



AccuRate

energy simulation software
for residential buildings



www.csiro.au

AccuRate: Feedback Mechanism User Guide

Kevin McDonald, Lan Ding, Wan Yee Chan, Stephen Egan

May, 2009

Enquiries should be addressed to:
Dr. Lan Ding, CSIRO Sustainable Ecosystems, Urban Systems
+61-2-9490 5457, Lan.Ding@csiro.au

Copyright and Disclaimer

© 2009 CSIRO To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO.

Important Disclaimer

CSIRO advises that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

Contents

1	Introduction.....	4
1.1	Overview.....	4
1.2	Minimum Requirements	4
2	Starting the Feedback Mechanism.....	5
3	Exploring the Feedback Mechanism.....	8
3.1	Indicators.....	8
3.2	Recommendations - Overview.....	10
3.3	Recommendations – Tree	12
3.4	Recommendations – Report.....	13
4	Implementing the Recommendations	16
4.1	Manually Implement Recommendations	16
4.2	Automatically Implement Recommendations.....	18

1 Introduction

1.1 Overview

This user guide is for the Feedback Mechanism, which is part of the AccuRate project. This guide assumes that the user has a good understanding of AccuRate and how to use it.

The aim of the Feedback Mechanism is to provide AccuRate users with advice as to how they could improve the performance of their projects so they meet a predetermined target. This advice will take the form of recommendations, which are prioritised so the user will know which recommendation will have the largest impact on the performance rating.

The guide will take the form of a tutorial format, starting from initialising the application through to generating the recommendations and then implementing the recommendations.

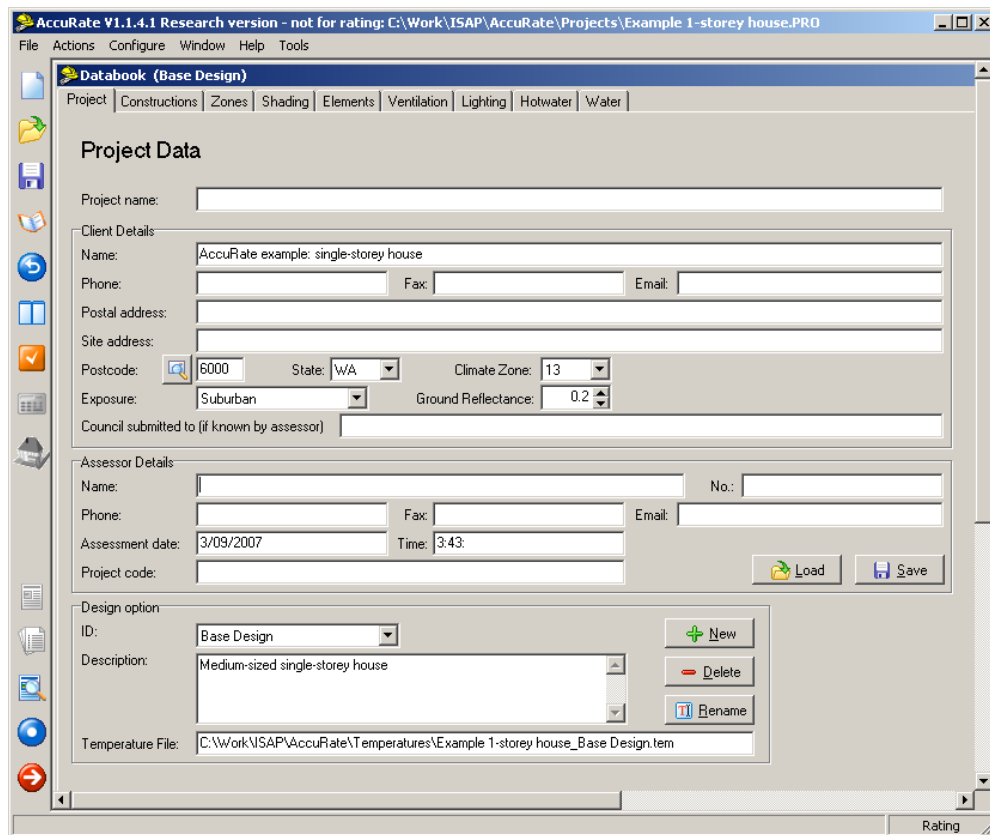
1.2 Minimum Requirements

The minimum requirements for this application are:

- **CPU**
Minimum: Pentium III or Athlon
- **CPU Speed**
Minimum: Greater than 700 Mhz.
- **System RAM**
Minimum: 256 MB
- **Operating System**
Minimum: Windows98/ME/2000/XP
- **Free Disk Space**
Minimum: 1 GB free HDD space
- **Keyboard and Mouse**

2 Starting the Feedback Mechanism

When a project is opened from AccuRate, this is the initial screen you will see:



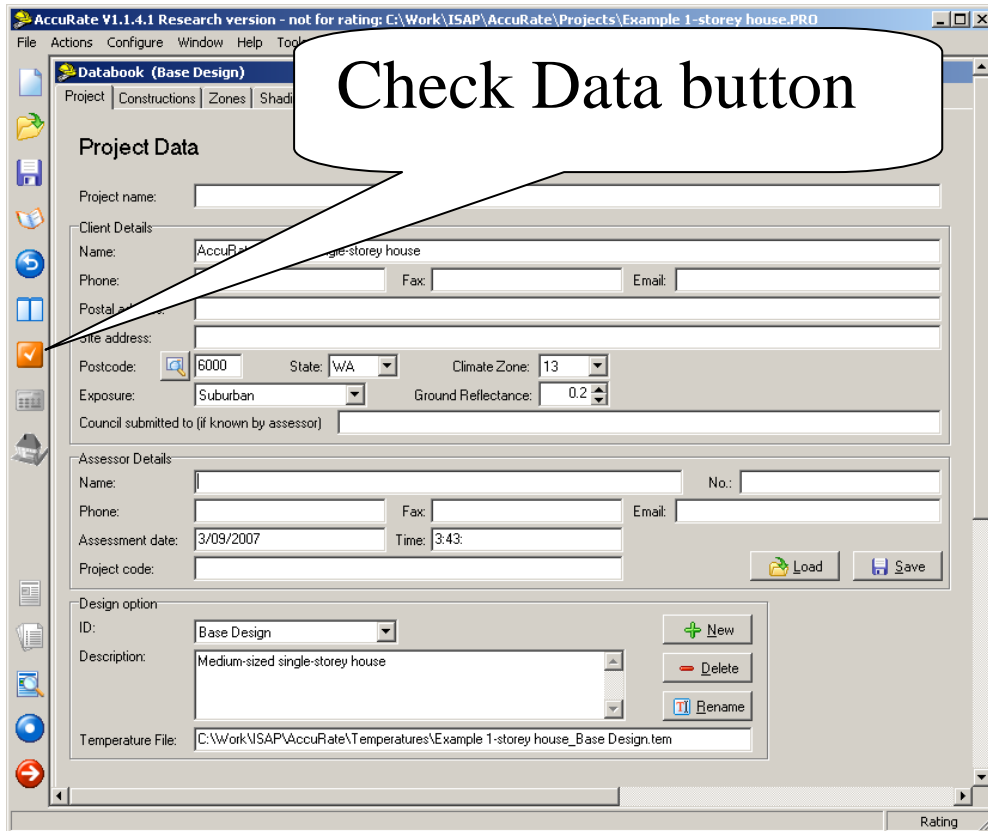
The screenshot shows the AccuRate V1.1.4.1 Research version software interface. The window title is "AccuRate V1.1.4.1 Research version - not for rating: C:\Work\ISAP\AccuRate\Projects\Example 1-storey house.PRO". The menu bar includes File, Actions, Configure, Window, Help, and Tools. The main window is titled "Databook (Base Design)" and has a navigation bar with Project, Constructions, Zones, Shading, Elements, Ventilation, Lighting, Hotwater, and Water. The "Project Data" section contains the following fields:

- Project name: [Text box]
- Client Details:
 - Name: AccuRate example: single-storey house
 - Phone: [Text box] Fax: [Text box] Email: [Text box]
 - Postal address: [Text box]
 - Site address: [Text box]
 - Postcode: 6000 State: WA Climate Zone: 13
 - Exposure: Suburban Ground Reflectance: 0.2
 - Council submitted to (if known by assessor): [Text box]
- Assessor Details:
 - Name: [Text box] No.: [Text box]
 - Phone: [Text box] Fax: [Text box] Email: [Text box]
 - Assessment date: 3/09/2007 Time: 3:43
 - Project code: [Text box]
- Design option:
 - ID: Base Design
 - Description: Medium-sized single-storey house
 - Buttons: + New, - Delete, Rename
- Temperature File: C:\Work\ISAP\AccuRate\Temperatures\Example 1-storey house_Base Design.tem

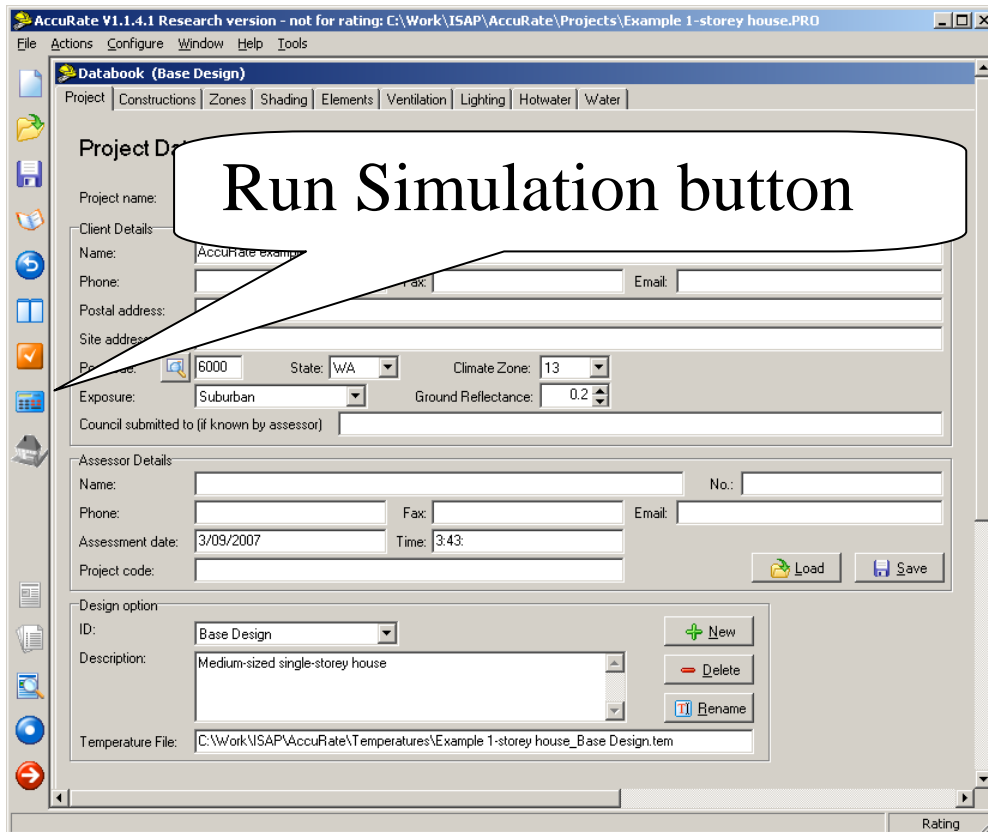
Buttons for Load and Save are located to the right of the Assessor Details section. A Rating button is at the bottom right of the window.

To launch the Feedback Mechanism from AccuRate, you will have to perform three steps:

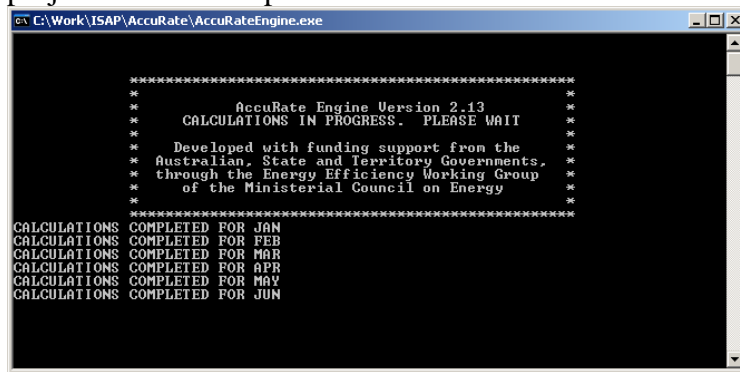
1. Firstly you will need to press the **Check Data** button. This will run verification tests against the user input within the project:



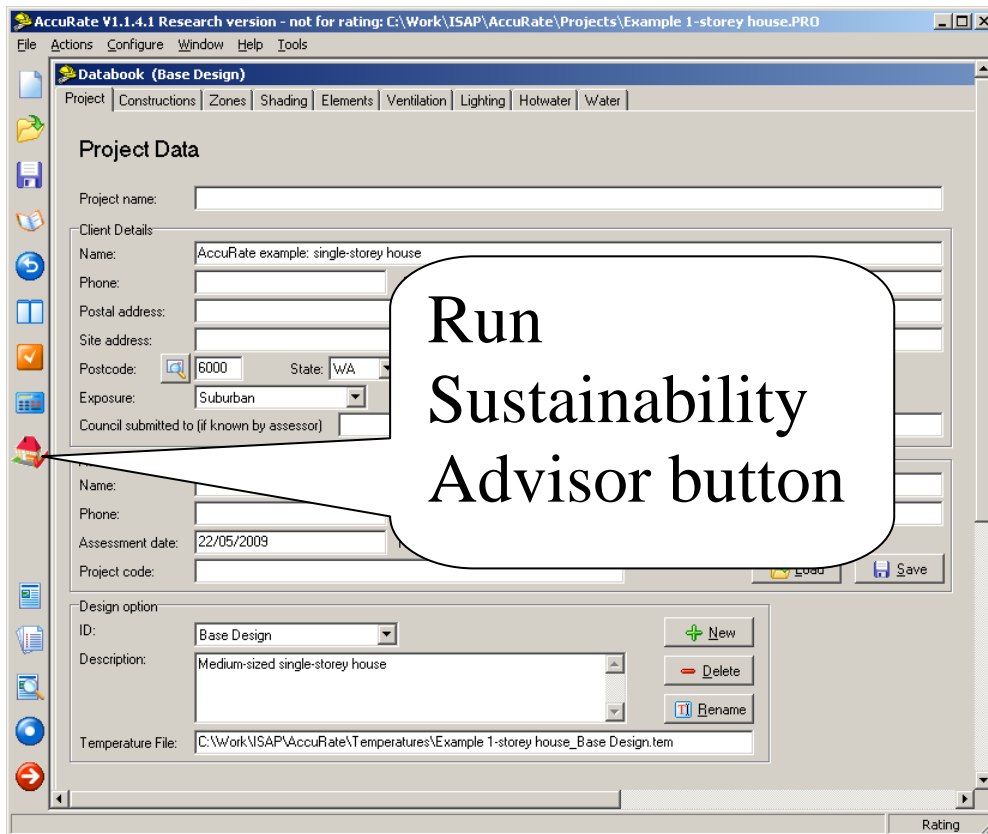
2. If there are no problems with the data, the **Run Simulation** button will be enabled. Please press this button now:



3. Pressing the **Run Simulation** button will run the AccuRate engine against the project which was opened.



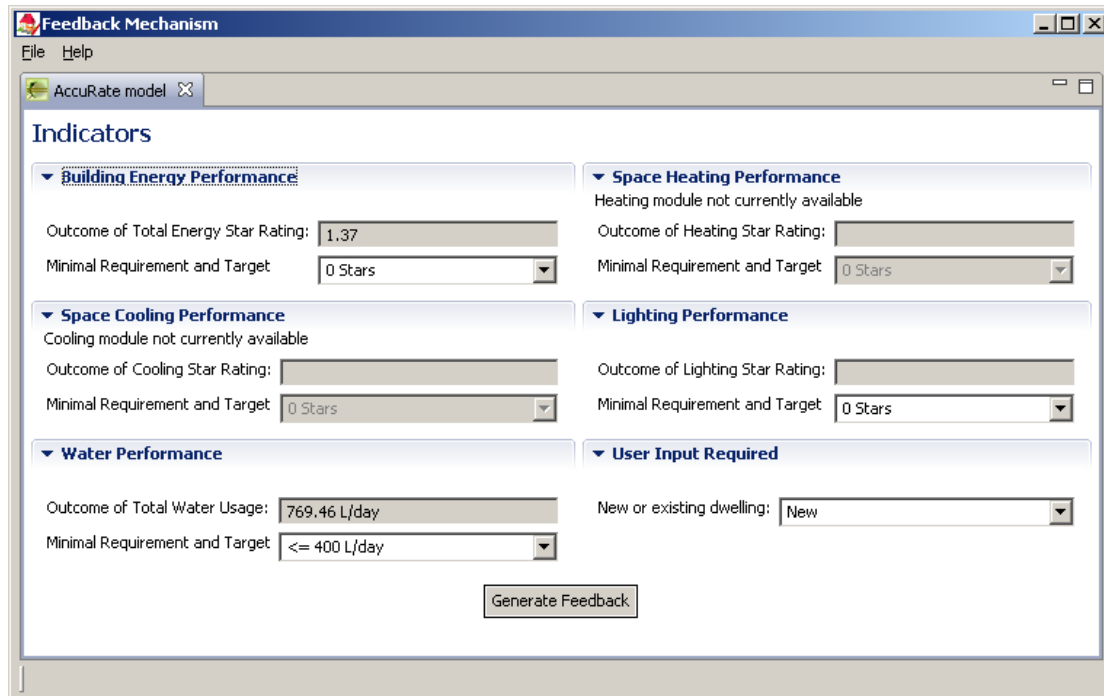
Following this, the **Run Sustainability Advisor** button will be enabled. When this button is pressed, the Feedback Mechanism application will start and the current project will be automatically loaded into it. Press this button now to begin the application.



The application will now start.

3 Exploring the Feedback Mechanism

When the Feedback Mechanism application is started, this is the initial screen you will be presented with:



3.1 Indicators

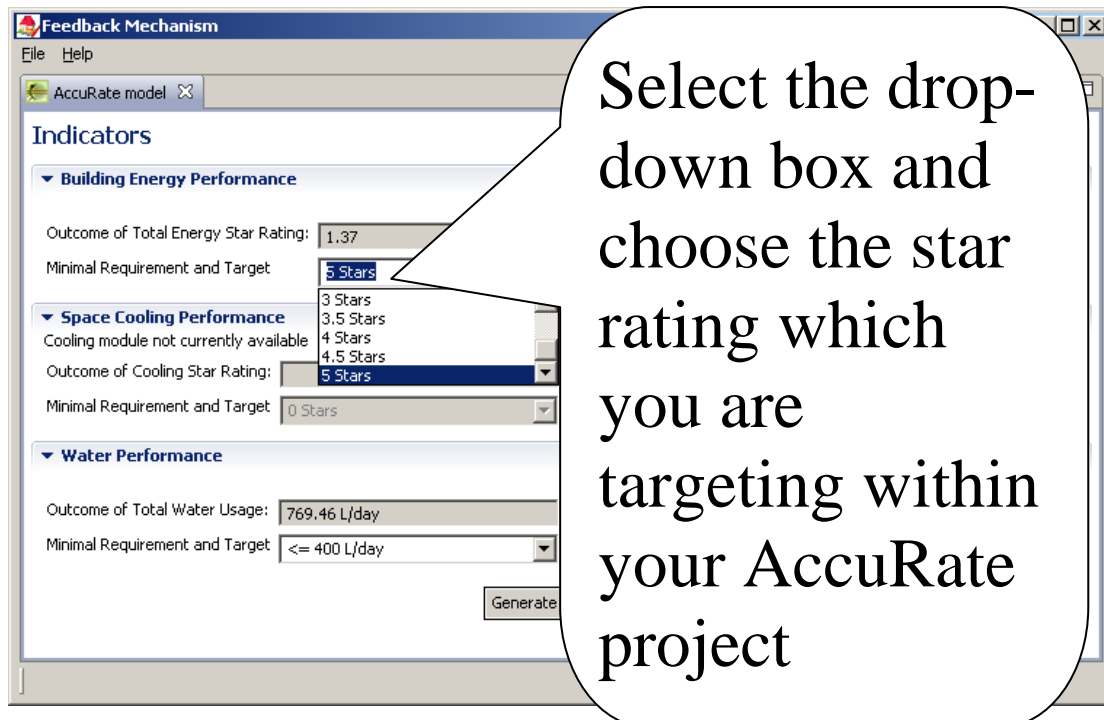
This **Indicators** tab displays performance modules for:

- Building Energy;
- Space Heating;
- Space Cooling;
- Lighting Performance; and
- Water Performance.

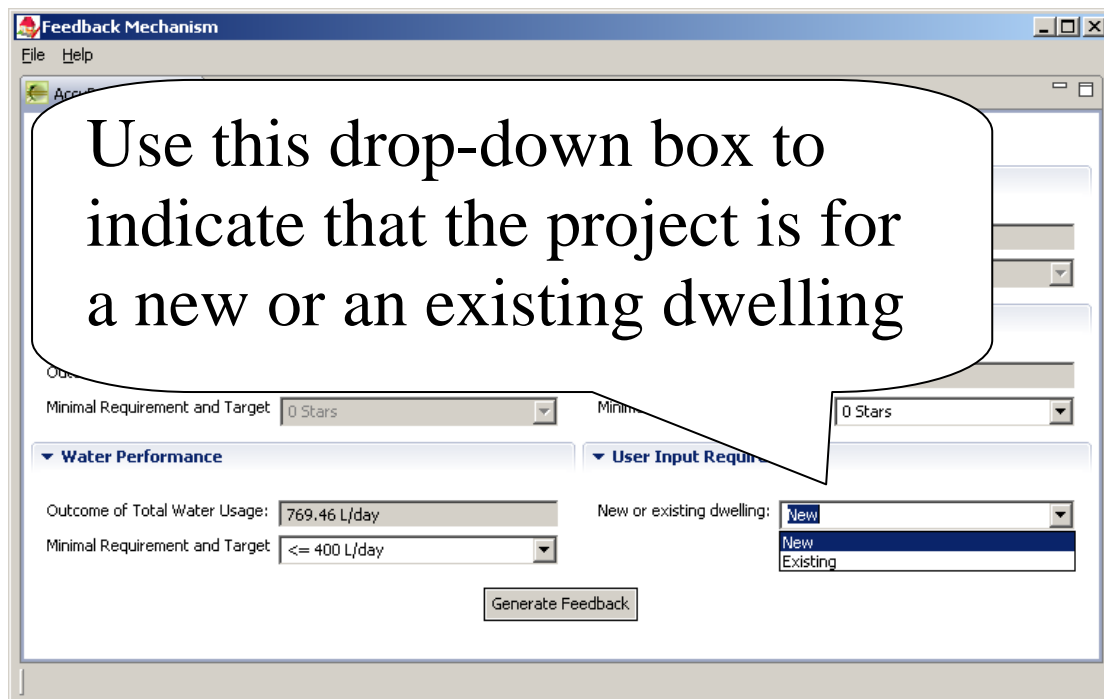
The modules for Space Heating and Space Cooling are currently not enabled for the application as they have not yet been completed within AccuRate.

For each module there is a performance outcome (extracted from the results of the simulation within AccuRate) and a minimal requirement target.

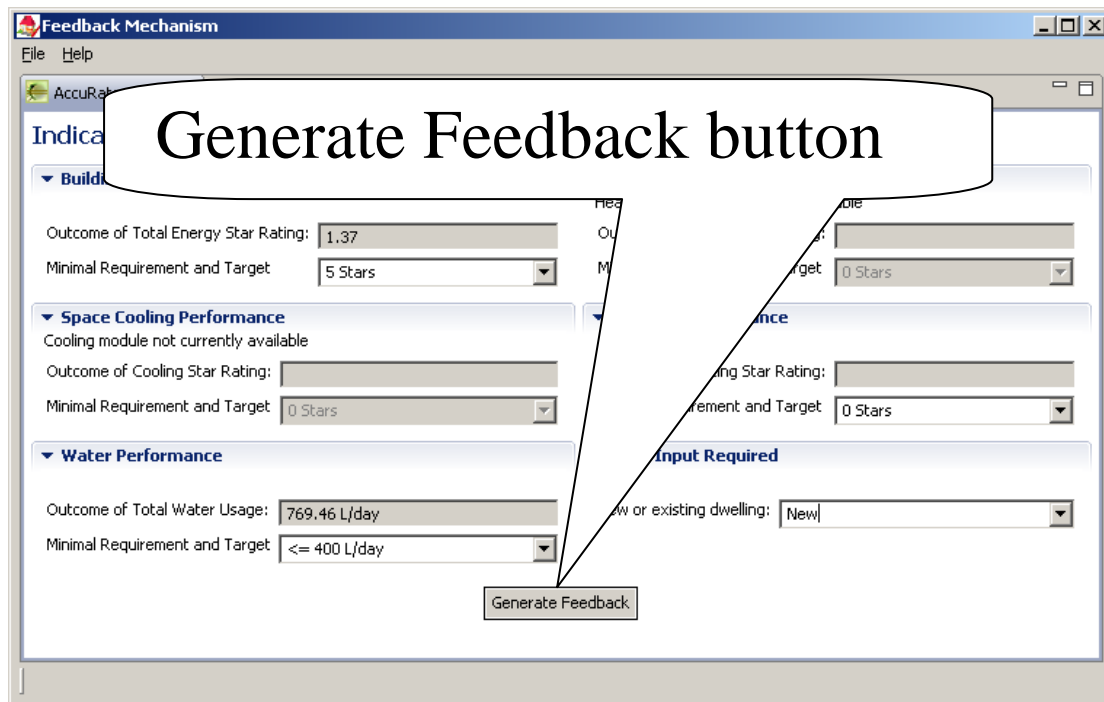
The user is able to select the minimal requirement target performance for there project by selecting the drop-down box within the module, and then selecting the target of there choice. For example, within the Building Energy Performance Module:



Once you have chosen all of the performance targets, you must instruct the application whether the building in the AccuRate project is a new, or an existing dwelling. You are able to do this through the drop-down box displayed below:



When all this data has been entered the user can press the **Generate Feedback** button, located at the bottom of the screen:

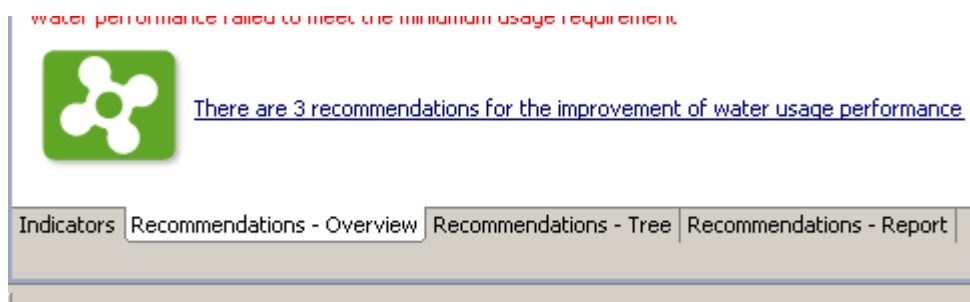


3.2 Recommendations - Overview

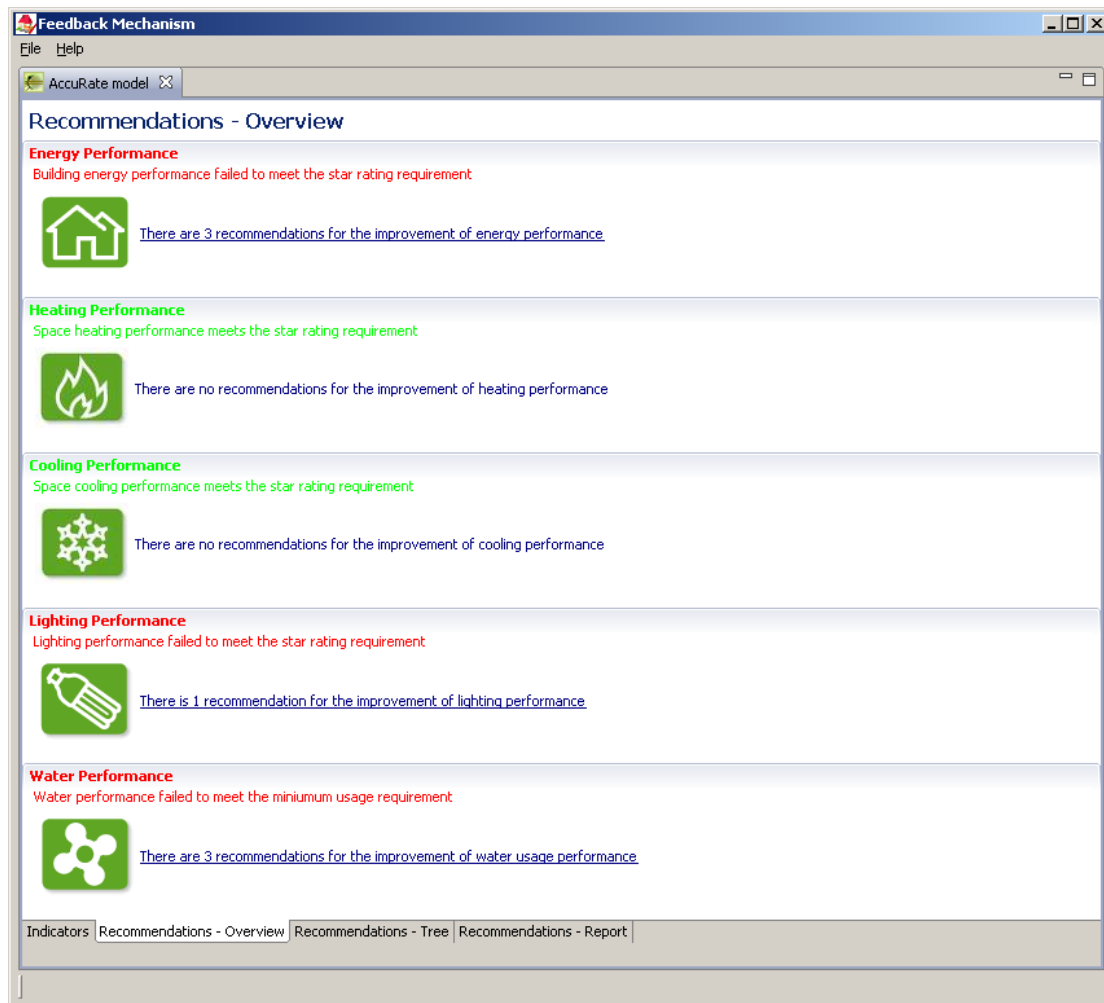
After the **Generate Feedback** button has been pressed, three new tabs will be displayed at the bottom of the screen.

These are:

- Recommendations – Overview
- Recommendations – Tree
- Recommendations – Report.

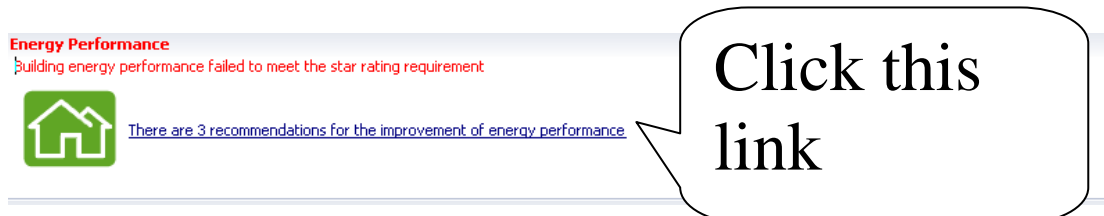


Once the feedback has been generated, the first tab displayed is Recommendations – Tree, so we will examine this first.



The Recommendations – Overview tab displays each module which was displayed in the Indicators tab. If a module’s title text is **red**, this means there are recommendations for that module which the user can follow in order to achieve the targeted performance rating. If the module’s text is **green**, this means the module meets the targeted performance rating and no recommendations are required.

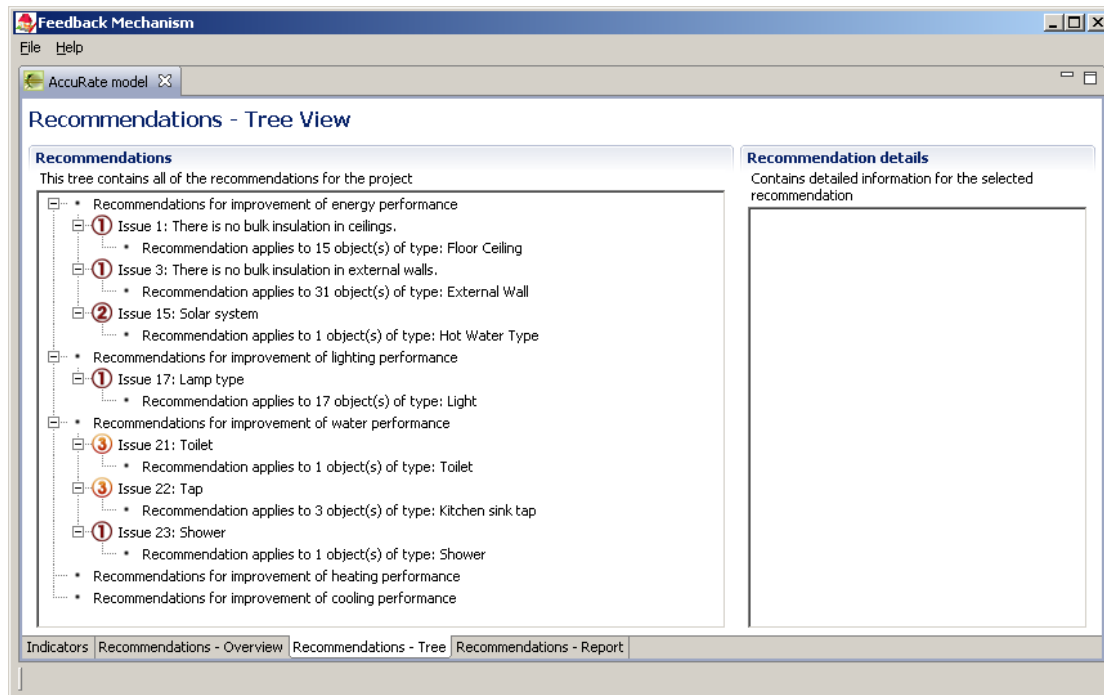
The user is able to click the hyperlink within each module, which will take the user to the more detailed Recommendations – Tree tab.



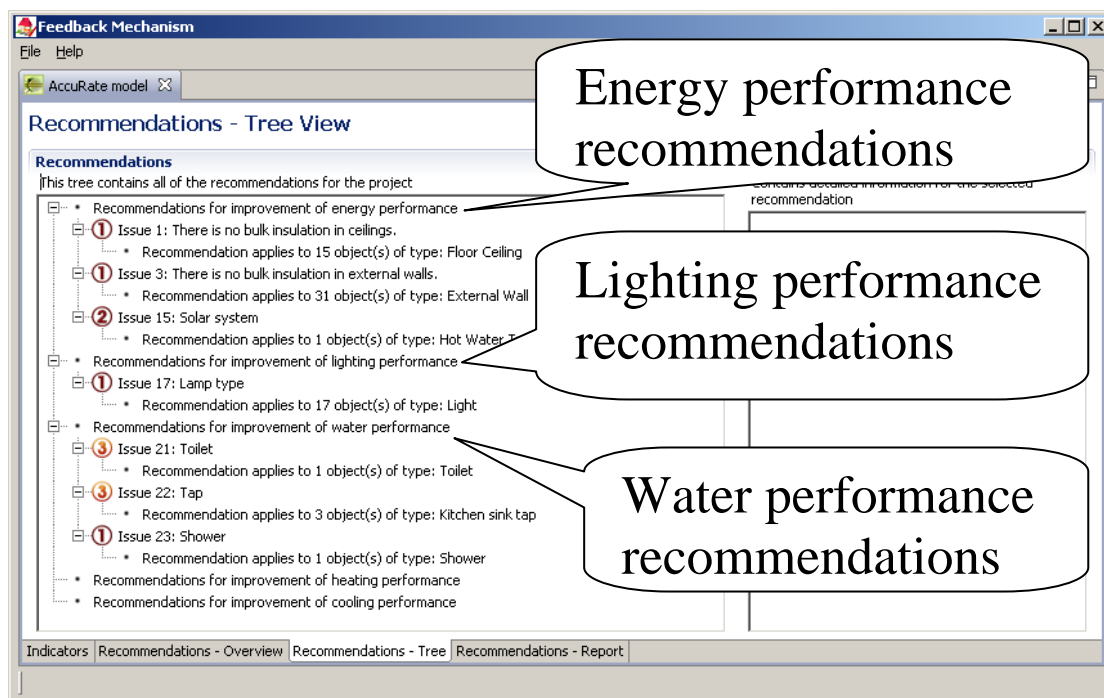
Alternatively, the user is able to directly click the Recommendations – Tree tab located at the bottom of the screen.

3.3 Recommendations – Tree

When the user proceeds to the Recommendations – Tree tab, they will be presented with this screen:

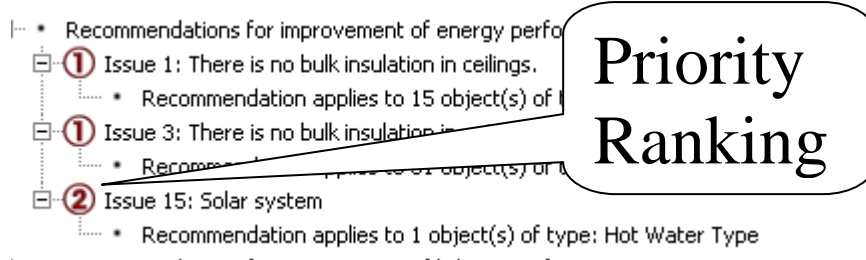


On the left hand side is the Tree panel. This contains all of the recommendations to the user, ordered by the module they are applicable to.



Each recommendation also has a number beside it. This number is the priority ranking, specific for the module it is contained in. The lower the number, the greater

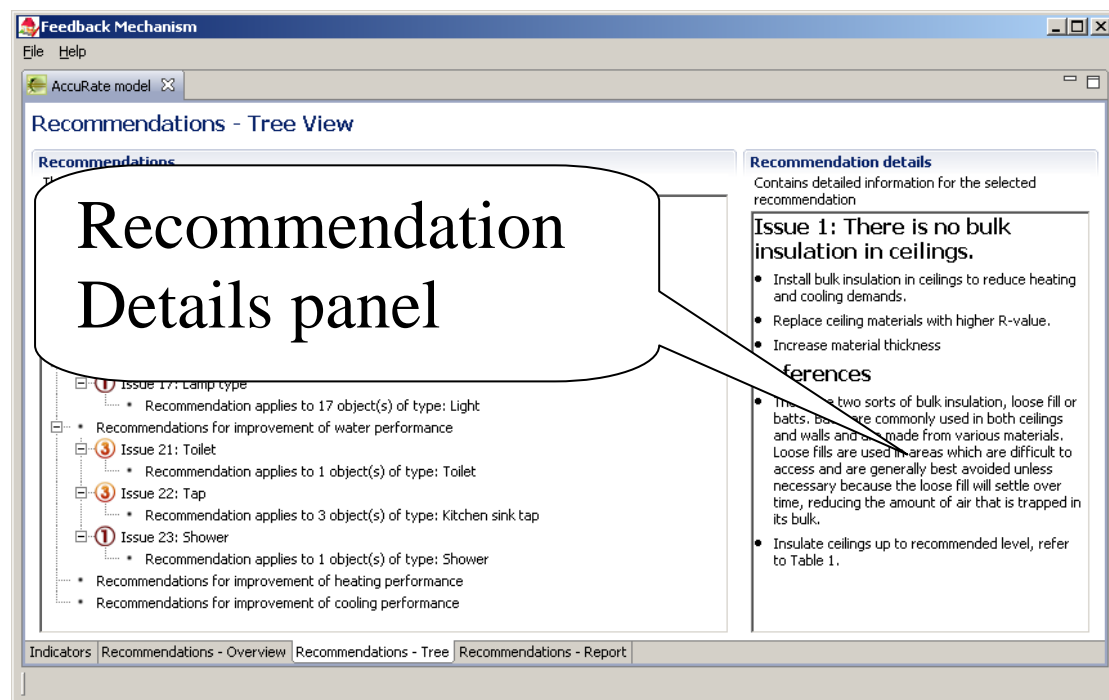
the priority. So recommendations with a large priority will indicate implementing this recommendation will lead to the greatest change in the actual performance rating.



The panel on the right is the Recommendations Details panel. This will give detailed information for a selected recommendation, specifically:

- The issue found;
- The recommendations for improvement;
- Reference information; and
- Comments or Alternatives.

To view detailed recommendation details, simply left click a recommendation from the Recommendations panel. The information will then be displayed in the Recommendation Details panel:



3.4 Recommendations – Report

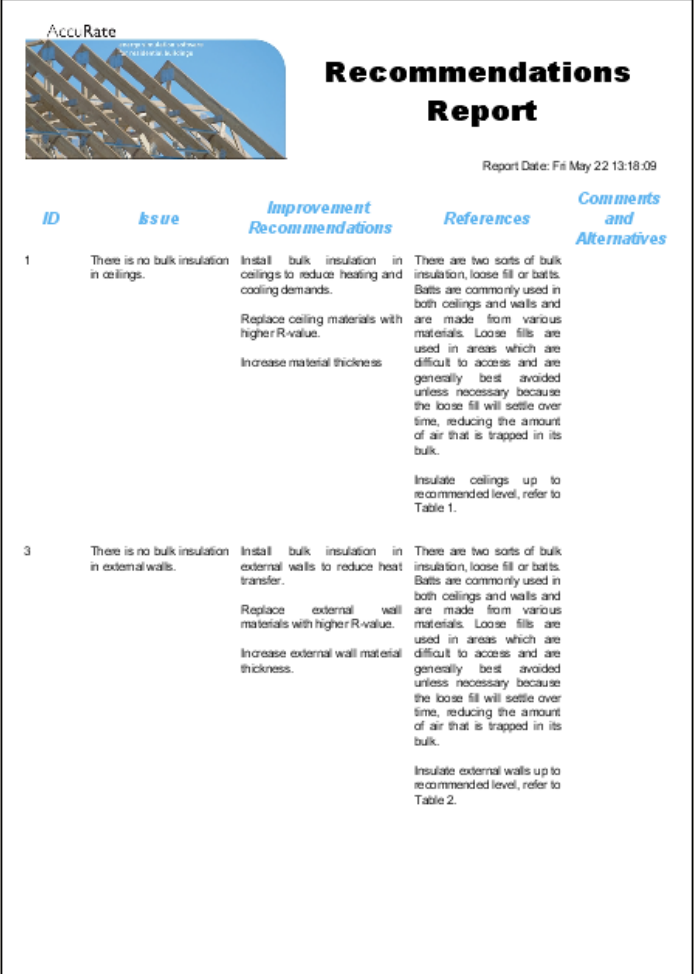
By clicking the Recommendations – Report tab located at the bottom of the screen, the user is able to view a printable report containing all of the recommendations for the AccuRate project. This will look like:

Feedback Mechanism

File Help

AccuRate model

1 of 4 75%



AccuRate

Recommendations Report

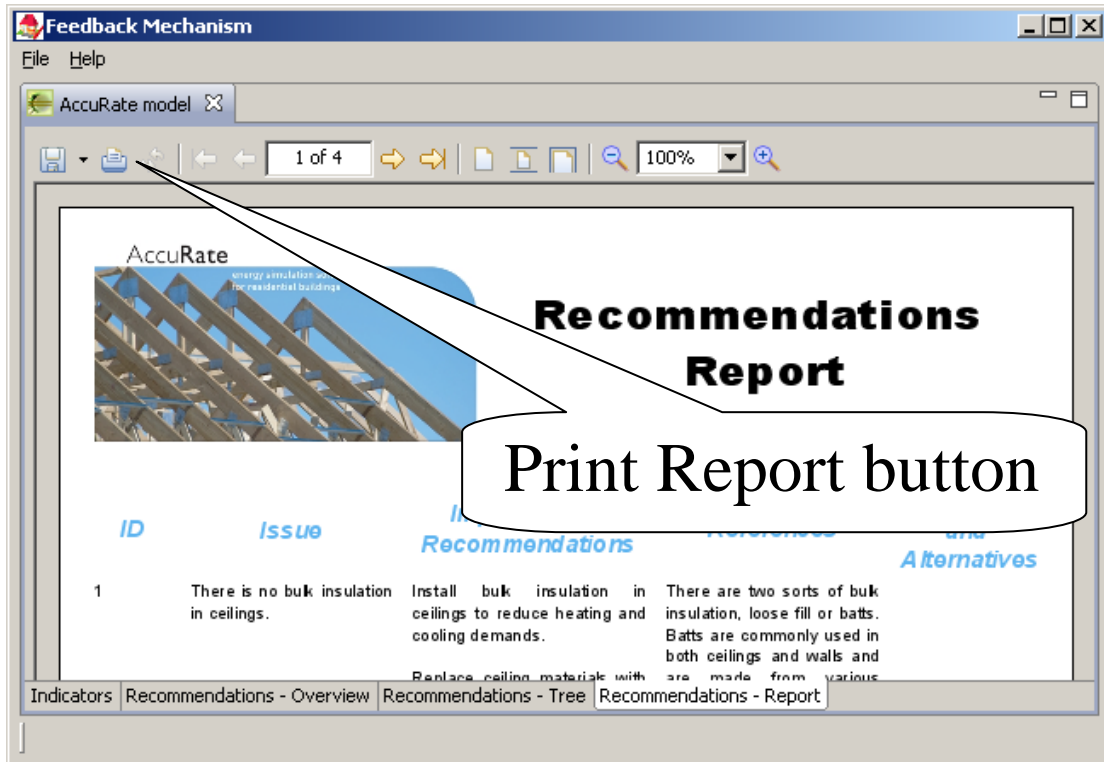
Report Date: Fri May 22 13:18:09

ID	Issue	Improvement Recommendations	References	Comments and Alternatives
1	There is no bulk insulation in ceilings.	<p>Install bulk insulation in ceilings to reduce heating and cooling demands.</p> <p>Replace ceiling materials with higher R-value.</p> <p>Increase material thickness</p>	<p>There are two sorts of bulk insulation, loose fill or batts. Batts are commonly used in both ceilings and walls and are made from various materials. Loose fills are used in areas which are difficult to access and are generally best avoided unless necessary because the loose fill will settle over time, reducing the amount of air that is trapped in its bulk.</p> <p>Insulate ceilings up to recommended level, refer to Table 1.</p>	
3	There is no bulk insulation in external walls.	<p>Install bulk insulation in external walls to reduce heat transfer.</p> <p>Replace external wall materials with higher R-value.</p> <p>Increase external wall material thickness.</p>	<p>There are two sorts of bulk insulation, loose fill or batts. Batts are commonly used in both ceilings and walls and are made from various materials. Loose fills are used in areas which are difficult to access and are generally best avoided unless necessary because the loose fill will settle over time, reducing the amount of air that is trapped in its bulk.</p> <p>Insulate external walls up to recommended level, refer to Table 2.</p>	

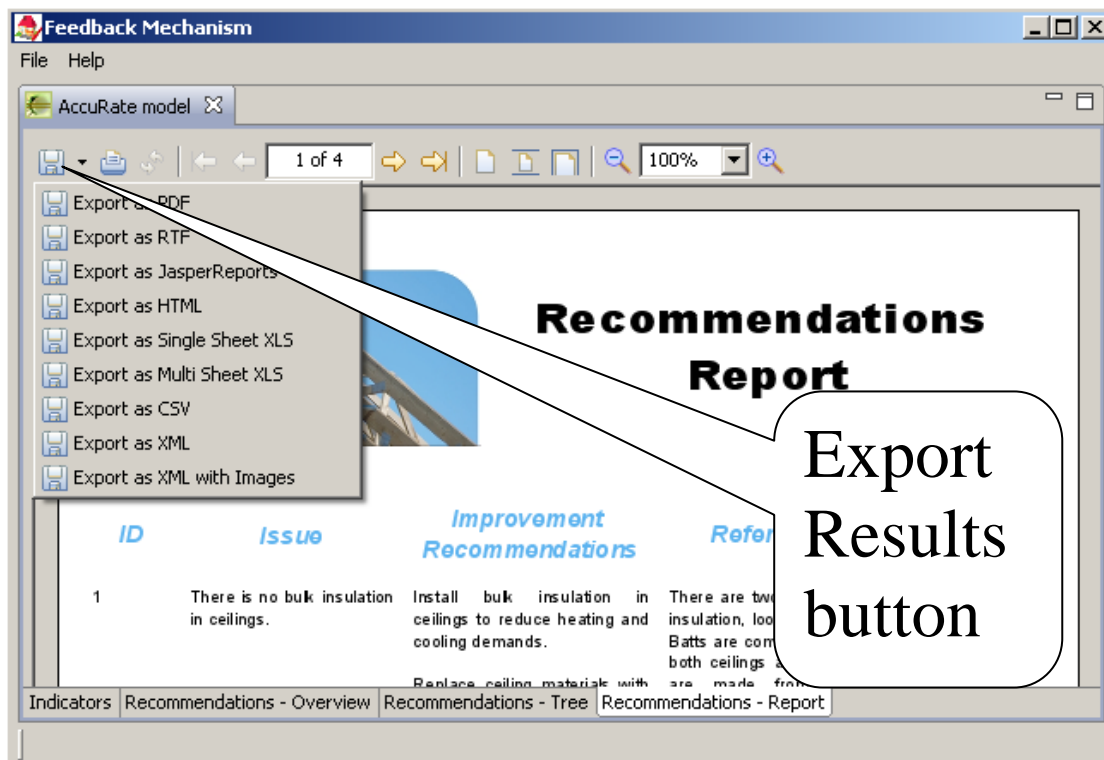
Indicators Recommendations - Overview Recommendations - Tree Recommendations - Report

Any tables which are referenced in the recommendations in the report will automatically be included at the end of the report. From this tab, the user is able to:

- Directly print the report:



- Or they are also able to export the report into a number of different formats, including PDF and html:



4 Implementing the Recommendations

In order to implement the recommendations contained in the report, the user has two options:

1. They can manually implement each recommendation. This will require good knowledge of the AccuRate software.
2. The second method is to automatically implement the change(s). This will implement the suggested change in the AccuRate project directly, and re-run the AccuRate engine. The performance outcomes for each module will then be updated in the Feedback Mechanism.

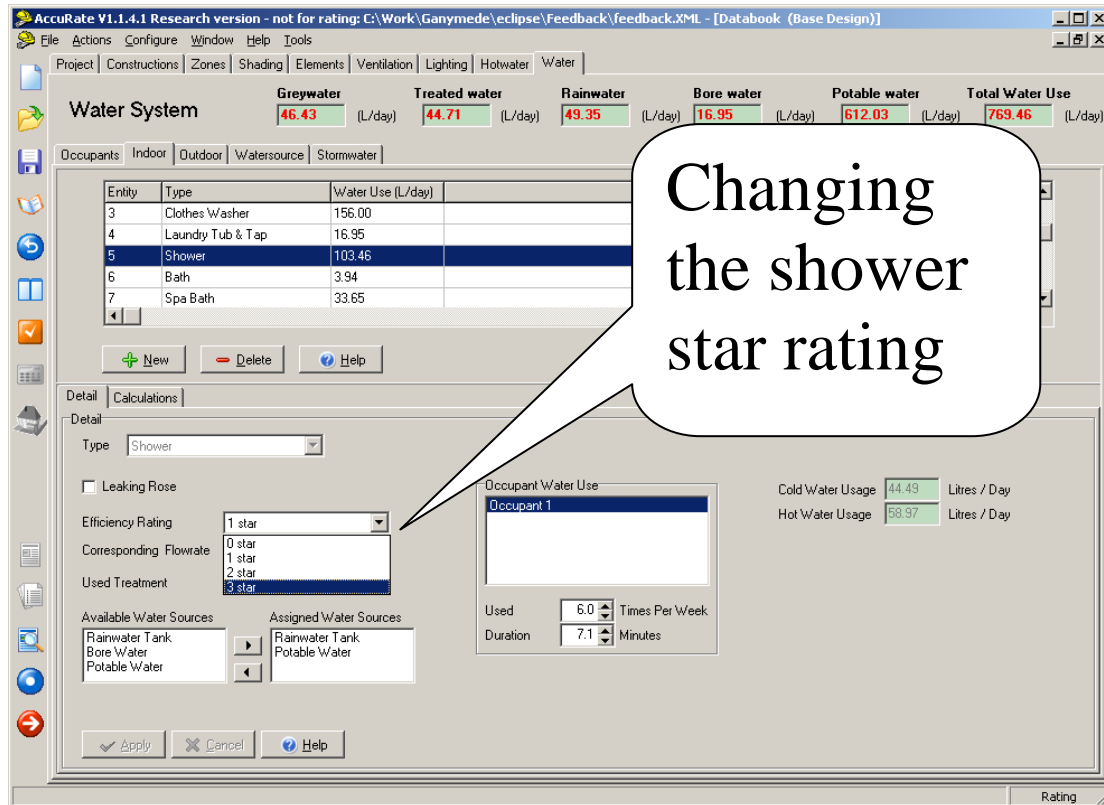
4.1 Manually Implement Recommendations

To illustrate how this will be done, I will use a shower recommendation example. The recommendation in this case provides the advice that we need to replace the shower head with a higher star rating:

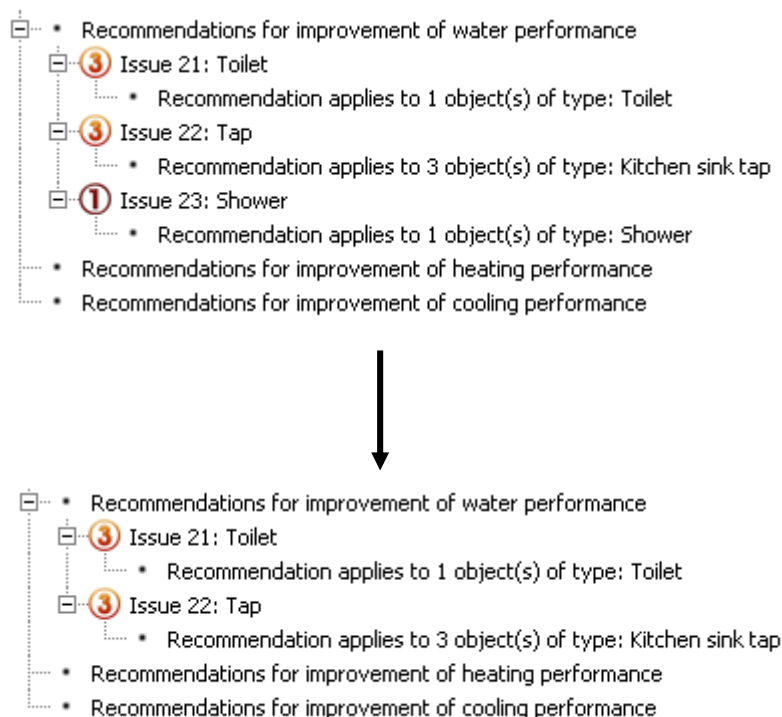
23	Shower	Replace shower with higher star rating	3-Star rated shower heads can be used to the mains pressure systems, storage systems and gas instantaneous water heaters with temperature control. 3-Star related shower heads are not suitable to electric instantaneous systems.
----	--------	--	---

In order to manually implement the recommendation(s), the user will need to:

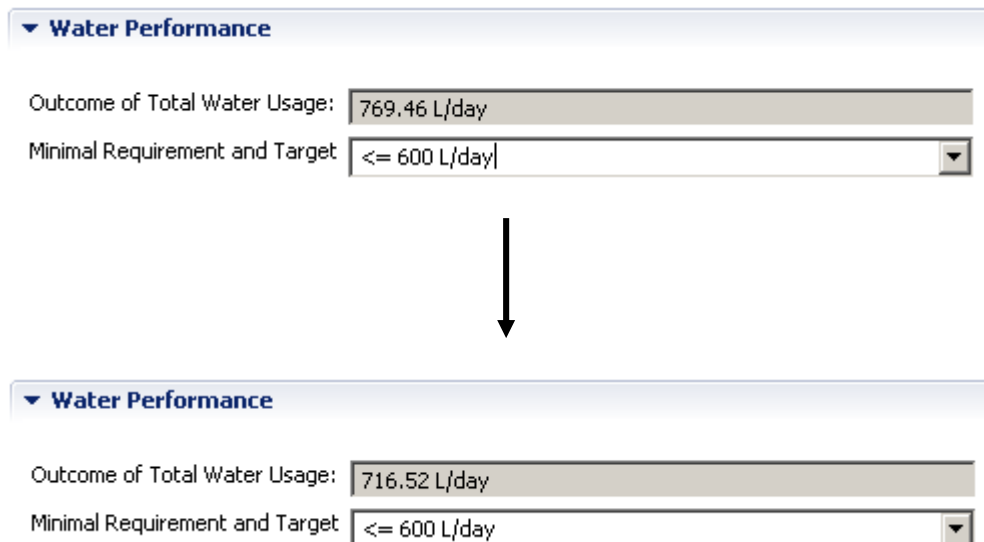
1. Firstly exit the Feedback Mechanism.
2. Start the AccuRate application. We will want to go to the **Water** page within AccuRate. Then click the **Indoor** tab.
3. We will now be able to see the **Shower** entity. After selecting the **Shower** entity, change the **Efficiency Rating** from 1 star to 3 star:



4. Run through the steps again listed in Section 2 of this document, in order to restart the Feedback Mechanism.
5. If the recommendation has been correctly implemented, it will no longer be listed within the Recommendations Tree:



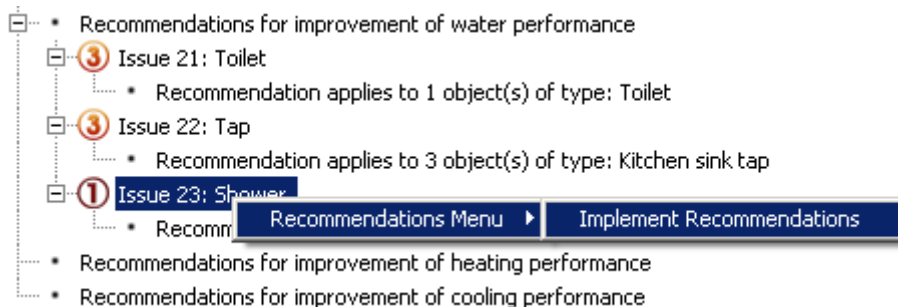
You will also notice that this has had an effect on the water performance outcome, moving the water performance close to the minimal requirement target in this case.



4.2 Automatically Implement Recommendations

We have also given the user the ability to automatically implement the recommendations. In order to do this, the user will be required to:

1. Go to the Recommendations – Tree tab within the Feedback Mechanism.
2. Right click a recommendation
3. After right-clicking a recommendation, a popup box will appear along side the recommendation. Click **Implement Recommendations**.



4. This will automatically make the changes in the AccuRate project and re-run the AccuRate engine against the updated project model.
5. The user will then be returned to the Indicators tab within the Feedback Mechanism, with the new performance outcomes loaded.