Technical note 2016/03 Defining environmental conditions for condensation risk analysis

This technical note introduces the new features for user-defined environmental conditions for condensation risk analysis in JPA Designer.

1 Background

The steady state interstitial condensation risk analysis carried out by JPA Designer requires monthly temperature and relative humidity data for the building exterior and interior. JPA Designer comes with external climate data for a range of locations in the UK, the Republic of Ireland, the Far East, Australia and New Zealand.

Internal conditions for heated buildings are commonly derived from the external conditions, using the method described in BS EN ISO 13788:2012. However, for fully-conditioned buildings (where internal temperature and humidity level are controlled) the temperature and humidity data must be set directly in the program.

JPA Designer now allows users to create, edit and save environmental data, making it quicker and easier to analyse condensation risk for fully-conditioned buildings and to deal with very particularly local climate conditions.

2 Managing user-defined sets of environmental data

The pre-defined sets of environmental data (from now-on referred to as 'pre-sets') are managed in the **Manage Environmental Pre-sets** dialogue (Figure 1). The dialogue lists all the user-created pre-sets, divided into internal and external conditions and sorted alphabetically.
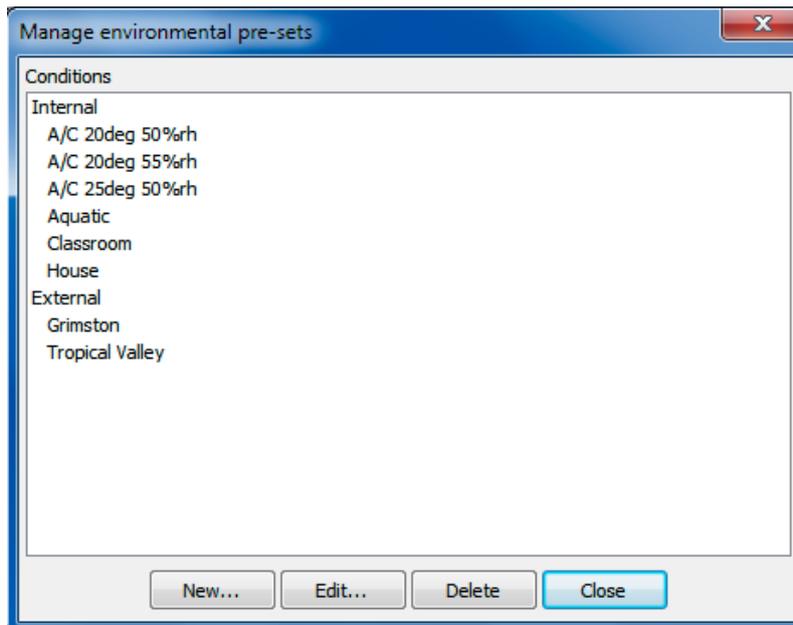
Figure 1: The **Manage environmental pre-sets** dialogue

To open the dialogue click the **Manage environmental pre-sets** button at the bottom of the **Environmental Conditions** dialogue.

The data for each environmental pre-set is entered and edited in the **Edit pre-set** dialogue (Figure 2).

Each pre-set has:

- **Condition**: this determines whether a pre-set will be used for setting either *internal* or *external* conditions.

- **Name**: an identifier.

- **Region**: select the region for which the pre-set applies. Usually this will be the region you are commonly working in.

- **Climate**: determines whether the pre-set applies to a *maritime* climate, such as the UK or northern Europe, or to a *continental or tropical* climate, such as that of Australia.

  These terms are defined in BS EN ISO 13788:2012 and identify two different methods for determining the internal environmental conditions from the external conditions.

- **Temperature (ºC)** and **relative humidity (%RH)** values for each month of the year. For internal conditions this may be taken from the building specification. For external conditions the data should be monthly average data (it should not be maximum or minimum monthly values).
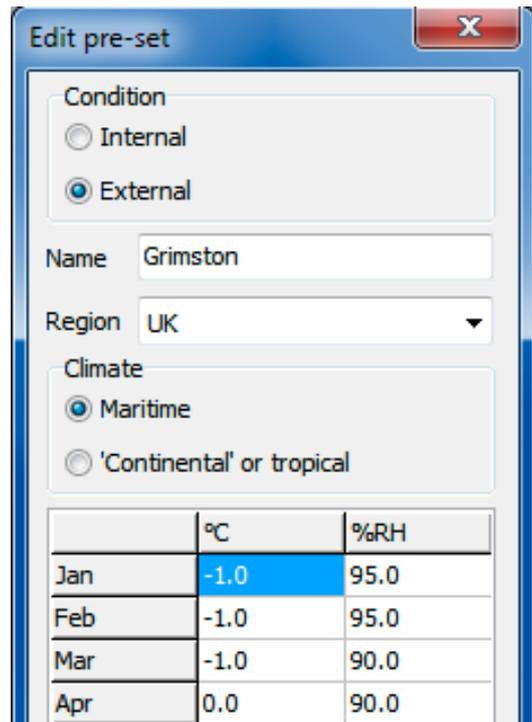
Figure 2: The upper part of the **Edit pre-set** dialogue

To create a new environmental condition pre-set:

1. In the **Manage environmental pre-sets** dialogue click **New**. The **Edit pre-set** dialogue opens.

2. Complete all the fields.

3. Click **OK**.

To edit an existing user-defined pre-set[1]:

1. In the **Manage environmental pre-sets** dialogue select the pre-set to be edited by clicking on it.

2. Click **Edit**. The **Edit pre-set** dialogue opens.

3. Amend the data.

4. Click **OK**.

To delete an existing user-defined pre-set:

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[1]Note that it is not possible to edit one of JPA Designer's built-in data sets.

1. In the **Manage environmental pre-sets** dialogue select the pre-set to be deleted by clicking on it.

2. Click **Delete**. The pre-set is deleted.

   A pre-set cannot be recovered once it has been deleted.

3   Using a set of environmental condtions in analysis

Once pre-sets have been defined they can be selected in the **Environmental Conditions** dialogue and used in interstitial condensation risk analysis.

- *External* pre-sets will be listed in the **Building location** list, after all the built-in data sets.

- *Internal* pre-sets will be shown in the list when the **Source of internal conditions** is set to *Use design data* (seeFigure 3).

By default, the list one internal conditions will only show those which have been defined for the region of the current calculation. If you wish to have all internal conditions available for selection tick **Show all zones** beneath the list.

4   Changes to the Environmental Condtions dialogue

The layout of the **Environmental Conditions** dialogue has been revised in order to group controls and options more logically (see Figure 3). The main changes are:

- The **Use 2003 Condensation Method** tick box has been moved to the bottom right of the dialogue. Given this 'new' method has been in use for over ten years the box no longer needs the prominence it used to have.

- The **Risk level** selection now sits directly under the **Building Location** list. As these two controls work together to set the external environmental conditions it is more logical to group them together.

- The selection of the method for setting the internal conditions has been changed from two tick boxes to a group of radio buttons, with the list of internal pre-sets showing below the buttons when *Use design data* is selected. The use of radio buttons makes it clear that these methods are alternatives.

- There is a new button **Manage environmental pre-sets** next to the **Cancel** button. This is described in section 2.
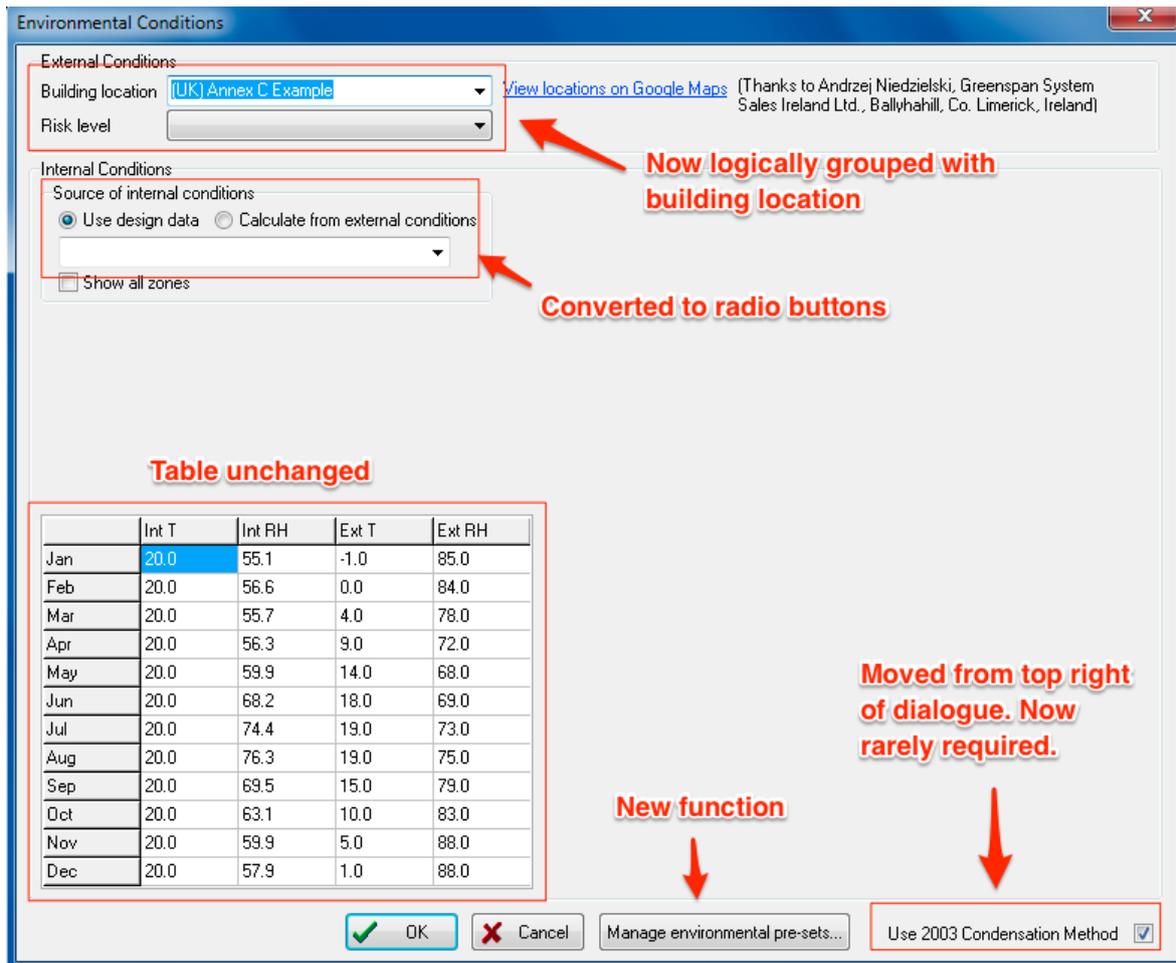
Figure 3: The revised layout of the **Environmental Conditions** dialogue

5   Further information

Information about JPA Designer may be found at http://www.techlit.co.uk.

Technical support by email only to support@techlit.co.uk.

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