

Guide to webTAG noise for non-experts

The government supports a risk-based approach to assessing the impacts of aviation noise. WebTAG provides a way of doing this which also allows for a comparison of impacts from different airspace change options.

Several respondents to the UK Airspace Policy consultation stated that they did not know how webTAG worked or how it could be used for the purposes intended. The information below is designed to give people a high level understanding of how webTAG can be used to value noise impacts as part of the airspace change options appraisal.

What is webTAG?

WebTAG is the Department for Transport's suite of guidance on how to assess the expected impacts of transport policy proposals and projects. This guidance covers various transport modes including; rail, road, aviation, walking and cycling. Although designed primarily for use by government, the guidance can be used by others, as all of webTAG is publically available.

WebTAG includes guidance documents, excel tools, excel data books and excel summary sheets.

The guidance relating to the environment, including noise (TAG Unit A3), is supported by excel workbooks. These workbooks can be used to monetise certain aspects of the noise impact, given the correct inputs are available.

WebTAG Noise Workbook

The webTAG noise workbook is a tool which assesses the impact of changes in noise exposure. This can be used to assess the impacts of a proposed airspace change compared to the current airspace arrangements. Multiple airspace options can be assessed in this manner.

For each one decibel change in average noise level, a monetary value is assigned for the change in the following health impacts: amenity (annoyance), acute myocardial infarction, dementia, stroke, and sleep disturbance. These values are based on the latest evidence from the World Health Organisation¹ on the link between noise exposure and health impacts, the government recognises they may not capture the full noise impacts experienced by everyone. WebTAG is regularly reviewed to consider how new evidence and methodologies should be incorporated.

This is not a comprehensive assessment of noise impacts. It is only currently possible to monetise the impacts listed above and to do so using average noise metrics. Despite these drawbacks, this approach allows decisions on transport schemes to take account, in a consistent manner, of the costs and benefits of different options of distributing noise.

How does webTAG calculate a value for health impacts?

The calculation is based on the probability of experiencing a negative impact from one of the health outcomes listed above. The impact of noise on an individual's health is subjective. Not everyone will experience the same adverse health impact at a given level of noise. Therefore we use evidence based probabilities to measure the likely impacts in a population. As the noise exposure increases so does the

¹ WHO (2011) Methodological guidance on estimating the burden of disease from environmental noise

probability of negative health impacts. The uncertainty means that health impacts can be valued for populations but should not be used to assess individual impact.

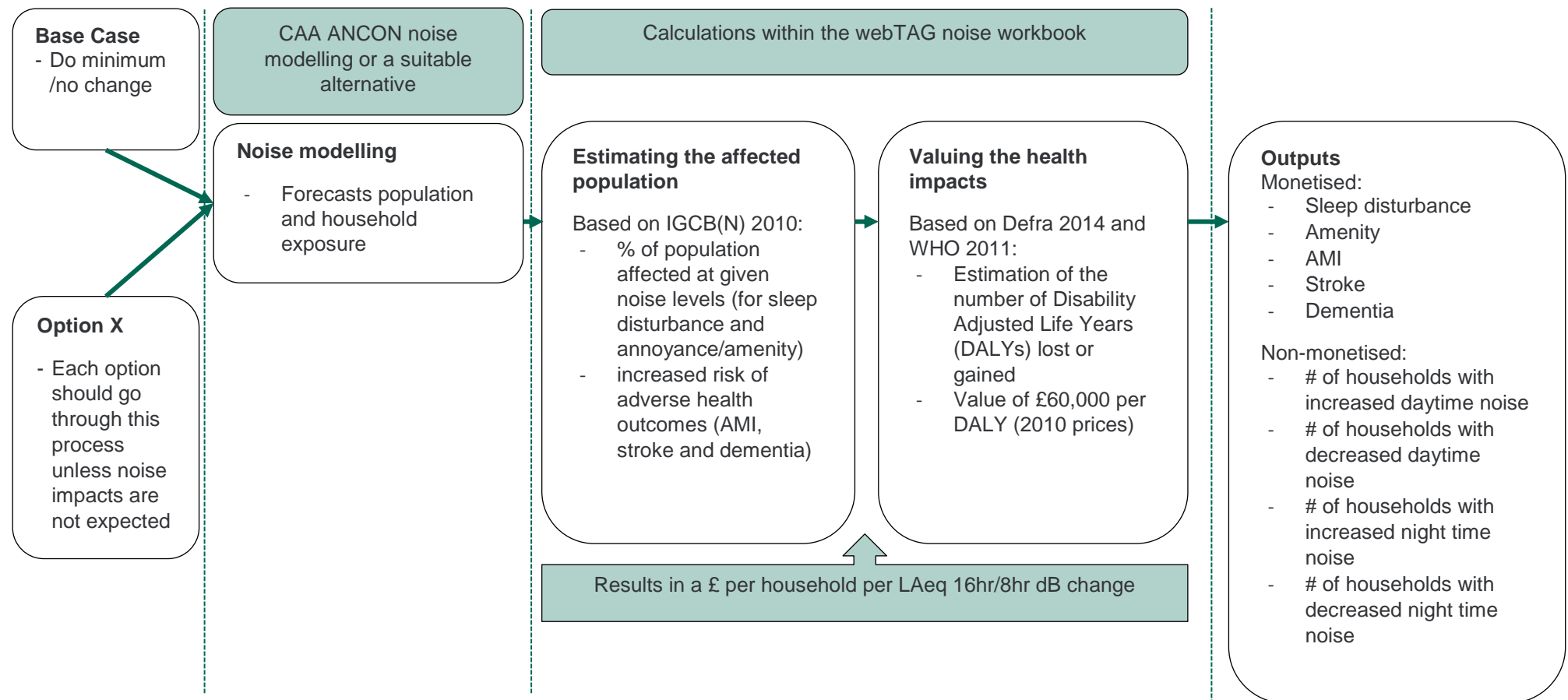
A decrease in noise exposure will result in a reduction in negative health impact (i.e. an improvement in health impacts), whereas an increase in noise exposure will result in an increase in negative health impacts. No change in noise exposure will result in no change in health outcomes.

For each option for an airspace change that is assessed, the noise tool is able to produce a value based on the total number of households that experience changes in noise exposure compared to what would happen if there was no change.

The inputs used in the noise workbook come from noise modelling forecasts which estimate the number of people and households exposed to different levels of aircraft noise.

See Figure X for an illustration of the noise assessment process.

Figure X: Illustration of the noise assessment process²



² References: CAA ANCON noise modelling – a model used to map and forecast noise from aviation, managed by the Environmental Research and Consultancy Department of the Civil Aviation Authority, see <https://www.caa.co.uk/Environment/Noise/Features-of-the-ANCON-noise-modelling-process/>
IGCB(N) (2010), Noise & Health – Valuing the Human Health Impacts of Environmental Noise Exposure, available at: <http://webarchive.nationalarchives.gov.uk/20130123222346/http://archive.defra.gov.uk/environment/quality/noise/igcb/documents/igcn-noise-health-response100707.pdf>
Defra, (2014), Environmental Noise: Valuing impacts on: sleep disturbance, annoyance, hypertension, productivity and quiet, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/380852/environmental-noise-valuing-impacts-PB14227.pdf
WHO, (2011), Burden of disease from environmental noise, available at http://www.euro.who.int/_data/assets/pdf_file/0008/136466/e94888.pdf
DALYs are presented in 2010 prices for consistency purposes, this can be adjusted within the workbook.

A worked example

The example below shows the impacts of a hypothetical airspace change compared to the existing arrangements (the baseline scenario). Two sets of inputs are needed for this process:

1. The number of households³ experiencing different noise levels (in bands of 3dBLeq) in the baseline scenario and the option proposed (without scheme and with scheme scenarios) for the opening year
2. The number of households experiencing different noise levels (in bands of 3dBLeq) in the baseline and the option proposed (without scheme and with scheme scenario) for the final year (the final year is decided by the change sponsor in line with CAA guidance).

These inputs should be produced through noise modelling. This process should be carried out for each of the options where noise impacts are expected.

In the tables below, the number of households experiencing a reduction in noise compared to the baseline scenario are shown in green, whereas those who experience more noise are in red, and those with no change in yellow.

Figure X: Opening year - no. of households experiencing 'baseline/without scheme' and 'proposed option/with scheme' noise levels

(dB Leq, 16h)	With scheme	<45	45-48	48-51	51-54	54-57	57-60	60-63	63-66	66-69	69-72	72-75	75-78	78-81	81+
Without scheme															
<45		3794300	87200	4600											
45-48		30450	419250	67500	11200										
48-51			17750	180850	46400	14700									
51-54				20550	97200	29800	7900								
54-57					36350	42200	12600								
57-60					16300	11400	22550	2600							
60-63					1050	5050	4000	18250	100						
63-66								900	14500	100					
66-69										7300	50				
69-72											3950				
72-75												6150			
75-78															
78-81															
81+															

Figure X: Forecast year - no. of households experiencing 'baseline/without scheme' and 'proposed option/with scheme' noise levels

(dB Leq, 16h)	With scheme	<45	45-48	48-51	51-54	54-57	57-60	60-63	63-66	66-69	69-72	72-75	75-78	78-81	81+
Without scheme															
<45		3794300	87200	4600											
45-48		30450	419250	67500	11200										
48-51			17750	180850	46400	14700									
51-54				20550	97200	29800	7900								
54-57					36350	42200	12600								
57-60					16300	11400	22550	2600							
60-63					1050	5050	4000	18250	100						
63-66								900	14500	100					
66-69										7300	50				
69-72											3950				
72-75												4800			
75-78															
78-81															
81+															

For the simplicity of this example, only daytime noise is considered. This will result in expected values for the change in amenity (annoyance), acute myocardial infarction,

³ Health impacts are related to the number of people affected. There is an assumption in the model on the average number of people in a household. This is set at the national average, 2.3, but can be adjusted to reflect local circumstance.

dementia and stroke. However a separate assessment can also be carried out for night time noise which will provide results for changes in sleep disturbance.

The results are calculated separately for each of the health impacts listed above. Results are based on the change in noise multiplied by the number of people affected, taking account of the value of health impact. The final outputs include:

- A monetary cost for each health impact
- The number of households experiencing changes (increases and decreases presented) in either day time or night time noise

Figure X: Example output sheet from webTAG noise workbook

Noise Workbook - Worksheet 1	
Proposal Name:	Hypothetical webTAG example
Present Value Base Year	2010
Current Year	2017
Proposal Opening year:	2018
Project (Road, Rail or Aviation):	aviation
Net present value of change in noise (£):	-£28,315,621
<small>*positive value reflects a net benefit (i.e. a reduction in noise)</small>	
Net present value of impact on sleep disturbance (£):	£0
Net present value of impact on amenity (£):	-£25,922,110
Net present value of impact on AMI (£):	£390,098
Net present value of impact on stroke (£):	-£1,104,598
Net present value of impact on dementia (£):	-£1,679,011
Quantitative results	
Households experiencing increased daytime noise in forecast year:	284750
Households experiencing reduced daytime noise in forecast year:	143800
Households experiencing increased night time noise in forecast year:	n/a
Households experiencing reduced night time noise in forecast year:	n/a
Qualitative Comments:	
Data Sources:	

Further Information

More detailed information on how webTAG can be applied to assess noise impacts of airspace changes can be found in the Air Navigation Guidance published alongside this government response. For other information relevant to this topic please see:

- DfT (2017) “TAG unit A3 environmental impact appraisal, December 2015”, <https://www.gov.uk/government/publications/webtag-tag-unit-a3-environmental-impact-appraisal-december-2015>
- DfT (2017) “WebTAG: environmental impacts worksheets”, see Local Air Quality workbook, Greenhouse gases workbook and Noise workbook, <https://www.gov.uk/government/publications/webtag-environmental-impacts-worksheets>