



**Scottish
Ambulance
Service**

Working in Partnership with Universities



Medical Gases

SAS Update – May 2026

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Authors: [REDACTED]
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1. Purpose of Document

Background

The Scottish Ambulance Service rents medical gas cylinders from the company, BOC, and following several national audits, the most recent of which was September 2025, the Board identified a total of 7,518 cylinders but was unable to locate 3,292 cylinders expected to be in stock at the time of the audit. The rigorous audit process had strong participation from every station, co-location base and workshop.

Of these unaccounted-for cylinders, 1,555 have expired and could not safely be used if they were to re-appear, but as with all non-returned cylinders, the Board continues to pay monthly rental costs to BOC for them. [REDACTED]

Prior to the payment of this write off the Service established a formal Medical Gases Best Value Project. This Medical Gases Project (MGP) is a key element of the SAS Best Value Programme, which is in place to lead service improvements and financial efficiencies.

The MGP is leading on the implementation of the improvement work required to avoid the further loss and financial impact of untracked cylinders. Progress of this work is being reported to the SAS Performance and Planning Steering Group and the SAS Audit and Risk Committee.

In addition, KPMG has undertaken an internal audit of medical gas controls and identified recommendations for improvement. This, whilst aligning to work that was already in place provides further scrutiny and review. The KPMG report was approved by the SAS Audit and Risk Committee on the 16th October 2025 and actions from this are progressing well.

This document describes an update on this medical gas project and a follow on from the Executive updates provided in October 2025 and January 2026. It also proposes the next steps and a timeline in terms of medical gas write off to BOC.

Progress to May 2026

1. Concluding the 'wash-up' of the September audit with particular reference to

- Undertaking a physical audit (as a final check) in those stations with the highest 'unaccounted for' cylinders and a
- A final review of all vehicles in Service that did not have medical gases scanned during the audit
- A final review of CFR, BASICS and Mountain Rescue Teams, requesting the return of surplus stock

This concluded mid-December, since then, a further 989 cylinders that were not identified during the September audit have been returned to BOC or were removed from stock holding based on the Service's scrutiny of the data and specific queries that were raised. Cylinders without a delivery note and/or an identifiable serial number and associated cylinder fill date and expiry date were removed.

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On that basis a decision was therefore made at that time to not pay BOC the write off until SAS gained further assurance of the accuracy of the stock holdings from the BOC data perspective.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

In addition there has been further work within SAS to increase the controls, monitoring and reporting of cylinders. The specific work since December to date is noted below:

- It was agreed by the Project Board to take a big-bang approach and make the Cylinder Track app available to all Paramedics and Ambulance Technicians to enable tracking of cylinders within and outwith SAS. The ask of staff was for the scanning of cylinder movements between physical locations e.g. from store to vehicle. This would build a real-time understanding of cylinder locations. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
- Additional controls were put in place to avoid unnecessary net increase in stock by requesting that all stations, unless by senior management exception, re-order medical gases will only be on a like-for-like basis.
- Development of baseline agreed stock levels of cylinders, in order for local operational management to manage gas quantities
- The development of a medical gas dashboard that will be used to monitor and track usage at station level

Next Steps from May to October 2026

The paper now provides an update on the actions now required to agree the write off payment to BOC, gain assurance on the internal control, monitoring and reporting processes within SAS and move the project into business as usual.

This update provides detail on the following workstreams:

1. Progressing discussions with the medical gases supplier, BOC in relation to the data accuracy of the cylinder stock and charges.
2. Agreement on the calculation of the stock level baseline for stations and other users
3. A test of change implemented to improve staff usage of the app with an action plan proposed

4. Progress on the development of the dashboard and station reporting and description of key performance indicators that will be reported in this national dashboard.
5. Final actions to conclude the whereabouts of the known expired cylinders that have been scanned but not yet returned to BOC
6. The current stock holding and position including the BOC credit option
7. The consideration of the Medical Gases Lead post and next steps
8. Timescales for the conclusion of the write off position and next steps that include project closure and progressing to business as usual.

Each of these workstreams are described further below:

1. BOC Data Accuracy

Through a series of meetings with BOC including escalation to their Healthcare Director and Operations team, actions have been taken to reconcile the stock holding report and gain greater understanding of BOC invoicing procedures.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

2. Baseline Agreed Stock levels

[REDACTED]

In 2019 there was a review of the quantity of gas cylinders on the primary vehicle fleet. There was also clinical agreement on the stock expected to be held on Accident and Emergency (A&E) ambulances and Patient Transport Vehicles (PTVs).

Building upon the work of the MGP, [REDACTED]
[REDACTED]
[REDACTED]

In addition, an estimate of stock holding in the gas stores at a small, medium and large station will be determined. This will then importantly show the show upper and lower limit for cylinder stock holding at each station with a gas storage cabinet. This will be reported through the dashboard, where variation can be followed up.

A stock allowance will also be agreed with Area Service Managers, Heads of Service and other senior management where agreed necessary, for cylinders held in a their response bag, and for stations that help replenishment for Scottish Mountain Rescue, Community First Responders and BASICS Scotland.

By the end of June there will be a re-baseline of the total Service stock holding required to safely provide patient care, and an agreed tolerance will be set. Updated clinical guidance is a key deliverable that will also support this.

3. Cylinder Tracker App Rollout, Utilisation and Test of Change

The cylinder tracker app was made available to approximately 4,000 A&E staff on 2nd February 2026 and since then 1,036 staff have used it.

Since February, 7,599 cylinders have been scanned to 615 vehicles, 112 stations/bases, 10 Community First Responder schemes, 2 Mountain Rescue Teams, 9 hospitals and 1 BASICS Scotland responder team.

There is an however only an average of 28% of cylinder movements being scanned since the app was implemented (in practice, the percentage will be lower because some cylinders are being scanned that haven't moved).

To understand the reasons for this low compliance a test of change in 3 stations – Aberdeen, Edinburgh and Paisley was initiated. This included a detailed question set (led by an operational staff member) in speaking to crews, gaining feedback and educating staff on what is required of them. This was supported by the Director of Workforce and linked to the culture work. The outcome of this feedback is being developed into an action plan. Aberdeen and Edinburgh City Station have been completed and Paisly is due to be complete by early June.

The key themes (to date) identified are

- 1) staff not understanding medical gases are a prescription only medicine and there is clinical responsibility for ensuring gases are tracked and in date
- 2) reluctance to utilise Service phones and therefore not have the tools in place to scan the cylinders
- 3) that Service phones don't meet their needs or the app doesn't work

Communications will be developed further to ensure clinical responsibility is clearer to staff and there will be myth busting communications on the phones and app issues.

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4. Medical Gases Dashboard

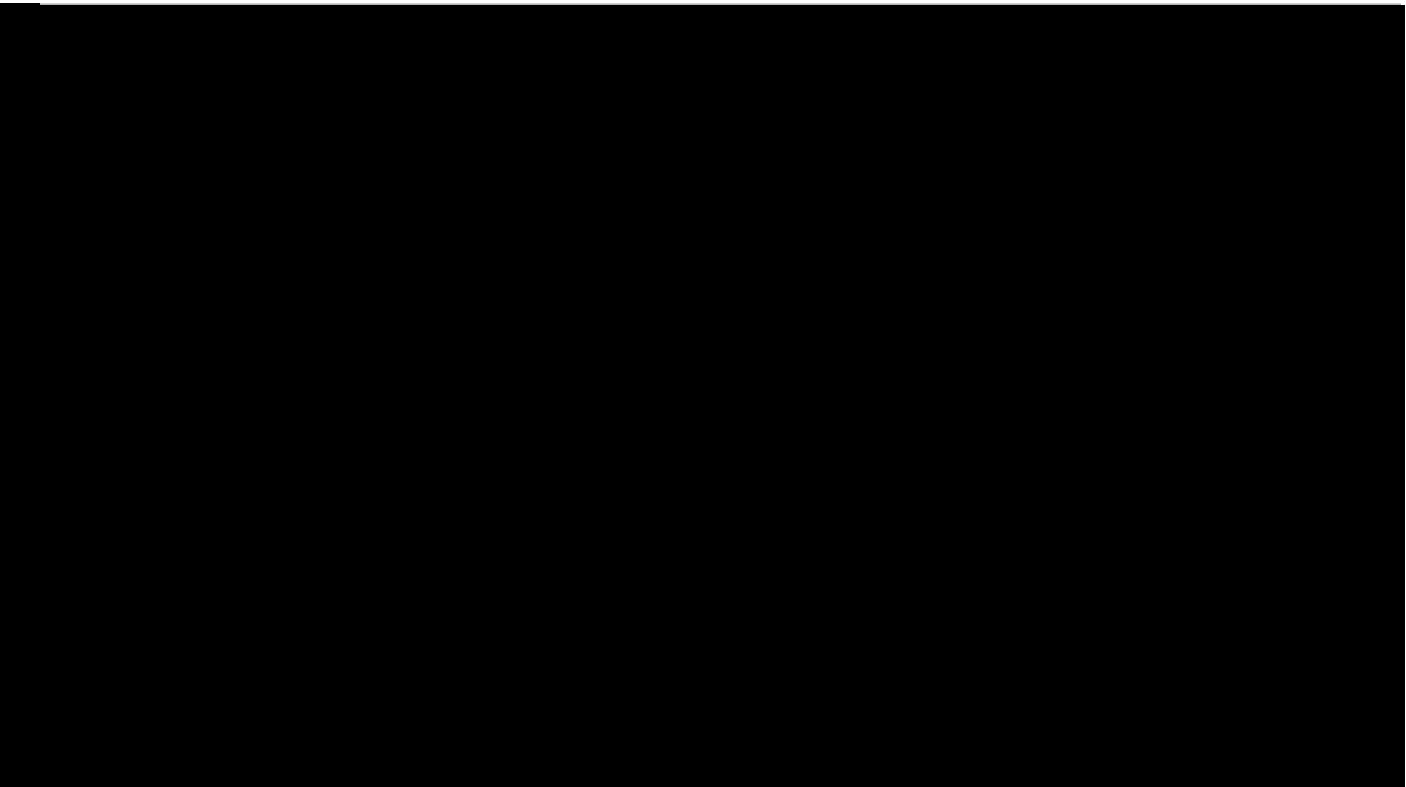
All A&E ambulance crews are required to capture every cylinder movement between vehicles, stores and when exchanged with other services or left at hospitals. The medical gas dashboard has been developed to illustrate scanning activity based on locations such as stations and vehicles, and when reconciled back to the BOC holding data determines where cylinders are not being scanned but are in use. This will go to individual vehicle and staff level and will provide a useful monitoring tool.

As the app usage rates increase, the wealth of data will grow rapidly to continuously improve the Service's understanding about gas usage, with scope to influence behaviours including ordering frequency, practices of recovering cylinders from hospitals and other emergency services, and a re-evaluation of stock holding on specific vehicle types and stock holding in stores. Importantly SAS will not lose cylinders and will be able to reconcile BOC billing and use.

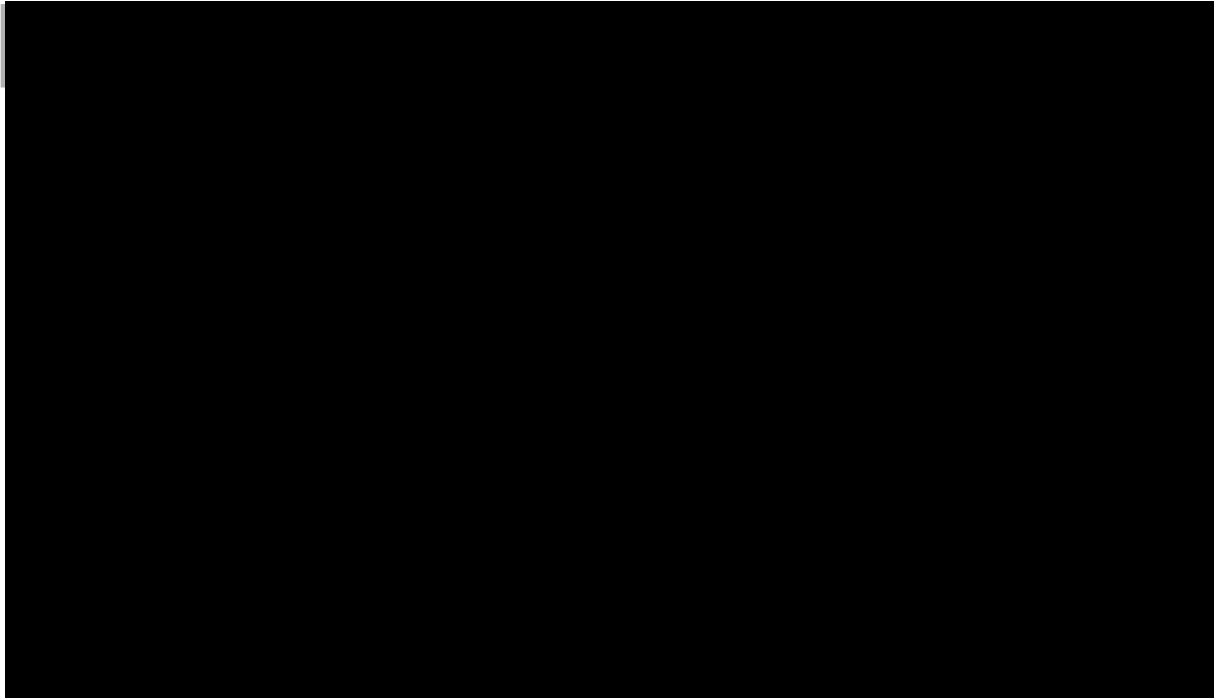
The dashboard has been published on @SAS and is available to all staff nationally. The dashboard is currently being accessed predominantly by Edinburgh City, Aberdeen and Paisley but will be more widely promoted following the end of the test of change in June. It has proved useful during the test of change and getting at 'at a glance' view of stock rotation and scanning rates at specific stations.

During and following the launch of mandatory use of the app by staff the dashboard will become an important monitoring tool in the use of medical gases.

[REDACTED]



As an example of useful insight starting to be understood nationally, is a summary of cylinder deliveries and returns to measure net increase or decrease in stock holding. This can be filtered by region, sub-region and station but also be looked at nationally. Since 30/01, 12,534 cylinders have been delivered and 12,583 returned, resulting in a decrease of 49 cylinders. The ZD cylinder size use has however increased by 200.



This shows the data available at station level comparing the cylinders delivered and cylinders returned and further data supporting this.



5. Actions to return the expired cylinders found during the audit

There remains too many cylinders that have been scanned but are known to have expired that are still within the Service. In summary there are

- 24 cylinders scanned since February that have expired
- 78 cylinders scanned September – December 2025 which have expired
- There are a further 10 cylinders that have been scanned since February and expire in the next 90 days.

Regions have been provided with the data on where the cylinder was based and requires to be sent back to BOC. This is being progressed as a matter of urgency.

6. Current Stock Holding

With the recent introduction of the Cylinder Tracker app and dashboard described earlier, there is now better insight to significantly mitigate the risk that cylinders will go undetected without early corrective action being taken.

It is now feasible, via the app, to accurately track cylinders between their delivery from and return to BOC. As described earlier, the project has started to use weekly supplied BOC reports to understand usage rates, re-ordering patterns and local variations in

behaviours between stations and the strengths and weaknesses of current control measures.

Currently BOC delivers cylinders directly to 83 stations/co-location bases and scan them into its system to charge rent. Stations order stock from BOC via a secure account and return used cylinders, at which point BOC ceases to charge rental. All smaller 'spoke' stations and bases replenish stock from one of the 83 delivery 'hub' locations. Cylinders often move widely throughout the vehicle fleet and stations, relative to their delivery location.

[REDACTED]

Current Usage

Over 7,500 cylinders are rotated in 12 months or less back to BOC.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]

[REDACTED]

- [REDACTED]

[REDACTED]

7. Medical Gases Lead – Post Continuation Review and Impact

The current Medical Gases Lead post was initially approved on the basis of a 12 month secondment from October 2025 to lead on the implementation of the medical gas project actions.

The focus of the work to date has been on improving controls in relation to ordering, storing, administering and tracking of medical gas cylinders.

The auditors, KPMG also undertook an internal audit and produced a report which assessed current risks and from which an action plan was developed, which the Medical Gases Lead is responsible for.

The latest target completion date for the resulting actions is July 2026 and these are on track for completion.

A Business Case is being collated to consider the ongoing continuation of the Medical Gases Lead. This would offer a single, clinically accountable point of contact for all aspects of medical gas governance - such as monitoring of usage, ongoing review of clinical developments and usage, BOC engagement, ownership and maintenance of the dashboard.

Clear ownership of the role would support decision-making processes, reduce variation, and provide assurance that risks associated with medical gases are actively and clinically managed. A governance process would be put in place for reporting and actions associated with medical gases.

Several English Ambulance Trusts manage medical gases as part of core medicines governance via assigned clinical leadership. Trusts such as LAS, NEAS, SCAS, and EEAST have responsibility for medical gases fall within their substantive medicines management structure, versus relying on time-limited or project-based roles.

The Business Case to consider the future of this post is due by August 2026 with a view that the post may be funded from savings that result from cost-efficiencies from optimising medical gas processes.



The paper provides a summary of the actions in place between May and proposed close date of end October.

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