Ymddiriedolaeth GIG
Gwasanaethau Ambiwlans Cymru

Welsh Ambulance Services
NHS Trust



Welsh Ambulance Services NHS Trust
999 Travel Time Analysis

Final Version

Hywel Dda New Hospital Site Selection – Technical Analysis Information

June 2022

Purpose

Travel time to hospital and ambulance response times were important factors raised during public consultation.

This presentation presents the analysis of the travel time implications for 999 patients requiring conveyance by ambulance to hospital.

Analysis 1: Access to the closest hospital Emergency Department within 1hr

Analysis 2a: Variation in the average travel time to the closest Emergency Department by Lower Super Output Area (LSAO) for each proposed site option compared to the current hospital configuration

WAST Strategic Context

Across Hywel Dda WAST typically convey up to circa **70%** of attended 999 incidents to hospital.

WAST's Long Term Strategic Framework 'Delivering Excellence' sets out a clear strategic ambition to **safely reduce the number of patients requiring conveyance to hospital (ED)**. Therefore, a greater proportion of patients will be safely managed, and care episode resolved without requiring an ambulance attendance or a conveyance to hospital.

The Trust is developing transformational plans to 'Invert the Triangle' to achieve this ambition.



Key areas that are being considered / developed include:

Hear, Treat & Refer: This is to be achieved through an enhanced virtual clinical triage model including the expansion of our Clinical Support Desk. This will mean more patients receiving self-care advice or referral to other non-ED clinical services to meet ongoing care needs.

See, Treat & Refer: A greater proportion of patients who receive a face to face clinical assessment will have their care episode resolved at home by one of our specialist clinicians (e.g. APPs) or be referred to a primary or community service to meet ongoing care needs in their own home without needing hospital conveyance .

This is a strategic ambition that is being socialised with stakeholders and key partners but is not currently a funded or commissioned service proposal.

Analysis 1: WAST Travel Time Analysis within 1 hour

Objective:

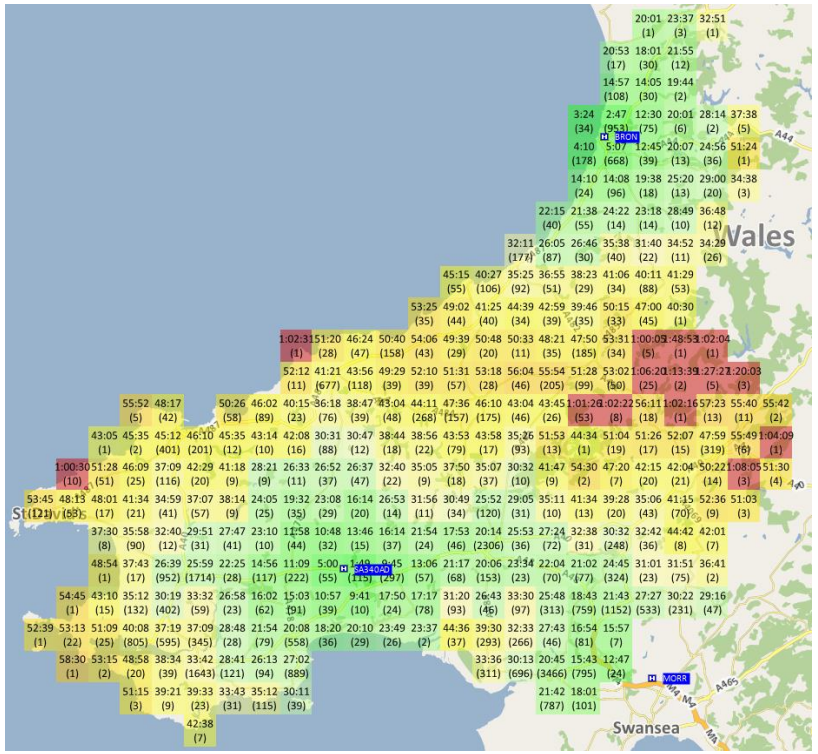
To model historical 999 WAST incidents conveyed to hospital to calculate the % of incidents that can access an Emergency Department within a 1-hour travel time for the proposed new hospital configuration for each of the 3 site locations for the new Urgent & Emergency Care Centre.

Approach:

- Source: Optima Ambulance Modelling Software
- Mapped historical WAST conveyance data for 2019
- A total of 33,808 '999' incidents were conveyed to a hospital within Hywel Dda or Morriston, Swansea in 2019
- All incidents were mapped using a 3x3 mile square
- Average Road speeds applied
- Only includes hospitals with an Emergency Department (excludes Prince Philip hospital)
- The three proposed site options were mapped (Whitland SA34 0AD / Narberth SA67 7AR & St Clears SA33 4AG) along with Bronglais & Morriston hospital
- Output = calculate the % of historical ambulance incidents that could access an Emergency Department within 1 hour

Analysis 1: Findings

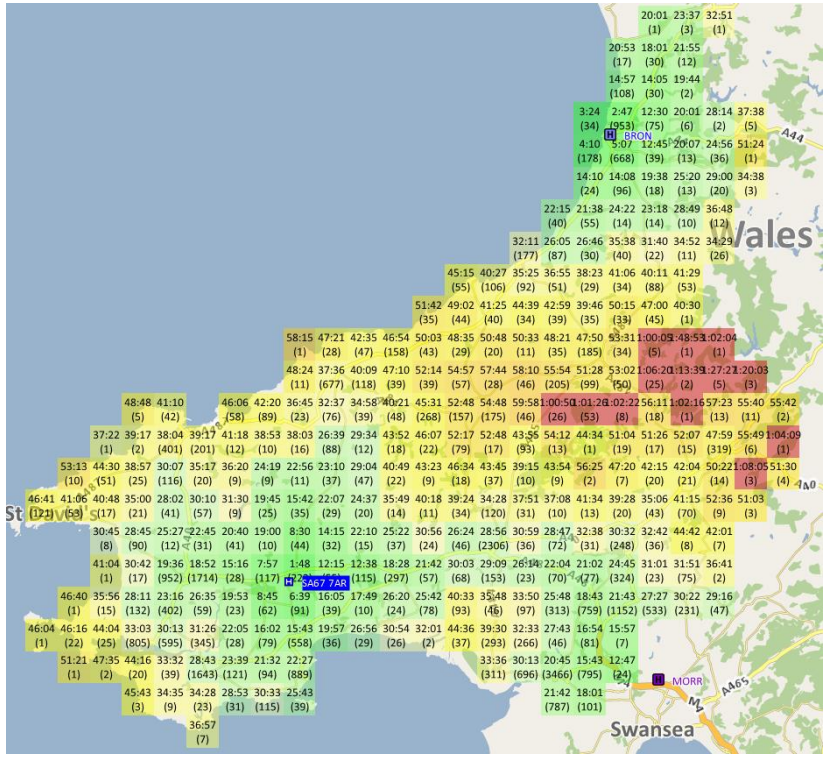
Whitland SA34 0AD



98.2% of incidents are within 1hr of either SA34 0AD **(Whitland)** or **Morriston** or **Bronglais**

A total of **601** incidents are outside 60mins average travel time.

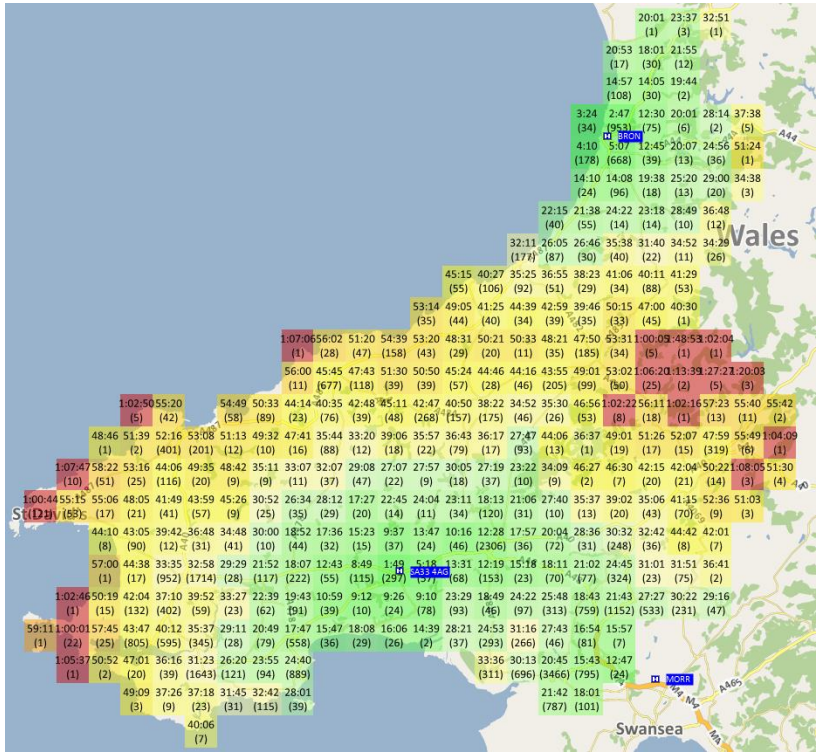
Narberth SA67 7AR



98.1% of incidents are within 1hr of either SA67 7AR (**Narberth**) or **Morriston** or **Bronglais**

A total of **640** incidents are outside of the 60 mins average travel time.

St Clears SA33 4AG



97.9% of incidents are within 1hr of either SA33 4AG (**St Clears**) or **Morriston** or **Bronglais**

A total of **723** outside 60 mins average travel time.

Analysis 2a: Travel time to the closest Emergency Department by LSOA

Objective:

Map the variation in the population level average travel time for each proposed site option compared with the baseline position (current hospital configuration) by LSOA.

Approach:

- Source: Optima Ambulance Modelling Software
- Assumption that patients attend their closest hospital with an ED (not symptom specific)
- Only includes hospitals with an Emergency Department (excludes Prince Philip hospital)
- Actual population data was overlayed to each Lower Super Output Area (LSOA) across Hywel Dda.
- LSOAs are geographic boundaries for populations up to 1,500 people
- Calculated the average travel time to hospital using Blue Light road speed for each LSOA. Comparing the variation in travel time between the current hospital configuration with an ED (Bronglais, Withybush, Glangwilli & Morriston) and the future hospital configurations for the three proposed site options:
  - Whitland (SA34 0AD) plus Bronglais & Morriston
  - Narberth (SA67 7AR) plus Bronglais & Morriston
  - St Clears (SA33 4AG) plus Bronglais & Morriston

Analysis 2a: Travel time heat maps to the nearest Emergency Department

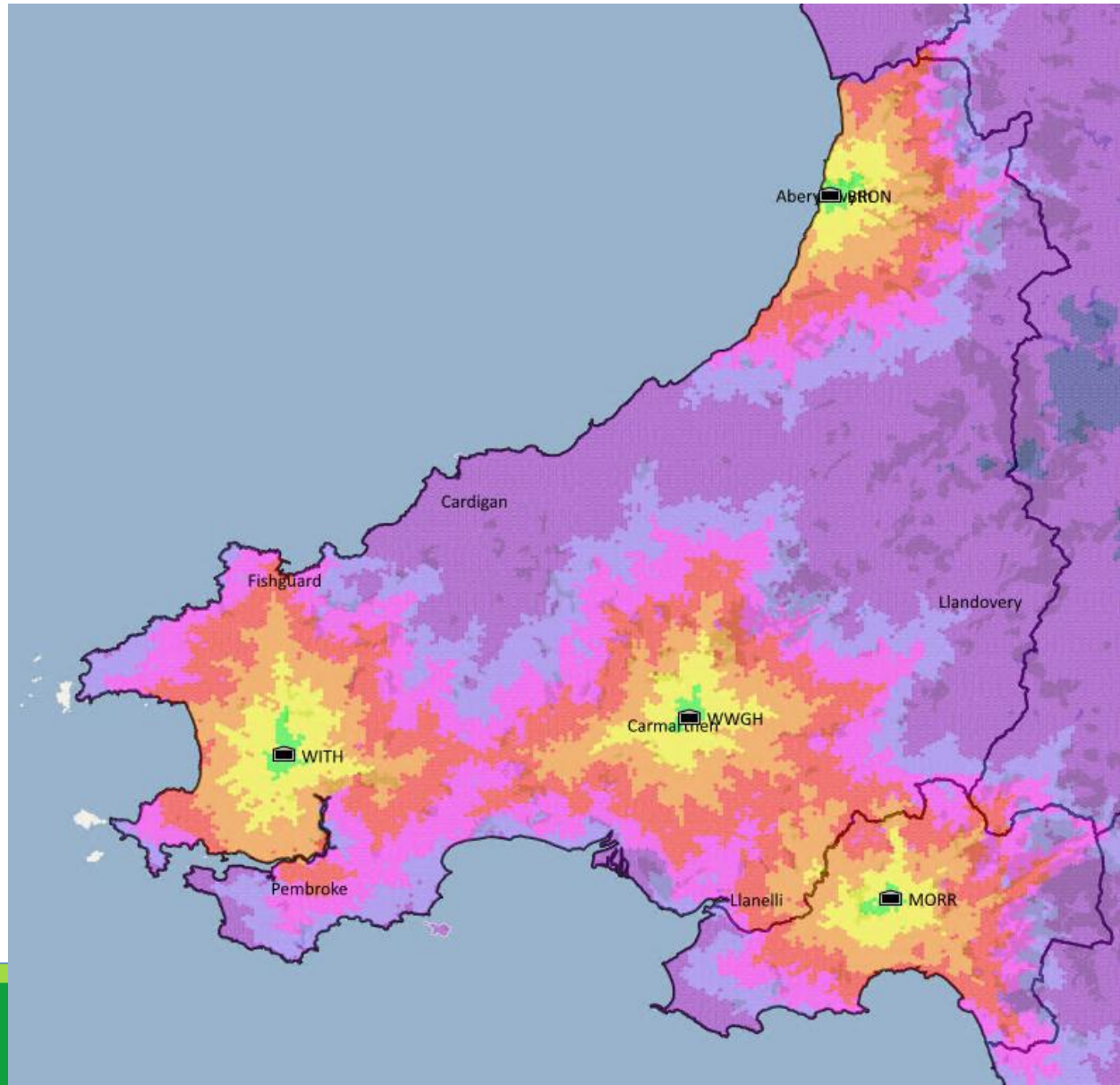
Baseline Hospital Configuration

- Bronglais
- Morriston
- Glangwili
- Withybush

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2a: Travel time heat maps to the nearest Emergency Department

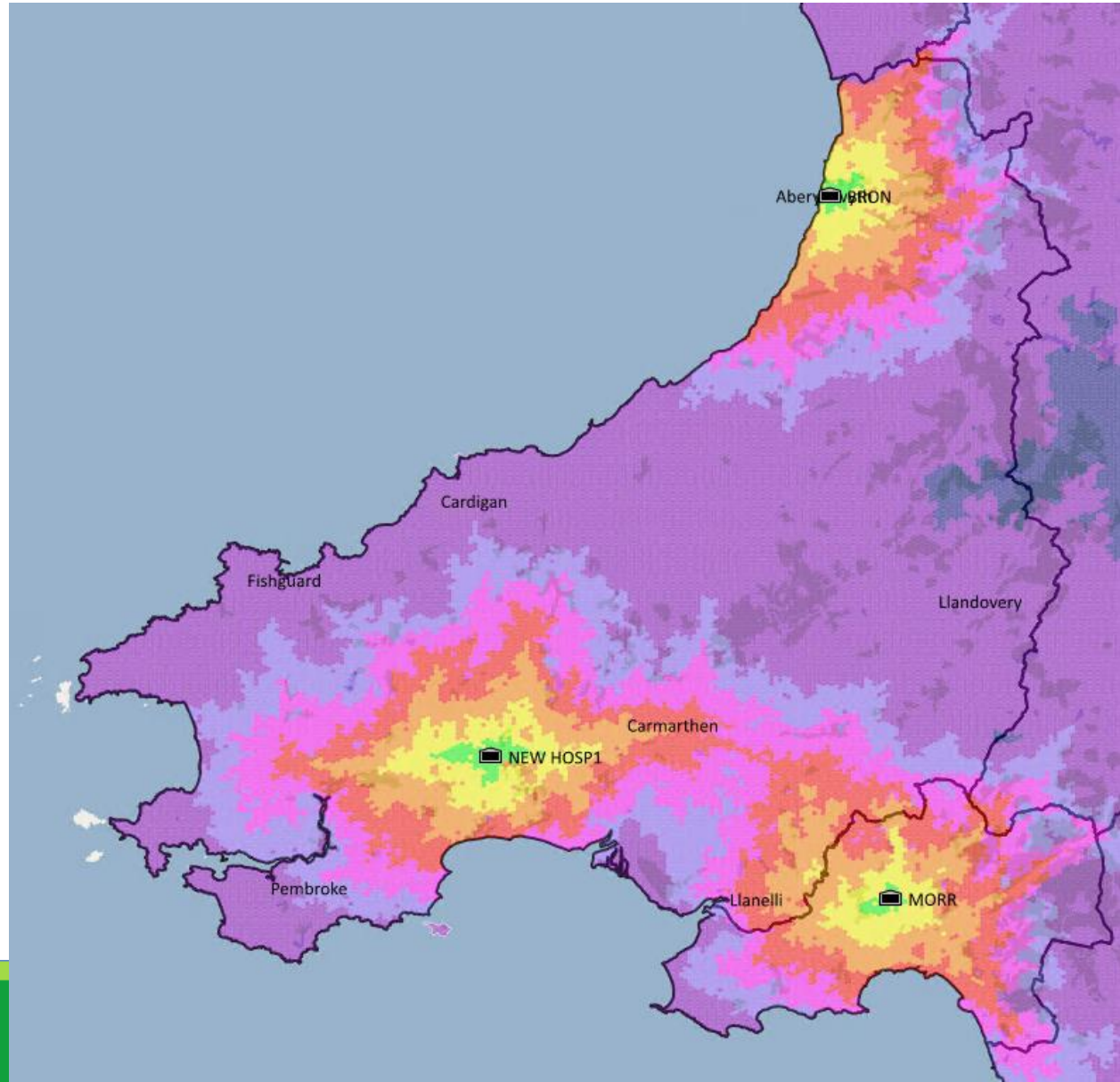
Whitland Option

- Bronglais
- Morriston
- Whitland

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2a: Travel time heat maps to the nearest Emergency Department

Hea Map Analysis

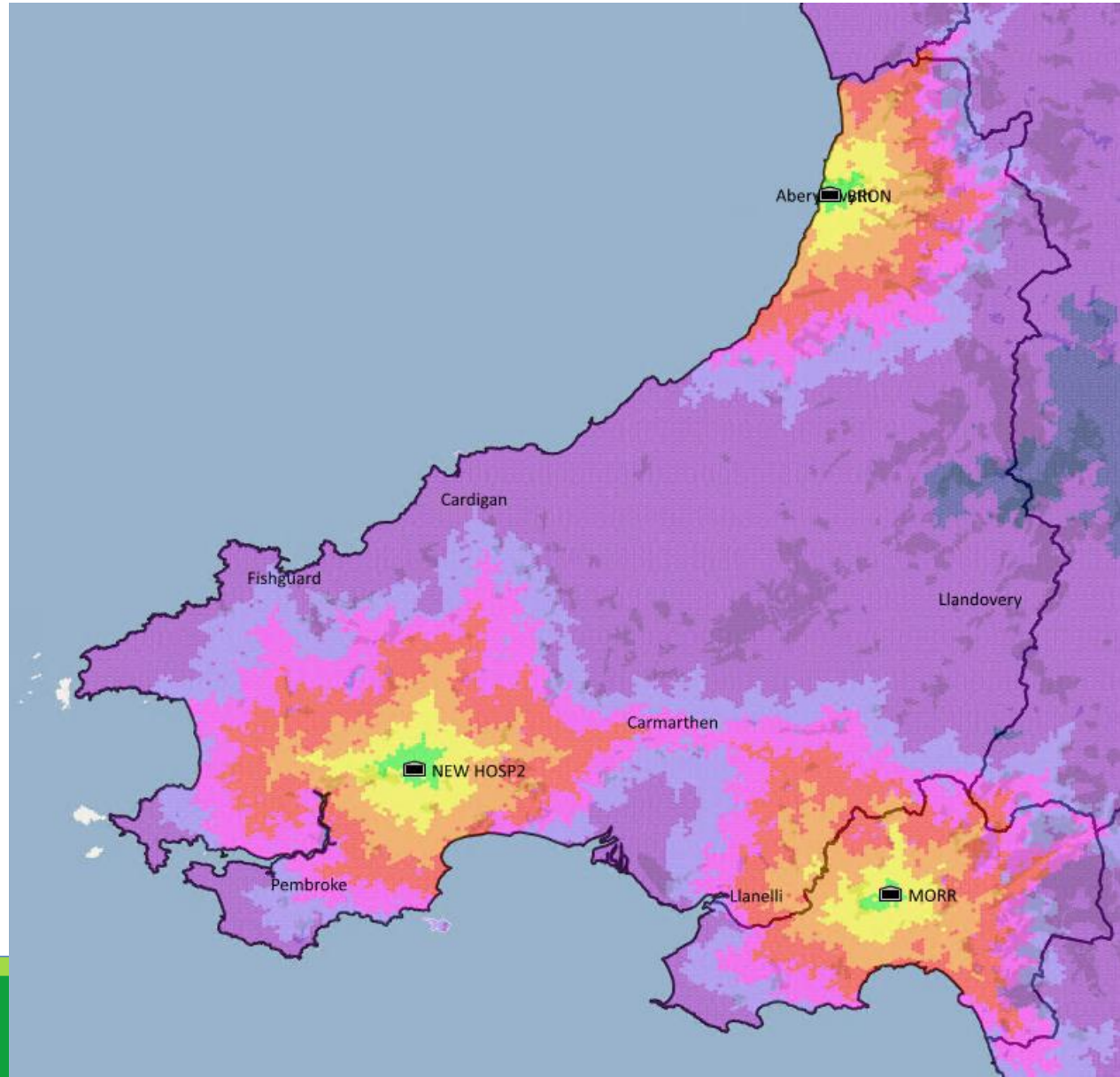
Narberth Option

- Bronglais
- Morriston
- Narberth

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2a: Travel time heat maps to the nearest Emergency Department

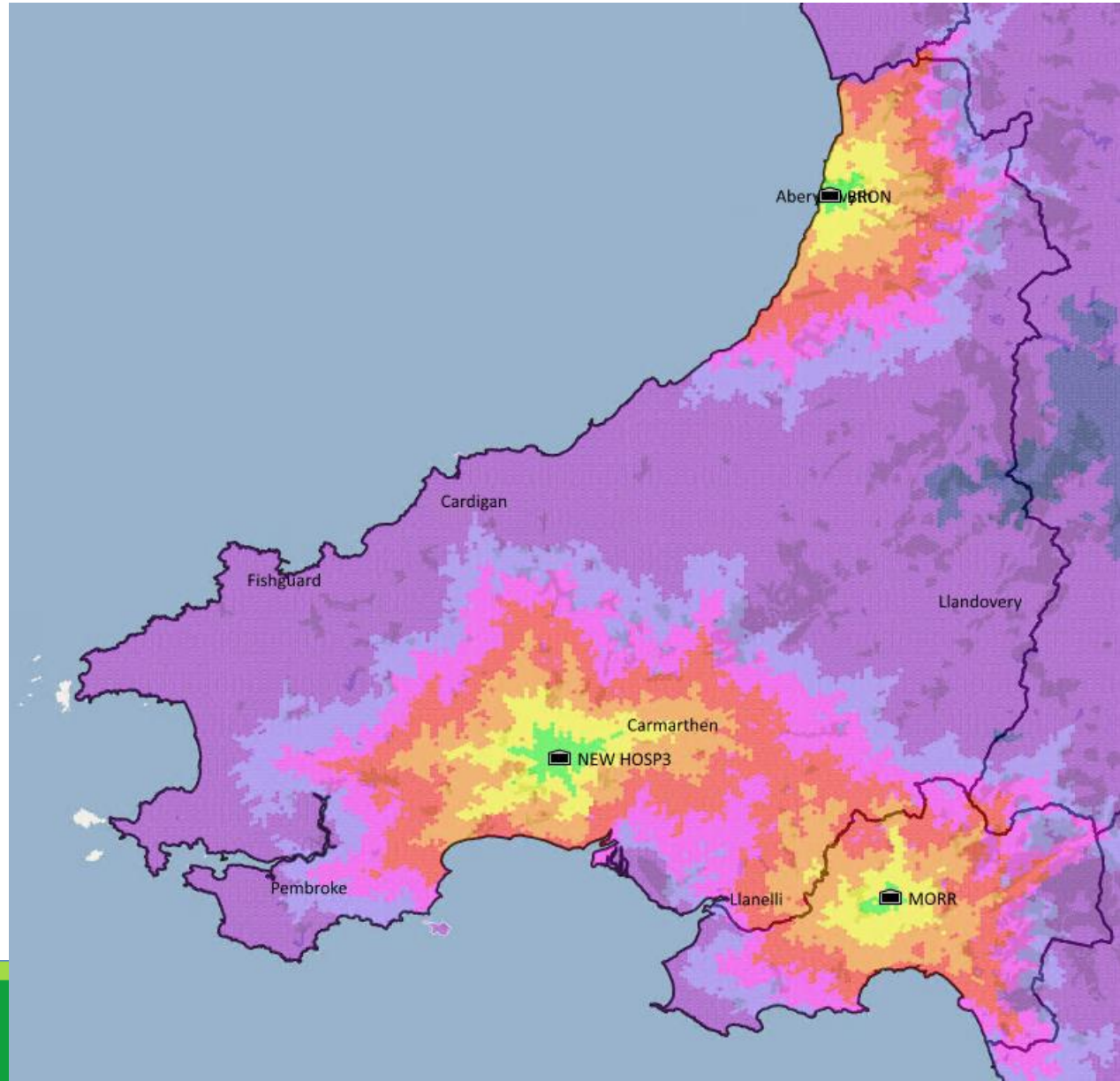
St Clears Option

- Bronglais
- Morriston
- St Clears

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2a: Variation in travel time by LSOA to the closest hospital with an Emergency Department

Map outlining the variation in travel time by LSOA & Population base for each proposed site against the baseline (current hospital configuration)

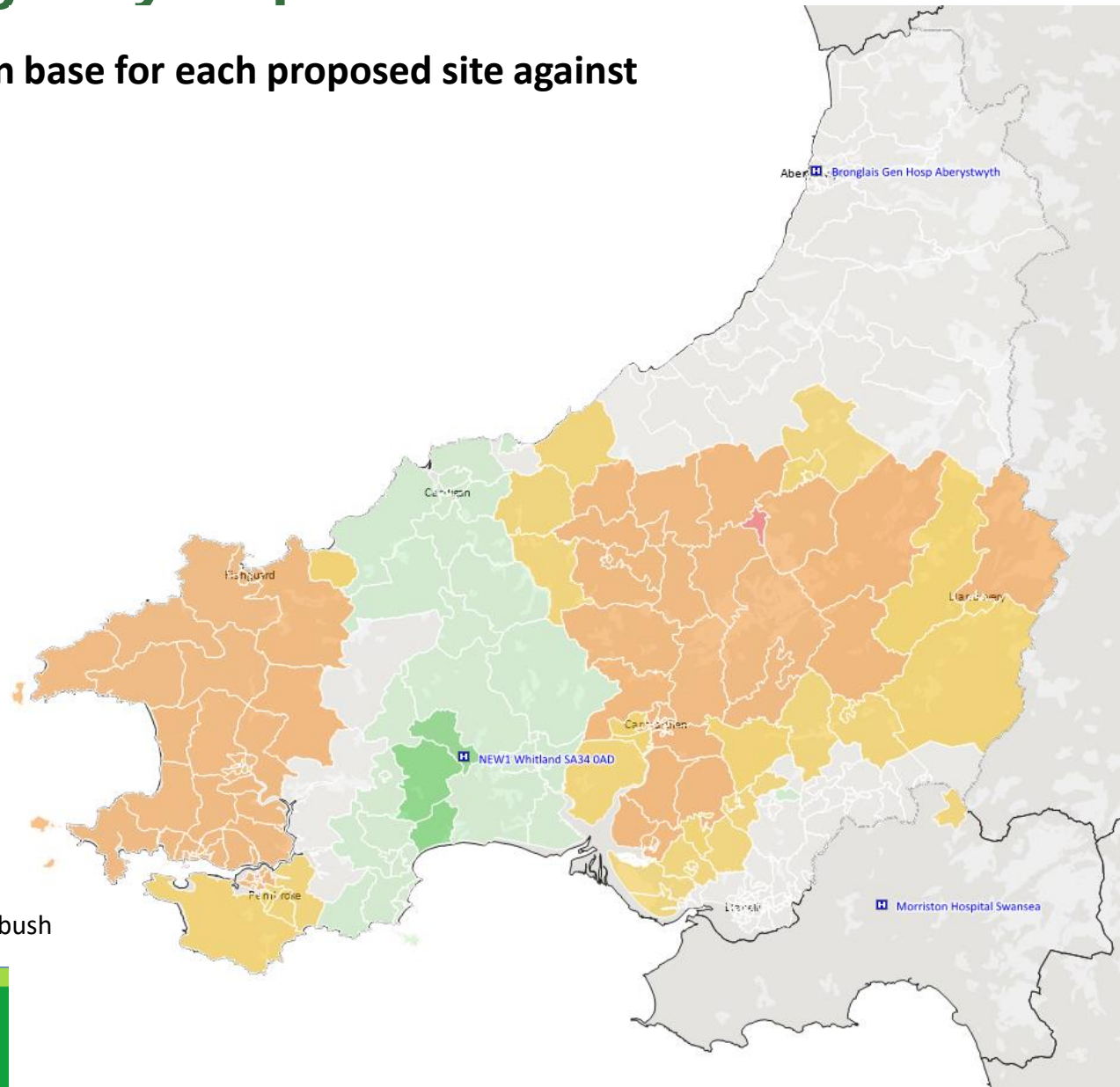
Whitland Option

- Bronglais
- Morriston
- Whitland

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	# LSOAs	% HD Population
20+ mins faster	0	0%
10-20 mins faster	3	1%
1-10 mins faster	31	6%
1 min either side of 0	89	19%
1-10 mins slower	33	57%
10-20 mins slower	73	16%
20+ mins slower	1	0%



Baseline Hospital Configuration
Bronglais / Morriston / Glangwili / Withybush

Analysis 2a: Variation in travel time by LSOA to the closest hospital with an Emergency Department

Map outlining the variation in travel time by LSOA & Population base for each proposed site against the baseline (current hospital configuration)

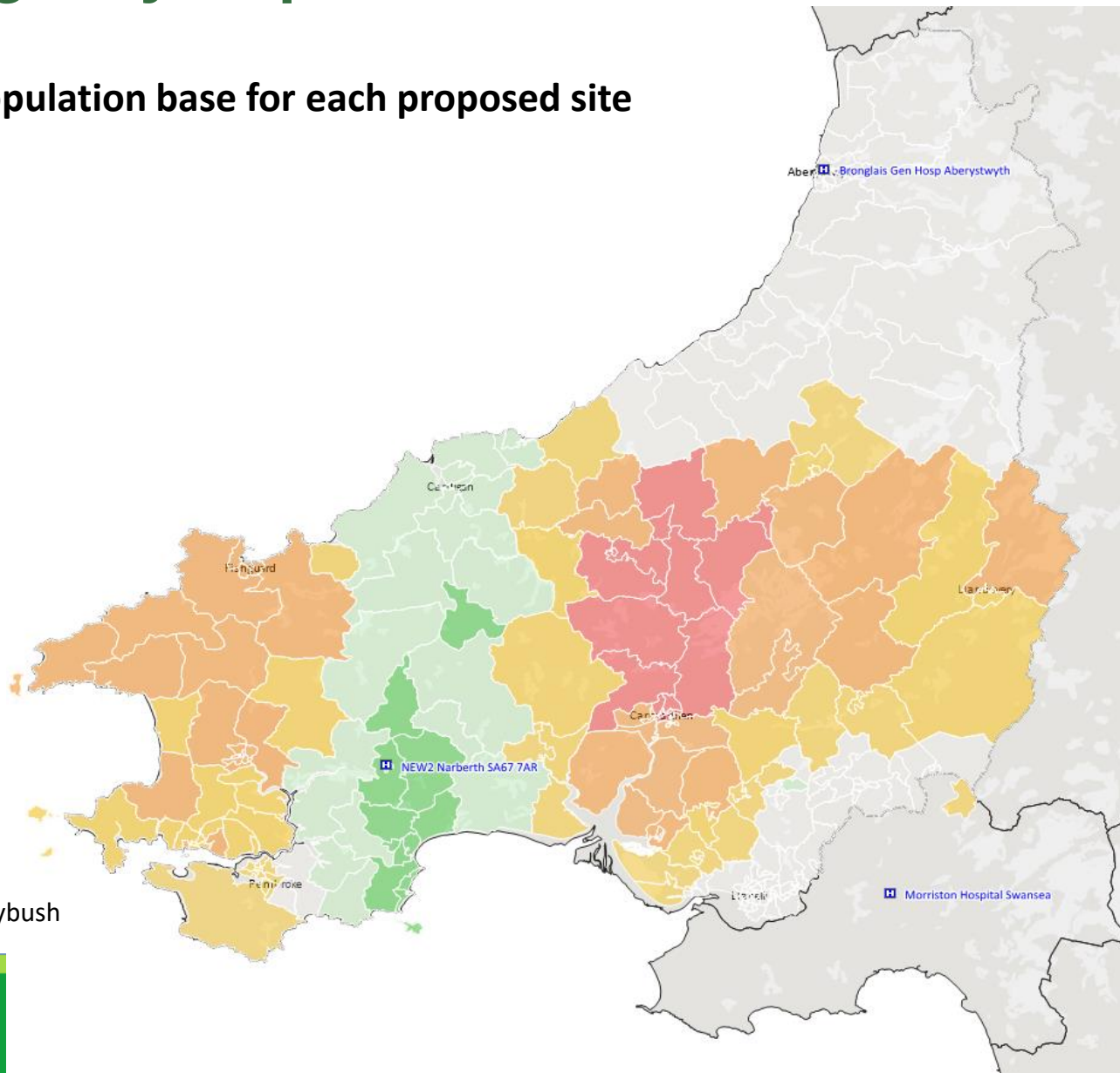
Narberth Option

- Bronglais
- Morriston
- Narberth

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	# LSOAs	% HD Population
20+ mins faster	0	0%
10-20 mins faster	14	3%
1-10 mins faster	20	4%
1 min either side of 0	87	19%
1-10 mins slower	53	62%
10-20 mins slower	42	9%
20+ mins slower	14	3%



Baseline Hospital Configuration
Bronglais / Morriston / Glangwili / Withybush

Analysis 2a: Variation in travel time by LSOA to the closest hospital with an Emergency Department

Map outlining the variation in travel time by LSOA & Population base for each proposed site against the baseline (current hospital configuration)

St Clears Option

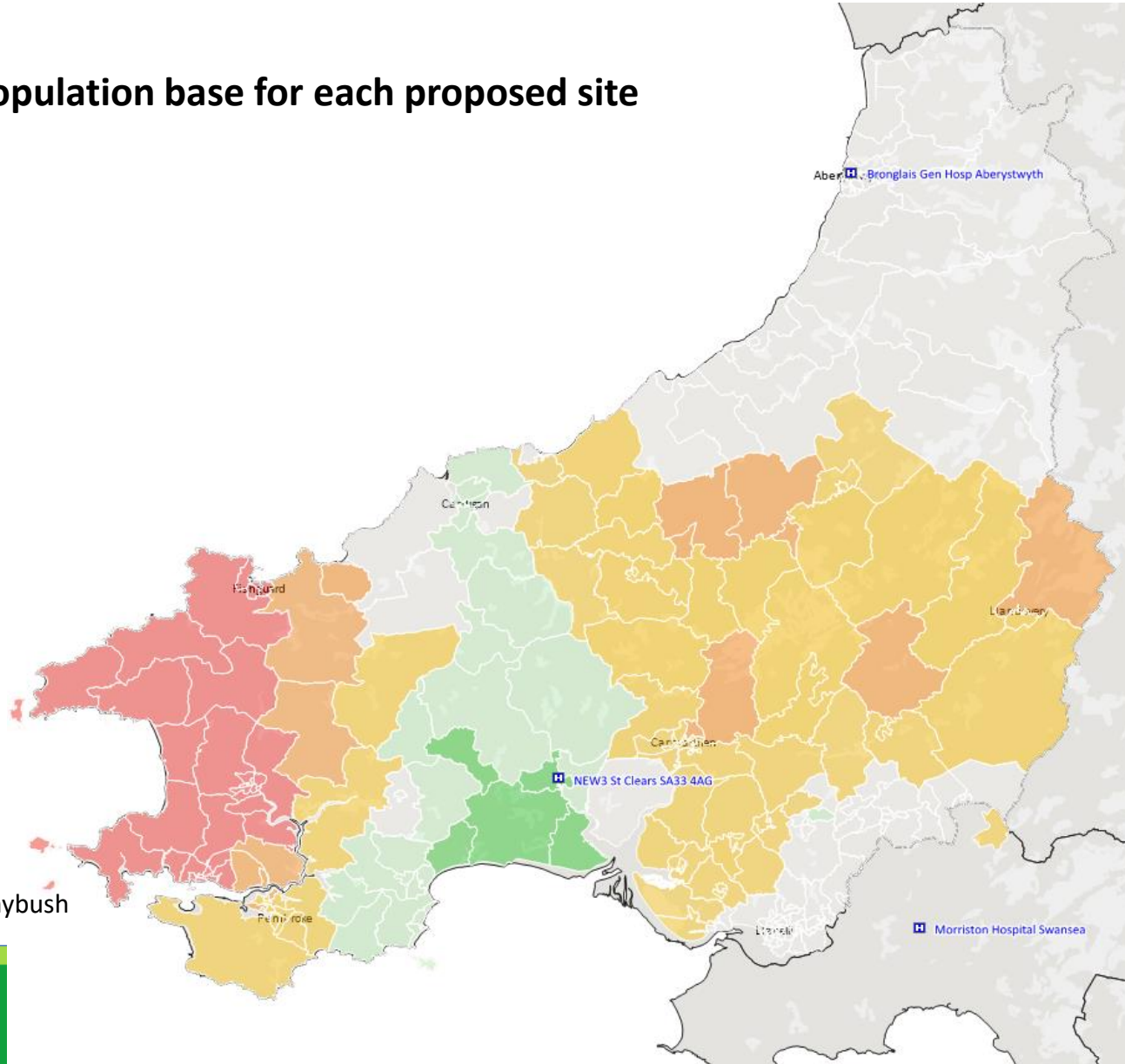
- Bronglais
- Morriston
- St Clears

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	# LSOAs	% HD Population
20+ mins faster	0	0%
10-20 mins faster	5	1%
1-10 mins faster	24	5%
1 min either side of 0	92	20%
1-10 mins slower	63	63%
10-20 mins slower	16	3%
20+ mins slower	30	7%

Baseline Hospital Configuration
Bronglais / Morriston / Glangwili / Withybush



Analysis 2a: Variation in travel time by LSOA to the closest hospital with an Emergency Department

What Percentage of Hywel Dda Population is affected in a positive / negative way of Travel Time ?

Population Weighted Average: shows the average travel time change from Baseline per person for each scenario.

E.g. The average person has a travel time of 8.8 minutes slower than baseline.

KEY			
New Hosp:	Whitland	Narberth	St Clears
20+ mins Quicker	0%	0%	0%
10-20 mins Quicker	1%	3%	1%
1-10 mins Quicker	6%	4%	5%
1 min either side of 0	19%	19%	20%
1-10 mins slower	57%	62%	63%
10-20 mins Slower	16%	9%	3%
20+ mins Slower	0%	3%	7%
Total	**100%**	**100%**	**100%**
Pop. Weighted Avg	8.8	11.1	6.0

This says that 1% of the Hywel Dda population are in an LSOA that have an average travel time to hospital 10-20 mins quicker in than the baseline.

Some patients may experience a longer travel time to hospital. The new model is predicated upon providing the highest quality of care to improve patient outcomes.

To ensure we have in place the right ambulance capacity in the right place to provide a clinically effective and timely response to service users. The impact on ambulance capacity and job cycle times will be modelled in more detail in conjunction with the detailed development of the AHMWW clinical model. Furthermore we are exploring co-locating an MRD and ambulance station on the new site to support response times and reduce vehicle downtime.

Additional Information

Analysis 2b: Population travel time analysis to access the closest hospital including Prince Philip

Analysis 2b: Population travel time analysis to access the closest hospital including Prince Philip

Objective:

Map the variation in the population level travel time for each proposed site option compared with the baseline position (current hospital configuration) by LSOA

Approach:

- Source: Optima Ambulance Modelling Software
- Assumption that patients attend their closest hospital (not symptom specific). Prince Philip has been included in this scenario noting that some ambulance patients may be conveyed here, but it does not have an Emergency Department in the future model.
- Population data was overlayed to each LSOA across Hywel Dda
- Calculated the average travel time to hospital using Blue Light road speed for each LSOA
- Applied the baseline travel time for the current hospital configuration with an ED – Bronglais, Withybush, Prince Philip, Glangwilli & Morriston
- Compared the variation in average travel times against the future hospital configuration with an ED for each of the three proposed site options:
  - Whitland (SA34 0AD) plus Bronglais & Morriston
  - Narberth (SA67 7AR) plus Bronglais & Morriston
  - St Clears (SA33 4AG) plus Bronglais & Morriston

Analysis 2b: Travel time heats maps to the nearest hospital including Prince Philip

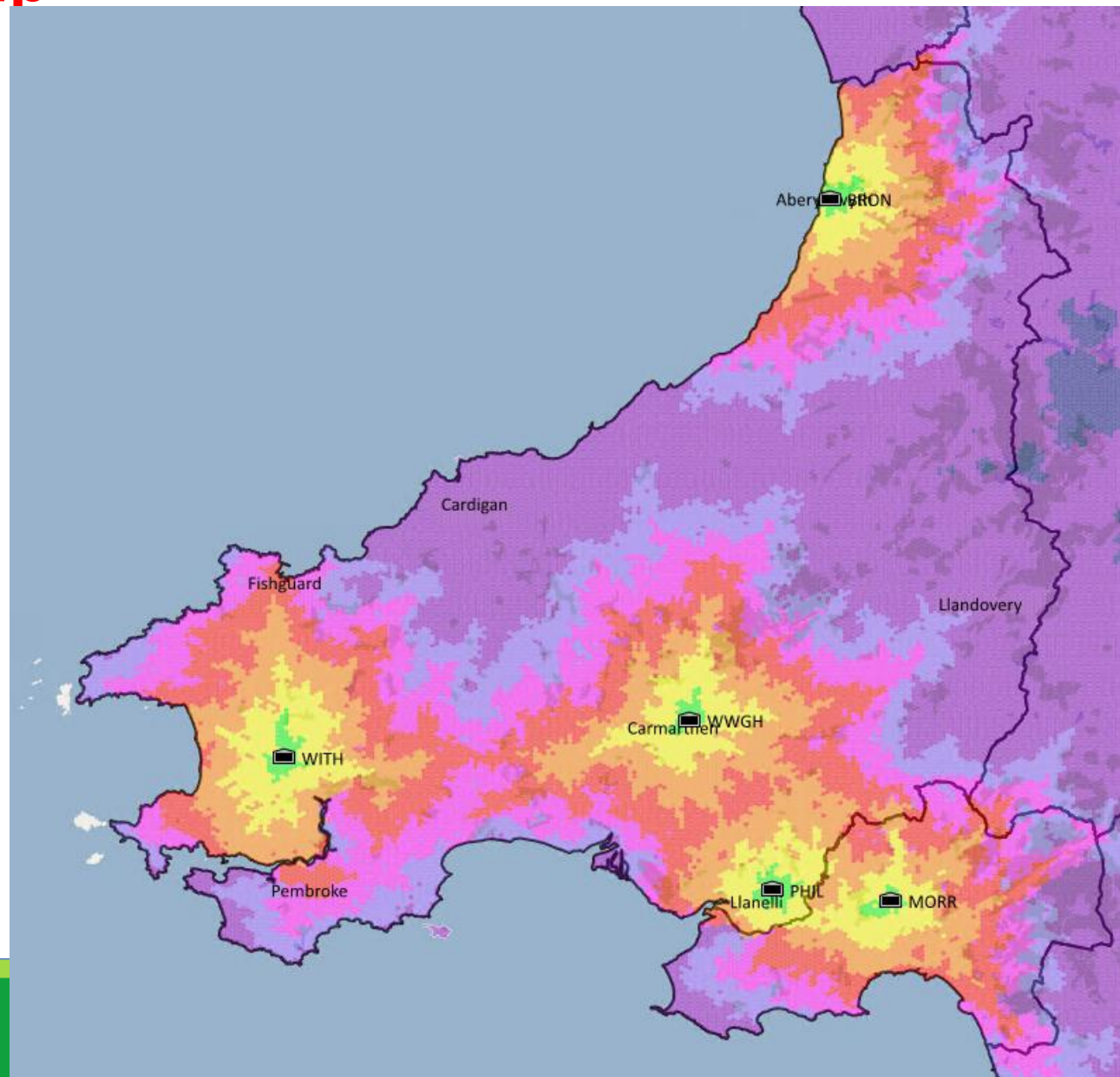
Baseline Hospital Configuration

- Bronglais
- Morriston
- Glangwili
- Withybush
- Prince Philip

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2b: Travel time heats maps to the nearest hospital including Prince Philip

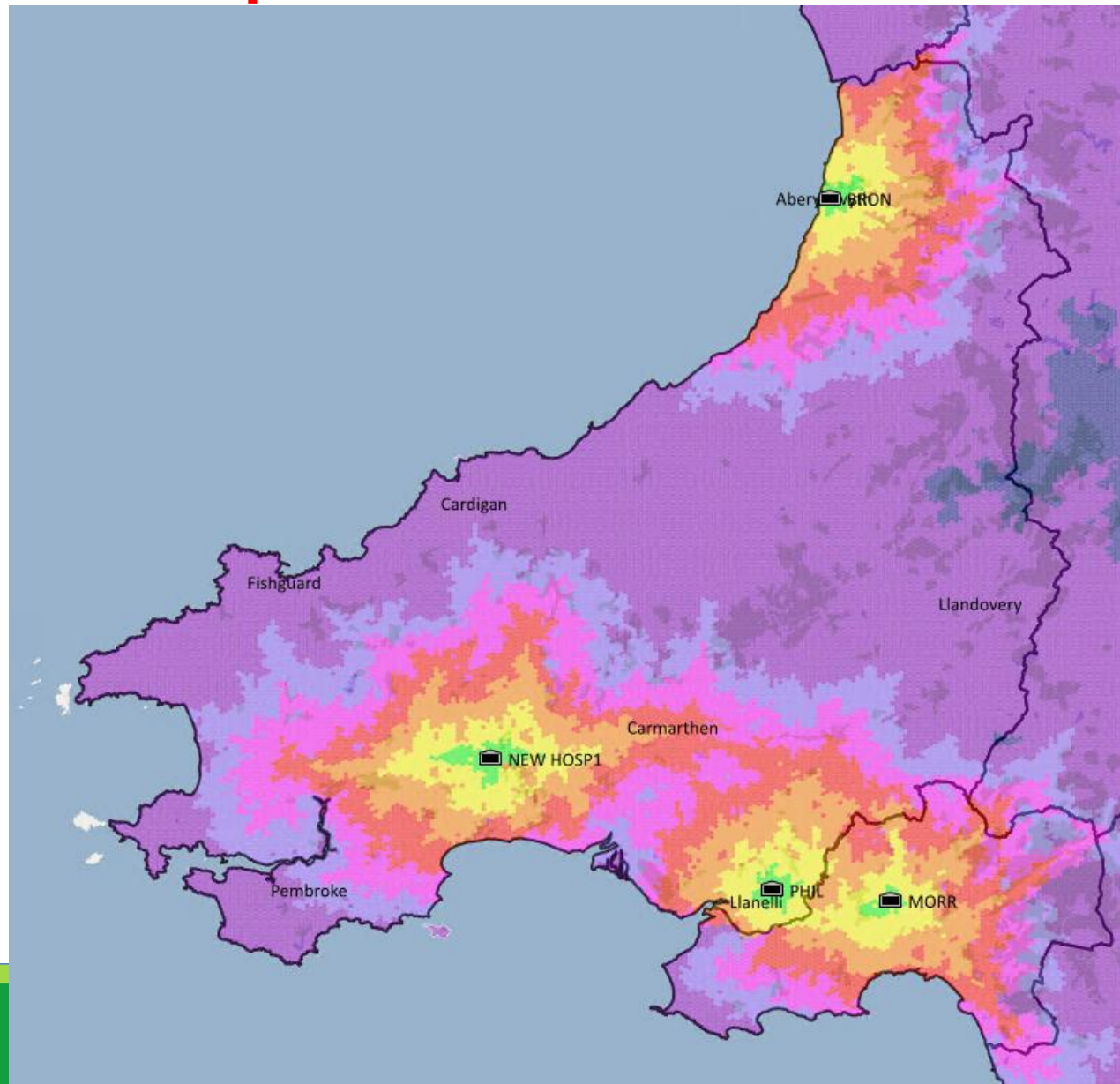
Whitland Option

- Bronglais
- Morriston
- Prince Philip
- Whitland

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2b: Travel time heats maps to the nearest hospital including Prince Philip

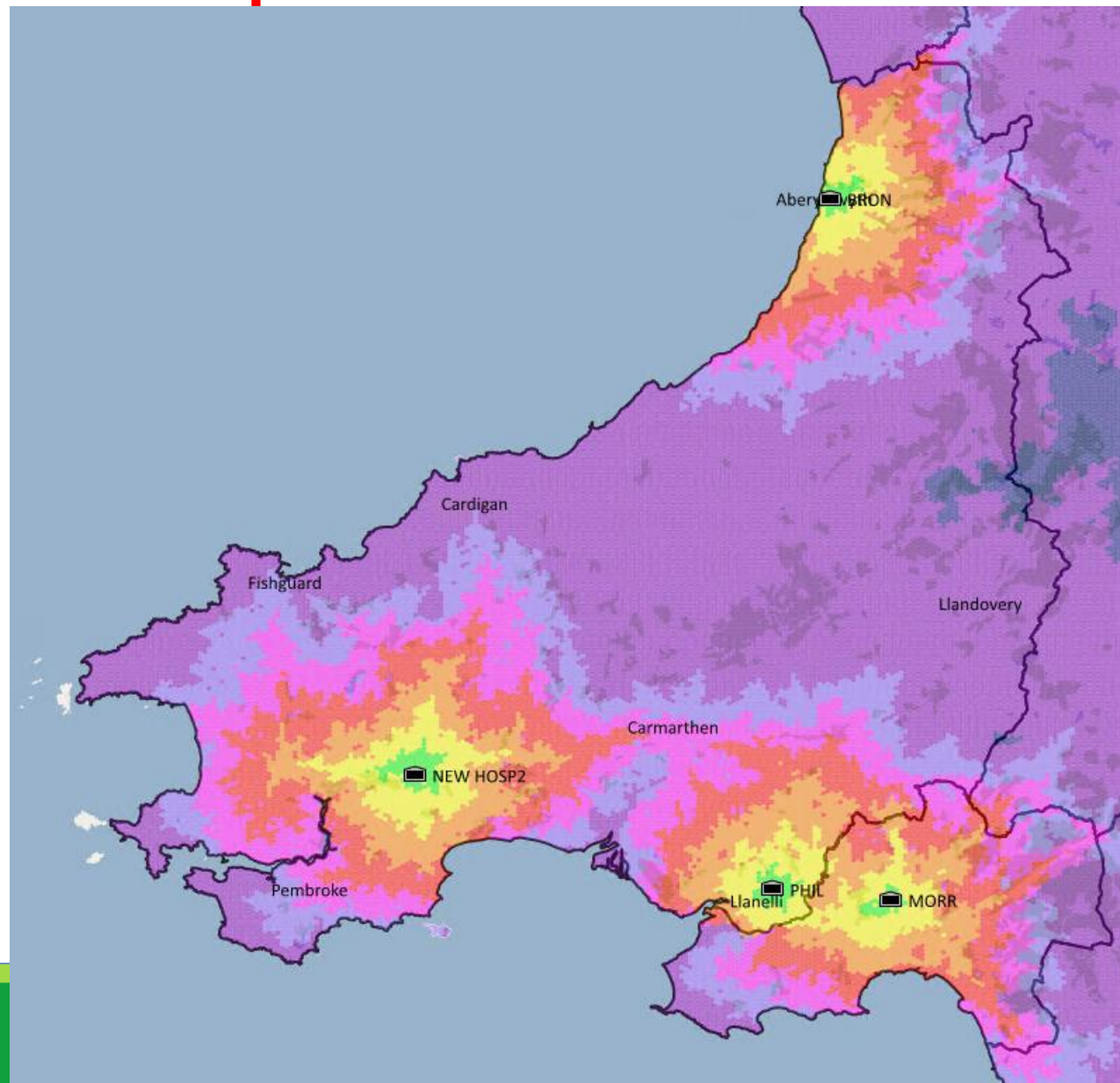
Narberth Option

- Bronglais
- Morriston
- Prince Philip
- Narberth

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2b: Travel time heats maps to the nearest hospital including Prince Philip

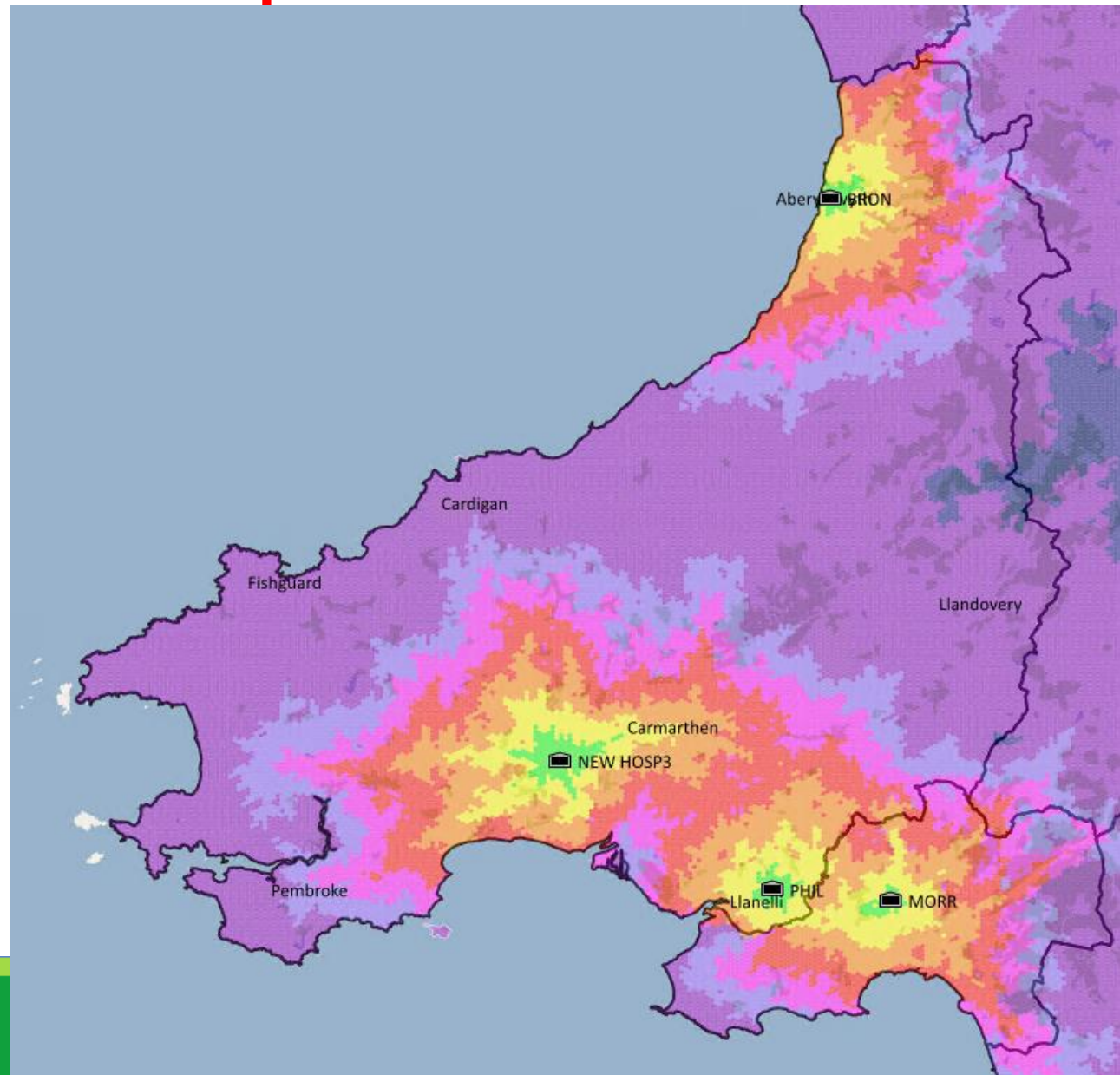
St Clears Option

- Bronglais
- Morriston
- Prince Philip
- St Clears

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	
0-5 mins	
5-10 mins	
10-15 mins	
15-20 mins	
20-25 mins	
25-30 mins	
30-60 mins	
60-90 mins	



Analysis 2b: Variation in travel time by LSOA to the closest hospital including Prince Philip

Map outlining the variation in travel time by LSOA & Population base for each proposed site against the baseline (current hospital configuration)

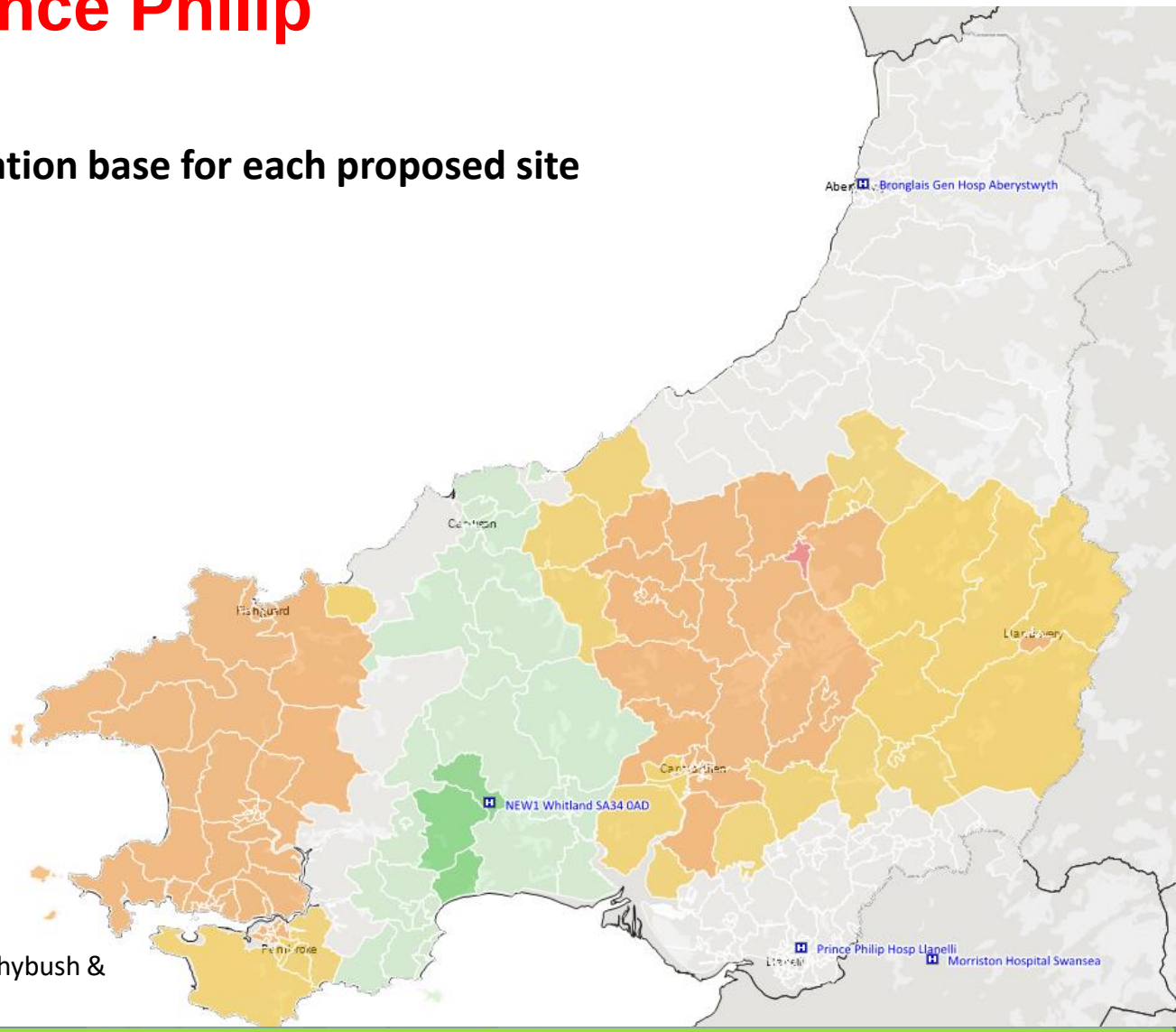
Whitland Option

- Bronglais
- Morriston
- Prince Philip
- Whitland

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	# LSOAs	% HD Population
20+ mins faster	0	0%
10-20 mins faster	3	1%
1-10 mins faster	29	6%
1 min either side of 0	102	22%
1-10 mins slower	28	56%
10-20 mins slower	67	15%
20+ mins slower	1	0%



Baseline Hospital Configuration
Bronglais / Morriston / Glangwili / Withybush & Prince Philip

Analysis 2b: Variation in travel time by LSOA to the closest hospital including Prince Philip

Map outlining the variation in travel time by LSOA & Population base for each proposed site against the baseline (current hospital configuration)

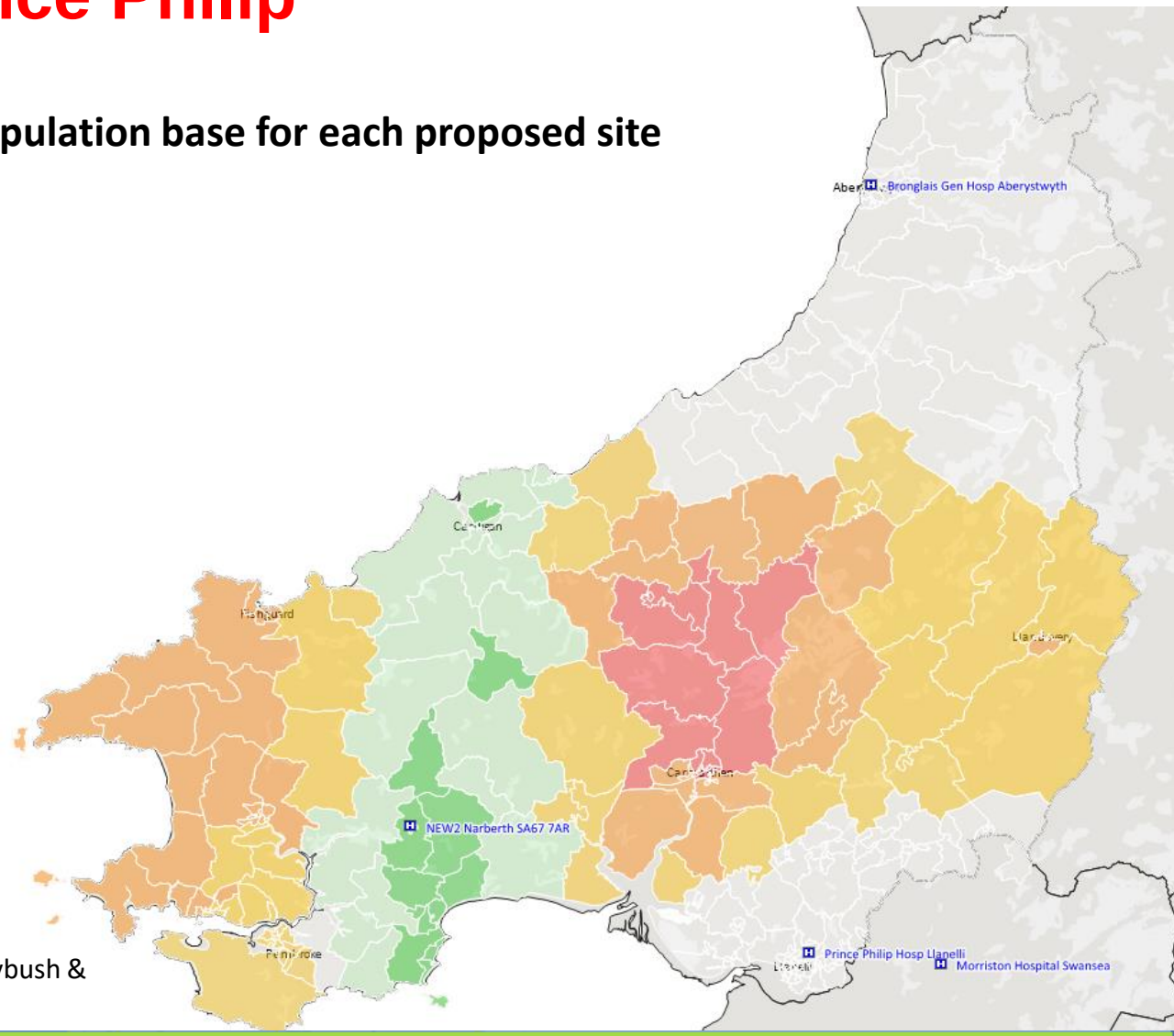
Narberth Option

- Bronglais
- Morriston
- Prince Philip
- Narberth

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	# LSOAs	% HD Population
20+ mins faster	0	0%
10-20 mins faster	15	3%
1-10 mins faster	18	4%
1 min either side of 0	98	22%
1-10 mins slower	47	61%
10-20 mins slower	38	8%
20+ mins slower	14	3%



Baseline Hospital Configuration
Bronglais / Morriston / Glangwili / Withybush & Prince Philip

Analysis 2b: Variation in travel time by LSOA to hospital including Prince Philip

Map outlining the variation in travel time by LSOA & Population base for each proposed site against the baseline (current hospital configuration)

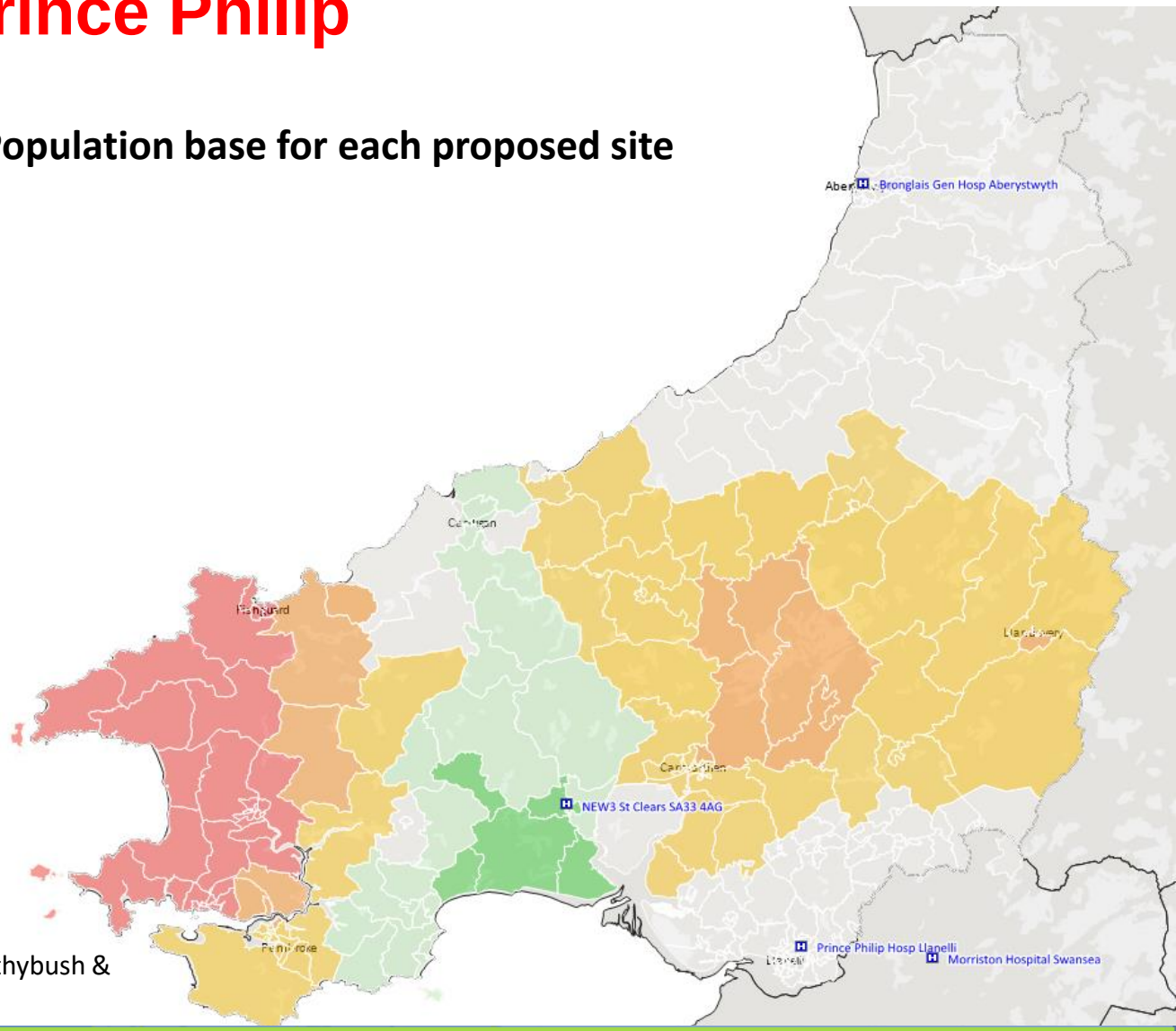
St Clears Option

- Bronglais
- Morriston
- Prince Philip
- St Clears

Modelling Parameters

- Lights & Sirens speed
- Friday 8AM

KEY	# LSOAs	% HD Population
20+ mins faster	0	0%
10-20 mins faster	5	1%
1-10 mins faster	23	5%
1 min either side of 0	104	23%
1-10 mins slower	53	61%
10-20 mins slower	15	3%
20+ mins slower	30	7%



Baseline Hospital Configuration
Bronglais / Morriston / Glangwili / Withybush & Prince Philip

Analysis 2b: Variation in travel time by LSOA to hospital including Prince Philip

What Percentage of Hywel Dda Population is affected in a positive / negative way of Travel Time ?

Population Weighted Average: shows the average travel time change from Baseline per person for each scenario.

E.g. The average person has a travel time of 4.5 minutes slower than baseline.

New Hosp:	Whitland	Narberth	St Clears
20+ mins Quicker	0%	0%	0%
10-20 mins Quicker	1%	3%	1%
1-10 mins Quicker	6%	4%	5%
1 min either side of 0	22%	22%	23%
1-10 mins slower	56%	61%	61%
10-20 mins Slower	15%	8%	3%
20+ mins Slower	0%	3%	7%
Total	**100%**	**100%**	**100%**
Pop. Weighted Avg	4.5	3.6	4.7

This says that 1% of the Hywel Dda population are in an LSOA that have an average travel time to hospital 10-20 mins quicker in than the baseline.