Final Report

Emergency Medical Retrieval and Transfer Service Review

MARCH 2024

Stephen Harrhy
Chief Ambulance Services Commissioner

GIG CYMRU NHS WALES
Pwyllgor Gwasanaethau Ambiwlans Brys
Emergency Ambulance Services Committee

2. Contents

3. Supporting Documents

The Report is supported by documents that readers should consider alongside this Report.

For ease of reference a full list has been provided below.

All documents are available on the following page: **https://easc.nhs.wales**

1. EASC EMRTS SDP Presentation
2. EMRTS Service Development Proposal Cover Paper
3. EMRTS Service Development Proposal
4. EMRTS Service Review Technical Document
5. Everyday Summary
6. Easy Read EMRTS Service Review
7. Engagement Event Presentation Slides
8. EQIA - EASC EMRTS Service Review January 2023
9. Frequently Asked Questions
10. Chief Ambulance Commissioner's Report
11. Chief Ambulance Commissioner's Report Plain Language Version
12. Chief Ambulance Commissioner's Phase 2 Engagement Slides
13. Phase 2 Frequently Asked Questions
14. EQIA - EASC EMRTS Service Review Sept 2023
15. Supporting Document 1 History of EMRTS
16. Supporting Document 2 Engagement What We Did and What We Heard
17. Supporting Document 3 Picker Institute Report
18. Supporting Document 4 EMRTS Historical Data Information Pack
19. Supporting Document 5 Drive Time and Population Coverage
20. Supporting Document 6 Weather Data
21. Supporting Document 7 Optima Modelling
22. Chief Ambulance Commissioner's Report Phase 3
23. EQIA - EASC EMRTS Service Review January 2024
24. Phase 3 Engagement Document Easy Read
25. EMRTS Options Appraisal Document
26. EMRTS Options Appraisal Summary
27. EASC Current and Past Papers

4. Foreword

I am pleased to present this Report as the culmination of an extensive review of the Emergency Medical Retrieval and Transfer Service (EMRTS).

The air ambulance service in Wales is a unique partnership between the Wales Air Ambulance Charity (WAAC) and the clinical teams of EMRTS.

It is a specialised pre-hospital critical care service that delivers excellent patient outcomes and is highly regarded by public and stakeholders alike.

It is a service that the people of Wales are rightly proud of and feel well-served by.

As the Chief Ambulance Services Commissioner for Wales, I have a duty and obligation to look at how this service can be further improved for those patients who need it.

Likewise, the Charity has a responsibility of making the best possible use of the funds that they have for everybody across Wales, wherever they are.

As a result of queries and concerns raised from the initial EMRTS Service Development Proposal in November 2022, it was agreed that work would start afresh as the EMRTS Service Review.

The purpose of this review is to ensure that as many people as possible benefit from improved clinical outcomes by making the best use of the clinical teams across Wales.

An extensive engagement and listening exercise has provided valuable insights for me to consider and take on board in the development of recommendations for the future of EMRTS in Wales.

I have heard and read countless patient stories, been struck by how valued this critical care service is and how worried by change people are. These stories have been powerful reminders of why we need to continually adapt to meet patient needs.

It has also provided rich intelligence about broader health system issues. This has been integral to the review process and I have been able to feed this back to health boards.

Alongside this feedback I have also analysed historical data, modelled scenarios and undertaken an option appraisal workshop.

There are opportunities for the Charity, EMRTS, NHS Wales and the public to work together to ensure we have a service that continues to deliver and develop effectively for the communities of Wales.

I would like to take this opportunity to thank the public, everyone in the EASC team, the Charity, EMRTS, NHS Wales colleagues, Llais, and every contributor to this review.

Stephen Harrhy
Chief Ambulance Services Commissioner

5. Executive Summary

This Report provides a structured evaluation of the Emergency Medical Retrieval and Transfer Service (EMRTS) within Wales. It outlines the process and methodology used to review the service, covering the following:

- service delivery
- operational efficiency
- stakeholder engagement, and
- analysis of service coverage across Wales.

The Report provides an overview of the historical development of EMRTS, detailing its establishment and evolution into a key component of the pre-hospital critical care provision in Wales. It addresses the service's role in providing advanced medical interventions in pre-hospital settings, highlighting the unique challenges faced in delivering critical care across the whole of Wales including remote areas.

5.1 Summary of Findings

Service Overview: EMRTS is Wales's main provider of pre-hospital critical care services. It utilises a mix of consultants, critical care practitioners (CCPs), appropriately equipped helicopters, and rapid response vehicles to deliver specialised hospital-level care directly to patients across Wales. It focuses on significantly improving outcomes for those in life and limb threatening situations.

Current Provision: EMRTS is primarily provided from four bases across Wales, offering a mix of consultants, CCPs, appropriately equipped helicopters, and rapid response vehicles operating across varying hours.

Critical Care Interventions: EMRTS provides advanced interventions beyond standard ambulance services, such as blood product administration, hypertonic saline for brain injuries, limb amputation, perimortem cesarean section, point-of-care testing, pre-hospital anaesthesia, and thoracostomy.

Dispatch Criteria and Process: The dispatch of EMRTS resources is decided by the EMRTS Critical Care Hub based on specific criteria, related to the severity of incidents. Decisions on resource deployment take into account various factors, including proximity and clinical team composition.

Base Activity and Response Time: Data from 2022 identifies the activity for each base and that this is variable. It shows for each health board the distribution of responses from each base.

Population Coverage: EMRTS aims to provide an equitable service across Wales. The entire population has access to air-based assets, road-based coverage is more limited due to road network limitations, topography and base locations.

Air Coverage: During the day, a combination of bases (Caernarfon, Welshpool, Dafen and Cardiff) can provide air coverage for the entire population within 30 minutes (08:00 – 19:00). Post 8pm, northern Wales lacks coverage within 60 minutes, affecting roughly 530,000 people or 75% of the Betsi Cadwaladr University Health Board population.

Road Coverage: Isochrone maps indicate varying population coverage for rapid response vehicles across Wales. After 8pm Cardiff provides the only rapid response vehicle for Wales.

Utilisation: Utilisation rates, which measure resource activity, vary across bases, indicating a better balance between efficiency and service availability is possible.

Unmet Need: Where critical care is required but no resources are available, this is recorded as unmet need, especially after 8pm. 73.7% of unmet need occurs post-8pm across Wales. North Wales has the highest level of unmet need.

Engagement Phases: The report details three phases of engagement from March to June 2023, October to November 2023, and February 2024 aimed at gathering feedback to inform and influence the EMRTS Review.

Operational Scenarios: Six operational scenarios were developed including maintaining the status quo, modifying existing bases, and considering new base locations with and without additional resources.

New North Wales Base Analysis: 1,718 potential locations in Mid and North Wales were assessed for their coverage capabilities. This identified a location south of Rhyl/Rhuddlan as the most effective area showing significant increases in incident coverage.

Modelling Results: The Report presents the results of six modelled scenarios with 20 variations. It focuses on outputs such as dispatches, scene arrivals, unmet needs, overall utilisation, and response durations. Results were shared during the Phase 2 public engagement.

Factors: Five factors, their definitions and weightings were agreed during the public engagement process. These are: Health Gain, Equity, Clinical Skills and Sustainability, Affordability, and Value for Money.

Options Appraisal: A shortlist of six options were appraised at a workshop. The workshop brought together representatives from health boards and trusts across Wales and included clinical, planning, operational, engagement and finance staff. Members of the Emergency Ambulance Services Committee (EASC) team, EMRTS management and the Wales Air Ambulance Charity were present to provide expert advice only.

Options Appraisal Scoring: Representatives from health boards and trusts were asked to score each option against each factor individually using information circulated prior to the workshop. Individual scores were discussed and a group score agreed. The two top scoring options were taken forward as part of Phase 3 engagement.

Concerns: The report acknowledges public and stakeholder concerns regarding service accessibility and specialisation, suggesting complementary actions to address these alongside the preferred operational changes.

5.2 Equality Impact Assessment (EQIA)

It is recognised that people in protected characteristic groups are likely to be impacted by any change more than the general population and that in particular children, older people, disabled people and those living with social & economic disadvantage could be disproportionately affected.

Intersectionality can also mean that some people receiving the service will have more than one of these protected characteristics and so the impacts on them would be disproportionately greater.

Data regarding EMRTS missions is not available in a format that enables further detailed analysis by equality protected characteristics and therefore any potential impact cannot be discounted.

Also, there are significant numbers of those who responded during Phase 3 who believe that there are adverse impacts on those with protected characteristics.

Whilst there is clear evidence of an overall health gain to the people of Wales from Option A and Option B, there is a possible likelihood of a moderate downside impact as it is recognised that during periods when the air ambulance helicopter is unable to fly (e.g. due to very poor weather conditions) then communities located closer to the current bases in Welshpool and Caernarfon may experience a reduced service during these "no fly" periods than now because of the increased distance for RRV response.

An implementation plan would need to be developed if the recommendation is approved by EASC particularly in recognition that increased need for EMRTS may be associated with factors such as age, deprivation and disability. Importantly, the implementation plan would need to consider the impact on EMRTS staff.

Also, the plan will need to specifically include communication with the public to better understand and trust the partnership service once more.

However, the recommendations within the review mitigate against these.

The aim of the Review is to use the existing resources to provide services to those who currently need it but don't receive it (2-3 a day) and therefore this consideration is influential for decision making (those 'unmet need' patients may also have protected characteristics).

An example of this would be that approximately 530,000 people in north Wales would not receive a response after 8pm within 60 minutes.

5.3 Summary of Recommendations

Recommendation 1 – The Committee approves the consolidation of the Emergency Medical Retrieval and Transfer Services currently operating at Welshpool and Caernarfon bases into a single site in North Wales.

Recommendation 2 - The Committee requests that the Charity secures an appropriately located operational base in line with the findings of this Report.

Recommendation 3 - The Committee requires that a joint plan is developed by EMRTS and the Charity, that maintains service provision across Wales during the transition to a new base and that this plan is included within the Committee's commissioning arrangements.

Recommendation 4 – The Committee approves the development of a commissioning proposal for bespoke road-based enhanced and/or critical care services in rural and remote areas.

6. PREFACE

6.1 Purpose

This Report concludes the Emergency Medical Retrieval and Transfer Service (EMRTS) Review instigated by the Emergency Ambulance Services Committee (EASC) at their December 2022 meeting.

The accompanying Final Engagement Report provides a comprehensive overview of the three phases of public and stakeholder engagement that has taken place as part of this review.

The findings and recommendations of the Chief Ambulance Services Commissioner (CASC) are set out within the Report.

6.2 Background

In November 2022, EASC received an EMRTS Service Development Proposal from EMRTS and the Wales Air Ambulance Charity (Charity).

The Proposal, based on data modelling, suggested re-configuring the operational arrangements to provide a more effective service, that could potentially do more within the existing resource by changing the way in which the service was operationally organised.

Specifically, the Proposal identified moving operations from Caernarfon and Welshpool bases into a combined base located in mid-North Wales adjacent to the A55.

The Proposal is available on the following link:

https://easc.nhs.wales/engagement/sdp/supporting-documents/

At this meeting, EASC members raised questions, as well as noted queries and concerns raised by members of the public, politicians, Community Health Council members (now Llais as of 1 April 2023) and community groups in relation to this proposed change affecting Caernarfon and Welshpool bases specifically.

Subsequently, EASC asked the CASC and the wider EASC Team to undertake an impartial review of the service.

The review is independent of the assumptions, comparisons and modelling included within the original EMRTS Service Development Proposal.

6.3 Commissioning Requirements

In considering this Report it is helpful to do so with consideration to specific and relevant criteria that EMRTS are expected to comply with as part of their commissioning requirements.

EMRTS through the EMRTS Quality and Delivery Framework are commissioned to deliver an all Wales service.

Consistent with other services commissioned by EASC, commissioning frameworks do not define the geographical location of bases, resource or infrastructure.

The following Care Standards and Core Requirements drawn from the EMRTS Quality and Delivery Framework are particularly relevant to this report:

PCP 3 EMRTS must engage fully with its third sector partner, the Wales Air Ambulance Charity Trust.

PCP 8 EMRTS must ensure that the right resource(s) are dispatched to provide the right type of care for patients.

PCP 9 EMRTS must ensure that, when a response is appropriate, a resource is dispatched without delay.

CR3 Equity - EMRTS must ensure that:

(i) Systems and procedures are in place to ensure that patients have equal access to services regardless of their location

(ii) Systems and procedures are in place to ensure that patients have equal access to services regardless of age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex, sexual orientation.

CR6 Safety - EMRTS must ensure that:

(i) Any services it provides to the public, and any patient intervention it undertakes, protects public / patients from avoidable harm and clinical risk

(ii) Systems must be in place to record, investigate, report and learn from incidents and accidents

(iii) The health, safety and wellbeing of patients who receive treatment is not adversely affected by inadequate training, accountability, operational systems or arrangements.

6.4 Commissioning Intentions

In addition to the Commissioning Framework, through the annual Integrated Medium Term Planning process the Committee sets out its Commissioning Intentions for services that outline the Committee's strategic priorities for each planning cycle.

EMRTS Commissioning Intentions 2023-24	
CI1a	Enhanced CCP-led response – Building on the findings of recent winter initiatives and demand and capacity planning undertaken within the service, support the implementation of an enhanced daytime response that will ensure more effective use of resources, improve service quality and the patient experience and provide opportunities for workforce development.
CI1b	Planning – Build on the implementation and consolidation of Phase 1 of the EMRTS Service Expansion project, working collaboratively with commissioners to plan the implementation of the remaining phases of the EMRTS Service Expansion programme.
CI3a	Improvement Plan – Develop and implement an improvement plan in response to the EMRTS Service Evaluation Report.
CI4a	Demand and Capacity Strategy – To continue with the work on a collaboratively developed demand and capacity strategy will set out the ongoing arrangements for proactively undertaking this work for the next decade, this will include the use of forecasting, modelling and health economic evaluations.

Table 1: Commissioning Intentions

6.5 History

The Charity was incorporated on 19 June 2000 and launched on St. David's Day in 2001. The objective of the Charity at that stage was to provide a paramedic-led air response with the aim of rapidly transferring patients to hospital by air.

The service was first operated from Swansea Airport on the establishment of the Charity with the first aircraft initially working as an 8 hours per day, 5 days per week service then expanding to a 7 day service in July 2002.

A paramedic was based at the North Wales Police helicopter base in Rhuddlan from April 2001 as an interim measure until the second aircraft was established at Caernarfon (Dinas Dinlle) Airport in July 2003.

The service at Welshpool Airport was established in June 2006, with the offer from the aircraft provider of a helicopter for a short period. This third aircraft initially worked as a 5-day service to cover the busy holiday period and then was made a permanent service in January 2007.

In 2015, the Emergency Medical Retrieval and Transfer Service (EMRTS) was established.

The new service created a partnership between the Charity, Welsh Government and NHS Wales, to provide an air and road response that would ensure advanced decision-making and critical care for life and limb threatening emergencies at scene and then transfer for time critical specialist care.

In 2016, Wales Air Ambulance moved from the isolated location of Swansea Airport to a purpose-built facility in Dafen, near Llanelli.

This move gave the service access to a better road network, in particular the M4, which was valuable for emergency responses via car.

In 2018, the Charity take over the long-term lease for Cardiff Heliport, which became home to the Charity's fourth aircraft with 24/7 services being provided for the whole of Wales from this base.

6.6 EMRTS Evaluation

The EMRTS Service Evaluation in 2021, undertaken jointly with Swansea University for the period of April 2015 to April 2020 demonstrated that the service was able to deliver improvements in a range of measurable benefits that were described in the original business case:

Factor	Measurable benefit	Result
Equity	*Introduction and expansion of EMRTS service will reduce the number of emergency interhospital transfers by 30%*	Emergency inter-hospital transfers were reduced by **41%**
	Improved equity of access to pre-hospital critical care in North Wales.	After service introduction, there was more than doubling of the attendance of doctors attending critical incidents in North Wales, and an increase in available key interventions.
	Access to specialist care and interventions	• **42%** of patients bypassed local hospitals to be taken directly to more specialist care. Very few patients attended required secondary transfer. • When the service attended emergency patients, critical interventions were available a median time of **29** minutes faster (air), and **41** minutes faster (road) than via the standard 999 response.
Health Gain	*Critical Care Intervention outside standard ambulance service practice*	• **63%** (6,018) of patients attended received interventions that are outside standard ambulance service practice • **313** patients received blood product transfusions • **790** patients received pre-hospital anaesthesia
	Reduction in mortality	For patients with blunt trauma, the 30-day mortality rate for patients treated by the service was **37%** lower (adjusted odds ratio 0.63 (95% CI 0.41-0.97); p=0.037) than an equivalent population attended by the ambulance service only

Area	*Measurable benefit*	Result
Clinical Skills and Sustainabilty	*Increased consultant appointments, especially in Emergency Medicine.*	• Twelve new consultants were recruited into Wales due to the attraction of posts that include formal pre-hospital care sessions with EMRTS. • Thirty-two part-time consultants who also work in key specialties in NHS hospitals are employed to deliver the clinical service
	Increased educational intervention to healthcare professionals.	An average of **100** formal training events per year have been delivered and recorded, delivering structured educational interventions to healthcare professionals across NHS Wales.

Table 2: Service Evaluation

6.6 Structure of the Report

This Report is set out over three main sections:

- Explaining the delivery of Pre-Hospital Critical Care in Wales
- Exploring the current problems of Pre-Hospital Critical Care delivery in Wales
- Exploring the solutions to Pre-Hospital Critical Care delivery in Wales

Each section provides a detailed overview of the work and analysis undertaken in the production of this report.

A summary page at the end of each section provides a concise overview of the content and findings of each section.

6.7 Limitations

Data

This Report is provided for informational purposes only and is based on the data and information available at the time of its preparation.

Despite our best efforts to ensure accuracy, completeness, and timeliness, it cannot be guaranteed that the report is free from errors or omissions.

Circumstances, data and information can change over time, which may impact the relevance and accuracy of the Report's contents.

Modelling

Modelling and its outputs are provided for informational and planning purposes only, based on assumptions, data, and information available at the time of creation.

While every effort has been made to ensure the model's accuracy and reliability, it cannot be guaranteed that it will perfectly reflect future conditions or outcomes.

Models are simplifications of reality and thus inherently contain uncertainties and potential inaccuracies.

Users are advised to consider the context, assumptions, and limitations of the model when interpreting its results.

6.8 Technical Note

Personal Identifiable Information

"Personal data is defined in the UK GDPR as: "'personal data' means any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person".

All statistical activities and outputs are subject to the UK Statistics Authority Code of Practice for Official Statistics, the Statistics and Registration Services Act 2007, the Data Protection Act 2018 and the General Data Protection Regulation (GDPR) (2016/679). The GDPR and the Data Protection Act 2018 replaced the 1998 Act from 25 May 2018.

Statistical Disclosure Control

When producing analysis, we need to balance accuracy and timeliness of publication with disclosure control to reduce the risk of identifying individuals from the outputs.

The following steps will be applied to reduce the risk of identifying individuals from small numbers.

- If a total is between 0 and 5 (inclusive)
    - no breakdown will be displayed and the figure displayed as '*'

Data has been sourced from the Welsh Ambulance Services NHS Trust Qlik Business Intelligence platform. Information provided in this report was cross checked with this platform on the 6 October 2023.

7. EXPLAINING THE DELIVERY OF PRE-HOSPITAL CRITICAL CARE IN WALES

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Emergency Ambulance Services Committee

7.1 Operating Model

Pre-Hospital Critical Care Services in Wales is primarily provided by Emergency Medical Retrieval and Transfer Service (EMRTS).

A small amount of enhanced and critical care is also provided by a number of voluntary organisations aligned to the British Association for Immediate Care.

EMRTS is a clinically led service, commissioned by EASC and is hosted by Swansea Bay University Health Board.

The service provides a highly trained critical care team comprising consultants (from an emergency medicine, anaesthesia, and intensive care background) and critical care practitioners (CCP) (who are advanced-trained paramedics and nurses).

It operates in partnership with the Charity, who provide helicopters, pilots, response cars and the infrastructure required for the critical care teams to operate across Wales.

The service has two main areas of activity:

- Pre-hospital critical care for all age groups (i.e., interventions/decisions that are outside standard paramedic practice).

- Undertaking time-critical, life or limb-threatening adult and paediatric transfers from peripheral centres for patients requiring specialist intervention at the receiving hospital.

7.2 Service at a Glance

What the Service IS	What the Service is NOT
IS a highly specialised critical care response bringing hospital level care to the patient	**NOT** designed to meet ambulance response times
IS a service that is designed to improve the outcomes of patients experiencing life or limb threatening illness or injury	**NOT** designed to be a safety net for areas of Wales that do not have access to a local hospital
IS a Doctor/CCP or CCP/CCP crew with access to a helicopter or a rapid response vehicle	**NOT** one crew for helicopters and one crew for rapid response vehicles, nor has a Doctor on each base.
IS a service for the whole of Wales, meaning any resource at any base can respond to any part of Wales.	**NOT** a service providing defined geographical response e.g. there is not mid-Wales air ambulance service
IS designed to bring specialist critical care expertise to the scene and start life-saving treatment sooner	**NOT** a fast ambulance that gets you to hospital quickly or to bring a patient to a hospital within a 'golden hour'

Table 3: Service at a glance

7.3 Flight Types

EMRTS undertake flights under two types of operation:

- **Helicopter Emergency Medical Services (HEMS)** – this type of flight allows for specific Civil Aviation Authority (CAA) dispensations (risk alleviations) to be granted in recognition of an emergency situation

- **Air Ambulance** – this type of flight is considered a normal transport task and so does not attract any of the risk alleviations present in HEMS flights i.e. a non-emergency routine long-distance transport / repatriation.

To provide a road ambulance analogy:

- If called to an emergency: an ambulance would proceed at great speed, sounding its siren and proceeding against traffic lights - thus matching the risk of operation to the risk of a potential death (= HEMS flights)

- For a transfer of a patient (or equipment) where life and death (or consequential injury of ground transport) is not an issue: the journey would be conducted without sirens and within normal rules of motoring - once again matching the risk to the task (= air ambulance flights).

It is for the medical professional to decide between HEMS or air ambulance and not the pilot.

7.4 Current Provision

Table 3 below demonstrates the current operational set up of EMRTS. The service is provided primarily from 4 bases in Wales.

Base	Hours	Crew Mix	Resources
Caernarfon	08:00 - 20:00	1 x Consultant & 1 x CCP or 2 x CCP*	Access to helicopter and rapid response vehicle
Welshpool	08:00 - 20:00	1 x Consultant & 1 x CCP or 2 x CCP*	
Dafen	07:00 - 19:00	1 x Consultant & 1 x CCP	
Cardiff Day	08:00 - 20:00	2 x CCP or 1 x CCP & HTP**	
Cardiff Night	20:00 - 08:00	1 x Consultant & 1 x CCP	

Table 4: Current Operational Provision

*Agreed hybrid model with one Consultant and a CCP at the North or Mid Wales base and two CCPs at the other.
** HTP = Helicopter Transfer Practitioner.

7.5 Map of current base locations

Image 1: Operational Map

7.6 Critical Care Interventions

EMRTS provides advanced pre-hospital critical care interventions that are typically above that provided by the ambulance services.

Examples include:

Blood Products - Ability to give blood and blood products. Any patient with a rapid bleed, trauma, obstetric, medical GI bleeding etc.

Hypertonic Saline 5% - Signs of actual or impending herniation (signs of coning) resulting from traumatic or non-traumatic brain injury.

Limb Amputation - A surgical procedure to remove a limb.
Indicated for rapid extrication of a critically ill patient when there are no other rapid options.

Neonatal CPAP - Support of the distressed neonate (particularly in premature labours).

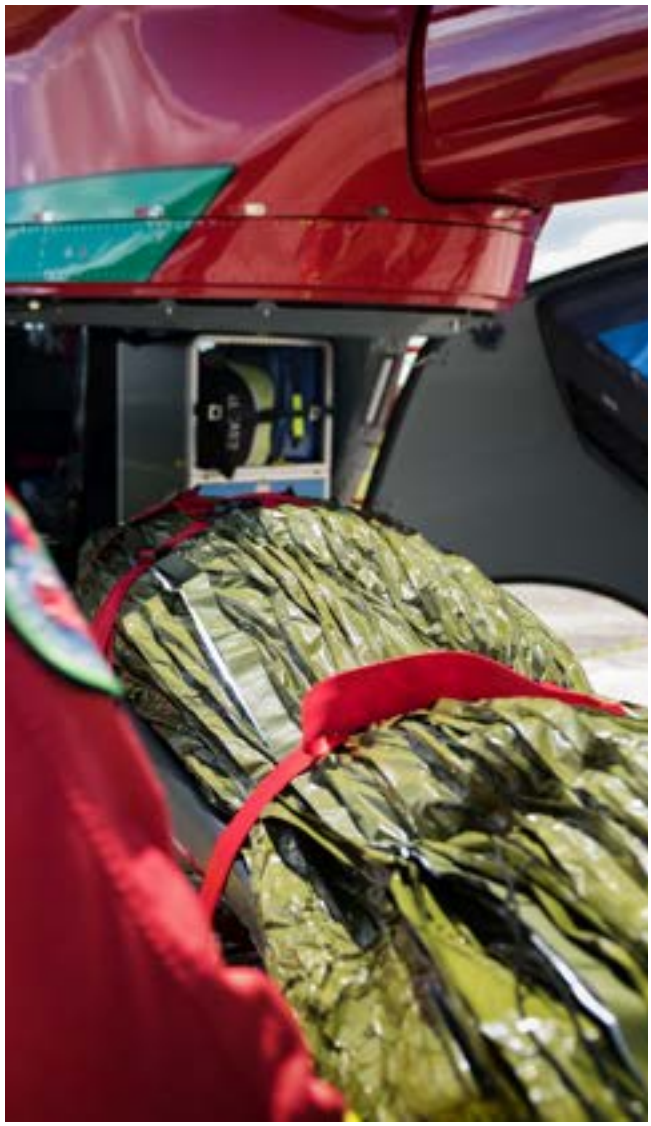
Perimortem Caesarean Section - Performance of an emergency caesarean section. To improve the cardiovascular status of a pregnant patient who is in traumatic or medical cardiac arrest.

Point-of-care Testing - Blood gas and blood analysis at scene. INR testing, carbon monoxide testing.

Pre-hospital Anaesthesia - The ability to anaesthesia a patient in order to intubate and ventilate. Airway compromise, respiratory failure, neurological compromise like unconsciousness.

Thoracostomy - Decompression of the chest using a scalpel and finger thoracostomy method. Relieves a tension pneumothorax.

This list is not exhaustive. Many of the interventions can be undertaken by Critical Care Practitioners, independently of a doctor.



7.7 Dispatch Criteria

The decision to task an EMRTS resource is made by the EMRTS Critical Care Hub. The Hub is based in the Welsh Ambulance Services NHS Trust Clinical contact Centre in Cwmbran and is staffed by 1 clinician and 1 allocator 24/7. The hub monitors calls for the whole of Wales.

Table 5 below outlines the typical calls that would prompt the Hub to investigate further, however the Hub team may access any call that presents to the ambulance 999 system.

Consider Immediate Dispatch Examples	Interrogated Dispatch Examples

• Vehicle Ejection/Rollover
• High speed vehicle and pedestrian collision
• Patient unconscious (RED appropriate or with associated mechanism)
• Major chest/head/pelvic injury
• Airway compromise
• Significant burn
• Amputation above ankle or wrist
• Stabbings, impalements, shootings, explosions (scene safety issues to be considered first)
• Fall from height (>10ft or 1 storey)
• Trapped in machinery
• Mass casualty event (e.g. Aircraft/train/coach crash)
	• Major Incident (standby/declared)
	• Vehicle or pedestrian collision
	• Industrial or agricultural accidents
	• Diving emergencies
	• Equestrian injuries
	• Coastal/beach incidents
	• 999 call originating from a midwife led maternity unit
	• 999 call originating from a District General Hospital
	• Crew request
	• Severe haemorrhage of any sort
	• Return of Spontaneous Circulation
	• Patient agitated/combative
	• Open or deformed limbs requiring advanced analgesia or procedural sedation
	• Medical emergencies (including Myocardial Infarction, Cardiac Arrest)
	• Traumatic injuries including:
	  ◦ Hangings
	  ◦ Burns/Scalds
	  ◦ Drowning
	  ◦ Electrocutions
	  ◦ Spinal injury with paralysis

Table 5: Dispatch Criteria

7.8 Dispatch Process

The 9 steps below outline the typical decision making and approach adopted by the HUB when dispatching an EMRTS resource.

1. Call handler receives 999 call from operator and processes the call.
2. EMRTS allocator/clinician listens to the call whilst it is being processed.
3. If a critical care need is identified on the call.
4. A logistical decision is made on appropriate team to attend – this would typically be based on proximity to the incident, but may also be based on clinical crew mix or a tactical decision based on other ongoing or potential incidents.
5. The allocator will contact the relevant base / team and give appropriate grid reference / location.
6. The base crew will decide on the type of vehicle (air or road) that they will use to attend the incident. They will consider location, travel time and likely destination for the patient when making this decision.
7. Clinician contacts scene or responding WAST vehicle enroute to interrogate call further and give clinical advice if required.
8. The EMRTS crew will be regularly updated enroute when safe and appropriate to do so.
9. Additional information enroute may on occasion result in the crew being stood down, or re-tasked to a different incident.

7.9 Base Activity

Table 6 and Chart 1 below demonstrates the arrivals at scene by resources assigned to each base during 2022.

	Caernarfon	Welshpool	Dafen	Cardiff Day	Cardiff Night
Aneurin Bevan	*	14	88	255	131
Cariff & Vale	*	*	39	269	143
Cwm Taf Morgannwg	*	*	103	135	102
Swansea Bay	*	*	161	32	60
Hywel Dda	6	28	194	49	42
Betsi Cadwaladr	292	138	*	*	13
Powys	7	129	28	32	15
Out of Area	*	17	*	*	6

Table 6: Base Activity

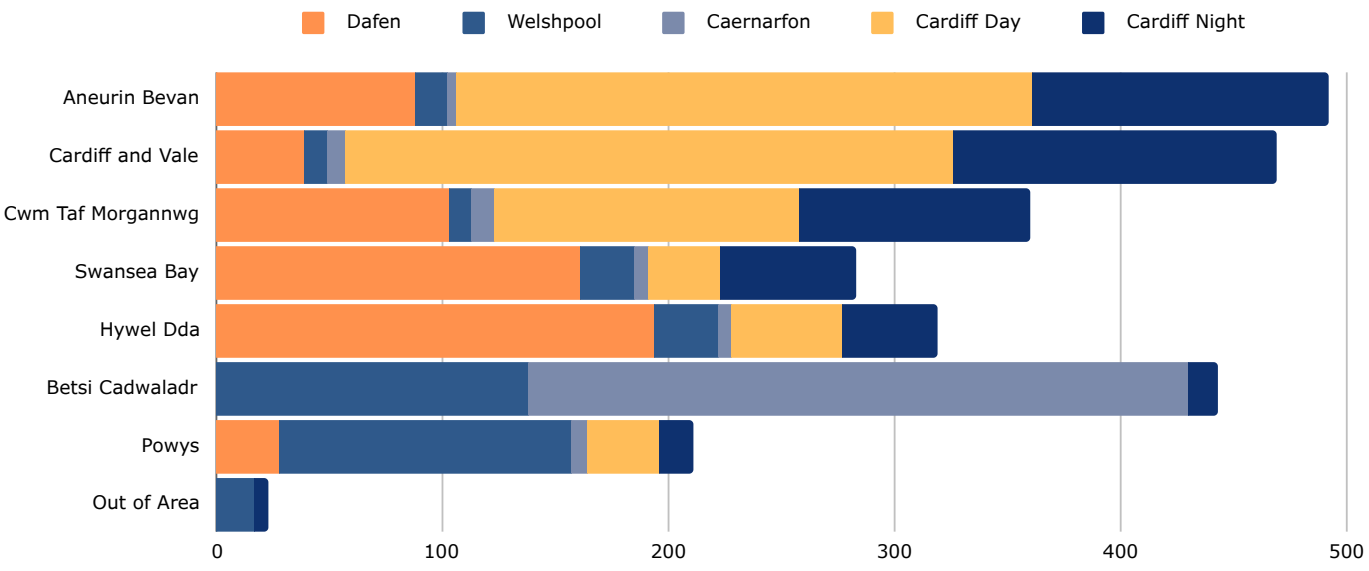


Chart 1: Base Activity

7.10 Response Time

Whilst the speed of response is important when considering life and limb-threatening illness or injury, EMRTS is not designed or commissioned to provide a primary response to these incidents, that role remains with the Welsh Ambulance Service.

EMRTS provides a specialised secondary response to these incidents and the response time should be considered in this context and cannot be measured against the traditional metric of ambulance response times.

Road ambulance response time clock start and clock stop points are well defined. The clock time starts regardless of the availability of an asset to respond.

Red
Identification of Chief Complaint (Clock Start) to on scene (Auto* or Manual).

Amber
Final Medical Priority Dispatch System (MPDS) disposition (Clock Start) to on scene (Auto* or Manual).

For EMRTS, clock start and stop times are less defined and could be applied to a number of unique episodes within the patient's care episode, but overall the definition of response time for EMRTS requires the allocation of an EMRTS resource, examples are provided below:

Clock Start:

- Identification of incident by the EMRTS Critical Care Hub
- Allocation of resource by EMRTS Critical Care Hub
- Take off /mobilisation of resource.

Clock Stop:

- Auto geo-fence (automatic applied when resource is within a set distance of the incident, this may include still being in the air)
- Manual input once landed
- Manual input once at the patient's location.

**Auto refers to a virtual geographic boundary, defined by Global Positioning System (GPS) technology, that enables vehicles to trigger an on-scene or at hospital status response when a vehicle enters a particular area.*

There are a number of additional nuances that apply to EMRTS air response that would not usually apply to road-based ambulance resources, linked to the requirements of the Civil Aviation Authority including:

- Daytime planning time of up to 6 minutes prior to take off
- Night-time planning time of up to 45 minutes prior to take off
- Aircraft landing locations can be significant distances from patient locations, requiring the crew to travel on foot or access secondary road-based transport to the patient's location.

Table 7 below provides the proportions of each resource type that responded to each health board, the average response time and arrivals at scene per 1000 population for each health board in 2022.

	Air/Road	Average Response Time	Arrivals at scene per 1000 population
Aneurin Bevan	54% / 46%	43 minutes	1.2
Betsi Cadwaladr	87% / 13%	47 minutes	1.6
Cardiff & Vale	17% / 83%	29 minutes	1.1
Cwm Taf Morgannwg	57% / 43%	41 minutes	1.3
Hywel Dda	79% / 21%	52 minutes	1.2
Powys	78% / 22%	49 minutes	0.6
Swansea Bay	50% / 50%	43 minutes	1.5
Out of Area	85% / 15%	29 minutes	N/A

Table 7: Response Time

7.11 Summary

Service Overview: EMRTS is Wales's main provider of pre-hospital critical care services. It utilises a mix of consultants, critical care practitioners (CCPs), appropriately equipped helicopters, and rapid response vehicles to deliver specialised hospital-level care directly to patients across Wales. It focuses on significantly improving outcomes for those in life and limb threatening situations.

Current Provision: EMRTS is primarily provided from four bases across Wales, offering a mix of consultants, CCPs, appropriately equipped helicopters, and rapid response vehicles operating across varying hours.

Critical Care Interventions: EMRTS provides advanced interventions beyond standard ambulance services, such as blood product administration, hypertonic saline for brain injuries, limb amputation, perimortem cesarean section, point-of-care testing, pre-hospital anaesthesia, and thoracostomy.

Dispatch Criteria and Process: The dispatch of EMRTS resources is decided by the EMRTS Critical Care Hub based on specific criteria, related to the severity of incidents. Decisions on resource deployment take into account various factors, including proximity and clinical team composition.

Base Activity and Response Time: Data from 2022 identifies the activity for each base and that this is variable. It shows for each health board the distribution of responses from each base.

8. EXPLORING THE CURRENT PROBLEMS OF PRE-HOSPITAL CRITICAL CARE DELIVERY IN WALES

GIG CYMRU NHS WALES
Pwyllgor Gwasanaethau Ambiwlans Brys
Emergency Ambulance Services Committee

8.1 Population Coverage

There is a clear and desirable expectation for EMRTS resources to be accessible to as much of the population as possible.

Whilst the whole of the population has access to air-based assets the timeliness of road-based assets to reach incidents locations is more complex due to the physical capabilities of response cars and the road network.

This information is based on a total Welsh population of **3,137,127** and is shown below in Table 8.

	30 minute Air response		60 minute Air response		90 minute Air Response
Caernarfon	809,751	25.8%	Whole Population		
Welshpool	1,258,626	40.1%			
Dafen	2,408,162	76.8%			
Cardiff Day	2,187,688	69.7%			
Cardiff Night	-	-	2,606,214	83.1%	Whole Population

Table 8: Population Coverage

8.2 Air Coverage - Day

Daytime response from each base assumes 6 minutes for start-up and daytime ground procedures, and 24 minutes flying time.

The combination of Caernarfon, Welshpool, Dafen and Cardiff Day provide coverage by air for the whole of the population within 30 minutes during 08:00 – 19:00.

At 60 minutes each base is individually able to provide coverage for the whole of the population.

Map 1: Air Coverage Day

8.3 Air Coverage - Night

Map 2 below demonstrates the current air coverage for Wales within 60 minutes after 8pm (or hours of darkness).

Night response assumes 20 minutes* for start-up and ground procedures, and 40 minutes flying time.

As can be seen from map 2, the population in the North of Wales is not currently covered by air after 8pm with the assumed start up and flying times within 60 minutes.

There is a population of approximately 530,000 in this uncovered area, equating to around 75% of the Betsi Cadwaladr University Health Board population.

Map 2: Air Coverage Night

*20 minutes is used as the average start-up time, but guidance allows for up to 45 minutes during the hours of darkness.

8.4 Road Coverage - Day

The ability of the rapid response vehicles to provide population coverage at times when the aircraft is not flying, or when the response would be better by road than by air is an important component of base effectiveness.

Table 9 below demonstrates the population covered by rapid response vehicles from each base at 30, 60 and 90 minutes.

	30 minute road response		60 minute road response		90 minute road response	
Caernarfon	77,031	2.5%	279,307	8.9%	553,336	17.6%
Welshpool	48,976	1.6%	279,306	8.9%	619,439	19.7%
Dafen	491,114	15.7%	1,490,063	47.5%	2,330,024	74.3%
Cardiff Day	860,339	27.4%	1,870,263	59.6%	2,129,128	67.9%

Table 9: Response Time

At 30 minutes

- Each base covers a unique population with no-overlap

At 60 minutes

- Dafen and Cardiff cover an overlap population in South Central Wales
- Welshpool and Caernarfon cover an overlap population near Dolgellau

At 90 minutes

- there are multiple overlaps of population by 2 or 3 bases.

Map 3 below demonstrates the rapid response vehicle coverage from each base in Wales at 90 minutes, which shows coverage to almost every area of Wales.

Map 3: Road Coverage - Wales

It should be noted that some areas on the map which show as not covered even though they are within a coverable area, this is due to the software containing no road that is available to drive on.

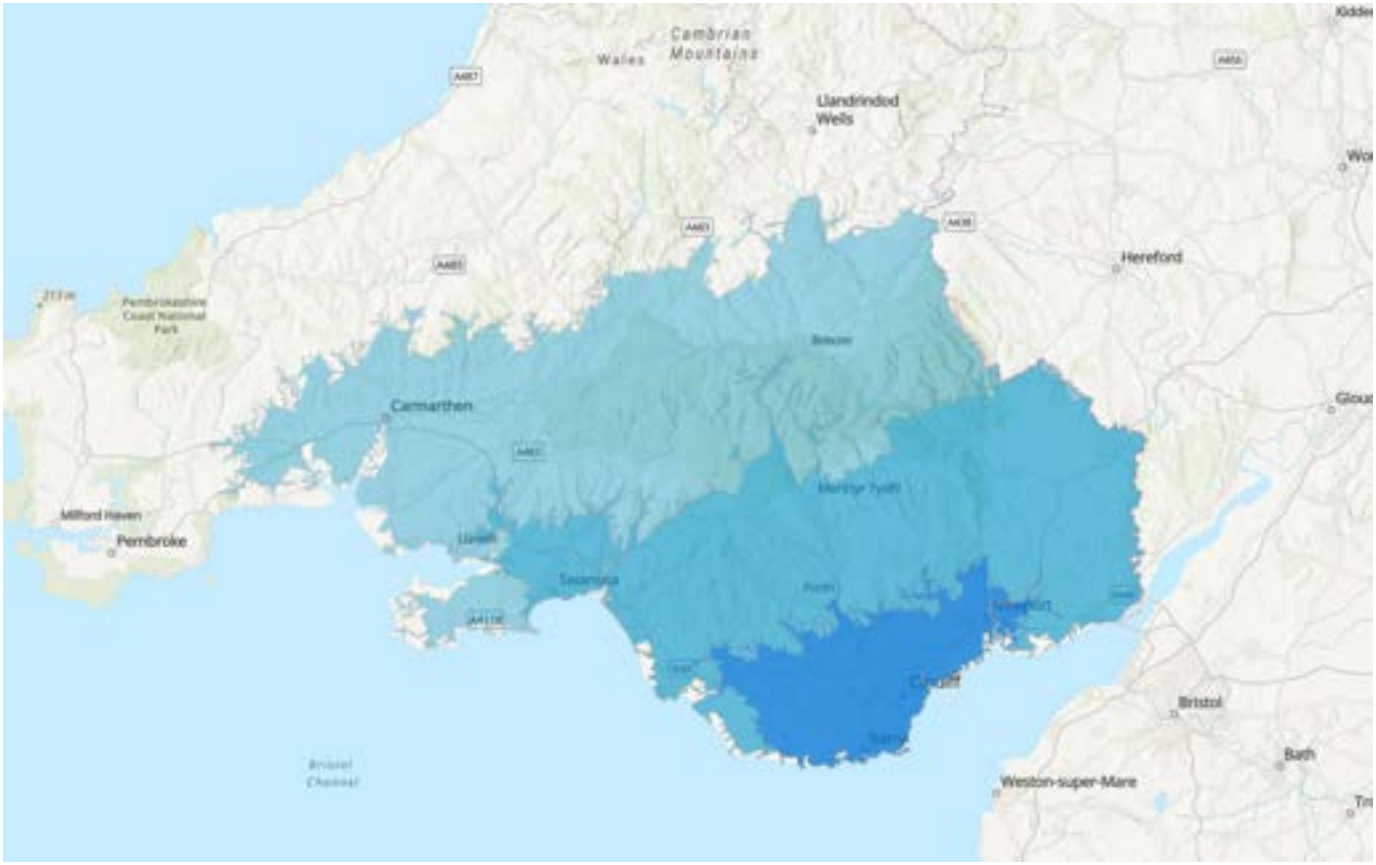
8.5 Road Coverage - Night

After 8pm at night there is one crew available for the whole of Wales based at Cardiff Heliport. Table 10 and Map 3 below show the population coverage for this asset when responding from the base.

	30 minute road response		60 minute road response		90 minute road response	
Cardiff Night	860,339	27.4%	1,870,263	59.6%	2,129,128	67.9%

Table 10: Response Time

Map 3 below illustrates the coverage area of Wales during nighttime hours originating from Cardiff Base. Displayed in varying shades of blue, the map delineates drive-time responses of 30, 60, and 90 minutes, with darker hue representing 30 minutes and lighter shades indicating longer travel times.



Map 3: Road Coverage Night - Cardiff

8.6 Utilisation

Utilisation is a measure how active a given resource is during the time it is available. For the purposes of providing an emergency response, utilisation is a balance between availability of resources against the efficiency and effectiveness of service delivery:

- Too low utilisation and the service becomes inefficient, costly and potentially disengages staff.
- Too high utilisation and the services becomes ineffective by not being available when patients need it.

The calculation below has been used:

Utilisation = total minutes from allocation to clear / available shift minutes

With the following assumptions included:

- A shift is assumed to be 12 hours, with no meal break, and therefore 720 minutes total
- Overruns are included in the activity

Overruns are periods where a crew continues to be active beyond the end of their shift. Overruns have a number of adverse impacts, including staff wellbeing, reduced cover for following shifts, and on occasion can result in an aircraft being stranded at a site away from its home base.

Base Utilisation			
	2020	**2021**	2022
Caernarfon	16%	21%	22%
Welshpool	19%	27%	25%
Dafen	47%	51%	46%
Cardiff Day	-	-	52%
Cardiff Night	56%	39%	32%

Table 11: Base Utilisation

Table 11 above provides the overall level of utilisation for each base on an annual basis, and outlines the variation in utilisation across bases in Wales.

From the process outlined in section 7.8 the deployment of a particular base or asset is primarily driven by proximity to the incident, this is consistent with the population coverage outlined in section 8.1 where bases with larger population coverage at 30 minute by air and the 30, 60 and 90 minutes by road are significantly busier.

Underlying these overall utilisation figures are days where the assets on the base do not arrive at the location of a single incident.

Table 12 below outlines the unique days in each of the previous three years where either air or road asset, or no asset reached the scene of an incident.

	No Arrival Days								
	2020			2021			2022		
	Air	Road	Base	Air	Road	Base	Air	Road	Base
Caernarfon	191	317	156	181	307	137	172	321	146
Welshpool	188	308	155	148	306	114	164	312	133
Dafen	117	177	27	120	207	50	89	254	43
Cardiff	313	34	26	167	41	17	127	41	7

Table 12: No Arrival Days

There are fixed costs with the operation of the EMRT service regardless of the volume of incidents attended, as such the table above highlights a significant opportunity for efficiency and productivity gains, particularly in those bases where on average 38% of days annually result in no attendance at a single incident.

8.7 Unmet Need

Unmet need is defined as any incident where a critical need is identified but no EMRTS resource is available to respond.

Unmet need may occur for a variety of reasons, such as:

- Assets already committed
- Assets offline
- Perceived time delay of response
- Weather

Since the instigation of the 24/7 EMRTS Critical Care Hub in 2020 the number of incidents where a critical care need was identified but no asset was available to respond has been recorded.

Chart 2 below demonstrates that unmet need occurs within each health board area of Wales.

The population of North Wales has the highest level of unmet need, this is particularly true after 8pm.

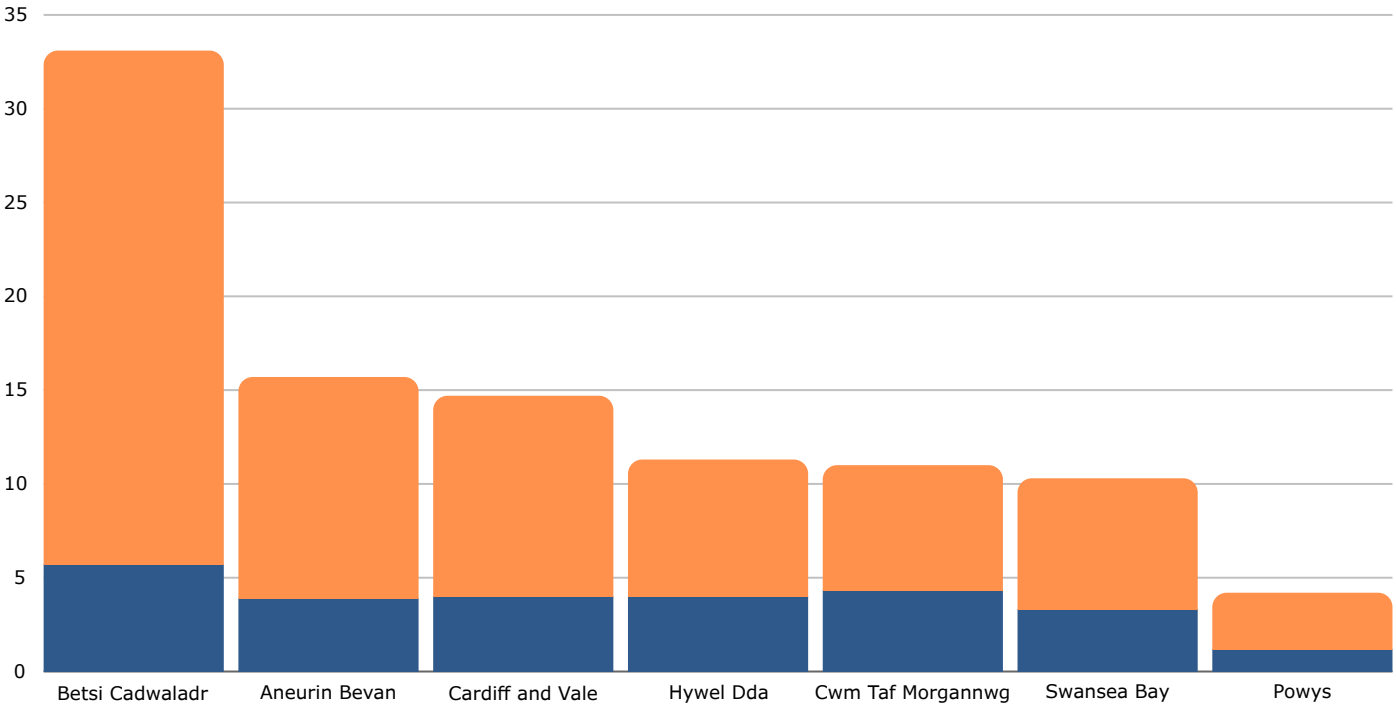


Chart 2: Unmet Need

It should be noted that 73.7% of unmet need occurs after 8pm. Every area of Wales experiences the majority of its unmet need during this time, when only one asset is available from Cardiff.

Table 13 below provides monthly unmet need since August 2022.

Air or Road	2020	2021	2022
January	N/A	122	137
February	N/A	76	90
March	N/A	103	89
April	N/A	144	70
May	N/A◇	129	77
June	N/A◇	190	87
July	N/A◇	172	73
August	115	164	61
September	123	153	75
October	133	124	87
November	124	118	88
December	131	118	70

Table 13: Unmet Need

N/A = Not Available
◇ New collection embedding

8.8 Summary

Population Coverage: EMRTS aims to provide an equitable service across Wales. The entire population has access to air-based assets, road-based coverage is more limited due to road network limitations, topography and base locations.

Air Coverage: During the day, a combination of bases (Dafen, Welshpool, Caernarfon, and Cardiff) can provide air coverage for the entire population within 30 minutes (08:00 – 19:00). Post 8pm, northern Wales lacks coverage within 60 minutes, affecting roughly 530,000 people or 75% of the Betsi Cadwaladr University Health Board population.

Road Coverage: Isochrone maps indicate varying population coverage for rapid response vehicles across Wales. After 8pm Cardiff provides the only rapid response vehicle for Wales.

Utilisation: Utilisation rates, which measure resource activity, vary across bases, indicating a better balance between efficiency and service availability is possible.

Unmet Need: Where critical care is required but no resources are available, this is recorded as unmet need, especially after 8pm. 73.7% of unmet need occurs post-8pm across Wales. North Wales has the highest level of unmet need.

9. EXPLORING THE SOLUTIONS TO PRE-HOSPITAL CRITICAL CARE DELIVERY IN WALES

GIG CYMRU NHS WALES
Pwyllgor Gwasanaethau Ambiwlans Brys
Emergency Ambulance Services Committee

9.1 Engagement

This Report uses the terms 'engagement / engage' to mean the continuous involvement of, and informal consultation and discussions with, citizens, staff, staff representative and professional bodies, stakeholders, and third sector and partner organisations regarding service development.

The rationale for conducting a public engagement was to have a constructive and meaningful conversation with public and stakeholders about how to further improve the air ambulance service in Wales in response to the queries and concerns raised to the initial EMRTS Service Development Proposal that were emanating from Caernarfon and Welshpool areas specifically.

The engagement would enable public and stakeholder views and concerns to be fully understood and responded to as part of the overall independent review led by the Commissioner.

An internal steering group was established in EASC and in September 2022, the EASC Team approached the (then) Community Health Councils (now Llais) for advice on the suitable engagement model for the EMRTS Service Review.

The Community Health Councils across Wales asked the Commissioner to undertake a formal engagement process of no fewer than 8 weeks across Wales.

This included a review of the process after 6 weeks. This engagement approach reflected the Welsh Government's guidance for a 'moderate service change' as it exhibited some of the characteristics detailed in the guidance.

The engagement process has been presented and detailed in every EASC meeting to sight Members on the overall progress of the delivery of the engagement programme, as well as the emerging themes from public and stakeholder feedback.

Detailed information on the feedback received during the engagement process and the CASC response is provided at Appendix 1

9.2 Engagement - Phase 1

The first phase of engagement took place from March 2023 - June 2023.

This phase was focused on listening and gathering information and feedback on factors, weighting and suggestions to inform the options to be developed.

Further detailed information on this phase is available in the accompanying Engagement Report.

9.3 Picker Survey

Alongside online and face to face engagement sessions, a report was commissioned from the Picker Institute to provide an all Wales Public Engagement Survey which was undertaken using YouGov.

The aim of this work was to provide a representative view of public perceptions on what constitutes high quality care. The report concluded

The most important priorities to the Welsh public when considering changes to the EMRTS service include:

- an effective road response is important to provide cover during the hours of darkness and/or when aircraft can't fly for any reason;
- if services change, there should be good training and support available for staff to make the best use of their advanced skills;
- everyone in Wales should have equal access to the service
- before any change happens, there must be a plan for the service to support patients to the same standard as it does today.

When asked to prioritise a selection of priority statements, the three top priority statements selected by respondents were:

- everyone in Wales should have **equal access** to the service;
- the service should be structured to **treat as many people as possible**
- before any change happens, there must be a plan for the service to **support patients to the same standard as it does today.**

9.4 Options Development

As part of the phase 1 public engagement 3 broad areas of proposed model options were discussed:

- Existing bases and changes to these
- Having a new base in the centre of North Wales (by closing other bases)
- Additional ideas or scenarios (to be informed by engagement process)

Following the completion of the Phase 1 Engagement, these broad themes were further developed into 6 operational scenarios to explore through modelling how each one would change the baseline position.

Scenario	Description
1	Status Quo – Keeping things as they are now
2	Existing Bases with Existing Capacity
3	Consolidated Base with Existing Capacity
4	Consolidated Base + Additional Capacity
5	Status Quo + Additional Capacity
6	Existing Bases + Additional Capacity

Table 14: Scenarios

Table x: Population Coverage - Rhuddlan

9.5 New North Wales Base

In order to establish the potential location of a base in the central area of North Wales, the modelling company were asked to assess locations based on proximity and coverage of existing EMRTS incidents.

To do this they ran coverage algorithms across 1,718 locations in Mid and North Wales which identified a location south of Rhyl / Rhuddlan area.

Given the proximity of this location to the historical airbase in Rhuddlan, this site was used for the remainder of the modelling.

The EASC Team assessed the population coverage of this location using the same methodology as set out in section 8.1.

For ease of reference the existing base population coverage by air and road have been re-provided along side the Rhuddlan site.

	30 minute Air response		60 minute Air response		90 minute Air Response
Caernarfon	809,751	25.8%	Whole Population		
Welshpool	1,258,626	40.1%			
Rhuddlan	787,641	25.1%			
Cardiff Day	2,187,688	69.7%			
Cardiff Night	-	-	2,606,214	83.1%	Whole Population

Table 15: Population coverage by air inc Rhuddlan

As Table 15 shows, whilst Rhuddlan is able to provide whole population coverage at 60 minutes, its more northerly location limits the coverage it can provide for southern population in 30 minutes compared to Welshpool and Caernarfon.

NOTE

- The combination of Dafen, Welshpool, Caernarfon and Cardiff Day provides coverage by air for the whole of the population within 30 minutes during 08:00 – 19:00.

- The combination of Dafen, Cardiff Day and Rhuddlan provides coverage by air for the whole of the population within 30 minutes during 08:00 – 19:00.

	30 minute Road response		60 minute Road response		90 minute Road Response	
Caernarfon	77,031	2.5%	279,307	8.9%	553,336	17.6%
Rhuddlan	324,348	10.3%	624,477	19.9%	707,959	22.6%
Welshpool	48,976	1.6%	279,306	8.9%	619,439	19.7%
Dafen	491,114	15.7%	1,490,063	47.5%	2,330,024	74.3%
Cardiff Day	860,339	27.4%	1,870,263	59.6%	2,129,128	67.9%
Cardiff Night						

Table 16: Population coverage by road inc Rhuddlan

As Table 16 above shows Rhuddlan provides a substantial increase in population coverage by road at 30 and 60 minutes, as well as a material additional coverage at 90 minutes.

Map 4 demonstrates Rhuddlan is not able to replicate the full geographical and therefore whole population coverage that the current base locations are able to provide at 90 minutes travel time by road.

Map 4: 90 minute response

9.6 Modelling

Modelling was used to explore the impact of each scenario.

To enhance the modelling outputs, the reference period used to inform the scenario modelling was set as the period between the 1 June 2022 to 31 May 2023. This time period provided the most recent and stable data period since the introduction of the additional daytime service from Cardiff.

Following feedback from Phase 1, weather data was also sourced for each of the current base locations, and the potential site in North Wales, located in Rhuddlan.

Multiple variations were run for each scenario resulting in 20 separately modelled options.

Scenario 1: Status Quo – Keeping things as they are now

Scenario 2: Existing Bases / Existing Capacity – Testing different shift times 14:00 – 02:00 and 20:00 – 08:00 for crews at the existing bases.

Scenario 3: Consolidated Base / Existing Capacity – Merging two bases into one at a centralised location and testing different shift times 08:00 – 20:00, 14:00 – 02:00 and 20:00 – 08:00 for crews at this base.

Scenario 4: Consolidated Base / Additional Capacity – Taking the best variation for scenario 3, and adding an extra car crew in a different location and testing different shift times 08:00 – 20:00, 14:00 – 02:00 and 20:00 – 08:00 for this crew.

Scenario 5: Status Quo / Additional Capacity – Taking the status quo and adding an extra crew to some bases and testing different shift times 14:00 – 02:00 and 20:00 – 08:00.

Scenario 6: Existing Bases / Additional Capacity – Taking the best variation for scenario 2, and adding an extra car crew in a different location and testing different shift times 08:00 – 20:00, 14:00 – 02:00 and 20:00 – 08:00 for this crew.

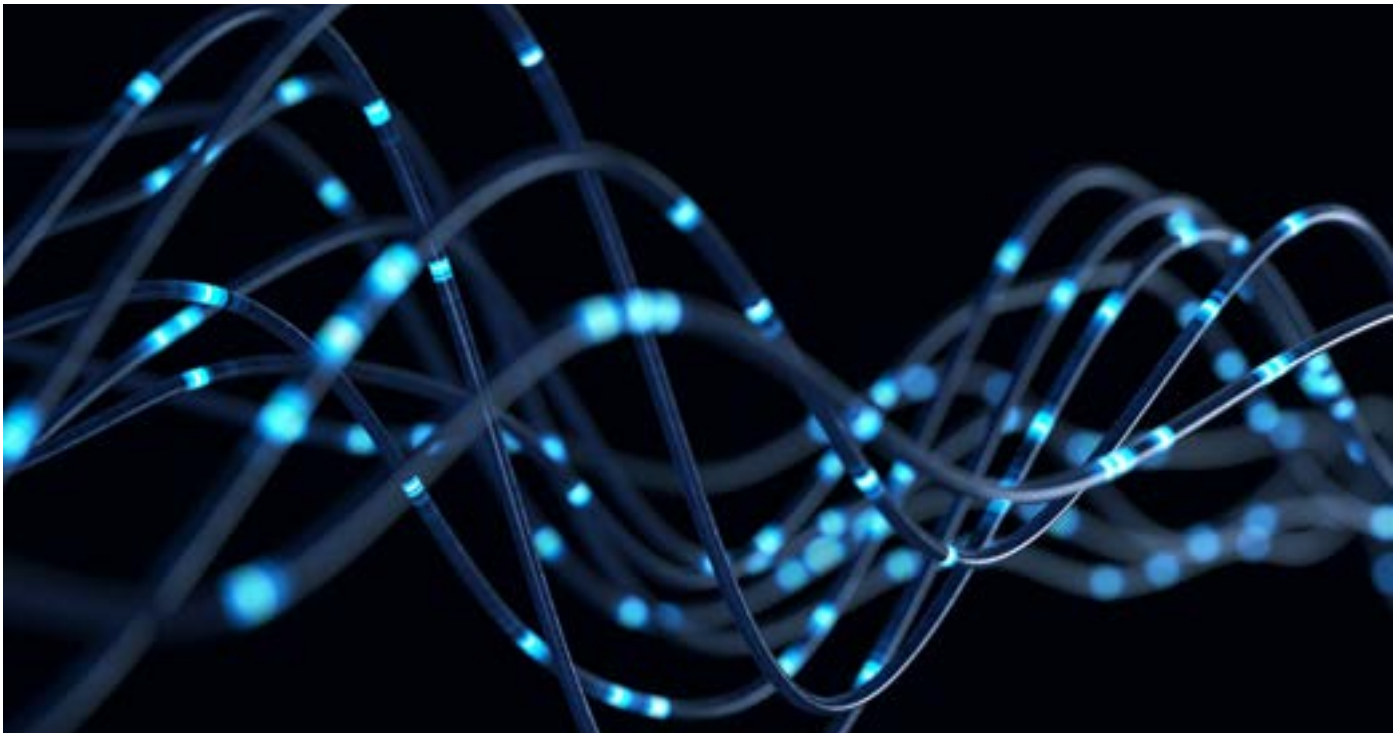
9.7 Modelling Results

The results of the modelling are set out overleaf. These were shared as part of the phase 2 – public engagement. The full modelling results report is available in the supporting document 7 Optima Modelling available on the EASC website on the EASC website..

- **Dispatches:** how often a vehicle was dispatched (not necessarily arrived i.e. stood down). [count]
- **Scene arrivals:** how often a vehicle arrived at scene. [count]
- **Residual unmet need:** The count of all incidents in the input incident dataset, minus the count of incidents with a simulated dispatch.
- **Overall Utilisation:** time assigned to incidents / planned shift time (e.g. 4h / 12h = 33%). [percentage] - In the results per best-performing scenario variation, these are also broken down by base.
- **Response Duration:** Clock Start Time --> First Vehicle Arrived Time. [mm:ss]
- **Vehicle Reflex Duration:** Vehicle Dispatch Time --> Vehicle Scene Arrival Time. [mm:ss]

Scenario	Dispatches	Scene Arrivals	Residual Unmet Need	Crew Utilisation	Response Duration (avg)	Veh. Reflex Duration (avg)
1) Baseline	3,650	2,696	858 (19%)	30%	56:21	26:20
Scenario 2: Existing Bases, Existing Capacity. The best-performing variation is marked as ★.						
2A) Welshpool 14-02	3,739	2,785	769 (17%)	31%	55:13	25:59
2B) Caernarfon 14-02 ★	3,748	2,793	760 (17%)	31%	55:25	26:36
2C) Welshpool & Caernarfon 14-02	3,684	2,730	824 (18%)	30%	55:50	25:12
2D) Welshpool 20-08	3,679	2,727	829 (18%)	30%	56:48	26:13
2E) Caernarfon 20-08	3,708	2,753	800 (18%)	31%	57:05	26:35
Scenario 3: Consolidated Base, Existing Capacity. The best-performing variation is marked as ★.						
3A) Rhuddlan 2x 08-20	3,661	2,707	847 (19%)	30%	56:36	26:09
3B) Best Alternative 2x 08-20	3,671	2,717	937 (21%)	31%	56:10	26:03
3C) Rhuddlan 08-20 + 20-08	3,767	2,812	741 (16%)	31%	53:58	24:43
3D) Rhuddlan 08-20 + 14-02 ★	3,791	2,835	717 (16%)	32%	53:23	25:22
Scenario 4: Additional Capacity to Scenario 3. The best-performing variation is marked as ★.						
4A) Extra car 08-20	3,817	2,861	691 (15%)	27%	54:29	25:08
4B) Extra car 14-02	3,843	2,888	665 (15%)	27%	53:02	24:34
4C) Extra car 20-08 ★	3,859	2,904	649 (14%)	27%	52:33	24:12
Scenario 5: Additional Capacity to Baseline. The best-performing variation is marked as ★.						
5A) Welshpool add 20-08	3,746	2,792	762 (17%)	26%	55:55	25:55
5B) Welshpool add 14-02	3,733	2,779	775 (17%)	26%	55:52	25:41
5C) Caernarfon add 20-08 ★	3,755	2,801	753 (17%)	26%	55:19	25:30
5D) Caernarfon add 14-02	3,738	2,785	770 (17%)	26%	56:06	25:50
Scenario 6: Additional Capacity to Scenario 2. The best-performing variation is marked as ★.						
6A) Extra car 08-20	3,777	2,823	731 (16%)	26%	54:06	25:55
6B) Extra car 14-02	3,834	2,878	674 (15%)	27%	52:44	25:08
6C) Extra car 20-08 ★	3,857	2,901	651 (14%)	27%	51:47	24:50

Table 17: Optima Modelled Scenario Results



9.8 Factors

At the outset of this work, the Committee approved the use of 5 factors for any proposed change to the service, these objectives are consistent with the original business case for the establishment of EMRTS and for the case to expand the service into a 24/7 operation.

Following the feedback received in the Phase 1 Public Engagement adjustments were made to the weightings, with Clinical Skills and Sustainability being increased to 20 and Value for Money decreased to 15.

The objectives are set out below in table 18 below.

Ref	Factor	Commissioning Objective	Original Weighitng	Post Phase 1 Weighting
1	**Health Gain**	To improve the quality of care and outcomes for patients in Wales	25	25
2	**Equity**	To ensure that the whole population of Wales receive adequate and timely access to specialised pre-hospital critical care	25	25
3	**Clinical Skills & Sustainability**	To retain and retrain staff and enable them to utilise their skills to the top of their skill set and to attract and recruit the best people for the service	15	20
4	**Affordability**	To ensure the service delivered is able to operate effectively within the financial constraints of NHS Wales and Wales Air Ambulance Charity Trust	15	15
5	**Value for Money**	To maximise efficiency, ensure that the population attain the highest possible level of health gain for the given level of expenditure	20	15

Table 18: Factors

9.9 Engagement Phase 2

The second Phase of engagement took place from October 2023 - November 2023.

This phase was focused on sharing the work undertaken to date and the options that had been developed and modelled.

Further detailed information on this phase is available in the accompanying Engagement Report.

9.10 Options Appraisal - Long List

Following the completion of Phase 2 and at the direction of the Joint Committee at the November 2023 meeting, an options appraisal workshop was held with representatives from across NHS Wales in January 2024.

In preparation for the workshop the EASC Team undertook a review of the 20 options in order to develop a reasonable shortlist for consideration by the workshop participants. The shortlist included six options plus DO NOTHING for comparison purposes.

Table xx outlines the justification for discounting each of the 13 options not taken forward to the workshop.

9.11 Options Discounted from the Long List

Having considered the modelling, the following 13 options were discounted and were not taken forward as part of the options appraisal process. The justification explained below:

No.	Option Discounted from the Long List	Justification for not taking forward from Long List
1	**2C) Welshpool & Caernarfon 1400-0200** Change the Welshpool and Caernarfon shifts to 14:00 - 02:00 hours.	**Similar option to 2A and 2B but:** • reduced available capacity between 0800-1400 • provides fewer scene arrivals and therefore smaller reduction in unmet need • results in lower crew utilisation
2	**2D) Welshpool 2000-0800** Change the Welshpool shift to 20:00 - 08:00 hours.	**Similar option to 2A and 2B but:** • reduced available capacity between 0800-2000 • provides less scene arrivals and therefore smaller reduction in unmet need • results in lower crew utilisation
3	**2E) Caernarfon 2000-0800** Change the Caernarfon shift to 20:00 - 08:00 hours.	**Similar option to 2A and 2B but:** • reduced available capacity between 0800-2000 • provides fewer scene arrivals and therefore smaller reduction in unmet need
4	**3A) North Central Wales near A55 2x 0800-2000.** Merge Welshpool (1 shift) and Caernarfon (1 shift) into North Central Wales near A55 (2 shifts).	**Similar option to 3D but:** • reduced available capacity after 2000 • provides fewer scene arrivals and therefore smaller reduction in unmet need • results in lower crew utilisation
5	**3B) Best Alternative.** Merge Welshpool and Caernarfon into the best alternative (2 shifts)	**Similar option to 3D but:** • reduced available capacity after 2000 • provides fewer scene arrivals and therefore smaller reduction in unmet need • results in lower crew utilisation
6	**3C) North Central Wales near A55 0800-2000 + 2000-0800 (Rhuddlan).** Merge Welshpool (1 shift) and Caernarfon (1 shift) into North Central Wales near A55 and change the shift timings to 08:00 - 20:00 and 20:00 - 08:00.	**Similar option to 3D but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need • results in lower crew utilisation

No.	Option Discounted from the Long List	Justification for not taking forward from Long List
7	**4A) Extra car 0800-2000.** Uses the best-performing variation of scenario 3, then adds a car-only shift (08:00 - 20:00 hours) to a new, well-covering location in the north Wales.	**Similar option to 4C but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need
8	**4B) Extra car 1400-0200.** Similar to the previous but make the car-only shift 14:00 - 02:00 hours.	**Similar option to 4C but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need
9	**5A) Welshpool add 2000-0800.** Add a 20:00 - 08:00 crew to Welshpool.	**Similar option to 5C but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need
10	**5B) Welshpool add 1400-0200.** Add a 14:00 - 02:00 crew to Welshpool. During the shift overlap (14:00 -20:00), if the helicopter is already being used, then the second crew will use the car.	**Similar option to 5C but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need
11	**5D) Caernarfon add 1400-0200.** Add a 14:00 - 02:00 crew to Caernarfon. During the shift overlap (14:00 -20:00), if the helicopter is already being used, then the second crew will use the car.	**Similar option to 5C but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need
12	**6A) Extra car 0800-2000.** Uses the best-performing variation of scenario 2, then adds a car-only shift (08:00 - 20:00 hours) to a new, well-covering location in the north Wales.	**Similar option to 6C but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need • results in lower crew utilisation
13	**6B) Extra car 1400-0200.** Similar to the previous but make the car-only shift 14:00 - 02:00 hours.	**Similar option to 6C but:** • provides fewer scene arrivals and therefore smaller reduction in unmet need

Table 19: Options Appraisal - Discounted Options

9.12 Options Appraisal - Short List

The 'Do Nothing- baseline' and remaining six options were carried forward as the short list for appraisal at the workshop. Table 20 below outlines these options:

Short List Option No.	Option Description
-	**Do Nothing** – Baseline (included for comparison purposes only) Keep all 4 bases, 4 teams and make no changes.
1	**Keep 4 bases and 4 teams** Only make 1 change, to Welshpool shift times from 8am - 8pm to 2pm - 2am.
2	**Keep 4 bases and 4 teams** Only make 1 change, to Caernarfon shift times from 8am - 8pm to 2pm - 2am.
3	**Reduce bases from 4 to 3, keep 4 teams** Close Welshpool and Caernarfon and open new merged base in North Central Wales near A55 running two teams one from 8am-8pm & one from 2pm-2am.
4	**Reduce bases from 4 to 3, keep 4 teams and add an extra car team from 8pm to 8am** Close Welshpool and Caernarfon and open new merged base in North Central Wales near A55 running two teams one from 8am-8pm & one from 2pm-2am Also add an extra car team running 8pm-8am from Wrexham area providing additional cover for the urban areas of North Wales.
5	**Keep 4 bases and 4 teams and add an extra crew based at Caernarfon from 8pm-8am** (Same as Option 2 but improved by adding an extra crew based at Caernarfon from 8pm - 8am)
6	**Keep 4 bases and 4 teams and add an extra car crew running 8pm-8am from a new, well-covering location in the North Wales near the A55.** Make the car-only shift 8pm-8am (Same as Option 2 but improved by adding car shift 8pm-8am in North Wales near A55)

Table 20: Options Appraisal - Short List

9.13 Options Appraisal - Workshop

The Options Appraisal Workshop was held on 12 January, 2024 with representation from health boards and NHS Trusts that included clinical, planning, operational, engagement and finance staff. The role of these NHS Wales representatives was to score each option against each factor and assist the CASC arriving at a recommendation for EASC.

Subject matter experts from EMRTS and the Charity were on hand to help answer any technical queries raised. However, they did not participate in the scoring and had no influence on the process. The EASC Team facilitated the session and answered any questions on the process followed to date.

Information was shared with attendees prior to the workshop, this included the Option Appraisal Process Document that included indicators and metrics, benefits and drawbacks for each option, in line with Table 21 below.

Factor	Commissioning Approach
Health Gain	• Proportion of met need • Residual unmet need • Scene arrivals • Increased number of arrivals at scene over baseline • Creation of new unmet need • Total crew utilisation (including range across bases – for context)
Equity	• Response times (reflex times) • Available capacity between 0800-1400 • Population coverage – road (30m, 60m, 90m) • Population coverage - air • %age of total unmet need (for context) • Unmet need per 10k (for context) • Weather (per base) (for context)
Clinical Skills and Sustainability	• Utilisation by base and asset • EMRTS Management Team's operational view • No arrival days (for context)
Affordability	• Additional recurrent cost to baseline (pay and non-pay costs) • Transition/project costs • Additional capital costs
Value for Money	• Additional cost to the baseline • Increased number of arrivals at scene over baseline • Cost per additional scene arrival

Table 21: Options Appraisal - Workshop

9.14 Options Appraisal - Scoring

Representatives were asked to score each option against each factor individually using the information circulated prior to the workshop. Individual scores were discussed and a group score agreed for each option against each factor.

The following table contains the total weighted scores, for descriptions see table 21 on page 57.

Opt	Description	Factor 1 Health Gain	Factor 2 Equity	Factor 3 Clinical Skill and Sustainability	Factor 4 Affordability	Factor 5 Value for Money	Total Weighted Score
1	**Keep 4 bases and 4 teams**	100	100	100	120	60	**480**
2	**Keep 4 bases and 4 teams**	100	100	100	150	120	**570**
3	**Reduce bases from 4 to 3, keep 4 teams**	200	150	200	120	150	**820**
4	**Reduce bases from 4 to 3, keep 4 teams and add an extra car team from 8pm to 8am**	225	225	100	60	90	**700**
5	**Keep 4 bases and 4 teams and add an extra crew based at Caernarfon from 8pm-8am**	150	200	80	60	30	**520**
6	**Keep 4 bases and 4 teams and add an extra car crew running 8pm-8am from a new, well-covering location in the North Wales near the A55.**	250	150	60	30	60	**550**

Table 22: Options Appraisal - Scoring

9.15 Options Appraisal - Ranking

Opt	Description	Total Weighted Score	Ranked Position
1	**Keep 4 bases and 4 teams** Only make 1 change, to Welshpool shift times from 8am - 8pm to 2pm - 2am.	**480**	**6th**
2	**Keep 4 bases and 4 teams** Only make 1 change, to Caernarfon shift times from 8am - 8pm to 2pm - 2am	**570**	**3rd**
3	**Reduce bases from 4 to 3, keep 4 teams** Close Welshpool and Caernarfon and open new merged base in North Central Wales near A55 running two teams one from 8am-8pm & one from 2pm-2am.	**820**	**1st**
4	**Reduce bases from 4 to 3, keep 4 teams and add an extra car team from 8pm to 8am** Close Welshpool and Caernarfon and open new merged base in North Central Wales near A55 running two teams one from 8am-8pm & one from 2pm-2am Also add an extra car team running 8pm-8am from Wrexham area providing additional cover for the urban areas of North Wales	**700**	**2nd**
5	**Keep 4 bases and 4 teams and add an extra crew based at Caernarfon from 8pm-8am** (Same as Option 2 but improved by adding an extra crew based at Caernarfon from 8pm - 8am)	**520**	**5th**
6	**Keep 4 bases and 4 teams and add an extra car crew running 8pm-8am from a new, well-covering location in the North Wales near the A55. Make the car-only shift 8pm-8am** (Same as Option 2 but improved by adding car shift 8pm-8am in North Wales near A55)	**550**	**4th**

Table 23: Options Appraisal - Ranking

9.16 Options Appraisal - Do Nothing

The “Do Nothing” option was carried forward as part of the long and shortlisting process for comparison purposes.

In his Phase 3 Report, the CASC stated that “Do Nothing” was not an acceptable choice, due to:

- High levels of unmet need
- Unequal and low levels of utilisation (including no-arrival days)
- Lack of night time capacity
- Poor population coverage at night

It should also be noted, that every modelled scenario was able to deliver an improvement in scene arrivals from the baseline, indicating that the current service is not optimised.

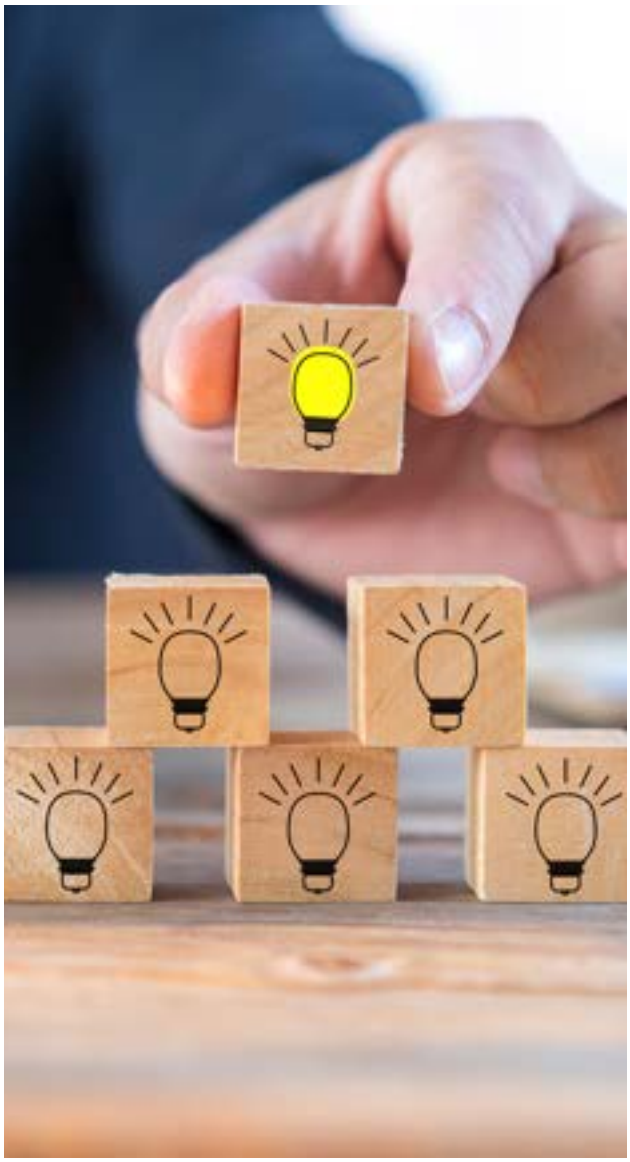
9.17 Options Appraisal - Conclusion

It was agreed that the highest ranking Options 3 and 4 would be taken forward to Phase 3.

However, workshop participants recognised that neither option would address all the public and stakeholder feedback heard throughout Phases 1 and 2 of engagement.

There were several consistent emerging themes, some within the scope of the Review. These included:

- Concern about WAST services regularly being pulled out of area and lengthy handover delays adversely affecting ability to respond to communities
- Concerns that mid, rural, and coastal communities are more vulnerable and 'less equal' than those in urban areas located closer to better road infrastructures and general hospitals and therefore need something more bespoke to reflect their rural needs
- Concern that EMRTS is too specialised and could respond to a wider range of conditions for rural and remote areas through a more bespoke clinical model
- Concern about paramedic staffing levels in mid and rural north Wales
- Concerns about EMRTS staff retention with any base moves
- Concerns that the Charity will lose the goodwill of support in base location areas and the impact on charitable donations which could decrease and destabilise this important service provided in partnership
- Concern about vulnerability of rural communities generally ('lost all other services already')
- Current bases perceived as a 'local lifeline' and visual presence is reassuring.



It was recognised that, as the Commissioner of both the ambulance service and EMRTS, the CASC has the opportunity to propose additional actions to address some of the feedback raised during the engagement process.

Adopting this approach will ensure that EASC is making the most of its total available commissioning allocation and therefore not requiring additional monies.

The additional actions should aim to:

- Provide additional pre-hospital resources and improve the ability to respond to rural, remote and coastal communities.
- Respond to the need for a different model in rural, remote and coastal areas.
- Involve a bespoke clinical model with EMRTS responding to a wider range of conditions in rural, remote and coastal areas, retaining a visual presence in these areas.
- Improve ambulance resources in rural, remote and coastal areas.
- Provide an alternative for EMRTS staff not wishing to work from a centralised base ensuring improved resource in rural, remote and coastal areas.

Positive feedback regarding the session was received from attendees.

A summary of the workshop and the full information pack is available on the EASC Website as part of the supporting information.

9.18 Engagement Phase 3

Phase 3 public engagement was focused on providing an opportunity for commenting on the proposed Options.

For the purposes of clarity during Phase 3, the shortlisted Options (previously referenced 3 and 4) are now referenced **Options A and B**.

It was evident from the public feedback that there were several common themes and concerns regarding the proposed changes to pre-hospital critical care delivery in Wales.

The key themes are summarised below:

1.Dissatisfaction and opposition to the closure of air bases in Welshpool and Caernarfon.

2.Concerns about longer response times, reduced coverage, and compromised emergency care, especially in rural and remote areas.

3.Criticism of the proposed new location for air ambulance services and doubts about its effectiveness.

4.Belief of the impact on rural communities, ageing populations, and workers in hazardous professions.

5.Risk of decreased donations to the Charity, potentially threatening its sustainability.

7.Emphasis on equitable access to pre-hospital critical care across all regions of Wales.

8.Calls for decision-makers to reconsider proposed options and prioritise the health and safety of residents.

These themes highlight the importance identified by the respondents to the need to address the unique needs of rural communities, ensuring timely access pre-hospital critical care, and maintaining essential life-saving services across Wales.

It was evident from each Phase of the public engagement process, how valued this critical care service is and how worried by change people are.

9.19 Summary

Engagement Phases: The report details three phases of engagement from March to June 2023, October to November 2023, and February 2024 aimed at gathering feedback to inform and influence the EMRTS Review.

Operational Scenarios: Six operational scenarios were developed including maintaining the status quo, modifying existing bases, and considering new base locations with and without additional resources.

New North Wales Base Analysis: 1,718 potential locations in Mid and North Wales were assessed for their coverage capabilities. This identified a location south of Rhyl/Rhuddlan as the most effective area showing significant increases in incident coverage.

Modelling Results: The Report presents the results of six modelled scenarios with 20 variations. It focuses on outputs such as dispatches, scene arrivals, unmet needs, overall utilisation, and response durations. Results were shared during the Phase 2 public engagement.

Factors: Five factors, their definitions and weightings were agreed during the public engagement process. These are: Health Gain, Equity, Clinical Skills and Sustainability, Affordability, and Value for Money.

Options Appraisal: A shortlist of six options were appraised at a workshop. The workshop brought together representatives from health boards and trusts across Wales and included clinical, planning, operational, engagement and finance staff. Members of the Emergency Ambulance Services Committee (EASC) team, EMRTS management and the Wales Air Ambulance Charity were present to provide expert advice only.

Options Appraisal Scoring: Representatives from health boards and trusts were asked to score each option against each factor individually using information circulated prior to the workshop. Individual scores were discussed and a group score agreed. The two top scoring options were taken forward as part of Phase 3 engagement.

Concerns: The report acknowledges public and stakeholder concerns regarding service accessibility and specialisation, suggesting complementary actions to address these alongside the preferred operational changes.

10. CONCLUSION AND RECOMMENDATIONS

10.1 Conclusion

This is the Final Report of the Emergency Medical Retrieval and Transfer Service Review.

The comprehensive review process, that has encompassed phases of public engagement, historical data analysis, operational scenario development and modelling, and a detailed option appraisal, has culminated in a thorough understanding of the achievements, challenges and solutions to delivering pre-hospital critical care delivery in Wales.

This process has clarified the need for the service to develop and enhance the access, effectiveness and efficiency of the service across Wales. This is particularly required during night-time hours, where currently approximately 530,000 of the North Wales population do not have access to an aircraft within 60 minutes after 8pm.

Due to the predominance of feedback from the engagement process, stating that no change in the service bases would be optimal it is important to understand that the current high levels of unmet need, unequal and low levels of utilisation (including no-arrival days), lack of night time capacity and poor population coverage at night, mean that doing nothing is not an acceptable option.

The process has recognised the importance of balancing community expectations with operational realities of service delivery.

Meticulous analysis and public engagement, has highlighted the essential role of EMRTS in providing advanced medical interventions in life and limb threatening situations across Wales.

Six operational scenarios with multiple variations were crafted based on maintaining the status quo, consolidating bases and adjusting or increasing existing capacity. Detailed modelling of these scenarios was conducted to assess their impact on service coverage, response times, utilisation rates, and unmet needs.

An appraisal workshop evaluated the scenarios against key factors such as Health Gain, Equity, Clinical Skills and Sustainability, Affordability, and Value for Money. This led to the selection of a consolidated base model with and without additional capacity being selected as the preferred options for further consideration.

Throughout the engagement phases, concerns were raised about the potential impact of operational changes on rural coverage, service specialisation, staff retention and community support. These concerns guided the recommendations.

10.2 Recommendations

Recommendation 1 – The Committee approves the consolidation of the Emergency Medical Retrieval and Transfer Services currently operating at Welshpool and Caernarfon bases into a single site in North Wales.

Recommendation 2 - The Committee requests that the Charity secures an appropriately located operational base in line with the findings of this Report.

Recommendation 3 - The Committee requires that a joint plan is developed by EMRTS and the Charity, that maintains service provision across Wales during the transition to a new base and that this plan is included within the Committee's commissioning arrangements.

Recommendation 4 – The Committee approves the development of a commissioning proposal for bespoke road-based enhanced and/or critical care services in rural and remote areas.

Appendix 1

Conclusions from EASC-led engagement feedback

The feedback gathered by the EASC Team reflect localised perspectives from Caernarfon and Welshpool surrounding areas:

About the first EMRTS Service Development Proposal

Feedback – There's a perception that the proposed changes are driven by cost-saving measures, which raises concerns about potential service cuts. Concerns have been raised about funding any relocation or new base, with worries about resources being redirected from frontline services. There are concerns regarding the initial EMRTS Service Development Proposal, with scepticism about the Rhuddlan model being based on assumptions rather than historical data that could support its coverage and scepticism about the effectiveness of the Rhuddlan base due to its proximity to the coast. There's a significant concern that relocating base locations from Caernarfon and Welshpool could result in fatalities in those localities due to decreased accessibility to emergency medical services.

EASC Response *– This is acknowledged. The Review has started work afresh and independent of the initial EMRTS Service Development Proposal. All options to develop the service cost more money is therefore not a cost-saving exercise. There are requirements in both NHS Wales and for the Charity (via the Charity Commission) to ensure that money is being spent in the most effective way to benefit patients. No evidence is received to support the belief that 'more people will die' if any operational base changes are made. However, data used within the Review shows that 2-3 patients per day need the service currently but who cannot access the service is a current known fact.*

About weather and environment

Feedback – Concern that merging air bases in north Wales into one could limit service capacity during adverse weather conditions, when flying is restricted and that weather in Rhuddlan base is worse compared to Caernarfon and Welshpool bases. Some suggest relocating the Dafen (Llanelli) base instead, citing weather impacts shared in a weather data report. Concern about continued deterioration of environmental factors (such as flooding) affecting timely response by car to rural areas. Another suggestion is to conduct flood mitigation works at Welshpool to enhance its utilisation.

EASC Response *– Acknowledgement is given to the belief that having assets spread across various bases enhances flexibility in responding to emergencies. However, no substantiated evidence has been provided to validate the claim that the Rhuddlan base encounters more adverse weather conditions, as the factual weather reports do not corroborate this allegation. Despite facing challenging weather conditions, the utilisation levels at Dafen remain appropriately productive. The Review acknowledges the importance of ensuring a diverse range of assets are available for clinical teams to respond to areas during inclement weather. It is emphasised that operational considerations in the Review prioritise avoiding recommendations that would place bases in more challenging flying conditions.*

About the data

Feedback – Perception that the original data time reference period was in a 'Covid pandemic' year and therefore would not be typical in its demand because of the lockdowns imposed on the public. There was also a perception that the initial EMRTS Proposal was 'flawed' and now 'discredited' by data modelled and shared in Phase 2 and 3.

EASC Response *– This concern was appreciated, and new data time reference period was used in response to Phase 1 feedback. It was also explained in Phase 2 that the original data used for the EMRTS Service Development Proposal was accurate at a specific point in time. However, since the original data was modelled, more data and further analysis have been conducted. For instance, the establishment of daytime Critical Care Paramedic (CCP)-led responses from Cardiff Heliport has become a standard part of the service. Additionally, weather data relating to each base has been sourced and incorporated into the analysis. These developments have influenced the data modelling done after Phase 1 engagement.*

Moreover, there have been other service developments across the NHS system since the original proposal was prepared, including adult critical care transfers. While this has impacted the number of transfers EMRTS is tasked with, it has also ensured that the service is more available to attend primary missions at the scene of incidents or illnesses.

These variables illustrate the complexity of modelling for this clinically specialised life-saving service. Since its establishment, EMRTS, in partnership with the Wales Air Ambulance Charity, has consistently explored options to improve and adapt the service to meet its aims and objectives, including meeting as much demand in Wales for this specialist service as possible.

Furthermore, the service is obligated to respond to the Commissioning Intentions set by the Emergency Ambulance Service Committee (EASC). These strategic priorities aim to ensure reasonable expectations for the ongoing improvement of services. For 2022-23, these intentions include service expansion and the use of forecasting and modelling to inform system transformation.

About response times

Feedback - For those in localities near to Caernarfon and Welshpool bases. there are concerns that the service will take longer to respond if it originates from bases other than Caernarfon or Welshpool. Additionally, there are concerns about the current Rapid Response Vehicle (RRV) locations and their ability to respond effectively. There's also apprehension about the mental and emotional stress patients may experience while waiting for an emergency response from "out of area" if base locations are moved and response times are prolonged. Rural mobile phone coverage is seen as adding delays when calling 999 compared to urban areas. There's a reliance on air support to provide a response within the "golden hour" compared to road response. The perception is that a local base always provides a local response, and any move would impact EMRTS response times for rural patients. Moreover, there's a perception that a base location in mid Wales can reach everywhere quicker across all of Wales due to its central position.

EASC Response *– This belief assumes that the 'local' helicopter is ring-fenced for local needs. However, the service operates on a national basis across all teams based in four locations. For instance, data reveals that 61% of the Welshpool teams' activity involves responding to incidents outside of Powys. Additionally, Cardiff crews provide 24-hour cover, meaning they are the only available option for incidents occurring after dark. The 'golden hour' is a historical term often used in trauma or emergency care to suggest that an injured or sick person must receive definitive treatment within the first 60 minutes from the time of injury or appearance of symptoms. The concept is outdated and has been substantially discredited by clinicians. The whole pathway of care is now different with many lifesaving interventions being made by first responders and ambulance clinicians in the early period following injury or illness, and in appropriate cases the delivery of critical care and onwards transfer to definitive care by EMRTS. For the patient this can mean hours saved when compared to standard care (going to the right hospital) and therefore the initial response time is less critical. However, in recognising the different needs in rural areas compared to urban areas (distance to District General Hospitals etc.) the Commissioner is proposing a bespoke and ring-fenced resource to be used within a different clinical model for rural communities.*

This is set out as Recommendation 2 in the Review document that would see the development of a commissioning proposal for the expansion of road based enhanced and/or critical care services in locations that would minimise any loss of geographical road coverage of these resources within a 90 minute travel window. All missions are to provide pre-hospital critical care to patients. However, the service is not commissioned on a time basis but on a clinical need. It is anticipated that WAST would continue to provide the first response as well as an EMRTS if the clinical desk thought it was necessary.

About emergency healthcare needs relating to rural versus urban areas…

Feedback - There is a perception that if bases move, current local base communities will no longer receive any service from EMRTS. Concerns have been raised about the vulnerability and inequality faced by mid, rural, and coastal communities compared to those closer to better road infrastructures and hospitals. The current bases are perceived as a local lifeline, providing reassurance through their visual presence. Road infrastructure limitations can impede emergency road response by the Welsh Ambulance Service Trust (WAST) due to weather and road closures. There are concerns about the proportion of high-risk jobs and activities in rural areas leading to a higher incidence of need compared to urban areas. Additionally, there's concern about air assets' ability to reach rural areas from north Wales, such as crossing the Eryri (Snowdonia) and Berwyn mountains. Lastly, there's a call for equity to be considered in the evaluation process and framework, given the variable access to health services across Wales.

EASC Response *–The feeling of being remote and therefore more vulnerable in emergencies is noted and appreciated. The data also shows that EMRTS has a higher usage per head of population in rural areas compared to urban. To provide assurance the way in which the service is delivered is not proposing to change. The way patients in the Caernarfon and Welshpool localities receive the service will remain. The whole basis of the Review is to look at how the service can be further improved, not removed. This is about providing the service to more people, not fewer, equally across Wales, including across communities local to Caernarfon and Welshpool. The 'equality factor' in the evaluation framework reflected the emphasis placed on this in the feedback. Helicopters already fly out of Caernarfon and Welshpool to reach patients elsewhere therefore crews also fly back into these areas.Similarly, the after-dark cover is only currently provided by Cardiff based teams who cover all of Wales.*

About EMRTS

Feedback - There is overwhelming appreciation for the individuals providing critical-care emergency services. However, there persists a perception that EMRTS primarily operates as a 'fast ambulance/scoop and run service.' Concerns have been raised about EMRTS's specialisation, with suggestions for a more adaptable clinical model to respond to a wider range of conditions in rural and remote areas. There are worries about potential staff turnover if base relocations occur, leading to skill loss and financial expenses in recruitment, as well as local economic impacts. Suggestions for renaming EMRTS to options such as "Flying Doctors," "Air Hospital," or "Flying Hospital" have been proposed. There's also concern about staff morale due to frustrations about not reaching more patients and maintaining clinical competencies. Staff also express a desire to support the critical care hub more.

EASC Response *– The appreciation and passion for the service is acknowledged. There is also agreement that citizens living and working remotely in rural areas relies on this service and that the service needs to be available to respond to incidents that might not currently meet the clinical decision-making threshold to initiate an EMRTS response. It is also acknowledged that the service may lose some experienced staff in both scenarios (of do nothing or changing base locations) – either because staff are not busy enough on shift or because some staff may not want to work from different bases. The impact on staff has been acknowledged as part of the factors and weightings this was given higher weighting following public comment. The extra actions detail how staff could be retained on their current base by working to a broader clinical response to better service rural communities. This would need to be worked through in line with standard NHS Wales processes. Branding considerations could be included within future Charity and EMRTS communications and marketing strategies in response to this feedback.*

About Health Boards, Welsh Ambulance Service and other emergency responders

Feedback - There is scepticism about service developments made by Health Boards and Local Authorities, with the perception that they are resulting in a worse service. Emergency Medical Retrieval and Transfer Service is seen as providing comfort to communities, especially as delays in handovers affect the Welsh Ambulance Service Trust's ability to respond. There's concern that any base moves could negatively affect other emergency responders in the Powys area. Additionally, there's concern about paramedic staffing levels in mid and rural Wales.

EASC Response *–All feedback relating to Health Boards and WAST has been shared back and reported within the EASC governance routes for further consideration by respective organisations. This intelligence has resulted in the Commissioner identifying extra actions to mitigate against these concerns.*

About EMRTS Staff…

Feedback – All staff are driven by serving patients who need the EMRTS critical care. There appeared to be more interest amongst staff from north and mid Wales than from south based teams based on session attendance. Responses from participants generally fell in two categories: support for developments that would enable as many patients to receive the service as possible, and those who want to maintain the current base arrangements. Staff have different views on how the current high under-utilisation levels affect staff as some feel that not responding to enough jobs adversely affected their clinical proficiency whilst others feel that training scenarios are sufficiently maintain clinical competencies. Some concern expressed about working different shift patterns and the potential loss of skilled staff should any changes take effect and staff did not want to change their base arrangements. Some staff also concerned about optics of 'leaving communities' where they have been for some time. Some staff also expressed support for Option 6c.

EASC Response *– The different views of the staff groups are acknowledged. Shortlisted options need the same or more staff, but it is understood that some staff may not want to change their current work base locations or patterns. There is a commitment that the Review takes into account staff views alongside all feedback and works with staff to support through any operational changes that may take effect. Any changes to the service would be subject to an implementation plan, including NHS Wales Organisational Change Processes where appropriate to support and facilitate any change.*

About the Charity

Feedback - There are concerns that the Charity will lose the goodwill of support in base location areas, potentially leading to a decrease in charitable donations and destabilising the partnership service. Additionally, there's concern that the Charity may not support the decision of the EAS Committee. Stakeholder relations and potential reputational damage are also concerning. However, there is expressed support for working with the Charity and Emergency Medical Retrieval and Transfer Service on initiatives such as addressing flooding risks in Welshpool and fundraising efforts. There's a strong sense of support and passion for the service, with a feeling of local "ownership". Moreover, there's a perception that communities in rural and mid Wales are the most generous donors to Charity fundraising efforts.

EASC Response *–This concern is noted and has been reflected as a risk within reports to the Committee. Assurance is provided that for those receiving a service now, that they will continue to receive a service and therefore encouraged to maintain support for the Charity. The Charity has confirmed it will support changes agreed by the Committee if the evidence shows an improved service to the people of Wales and that no community is materially disadvantaged as a result of any changes. If the Committee decides to endorse a change in medical operations which will need to be supported by an altered configuration of air base locations, and the above-mentioned parameters are met, the Charity will support the Committee's decision and start activities to make the changes happen. Despite the passion and perceived local ownership, the service operates dynamically on a national basis to serve the population of Wales.*

About Welsh Government and Policy Makers...

Feedback - There are concerns about the funding of the air ambulance service in Wales, with a view that it should be entirely funded by the Welsh Government. There's a request to consider additional bases and funding rather than relocating existing base locations. Additionally, there's a perception that citizens in mid and rural Wales are disadvantaged compared to those in urban areas in the north and south by public services generally. There's also concern that the new 20mph speed limit will negatively impact road ambulance response times, exacerbating existing challenges. Citizens were keen to see more engagement from Welsh Government.

EASC Response *– All feedback relating to Welsh Government has been shared back and reported within the EASC governance routes for further consideration by Welsh Government and policy makers.*

About the engagement process

Feedback - supports the proposed evaluation factors and suggested adjusted weightings for them. There has been a mix of positive and negative sentiment: acknowledgment of the thoroughness, transparency, and delivery of the engagement process; and criticism for alleged 'bias' in questionnaire design, and pre-determined decision making. The feedback reflects how the Commissioner has been trusted and seen as someone who keeps promises and is true to their word in this Review. The clear presentation of complex information is appreciated, as is the use of different data ranges and the development of options. The level of detail provided is also appreciated and maintaining openness and transparency throughout was requested. However, feedback received later during the engagement sees some criticism for information being too complicated and some queries and scepticism about the engagement, purpose and approach to the Options Appraisal and decision-making processes.

EASC Response *– It is acknowledged that this is a clinically and operationally complex service. For that reason, every effort was made to make information as simple as possible including FAQs and glossary of terms throughout the engagement. In addition, full technical information has been made available for those wanting more detail. All information presented has been done using historical data, and reports for supporting documents were provided by professional suppliers.*

An independent supplier was used for questionnaire design, collation and analysis. Committee members had previously agreed (21 November 2023) that Health Board representatives would participate in the Options Appraisal process. Health Board participants represented a broad range of professional disciplines that included medical and clinical.

The Commissioner and EASC Team did not score the options and neither did the and Charity representatives who were there to answer technical queries only. This has been explained publicly and all documents, including how scoring worked on the day. The EAS Committee is a joint committee of all Health Board and Health Boards are responsible for commissioning services for their population, therefore have to be involved in any work relating to their specific areas.

About Options Developed

Feedback - The feedback indicates support for Option 1 (do nothing), suggesting that maintaining the current setup is preferred by majority of respondents from areas near to Caernarfon and Welshpool bases. Stakeholders, however, in Phases 2 and 3 there is support for Option 6c from Powys and Betsi Cadwaladr areas specifically.

Option 6c proposes the consideration of a 'forward operating base' for Caernarfon and Welshpool to utilise in any occurrence, including fuel and clinical stock, for added resilience (i.e. for teams to operate from different locations when on shift). There is support for making Welshpool or Caernarfon bases operational 24 hours a day, which would provide an additional night service to better serve the needs of the communities.

There is a consistent view from stakeholders that the gains illustrated in the modelling are too marginal to justify any reconfiguration, especially considering the margin of error with modelled data.

EASC Response *– The Commissioner has a duty and obligation to look at how this service can be further improved to these patients who need the service. There is robust evidence and an academic report that patients receiving an EMRTS response are more likely to survive and get back to normal life sooner. Therefore, the un-met patient need and under-utilisation levels for some clinical teams cannot be ignored and 'do nothing' is not an acceptable choice. It is agreed that there needs to be more resilience in 24hour provision. It is of concern that the support expressed for Option 6c provides less cover for Powys residents and is therefore unacceptable to the Commissioner. the EMRTS Service has developed incrementally over time to meet more patient's needs. All changes are incremental and each time the service has developed it has delivered more than data modelled.*

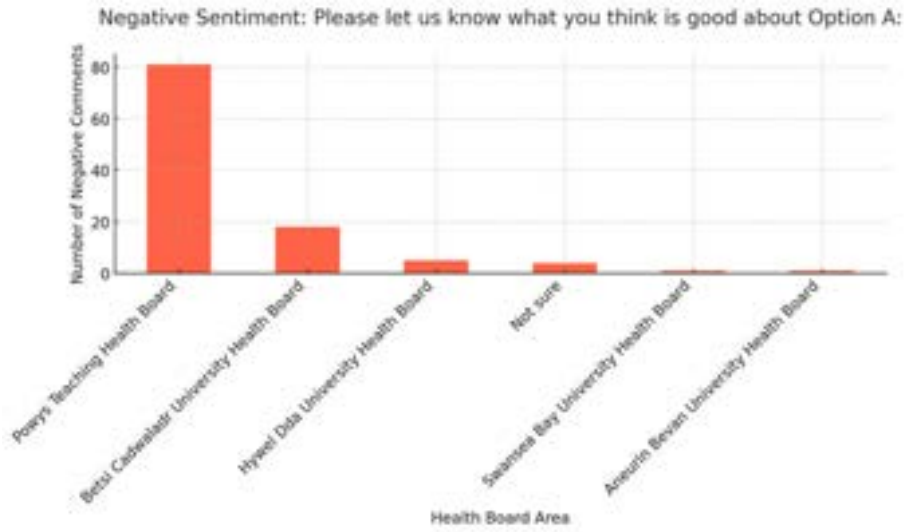


Chart 3: Option A: Good

'Good' about Option A: Despite being a prompt for positive comments about Option A, there was a substantial number of negative sentiments, particularly from the Powys Teaching Health Board (81) and Betsi Cadwaladr University Health Board (18). This indicates that respondents from this area struggled to identify positive aspects of Option A, and their comments were instead reflective of underlying concerns or dissatisfaction. Age groups with the most negative sentiment were predominantly 65+ years (53) and 55-64 years (29).

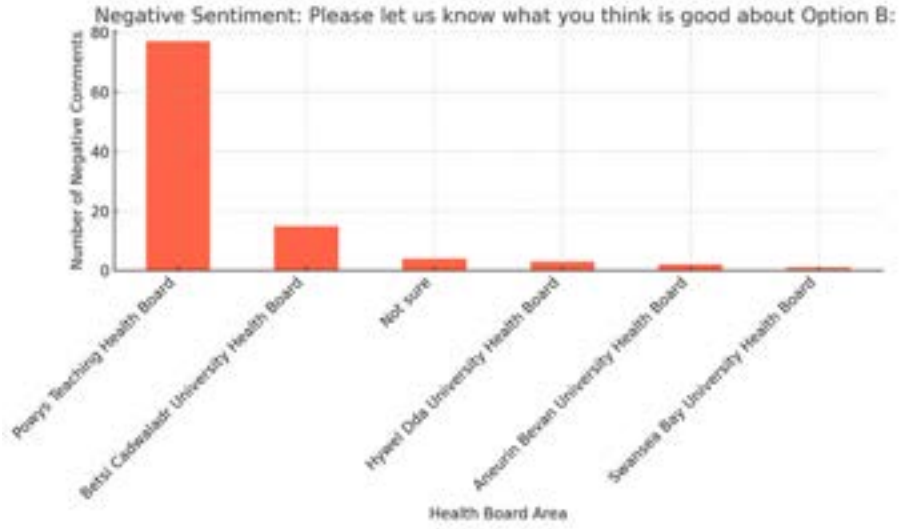


Chart 4: Option A: Not So Good

'Not So Good' about Option A:, A large number of negative comments were noted, again with Powys Teaching Health Board leading significantly (138), followed by Betsi Cadwaladr University Health Board (35. This suggests that the concerns in this area are particularly strong regarding Option A. The age groups 65+ years (72) and 55-64 years (56) showed the most negative sentiment.

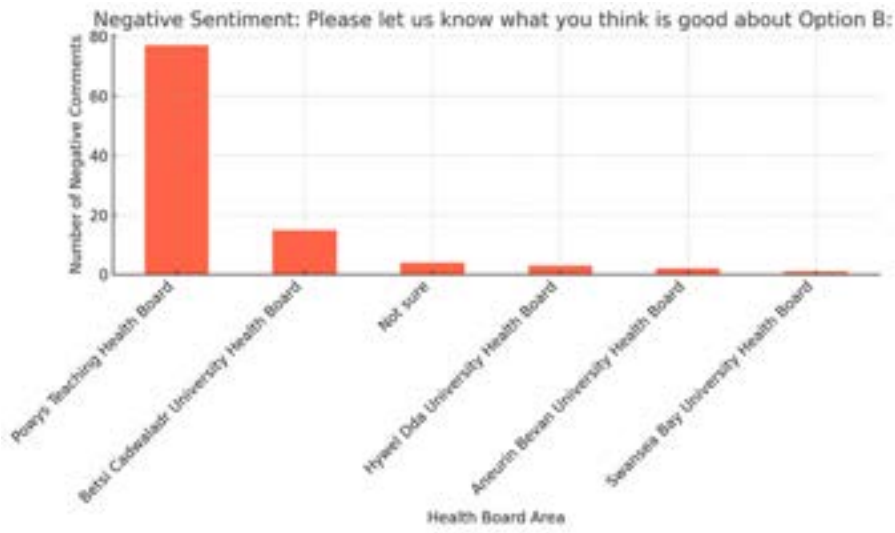


Chart 5: Option B: Good

'Good' about Option B: Similar to Option A, the prompt for positive comments about Option B still attracted negative sentiments, predominantly from Powys Teaching Health Board (77) and Betsi Cadwaladr University Health Board (15). Older age groups showed more negativity with 65+ years (42) and 55-64 years (33) leading.

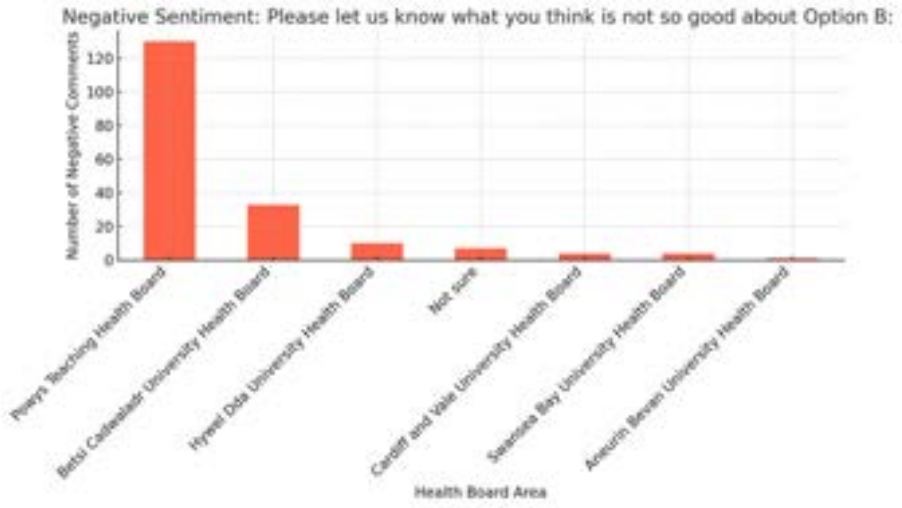


Chart 4: Option B: Not So Good

'**Not So Good' about Option B:** This aspect also revealed a high volume of negative comments from Powys Teaching Health Board (130) and Betsi Cadwaladr University Health Board (33). They highlight specific areas of concern or dissatisfaction with Option B among residents, which may require further attention and action. The 65+ years (74) and 55-64 years (51) age groups were again the most represented.

Across all categories, Powys Teaching Health Board area consistently stands out with the highest number of comments. This suggests a strong level of dissatisfaction or concern in this area regarding both Options A and B.

The Betsi Cadwaladr University Health Board area also shows considerable concerns, although less than Powys, indicating it is another key area of concern.

Age-wise, most feedback is from the older age groups, particularly those aged 65+ years and 55-64 years. This trend suggests that these age groups may have specific concerns or expectations that are not met by Options A and B.

The concentration of negative sentiment in these specific Health Board areas and among older age groups could be indicative of areas where additional focus is needed to address concerns, possibly related to healthcare access, quality of services, or communication about the changes proposed in Options A and B.

Equalities Impacts

Feedback – Feedback showed a perception of negative impacts for those equalities characteristics including age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, sexual orientation, carer responsibilities and Welsh Language. There is a belief that changes to operational arrangements would include changes to clinical decision-making and dispatch from 999.

Impact on Well-Being of Future Generations Act

This section summarises some of the impacts on wellbeing that we have heard during the engagement from respondents in the Caernarfon and Welshpool bases surrounding areas:

Wellbeing Goal	Considerations	Examples of Feedback
A globally responsible Wales	People in terms of macro-economic, environmental and sustainability factors: consider the impact of government policies; gross domestic product; economic development; biological diversity and climate A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.	People regularly expressed concern about the loss of services in their area, often wider than health services but believed that the EMRTS service made them feel safe and secure; often, people supported the need for change to help more people but only if it didn't mean moving the air base from their locality Concerns about weather, more frequent flooding affecting ability for road responses.
A resilient Wales	People in terms of their use of the physical environment: consider the impact on the availability and accessibility of transport, healthy food, leisure activities, green spaces; of the design of the built environment on the physical and mental health of patients, staff and visitors; on air quality, exposure to pollutants; safety of neighbourhoods, exposure to crime; road safety and preventing injuries/accidents; quality and safety of play areas and open spaces. A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example, climate change).	Feedback suggested investing in training citizens in healthy lifestyles, first aid/community resilience, and improved driver education to alleviate overall demand on emergency services. During the engagement process, people regularly raised concerns about the road infrastructure and the high level of road accidents in the local area. They raised concerns about the local industries of farming and forestry work being dangerous with high levels of accidents and incidents. Less was mentioned about green spaces and the mental health /wellbeing of local people although the potential move of the air base did make them feel less safe. Some shared another air ambulance consultation - Hampshire Air Ambulance who were consulting with the public to move of the base of their helicopter to an area closer to the densest population, from a rural area. The environmental impacts and shorter journey times for patients were highlighted as well as the ability to provide a better service to the previously location area. This was a topic of interest within the social media groups who believed that the consultation being held was fairer and more open. The work was considered and overwhelmingly provided a very similar set of issues (to the EMRTS Service Review) in trying to get to see more patients but not excluding rural areas. This service provided one helicopter to 1.8million people. The service in Wales operates 4 helicopters to 3.1million people.

Wellbeing Goal	Considerations	Examples of Feedback
A healthier Wales	People being able to improve/ maintain healthy lifestyles: consider the impact on healthy lifestyles, including health eating, being active, no smoking/smoking cessation, reducing the harm caused by alcohol and or non-prescribed drugs plus access to services that support disease prevention (e.g. immunisation and vaccination, falls prevention). Also consider impact on access to supportive services including smoking cessation services, weight management services etc. A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.	Scepticism expressed about service developments made by Health Boards and Local Authorities, with the perception that they are resulting in worse services. There's concern that any base moves could negatively affect other emergency responders in the Powys area. Overwhelmingly, local people to the air bases considered themselves much safer in terms of having a local air base. Frequently people misunderstood that EMRTS did not provide a fast ambulance and regularly suggested that this was all that was required. The pre-hospital critical care service meant that many felt this was very important as they did not have a district general hospital.
A more equal Wales	A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio-economic background and circumstances). People being able to access the service offered: consider access for those living in areas of deprivation and or those experiencing health inequalities	Wider discussion was heard in relation to primary care services as well as ambulance services. The low level of performance in the areas was a topic of concern and the potential change for this high-end service seemed to escalate the perceived impact. A range of potential perceived equality impacts have been identified in the previous section about emergency health needs for rural communities – with mitigation actions agreed as appropriate – as part of any decision-making process.
A Wales of cohesive communities	People in terms of social and community influences on their health: consider the impact on family organisation and roles; social support and social networks; neighbourliness and sense of belonging; social isolation; peer pressure; community identify; cultural and spiritual ethos Attractive, viable, safe and well-connected communities.	Local communities visited had a high level belonging and use of social networks. The responses reflect the sense of a community asset and the strength of feeling to maintain this. There was balance, that the service should see as many people as possible, as long as this did not move the base. Many local (to base) respondents suggested that if the base was moved that they would no longer contribute to the Wales Air Ambulance Charity. This was a frequent response which suggested that they felt the service was closing and there would not be a service. Despite reassurances this message appears to be unheard. Respondents have identified concerns about overall community viability and cohesiveness about public services generally. They have identified concerns about an erosion of public services that believe will affect people's choices around moving to or staying in rural areas, and this might affect overall community sustainability.

Wellbeing Goal	Considerations	Examples of Feedback
A Wales of vibrant culture and thriving Welsh language	A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation. People in terms of their use of the Welsh Language and maintaining and strengthening Welsh cultural life	No examples were shared; however, every session had simultaneous translation and 121s had bilingual staff ready to engage with the public. All documents were produced bilingually There are opportunities to continue to support and develop the service through the medium of Welsh.
A prosperous Wales	An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work. People in terms of their income and employment status: consider the impact and availability and accessibility of work, paid and unpaid employment, wage levels, job security, working condition	People raised the dangerous occupations regularly. Respondents expressed concerns that the loss of EMRTS and other health services primary care GP practice premises would affect the number of jobs in the community and also affect the overall attractiveness of the community for businesses, residents etc.

Table 24: Impact on Well-Being of Future Generations Act

Summary of Emergent Themes

There was good quality dialogue and/or feedback in all sessions - drop-ins, in-person public meetings, and virtual/on-line.

Whilst the focus of the engagement has been on the EMRTS Service Review and how to develop the air ambulance service that is provided in partnership by the Wales Air Ambulance Charity and Emergency Medical Retrieval and Transfer Service Cymru (NHS Wales), throughout the dialogue feedback surfaced that covered health and social care issues more broadly. This has provided rich intelligence shared with colleagues across NHS Wales and Welsh Government.

Many personal experiences and testimonials were shared during the engagement through all response routes. This feedback highlights the value placed on the service and the general sense of anxiety over any proposed base move amongst respondents living in the Caernarfon and Welshpool areas (Betsi Cadwaladr University Health Board and Powys Teaching Health Board areas.)

It is evident from feedback that there are several common themes and concerns regarding the proposed changes to air ambulance services in Wales, particularly for citizens in the surrounding areas of Caernarfon and Welshpool (i.e. BCUHB and PTHB respectively):

- Dissatisfaction and opposition to the closure of air bases in Welshpool and Caernarfon.
- Concerns about longer response times, reduced coverage, and compromised emergency care, especially in rural and remote areas.
- Criticism of the proposed new location for air ambulance services and doubts about its effectiveness.
- Belief of the impact on rural communities, aging populations, and workers in hazardous professions.
- Risk of decreased donations to the Wales Air Ambulance charity, potentially threatening its sustainability.
- Advocacy for maintaining current air ambulance bases and providing additional Rapid Response Vehicle (RRV) coverage to other areas as an alternative to closure.
- Emphasis on equitable access to pre-hospital critical care across all regions of Wales.
- Calls for decision-makers to reconsider proposed options and prioritize the health and safety of residents.

These themes highlight the importance identified by the respondents to the need to address the needs of rural communities and protected characteristic groups, ensuring timely access to pre-hospital critical care, and maintaining essential life-saving services across Wales.

Notwithstanding the concerns of the public and stakeholder feedback in these areas there is a consensus of understanding that:

- Un-met patient need must be provided for by the service; and
- Highly skilled clinical teams need to be used in the best way to provide for patients.

n addition, the national feedback concluded the following priorities:

- everyone in Wales should have equal access to the service;
- the service should be structured to treat as many people as possible
- before any change happens, there must be a plan for the service to support patients to the same standard as it does today.

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