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Independent review of Cheshire FRS Emergency Response Proposals 2020-24

Final report

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Executive Summary

Introduction

Cheshire FRS have proposed four changes to fire cover as part of the 2020-24 Integrated Risk Management Plan (IRMP), namely:

1. To replace the hydraulic (aerial) ladder platform at Macclesfield with a High Reach Fire Engine (HRFE).
2. To introduce a Day Crewed duty system at Wilmslow.
3. To relocate the second Wholetime fire engine from Ellesmere Port to Powey Lane, and to move the Powey Lane Wholetime fire engine to Chester, such that Chester has two Wholetime fire engines.
4. To expand the fleet of Rapid Response Rescue Units (RRRU) from two to 13 and have these at each station with a wholly On-Call duty system.

The review aims to provide assurance on the validity and reliability of the data and the assessment process completed by Cheshire FRS to inform the review.

The review assessed Supplementary Information, Background Data, Cheshire FRS presentations and verbal feedback from Cheshire FRS IRMP team.

The reviewer

The review was completed by Michael Wright (BSc, MSc, CMIOSH, Director). Michael Wright has supported the UK fire service for 26 years. Michael can draw on risk assessment and community fire safety operational analysis to scrutinise the Cheshire Fire and Rescue Service (FRS) whole service review.

Key observations

A suitable and sufficient scope of analysis and data has been compiled and presented. This included assessments of response times, operational workloads, risk profiles and future risk. The assessments did cover all reasonable options. The analysis was detailed and had a wide scope. Some points of data could benefit from clarification and highlighting.

The evidence is consistent with the four proposals. Further consideration could be given to:

- Clarifying the rational for a HRFE being initially located in Macclesfield, as opposed to another station, and arrangements for ensuring that its first year trial is an effective operational test;
- Clarifying the contingency for not being able to build accommodation in Wilmslow for a Day Crew duty system;
- Re-stating the operational rationale for a Wholetime crew at Powey Lane and its special resource role adjacent to the M56;
- Widening the range of incidents that RRRU are deployed to – for the sake of improving weight of response to fires, improved utilisation of On-Call crews and a faster response to “smaller” non-fire incidents (some of which could be lifesaving).

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1 INTRODUCTION

1.1 Background

Cheshire FRS have proposed four changes to fire cover as part of the 2020-24 Integrated Risk Management Plan (IRMP), namely:

1. To replace the third hydraulic (aerial) ladder platform at Macclesfield with a High Reach Fire Engine (HRFE).
2. To introduce a Day Crewed duty system at Wilmslow.
3. To relocate the second Wholetime fire engine from Ellesmere Port to Powey Lane, and to move the Powey Lane Wholetime fire engine to Chester such that Chester has two Wholetime fire engines.
4. To expand the fleet of Rapid Response Rescue Units (RRRU) from two to 13 and have these at each station with a wholly On-Call duty system.

1.2 Purpose of the independent review

The review aims to provide assurance on the validity and reliability of the data and assessment process completed by Cheshire FRS to inform the review.

The review answered the following questions:

1. Have suitable and sufficient data and analyses been completed and presented?
2. Are key results clearly presented?
3. Does the data and analysis support the proposals?
4. Has the review assessed the feasibility of plans?
5. Have all reasonable options and issues been identified and assessed?
6. Has due account had been taken of review findings and data?

1.3 The reviewer

The review was completed by Michael Wright (BSc, MSc, CMIOSH, Director). Michael Wright has supported the UK fire service for 26 years. Michael can draw on risk assessment, community fire safety, operational analysis to scrutinise the Cheshire Fire and Rescue Service (FRS) whole service review. This includes:

- 1992-1995: Assisting London Fire Brigade to develop a new approach to fire fighter operational safety in response to the death and serious injury of firefighters, including dynamic, generic and site specific risk assessment, realistic training and operating procedures.
- 1995-1998: Development of a new risk based approach to planning fire cover and community fire - a part of the ‘Out of the line of fire’ response to the Audit Commission’s 1995 report ‘In the line of fire’. This work underpinned the national transformation of the UK fire service approach to fire safety and fire cover, culminating in the Integrated Risk Management Planning (IRMP) process.
- 1998 to date: Support to national government and fire and rescue services to develop and apply fire cover review, risk assessment and IRMPs. This has also included peer review and validation of fire cover reviews for Cheshire FRS, Manchester FRS, Lothian and Borders FRS (as was), Highlands and Islands FRS (as was) and national review work for the government.

- 2000 to date: Support to national government and fire and rescue services to develop and evaluate community fire safety strategies, including Home fire risk checks, arson prevention, schools based fire safety education, fire regulation and enforcement.
- Worked for the Fire Brigades Union in 2014 to assess the causes of longer fire service emergency response times and the impact of this on loss of life.

Outside of the fire service, Michael has led the development and application of operational response review projects for the Royal National Lifeboat Institution (which are very similar to fire cover reviews), and developed risk assessment methods for use by the UK Maritime and Coastguard Agency, and reviewed specialist response teams for responding to terrorist attacks.

1.4 Evidence reviewed

The review is based on the following documentation and review meetings.

Documents reviewed:

1. Draft IRMP 2020-24.
2. Supplementary Information (one per proposal).
3. Background data (V.1) (one per proposal).
4. Power point presentations by Cheshire FRS IRMP team (December 2019 and February 2020).

Review meetings in:

1. January 2020.
2. February 2020.
3. May 2020.

The review meetings led to additional data and analysis being completed by Cheshire FRS and additional verbal clarification of the rationale for some aspects of the proposals.

2 PROPOSAL 1: REPLACE THE THIRD AERIAL APPLIANCE WITH A HIGH REACH FIRE ENGINE

2.1 The proposal

The proposal is to replace the Macclesfield aerial ladder platform (ALP – a hydraulic platform) with a High Reach Fire Engine (HRFE[1]) and for Cheshire to be serviced by this and two ALPs operating from Chester and Lymm. Figure 1 shows two types of HRFEs. Figure 2 shows the Lymm ALP.

The rationale is that operational needs align to two ALPs and that a HRFE offers new capabilities and would be a better value for money option than an ALP, especially in respect of providing a superior water tower capability. The HRFE can, for example, deliver water over a longer distance (~85m) and has a piercing tool. The HRFE is remotely operated, enabling the operator to be distant from the fire, such as when the turret is above a fire. AT Stinger has 16.5m vertical reach, E1 Scorpion has 20m vertical reach. As they have on-board water tanks, they can quickly deliver water. An ALP relies on water pumped from a fire engine. The HRFE can also act as a fire engine so can perform both roles.

Figure 1: Pictures of HRFEs

AT STINGER

E1 SCORPION

Figure 2: Lymm ALP at an incident

[1] Also called a High Reach Extending Turrets' (HRET).

2.2 Observations

2.2.1 Is there a need for three aerial ladder platforms?

The data clearly indicates a very low level of demand for a third ALP. The vast majority of incidents requiring an ALP are attended by the Chester and Lymm ALPs. This is due to the vast majority of incidents that require an ALP being in the north side of Cheshire, as evidenced by the presented data. Two ALPs are advocated in part to ensure that, when one is deployed, a second is available to attend other simultaneous incidents, or to provide relief duties.

The data specifically indicates a low level of demand for an ALP in the Macclesfield area. The case for not having an ALP in Macclesfield is evidenced. This includes:

- Very low level of ALP mobilisation;
- Two[2] (out of 24 in Cheshire) high rise buildings in the Macclesfield area have been assured by Cheshire FRS inspections in respect of fire protection and absence of flammable cladding;
- The Macclesfield ALP has been used for water tower functions – which a HRFE can provide;
- Over the border ALPs can attend Macclesfield in 20 to 30 minutes[3], which equals ALP attendances times in some other urban parts of Cheshire.

2.2.2 Optimal locations for aerials

Communication with Cheshire FRS officers provided additional insights into the operational case for locating ALPs (as opposed to a HRFE) in Chester and Lymm (or another north east station). The full rationale is not fully articulated in the supplementary information.

The full case is articulated as:

- For Chester – the vulnerability of heritage fire risk and the need to have “over the top and round the back” access to heritage buildings; the need to assist with boat deployments; 9 out of Cheshire’s 24 high rise (residential[4]) blocks are in Chester and 3 in nearby Ellesmere Port, as well as the frequency of incidents benefiting from an aerial in the north of Cheshire;
- For Lymm[5] – assisting with boat deployments and technical rescue incidents, seven high or medium rise residential blocks, as well as the frequency of incidents benefiting from an aerial in the north of Cheshire. Lymm can also serve the south of the county via the M6.

This is important, as it indicates that there are specific reasons for ALPs being located in Chester and Lymm, instead of choosing to locate an HRFE in either Chester or Lymm.

Assessment did test the impact of changing the location of the ALPs and their optimal locations in respect of response times. This modelled all potential locations across Cheshire.

There is some evidence that the attendance time of Cheshire FRS aerials to the southern central part of Cheshire (e.g. Crewe and Nantwich), are longer than elsewhere in Cheshire.

[2] Pennine Court and Range Court, 16 storeys, 49m roof height, 92 flats each. ALPs have a 32 metre reach.

[3] There is no response time standard for aerials in Cheshire FRS.

[4] 10 to 13 storeys

[5] Whilst modelling suggests that locating a water tower in Widnes would be optimal, the difference is response times is not great

A two ALP policy does not change this because the Lymm ALP reaches Crewe before Macclesfield's ALP.

2.2.3 Location of high-rise residential buildings

Whilst data on the location of high-rise residential buildings has been compiled, this was not presented in the supplementary information. Their locations were communicated as part of this review.

It should be noted that most fires in high-rise buildings are fought internally and that ALPs offer a limited rescue capability due to upper floors in high rise buildings being higher than the reach of aerials. ALPs can reach approximately 10 storeys, depending on the height per storey. Also, ALPs are not designed for mass rescues. Evacuation of high-rise buildings assumes the use of staircases. Fire-fighting in high rise building assumes the use of equipment inside the building, such as risers.

Nonetheless, data on Cheshire high-rise buildings indicates that they are mostly located in the north of Cheshire, with two 16 storey residential flats in Macclesfield.

2.2.4 Is there a need for a HRFE?

The IRMP notes that a HRFE offers new capability, particularly breaking into roofs (remotely) and enhanced water tower capability.

This means that past ALP experience may not provide a complete picture of what HRFEs may be used for in the future. Communication from Cheshire FRS officers indicates that they could provide additional operational capability at a wider range of incidents than cited in the IRMP. For example, the 'instant' water tower from the on-board tank combined with high output long range jet means that all types of fire can be fought from a safe distance, thus improving operational effectiveness and firefighter safety.

2.2.5 Optimal location for a HRFE

2.2.5.1 Trialling a HRFE

The criteria for choosing a location for trialling a HRFE could be clarified. Communication with Cheshire FRS officers indicates that these would include:

1. There being sufficient "normal" fire and rescue incidents in the area for the HRFE to be trialled as a "standard" fire engine;
2. A crew duty system that would assure "faster" mobilisation and availability (i.e. Nucleus, Day Crewed or Wholetime rather than On-Call).

Proximity to incidents requiring special resources were not considered to be a key criterion. Where ALPs are used as water towers, there is an "extended" time between mobilisation and delivery of water. On arrival at an incident, ALPs need to be set up (e.g. deploy stabilizers) and connected to a fire engine. Secondly, ALPs are often requested by the on-scene officer in charge after they have assessed the incident. Therefore, a small difference (e.g. 5 minutes) in response times between the station and the incident is not considered to be a key criterion.

Macclesfield satisfies the two criteria for a location to trial the HRFE. It has a Nucleus crew and a moderate number of incidents (>600 per year). These criteria would also be met at other stations, such as Crewe or Wilmslow.

2.2.5.2 Response times

The presented analysis indicates that other locations, such as Middlewich[6], are equally or more suitable in respect of proximity to incidents. A central Cheshire location would provide equidistance to many parts of Cheshire, whilst Macclesfield is obviously on the eastern border.

The map of aerial mobilisations on page 4 of the Background Data indicates that there are a cluster of incidents in the Crewe/Nantwich/Winsford/Northwich areas and that there are more incidents in these areas than in and around Macclesfield. It also shows that the 20-minute response time radius around Macclesfield is relatively small, presumably due to the road speeds around Macclesfield. Macclesfield is twice as far from the M6 as Crewe, increasing its deployment times to those parts of Cheshire where a HRFE may be needed.

These areas are served by the ALP from Lymm. The response time to Crewe-Nantwich area could be improved if the HRFE was more central/south Cheshire. However, as previously noted, there is no response time standard for aerials.

2.2.6 Effectively trialling the HRFE

Cheshire FRS officers confirmed that it was the intention to locate the HRFE at Macclesfield and test out the new capability and assess its effectiveness. Its location would be subject to ongoing review as per all specialist resources across Cheshire. If successful, additional HRFE's might, in due time, be deployed at additional locations.

The assurance of a successful operational trial could be further elaborated. For example:

- That mobilisation rules will be evolved to ensure it will be mobilised as appropriate, such as when a water tower or breaking into roofs is required;
- That its location in Macclesfield will not limit its deployment to the main area of water tower incidents, namely the north of Cheshire;
- That availability of the Macclesfield Nucleus crew will not overly limit its trial mobilisations.

2.3 Conclusions

2.3.1 Has a suitable and sufficient analysis been completed?

A suitable and sufficient scope of analysis and data has been compiled and presented. This includes:

- An analysis of the frequency of aerial mobilisation, the types of incidents attended, and the functions performed;
- The response times that would be achieved across Cheshire to incidents involving aerials and / or a HRFE;
- An analysis of the optimal locations for ALPs and HRFE, in respect of response times;
- The locality specific rationale for optimal location of ALPs and a HRFE, such as location of heritage risk and assisting with boat deployment.

2.3.2 Have all reasonable options been considered?

All reasonable options have been considered for the number and location of ALPs.

[6] Middlewich is an On-Call station and has a relatively lower number of "normal" incidents, and so does not meet the criteria for a trial location.

It is less clear that all options for the *optimum* location for a HRFE have been given due weight. Macclesfield does meet the criteria for trialling the HRFE.

2.3.3 Does the evidence support the proposal?

The evidence supports a two ALP policy and the location of the two ALPs.

As noted above, if a single HRFE is retained in the future, the optimal location of a HRFE should be subject to review.

2.3.4 Clarifications

It could be clarified that the HRFE would be the 35th fire engine as well as a special resource. Thus, the proposal is to have 35 fire engines (one of which would be the HRFE) plus two separate aerial ladder platforms.

Secondly, it could be clarified that the Macclesfield location for a HRFE may not be the optimum location, in respect of response times, and will be subject to review.

Furthermore, if the HRFE proves to add value, there is the possibility that additional HRFE would be procured and located elsewhere in Cheshire.

3 PROPOSAL 2: INTRODUCE A DAY CREWING SYSTEM AT WILMSLOW FIRE STATION

3.1 The proposal

Wilmslow fire and rescue station is currently Nucleus crewed – full time staff during the day and On-Call crew at night. Three of the adjacent Cheshire FRS stations are On-Call and one (Macclesfield) is Nucleus.

It is stated that there have been difficulties in recruiting and retaining the night-time On-Call crew. This has been managed by bringing staff in from elsewhere to fulfil the night-time crew. This "backfilling" has maintained 99% availability. In the absence of backfilling, night-time availability would be a little under 20%. However, it is time consuming and considered "costly".

The proposal is to move to a Day Crew system, where a full-time crew operates during the day (weekdays) and is available On-Call at night and at weekends by virtue of living in accommodate adjacent to the fire station.

3.2 Observations

3.2.1 Supplementary information

A 30 page data pack was provided which includes a large amount of data.

The key points may be lost in the detail. In addition, the commentary in the data pack information compares a single latest year against a single baseline year. The number of incidents in a relatively small area will spike and dip a lot. The trend over 5 to 10 years provides a clearer picture.

3.2.2 Key points: Risk profile

The key points are noted below. Overall, the size of the town and level of operational activity is mid-range and consistent with other Day Crewed stations. In particular:

- Wilmslow's attendances exceed those at the Congleton Day Crewed station, are almost equal to Winsford's Day Crewed station and somewhat less than Northwich's Day Crewed station;
- Wilmslow's attendances are somewhat less than some other Nucleus crewed stations, such as Macclesfield and Birchwood – about 450 vs about 650 per year.

It is also important to note that:

- A large proportion of Wilmslow's life risk incidents occur at night, which is when the proposed Day Crew would be available for rapid mobilisation;
- Wilmslow has a high frequency of Platinum and Gold safe and well addresses, i.e. a vulnerable older population;
- Wilmslow is 14th out of 35 Cheshire fire engines in terms of number of attendances.
- Wilmslow has about 41,000 residents compared to about 34,276 in Winsford (Day Crewed), 65,833 in Northwich (Day Crewed), 59,384 Macclesfield (Nucleus) and 41,208 in Birchwood (Nucleus).

Thus, Wilmslow's population is comparable to other Day Crewed and Nucleus Crewed stations.

Table 1: Key points: Wilmslow risk profile

Topic	Key points
Population level	Wilmslow is a medium sized town with a population of about 42,000 people, 19,000 dwellings and 3,380 business properties, some heritage buildings, but no HMOs and a small night time economy.
Growing or reducing	The population is **growing** in Wilmslow, as with the rest of Cheshire.
Number of fires	In the period 2014/15 to 2018/19 there was an average of 18 dwelling and 12 non-dwelling property fires each year.
Traffic levels	Traffic volumes have been steady for the past 9 years and are projected to increase.
Operational activity level	Wilmslow operational activity has **slowly risen** over the past 8 years.
Fire engines required per incident	Most incidents require a **single fire engine**.
Life risk incidents	There is a **moderate number of life risk incidents each year**, in the region of tens.
Day vs night risk	Whilst in most years most life risk incidents occur during the day, **a large proportion occur at night.**
Safe and well	Wilmslow has the third highest number of Platinum (high risk) safe and well addresses in Cheshire, and sixth most Gold.

3.2.3 Response times

The assessment considered every option: closure, Wholetime, Day Crew, current Nucleus arrangement, wholly On-Call, no night time crew and station closure.

Removing the night shift, being wholly On-Call or closing the station would fail the Cheshire response time standard.

The Day Crew option is only a little better in terms of response times than the current arrangement because the night time On-Call crew is being back filled to achieve 99% availability. A Day Crew option would meet the 10 minute response time standard on 90% instead of 85% of occasions.

Previous Cheshire FRS trials assumed a five-minute time interval between the first fire engine and the second fire engine, as a test of the feasibility of the procedure, rather than as a pre-requisite for a safe system of work. The interval between the 1st fire engine and the 2nd fire engine is well below 5 minutes in all options.

3.2.4 Contingency for no site for accommodation

It was not clear from the draft Background data whether a site for accommodation has been positively identified or acquired. There was no mention of whether a site has been found in the draft document. It was clarified in the final IRMP that there is a contingency, in the event that an accommodation unit cannot be built.

3.2.5 Presentation of costs and changes in costs

The presentation of changes costs could be a little clearer. They are represented in Table 2.

Table 2: Re-presentation of change in revenue costs

Option	Cost	Change in cost
A w/t	£865,000	+£223,000
B Current	£642,000	Zero
C D/C	£459,000	-£183,000
D Remove overnight	£480,000	-£162,000
E: On-Call	£162,000	-£480,000

In addition, the approximate capital cost of the accommodation could be more clearly stated for comparison to the 25-30 year revenue savings. The information, presented in slide form, indicated an annualised (25 year) cost of £195,000 to £225,000 for the construction of accommodation for a Day Crew. A Day Crew has a saving, in operational costs, of £183,000 per year giving a net (taking account of construction costs) annual cost increase of £13,000 to £38,000. This would be offset by rental income but this is not explicit in the information.

3.3 Conclusions

3.3.1 Has a suitable and sufficient analysis been completed?

A suitable and sufficient scope of analysis and data has been compiled and presented. This includes:

- Analysis of operational workloads, day and night;
- Impact on response times of each option;
- The risk profile of Wilmslow and its potential growth and changes in the future.

3.3.2 Have all reasonable options been considered?

All reasonable options have been considered.

3.3.3 Does the evidence support the proposal?

The evidence shows an operational and workload case for Day Crewing at Wilmslow. This has lower revenue costs and, after taking account of capital costs and likely rental income, is cost neutral.

The data indicates that the level of operational demand and incident severity requires one structural engine at Wilmslow, with other fire engines attending from neighbouring stations. The data also indicates that the provision of night time cover is important.

In the event that an accommodation unit is not possible, a contingency for making current crewing sustainable should be implemented, such as assuring a sustainable Nucleus Crewing arrangement.

4 PROPOSAL 3: RELOCATE ELLESMERE PORT 2ND FIRE ENGINE TO POWEY LANE

4.1 The proposal

After building a new station at Powey Lane (south side of Ellesmere Port) it is proposed to move its fire engine to Chester, and for Ellesmere Port's second fire engine to move to Powey Lane.

Figure 3: Proposed location of Wholetime fire engines

4.2 Observations

4.2.1 Clarity of presented information

The presentation of the assessment of options in the Supplementary Information could be clearer.

It could be sub-divided:

1. Holmes Chapel, Middlewich vs Chester
2. Chester vs Powey Lane vs Ellesmere Port

The Background data compares a recent year with a single earlier year as a point of comparison. As the number of incidents spikes and dips from one year to another, it is more useful to consider the trend in incidents over a number of years.

The point that Ellesmere Port P2 is used a lot for standby moves (10% of its available time) could be commented on (figure 35 and 36 of the Background data). Does this have any implication for the proposal to relocate it?

4.2.2 Key points: Chester and Ellesmere Port

A large amount of information is provided. The key points of comparison for Chester and Ellesmere Port are drawn out in Table 3. It can be noted that:

- The time interval between the first and second fire engine arrival would be greatly reduced for Chester;
- Chester is a higher risk area than Ellesmere Port in terms of residential, RTC and night time risk;
- As the Powey Lane Wholetime fire engine is on the south of Ellesmere Port, it can reach all of Ellesmere Port in 10 minutes and act as a second fire engine for Ellesmere Port.

Whilst the assessment also considered Holmes Chapel and Middlewich, the analysis screened these locations out on the grounds that the operational workloads do not provide value for money for a Wholetime fire engine.

The impact on average response times, across Cheshire, of moving the second Wholetime fire engine is minimal.

The implication of COMAH sites at Ellesmere Port was considered in the 2017 review. It was noted that the response to a major incident at a COMAH site would be made by many fire engines and specialist resources from across Cheshire. It should also be noted that Powey Lane would remain a second fire engine for Ellesmere Port COMAH site incidents as well as providing specialist resources for COMAH site incidents.

The possibility of an On-Call fire engine at Chester was assessed. The number of households from whom On-Call staff could be recruited was limited (2000 households) in the 5 minute radius, with just 28 in the second priority group (zero in the top priority group).

Table 3: Key points for Chester and Ellesmere Port

Topic	Comments
2nd fire engine response times	Greater benefit of a second fire engine in Chester than Ellesmere Port. The current 2nd response to Chester is on the cusp of the 5-minute interval between arrival of first and second fire engine, assumed in the ridership trials. By having a 2nd Wholetime in Chester, the interval between the first and second fire engine is minimal - reducing interval by 4 minutes and 49 seconds. Ellesmere Port would remain well within the 5-minute assumption if its second fire engine was relocated, due to the closeness of Powey Lane, with an interval of about 2.5 minutes.
1st fire engine response times	Minimal impact on each location.
Cheshire FRS 1st fire engine response time standard[7]	Minimal impact on each location.
Frequency of requiring two fire engines	Minimal difference.
Number of dwelling fires and fires in non-dwelling premises	Similar in both areas in 2018/19.
Frequency of incident attendances	Significantly more in Chester.
Population	Chester is markedly larger (60% larger).
Population growth	There has been a low level of population growth since 2011/12 in both Ellesmere Port (0.47%) and Chester (2.63%), but somewhat more in Chester. Both have forecasted growth.
Population vulnerability	Chester has far more Platinum to Bronze Safe and Well visits than Ellesmere Port. More HMOs in Chester than Ellesmere Port.
Fire deaths and injuries	More fire deaths and injuries in Chester than Ellesmere Port.
Non-domestic premises	Far more in Chester than Ellesmere Port.
Large fires	Similar in each location.

[7] Reach 80% of life risk incidents in 10 minutes

Topic	Comments
Night time economy	Larger night time economy in Chester than Ellesmere Port.
RTCs	Far more in Chester than Ellesmere Port.
Special risks	Chester has substantial heritage risk, 18% of Cheshire total. Ellesmere Port has high concentration of COMAH sites, 7 in total.

4.3 Conclusions

4.3.1 Has a suitable and sufficient analysis been completed?

A suitable and sufficient scope of analysis and data has been compiled and presented. This includes:

- Assessment of every station in Cheshire of the impact on response times of moving the second fire engine;
- The risk profiles of Chester and Ellesmere Port, including trends in incidents, population growth and special risks;
- The impact on first and second fire engine response times of changing the second fire engine location.

The reason for Ellesmere Port standby moves could be clarified along with any implications this has.

4.3.2 Have all reasonable options been considered?

All options for relocating Ellesmere Port's second fire engine were modelled, i.e. every other station in Cheshire. All combinations of Wholetime fire engines at Ellesmere Port, Powey Lane and Chester were assessed. This included the option of a Wholetime and a Nucleus crew at each of Ellesmere Port and Chester.

The option of closing Powey Lane and having two Wholetime crews at Ellesmere Port and Chester was not assessed. This is considered reasonable noting the role of Powey Lane as having special resources and direct access to the M56 for county wide special support. The operational rationale for Powey Lane being Wholetime could be clarified in the IRMP. The option of two Wholetime fire engines at Powey Lane was assessed and found to be a poorer option.

4.3.3 Does the evidence support the proposal?

The evidence indicates that having two fire engines in Chester would greatly improve its second fire engine response times. Also, Chester has more RTCs, a far more vulnerable population, heritage risk and night time risk. Ellesmere Port would be served within Cheshire FRS performance standards by two fire engines one from Ellesmere Port and one from Powey Lane, with specialist COMAH resource coming from Powey Lane.

5 PROPOSAL 4: EXPANDING OUR RESPONSE TO ROAD TRAFFIC COLLISIONS

5.1 The proposal

The proposal is to expand the fleet of Rapid Response Rescue Units (RRRU) from two to 13. These would be allocated to fire stations wholly crewed by On-Call Duty Systems.

The new RRRU will accommodate four persons. They can be deployed with two persons. They can perform lifesaving trauma care. RRRU have a 4x4 capability and so can also respond to extreme weather, floods and rural fires.

It is policy that a standard fire engine is deployed in addition to RRRU. Two persons would travel on the RRRU and a minimum of three on the standard fire engine. As the RRRU can deploy with two persons, it can mobilise sooner than a standard fire engine, which policy requires a crew of four.

Two RRRU are currently located at Holmes Chapel and Sandbach.

Figure 4: A RRRU

5.2 Observations

5.2.1 Clarifications

The Supplementary and Background data could clarify:

1. What trauma care and preparatory work the RRRU can provide, and what can't they provide.

   This would help indicate the extent to which the RRRU provide a lifesaving service.

2. The frequency that the RRRU have and whether they might, in the future, attend RTCs where persons needed to be extricated.

5.2.2 Crew safety

A check was made by Cheshire FRS of incident and near miss records. In addition, RRRU (crew/watch) managers were asked to recall any safety issues. There were zero recorded injuries or near miss reports related to the 10-year operational history of the RRRU.

It is also understood that Cheshire FRs ran physical trials of the deployment of RRRU to motorways and have developed Standard Operating Procedures specifically for RRRU.

5.2.3 Impact on response time to RTCs

The current two RRRU have achieved response times of 6 minutes 38 seconds and eight minutes 42 seconds, respectively. This does offer evidence that they have been mobilised well within the Cheshire FRS response time standards. A check was made on the calculated improvement in response times to RTCs.

It should be noted that the reduced response time goes from 10:13 to just under 9 minutes. This would bring the time to within the Cheshire FRS response time standard for life risk incidents.

There is clinical research and research into the impact of fire and rescue response times on

survival[8]. This indicates that a reduction in response times to RTCs involving casualties or extrications would improve survival rates by about 4% This means about 15% fewer deaths at RTCs involving casualties or extrications. There are about 16 deaths per year in RTCs attended by Cheshire FRS, averaged over 2015/16 to 2018/19[9]. As the RRRU would attend about 15% of all RTCs in Cheshire, they might attend at 2 fatal incidents per year. A 15% reduction in lethality would save one life every three years, very approximately.

5.2.4 Frequency of attending RTCs

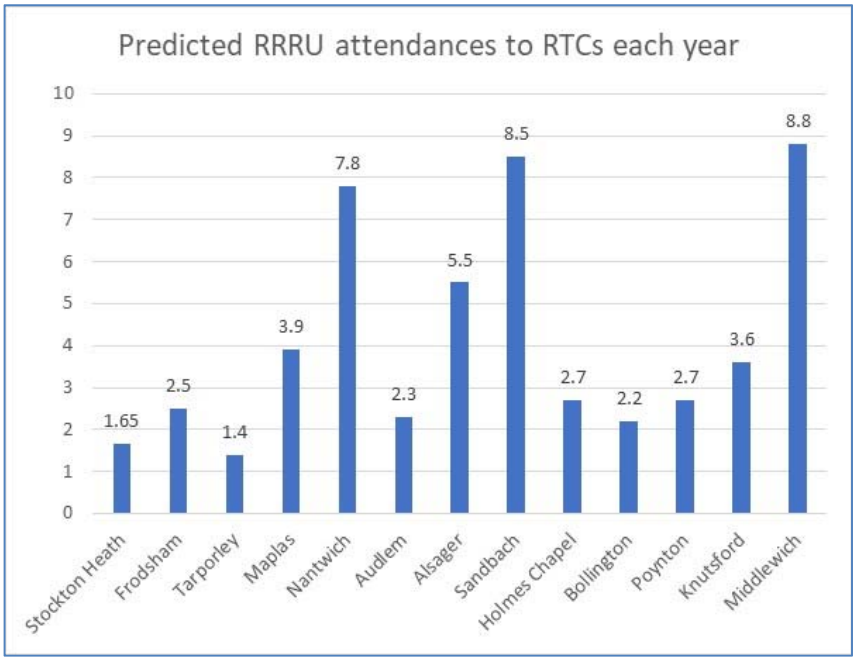
Data does show that the current two RRRU have been deployed to a significant number of incidents each year, about 14 and 20 incidents each, per year.

The background data indicates the predicted frequency of RRRU attending RTCs within their nominal station areas. The frequency varies greatly between stations, from less than 2 to about 9 each year. This is shown in Figure 5 using data from section 2.1 of Proposal 4 Background data. It should be noted that the RRRU may also attend incidents outside of their station areas. These additional incidents are not included in the Cheshire FRS data.

The total for all 13 RRRU would be around 53 attendances to RTCs each year. This would be about 15% of all RTCs in Cheshire.

The prediction frequency for Holmes Chapel and Sandbach is less than for the 2009-2019.

Figure 5: Predicted frequency of RRRU attending RTCs along with standard fire engine within their station areas



5.2.5 RTCs vs other incidents

Whilst the proposal is titled “Expanding our response to RTCs” the supplementary information and background data considers potential deployment to other types of incidents.

This is considered important, in the context that some On-Call stations have a very low

[8] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/6234/1778745.pdf

[9] https://www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables#non-fire-incidents

predicted frequency of RRRU attending RTCs, as noted in Figure 5.

Figure 6 shows the total number of predicted RRRU deployments if they were deployed to a wider range of incidents within their station areas. The RRRU would be utilised five times more often if they were deployed to the full range of incidents that they are thought capable of supporting.

The four categories in Figure 6 are:

1. RTCs where a RRRU would be deployed in addition to the standard fire engine – based on two crew arriving before others;
2. Cardiac arrest incidents where two crew arrive before others[10];
3. Incidents that a crew of two could manage alone or as an initial attendance, such as 'gaining entry';
4. Larger non-RTC incidents. These are incidents where the RRRU would supplement the standard fire engine – such as building fires. This gives an attendance of seven or more crew.

The data is taken from Cheshire FRS analysis. The range of incidents in categories three and four are listed in the Background data. Whilst the mobilisation policy would be subject to further risk assessment, the hypothetical mobilisation criteria are credible. The predictions take account of recorded crew availability, including the frequency of only two crew being available and frequency of more crew being available, e.g. 5 or 7. When five crew are available it is assumed that the standard fire engine can be deployed. When 7 or more crew are available, the standard fire engine (e.g. with 5 crew) and RRRU (two or more crew) can be co-deployed to "larger" incidents. The Cheshire FRS analysis does acknowledge limitations in the data, including the use of county wide recorded availability (instead of station specific) and being unable to account for whether two people, with the necessary skills, arrive first to mobilise a RRRU.

[10] The chances of survival from cardiac arrest increases by about 10% for every minute saved in applying defibrillation. https://www.zoll.com/-/media/uploadedfiles/public_site/core_technologies/real_cpr_help/cpr-fakten-pdf

Figure 6: Predicted frequency of deployment of RRRU to RTC and other categories of incidents within station areas

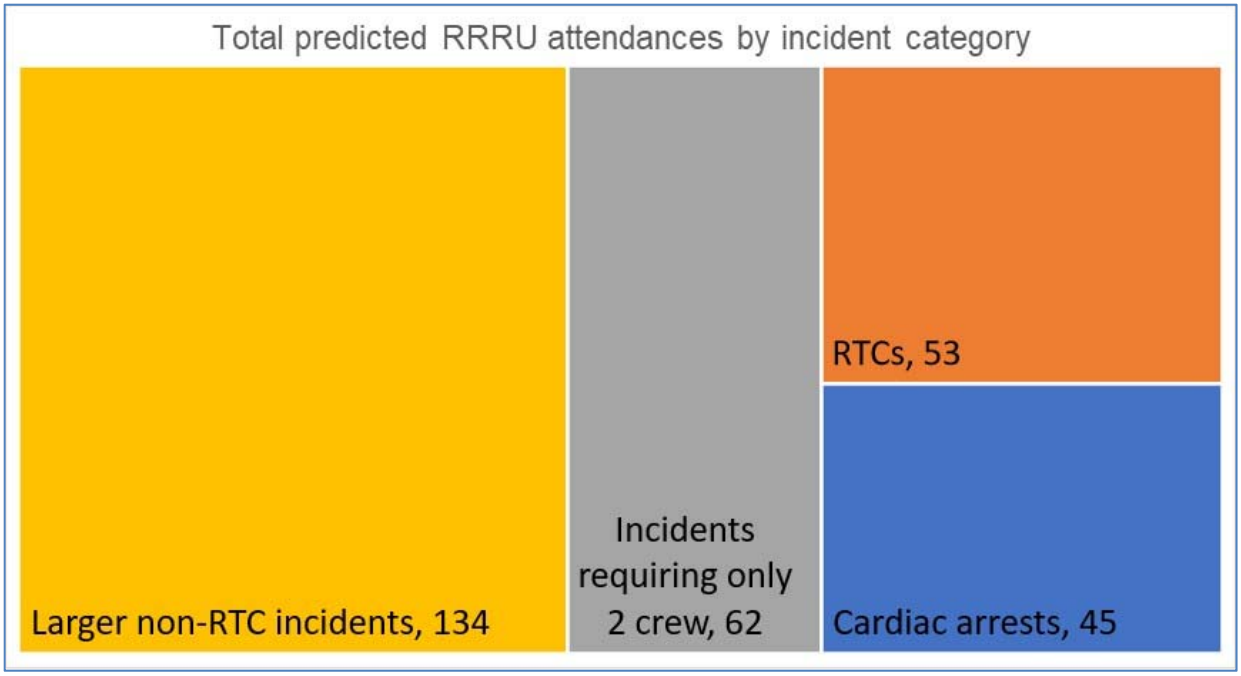
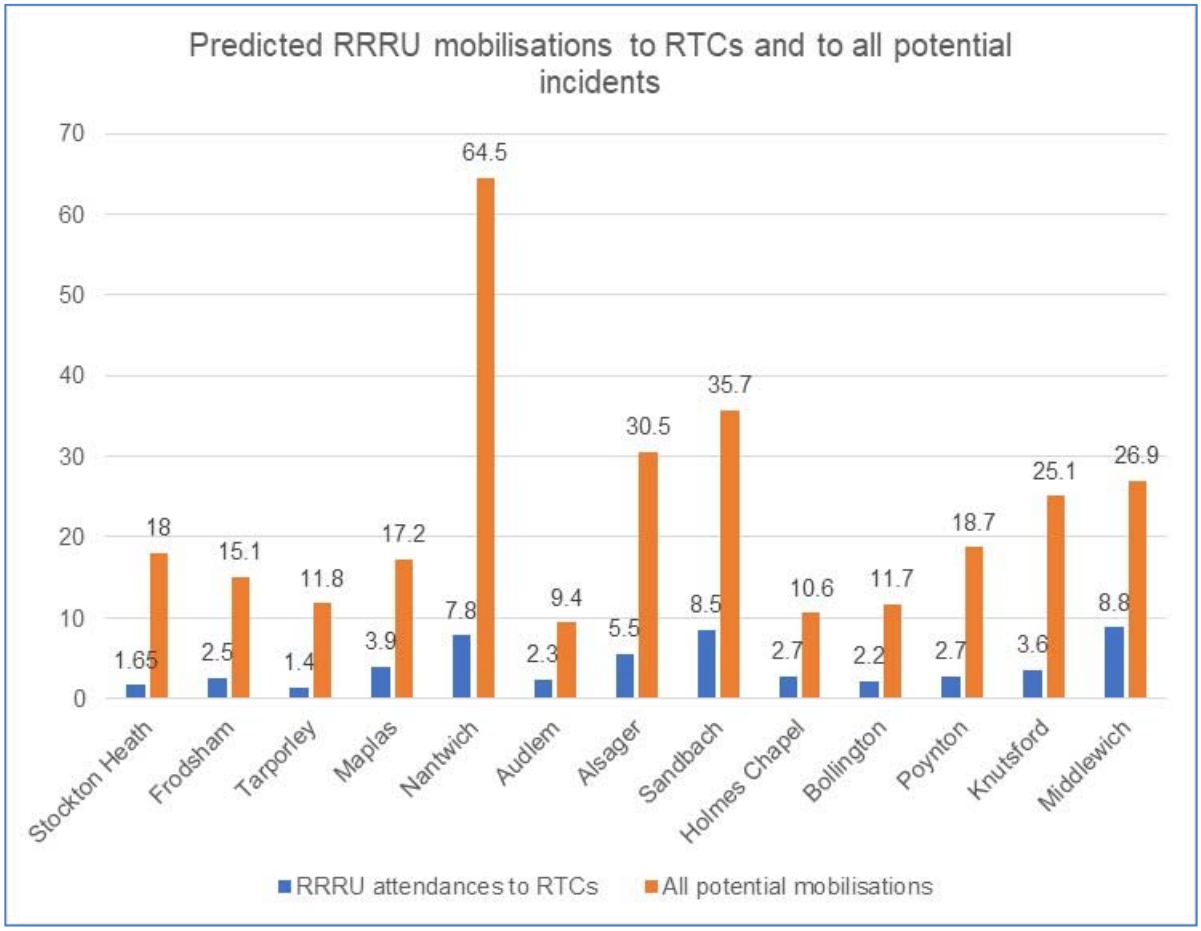


Figure 7 shows the total number of incidents RRRU could be deployed to, alongside the number of incidents they could attend if they were only deployed to RTCs. The lowest level of RRRU utilization would be 9.4 per year, at Audlem.

Figure 7: Predicted RRRU mobilisations to RTCs and to all potential incidents each year within station areas



Deployment alongside standard fire engines to fire

The deployment of RRRU alongside standard fire engines would increase the number of fire fighters available during the initial stages of an incident.

This is not required by Cheshire FRS response time standards nor by its ridership[11] policy.

Cheshire FRS incident task analysis does note the benefit of additional crew arriving within 5 minutes of the first fire engine. The deployment of RRRU would provide a greater weight of response sooner for On-Call stations with a single fire engine, if they are co-deployed.

5.2.6 Potential to improve retention and availability of On-Call Crews

The availability of On-Call Crews varies a lot between stations. It is thought that the availability of crew is linked to the frequency of their deployment. In particular, individuals may be more likely to ensure their availability (by declaring themselves to be On-Call) if they have a higher frequency of being deployed.

The RRRU should increase the frequency of On-Call crew being deployed. It is reasonable to assume that this will improve crew morale and availability.

It is difficult to quantify the impact on crew morale and availability. The benefit would be greater if RRRU are used for a wide range of incidents.

If RRRU attended a wide range of incidents, they would attend about 20% of all incidents at

[11] A minimum of four persons on the first fire engine attending a primary fire

On-Call stations. Thus, two or more crew would be deployed on 20% more occasions.

5.3 Conclusions

5.3.1 Suitable and sufficient analysis

A suitable and sufficient scope of analysis and data has been compiled and presented. This includes:

- Assessment of frequency of mobilisation to different types of incidents;
- Impact on response times;
- Occurrence of crew safety incidents or near misses involving RRRU.

Testimonials from current RRRU crews

An option is to seek testimonial feedback from current RRRU crew regarding:

- The impact of RRRU on the motivation and availability of On-Call crew;
- RRRU safety and operational value.

Whilst the impact on crew morale and availability cannot be easily quantified, these may be moderate benefits.

The current county wide availability of On-Call stations is stated to be 64.81% but varies a lot. It is in the range of 30% to 50% at some stations. This suggests potential value of increased crew mobilisation.

5.3.2 Have all reasonable options been considered?

Greater value could be achieved by using the RRRU for a wider range of incidents.

This could include:

- Deployment alongside standard fire engines to fires;
- Solo deployment to small non-fire incidents where a RRRU is sufficient, such as forced entry.

This would increase RRRU mobilisation fivefold. This would reduce the cost per deployment fivefold.

Whilst the data and analysis are available to consider the impact of a wider range of mobilisations, this option is not explicitly cited.

5.3.3 Does evidence support the proposals?

The evidence does indicate that RRRU would achieve faster response to RTCs including those where peoples' lives are at risk.

This would comprise:

- 53 RTCs attended by RRRU before arrival of a standard fire engine;
- A reduction in time taken to reach RTCs, down from 10 minutes 13 seconds to just under 9 minutes.

This would reduce the number of deaths at RTCs with casualties or extrications attended by RRRU by approximately 15%. As RRRU would attend about 15% of all Cheshire RTCs, this would save about one life every three years or so. Over a ten year fleet life, this would be about three RTC lives saved for a capital cost of £400,000.

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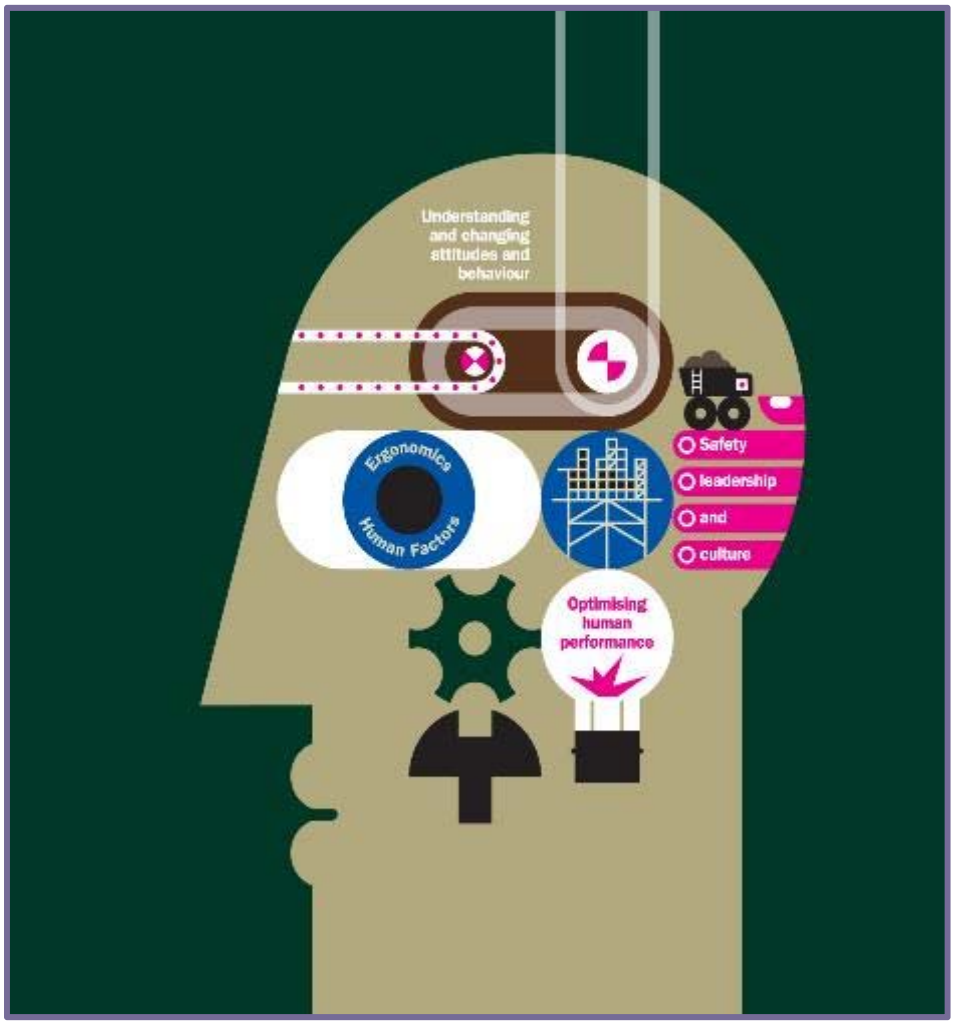

'managing the human element of risk'