Omit this parameter where the first row in the file is a data row.
`-t`	Optional. Where present, stops generation of field names in the **t**op row of the output file. If this parameter is omitted, then each of the output files will contain a header row.
`-v`	Optional. Increases verbosity of the log output.
`-?`	Optional. Where present, directs the Tool to list the available command line parameters. This parameter cannot be combined with other parameters.
`> Log_File`	Optional. Where present, the Tool redirects the log output to a specified file. If not used, the log output is written to the screen.

Where there are spaces in paths or filenames for parameter values, the parameter value must be enclosed within double-quote characters.

Running the Tool

It is recommended that users invoke the command line Tool from a script (also known as a batch file). For example, to process some APC data (with headings) in C:\Temp\data\apc.csv using a suitable Record Definition File (APC.rdf) in the same directory, then a suitable script is:

```
@echo off
cd /d "c:\Program Files\NHS Digital\PSS 2019_20 Operational Tool"
HRGGrouperc.exe -i "c:\Temp\data\apc.csv" -o "c:\Temp\data\output.csv" -
d "c:\Temp\data\apc.rdf" -l APC -h > "c:\Temp\data\hrg.log"
if %ERRORLEVEL% neq 0 echo Error in command, please check hrg.log
pause
```

Alternatively, it is possible to run the Tool from a working directory by invoking HRGGrouperc.exe as a fully qualified path:

```
@echo off
cd /d "c:\Temp\data"
"c:\Program Files\NHS Digital\ PSS 2019_20 Operational Tool
\HRGGrouperc.exe" -i "apc.csv" -o "output.csv" -d "apc.rdf" -l APC -h >
"hrg.log"
if %ERRORLEVEL% neq 0 echo Error in command, please check hrg.log
pause
```

The penultimate statement of these scripts checks whether the Tool run was successfully completed and prints a message if the run failed.

Single Spell Processing

The Single Spell module is best used to help understand how outputs are derived for one particular spell or episode. By adding the input data manually, a user can see how the individual codes affect the output in real time. This can be useful when exploring how certain combinations of clinical codes lead to different service lines being derived. It can also be useful to quickly find the descriptions of codes and ascertain which fields are mandatory (expressed in **bold** text).

Opening a Single Spell screen can be done in several ways:

- Select the icon next to **Single Spell** on the navigation pane;
- Select the *Single Spell* title hyperlink or the icon on the main home screen;
- Select **File** on the menu bar, then **New** and then **Single Spell**; or
- Use shortcut keys **Alt+S**.

There are two ways to create a record in Single Spell. The first way to add a record is to select database from the **Database** drop-down list, which will automatically populate the screen with a set of default input fields to allow a user to group data. The second way is by selecting a Record Definition File (RDF) by either dragging an RDF directly into the **Record Definition File** box or by using the icon to the right of the **Record Definition File** box. Selecting a **Record Definition File** will automatically choose the relevant **Database**.

Select **PSO_1920 - Admitted Patient Care (APC)** from the **Database** drop-down list. The **Record Definition File** drop-down box will populate with a **<Default RDF>**, and based on the Default RDF, the Single Spell window will populate with a set of input fields.

When using Single Spell, it may be appropriate to increase or decrease the number of variable fields for a database. The **Field Customisation** button allows users to easily do this for applicable fields without the need to create a bespoke Record Definition File.

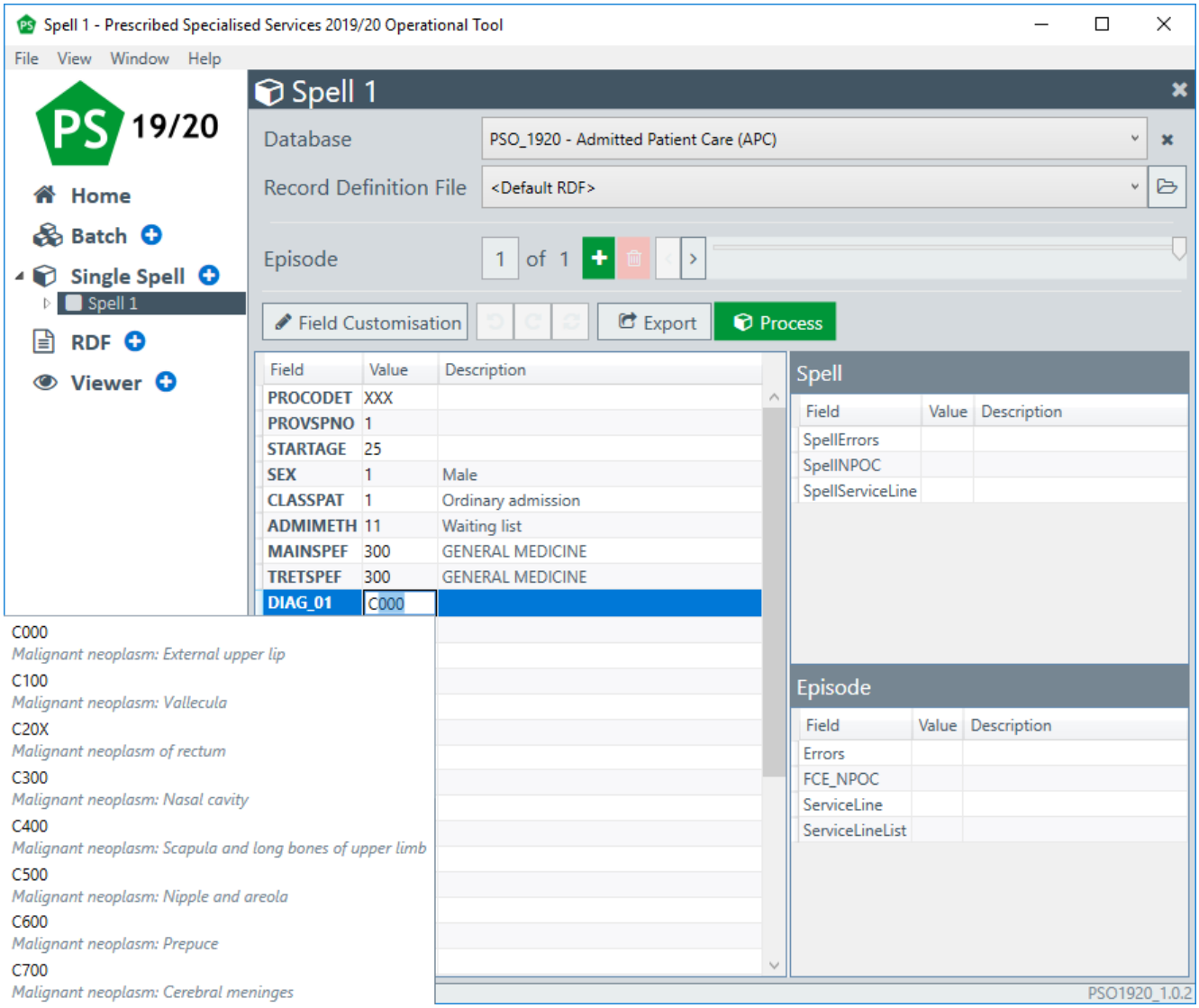
Select the **Field Customisation** button and set the diagnosis and procedure fields to 20.

The input window should now display 20 diagnosis fields and 20 procedure fields.

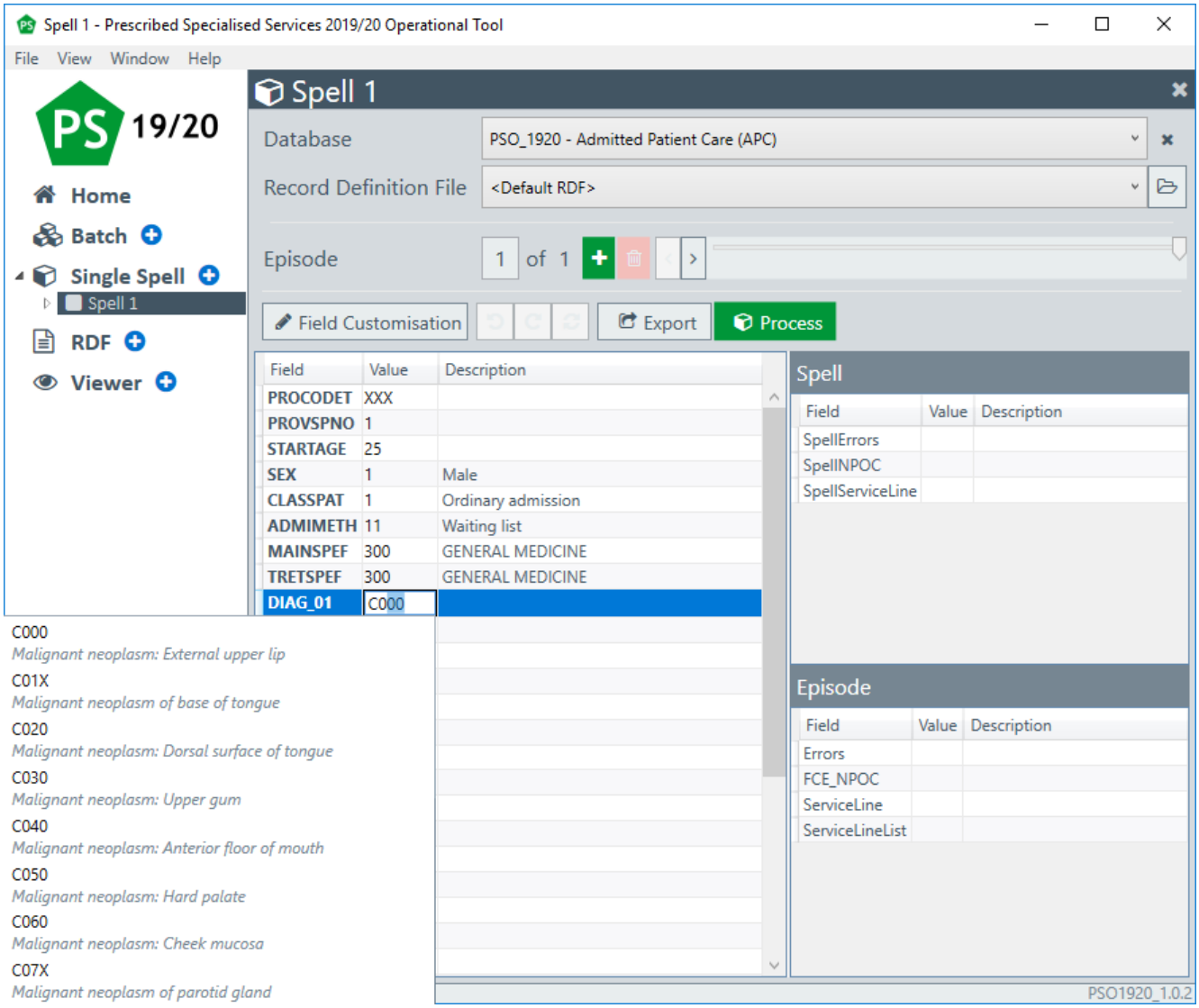
When a Database or Record Definition File is selected, certain fields in the input window are already populated with useful values to save some data input effort, but users can edit these values and populate other fields as appropriate.

Particular input fields contain an auto-complete function, meaning that when a user starts typing in the cell, a list of 10 relevant codes will be displayed along with their description. If a user continues to type in the input cell, the list of codes will narrow based on pattern matching.

In the **DIAG_01** value cell, type "**C**". You will see a list of 10 possible values appear, which a user can choose from.



After “**C**”, type “**0**” and the list of 10 options will alter to possible values starting with “**C0**”.



Select value “**C000**” (Malignant neoplasm: External upper lip). Once selected, and an appropriate provider code supplied, the input values will automatically process and produce outputs in the Spell and Episode windows.

Now add code "**W018**" (Other specified complex reconstruction of thumb) to the **OPER_01** value cell.

Once entered, the Spell and Episode outputs change, reflecting the data matching different identification rules.

In certain circumstances, a user may want to undo or redo an action performed in Single Spell. To undo a particular action, click the undo icon or use the shortcut keys **Ctrl+Z**. To redo a previous action, click the redo icon or use the shortcut keys **Ctrl+Y**. The undo and redo buttons store up to a maximum of 5 changes. Where a user makes a number of changes to the input values in the Single Spell window and wants to return to the values when Single Spell was first opened, then selecting the Reset button will reset the Single Spell window back to its default values for a specific database.

Select the undo icon and the value "**W018**" is removed from the value field of OPER_01. Selecting the undo icon again will remove the value "**C000**" from DIAG_01, which causes the error message "Primary Diagnosis is blank" to be generated.

Select the redo icon and the value "**C000**" is re-populated in the value field of DIAG_01. Select the redo icon again and the value "**W018**" is re-populated in the value field of OPER_01.

For particular fields in Single Spell, there is "Drag and Drop" functionality, which allows users to drag a particular value from one field to another. The following fields contain the "Drag and Drop" facility:

APC – Diagnosis and Procedure fields

NAC – Diagnosis and Procedure fields

Enter the procedure code "**W029**" (Unspecified other complex reconstruction of hand) into the OPER_02 value field and "**W065**" (Total excision of bone of foot NEC) into the OPER_03 value field.

Click in the OPER_03 value field and highlight the value "**W065**".

Using the cursor, select the actual value “**W065**” (highlighted blue) and drag it to the OPER_01 value field and drop it.

The OPER_01 value (**W018**) moves to OPER_02 and the OPER_02 value (**W029**) moves to the OPER_03.

When values are moved, Single Spell automatically re-processes the data, so in this example **W065** (Total excision of bone of foot NEC) is now in the dominant procedure code and this is what is used by some of the identification rules and results in the information in the Episode and Spell output windows changing. Previously, the Spell and Episode ServiceLine was **NCBPS34A** (ADULT SPECIALIST ORTHOPAEDIC SERVICES: SPECIALIST ORTHOPAEDIC SURGERY) but it has now changed to **NCBPS01M** (SPECIALIST CANCER SERVICES: HEAD AND NECK CANCER).

For some of the databases, such as Admitted Patient Care, it is possible to build up a spell consisting of multiple episodes. Additional episodes can be added by clicking the + icon on the Single Spell window or by right-clicking on the particular Spell in the navigation pane and selecting **New Episode**. Databases that do not support additional episodes will have this functionality disabled.

Add a new episode to the current Spell by clicking the + icon on the Single Spell window.

A new Episode window will open and certain information from the previous episode will be brought forward. This does not include non-primary diagnosis codes or procedure codes.

When the second episode is added, it automatically re-processes the input values again, and depending on the information in the episodes, the information in the Episode and Spell windows may change.

A user can navigate between different episodes within a Spell by either clicking on the **Episode** numbers in the navigation pane, entering a specific episode number in the **Episode Number box** or by using the **Slider bar**.

Single Spell allows information from other sources to be copied and pasted directly into the Single Spell window.

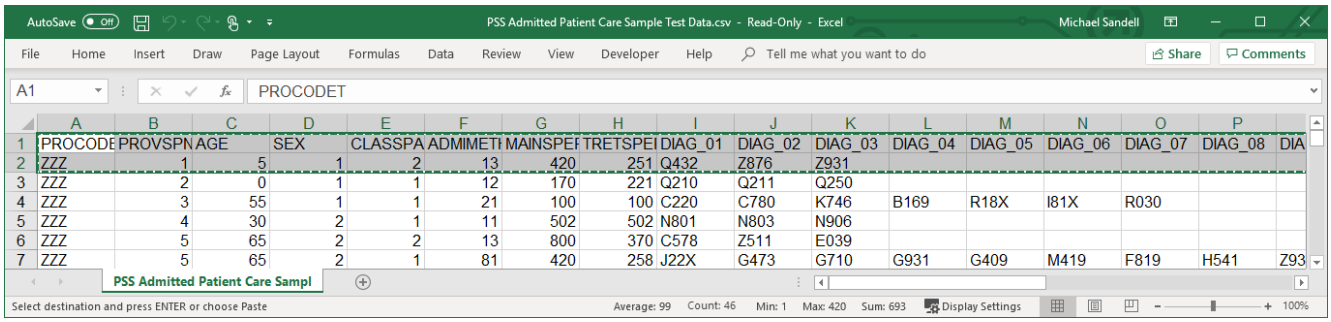
The first way of copying information from an application such as Excel is to select a row of data from a file, along with header information, and paste it directly into the Single Spell window.

This is known as "**smart pasting**", and it uses the header information to identify which cells to paste the information into. This is a useful way of pasting information into Single Spell where the input fields in the Single Spell window are in a different order to the data being copied. The disadvantage to this method of copying and pasting is that the headers from where the data is being copied must be named exactly the same as the field names in the Single Spell window.

Open a new Single Spell window and select **PSO_1920 - Admitted Patient Care (APC)** from the **Database** drop-down box.

Go to the `PSS Admitted Patient Care Sample Test Data.csv` file and open it.

Select the header row and the first line of data and copy:



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	PROCODE	PROVSPN	AGE	SEX	CLASSPA	ADMIMETI	MAINSPEF	TRETSPEI	DIAG_01	DIAG_02	DIAG_03	DIAG_04	DIAG_05	DIAG_06	DIAG_07	DIAG_08	DIA
2	ZZZ	1	5	1	2	13	420	251	Q432	Z876	Z931						
3	ZZZ	2	0	1	1	12	170	221	Q210	Q211	Q250						
4	ZZZ	3	55	1	1	21	100	100	C220	C780	K746	B169	R18X	I81X	R030		
5	ZZZ	4	30	2	1	11	502	502	N801	N803	N906						
6	ZZZ	5	65	2	2	13	800	370	C578	Z511	E039						
7	ZZZ	5	65	2	1	81	420	258	J22X	G473	G710	G931	G409	M419	F819	H541	Z93

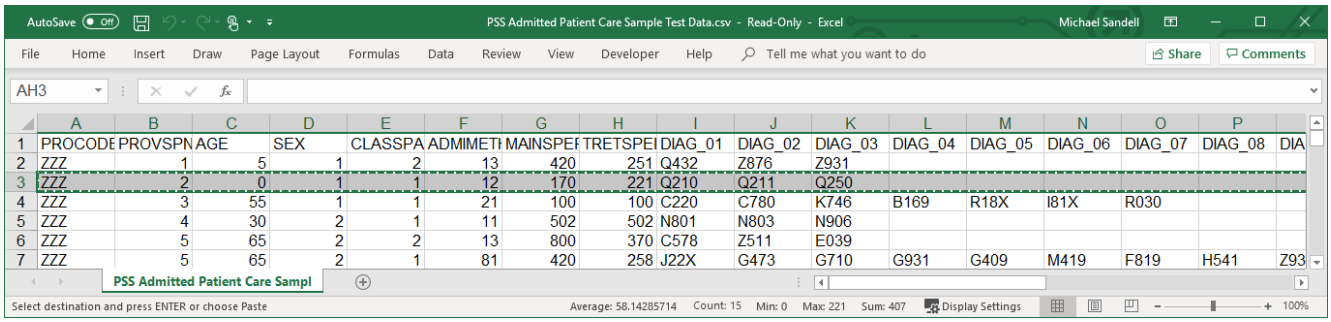
Go back to the newly opened APC Single Spell window, click anywhere in the Single Spell input window, right-click and select Paste. Alternatively, using the shortcut keys **Ctrl + V** will paste the information into the Single Spell input window.

A user can copy a row of data or a particular column of codes from applications such as Excel and paste them straight into a Single Spell window. Single Spell will recognise a string of codes and paste them appropriately, transposing a row of codes automatically. This is the simplest way of pasting values into the Single Spell window, but it requires the user knowing the correct position to start pasting the copied values, otherwise errors are likely to be generated.

Open a new Single Spell window and select **PSO_1920 – Admitted Patient Care (APC)** from the **Database** drop-down box.

Go to the `PSS Admitted Patient Care Sample Test Data.csv` file and open it.

Select the second line of data and copy:



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	PROCODE	PROVSPN	AGE	SEX	CLASSPA	ADMIMETI	MAINSPEF	TRETSPEI	DIAG_01	DIAG_02	DIAG_03	DIAG_04	DIAG_05	DIAG_06	DIAG_07	DIAG_08	DIA
2	ZZZ	1	5	1	2	13	420	251	Q432	Z876	Z931						
3	ZZZ	2	0	1	1	12	170	221	Q210	Q211	Q250						
4	ZZZ	3	55	1	1	21	100	100	C220	C780	K746	B169	R18X	I81X	R030		
5	ZZZ	4	30	2	1	11	502	502	N801	N803	N906						
6	ZZZ	5	65	2	2	13	800	370	C578	Z511	E039						
7	ZZZ	5	65	2	1	81	420	258	J22X	G473	G710	G931	G409	M419	F819	H541	Z93

Go back to the newly opened APC Single Spell window, right-click on the PROCODET field name and select Paste. Alternatively, using the shortcut keys **Ctrl + V** will paste the information into the Single Spell input window.

Single Spell also contains functions to allow users to copy or save information from Single Spell windows. This is useful if the information from single spell is needed for future use or is required for other purposes.

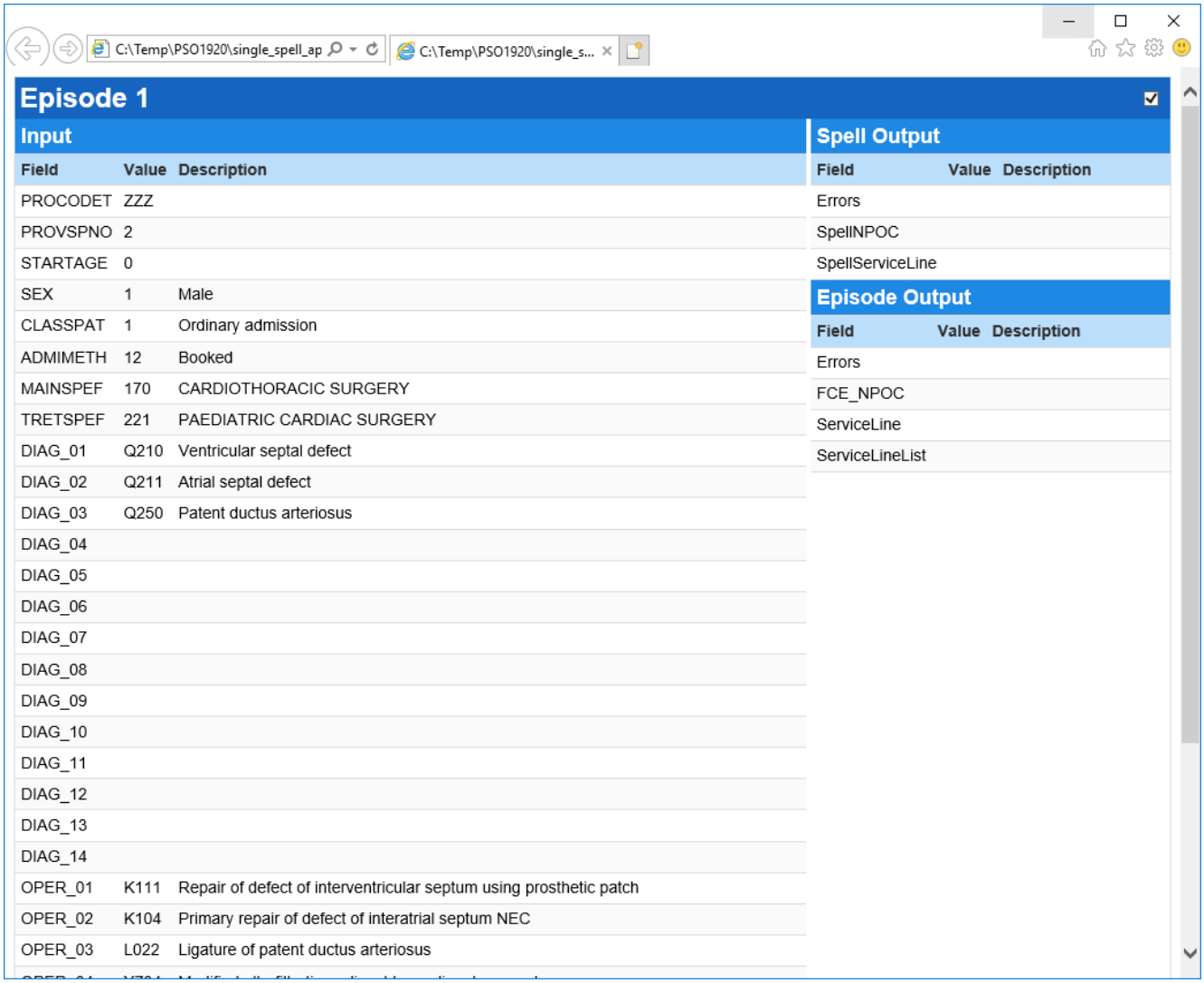
There are three different methods for copying information from Single Spell windows:

- **Copy** (Ctrl+C) – this will copy data in a transposed comma delimited format (CSV) for use in creating input files;
- **Copy Excel** (Ctrl+Shift+C) – this will copy data in a transposed tab delimited format (TSV) for use with Excel and other external editors; and
- **Copy with descriptions** (Ctrl+Alt+C) – this copies a Single Spell table in a tab delimited format (TSV), preserving the layout and descriptions for use in Excel and other editors.

Single Spell also contains an **Export** button that allows information from the Single Spell window to be saved as a HTML or CSV file type. When saved as a HTML file type, the information is output in a similar layout to the Single Spell window, meaning the information can be printed in a structured format.

Following on from the previous copy and paste example, select the **Export** button on the Single Spell window. The **Save As** dialog box will appear, prompting the user to give the

HTML file a name. Select an appropriate location and type `single_spell_apc_html` (or anything similarly appropriate) in the **File name** box and click **Save**. The HTML file will automatically open in your default web browser and display the information from the Single Spell window in a similar format.



Episode 1

Input

Field	Value	Description
PROCODET	ZZZ	
PROVSPNO	2	
STARTAGE	0	
SEX	1	Male
CLASSPAT	1	Ordinary admission
ADMIMETH	12	Booked
MAINSPEF	170	CARDIOTHORACIC SURGERY
TRETSPEF	221	PAEDIATRIC CARDIAC SURGERY
DIAG_01	Q210	Ventricular septal defect
DIAG_02	Q211	Atrial septal defect
DIAG_03	Q250	Patent ductus arteriosus
DIAG_04		
DIAG_05		
DIAG_06		
DIAG_07		
DIAG_08		
DIAG_09		
DIAG_10		
DIAG_11		
DIAG_12		
DIAG_13		
DIAG_14		
OPER_01	K111	Repair of defect of interventricular septum using prosthetic patch
OPER_02	K104	Primary repair of defect of interatrial septum NEC
OPER_03	L022	Ligature of patent ductus arteriosus

Spell Output

Field	Value	Description
Errors		
SpellNPOC		
SpellServiceLine		

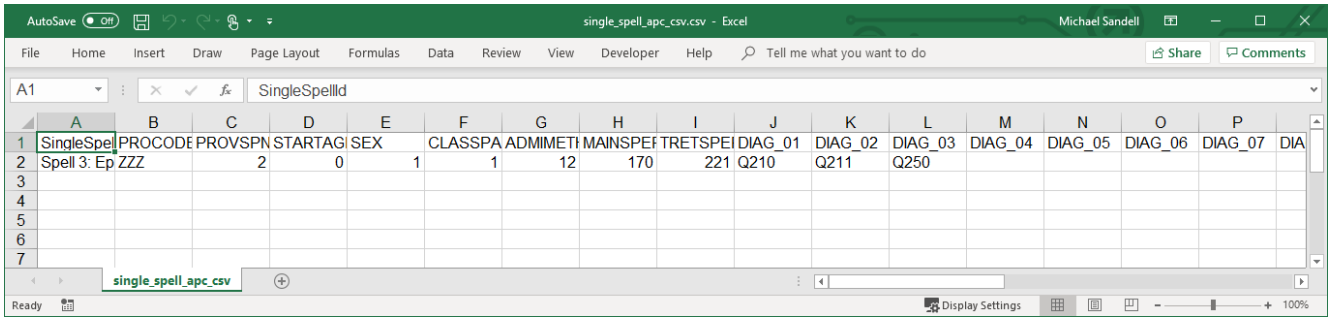
Episode Output

Field	Value	Description
Errors		
FCE_NPOC		
ServiceLine		
ServiceLineList		

Outputting information from Single Spell to an HTML file format also allows users to print the information when necessary. To print, right-click in the top blue bar named “**Episode 1**” and select **Print**.

In additional to saving information from Single Spell as an HTML file type, a user can use the **Export** button to save it as a CSV file type. When saved as a CSV file type, the information is transposed, along with headers, in a format needed by the tool.

Using the same Single Spell window, select the **Export** button. The **Save As** dialog box will appear, prompting the user to give the CSV file a name. Change the **Save as type** to .csv (by default this is set to html). Select an appropriate location and type `single_spell_apc_csv` (or anything similarly appropriate) in the **File name** box and click **Save**. Navigate to the file location and open.



The information is displayed in a format that can be used by the tool.

Episodes can be deleted by either using the icon or by right-clicking on an episode in the navigation pane and selecting **Delete Episode**. To close the entire Spell, right-click on the relevant Spell number in the navigation pane and select **Close**.

Any errors are highlighted in red in both the Input and Output sections.

Record Definition File (RDF)

The RDF tells the Tool the structure of the data you want it to process. The field content of the RDF must include all mandatory input fields for the type of data you want to process.

Although these fields are mandatory, the user defines their order. The user may include additional fields, but these will be ignored by the Tool.

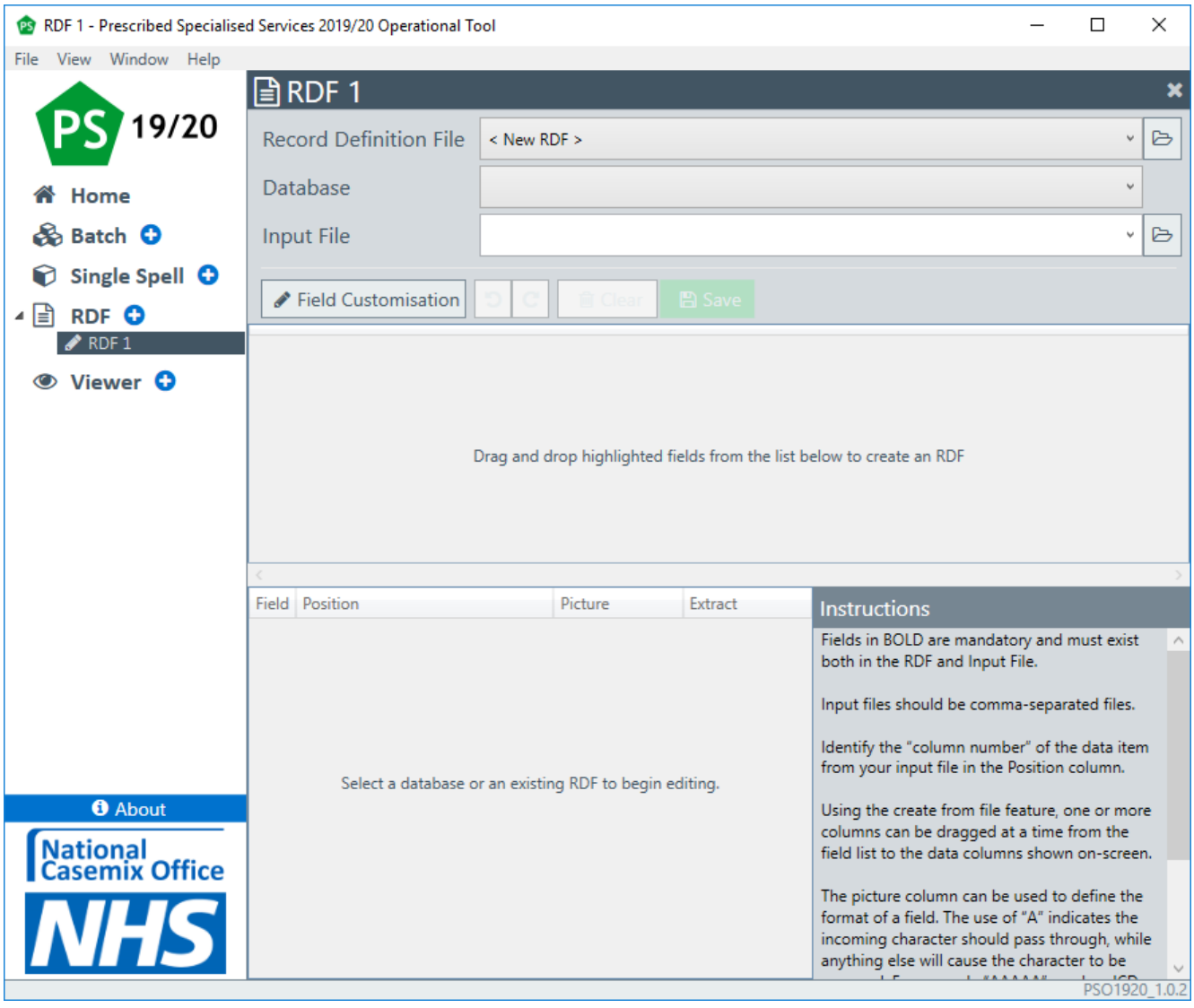
The product comes with a set of standard RDFs that hold all the mandatory fields required to be able to process data. You can adapt your data to match the standard RDFs or create an RDF manually.

To create or modify an RDF, the Tool has an interactive RDF module.

The RDF module allows a user to create an RDF from scratch or to modify an existing RDF. This section explains the different ways a user can create or modify an existing RDF.

The RDF screen can be opened in several ways:

- Select the ⊕ icon next to RDF on the navigation pane;
- Select the *RDF* title hyperlink or the 🗎 icon on the main home screen;
- Select **File** on the menu bar, then **New** and then **RDF**; or
- Use shortcut keys **Alt+R**.

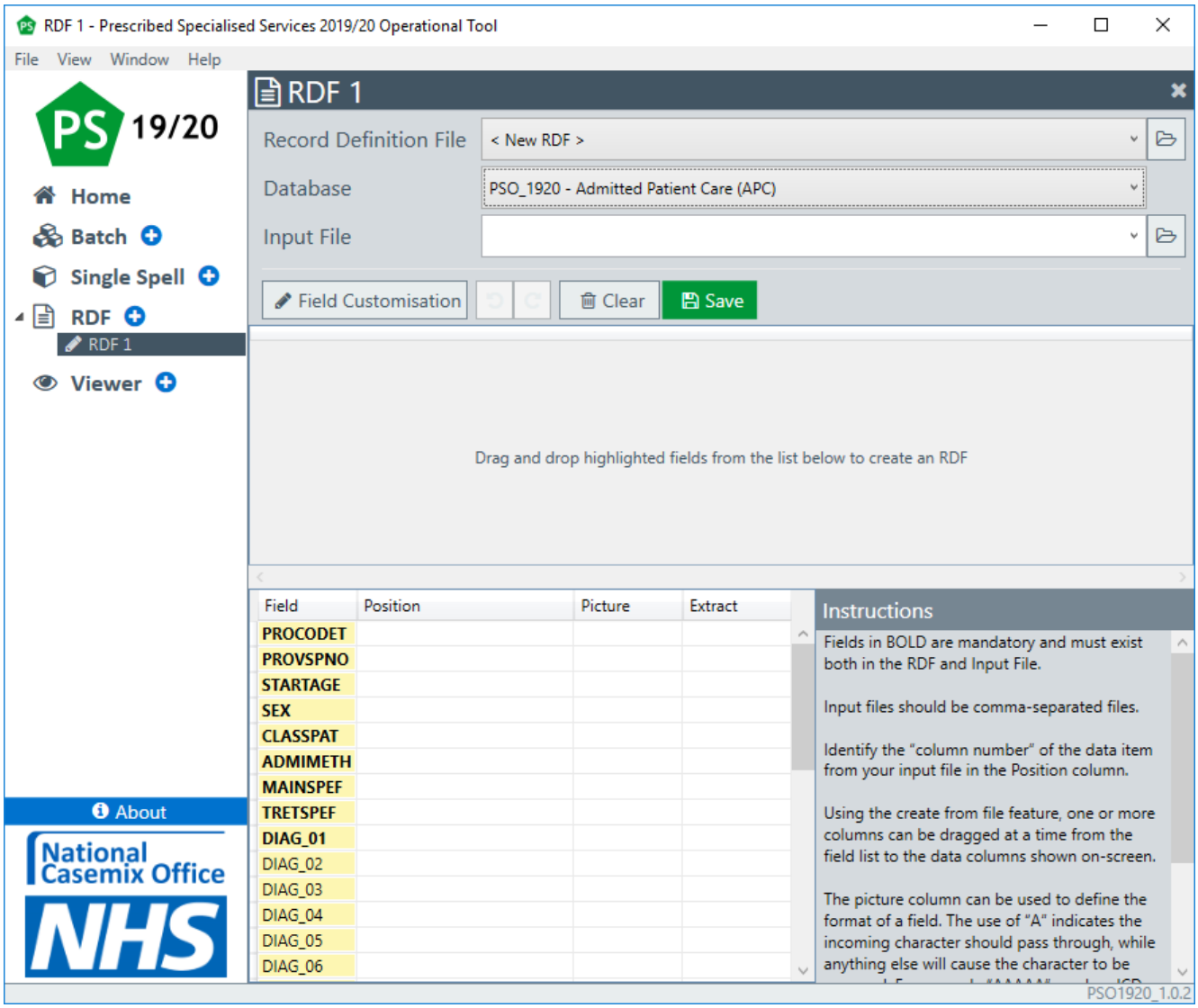


A user can create an RDF manually in two ways. The first way is to create an RDF using an input file, and the second way is to create an RDF using a specific database from the **Database** drop-down box.

Create a New RDF – Create from Input File

When the RDF screen is opened, the **Record Definition File** box is automatically set to **< New RDF >**.

The **Input** window, which contains the columns headers **Field**, **Position**, **Picture** and **Extract**, prompts the user to "*Select a database or an existing RDF to begin editing*". As we are creating an RDF from an input file in this section, select **PSO_1920 - Admitted Patient Care (APC)** from the **Database** drop-down list. If you are using a different database, the sample data file specific to that database must be used.



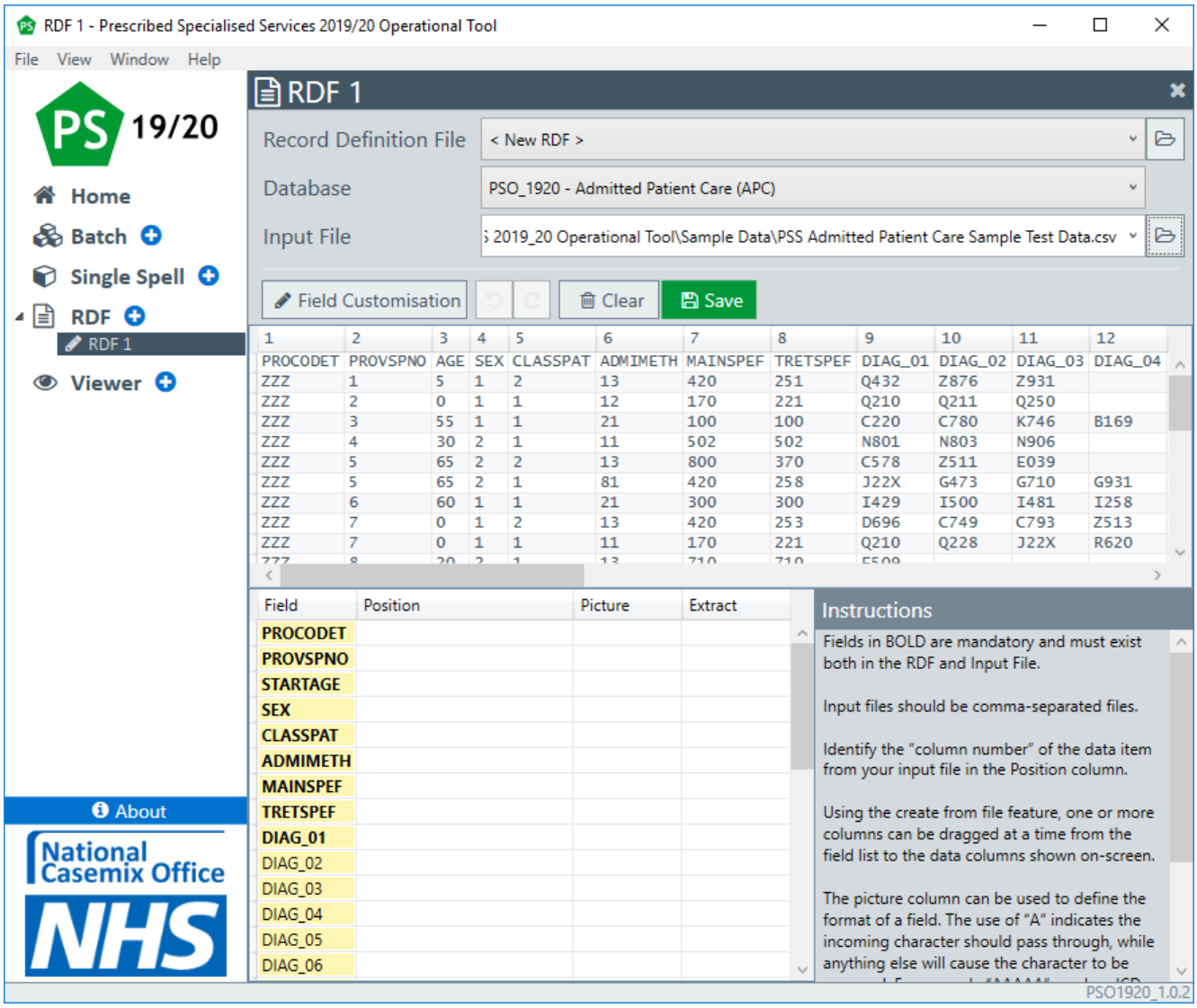
When the database is selected, the **Input** window auto-populates with a list of field names, which are highlighted yellow. All field names in bold are mandatory and must be assigned a position when creating an RDF.

The next step is to select an input file to use as a guide for creating an RDF. To select an input file, click the icon to the right of the **Input File** drop-down box. This will open the **Open Input File** dialog box, allowing a user to search for the relevant input file (which should

be format *.csv). The sample data are located in the application's installation folder in a sub-folder called `Sample Data`.

Open the file `PSS Admitted Patient Care Sample Test Data.csv`. If you are using a different database, the sample data file specific to that database must be used.

Alternatively, an input file can simply be dragged and dropped from a file explorer window straight into the **Input File** drop-down box.



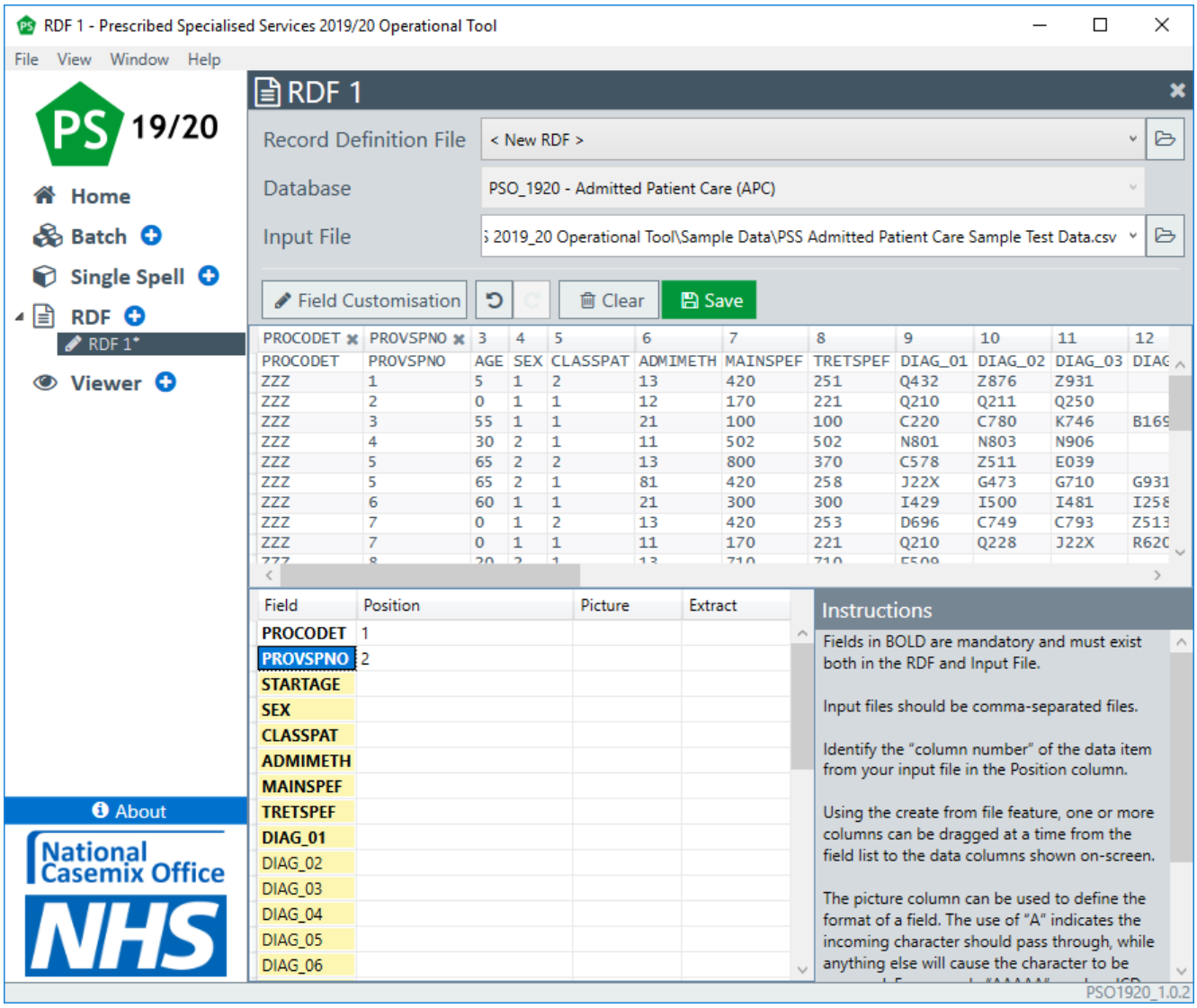
The first 30 rows of the selected input file are displayed in the **Drag and Drop** window. Each field displayed in the **Drag and Drop** window is assigned a position, e.g. 1, 2, 3.

Depending on the database chosen, the number of repeating occurrences of certain fields can be increased or decreased using the **Field Customisation** button. For example, if the input file contains 20 diagnosis codes, the number of diagnosis fields can be increased from the default value of 14 to 20 using the toggle buttons.

In addition to the **Field Customisation** button, a user can insert and delete non-mandatory fields. Extra fields can be added to the RDF using the blank row at the bottom of the **Input** window or by highlighting a field row, right-clicking and selecting **Insert Row** (Ctrl+I). To delete a non-mandatory field, select the field row to be deleted and either select the **Delete**

key or right-click and select **Remove Row** (Ctrl+Delete). The field will be removed from the field list. Mandatory fields cannot be deleted from an RDF.

To create an RDF, select each of the field names highlighted in yellow and drag it to the appropriate column in the **Drag and Drop** window, i.e. PROCODET to column number 1, PROVSPNO to column 2, etc.



Once a field is dragged into the **Drag and Drop** window, the **Position** column in the **Input** window will be populated with the relevant field position number. Alternatively, a user can type the field number directly into the **Position** column.

Multiple fields can be selected by clicking with the mouse while holding down the SHIFT and/or CTRL keys. The selected fields can then be dragged to the **Drag and Drop** window.

If a field is erroneously assigned, it can be removed in a variety of ways. Fields are unassigned by clicking the "**x**" next to the field name in the drag and drop window; by right-clicking on the field name and selecting **Unassign**; or by selecting the field position from the **Position** column and pressing the **Delete** key. The field will then be removed from the file preview window. If you wish to clear all the field positions allocated, select the **Clear** button to reset all the field positions.

In certain circumstances, actions performed on the RDF Editor screen may need to be undone or redone. The **Undo** and **Redo** buttons store up to a maximum of 5 changes. Alternatively, the shortcut combination keys of **Ctrl+Z** (Undo) and **Ctrl+Y** (Redo) can be used.

When all highlighted fields have been assigned, the RDF can be saved by selecting the **Save** button. The **Save As** dialog box will appear, prompting the user to give the RDF file a name. Select an appropriate location and type `rdf_apc` (or anything similarly appropriate) in the **File name** box and click **Save**.

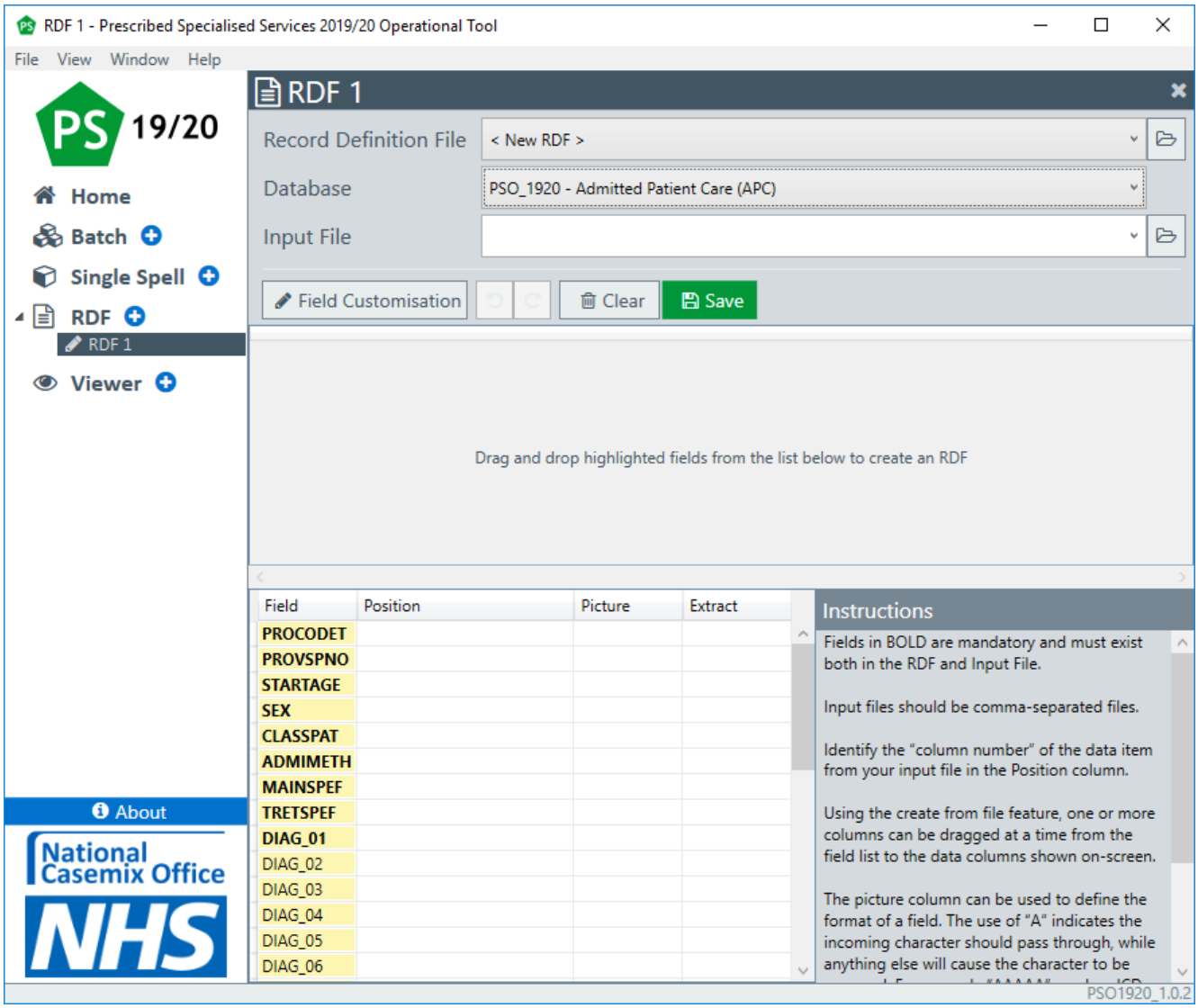
Create a New RDF – Create from Database

An RDF can be created manually by using a specific database from the **Database** drop-down box. This method is reliant on the user knowing the structure of the data without the need to use it as a guide in the **Drag and Drop** window.

The create an RDF using this method, first open a new RDF window.

When the RDF screen is opened, the **Record Definition File** box is automatically set to **< New RDF >**.

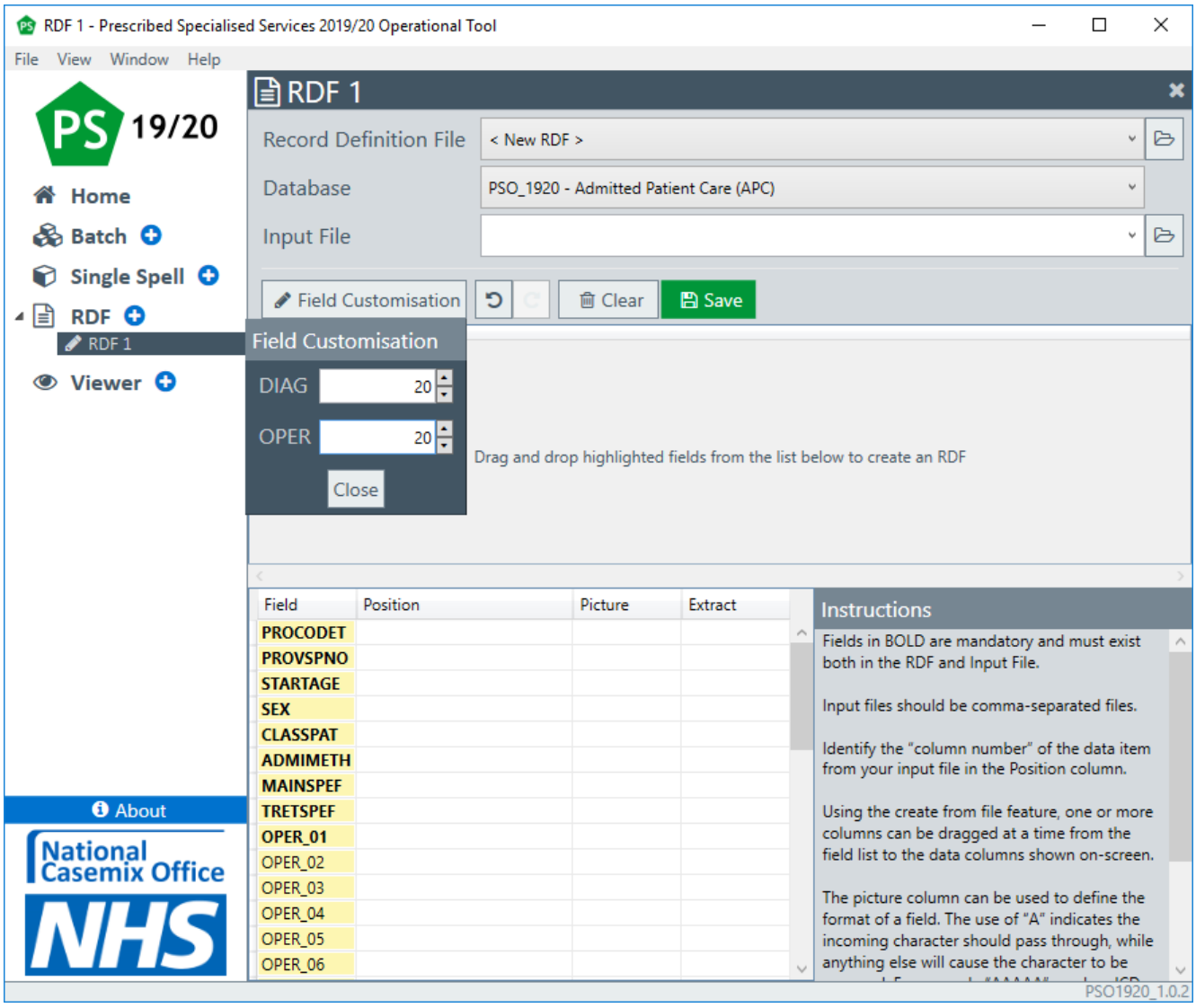
Select **PSO_1920 - Admitted Patient Care (APC)** from the **Database** drop-down list.



The **Input** window auto-populates with a list of field names, which are highlighted yellow. All field names in bold are mandatory and must be assigned a position when creating an RDF. As no input file is used in this method of creating an RDF, the **Drag and Drop** window remains blank.

Depending on the database chosen, the number of repeating occurrences of certain fields can be increased or decreased using the **Field Customisation** button. For example, if the input file contains 20 diagnosis codes, the number of diagnosis fields can be increased from the default value of 14 to 20 using the toggle buttons.

Select the **Field Customisation** button and set the diagnosis and procedure fields to 20.



When altering the number of variable fields for a particular database, the field ordering changes, so in the above example, diagnosis and procedure fields move to the bottom of the field list.

To create the RDF, type the field numbers directly into the **Position** column in the **Input** window to specify the order of the input file that will be processed.

If a field is erroneously assigned, it can be removed in a variety of ways. Fields are unassigned by clicking the "**x**" next to the field name in the **Drag and Drop** window; by right-clicking on the field name and selecting **Unassign**; or by selecting the field position from the

Position column and pressing the **Delete** key. The field will then be removed from the file preview window. If you wish to clear all the field positions allocated, select the **Clear** button to reset all the field positions.

In certain circumstances, actions performed on the RDF Editor screen may need to be undone or redone. The **Undo** and **Redo** buttons store up to a maximum of 5 changes. Alternatively, the shortcut combination keys of **Ctrl+Z** (Undo) and **Ctrl+Y** (Redo) can be used.

When all highlighted fields have been assigned, the RDF can be saved by selecting the **Save** button. The **Save As** dialog box will appear, prompting the user to give the RDF file a name. Select an appropriate location and type `rdf_apc` (or anything similarly appropriate) in the **File name** box and click **Save**.

Edit an Existing RDF

In addition to manually creating an RDF, a user can edit an existing RDF.

First open a new RDF window.

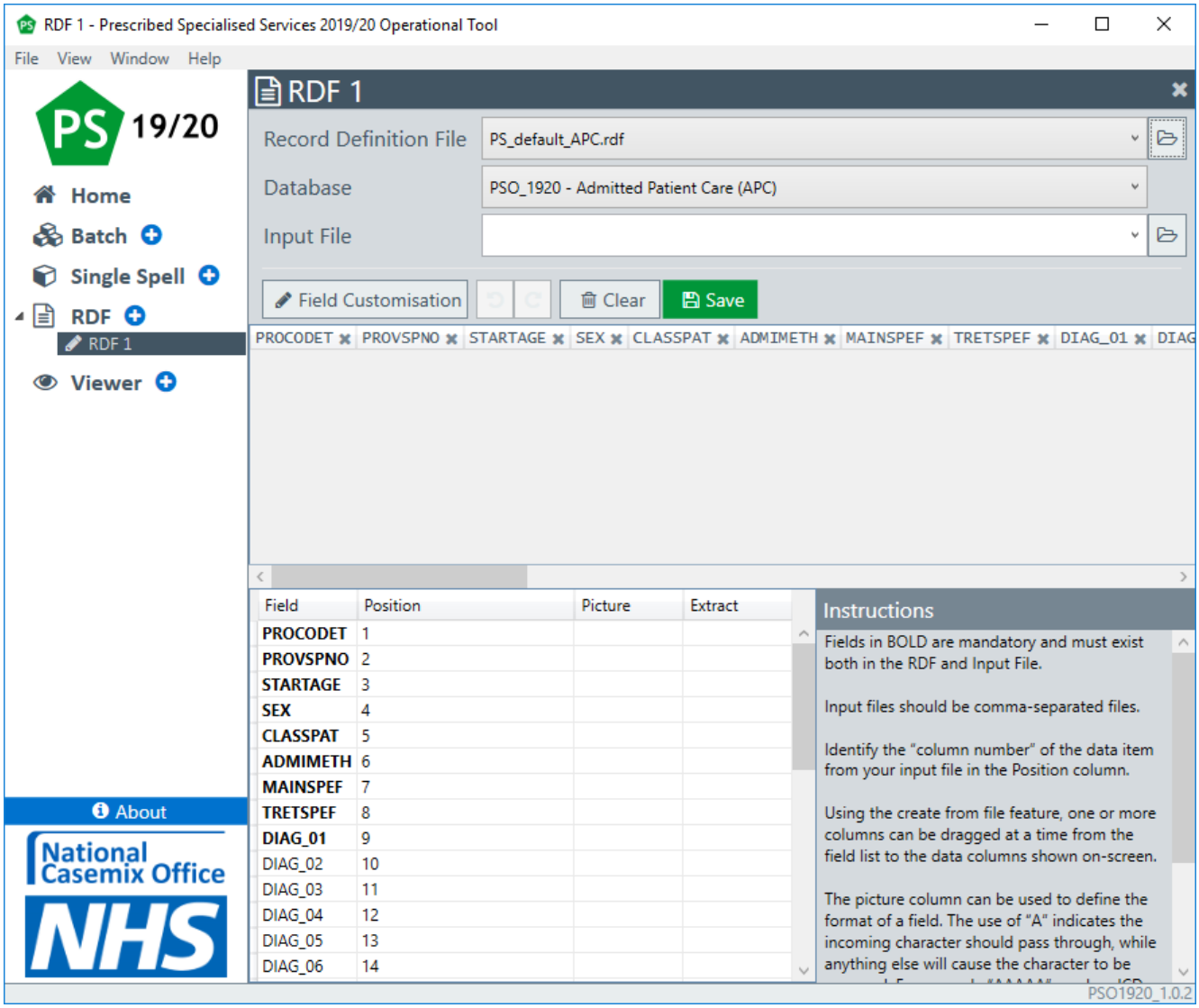
When the RDF screen is opened, the **Record Definition File** box is automatically set to **< New RDF >**. To select an existing RDF to edit, click the icon to the right of the **Record Definition File** drop-down box. This will open the **Open RDF File** dialog box, allowing a user to search for the relevant RDF to edit (which should be format *.RDF). The sample RDFs are located in the application's installation folder in a sub-folder called `Default RDF`.

Open the file `PS_default_APC.rdf`. If you are using a different database, the sample RDF specific to that database must be used.

Alternatively, simply drag and drop the relevant **RDF** into the **Record Definition File** drop-down box.

The **Database** drop-down box will automatically populate with the relevant database depending on the mandatory fields contained in the selected RDF.

Once the RDF is selected, the **Drag and Drop** window will display all the fields stated in the RDF and the **Input** window will display the RDF field names and their assigned position numbers.



Depending on the data type, the number of repeating occurrences of certain fields can be increased or decreased using the **Field Customisation** button. For example, if the input file contains 20 diagnosis codes, the number of diagnosis fields can be increased from the default value of 14 to 20 using the toggle buttons.

In addition to the **Field Customisation** button, a user can insert and delete non-mandatory fields. Extra fields can be added to the RDF using the blank row at the bottom of the **Input** window or by highlighting a field row, right-clicking and selecting **Insert Row** (Ctrl+I). To delete a non-mandatory field, select the field row to be deleted and either select the **Delete** key or right-click and select **Remove Row** (Ctrl+Delete). The field will be removed from the field list. Mandatory fields cannot be deleted from an RDF.

If a field is erroneously assigned, it can be removed in a variety of ways. Fields are unassigned by clicking the "**x**" next to the field name in the drag and drop window; by right-clicking on the field name and selecting **Unassign**; or by selecting the field position from the **Position** column and pressing the **Delete** key. The field will then be removed from the file preview window. If you wish to clear all the field positions allocated, select the **Clear** button to reset all the field positions.

In certain circumstances, actions performed on the RDF Editor screen may need to be undone or redone. The **Undo** and **Redo** buttons store up to a maximum of 5 changes.

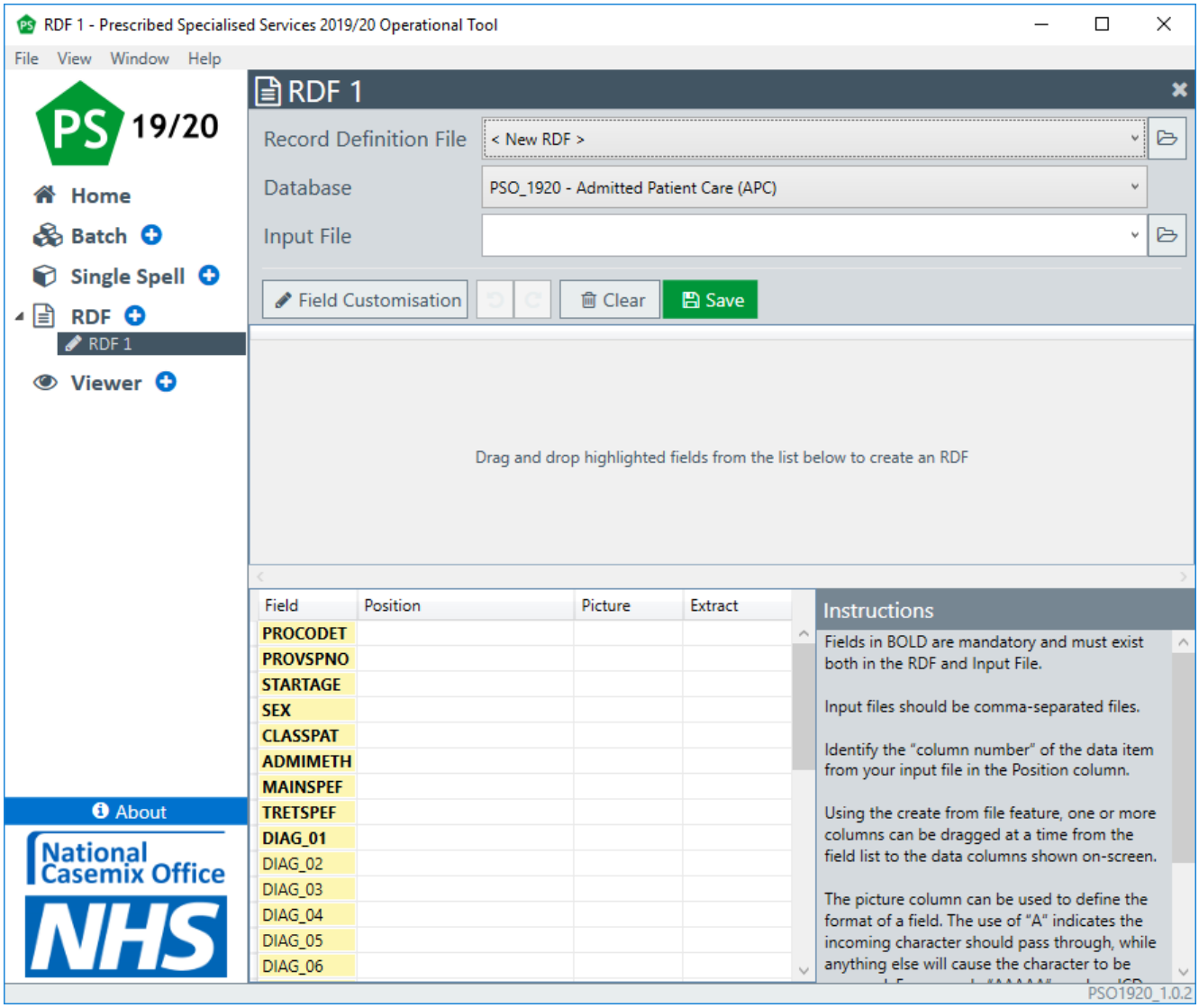
Alternatively, the shortcut combination keys of **Ctrl+Z** (Undo) and **Ctrl+Y** (Redo) can be used.

When all the highlighted fields have been assigned, the RDF can be saved by selecting the **Save** button. The **Save As** dialog box will appear, prompting the user to give the RDF file a name. Select an appropriate location and type `rdf_apc` (or anything similarly appropriate) in the **File name** box and click **Save**.

RDF Input Window

The RDF **Input** window contains the following four columns:

Name	Description
Field	The field name; mandatory fields (in bold) cannot be modified.
Position	The field column number in the input file.
Picture	Specifies whether specific character positions in the field are used or ignored during processing. It must be specified as a string of “A” and “.” where “A” means keep the character in that position and “.” means ignore the character in that position. For example: “AAA.A” means ignore the 4th character and process characters in positions 1,2,3 and 5 as if it is a 4-character code, so that W58.1 gets processed as W581. Note that it is no longer necessary to use Picture to remove full stops from procedure and diagnosis codes because these now get removed automatically.
Extract	Allows you to specify that specific characters (in any position) in the field are ignored during processing. For example, “.” (without quote marks) will remove all full stops from the field.



Picture

Picture is a feature within the RDF that can be used to specify the inclusion or exclusion of specific character positions from input fields. It allows the user to provide filtering instructions for each field by describing a character template. During processing, the application will apply this template to the field by selectively ignoring characters in specific positions within a field.

An “A” character indicates a character position to be included in grouping and a full stop indicates a character position to be ignored in grouping. This “picture” is then imposed on the field before grouping, meaning that the modified version of the field contents is processed by the Tool.

To use Picture, enter a character template in the **Picture** column of the Record Definition File using the RDF module.

- Characters should not be separated by spaces.
- Quotation marks should not be used.
- Picture can be used with alpha and numeric fields.
- Where the number of characters in the field exceeds the number of characters specified in Picture, the application will implement the Picture on the left-most portion of the field. For this reason, care should be taken when using Picture with variable length fields as this may lead to unpredictable results.

- Picture is applied prior to data validation.
- Picture applies to file processing only; it does not affect single spell grouping.

Example 1 AAA.AA Characters 1, 2, 3, 5 and 6 are used. Character 4 is ignored.

Example 2 .A.AAA Characters 2, 4, 5 and 6 are used. Characters 1 and 3 are ignored.

Example 3 .A. Character 2 is used. Characters 1 and 3 are ignored.

Example 4 AA Characters 1 and 2 are used (Note that full stops are not required if consecutive characters from the beginning of the field are the only characters required).

Extract

Extract is a feature of the RDF that can be used to make the Tool ignore specific characters in input fields, irrespective of character position.

Entering one or more characters in the **Extract** column of the RDF using the RDF module will instruct the grouper that any occurrence of any of these characters in that field should be ignored in grouping. (Note: Commas cannot be excluded because the input data files are comma-separated).

The application does not consider a series of characters as a string of characters to be ignored as a single entity. Each character entered is ignored wherever it appears in the input field.

- The characters specified will be ignored wherever they appear in the input data field.
- There is no relation between the position of a character in the extract field and the input field.
- All occurrences of the characters are affected.
- Extract is applied prior to data validation.
- Extract applies to file processing only; it does not affect single spell.

Extract Field Examples

The examples below are shown in quotation marks (“) to help identify the examples. Quotation marks should not be entered when using the Extract function (unless a user wishes to ignore quotation marks).

Example 1

Entering an Extract character of “.” informs the application that all occurrences of a decimal place or full stop should be ignored when processing that field. This is a convenient way to remove decimal points from a field in the input file. An input field containing the character string “abc…d” will be interpreted by the application as “abcd”.

Example 2

Entering the characters “+$” in this field informs the application that any occurrences of both the “+” character and the “$” character are to be ignored by the application when processing that field. An input field containing the character string “46+$$++” will be interpreted by the application as “46”.

Viewer

The Tool provides a file viewer that can be used to view input or output files. The Viewer allows users to filter on columns and select data that are then opened in Single Spell.

Selecting a **Record Definition File** and a **File** will display the file data organised into the columns specified in the RDF and can be used as an aid to see if there are problems in the layout or content of a data file.

Opening a Viewer screen can be done in several ways:

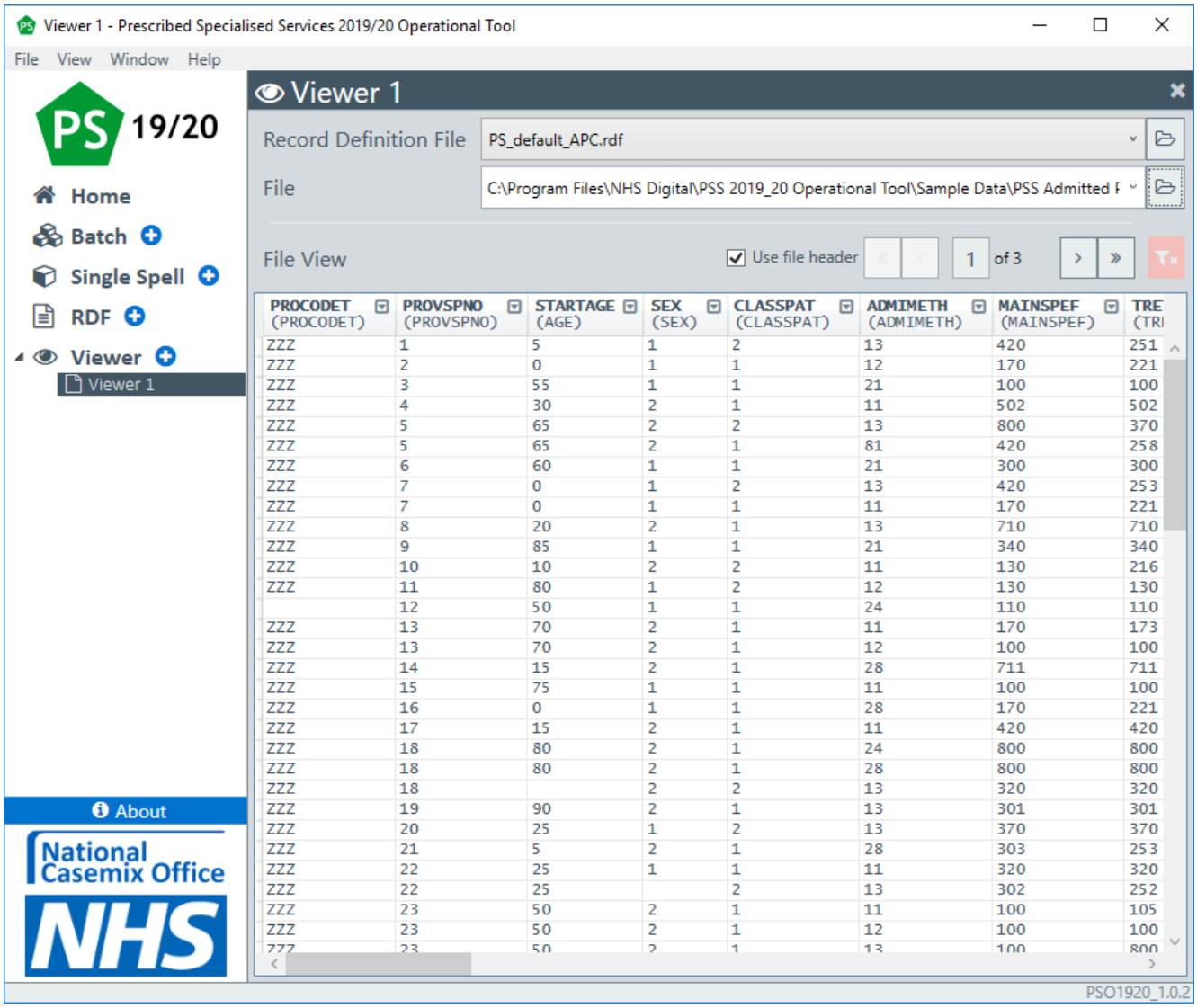
- Select the ⊕ icon next to **Viewer** on the navigation pane;
- Select the *Viewer* title hyperlink or the 👁 icon on the main home screen;
- Select **File** on the menu bar, then **New** and then **Viewer**; or
- Use shortcut keys **Alt+V**.

To view a file, you can either drag a file directly into the **File** drop-down box or use the 🗁 icon to navigate to the appropriate file to be viewed.

It is advised that a user selects an appropriate RDF as some functionality within the Viewer requires the use of the fields defined in the RDF. To select an RDF, you can either drag a file directly into the **Record Definition File** drop-down box or use the  icon to navigate to the appropriate RDF.

To select the **Record Definition File**, navigate to the Default RDF folder installed with the Tool and select the file `PS_default_APC.rdf` or alternatively drag and drop the file `PS_default_APC.rdf` directly into the **Record Definition File** drop-down box.

For the **File**, navigate to the Sample Data folder installed with the Tool and select the file `PSS Admitted Patient Care Sample Test Data.csv` or alternatively drag and drop the file `PSS Admitted Patient Care Sample Test Data.csv` directly into the **File** drop-down box.



When a file is selected, the data will be displayed in the **File View** window. Depending on the number of rows of data in your file, the Viewer will display the data over a number of pages.

The **Use file header** checkbox allows a user to specify whether the first row in the file being viewed is a header row. When this is ticked, the file headers (surrounded by rounded brackets) underneath the Record Definition File headers in bold remain visible when navigating between the different pages.

Users can use the navigation buttons to move between pages in the Viewer window.

› Moves the user to the next page of the file

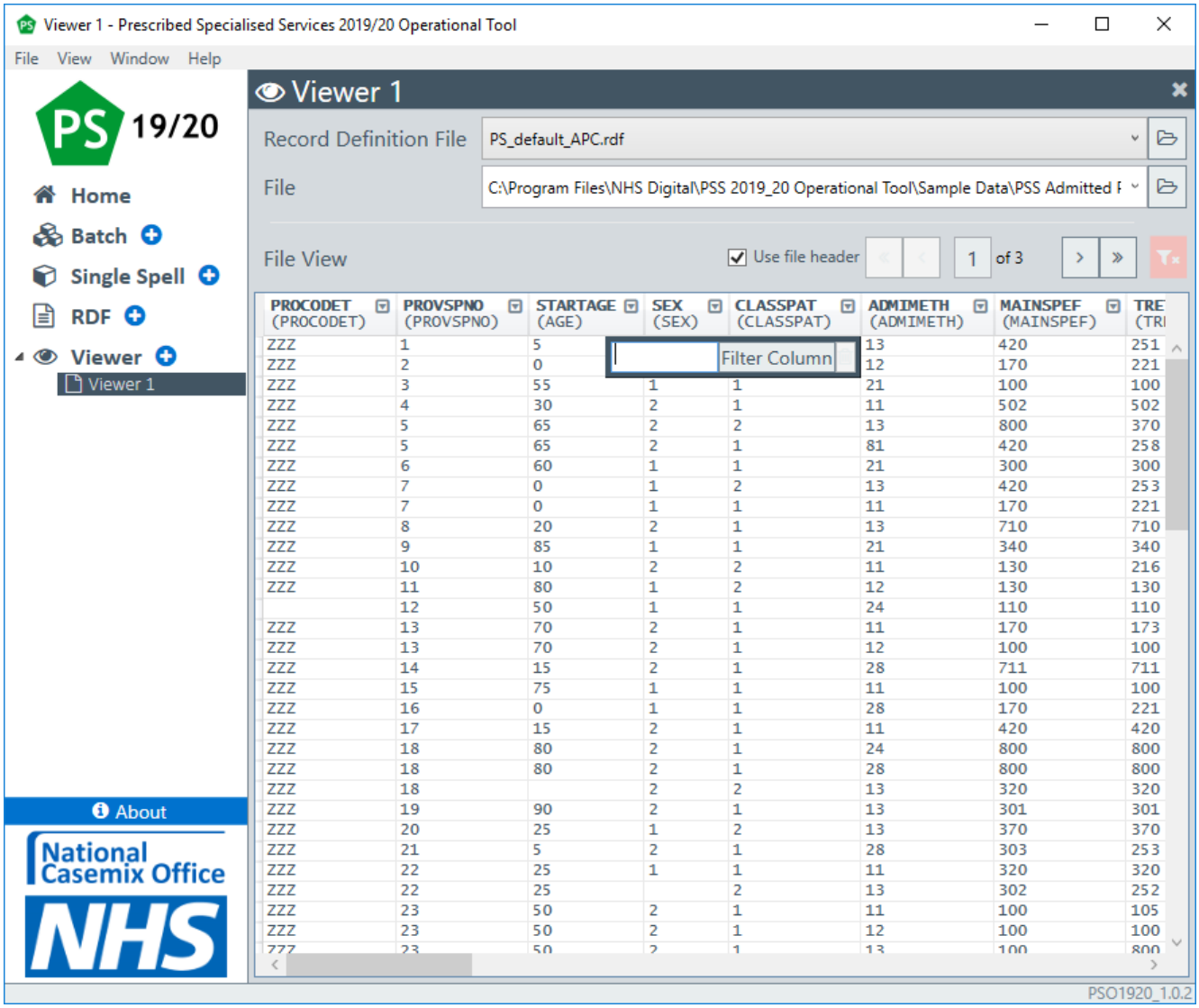
» Moves the user to the last page of the file

‹ Moves the user to the previous page of the file

« Moves the user to the first page of the file

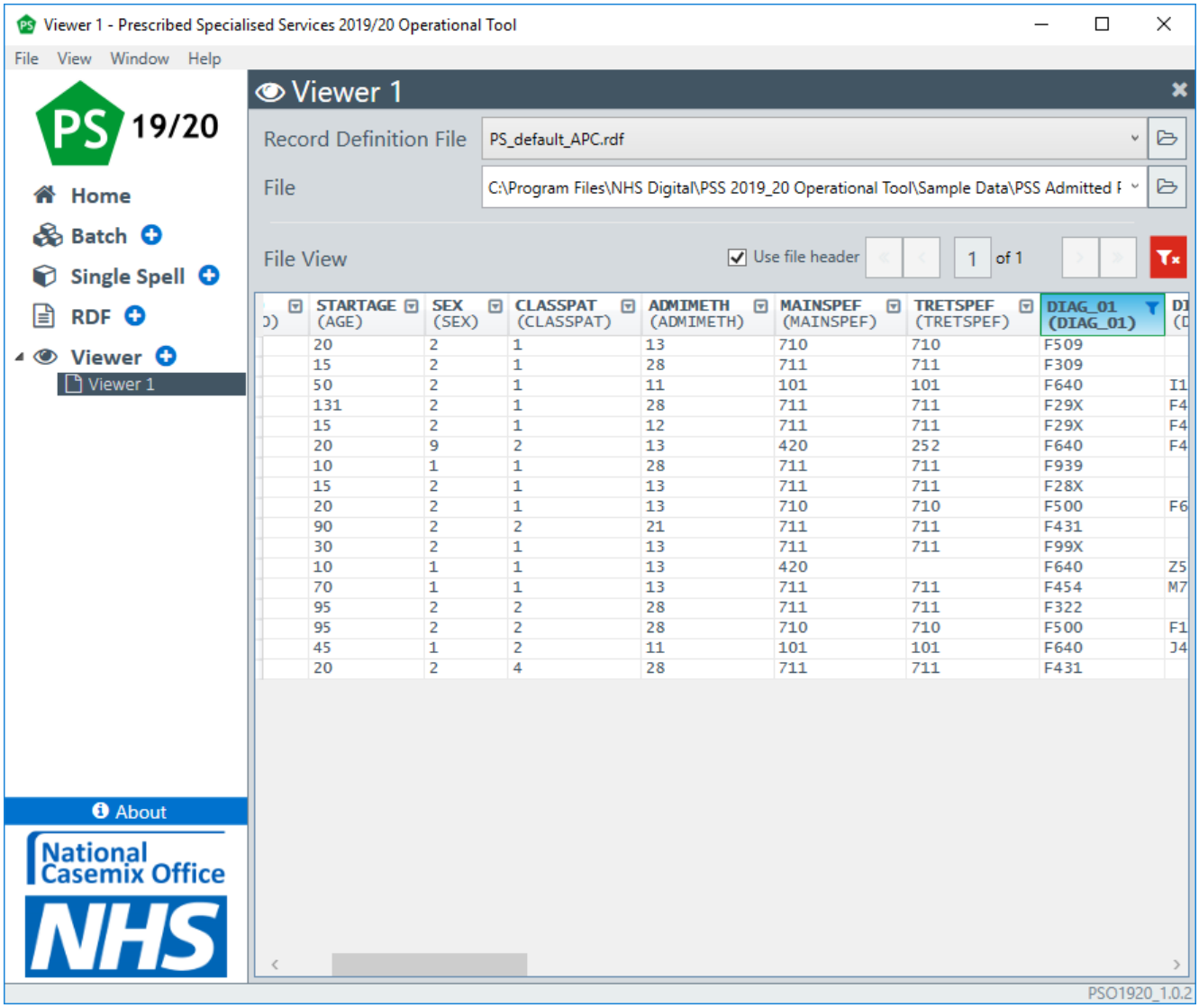
A user can also use the page number box to manually enter a specific page number to view.

Filters have been introduced into the Viewer that allow users to filter on specific columns in the **File View** window. In the top row of the **File View** window, each column contains a small drop-down arrow that when clicked opens a pop-up box that allows users to filter on a particular value.



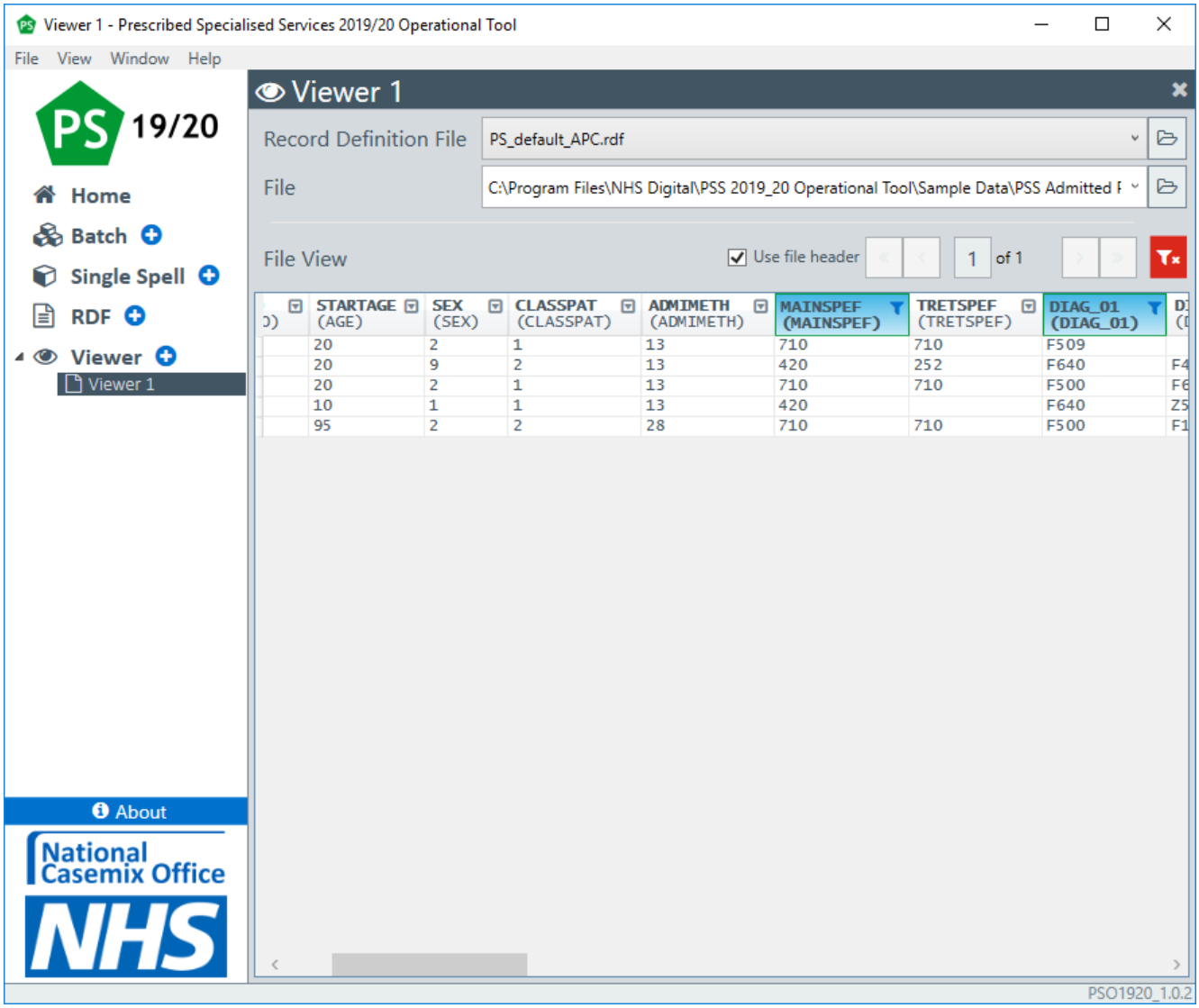
Users can filter on a particular value or use the wildcard characters * and ?.

The asterisk (*) in a wildcard matches any character zero or more times. For example, click the ▼ button in the DIAG_01 column and enter F*. This will return all diagnosis codes that start with F.



The question mark (?) in a wildcard matches a single character once. The question mark can also be used more than once. For example, click the ▽ button in the MAINSPEF column and enter ??0. This will return all main specialty codes where the code is three characters and the last character is a 0.

Please note that the filter functionality is case sensitive.



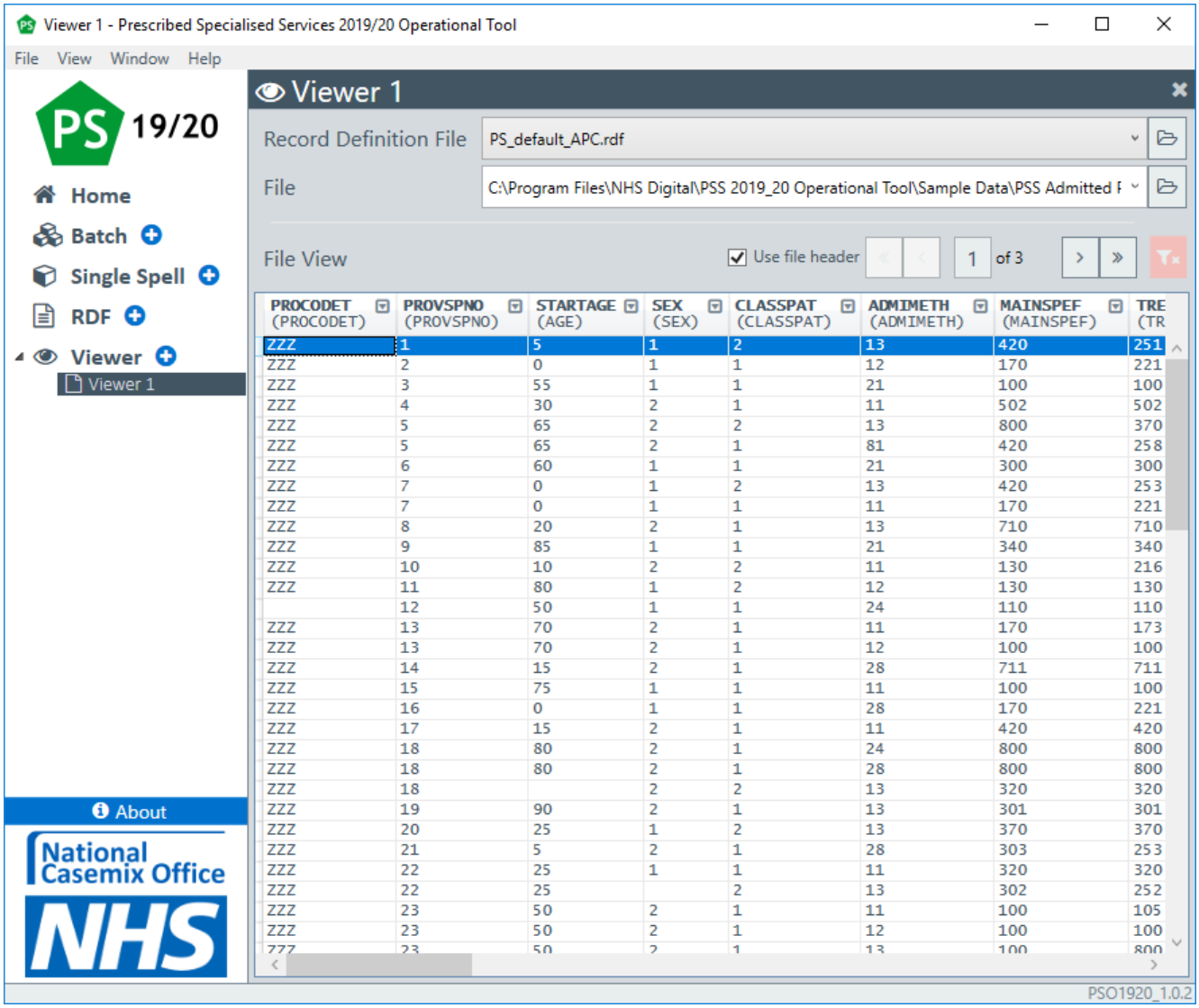
A user can filter on blanks by leaving the “Filter Column” blank and pressing return.

Individual filters can be cleared by clicking on the small drop-down arrow on columns where filters are applied and clicking on the bin icon, or where multiple filters have been applied, all filters can be cleared by clicking on the (Clear All Filter) icon.

Click the clear all filter icon to reset the viewing window to its original state.

While the use of the Viewer has limited value for manipulating large files (due to the display limitations), one specific area of development has been to introduce cross-functionality whereby a user can now double-click on a row of data in the **File View** window to open a new Single Spell window with the information already populated in the relevant fields.

Double-click the first line of data of the `PSS Admitted Patient Care Sample Test Data.csv` in the **File View** window or right-click on the row of data and select “Open in single spell”.



This will open a new Single Spell window populated with the data shown in the **File View** window.

This feature only works when a Record Definition File is selected and it is this RDF that will be used in the Single Spell.

Input File Preparation

This section provides guidance about preparing input files for processing with the Tool.

Validation

Unless otherwise stated, the values in each field are validated against enumerated sets of values – generally based on NHS Data Dictionary definitions.

File Format

Input data must be in comma-separated value (CSV) format using the American Standard Code for Information Interchange (ASCII) character set, excluding the non-printing ASCII characters. The input file must not include qualifiers, such as quotation marks, around the fields.

Text qualifiers in any original fields can be ignored by selecting the appropriate “Text Qualifiers < > none” when either extracting the CSV or importing into Excel prior to saving as a CSV file.

Using Excel for File Preparation

If some of the records end with empty fields then a file structure issue can arise when saving a text file using Microsoft Excel. To prevent this issue arising, ensure that the final (rightmost) column of data is populated for every record in the file with dummy data such as “x”.

Please be aware that unless properly imported, opening a CSV in Excel will cause changes to the data. A common occurrence is for leading zeros to be stripped when a CSV file is opened in Excel. For code types such as source of referral codes the field length is set, and the Tool expects a specific number of characters. With leading zeros stripped the field length is short of the expected amount and the Tool will produce no service lines and give an explanation in the output Quality file.

To open a CSV in Excel whilst retaining the correct values it is necessary to import the data with every field formatted as text. There are many guides online as to how to do this.

Admitted Patient Care (APC)

The Tool sorts APC data prior to processing so that records with the same Provider Code and Provider Spell Number are placed together.

The field list below shows the fields required by the Tool. The field order of the input file is defined by the Record Definition File used for the session; there is no significance to the order in which the fields are listed below.

Tool Field Name	CDS/DD Field Name	Notes
PROCODET	ORGANISATION CODE (CODE OF PROVIDER)	A value must be supplied but is not validated. For NHS organisations use the first 3 characters for non-NHS organisations use all 5 characters.
PROVSPNO	HOSPITAL PROVIDER SPELL NUMBER	A value must be supplied but is not validated.
STARTAGE	Derived	Whole years rounded down: START DATE (EPISODE) - PERSON BIRTH DATE
SEX	PERSON GENDER CODE CURRENT	A value must be supplied and must be valid
CLASSPAT	PATIENT CLASSIFICATION CODE	A value must be supplied and must be valid
ADMIMETH	ADMISSION METHOD CODE (HOSPITAL PROVIDER SPELL)	A value must be supplied and must be valid
MAINSPEF	CARE PROFESSIONAL MAIN SPECIALTY CODE	A value must be supplied and must be valid
TRETSPEF	ACTIVITY TREATMENT FUNCTION CODE	A value must be supplied and must be valid
DIAG_01	PRIMARY DIAGNOSIS (ICD)	Valid ICD-10 code. If this field is blank an error will be generated.
DIAG_02 - DIAG_99	SECONDARY DIAGNOSIS (ICD)	As above, but blanks are allowed.
OPER_01 - OPER_99	PRIMARY PROCEDURE (OPCS) and PROCEDURE (OPCS)	Valid OPCS-4 codes or blank.

Non-Admitted Consultations (NAC)

Non-admitted Consultations are outpatient attendances or attendances by patients for nursing care on a ward (ward attenders). Since 1 April 2005 the Outpatient Attendance CDS has contained both types of data.

The field list below shows the fields required by the Tool. The field order of the input file is defined by the Record Definition File used for the session; there is no significance to the order in which the fields are listed below.

Tool Field Name	CDS/DD Field Name	Notes
PROCODET	ORGANISATION CODE (CODE OF PROVIDER)	A value must be supplied but is not validated. For NHS organisations use the first 3 characters for non-NHS organisations use all 5 characters.
STARTAGE	Derived	Whole years rounded down: APPOINTMENT DATE - PERSON BIRTH DATE
SEX	PERSON GENDER CODE CURRENT	A value must be supplied and must be valid
ATTENDED	ATTENDED OR DID NOT ATTEND CODE	A value must be supplied and must be valid
REFSOURC	SOURCE OF REFERRAL FOR OUT-PATIENTS	A value must be supplied and must be valid
MAINSPEF	CARE PROFESSIONAL MAIN SPECIALTY CODE	A value must be supplied and must be valid
TRETSPEF	ACTIVITY TREATMENT FUNCTION CODE	A value must be supplied and must be valid
DIAG_01 - DIAG_99	PRIMARY DIAGNOSIS (ICD) and SECONDARY DIAGNOSIS (ICD)	Valid ICD-10 codes or blank.
OPER_01 - OPER_99	PRIMARY PROCEDURE (OPCS) and PROCEDURE (OPCS)	Valid OPCS-4 codes or blank.

Output Files

In the text below and in the tables in the following pages, the output file name supplied by the user during processing is referred to as `[name]`; the remainder of the file name is a standard suffix that is appended by the Tool.

A single input file produces several output files. User requirements determine which files are used; some users may not require certain output files. In most cases, an output field appears in more than one file, enabling users to select the files that best suit their needs.

Output files are produced as comma-separated text. These files may be opened with Microsoft Excel, but very large files may exceed the maximum number of rows for Excel. In these cases, an error message such as “File not loaded completely” will be displayed when attempting to open the file. The output files may be opened with a variety of other applications, including Windows Notepad.

Relational Outputs

Relational output files can be identified by the presence of “`_rel`” as part of the filename. They are characterised by the following features:

- They include row number references in order to allow files to be linked.
- Where items are repeated (e.g. service lines, error messages), this is represented by the addition of rows rather than columns, i.e. the data is normalised.

The relational output files are supplied to support users who wish to import the Tool output into a relational database; other users may choose to ignore them – and vice versa.

RowNo Field

RowNo is an identifier that can be used to link rows in output files to rows in other output files. This is particularly useful in the case of the relational output files. Use of a system generated row number avoids problems using input values where they may not be unique.

Note that depending on the file’s role in a relationship with another file, **RowNo** may not contain consecutive values, i.e. there may be values missing; this is by design. For example, the **RowNo** values in the `[name]_FCE_rel.csv` file will contain non-consecutive values where the input data contains episodes that do not relate to a prescribed service.

Iteration Field

Iteration appears in some relational output files where it is used to distinguish between occurrences within the same key value. There is no significance to the numerical values of “Iteration”; the values are assigned in consecutive order starting with 1.

Admitted Patient Care

There are eight output files.

File Name/Field Name		**Description**
[name].csv		A list of the other output files.
[name]_sort.csv		A copy of the input data after it has been sorted by PROCODET and PROVSPNO prior to processing.
	<input data>	All the input data, including any non-mandatory fields.
	RowNo	The generated row number of the record after sorting. This will match the equivalent fields in other output files from the same processing run.
[name]_FCE.csv		Contains both episode and spell output fields. The spell fields are repeated for each episode in the spell; care must be taken to avoid double-counting when using spell fields.
	<input data>	All the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	FCE_NPOC	The dominant National Programme of Care service code for the episode.
	ServiceLine	The dominant Service Line for the episode.
	ServiceLineList	A semi-colon separated list of all the Service Lines the episode qualifies for.
	SpellNPOC	The dominant National Programme of Care service code for the spell.
	SpellServiceLine	The dominant Service Line for the spell.
[name]_spell.csv		Contains one row per spell.
	RowNo	Matches the run generated row number of the first episode in the spell in the sorted input data.
	SpellNPOC	The dominant National Programme of Care service code for the spell.
	SpellServiceLine	The dominant Service Line for the spell.
[name]_quality.csv		Contains a row for each episode that contains an error.

		Where one or more episodes within a multi-episode spell contain errors, all the episodes from the spell, including those that do not contain errors, are included in the quality file. Thus, there are records in the quality file that do not include error messages.
	<input data>	All the input data for the episode, including any non-mandatory fields, are reproduced in the output.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, each consisting of Code Type, Code and Error Message, separated by pipe (“|”) symbols.
[name]_FCE_rel.csv		Episode-level output in relational form.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the Service Line for the episode.
	ServiceLine	One of the Service Lines the episode qualifies for.
[name]_quality_rel.csv		**The relational format includes a row for each error that an episode contains.**
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	The value of the code that has failed validation. Blank where the code is missing from the input data.
	Error Message	Description of the error.
[name]_summary.csv		Contains details about the processing session.
	Grouper Version	The version of the Tool that produced the output files.
	Database Version	The Tool’s internal database version.
	FCE Count	The number of episodes in the input data.
	Spell Count	The number of spells in the input data.
	FCE Error Count	The number of episodes having errors.
	Spell Error Count	The number of spells whose episodes have at least one error.

	Run Start Date/Time	The date and time that the processing run started.
	Run End Date/Time	The date and time that the processing run finished.
	Input Filename	The path and filename of the input file.
	Output Filename	The path and filename of the output, as selected by the user.
	RDF path and name	The path and filename of the Record Definition File used for processing.

Non-Admitted Consultations

There are five output files.

File Name/Field Name		**Description**
[name].csv		A list of the other output files.
[name]_attend.csv		The main output file.
	<input data>	All the input data, including any non-mandatory fields.
	RowNo	The generated row number of the record.
	NPOC	The dominant National Programme of Care service code for the attendance.
	ServiceLine	The dominant Service Line for the attendance.
[name]_quality.csv		Contains one row for each attendance that contains errors.
	<input data>	All the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, consisting of Code Type, Code and Error Message, separated by pipe (“|”) symbols.
[name]_quality_rel.csv		All error messages in relational form.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	The value of the code that has failed validation. Blank where the code is missing from the input data.
	Error Message	Description of the error.
[name]_summary.csv		Contains details about the processing session.
	Grouper Version	The version of the Tool that produced the output files.
	Database Version	The Tool’s internal database version.
	Attendance Count	The number of records in the input data.

	Attendance Error Count	The number of records having errors.
	Run Start Date/Time	The date and time that the processing run started.
	Run End Date/Time	The date and time that the processing run finished.
	Input Filename	The path and filename of the input file.
	Output Filename	The path and filename of the output, as selected by the user.
	RDF path and name	The path and filename of the Record Definition File used for processing.

Errors and Validation

As part of processing the Tool carries out validation checks on many of the mandatory input fields. Where one or more fields fail validation, the Tool will not derive any service lines for the record.

Caution must be exercised when considering multi-episode spells that contain a mixture of episodes that pass validation and episodes that fail validation. The Tool will derive a spell service line from the episode service lines. Once the episode level errors have been fixed the spell service line could change. The Spell Errors field in the summary file indicates how many spells may be affected.

Details of all errors encountered are reported in the output quality file. The listings in the Output Files section of this document include a description of the quality files. The Input File Preparation section provides further information about valid values for various input fields.

Error Message Format

Error messages in the quality file are displayed in three sections, separated by a pipe character:

```
Code Type|Code|Error Message
```

`Code Type` identifies the field or field type

`Code` is the unrecognised value. Where an error is due to the absence of a code, this section is left blank.

`Error Description` explains the nature of the error

An example error message is:

```
DIAG_01|H547|Primary Diagnosis is invalid.
```

Most of the mandatory input fields are validated against lists of acceptable values within the Tool and will generate similar error messages if an invalid value is used.

Most mandatory fields will also report if a value has not been supplied, for example:

```
MAINSPEF||Main Specialty Code is blank
```

Notes

When one error is found in a record the Tool does not stop the validation process. The software aims to identify all errors and output them together.