

Area Development Twente

Catchment area of Twente Airport

23 February 2011
ADT001/Hnr/0002

1 Catchment areas of airports

1.1 Background

Area Development Twente is investigating the potential of Twente Airport within the framework of the business case for the airport. A key measure of airport viability is the number of people able to get to the airport in a given period of time. This is known as the airport's catchment area. Area Development Twente wishes to know how accessible the location of the airport currently is, and how accessible it will be in 2020 when it will have been partly developed, accommodating 600,000 passengers.

In addition, Area Development Twente wishes to compare the catchment area of Twente Airport with those of other airports. These include:

- Twente;
- Groningen;
- Eindhoven;
- Maastricht;
- Schiphol;
- Weeze (Germany);
- Münster-Osnabrück (Germany);
- Düsseldorf (Germany);
- Cologne (Germany).

To answer these questions, the National Model developed by traffic and transport consultants Goudappel Coffeng has been used (see section 1.2). Because the catchment areas cross national boundaries, additional data was obtained for Germany and Belgium (see section 1.3).

1.2 The National Model

Goudappel Coffeng has constructed a National Model, a modelling system designed to perform calculations for the Netherlands and hence ideally suited to this study. This transport model contains infrastructure data (speeds, number of lanes, road types) and socio-economic data (population and jobs) for 2008 and 2020. The year 2020 is based on the “Global Economy” national scenario. Using this information, we can calculate the journey times to the airport from any given area, and the number of people and jobs located in that area. This is how we establish the size of the population in the catchment area.

The data from the National Model is less detailed for countries outside the Netherlands. This is why we obtained additional data for Belgium and Germany in order to calculate the Belgian and German catchment areas at a similar level of detail.

1.3 Gathering German and Belgian data

We obtained detailed information on residents and jobs for 2008 and 2020 from Eurostat, the European statistics office.

Data for Belgium was taken from a transport model for the South of the Netherlands also developed by Goudappel Coffeng. This model uses a detailed division into zones and shows the production of journeys for each zone (i.e. the number of journeys to and from each zone). Information on the number of residents and jobs for 2008 and 2020 is only available for the somewhat larger zones, but can simply be distributed across the smaller zones in proportion to the available journey production information.

Figure 1.1 makes this clear. It shows the journeys for all small zones, and the total number of residents and jobs in the red area. If journey production in a small zone accounts for 10% of journeys in the larger red area, it also accounts for 10% of all residents and jobs. We applied this method for both 2008 and 2020.

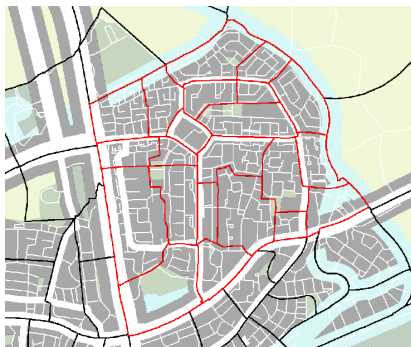


Figure 1.1: Division into zones for Belgium

In cases where the division into zones was still not detailed enough, we defined the catchment areas by looking at what percentage of each zone was accessible within a given amount of time.

1.4 ***Calculation of journey times***

The catchment area of an airport is based on the number of residents and jobs that can be accessed from the airport by car within a given period of time. This is not so much about the accessibility of the airport to office workers (who generally commute during peak periods) as about the number of passengers, who arrive at and depart from the airport much more spread out throughout the day. The majority of passengers are likely to travel outside peak hours and will not therefore have to cope with daily congestion. This is why journey times have been calculated on the basis of free-flow speeds. During the rush-hour, catchment areas tend to become smaller in highly urbanised areas in particular. However, the area around Twente Airport still sees only limited delays due to congestion.

Journey times between all zones in the Netherlands have been calculated using the National Transport Model. Because the National Transport Model provides less detail in terms of the road networks in neighbouring countries, we adopted a different approach to ensure an even quality of travel times for the Netherlands and abroad. Using a route planner, we calculated the journey times from the airport to locations abroad. Next, we determined the number of residents and jobs located in the areas situated at distances of 1, 1.5 and 2 hours of travel from the airport.

1.5 ***Catchment areas defined***

We have established the number of residents and jobs accessible from the airports by car at travel distances of 60, 90 and 120 minutes for 2008 and 2020.

The total number of residents and jobs accessible from the airports are shown in tables 1.1 to 1.3 (at distances of 1, 1.5 and 2 hours' travel, respectively). Schedule 1 shows the same data broken down by country of origin (Netherlands, Germany, and Belgium). Figures 1 to 9 show the catchment areas of each of the airports analysed.

We have also calculated how many residents and jobs are nearer to Twente Airport than any other airport (in terms of travel time). The results are shown in table 1.4 and figure 11.

Airport	Residents		Jobs	
	2008	2020	2008	2020
Twente	3,316	3,346	1,315	1,352
Groningen	2,050	2,065	857	900
Eindhoven	7,240	7,428	3,258	3,386
Maastricht	6,346	6,480	2,218	2,292
Schiphol	8,634	8,968	3,918	4,032
Weeze (Germany)	5,975	5,988	2,203	2,242
Münster-Osnabrück (Germany)	4,991	4,902	1,570	1,543
Düsseldorf (Germany)	13,523	13,385	4,620	4,588
Cologne (Germany)	13,737	13,617	4,640	4,609

Table 1.1 – Residents and jobs (x 1,000) in 1-hour catchment area

Airport	Residents		Jobs	
	2008	2020	2008	2020
Twente	15,041	15,186	5,799	5,887
Groningen	4,577	4,709	1,831	1,913
Eindhoven	21,134	21,489	8,442	8,647
Maastricht	19,427	19,664	7,430	7,585
Schiphol	13,130	13,554	5,955	6,171
Weeze (Germany)	18,249	18,368	7,090	7,195
Münster-Osnabrück (Germany)	14,270	14,078	4,816	4,767
Düsseldorf (Germany)	21,303	21,230	7,618	7,592
Cologne (Germany)	21,703	21,559	7,430	7,429

Table 1.2 – Residents and jobs (x 1,000) in 1.5-hour catchment area

Airport	Residents		Jobs	
	2008	2020	2008	2020
Twente	31,287	31,567	12,207	12,401
Groningen	12,373	12,808	5,249	5,437
Eindhoven	37,240	37,665	14,342	14,589
Maastricht	34,405	34,749	13,105	13,325
Schiphol	18,968	19,414	8,111	8,376
Weeze (Germany)	31,422	31,788	12,137	12,363
Münster-Osnabrück (Germany)	24,471	24,300	8,586	8,577
Düsseldorf (Germany)	31,545	31,656	11,471	11,444
Cologne (Germany)	35,876	35,825	13,274	13,344

Table 1.3 – Residents and jobs (x 1,000) in 2-hour catchment area

Airport	Residents		Jobs	
	2008	2020	2008	2020
Twente	2,094	2,106	858	887

Table 1.4 – Residents and jobs (x 1,000) nearer to Twente Airport than any other airport (in terms of travel time)

1.6 Analysis

The catchment areas will only grow to a limited extent between 2008 and 2020. This holds true for all the airports. The chart below sums up the key data: the number of residents located 1 hour, 1.5 hours and 2 hours away from the airports in 2020.

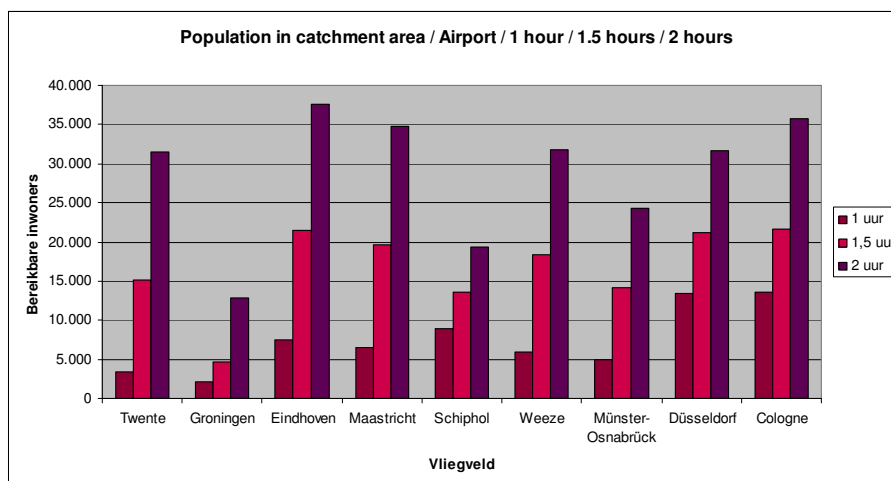


Figure 1.2: Number of residents at different travel distances from the airports (2020)

A striking feature is that although Twente Airport has a relatively small 1-hour catchment area (like Groningen Airport, for instance), its catchment areas grows strongly as the travel distances are extended to 1.5 and 2 hours. Highly urbanised areas, such as the German Ruhr region, are then within reach.

The opposite is true for Schiphol Airport: there, a large urban area (the Randstad conurbation) is situated at 1 hour's travel from the airport, but its catchment area does not grow an awful lot if maximum travel times are extended.

Twente Airport clearly has a larger catchment area than Groningen, but it is smaller than those of Eindhoven and Maastricht. In the South of the Netherlands, the catchment areas of different airports overlap considerably, whereas Twente Airport is situated at a relatively large distance from other airports.

Figure 10 makes this clear. The more the airports analysed can be reached within one hour, the darker the area in question is in this figure. (The light areas at the edges of the figure are not representative, because they are also largely situated in the catchment areas of other airports which have not been looked at, such as Rotterdam, Antwerp, and Brussels). There is a fairly large area around Twente Airport from which only this airport can be reached within an hour. This also applies to Groningen and, to a lesser extent, Amsterdam Schiphol Airport, but it does not apply to Eindhoven and Maastricht.

Twente Airport is the nearest airport for 2.1 million residents and nearly 900,000 jobs. The area for which Twente is the nearest airport is shown in figure 11.

Schedule 1 Catchment areas by country of origin

Population in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	1,819	1,831	1,497	1,515	0	0	3,316	3,346
Groningen	1,884	1,890	166	174	0	0	2,050	2,065
Eindhoven	6,321	6,449	67	66	853	913	7,240	7,428
Maastricht	1,844	1,815	2,608	2,620	1,895	2,045	6,346	6,480
Schiphol	8,634	8,968	0	0	0	0	8,634	8,968
Weeze (Germany)	2,174	2,229	3,801	3,760	0	0	5,975	5,988
Münster-Osnabrück (Germany)	30	29	4,961	4,873	0	0	4,991	4,902
Düsseldorf (Germany)	1,024	994	12,477	12,368	22	23	13,523	13,385
Cologne (Germany)	447	413	13,209	13,123	81	81	13,737	13,617

Jobs in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	824	854	491	498	0	0	1,315	1,352
Groningen	813	853	45	47	0	0	857	900
Eindhoven	2,981	3,093	14	14	262	279	3,258	3,386
Maastricht	850	877	804	808	564	607	2,218	2,292
Schiphol	3,918	4,032	0	0	0	0	3,918	4,032
Weeze (Germany)	1,007	1,059	1,196	1,183	0	0	2,203	2,242
Münster-Osnabrück (Germany)	7	7	1,563	1,536	0	0	1,570	1,543
Düsseldorf (Germany)	429	429	4,187	4,155	4	4	4,620	4,588
Cologne (Germany)	163	159	4,453	4,425	24	24	4,640	4,609

Residents and jobs (x 1,000) in catchment areas at 1 hours' distance

Population in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	6,384	6,629	8,657	8,558	0	0	15,041	15,186
Groningen	3,585	3,667	992	1,042	0	0	4,577	4,709
Eindhoven	13,188	13,523	4,110	4,048	3,836	3,918	21,134	21,489
Maastricht	4,397	4,451	9,468	9,476	5,562	5,737	19,427	19,664
Schiphol	13,077	13,502	28	28	24	24	13,130	13,554
Weeze (Germany)	7,500	7,713	10,467	10,351	282	304	18,249	18,368
Münster-Osnabrück (Germany)	972	975	13,299	13,103	0	0	14,270	14,078
Düsseldorf (Germany)	4,153	4,166	16,173	16,007	978	1,056	21,303	21,230
Cologne (Germany)	2,030	1,983	18,138	17,942	1,534	1,634	21,703	21,559

Jobs in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	3,006	3,127	2,793	2,760	0	0	5,799	5,887
Groningen	1,536	1,603	295	310	0	0	1,831	1,913
Eindhoven	6,023	6,226	1,298	1,279	1,121	1,142	8,442	8,647
Maastricht	2,049	2,148	3,298	3,301	2,084	2,135	7,430	7,585
Schiphol	5,941	6,157	9	9	4	4	5,955	6,171
Weeze (Germany)	3,499	3,633	3,501	3,465	90	97	7,090	7,195
Münster-Osnabrück (Germany)	418	432	4,399	4,334	0	0	4,816	4,767
Düsseldorf (Germany)	1,906	1,906	5,387	5,334	326	352	7,618	7,592
Cologne (Germany)	879	907	6,084	6,023	468	499	7,430	7,429

Residents and jobs (x 1,000) in catchment areas at 1.5 hours' distance

Population in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	14,498	14,927	16,789	16,640	0	0	31,287	31,567
Groningen	9,254	9,588	3,119	3,220	0	0	12,373	12,808
Eindhoven	14,977	15,356	14,111	13,981	8,152	8,327	37,240	37,665
Maastricht	11,835	12,105	14,246	14,145	8,324	8,499	34,405	34,749
Schiphol	15,654	16,076	1,470	1,470	1,844	1,867	18,968	19,414
Weeze (Germany)	14,176	14,532	15,014	14,882	2,231	2,374	31,422	31,788
Münster-Osnabrück (Germany)	3,182	3,212	21,289	21,087	0	0	24,471	24,300
Düsseldorf (Germany)	8,226	8,400	20,169	19,938	3,150	3,318	31,545	31,656
Cologne (Germany)	5,793	5,848	24,651	24,370	5,432	5,608	35,876	35,825

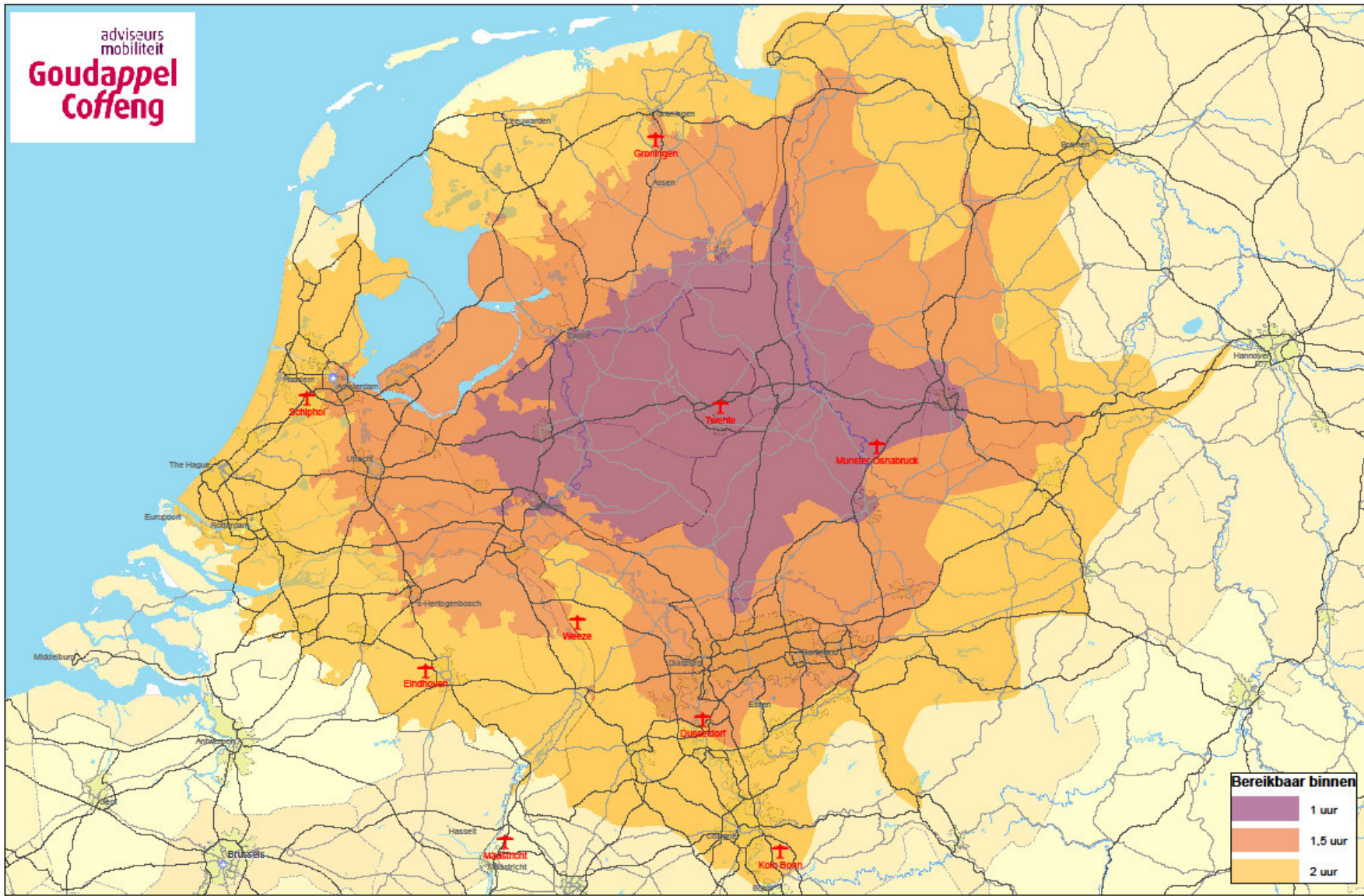
Jobs in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	6,570	6,812	5,637	5,589	0	0	12,207	12,401
Groningen	4,247	4,404	1,001	1,033	0	0	5,249	5,437
Eindhoven	6,725	6,960	4,722	4,682	2,896	2,947	14,342	14,589
Maastricht	5,492	5,692	4,722	4,690	2,892	2,943	13,105	13,325
Schiphol	7,033	7,294	420	416	659	666	8,111	8,376
Weeze (Germany)	6,416	6,639	4,999	4,958	722	766	12,137	12,363
Münster-Osnabrück (Germany)	1,405	1,460	7,181	7,117	0	0	8,586	8,577
Düsseldorf (Germany)	3,785	3,785	6,739	6,664	947	995	11,471	11,444
Cologne (Germany)	2,662	2,770	8,579	8,490	2,033	2,084	13,274	13,344

Residents and jobs (x 1,000) in catchment areas at 2 hours' distance

Population in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	1,632	1,630	462	476	0	0	2,094	2,106

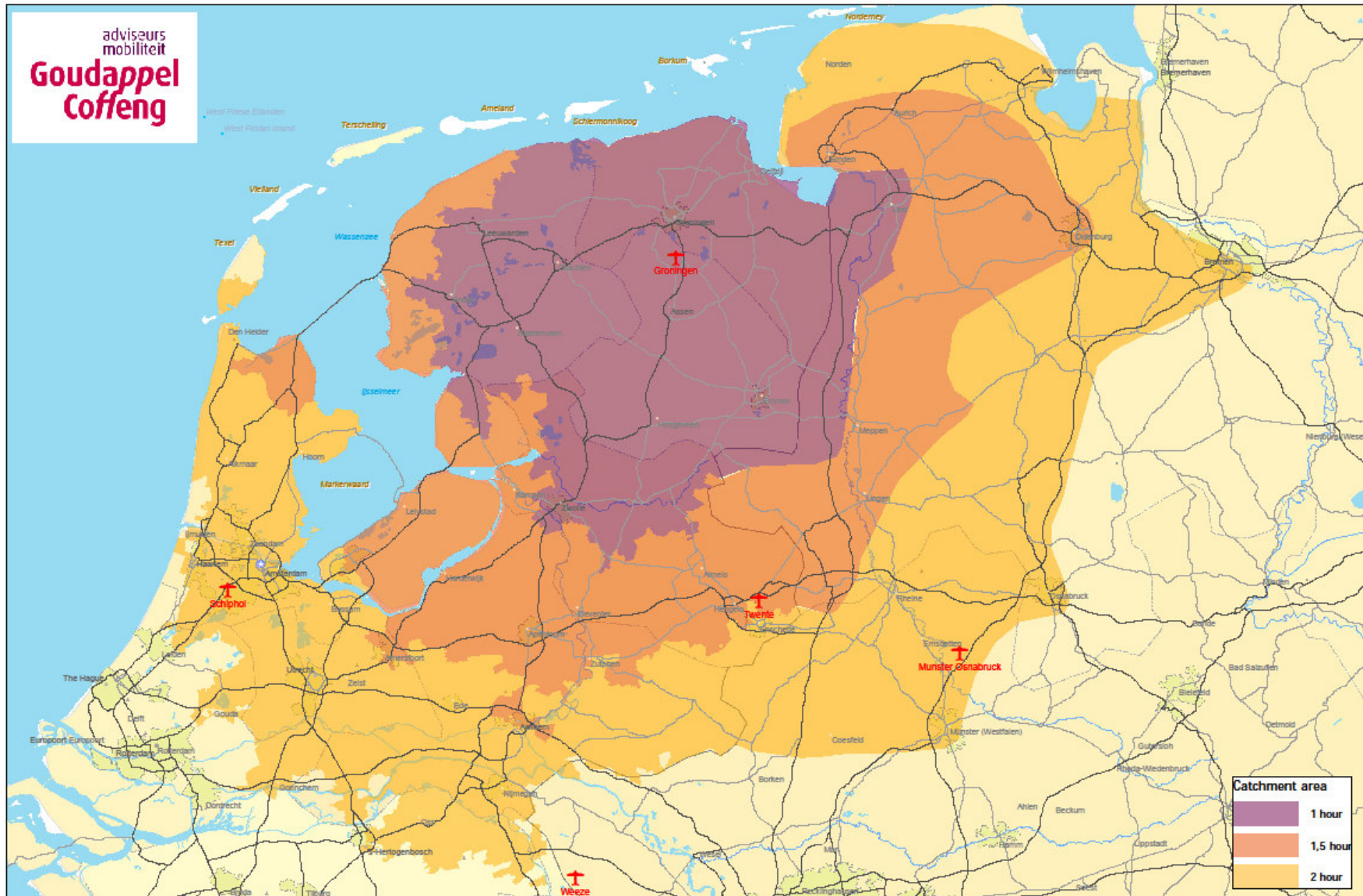
Jobs in catchment area	Netherlands		Germany		Belgium		Total	
	2008	2020	2008	2020	2008	2020	2008	2020
Airport								
Twente	719	745	138	142	0	0	858	887

Residents and jobs (x 1,000) nearer to Twente Airport than any other airport (in terms of travel time)



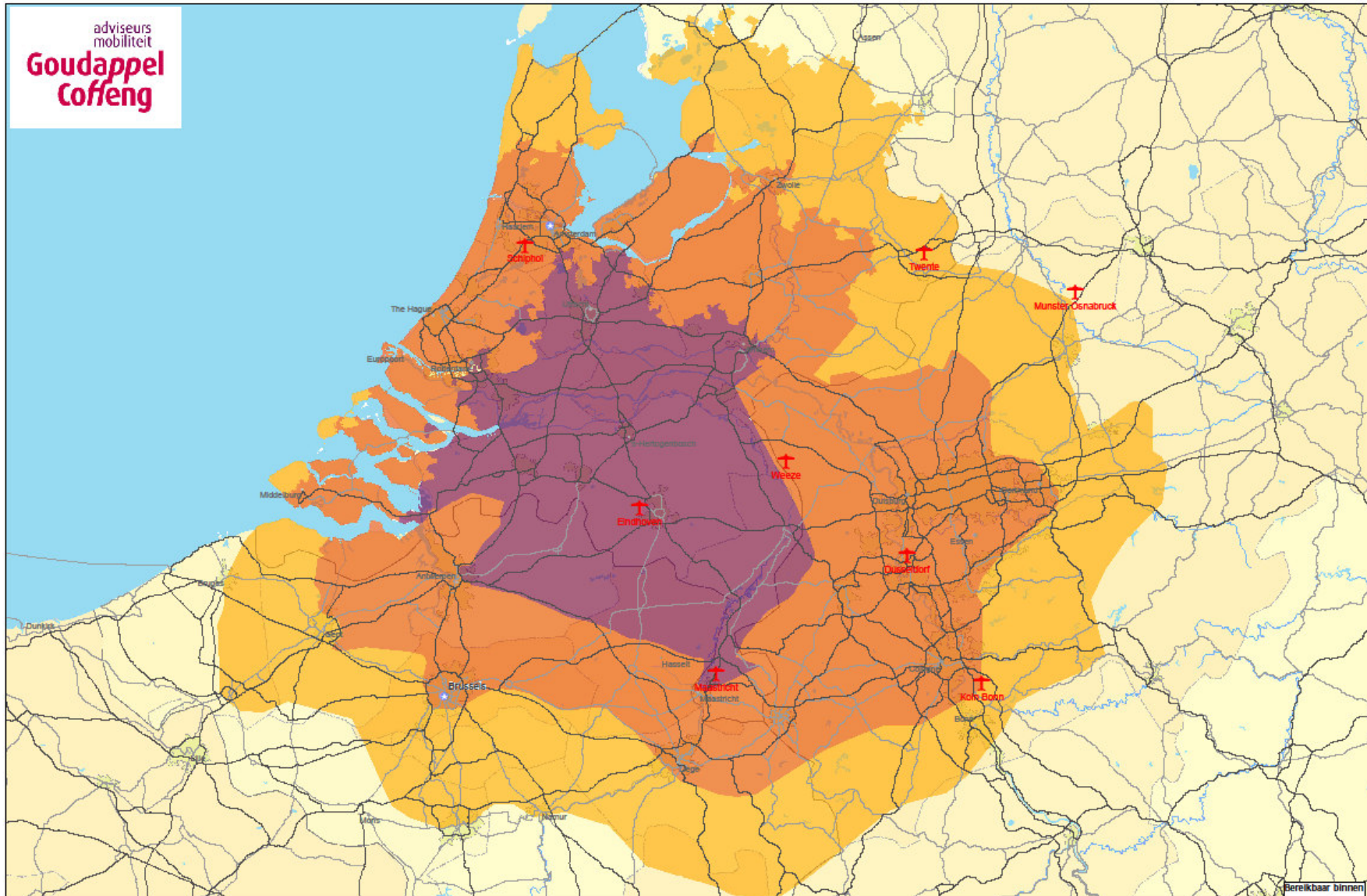
01 Catchment Area Twente

Kennmerk: ADF001/1/km
Datum: 07 februari 2011



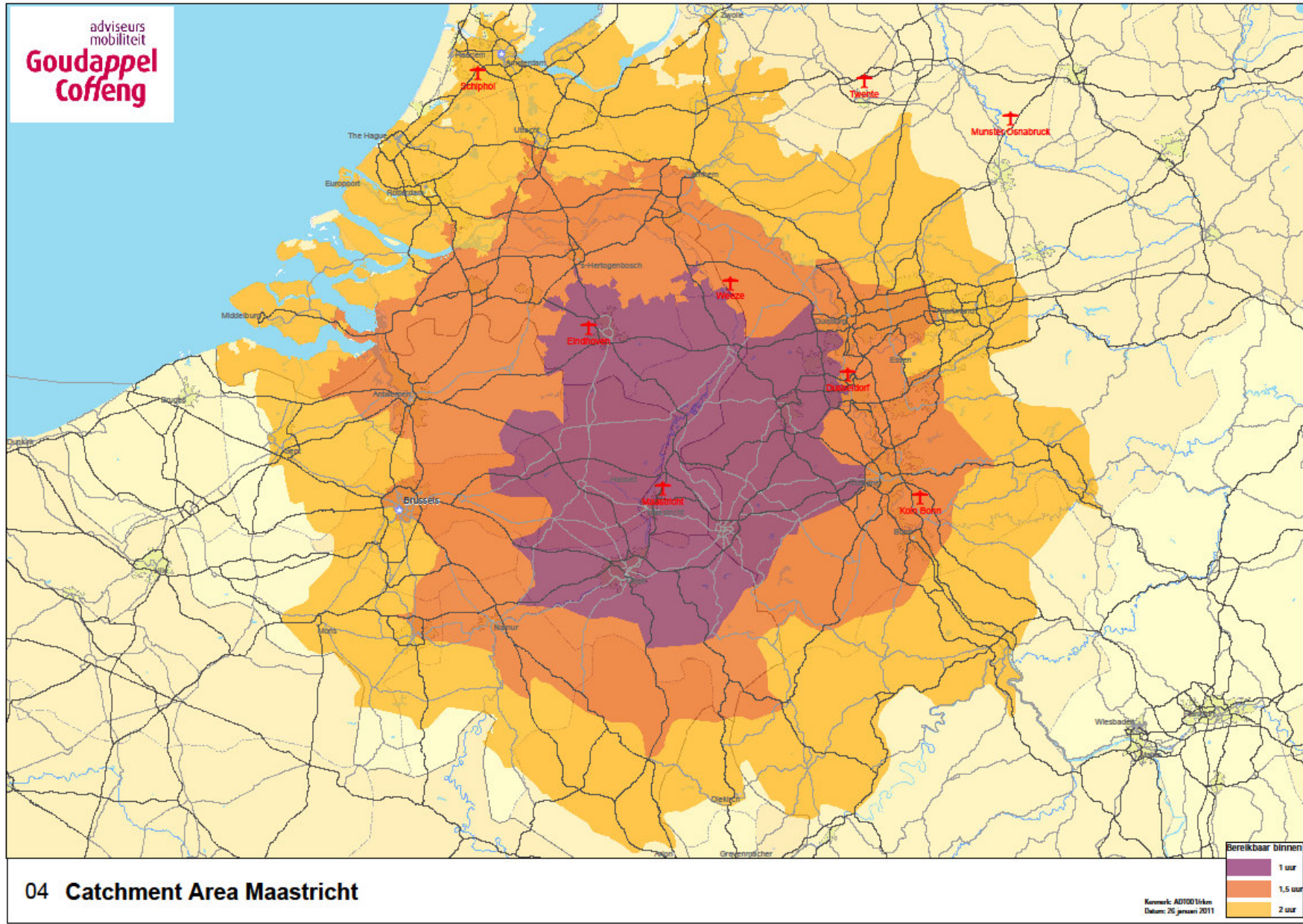
02 Catchment Area Groningen

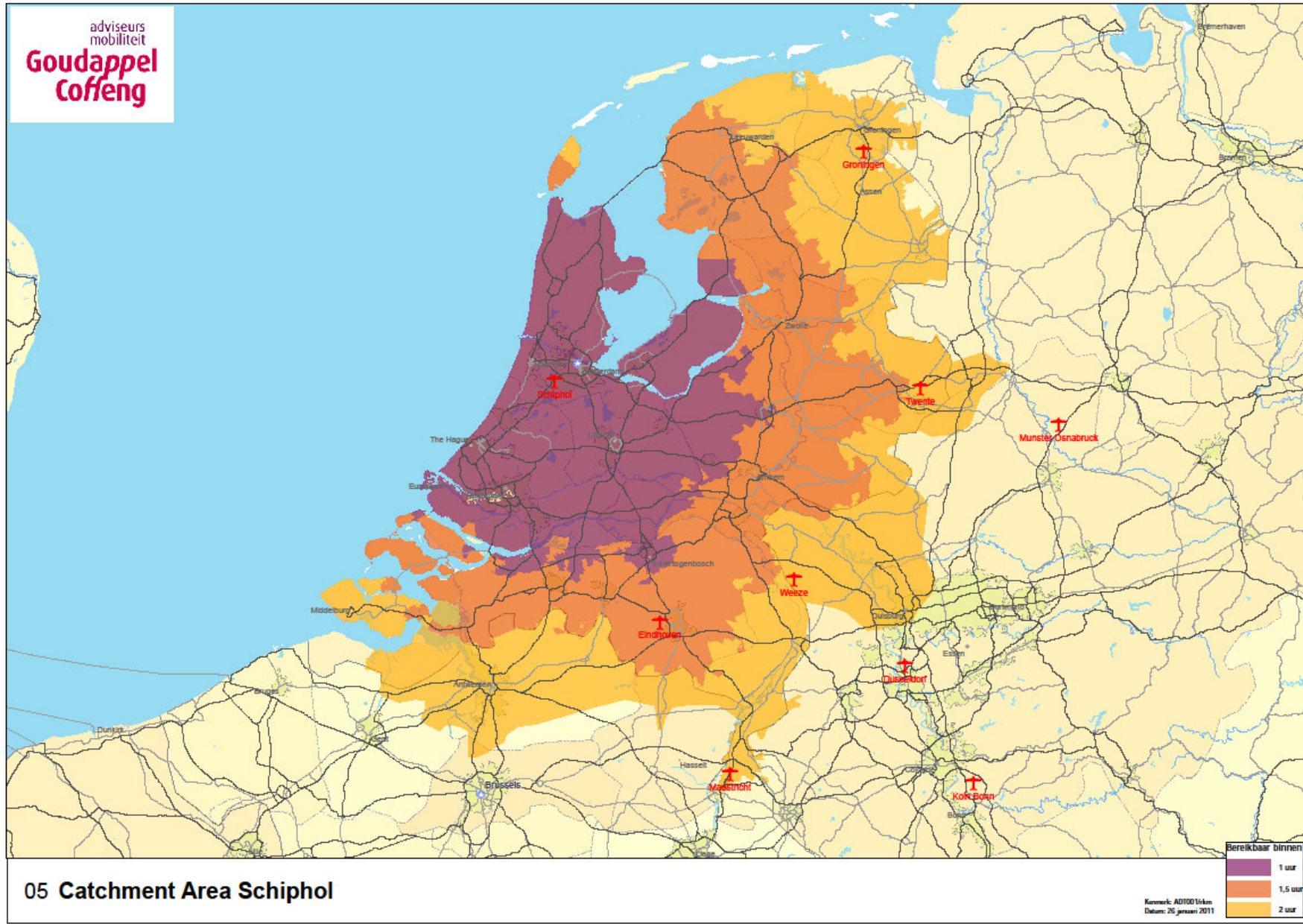
Kennink: A0001Wkm
Datum: 26 januari 2011

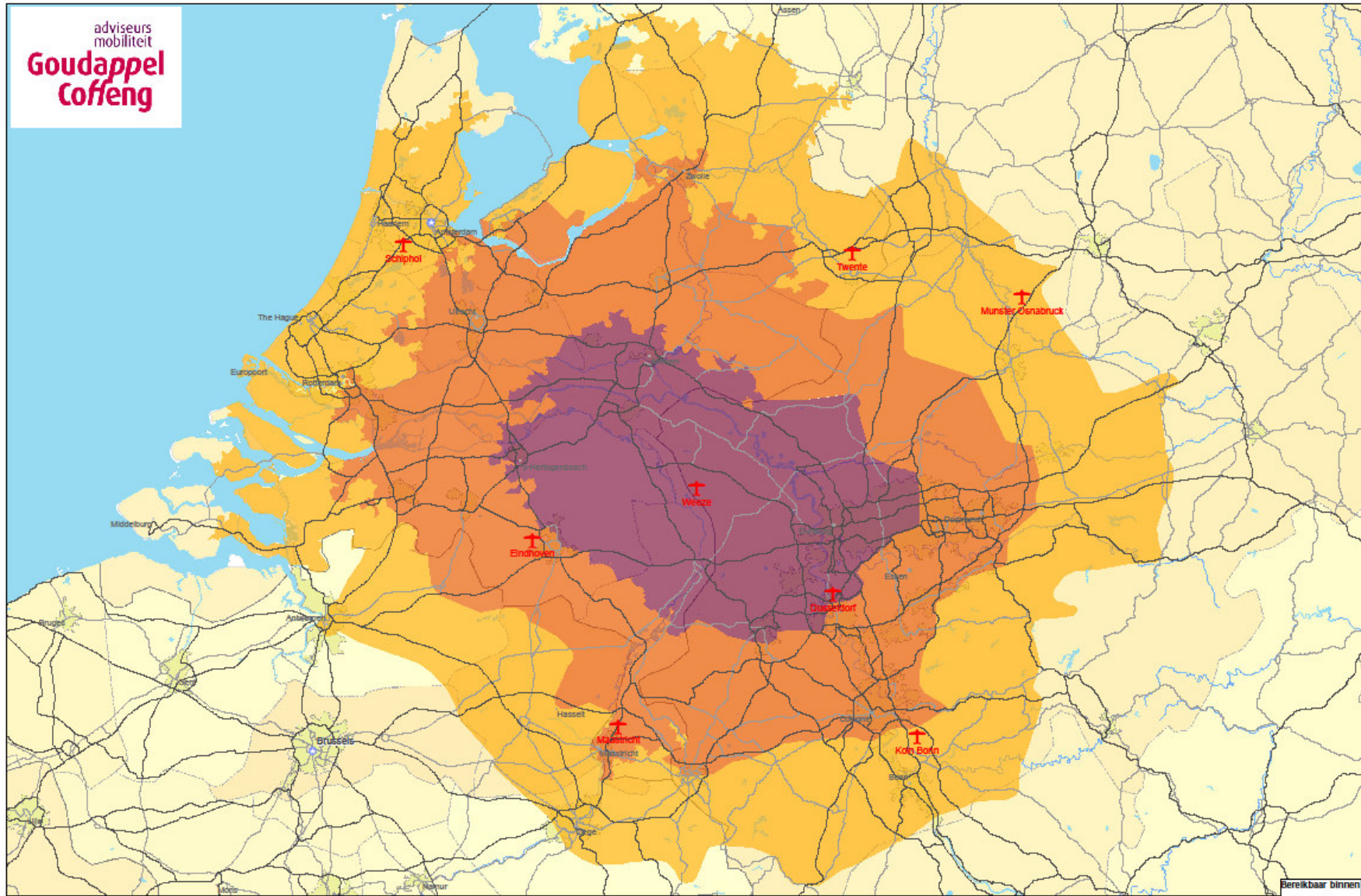


03 Catchment Area Eindhoven

Kaartmerk: AD1000 Unkm
Datum: 26 januari 2011

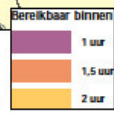


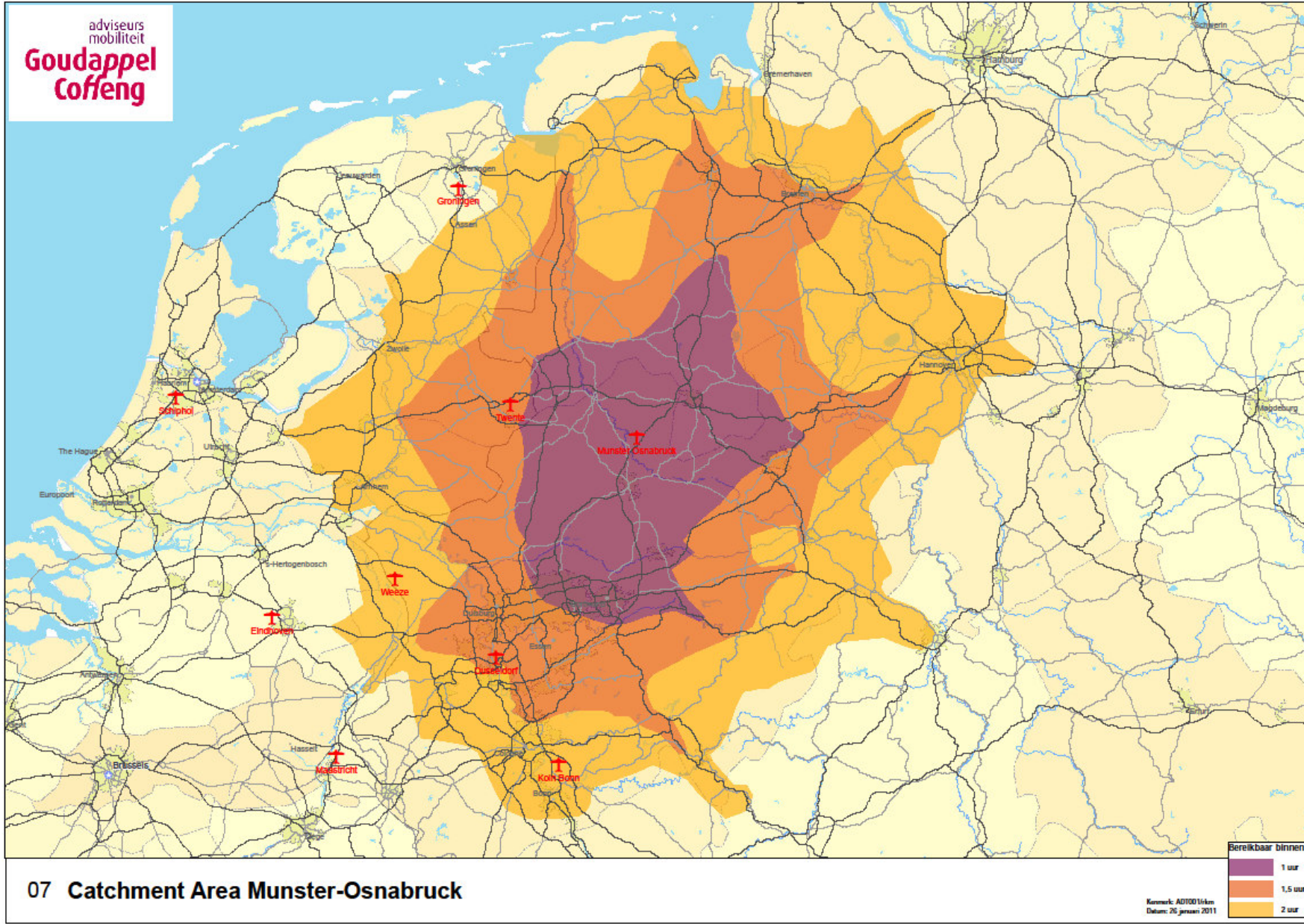


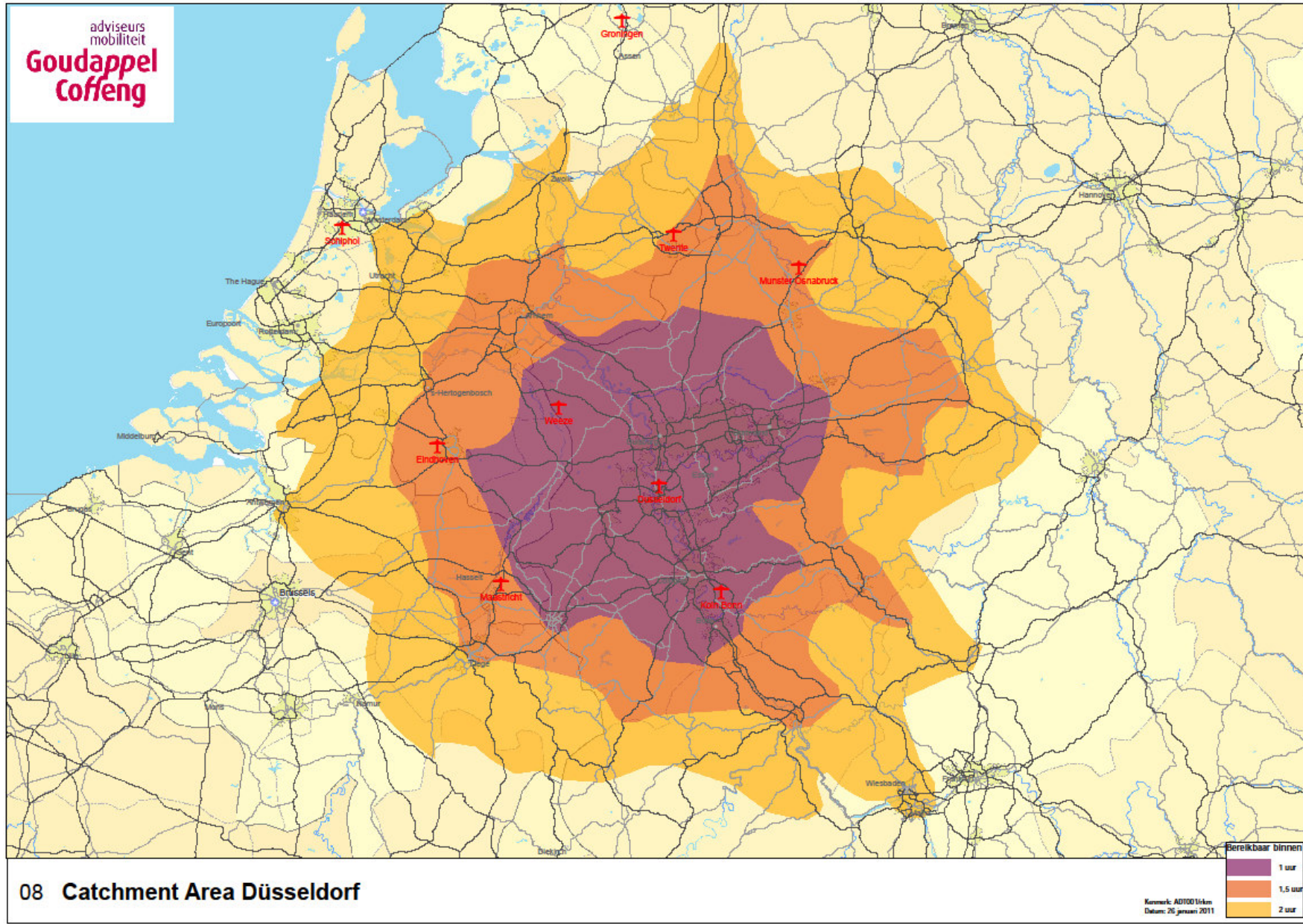


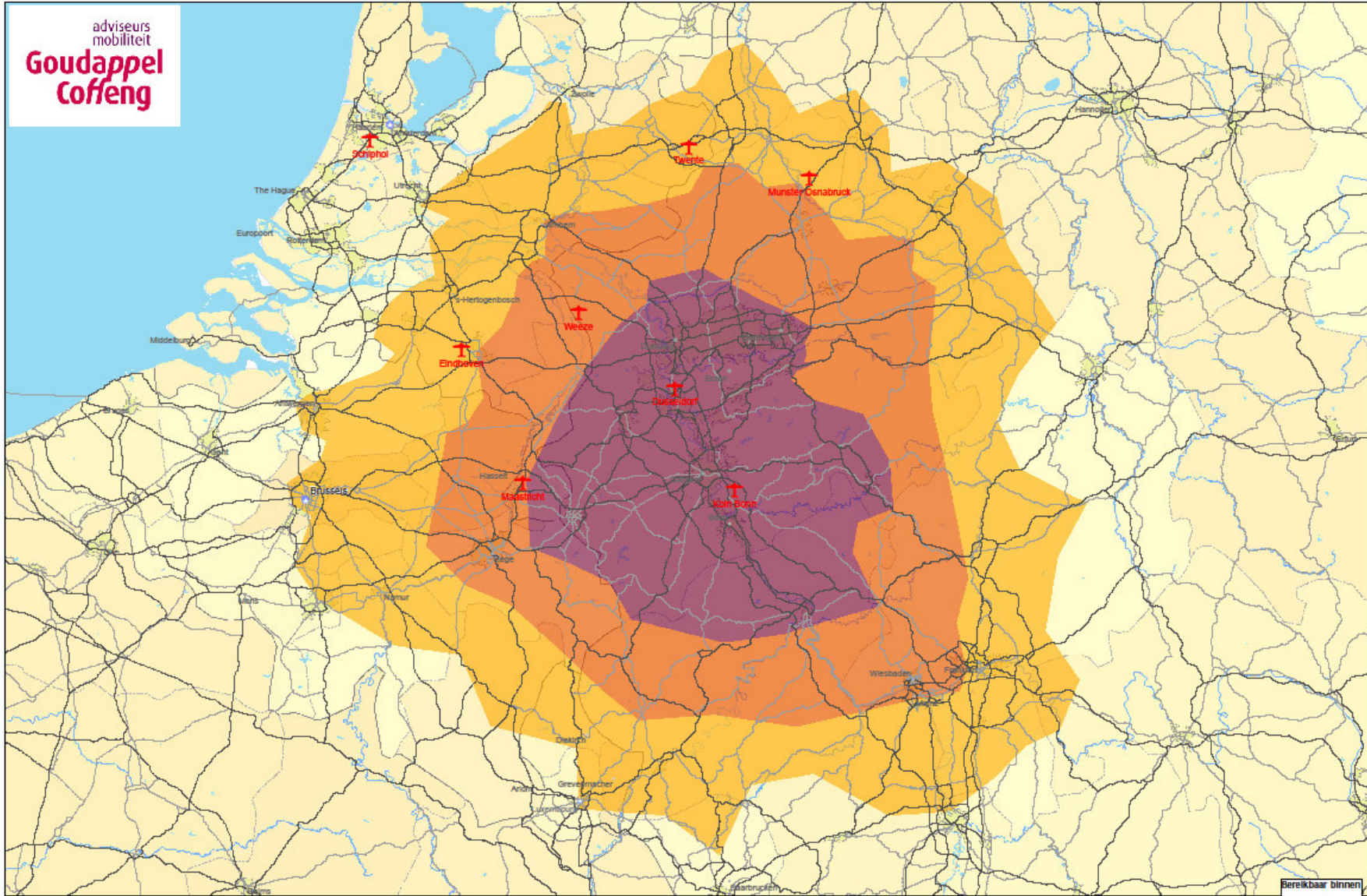
06 Catchment Area Weeze

Kennmerk: AD10014km
Datum: 26 januari 2011

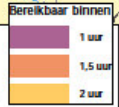




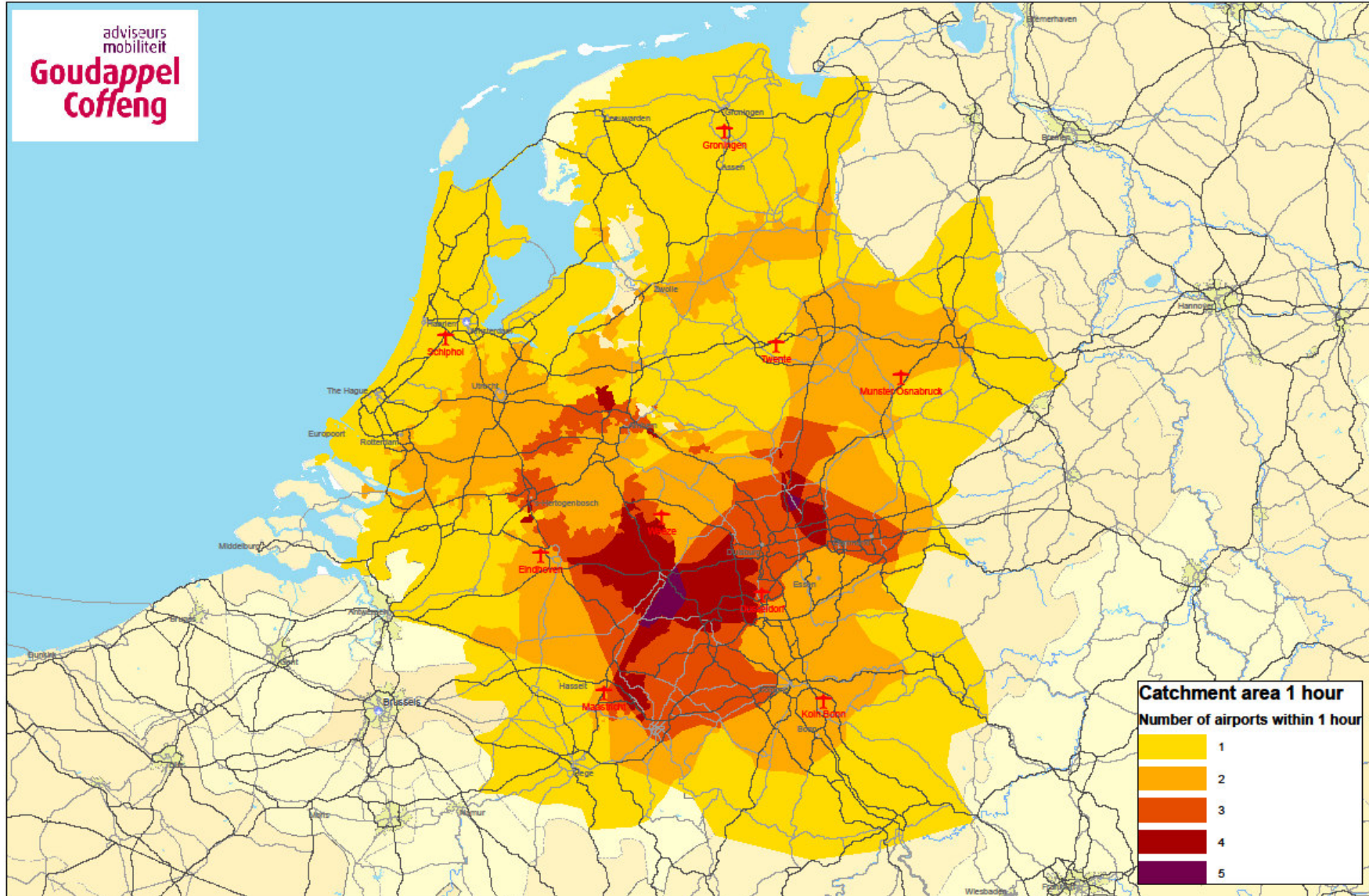




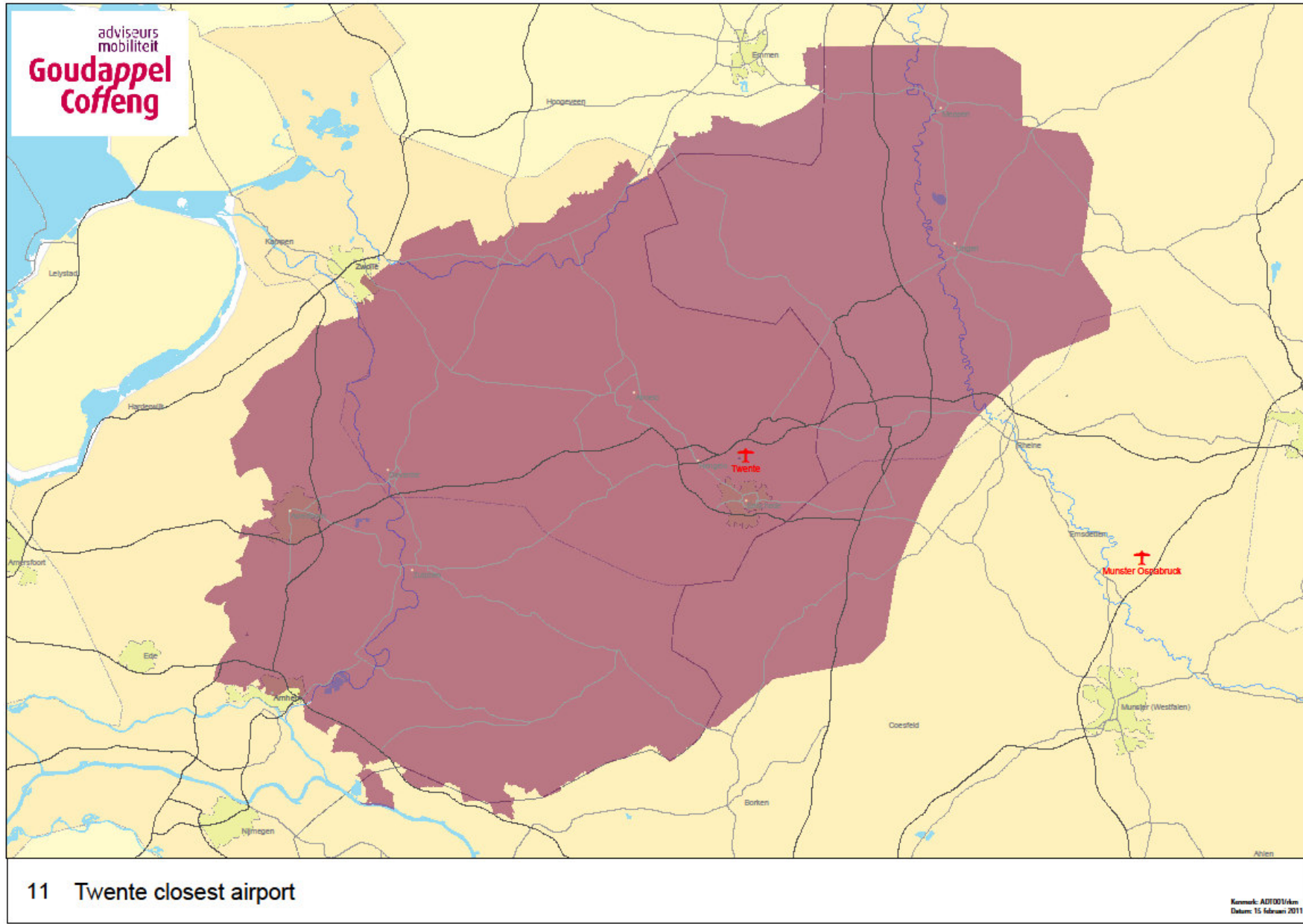
09 Catchment Area Keulen



Kennmerk: AD10014km
Datum: 26 januari 2011



10 Catchment Area 1 hour



11 Twente closest airport

Kennis: A0001Wkm
Datum: 15 februari 2011

Legend

Band Widths
ic_pac_as (ADT001)
■ 0 - 80
■ > 80



Legend

Band Widths
ic_pac_as (ADT001)
■ 0 - 80
■ > 80

