Construction Waste Indicative Cost (CWIC) Calculator – User Guide

Contents

1. Set up

All cells that require/allow data entry are green. Figure 1 shows the 'Set up' page, pre-populated with example data. This requires the user to insert the following information:

- The date(s) when data collection took place
- Company name
- User name
- Site/location and any site-specific reference.

Figure 1: CWIC Calculator Set up Page

1.1. Figure 1 also shows fields with drop-down lists for: 'Construction type'; 'Project type'; 'Project phase'; 'Season' and 'Weather'.

1.2. 'Construction type' has four options as follows:

    1.2.1. All construction work

    1.2.2. Maintenance

    1.2.3. New build

    1.2.4. Refurbishment/renovation

1. Set up

1.3. 'All construction work' is the default and should be used for project types that include a mix of the others, however if the project type is specifically one of the remaining options then chose this from the drop-down list. Only one option is allowed.

1.4. 'Project type' is split between the two broad categories of 'Building' and 'Civil Engineering'. Choose the option from the drop-down list that best describes the type of work involved in the project. Only one option is allowed therefore choose the one that covers the majority of the project scope by value or volume. Table 1 shows the options available.

Table 1: Project types

Building	Civil Engineering
Building: Commercial Offices	Civil Engineering: Airports
Building: Commercial Other	Civil Engineering: Bridges & Structures
Building: Commercial Retail	Civil Engineering: Coastal protection
Building: Education	Civil Engineering: Development site infrastructure
Building: Healthcare	Civil Engineering: Flood defence
Building: Industrial Buildings	Civil Engineering: Highways
Building: Leisure	Civil Engineering: Landfill & Quarries
Building: Mixed Use	Civil Engineering: Other
Building: Other	Civil Engineering: Ports & harbours
Building: Public Buildings	Civil Engineering: Railways
Building: Residential	Civil Engineering: Tunnels
Building: Transport	Civil Engineering: Utilities - infrastructure
	Civil Engineering: Utilities - streetworks

1. Set up

1.5. 'Project phase' relates to the construction phase works being undertaken at the time of data collection. These have been aligned to three broad time-frames of 'Early'; 'Mid'; and 'End' to allow a wide collection of construction work to be accommodated. Within these broad descriptions the following options are available in the drop-down list:

1.5.1. Early: Demolition/removal of existing

1.5.2. Early: Foundations/earthworks/ preparation

1.5.3. Early: Mixed use/general

1.5.4. Mid: Structure/superstructure/ installation

1.5.5. Mid: Building envelope/ waterproofing

1.5.6. Mid: Mechanical, electrical plumbing (MEP)

1.5.7. Mid: Mixed use/general

1.5.8. End: Finishes/surface finishes

1.5.9. End: Post-handover works

1.5.10. End: Mixed use/general

1.6. The options in 1.6 allow both building and civil engineering works to be accommodated in the project phases. The 'Mixed use/ general' options also allow for projects where multiple works may be ongoing throughout the duration of construction works e.g. in housebuilding or large mixed-use developments, where foundations, superstructure and finishing works may be taking place simultaneously.

1.7. 'Season' allows one option from the drop-down list, for each of the four seasons of the year:

1.7.1. Spring

1.7.2. Summer

1.7.3. Autumn

1.7.4. Winter

1.8. 'Weather' options are based on Met office classifications. One option should be chosen based on the most common weather conditions that prevailed during data collection (which could happen over several days). The weather options are as follows:

1.8.1. Clear

1.8.2. Cloudy

1.8.3. Drizzle

1.8.4. Fog

1.8.5. Hail

1.8.6. Hail shower

1.8.7. Heavy rain

1.8.8. Heavy rain showers

1.8.9. Heavy snow

1.8.10. Heavy snow showers

1.8.11. Light rain

1.8.12. Light rain showers

1.8.13. Light snow

1.8.14. Light snow showers

1.8.15. Mist

1.8.16. Overcast

1.8.17. Partly cloudy

1.8.18. Sleet

1.8.19. Sleet shower

1.8.20. Sunny

1.8.21. Thunder

1.8.22. Thunder shower

1.8.23. Not available

1. Set up

1.9. The final 'Not available' option should be chosen if it was not possible to obtain the weather information. However, every effort should be made to record if adverse weather occurred as this may have caused damage to fragile or perishable materials.

1.10. Set up page – Distances to skip: the average distances to the skip should be input here. There are three modes of travel allowed for and the user should use all that apply (see Figure 1), note that the 'Total average (auto)' field is automatically calculated on the spreadsheet using the cumulative figures for walking, hoist/lift, and vehicle. However, there is also an option for the 'Total average (manual)' to be used.

1.11. The method of estimating travel distances is described in the CWIC Protocol document. Once these have been decided, input them either under their individual modes of travel (walking, hoist/lift, vehicle) or estimate an overall average for the site.

1.12. Set up page – Size of skip sampled: The default skip size is an 8 yard skip. But the user has the option to increase the size (there is no smaller option because '8 yard' is the minimum for calculating the figures). Alternative sizes go up to 40 yards and are used to alter the cost and volume parameters for analysis. Note that the skip options appear as a drop-down list and, like every drop-down list in the CWIC Calculator, it has a darker shade of green than the others.

1. Set up

2.1 CWIC Calculator – Data input page (left side): The 'Data input' tab (which appears along the bottom of the spreadsheet – see Figure 1) is where most of the waste information is input. This sheet takes the form of a table with headings describing what information is needed, and rows for inputting information relating to each waste item (or collection of similar items) in the skip. Data is input from left to right along each row, as shown in Table 2.

2.2 The fist column in the Data input table is a sequence number for reference. This is automatically generated, from 1 to 200.

2.3 The second column is 'Type of waste'; choose from the drop-down list, as shown in Figure 2. Column three is automatically filled with the European Waste Catalogue (EWC) code, depending on type of waste chosen. Note: only 'construction and demolition' waste codes are explicitly used (those beginning with a '17') any other waste (e.g. tools, equipment, furniture, carpets) are treated as 'Other'. There are some useful tips regarding data input as follows:

Table 2: Data input headings (left side)

Seq. No.	Type of waste	Waste code (auto fill)	Description of waste	Notes on waste	Source of waste
	↓Drop-Down List		↓Drop-Down List		↓Drop-Down List
1	Insulation	17-06-04	Insulation: general		Cutting waste
2	Treated_wood_glass_plastic_including_wood_plastic_window_frames	17-02-04	Treated wood/glass/plastic: timber (lengths) wall or partition members		Fixing waste: built in wrong place
3	Concrete_bricks_tiles_and_ceramics_in_mixtures	17-01-07	Concrete bricks/blocks, tiles and ceramics in mixtures: bricks, common bricks including mortar		Fixing waste: poor workmanship/quality
4	Other	0	Other Each (insert cost figure)	Broom	Damaged: Site storage and internal site transit waste
5	Mixed_construction_and_demolition_wastes	17-09-04	Mixed construction and demolition wastes		Demolition and stripping out
6	Concrete	17-01-01	Concrete: plain in situ ready mixed - C10		Application and residue waste (spillage)
7	Gypsum_materials	17-08-02	Gypsum materials: plasterboard		Client/designer change of mind
8	Other	0	Other Square meter (insert cost figure)	Carpet	Cutting waste

2.3.1. Try to be specific; there are some waste categories that include multiple materials in their description. But there is a two-tier system for specific categorising of waste in the second tier. Using the second tier will help avoid combining multiple wastes in one data entry. Doing this will lead to more accurate cost analysis.

2.3.2. Take time to learn the drop-down lists; the two-tier system means some materials are not obvious until the Tier 1 option is chosen. For example, 'mixed construction and demolition wastes' is a Tier 1 option that allows materials such as bricks, plasterboard, timber etc. to be logged in Tier 2. But if demolished bricks, timber, plasterboard etc. are logged in Tier 1, the CWIC Calculator will assume this is material that was purchased for the project and add purchase costs, which is incorrect. As a general rule, only use 'mixed construction and demolition wastes' for existing in-situ material that has been demolished, deconstructed or stripped out.

2. Data input

2.3.3. Some options on the Data input tab have been developed to be complementary, for example, there are several types of packaging waste in the Tier 1 drop-down list. The most common reason packaging ends up in the skip is because it cannot be returned to the supplier, therefore 'not recovered by supplier' is an option for the waste 'Source' (see Section 3.13).

2.3.4. Under the 'Other Each' Tier 1 categories, there is a Tier 2 option for 'Other [Zero Cost]'. This category has been included to identify other waste (not identified elsewhere) with zero cost to the project e.g. office and canteen waste (explained further in 3.6).

Figure 2: Type of waste example drop-down list

2.4. There are 'Other' options for anything not on the list, which are based on their respective units of measure: Each; Linear meter; Meter squared; Meter cubed, depending on the usual unit of measurement for purchasing the material.

2.5. Column four is 'Description of waste'. This is a secondary (Tier 2) list of materials for each Tier 1 option and does not become active until a Tier 1 option is chosen. This second tier provides options for greater cost accuracy. Most Tier 2 lists include a 'general' option if specific materials are not on the example list as shown in Figure 3.

Figure 3: Description of waste example drop-down list

2. Data input

2.6. Column five is 'Notes on waste'. This is a user defined field and can be used to provide more detail information, and/or record e.g. a cross-reference of corresponding photos of the waste. This field is purely for information only and is not specifically analysed.

2.7. Column six is 'Source of waste', which is used to record the reason why the waste materials are in the skip. This is a pre-populated drop-down list. The CWIC Protocol document explains how to decide which option should be chosen. Once decided, chose one of the following options:

    2.7.1. Application and residue waste (spillage)

    2.7.2. Canteen and office waste

    2.7.3. Client/designer change of mind

    2.7.4. Conversion waste (dimensions)

    2.7.5. Criminal waste (vandalism)

    2.7.6. Cutting waste

    2.7.7. Damaged: Site storage and internal site transit waste

    2.7.8. Damaged: Transport and delivery

    2.7.9. Damaged: weather

    2.7.10. Demolition and stripping out

    2.7.11. Design error

    2.7.12. Excavated waste

    2.7.13. Excess materials (too much in a batch)

    2.7.14. Fixing waste: built in wrong place

    2.7.15. Fixing waste: poor workmanship/ quality

    2.7.16. Learning waste

    2.7.17. Manufacturing defect

    2.7.18. Not recovered by supplier (packaging)

    2.7.19. Over ordering

    2.7.20. Temporary Works

    2.7.21. Waste caused by other trades (if unprotected)

    2.7.22. Wrongly specified (by contractor)

2.8. CWIC Calculator – Data input page (right side): Table 3 shows the right side of the Data input sheet. The headings on this side of the sheet continue from left to right, following on from those shown in Table 2.

Table 3: Data input headings (right side)

No. of similar objects (enter 1 if only one)	Length (mm)	Width (mm)	Thickness (mm)	Total volume (auto fill). Aim for 5m3:	Condition	Waste material was installed then removed	New material needed to replace material wasted
				1.193	↓Drop-Down List	↓List Yes/No	↓List Yes/No
5	1200	400	200	0.480	Potentially reusable	No	No
10	2400	100	50	0.120	Potentially reusable	No	No
1	200	1200	120	0.029	Suitable for recycling	Yes	Yes
1	1200	20	20	0.000	Suitable for recycling	No	Yes
5	100	100	50	0.003	Disposal/Landfill		
1	1000	600	400	0.240	Disposal/Landfill		
50	50	300	10	0.008	Disposal/Landfill		
7	600	300	150	0.189	Disposal/Landfill		
1	500	500	500	0.125	Disposal/Landfill		

2. Data input

**2.9.** The first column in Table 3 shows the next option for data entry, following on from entering the 'Source' of the material (see Table 2). This option is for entering how many objects of the same material and of similar size there are e.g. the number of single bricks. This is particularly useful when a load of e.g. cut plasterboard sheets are placed in the skip at the same time. Even if they are of differing sizes, observing the smallest and largest sheet will allow an estimate to be made of the average dimensions per sheet to input the load on one row. It is essential to input a number '1' for single objects so the 'volume' calculator works properly.

2.10. The dimension (second, third and fourth) columns should be self-explanatory and are input in millimetres. However, note that the 'Total volume' column is auto-filled (this column is not green, indicating it is not for data input) and should not be used to estimate the volume of objects; the three dimensional planes need to be used for this data input and a measuring tape is useful to help record dimensions. The CWIC Protocol document describes how to estimate these dimensions. Note that the 'Total volume' heading of column five in Table 3 incorporates a running total of waste volume as it is being logged. This shows that there is currently only 1.193m3 of waste logged, therefore the figure is amber (as it is over the minimum 1m3) and will remain amber until 5m3 is logged, when it will turn green, after which it will turn red above 5.9m3 which is the maximum amount.

2.11. The next column, after 'Volume', is the 'Condition' of the waste. This field allows an estimation of the suitability of the waste materials regarding the potential for reuse or recycling (i.e. circular economy). The options come from a drop-down list as follows:

2.11.1. As good as new

2.11.2. Potentially reusable

2.11.3. Slight damage/Reparable

2.11.4. Suitable for recycling

2.11.5. Mostly recyclable (applicable to multiple or bulk materials)

2.11.6. Disposal/Landfill

2.11. Estimating the condition of the waste is subjective, however the CWIC Protocol document provides guidance and examples to help decide which option to choose.

2.12. The final two columns of data input allow further cost calculations to be made, depending on whether materials were installed then removed, and/or replaced with new materials. These options are closely linked to the 'Source' options for the materials, however, their application is left to the discretion of the user as they need to be considered on a case by case basis. For example, the first of these columns should be checked if, e.g. a wall was built in the wrong place, then pulled back down. Further, if a new wall had to be built in the correct location as a result of this, then the second column should also be checked. However, another scenario applicable to these columns may be materials with a manufacturing defect, which may be discovered before (don't check the columns) or after (do check the columns) being installed on site. Note that if these last two columns are left blank the CWIC Calculator assumes them to be 'No' (see Table 3). Both columns are 'yes' in Table 3 for one row due to 'Poor workmanship', and the 'New material needed...' is 'yes' because this row is for a broken broom that has been replaced.

3. Dashboard costs

3.1. There are four main groups of information displayed in the Dashboard costs tab:

3.1.1. Overview of costs (top table)

3.1.2. Materials Breakdown: sample from skip

3.1.3. Cost of materials pie chart

3.1.4. Project information (copied from 'Set up' tab)

3.2. The cost overview table has five columns as follows:

3.2.1. 1st column describes the cost elements: materials, labour, skip hire, and VAT;

3.2.2. 2nd column shows the combined direct (purchase cost) and indirect cost (for reasons given in Section 2.13) calculations for the waste materials sampled, including confirmation of the volume of sample waste in the header (m^3);

3.2.3. 3rd column shows costs calculated per cubic meter;

3.2.4. 4th column shows costs extrapolated from the sample (in column 1), presented for the size of skip chosen in the 'Set up' tab (the skip size is indicated in the header);

3.2.5. 5th column shows the same cost data as column 4, but with the option to change the skip hire cost.

3.3. The reason for the 5th column described in 3.2.5 is to allow the user to alter the skip cost for either a different type of skip from the default e.g. segregated skips tend to have a lower skip hire cost than mixed skips, or to insert a more accurate skip hire cost based on what the user actually paid (excluding VAT).

3.4. The materials breakdown table shows costs for each Tier 1 category chosen during data input. This is a dynamic table and the following steps need to be taken to refresh it:

3.4.1. Click the drop-down filter in the top right corner of the table (see Figure 4);

3.4.2. Click 'select all' to ensure the table includes all newly input categories;

3.4.3. Uncheck any box(s) with zeros (e.g. £0, £-, 0) to declutter the table.

3.4.4. Click the 'OK' box.

Figure 4: Refresh Dashboard tables, remove zeros
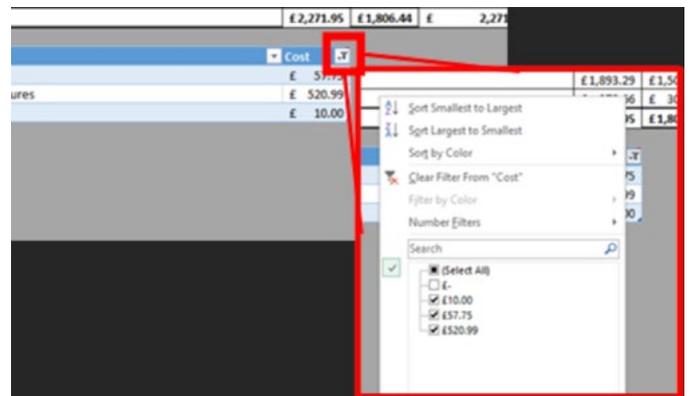
3. Dashboard costs

3.5. The resulting table shows combined costs for all materials within each Tier 1 category, excluding materials with no costs. Note that some Tier 1 categories are designed to have zero cost e.g. demolition waste. The following categories have zero costs pre-selected:

3.5.1. Inert soil and stones

3.5.2. Dredging spoil

3.5.3. Mixed construction and demolition wastes

3.5.4. Packaging: Paper/Card

3.5.5. Packaging: Plastic

3.5.6. Packaging: Metal

3.5.7. Packaging: Glass

3.5.8. Packaging: Textiles

3.5.9. Packaging: Paint cans (Metal / Plastic)

3.5.10. Other Each

3.5.11. Other Linear meter

3.5.12. Other Square meter

3.5.13. Other Volume cubic meter

3.6. Items 3.5.1 – 3.5.9 are expected to be zero as they represent waste materials with no purchase price. However, the 'Other' categories allow the user to insert one-off costs depending on what the waste material is i.e. having either project costs or not. This is explained further in Section 10 of this user guide. Office and canteen waste is assumed to have zero purchase price to the project. This should be dealt with as either packaging waste (if the contents are all e.g. food packaging) or 'Other Each' (Tier 1), then 'Other [Zero Cost]' (Tier 2).

3.7. The materials breakdown table only includes costs for materials physically in the skip. However, the cost figure for materials in the overview table (as described in Sections 2.13 and 3.2.2) includes indirect costs for any waste materials that had to be replaced (i.e. purchased twice because the original material was wasted). The examples described in Section 2.13 result in the following scenario:

3.7.1. Total Material Costs, shown in Table 4, include the replacement cost of new materials due to poor workmanship and buying a replacement broom = £336.34;

3.7.2. Materials Breakdown (of waste sampled in the skip) shown in Table 5, adds up to £300.29;

3.7.3. The difference (£36.05) is the additional cost of materials bought to replace those in the skip. This difference is not explicitly shown in the Dashboard Costs tab for brevity, but is shown in full within the Report tab (explained in Section 8.0 of this user guide).

Table 4: 'Overview of costs' example

Overview of costs	Volume (m3) of sample:	1.193
Total Materials Costs		£ 336.34
Total Labour Costs		£ 94.62
Skip Hire Cost (mixed)		£ 178.33
Total (excl. VAT)		£ 609.29
VAT		£ 121.86
Grand Total		£ 731.15

3. Dashboard costs

Table 5: 'Materials breakdown: sample from skip' example

Materials Breakdown: sample from skip	▼ Cost	◀
Insulation	£	58.93
Concrete	£	11.90
Concrete_bricks_tiles_and_ceramics_in_mixtures	£	26.05
Treated_wood_glass_plastic_including_wood_plastic_window_frames	£	61.40
Gypsum_materials	£	57.47
Other_Each	£	60.00
Other_Square_meter	£	24.55

3.8. The pie chart in the 'Dashboard Costs' tab presents data from the materials breakdown table, with costs and percentage labels (as a percentage of costs in the materials breakdown table). The corresponding pie chart for the material costs in Table 5 is shown in Figure 5.

3.9. Note: 'Other each' in Table 5 and Figure 5 relates to costs for a broom and wheel barrow, whilst 'Other Square Meter' is for carpet tiles (EWC is 'textiles' not 'construction and demolition') as shown in the example data from Table 2.

3.10. The final group of information in the 'Dashboard Costs' tab is project-specific information, namely:

3.10.1. Company name;

3.10.2. User name;

3.10.3. Site/location;

3.10.4. Dates (of data collection).

Figure 5: 'Cost' pie chart example
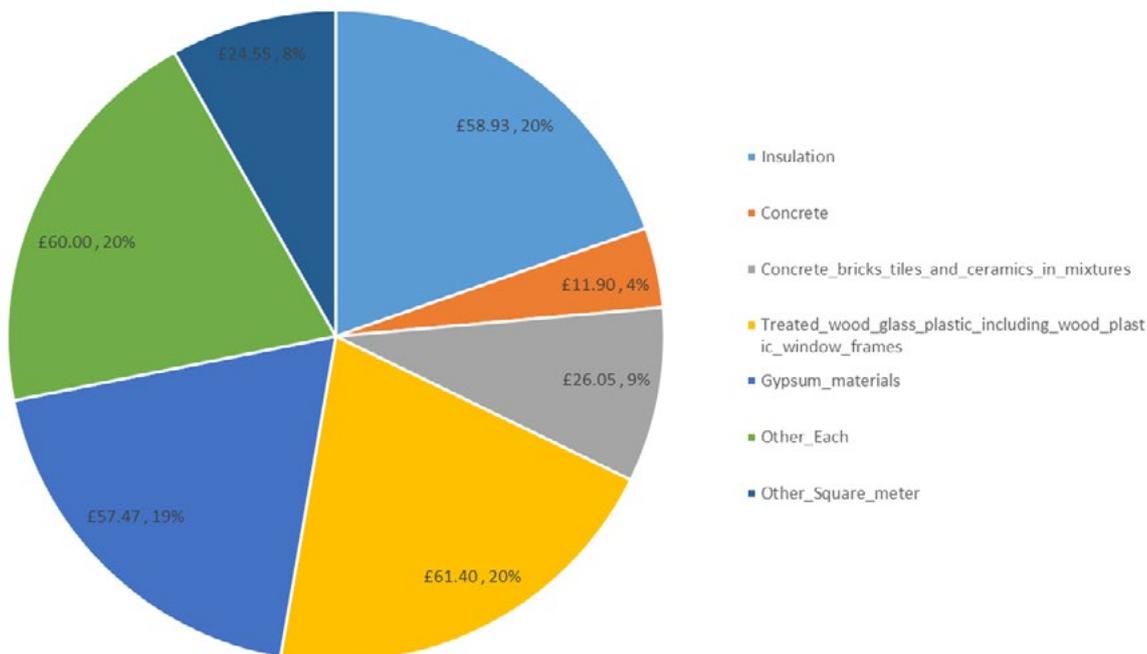
4. Dash Volume

4.1. There are three groups of information displayed:

4.1.1. Project-specific information (see Section 3.10);

4.1.2. Materials Breakdown table (with similar functionality to the one described in Section 3.4);

4.1.3. Volume (m^3) pie chart.

4.2. The project-specific information is copied from the 'Set up' tab, in line with all other Dashboard tabs.

4.3. The Materials breakdown table in the 'Dash Volume' tab is a dynamic table and is refreshed following the same procedure described in Section 3.4 of this guide. An example of waste volumes (m^3), using the data shown in Tables 2 and 3 of this guide, is shown in Table 6. Note that Table 6 includes a new waste category not shown in Table 5: 'Mixed construction and demolition wastes'. This is because it is demolition waste, therefore is not included in Table 5 as it does not have a purchase cost to the project.

Table 6: 'Materials breakdown – Volume (m^3)' example

Materials Breakdown	Volume (m3)
Insulation	0.48
Concrete	0.125
Concrete_bricks_tiles_and_ceramics_in_mixtures	0.0288
Treated_wood_glass_plastic_including_wood_plastic_window_frames	0.12
Gypsum_materials	0.189
Mixed_construction_and_demolition_wastes	0.0025
Other_Each	0.24048
Other_Square_meter	0.0075

4. Dash Volume

4.4. The 'Dash Volume' pie chart shows waste by percentage of waste materials (by volume m³) sampled in the skip. An example is shown in Figure 6, which is based on the data in Table 6.

Figure 6: 'Volume' pie chart example

Legend:
- Insulation
- Concrete
- Concrete_bricks_tiles_and_ceramics_in_mixtures
- Treated_wood_glass_plastic_including_wood_plastic_window_frames
- Gypsum_materials
- Mixed_construction_and_demolition_wastes
- Other_Each
- Other_Square_meter
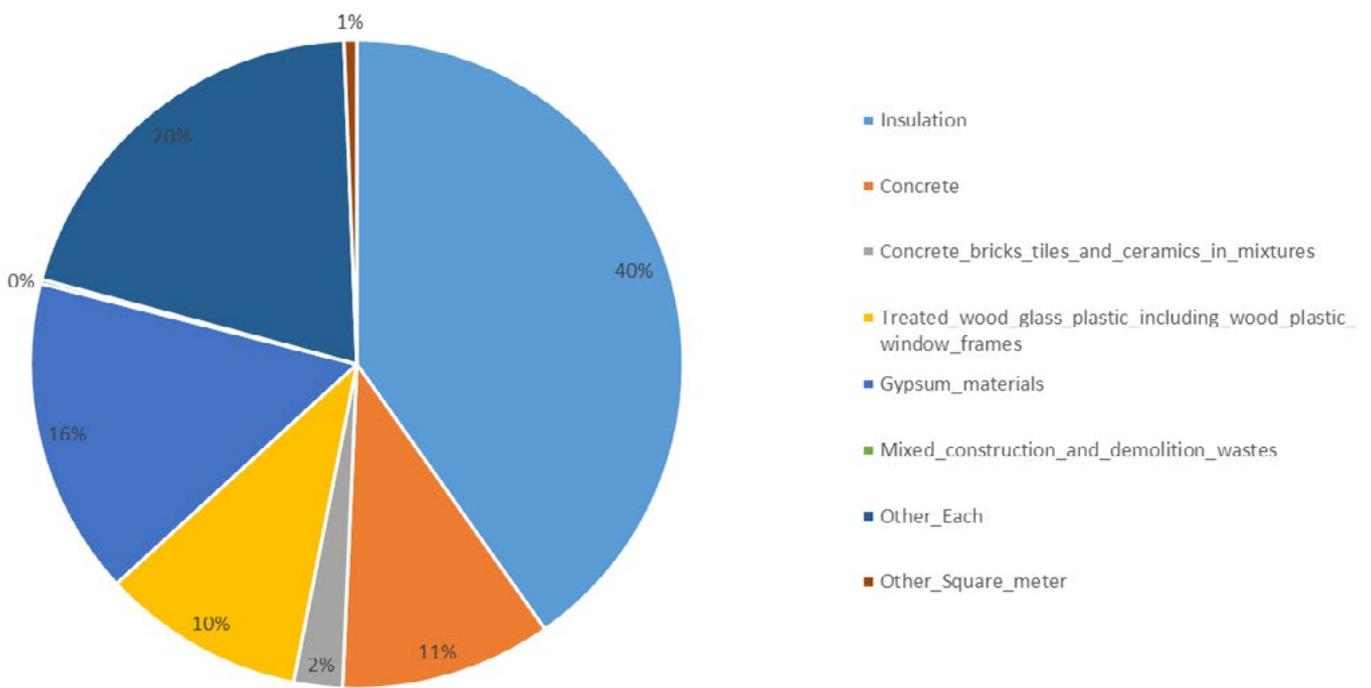
5. Dash Weight

5.1. There are three groups of information displayed:

5.1.1. Project-specific information (see Section 3.10);

5.1.2. Materials Breakdown table (with similar functionality to the one described in Section 3.4);

5.1.3. Weight (metric tonne) pie chart.

5.2. The project-specific information is copied from the 'Set up' tab, in line with all other Dashboard tabs.

5.3. The Materials breakdown table in the 'Dash Weight' tab is a dynamic table and is refreshed following the same procedure described in Section 3.4 of this guide. An example of waste weights (t), using the data shown in Tables 2 and 3 of this guide, is shown in Table 7. Note that Table 7 merely copies the data from Table 6, but substitutes volume for weight (t) using prescribed density conversion factors for each Tier 1 category of waste.

Table 7: 'Materials breakdown – Weight (t)' example

Materials Breakdown	Weight (t)
Insulation	0.12
Concrete	0.11625
Concrete_bricks_tiles_and_ceramics_in_mixtures	0.019008
Treated_wood_glass_plastic_including_wood_plastic_window_frames	0.0348
Gypsum_materials	0.1151388
Mixed_construction_and_demolition_wastes	0.0008
Other_Each	0.0769536
Other_Square_meter	0.0024

5. Dash Weight

5.4. The 'Dash Weight' pie chart shows waste by percentage of waste materials (in tonnes) sampled in the skip. An example is shown in Figure 7, based on the data from Table 7.

Figure 7: 'Weight' pie chart example

- Insulation
- Concrete
- Concrete_bricks_tiles_and_ceramics_in_mixtures
- Treated_wood_glass_plastic_including_wood_plastic_window_frames
- Gypsum_materials
- Mixed_construction_and_demolition_wastes
- Other_Each
- Other_Square_meter
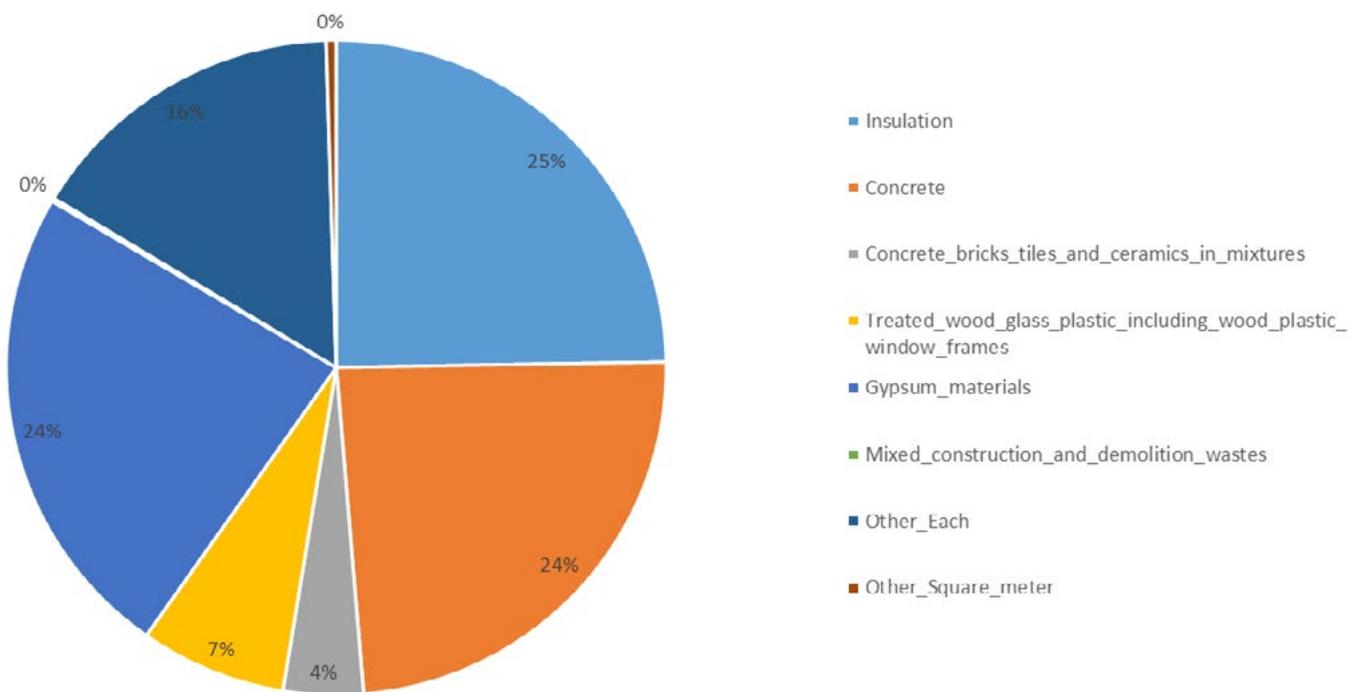
6. Dash Source

6.1. There are three groups of information displayed:

    6.1.1. Project-specific information (see Section 3.10);

    6.1.2. Source (by volume) table (with similar functionality to the one described in Section 3.4);

    6.1.3. Source (by volume) pie chart.

6.2. The project-specific information is copied from the 'Set up' tab, in line with all other Dashboard tabs.

6.3. The Source table in the 'Dash Source' tab is a dynamic table and is refreshed following the same procedure described in Section 3.4 of this guide. An example of waste sources, using the data shown in Tables 2 and 3 of this guide, is shown in Table 8. This uses the Source categories described in Section 2.7 of this guide, and applying the data input examples from Tables 2 and 3.

Table 8: 'Source' by volume of waste example

Source	Volume
Application and residue waste (spillage)	0.125
Client/designer change of mind	0.189
Cutting waste	0.0075
Damaged: Site storage and internal site transit waste	0.24048
Damaged: weather	0.48
Demolition and stripping out	0.0025
Fixing waste: built in wrong place	0.12
Fixing waste: poor workmanship/quality	0.0288

6. Dash Source

6.4. The 'Dash Source' pie chart (Figure 8) shows the data from Table 8.

Figure 8: 'Source' by volume of waste pie chart example

- Application and residue waste (spillage)
- Client/designer change of mind
- Cutting waste
- Damaged: Site storage and internal site transit waste
- Damaged: weather
- Demolition and stripping out
- Fixing waste: built in wrong place
- Fixing waste: poor workmanship/quality
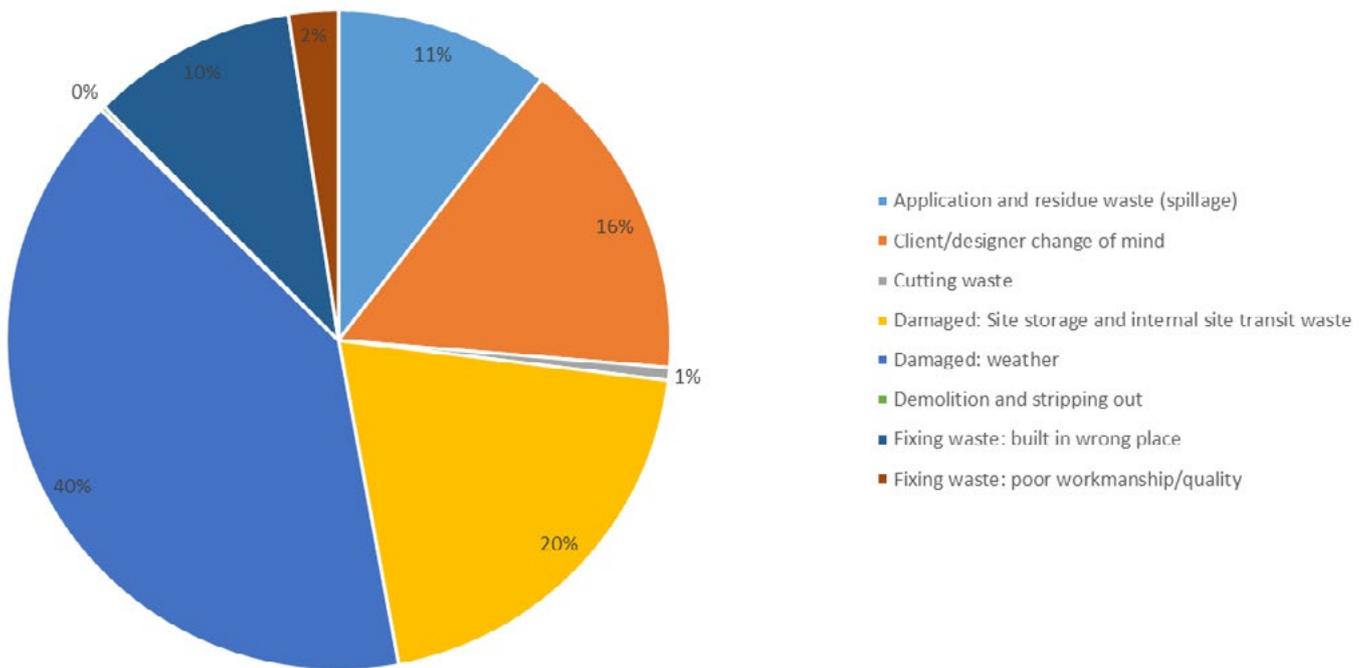
7. Dash Condition

7.1. There are three groups of information displayed:

    7.1.1. Project-specific information (see Section 3.10);

    7.1.2. Condition (by volume) table (with similar functionality to the one described in Section 3.4);

    7.1.3. Condition (by volume) pie chart.

7.2. The project-specific information is copied from the 'Set up' tab, in line with all other Dashboard tabs.

7.3. The Condition table in the 'Dash Condition' tab is a dynamic table and is refreshed following the same procedure described in Section 3.4 of this guide. An example of waste sources, using the data shown in Tables 2 and 3 of this guide, is shown in Table 9. This uses the Condition categories described in Section 2.11 of this guide, and applying the data input examples from Tables 2 and 3.

Table 9: 'Condition' by volume of waste example

Condition	Volume
Potentially reusable	0.6
Suitable for recycling	0.02928
Landfill	0.564

7. Dash Condition

7.4.   The 'Dash Condition' pie chart (Figure 9)
shows the data from Table 9.

Figure 9: 'Condition' by volume of waste pie chart example
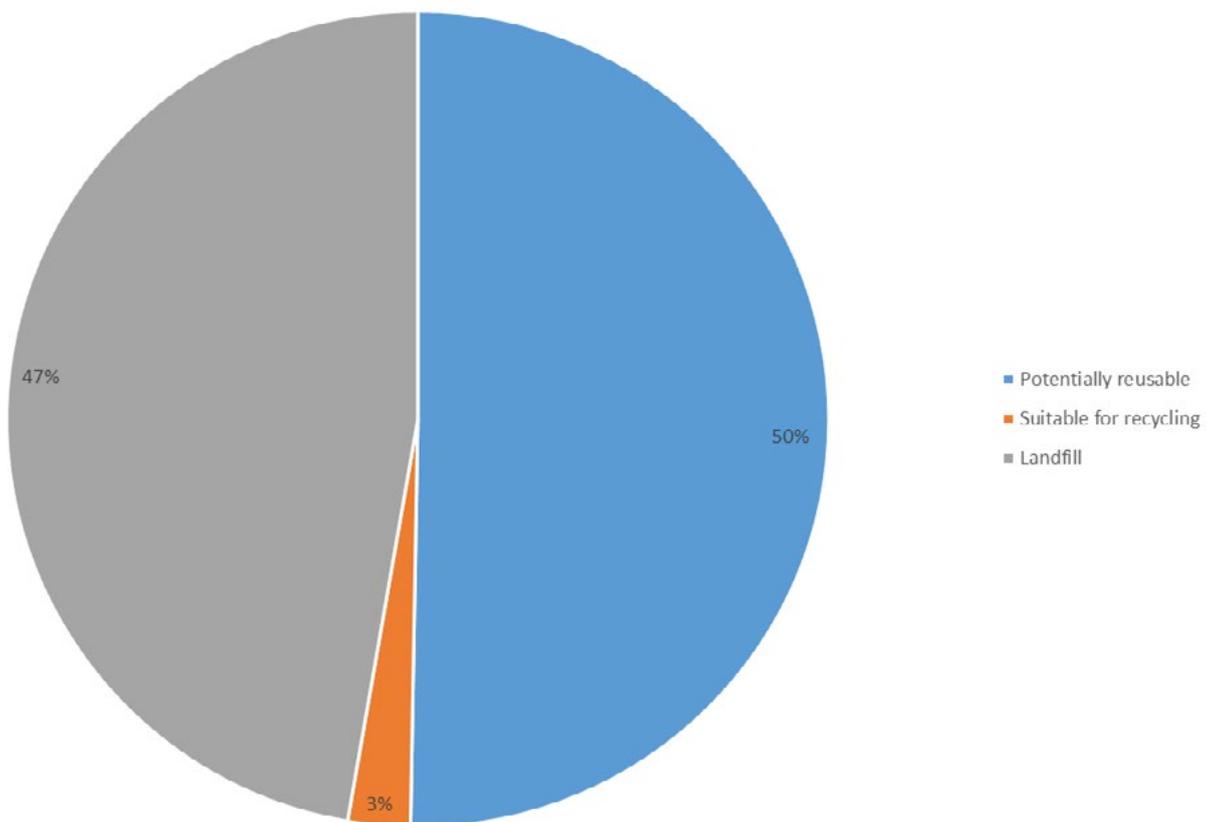
8. Report tab

8.1. The 'Report' tab presents all the data from the individual Dashboard tabs in tabular form, together in one spreadsheet. This is provided for ease of copying data out of the CWIC Calculator.

8.2. A feature of the Report tables is that they provide fuller information, as shown in Table 10. This extract identifies the additional cost of £36.05, arising out of replacing wasted materials (as described in Section 3.7 of this guide) for completeness.

Table 10: extract from 'Report' tables

TOTAL COST OF MATERIALS IN SKIP	£	300.29
Replacement material costs	£	36.05
TOTAL (ALL) MATERIALS COST	£	336.34

9. Lists tab

9.1. The 'Lists' tab is the first of three that contain the information needed to produce all the 'Dashboard' outputs from the 'Data input' tabs. For the most part, the tables in this tab are locked. However, advanced users can access certain parts of the Lists tab to alter options for Data input and Dashboard settings.

9.2. In keeping with the rules of the other tabs, the areas that allow user input are green in colour. The only fields that are green in the Lists tab start at cell A50, as shown in the screen shot (Figure 10). From here, Tier 2 categories of waste can be added to the existing lists. Figure 10 shows how each Tier 1 Heading has sub-categories (the Tier 2 categories) under them.

Figure 10: Screenshot of Lists tab

9.3. If users need to add new Tier 2 categories, there are five extra cells under each Tier 1 heading for this, adding any more will require advanced knowledge of Excel. However, it must be stressed that the text used for each new Tier 2 category must match the corresponding ones listed in the 'Costs' tab exactly (i.e. exact match of every character) to prevent errors. Therefore, it is recommended that once a new Tier 2 category is inserted into the 'Costs' tab (see Section 10 of this guide for further information), the corresponding 'List'

version is not retyped or even copied and pasted, but rather uses the equal sign (=) followed by the location of the cell where the new category is in the 'Costs' tab. For example: =Costs!B38 is the location of the first spare Tier 2 category in the 'Costs' tab, as shown in Figure 11. Simply type: =Costs!B38 into cell A50 of the 'Lists' tab. Which means when the new Tier 2 category is created in the Costs tab, it will automatically update the 'List' tab with no errors. A fictitious Tier 2 category 'Insulation: new insulation' is shown in Figure 11 to illustrate this point.

9. Lists tab

9.4. This process can be repeated for any other new Tier 2 categories that need to be inserted into the Lists tab, starting at the 'Insulation' list, and working to the right of it.

9.5. Note that for reasons of consistency, it is not possible to allow new Tier 1 categories.

Figure 11: Screenshot showing a new Tier 2 link to 'Costs' tab

10. Costs tab

10.1. The 'Costs' tab is the second of three that contain the information needed to produce all the 'Dashboard' outputs from the 'Data input' tabs. For the most part, the tables in this tab are locked. However, advanced users can access certain parts of the Costs tab to alter options for Data input and Dashboard settings.

10.2. In keeping with the rules of the other tabs, the areas that allow user input are green in colour. There are a number of options available to change in the Costs tab as follows:

   10.2.1. Insert a name for 'Other' Tier 2 categories (these have no EWC Codes);

   10.2.2. Insert materials, labour, and plant costs for 'Other' Tier 2 categories;

   10.2.3. Change the default costs for all Tier 2 materials, labour and plant;

   10.2.4. Create new Tier 2 categories.

10.3. On the 'Costs' tab, there are green columns under the 'materials' 'labour' and 'plant' headings for various 'Other' material options. These are default to zero. However, if there are unusual materials, not found in the default list, then costs can be manually inserted here for any of the 'Other' cost options: i.e. Each; Linear meter; Square meter; Cubic meter (depending on unit of measurement for purchasing the material).

Table 11: 'Other' cost options

Type	Material	Unit		Materials Ra	Total count	Materials Cost		Labour		Plant	
Other_Each	[Broom] Other Each (insert cost figure)	Each		£ 10.00	1.000	£ 10.00		£ -		£ -	
Other_Each	[Barrow] Other Each (insert cost figure)	Each		£ 50.00	1.000	£ 50.00		£ -		£ -	
Other_Each	[NAME 3] Other Each (insert cost figure)	Each		£ -	0.000	£ -		£ -		£ -	
Other_Each	[NAME 4] Other Each (insert cost figure)	Each		£ -	0.000	£ -		£ -		£ -	
Other_Each	[NAME 5] Other Each (insert cost figure)	Each		£ -	0.000	£ -		£ -		£ -	
Other_Each	[NAME 6] Other Each (insert cost figure)	Each		£ -	0.000	£ -		£ -		£ -	
Other_Each	[NAME 7] Other Each (insert cost figure)	Each		£ -	0.000	£ -		£ -		£ -	
Other_Each	[NAME 8] Other Each (insert cost figure)	Each		£ -	0.000	£ -		£ -		£ -	
Other_Each	[NAME 9] Other Each (insert cost figure)	Each		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 1] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 2] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 3] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 4] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 5] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 6] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 7] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 8] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Linear_	[NAME 9] Other Linear meter (insert cost figure)	m		£ -	0.000	£ -		£ -		£ -	
Other_Square	[Carpet tiles] Other Square meter (insert cost figure)	m2		£ 32.73	0.750	£ 24.55		£ 10.13		£ -	
Other_Square	[Carpet - roll] Other Square meter (insert cost figure)	m2		£ 47.19	0.000	£ -		£ 5.99		£ -	
Other_Square	[NAME 3] Other Square meter (insert cost figure)	m2		£ -	0.000	£ -		£ -		£ -	

10. Costs tab

10.4. Table 11 illustrates how 'Other' names and costs can be input, note in the example £10 per item has been inserted to demonstrate the cost of a 'Broom' (in the 'Other Each' option under the 'Material' column) which is not a standard default option from the CWIC lists. Likewise, Table 11 shows a barrow and carpet tiles (per square meter) as textiles are not specifically labelled construction and demolition waste (17-XX-XX) under the EWC (textiles are coded 20-01-11). Up to 9 different one-off items can be added to the 'Others' lists for each unit of measurement (i.e. Each; Linear meter; Square meter; Cubic meter). The user has the option to include the materials ('Materials Rate'), labour, and associated plant costs (per unit of measure) if they have this information and wish to include it as a project cost, which will automatically be added to the cost calculations. However, these can also be left blank if, for example, the wheelbarrow was owned by a third party or was already on the site and therefore not a project cost.

10.5. The default list of all materials, labour and plant costs is shown in the Figure 12 screenshot, starting at cell E62. Users can replace these costs with their own purchase costs for a more accurate estimate, which is useful for internal benchmarking. However, this will mean like with like cost comparisons with other contractors (externally) will not be possible on costs.

Figure 12: Screenshot of default costs

10. Costs tab

10.6. Finally, for more advanced users, new Tier 2 categories can be inserted starting at cell A38, as shown in the Figure 13 screenshot. There are 20 spare rows for this purpose.

Figure 13: Cost tab – spare Tier 2 rows

10.7. The procedure to insert new Tier 2 categories is as follows:

10.7.1. Decide the Tier 1 category that the new Tier 2 category will sit under (these are in the 'Lists' tab (see Section 9.0 of this guide for how to access the list). Note: if the waste material is a one-off or unusual, it is easier and quicker to include it under 'Other' (see Sections 10.3 – 10.4);

10.7.2. Replace the first [SPARE01] text in cell A38 with an equals (=) followed by the desired Tier 1 name (although it is recommended that the cell location in the Lists tab of the Tier 1 name is used to prevent typo errors, e.g. 'Insulation' would be: =Lists!A41);

10.7.3. Type the name of the new Tier 2 category in cell B38, starting with the name of the Tier 1 category, the fictitious example in Figure 13 is: 'Insulation: new insulation (where 'Insulation' is the Tier 1 category, and 'new insulation' is the new Tier 2 category). If the procedure in Section 9.3 of this guide is followed, then the List tab will automatically update with the new Tier 2 category;

10.7.4. Decide the unit of measurement for the new Tier 2 category, other similar Tier 2 categories will provide a clue as to which one to use, but knowledge of the unit of measurement for purchasing the material is the key factor, e.g. insulation is usually priced per square meter (m^2);

10. Costs tab

10.7.5. Insert the desired unit of measurement in column C (i.e. cell C38): m2;

10.7.6. Then, row 38 needs to replicate the necessary data and formulas in columns E to N, as shown in Table 12.

10.7.7. Replicate this process for any other new Tier 2 categories between rows 39 and 57 using the desired unit of measurement. Note: replace the number 38 in the formulas shown on Table 12 with the corresponding row number, from 39 to 57, for any further categories inserted.

Table 12: Formula and data for Costs tab; row 38

Cell number	Formula/data
E38	materials cost (£) per square meter
F38	=SUMIF('Data input'!D$3:D$202,B38,$R$3:$R$202)
G38	=E38*F38
H38	labour cost (£) per square meter
I38	plant cost (£) per square meter
J38	=H38+I38
K38	=F38*J38
L38	=SUMIF('Data input'!$D$3:$D$202,B38,$X$3:$X$202)
M38	=SUMIF('Data input'!$D$3:$D$202,B38,$AC$3:$AC$202)
N38	=SUMIF('Data input'!$D$3:$D$202,B38,$AD$3:$AD$202)

11. Calcs tab

11.1. There are no green areas in the Calcs tab, meaning no cells in this tab can be altered by the user.

References

BRE (2022) SmartWaste: Sustainability and environmental monitoring and reporting software for construction, property development, offsite and product manufacturing, Building Research Establishment (BRE): https://www.bresmartsite.com/products/smartwaste/

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