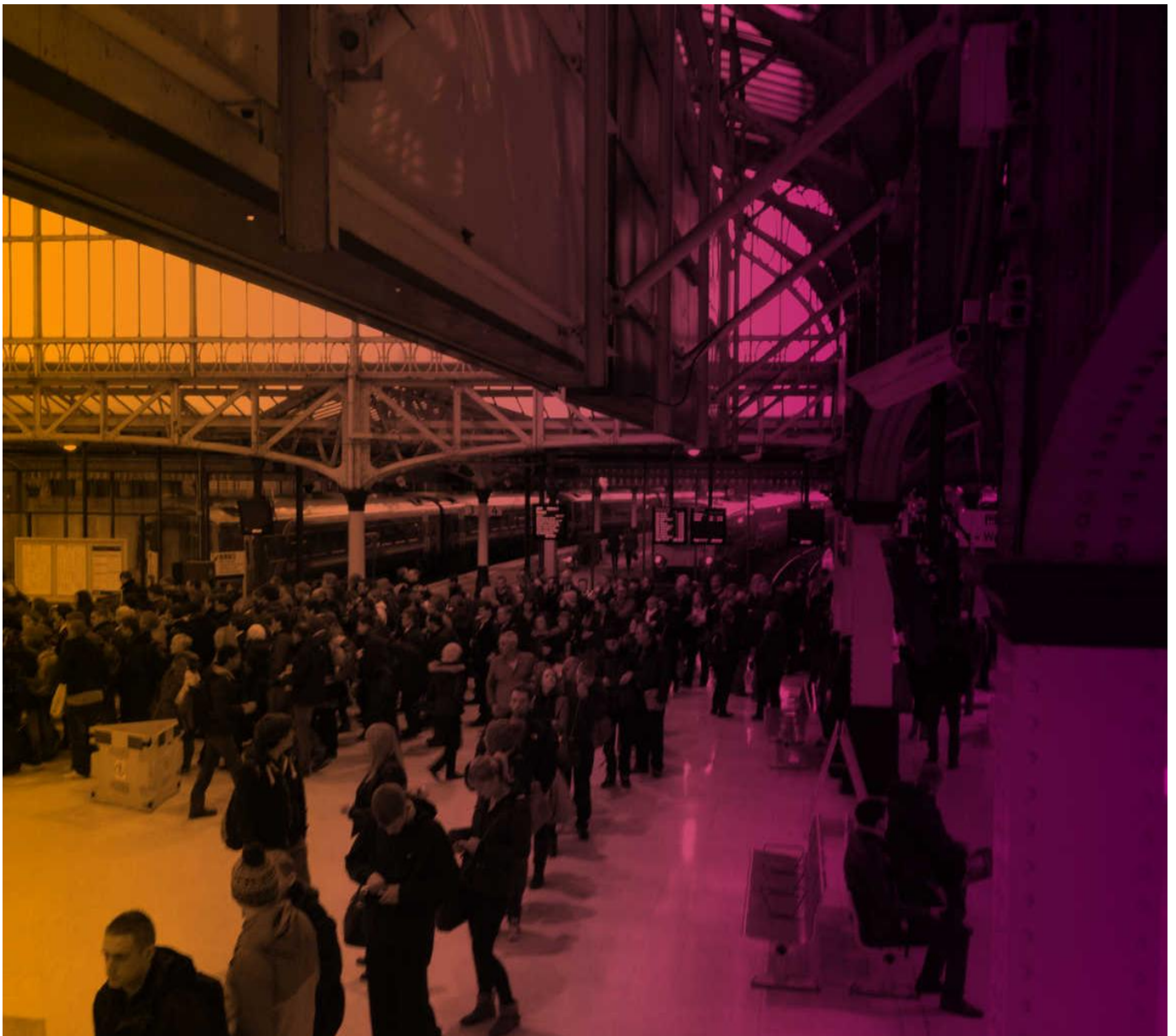
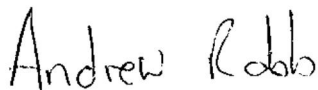
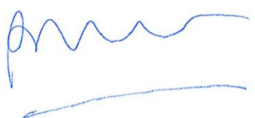


# Nestrans Rail Occupancy Survey - November 2013



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Nestrans Rail Occupancy Survey - November 2013

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## **Executive Summary**

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## Executive Summary

### Introduction

In November 2013, Nestrans commissioned AECOM to gather data to assess occupancy levels on peak period rail services in North East Scotland between Stonehaven and Inverurie. Improved rail links and connections are a key element of Nestrans' external and internal connection strategies in their RTS, and this work follows similar survey work undertaken in June and October 2011.

### Methodology

The surveys assessed the level of overcrowding on the following routes/journeys:

#### AM Peak Services

	Northbound				
Stonehaven- Portlethen- Aberdeen	0724	0736	0749	0822	
	0734	-	0800	0830	
	0747	0757	0814	0846	
Aberdeen- Dyce- Inverurie	0748		0821	0851	
	0757		0830	0900	
	0811		0842	-	
	Southbound				
Inverurie- Dyce- Aberdeen	0713	0743	0817	-	0908
	0726	0757	0830	0908	0920
	0737	0809	0843	0919	0932
Aberdeen- Portlethen- Stonehaven					

#### PM Peak Services

	Northbound					
Stonehaven- Portlethen- Aberdeen						
Aberdeen- Dyce- Inverurie	1644	1721	1754	1820		
	1652	1731	1803	1829		
	-	1747	1818	1841		
	Southbound					
Inverurie- Dyce- Aberdeen	(1616)*	1638	-		1718	1750
	1630	1654	1705		1732	1803
	1641	1705	1716		1743	1815
Aberdeen- Portlethen- Stonehaven	1637		1718	1736	(1818)*	1830
	1647		1729	-	-	1840
	1655		1737	1752	1835	1849

\*Survey unable to be fully completed

The surveys captured:

- An estimate of the passengers carried for each section of the above journeys (e.g. Stonehaven-Portlethen and Portlethen-Aberdeen);
- The number of passengers as a percentage of the seating capacity (i.e. the assessment of overcrowding); and

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- The type of seating / standing (seated, standing, vestibules), plus the seating capacity of the train.

#### **Key Finding 1 – Occupancy Level**

The results show that the route which most commonly exceeded the total number of seats available was on journeys between Dyce and Aberdeen rail stations, particularly in the AM peak, suggesting a close alignment with commuting patterns between the two stations.

On services between Aberdeen and Stonehaven/Portlethen, high occupancies were also noted on some services in the AM peak, but were found to occur at greater frequency in the PM peak.

#### **Key Finding 2 – Train Capacities**

A particular stress point appears to be on southbound journeys into Aberdeen in the AM peak.

A number of these services originate in Inverness and by the time they reach stations in the survey area have occupancy levels exceeding 100%.

#### **Key Finding 3 – Assessment of Journey Length and Occupancy Levels**

Transport Scotland expects that passengers should not stand on board a journey of longer than 10 minutes. The results of the survey have been further interpreted to highlight those journeys with >100% occupancy, and their journey time.

Several individual journeys (i.e. legs of journeys between two stations in North East Scotland) have journey times of 10 minutes or more. More than a third of the passengers on the 07:13 Inverurie-Dyce service, which has a journey time of 13 minutes, were standing.

It is generally considered that journey times between station pairs such as Aberdeen and Dyce and Aberdeen and Portlethen are generally around the limits of acceptable standing time as stated by Transport Scotland.

However, it also appears from the survey results that as a service reaches 50-60% of capacity, passengers choose to stand or use seats within the vestibule. 87.5% of all surveyed journeys experienced standing passengers.

#### **Key Finding 4 – Comparison of Services North and South of Aberdeen**

Prior to the surveys being undertaken, it was anticipated that services north of Aberdeen may experience more overcrowding issues than services to the south. In the survey, the number of journeys with occupancies exceeding 100% was found to be slightly higher on services operating north of Aberdeen.

#### **Key Finding 5 – Comparison of 2011 and 2013 Survey Results**

Similar surveys were undertaken on rail services in North East Scotland in 2011. Results of surveys undertaken in October 2011 have been compared with the survey results from November 2013.

This comparison showed that 16 of the surveyed journeys had an occupancy level exceeding 100% in the 2013 survey, compared with 11 journeys in the October 2011 survey.

An increase in overcrowded journeys on southbound peak services appears to be one of the key outcomes of the 2013 survey, which showed an increase of three journeys in the AM peak and two in the PM peak. This is despite an overall increase in the number of seats available.

## **Introduction**

# 1 Introduction

## 1.1 Introduction

In their Regional Transport Strategy (RTS), Nestrans state that:

*Rail journey times between the north east and central Scotland are long relative to the distances involved, and there are also issues of train capacity, fare levels and peak-hour overcrowding.*

In November 2013, Nestrans commissioned AECOM to gather data to assess occupancy levels on peak period rail services in North East Scotland between Stonehaven and Inverurie.

This report presents the methodology, results and key findings of surveys undertaken on 27<sup>th</sup> November 2013 on behalf of Nestrans by AECOM, in partnership with sub-consultants Streetwise Services Limited.

## 1.2 Background

Improved rail links and connections are a key element of Nestrans' external and internal connection strategies in their RTS<sup>1</sup>.

A range of rail survey work has been undertaken by Nestrans in recent years, including:

- Surveys in relation to the introduction of timetable information improvements at Dyce and Inverurie rail stations; and
- Surveys in relation to potential demand for the Dyce Shuttle Bus service which connects Dyce rail station and Aberdeen Airport.

In June and October 2011, surveys with a methodology mirroring this current commission were undertaken to assess occupancy levels on peak period rail services between Stonehaven and Inverurie. The results for June demonstrated that the majority of cases where the % occupancy exceeded the total number of seats available were on journeys between Aberdeen and Dyce rail stations. Overall, there was a notable increase in passenger levels in October compared to June, and this was reflected in the number of services that operated above capacity.

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<sup>1</sup> Nestrans Regional Transport Strategy (2013 Refresh). Available at [www.nestrans.org.uk/our-strategy.html](http://www.nestrans.org.uk/our-strategy.html)



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**Photo 1.1: Aberdeen Rail Station**



This commission provides further confirmation of characteristics and issues associated with peak hour rail travel in North East Scotland, and provides quantification of the level of peak-hour loading on-board train services.

For each service included in this survey, the following have been assessed:

- Train type, and seated capacity of the train;
- Numbers of passengers on the service, whether seated, standing, or using vestibule “flip-up” seats; and
- An overall percentage service occupancy for each leg of the journey, based on the total occupancy of the train as identified through the carriage configuration.

### **1.3 Industry Definition of Overcrowding**

In Scotland, it is understood that Transport Scotland expects that passengers should not stand on board a journey of longer than 10 minutes<sup>2</sup>.

While the data collected and presented in this report is based on occupancies, a high level assessment of the results within the context of Transport Scotland’s expectations of standing time has been made in Chapter 4.

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<sup>2</sup> Scotland’s Railways (2006), The Scottish Executive. Available at [www.scotland.gov.uk/Publications/2006/12/04104648/0](http://www.scotland.gov.uk/Publications/2006/12/04104648/0)

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In addition, within the rail industry, rail overcrowding is defined as Passengers in Excess of Capacity (PIXC)<sup>3</sup>. For journeys greater than 20 minutes it is measured with respect to the number of standard class seats on the train.

For journeys of 20 minutes or less, an additional allowance for standing room is also made, which varies with the type of rolling stock. For modern sliding door stock, it is typically approximately 35 per cent of the number of seats.

It is noted that within this study, journey times are typically greater than 20 minutes for trips between Aberdeen and Inverurie (21-26 mins). They are less than 20 minutes for trips between Aberdeen and Dyce (8-10 mins), Aberdeen and Stonehaven (16-19 mins) and Aberdeen and Portlethen (10-11 mins).

#### 1.4 Structure of Report

The remainder of this report is structured as follows:

- Chapter 2 – Methodology;
- Chapter 3 – Survey Results; and
- Chapter 4 – Key Findings.

A copy of the results spreadsheet has also been disseminated separately to the client team.

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<sup>3</sup> Rail Passenger Numbers and Crowding Statistics: Notes and Definitions, Department for Transport, DfT.

## **Methodology**

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## 2 Methodology

### 2.1 Introduction

This chapter details the methodology employed for the survey.

- Rail Occupancy Assessment; and
- Station Platform Assessment.

### 2.2 Scope of Survey

Discussions with Nestrans confirmed the requirement to assess the level of overcrowding on the following routes/journeys:

**Table 2.1: AM Peak Services**

	Northbound				
Stonehaven- Portlethen- Aberdeen	0724	0736	0749	0822	
	0734	-	0800	0830	
	0747	0757	0814	0846	
Aberdeen- Dyce- Inverurie	0748		0821	0851	
	0757		0830	0900	
	0811		0842	-	
	Southbound				
Inverurie- Dyce- Aberdeen	0713	0743	0817	-	0908
	0726	0757	0830	0908	0920
	0737	0809	0843	0919	0932
Aberdeen- Portlethen- Stonehaven					

**Table 2.2: PM Peak Services**

	Northbound					
Stonehaven- Portlethen- Aberdeen						
Aberdeen- Dyce- Inverurie	1644	1721	1754	1820		
	1652	1731	1803	1829		
	-	1747	1818	1841		
	Southbound					
Inverurie- Dyce- Aberdeen	(1616)*	1638	-		1718	1750
	1630	1654	1705		1732	1803
	1641	1705	1716		1743	1815
Aberdeen- Portlethen- Stonehaven	1637		1718	1736	(1818)*	1830
	1647		1729	-	-	1840
	1655		1737	1752	1835	1849

\*Survey unable to be fully completed

Capabilities on project:  
Transportation

### **2.3 Rail Occupancy Assessment Methodology**

For all services listed in Tables 2.1 and 2.2, survey teams conducted on-board passenger counts to record the following information:

- An estimate of the passengers carried for each section of the above journeys (e.g. Stonehaven-Portlethen and Portlethen-Aberdeen);
- The number of passengers as a percentage of the seating capacity (i.e. the assessment of overcrowding); and
- The type of seating / standing (seated, standing, vestibules), plus the seating capacity of the train.

The survey approach enabled two surveyors to be deployed on the busiest routes and those routes made up of multiple train sets.

The information collected from the above has subsequently been used to calculate the estimate of passengers/occupancy for all individual sections of the targeted journeys.

### **2.4 Station Platform Assessment Methodology**

During the survey, opportunity was also taken to note whether any station/platform overcrowding and issues relating to safety – where numbers wishing to access trains at peak times are a concern relative to the time available for boarding trains – were apparent. This included any issues relating to the passenger disembarkation/embarkation process, and the time and space available for this.

### **2.5 Survey Conduct**

Authorisation to conduct the on-board train surveys and for surveyors to pass between platforms at Aberdeen rail station was obtained through discussions with ScotRail.

### **2.6 Summary**

This section has set out the data collection methods identified to facilitate the assessment of rail overcrowding in North East Scotland. Survey results are set out in Chapter 3.

## **Survey Results**

Capabilities on project:  
Transportation

## 3 Survey Results

### 3.1 Introduction

This chapter presents the key results from the surveys undertaken on Wednesday 27<sup>th</sup> November 2013.

Analysis is categorised according to direction and time of day.

### 3.2 Meeting the Survey Requirements

#### 3.2.1 Introduction

No significant problems were encountered during the on-board counts. However, operational issues affected counts on some services, as detailed below.

**Table 3.1: Service Operational Issues**

Count Issue	Assessment / Action
The 16:16 Inverurie to Aberdeen service was cancelled.	Passengers were transferred onto the 16:38 Inverurie to Aberdeen service instead and passengers were counted accordingly.
On the 07:34 Portlethen to Aberdeen departure there was insufficient time to count passengers in carriages B and C.	Additional passengers boarding between Stonehaven and Aberdeen (at Portlethen) counted in carriage A only. The occupancy level of this journey has been estimated using the information available for the 07:24 Stonehaven to Portlethen service.
Surveyors unable to complete all 10 carriages on the 18:18 Aberdeen to Stonehaven service.	The occupancy level of this journey has been estimated using the information available for the 18:18 Aberdeen to Stonehaven service. Also, given the length of this train (East Coast Mainline Service), and the long distance route it operates, there is not a significant capacity issue on this service for rail connections between Aberdeen and Stonehaven.

### 3.3 Rail Occupancy Assessment

The sections below present the key results of the on-board train surveys undertaken on Wednesday 27<sup>th</sup> November 2013. Results are presented by direction and time of day, and within each of these sections, the results are further sub-divided into route sections to highlight total occupancy and percentage of total train occupancy.

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Transportation

### 3.4 Northbound Services

#### 3.4.1 AM Peak

**Table 3.2: Stonehaven – Portlethen – Aberdeen**

On this journey, there was insufficient time to count passengers in carriages B and C on the Portlethen-Aberdeen leg of the journey. Thus the apparent decrease in occupancy between Stonehaven and Aberdeen at Portlethen is reflective of counts only being undertaken for one carriage on this service.

However, it is possible to estimate the number of passengers on the 07:34 Portlethen to Aberdeen service by assuming that the carriages not counted had the same patronage figures as the 07:24 Stonehaven to Portlethen service. This would give an estimated total of 135 for total occupancy and an approximate occupancy level of 64% (rather than 35%).

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
07:24	Stonehaven	Portlethen	94	1	8	1	104	49%
07:34	Portlethen	Aberdeen	59	8	1	6	74	64%*
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

\*See text above.

**Table 3.3: Aberdeen – Dyce – Inverurie**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
07:48	Aberdeen	Dyce	138	0	8	10	156	74%
07:57	Dyce	Inverurie	12	0	0	0	12	6%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							



Capabilities on project:  
Transportation

**Table 3.4: Stonehaven – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
07:36	<b>Stonehaven</b>	<b>Aberdeen</b>	160	2	0	17	179	66%
Train Class:	158							
Number of Carriages:	4							
Number of Seats:	272							

**Table 3.5: Stonehaven – Portlethen – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
07:49	<b>Stonehaven</b>	<b>Portlethen</b>	159	20	32	22	233	86%
08:00	<b>Portlethen</b>	<b>Aberdeen</b>	163	36	32	21	252	93%
Train Class:	158							
Number of Carriages:	4							
Number of Seats:	272							

**Table 3.6: Aberdeen – Dyce – Inverurie**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
08:21	<b>Aberdeen</b>	<b>Dyce</b>	125	14	4	13	156	115%
08:30	<b>Dyce</b>	<b>Inverurie</b>	42	0	1	0	43	32%
Train Class:	158							
Number of Carriages:	2							
Number of Seats:	136							

Capabilities on project:  
Transportation

**Table 3.7: Stonehaven – Portlethen – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
08:22	<b>Stonehaven</b>	<b>Portlethen</b>	144	42	6	23	215	101%
08:30	<b>Portlethen</b>	<b>Aberdeen</b>	144	45	6	26	221	104%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

**Table 3.8: Aberdeen – Dyce**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
08:51	<b>Aberdeen</b>	<b>Dyce</b>	64	0	2	0	66	31%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

Capabilities on project:  
Transportation

### 3.4.2 PM Peak

**Table 3.9: Aberdeen – Dyce**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
16:44	<b>Aberdeen</b>	<b>Dyce</b>	50	0	3	0	53	39%
Train Class:		158						
Number of Carriages:		2						
Number of Seats:		136						

**Table 3.10: Aberdeen – Dyce – Inverurie**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
17:21	<b>Aberdeen</b>	<b>Dyce</b>	313	109	20	10	452	107%
17:31	<b>Dyce</b>	<b>Inverurie</b>	347	59	15	53	474	112%
Train Class:		170						
Number of Carriages:		6						
Number of Seats:		424						

**Table 3.11: Aberdeen – Dyce – Inverurie**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
17:54	<b>Aberdeen</b>	<b>Dyce</b>	111	0	4	7	122	58%
18:03	<b>Dyce</b>	<b>Inverurie</b>	82	1	3	0	86	41%
Train Class:		170						
Number of Carriages:		3						
Number of Seats:		212						

Capabilities on project:  
Transportation

**Table 3.12: Aberdeen – Dyce – Inverurie**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
18:20	<b>Aberdeen</b>	<b>Dyce</b>	129	5	7	3	144	53%
18:29	<b>Dyce</b>	<b>Inverurie</b>	120	4	6	4	134	49%
Train Class:	158							
Number of Carriages:	4							
Number of Seats:	272							

### 3.5 Southbound Services

#### 3.5.1 AM Peak

**Table 3.13: Inverurie – Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
07:13	<b>Inverurie</b>	<b>Dyce</b>	162	52	1	45	260	123%
07:26	<b>Dyce</b>	<b>Aberdeen</b>	164	39	1	36	240	113%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

**Table 3.14: Inverurie – Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
07:43	<b>Inverurie</b>	<b>Dyce</b>	246	30	12	69	357	131%
07:57	<b>Dyce</b>	<b>Aberdeen</b>	238	28	2	44	312	115%
Train Class:	158							
Number of Carriages:	4							
Number of Seats:	272							

Capabilities on project:  
Transportation

**Table 3.15: Inverurie – Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
08:17	<b>Inverurie</b>	<b>Dyce</b>	98	1	4	0	103	49%
08:30	<b>Dyce</b>	<b>Aberdeen</b>	117	2	6	12	137	65%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

**Table 3.16: Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
09:08	<b>Dyce</b>	<b>Aberdeen</b>	18	0	0	0	18	8%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

**Table 3.17: Inverurie – Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
09:08	<b>Inverurie</b>	<b>Dyce</b>	128	30	3	21	182	134%
09:20	<b>Dyce</b>	<b>Aberdeen</b>	126	17	2	15	160	118%
Train Class:	158							
Number of Carriages:	2							
Number of Seats:	136							

Capabilities on project:  
Transportation

3.5.2 PM Peak

**Table 3.18: Inverurie – Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
16:16	Inverurie	Dyce						
16:30	Dyce	Aberdeen						
Train Class:								
Number of Carriages:								
Number of Seats:								

**Service cancelled and passengers transferred onto the 16:38 service**

**Table 3.19: Aberdeen – Portlethen – Stonehaven**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
16:37	Aberdeen	Portlethen	194	24	6	30	254	120%
16:47	Portlethen	Stonehaven	196	16	5	19	236	111%
Train Class:		170						
Number of Carriages:		3						
Number of Seats:		212						

Capabilities on project:  
Transportation

**Table 3.20 – Inverurie – Dyce – Aberdeen**

Passengers were transferred from the cancelled 16:16 Inverurie-Dyce service (Table 3.16 above) onto the 16:38 Inverurie to Aberdeen (via Dyce) service and passengers were counted accordingly.

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
16:38	<b>Inverurie</b>	<b>Dyce</b>	59	0	1	0	60	28%
16:54	<b>Dyce</b>	<b>Aberdeen</b>	153	7	10	24	194	92%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

**Table 3.21: Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
17:05	<b>Dyce</b>	<b>Aberdeen</b>	72	3	6	1	82	60%
Train Class:	158							
Number of Carriages:	2							
Number of Seats:	136							

**Table 3.22: Aberdeen – Portlethen – Stonehaven**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
17:18	<b>Aberdeen</b>	<b>Portlethen</b>	125	10	2	5	142	104%
17:29	<b>Portlethen</b>	<b>Stonehaven</b>	79	3	4	4	90	66%
Train Class:	158							
Number of Carriages:	2							
Number of Seats:	136							

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**Table 3.23: Inverurie – Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
17:18	<b>Inverurie</b>	<b>Dyce</b>	87	0	0	0	87	64%
17:32	<b>Dyce</b>	<b>Aberdeen</b>	126	21	1	16	164	121%
Train Class:	158							
Number of Carriages:	2							
Number of Seats:	136							

**Table 3.24: Aberdeen – Stonehaven**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
17:36	<b>Aberdeen</b>	<b>Stonehaven</b>	175	13	12	37	237	112%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							

**Table 3.25: Inverurie – Dyce – Aberdeen**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
17:50	<b>Inverurie</b>	<b>Dyce</b>	17	0	0	0	17	8%
18:03	<b>Dyce</b>	<b>Aberdeen</b>	92	10	4	2	108	51%
Train Class:	170							
Number of Carriages:	3							
Number of Seats:	212							



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**Table 3.26: Aberdeen – Stonehaven**

Surveyors were unable to complete all 10 carriages on the 18:18 Aberdeen to Stonehaven service. However, it has been established that this East Coast train has a capacity of 543 seats. The survey results reported occupancies of:

- 23 passengers (1 standing) in Carriage A (which has 63 seats);
- 59 passengers in Carriage B (which has 74 seats); and
- 59 passengers in Carriage C (which has 74 seats).

This gives a total of 141 passengers with 211 seats available, and an occupancy level of 67%.

If these results are applied throughout the East Coast train, it can be deduced that approximately 363 passengers were on board the service when it departed Aberdeen.

Noting the above, and given the length of this train (East Coast Mainline Service), and the long distance route it operates, there is not a significant capacity issue on this service for rail connections between Aberdeen and Stonehaven.

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
18:18	<b>Aberdeen</b>	<b>Stonehaven</b>	140	0	0	1	141	67%*
Train Class:		East Coast						
Number of Carriages:		10						
Number of Seats:		543						

\*See text above.

**Table 3.27: Aberdeen – Portlethen – Stonehaven**

Scheduled Departure Time	From (station name)	To (station name)	Total				Total occupancy	% Occupancy
			Seated	Standing within carriage	Sitting on 'flap-up' vestibule seats	Standing in Vestibule		
18:30	<b>Aberdeen</b>	<b>Portlethen</b>	102	2	6	2	112	53%
18:40	<b>Portlethen</b>	<b>Stonehaven</b>	92	1	3	1	97	46%
Train Class:		170						
Number of Carriages:		3						
Number of Seats:		212						

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### **3.6 Rail Occupancy Assessment – AM/PM Summary Comparison**

In the AM peak, high occupancy was common on services north of Aberdeen (to/from Dyce and Inverurie), and on some journeys from Stonehaven to Aberdeen.

The highest occupancies in the PM peak appear generally to be on services leaving Aberdeen to the south. As noted above, high occupancies are also experienced on this line from Stonehaven northwards to Aberdeen in the morning, although not to the same extent as in the PM.

The highest occupancy in the survey was 134% on the 0908 from Inverurie-Dyce., with the service from Dyce onwards to Aberdeen showing 118% occupancy.

### **3.7 Station Platform Assessment**

No problems associated with passenger movement, embarkation or disembarkation were observed at any of the stations that had trains arriving and departing during the survey.

### **3.8 Summary**

This chapter has presented the results of the surveys undertaken on 27<sup>th</sup> November 2013.

Chapter 4 draws on these results and presents the key findings that have emerged from the surveys.

## **Key Findings**

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## 4 Key Findings

### 4.1 Introduction

This chapter presents the key findings of the surveys undertaken on Wednesday 27<sup>th</sup> November 2013.

### 4.2 Key Finding 1 – Occupancy Level

The results show that the route which most commonly exceeded the total number of seats available was on journeys between Dyce and Aberdeen rail stations, particularly in the AM peak, suggesting a close alignment with commuting patterns between the two stations.

On services between Aberdeen and Stonehaven/Portlethen, high occupancies were also noted on some services in the AM peak, but were found to occur at greater frequency in the PM peak.

Table 4.1 below highlights the 10 services that experienced occupancy levels of greater than 100% on the day of the survey (colour shading within each direction and time band denotes journeys within the same service).

**Table 4.1: Services with >100% Occupancy, 27<sup>th</sup> November 2013**

Direction and Time	Ref	Service	Start destination	End destination	% Occupancy
NB AM	1	08:21	Aberdeen	Dyce	115%
	2	08:22	Stonehaven	Portlethen	101%
		08:30	Portlethen	Aberdeen	104%
NB PM	3	17:21	Aberdeen	Dyce	107%
		17:31	Dyce	Inverurie	112%
SB AM	4	07:13	Inverurie	Dyce	123%
		07:26	Dyce	Aberdeen	113%
	5	07:43	Inverurie	Dyce	131%
		07:57	Dyce	Aberdeen	115%
	6	09:08	Inverurie	Dyce	134%
		09:20	Dyce	Aberdeen	118%
SB PM	7	16:37	Aberdeen	Portlethen	120%
		16:47	Portlethen	Stonehaven	111%
	8	17:18	Aberdeen	Portlethen	104%
	9	17:32	Dyce	Aberdeen	121%
	10	17:36	Aberdeen	Stonehaven	112%

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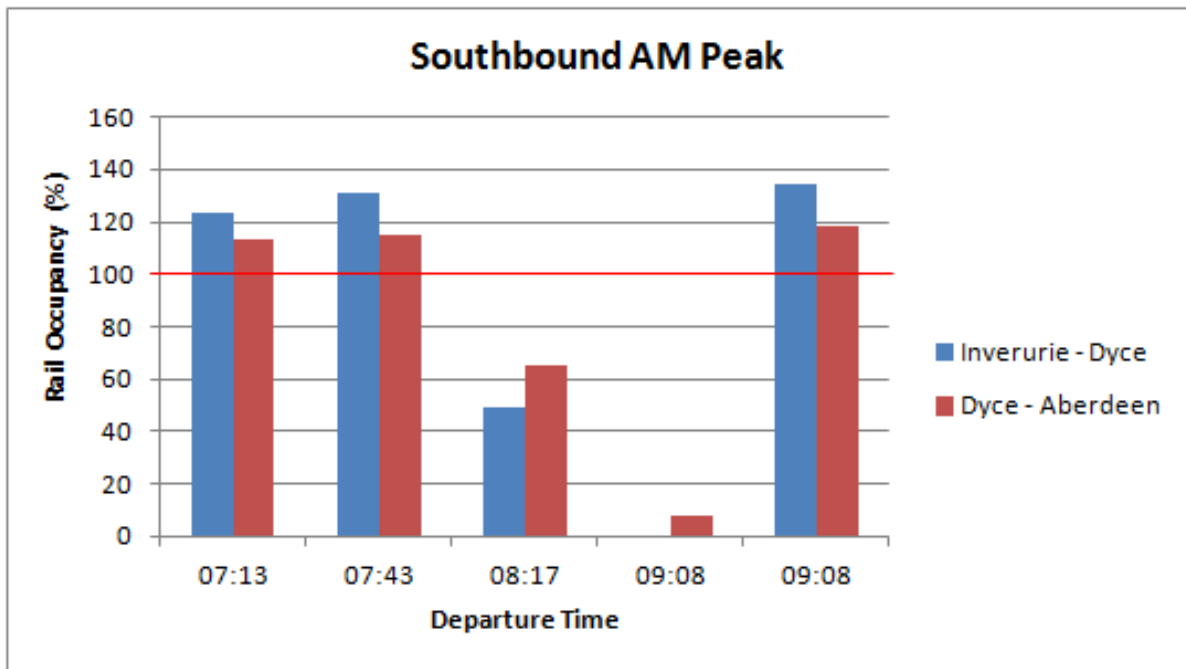
It is also noted that two services, one between Portlethen and Aberdeen and the other between Dyce and Aberdeen, although not ‘over-subscribed’, still had very high occupancy levels of the total seats available. These services are outlined in Table 5.2.

**Table 4.2: Additional Services with High Occupancies**

Scheduled Departure Time	Start destination	End destination	% Occupancy
08:00	Portlethen	Aberdeen	93%
16:54	Dyce	Aberdeen	92%

The figures below provide an overview of occupancy levels on all surveyed journeys.

**Figure 4.1: Southbound Services (AM Peak)**



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Figure 4.2: Northbound Services (AM Peak)

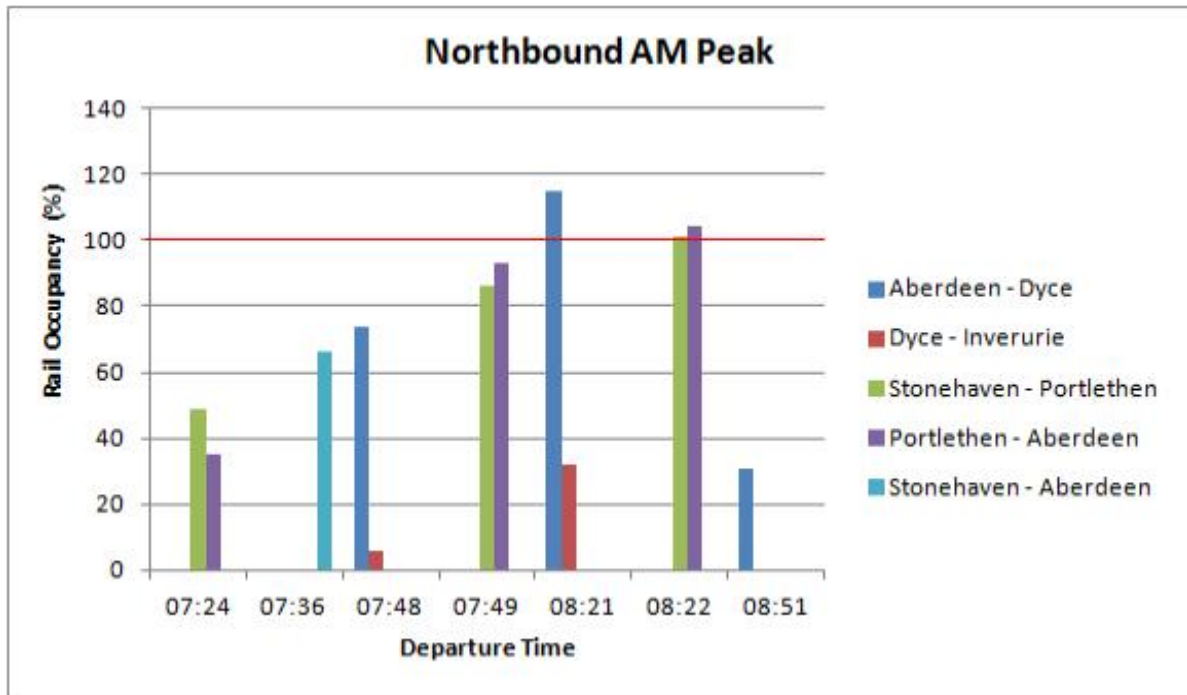
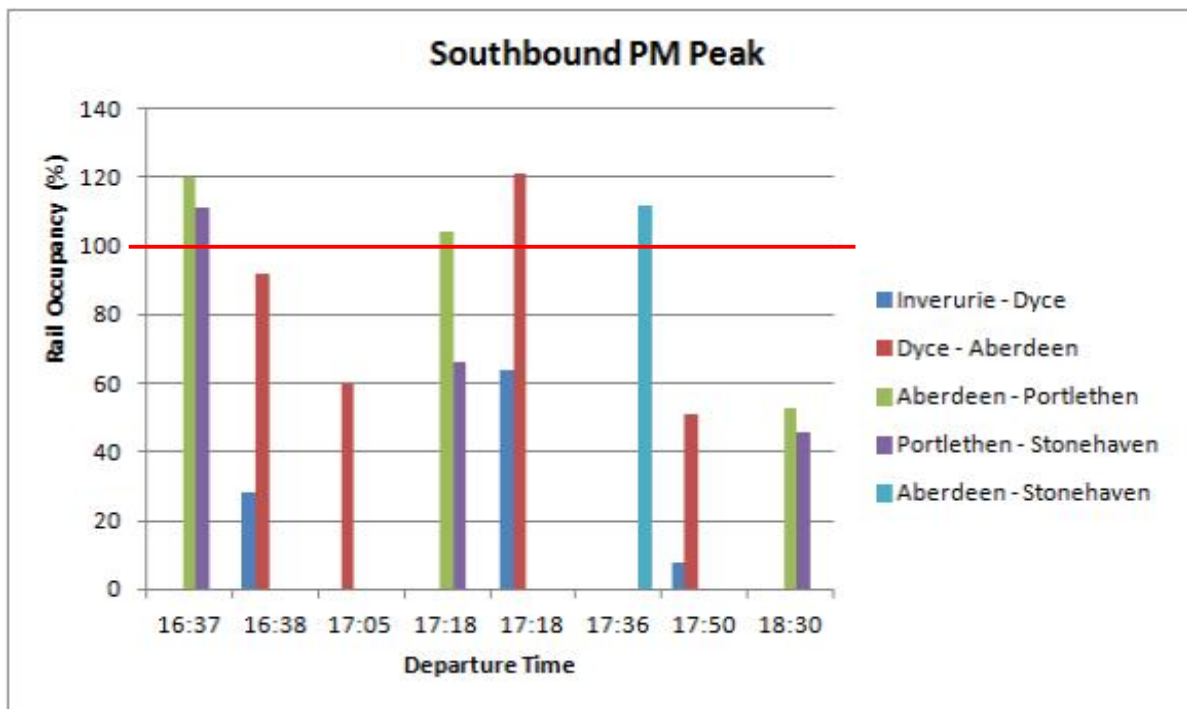
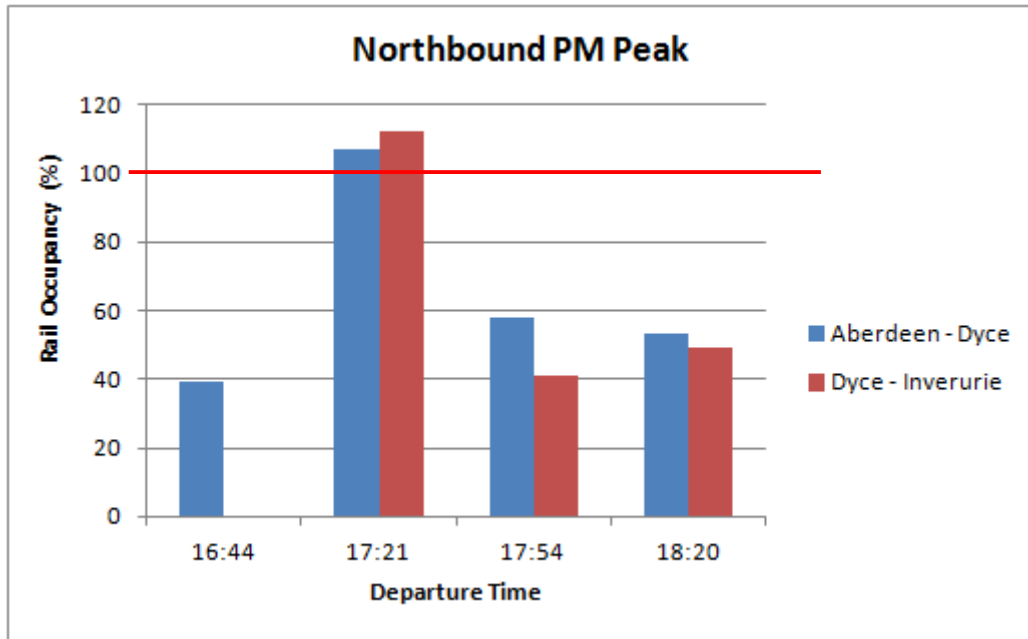


Figure 4.3: Southbound Services (PM Peak)



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**Figure 4.4: Northbound Services (PM Peak)**



**4.3 Key Finding 2 – Train Capacities**

A particular stress point appears to be on southbound journeys into Aberdeen in the AM peak.

For those journeys where occupancy exceeded 100%, further assessment has been undertaken to confirm 1) the initial origin station of the service of which that trip is a part; and 2) the configuration of the train with respect to the service capacity (number of seats).

**Table 4.3: Capacity of Southbound Services into Aberdeen**

Scheduled Departure Time	Start destination	End destination	% Occupancy	Service Origin	Train Configuration		
					Type	Carriages	Seats
07:13	Inverurie	Dyce	123%	Inverurie	170	3	212
07:26	Dyce	Aberdeen	113%				
07:43	Inverurie	Dyce	131%	Inverness	158	4	272
07:57	Dyce	Aberdeen	115%				
09:08	Inverurie	Dyce	134%	Inverness	158	2	136
09:20	Dyce	Aberdeen	118%				

As Table 4.3 shows, a number of the above services originate in Inverness, and, by the time they reach stations in the survey area, have occupancy levels exceeding 100%. This is the case for the 0908 Inverurie-Dyce and 0920 Dyce-Aberdeen services which only have two carriages, but occupancies are similarly high

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during the AM peak service into Aberdeen (originating in Inverness) despite the carrying capacity of this service being double to that of the later train.

#### 4.4 Key Finding 3 – Assessment of Journey Length and Occupancy Levels

Transport Scotland expects that passengers should not stand on board a journey of longer than 10 minutes. The results of the survey have been further interpreted to highlight those journeys with >100% occupancy, and their journey time.

**Table 4.4: Standing Passengers on Journeys (Including on Journeys of 10+ minutes)**

Direction and Time	Scheduled Departure Time	Start destination	End destination	% Occupancy	Journey Time	Number standing (% of occupancy)
NB AM	08:21	Aberdeen	Dyce	115%	9 minutes	27 (17%)
	08:22	Stonehaven	Portlethen	101%	8 minutes	65 (30%)
	08:30	Portlethen	Aberdeen	104%	16 minutes	71 (32%)
NB PM	17:21	Aberdeen	Dyce	107%	10 minutes	119 (26%)
	17:31	Dyce	Inverurie	112%	16 minutes	112 (24%)
SB AM	07:13	Inverurie	Dyce	123%	13 minutes	97 (37%)
	07:26	Dyce	Aberdeen	113%	11 minutes	75 (31%)
	07:43	Inverurie	Dyce	131%	14 minutes	99 (28%)
	07:57	Dyce	Aberdeen	115%	12 minutes	72 (23%)
	09:08	Inverurie	Dyce	134%	12 minutes	51 (28%)
	09:20	Dyce	Aberdeen	118%	12 minutes	32 (20%)
SB PM	16:37	Aberdeen	Portlethen	120%	10 minutes	54 (21%)
	16:47	Portlethen	Stonehaven	111%	8 minutes	35 (15%)
	17:18	Aberdeen	Portlethen	104%	11 minutes	15 (11%)
	17:32	Dyce	Aberdeen	121%	11 minutes	37 (23%)
	17:36	Aberdeen	Stonehaven	112%	16 minutes	50 (21%)

As Table 4.4 shows, several individual journeys (i.e. legs of journeys between two stations in North East Scotland) have journey times of 10 minutes or more.

More than a third of the passengers on the 07:13 Inverurie-Dyce service, which has a journey time of 13 minutes, were standing.

It is generally considered that journey times between station pairs such as Aberdeen and Dyce and Aberdeen and Portlethen are generally around the limits of acceptable standing time as stated by Transport Scotland.



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However, it also appears from the survey results that as a service reaches 50-60% of capacity, passengers choose to stand or use seats within the vestibule. 87.5% of all surveyed journeys experienced standing passengers.

#### 4.5 Key Finding 4 – Comparison of Services North and South of Aberdeen

By way of summary, a comparison has been made of the total number of services surveyed for each journey leg against the number of services where occupancies exceeded 100%.

**Table 4.5: Overview of Services**

Route	Services Between	Total Number of Services Surveyed	Number with Occupancy >100%
North of Aberdeen	Aberdeen, Dyce, Inverurie	16	6
South of Aberdeen	Aberdeen, Stonehaven, Portlethen	8	4

Prior to the surveys being undertaken, it was anticipated that services north of Aberdeen may experience more overcrowding issues than services to the south. As Table 4.5 shows, the number of journeys with occupancies exceeding 100% was found to be slightly higher on services operating north of Aberdeen.

#### 4.6 Key Finding 5 – Comparison of 2011 and 2013 Survey Results

As noted in Chapter 1, similar surveys were undertaken on rail services in North East Scotland in 2011. This section sets out a comparison of the survey results from November 2013 with those recorded in October 2011. Results from the June 2011 survey have not been compared in this section as it is considered that the October 2011/November 2013 datasets provide better basis for comparison in terms of annual patterns of use of the rail network.

In order to ensure an effective comparison, the 2011 results utilise the data from the Thursday survey day (rather than the Friday) as this again provides the best basis for comparison with the 2013 (Wednesday survey day) data.

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Prior to undertaking this comparison, Tables 4.6 and 4.7 below provide an overview of how capacity differs on the network from the 2011 survey.

**Table 4.6: Total Seating Capacity – Northbound Services**

Direction and Time	Route	June 2011 Capacity (seats)	October 2011 Capacity (seats)	November 2013 Capacity (seats)
NB AM	Stonehaven-Portlethen-Aberdeen	810	810	968
	Aberdeen-Dyce-Inverurie	484	484	560
NB PM	Stonehaven-Portlethen-Aberdeen	-	-	-
	Aberdeen-Dyce-Inverurie	968	968	1,044

**Table 4.7: Total Seating Capacity – Southbound Services**

Direction and Time	Route	June 2011 Capacity (seats)	October 2011 Capacity (seats)	November 2013 Capacity (seats)
SB AM	Inverurie-Dyce-Aberdeen	1,044	1,044	1,044
	Aberdeen-Portlethen-Stonehaven	-	-	-
SB PM	Inverurie-Dyce-Aberdeen	756	756	908
	Aberdeen-Portlethen-Stonehaven	1,318	1,318	1,315

Since the 2011 survey, additional carriages have been added to the 07:24 Stonehaven-Portlethen-Aberdeen-Dyce-Inverurie and the 07:49 Stonehaven-Portlethen-Aberdeen services. There has also been a reconfiguration of the train sets on the 07:43 and 08:17 Inverurie-Dyce-Aberdeen services, with the former operating 4 x 158 carriages (272 seats) and the latter 3 x 170 carriages (212 seats). However, the overall capacity for these journeys remains the same as the equivalent journeys in 2011.

On evening peak services, additional carriages have been added on each of the 16:16 and 17:50 Inverurie-Dyce-Aberdeen services, and the 17:21 Aberdeen-Dyce-Inverurie service.

Overall, these additions amount to an increase in capacity of 8.5%.

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The tables below show all surveyed journeys with occupancy rates exceeding 100% from the October 2011 survey, and the November 2013 survey.<sup>4</sup>

**Table 4.8: Journeys with >100% Occupancy, Thursday 27<sup>th</sup> October 2011**

Direction and Time	Journey	Start destination	End destination	% Occupancy
NB AM	07:50	Aberdeen	Dyce	113%
	07:48	Stonehaven	Portlethen	117%
	07:59	Portlethen	Aberdeen	117%
NB PM	17:18	Aberdeen	Dyce	118%
	17:29	Dyce	Inverurie	136%
SB AM	07:49	Inverurie	Dyce	107%
	08:03	Dyce	Aberdeen	112%
	09:15	Inverurie	Dyce	102%
SB PM	16:37	Aberdeen	Stonehaven	107%
	17:30	Dyce	Aberdeen	127%
	17:36	Aberdeen	Stonehaven	119%

**Number of journeys with occupancy level exceeding 100%: 11**

**Table 4.9: Journeys with >100% Occupancy, Wednesday 27<sup>th</sup> November 2013**

Direction and Time	Journey	Start destination	End destination	% Occupancy
NB AM	08:21	Aberdeen	Dyce	115%
	08:22	Stonehaven	Portlethen	101%
	08:30	Portlethen	Aberdeen	104%
NB PM	17:21	Aberdeen	Dyce	107%
	17:31	Dyce	Inverurie	112%
SB AM	07:13	Inverurie	Dyce	123%
	07:26	Dyce	Aberdeen	113%
	07:43	Inverurie	Dyce	131%
	07:57	Dyce	Aberdeen	115%
	09:08	Inverurie	Dyce	134%
	09:20	Dyce	Aberdeen	118%
SB PM	16:37	Aberdeen	Portlethen	120%
	16:47	Portlethen	Stonehaven	111%
	17:18	Aberdeen	Portlethen	104%
	17:32	Dyce	Aberdeen	121%
	17:36	Aberdeen	Stonehaven	112%

**Number of journeys with occupancy level exceeding 100%: 16**

<sup>4</sup> Table 4.8 is a copy of Table 4.1 for the purposes of illustration in this section of the report.

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The above comparison of survey results from 2011 and 2013 shows that there is an increase in the number of journeys overcrowded. Southbound services show an increase (of three journeys in the AM peak and two in the PM peak) when comparing the number of journeys overcrowded in the October 2011 (Thursday) and November 2013 (Wednesday) surveys.

Thus, the increase in overcrowded journeys on southbound peak services appears to be one of the key outcomes of the 2013 survey, despite an overall increase in the number of seats available.

#### **4.7 Conclusion**

Overall, it is considered that this work provides a valuable record of the pattern of train service occupancy in North East Scotland, and provides Nestrans with useful information to support their passenger rail policies.