



Core Financial Controls: Best Value Programmes [2025.02]

Scottish Ambulance Service (SAS)

KPMG Internal Audit, Risk and Compliance Services

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October 2025

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Distribution list

For action:

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Other MGP team members.

For information:

, Director of Strategy, Planning & Programmes.

Audit and Risk Committee.

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Presented to Audit and Risk Committee: 16 October 2025.

01 - Executive Summary

Conclusion

Financial sustainability is a key priority for the Scottish Ambulance Service (SAS). Efficiency savings are essential to support service and cost pressures over the next three years. The Best Value Programme (BVP) targets service improvements and financial efficiencies across 31 areas. One key risk is the medical gases programme, which is facing issues including expired and lost cylinders, costing up to £350,000 annually. We carried-out an internal audit which assessed the medical gases stock management process within the service and effectiveness of overarching governance arrangements over the BVP. Our approach included review of relevant documentation, walkthroughs of end-to-end stock management process at three sampled stations (Falkirk, Motherwell, and Inverness), sample-based substantive testing over medical gases invoices and interviews with key management and relevant staff members. The Medical Gases Project (MGP) demonstrates strong governance and operational rigour, with a clearly defined structure supported by senior leadership. Monthly reporting to the BVP team and onward to the Executive Team (ET) reinforces accountability. BVP is also a standing agenda in the Performance and Planning Steering Group (PPSG) meetings and at the Audit and Risk Committee (ARC). Furthermore, embedded staff education and cultural change initiatives will help promote consistent gas management practices across the Service. Risks associated with medical gas usage are proactively managed through a dedicated risk register, with issues and action logs maintained by the Project Board to support timely resolution of outstanding items and prompt escalation of any delays.

Our work has identified improvement opportunities to enhance controls around medical gas stock planning, ordering, supplier deliveries, movement and tracking of cylinders and invoice verification processes. Currently, there is no inventory management system to record and monitor stock levels, receipt, issuance and movement. There is no mechanism to track and record physical cylinder movement between ambulance stations, vehicles, or third parties. As a result, many gas cylinders have been lost in the last few years resulting in unnecessary rental and write off costs. There are also no controls to enable three way matching to ensure that quantities billed by BOC (vendor) are in line with underlying orders and actual quantities delivered by the vendor. We have raised low-risk findings relating to physical access controls, inventory management and monitoring over actual gas cylinders utilisation by ambulance vehicles and stations. There is a cost saving opportunity which could be explored by optimising medical gas cylinder stock levels in ambulances and using each gas cylinder in full.

We have provided an overall rating of ‘**partial assurance with improvements required**’ (**AMBER-RED**) which is in line with management expectation. We have raised four medium and three low risk findings with appropriate actions agreed with Management. The agreed management actions are point in time as the service has already started few initiatives (development of an cylinder tracking app, recruitment of Medical Gases Lead etc.) to overcome the challenges around medical gases management and reporting. The MGP will take the lead role in the implementation of the agreed actions with Director of Finance, Logistics and Strategy being an exec. lead who will be supported by the other group members.

Summary			
Partial assurance with improvements required			
Findings	Control design	Operating effectiveness	Total
High	0	0	0
Medium	4	0	4
Low	1	2	3
Total	5	2	7

Out of scope

This internal audit is limited to consideration of the key risks identified.

01 - Executive Summary

Areas of good practice

- ✓ The Medical Gases Project (MGP) operates under a clearly defined governance structure with the Project Board reporting monthly to the BVP Team who then feeds into the ET.
- ✓ Staff education and cultural change initiatives are embedded in the project to promote safe and consistent gas management practices across the service.
- ✓ A SAS-led audit report has been submitted to the ET outlining a comprehensive and evidence-based approach to improving medical gas cylinder management and to support sustainable cost savings in rental charges.
- ✓ A formal Medical Gas Usage risk register is in place, detailing key risks, severity, risk owners, and corresponding mitigation actions in accordance with the Service's risk management policy. There is also a separate issue and decision log from the Project Board meetings, demonstrating sound project management.
- ✓ The Accounts Payable Manager conducts invoice verification to ensure medical gas cylinder rates match agreed terms prior to invoice approval, and our sample testing noted no exceptions.
- ✓ Supplier performance was periodically evaluated, and overall satisfaction was reported with the lead and delivery times of medical gas cylinders.
- ✓ Review of the recent PPSG Decision Logs submitted to the ARC confirmed that the BVP report was consistently presented by the Director of Strategy, Planning and Programmes, with key points documented. The BVP Update Report is also a standing item on the ARC agenda, outlining required actions and highlighting key issues for committee attention.

Summary of key findings		
Stock Recording, Movement and Management	A	There are no formal controls in place to track the movement of medical gas cylinders between ambulance stations, individual ambulances, or third parties. Additionally, there is no inventory management system to record and monitor stock held at each ambulance station.
Stock planning process and guidance	B	There are currently no minimum, maximum and reorder levels for medical gases which consider periodic requirements of each ambulance station. The review of the existing guidance for stock level on the ambulance vehicles is also overdue.
Medical Gas Orders and Receipt	C	The controls for ordering medical gases, supplier delivery, and stock recording require improvement
Medical Gases Invoices	D	There is currently no mechanism in place to verify the quantity of cylinders invoiced by the supplier (BOC) as actual deliveries are not routinely reconciled with underlying orders or matched against invoiced amounts.
Potential Saving Opportunity	E	The Service would benefit from monitoring actual utilisation of medical gas and conducting a cost-benefit analysis to explore whether there is an opportunity to optimise medical gas cylinder stock levels in ambulances by using each gas cylinder in full.
Stock Arrangement	F	Our station visits identified that gas cylinders were not always arranged using the FIFO method.
Physical Access Controls	G	There are opportunities to tighten the controls relating to physical access into the ambulance stations medical gases stock room.

02 – Findings and management actions

A Stock Recording, Movement and Management			
Medium	There are no formal controls in place to track the movement of medical gas cylinders between ambulance stations, individual ambulances, or third parties. Additionally, there is no inventory management system to record and monitor stock held at each ambulance station. Medical gas cylinder stock at ambulance stations can be directly accessed by ambulance crews, sub-station staff, and third-party responders, and cylinders can be exchanged between vehicles, other stations or sub stations and third parties. There is currently no inventory management system to record and monitor: – issuance of cylinders from the stock room of each ambulance station; – The movement and actual location of cylinder post issuance (until returned); – stock levels for each type of cylinder at ambulance stations; and – missing cylinders or those that have not been returned for a significant period of time. The cylinders themselves are owned by the vendor and the service has to pay monthly rental charges until they are returned or declared as lost by the service. In the latter case, missing cylinders would be written off and the full cost of cylinder is paid by the service. [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Risk: The inability to formally record and track cylinders between ambulance stations, ambulances and third parties has resulted in higher rental costs leading to a financial loss. Agreed management action: 2.1) We will explore an adequate and cost-effective solution to strengthen controls to record and track the movement of medical gas cylinders from the point they are delivered to the Service until finally returned to the vendor. The below actions will be formally considered but this is not an exhaustive list: – Developing or procuring a dedicated application and inventory management system, including the installation of a scanning system at all ambulance stations, and implementing mandatory scanning of all cylinders when moved out from and moved into the stock rooms. – Creating a formal procedure requiring all ambulance personnel with Service-issued mobile devices to scan cylinders and record any transfer to/from other vehicles or stations via the app. – Restricting any third-party emergency responder access to stock rooms and agreeing Service Level Agreements to establish their responsibilities. – Establishing a formal accountability process for missing cylinders. – Introducing monthly physical verification to reconcile actual versus expected cylinders in the ambulance stations stock rooms. Also, an annual stock count across all locations and vehicles to identify and report exceptions, and verify the vendor's future claims.	Evidence to confirm implementation: 2.1) Result of cost-benefit analysis and decision paper. Responsible person/title: [REDACTED] – Director of Finance, Logistics and Strategy (Exec. Lead for MGP). Target date: 31 July 2026. (Note: MGP team is working on a detailed action plan to support these actions and believe that some actions will be progressed quicker than others.)

02 – Findings and management actions

B Stock planning process and guidance			
Medium	There are currently no minimum, maximum and reorder levels for medical gases which consider periodic requirements of each ambulance station. The review of the existing guidance for stock levels on the ambulance vehicles is also overdue. There is currently no overarching mechanism in place to systematically assess historical data and operational needs to establish appropriate stock levels at ambulance stations. We noted that: • There are no defined minimum, maximum, or reorder levels for medical gas cylinder stock at the ambulance stations tailored to their operational needs along with the requirement of sub stations and third parties to which they supply stock. • Stock replenishment decisions (inc. quantity ordered and timing of orders) are made at the discretion of local staff, based on experience and perceived need, rather than standardised criteria. As there are no formal or structured controls, we were unable to perform any substantive testing. SAS operates under a vehicle stock guidance document that sets out medical gas cylinder stock levels for ambulance vehicles. The review of this document is overdue, and we found that stations do not consistently maintain the stipulated stock levels. For example, the guidance specifies that each vehicle should carry one ZX cylinder (oxygen) but we observed that generally two cylinders are carried. This inconsistency indicates that either the prescribed stock levels may no longer reflect current operational requirements or compliance with the guidance needs to be reinforced.	Risks: Ineffective planning over medical gases stock at stations could lead to shortages resulting in operational constraints or over stocking resulting in increased financial and stock holding cost. The lack of central oversight over the station's adherence to the defined stock levels at a vehicle level could lead to inconsistent practices and non-compliance to the guidelines. Agreed management actions: 2.2) Create a process to establish minimum, maximum and reorder levels for medical gases in coordination with regional and ambulance station management with consideration of relevant factors such as ambulance trips or historical usage, lead time, seasonal variations etc. Approval from the Medical Management Group (MMG) will be obtained accordingly. 2.3) The vehicle stock guidance will be reviewed, and current vehicle stock levels will be reassessed with due consultation with the relevant internal stakeholders (particularly ASMs and regional directors). Any changes to the guidance will be approved by the MMG and PPSG. 2.4) Regular communications will be made to the ambulance stations to increase awareness and compliance to stipulated stock levels. If possible, sample-based spot checks at the ambulance stations to identify instances of non-compliance will be established.	Evidences to confirm implementation: 2.2 and 2.3) Stock planning process and guidance. 2.4) Communications and results of spot checks. Responsible person/title: ██████████ – Director of Finance, Logistics and Strategy (Exec. Lead for MGP). Target date: 30 April 2026 (high risk gases and/or high priority stations will be progressed first).

02 – Findings and management actions

C Medical Gas Orders and Receipt			
Medium	The controls for ordering medical gases, supplier delivery, and stock recording require improvement. Our review identified inconsistent practices in the ordering of medical gas cylinders across sampled stations. Orders are placed by various staff members, including Team Leaders (TLs) and vehicle cleaners, without a defined authority matrix or approval process. There is no formal oversight or retrospective reporting provided to the Area Service Managers (ASMs) to monitor ordered quantities. The controls relating to the collection of empty gas cylinders and the delivery of new cylinders need to be strengthened. Currently, the vendor's staff directly access ambulance station stock rooms to collect and deliver cylinders. The process is not independently validated by any of the Service staff by observing and formally acknowledging delivery notes to ensure that the delivery matches the underlying order and that the number of returned empty cylinders reconciles with the delivered quantities. In our sample-based testing, we found that majority delivery notes were either not acknowledged by any service staff or signed by the vendor's delivery team. Delivery notes also include cylinders with temporary barcodes, which are not reconciled against permanent identifiers, increasing the risk of continued rental charges on cylinders which are no longer in use by the Service.	Risks: The absence of formal authorisation and oversight for ordering medical gas cylinders increases the risk of unauthorised or excessive purchases, potentially leading to higher financial costs. The lack of effective controls relating to stock receipt and return of empty gas cylinders could lead to inefficiencies and hinder the ability to identify any errors or irregularities by the vendor. Agreed management actions: 2.5) Implement a formal authorisation process for ordering medical gas cylinders, including a clear authority matrix that defines who is permitted to place orders and under what conditions (that is, when the reorder level is reached). 2.6) Based on consultations with the ambulance stations and BOC appropriate controls will be introduced to ensure that: – Each delivery of cylinders is received and acknowledged by a dedicated member of staff within the Service. – All receipt of new stock and return of empty cylinders from/to the vendor will be tracked in a stock management system through a bar code scanner. – All stock receipts will be formally matched with underlying orders and a summary report will be shared with the ASM and Finance team on a monthly basis where exceptions to any order are clearly highlighted for necessary payment adjustments.	Evidences to confirm implementation: 2.5) Ordering-procedures for medical gas. 2.6) Stock receipt and matching process, and monthly summary report from ambulance stations. Responsible person/title: ██████ – Director of Finance, Logistics and Strategy (Exec. Lead for MGP). Target dates: 2.5) 31 January 2026. 2.6) 30 April 2026 (note: lower volume' stations will be actioned in three months and hub stations may take up to six months).

02 – Findings and management actions

D Medical Gases Invoices			
Medium	There is currently no process in place to verify the quantity of cylinders invoiced by the supplier (BOC) as actual deliveries are not routinely reconciled with underlying orders or matched against invoiced amounts. As stated in Finding C, there is no process to confirm and match the actual cylinders delivered by BOC against the underlying order at each ambulance station. Due to the absence of local or centralised records shared with the Finance team, the quantities invoiced by the supplier are not verified, and invoices are typically approved based solely on rate validation. We performed sample-based testing and verified rates charged to the sampled ambulance stations in the month of May and June 2025 and noted no exceptions. H [REDACTED] [REDACTED] by the vendor as there is no internal record to establish the total number of cylinders held by each ambulance station (see Finding A).	Risks: [REDACTED] [REDACTED] Agreed management action: 2.7) Based on the monthly summary report received from each ambulance station (action # 2.6) , the quantity invoiced by BOC will be verified along with the rate verifications. Also, post stock management system implementation (action # 2.1), the BOC monthly rental charges for the gas cylinders will be verified based on internal inventory record within the Service.	Evidence to confirm implementation: 2.7) Sample of verified BOC invoice along with underlying internal record. Responsible person/title: [REDACTED] – Director of Finance, Logistics and Strategy (Exec. Lead for MGP). Target date: 31 July 2026 (this action is dependent on completion of the action #2.6 for which the agreed target date is 30 April 2026).

02 – Findings and management actions

E Potential Saving Opportunity			
Low	The Service would benefit from monitoring actual utilisation of medical gas and conducting a cost-benefit analysis to explore whether there is an opportunity to optimise medical gas cylinder stock levels in ambulances by using each gas cylinder in full. The Service tracks the frequency of oxygen and Entonox administration by clinicians, vehicle, and station. It cannot measure actual gas consumption due to variable flow rates, administration duration, and intermittent use. Consequently, there is no mechanism to quantify usage per patient or station, nor reliable data to monitor consumption trends. Per the vehicle stock guidance document, the ambulances are required to carry one cylinder of each type of gas and replace a cylinder once the underling gas quantity reaches the last quarter (this is to avoid risk of running out of gas). In our visit to the sampled ambulance stations, we observed higher stock levels in most of the sampled vehicles (see finding B). The crew believe that carrying a single gas cylinder still creates a risk, therefore they usually carry additional cylinders for each type of gas. Although, many ambulances stock spare cylinders each cylinder is not used in full and is replaced once the quantity reaches near to the last quarter. We believe that there is a cost saving opportunity which require analysis over the impact of optimising medical gases cylinder stock levels in ambulances and using each gas cylinder in full.	Risk: There is a risk that the Service has not fully explored or assessed potential cost reduction and saving opportunities associated with optimising medical gas cylinder usage in ambulances. Agreed management actions: 2.8) We will assess the feasibility of implementing a solution to capture actual medical gas usage data at both vehicle and station level once action # 2.1 is fully implemented. 2.9) We will also conduct a cost-benefit analysis to evaluate the financial and operational impact of fully utilising medical gas cylinders in ambulances before replacement and increasing the standard stock level for medical gases in emergency response vehicles as set in the vehicle stock guidance.	Evidences to confirm implementation: 2.8) Result of assessment and decision. 2.9) Result of cost- benefit analysis and decision. Responsible person/title: ██████ – Director of Finance, Logistics and Strategy (Exec. Lead for MGP). Target date: 31 July 2026.

02 – Findings and management actions

F Stock Arrangement		
Low	Our station visits identified that gas cylinders were not always arranged using the FIFO method. As part of our observations during the site visits, we attended the medical gas stock rooms to confirm that cylinders are stored appropriately to support the First-In-First-Out (FIFO) method. At Motherwell station, cylinders were clearly arranged to support FIFO based on expiry dates. In contrast, Falkirk station did not consistently follow this approach, and at Inverness, stock levels were too low to verify adherence. However, across all three stations, we did not identify any expired gas cylinders. Regardless of the turnover rate of the cylinder, it is a good practice to issue items using the FIFO method to minimise waste and ensure safe, timely use of medical gas cylinders.	Risk: Failure to consistently apply the FIFO method for arranging medical gas cylinders increases the risk of inefficient stock rotation, potential wastage, and compromised safety due to the use of older cylinders. Agreed management action: 2.10) Implement a standardised FIFO stock arrangement procedure across all the ambulance stations.
		Evidence to confirm implementation: 2.10) Stock arrangement procedure. Responsible person/title: [REDACTED] – Director of Finance, Logistics and Strategy (Exec. Lead for MGP). Target date: 31 January 2026.
G Physical Access controls		
Low	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	Risk: [REDACTED] [REDACTED] [REDACTED] Agreed management action: 2.11) Review and update the Medicines Management Policy to reflect revised access protocols and ensure alignment with best practice in physical security and stock safeguarding. Restrict or monitor vendor staff access to the ambulation stations stock room.
		Evidence to confirm implementation: 2.11) Updated Medicines Management Policy. Responsible person/title: [REDACTED] – Director of Finance, Logistics and Strategy (Exec. Lead for MGP). Target date: 31 July 2026.

Appendix A: Detailed findings

We assessed the design and operating effectiveness of the controls established to ensure robust stock management and oversight arrangements in place for medical gases at a sample of SAS ambulance stations.

Audit Risk Area	Control	KPMG Commentary																									
Risk 1: Ineffective planning over medical gases could increase wastage or shortages leading to financial losses or threats to patient safety.	1. Guidance is in place specifying the recommended number of medical gas cylinders for each ambulance vehicle type. This followed a national review of medical gases in 2017 to test a reduction in the number of cylinders carried on ambulances.	- There is currently no effective stock planning process in place at ambulance stations for medical gases, with no defined minimum, maximum, or reorder levels. Stock is managed based on local experience rather than any national guidance. Variation in practice was observed across sampled stations and we found inconsistency in the number of cylinders held in the stock rooms. Orders are placed based on perceived need, and stock levels are maintained by replacing empty cylinders (Finding B). - While there is a formal guidance in place, this only covers vehicle-level stock, and was published in September 2019, indicating a need for review. Moreover, inconsistencies were found in the number and type of cylinders held across stations and vehicles. For instance, Accident and Emergency (A&E) ambulance stock levels at Falkirk, Motherwell, and Inverness stations all deviated from published guidance as shown in the table below (Finding B).																									
	2. The Guidance also advises that oxygen cylinders should be replaced when the gauge reaches between the quarter and red markings. For long-distance transfers involving high-flow oxygen, the crews should consider replacing cylinders that are less than half-full or carrying an extra cylinder.	<table><tr><th>Cylinder types</th><th>Guidance</th><th>Falkirk</th><th>Motherwell</th><th>Inverness</th></tr><tr><td>ZX – Oxygen with 10 litre capacity.</td><td>1</td><td>2</td><td>2</td><td>2</td></tr><tr><td>ZD – Oxygen with two litre capacity.</td><td>2</td><td>3</td><td>2-3</td><td>1</td></tr><tr><td>ED – Entonox with two litre capacity and 217 bar pressure.</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>CD – Entonox with two litre capacity and 230 bar pressure.</td><td>-</td><td>-</td><td>-</td><td>1</td></tr></table>	Cylinder types	Guidance	Falkirk	Motherwell	Inverness	ZX – Oxygen with 10 litre capacity.	1	2	2	2	ZD – Oxygen with two litre capacity.	2	3	2-3	1	ED – Entonox with two litre capacity and 217 bar pressure.	2	2	2	2	CD – Entonox with two litre capacity and 230 bar pressure.	-	-	-	1
	Cylinder types	Guidance	Falkirk	Motherwell	Inverness																						
	ZX – Oxygen with 10 litre capacity.	1	2	2	2																						
	ZD – Oxygen with two litre capacity.	2	3	2-3	1																						
ED – Entonox with two litre capacity and 217 bar pressure.	2	2	2	2																							
CD – Entonox with two litre capacity and 230 bar pressure.	-	-	-	1																							
3. The three sampled stations serve as primary hubs for distributing medical gas to other stations within their region. Staff routinely monitor stock levels and place orders through a shared BOC account or by phone when supplies are running low (using their own discretion).	There is no automated or centralised monitoring of stock levels or reordering mechanisms. However, development is underway for an internal app to support stock checks, cylinder tracking, and tailored guidance based on usage data. Future savings and improvements are expected to be supported by clinical governance input, enabling better alignment between actual holdings, expected levels, and supplier-reported station stocks, which influence rental charges.																										

Appendix A: Detailed findings

Audit Risk Area	Control	KPMG Commentary
Risk 2: Unauthorised orders or delays in ordering medicine gases could lead to unavailability of stock potentially leading to an adverse event.	4. At the station level, ASMs or TLs will periodically observe stock levels, at least weekly and place order on a shared BOC account when needed to ensure sufficient stock. In their absence, other staff members may place orders directly with the supplier via telephone.	- ASMs and TLs at each station share one BOC account for ordering of medical gases. At our station visit to the Falkirk station, we were informed that other staff members, including non-clinical personnel (e.g. vehicle cleaners), have placed orders in the absence of Team Leaders. There is no formal authority matrix or review process in place to ensure appropriateness of orders or invoices (Finding C). - Delivery notes are emailed but not consistently signed upon delivery; of 17 delivery notes reviewed, only nine were signed by SAS personnel, four by BOC drivers, and the remaining four were unsigned. We noted a discussion at the Project Board meeting on 23 July 2025 which proposed introducing mandatory sign-off and routing delivery notes to a shared mailbox to strengthen control measures. Moreover, there is a notable gap in the recording of receipts and the verification of invoices against deliveries. No three-way matching controls are currently in place due to the absence of an official record. At present, SAS relies solely on information provided by BOC regarding rental and refill charges with only basic checks in place (Finding D). ✓ The NHS London Procurement Partnership has established a Framework Agreement for the supply of medical gases and related services. As part of this agreement, suppliers are required to support seven-day operational arrangements. We have confirmed that BOC meets this requirement. Feedback from stakeholders and TLs across all three sampled stations indicates satisfaction with the supplier's performance, particularly regarding lead times. Orders placed before 2pm typically arrive the next working day.

Appendix A: Detailed findings

Audit Risk Area	Control	KPMG Commentary
Risk 3: The absence of a robust mechanism to record and track cylinder movements, current location, stock deliveries and returns, stock levels and to quantify lost cylinders could lead to operational and financial implications.	5. BOC scans cylinders at the point of delivery and collection with periodic reporting provided to SAS. 6. Cylinder movements in and out of the stock room are tracked using log books at some stations. 7. Across all three sampled stations, there is an allocated area for empty cylinders to be stored separately within the medical gas stock rooms.	- BOC scans cylinders during delivery and collection, but SAS stations often do not verify these deliveries independently. Moreover, our testing of the sampled delivery notes also found that cylinders are occasionally assigned temporary barcodes, which are issued by BOC when original barcodes are defaced, illegible, or missing. While this allows BOC to process deliveries and returns, the absence of a reconciliation process between temporary and permanent barcodes poses a risk of continued rental charges on cylinders that may no longer be in use (Finding D). - The Medical Gases Lead position, which is currently being recruited, will be tasked with implementing national guidance, managing stock control, and enhancing compliance tracking and delivery verification procedures. Discussions with relevant stakeholders confirmed that the role will carry a national remit, providing strategic advice on stock control, developing solutions for monitoring compliance (including oversight of data from tracking applications), and offering leadership and direction in the management of medical gases across the Service. - Cylinder movements, deliveries, returns, and stock levels are currently tracked manually, with limited formal controls across stations. No standardised system exists for recording movements, particularly for transfers between vehicles, sub-stations, or third-party volunteers and responders. Manual logs are used at Falkirk and Inverness stations, but we were informed that compliance is low. No controls were noted at Motherwell station. SAS relies on BOC-generated reports for delivery and return tracking, but no internal tracking exists for cylinder movements outside of BOC deliveries. A [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] We have verified extensive discussions over a solution in the Project Board's minutes and an in-house solution has been agreed as an interim measure.

Continued...

Appendix A: Detailed findings

Audit Risk Area	Control	KPMG Commentary
Risk 3: The absence of a robust mechanism to record and track cylinder movements, current location, stock deliveries and returns, stock levels and to quantify lost cylinders could lead to operational and financial implications.	<i>Continued...</i>	<i>Continued...</i> Although each station has a designated area for storing empty cylinders, there is currently no formal process to verify or reconcile the quantity of cylinders delivered and returned against BOC's delivery notes. Additionally, empty cylinders are stored in the same stock room as full cylinders, with unrestricted access granted to external personnel, including BOC delivery staff and third-party volunteers. [REDACTED] [REDACTED] [REDACTED] [REDACTED] thereby enhancing control. Our invoice sample testing also identified an instance where an order was raised by BOC to buy an Entonox cylinder [REDACTED] and charged to SAS Falkirk station without prior knowledge or authorisation from station staff. Conversations with relevant stakeholders confirmed that this incident had not been investigated, raising concerns about the potential for unauthorised orders and highlighting a gap in the current oversight process (Finding D).
Risk 4: Ineffective distribution mechanisms may result in under or over stock situations at the ambulance stations.	8. The supplier offers standard next day delivery and emergency delivery within four hours of order being placed. 9. Stations aim to apply a first-in, first-out (FIFO) approach by placing newly received medical gas cylinders behind existing stock to ensure older cylinders are used first.	✓ [REDACTED] [REDACTED] Nonetheless, stakeholders across sampled stations expressed overall satisfaction with delivery timelines, with only rare seasonal delays noted during the Christmas period two years ago. ✓ [REDACTED] [REDACTED]. During our site visits, we reviewed the storage arrangements within medical gas stock rooms to assess adherence to the First-In, First-Out method. At Motherwell station, cylinders were appropriately organised by expiry date to support FIFO. In contrast, Falkirk station did not consistently apply this approach, and stock levels at Inverness station were insufficient to confirm compliance. However, no expired medical gas cylinders were identified at any of the three stations (Finding F).

Appendix A: Detailed findings

Audit Risk Area	Control	KPMG Commentary
Risk 5: Ineffective monitoring of the utilisation, expiry and wastage of medical gases can lead to financial loss and/or risks to patient safety.	10. TLs proactively monitor stock level to ensure timely order and sufficient stock. 11. SAS has conducted an analysis and physical audit of cylinders not moved or scanned for over 3 years to estimate write-off costs and stop ongoing rental charges.	✓ Stock rotation practices vary across stations as previously mentioned, however, our station visits at Falkirk, Motherwell and Inverness did not identify any expired cylinders. We noted that at Inverness station, stock levels were nearly depleted during inspection and an order was placed earlier that morning. High turnover rates at these stations and a shelf life of three years suggest a low risk of expired stock. ✓ BOC maintains a spreadsheet that tracks all medical gas cylinders currently held by SAS. The spreadsheet includes detailed fields such as location, serial number, material description, expiry date, delivery date, and the date each cylinder was last moved. At present, SAS does not have an internal control system in place, however, an in-house solution is under development and the Medical Gases Lead will play a key role in providing structured oversight and strengthening the monitoring and management of medical gases across the Service. • A central report generated from BOC data is used to keep track of cylinders and days until expiration. The spreadsheet outlines location, serial number, material description, code (e.g. ZD, ZA, ZX, ED, etc...), expiry date, days until expiry, delivery date, and last moved date of stock. We noted that a significant number of cylinders had expired prior to 2019. [REDACTED] • [REDACTED] There have been delays preventing the write-off of cylinders due to the lack of assurance that a cylinder is truly lost, due to insufficient tracking and data on cylinder movements. Improved tracking and accountability are required to distinguish between actual loss and administrative discrepancies, ensuring that write-offs are justified. This is a requirement from the Scottish Government. The current system does not provide clear visibility on whether a cylinder has been lost, misplaced, or collected by the supplier, making it difficult to confidently process write-offs (Finding A). • The current guideline for replacing gas cylinders is when the cylinder in the vehicle reaches its last quarter. However, site visits suggest this approach could be optimised through better stock planning to reduce unnecessary replacements. Discussions with stakeholders confirmed that no cost-benefit analysis has been conducted to assess potential savings opportunity from last-quarter replacements or the potential benefits of increasing stock levels (Finding E). • While the Service tracks the frequency of oxygen or Entonox administration by clinician, vehicle, or station, it cannot measure actual gas usage due to variable flow rates, administration duration, and intermittent use. As a result, there is no mechanism to quantify consumption per patient or station, and there is currently no reliable data available to monitor or analyse medical gas usage trends (Finding E).

Appendix A: Detailed findings

Audit Risk Area	Control	KPMG Commentary
Risk 6: Inadequate controls around invoice verification could lead to over payments.	12. Monthly consolidated invoices including rental, delivery, collection, management fees, climate levy, and refill charges are used to streamline billing across multiple cost categories. Approved invoices and supporting documents are stored in a shared departmental drive for ledger processing. 13. Accounts Payable Team Manager performs basic checks before processing including comparison of total invoice value to previous months, verification of rates against agreed terms and confirmation that shipments were made to SAS locations. Unusual items are escalated to the Head of Finance.	✓ As part of the ongoing Medical Gases Usage project, a Power BI dashboard has been developed to integrate invoice data with local cylinder tracking, enabling more robust analysis and verification across the service, including by budget holders. However, the dashboard is still under development and dependent on the completion of the tracking system. ✓ Through our testing of sampled invoices from Falkirk and Motherwell stations, we were able to reconcile the quantities ordered as per the consolidated invoice provided by BOC in May and June 2025 with the corresponding delivery notes and station invoices. We also confirmed that the actual rates for refill, rental, delivery, and the climate change levy aligned with the agreed terms as per BOC contract. • Although the Accounts Payable Team Manager performs basic checks to confirm that rates charged align with agreed terms, which we verified through invoice testing, there is currently no control in place to validate the quantity of cylinders invoiced. SAS currently lacks a mechanism to ensure the accuracy of cylinder quantities billed each month and relies solely on supplier-generated data (Finding D).

Appendix A: Detailed findings

Audit Risk Area	Control	KPMG Commentary
Risk 7: The lack of effective oversight over the delivery of BVP could hinder the Service ability to achieve the targeted savings which could increase the operating deficit.	14. The Medical Gas Project Board operates under a formal Terms of Reference outlining its remit, purpose, and reporting structure. 15. The Project Board holds monthly meetings with a standing agenda, documented minutes, and an action plan. 16. The Project Board reports monthly to the BVP Team, who provides updates to the SAS ET. 17. The PPSG reviews BVP as a standing agenda item with outcomes and decisions feeding directly into the ARC.	✓ The MGP operates under a formal Terms of Reference, updated in February 2025, outlining its remit, objectives, and reporting structure. The Project includes key initiatives such as service-wide audits, stock benchmarking, ACCURA system implementation, cylinder write-offs, and staff education aiming to address inconsistent practices, outdated policies, and stock level baselining to improve audit accuracy and reduce rental costs. ✓ The governance structure of BVP includes monthly highlight reports submitted to the BVP Team, which informs reporting to the ET. Oversight also extends to cultural change and storage practices, with the education team actively supporting staff training and promoting behavioural shifts. Feedback from station staff emphasised that a cultural transformation is essential to improving cylinder management, as current practices shaped by high-pressure working environments, often result in limited care and high number of misplaced cylinders. ✓ We reviewed the four most recent PPSG Decision Logs submitted to the ARC and confirmed that, in each meeting, the BVP report was presented by the Director of Strategy, Planning & Programmes. Key points were consistently discussed and clearly documented in the decision logs. Additionally, we confirmed that the BVP Update Report is a standing item on the ARC agenda, with clearly defined actions and key issues highlighted for committee attention.

Appendix B: Terms of Reference

Background of the internal audit

Financial delivery and sustainability is a key priority for the Service and remains one of the highest risks in the Corporate Risk Register (CRR) for the Scottish Ambulance Service (SAS). The delivery of efficiency savings is a key element of the financial plan and is required to demonstrate continuous improvement and reinvestment of funds to support cost and service pressures, over the next three years. SAS implemented the Best Value Program (BVP) a number of years ago which has focused on service improvements that deliver financial efficiencies while balancing workforce, service delivery and performance. There are 31 efficiency saving areas in total that have been identified under four different themes within the BVP and one known area of risk is the medical gases programme where there are challenges around gas cylinder stock management such as, expired stock, suboptimal stock levels and lost cylinders which has increased [REDACTED]

By implementing further controls over medical gases, SAS aims to achieve further reductions in expenditure and efficiency savings of approximately £100,000. We carried out an internal audit in relation to medical gas stock management controls with a focus on stock planning, management and reporting. In addition, our review will also cover the overarching governance and reporting arrangements through the Best Value Steering Group (BVSG) and Performance and Planning Steering Group (PPSG).

Objectives

Objective 1 - Stock Management

To conclude over the design adequacy and operating effectiveness of key stock planning and management controls for medical gases.

We determined whether:

- There is an effective stock planning process in place and minimum, maximum and reorder levels are suitably defined in accordance with ambulance station requirements, and lead times have been realistically established and agreed with key suppliers;

Continued..

Objectives

(Cont'd)

- There is a robust mechanism to ensure that orders are placed in a timely manner and duly authorised;
- There is a robust mechanism to record and track cylinder movements, current location, stock deliveries and returns, stock levels, and to quantify lost cylinders;
- There are effective distribution mechanisms in place to ensure timely delivery of medical gases to the ambulance stations;
- There is a robust monitoring over utilisation, expiry and wastage of medical gases at both ambulance stations/regions and HQ and
- Supplier's invoices are subject to appropriate verification/validation.

Objective 2 - Oversight

To conclude whether there are effective overarching governance and reporting arrangements over delivery of the BVP.

Our approach

Our work involved the following activities:

- Desktop review of key reports and documentation supporting the internal controls;
- Walkthroughs of stock management process at a sample of ambulance stations within the three regions;
- Conducting interviews with the relevant regional and HQ staff members and management team;
- Sample testing where appropriate; and
- Agreeing findings and recommendations with management.

Appendix B: Terms of Reference

Risks considered

We considered the following key potential risks as part of our work:

Key potential risks considered	
Objective one	
1	Ineffective planning over medical gases could increase wastage or shortages leading to financial losses or threats to patient safety.
2	Unauthorised orders or delays in ordering medicine gases could lead to unavailability of stock potentially leading to an adverse event.
3	The absence of a robust mechanism to record and track cylinder movements, current location, stock deliveries and returns, stock levels and to quantify lost cylinders could lead to operational and financial implications.
4	Ineffective distribution mechanisms may result in under or over stock situations at the ambulance stations.
5	Ineffective monitoring of the utilisation, expiry and wastage of medical gases can lead to financial loss and/or risks to patient safety.
6	Inadequate controls around invoice verification could lead to over payments.
Objective two	
7	The lack of effective oversight over the delivery of BVP could hinder the Service ability to achieve the targeted savings which could increase the operating deficit.

Appendix C – Staff interviewed and documents reviewed

We interviewed the following staff at SAS during the course of our work:

	Title
	Director of Finance, Logistics and Strategy.
	Director of Strategy, Planning & Programmes.
	Deputy Regional Director.
	National Clinical Governance Manager (Medicines & Medical Devices).
	Deputy Head of Procurement.
	Project Manager.
	Team Leader, SAS Falkirk Station.
	Area Service Manager, SAS Motherwell Station.
	Team Leader, SAS Motherwell Station.
	Ambulance Paramedic, SAS Inverness Station.

We reviewed the following documents during the course of work:

- Medical Gas Usage Project - Gas Delivery Storage Arrangements(1-206).
- Medical Gas Project Board Terms of Reference.
- Monthly Medical Gas Highlight Reports January to May 2025.
- Medical Gas Project Board Meeting Minutes March to July 2025.
- Best Value Delivery Updates May and June 2025.
- Best Value Programme Team Meeting Minutes May and June 2025.
- MOU SAS-SMR.
- MGU-SBAR Cylinder Management Options.
- MGU Risk Register 25-07-16.
- MGU Issues Log.
- MGU Actions Decisions Log.
- Regional Best Value Report June 2025.
- MGU Lessons Learned Log v0.1.
- BOC Cylinder Write-Off.
- BOC Cylinder Write-off costs.
- MGU SBAR Gases per vehicle 015-19.
- MGU Medical Gases Audit Report 25-04-28-v1.0.
- Medical Gases Project Initiation Document.
- BASICS-SAS MOU V0.03.

Appendix C – Staff interviewed and documents reviewed

We reviewed the following documents during the course of work (Cont.):

- SAS Medicines Management Policy v1.3 March 2018.
- Key Performance Indicators - Total Pharmaceutical Gas Solutions Framework.
- NHS Procurement in Partnership - Total Pharmaceutical Gas Solutions Specification.
- MGU Asset Management Product Mini Business Case v1.0.
- Expired and Expiring Materials-2025-07-09-14-45-33.
- Materials by Location with Expiry Dates-2025-07-09-14-41-40.
- Materials in Stock-2025-07-09-14-42-26.
- Summary of Days in Stock-2025-07-09-14-44-28.
- BOC_inv_reg_IA.
- BOC-External-Cyl-Movements.csv.
- BOC May and June invoices.
- Falkirk station order notes and invoices.
- Motherwell station order notes and invoices.
- 2022-01-v3-standing-financial-instruction.
- ARC 2025-04-17 Item 14 PART 1 Best Value Update.
- 2025-04-17 Item 05.4 PPSG Decision Log.
- 2025-06-12 Item 05.5 PPSG April Decision Log v0.2.
- 2025-01-23 Item 05.4 PPSG Approved Decision Log.
- 2025-01-23 Item 12 Best Value Update JC.

Appendix D: Rating definitions

We have set out below the overall report grading criteria and priority ratings used to assess each individual finding.

Level	Classification
Significant assurance	Means the system is well designed and only minor low priority management actions have been identified related to its operation. Might be indicated by priority three only, or no management actions (i.e. any weaknesses identified relate only to issues of good practice which could improve the efficiency and effectiveness of the system or process).
Significant assurance with minor improvement opportunities	Means the systems is generally well designed however minor improvements could be made and some exceptions in its operation have been identified. Might be indicated by one or more priority two management actions. (i.e. there are weaknesses requiring improvement but these are not vital to the achievement of strategic aims and objectives - however, if not addressed the weaknesses could increase the likelihood of strategic risks occurring).
Partial assurance with improvements required	Means both the design of the system and its effective operation need to be addressed by management. Might be indicated by one or more priority one, or a high number of priority two management actions that taken cumulatively suggest a weak control environment. (i.e. the weakness or weaknesses identified have a significant impact preventing achievement of strategic aims and/or objectives; or result in an unacceptable exposure to reputation or other strategic risks).
No assurance	Means the system has not been designed effectively and is not operating effectively. Audit work has been limited by ineffective system design and significant attention is needed to address the controls. Might be indicated by one or more priority one management actions and fundamental design or operational weaknesses in the area under review. (i.e. the weakness or weaknesses identified have a fundamental and immediate impact preventing achievement of strategic aims and/or objectives; or result in an unacceptable exposure to reputation or other strategic risks).

Priority	Description
Red – priority 1	A significant weakness in the system or process which is putting you at serious risk of not achieving its strategic aims and objectives. In particular: significant adverse impact on reputation; non-compliance with key statutory requirements; or substantially raising the likelihood that any of your strategic risks will occur. Any management actions in this category would require immediate attention.
Amber – priority 2	A potentially significant or medium level weakness in the system or process which could put you at risk of not achieving its strategic aims and objectives. In particular, having the potential for adverse impact on your reputation or for raising the likelihood of your strategic risks occurring.
Green – priority 3	Management actions which could improve the efficiency and / or effectiveness of the system or process but which are not vital to achieving your strategic aims and objectives. These are generally issues of good practice that the auditors consider would achieve better outcomes.



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