REPORT INTO THE BREAKDOWN OF THE MV HAMNAVOE

CONTENTS

1. TIMELINE OF EVENTS

1.1 The following table sets out the key events during the period the MV Hamnavoe was out of service.

25 April 2013	Engine failure experienced on 7 pm sailing from Scrabster to Stromness. Vessel continues to Stromness on a single engine and is then taken out of service due to serious mechanical failure.
27 April 2013	Engine manufacturer technicians arrive from Germany to inspect the vessel.
1 May 2013	Hamnavoe sails to Rosyth for repairs, arriving on Thursday, 2 May at the Babcock Marine yard.
2 May 2013	The freighter, MV Helliar begins service on Scrabster – Stromness route taking cars and freight traffic.
3 May 2013	Repair work begins and continues 24 hours per day by a team including 11 Finning Mak engineers.
9 May 2013	Damaged crankshaft removed (new part set in place on 13 May).
13 May 2013	Minister for Transport visits Babcock Marine to inspect ongoing repair work.
15 May 2013	Lube oil testing of engine begins to ensure replacement mechanism operating correctly.
19 May 2013	Successful sea trials carried out at sea after leaving Rosyth
20 May 2013	- Hamnavoe arrives back in Stromness - Vibration damper problem identified - Replacement damper dispatched from Germany
21 May 2013	Replacement damper arrives at Stromness and repairs begin
22 May 2013	Following replacement of vibration damper, sea trials take place
23 May 2013	Hamnaove resumes normal service

1.2 From the point at which the Hamnaove suffered mechanical breakdown to the point at which the vessel resumed normal service was just less than one month.

1.3 From 2 May, however, the freighter MV Helliar operated on the route at close to the normal timetable (albeit with a 2-hour sailing as opposed to 1.5 hours). While this vessel was limited to a maximum of 12 passengers, she could take cars and commercial vehicles easing pressure on the other ferry operators, especially Pentland Ferries, running a parallel service.

2. MECHANICAL SUMMARY

Primary Problem: Crankshaft on the Starboard Main Engine

2.1 The MV Hamnavoe suffered a serious mechanical breakdown. On the evening of Thursday, 25 April at 1948hrs on the 1900hrs sailing from Scrabster to Stromness, there was a failure of the crankshaft on the Starboard Main Engine.

2.2 The contract with Serco NorthLink explicitly covers what will happen in the event of vessel failure. The contract states that Serco will respond to any vessel failure in an efficient and effective way, making best use of their existing maritime expertise and industry contacts. This includes scope for different vessels to be brought onto the routes.

2.3 Following the breakdown, a range of technical inspections were undertaken by representatives from:

- Lloyds - Serco NorthLink's class surveyors;
- GL Noble Dentons - the main Casualty Investigator appointed by the Hull and Machinery Club (an insurance association that provides cover for ship owners or operators); and
- MaK – the vessel's engine manufacturer.

2.4 Their assessment was that the crankshaft was irreparable and that the cause of the failure was not as a consequence of lack of maintenance, sabotage or forces external to the engine. Within days of the cause of the engine failure being identified, the Hamnavoe was moved to Babcock Marine at Rosyth to have the damaged Starboard Main Engine repaired.

2.5 From 28 April, a team of engineers worked round the clock to effect the necessary repairs. These included 11 specialists from the German engine manufacturer, Caterpillar MAK as well as the Babcock engineers and Serco NorthLink's own engineering crew.

2.6 Replacing the damaged crankshaft was a major and complex operation. The damaged engine had to be stripped down and all component parts stored in preparation for rebuild. Pipes supplying water, electricity and other essential services had to be rerouted and a hole cut in the car deck to allow the damaged crankshaft to be lifted out.

2.7 The new 4.5 ton crankshaft then had to be slowly lowered into place and then all the other component parts of the Starboard Main Engine reassembled, the supply pipes reconnected and the car deck repaired. Sea trials took place on Sunday, 19 May and the Hamnavoe sailed for Orkney that night arriving in Stromness on Monday 20 May. However, shortly after arrival in Stromness, a separate mechanical problem emerged.

Figure 1. Serco NorthLink Technical Manager, Chris Adams with the replacement crankshaft.

Secondary Problem: Damage to Vibration Damper

2.8 On the Hamnavoe's arrival back in Stromness, the ship's engineers discovered damage to one of the components, a vibration damper. Dampers are used to "damp" or reduce the frequency of oscillation of the crankshaft 'free' end. While fitting a new damper would only take around 18 hours, a new component had to be sourced from the engine manufacturers, Caterpillar Mak in Germany. The replacement was dispatched from Germany at 5pm on Monday 20 May and arrived at Stromness at 4pm on Tuesday, 21 May.

2.9 The damper had been opened up for inspection as part of the earlier crankshaft repair. Finning MAK had been asked to inspect the unit, as it had been suspected as being a contributory factor in the crankshaft failure. The damper had been sent to Finning's Component Overhaul Centre in Leeds, where it was dismantled, inspected and rebuilt. The damper had been inspected in Leeds by both Serco and separately by their Lloyds Surveyor and was subsequently returned to Rosyth Other than sealing 'O' rings, no components were replaced; the unit was deemed fit for further service and returned to Rosyth for fitting to the ship. Under the project management of the Finnings MAK team – it was refitted to the crankshaft as part of the engine rebuild.

2.10 The vibration damper is manufactured by an Austrian company, Geislinger. This component would normally be replaced at 60,000 hours running. At the time of the Hamnavoe's initial crankshaft failure 41,003 hours were recorded on this damper, well within operating tolerance.

2.11 The new damper was in place in time for sea trials on 22 May and the Hamnavoe resumed normal service the following day.

3. CONTINGENCY MEASURES

Working with Other Operators

3.1 The breakdown occurred at 7pm, Day 1. The engine was opened up and by 2pm on Day 2 the full extent of the damage was known. Within minutes of this, Stuart Garrett called Pentland Ferries to discuss their available capacity.

3.2 Serco worked with other operators to review alternative options for travel. Pentland Ferries agreed to put on additional sailings that had the capacity and flexibility to cope with the expected additional number of passengers. This arrangement has worked well throughout the whole period the Hamnavoe was out of service.

3.3 Pentland Ferries moved to operating four sailings per day in each direction between the mainland (Gills Bay) and Orkney (St Margaret's Hope) on Friday and Saturday, with three sailings a day Sunday to Thursday. Serco worked well with Pentland Ferries on every aspect of the service including assisting with handling bookings on behalf of the commercial operator.

3.4 Alternative transport to the mainland was also still possible via Serco NorthLink's timetabled service between Kirkwall and Aberdeen. Loganair was, of course, operating on its summer timetable during this period with flights between Kirkwall and Aberdeen, Edinburgh and Glasgow.

Courtesy Travel Arrangements

3.5 Serco moved swiftly to provide courtesy travel to and from the ports where the Pentland Ferries vessel berths. Serco staff helped passengers to book alternative options and welcomed them to their offices in Scrabster, Stromness, and at Kiln Corner in Kirkwall.

MV Helliar Brought Onto Scrabster – Stromness Route

3.6 At 1600 hrs on 2 May, one of Serco's two freight vessels, the MV Helliar, commenced operating on the Scrabster – Stromness route. This followed alterations to the Queen Elizabeth berth at Scrabster Harbour. Two return sailings operated each day on a broadly similar timetable to the scheduled service. The vessel made the crossing in 2 hours as opposed to the anticipated 2.5 hours. This compares to the 1.5 hour crossing time for the Hamnavoe.

3.7 This provided a major increase in freight/ vehicle carrying capacity across the Pentland Firth. Working in concert with Pentland Ferries (and also John O'Groats Ferries) Serco thereby ensured that there was more than enough capacity to meet demand in terms of passengers, vehicles and freight including anticipated spikes in demand such as for the Orkney Folk Festival which ran from 23 to 26 May.

3.8 Serco had requested alterations to the Scrabster linkspan to accommodate the MV Helliar stern door drop. This was facilitated by Scrabster Harbour Trust and required the removal of a fixed fender to be replaced by a Yokohama Fender.

4. SEARCH FOR A REPLACEMENT VESSEL

The Shipping Market

4.1 Immediately it was established that the Hamnavoe would have to go off service, Serco NorthLink sought to locate a replacement vessel. From the outset, however, shipping brokers advised that the likelihood of success was slim. There are a number of reasons for this, specifically:

- the depressed state of the market which has seen a lot of tonnage lost recently;
- the very short lease period being sought was both logistically and financially impractical and therefore unattractive to vessel owners;
- the very high regulatory standards on vessels operating in the difficult waters of the Pentland Firth;
- the berthing and loading infrastructure at the ports of Scrabster and Stromness;
- the Hamnavoe was purpose built for the Scrabster – Stromness route making a suitable replacement vessel especially hard to find as any replacement would have had to conform to a wide range of strict technical specifications.

Assistance from CalMac and CMAL

4.2 CMAL assisted in this effort engaging Clarkson Shipbrokers, Simonship and Masons Shipbrokers to help in the search for a suitable replacement vessel.

4.3 CalMac were asked to consider the potential for taking a vessel from one of their routes for temporary use on the Scrabster – Stromness route. Although 4 options had originally been researched, 3 out of the 4 were not suitable for a variety of reasons, such as those set out at 4.1 above. The final option of moving the MV Hebridean Isles from Islay would have had significant negative consequences for the Islay community and was therefore not pursued.

Other European States

4.4 Transport Scotland made contact with officials in Norway, Sweden and the Republic of Ireland to establish if there was suitable tonnage in their countries which may be available for use but there does not appear to be any realistic prospect of them being in a position to help.

Costs

4.5 It should be noted that the cost of obtaining a time chartered vessel would have been in the region of £20,000 per day.

5. COMMUNICATIONS

Local Community

5.1 The most repeated complaint from the local community during the period the Hamnavoe was out of service concerned communication. Orkney Islands Council, the local media and some other local stakeholders were critical of the operator's response. They complained about Serco NorthLink's slowness to react to the initial problem by properly informing the community about the fact of the Hamnavoe's loss and what contingency measures were to be put in place.

5.2 The operator disputed that they were negligent in this regard. Serco's first priority was to contact people who were booked to use the service. However, what was clear was that, understandably, there is a high level of sensitivity among our island communities with regard to the security of their ferry services. This was recognised quickly and steps were taken to ensure that the local community – and visitors to Orkney – were kept informed of the situation.

5.3 Serco provided regular updates to the media covering the ongoing repairs to the Hamnaove as well as detailing their efforts to find a replacement vessel. Their website carried an 'Orkney Open for Business' section, explaining the situation and providing full details of contingencies and alternative travel options.

5.4 Transport Scotland's Communications staff liaised with Weber Shandwick who act for Serco to ensure that Ministerial interests were covered in keeping the media and stakeholders fully abreast of all of the efforts under way to find an early resolution.

5.5 Overall, it is fair to say that Serco engaged positively with the local media, the Council, tourism representatives and the Orkney community and worked hard to counter any misleading reports about the alternative service arrangements. They issued daily update notes to key stakeholders to keep them informed of progress.

5.6 Serco NorthLink's Managing Director, Stuart Garrett made himself available for interviews by the local media and a number of such events took place.

Ministerial Engagement

5.7 Transport Scotland officials liaised closely with Serco and regular updates were passed to the Minister throughout the breakdown period, initially daily.

5.8 On 13 May 2013, Minister for Transport, Keith Brown MSP visited the Babcock Marine yard at Rosyth to inspect the ongoing repairs work on the Hamnavoe. The Minister said: *"I was keen to see for myself the significant efforts being put in around the clock by the team of engineers at Rosyth to make good the repair and get the MV Hamnavoe back into service on the Scrabster-Stromness route."*

5.9 On 17 May, Mr Brown travelled to Orkney where he addressed the full Council, met with members of the Transport Committee and also held talks with Liam McArthur MSP, representatives of the tourist industry and others.

5.10 In addition to a range of PQs on the subject, reference to the Hamnavoe breakdown was included in a Labour Party Motion which covered a range of ferry related subjects. The Motion was debated on 22 May 2013 the day before the Hamnavoe went back into service.

6. FINANCIAL IMPACT

Performance Deductions

6.1 The contract which Scottish Ministers have with Serco NorthLink covers what will happen in the event of vessel failure. The contract states that Serco will respond to any vessel failure in an efficient and effective way, making best use of their existing maritime expertise and industry contacts. The contract also provides scope for different vessels to be brought to the routes.

6.2 Performance deductions may be made from future grant payments whenever the operator does not deliver the ferry services to schedule. In such circumstances, a performance deduction of £7,732 can be applied for each return sailing missed. During the period 26 April 2013 to 1 May 2013, a total of 13 return sailings were missed, incurring a performance deduction of £101,036.

6.3 However from 2 May until 22 May, Serco provided a limited service by operating the MV Helliar on the route. She operated 2 return sailings per day and had the ability to carry up to 12 passengers along with cars and freight.

6.4 The Hamnavoe missed 46 return sailings during this period which would have given rise to a performance deduction of £357,512. However, on the basis that, from 2 May to 22 May, the service was still partially provided, Ministers agreed that it would be unduly punitive to impose a performance deduction at the full rate. Therefore, from the point at which the Helliar was operating on the route the performance deduction was applied at a rate of 50% so the total deduction for this period was £178,756 with the total performance deduction recovered from Serco NorthLink coming to £279,792. This sum was reclaimed from Serco's grant claim which was submitted on 18 June and paid on 28 June. (A spread sheet setting out the breakdown of the performance deduction calculation is on the following page).

Meeting the Costs Incurred

6.5 Significant costs were incurred by the operator as a result of the crankshaft failure on the Hamnavoe. The new crankshaft alone cost £420,000 and repair costs at the Babcock Marine yard – where a team of engineers worked round the clock for weeks – were significant. The total costs of the repairs have been estimated at almost £850k and this does not take into account loss of revenue, the cost of bringing the Helliar onto service and so on. These costs will have to be met immediately by Serco NorthLink. In the final analysis, some costs will be recovered from insurance and potentially from the engine suppliers and there will be a small element of additional costs to be shared by the Scottish Government. Serco NorthLink are currently in discussion with their insurers following the MV Hamnavoe breakdown. These discussions are on-going on the outstanding balances due and following resolution there will be a small element of additional cost to be shared by the Scottish Government which is likely to be around £100,000.

6.6 In the contract's financial base case, Serco NorthLink have submitted a projected cost for sea going repairs. Specifically, they have set down a projected figure for costs they anticipated incurring relating to engine repairs - £239k per ropax vessel. Serco will therefore

be liable for 100% of the cost of the Hamnavoe's engine repairs up to this level. For costs incurred beyond that level, the impact will be shared 50% with the Scottish Government under the terms of the contract which allows for a "painshare" of all seagoing costs. However, this does not take account of the repair costs which will be entirely covered by Serco's insurance arrangements.

6.7 However, it should be noted that Serco NorthLink are actively pursuing reimbursement of much of the costs of the Hamnavoe breakdown. They are insured against "hull and machinery" costs and they are also liaising with the engine manufacturer about the latter's responsibility for the failure of the crankshaft. Every effort is therefore being made to minimise the cost impact to both Serco NorthLink and particularly to the Scottish Government. We will not know the full extent of the Scottish Government's liability until Serco's insurance claims and negotiations with the engine manufacturer are completed.

Hamnavoe Crank Shaft Failure Performance Deduction Calculation

100% Performance deduction where no vessel operated
50% Performance deduction where Helliar covered route

Number of sailings where no vessel operated

Dates	No. of sailings	
26th-30th April		
	22	
1st May 2013	4	
Total	26	
Grant per single sailing	£3,886	
Value of Performance Deduction	£101,036	

Number of sailings where Helliar operated

Dates	Sailings	
2nd-22nd May		
	92	
Total	92	
Grant per sailing	£3,886	
	£357,512*	
50% of Performance Deduction*	£178,756	

Total Value of Performance Deduction **£279,792**

7. LESSONS LEARNED

7.1 This section of the report considers what can be learned from the breakdown of the MV Hamnavoe and what lessons can be taken forward to either prevent, or better respond to, any future incidents of this kind.

Vessel Maintenance and Repair

7.2 As is the case with any ferry operator operating from the EU, Serco NorthLink adhere to very strict standards of vessel maintenance. Serco NorthLink's technical staff ensure that all their vessels are maintained to the highest standards, well above and beyond that of what is required as a legal minimum.

7.3 Given the routine care and maintenance undertaken on the vessel, the failure to the crankshaft on the Hamnavoe's Starboard Main Engine was an entirely unforeseen event and there is nothing to suggest any fault which can be attributed to the operator.

7.4 The full extent of the damage was very swiftly identified, with a technical team from the German engine manufacturer arriving on site within 48 hrs of the breakdown. Thereafter, Serco management immediately arranged for the Hamnavoe to be booked in to the Babcock Marine port wet basin at Rosyth, the nearest available yard where repairs of this nature could be quickly carried out. Repair work began on 3 May with engineers working round the clock until 19 May when sea trials began. The Hamnavoe was then able to return to service on 23 May.

7.5 Taking all of this into account, it is difficult to see that Serco NorthLink could have done more, or done anything more quickly, either to prevent the mechanical breakdown which affected the Hamnavoe or to better carry out the necessary repair work.

Contingency Measures

7.6 Immediately following the Hamnavoe's breakdown, and with reference to their Business Continuity Plan, Serco NorthLink's management team undertook all necessary actions to ensure continuity of service across the Pentland Firth. They liaised with other ferry companies operating from other ports on the Pentland Firth and arranged for courtesy travel to those ports. Passengers already booked on the Hamnavoe were proactively contacted and assisted in rescheduling their travel arrangements.

7.7 In addition, in the absence of available replacement tonnage (as explained at section 4) and with the co-operation of Scrabster Harbour Trust, arrangements were made to bring the freighter, the MV Helliar, onto the route ensuring there was no pressure on freight and vehicle space.

7.8 Therefore, from an early point onwards, the practical needs of passengers and traffic wishing to cross the Pentland Firth were provided for. However, what is apparent is that having practical contingency measures in place – and carrying them out – is not sufficient. It is equally important that the operator has an immediate and strong communications plan to keep all local stakeholders fully informed about any disruption to the normal service.

7.9 Concerns were expressed during this period from the Orkney community who felt that Serco NorthLink were not adequately engaging with them on the issues surrounding the breakdown. This gave rise to criticism that the company did not have suitable contingency arrangements in place. The impression was being given, in some quarters, that Orkney was inaccessible while the Hamnavoe was out of service. This was not the case as Serco Northlink's contingency arrangements in partnership with Pentland Ferries allowed for the movement of passengers and freight to and from the island.

7.10 Serco NorthLink did have a communications plan in place and the right information went out at the appropriate time to those immediately affected and thereafter to the broader audience. There was little justification for the inaccurate and damaging rumours about the available service level which quickly spread and often bore little resemblance to the reality of the situation. Key stakeholders had opportunity on national media to communicate Orkney's alternative transport options and therefore that Orkney remained open for business.

7.11 However, perceptions are important and the lesson which must be learned here is the need to be mindful of the particular sensitivities which island communities have around their connectivity with the Scottish mainland.

7.12 The clear lessons, therefore, concern:

- **the need for strong and immediate communication with both the affected community and with key stakeholders;**

- **the need for strong links between Transport Scotland resilience staff and the wider Scottish Government Resilience network to ensure the immediate communication of information about breakdowns and other disruptions to the services;**

- **the need for all stakeholders to take opportunities to communicate to the wider public the alternative transport options;**

- **the need to ensure that firm plans are in place across the Scottish ferry network detailing how similar events will be responded to in future;**

- **the need for ongoing awareness of suitable vessel availability to be maintained through good relationships with shipbrokers.**

8. NEXT STEPS

8.1 Following his visit to Orkney on 17 May 2013, Transport Minister, Keith Brown MSP announced that he had asked Transport Scotland to take steps to put in place a new consultative mechanism with Orkney and Shetland ferry service stakeholders. As set out in the Ferries Plan, this is the first step in a process whereby consistent consultative arrangements will be established with all communities served by Scottish Government ferry services.

8.2 Transport Scotland have established the Northern Isles Ferry Consultative Forum. The first meeting of the new Forum was held on 10 December 2013 in Orkney where an outward facing contingency plan for the Northern Isles ferry services was discussed as part of the agenda. Going forward, as other Forums are established representing other parts of the network, this approach will be replicated.