A critique of the Need Assessment in support of an application for a new crematorium at Turners Hill and a counter-statement to that application

John Dodsworth, Beacon Dodsworth Ltd, November 2020

Contents

1 Personal

1.1
I hold a BA in Physics from the University of Oxford.

1.2
I have forty years' experience in IT.
After a spell with IBM (UK), I led a research group at the University of Leeds working on modelling 3D objects for design and manufacture.
Co-founding Geomatrix in 1988, I designed and built one of the first GIS (Geographical Information Systems), Prospex, in the UK.
In 1994, most of Geomatrix moved to York and founded Beacon Dodsworth Ltd. We redeveloped Prospex and its supporting data.

1.3
My experience spans software development and consultancy in retail location, service distribution and transport studies. For example Transport Focus use Beacon Dodsworth's drive-time analysis in their surveys of road users. Our technology is also used for a travel expenses system in the NHS.

1.4
I have no conflict of interest with any party involved.

2 Introduction and background

2.1 An application was made for a new crematorium at Turners Hill (DM/20/2877). The supporting documentation from Peter Mitchell Associates is dated August 2020.

2.2 An objection and counter-statement was received dated 29/9/2020 from Clyde & Co acting on behalf of Dignity who operate two crematoria in the area.

2.3 In this document I will provide commentary on the relevant parts of these documents, in particular, the quantitative needs assessment and 4.20-4.27 of the objection.

3 Needs assessment

3.1
The quantitative needs case is based on two sources:

a) Data
b) Models

We need to assess the quality of these and the assumptions on which they are based.
We also need to look at the variation of the outputs based on any variation of the inputs. This "sensitivity analysis" will provide upper and lower bounds on the outputs.

3.2
The demographic data is from the ONS (Office for National Statistics).
ONS projections of population and deaths are based (mainly) on the last five years' data.
We can expect data for recent years to be accurate since they are based on measured data.
Even for these numbers, there are different interpretations, for example should students be counted in their place of normal residence or place of study (the ONS approach)? How should seasonal workers be counted? However, it is the most reliable data available.
Variability of the data published by ONS is discussed later.

Data on cortège speeds and travel patterns is not based on any measured data. It is a mixture of anecdotal evidence and generally agreed formulas that rely on the notion of "normal traffic speeds". As discussed later, this is also open to interpretation.

3.3
The road network is from Ordnance Survey and is Open Data. The locations of the crematoria use the postcode grid references in CodePoint Open, also from Ordnance Survey.
3.3
The model for calculating catchment areas uses the road speeds and a unit of geographical area for which we have population counts. The Needs Assessment uses HERE data for calculating areas and LSOAs (Lower Super Output Areas) as the smallest geographical unit.
There are various sources for drive time calculation including familiar ones such as Google, Bing and the RAC. None of these is definitive and they are designed to guide the naive road user. Drivers familiar with an area will often take different routes. This could well be the case where a cortège will behave differently from a normal private car user.

3.4
An LSOA has an average population of over 1,700 so its inclusion or exclusion in a catchment area can have a large effect on the total population for that area.

3.5
The capacity of a crematorium seems to give the widest range of dispute. There is the “hard” data of the number of chapels and number of slots and an agreed definition of core versus technical capacity. We need to try and understand the large discrepancy between the claimed figures on both sides.

3.6
I have used the paragraph numbering (bold) in the Needs Assessment.

6.6
The number of deaths is similar to Victorian times (approx 600,000 a year).

6.13
According to ONS, deaths in England are:
2019: 484,663 actual
2043: 648,695 projected
This is an increase of 34%, so broadly similar to the 37% quoted for UK deaths to 2117. There is some levelling in the projections after 2050 but the baseline year used elsewhere (e.g. **7.6**) for capacity is 2043.

However, as stated previously, ONS base their projections on the last 5 years and those have shown a rapid increase. Looking at a longer historical context, it is difficult to argue that such a sustained linear and rapid increase is likely unless current health improvements and medical treatments begin to slow.

In West Sussex the projected rate is larger than the national average:
2019: 8,953
2043: 12,514 projected
An increase of 39.8%

7.6
Using ONS figures, our analysis shows:

AREA	2020	2043	Increase
England	509,540	648,695	34%
Lewes	1,130	1,496	39%
Wealden	1,818	2,448	43%
Tandridge	857	1,109	34%
Mid Sussex	1,430	1,924	42%

The raw figures agree almost exactly but the percentage increase is wrong - perhaps the increases were measured originally against 2018 or 2019 figures.

7.7, 7.8

It is claimed that an increase in population over 65 years old means a larger increase in deaths.
This is not necessarily the case. It assumes that the death rate by age band remains constant, which it clearly hasn't done for several decades. Indeed, one of the reasons for an increasing median age is a lower mortality rate.

The projected increase of deaths in all ages is the only relevant statistic here: the age and mortality distribution is already accounted for in the ONS modelled projections.
These figures will be affected by government policy on immigration, health, diet, etc.

Demographic data does not show the qualitative need. It demonstrates the need for overall capacity but not the configuration. It is possible that capacity could be realised by expanding existing crematoria or new crematoria in a different location. This is not examined here.

8 - drive-time catchment analysis

8.1
"Quantitative need is established by quantifying the population that would be in closer proximity to the new crematorium than to existing crematoria and examining the current and future capacity for funerals available at existing crematoria."

The first part assumes that proximity is the most important criterion, which is later shown often not to be the case (**Appendix, 4**). In particular, relative proximity alone is not a factor when considering drive times of less than 30 minutes. See Appendix B.
There would be a qualitative improvement in that for some people a shorter journey would be more convenient.

8.5
In the quote:
"as a rule of thumb, the industry works on the basis that a funeral party should not have to undergo more than 30 minutes' drive to a crematorium."

8.9 - 8.20

8.9: *"...applied a factor of 0.6 to normal road traffic speeds to take account of cortège speeds".*

This "formula" is cited in 5.3.1 of the Competition and Markets Authority (CMA) report, the Funerals Market Study:
https://assets.publishing.service.gov.uk/media/5c9ba9bf40f0b633f6c52a7e/funerals_market_study_-_final_report.pdf

“We have analysed the cortege drive time (60% of full speeds) between all crematoria in the UK to understand the extent to which crematoria across the UK have alternative crematoria nearby.”

a) It is unknown what the source of the 60% factor is
b) There is no agreed definition of normal road traffic speeds, or “full” speeds. The speeds at which a private vehicle travels are affected by legal limits, time of day (traffic density, congestion, etc) and local conditions (weather, traffic calming measures, etc).
c) The 30 mins time is generally accepted with the understanding that greater times might be expected in rural areas.

8.19

“I am not persuaded that the 30-minute drivetime should be seen as a definitive limit as, due to the nature of this area, longer drive times may be more acceptable to residents.”
It seems to be generally agreed that the 30 mins limit be applied to urban areas in particular, but longer times are acceptable in rural areas. Clearly the effect of drive times is not binary: 29 mins is OK but 31 mins is not. However, to perform meaningful analysis we do need a rule of thumb.

This is important because of the sensitivity of the analysis to altering the speeds or limit (shown later).

8.21 - Funeral drive-time catchment mapping

8.22, 8.23

We can find no survey data about cortège speeds. Therefore we must build a model based on the “industry standard” as above - 60% of “normal” traffic speeds. This model is simplified because:
a) it is acknowledged that cortèges do not behave like a single private vehicle. The surrounding traffic behaves differently, often not overtaking. Cortège continuity is preserved. Acceleration/deceleration will be reduced. Some funeral directors avoid motorways.
b) We have to assume a time of day. Speeds in peak hours will be lower than the most required (core) slot times during the middle of the day (off-peak).
c) We will have to reduce speeds on larger roads in the model (e.g. motorways and dual carriageways) partly because the 60% rule would mean using speeds in excess of 40mph and partly to “discourage” the model from using those road types. This is important because there are such roads in the area (e.g. M23). If these roads are used by local funeral directors then the speed they travel at will affect the catchment area significantly (because they will form the majority of the journey’s length). According to government figures for average speeds, the average peak-time speed on the section of M23 north of Gatwick Airport is in the range of 21-30mph. Off-peak speeds will be greater even for this very busy stretch of motorway.
d) Many funeral directors’ web sites indicate that a cortège will travel at about 20mph. This is probably a good rule of thumb in urban and suburban areas. It is to be expected that this will increase outside these areas and on larger roads.

One piece of advice from a funeral director:

https://efbox.co.uk/aftercare-knowledge/etiquette/cortege/ suggests:
"Driving in the procession: First wait for the cortege to assemble. Turn your headlights on. Approximate speed 15-25 mph on roads increasing to around 35-40 mph on dual carriageways and 55-60mph on motorways."

Some funeral directors avoid motorways altogether (e.g. https://www.eastleighsindependentfunerals.co.uk/our-vehicles).

According to the RAC in https://www.racfoundation.org/motoring-faqs/mobility#:~:text=A41 "In 2019, average speeds were 69mph on motorways, 50mph on single carriageways, 31mph on 30mph limit roads, and on 20mph limit roads the average was higher than 20mph."

Although the 60% speed, 30 minutes' drive is accepted, it is noted that in the planning application APP/Z3825/A/14/2216102 (West Grinstead), the speeds used for modelling were 20mph in urban areas and slow-moving-vehicle (HGV) speeds in rural areas. In the Proof of Evidence in that case, APP/N3020/A/13/2208636, is cited

> *"I also note in passing that the appellants' case as to journey times is predicated on an assumed cortege speed of only 60% of the normal road speed. But the basis for adopting that assumption is far from clear. Certainly, cortege vehicles are likely to travel more slowly than other traffic. But the assumption of 60% rather than say 70% or 75%, will clearly have an influence on the resulting journey times, and thus on the extent of the area of need. The figure of 60% has been used in some other appeals, but again that does not mean it needs no further explanation or justification. It is stated that the figure originated from a recommendation of the former Office of Fair Trading, but its relevance to planning is not clear. As far as this inquiry is concerned, there is no evidence before me with regard to the actual speeds at which corteges travel. This reinforces my view that the 'need' case, based on 30-minute drive times from the existing crematoria has not been substantiated."*

8.24, 8.25

a) ESRI ArcGIS is industry standard proprietary software for geographical analysis and display.
b) HERE (formerly NAVTEQ or Navigational Technologies) specialise in data and software for in-car navigation.
c) An isochrone is a boundary polygon delimiting the "reach" from a single location based on the road network. It uses a model for the network of links and nodes (junctions) and attaches speeds to each link of road. The speed might be based on static properties such as the road type, width, number of carriageways, urban density, etc, or based on measured speeds using counters (rare) or detecting travelling devices such as phones. The latter will vary during the day and across days and seasons (and be subject to occasional effects such as road works, emergencies, etc) so will be averaged in the model. HERE produce various "link speed" models and it is unknown which one has been used here. Perhaps 18 minute normal speed drive-time isochrones were used to simulate 30 minutes.
d) LSOAs (Lower Super Output Areas) are census building blocks (polygons) used by ONS to publish national statistics. Each LSOA is made up of (5 on average) Census Output Areas (OAs), the smallest level at which demographic data is published. OAs

have an average population of 342. LSOAs have an average population of 1,770. The factor of 5 in resolution is significant in the catchment analysis.

e) **8.25** rightly points out the large difference in population density of LSOAs without offering an explanation of why this is important.

f) It is unclear how the isochrone has been used to generate the sets of LSOAs that define each catchment area in **Figs 14-18**. In **Figs 16** and **19** (the non-overlapping catchments with and without Turners Hill) it is clear that we are looking at areas built from LSOAs. In the others we are looking at the raw area covered by road links reachable in the time limit. At some point LSOAs have to be allocated to the raw isochrones. It is important to understand how this process occurs. It might be:

    i) An LSOA is included if the raw isochrone has any overlap
    ii) An LSOA is included if a certain portion overlaps
    iii) An LSOA is included if it is totally contained in the raw isochrone
    iv) An LSOA is included if the raw isochrone covers its centroid

    Fig A below shows the 2018 populations of LSOAs in an area between Crawley, Horsham and Haywards Heath. LSOA boundaries are in thick blue with the OA boundaries in black. The variation in area is large, as is the distribution of OAs within each LSOA.
    For example, in the centre of the image, around Balcombe and Ardingly are two LSOAs. One has a population of 1,859, the other 1,971. Both are about 4 miles North to South. By including or excluding them from a catchment (say by just “arriving” at the northernmost junctions) the population total would be different by 3,830. We have mitigated this effect in our analysis by using Output Areas, which can be seen to model settlements much more closely. These are computed as those Output Areas where the average drive time to all the junctions in the Output Area exceed the threshold. This best represents the fact that an Output Area has a finite extent.

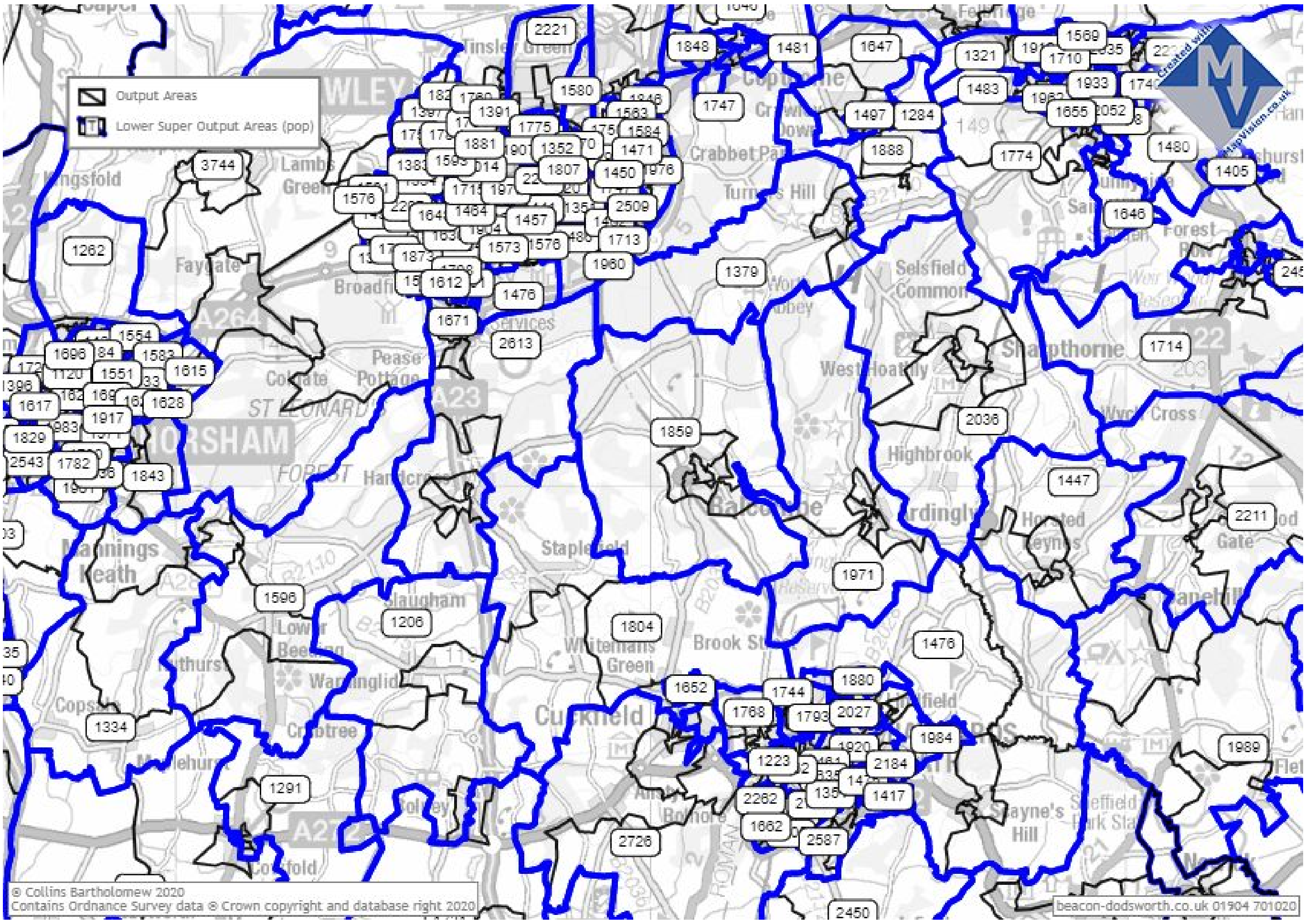

Fig A. The relative sizes and populations of LSOAs and OAs

Given the discrepancies in population figures it seems likely that a "pessimistic" view of allocation is being taken, i.e. an LSOA is included only if it substantially covers the isochrone. This will lead to many Output Areas being excluded that should be included.

8.30

In our analysis we have taken the same approach.

8.31

It is unclear what advantage using 15 mins drive times is.

In general, rather than use 45 minute drive-times, it is better to use "unconstrained" drive-times and evaluate the maximum drive time to assess a poorly-met need. In this case it appears from **Fig 16** that all areas are reached within 45 mins anyway. This agrees with our analysis.

The maximum drive time for any Output Area is 39 minutes.

For completeness, Fig B shows the 15 mins drive time catchments from the existing and proposed crematoria.

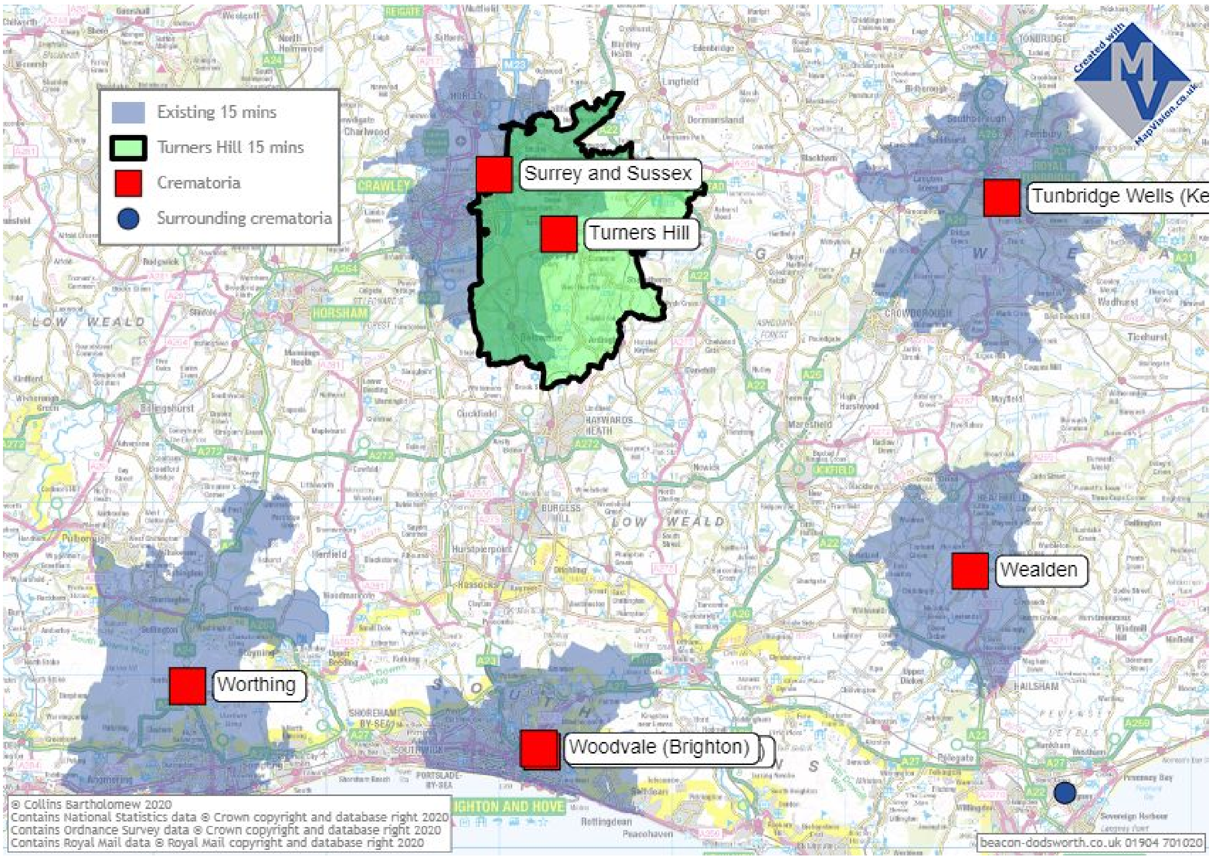

Fig B. 15 minutes' drive-time catchment areas

Fig 15

In our analysis, the 30 min catchment areas begin to impinge on each other so we show the unconstrained 30 min areas (Fig C) and the constrained ones for comparison (Fig D).

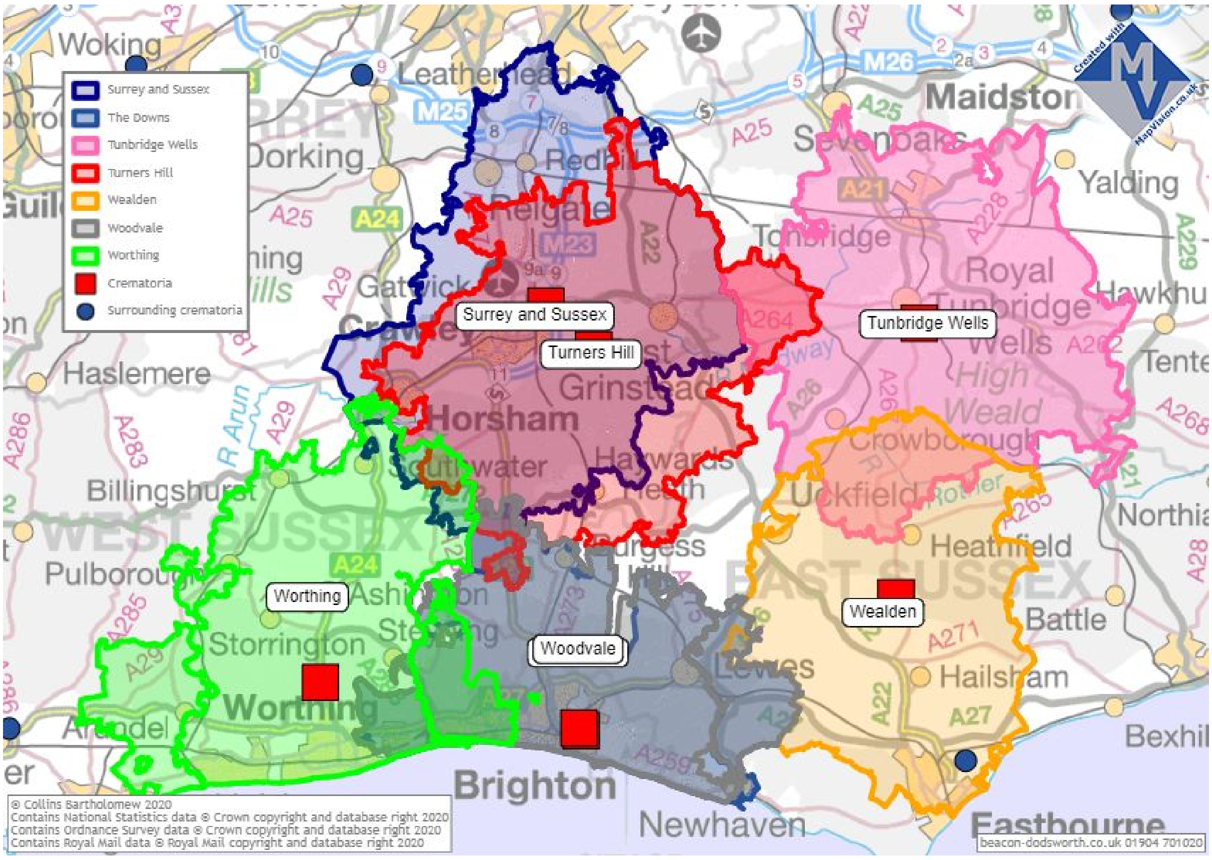

Fig C. Unconstrained (overlapping) 30 minute catchments, including Turners Hill

The total population "reached" by each crematorium in Fig C is listed here for context:

Crematorium	Population
Surrey and Sussex	416,606
The Downs	469,425
Tunbridge Wells	209,036
Turners Hill	312,081
Wealden	184,190
Woodvale	472,863
Worthing	365,750

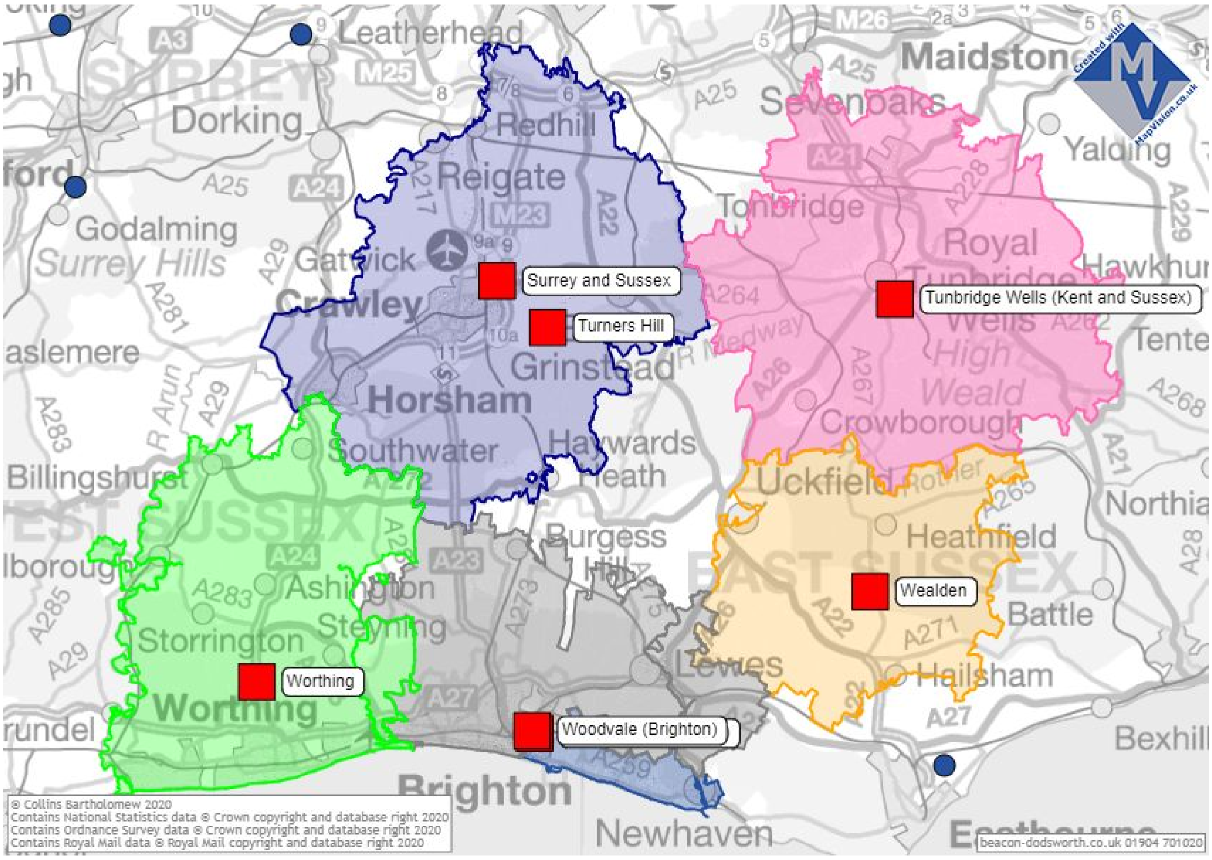

Fig D. Constrained 30 minute drive-time catchments from existing crematoria

Fig E shows the 45 mins areas.

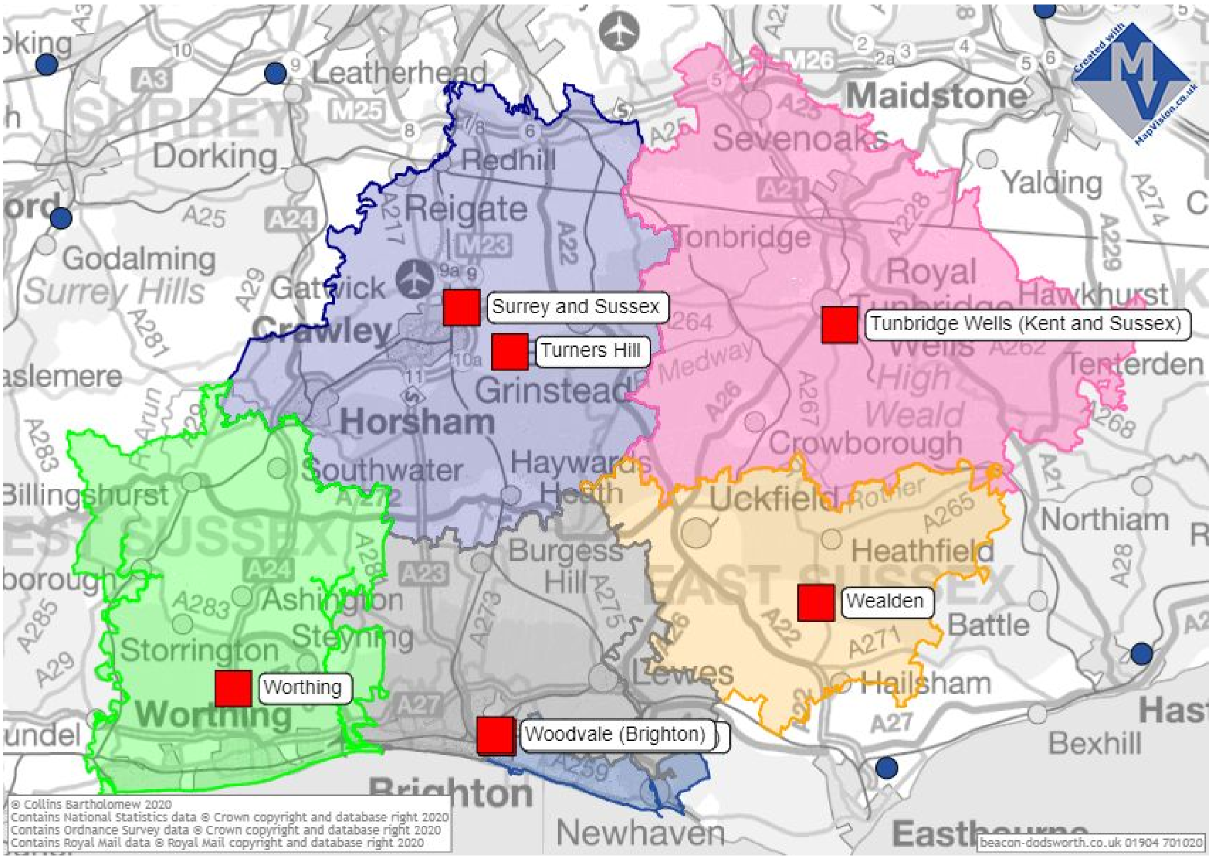

Fig E. Constrained 45 minute drive-time catchments from existing crematoria

8.33
In **Fig 18**, it is unclear whether the Surrey and Sussex and Turners Hill isochrones are constrained where they meet. The corridor between them would be served by both crematoria. For modelling purposes it is necessary to allocate the LSOAs (or better, the OAs) in the corridor to the nearer one.

Some notes:

a) The use of LSOAs makes the analysis less refined than using OAs. The inclusion of an LSOA in a catchment area makes a difference in the reached population of 1-2,000. In particular an LSOA in a rural area can be very large. The ONS have designed LSOAs to be reasonably uniform in population. Most of the LSOAs where catchments “meet” are in rural areas (presumably as a consequence of existing crematoria mainly serving urban centres).
b) As stated, we don’t know the allocation method for the inclusion or exclusion of an LSOA at the edges of catchments. This makes the upper and lower bounds of population counts wider.
c) This effect is most marked for small catchments, rendering 15 mins catchment areas unusable in this analysis. In addition, 15 mins is not used for any planning purposes.
d) This “edge effect” is more critical because if we increase/decrease the speeds in the speed model by 10%, the area covered will increase/decrease by approximately 20%. For example, the 30 min catchment area population of Surrey & Sussex Crematorium is stated to be 281,988. If we increased the speed from 20mph to

21mph (5%), and other road speeds accordingly, the population could increase to over 310,000.

e) If crematoria are centred on towns then the limits (at 30 mins) will be in more rural areas and the population difference between 35 mins and 25 mins will be small.

f) Conversely, if the midpoint between two "competing" crematoria is in a more urban area, these population differences will be more significant.

g) This sensitivity to the model (road speeds and use of LSOAs) makes the absolute numbers difficult to justify. However the relative change (by the inclusion of Turners Hill) to the analysis) will be more significant although subject to the same caveats.

h) We have used Output Areas to model the catchment areas using our own network analysis software. As stated above, Output Areas offer 5 times the resolution of LSOAs meaning that population counts are more accurate. ONS produce population estimates at Output Area level each year. The number of deaths is published at LSOA level and is easily apportioned to OA level.

i) In order to emulate the results in the Needs Assessment as closely as possible, we have used conservative speeds: 16mph for most minor roads, 19mph for other roads in urban areas up to a maximum of 33mph for motorways. The existence of the M23 and major A roads is significant for access up to the M25. Using speeds less than the stated 20mph reflects other factors in slowing vehicles down - junctions, roundabouts, signals and other traffic.

j) It is unclear what the practical speeds are on larger roads where there is very little "impedance" or indeed whether these roads are used at all by funeral cortèges in favour of smaller roads. This adds further uncertainty to the absolute population figures.

k) Validation of a speed model could use an online route planner where an 18 minute journey would be equivalent to 30 mins using the 60% formula. Sample checks using Google and RAC suggest that the model in h) is "accurate" given the caveats about cortege behaviour.

8.34

These tables from our analysis mirror the three tables in **8.34**:

Fig 20

Crematorium	Population			Deaths		
	15 Mins	**30 Mins**	45 Mins	15 Mins	30 Mins	45 Mins
Surrey and Sussex	158,609	**349,744**	401,860	1,191	2,907	3,424
The Downs	56,438	**95,730**	98,202	513	906	928
Tunbridge Wells	85,146	**204,927**	264,786	830	1,895	2,435
Wealden	30,637	**62,625**	75,281	391	739	877
Woodvale	218,364	**330,844**	347,572	1,541	2,699	2,808

Worthing	129,156	**282,765**	289,940	1,545	3,462	3,531
Total	678,350	**1,326,635**	1,477,641	6,011	12,608	14,001

Population and deaths within drive-time catchments of existing crematoria

Fig 21

Crematorium	Population			Deaths		
	15 Mins	**30 Mins**	45 Mins	15 Mins	30 Mins	45 Mins
Surrey and Sussex	147,873	**273,824**	289,550	1,098	2,120	2,311
The Downs	56,438	**95,730**	98,202	513	906	928
Tunbridge Wells	85,146	**204,716**	262,046	830	1,893	2,401
Turners Hill	40,489	**114,978**	122,234	376	1,134	1,205
Wealden	30,637	**62,625**	73,975	391	739	862
Woodvale	218,364	**330,844**	341,694	1,541	2,699	2,763
Worthing	129,156	**282,765**	289,940	1,545	3,462	3,531
Total	708,103	**1,365,482**	1,477,641	6,295	12,954	14,001

Population and deaths within drive-time catchments of proposed crematoria

Fig 22

Crematorium	Population			Deaths		
	15 Mins	**30 Mins**	45 Mins	15 Mins	30 Mins	45 Mins
Surrey and Sussex	-10,736	**-75,920**	-112,310	-92	-787	-1,113
The Downs	0	**0**	0	0	0	0
Tunbridge Wells	0	**-211**	-2,740	0	-1	-33
Turners Hill	40,489	**114,978**	**122,234**	376	1,134	1,205
Wealden	0	**0**	-1,306	0	0	-15
Woodvale	0	**0**	-5,878	0	0	-45
Worthing	0	**0**	0	0	0	0

Total	29,753	**38,847**	0	284	346	0

Difference between populations and deaths in existing and proposed crematoria

The divergence in the 15 mins catchment areas (and hence populations) is explained mainly by the use of LSOAs.
The discrepancy at 45 mins in Wealden might be due to the constraining crematoria of Eastbourne and Hastings but is not material. Visually, the difference appears to be the area between Brighton and Eastbourne.

8.35
It is claimed that 11,755 people live within 15 minutes' drive-time of Turners Hill. Our analysis shows a significantly higher figure of 40,489.

It is claimed that 10,008 people would be within 15 minutes' drive-time of a crematorium for the first time. Our analysis shows 29,753.

It is claimed that 88,305 people live within 30 minutes' drive-time of Turners Hill. Our analysis shows 114,978.

The table also shows that Surrey and Sussex will "lose" 44,773 people. Our analysis shows 75,920.

The most significant figure is 43,532 for the population brought into a 30 minute drive time of any crematorium for the first time. According to our analysis this figure should be 38,847. 29,856 (77%) of this is contributed by the east and south of Haywards Heath.

In addition, according to our analysis there are still 112,159 people not within a 30 minutes' drive-time of any crematorium, including the proposed one. Of these, 26,801 are in the area surrounded by the ring of existing and proposed crematoria between Haywards Heath and Uckfield.

8.36
It is claimed that 122,916 people live closer to Turners Hill than any other crematorium.
Our analysis shows that the figure is 122,234. This is in good agreement.

8.37, 8.38, 8.39
We did not analyse the data by local authority. It is clear that Turners Hill would primarily serve the Mid Sussex area,

8.40, 8.41
Our analysis agrees with this. It is only worth concentrating on the impact on the Surrey and Sussex crematorium and the distant area previously unserved within 30 mins.

9 - factors affecting capacity

9.44 seasonal fluctuation

The tables in **Fig 33 and 34** suggest the maximum monthly number of deaths is almost always in January although in 2016, the peak was in the spring. Looking at the 2019 figures for West Sussex from ONS (this mirrors the last table in **Fig 34**):

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
940	777	754	712	792	665	744	651	693	793	776	767

Deaths per month in West Sussex in 2019

Ignoring January, no month has more than 5% above the average. January might be exceptional for many reasons. It is unclear whether these statistics relate to date of death or date of registration of death. May and October have the second and third highest totals. However, the effect of the larger January total could be exacerbated by delays due to the holiday season.
It is possible that for winter deaths a funeral might be arranged later than normal because of easier weather conditions.

Expanding these figures for all West Sussex (part of **Fig 34**):

Local authority	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	Max	Max /Avg
West Sussex	940	777	754	712	792	665	744	651	693	793	776	767	755	940	1.24
Adur	70	59	57	51	56	61	68	53	55	61	55	57	59	70	1.19
Arun	240	175	182	172	186	163	178	166	153	184	192	158	179	240	1.34
Chichester	161	116	97	112	134	108	107	107	119	148	127	136	123	161	1.31
Crawley	65	76	70	68	74	53	48	46	59	66	63	70	63	76	1.20
Horsham	136	123	111	97	116	99	113	88	102	127	95	104	109	136	1.24
Mid Sussex	148	112	120	117	115	93	108	93	99	116	125	113	113	148	1.31
Worthing	120	116	117	95	111	88	122	98	106	91	119	129	109	129	1.18

Deaths per month for each local authority in West Sussex in 2019 with the ratio of maximum to average

It can be seen that there is variation in the peak to average ratio (1.18-1.34). The figure for England is 1.22.

9.48
It is unclear why weeks are used rather than months, especially given the quote in **9.51**. Averaging over months would give a smaller peak to average ratio. Even in the case above, the rate would be 24% (varying from 19% to 34%) rather than 26%. This figure is important in the method used for calculating “practical” capacity later.

9.49
The variation in deaths should be considered when assessing capacity. To use the peak month to calculate all capacity measures appears to be extreme given the volatility of the figures.

9.56
It is unclear why the years 2016-209 have been selected. However, it does illustrate the variation in the number of deaths in the peak month. The annual monthly averages are almost constant. More years' data would have shown an even larger variation in the number of deaths.
The excess winter deaths (EWD) were significantly higher in 2017/2018. There were similar spikes in 2008/2009 and 2014/2015. Because of these patterns, it is difficult to find a baseline to measure a realistic peak month.

10.5
The headline figures ("Level of practical (core) capacity in peak month") are dependent on the "Percentage of annual deaths occurring in peak month". As mentioned above, there is a large variance in the ratio of peak to average, and two of the years had high EWD values.

Using Surrey and Sussex as an example, what does running at 119% (2018) capacity in the peak month mean in practice?

a) A less-preferred slot is taken?
b) A funeral is delayed? If so, by how much?
c) A less-preferred chapel is taken?

10.9
Figures agree but % increases are incorrect. See comment on **7.6**.
It should be mentioned here that although the ONS publish population projections and mortality rates on which projection of deaths is based, these assume a forward projection based on (mainly) the last five years not accounting for legislative changes and other external factors. They also publish alternative figures assuming lower migration (and indeed some with higher migration).
This table compares projections for 2043 using the standard and low-migration models for two authorities in West Sussex and all England. See Appendix C.

Local Authority	Population			% change	
	2018	2043	2043 (low migration)	2018-2043	2018-2043 (low migration)
Mid Sussex	149,716	167,212	161,123	11.7%	7.6%
Crawley	112,448	119,625	113,829	6.4%	1.2%
England	55,977,178	61,744,098	59,245,369	10.3%	5.8%

Standard and low-migration projected population change to 2043

These projections show a considerable difference in projected population and hence deaths. The change in deaths will not be in direct proportion because the age profile of migrant populations is usually different (generally younger).

10.10
The extrapolation assumes that the current distribution of deaths across months continues, and that peak month capacity remains critical.
The previous comments about variability in projections and the value of the peak month apply.

10.11
It is also unclear that the 80% mentioned in **9.51** relates purely to core or practical capacity outside the context of the extensive qualitative issues there.

10.12 - 10.32
We have not considered these figures because the impact is substantial only on the Surrey and Sussex crematorium (as in **10.34** for Worthing).

11.6 - 11.11
There is no explicit linkage between the factors listed in **11.7** and **11.8** to the data and assertion in **11.10** and **11.11**. In general in any distributed data one would expect half of the data to lie beyond the average. The average used here is the mean but there are a few outliers in the data (suggesting exceptional circumstances) so a better averaging mechanism would show a smaller longer-than-average delay.
See Appendix B.

The obituaries data for Surrey and Sussex is not distributed among the months evenly (or in proportion to deaths). 22 of the 50 are in the winter months of Dec to Feb.
Woodvale obituaries are all from Sep to Dec, The Downs from Jun to Sep. In all cases there is little correlation between the months of high average delay and the peak month for deaths.

In the Needs Assessment, Appendix: Survey of Funeral Directors para 6, responses suggest lower delays albeit with a small sample.

4 Objection and counter-statement

4.1
I have used the paragraph numbering (bold) in the Objection counter-statement letter from Clyde & Co.

4.21
It is 4 miles from the proposed Turners Hill crematorium to the Surrey and Sussex crematorium.
It would have been useful to make available some of the records relied on in the refutation.

4.22

The proposed crematorium is about 15 mins cortège drive-time from the Surrey and Sussex crematorium.

4.23
As stated above, our analysis shows that this figure should be 38,847. Of this, 29,856 (77%) is contributed by the east and south of Haywards Heath.

4.25
The objection's case is that actual crematorium use (in particular Surrey and Sussex) is different from that assumed by the applicant.
It is unclear why figures from only 2018 and 2019 have been used.
However, for a given year there are four figures being used:

i) Technical capacity = number of cremations/total slots available (ignoring Saturdays)
ii) Core capacity = number of cremations/core slots available
iii) Core capacity in peak month = core capacity scaled to reflect higher death rate in the peak month
iv) Claimed capacity by the crematorium operator

These figures rely on the accuracy of:
i) The number of cremations. These are published figures and not in dispute.
ii) The total slots available. It is unknown how many, if any, Saturday slots are used.
iii) Core slots available. It is unknown whether the operator is using the same core figures; it may be that, in practice, 8 slots a day were used rather than 7, say.
iv) The objectors haven't directly mentioned the validity of using the peak month death rate as a multiplier to achieve "ideal" capacity. Although serving the population through peak months is important, it is unclear that this wouldn't simply result in using non-core slots to accommodate the increased need. It is also important to note the variability in the peak month figures. Without knowing the distribution of slot times, it is difficult to verify the objectors' claims.

Assuming the even split (between chapels) case for 2019:

Number of cremations = 2,841
Total slots available (ignoring Saturdays) = 5,040
Core capacity in peak month = 3,528
Scale factor to account for peak month = 10.5%/8.33% = 1.26
Technical capacity = 2,841/5,040 = 56%
Core capacity = 2,841/3,528 = 81%
Core (peak) capacity = Core capacity x 1.26 = 101%

Because the objectors are claiming approximately 50% capacity (43% and 57% for the two chapels), this implies that they have used 2,841 x 2 slots = 5,682.
This is 642 more than the core slots available. Over 252 days this represents 2.5 slots per day. This implies either that the early morning and late afternoon slots were used or the Saturday slots (or both).

It is noted that the number of cremations carried out by the Sussex and Surrey crematorium has not changed significantly since 1980 according to figures from The Cremation Society. (https://www.cremation.org.uk/content/files/Sussex%20West.pdf).
The national trend has been upwards since about 1995.

It is unclear, and disputed, how an uneven split between chapels should be modelled.

4.26
It is unclear whether these crematoria are operating at or near capacity. This is partly due to the dispute about how capacity (particularly including peak-month factors) is calculated, and partly a lack of information about how historic cremations have been distributed among available slots. If one of the main criteria is "over-trading", it will be incumbent on the existing operators to demonstrate sufficient capacity rather than merely state it.

5 Conclusions

5.1 The method for calculating drive-time catchments

1. We agree with the methodology used to model "natural" catchments at 30 minutes' drive-time for each crematorium. The figures for longer drive-times are in rough agreement although even using conservative speeds our population coverage figures are mostly higher.
2. The model for speeds is critical to developing these catchments and we are not given the speed model used other than 60% of "normal" speeds.
3. We believe that the use of LSOAs is at too coarse a level of geography to provide accurate figures for population and we are not given the methodology for allocating LSOAs to the drive-time isochrones. We have used Output Areas.
4. The projections of population and number of deaths is based on the "standard" ONS published data. However, the ONS publish different projections with different assumptions.
5. We have not used separate projections for male/female split even though mortality rates differ. The difference achieved would be much smaller than the margin for error from other factors.
6. The sensitivity of the models and projections to assumptions either unknown or unknowable mean that there is a large degree of uncertainty attached to the populations (and hence deaths), perhaps up to a factor of 2.

5.2 The method for calculating capacity

1. There seems to be agreement that over-trading (where core capacity exceeds 80%) can lead to qualitative issues.
2. There seems to be little agreement about the formula for accounting for variability of deaths across months. Using the ratio of peak month deaths to average month deaths poses difficulties because of the variability in peak month deaths across years.

5.3

There may well be a need for more crematorium capacity. The existing provision highlights a “gap” of 66,148 people inside the ring as shown in Fig F in Appendix D.

6 Appendices

A Data sources

Copyright acknowledgements:

Office for National Statistics: licensed under the Open Government Licence

Ordnance Survey: Crown copyright and database right 2020

B Funerals Market Investigation

Crematoria: evidence on competition between crematoria

https://assets.publishing.service.gov.uk/media/5e32d2e1e5274a08e81217e1/Crematoria-_competition.pdf

Relevant paragraphs:

3.20

The CMA consumer research found that there was a preference for minimising journey times from the place of death (or the deceased’s home) to the funeral director and from the funeral director to the crematorium or burial ground. The respondents said that this helped facilitate access for those who wished to visit the deceased while they were in the care of the funeral director. A drive time of 10-20 minutes between these key locations was Typical.

5.2.1

The vast majority of customers do not compare the services of different Crematoria.

5.25

Furthermore, both economic incentives and planning restrictions may lead new crematoria to locate relatively far from existing crematoria (while remaining relatively close to demand). A new entrant, in order to ensure that it covers the high fixed costs of entry and operation, will have the incentive to avoid as much as possible any head-to-head competition with the existing crematoria. As such, it will prefer to locate its facilities far from existing crematoria to ensure it will have a large uncontested demand for its cremation services. As we explain in Appendix C, some evidence indicates that providers do not consider it viable in many cases to open too close to an existing crematorium, and the requirement to meet the planning process “qualitative” need test may reinforce the preference of new entrants to locate far from existing crematoria.

5.66 wait times vs capacity

Finally, we have also considered whether the length of time that a family has to wait between death and cremation could be a factor on which crematoria *compete. Data supplied to the CMA by two crematorium operators show a degree of variation in the average time between death and the cremation service across crematoria, with families at some crematoria having an average wait time of around 10 days, and others with a wait time of up to 24 days. We have considered whether longer wait times appear likely to be caused by limited capacity at crematoria, or in contrast are likely to be due to external factors outside the control of crematoria (eg waiting for a coroner's report, waiting for the correct paperwork to be completed by the funeral director, or families waiting for a time that they prefer/can be together). We did not find a clear relationship between capacity and wait times – there are crematoria with relatively low capacity utilisation that have short waiting times and crematoria with similar levels of capacity utilisation where the wait time is very long (five weeks).255 This suggests that the wait time may be the result of external factors outside the control of crematoria and, as such, is unlikely to be a meaningful measure of quality over which crematoria can compete.*

C A note on mortality rates from ONS:
https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/methodologies/periodandcohortlifeexpectancyexplained

"Expert judgement is applied to decide how long historical trends will continue into the future. Some demographers argue that future improvements in mortality rates will not be as rapid as historical improvements, partly as no more than a minority of the population will adopt a healthy lifestyle. External factors, such as the emergence of new diseases or antibiotic resistance, might also serve to offset future mortality improvements."

D The gap in the existing provision

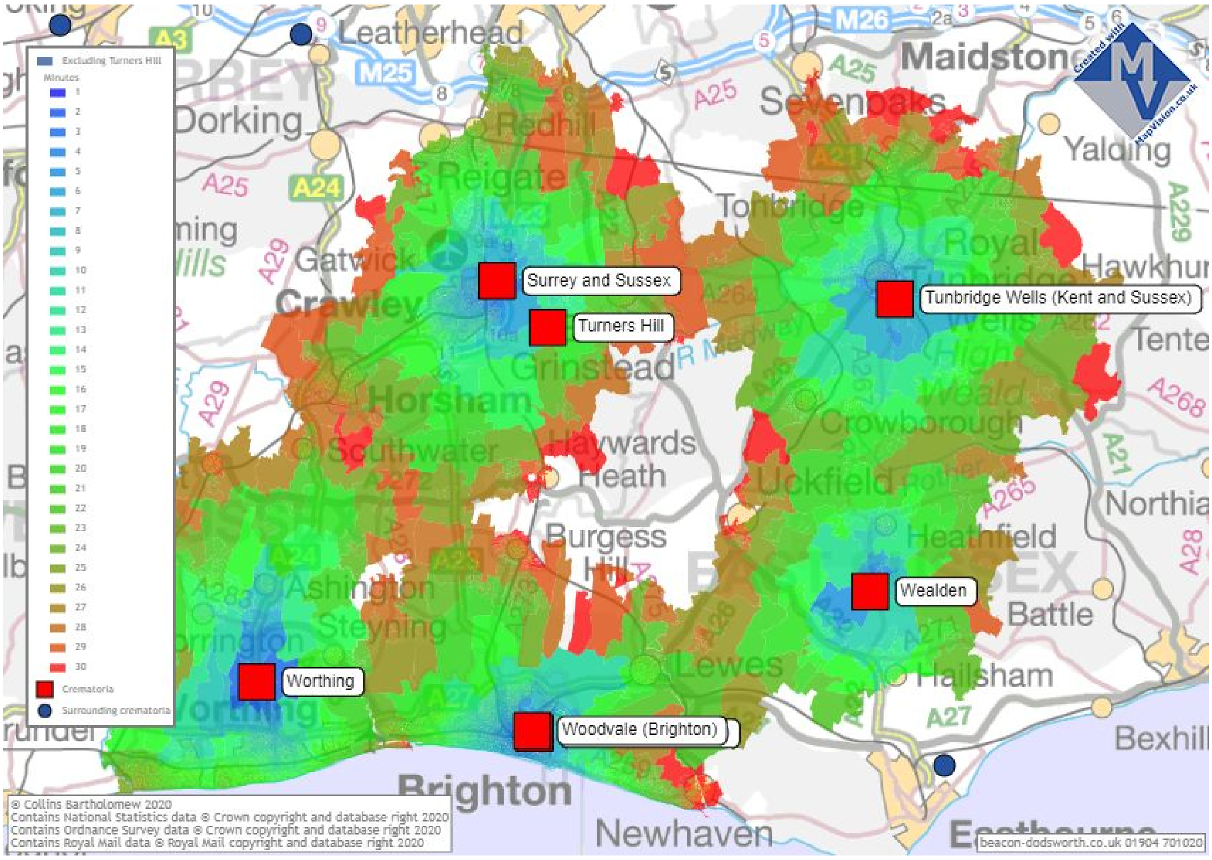

Fig F. The existing provision in one minute drive-time bands