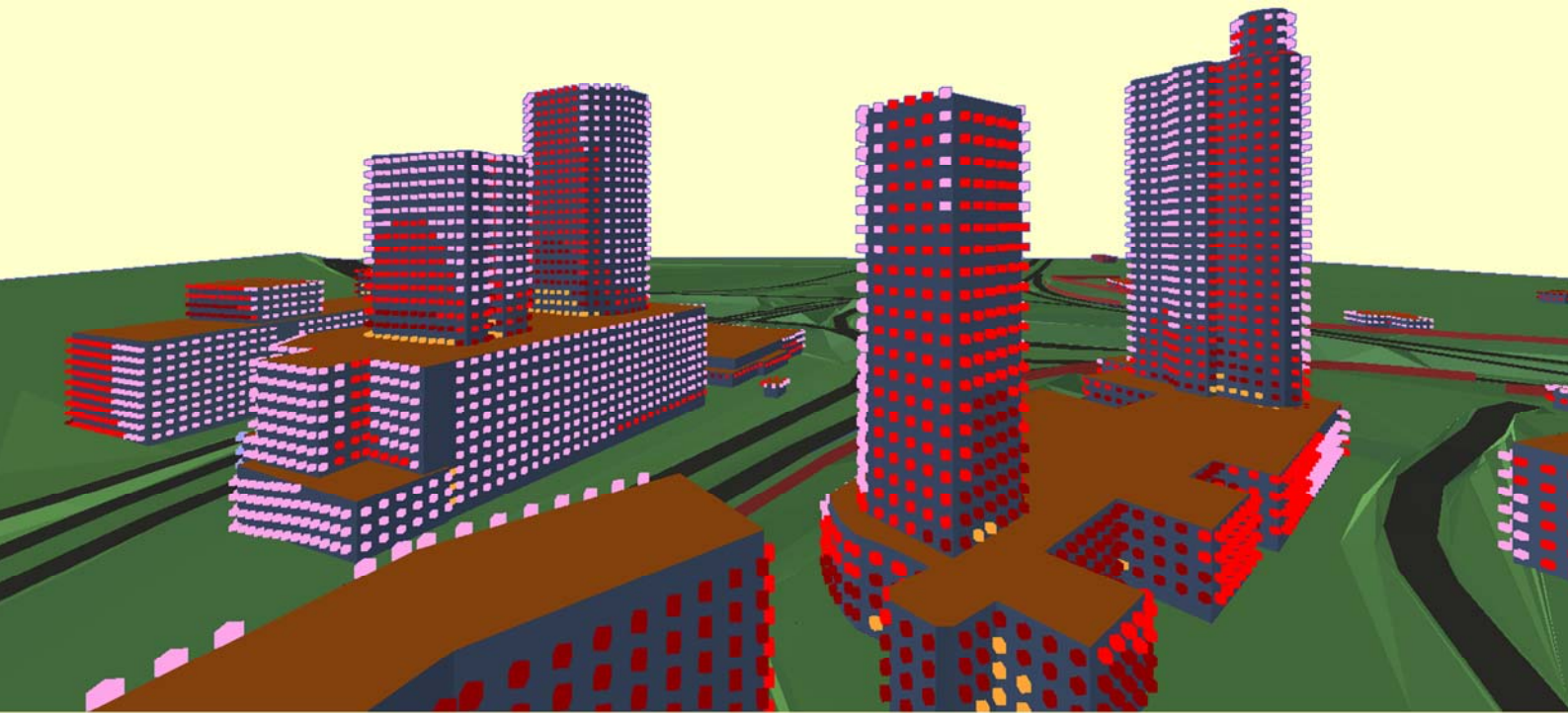


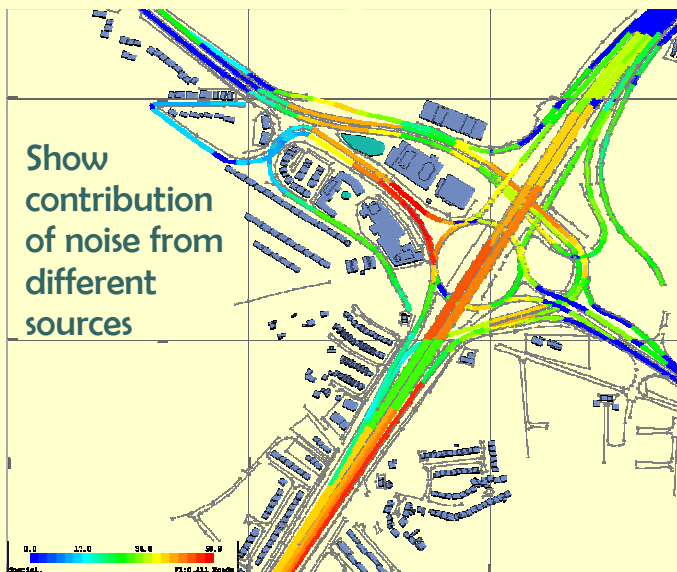
# NoiseMap five

*Mapping the way to a quieter future*



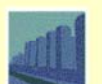
Environmental noise mapping for professionals

Visualise Road, Rail and Site Noise the way you want



[www.noisemap.com](http://www.noisemap.com)  
email: [info@noisemap.com](mailto:info@noisemap.com)

NoiseMap



# NoiseMap five

NoiseMap five is a comprehensive professional system for the assessment of environmental noise from roads, railways and all types of open-site and industrial projects.

It is equally suited to the large-scale mapping of entire cities, for the detailed evaluation of infrastructure schemes and for the design of building developments and mitigation such as noise barriers, and for engineering operations.

## Noise maps

The noise level of an area is calculated and stored in the database. This can be done by one stand-alone computer, or for very large projects, multiple computers\* can join in the calculation process. The stored results can be recalled as required and the noise map is then drawn. The contour spacing and colouring system is chosen when the contour is displayed, for flexibility. The map can cover any size of area, divided into 500-metre square tiles.

You can choose which of the model objects you display on the map. For example, you can show roads, railways and other working locations, buildings, noise barriers, ground contours and features such as water areas and administrative boundaries.

## Vertical noise contours

Conventional noise contours are useful for showing the distribution of noise over an area, but when planning the layout of a development, it can be useful to see the vertical spread of noise. This helps to show how one building can shield another one from noise.

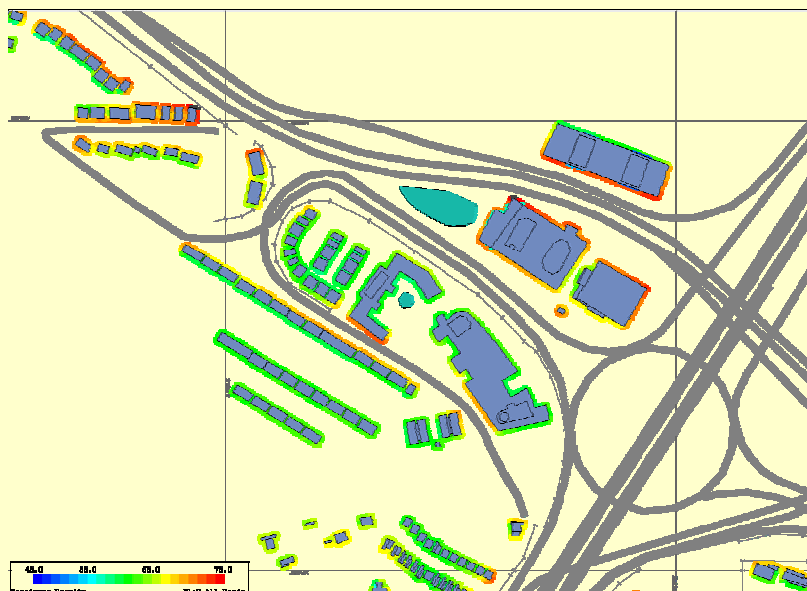
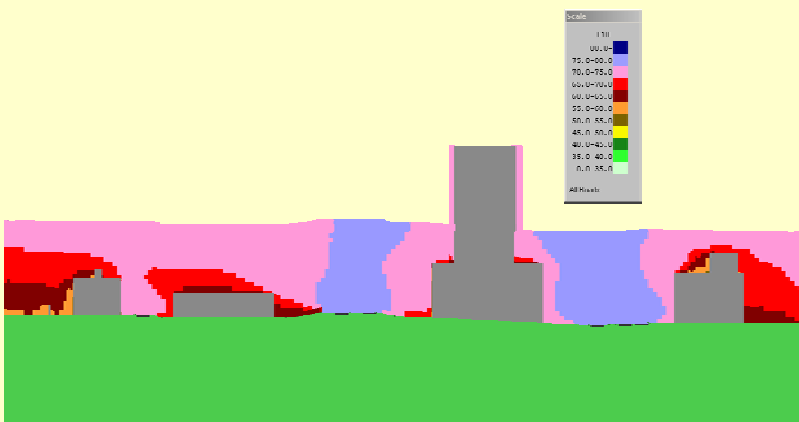
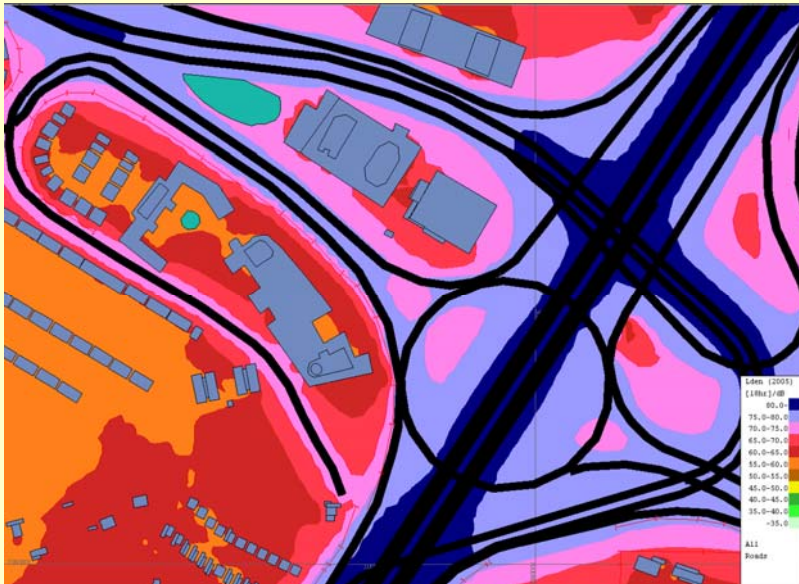
NoiseMap allows a grid of receivers to be entered into the noise model, from which a vertical noise contour can be easily generated.

## Façade noise levels

Another useful way of showing noise levels is to use an automatic function of NoiseMap to generate receivers around the facades of buildings. This can be done for each floor level. Then the noise levels at these receiver points can be drawn in colour for any chosen floor level.

### 3-d perspective view of noise levels (see cover)

This is perhaps the most sophisticated way of showing noise levels across a development and is very easy to do with NoiseMap. Firstly, receivers are generated at the building facades as described above, and then the perspective view is generated by means of a single button click. The 3-d model can then be viewed and 'flown through' in real time.





# Mapping the way to a quieter future

## Database previewer

The database previewer shows the structure of all the noise models in the database and lets you easily select the one that you require.

## Scenarios

Most noise modelling work requires many different 'scenarios' to be modelled—these could be different scheme options, different dates, different types of mitigation and so on. Very often, one scenario is just a variation of another scenario, and NoiseMap displays a 'tree' showing how one scenario is related to another. There is no limit\* to the number of scenarios you can have in the database.

## Named areas

Noise models can cover very large areas. You can give a name to any area of the model so that you can easily select it for loading and editing at any time.

## Difference contours

You can display the difference between any contours—in this example showing the effect of increasing the height of a noise barrier.

You could also show the difference caused by introducing a transport scheme, or changing traffic flows or the sound power levels of plant. You can even show the difference between day and night noise levels or different noise indices.

The contour comparison feature also lets you add together different noise contours, perhaps from different sources, to see the combined effect.

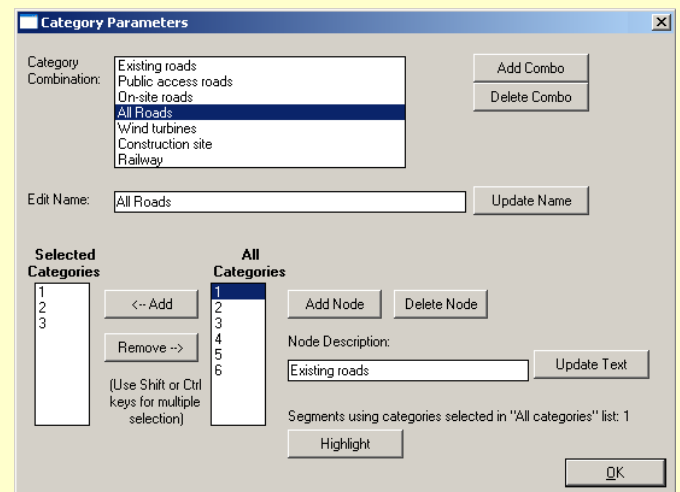
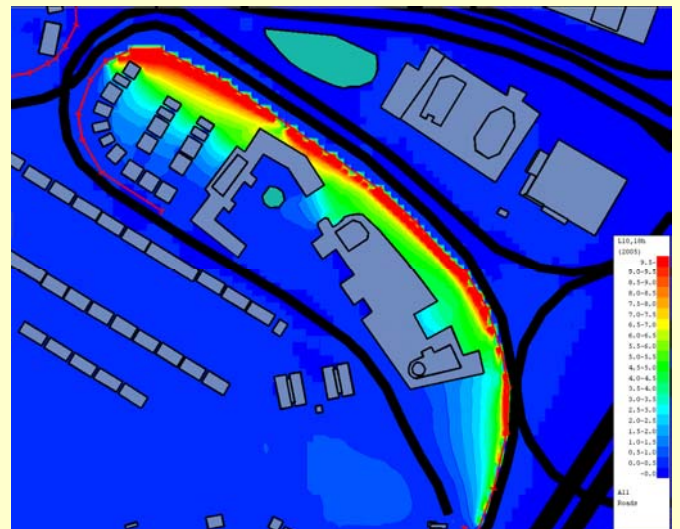
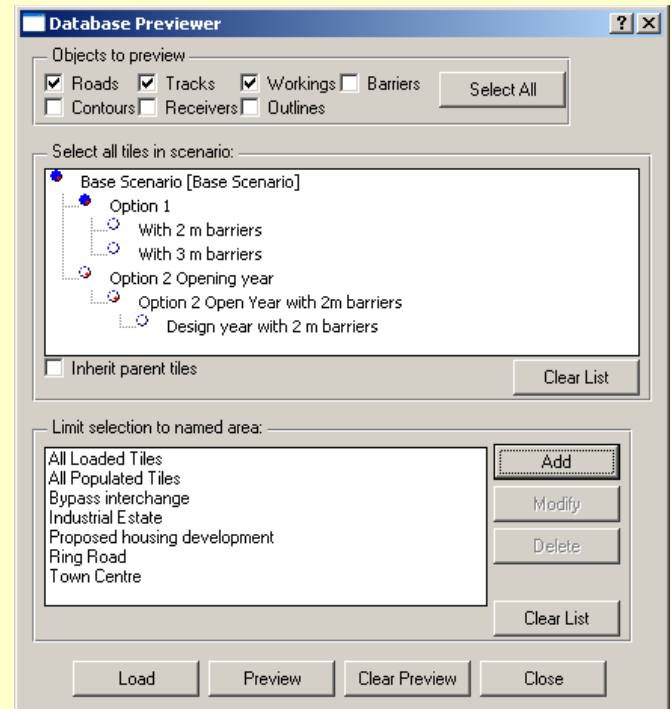
## Evaluation of noise sources

Most projects involve the evaluation of noise from various sources. These could be completely different types of source, such as roads, railways and industrial sources, or it could be different 'categories' of the same type of source, such as unaltered, altered and new roads, or daytime and night-time engineering work.

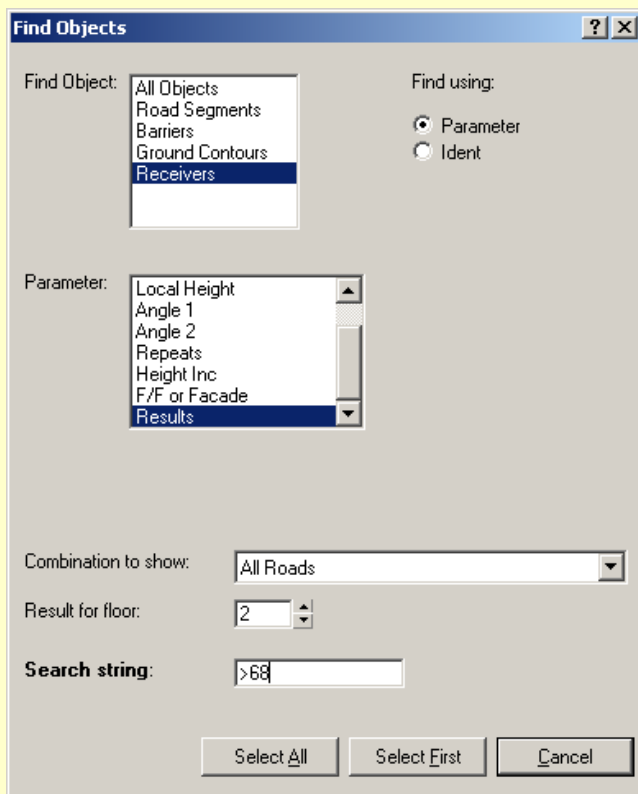
NoiseMap lets you assign each noise source to a 'category' and then it sub-totals the noise within each category and for any combination of categories. This lets you see quickly which types of noise source are creating the most noise, and lets you assess the contribution of noise from each type, as required by the Noise Insulation Regulations.

\* Remote database system

† Computer and disk capacity will provide the ultimate limit.



# NoiseMap five



The 'Find Objects' dialog box is used to search for specific objects in the NoiseMap model. It features a 'Find Object:' dropdown menu with options: All Objects, Road Segments, Barriers, Ground Contours, and Receivers. The 'Receivers' option is currently selected. To the right, the 'Find using:' section has two radio buttons: 'Parameter' (selected) and 'Ident'. Below this, the 'Parameter:' dropdown menu is open, showing a list of parameters: Local Height, Angle 1, Angle 2, Repeats, Height Inc, F/F or Facade, and Results. The 'Results' parameter is selected. At the bottom, there are three input fields: 'Combination to show:' with a dropdown set to 'All Roads', 'Result for floor:' with a numeric input set to '2', and 'Search string:' with a text input containing '>68'. Three buttons are at the bottom: 'Select All', 'Select First', and 'Cancel'.

## Finding objects

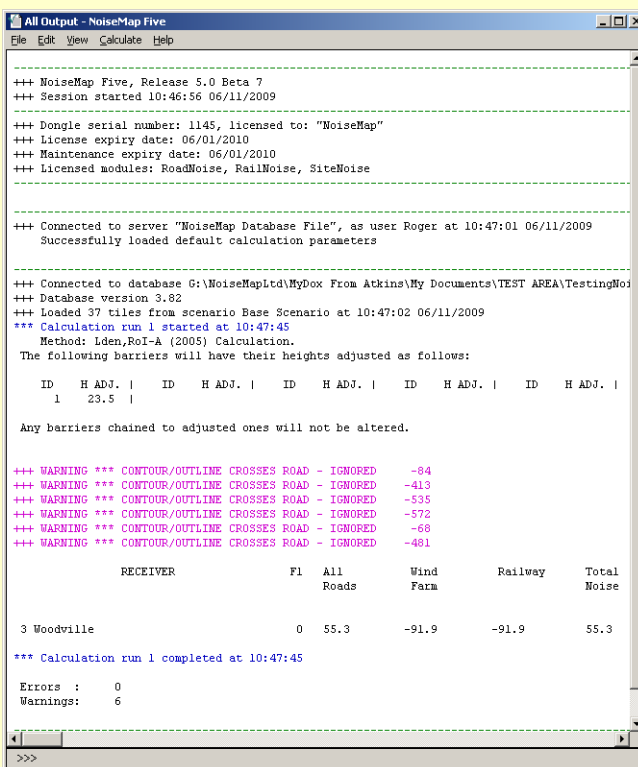
In large models, it could be difficult to locate a particular object, but NoiseMap lets you find any object by searching on the value of any parameter.

In the example shown here, the user is searching for receivers where the noise from all roads at second floor level is 68 dB or more.

You can either highlight the first one in the model, and then scroll through the rest one-by-one, or you can highlight all of them at once.

The display shifts so that the first one is centred on the screen.

Many of the individual object property windows also have a 'highlight' or scroll button that selects the specific object on-screen.



The 'All Output - NoiseMap Five' window displays a comprehensive log of the software's operations. The log includes version information (NoiseMap Five, Release 5.0 Beta 7), session start time (10:46:56 06/11/2009), license details (serial number 1145, expiry date 06/01/2010), and a list of loaded modules (RoadNoise, RailNoise, SiteNoise). It also shows connection status to a server and a database. A calculation run is detailed, including the method (Iden, RoI-A (2005) Calculation) and a table of barriers with their adjusted heights. The log concludes with a summary of errors (0) and warnings (6).

ID	H ADJ.	ID	H ADJ.	ID	H ADJ.	ID	H ADJ.	ID	H ADJ.
1	23.5								

RECEIVER	F1	All Roads	Wind Farm	Railway	Total Noise
3 Woodville	0	55.3	-91.9	-91.9	55.3

## The All Output Screen

The Output Screen provides a comprehensive record of your work during a NoiseMap session. It shows the NoiseMap version number and your licence details, the file system or server to which you are connected (in this case an ordinary stand-alone flat file) and the database that you have loaded.

When you undertake a calculation run, it shows the calculation method and if you are doing a local calculation, it shows the results. You can choose for the full calculation detail to be shown if required for checking the model or evaluating the performance of a particular barrier.

## Script Interface

NoiseMap provides a script interface that lets you automate many tasks, including loading and converting Shapefiles, initiating complex calculation procedures, and downloading and outputting results to external files.

Script Commands can be taken from a script file or entered manually in the Command Pane window at the bottom of the Output Screen.

## Script example

The script file here sets various traffic flow and road surface parameters and then calls a separate script file (not shown) to run the calculations and store the noise levels in the database. The levels are also exported to an external spreadsheet.

This allows a complex series of tests to be run on various road configurations in order to find the optimum design.

Scripting may allow third-party add-ins to be provided for more sophisticated noise mapping operations in future.

```
# NoiseMap Script for testing various road configurations
SET CONF MedBank # Configuration is Medium (4m) Embankment
SET SFC 0.0 # SET SURFACE CORRECTION
set SP 100.0 # speed= 100 km/h
set PH 5.0 # percent heavy= 5.0 %
message "%SP% %PH%" type=ok
include file="W:\CalculateScript2.nms"

set PH 15.0 # percent heavy= 15.0 %
message "%SP% %PH%" type=ok
include file="W:\CalculateScript2.nms"

# now run for 120 km/h
set SP 120.0 # speed= 120 km/h
set PH 5.0 # percent heavy= 5.0 %
message "%SP% %PH%" type=ok
include file="W:\CalculateScript2.nms"

set PH 15.0 # percent heavy= 15.0 %
message "%SP% %PH%" type=ok
include file="W:\CalculateScript2.nms"
```

# Mapping the way to a quieter future

## Sophisticated labelling

You can label each object with any of its parameters that you choose.

In this illustration, road segments have been labelled with the vehicle flow rate. Noise barriers are also shown to help the user to locate them, but ground contours have been turned off to avoid overcrowding the display.

## View-as-colour

Additionally, the receivers have been labelled with the noise level arising from all roads (at ground floor level). The receiver noise levels have been colour-coded according to their noise level. Almost any object property can be colour-coded in this way.

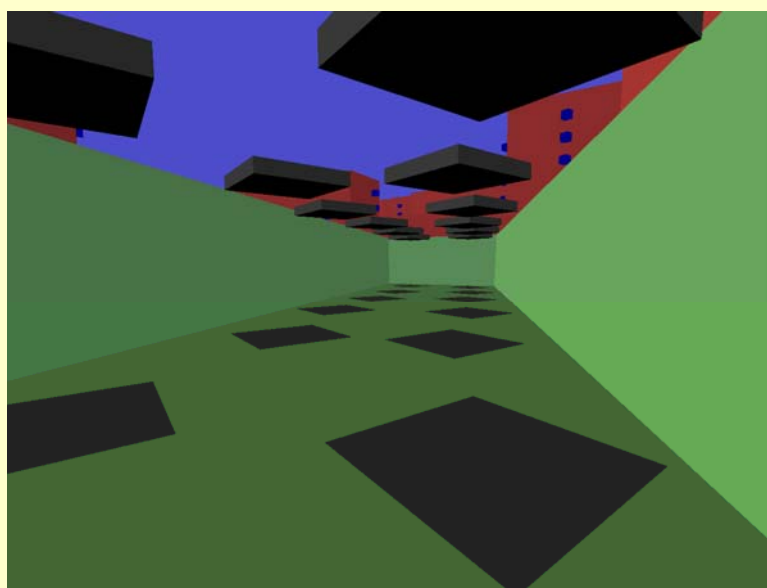
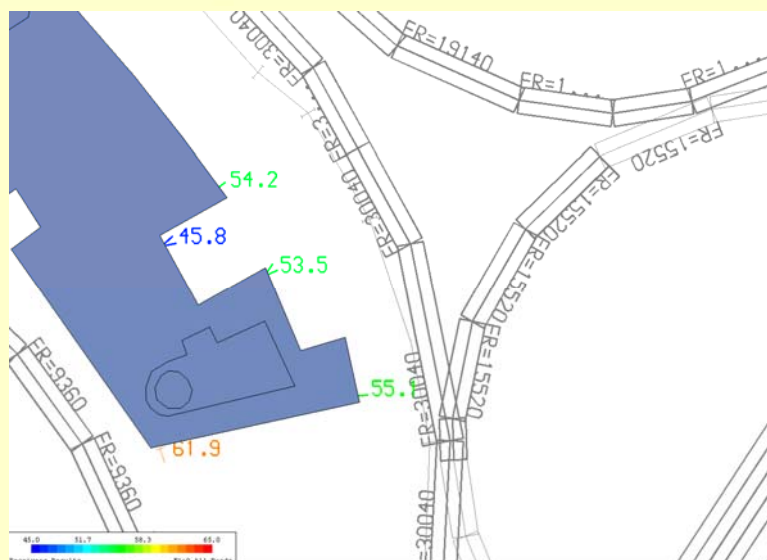
## 3-D Source positioning

All noise sources are positioned in three dimensions, plus their height relative to local ground. This allows noise sources to be elevated, for example a railway on a viaduct.

The illustration shows a civil engineering site modelled in SiteNoise. The black squares represent working locations. Some of them are at the new ground level in the bottom of an excavation, whilst others are elevated above the level of the excavation.

Receiver points can also be seen in buildings overlooking the excavation.

This 3-D view was created from the current noise model by the click of a single button.



## Cross-sections

These provide a rapid way to checking the vertical positioning of the objects in your model.

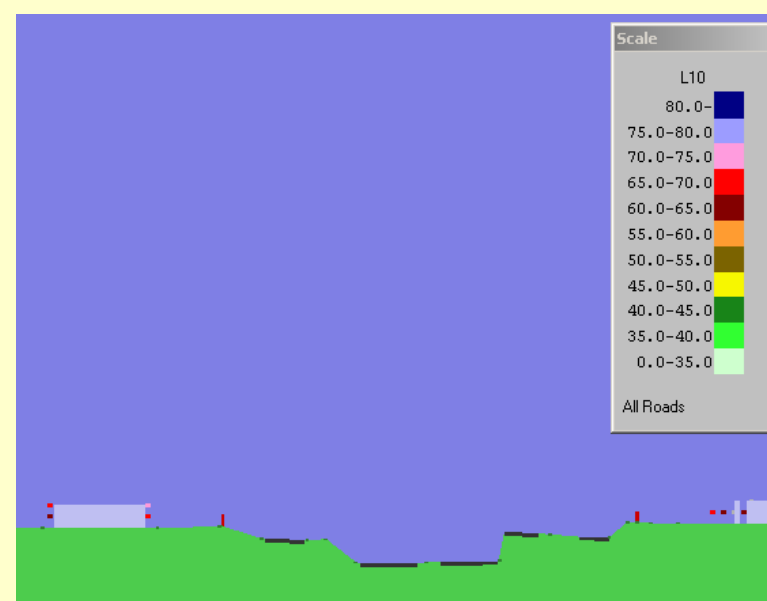
They show the position of noise sources, buildings, topography and ground formation, and noise barriers at a scale of your choosing.

The receiver points are also shown and can be coloured according to their noise level. This provides a rapid visualisation of the variation of noise in the vertical plane.

## Calculation time period

You can set the calculation time period for Road, Rail and Site Noise calculations to a value of your choice.

For Road Traffic Noise Calculations, you can calculate  $L_{den}$  from a variety of time periods, and you can even calculate individual hourly noise levels and then scroll through them in the noise contour display.



**Traffic Flow Manager**

Select cells to edit data, create new flow directly in the list, or use the Add or Delete buttons:

Flow Information						18Hr/1Hr/00:00-01:00		
ID	Name/Description	Root Scenario	Use	Flow Type	Grad. Corrected	Flow	Speed	%HGV
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	5633	14.0	4.3
12...	B524	Base Scenario	0	1 Hr	Not Corrected	1921	14.0	2.8
12...	B524	Base Scenario	0	D/E/N	Not Corrected	7502	3.0	3.9
12...	unclassified	Base Scenario	0	24 Hr	Not Corrected	7230	13.0	5.3
12...	B524	Base Scenario	0	18 Hr	Not Corrected	7013	12.0	3.6
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	6663	23.0	3.6
12...	<b>unclassified</b>	<b>Base Scenario</b>	<b>3</b>	<b>18 Hr</b>	<b>Not Corrected</b>	<b>7296</b>	<b>31.0</b>	<b>3.9</b>
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	3167	9.0	4.0
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	7715	8.0	3.7
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	8374	9.0	5.2
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	6515	13.0	3.7
12...	<b>unclassified</b>	<b>Base Scenario</b>	<b>2</b>	<b>18 Hr</b>	<b>Not Corrected</b>	<b>4918</b>	<b>7.0</b>	<b>3.5</b>
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	2605	11.0	3.4
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	8750	7.0	3.7
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	3275	8.0	4.0
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	2366	7.0	5.0
12...	unclassified	Base Scenario	0	18 Hr	Not Corrected	9282	14.0	4.9
12...	<b>unclassified</b>	<b>Base Scenario</b>	<b>1</b>	<b>18 Hr</b>	<b>Not Corrected</b>	<b>9397</b>	<b>15.0</b>	<b>4.9</b>
12...	<b>unclassified</b>	<b>Base Scenario</b>	<b>2</b>	<b>18 Hr</b>	<b>Not Corrected</b>	<b>115...</b>	<b>14.0</b>	<b>3.2</b>
12...	<b>unclassified</b>	<b>Base Scenario</b>	<b>6</b>	<b>18 Hr</b>	<b>Not Corrected</b>	<b>5683</b>	<b>17.0</b>	<b>2.9</b>
12...	<b>unclassified</b>	<b>Base Scenario</b>	<b>3</b>	<b>18 Hr</b>	<b>Not Corrected</b>	<b>5036</b>	<b>8.0</b>	<b>4.4</b>
13...	GLOUCESTER PLA...	Base Scenario	0	18 Hr	Not Corrected	17446	20.0	9.3
13...	GLOUCESTER PLA...	Base Scenario	0	18 Hr	Not Corrected	17446	20.0	9.3

Add Flow Delete Flow Select Roads Help Close

## Traffic flow management

Traffic flow data is presented in tabular form to make it easy to read large sets of data. Traffic flows assigned to road segments are shown in bold and the number of segments assigned is given.

When you select a road segment, the corresponding line of traffic flow data is highlighted for convenience. You can also highlight the roads using any particular traffic flow.

You can use 18-hour, 1-hour, day/evening/night or 24x1-hour flows.

Traffic flows can be entered manually into the traffic flow table, or can be imported from a spreadsheet, which can be useful when obtained from traffic modelling software.

You can easily assign different sets of traffic flow data to the same model, simply by importing a new set of traffic data using the same reference numbers, and saving them to a new scenario.

**Plant Manager**

Select cells to edit data, create new plant directly in the list, or use the Add or Delete buttons:

ID	Name/Description	Source Type	Level dB(A)	Height	31.5Hz	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
1	Wheeled mob tele crane	Sound Po...	106.0	1.0	98.0	100.0	103.0	102.0	100.0	99.0	97.0	96.0	85.0
2	Lorry (loading)	Sound Po...	110.0	1.0	97.0	109.0	105.0	106.0	103.0	100.0	100.0	98.0	88.0
3	Lorry (moving)	Sound Po...	111.0	1.0	97.0	108.0	109.0	109.0	108.0	105.0	104.0	102.0	90.0
4	Lorry (stopping)	Sound Pow...	104.0	1.0	91.0	103.0	99.0	100.0	97.0	94.0	98.0	96.0	93.0
5	Mixer truck and pump ...	Sound Po...	103.0	1.0	95.0	97.0	100.0	101.0	97.0	95.0	94.0	93.0	88.0
6	Tower lights	Sound Po...	93.0	0.0	81.0	83.0	89.0	90.0	87.0	84.0	88.0	85.0	79.0
7	Kango 900 k hammer breaker	Sound Pow...	107.0	0.0	90.0	101.0	103.0	103.0	101.0	101.0	98.0	97.0	89.0
8	Road breaker (hand pneum...	Sound Pow...	110.0	0.0	93.0	104.0	106.0	107.0	104.0	107.0	106.0	106.0	101.0
9	Road breaker (hand - oner...	Sound Pow...	124.0	0.5	103.0	114.0	116.0	118.0	114.0	119.0	118.0	116.0	102.0
10	Compressor	Sound Pow...	93.0	0.5	81.0	84.0	90.0	91.0	88.0	85.0	88.0	83.0	80.0
11	10 kVA Generator	Sound Pow...	102.0	1.0	94.0	96.0	99.0	100.0	98.0	97.0	94.0	90.0	82.0
12	Tracked excavator	Sound Pow...	104.0	1.0	96.0	98.0	101.0	102.0	101.0	100.0	96.0	92.0	85.0
13	Tracked excavator & breaker	Sound Pow...	119.0	1.0	106.0	113.0	116.0	117.0	117.0	115.0	111.0	107.0	98.0
14	360 deg excavator & breaker	Sound Pow...	106.0	1.0	98.0	100.0	101.0	104.0	103.0	102.0	98.0	92.0	85.0
15	Core drill	Sound Pow...	98.0	1.0	80.0	91.0	93.0	94.0	92.0	90.0	87.0	86.0	85.0
16	Angle grinder 110 v	Sound Pow...	108.0	1.0	90.0	101.0	103.0	104.0	103.0	101.0	98.0	96.0	95.0
17	Poker vibrator	Sound Pow...	106.0	0.0									
18	Hand-held circular saw	Sound Pow...	115.0	0.0									
19	Grout mixer & pump	Sound Pow...	108.0	0.5									
20	Vibratory plate	Sound Pow...	108.0	0.5									
21	Diesel pump	Sound Pow...	96.0	0.5									
22	360 deg wheel excav PC110	Sound Pow...	86.0	0.5									
23	360 deg wheel excav PC110	Sound Pow...	86.0	0.5									

Add Plant Delete Plant Help Close

## Plant database

You can build up a comprehensive database of plant to be used in civil engineering projects which you can then import into different noise models.

Plant data can be entered as a sound power level, an  $L_{Aeq}$  at 10 m or an  $L_{Amax}$  at 10 m, and can include just the A-weighted value or also an octave spectrum.

It is then simple to assign the required plant to a particular work activity.

Each item of plant need only be entered once and can be used in any number of activities.

**Activity Manager**

Select cells to edit data, create new activities directly in the list, or use the Add or Delete buttons:

ID	Activity Name/Plant ID	Plant Type	Categ...	% On Time	Speed	Flow	Use
1	Wheeled mobile crane	15	1	90.0	0.0	0.0	1
2	Lorry (loading)	25	1	50.0	0.0	0.0	1
	2: Lorry (loading)	Station...	1	50.0	0.0	0.0	
	22: 360 deg wheel excav PC1...	Station...	1	50.0	0.0	0.0	
	Select plant...						
3	Lorry movement on access rd	1H	1	20.0	20.0	2...	1
4	Concrete mixer truck	15	1	25.0	0.0	0.0	1
5	Tower lights	15	1	0.0	0.0	0.0	2
6	Kango 900 K hammer						0

Add Activity Insert Plant Delete Select Workings Help Close

## Activity Manager

You can have any number of civil engineering activities in a model and each activity can use any number of items of plant.

Moreover, each activity can be placed at any number of working locations, which is often required when modelling different phases in the progress of the work.



# Mapping the way to a quieter future

## Working locations

A working location can have any number of activities located at it. To add activities to a working location, you firstly select the location and in the properties window (shown here) you select from the drop-down list of activities, those that you want to be added to this location.

The properties windows are clear and consistent, showing all the parameters that affect the object.

A simple help prompt at the bottom of the window gives you a brief reminder of the selected property and the Help button will open the detailed User Manual at the correct page to give you comprehensive guidance.

Road, rail and other objects have similar property windows relevant to their specific parameters.

## Railway noise

Large railway networks can be simply modelled in NoiseMap. You can import a database of rail vehicles from a spreadsheet or other data source and import the rail network from digital mapping. You can then enter detailed train services on the network. Each service can have any number of different types of vehicle in it, and the speed and power setting can vary on each section of track. You can enter maximum speeds allowable on each section of track and a generic speed for the service so you do not have to make speed settings for each track segment unless you need to.

You can calculate the noise level averaged over any operational period.

## Distributed calculations

Very large models can take a considerable amount of calculation time. The total time can be reduced by distributing the calculations between many computers, using the remote database system.

An easy-to-use database administrator tool lets you set up new databases, add users and control the calculation queue, and the efficient design of the database lets you locate your file system anywhere in the world.

## Standalone noise models

If you do not need to share noise models simultaneously with others, or to make distributed calculations, NoiseMap can work in a standalone manner without requiring a dedicated server, even on a simple laptop.

Fixed Working Properties	
Number	4
Identifier	
TOID	No TOID assigned
Modified	29/10/2009 23:43:21
Root Scenario	2: Scenario 1 (day)

Object Position	
X Position (m)	527909.0
Y Position (m)	182151.9
Height (m)	28.6
Local Height (m)	0.0
Calculate Height	Select method to calculate height...
Tile	42016D

Fixed Working Parameters	
Ground Type	Soft Ground
First Effective Barrier	1

Working Activities					
ID/Name	Category	% On Time	Speed	Flow	
2: Lorry (loading)	1	50.0	0.0	0.0	
5: Tower lights	1	0.0	0.0	0.0	
Select activity to insert...					

**Activity Location Properties**  
Activities currently assigned to working. Edit activity location parameters to override default settings from the activity.

ID	Service Name/Vehicle ID	Category	Cars	Speed	Flow / 1.0hr	Power	Use
1	Tourist service	20: Railway	---	60.0	2.0	Off Po...	11
	1: Diesel Loco	20: Railway	1				
	2: Rolling stock	20: Railway	5				
	Select vehicle...						
*	Enter new service name or ID...						

Add Service Insert Vehicle Delete Select Tracks Help Close

**Calculation Queue**

Queue Status  
Total requests: 20 total, 18 pending, 2 calculating/active, 0 disabled  
Calculations: 20 total, 18 pending, 2 calculating, 0 disabled  
Image generation: 0 total, 0 pending, 0 active, 0 disabled  
Most Recent: Active/Calculating Contour Calculation - m4\_m5-hsr (opened sept 09), Tile 2d4171 (3), Scenario 4, RoadNoise - CRTN 2005 (L10, Ld, Le,...

Queued Calculation Requests

Show requests of type: All Types Show calculation method: All Methods Download

Show requests from: 01/01/2000 00:00:00 Show requests up to: 10/11/2009 23:59:59

Database/Tiles	Status	Order	Request Type	Calculation Type	Height	Res	Categories	Queued/Started
frantest	2 pending, 0 calculating/active, 0 disabled							19/10/20...
Tile 00d003 (...)	Pending	1	Contour ...	SiteNoise - ...	2...	2...	1,2,3...	19/10/200...
Tile 00e003 (...)	Pending	2	Contour ...	SiteNoise - ...	2...	2...	1,2,3...	19/10/200...
granthon	0 pending, 1 calculating/active, 0 disabled							09/09/20...
Tile 517265 (...)	Active/Calculating	1	Contour ...	RoadNoise ...	1...	1...	1	29/06/200...
m456_erc	16 pending, 0 calculating/active, 0 disabled							10/11/20...
a987_north	0 pending, 1 calculating/active, 0 disabled							15/10/20...
Tile 2d4171 (...)	Active/Calculating	1	Contour ...	RoadNoise ...	4...	1...	1	21/10/200...

Delete Enable Disable Export... Import...

# NoiseMap five

## Mapping the way to a quieter future



### Integrated road, rail and industrial noise maps

- from digital mapping
- from shapefiles
- from DXF files
- from bitmaps
- by hand
- automatic generation of receiver points

### Display noise maps in many ways:

- noise contour maps
- sum and difference contours
- individual receiver points
- façade noise levels
- 3-d perspective views
- contribution of noise from each source
- vertical noise contours
- web-based display \*
- ISO and custom colours
- full control over display process

### Wide choice of calculation method:

- Calculation of Road Traffic Noise (UK)
- Calculation of Railway Noise (UK)
- BS5228 (with enhancements)
- $L_{Aeq}$  (UK Noise Advisory Council)
- $L_{den}$  (UK Department of Environment)
- $L_{den}$  (Rep. of Ireland, Methods A and B)
- UK Highways Agency DMRB 2008 methods
- 1-hr, 18-hr and 24x1-hr traffic calcs
- any assessment period for Site and Rail

### Huge model sizes:

- practically unlimited model sizes†
- easy to create and store hundreds of scenarios
- script files for automated processing
- results are stored with the model
- database previewer for easy navigation
- simple for users to collaborate \*
- simple distributed calculations \*

### Easy to check accuracy:

- view-as-colour
- cross-sections
- 3-d perspective views
- one line per source output
- full calculation logs
- clear error reporting

### Flexible licence terms:

- permanent licences
- pay-as-you-go
- hire
- hire-purchase
- calculation-only

### Excellent user support:

- printed user manual (250 pages)
- 'How to' user guides
- on-screen context sensitive help
- on-line User Forum
- telephone and email support
- on-site training courses
- sample models
- compatibility with earlier versions
- specialist knowledge not required
- 25 yrs development by practitioners

### Powerful productivity tools

- improved object property windows
- multiple activities at each working location
- multiple types of vehicle in a train service
- standalone or distributed computing
- easy navigation
- import and export from spreadsheets, GIS, CAD, etc

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