

UFS TOOLS

FOR UFSL AND PORTAL DATA – SCRUTINY AND SCHEDULE GENERATION

New in-house tools have been developed for usage in UFS work. They will enable consolidation of UFSL data for uploading the data in Portal and also enable scrutiny of the data before upload. The tools also work with the data already uploaded in the portal (even with the UFSL data). These tools also enable the generation of schedules from the data imported.

UFSL SCRUTINY/CORRECTION TOOL

This tool allows you to open the UFSL CSV files and perform corrections in the file. It checks for format errors that are commonly found in the CSV files probably due to manually editing the files in Microsoft Excel or other CSV programs. It will also try to auto-correct them as much as possible. It will look for the following errors:

1. File name not properly formatted
2. Invalid line endings in the file
3. No valid header present in the file
4. Non-numeric values provided for Ward/Block/IV Unit number
5. Additional commas in starting lines
6. Information mismatch in file and file name like block number in file name and block number inside file content
7. Additional column found in file
8. Columns being rearranged in file
9. One comma missing in a line causing wrong formatting like date being displayed in Corner-point
10. Line being split before completing all data in single line
11. Two lines being merged into a single line
12. Missing seconds in date and time
13. Invalid time format including MM-DD format, or slashes in date
14. Invalid file ending (no total in generated file)
15. Additional lines present in file after line having total households

Apart from above checks related to file format, the following checks for data integrity and consistency are also checked:

16. All three values missing – house number, owner name and name of the structure in the line
17. Non-numeric serial number or incorrect serial number in start of the line
18. Invalid characters present in house number
19. Invalid characters present in owner name like digits, symbols etc.
20. Invalid characters in landmark
21. Invalid values for corner point (all values except four)
22. Corner point repeated in listing
23. Invalid characters in Details
24. Invalid household count like non-numeric values

25. Total households not in valid range for a block 120-150 households
26. No corner points given in whole listing
27. Incorrect total given in the file

And a few other checks beyond the checks mentioned above.

These checks are conducted for each and every file opened using the tool. And wherever possible, repairs are also performed on the fly. For some type of errors, you may also see the messages regarding the error and action that could be taken on the error. The listing data thus parsed can also be seen within the tool as well.

There are usually three types of files that exist in the UFSL software:

1. <RO Name>-<RO Code>_<Town Name>_<IV>_<BLOCK>.csv
2. .<RO Name>-<RO Code>_<Town Name>_<IV>_<BLOCK>.csv
3. .org_<RO Name>-<RO Code>_<Town Name>_<IV>_<BLOCK>.csv

All of these files have their own significance. If available, the files should be chosen in the above priority. If not available then the next type of file may be used in this tool. In some cases, you may need the second file (where the first file has been corrupted beyond repair).

The listing view will show you the structures listed in the selected file along with other attributes like corner point, landmark and so on. Here, also the tool will suggest you the landmark applicable for the structure based on the naming of the structure. It will suggest you the possible landmarks with varying strength.

It will show landmark suggestions for Temple, Church, Mosque, School, Bank, etc.

It can detect up to two-character spelling mistakes for common names like *tempel* will be shown the landmark of type Temple, and also *tenole* will also show suggested landmark as temple.

The editing can be done in place and you can also delete the additional/redundant lines using the tool directly.

You can also add households which were left during listing but were found out during scrutiny or inspection.

After all the refinement has been carried out based on suggestions and the actual field situation, you can download the file in two formats – CSV and Excel. Both of these have their own relevance and structure.

Before you download the files, you will need to fill the details about the block like JSO ID, State name, district name and so on. As these details will be used to generate the data for the Excel and CSV file.

Note: You must enter the values for all the entries matching the data available on the Bhuvan portal. Any deviation may cause problem on a later stage, as you will have to regenerate all files again with correct data as given in portal.

The CSV file available for download will contain all the changes you have made to the listing so far including change in names and other values like landmarks and corner points. The downloaded CSV file will save you some time as you will have a properly formatted CSV file with latest changes. And using it will not require to redo all the changes each time you need to generate the Excel file.

The Excel file will allow you to download the listing data in the format provided by HQ including all the additional details like JSO name, JSO ID, state name, state code, district name, district code, town name, town code and so on. All this data will be saved in a single sheet for each block. So, when using the merge tool, if there is an error present in one of the blocks, you will not be required to generate the schedules for all the listing again and again.

These Excel files can be merged using the merge tool to form larger files containing data relating to all blocks of an IV unit, or multiple IV units, or even multiple towns as required.

Note: Do not use Excel for editing the CSV files in any case. You may view the files, but editing it with Excel will again change the file format and you will need to process it again. You may use any other CSV editor provided it is not compliant to RFC 4180 (as output will be changed in this as well) and can edit simple CSV files.

(EXCEL) MERGE TOOL

Using this tool, you will be able to merge multiple Excel files into a single Excel file. This can handle merging of data from multiple files containing individual block data, individual IV Unit data, individual town data or even multiple town data.

Opening of files is as easy as drag and drop. The tool will search for inconsistencies like missing values in number of households, all three values being empty, invalid date/time and so on and it will report these in the file section. The opened file must have been generated by the UFSL correction tool with proper header as required. If any change has been made to the header, there may be a chance that it will not get parsed properly or at all. It will also make adjustments in case of the columns of file have been rearranged due to some reason.

The checks incorporated here are:

1. Empty cells where a value is expected like JSO Name, JSO ID, State name etc.
2. Incorrect headings (if any deviation from HQ format is found, import will fail)
3. Invalid JSO IDs (a zero in JSO ID before underscore, JSO ID less than seven numeric digits after underscore)
4. Matching of codes for state, district and town in columns provided with JSO ID provided
5. At least one of three cells – house number, owner name and building name to be non-empty
6. Number of households to be greater than or equal to 0 (warnings for cases where it is too high)
7. Message for multiple codes given to a single state or district or town in different rows
8. Invalid date time found in the rows
9. Invalid corner points provided
10. Summary before downloading merged to verify that there is no accidental mistake

A simple summary will also be displayed for the file opened using this tool. For an individual block file, it will show the details about JSO involved, state, district, town and other details. And for multiple blocks in single IV unit, a summary table will be shown displaying the total number of households and structures in each block of that IV. Similarly, for multiple IV units, the tool will display summary for each IV, using which you can see the details of blocks within that IV unit. And same will be the case where multiple towns are present.

Please note that any single mistake in the Excel file due to editing or otherwise, may cause the tool to interpret it as a separate entity and create a separate head for it in the summary table.

The merged file can be downloaded by simply opening all the files that need to be merged and clicking on the merge button.

Here, you need to ensure that the data selected in this tool does not have any spelling mistakes or wrongly entered block numbers, ward numbers or iv-unit numbers. If you see multiple values for blocks even though they are the same, make sure that you entered it correctly in the previous tool before generating the Excel file. All data entered is case sensitive, so the name of JSO needs same capitalization in all instances it is entered.

The merged output can be used in multiple ways. The merged file may be used by ROs to submit the data for inclusion in the web portal. And it may also be used to generate the schedules for that town using the finalizing tool.

FINALIZING TOOL

This tool can be used to find out the mismatches in the data and get them fixed so that, it can be readied for schedule generation. After all checks, the data may also be used to generate schedules.

This tool requires data from the portal downloaded using the "Download xxx table" button from the town boundary page, iv-unit boundary page, ward boundary page, block boundary page and listing page.

For listing data, it will accept the file downloaded from portal as well as the Excel file generated using the merge tool. You can also add both these for towns which have been completed partially in UFSL and partially in Bhuvan app (portal data to be added first, and then add the UFSL Excel file/s).

It is to be noted that the file is to be downloaded using the 'Export data to Excel' button given in the boundary/listing page. And this downloaded data should not be edited in any application including Excel. If any change is required to be done in the data, it should be done via the portal (or correction tool for UFSL data, as the case may be) and then the file has to be downloaded again for proper working.

After importing all data related to boundaries and listing, you may proceed for scrutiny of the data. The data will be scrutinized against the following initial checks:

1. There should not be more than one town boundary (normally).
2. There should be no such block number (or unique combination of ward number, iv-unit number and block number) that does not have any listing data associated with it.
3. There should be no such block number (or unique combination of ward number, iv-unit number and block number) that does not have any block boundary associated with it.
4. There should be no ward number and no iv-unit number which does not have any listing data.
5. There should be no such pair of ward number and iv-unit number that occurs multiple times in either of the side in pairs i.e., there should be no such ward which is contained in multiple iv units and one of such iv units contains multiple wards in itself and vice versa for iv unit.

If the imported data does not have any such error, then only you will be able to proceed for scrutiny. If any error exists, the dialog box will display the error and you will need to correct the error. The description about the error and possible remedy can be accessed from the user manual given in the tools itself.

It may be noted that you may proceed in either correction mode or in scrutiny mode. In correction mode, you will be able to edit the data imported in the tool while the scrutiny mode will not allow you to edit the data. It is to be noted here that the data that you edit using this tool will not be updated in the portal or UFSL files, you also need to carry out necessary modifications in the original source for these changes to persist.

It would be preferable to proceed with the data which is complete in all respects i.e., the field work related to the given town has been completed (either in UFSL or Bhuvan or in combination).

After you click on start button, you will be shown the summary of available blocks, iv units, ward boundary (if applicable) in a tabular format. You shall also see a button to cross check the record numbers of block boundary, ward boundary and iv-unit boundary entered in the QGIS project and available on the portal.

QGIS Record Number Check: To check the record numbers, the instructions are given in the dialog box that opens up using the button given for matching of record numbers. All you have to do is to simply select all the

features from attribute table and then paste it in the text box. You can do this for block boundaries, ward boundaries and iv-unit boundaries.

The tool will try to guess the type of boundary pasted as well as the column names chosen for record number and so on. After clicking on next, you shall see all the record numbers with status of matching next to them. You can view the records using the check boxes given in the dialog box above the record table.

This feature can also be used to fill record number for boundaries. Simply, paste the boundary data from QGIS without record numbers and you shall see a fill record numbers button. Pressing this button, all the record numbers will be filled in and you will be able to paste back the features in QGIS with filled in record numbers.

Then, there is an option to scrutiny the block data against the boundary uploaded. This will allow you to do the following:

1. Search for building mentioned in the boundary description and see if they have been included or excluded
2. Check the cyclicity of boundary descriptions i.e., the description of north boundary ends where the description for east boundary starts and so on.
3. If number of households in the block is within the prescribed limit of 120-150 households for each block (also see provided remarks regarding deviation, if any)
4. Number of corner points present in blocks. If there is missing corner point, you will be able to see this directly in the summary of checks to be performed and you will also be able to see excess corner points being given in the block. (It also covers cases where the number of buildings in the block are lesser)
5. Also check if the corner points have been assigned to correct structures, not just to any structure
6. Auxiliary information regarding the block will be derived from the listing data and presented with status about its inclusion or omission in the boundary description
7. Suggestions relating to the type of area of the block based on the listing data available

Here, the auxiliary information needs to be unique and similarly the type of area also needs to be different for Area 1 and Area 2. Also, there has to be a type of area given for each block (at least one type of area).

The listing will also be displayed along with the block boundary data. And you will be able to see landmark suggestions as they were given in the correction tool. The incorrect landmarks will also be highlighted and you may need to correct them. It also looks for two character distances and tries to guess the proper landmark for the listing entry.

SCHEDULE GENERATOR

Schedules can also be generated using this tool. Clicking the schedules generator button will open the schedule generator page. Here, you can fill up the details and download the schedules for Town Schedule, Block Schedule, IV Unit Schedule, Ward Schedule and Listing Schedule.

Some values are required for each schedule (except listing schedule) and need to be entered for generating the schedule. The fields are self-explanatory and a few checks have also been implemented in them.

The downloaded schedules are in the format as required and can be downloaded any times using the tool.

VERIFICATION TOOL

After generation of schedules, the schedules need to be verified against some inconsistencies like date of dispatch will be later than date of field work end, the number of households as given across various schedules needs to add up and match.

The following checks have been implemented in the verification tool for use by SRO/RH/QC/HQ:

1. Same Town/State/District Name is given in all the schedules including the Present Name (if any)
2. Same Town/State/District Codes is given in all the schedules
3. Frame code is given as 18 in town and block schedules
4. Total IVs in Block 1 of town schedule match with total IVs in Block 3 of Town Schedule. And all IV Schedules are present and imported in the tool
5. Total Wards in Block 1 of town schedule match with total Wards in Block 3 of Town Schedule. And all Ward Schedules are present and imported in the tool
6. Value of Total Households for town is provided correctly
7. Population for 2011 census is within expected range
8. Households for census 2011 data and current households are within expected range
9. Date of field work commencement is lowest (or one of lowest) in all schedules
10. Date of completion is highest (or one of highest) among all schedules
11. Date of dispatch should be highest (higher than completion date of inspection and survey)
12. Number of blocks in each IV/Ward match with block schedule with given ward/iv number
13. Unique descriptions are provided for all IVs/Wards and all are with non-zero block count
14. IV Unit numbers and Ward numbers are in serial order (Except cases like 888, 999, [6, 601, 602..])

Block Schedule

15. Block 1 of Block schedule has serial 8-13 identical to town schedules Block 1 and for Block 2 serial 1-3 and 5.
16. All blocks within one IV Unit are in serial order
17. Number of households tally with listing schedule
18. No Block/IV Unit/Ward should have zero household
19. No Block/IV Unit/Ward number should begin with 0
20. IV should have 20-40 blocks or town should have only one IV Unit in whole
21. NESW should be unique in IV/Wards separately or combined
22. Listing schedule exists for each block entry in block 3 of block schedule

IV/Ward Schedule

23. Correct details about total wards/iv units
24. Total blocks correct as per blocks included in Block 3 of this schedule
25. Total households correct from Block 3 of this schedule
26. Inspection start should be greater than or equal to field start
27. Inspection start should be greater than inspection end
28. Field end should be greater than field start
29. Scrutiny date should be greater than all
30. Unique boundary descriptions for all wards and IV units
31. Persistent block information across schedules including boundary details, total households, auxiliary information, type of area, ward/iv/block combination and description
32. Data about total households, auxiliary information, area type, description, iv/ward/block matches with Block 3 of block schedule

Listing schedule

33. Field end should be greater than or equal to field start date
34. No row should be devoid of identification particulars for structure
35. Total written in schedule should be correct and matches with total given in Block 3 of block schedule

INSTALLING THE TOOL

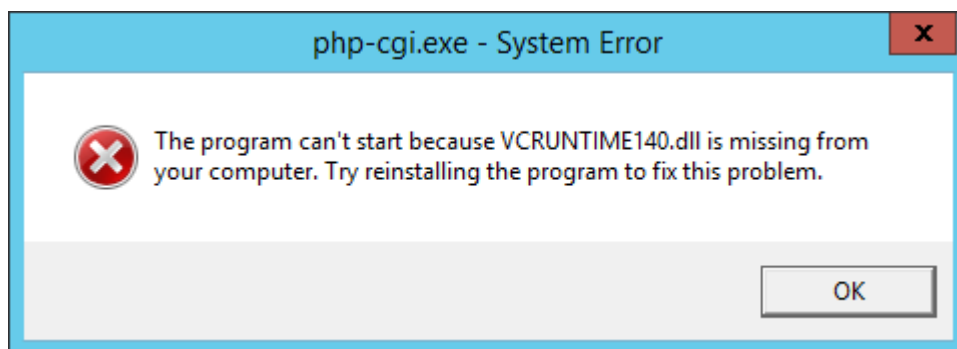
Installation of the tool is very simple. A simple process of installation is to be followed and the program will be up and running in a few minutes. After installation the tool can be opened using the shortcut generated.

The software can be used by JSO/FI, SSO/FO, RH and above users. The tools for each of these users have been separately given in the tool homepage.

User manuals for the tools used are also provided inside the software itself. This tool can be run any number of times as required. It can also have multiple instances with both working on different data.

VC RUNTIME ERROR

After installation you may get the following error:



If you see this error, then you need to install Visual C++ Redistributable 2015. It can be downloaded from [Microsoft Website](#) or from [this alternate link](#).

Simply, close the UFS Tools app and download the above package and install it. After installation is complete, open UFS Tools again to run. You do not need to uninstall or reinstall the UFS Tools app.

TYPICAL WORKFLOW

For JSO, mainly two tools have been given viz. UFSL correction tool and merge tool. These tools are to be used by JSO for cleaning the CSV files and converting the files into Excel format. Then all the data for a single town (done by that JSO) is to be merged into a single Excel file and then given to SSO for further scrutiny/action.

Since, all the editing can be done using these tools, you must refrain from using Excel or any other tool to edit these files. Excel is not to be used for editing of CSV files or the downloaded Excel files from portal.

Also, it is to be noted that the data edited using the tool will not be saved unless you download it using the options given. So, after making any edits in the data, you should download the data in the format as required. These changes will be lost as soon as you close the application, if you have not saved the data. Also, for backup purposes you should keep copies of data after each step as a precaution.

Please note that there are three type of Excel files:

1. Microsoft Excel Comma Separated Value File (CSV)
2. Microsoft Excel Workbook File 2003 (XLS)
3. Microsoft Excel Workbook File (XLSX)

If you don't see the required type of file while importing, you can select All files to be able to see the files in the browse dialog.

WORKFLOW FOR JSO

JSO will open the CSV files in the tool for cleaning.

Removal of all inconsistencies as suggested in the tool is to be performed.

After this, JSO should download the cleaned CSV file.

JSO should enter all the details in the dialog box regarding the block.

After this JSO should download the Excel files (XLSX) using the same tool for each block.

At last, JSO should merge all the generated Excel files into a single Excel file for given town.

This merged file is to be submitted for further process.

WORKFLOW FOR SSO (FOR TOWN WITH UFSL DATA)

SSO should merge all the Excel files received from JSOs using the merge tool.

One Excel file for each town should be generated.

This file will be used for scrutiny tool.

Similarly, for SSO, there are two tools that are given – merge tool and scrutiny tool. The merge tool will help the SSO to merge data for single town from multiple JSOs into a single file that will be later used for scrutiny in the second tool. The scrutiny tool can then be used to conduct scrutiny of the available data and then finally schedules can also be generated for dispatch. A quick QGIS record check is also included in the work flow of checks to be performed.

WORKFLOW FOR SSO/ABOVE (AT SRO/RO LEVEL AND ABOVE, INCLUDING QC)

Download the following from Bhuvan portal using the Export button in the GIS page of SRO/RO and above:

1. Town boundary data from Town Boundary Table
2. IV Unit boundary data from IV Unit Boundary Table
3. Ward boundary data from Ward Boundary Table (if applicable)
4. Block boundary data from Block Boundary Table
5. Listing data from Listing Table (if available)

If listing data is not available in the portal, the UFSL data is to be used for the scrutiny purpose. The UFSL data should be merged in a single Excel file for convenience.

Note: If you cannot see the files listed in the open dialog box, select the file type as XLS or XLSX, or even all files from the dropdown given above the cancel button in the open file dialog box.

If a town contains data from both Portal as well as UFSL, then both files are to be used for scrutiny, with portal data being imported first.

Open the scrutiny/finalization Tool and import all these files downloaded/generated in the above steps.

Then click on the button to proceed for scrutiny.

Verify the details of the town given in the dialog box and then click on Next.

Statistics page will be displayed, showing all the IV units and blocks present in the data.

Scrutiny is to be performed for each block using the button provided.

If any inconsistency is found in the data, the editing is to be done in portal/UFSL data as required and then this process is to be started again (from the first step of downloading the data).

After scrutiny is completed, and it is assured that data is free from errors, the data may be used to generate schedules.

To generate the schedules, details regarding scrutiny date, remarks, SSO name, census population etc. is to be entered in appropriate text boxes and then schedule is to be generated.

Schedules can be generated for towns completed in any way including UFSL and Bhuvan app (individually or mixed).

For users including RH and others, the tools available are Finalization tool and verification tool. Using the second tool, the user can check for inconsistencies in the schedules generated using the data. It will check for the inconsistencies present in the schedules and display relevant messages accordingly.

VERIFICATION OF SCHEDULES

This is to be performed at ZO and above levels.

The schedules are to be imported in the tool and any inconsistencies reported are to be indicated in the scrutiny note and also, they will be required to be corrected by following the appropriate mechanism.

There are many checks that have already been implemented in the tool. And could not be documented in detail. Also, with updates more features can be added/modified/removed as the requirement for those changes. You can always visit the user manual to learn more about these features.