Net Waste Tool

Update Guide, Version 1.0

WRAP recently commissioned a number of developments to the Net Waste Tool (NW Tool or the Tool). This is in an effort to enhance the utility and usability of the tool whilst taking advantage of developments in online software. This report provides an update on the key changes made to the Tool, split into 3 key categories; Data, Functionality and Reporting.

Section 1: Data

It is important to keep the data within the tool up to date to enable users to accurately forecast the cost impacts of their waste generation. With this in mind, various aspects of the data have been updated.

1.1   Default recovery rates

The default recovery rates have been updated to align with recent guidance developed with the UKCG and CECA.

1.2   Skip rates and sizes

The skip rates have been revised to better reflect market conditions. The rates can still be changed to suit individual requirements and known actuals to improve the accuracy of the forecast.

The available skip sizes have also been amended to reflect the most commonly used container sizes. This has seen the 5 yard skip option replaced with a 6 yard and the 12 yard option replaced with a 16 yard.

1.3   Component cost data

The component cost data has also been updated to reflect current market rates. The prices in the database are benchmark prices from a variety of sources including:

- Spon's Architects and Builders Price Book 2011;
- Spon's Mechanical and Electrical Price Book 2011;
- The Building Cost Information Service Online;
- Consultation with a selection of UK-based Main Contractors; and
- Data provided by Cyril Sweett.

It is still recommended that the default costs are overwritten where possible with known actuals to improve the accuracy of the results generated.

The Embodied Carbon dataset has also been updated in line with the Inventory of Carbon and Energy (ICE) database Version 2.0. This will improve the accuracy of the carbon forecasts.

The component database has also been rationalised to simplify the component selection process and avoid giving an impression of false accuracy. For example, the large number of internal door options in the dataset has been reviewed and reduced to a far shorter list.

Section 2: Functionality

User feedback suggested that some additional functionality would improve the utility of the Tool, and the following developments have been made in response to these suggestions.

2.1   Inclusion of external works within project types

Previously, external works were assessed under a specific project type within the NW Tool, which resulted in a full project analysis taking longer than necessary. External can now be added to the project timeline (Project Details screen) for all project types, as shown in Figure 1. External works will then be available for selection within the Add and edit components screen, as shown on Figure 2.

Figure 1 Project Details screen showing how to specify the inclusion of external works elements

Figure 2 Add and edit components screen showing external works components available for selection

2.2   Demolition, excavation and strip-out waste

For new build projects, the Demolition Quantities Estimator (DQE) can be accessed via the Project Details screen. A tick-box has been added under the General Details section of the screen as shown in Figure 3, asking users to indicate whether the project includes demolition and activities. If the user selects 'yes', the DQE is made available. The Tool will then add the calculated or user-defined demolition waste to the segregation strategy.

Excavation waste can be entered in tonnes or m^3.

There is also an option to specify strip-out activities. If the user selects 'yes':
- a Strip-Out Quantities Estimator (SOQE) will be added to the Project Quantities section of the screen; and
- a 'strip-out' option will be added to the Project Timeline.

Figure 3 Project Details screen showing where to access the DQE, enter excavation quantities, and access the SOQE

2.3   Spreadsheet upload for components

The most significant change to the Tool is the spreadsheet upload function within the Add and edit components screen.

Edits to component data (cost, recycled content % etc.) could previously only be made online, which can be a repetitive process and is heavily dependent on the user's internet connection/speed. Users can now download all of their selected components as a pre-formatted spreadsheet so that edits and additions can be made offline (see Figures 4 to 7). This will significantly reduce the time required to edit component details, and it should avoid some of the slow refresh times which have been previously reported.

When a user edits any of the default components from the NW Tool dataset, a copy, or, "User component" is created which is then detached from the default selection allowing the component data to be changed as required. When a user uploads a spreadsheet of components, they will be added to the project as user components (even if the data hasn't been changed from default or was previously a default component at the point of download).

When selecting components to download, the tool now recognises zero as a quantity. This will speed up the element selection process, as demonstrated in Figure 4. Once selections under the individual tabs have been made, the user must save the changes before downloading the dataset. The dataset can be downloaded as shown in Figure 5 and edited as appropriate to suit any data changes.

Once all edits have been made the user can upload the dataset back into the tool as shown in Figure 6. Users must check that the row is valid before it is uploaded. The validity of each row of data is indicated in the spreadsheet, as shown in Figure 7. Once uploaded, the Add and edit components screen will be re-populated. Any amendments will be shown in yellow below the standard dataset description, and will appear as shown in Figure 8.

The component upload process is fully inclusive, meaning that when a spreadsheet of components is uploaded it effectively becomes the full list of selected components for that project (overwriting all previous selections).

Figure 4 Add and edit components screen – enter user quantity and tick box to select

Figure 5 Add and edit components screen – Download / Upload components

Figure 6 Download / Upload components pop-up screen
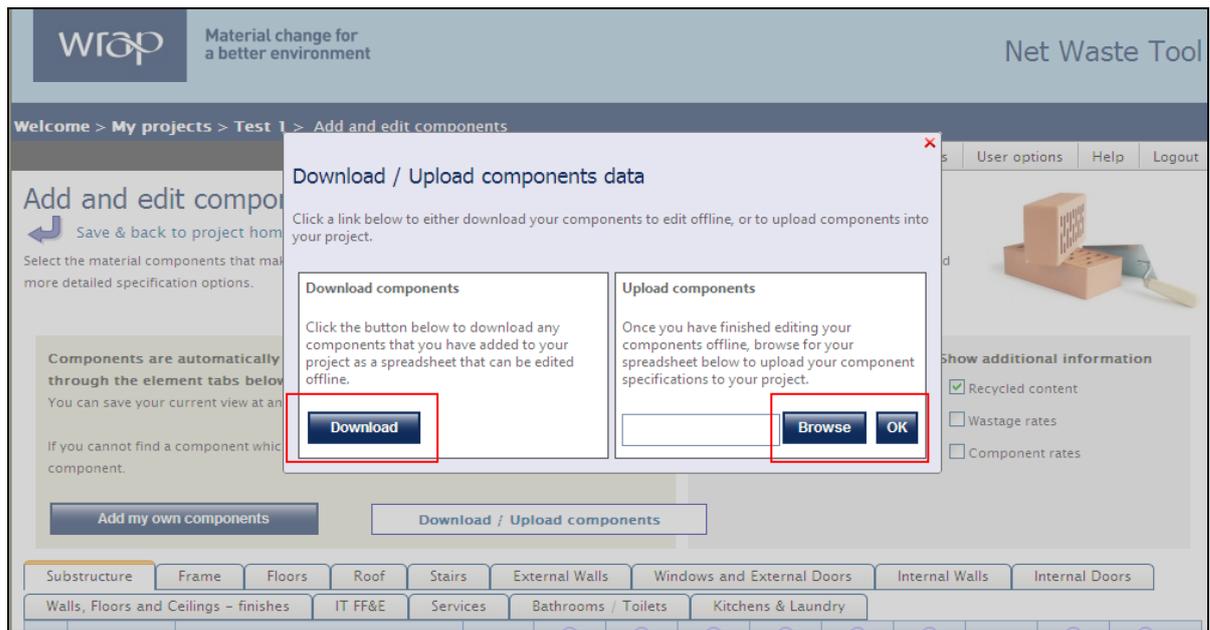
Figure 7 Component spreadsheet showing valid entries

**Figure 8** Amendments where valid entries have been uploaded
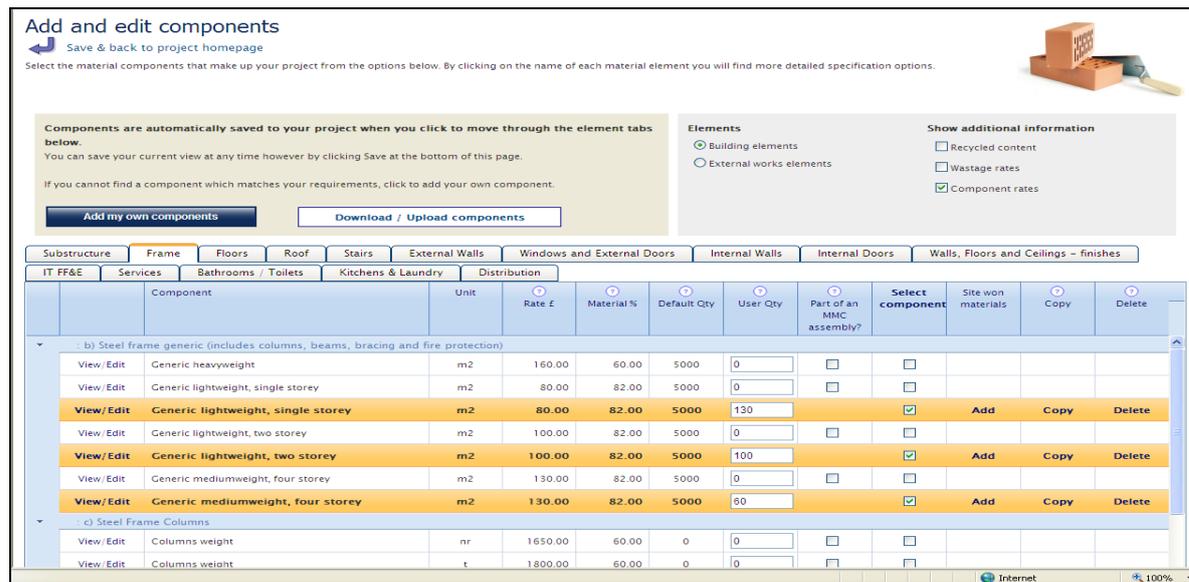
## 2.4   Specification of site-won materials

It was noted that the Tool should better recognise the possibility of incorporating site-won materials. When selecting components, users are given the opportunity to indicate whether they are using site-won materials, to off-set material purchase requirements. A 'site-won materials pop-up' prompts users to view the available site-won materials and quantities, and select the quantity that will be incorporated within the component. This is shown in Figures 9 and 10.

This quantity will be applied to the relevant component in order to calculate the revised quantity that needs to be purchased.

Figure 9 Add and edit components screen showing how to specify site-won materials
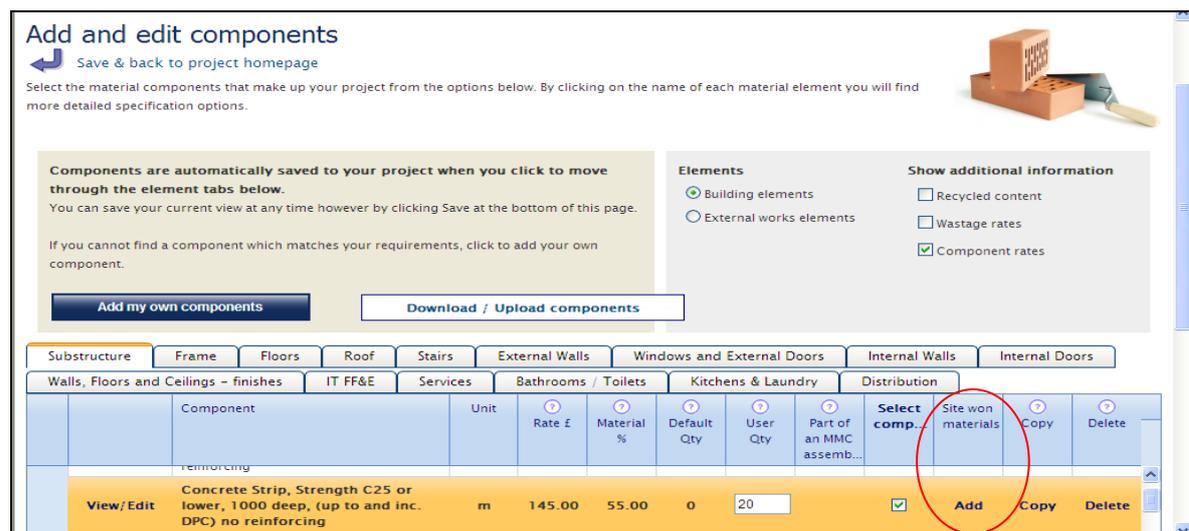
Figure 10 Add site-won materials pop-up screen
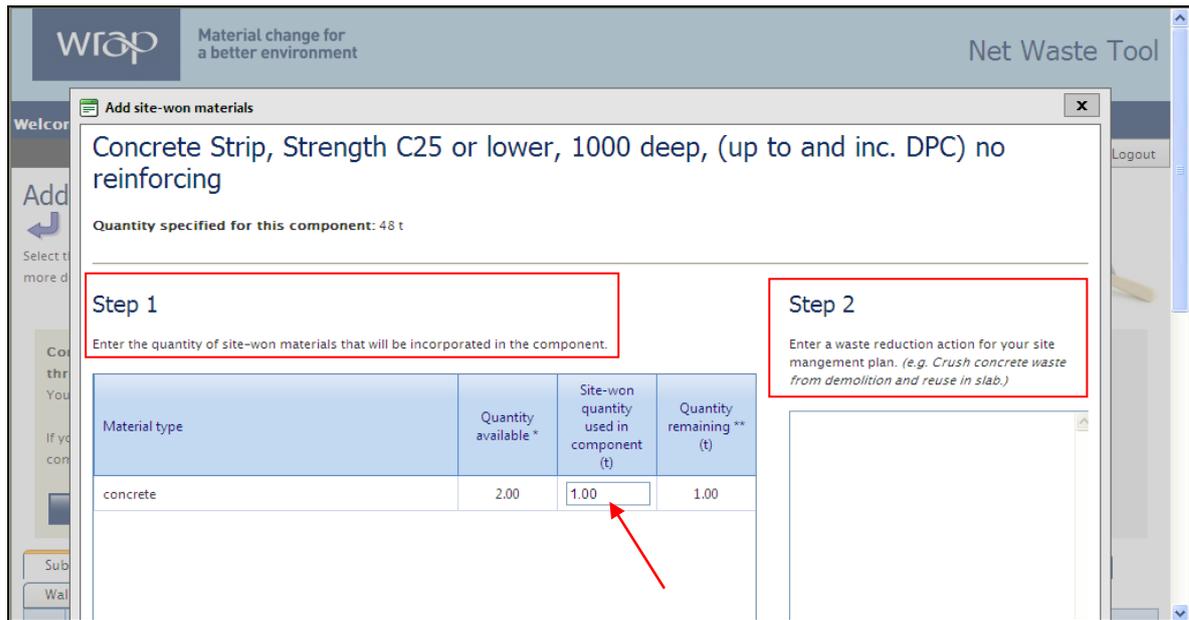
2.5   Additional take-back options

The Tool previously had plasterboard as the only available option for take-back. An additional column within the component data set named 'take back cost per unit' has been introduced to facilitate bespoke take back arrangements. If this option is selected the Tool adds the component to the waste segregation options, as shown in Figure 11.

**Figure 11** Component spreadsheet showing how to specify take back options

2.6   Recovery rates interface

The Waste Recovery screen previously required users to set target recovery rates via a pop-up. This pop-up was considered difficult to use recovery rates had to entered against each of the individual materials listed, rather than at the waste stream level. A second tab has been added to the screen enabling users to either update recovery rates either by individual material type as per the original method, or to make a single update across the entire waste stream, as shown in Figure 12 below.

Figure 12 Set target recovery rate at waste stream level pop-up screen
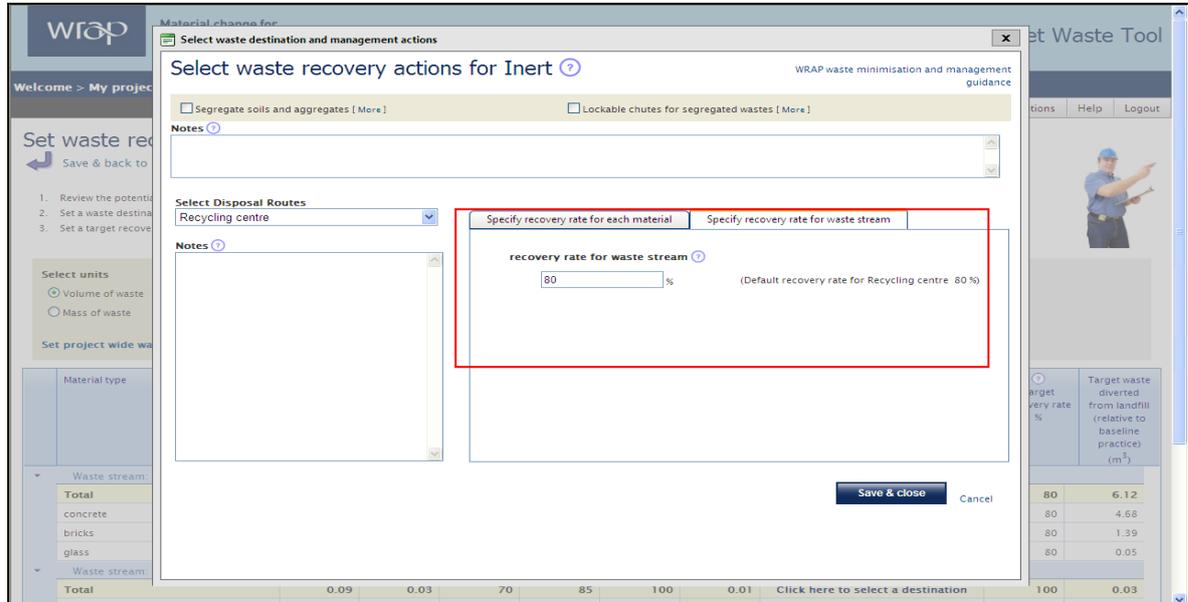
2.7   Terminology review

The wording throughout the Tool has been reviewed and simplified where possible to make it more accessible.

Section 3: Reporting

Existing reports include several legacy outputs from the Tool's evolution from the RC Toolkit to NW Tool v1.1. There are currently four reports available in the Tool, allowing users to download detailed or summary results, a recycled content report, or a project component report. Most can be downloaded in more than one format – Excel and 'printer friendly'.

3.1   Review of available reports

The Project Waste Report has been restructured and now incorporates the following tabs:

- Summary Results and benchmarks against KPI's
- Opportunities (to reduce wastage rates and incorporate site-won materials)
- SWMP actions
- SWMP waste forecast
- Waste generation (at the component level)
- Waste destinations
- Performance graphs (the graphs from the project homepage)

Hover-over text has also been added to provide further explanation of the function of the each area of the Reports screen.

3.2 HW2L metrics and KPI's

The project homepage and Project Waste Report now include the standard WRAP KPIs, for benchmarking and target-tracking:

- Waste arisings: tonnes of waste generated per £100k of construction output (t/£100k);
- Waste to landfill: tonnes of waste disposed of to landfill per £100k of construction output (t/£100k); and
- Waste diversion rate: percentage of waste diverted from landfill (%).

3.3 Addition of demolition, excavation and strip-out waste

Demolition, excavation and strip-out has been added to the NW Tool outputs, providing waste arisings data at the material level, and stating how much of each material will be reused in the project as site-won materials. Total waste arisings, and total waste reduction results can then be calculated. Excavation waste is reported as a total (by mass and/or volume).

Demolition, excavation and strip-out waste will also be included in the NW Tool's SWMP outputs.

3.4 Consistency with SWMP Template

The NW Tool will now generate a waste forecast at the material level (one row per material type), using the same material and waste stream categories as the SWMP Template. Construction, Demolition and Excavation waste is reported separately, with strip-out waste recorded under the 'demolition' category. Specific actions for reducing waste are consistent and align directly to the SWMP Template. Instructions for copying and pasting the results into the SWMP Template are included in the output reports, these have been shown in Figure 13 and 14.

Figure 13 Output Report SWMP Waste Forecast

Figure 14 Output Report SWMP Actions

SWMP Actions

	Waste reduction, waste management and reduction actions

Notes
The contents of this sheet can be used to populate the "Actions" sheet in the WRAP SWMP Template.
Columns D --> N in this sheet should be copied to Columns C --> M in the SWMP Template. The data in this sheet starts at Row 18.

								Copy to SWMP				
Number	Type of Waste Action	Action Taken	Action owner	Reference to project document / drawing	Waste stream	Material type	Estimated Cost Saving (£)	Waste reduced			Date for completion (dd/mm/yyyy)	Status
								(m³)	(tonnes)			
1	Waste reduction action	Use of compost to manufacture soils	User	Net Waste Tool	Inert - mixture of concrete, bricks, tiles etc.	concrete	£1,195.25	45.72	36.00			
2	Waste reduction action	Test action site won	User	Net Waste Tool	Inert - mixture of concrete, bricks, tiles etc.	concrete	£33.20	1.27	1.00			

www.wrap.org.uk/construction

recycle