AUDIT ST HELENA
External Auditors

Investigation:
The Bulk Fuel Installation Project

September 2020

Audit St Helena is the body that carries out financial and performance audits on behalf of the Chief Auditor.

The Chief Auditor is an independent statutory office with responsibilities set out in the Constitution and the Public Finance Ordinance. Section 29(2) of the Ordinance requires the conduct of performance audits on behalf of the Legislative Council to determine whether resources have been used with proper regard to economy, efficiency and effectiveness.

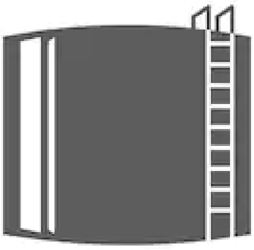
This report has been prepared in accordance with section 29(2) and published by the Chief Auditor, Phil Sharman. The audit team consisted of David Brown and Damian Burns, with assistance from Brendon Hunt.

Contents

Abbreviations

AFF	Airport Fuel Facility
BFI	Bulk Fuel Installation
DBOH	Design, Build, Operate and Handback
DFID	United Kingdom Department for International Development
ExCo	Executive Council
FMC	Fuel Management Contractor
FY	Financial Year
IPSAS	International Public Sector Accounting Standards
LegCo	Legislative Council
Ltd	Limited
P&G	Preliminary and General
PAC	Public Accounts Committee
PMU	Project Management Unit
SHAP	St Helena Airport Project
SHG	St Helena Government
UK	United Kingdom

Key Facts



Up to 2.5 times

more diesel and petrol storage capacity at the new BFI

63 months

since the BFI's original planned completion date in the airport contract, and 105 months since work began on the airport project as a whole

£78.3 million

spent on the BFI and wider fuel system through May 2020, £46.9 million more than the airport contract's estimate to complete the system

Summary

1. This report investigates the historical and current issues faced by the ongoing project to construct an integrated multi-fuel storage system for St Helena, centred on a new bulk fuel installation (BFI) in upper Rupert's Valley. The system is an integral part of the design, build, operate and handback (DBOH) contract awarded to Basil Read to deliver the St Helena Airport Project (SHAP). Full funding for SHAP, including the fuel system, was provided by the United Kingdom's Department for International Development (DFID). The purpose of our investigation is to set out the facts surrounding the BFI project and propose recommendations to help SHG secure value for money going forward.

2. The BFI portion of the system is intended to store three fuels: gasoline (petrol) and gas oil (diesel) for the island's vehicles, with diesel also being used to generate electric power for homes and businesses, and aviation fuel (Jet A-1) to refuel planes at the airport. It was a prominent part of the £201.5 million 'design and build' portion of the DBOH contract, which divided the airport project into two overlapping phases: (1) the BFI and a smaller airport fuel facility (AFF), and (2) 'the Rest of the Works', which focussed on airport construction and the roads and other infrastructure that would support it. The airport was completed in May 2016 and scheduled commercial service began in October of the following year. However, the fuel system – which was intended to be finalised before the airport opened – is not yet finished. St Helena's Public Accounts Committee (PAC), Legislative Council (LegCo) and Executive Council (ExCo) have voiced concerns over the years regarding the fuel system project's design, costs and delays.

3. Our investigation proceeded along three lines of enquiry as outlined in this report:

   - What is the BFI project's status with respect to design, timeline and cost?
   - What elements of the project succeeded, what elements failed and what factors contributed to the latter?
   - What effect is the new installation likely to have on fuel prices, SHG finances and long-term viability?

KEY FINDINGS

THE BFI IS PART OF THE AIRPORT PROJECT'S NEW FUEL SYSTEM THAT EXPANDS STORAGE CAPACITY AND ACCOMODATES AVIATION FUEL

4. **The BFI project was managed under the governance of the St Helena Airport Project.** In 2010, DFID officially committed to funding the construction of St Helena's airport and related infrastructure; the next year, SHG awarded Basil Read the DBOH contract. At its inception, SHAP was governed by the Airport Programme Board, chaired by DFID (the 'funder') and supported by SHG (the 'employer') and Basil Read (the 'contractor'). The board was advised by the Project Management Unit (PMU), who was hired by the funder and consisted of a lead engineer and other technical specialists originally supplied by Halcrow; SHG's Airport Directorate, including project managers within its SHAP management team; the fuel management contractor (FMC), once appointed; and other stakeholders. (paragraphs 1.1 and 1.2, and Figure 1)

5. **Experts deemed the BFI's original design concept appropriate given what was known at the time.** SHG and the funder commissioned a study from Atkins Management Consultants, a multinational engineering and design firm, who endorsed the idea of integrating the replacement of the existing ground fuel storage facility near Rupert's Bay with the construction of a combined ground and aviation fuel storage facility as part of the airport project. With fuel demand expected to increase due mainly to airport-enabled tourism, Atkins noted that the limiting factor preventing the island from achieving economies of scale through larger, less frequent fuel tanker shipments was the volume of available ground fuel storage. Atkins' recommended aviation fuel storage capacities for the BFI and AFF were vetted by an external fuel advisor. Further, a marine transport consultancy concurred with Atkins' overall storage concept, considering it likely that once the BFI was constructed the annual number of fuel shipments would be halved. (paragraphs 1.3 to 1.7)

6. **The new BFI is part of a wider fuel system, and will have a greater capacity than the existing BFI.** The new BFI is linked to the other parts of a comprehensive and continuous fuel system via several important new-build components, such as a shore-side gantry at Rupert's Beach to receive fuel from tankers, pipelines to pump it up the valley to the BFI and Jet A-1 storage at the AFF for aircraft refuelling. The new storage facility can hold about 2.5 times the volume of diesel and petrol as the existing BFI. Early observations of demand for ground and aviation fuels following the airport's opening indicate that the assumptions Atkins used almost 15 years ago to determine future fuel storage needs have held up reasonably well thus far for ground fuels – albeit without accounting for SHG's renewable energy goal adopted since that time – and less so for Jet A-1. (paragraphs 1.8 to 1.10, 2.6, 2.7 and Figures 2, 3, 4 and 7)

ORIGINALLY TARGETED FOR COMMISSIONING IN JUNE 2015, THE BFI AND WIDER FUEL SYSTEM ARE NOT YET COMPLETE AND PROJECT COSTS HAVE ESCALATED

7. **Subsequent developments over more than a decade have led to fuel system design changes and other disruptions.** A series of agreed changes altered the DBOH contract's programme, with variation orders and other agreements amending project design. Further, uncertainty persists regarding the use of portable 'tank containers', which began in 2015 as a contingency arrangement for importing Jet A-1 while the contractor diverted resources from the BFI to focus on completing the airport. In addition, expected future energy needs that underpin BFI design assumptions have changed. Other key developments for the fuel system include evolving standards for aviation fuel handling, Basil Read's departure after its DBOH contract was terminated and independent reviews that have generated proposals for significant changes, such as dismantling the Jet A-1 storage tanks at the BFI, the new fuel gantry at Bay Side and the pipelines linking the two. (paragraphs 2.1 to 2.16, and Figures 5, 6, 7 and 8)

8. **These design changes and disruptions have prolonged the fuel system work and increased its cost. Implementing recent recommendations would mean additional time and cost.** While many components of the fuel system have been constructed, neither the BFI nor the AFF have been commissioned as of September 2020, 105 months after work on the airport project began and 63 months after the fuel system's completion date in the original construction programme. The funder paid the contractor £70.2 million for the fuel system from late 2011 through the DBOH contract's termination in October 2018, including agreed variations. According to the Airport Directorate, a total of £78.3 million has been spent on the fuel facilities through May 2020, which is £46.9 million more than the PMU's estimate of construction and overhead costs for a completed system in the original DBOH contract (£31.4 million). Outstanding recommendations from an independent reviewer, if implemented, would contribute to the final cost and further prolong the project. (paragraphs 2.17 to 2.21, and Figures 9, 10 and 11)

FUEL SYSTEM PROGRESS HAS SUFFERED DUE TO WEAKNESSES IN PROCUREMENT, CONTRACT MANAGEMENT AND PROJECT OVERSIGHT

9. **A lack of interested bidders and insufficient regard for required specialties imperilled the fuel system project.** The lack of competition in the airport procurement process meant that SHG and the funder were in a position of weakness relative to the eventual contractor from the start. The fact that its clients had no feasible fallback put the contractor in a strong position and allowed it to negotiate for dispensations that adjusted incentives, re-prioritised milestones and complicated oversight on the ground. There was not enough emphasis placed on the fuel facilities and the expertise they required – the contractor did not have a dedicated specialist in this role throughout the project, it was not written into the PMU contract, it was not represented on SHG's or the funder's

teams, and the fuel management contract was not awarded in a timely fashion. (paragraphs 3.1 to 3.3)

10. **Project managers attempted to reduce costs through contract provisions and oversight, while mitigating risk through bonding and risk-sharing.** The contractor reached an agreement with the funder whereby the contractor would be paid up front on a rolling basis for completed monthly milestones. Given this arrangement, the PMU's contract management role was focussed on confirming that the contractor's planned work would achieve a given milestone and that a given date would be reached per the agreed construction programme – the actual work would not be completed and ready for the PMU's inspection until after payment had already been made. Still, the PMU had the authority to request later repairs and did (1) issue a series of non-conformance notices to the contractor, (2) deduct from advance payments for coming work as compensation for defects in past work and (3) track the total value of completed work compared to the total value of payments to date to flag any shortfalls. Another arrangement added financial risk as the funder agreed to pay the contractor in four currencies tied to unhedged exchange rates, but the funder partially mitigated this risk by buying and holding South African rand. Further, the DBOH contract required the contractor to provide performance security in the form of bank guarantees, some of which were collected after the contract's termination. (paragraphs 3.4 to 3.8)

11. **However, provisions to reduce costs and other aspects of project procurement led to weaknesses in contract management and project oversight.** Because of the pre-payment arrangement between the contractor and the funder, milestones in the agreed payment schedule could not be matched up with the funder's actual payments. Further, this arrangement incentivised the contractor to prioritise milestones outside of the order specified in the project plan, and to move resources from one part of the project to another in order to secure payment for a specific milestone, delaying progress on other milestones. The timing of certain procurement decisions further exacerbated project management. For example, the DBOH contract required the contractor to "consult and cooperate with the FMC in the design" of the fuel facilities. However, SHG was unable to appoint the FMC until after fuel facility design and construction was already underway, which led to significant changes requested by the FMC that contributed to the project's extended timeline and escalated cost. (paragraphs 2.2 and 3.9 to 3.14)

12. **Coordination among project partners was generally strong with key exceptions.** Delivering a functioning international airport on a remote island required that project partners collaborate effectively across a wide variety of complex tasks, from the design and construction of a commercial wharf, new roads, fuel facilities and an airport terminal to environmental mitigation and the airport certification process. However, coordination suffered in a few key areas. First, informal channels allowed the contractor to bypass local project managers at times to consult directly with the funder in London. Second, the remoteness of the site from numerous subcontracted designers across South Africa hampered coordination between disciplines. Third, the distinction between the contractor's role and project management's role was not always observed in the field.

Finally, the contractor's entrance into business rescue and eventual termination limited its cooperation as SHG and the PMU moved forward. (paragraphs 3.15 to 3.19)

THE NEW FUEL SYSTEM'S EFFECT ON SHG FINANCES AND FUEL PRICES IS UNCERTAIN AND REMAINS A SOURCE OF RISK

13. **If project components prove redundant or unfit for purpose, the value of assets granted to SHG would decline.** When the fuel system project is complete and the BFI is commissioned, the BFI and other fuel system components would be listed as a completed asset in SHG's accounts. At this point, international accounting standards would require the value of such aid-funded infrastructure to be measured using the asset's replacement cost. In the case of the fuel system, the absence of a market value means replacement cost would reflect the asset's value in use, which would require professional valuation. If the built fuel system, or any part of it, is no longer needed for the storage and supply of the island's fuel, its fair value – estimated by its value in use – would be significantly impaired. In the case of the BFI, the most likely scenario is the asset would have to be re-valued to a level that reflects the smaller installation St Helena may require due to renewable energy initiatives and other developments. (paragraphs 4.1 to 4.3)

14. **Ground fuel prices could rise due to lost economies of scale, provisions for asset replacement and the increased cost of fuel handling.** Ground fuel prices are set by SHG, who instructs the current BFI operators, Solomons, on fuel prices after every fuel shipment. Solomons uses a model to inform fuel prices that takes into account the fuel's landed cost and other fees. If Solomons wants to increase the price of fuel sold at the BFI, which is consumed by bulk buyers like the power plant or re-sold at the retail fuel stations, it needs permission from SHG's finance office to do so. According to the Financial Secretary, a new fuel pricing model will be developed to coincide with the new BFI's commissioning. While we cannot speculate on what inputs the new pricing model will consider and how they will be weighted, it is possible that, in the absence of subsidy or other intervention, fuel prices could rise for a number of reasons. For example, an independent reviewer's proposal to import ground fuels in tank containers, as now happens with aviation fuel, threatens to erase the economies of scale expected from the larger, less frequent bulk deliveries that were the foundation of the new BFI's design. (paragraphs 4.4 and 4.5)

CONCLUDING REMARKS AND RECOMMENDATIONS

15. Much of what has gone wrong on the fuel system project has been outside of SHG's direct control. While it is true that SHG through the Airport Directorate co-managed the project with the contractor, the funder, and the PMU, the latter party was responsible for monitoring and incentivising the contractor's performance through milestone payments. Further, the project's governance structure shared responsibility for ensuring that the project stayed on course among the Programme Board, SHG, the funder and the PMU.

Finally, SHG was not responsible for the contractor's entrance into business rescue nor for the problems that followed from that development.

16. Assessing the value for money to SHG of the new BFI and wider fuel system project is less straightforward than a typical project or programme wherein the funder is also the direct beneficiary. In this case, the funder made each of the milestone payments for project construction, with SHG's contribution consisting primarily of (1) land to site the new roads and facilities, and (2) staff time for project design and management. Given the value of what the funder has transferred to SHG thus far – in particular, a modern commercial airport on a remote island more than 4,600 miles from London – SHG has benefited from its participation in the airport project. Narrowing the lens to focus on the fuel system component, it is clear that whether or not aviation fuel is ever stored at the BFI, SHG will have been granted all the necessary components of a new ground fuel BFI to replace its aging diesel and petrol storage facility. This has a high value for the island even if SHG is carrying larger-than-necessary storage tanks on its books due to fuel demand changing since the BFI's original design. However, whether the new fuel system's value in use will ever equate to the £78 million spent – with millions more to come – is highly questionable and indicates that value for money will not be secured from this significant investment of public funds.

17. In the overall evaluation of the BFI and wider fuel system, officials from both SHG and DFID should consider what else could have been done with any funds over and above the lowest cost alternative to the current fuel system that would accommodate aviation fuel. This question is especially pertinent if, out of the design options currently under consideration following the independent review, SHG proceeds with the reviewer's recommended option that results in costly works such as the Jet A-1 storage tanks at the BFI and the new fuel gantry at Bay Side being dismantled without ever being used.

18. **In light of the significant public investment already committed, SHG should:**

- Work with DFID to publish an expected timeline for resolving outstanding design issues at the new BFI and AFF;
- Ensure that the governance arrangements for the remaining fuel system work incorporate the lessons learnt from those arrangements' shortcomings thus far;
- Obtain a valuation of the new fuel system for accounting purposes once construction is complete; and
- Keep businesses and the public informed about the new fuel pricing model so that they can prepare for any future changes in fuel costs.

Part One

Introduction and Background

THE BFI'S DESIGN AND ITS PLACE IN THE AIRPORT PROJECT'S NEW FUEL SYSTEM

The BFI project was managed under the governance of the St Helena Airport Project.

1.1. In 2010, the United Kingdom's Department for International Development (DFID)[1] officially committed to funding the construction of St Helena's airport and related infrastructure. The next year, SHG awarded Basil Read a contract to design, build, operate and eventually hand back (DBOH) those facilities for SHG to manage them; the design and build portion of the contract was valued at £201.5 million. In addition to structures associated with handling passenger aircraft (e.g., a runway and terminal), as well as a wharf in Rupert's Bay where supply ships could dock, sea rescue facilities there and a surfaced access road from Rupert's Valley to the airport, a key component of the project was a new bulk fuel installation (BFI) in the valley along with a smaller airport fuel facility (AFF) on the airport grounds. The total value of the airport project, including the 10-year operation period, has been estimated at £285.5 million.

1.2. At its inception, the St Helena Airport Project (SHAP) was governed by the Airport Programme Board (the board). The board was chaired by a senior responsible owner in DFID (the 'funder'), who was and still is directly accountable for delivery of all aspects of the programme. The funder was supported by board members representing the senior user (SHG, the 'employer') and senior supplier (Basil Read, the 'contractor'); together, SHG and the funder were the contractor's 'clients'. The board's responsibilities were to provide direction and challenge to the project teams and contractors, as well as representing the higher-level interests of the funder, the people of St Helena and contractors engaged in the project. The board was advised by the Project Management Unit (PMU), who was hired by the funder and consisted of a lead engineer and other technical specialists originally supplied by Halcrow (now known as Jacobs)[2]; SHG's Airport Directorate[3], including project managers within its SHAP management team; other SHG directorates; SHG's Financial Secretary; the fuel management contractor (FMC), once appointed; and Enterprise St Helena. In October 2018, the contractor entered business rescue leading to a change in governance

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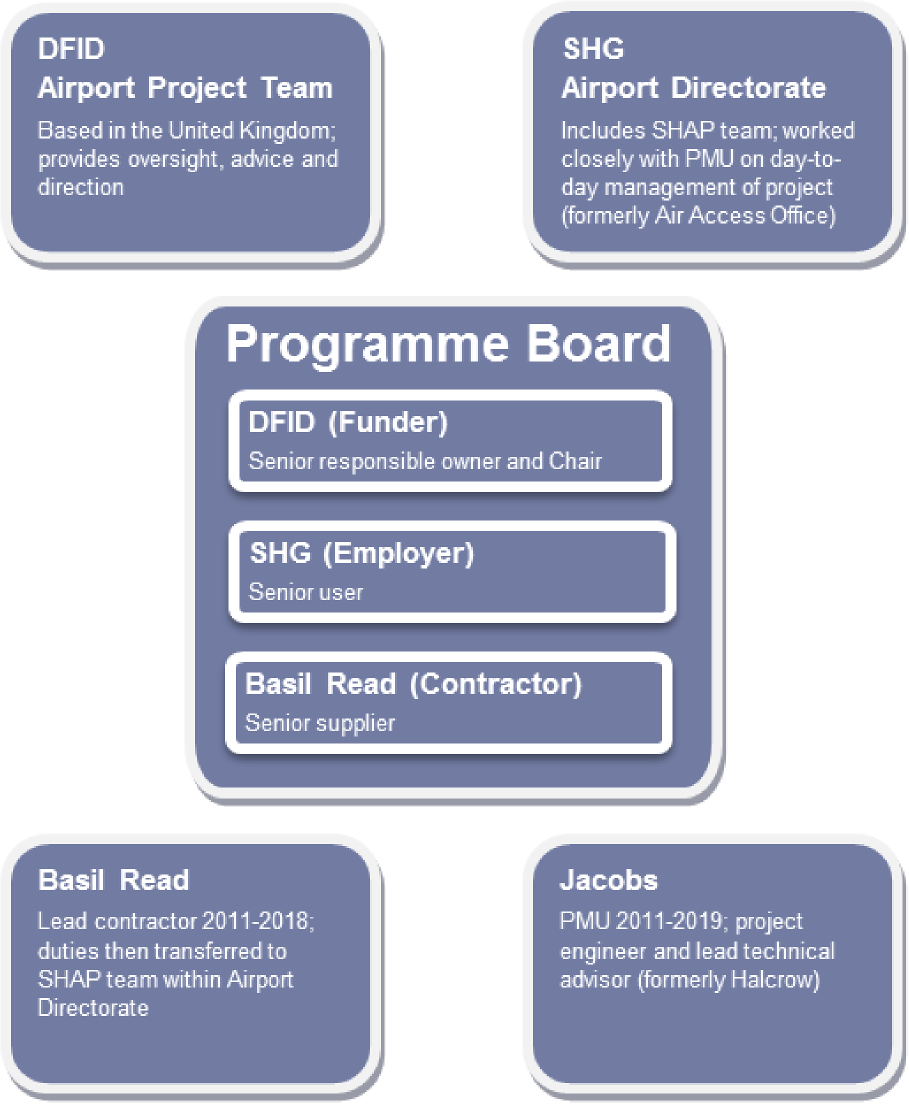
[1] On 2 September 2020, DFID and the UK's Foreign and Commonwealth Office merged to form the Foreign, Commonwealth and Development Office. Because this report is historical in nature, we refer to DFID throughout.
[2] Halcrow was a UK-based engineering, planning, design and management services firm specialising in infrastructure projects. In 2011 it was acquired by CH2M Hill, which in turn was acquired by Jacobs Engineering Group in 2017.
[3] Originally known as the Air Access Office.

structure for SHAP: these events are explored in more detail in later sections of this report. Roles and responsibilities for delivering the airport project, including the new fuel system, are shown in **Figure 1**.

FIGURE 1: ROLES AND RESPONSIBILITIES FOR DELIVERING THE AIRPORT PROJECT, INCLUDING THE NEW FUEL SYSTEM



Source: Audit St Helena analysis of project documentation

Experts deemed the BFI's original design concept appropriate given what was known at the time.

Atkins' design concept expanded the island's fuel storage capacity

1.3. Soon after the UK government announced its intention to fund an airport on St Helena, SHG and the funder commissioned Atkins Management Consultants, a multinational engineering and design firm, to study the present and potential future bulk fuel supply arrangements for the island. Atkins, which had completed the original feasibility study on air access in 2005, was also asked to produce design specifications for inclusion in the invitation to tender for the DBOH contract. The successful bidder would use these specifications as a guide for drafting blueprints and other detailed design documents that would facilitate actual construction of the fuel facilities.

1.4. Atkins' report, delivered in May 2006, endorsed the idea of integrating the replacement of the existing ground fuel storage facility near Rupert's Bay (the original BFI) with the construction of a combined ground and aviation fuel storage facility as part of the airport project. According to Atkins, the forecasted growth in the economy due mainly to airport-enabled tourism would generate an increased demand for the ground fuels that power the islands' vehicles and electric station. Atkins further specified Jet A-1 as the appropriate aviation fuel for the airport.

1.5. Atkins noted that the limiting factor preventing the island from achieving economies of scale through larger, less frequent fuel tanker shipments was the volume of available ground fuel storage. Atkins did not consider the existing BFI (commissioned in 1987) to be fit for purpose due to concerns about safety and the environment, so enlarging it and adding Jet A-1 storage was not seen as a viable option. Atkins further observed that the installation's limited storage capacity and relative inefficiency was due to the large number of small tanks, which influenced Atkins' design concept for the new facility. That concept was to build a bigger version of the existing BFI with annual savings based on a greater volume of storage to allow for fewer bulk fuel shipments.

1.6. Atkins calculated the necessary aviation fuel storage capacity over a 10-year planning horizon to accommodate aircraft the size of a Boeing 737-700 or Airbus 320 and a supply frequency of 6 months, which is the maximum certification period for Jet A-1 fuel quality before recertification is required (petrol is subject to a similar constraint). Atkins then extended this same expected supply frequency to the ground fuels to maximise efficiency and cost stability. Finally, Atkins added an extra month to the resulting 6-month storage requirement at the BFI to allow for contingency stocks of each fuel to mitigate disruption in the case of a late shipment.

Expert reviews supported Atkins’ design concept

1.7. Atkins’ recommended aviation fuel storage capacities for the BFI and AFF were vetted by Penspen, an external fuel advisor and SHG’s future FMC for the new system (see paragraph 2.2). Further, a 2008 report to the funder from a marine transport consultancy concurred with Atkins’ overall storage concept. The authors considered it likely that once the BFI was constructed the annual number of fuel shipments would be halved, with quarterly deliveries replaced by semi-annual ones, and thus recommended that construction of the new BFI be prioritised in the scheduling of the airport contract. This prioritisation was reflected in the eventual DBOH contract, which divided project construction into two concurrent phases: the BFI and AFF (‘Section 1’) and ‘the Rest of the Works’ (‘Section 2’). After being awarded the contract, Basil Read hired several subcontractors to assist with a detailed design of the fuel facilities.

The new BFI is part of a wider fuel system, and will have a greater capacity than the existing BFI.

1.8. The BFI is linked to the other parts of the fuel system via several important new-build components. To the north, a new shore-side gantry at Rupert’s Beach would intake bulk fuel through floating hoses attached to tankers arriving in the harbour every 6 months. Once ashore at the Bay Side facility, diesel, petrol and Jet A-1 would then be pumped through pipelines up the valley to the BFI. Meanwhile, tanker trucks would travel south from the BFI to deliver fuel to five storage tanks at the AFF – four Jet A-1 and one diesel[4] – where the aviation fuel could then be used to refuel jets just off the runway. Tankers would also deliver diesel and petrol to retail outlets around the island, and a dedicated pipeline would supply diesel to the island’s power plant. Once complete, this new fuel-related infrastructure is intended to operate as a comprehensive and continuous system with the BFI as its centrepiece.

1.9. Plans for the BFI include two petrol tanks, four diesel tanks and two Jet A-1 tanks, with one of the diesel tanks designated as a ‘swing tank’ capable of storing Jet A-1 if conditions require. Each tank would have a capacity of 750 cubic meters, which means that each could accommodate up to 750,000 litres of fuel. Around the time that construction began on the BFI, the original bulk fuel installation it is meant to replace could hold 592,000 litres of petrol and 988,000 litres of diesel; its current capacity is about the same for petrol and 25% greater for diesel. As shown in **Figure 2**, the new BFI would be able to hold about 2.5 times more diesel and petrol than the existing facility. Once the new BFI is commissioned, the original BFI would be decommissioned and dismantled.

[4] The relatively small (7,000-litre) diesel tank supports vehicle refuelling at the airport.

FIGURE 2. STORAGE CAPACITY BY FUEL TYPE AT ORIGINAL BFI, NEW BFI AND AFF (IN 1000S OF LITRES)

Facility	Petrol	Diesel	Jet A-1
Original BFI (when new BFI construction began)	592	988	n/a
Original BFI (current)	594	1,241	n/a
New BFI	1,500	2,250 or 3,000	1,500 or 2,250
AFF	n/a	7	160

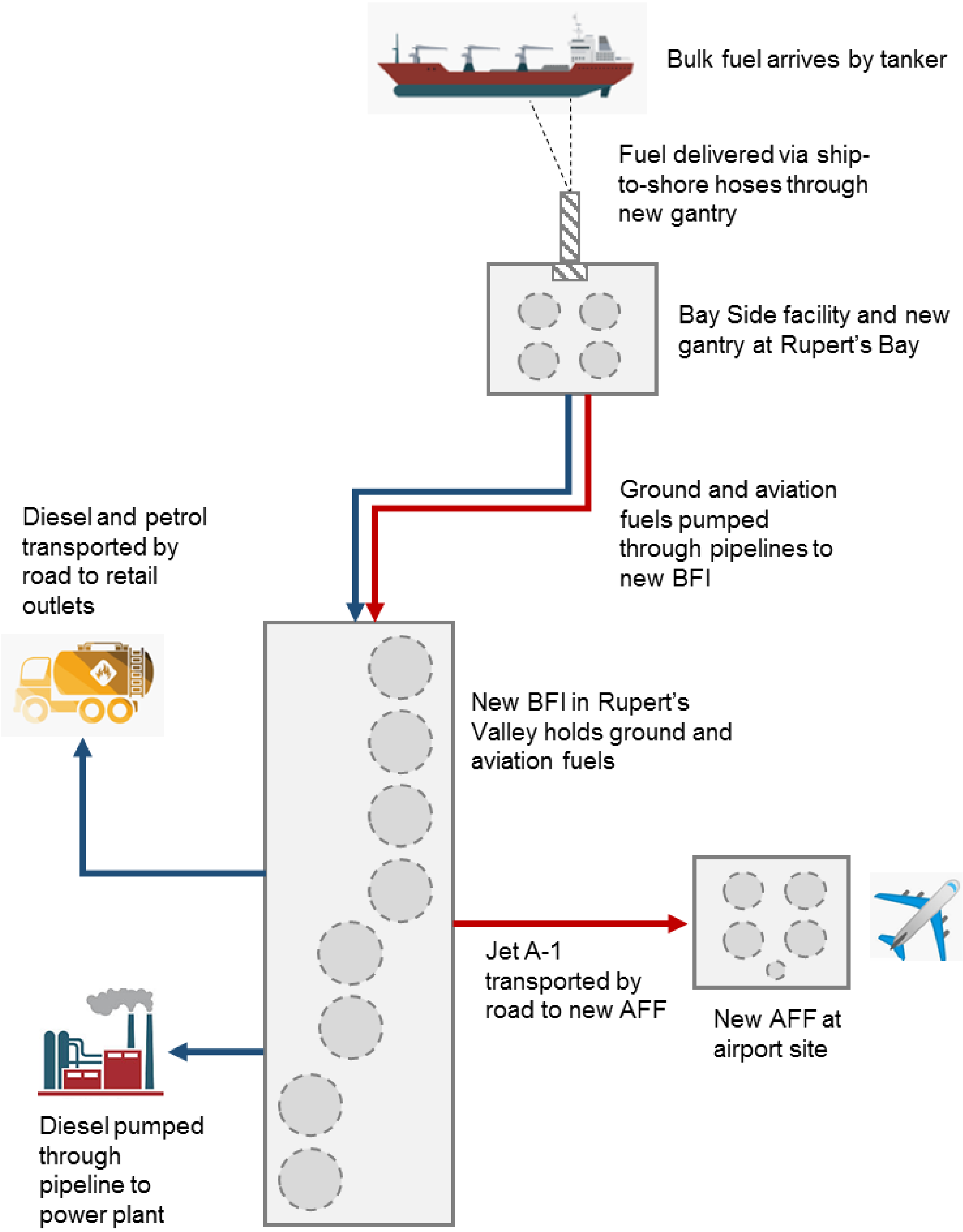
Source: Audit St Helena analysis of project documentation
Note: The new BFI has a swing tank that can accommodate either diesel or Jet A-1. The total storage capacity for each fuel depends upon the chosen configuration.

1.10. Figures 3 and 4 show the new BFI as constructed and the wider fuel system as designed.

FIGURE 3. NEW BFI IN RUPERT'S VALLEY, DECEMBER 2018

Source: PMU

FIGURE 4. FUEL SYSTEM LAYOUT AS DESIGNED



Source: Audit St Helena analysis of project documentation

Part Two

Delays and Cost Escalation

DESIGN CHANGES AND OTHER DISRUPTIONS

Subsequent developments over more than a decade have led to fuel system design changes and other disruptions.

Variation orders and other agreements amended project design

2.1. A series of agreed changes altered the DBOH contract's programme. These included 16 supplemental agreements, which were used to change the terms of the DBOH contract, and 54 variation orders that added or amended project milestones. Both constituted substantive alterations of the original plan with implications for the fuel system's cost and timeline. For example, Supplemental Agreement 2, executed in February 2012, replaced the original payment schedule with one that accelerated payment for the BFI, as the clients had agreed the contractor could use the completed facility to store fuel for its purposes during airport construction.

2.2. Variation Order 30 represents a more substantial change to the project. It had its origins in SHG's August 2014 appointment of the FMC, Greystar Europe (now known as Penspen)[5], who would assist with designing and eventually would operate the new fuel facilities. Once appointed, the FMC considered certain aspects of the contractor's detailed design to be unsatisfactory. This was driven in part by operational needs and in part by the evolution of aviation fuel handling standards over the course of the contract. The resulting variation order incorporated a number of significant changes, such as enlarging the existing Bay Side facility at Rupert's Beach to include 'break tanks' to boost onward fuel pumping (**Figure 5**). A section of the original DBOH contract was redrafted to memorialise the amended plan.

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[5] Shortly after its appointment, Greystar Europe – already part of the Penspen group – was rebranded to trade as Penspen.

FIGURE 5. BAY SIDE FACILITY INCLUDING OLD AND NEW FUEL GANTRIES, OCTOBER 2019

Source: Audit St Helena
Note: The old gantry is in the foreground, while the new, larger gantry is in the background.

2.3. In 2015 – at the direction of the Programme Board, and in a departure from Supplemental Agreement 2 – the contractor diverted resources away from finishing the BFI in order to prioritise airport completion. This necessitated a contingency arrangement with the FMC, executed in November 2015, establishing a plan for aviation fuel storage in the absence of the BFI coming online with its new tanks. The agreed workaround was to import Jet A-1 in portable 'tank containers' that could be carried on the RMS St Helena, the supply ship that then visited the island every 3 to 4 weeks (**Figure 6**). This would allow the contractor to obtain certification for the airport so that commercial flights could begin serving St Helena.

FIGURE 6. STANDARD 20-FOOT TANK CONTAINER

Source: MC Containers

Uncertainty persists regarding the use of tank containers

2.4. In May 2016, the FMC recommended that the November 2015 contingency arrangement for Jet A-1 be made permanent, arguing that the importation of aviation fuel in tank containers was “the only viable method of supply”. According to the FMC, delivery by tank container was preferred to delivery in bulk for quality assurance and because a suitable bulk supplier of Jet A-1 had not been identified. The FMC further recommended that the Bay Side facility be adapted to handle only the two ground fuels and that work stop on aviation fuel storage infrastructure at the BFI and AFF.

2.5. The FMC then changed tack in October 2017, recommending that Jet A-1 be imported in bulk along with diesel, but not with petrol, which would instead be imported in tank containers. The impetus for this reversal was an offer from the shipping company that had been awarded the contract to replace the RMS St Helena to retrofit its supply ship (the MV Helena) with bulk fuel tanks suitable for carrying Jet A-1 and diesel. Petrol, which is the most volatile of the three fuels, would be carried in tank containers along with the ship’s regular container cargo of food and dry goods. According to the FMC, its recommended option represented “the most practical and economical means of bringing all three fuels to St Helena in the volumes that can be currently anticipated". This recommendation has not been implemented to date.

Expected energy needs that underpin design assumptions have changed

2.6. Several changes in underlying conditions have the potential to reduce the island's fuel demand in the coming years. First, SHG's official energy strategy targets April 2022 as the date by which renewable energy will meet 100% of electricity demand for all consumers connected to the island's power grid.[6] This goal is being pursued through a combination of wind, solar and battery power, and if achieved it would greatly diminish the island's diesel consumption. Further, due to problems with wind shear observed during flight tests, the airport is contractually serviced by smaller jets than envisioned in its original design, and newer jets are more fuel-efficient: both developments mean less Jet A-1 is being consumed than expected. Finally, to the extent electric cars displace petrol-powered ones in the coming years, the island's need for petrol storage will be reduced (all other things being equal).

2.7. Early observations of demand for ground and aviation fuels following the airport's opening indicate that the assumptions Atkins used almost 15 years ago to determine future fuel storage needs have held up reasonably well thus far for ground fuels – albeit without accounting for the renewable energy goal adopted since that time – and less so for Jet A-1. For Year 1 after the airport's opening, Atkins assumed an annual demand of 1.2 million litres of petrol, 3.3 million litres of diesel and 2.0 million litres of Jet A-1. Given that scheduled commercial service commenced in October 2017, financial year (FY) 2018/19 would constitute Year 1 in our analysis. The actual sales for that financial year at the existing BFI were 0.9 million litres of petrol (76% of Atkins' forecast) and 3.8 million litres of diesel (115%). We also know that 0.5 million litres of Jet A-1 were consumed in the airport's first full financial year (27% of Atkins' forecast). See **Figure 7** on the following page.

FIGURE 7. DEMAND FOR GROUND AND AVIATION FUELS IN YEAR 1 AFTER THE AIRPORT OPENED (FY 2108/19), IN 1000S OF LITRES

Annual demand	Petrol	Diesel	Jet A-1
Atkins' assumption	1,210	3,322	2,000
Actual consumption	917	3,829	539

Source: Audit St Helena analysis of Atkins, SHG and independent reviewer documentation
Note: Petrol and diesel consumption volumes reflect BFI sales; Jet A-1 consumption was reported by an independent reviewer of the fuel system (see paragraphs 2.13 to 2.15).

[6] In May 2020, St Helena's power provider (Connect Saint Helena Ltd) signed a power purchase agreement with PASH Global to meet the 100% renewable energy target.

2.8. In terms of recent trends, any reduction to petrol and diesel consumption due to renewable energy sources coming online was outweighed by increased demand from St Helena consumers. According to records from the existing BFI, petrol sales in FY 2018/19 were up 2.5% compared to FY 2017/18, and while diesel sales were down 2.0% over the previous year, they were up 1.8% if we exclude the contractor's steep decline in litres purchased. (Although the contractor was still employed on the airport project for the first half of FY 2018/19, its purchases represented just 2.2% of total diesel sales – down from 5.9% in FY 2017/18, an absolute decline of 144,000 litres.)

2.9. Still, concerns remain about continuing to build and maintain excess capacity at the new BFI. At the August 2018 PAC hearing, the Financial Secretary recognised the facility "has far more capacity than what we will probably need", especially for diesel storage in light of SHG's commitment to renewable energy. According to the Financial Secretary, there had been discussions of additional uses for that storage – such as making St Helena a mid-Atlantic fuel hub for passing vessels – as SHG considered revenue-generating scenarios that would offset any costs to island consumers. He further noted that at the time the DBOH contract was signed, renewable energy made up a small fraction of the island's total power supply and there was no stated goal to reach 100% in the near term as there is now.

Unresolved issues at the AFF include firefighting protocols and where fuel would be stored

2.10. Questions about design have also hampered the AFF, where concerns over firefighting protocols have delayed completion. The DBOH contract did not envision a fixed firefighting system at the AFF due to the presence of on-airport firefighters during flight and refuelling operations in tandem with an alarm system that would summon SHG's fire service for on-site deployment within 30-45 minutes. However, after a reconsideration of various risks and their likely impacts, the contract was revised in June 2015 to require the contractor to complete a risk and hazard assessment to determine the best way forward at the AFF. A consultant completed this assessment in May 2016; in September 2017 the PMU recommended that SHG install a manually initiated permanent firefighting system with a design that includes the option of converting to a fully automatic system at a later date. This system is still under consideration.

2.11. In addition to firefighting concerns, AFF completion depends upon a final decision on how aviation fuel will be imported. In December 2018 the FMC advised that the current workaround whereby tank containers are stored at small depots in Rupert's Valley and on the airport road was not appropriate for permanent adoption. The FMC further recommended the AFF "be completed and operated in line with its original intent or not at all" because "reconfiguring or downsizing has no clear and identifiable benefits". In lieu of Jet A-1 storage at the AFF, the FMC recommended a permanent off-airport depot that would be suitable whether SHG decided to (1) continue importing Jet A-1 in tank containers or (2) revert to the original bulk supply model via dedicated tanker or aboard a retrofitted MV Helena. Conversely, an inspector for the leading organisation governing aviation fuel supply standards conducted an independent inspection in October 2017 and recommended that the AFF as designed be brought into use as soon as possible.

The contractor's financial difficulties halted progress on the fuel system

2.12. While progress on the fuel system had been disrupted by various factors over several years, the most serious disruption to that portion of the airport project came in June 2018 when the contractor entered South Africa's business rescue process (similar to administration in the United Kingdom). After negotiating for several months in an attempt to preserve Basil Read's viability as the project's contractor, SHG terminated the DBOH contract in October 2018 and established a new entity – St Helena Airport Ltd – to operate the airport. At the same time, SHG assumed responsibility for completing the BFI and other outstanding works via the existing SHAP team. SHG then implemented a temporary site shutdown in December 2018 to take stock of the project and manage the intake of personnel previously employed by the contractor.

Independent reviews generated proposals for substantial changes

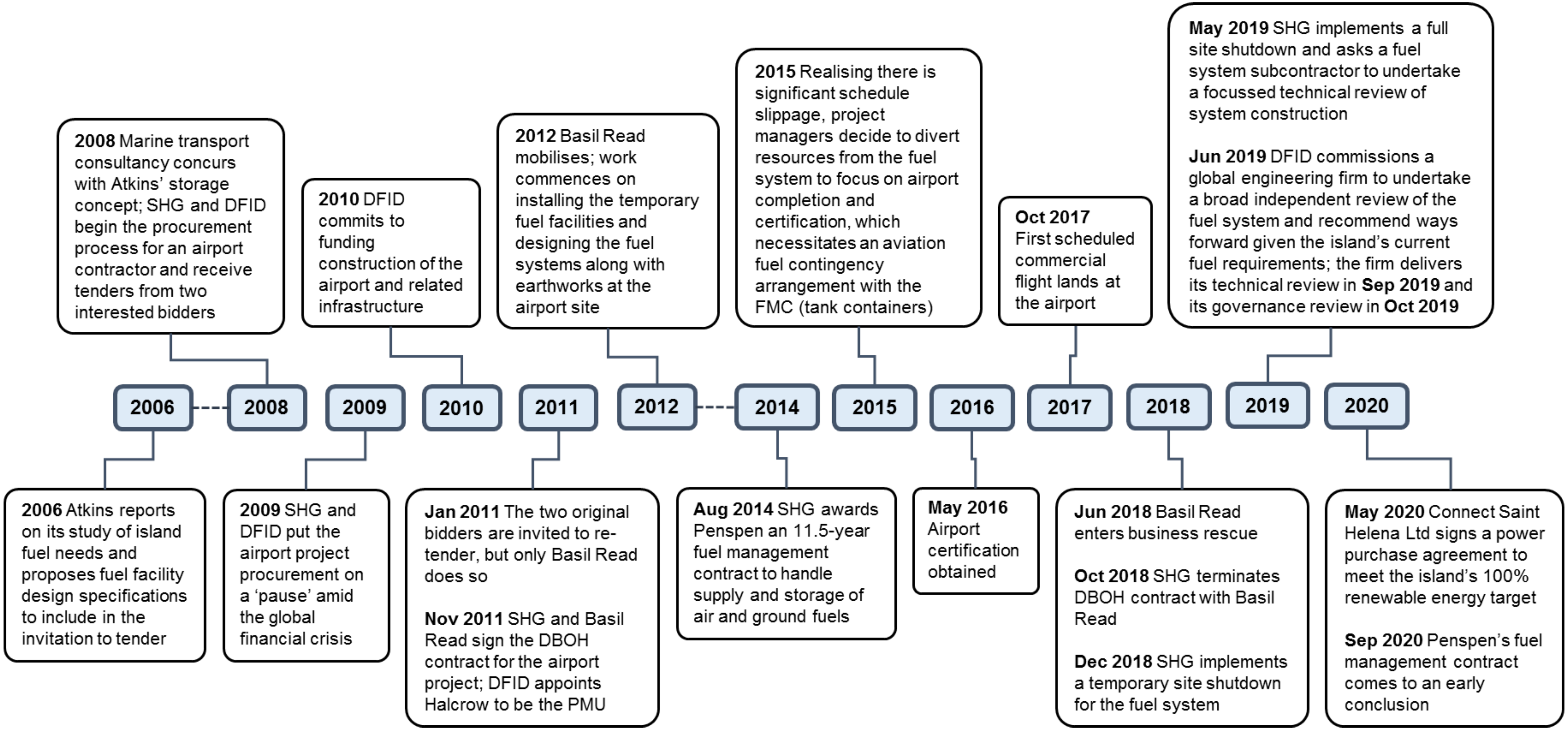
2.13. After the temporary site shutdown, SHG and the funder agreed on a longer-term shutdown commencing in May 2019 so that internal and external reviews could occur. SHG asked Basil Read's subcontractor for testing and commissioning the fuel system to conduct a focussed technical review of system construction. In addition, responding to SHG's request for a comprehensive assessment, the funder in June 2019 hired a global engineering firm to undertake an independent review of the fuel system and advise on both technical and governance-related matters. The funder received the firm's completed technical review in September 2019 and its governance review the following month.

2.14. The technical review recommends dismantling key components of the fuel system, including part of the new BFI. The reviewer's revised design concept calls for importing all three fuels in tank containers and decanting both diesel and petrol into their corresponding BFI storage tanks after the facility is commissioned. The two Jet A-1 tanks, however, are made redundant in the amended design, as is the new fuel gantry at Bay Side and the pipelines leading up the valley to the new BFI. The reviewer recommends that these either be repurposed (e.g., for potable water storage) or decommissioned and then recycled and/or sold. Both the Airport Directorate and the PMU disagreed with key aspects of the technical review, particularly in the way that alternatives were costed and evaluated. The directorate also queried what it perceived as a lack of specificity about the recommended way forward, noting that the 'what' had been identified but not the 'why' and the 'how'. This has led to additional analysis in conjunction with the funder.

2.15. In addition to the substantial changes resulting from the technical review, the governance review highlighted weaknesses in programme management and recommended a new governance structure. The Airport Directorate accepted the reviewer's findings in general, acknowledging weaknesses in the programme management arrangements, but the directorate challenged the reviewer's understanding of those arrangements and its proposed corrective action. However, because the funder did not authorise us to read the full governance review, we can assess the validity of neither the reviewer's findings nor the Airport Directorate's objections.

2.16. **Figure 8** presents a timeline for the airport project including key developments affecting the fuel system.

FIGURE 8. AIRPORT PROJECT TIMELINE WITH FUEL SYSTEM DETAILS



Source: Audit St Helena analysis of project documentation

RESULTING IMPACT ON SCHEDULE AND COST

These design changes and disruptions have prolonged the fuel system work and increased its cost. Implementing recent recommendations would mean additional time and cost.

Fuel system completion has been delayed by 63 months

2.17. The DBOH contract between SHG and Basil Read, signed in November 2011 and commencing the following month, targeted June 2015 for the completion of the BFI and AFF (42 months). The series of supplemental agreements and variation orders discussed in paragraphs 2.1 and 2.2 – especially Variation Order 30 incorporating the new FMC's design revisions – pushed this planned completion date out to May 2018 (77 months). While many components of the fuel system have been constructed, neither the BFI nor the AFF have been commissioned as of September 2020, 105 months after work on the airport project began and 63 months after the fuel system's completion date in the original construction programme.

Fuel system payments through May 2020 exceeded the original cost estimate for the system's completion by 149%

2.18. Turning to cost, Atkins estimated in its 2006 report that a new BFI accommodating both aviation and ground fuels would cost £3.14 million. This amount included removal of all existing tanks and construction of nine new tanks, as well as new marine receipt facilities (hose and gantry) and necessary pipelines, among other components. While not directly comparable to later estimates – for example, the AFF is not included, nor is the contractor's mobilisation to St Helena – this estimate associated with the original design provides useful context for understanding what came afterward.

2.19. The 2011 DBOH contract with Basil Read assigned £9.6 million in construction costs to the fuel system. Of this amount, the PMU withheld £0.3 million from payment for cracks found in concrete slabs and other defects. In addition, the PMU estimated that 20% of the airport project's 'preliminary and general' (P&G) costs should be apportioned to the fuel system (£21.8 million), comprising overhead costs such as project management and transport of equipment to St Helena. Finally, the 54 variation orders added another £39.1 million to the fuel system's cost, with Variation Order 30 alone accounting for £36.0 million of that total. In sum, the funder paid the contractor £70.2 million for the fuel system from late 2011 through the DBOH contract's termination in October 2018. According to the Airport Directorate, spending on the fuel facilities through May 2020 brings that total up to £78.3 million[7], which is 149% greater than the PMU's estimate of construction and P&G costs for a completed system in the original DBOH contract (£31.4 million). This expenditure is summarised in **Figure 9**.

[7] May 2020 is the latest month for which actual expenditure was available for our analysis.

FIGURE 9. SPENDING ASSOCIATED WITH THE NEW FUEL SYSTEM THROUGH MAY 2020

	£ million
DBOH contract – construction costs	9.6
DBOH contract – P&G costs (as estimated by PMU)	21.8
DBOH contract costs (subtotal)	*31.4*
PMU actuals – Variation Order 30	36.0
PMU actuals – remaining VOs	3.1
PMU actuals – withheld due to defects	(-0.3)
DBOH contract costs + PMU actuals (subtotal through contract termination)	*70.2*
Additional spending tracked by Airport Directorate (through May 2020)	8.1
Total spent on fuel system	**78.3**

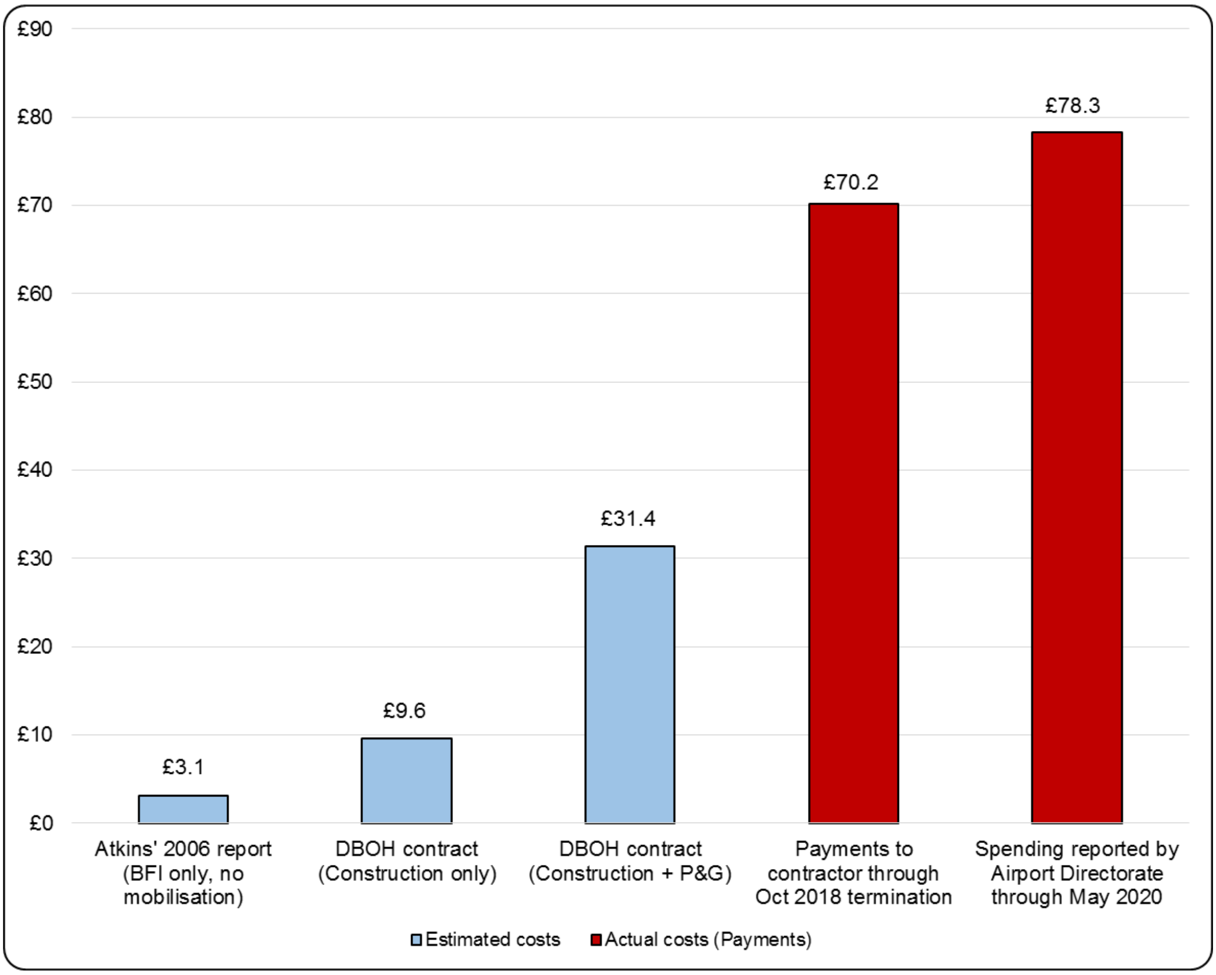
Source: Audit St Helena analysis of PMU and SHG documentation

Remaining costs include commissioning and decommissioning

2.20. Remaining costs for the fuel system include those associated with completing and commissioning both the BFI and AFF as included in the airport project's original programme. Implementing the independent reviewer's recommendations would mean additional time and cost for both commissioning and decommissioning that cannot be estimated until the Programme Board chooses a way forward. Further, there will be costs associated with decommissioning, dismantling and removing elements of the old BFI, which currently represent an unfunded requirement whose responsibility was a source of dispute between SHG and the contractor prior to termination. It is important to note that all of these additional costs relate only to design changes and unforeseen expenses, not the disruptions the project has experienced – but costs associated with the latter undoubtedly exist. For example, it would be difficult to assign a value to lost staff time devoted to managing the contractor's departure and the ensuing fallout, for both SHG and the funder. Moreover, there are labour costs associated with staff assigned to maintain and repair partially completed fuel system infrastructure during the ongoing BFI site shutdown, now in its sixteenth month.

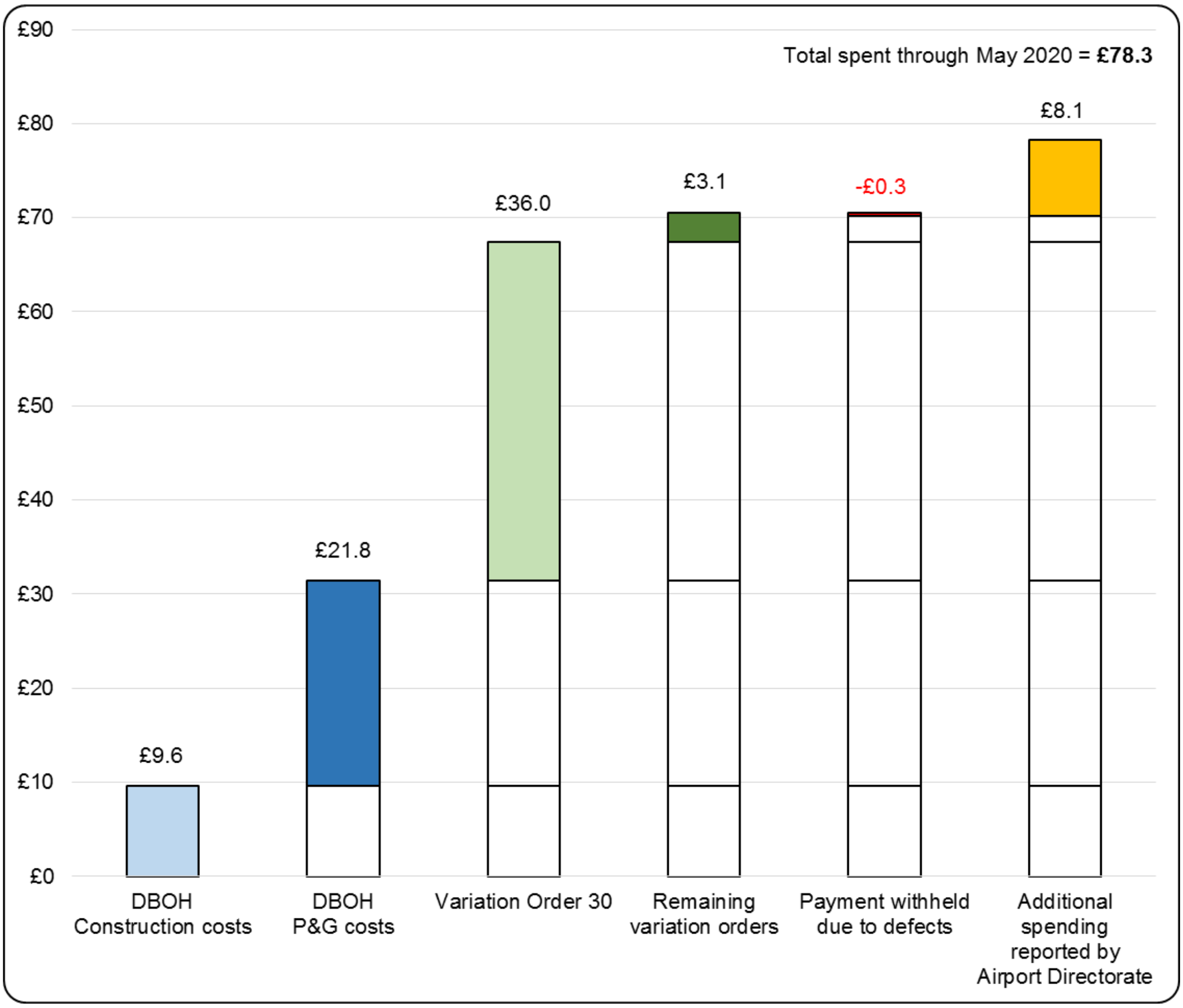
2.21. **Figures 10** and **11** present various aspects of the fuel system's costs and related spending through May 2020.

FIGURE 10. ESTIMATED AND ACTUAL COSTS ATTRIBUTED TO THE NEW FUEL SYSTEM THROUGH MAY 2020 (IN MILLIONS)



Source: Audit St Helena analysis of Atkins, PMU and SHG documentation

FIGURE 11. COMPOSITION OF TOTAL AMOUNT SPENT ON THE NEW FUEL SYSTEM THROUGH MAY 2020 (IN MILLIONS)



Source: Audit St Helena analysis of PMU and SHG documentation

Part Three

Factors That Contributed to Project Setbacks

WEAKNESSES IN PROCUREMENT, CONTRACT MANAGEMENT AND PROJECT OVERSIGHT

A lack of interested bidders and insufficient regard for required specialties imperilled the fuel system project.

3.1. The lack of competition in the airport procurement process meant that SHG and the funder were in a position of weakness relative to the eventual contractor from the start. Going back to the mid-2000s, in addition to Basil Read there was a second interested party involved early in the procurement process, before the global financial crisis necessitated a procurement 'pause' in late 2008. After the procurement was once again allowed to proceed, SHG and the funder sought advice about how to restart the process. They were advised to go back to the original two interested bidders rather than re-open the process to new bidders. However, the second interested party never submitted an official bid, leaving Basil Read as the sole bidder. The fact that its clients had no feasible fallback put the contractor in a strong position during contract negotiation and in its relationship to SHG and the funder during the course of the project. The most obvious example of this is a pre-payment arrangement the contractor negotiated with the funder, described in paragraph 3.4, which adjusted incentives, re-prioritised milestones and complicated oversight on the ground.

3.2. Despite the contractor's problems completing the fuel system, project managers agreed it was proficient at the civil works side of the airport project. But while the contractor was experienced in large-scale mining and construction, it did not have similar experience in the design and construction of fuel facilities. Though SHG was certainly fortunate to be able to bring a large all-purpose contractor to the island, there was not enough emphasis placed on the fuel facilities and the expertise they required. The contractor did not have a dedicated specialist in this role throughout the project, it was not written into the PMU contract, it was not represented on SHG's or the funder's teams, and the fuel management contract was not awarded in a timely fashion (see paragraph 3.14). In its governance review, the independent reviewer highlighted this relative lack of specialist resource for the fuel system, a finding with which the Airport Directorate concurred.

3.3. The full effect of these weaknesses in procurement and contracting will not be known until the fuel system is completed and the full costs tallied in terms of overrun and delay. Much depends on the extent to which SHG and the funder decide to implement the independent reviewer's recommendations to redesign aspects of fuel importation and storage, making certain works either redundant or in need of repurposing. Still, given the gap between the expectations for fuel system status and costs and the reality of where things stand today, it seems clear that those weaknesses impeded the project's intended course.

Project managers attempted to reduce costs through contract provisions and oversight, while mitigating risk through bonding and risk-sharing.

Advance payments meant borrowing costs were avoided

3.4. The airport project as scheduled in the DBOH contract comprised 48 monthly payments, each associated with specific milestones. However, the contractor reached an agreement with the funder whereby the contractor would be paid up front on a rolling basis for completed monthly milestones. This meant the contractor could avoid taking out loans to cover salaries and materials during each stage of project construction, costing it more due to finance charges and thus adding to the overall project cost. Instead, the contractor would estimate what activities it would complete in an upcoming month and how much this would cost in terms of labour, materials and other inputs, then invoice the funder for that amount up to 3 months ahead of the work commencing. The contractor would submit the invoice to the PMU, who would certify it for payment (by the funder) in time to fund the upcoming work. So, for example, if the contractor estimated it would spend £2 million on project activities in April of a given year, it could apply for a £2 million payment in January of that year in the expectation it would receive payment before the beginning of April. According to the PMU, the contractor typically was paid about 2 months in advance.

The PMU monitored defects and the value of work completed

3.5. Given the contractor's pre-payment arrangement with the funder, the PMU's contract management role was focussed on confirming that the contractor's planned work would achieve a given milestone and that a given date would be reached per the agreed construction programme. If both of these conditions were met, the PMU was obliged to certify the contractor's advance application for payment – there was no completed work to inspect. Still, the PMU had the authority to stop work, request repairs and deduct from advance payments for coming work to compensate the funder for defects in work completed to that point. Indeed, the PMU issued a series of non-conformance notices to the contractor, some of which remained outstanding when the contractor entered business rescue. The PMU also continuously tracked the 'earned value' of the project – that is, the total value of completed work compared to the total value of payments to date – to flag any shortfalls.

The funder shared some risks with the contractor

3.6. In the DBOH contract, the funder agreed to pay the contractor in four currencies reflecting the four markets from which the contractor would be buying labour and capital: the rand, the pound, the euro and the dollar. Like the allowance for the contractor to be pre-paid, this scheme was intended to reduce costs as it was less expensive for the funder to buy and hold currency than for the contractor to do so. Exchange rates were unhedged in the project, which added risk to the funder's position: buying and holding currencies could mitigate (hedge) that risk and avoid costs associated with converting one currency for another. The funder chose to hedge rand, which was relatively volatile and due to be used for more than half of the airport project's payments in the design and build phase. On paper this practice saved £1 million, according to the PMU, which was then re-invested in the project as a variation order that lengthened the airport runway among other upgrades.

3.7. The DBOH contract price was based on specified exchange rates, with project costs locked in as they appear in the contract – there was no adjustment for inflation. However, there was a separate £10 million risk-sharing contingency fund in the contract. The purpose of this fund was to manage risk associated with price inflation for (1) fuel consumed by the contractor's ships and construction equipment and (2) explosives used in the earthworks. The fund compensated the contractor for price increases, while savings from price reductions were typically shared between the contractor and the funder.

The contractor provided performance security bonds

3.8. In addition to risk-sharing, the DBOH contract required the contractor to provide performance security in the form of bank guarantees, starting at £21.15 million in the first year of project construction and generally declining as construction progressed. However, after the PMU's earned value analysis demonstrated that what the funder had paid the contractor to date exceeded the value of completed work, the contractor was required to provide millions in additional 'top up' security in subsequent years. Nonetheless, according to the PMU, at termination these guarantees were approximately £2.8 million short of what should have been recoverable.

However, provisions to reduce costs and other aspects of project procurement led to weaknesses in contract management and project oversight.

The contractor departed from the agreed project path

3.9. One practical effect of the funder's pre-payment arrangement from a project management perspective was that milestones in the agreed payment schedule could not be matched up with the funder's actual payments. Instead, activity in a given month may correlate to a payment made as much as 2 months before. Further, this arrangement incentivised the contractor to prioritise milestones outside of the order specified in the project plan, and to move resources from one part of the project to another in order to secure payment for a specific milestone, delaying progress on other milestones. As a result, there was not necessarily any link between a milestone the contractor had to achieve in order to be paid and what was actually being paid at the time. Moreover, given that the contractor was paid for the fuel facilities up front, there was less incentive to finish them at the end.

3.10. The contractor fell behind fairly early in the project, as it began to depart from the agreed milestones in the DBOH contract's payment schedule. An example of this is when the contractor shifted its resources at the airport from (1) the 'combined building' with the control tower to (2) the terminal building in order to meet a specific milestone for payment. While the combined building was on the construction programme's critical path, because it needed to be enclosed and dry for instrument calibration, the terminal building was not. There is evidence throughout the Programme Board meeting minutes of SHG, the funder and the PMU tracking the contractor's progress, asking for updated schedules and displaying other forms of challenge. In spite of this, project delays persisted.

3.11. To prevent the contractor from moving resources around to concentrate on a single milestone at the expense of others that should progress concurrently, the PMU began giving the contractor 'secondary milestones', i.e., multiple tasks to complete within the same milestone. For example, at one point in the project, the payment schedule milestone for Month 30 was "Complete fill to terrace 11" at the airport site. In the final version of the milestones, the Month 30 milestone had been amended to "Complete Rockfill to Level +265 AND BFI Practical completion Tanks 5 to 8".

Duplicate payments may have occurred but were offset by liquidated performance bonds

3.12. After contract termination, SHG employed some of the contractor's fuel system subcontractors for several months in an attempt to maintain project momentum. As such, there was a possibility of 'double payments' to those subcontractors and to suppliers – the first in the form of the funder's advance payments to the contractor, the second in direct payments to make whole any parties unpaid by the contractor. According to the PMU, the contractor was paid all of the original contract price and for additional expenses associated with Variation Order 30, so any payment to directly engaged subcontractors above that amount meant paying twice for the same work. The liquidation of £7.2 million worth of the contractor's performance bonds upon termination of the airport contract has mitigated this risk of duplicate payments.

Procurement delays presented additional challenges

3.13. The timing of certain procurement decisions further exacerbated project management. For example, when the funder appointed Halcrow as the PMU in 2008, it was at the same time that the first invitation to tender went out for the airport contract, so the PMU was able to be involved in the subsequent procurement negotiation (which eventually was 'paused' during the global financial crisis). But Halcrow's second appointment coincided with the appointment of Basil Read as the DBOH contractor. As such, the PMU did not have the full history of what was agreed (formally and informally) between the clients and the contractor. This meant there were times the contractor disputed a contract provision and told the PMU a different agreement had been negotiated before the PMU joined the project, even though the contractor could not necessarily produce any records to substantiate its claims. Further, the PMU never had full details on the cost breakout for the fuel system, which were not included in the DBOH contract. After the contract was signed, the clients (and the PMU) had less leverage with which to obtain these details from the contractor, who reportedly was not forthcoming.

3.14. Similarly, appointing the FMC later than envisioned in the DBOH contract had negative consequences. The original project plan assumed the FMC would be appointed before work began and thus would have input into project specifications. Specifically, Section 14 of the contract required the contractor to "consult and cooperate with the FMC in the design" of the fuel facilities. But fuel facility design and even construction was already underway by the time SHG was able to complete the procurement process and award Penspen the fuel management contract in August 2014. As discussed in Part Two, significant changes requested by the FMC so that it could operate the fuel facilities to its satisfaction (Variation Order 30) contributed to the project's extended timeline and escalated cost.

Coordination among project partners was generally strong with key exceptions.

3.15. Coordination among airport project partners was sufficient to deliver a functioning international airport on a remote island lying outside established shipping channels and far from the mainland UK. This required that partners collaborate effectively across a wide variety of complex project areas, from the design and construction of a commercial wharf, new roads, fuel facilities and an airport terminal to environmental mitigation and the airport certification process. However, coordination suffered in a few key areas. Given the fuel system's integration with the airport project, we would expect such coordination challenges to affect progress on the new fuel system.

Project management roles and reporting relationships were not always well-defined

3.16. As the titular project manager, the PMU reported to the funder but was functionally integrated with SHG in the day-to-day management of the project. In theory, all contract-related communications should have been between the PMU and the contractor. In practice, the contractor's and funder's project leadership developed a close working relationship. While this had obvious benefits for coordination, it also meant that when the PMU required the contractor to remediate some aspect of its work in St Helena, the contractor's local project management could push back through this informal relationship outside of normal channels.

3.17. According to the PMU's final report on the airport project, the remoteness of the site from the project designers was not conducive to a smooth design process. This challenge was exacerbated by the numerous subcontracted designers being spread across South Africa, resulting in a lack of coordination between different disciplines. In addition, because it was logistically easier to reach London by air from South Africa than by ship from St Helena, the contractor's director could fly north for in-person meetings that would not include the PMU. This relative inability to travel to London for project conferences put SHG officials at a disadvantage as well.

3.18. Like the PMU, SHG's Airport Directorate encountered occasional problems caused by project management being divided between SHG, the funder and the PMU. The Airport Director acknowledged that the clients' respective project managers sometimes stepped outside of their normal roles. One example of the latter is on the environmental side. The contractor's environmental management team was very small, so SHAP managers supplemented it with Airport Directorate staff. While this allowed, e.g., critical wirebird habitat to be protected through road redesign, the Airport Director recognised that it also led to a blurring of lines between (1) the contractor in its performance role and (2) the directorate in its project management role.

Cooperation eroded as the contractor faced financial difficulties

3.19. Coordination suffered further as the contractor fell behind on fuel system milestones, saw its financial position weaken and ultimately had its contract terminated. In addition, the contractor and/or its fuel system subcontractor (which also succumbed to business rescue) appears to have retained in its own files – or even discarded – some of the system's documentation, especially related to welding, which is critical to the testing and commissioning progress; SHG has attempted to track down what remains of that documentation. SHG and the PMU also had problems obtaining passwords to access computers after the contractor departed. While these issues can be resolved, there are additional time and cost implications as a result.

Part Four
The Impact on SHG

THE NEW FUEL SYSTEM'S EFFECT ON SHG FINANCES AND FUEL PRICES

If project components prove redundant or unfit for purpose, the value of assets granted to SHG would decline.

4.1. The BFI is not yet complete, and so is recorded in SHG's accounts as an asset under construction. As of March 2019 – reflecting the most recent audited accounts – the total value of assets under construction held by SHG was £76.2 million, most of which was the new fuel system. This made up 27% of the £279 million worth of property, plant and equipment held on SHG's balance sheet at the end of the 2018/19 financial year.

4.2. SHG's accounting policy for assets under construction like the fuel system is to value them at their construction cost (which was estimated to be £78.3 million through May 2020, as shown in Part Two). When the fuel system project is complete and the BFI is commissioned, the value of the BFI and other fuel system components will be transferred to completed assets having been treated as non-exchange revenue received throughout the construction process. Once this happens, the aid-funded infrastructure owned by SHG – including the fuel system but also the airport, new roads and permanent wharf in Rupert's – is required by the International Public Sector Accounting Standards (IPSAS) to be measured at fair value estimated using the asset's replacement cost. In the case of the fuel system, the absence of a market value means replacement cost would have to be estimated by other means. IPSAS standards require the replacement cost to reflect the asset's value in use. This means that when the fuel system is complete, and is transferred to completed assets in the SHG accounts, its components will have to be professionally valued based on SHG's current and future requirements for its fuel facilities.

4.3. If the built fuel system, or any part of it, is no longer needed for the storage and supply of the island's fuel, its fair value per its replacement cost – here the value in use – would be significantly impaired, as this would reduce the future economic inflows to SHG from the use of the asset. In the case of the BFI, the most likely scenario is the asset would have to be re-valued to a level that reflects the smaller installation St Helena may need going forward due to renewable energy initiatives and other developments, as discussed in Part Two.

Ground fuel prices could rise due to lost economies of scale, provisions for asset replacement and the increased cost of fuel handling.

4.4. Ground fuel prices are currently set by SHG, who instructs the current BFI operators, Solomons, on fuel prices after every fuel shipment. Solomons uses a model to inform fuel prices that takes into account the fuel's landed cost, freight, duty, insurance, crown agents fees, and landing fees and charges as well as a degree of mark up. If Solomons wants to increase the price of fuel sold at the BFI, it needs permission from SHG's finance office to do so. Fuel sold at the BFI is then used by bulk-buying customers (like the power plant) or sold on to retail customers at the fuel stations.

4.5. According to the Financial Secretary, a new fuel pricing model will be developed to coincide with the new BFI's commissioning. The model will be vetted by ExCo before its adoption, and will be finalised before fuel orders are placed for the new BFI. While we do not yet know what inputs the new pricing model will consider and how they will be weighted, it is possible that, in the absence of subsidy or other intervention, fuel prices could rise for a number of reasons:

- *The loss of economies of scale derived from larger shipments due to tank containers.* If implemented, the independent reviewer's recommendation to change the mode of importing ground fuels from bulk to tank container would have implications for fuel pricing. Under this arrangement fuel would be imported in small, discrete parcels that could diminish any supply-side pricing discounts derived from the larger, less frequent bulk deliveries that were the foundation of the new BFI's design. In a normal market setting, this cost would be passed on to the consumer through a higher price per litre.

- *Recovering the full cost of replacement could add significantly to the cost of ground fuels.* With large, revenue-driving assets, it is standard practice to apportion part of the revenues gained towards a capital replacement fund that would eventually be used to replace the asset at the end of its useful economic life. For example, if the new BFI is expected to last 40 years, some fraction of the fuel price per litre should be earmarked for the facility's eventual replacement at the end of that 40-year lifespan. During PAC questioning in August 2018, the Financial Secretary noted that if SHG attempted to recover the BFI's sizeable replacement cost over too short a period of time, it would significantly increase the cost of fuel and thus could raise the price per litre at the pump.

- *The new fuel management contract is significantly more expensive than the old one, reflecting the greater risk of handling aircraft fuel.* SHG's 2014 fuel management contract with Penspen for the supply and management of fuel as well as operation of the new fuel system is worth £15 million over 11.5 years, or an average of £1.3 million per year, compared to £0.4 million per year for the current Solomons contract. The new contract is much more costly because of the risks associated with aviation fuel management, which require greater levels of expertise and assurance. However, the full cost of the contract would not be realised until Penspen began operating the completed fuel facilities, which we now know will not occur. Instead, at the August 2020 hearing of the PAC the Airport Director stated that an interim fuel management contract is being pursued with a more limited scope of work, which would replace the current Penspen contract[8] and bring a different FMC to St Helena to focus on aviation fuel handling until the fuel facilities are commissioned. After that interim period, a new procurement process would identify a FMC to manage both aviation and ground fuels as envisioned in the original contract with Penspen. Until the terms of those two fuel management contracts are known – especially the latter one – it is not possible to assess any potential impacts on ground fuel pricing. Further, at the PAC's April 2020 hearing, the Financial Secretary stated that DFID currently contributes £1.2 million in St Helena's annual aid budget to subsidise the price of aviation fuel used by air carriers, which makes ticket prices more affordable and keeps the cost of aviation fuel handling from being recouped by raising the price of ground fuels. In this way, the new fuel management contract's ultimate effect on ground fuel prices could depend on the continuation of this subsidy.

[8] The Airport Director cited 'frustration of contract' as the reason that SHG's 2014 contract with Penspen was coming to an early conclusion. Because the new fuel system infrastructure is not complete, and through no fault of its own, Penspen is unable to fulfil its duties under the original contract.

Appendix One

Our Approach and Evidence Base

Our three key lines of enquiry:	**1. What is the BFI project's status with respect to design, timeline and cost?**	
	Divided into key sub-questions:	• Was the project's original design appropriate to the future needs of St Helena? • What have been the key developments and milestones for the project in the years since the project was designed? • What is the project's current status, cost profile and timeline in comparison to its original plans?
	2. What elements of the project succeeded, what elements failed and what factors contributed to the latter?	
	Divided into key sub-questions:	• How well were lines of authority, responsibility and accountability maintained in contract management and project governance? • How well did the various decision makers and governance bodies coordinate among each other? • How did management make decisions and manage the project to mitigate risk? • Who is ultimately responsible and therefore accountable for the BFI project's shortcomings? • What lessons learnt from this project can be applied to other SHG projects?
	3. What effect is the new installation likely to have on fuel prices, SHG finances and long-term viability?	
	Divided into key sub-questions:	• What would be the accounting implications for SHG in the event that project components prove unfit for purpose? • How will the fuel pricing model take into account the costs of bulk fuel supplies, capital infrastructure and fuel management?
Our evidence base:	We reviewed and assessed the following documentation: the comprehensive file provided to the independent reviewer that included current and historical documents from the Airport Directorate, other project stakeholders and consultants; the project's original milestone payment schedule, comparing it to the project's current status with respect to timeline and cost; the DBOH contract, original and as amended; the Airport Directorate's published project updates; various analyses from the PMU and its final report on the airport project; the independent reviewer's findings along with responses from the Airport Directorate and the PMU; Programme Board meeting minutes from 2014 through 2020; SHG's financial statements and other accounting records; SHG's renewable energy strategy and other plans; transcripts, summaries and memoranda from the PAC, LegCo and ExCo; memoranda and reports from Atkins and other consultants;	

	and media coverage in St Helena and abroad. We collected and analysed data related to fuel costs, fuel pricing, consumption trends and future fuel needs. We toured project sites in Rupert's Valley and at the airport to gain a better understanding of the physical infrastructure being built and managed. We examined relevant work from the UK's National Audit Office and guidelines set by the International Public Sector Accounting Standards Board. Throughout our work we interviewed and corresponded with SHG leadership and officials in the Airport Directorate and PMU, among others. Near the conclusion of our work we met with officials from DFID to discuss our findings and solicit their comments before we finalised the report's content. We conducted our work from August 2019 through July 2020.
Our conclusion:	Much of what has gone wrong on the fuel system project has been outside of SHG's direct control. While it is true that SHG through the Airport Directorate co-managed the project with the contractor, the funder, and the PMU, the latter party was responsible for monitoring and incentivising the contractor's performance through milestone payments. Further, the project's governance structure shared responsibility for ensuring that the project stayed on course among the Programme Board, SHG, the funder and the PMU. Finally, SHG was not responsible for the contractor's entrance into business rescue nor for the problems that followed from that development. Assessing the value for money to SHG of the new BFI and wider fuel system project is less straightforward than a typical project or programme wherein the funder is also the direct beneficiary. In this case, the funder made each of the milestone payments for project construction, with SHG's contribution consisting primarily of (1) land to site the new roads and facilities, and (2) staff time for project design and management. Given the value of what the funder has transferred to SHG thus far – in particular, a modern commercial airport on a remote island more than 4,600 miles from London – SHG has benefited from its participation in the airport project. Narrowing the lens to focus on the fuel system component, it is clear that whether or not aviation fuel is ever stored at the BFI, SHG will have been granted all the necessary components of a new ground fuel BFI to replace its aging diesel and petrol storage facility. This has a high value for the island even if SHG is carrying larger-than-necessary storage tanks on its books due to fuel demand changing since the BFI's original design. However, whether the new fuel system's value in use will ever equate to the £78 million spent – with millions more to come – is highly questionable and indicates that value for money will not be secured from this significant investment of public funds. In the overall evaluation of the BFI and wider fuel system, officials from both SHG and DFID should consider what else could have been done with any funds over and above the lowest cost alternative to the current fuel system that would accommodate aviation fuel. This question is especially pertinent if, out of the design options currently under consideration following the independent review, SHG proceeds with the reviewer's recommended option that results in costly works such as the Jet A-1 storage tanks at the BFI and the new fuel gantry at Bay Side being dismantled without ever being used.

Appendix Two
Recommendations Summary

Number	Recommendation
1	Work with DFID to publish an expected timeline for resolving outstanding design issues at the new BFI and AFF
2	Ensure that the governance arrangements for the remaining fuel system work incorporate the lessons learnt from those arrangements' shortcomings thus far
3	Obtain a valuation of the new fuel system for accounting purposes once construction is complete
4	Keep businesses and the public informed about the new fuel pricing model so that they can prepare for any future changes in fuel costs