Strategic noise mapping

Explaining which noise sources were included in 2017 noise maps

July 2019

Contents

Background

Environmental noise mainly consists of noise from transport sources such as road, rail and aviation. One of the ways Defra manages this noise is by implementing the [Environmental Noise Directive (END)](#) (Directive 2002/49/EC) which is transposed into English law by the Environmental Noise (England) Regulations 2006 (as amended).

The END requires that, every 5 years, Defra:

1. adopts noise maps which show people's exposure to environmental noise;

2. adopts action plans based on the results of noise mapping

3. aims to preserve environmental noise quality where it is good; and

4. provides information to the public on environmental noise and its effects;

This document relates to the maps produced for the third round of this 5 yearly cycle (hereafter referred to as "Round 3").

Defra is responsible for creating noise maps and drawing up Action Plans for most of the noise sources. The exception is airports where responsibility lies with the relevant airport operators[1].

Noise mapping

In order to create the noise maps, the main sources of environmental noise need to be identified. Under the END the following sources are considered:

- Agglomerations (large urban areas);
- Major Airports;
- Major Railways; and
- Major Roads.

Resources for END Round 3 noise mapping were prioritised to focus on the most significant changes in the noise environment since the previous round of noise mapping in 2012. This has resulted in some differences in the approach to mapping each of the above noise sources, as detailed in the following sections.

Maps were made using computer modelling techniques, based on information such as traffic flow or vehicle type data. No actual noise measurements were made in the production of the strategic maps. Therefore mapping data – although useful in helping

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[1] For designated airports (Gatwick, Heathrow & Stansted) the competent authority for the strategic noise mapping is the Department for Transport.

authorities to identify priority areas for investigation – does not necessarily represent an exact picture of the current situation on the ground at any given locality.

Noise action planning

The data generated by the noise mapping process is used to inform the drafting of noise action plans for road, rail, agglomerations and individual airports. These have been published with the noise mapping data on GOV.UK and on individual airport websites. Datasets for noise "important areas" (noise hotspots) as well as population exposure figures are published at the same time.

Agglomerations

Agglomerations are large urban areas. These are defined under the END as an area with a population in excess of 100,000 persons and a population density equal to or greater than 500 people per km^2, which the Secretary of State considers to be urbanised. Within the agglomeration area all motorways and A class roads and all mainline railways (as defined by Network Rail) were used as noise sources for the mapping, regardless of the flow of traffic and trains on these routes.

Agglomerations for END Round 3 have not changed from those mapped in END Round 2. These were defined using the Ministry for Housing, Communities and Local Government's Urban Settlements 2001 dataset. All urban areas within 200m of one another were combined into a single entity. The total population for each entity was calculated using Census 2001 data by Census Enumeration District linked to the Ordnance Survey (OS) Address Point database. Those with a total population greater than 100,000 (65 in total) were identified as Agglomerations and are shown in Figure 1 below[2].

The Geographic Information Systems (GIS) data on agglomerations can be found at: https://environment.data.gov.uk/dataset/4739c0c3-e800-4cb1-89cd-e71115b191e9

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[2] A list of agglomerations can be found in END Round 3 noise action plans.

Figure 1. Agglomerations in England
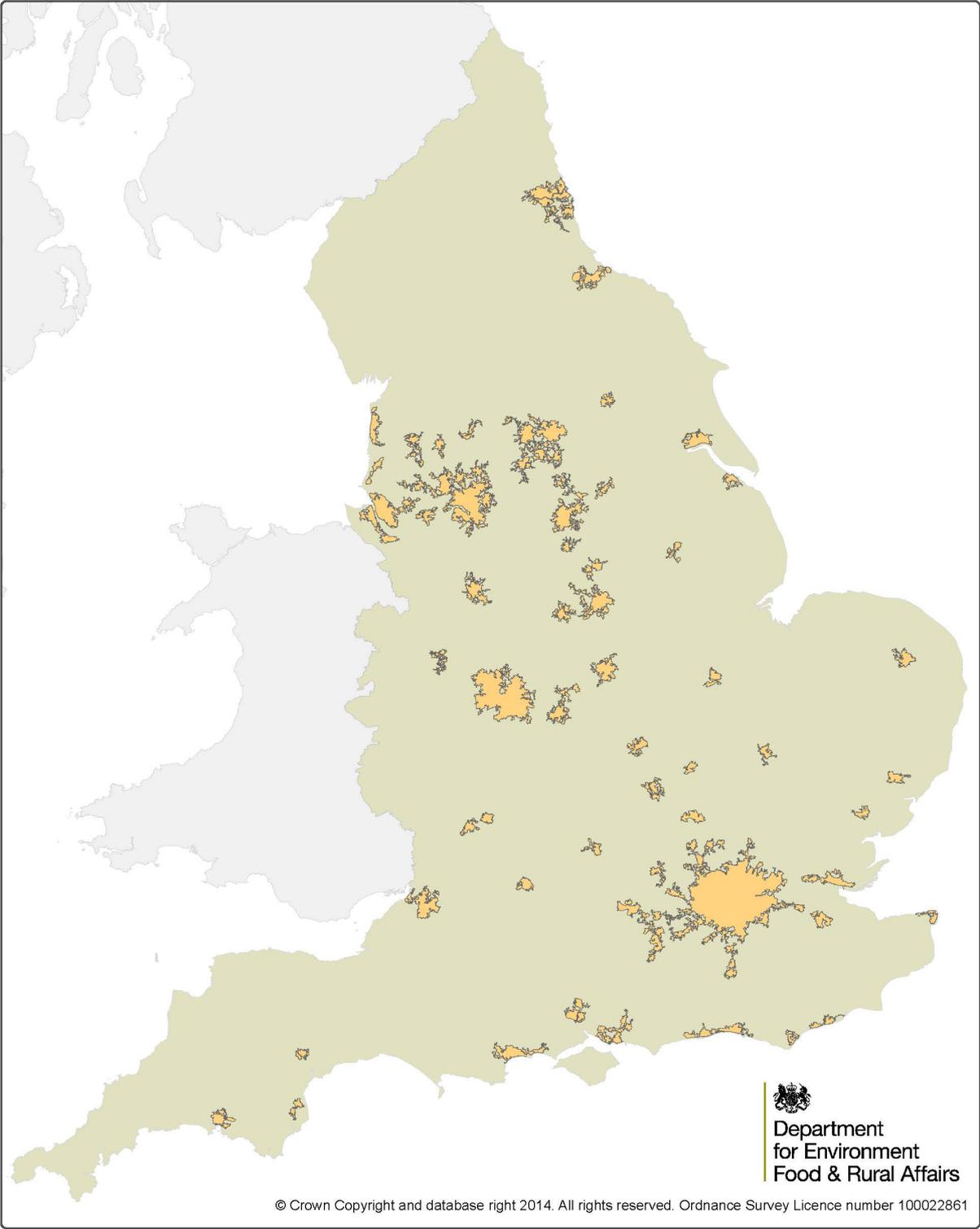
Airports

Under the END, noise from two kinds of airports are mapped; Major Airports and non-major airports which may impact upon an agglomeration.

Major Airports are defined by the END as those with 50,000 or more plane movements per year (excluding light aircraft used purely for training purposes). The Major Airports for Noise Mapping 2017 were identified using the Civil Aviation Authority's https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/Airports/Datasets/UK-Airport-data/Airport-data-2016/ . Major airports are indicated by the * symbol in the list below.

Airports which have an impact on an Agglomeration are defined as those where air traffic results in noise levels of: greater than or equal to 55dB L_{den}[3] averaged over 24 hours; or 50dBA L_{night} averaged over the hours between 23:00 and 07:00.

The following airports undertook noise mapping in 2017. Data from the 2015 mid-census estimates was used to generate updated population exposure figures. The resulting Noise Action Plans are published on the individual airports' websites.

- Birmingham International*
- Bournemouth
- Bristol*
- Cambridge
- East Midlands*
- Leeds Bradford
- Liverpool John Lennon
- London City*
- London Gatwick*
- London Heathrow*
- London Luton*
- London Stansted*
- Manchester International*
- Newcastle International*
- Southampton
- Southend
- Wycombe Air Park

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[3] A-weighted, Leq noise level, measured over the 24 hour period, with a 10 dB uplift added to the levels between 23.00 and 07.00 hours and a 5 dB uplift added to the levels between 19.00 and 23.00 hours to reflect people's extra sensitivity to noise during the night and the evening.

Major railways

Major Railways as defined under the END are those sections of rail route above a flow threshold of 30,000 vehicle passages per year. Where more than one line follows the same route, forming a "corridor", the flow on each line is summed to give the total flow for that section.

The Major Railways for Noise Mapping 2012 were identified using a subset of Network Rail's Actual Traffic (ACTRAFF) database (managed by DeltaRail on behalf of Network Rail - not publicly available at the time) for the 12 months to September 2011 inclusively (see Figure 2 below).

National level scoping was undertaken for the rail network prior to the Round 3 maps being produced. This indicated that noise level changes were likely to be less significant in comparison to changes in road and aviation noise. The Round 3 rail noise mapping has therefore focused on updating population exposure data using 2015 mid-census estimates.

The Geographic Information Systems (GIS) data on noise from railways in England can be found at:

Rail Noise Indicator	Weblink
L_{DEN}	https://environment.data.gov.uk/dataset/e8e78e12-9297-450b-b875-e0523cb3c9ea
$L_{Aeq,16hr}$	https://environment.data.gov.uk/dataset/b9c6bf30-a02d-4378-94a0-2982de1bef86
L_{Night}	https://environment.data.gov.uk/dataset/f6c0e3b6-3186-4d0a-b0e7-ca32bfb6573f

Figure 2. Major railways in England 2017

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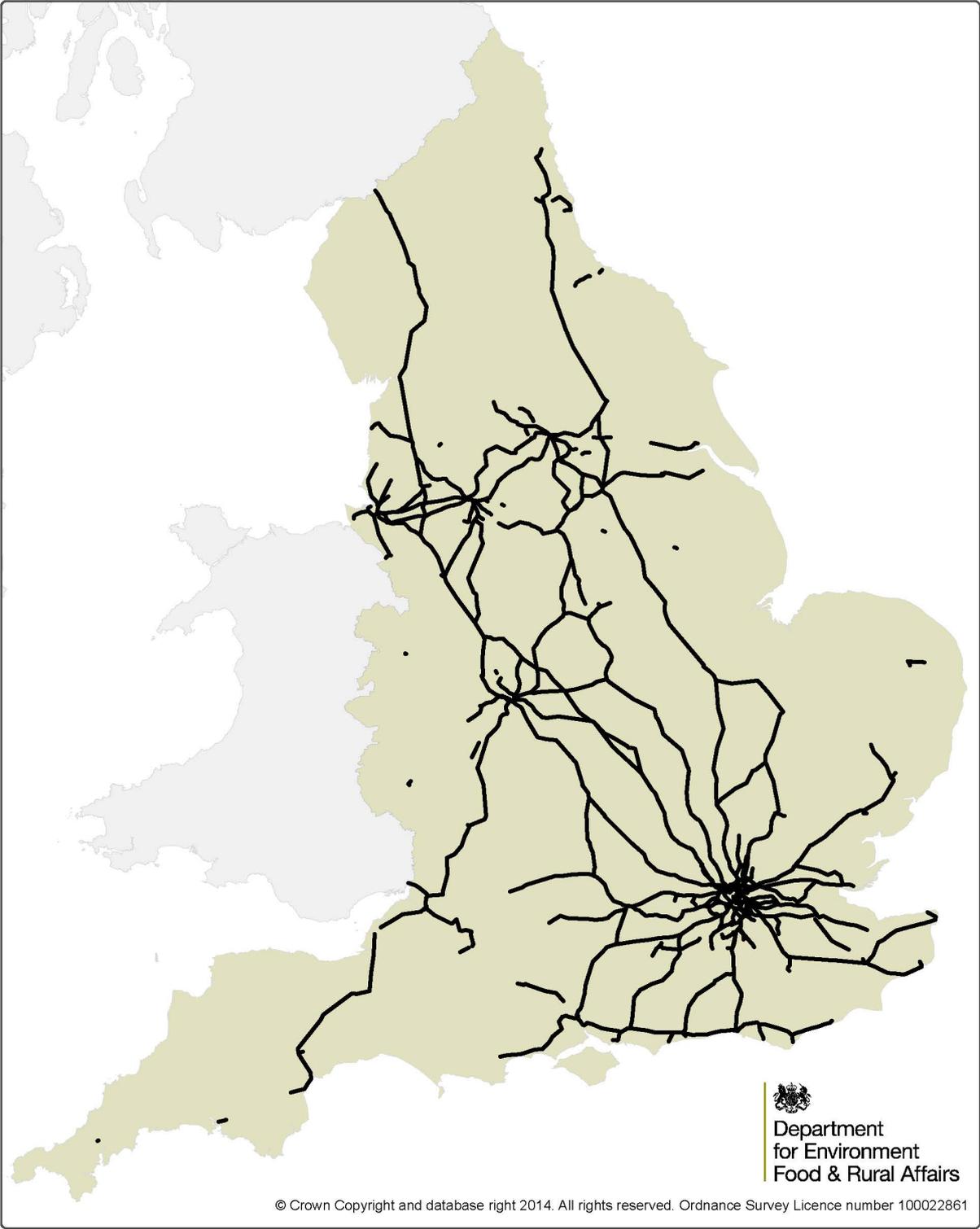
Major roads

Major Roads are defined under the END as regional or national sections of road which have a bi-directional flow of 3 million vehicle passages or more per year. The Major Roads for Noise Mapping 2017 were identified using the Department for Transport's [Transport Statistics Major Roads](#) data (see Figure 3 below).

National level scoping indicated that changes to noise exposure on the road network were likely to have occurred fairly widely. Mapping for the road network in England was therefore updated using 2015/16 traffic flow data where available. Population exposure data has also been updated using 2015 mid-census estimates.

The Geographic Information Systems (GIS) data on noise from roads in England can be found at:

Road Noise Indicator	Weblink
L_{DEN}	https://environment.data.gov.uk/dataset/fd1c6327-ad77-42ae-a761-7c6a0866523d
$L_{Aeq,16hr}$	https://environment.data.gov.uk/dataset/b9c6bf30-a02d-4378-94a0-2982de1bef86
L_{Night}	https://environment.data.gov.uk/dataset/cc48e728-602a-4e8a-9221-49f661ab58f8

Figure 3. Major roads in England 2017

Legend:
- Motorway
- A-Road

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