

TECHNICAL NOTE:

Edinburgh Airport new SIDs ACP – reworking of noise contours for revised Runway 06 SIDs

Introduction

ERCD was commissioned by NATS to rework the Edinburgh Airport ACP summer day Leq contours to account for the revised departure routes from Runway 06. The results of the previous noise assessment were summarised in the CAA Technical Note, *Edinburgh Airport new SIDs ACP - summer day Leq contours for finalised route usage*, dated 6 September 2017.

The full set of departure routes is shown in **Figure 1**. Restrictions to SID route usage by time are proposed.

NATS advised that all the new routes would now be implemented in a single phase (2019). Two revised contour sets were therefore generated:

- 2019 – ACP implementation of all new SIDs; and
- 2024 – 5-year forecast from ACP implementation.

NATS also requested SEL footprints for the two aircraft types Boeing 737-800 and Airbus A330, for each of the 4 new Runway 06 SIDs.

Methodology

Edinburgh Airport's definitions of 'day' and 'night' are 0600-2300 and 2300-0600 (local time) respectively. In addition, 'peak' hours are defined as 0600-1000. The standard Leq definitions are 0700-2300 for day and 2300-0700 for night (all local time).

The proposed restrictions to the usage of SIDs, which have been accounted for in the revised Leq contours, are summarised below:

- **A3-ARBOR** (-TALLA) is used by jets and turboprops over the 24-hour period. Flights previously allocated to D-HAVEN were assumed to use A3-ARBOR.
- **B2-BEECH** (-CUMBO/-GOSAM) is only available to transatlantic jets during the day.
- **B5-BRIER** (-GOSAM) is available to jets only, over the 24-hour period.
- **C-CEDAR** (-GRICE) – no change to assumptions employed in the previous modelling work.

- **EMJEE 1D** replaces the previous E-ELDER Option 2 route. This SID is restricted to use by jets during the day period (i.e. 0700-2300 in the Leq day period). As was the case for the modelling undertaken in September 2017, traffic previously assigned to the H-GOSAM route was shifted to EMJEE 1D.
- **GRICE 1D** replaces the F-FLORA Option 2 route and is available to all aircraft types over the 24-hour period.
- **VOSNE 1D** replaces the G-DOWEL route and is restricted to use by jets but is available over the 24-hour period.
- **KRAGY 1D** replaces the H-HEATH route and is used by turboprops during the day period.

The numbers of each aircraft type operating within the Leq daytime period on each route were derived from a combination of (a) the 2016 movement data previously supplied by NATS, which included the departure time for each flight, (b) the ACP SID distribution statistics that were previously supplied by NATS, and (c) the above SID route restrictions.

The following traffic growth figures as supplied by NATS have been modelled:

- 2016 to 2019 (ACP implementation year): 2016 + 7.4%;
- 2016 to 2024 (ACP implementation + 5 years): 2016 + 20.0%.

All other modelling assumptions have remained the same as the previous assessment of September 2017.

Results

Leq contours

The 51-72 dBA contours for the two daytime Leq scenarios are shown in **Figures 2 & 3**. Estimates of the area, population and households within the contours, using an updated 2016 population database (based on the 2011 Census) supplied by CACI Ltd, are given in **Tables 1 & 2**.

SEL footprints

The 80 and 90 dBA SEL footprints for the Boeing 737-800 (ANCON type 'B738') and Airbus A330 (ANCON type 'EA33') are shown in **Figures 4 & 5**. Area, population and household estimates are given in **Tables 3 & 4**.

ERCD

29 March 2018

Table 1 Edinburgh 2019 summer day Leq contours with ACP implementation - area, population and household estimates

Leq (dBA)	Area (km ²)	Population	Households
> 51	60.5	32,200	13,300
> 54	33.1	9,800	4,100
> 57	18.2	4,100	1,800
> 60	9.9	2,100	900
> 63	5.5	400	200
> 66	3.1	200	100
> 69	1.8	< 100	< 100
> 72	1.0	0	0

Table 2 Edinburgh 2024 summer day Leq contours (ACP implementation + 5 years) - area, population and household estimates

Leq (dBA)	Area (km ²)	Population	Households
> 51	67.0	36,700	15,300
> 54	36.4	12,800	5,400
> 57	20.1	4,300	1,900
> 60	10.9	2,700	1,200
> 63	6.0	400	200
> 66	3.4	300	100
> 69	1.9	< 100	< 100
> 72	1.1	0	0

Note: Populations and households are given to the nearest 100. The population database used is a 2016 update of the 2011 Census supplied by CACI Ltd.

Table 3 Boeing 737-800 (B738) SEL footprints for new Runway 06 routes - area, population and household estimates

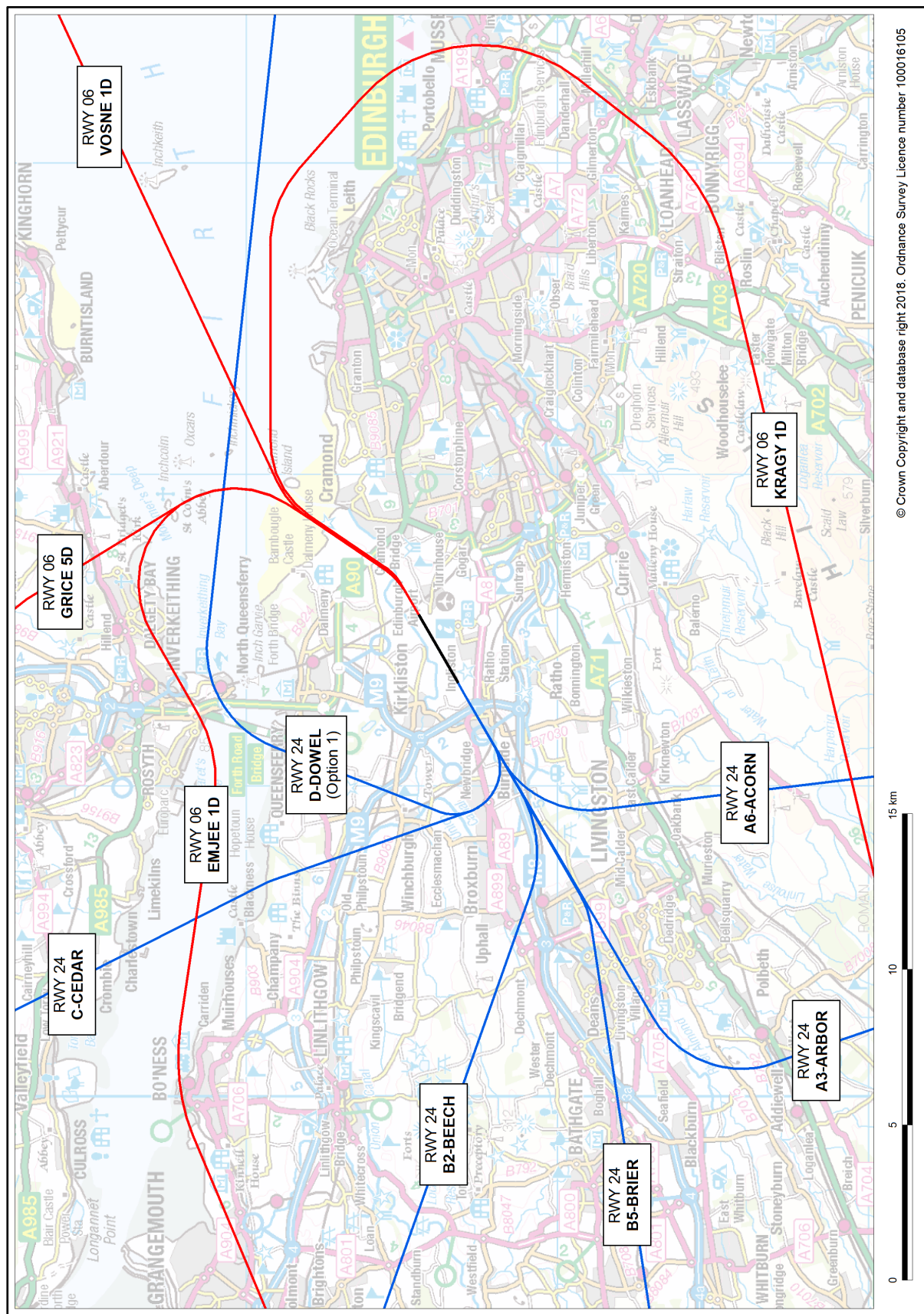
SEL (dBA)	Area (km ²)	Population	Households
EMJEE 1D			
> 80	25.6	3,700	1,600
> 90	4.7	100	< 100
GRICE 5D			
> 80	25.3	3,700	1,600
> 90	4.7	100	< 100
VOSNE 1D			
> 80	25.1	3,500	1,500
> 90	4.7	100	< 100
KRAGY 1D			
> 80	25.2	3,900	1,700
> 90	4.7	100	< 100

Table 4 Airbus A330 (EA33) SEL footprints for new Runway 06 routes - area, population and household estimates

SEL (dBA)	Area (km ²)	Population	Households
EMJEE 1D			
> 80	51.5	18,900	8,100
> 90	8.2	300	100
GRICE 5D			
> 80	53.7	9,300	3,900
> 90	8.2	300	100
VOSNE 1D			
> 80	50.9	6,800	2,900
> 90	8.2	300	100
KRAGY 1D			
> 80	50.9	7,000	3,000
> 90	8.2	300	100

Note: Populations and households are given to the nearest 100. The population database used is a 2016 update of the 2011 Census supplied by CACI Ltd.

Figure 1 Edinburgh Airport ACP SID routes (March 2018)



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Figure 2 Edinburgh 2019 average summer day (70% W / 30% E) 51-72 dBA Leq noise contours – with ACP implementation

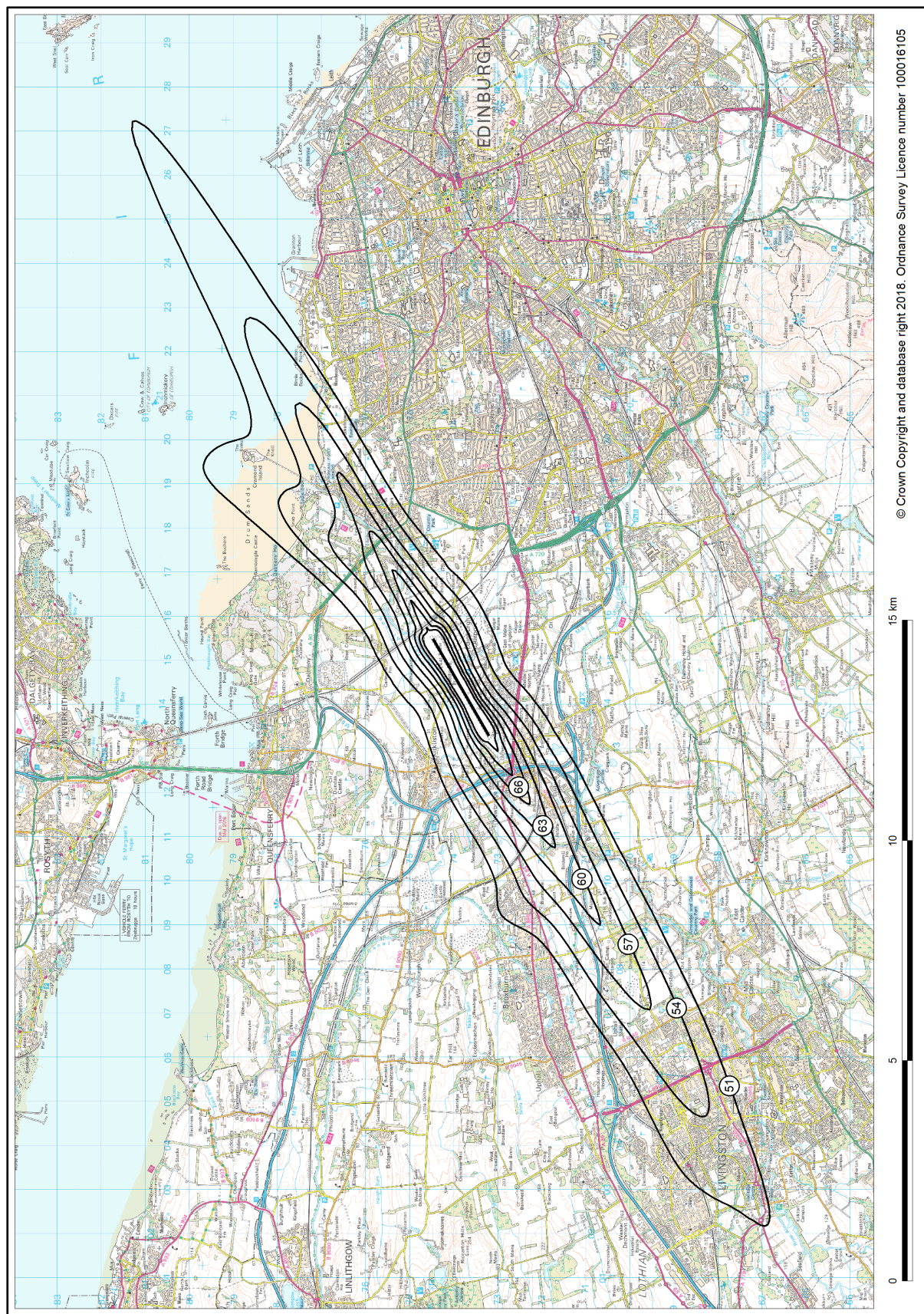


Figure 3 Edinburgh 2024 average summer day (70% W / 30% E) 51-72 dBA Leq noise contours – ACP implementation + 5 years

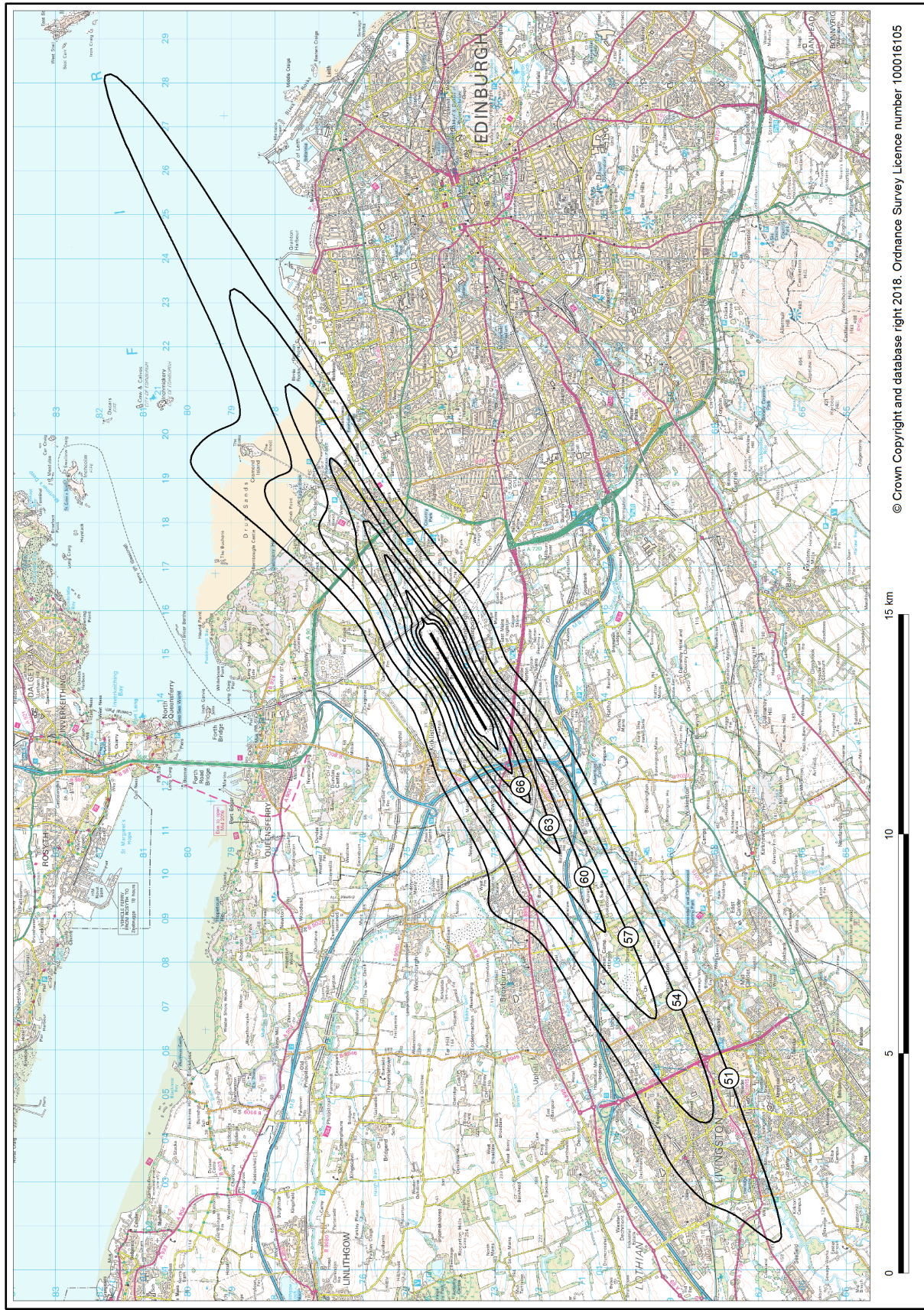


Figure 4 Boeing 737-800 (B738) departure SEL footprints for new Runway 06 ACP SID routes



Figure 5 Airbus A330 (EA33) departure SEL footprints for new Runway 06 ACP SID routes

