

NoiseMap fi√e

A Guide to

Designing Noise Barriers

Edition dated 2020-06-04

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2. DESIGNING NOISE BARRIERS

CREATING AND ADJUSTING BARRIERS

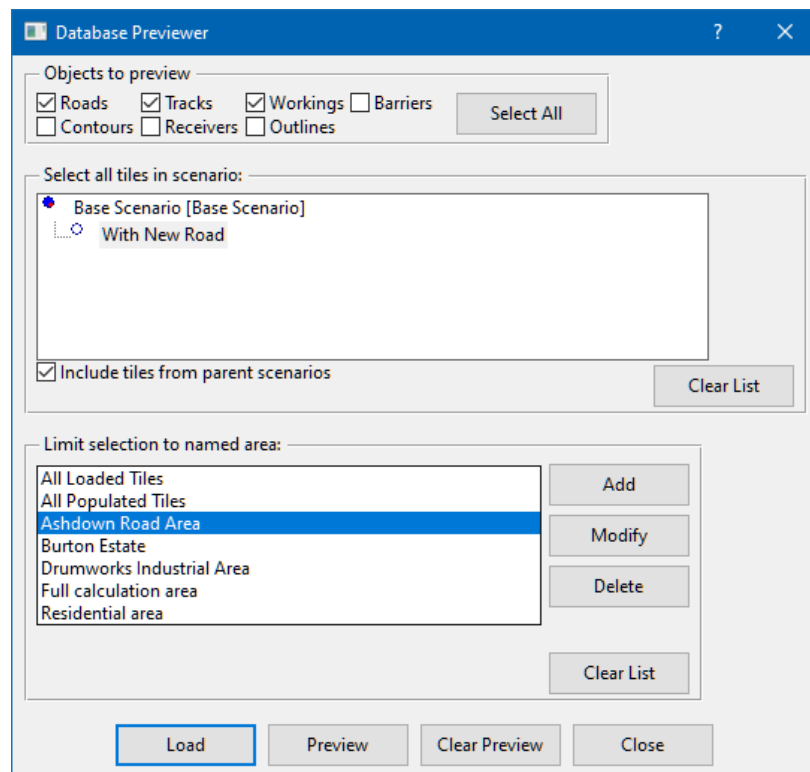
This simple example shows how barriers can be created and how you can easily adjust their height to meet a criterion.

This guide uses the `ManualExampleDatabase.nmdb` model supplied under the Help menu of NoiseMap. We suggest that you make a copy of this file and then work on the copy, so that you preserve the original.

IMPORTING THE MODEL

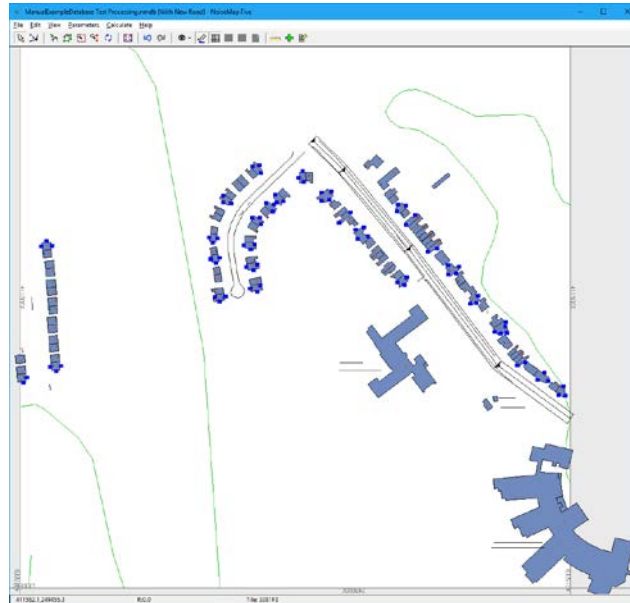
Start NoiseMap and from its file menu, choose Open Database File. Navigate to where the Manual Example Database is located and open it.

Using the Database Previewer (shortcut Ctrl+W) select the *New Road* scenario and limit the selection to the *Ashdown Road* named area as below. Click the **Load** button.



Selecting the study area

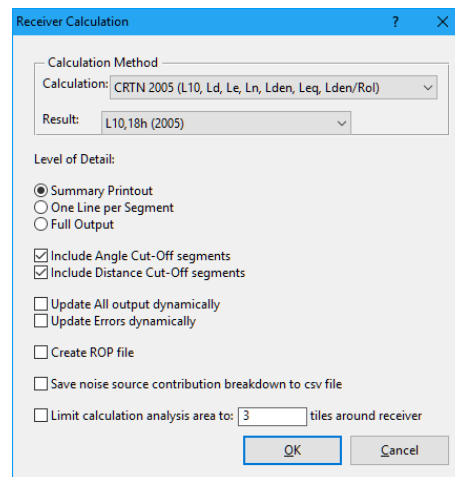
The following area is shown on screen:



Viewing the study area

UNDERTAKING A 'LIVE' NOISE CALCULATION

We will do an on-the-fly or 'live' calculation for receiver number 151, address 347 Ashdown Road. Use the Edit>Find function to locate it. Select the receiver by pointing the mouse at it and clicking. Its icon turns into a blue circle. Next, do a calculation by going to Calculate>Selected receivers and choosing the CRTN 2005 method from the drop-down list. Choose *summary printout* as we don't need the detail of the calculation yet.



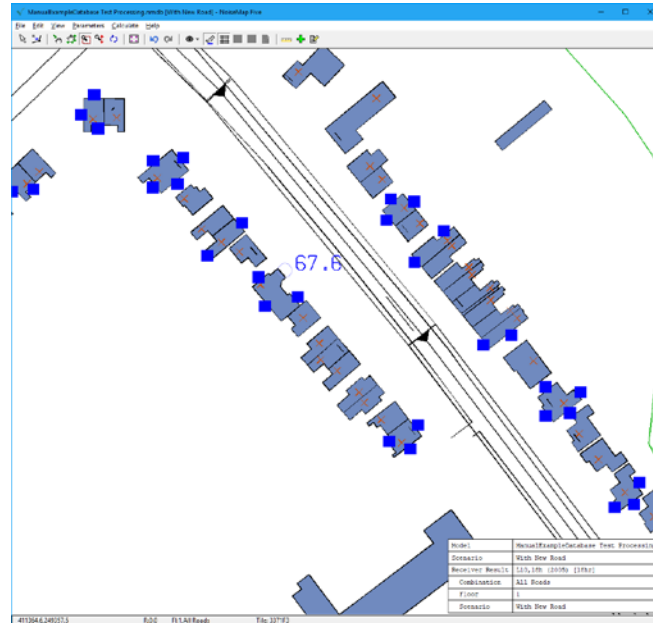
Starting the calculation

Click OK and the calculation will take place.

LABELLING THE RECEIVER WITH THE NOISE LEVEL

To label the receiver with the noise level, go to View>Display options and select the *labels view* tab. Check the *Receiver Labels* column and click *Advanced Recs*. A tab opens to allow you to choose which results to display. We will leave it at

L10,18h, but in *Combination to show*, choose *All Roads* from the drop-down and select 1 for the floor level. Click OK to return to the graphical screen. Select the receiver point again and the noise level is shown as 67.6 dB.



Labelling the noise level at selected receiver

CREATING THE NOISE

BARRIER

Let's assume that we want to reduce this to 60 dB using a barrier alongside the road.

Click on the green + sign in the toolbar and select 'Barriers'. Check *Automatically generate height* and leave *'Get height from'* as *NoiseMap Ground Model*. (This means the ground contours already in the model.) Leave *Additional height to be added* at 0.0. This means that the barriers will be level with the ground surface. The cursor is now shown as cross-hairs to indicate that you are in 'Add' mode. Click at the top left end of the road and click twice more to mark segments of barrier that follow the straight road segments, see screenshot below. Then right-click the mouse to leave the add mode. The Multiple barrier properties window opens. In fact, we are going to make a separate height adjustment for each of the barrier segments, so click the 'select' arrow on the left-hand end of the toolbar, then point at the first (top left) barrier segment, and click to select it.

ENABLING HEIGHT

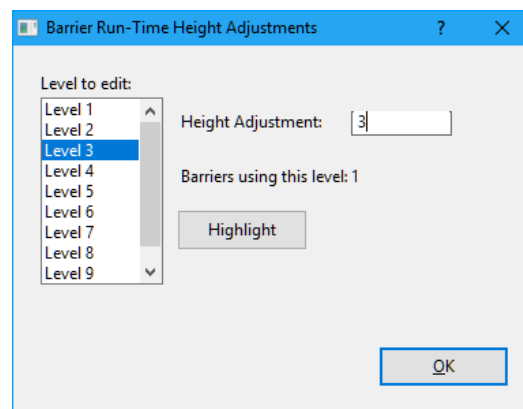
ADJUSTMENT

Now only this one barrier segment is selected and the barrier properties box is only shown for this one segment. At the bottom of the screen, open the barrier properties section, and check *Height Adjustment Level 1*. Now go to the next barrier segment and check *Height Adjustment Level 2*. Then go to the third and last barrier segment and click *Height Adjustment Level 3*. Click *Apply*. This allows the height of each barrier segment to be temporarily changed. You may wish to save your work to a new

scenario at this point. Select Commit Changes from the File menu, or use the shortcut Ctrl+S. Save to a new scenario, which we can call *Barrier Design*. Click OK and check that you receive the message that the changes have been committed successfully.

GIVING THE BARRIERS A HEIGHT

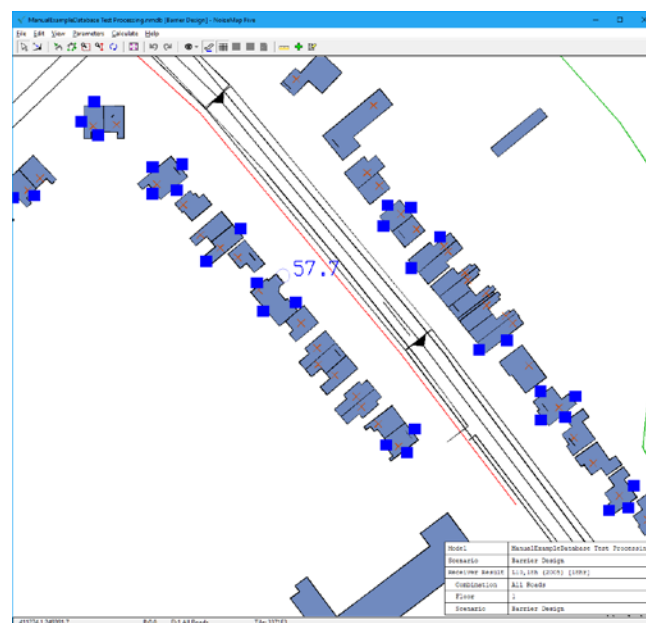
At this point, we have added new barrier segments, but since they are at ground level, they will be ineffectual. We can give them some height by setting the height adjustment levels. Go to Parameters>Edit Barrier Adjustments. The receiver is at first floor level, so let's make all the segments 3 metres high. Select Level 1 and set the Height adjustment to 3. Repeat for Level 2 and Level 3. Click OK. The height adjustment levels will be applied when the calculation is made.



Setting the height adjustments

If you now click on the receiver of interest (347 Ashdown Road) the previously-calculated value may still be there = 67.6 dB.

Now go to Calculate>Selected receivers and click OK to redo the calculation. The level has dropped to 57.7 dB.

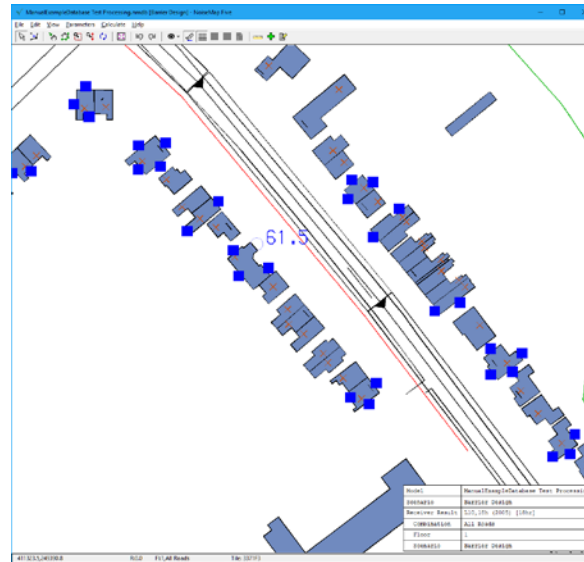


Obtaining the new noise level

ADJUSTING THE HEIGHT

Suppose we want a value of 60 dB. We can reduce the barrier height.

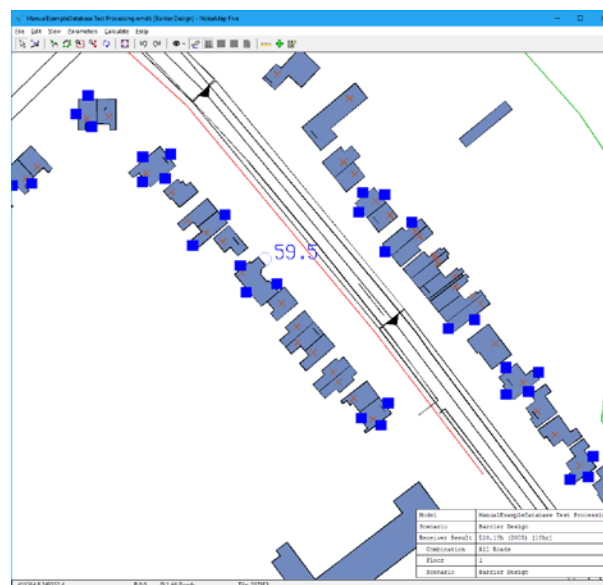
Go back to Parameters > Edit Barrier adjustments and set Level 1, 2 and 3 to 2.0 metres. Go to Calculate > Selected Receivers again and OK to run the calculation. The screen is now showing 61.5 dB. A little bit too high.



Level with reduced barrier height

REFINING THE HEIGHT

Go back to Parameters > Edit Barrier adjustments and set Level 2 to 2.5 metres without adjusting Levels 1 and 3. This makes the central section of barrier 0.5 m higher than the ends. Go to Calculate > Selected Receivers again and OK to run the calculation. The screen is now showing 59.5 dB. Just about right. What would happen if we got rid of the end sections?



Height now meets target level

Go back to Parameters > Edit Barrier adjustments and Level 1 and 3 to 0.0 metres. Go to Calculate > Selected Receivers again and OK to run the calculation.



Effect of shortening the barrier

The screen is now showing 60.9 dB. A little bit too high. Those end sections were doing something. You can now make further adjustments to get to the level you're happy with.

CONCLUSION

There are several different ways of using those barrier height adjustments. A barrier can have several different height adjustments working at the same time – they add together to give the final barrier height. Moreover, the barrier does not have to be at ground level to start with.

Check out our video guides for further help on creating and adjusting noise barriers.