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Personal Protective Equipment: 'make and buy' in Scotland

Introduction

In June, the Londonderry Chamber of Commerce¹ wrote to the Committee for Finance ('the Committee'), referring to the Scottish 'make and buy' approach, stating:

By adopting a similar strategy in Northern Ireland, whereby the government establishes a new supply chain of locally produced, locally procured, and readily available PPE, we can support businesses who have seen their operations slow down during this crisis but also ensure that we have a deeper and easily accessible stock of equipment for our healthcare workers and other frontline staff as the virus naturally troughs and peaks.²

To inform considerations by the Committee for Finance (the Committee) regarding this Scottish approach and how it could inform Northern Ireland's approach in future, this Briefing Note explains Scotland's 'make and buy' approach to sourcing Personal

¹ <https://www.londonderrychamber.co.uk/> a business organisation which promotes business growth and investment in the North West

² Letter to Committee for Finance 'PPE Procurement in NI Briefing Paper: June 2020'

Protective Equipment (PPE) during Covid-19. It provides information underpinning that approach, including data on the dramatic increase in demand for PPE in Scotland related to Covid-19. Publicly available information about Scottish PPE procurement is limited. This Note therefore relies heavily on a report published by the Scottish Government in June 2020, and information provided directly to the Research and Information Service (RaISe) by a senior Scottish Government official.

First, however, for context the Note explains the structure of National Services Scotland, the body responsible for national PPE procurement.

1. NHS National Services Scotland

National Services Scotland (NSS) is a national NHS (National Health Services) Board and the body responsible for strategic sourcing and procurement. NSS provides shared services:

*...to help our customers save money and free up resources so they can be re-invested into essential services.*³

This includes sourcing and buying PPE. The logic for having a central body like NSS responsible for system-wide purchasing of common items of equipment is straightforward – i.e. centrally negotiated, larger contracts for the aggregated demand of all relevant service delivery organisations (including hospitals, care homes or GP surgeries) should be more economic and efficient. Conversely, numerous smaller contracts awarded by smaller bodies imply fragmentation of demand, higher transaction costs and less leverage over suppliers.⁴

NSS is a Non-Departmental Public Body (NDPB). As such, its functions, and relationships with government and other public bodies, are detailed in a Framework Document, which states one of the statutory functions of NSS is to:

*...procure equipment, supplies and services in support of the functions of Scottish Ministers, Health Boards Special Health Boards and Healthcare Improvement Scotland.*⁵

Scottish Ministers are ultimately accountable to the Scottish Parliament for the activities of NSS and its use of resources. The Government is not, however, responsible for day-to-day operational matters. This is in keeping with common NDPB arrangements.

NSS is therefore a broadly similar organisation to Business Services Organisation (BSO) in NI. According to BSO's Management Statement, it is:

³ <https://nhsnss.org/how-nss-works/>

⁴ For a helpful and concise discussion in relation to NI, see NIAO (2012) [Department of Finance and Personnel - Collaborative Procurement and Aggregated Demand](#) pages 10-12

⁵ NHS National Services Scotland (2018) [Framework Document](#) page 1

*...akin to an executive non-Departmental public body.*⁶

Like NSS, BSO has a role in purchasing supplies and services, through its Procurement and Logistics Service, which is one of NI's Centres of Procurement Expertise (CoPEs).⁷

Having discussed NSS' structure, the following section sets out the challenging context for PPE procurement in Scotland.

2. PPE: changing specifications

Scotland's health and care bodies, like those across the globe, now require vastly increased volumes of PPE both to work safely with Covid-19 patients and to practise infection control. This section briefly discusses guidance and specifications, before presenting demand data, and NSS approach are explored in Section 3.

Specifications are important because, of course, not all PPE is equal, as shown by some high profile cases since the pandemic began:

*At the height of the COVID-19 pandemic, a batch of 400,000 gowns flown into the UK from Turkey were rejected after failing to meet National Health Service (NHS) standards. This high-profile recall highlighted the pitfalls of manufacturing personal protective equipment (PPE) that does not comply with regulatory frameworks.*⁸

Such frameworks and technical standards have been in the public eye more than usual because of the high risks of coronavirus transmission during Covid-19. Of course, technical standards and specifications are not new. However, because the virus was unknown until the latter part of 2019, there was a lack of research evidence upon which to base many decisions, including PPE specifications.⁹ This is important to highlight given the risks associated with PPE failing to meet specified standards. Consequently, part of NSS' approach to sourcing PPE recognised the need to assess quality before purchasing.

It should also be noted that the commonly repeated phrase about decision makers 'following the science' is an oversimplification of what policy development requires. It relies on "a mixture of goals, costs and facts."¹⁰ In other words, more than just 'the science'. For example, virus transmission would be close to zero if everyone were dressed in a positive pressure full body suit, but this was not recommended because:

⁶ BSO (2018) [Management Statement](#) page 3

⁷ <http://www.hscbusiness.hscni.net/services/1878.htm>

⁸ Gobron, Dr S (2020) [Three tips to manufacture quality compliant PPE](#) in European Pharmaceutical Review, 19 Aug 2020

⁹ For example of specifications, see: https://www.who.int/medical_devices/priority/COVID_19_PPE/en/

¹⁰ Dupre, J (2020) ["Following the science" in the COVID-19 pandemic](#) in Nuffield Council on Bioethics, 29 April 2020

*The expense would be enormous, many jobs would be difficult or impossible dressed in this cumbersome way, and many NHS workers are anyhow exposed to relatively low risks of coronavirus transmission.*¹¹

In addition, guidance in a whole range of spheres has changed regularly as Covid-19 has unfolded. For example, the UK Government's webpage 'Working safely during coronavirus (Covid-19)¹² lists 17 updates between 11 May and 13 August 2020. Such considerations potentially serve to complicate the already complex processes of procuring PPE at a time when the rest of the world's governments were also trying to do the same.

To contextualise the scale of the challenge, PPE demand data are shown in the following Section, alongside the steps taken by NSS to satisfy that demand.

3. The NSS approach to surging demand for PPE

This Section presents demand data provided by NSS to the Public Finance Scrutiny Unit (PFSU) within RaiSe. Without these data, the pure scale of the Covid-19 PPE procurement challenge is difficult to comprehend. Data are provided for the most common items of PPE. For each item, there is some commentary about the approach taken by NSS to source the items. Before moving to specific PPE items, some more general information about procurement risks is presented. Then, how NSS has organised its work during Covid-19 is discussed.

It, however, should be noted that sourcing PPE was not the only issue faced by NSS. Many other single-use items were also required in large volumes. For example, NSS identified 680 essential items for intensive care units (ICUs) – such as various components for connecting ventilators to a patient. It may also be of interest to the Committee to note that, of those 680 items, 100 are produced in Coleraine by a firm called Armstrong Medical.¹³

Before moving to NSS' logistical solutions, the following subsection briefly considers the value-for-money risks raised by the Covid-19 challenge.

3.1. Procurement risks

At the outset, it is worth noting that the procurement of PPE in Scotland has not been without controversy. In particular, media reports focused on the allegation that the First Minister ignored repeated NHS warnings about low stock levels.¹⁴ At that time and since, governments across the world have scrambled to source PPE, and have been in

¹¹ Dupre, J (2020) "Following the science" in the COVID-19 pandemic in Nuffield Council on Bioethics, 29 April 2020

¹² <https://www.gov.uk/guidance/working-safely-during-coronavirus-covid-19/updates>

¹³ Armstrong Medical appears to be an emerging NI success story from Covid-19

<https://www.belfasttelegraph.co.uk/news/health/coronavirus/healthcare-project-opens-in-coleraine-39261107.html>

¹⁴ Ross, C in The Courier, 9 July 2020, [Coronavirus: Nicola Sturgeon defends PPE record after we revealed pre-pandemic warnings](#)

direct competition for scarce resources. Indeed, in May 2020, the UK Government told health trusts to stop directly procuring PPE to prevent them from competing with each other.¹⁵

Sourcing PPE has clearly therefore created significant logistical problems, and also given rise to risks. The UK Government's response to Covid-19 is already the subject of several investigations by the National Audit Office, including one specifically into PPE, which is due to report this autumn.¹⁶ The Welsh Auditor General has proposed that all 22 local authorities across Wales, together with the Welsh Government, should submit Covid-19 grant and payment data to the National Fraud Initiative, to help identify fraudulent applications.¹⁷

In September 2020, the NI Audit Office published an initial overview of the Executive's Covid-19 response, which mentions PPE. The NIAO report, however, states:

*At this point, no examination or assessment of the value for money, or effectiveness, of individual measures has been made.*¹⁸

When the NIAO specifically examines PPE, or assesses other elements of the Executive's response remains to be finally determined, though the NIAO's recent report states:

*As an initial step, we intend to examine arrangements surrounding the supply of personal protective equipment in NI; the support provided to lessen the impact on vulnerable groups; and the wider impact of COVID-19 on public sector income. Over the coming months, we will consider the need to further revise our existing Public Reporting Programme. Revisions to our plans will be notified to departments and published on our website.*¹⁹

In the meantime, Audit Scotland has signalled five Covid-19 'procurement risks', namely:²⁰

- Mandate and diversion fraud, whereby fraudsters try to get bank details changed by under-pressure staff;
- Relaxation of controls as bodies seek goods/services urgently;
- Increasing medical waste streams, potentially leading to criminals seeking waste management contracts and utilising unsafe disposal methods;
- Duplicate payments undetected, or payments made without full quality checks on goods/services; or,
- Fraudsters potentially marketing counterfeit/substandard goods.

¹⁵ https://www.audit-scotland.gov.uk/uploads/docs/report/2020/briefing_200723_covid.pdf

¹⁶ <https://www.nao.org.uk/work-in-progress/supplying-the-nhs-and-adult-social-care-sector-with-personal-protective-equipment-ppe/>

¹⁷ Compton, A (2020) [Covid-19 fraud – a Welsh perspective](#)

¹⁸ NIAO (2020) [Overview of the Northern Ireland Executive's Response to the COVID-19 Pandemic](#), see page 3

¹⁹ NIAO (2020) [Overview of the Northern Ireland Executive's Response to the COVID-19 Pandemic](#), see page 33

²⁰ Audit Scotland (2020) [Covid-19: emerging fraud risks](#), see page 3

The nature of the identification of risks means that these things may or may not transpire. Audit Scotland here is helping to identify potential risks which should be considered by authorities for mitigation measures as part of their risk management.

Each week, the Scottish Government publishes data on PPE supplied.²¹ The scale of the challenge, and therefore the heightened fraud risk, is clearly shown by the data in Table 1 below.

²¹ <https://www.gov.scot/publications/coronavirus-covid-19-ppe-distribution-statistics/>

Table 1: Total PPE supplied 1 March 2020 to 26 August 2020

Item	Since 1 March 2020	In the seven days to 26 August 2020
Aprons	73,669,621	2,502,300
Goggles	2,839,100	0
Type IIR masks	79,616,200	4,978,450
FFP3 masks	3,234,500	2,260
Face visors	3,884,837	31,910
Gloves (singles)	266,789,900	10,604,050
Gowns (non sterile fluid-resistant)	943,924	30,422
Gowns (sterile)	538,164	4,859
Hand sanitiser	346,279	7,016
Total	431,862,525	18,161,267

Source: [Scottish Government](#)

It is immediately apparent that the overall numbers are large. The data provided directly to the PFSU by NSS, however, give more context by giving 'before' and 'after' Covid-19 numbers. These pandemic-driven increases are shown in the following subsection 3.3.

3.2. General information about the NSS approach

Early in the pandemic, the Scottish Government established a multi-agency team (including NHS clinicians, Scottish Enterprise, Scottish Development International, and

the National Manufacturing Institute Scotland, operated by University of Strathclyde), with two key aims:²²

- Identifying offers of support which could supply us with high volumes of approved PPE and sanitiser products in the fastest times; and,
- Working with businesses to increase Scottish capacity to make key products to help build resilience for future crises.

To facilitate this process, the multi-agency team had a daily call, chaired by the Minister for Trade, Investment and Innovation. Generally, this call had between 50 and 85 participants, depending on the specific needs at the time.

The multi-agency nature of the team was considered by the NSS' Head of Strategic Sourcing & Commercial, National Procurement, Commissioning and Facilities to be a very important element of its success.²³ It was able to:

- bring together user groups to assess products, e.g. NHS consultants to try on masks;
- exploit local knowledge, by sending local representatives of Scottish Enterprise based abroad to quality assure products and facilities, e.g. to visit manufacturing sites on the ground in China;
- forecast PPE demand to March 2021, securing the budget approvals; and,
- use procurement frameworks where they existed, or make direct awards where they did not.

At the practical level, NSS has 63 staff involved in its strategic sourcing activities. At the peak of the crisis, approximately four-fifths of those workers were redeployed to support the procurement of key PPE items.²⁴

The NSS' Head of Strategic Sourcing & Commercial, National Procurement, Commissioning and Facilities noted that before trying to develop the strategic approach to procurement it was crucial to know what could be produced, and by whom, and the raw materials required.²⁵

More detail on specific items, and the processes is provided below.

²² Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 1

²³ Phone call with NSS and RaiSe, 21 July 2020

²⁴ E-mail from NSS to RaiSe, date 3 August 2020

²⁵ Phone call with NSS and RaiSe, 21 July 2020

3.3. Item-by-item data

All infographics in this sub-section are produced by RaISe, relying on data provided by NSS.

3.3.1. Aprons



Disposable aprons are used in a variety of clinical and care settings,²⁶ from Covid-19 test centres to schools. The majority of these aprons were procured from Asia. However, because of the hugely increased demand:

Berry BPI, already a supplier to the NHS, sourced and shipped to Scotland specialist machines for the manufacture of disposable aprons from their Greenock factory. At capacity, these machines will produce 2-3 million aprons per week.²⁷

This is an example of an existing supplier with a track record of working with the sector shifting manufacture (or 're-homing'), to enable a secure supply to meet between 40-60% of Scotland's needs for that item.

²⁶ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 8

²⁷ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 8

3.3.2. Eyewear



The increased demand for face visors and goggles provides an example of a local manufacturer shifting production from one product to another:

After hearing of the shortage of visors for front line NHS workers, Scottish company Alpha Solway switched emphasis from making protective clothing for oil and gas industries to visors.²⁸

There were numerous examples in NI of institutions and people turning to visor and mask production.²⁹ A similar process occurred in Scotland, where:

...many manufacturers have stepped up to meet the local supply of visors for their NHS Boards, Care Homes and communities across Scotland.³⁰

The NSS' Head of Strategic Sourcing & Commercial, National Procurement, Commissioning and Facilities noted that for clinical use, all PPE has to be of a high standard to ensure protection, comfort and so on. They can be supplied in reusable or disposable forms. He further explained that things could be quickly certified as meeting standards if you have capacity. A key decision by NSS to provide that capacity was to stop tendering process for 2-3 months enabling staff to be redeployed to purchasing drugs and/or equipment.³¹

²⁸ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 7

²⁹ See for example [Dundonald High School](#) and [Queens University](#)

³⁰ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 7

³¹ Phone call with NSS and RaiSe, 21 July 2020

3.3.3. Type IIR masks



This type of fluid-resistant mask is another item of PPE, which has seen an enormous surge in demand. In Scotland, around 50% more masks are now needed in a week than were previously needed in a year.

Another important part of the NSS approach during the height of the crisis, via the daily phone call mentioned above, was to profile usage and monitor when stocks were running out.³² The Scottish Government report stated that supplies of this item remained ‘strong’. Nevertheless, it is clear that the pandemic will continue for some considerable time because the search for a vaccine can take a minimum of 6-12 months.³³ Part of the Scottish approach is therefore to try to ensure self-sufficiency, by pursuing a parallel source and make approach:

In order to meet this huge increase in demand NSS has adopted a “make” and “buy” strategy. To date, over 100 million masks have been imported, with a further 60 million to follow. At the same time Scottish manufacturers are investing in the machinery required to supply the masks, with discussions ongoing about contracts with the NHS to help develop Scottish self-sufficiency.³⁴

According to NSS, the key issues for these masks are firstly the raw material, and then the machinery to fold that material correctly.

³² Phone call with NSS and PFSU in RaISe, 21 July 2020

³³ <https://www.nhs.uk/conditions/coronavirus-covid-19/research/coronavirus-vaccine-research/>

³⁴ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 3

3.3.4. FFP3 masks



FFP3 masks offer a higher degree of filtration (99%) than Type IIR masks. They are only required when undertaking Aerosol Generating Procedures (AGP). This is because the presence of aerosols increases the risk of virus transmission to medical staff.

The NSS approach has included a company reshoring its production from Taiwan to Scotland:

Backed by an order for 2 million FFP3 masks, Alpha Solway has reshored mask manufacturing from Taiwan and begun to ramp up production to 5 million masks per week – well beyond NHS Scotland’s demand, creating export potential.³⁵

Potential scrutiny points:

- 1. Have the NI governmental bodies responsible for PPE procurement investigated potential suppliers in collaboration with their equivalent agencies across the UK and the Republic of Ireland to explore specialisation?**
- 2. Has the NI Business Services Organisation explored the potential to establish a secure supply chain with Scottish firms which are have exporting capacity?**

The Scottish Government has further supported this process, with the provision of loan finance (described as a “repayable grant” in the passage below), to create potential economic opportunity. It stated:

To address global shortages of the raw material required in the filter layer of FFP3 masks, the Scottish Government via Scottish Enterprise has provided Forfar-based Don & Low with a £3.6 million repayable grant towards the £4.5 million purchase, import and installation of new machinery

³⁵ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 5

to manufacture this raw material in Scotland. This will make Don & Low one of a handful of companies in Europe capable of supplying the filter material and will both boost domestic manufacturing and supply, provide more stability in the supply chain and create export opportunities.³⁶

Potential scrutiny point:

Does the NI Executive have the potential to support local manufacturers, and thereby create similar economic opportunities, including possible use of Financial Transactions Capital?³⁷

In similar fashion to the example of Queen's University Belfast working on visor design, the NSS approach also included collaborating with universities:

The National Manufacturing Institute Scotland (NMIS) team at the University of Strathclyde's Advanced Forming Research Centre is using research and innovate on with hand held 3D digital scanners to make long term improvements to the FFP mask design and manufacturing process.³⁸

3.3.5. Gloves



The demand for nitrile gloves was very large in Scotland prior to Covid-19 – at nearly enough for a glove each for the whole population.³⁹ This has more than doubled. However, NSS was unable to source these in Scotland and part of the approach is:

Scottish Enterprise is supporting two glove manufacturers to consider Scotland as a manufacturing location as they look to begin UK production of gloves.⁴⁰

³⁶ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 5

³⁷ For a brief introduction to some of the issues around Financial Transactions Capital, see RaSe blog <https://www.assemblyresearchmatters.org/2016/08/01/financial-transactions-capital-what-is-it-and-how-can-it-be-used/>

³⁸ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 5

³⁹ Based on population figure provided [here](#)

⁴⁰ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 6

The NSS' Head of Strategic Sourcing & Commercial, National Procurement, Commissioning and Facilities noted that glove manufacture at the scale needed across the UK would require 500,000 litres of water/day. In addition, he stated that the capital investment needed to manufacture the nitrile would cost around £100 million, and maybe therefore something that the UK Government might need to consider.⁴¹

Scrutiny point:

Have the NI bodies responsible for PPE procurement investigated the possibility of UK Government investment in nitrile glove manufacture?

3.3.6. Non-sterile gowns



Non-Sterile Gowns or isolation gowns are used for procedures that do not require a sterile product. They are required where the users need a degree of protection above that provided by a plastic apron.

The Scottish Government reports another example of domestic manufacturers repurposing to create a new supply chain:

A new domestic supply chain has been created for non-sterile gowns. Forfar manufacturer Don and Low has repurposed production to produce material for gowns. NSS has so far ordered 2.8 million square metres of this material, which is being converted to gowns by Edmund Bell (Yorkshire) and Keela (Glenrothes), with additional support from Endura and Transcal (Livingston).⁴²

In consequence, NSS believes that 50% of Scottish demand can be met by Scotland-based manufacturers, and Scottish firms have the capacity to produce 70,000

⁴¹ Phone call with NSS and PFSU in RaISe, 21 July 2020

⁴² Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 9

reusable gowns per week. All other things being equal, this should reduce the overall level of demand – as gowns are washed and reused instead of disposed.

3.3.7. Hand sanitiser



Demand for hand sanitiser has increased by a factor of 10 in the health and social care system in Scotland. A considerable volume is produced in Scotland:

*Scottish chemicals company CalaChem Ltd has produced 580,000 litres of sanitiser at its site in Grangemouth, with ethanol provided by Whyte & Mackay. This has been bottled in a range of sizes by a number of Scottish companies.*⁴³

In an example of how changing specifications can help governments, according to NSS, the WHO's guidance allows for alcohol produced in a distillery to be used for hand sanitiser:

*This work has also been helped by The Scotch Whisky Association which launched a portal connecting distillers that can produce and supply hand sanitiser and/or ethanol with organisations in need, making it easier for relevant companies to collaborate.*⁴⁴

There were also reports of NI-based distilleries helping out against Covid-19.⁴⁵

4. Concluding remarks

It may safely be assumed that the NI demand for PPE has increased by a broadly similar proportion to Scotland during Covid-19. Data published by the Department of Health state that between 6 March and 31 July, the NI Health and Social Care systems Procurement and Logistics Service delivered more than 167 million items of PPE to NI

⁴³ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 10

⁴⁴ Scottish Government (2020) [Coronavirus \(COVID-19\): report on Personal Protective Equipment supplies](#), page 10

⁴⁵ <https://www.nigoodfood.com/northern-ireland-craft-distillers-join-battle-against-covid-19-virus/>

health and social care services.⁴⁶ There have clearly been challenges in Scotland and also in NI.

The Committee will, no doubt, be encouraged to hear that a local business (i.e. Armstrong Medical) has been identified as strategically important in the Scottish medical devices supply chain. It is also of note that firms in Scotland have been rehoming manufacture from overseas or investing, with Scottish Government support, in new machinery.

It would be of great interest for the Committee to hear whether such investment has been coordinated strategically across these islands, particularly in relation to the economic need to support jobs and businesses in the current downturn. In addition, it would be helpful to learn whether there has been strategic coordination in terms of ensuring adequate local supply of PPE, given such supply is likely to be impacted by the return of workers to the office and of schools this autumn, e.g. teachers and other school staff, along with pupils, needing various PPE items to protect themselves and others.

⁴⁶ <https://www.health-ni.gov.uk/news/publication-weekly-personal-protective-equipment-ppe-deliveries-northern-ireland-we-6-march-we-31>