

# The Value of having a Helipad at The Balfour Hospital in Kirkwall, Orkney



[Ref. 1]

An Interdisciplinary Project for the  
Scottish Science Baccalaureate

by  
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## Introduction

Recently (June 2019), a new hospital was opened in Orkney [Ref. 2], located at its capital Kirkwall. Original plans for the new hospital included a helipad on site (see Figure 2); however, it was later decided that there should not be a helipad at the hospital (see Figure 3) and that Kirkwall Airport (3.3 miles away) would continue to be used as the place for the air ambulance helicopter to land.

The aim of this project is to investigate the value of having a helipad at The Balfour Hospital in Kirkwall, Orkney, and to evaluate the impact it could have on the emergency healthcare of the residents of Orkney's remote outer North Isles, a population that relies on ferries and planes for transport to Kirkwall.



Figure 1 - The outer North Isles of Orkney, filled-in in orange [Ref. 3], rely on the Scottish Ambulance Service air ambulance helicopter to serve them in an emergency.

## Background

The Balfour Hospital was originally planned to be built on a site at Corse West on the outskirts of Kirkwall [Ref. 4], however, this was later changed as the “people of Orkney” wanted the hospital to be built at Scapa, where it stands now. According to the Chairman of NHS Orkney at the time (John Ross Scott), whom I interviewed, there was a vote in which Scapa was overwhelmingly voted for to be the home of the new hospital [Ref. 5]. He suggested Scapa was preferred because the area is close to where the old hospital was.

At this time, the site plans for all the proposed hospital sites included a helipad [Ref. 6]

After the Scapa site was formally selected, the helipad was dropped from its site plans. (See Figures 2 and 3.)



Figure 2 - Proposed site layout of The Balfour Hospital, at Scapa site (H is for helipad) [Ref. 6]



Figure 3 - Final layout of The Balfour Hospital, at Scapa site [Ref. 7]

Mr Scott maintains this was mainly due to the extra costs which would have been necessary for removing overhead power cables to allow a helicopter to land at the hospital.

He also stated that the medical professionals working at The Balfour Hospital did not think a helipad would be necessary, considering how close the airport is to the hospital. They thought that the money could be more usefully deployed in other areas of the hospital.

On being questioned by the Orkney MSP, Liam McArthur [Ref. 8], the Chief Executive of NHS Orkney at the time, Cathie Cowan, provided him with a list of the key issues that determined the decision not to install a helipad at the hospital. The following are the ones relevant to the service serving Orkney's outer North Isles:

- “
1. The need to refuel at the airport - cannot do return flight without refuelling, introduces potential delays or at worst patients landing elsewhere.
  2. Environmental health advised they would cap the number of flights that could land at the helipad and limit this to “life and limb” flights to minimise noise disruption to residents living next to new facility.
  3. Pilots advised that given we are 10 minutes away from the airport they would prefer to land there with all the additional safety measures in place.
  4. Electricity poles and cables are a flight hazard on our site and all would have to be rerouted.
  5. The helipad would support about 80 flights, but the issues set out above would still apply, i.e. refuel at the airport.
  6. Currently patients landing at the airport arrive at the hospital in under 10 minutes.
- ”

Regarding point 6, however, Mr. McArthur's casework [Ref. 8] has revealed that this is clearly not always the case and that the availability of land ambulances to meet an air ambulance flight has been a problem on numerous occasions. Concerns have been highlighted by air ambulance crews who remain unavailable to respond to other call outs while they are awaiting the chance to hand over a patient.

## Procedure

To obtain other background information I contacted our local newspaper, “The Orcadian” for relevant articles from their archive.

I contacted Orkney’s MSP, Liam McArthur [Ref. 8]. I had seen in his “Scottish Parliament Winter Update 2020” [Ref.9] that there was an article entitled “Raising concerns around Orkney’s land ambulance” which quoted him saying “It is clear that a single land ambulance covering the Orkney Mainland and linked isles is inadequate. It puts the public at risk and places unfair pressure on ambulance crews as well as out of hours GPs.” As a land ambulance is currently required to transport patients coming into Kirkwall by air ambulance, I thought that this was extremely relevant.

I also organised a video call with the former Chair of NHS Orkney, Cllr John Ross Scott, who was in post at the time the new hospital was being planned to be built, in order to find out what the actual reason was that the helipad was not installed there.

I sent an email survey to medical professionals working in the North Isles of Orkney for their views on having a helipad at The Balfour Hospital. (See Appendix.)

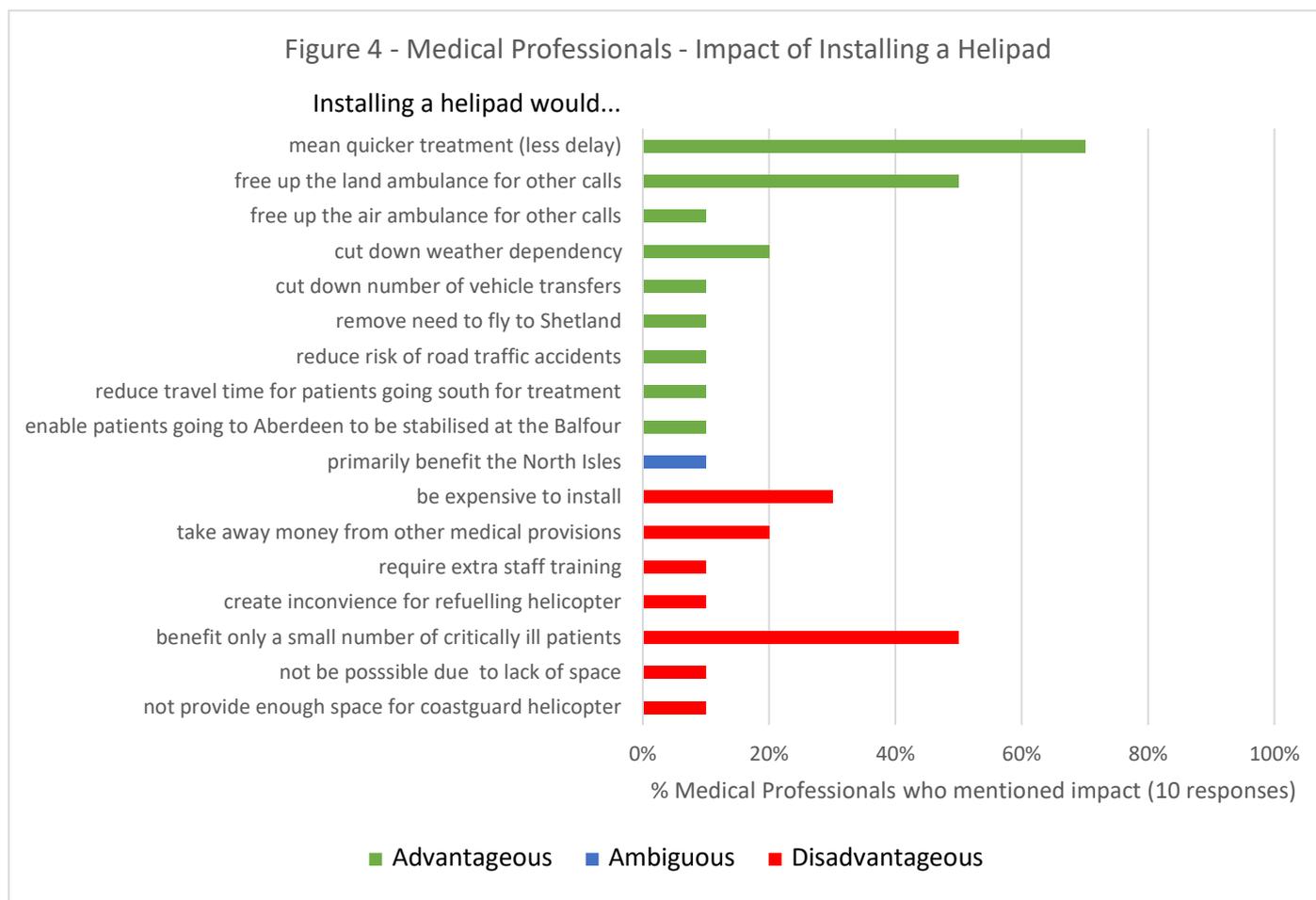
Lastly, I wanted to know the opinions of the residents of Orkney’s outer North Isles. I had a letter published, which included a survey, in the North Isles’ newsletters: “The Sanday Sound”, “Eday Sound”, “Stronsay Limpet” and “The Rousay, Egilsay, Wyre Review” as well as posting the survey online, using North Isles’ island Facebook pages. (See Appendix.)

I felt it was important to have open questions in my survey because I did not want to limit the response by prejudging what issues would concern the survey-takers, nor introduce bias through my choice of questions.

To analyse the responses from my survey, I identified the key points mentioned by each individual survey-taker and calculated the frequency of each point across all island resident survey-takers and medical professional survey-takers. These are displayed as bar charts in Figures 4 and 5.

## Results

### Views of medical professionals involved in providing healthcare in Orkney's outer North Isles



Going over the points made by the medical professionals who responded:

A patient would receive treatment quicker with less delay / Would cut down weather dependency / Would reduce travel time for patients going south for treatment / Would remove need to fly to Shetland / Would cut down number of vehicle transfers / Would enable patients going to Aberdeen to be stabilised at The Balfour

The time that elapses from making a phone request for an air ambulance to the sick patient arriving at The Balfour is typically around 1.5 to 2.5 hours. This can vary depending on whether the helicopter is already in the vicinity, the weather, if the service is already busy and if the call occurs around a shift change of helicopter crew. Assuming a land ambulance is at the airport, ready to pick up a patient, that vehicle transfer can take around 10 minutes. However, the land ambulances could be in use, and therefore can prolong the total transfer time by 1 to 2 hours.

If the patients from the outer North Isles did not have to rely on a land ambulance transferring them from the airport to the hospital, there is less risk of missing a time window

for treatment. For example, someone who has been airlifted to go to The Balfour Hospital for a (ischaemic) stroke can get clot-dissolving medication called Alteplase which restores blood flow to the brain. However, if the patient has not reached the hospital within 4.5 hours it is generally not recommended for use, as it is not clear how beneficial it is after this time. [Ref. 10]

Any patient already in The Balfour Hospital needing to be transferred to another hospital south would also have the benefit of reduced travel time and fewer ambulance transfers if they were able to travel by air ambulance.

According to Dr Reitzug [Ref. 11] “The transfers are well recognized as potentially the most hazardous part of the journey. That is when things go wrong — the time of highest risk to an unstable patient. Adding two transfers —from ambulance to aircraft and back to an ambulance — unacceptably doubles the risk. In clinical conditions, where time is critical, there is the additional problem of time loss involved in each transfer. Considering this, the ‘no clinical benefit to including a helipad’ statement is utter nonsense.” From Dr Reitzug’s experience he says: “These transports with the two extra ambulance transfers were the most harrowing, had the greatest stress to the patients, and, understandably, the worst outcomes. Orkney with its geography has condemned us to use air travel to access tertiary care in Aberdeen. Unavoidably, there will be severely ill patients who may have multiple tubes — IVs, splints, monitors, and sometimes even a ventilator attached to them, as they are transferred from their bassinette or specialized gurney into the ambulance or aircraft,”

To quote one of my survey-takers: “In trauma situations such as Afghanistan, where medical centres and field hospitals were being built from scratch and helicopter evacuation was the safest and fastest method of getting a patient to the hospital, we tried to locate the medical centre and hospital close to a suitable HLS (heli landing site), in order to minimise transfer time to resuscitation, diagnostic (X-ray, lab, CT etc) and theatre facilities. In this country, and in much of USA and W Europe, major trauma centres have helipads adjacent to or on top of the hospital (e.g. London), and it is increasingly being regarded as a prerequisite. In Orkney, [land] ambulances are at a premium and there will not always be one to await the arrival of a heli, esp if it is tied up on another task. It might therefore have been safer to have factored in a helipad next to the Balfour at the time of the hospital redesign.”

There have been situations where The Balfour Hospital had been warned to expect a patient, however a paramedic felt they could not risk a delay at the airport and therefore the patient was transported to Shetland instead, where they have a helipad at their hospital.

A former paramedic suggested to me that the helipad could be of benefit to anyone passing The Balfour Hospital. A patient could be stabilised on the way to e.g. Aberdeen by drop-in at The Balfour, however, this would only be efficient if there is very little risk of delay. This could be of extreme benefit to a patient’s life. This would only work with a helipad on site.

[Would free up the land ambulance/air ambulance for other calls / Would reduce risk of road traffic accidents](#)

If there were to be a helipad close enough to The Balfour Hospital that a patient would not require a land ambulance transfer, this would free up the land ambulance for dealing solely with emergencies on the Mainland of Orkney.

Removing the need for an extra vehicle transfer by land ambulance also reduces delays that could be caused by road traffic congestion or accidents.

In Orkney, people have experienced having to wait at the airport due to a land ambulance delay. This also holds up the air ambulance. There have been situations where a paramedic from the air ambulance crew has had to travel in the land ambulance with the patient. This means anyone who requires the air ambulance somewhere else in the North of Scotland is left waiting until that paramedic returns to the airport.

This shows that not having a helipad installed at The Balfour Hospital not only affects those living on the North Isles of Orkney, but also anyone requiring the land ambulance on Mainland Orkney and anyone in the North of Scotland requiring the air ambulance service.

Would be expensive to install / Would take away money from other medical provisions / Would benefit only a small number of critically ill patients / Would require extra staff training

In the view of most of these survey-takers, the driving factor as to why the helipad was not installed was cost.

“There are always budget restrictions on any project and if a helipad were to be built its cost would have had to come from somewhere else in the hospital design, e.g. A&E, theatre, wards, management offices, etc.” Considering the small number of critical transfers from the outer North Isles of Orkney, one might say that it is medically justified to have the money that could have been used for the helipad used for something elsewhere in the hospital, either to improve existing services or introduce new ones, in both primary and secondary healthcare.

Maintaining the helipad and training staff would also have cost implications.

“One problem that I suspect may have influenced the discussion of this [on whether the helipad should have been installed at The Balfour Hospital] at the time may have been that the build project would have had to pay for the construction while any savings would have accrued mainly to the Scottish Ambulance Service. Clashes due to competing budgets are, even with the best of intentions, a common theme in any large organisation such as the NHS.”

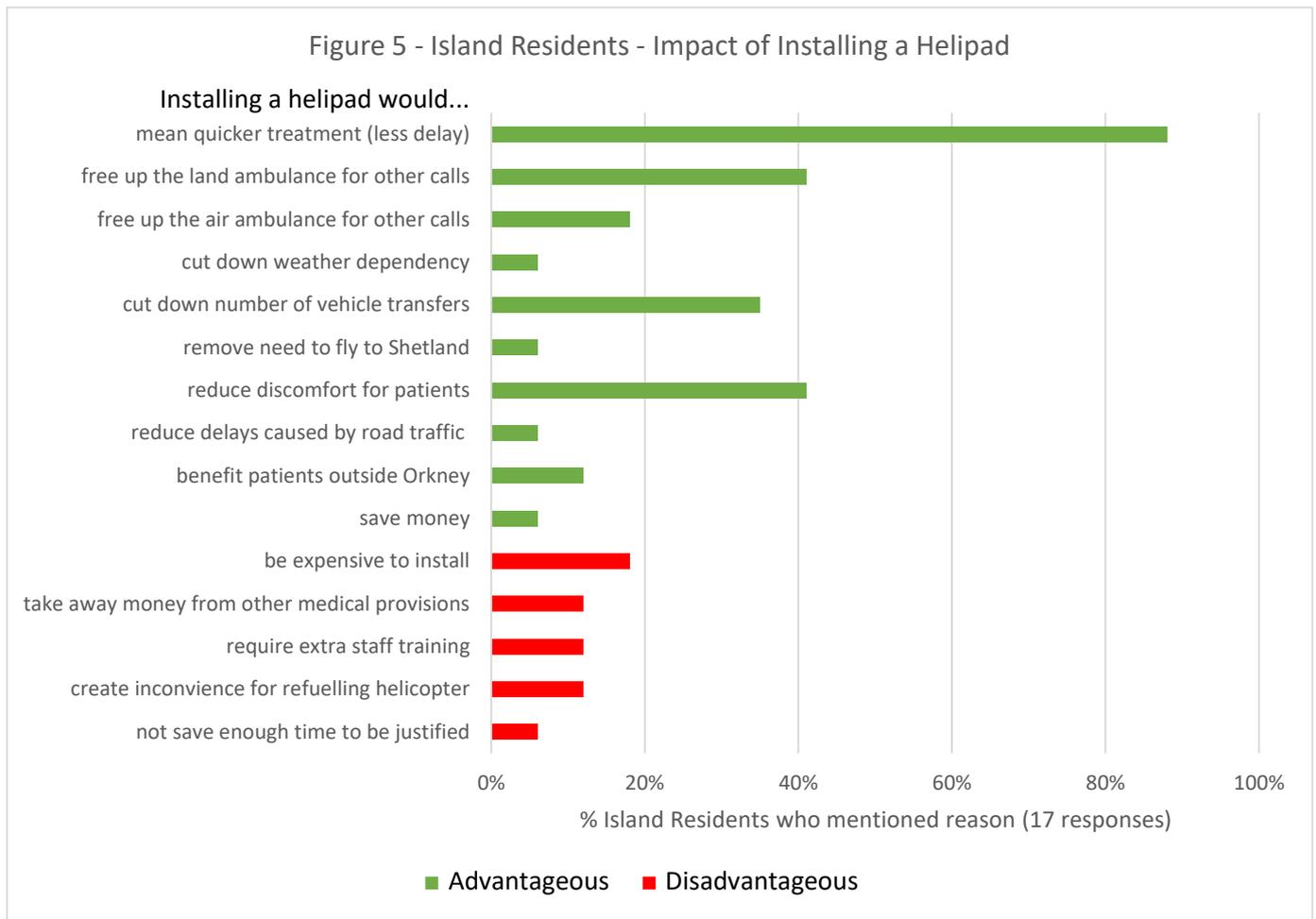
Would be an inconvenience for refuelling the helicopter / Would not provide enough space for Coastguard helicopter

Refuelling would be an inconvenience for the pilot as they would have to travel to the airport, potentially also causing a time delay if they have been called to pick someone up.

When sending emergency cases into hospital, the Scottish Ambulance Service or, in certain circumstances, the Coastguard helicopter, is used. Considering the cost of provision and the possible problem with space and where to site the helipad, it could be possible that the helipad is not big enough to accommodate the Coastguard air ambulance (which is much bigger than the Scottish Ambulance Service air ambulance). This could make the helipad irrelevant in emergencies where the coastguard helicopter is being used.

Where possible, non-urgent transfers to The Balfour Hospital from the outer North Isles of Orkney are done by ferry or fixed wing aircraft, in the latter case, of course, they would have to land at the airport and rely on a land ambulance to transfer them

Views of residents of Orkney’s outer North Isles reliant on the air ambulance service (patients and potential patients)



As can be seen by comparing Figs. 4 & 5, most of the island residents’ views corresponded to those of the medical professionals, however there were some additional points:

[Would reduce discomfort for patients / Would reduce delays caused by road traffic](#)

One of the additional points which I considered to be very valid is the discomfort to patients during a vehicle transfer from the airport to the hospital in the land ambulance. The route was described as “bumpy and bendy” and has caused them pain in the past. This would be most concerning in the case of a spinal injury. Repeated transfers across vehicles and the “bumpy and bendy” road risk that a patient may sustain damage to their spinal cord, which could result in permanent paralysis. If the helicopter were able to fly directly to the hospital, that risk would be significantly reduced. Removing this vehicle transfer via land ambulance would also reduce any delay that could occur due to other road traffic.

[Would save money](#)

Having a helipad at The Balfour Hospital could potentially save money. The airport would not be required to open at unsociable hours to receive a helicopter and fewer staff would be needed to transfer a patient directly to The Balfour Hospital.

## Conclusion

The overall benefit from the addition of a helipad would be the possible improved patient outcomes from faster transfers. However, patients' comfort and potential hazards arising from being disconnected and reconnected would also be addressed by a reduction in vehicle transfers. There could also be potential savings from reduced use of land ambulances, and savings on airport landing fees and the airport not having to be open during antisocial hours.

Having a helipad installed at The Balfour Hospital not only affects those on the outer North Isles of Orkney, but also anyone requiring a land ambulance on Mainland Orkney, and anyone in the North of Scotland requiring the air ambulance service. One survey-taker considered the fact that it would primarily benefit those living on the outer North Isles (as opposed to residents of other places) as a disadvantage. However, I believe this would not be the case, as it could potentially benefit everyone in the North of Scotland.

After having completed this study, analysed the results, and read the comments provided by the medical professionals, I, personally, am persuaded of the benefit of a helipad being sited at The Balfour Hospital, just like 94% of the island resident survey-takers. However, a few survey-takers made the comment that the money required for installing a helipad now, at this late stage, could probably be better spent on improving existing services or introducing new ones.

It could be argued that outer North Isles' patients are currently disadvantaged in relation to patients on Mainland Orkney due to the approximately 1.5 to 2.5 hour transfer time to The Balfour Hospital. A helipad would help address this. However, one could also say that those living on the outer North Isles already have a large amount of money spent on emergency transportation to The Balfour Hospital. However, as a medical professional stated: "...the one-off cost of a helipad seemed, and still seems to me, relatively small in addition."

Those living in the outer North Isles and those considering moving to the outer North Isles must have full confidence in the local medical services, this includes their ability to access medical care, especially in emergencies. For this reason, I am not surprised by the significant number of locals in the North Isles who stated they wanted a helipad installed.

The main disadvantage of installing a helipad would be the cost. After having a conversation with Cllr John Ross Scott over video call, it is clear that this was the driving factor to not including one, as there would have been a significant cost associated with removing the overhead power lines around the new Balfour Hospital. "...what value is on a patient's life, though?" [Survey-taker comment].

However, a programme is currently being undertaken by Scottish and Southern Electricity Networks to remove overhead cables and reinstall them underground, so it is likely that this will be happening anyway around The Balfour Hospital in due course, thus removing that particular cost factor.

Something that was never taken into account by NHS Orkney at the time, although it existed [Ref. 12], was a charity called the HELP appeal, which is a charity which exists "to provide funding towards the most appropriate base infrastructure, where and when it's needed" for helipads.

To quote from their website "In an emergency, when time is of the essence, being able to land an Air Ambulance seconds away from specialist care, is crucial. For many patients, a helipad could represent the difference between life and death." [Ref. 13]

## Evaluation

Approximately 2% of the adult population of the Outer North Isles of Orkney responded to my survey. Which I think is reasonable since I did not do a direct mail shot, but rather relied on them seeing my notice in their local island newsletter or on the online equivalent. With hindsight, a better, but more expensive, approach would have been to have sent a flyer around to each household or perhaps use Radio Orkney to alert more people to the survey.

This contrasted with the response quota of the medical professionals and local politicians that I contacted directly by email, where I got almost 100% response. I am pleased that they took my survey seriously and responded objectively. The response from the island residents was more likely to be subjective and reflect genuine fears that they have for their wellbeing in the event of a medical emergency.

I felt it was important to have open questions in my survey because I did not want to limit the response by prejudging what issues would concern the survey-takers, nor introduce bias through my choice of questions.

I am aware that the identification of the various points when I came to analyse the responses could be subjective, so I was careful to be as objective as possible.

The island residents were more likely to respond to my survey if they had themselves had, or knew somebody who had had, a bad experience. I noticed that many of my responses came from the residents on Stronsay (41%), I believe this is because Stronsay had been particularly affected by air ambulance issues. They had held meetings in the past discussing the delivery of emergency services to island residents. "Concerns were raised in the context of delays in getting some isles patients transferred from Kirkwall airport to the Balfour Hospital due to land ambulances not being available." [Ref. 14]

47% of my island residents survey responses came from Sanday. I believe this is probably because I live on that island, and, because people know me there, they were more willing to contribute.

If I had had more time, I would have republished my survey on those islands from which I got a poor response quota in the hope to get more responses.

Overall, I feel that the responses were representative of the opinions of the groups surveyed, however, more responses from the island residents would have improved confidence in the results.

## Acknowledgements

Dr Erland Johnston (Supervisor at Kirkwall Grammar School)

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Councillor Heather Woodbridge

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Dr Neal Gillespie  
Dr Stephen Murray  
Dr Roger Neville-Smith  
Beverley Whitman  
And the other medical professionals (who did not wish to be named).

Mark Harcus ("The Orcadian")  
Irene Brown ("The Sanday Sound")  
Bruce Fletcher ("Stronsay Limpet")  
Lorna ("Eday Sound")  
Kayleigh Tipper ("The Rousay, Egilsay & Wyre Review")

The residents of the North Isles who responded to my survey (not named to maintain their confidentiality).

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## Appendix

Survey email – sent via email to medical professionals working in the outer North Isles

Hello,

My name is Frideswide Clackson. This year, in my last year (S6) at KGS, I am doing the Scottish Science Baccalaureate, for which I must complete an interdisciplinary project. In my project, I am exploring the reasons why it may or may not be useful to have a helipad at the Balfour Hospital in Kirkwall, Orkney.

In editions of “The Orcadian” newspaper published in February 2018, the following conflicting opinions were expressed by medical doctors on the decision not to include a helipad at Kirkwall’s new Balfour Hospital:

1. Dr Henry Reitzug (retired paediatrician) said: “NHS Orkney have been dangerously wrong in their decision not to build a helipad at Orkney’s new hospital.”
2. Dr Kevin Woodbridge (retired GP) said: “I’m quite comfortable with the decision the NHS board has arrived at.”

As a medical professional yourself, who may well have made transfers of patients to the air ambulance, I am interested in your thoughts on the matter. From a rural medicine perspective, what is your opinion of the value or otherwise of having the air ambulance helicopter actually able to land at the hospital, rather than having to rely on a land ambulance to transfer the patients from the airport to the hospital?

If you know of any other medical professionals (active or retired) who may also have opinions on this matter, please let me know.

Thank you in advance for your assistance, and I look forward to hearing from you.

Kind regards,

Frideswide Clackson

1 – [Ref. 11]

2 – [Ref. 15]

Survey letter – sent to North Isles residents via island newsletters and via social media

**Would there be value in having a helipad at the Balfour Hospital?**

This year, in my last year (S6) at KGS, I am doing the Scottish Science Baccalaureate, for which I must complete an interdisciplinary project. My project is called "The value of having a helipad at the Balfour Hospital in Kirkwall, Orkney" where I am exploring the reasons why it may or may not be beneficial to have a helipad at The Balfour.

On early plans for a new Balfour Hospital, a helipad was included for the use of the air ambulance helicopter. However, when the new hospital was built, no helipad was included. Consequently, the air ambulance helicopter has to land at Kirkwall Airport, and the patient is transferred from there to the Balfour Hospital using a land ambulance.

1. From your experience as a patient, or from hearing about the experiences of others, do you think a helipad should have been included at the new hospital?

2. What would be the advantages/disadvantages?

3. Do you have any other comments?

Please get in touch with me via my email (frideswidec@gmail.com) or by post at West Manse, Sanday, Orkney, KW17 2BN

All contributions will be treated in the strictest confidence.

Thank you in advance for your help,

Frideswide Clackson

Contact details for sending comments and feedback to:

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