



Local Air Quality Management
Environment Act 1995

PROGRESS REPORT 2004



North Devon District Council
Environmental Health Unit
Prepared April 2005

Progress Report

North Devon District Council

April 2005

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1. Introduction

1.1 Background

The Environment Act 1995 required the UK Government to produce a national air quality strategy containing standards and objectives for improving ambient air quality. The Act introduced the system of local air quality management (LAQM). As a result, local authorities are required to periodically review and assess the current and future air quality in their areas against those in the Strategy, which have been prescribed in regulations. This report has been produced as part of North Devon District Council's statutory obligation under the Environment Act 1995 to review and assess local air quality.

1.2 Regulations and Air Quality Objectives

The Air Quality Objectives considered in this report are set out in the Air Quality (England) Regulations 2000 and the Air Quality (England) Amendment Regulations 2002. The exception is the particles (PM₁₀) objective for 2010 which for the time being is provisional, and not included in regulation. The Government will consider the inclusion of this objective after the EU first Air Quality Daughter Directive is adopted. The National air quality standards and objectives are contained in Table 1.1.

The provisional objectives for particles (PM₁₀) for 2010 are different depending on which part of the UK is being assessed. The provisional objectives applicable to the North Devon district are given in Table 1.2.

Although local Authorities are not yet statutorily required to assess levels of particles for 2010, they are strongly recommended to do so, to assist with long term planning and the assessment of development proposals in their areas. Therefore this Authority has undertaken an assessment of particles against the 2010 objective.

Also not included in Table 1.1 is an annual mean standard for Nitrogen dioxide of 40µg/m³ to be achieved by 2010. Although not formally part of the review and assessment process, Nitrogen dioxide annual mean concentrations have also been assessed against this objective.

Table 1.1 - National air quality standards and objectives as outlined in regulations.

POLLUTANT	OBJECTIVE		DATE TO BE ACHIEVED BY
	Concentration	Measured as	
Benzene	16.25µg/m ³ (5ppb)	running annual mean	31 December 2003
1,3-butadiene	2.25µg/m ³ (1ppb)	running annual mean	31 December 2003
Carbon monoxide	11.6mg/m ³ (10ppm)	running 8 hour mean	31 December 2003
Lead	0.5µg/m ³	annual mean	31 December 2004
	0.25µg/m ³	annual mean	31 December 2008
Nitrogen dioxide	200µg/m ³ (105ppb) not to be exceeded more than 18 times a year	1hour mean	31 December 2005
	40µg/m ³ (21ppb)	annual mean	31 December 2005
Particles (PM₁₀) (gravimetric) *	50µg/m ³ not to be exceeded more than 35 times a year	24 hour mean	31 December 2004
	40µg/m ³	annual mean	31 December 2004
Sulphur dioxide	350µg/m ³ (132ppb) not to be exceeded more than 24 times a year	1 hour mean	31 December 2004
	125µg/m ³ (47ppb) not to be exceeded more than 3 times a year	24 hour mean	31 December 2004
	266µg/m ³ (100ppb) not to be exceeded more than 35 times a year	15 minute mean	31 December 2005
*measured using the European gravimetric transfer sampler or equivalent			

Table 1.2 – Provisional Objectives for Particles Not Included in the Regulations for the Purpose of Local Air Quality Management

POLLUTANT	AIR QUALITY OBJECTIVE		DATE TO BE ACHIEVED BY
	Concentration	Measured as	
Particles (PM ₁₀) (gravimetric)*	50µg/m ³ not to be exceeded more than 7 times a year	24 hour mean	31 December 2004
	20µg/m ³	annual mean	31 December 2004
*measured using the European gravimetric transfer sampler or equivalent			

1.3 Purpose and Scope of Report

This progress report is produced in accordance with the national timetable for ongoing review and assessment of local air quality, as outlined in Table 1.3. It reports on new monitoring data and local developments that have been identified since the 2003 Updating and Screening Assessment, and reports progress on achieving or maintaining pollutant concentrations below the national air quality standards. The report has been produced in accordance with the requirements of DEFRA Progress Report Guidance LAQM.PRG(03)

Table 1.3 – Recommended Timescales for Submissions of Reviews and Assessments and Progress Reports for Local Authorities

LAQM Activity	Completion Date	Which Authorities?
Updating and Screening Assessment (USA)	End of May 2003	All Authorities
Detailed Assessment	End of April 2004	Those Authorities which have identified the need for on in their May 2003 USA
Progress Report	End of April 2004	Those Authorities which identified that there was no need for a Detailed Assessment in their May 2003 USA
Progress Report	End of April 2005	All Authorities
USA	End of April 2006	All Authorities
Detailed Assessment	End of April 2007	Those Authorities which have identified the need for on in their April 2006 USA
Progress Report	End of April 2007	Those Authorities which identified that there was no need for a Detailed Assessment in their April 2006 USA
Progress Report	End of April 2008	All Authorities

USA	End of April 2009	All Authorities
Detailed Assessment	End of April 2010	Those Authorities which have identified the need for on in their April 2009 USA
Progress Report	End of April 2010	Those Authorities which identified that there was no need for a Detailed Assessment in their April 2009 USA

2. SUMMARY OF FINDINGS FROM PREVIOUS REVIEW AND ASSESSMENT WORK

2.1 First Round of Review And Assessment

The first round of review and assessment (carried out in 2000) concluded that the risk of exceeding the air quality objectives for the following pollutants was negligible: -

Carbon monoxide, Benzene, 1,3-butadiene, Lead, Sulphur dioxide, PM10 & Nitrogen dioxide.

On this occasion these conclusions were dependent on a proposed gas fired power station in Yelland not being constructed. If constructed, a third stage review would have been required to consider localised exceedences of *Sulphur dioxide* and *Nitrogen dioxide*.

2.2 Updating and Screening Assessment

The Updating and Screening Assessment (carried out in 2002/03) concluded that: -

1. The risk of exceeding the air quality objectives for the following pollutants was negligible: -

Carbon monoxide, Benzene, 1,3-butadiene, Lead, PM10 & Nitrogen dioxide.

2. A detailed assessment was required for the *15-minute Sulphur Dioxide* only arising from public exposure to idling trains at Barnstaple railway station.
3. Monitoring results for *Nitrogen dioxide* identified potential exceedences of the annual mean objective at several locations in Barnstaple, however these locations were likely to see significant reductions in road traffic numbers should the proposed western bypass and downstream bridge be constructed. As this was scheduled for completion by early 2006, it was considered that a detailed assessment for Nitrogen dioxide was not necessary.

3. NEW MONITORING RESULTS

3.1 Carbon monoxide

3.1.1 National Network Monitoring (nearest national network monitoring sites)

2004 – No exceedences at any site in South West England

3.1.2 Local Monitoring

No local monitoring programme

3.2 Benzene

3.2.1 National Network Monitoring (nearest national network monitoring sites)

2004 – No exceedences at any site in South West England

3.2.2 Local Monitoring

No local monitoring programme

3.3 1,3-Butadiene

3.3.1 National Network Monitoring (nearest national network monitoring sites)

2004 – No monitoring sites in South West England

3.3.2 Local Monitoring

No local monitoring programme

3.4 Lead

3.4.1 National Network Monitoring (nearest national network monitoring sites)

2004 – No monitoring sites in South West England

3.4.2 Local Monitoring

No local monitoring programme

3.5 Sulphur dioxide

3.5.1 National Network Monitoring (nearest national network monitoring sites)

2004 – No exceedences at any site in South West England

3.5.2 Local Monitoring

No local monitoring programme

3.6 PM10

3.6.1 National Network Monitoring (nearest national network monitoring sites)

2004 – No exceedences at any site in South West England

3.6.2 Local Monitoring

No local monitoring programme

3.7 Nitrogen dioxide

3.7.1 National Network Monitoring (nearest national network monitoring sites)

2004 – No exceedences of 1hour mean standard at any site in South West England. The annual mean standard was exceeded at the following sites: -

- BATH 1N
- BATH ROADSIDE
- BRIDGWATER 6N
- BRISTOL 1N
- BRISTOL 5N
- BRISTOL OLD MARKET
- EXETER 1N
- EXETER 5N
- NEWTON ABBOT 6N
- POOLE 3N
- SOUTHAMPTON 10N
- TOTNES 9N
- WESTBURY 1N
- WESTBURY 6N

3.7.2 Local Monitoring

Nitrogen dioxide diffusion tube survey at locations described in detail in Appendix 1

Table 3.1 - Locations monitored since last USA in 2003

Site <i>(all locations in Barnstaple unless stated)</i>	Annual Mean NO ₂ Concentrations (µg/m ³)			
	Uncorrected		Corrected	
	2003 ¹	2004 ²	2003 ³	2004 ⁴
Broad Street, South Molton	28.5	20.66	27.36	19.63
Hollowtree Road	37.25	32.89	35.76	31.25
Cedars Roundabout	28.5	20.66	27.36	19.63
Sticklepath School	11.85	8.92	11.38	11.26
Alexandra Road	42.39	32.62	40.69	30.99
Medical Centre, Vicarage St.	21.8	17.47	20.93	16.60
Pilton Causeway	30.23	25.46	29.02	24.19
High Street, Ilfracombe (1)	27.76	22.87	26.65	21.73
Church Street, Ilfracombe	27.9	22.98	26.78	21.83
The Square, Braunton	41.83	39.43	40.16	37.46
Prixford, nr Barnstaple	12.58	9.77	12.08	9.28
West Yelland, nr Barnstaple	13.40	-	12.864	-
Lower Sticklepath	34.17	25.96	32.8032	24.662
Rolle Street	45.16	38.74	43.3536	36.803

Notes: -

- ¹ - January 2003 – December 2003
- ² - January 2004 – December 2004
- ³ - Bias adjustment factor = 0.96 – refer to Appendix 3
- ⁴ - Bias adjustment factor = 0.95 – refer to Appendix 3

3.7.3 Annual Mean Concentration Trends

Of the Nitrogen dioxide diffusion tube monitoring locations in North Devon, 9 have been in operation for 4 or more years. These are as follows: -

- Broad Street, South Molton
- Hollowtree Road, Barnstaple
- Cedars Roundabout, Barnstaple
- Sticklepath School, Barnstaple
- Alexandra Road, Barnstaple
- Medical Centre, Vicarage Street, Barnstaple
- Pilton Causeway, Barnstaple
- High Street, Ilfracombe (1)
- The Square, Braunton

In 2001, tube preparations changed to 20%TEA in water. As a result monitored Nitrogen dioxide concentrations increased at all sites. Despite this increase, the use of data from before the change in tube preparation is considered to be valid as it was still subject to satisfactory QA/QC at an accredited laboratory.

The data in the below chart is presented in uncorrected format, as this Authority was not able to establish a valid bias adjustment factor for each year of collected data. The site numbers in the legend correlate with those contained in Appendix 1.

3.7.4 Annual Mean Concentration Projections

Table 3.2 contains projected Nitrogen dioxide concentrations for 2005 and 2010. As can be seen in the table, it is predicted that the objective will be exceeded in 2005 at Rolle Street, Barnstaple. This location is a congested street canyon, and road traffic is the primary source of Nitrogen dioxide, however completion of the road scheme described in section 4.2 is projected to deliver a 54% reduction in traffic flow along this road link. This will have significant air quality benefits, and a detailed assessment for this location is considered necessary at this time.

Chart 3.1 - Annual Mean NO2 Concentration Trends 2000-2004

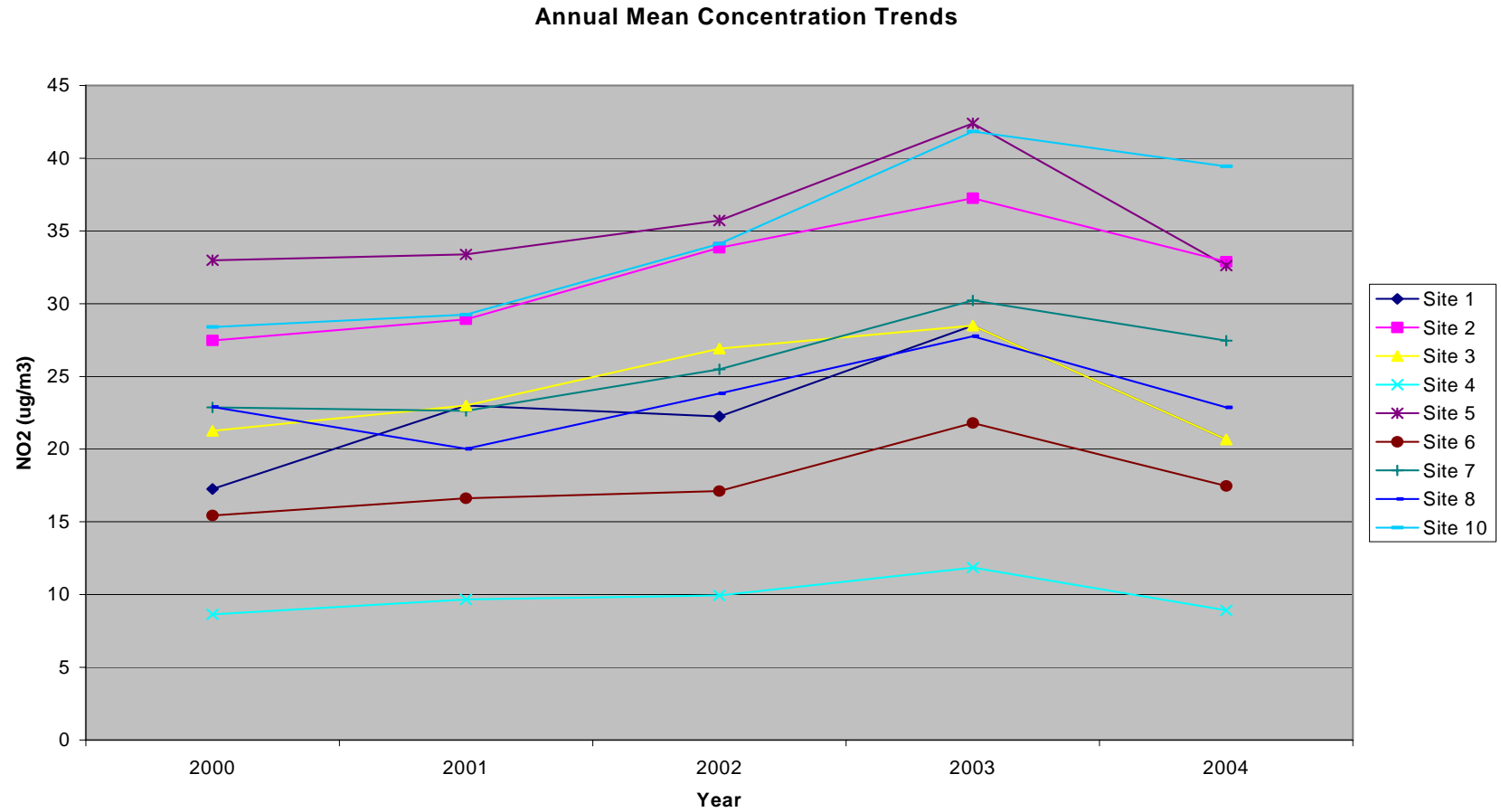


Table 3.2 - Nitrogen dioxide annual mean concentration projections

Site <i>(all locations in Barnstaple unless stated)</i>	Bias Corrected Measured Concentration ($\mu\text{g}/\text{m}^3$)		Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)		Predicted Exceedence	
	2003	2004	2005	2010	2005	2010
Broad Street, South Molton	27.36	19.63	25.94	21.34		
Hollowtree Road	35.76	31.25	33.90	27.89		
Cedars Roundabout	27.36	19.63	25.94	21.34		
Sticklepath School	11.38	11.26	10.98	9.03		
Alexandra Road	40.69	30.99	38.57	31.74		
Medical Centre, Vicarage St.	20.93	16.60	19.84	16.33		
Pilton Causeway	29.02	24.19	27.51	22.64		
High Street, Ilfracombe (1)	26.65	21.73	25.26	20.79		
High Street, Ilfracombe (2)	26.78	21.83	25.39	20.89		
The Square, Braunton	40.16	37.46	38.07	31.33		
Prixford, nr Barnstaple	12.08	9.28	11.45	9.42		
West Yelland, nr Barnstaple	12.86	-	12.19	10.03		
Lower Sticklepath Roundabout	32.80	24.66	31.09	25.58		
Rolle Street	43.35	36.80	41.09	33.81	4	

Correction factors for projected concentrations derived from Guidance LAQM.TG(03) Box 6.6

4. NEW LOCAL DEVELOPMENTS

4.1 New Industrial Processes

Table 4.1 - Industrial Processes Identified Since Publication Of The 2003 USA: -

Location	OS Grid ref.	Description	Relevant Pollutants ¹
Hill Village, South Molton	SS 686 262	Part A2 Particleboard, wood combustion and wood products processes	none
Charles, Barnstaple	SS 691 328	Part A2 Roadstone Coating process	None
Bickington, Barnstaple	SS 533 324	Part B Waste Oil Burner	none
Mill Road, Barnstaple	SS 555 334	Part B Waste Oil Burner	none

¹Pollutant information taken from LAQM.TG(03), Appendix E

No significant new industrial processes have been identified in neighbouring Local Authority areas with potential to adversely affect air quality in North Devon.

4.2 New Road Schemes

A major new road scheme is currently under construction in Barnstaple - a western bypass of the town centre, together with a new bridge over the River Taw downstream of the town centre. The path of the bypass and downstream bridge can be seen in outline in Appendix 4.

This scheme had been granted planning permission prior to the submission of the 2003 USA, however due to delays in establishing the funding package, commencement of work has been delayed. Information provided by the road scheme contractor has suggested that the road will not be open to traffic until Spring 2007, one year later than stated in the 2003 USA. The scheme is still expected to deliver the predicted reduction in road traffic levels and air pollutants, however in some cases this will be over 12 months after the objective date.

Since January 2005, North Devon District Council has expanded its Nitrogen dioxide diffusion tube monitoring scheme on those roads affected by the downstream bridge project, so that it may assess the impact the delays will have on achievement of the Nitrogen dioxide annual mean objective for 31st December 2005. This data will be fully considered in the 2006 USA.

4.3 Public Transport

In the 2003 USA, Diesel locomotives idling at Barnstaple Station were identified as requiring further assessment against the 15-minute Sulphur dioxide objective. This was on the basis of timetable assessment and observations of trains at the station, that indicated that trains were idling at the station within 1metre of public areas for greater than 15 minutes on 3 or more occasions per day.

Since publication of the USA, North Devon District Council has been in contact with Wessex Trains, and were informed that at the end of a branch line like Barnstaple Station, it was not advisable to switch the diesel engines off, due to the distance to a repair facility should they fail to switch on again. Despite this situation, a solution to the problem has materialised in that following timetable changes in early 2004 trains are at the platform for more than 15 minutes on no more than 2 occasions per day. This continues into the current timetable, and the screening criteria are no longer fulfilled and a detailed assessment of air quality is not required. A copy of the current timetable for this line is included in Appendix 5.

4.4 New Developments

In previous rounds of review and assessment, North Devon District Council has identified proposals for a Combined Cycle Gas Turbine Power Station at West Yelland, Barnstaple. Since the 2003 USA these proposals have been completely withdrawn, and indeed the Part A1 Permit for the development has been surrendered.

4.5 Planning Approvals

No planning approvals have been given since the last round of review and assessment where it has been necessary to impose conditions for assessment of, or to limit the impact on, compliance with the National Air Quality Standards.

Applications with air quality issues that are currently being determined are outlined in Table 4.2. Only one application is described in the table, this being the redevelopment of a former industrial site for mixed retail and residential use. This is a major application and required an Environmental Impact Assessment. Air Quality was a major component of this assessment, due to the increases in traffic flow in Braunton, some road links seeing an increase in Annual Average Daily Traffic flow of almost 5000. The air quality assessment determined that although there would certainly be some increase in pollutant concentrations, these were not likely to lead to an exceedence of the 2005 objectives.

Table 4.2 – Current Planning Applications with Air Quality Concerns

Application Number	Location	Description	Cause of Concern	Relevant Pollutants
34480	Former Brannoc Fibres Site, First Field Lane, Braunton	Food Store, Business Floor Space and Residential Development (outline application)	Increased traffic on several road links in Braunton	NO ₂ & PM ₁₀

5. Summary of Findings

This Progress Report concludes that: -

1. The findings of the 2003 Updating and Screening Assessment remain valid for Carbon monoxide, Benzene, 1,3-Butadiene, Lead and PM₁₀.
2. A Detailed Assessment is not required for the 15-minute Sulphur dioxide objective, due to changes in the timetable for trains operating from Barnstaple Station.
3. Construction of the Barnstaple Western Bypass has now commenced. The predicted reductions in road traffic in central Barnstaple are still expected to be achieved, however compliance with the annual mean objective for Nitrogen dioxide at Rolle Street is expected to be approximately 12 months later than stated in the 2003 USA.
4. There are no new industrial processes or planned developments in the North Devon District with the potential to significantly impact upon achievement of the National Air Quality Standards.

Appendix 1

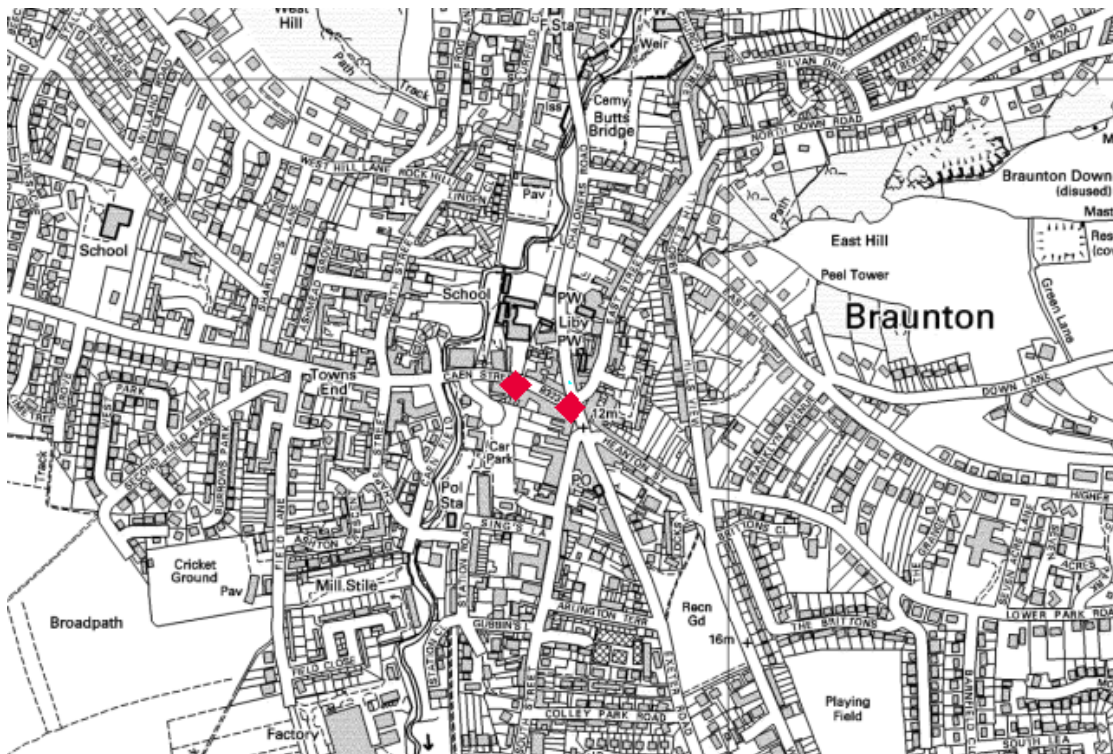
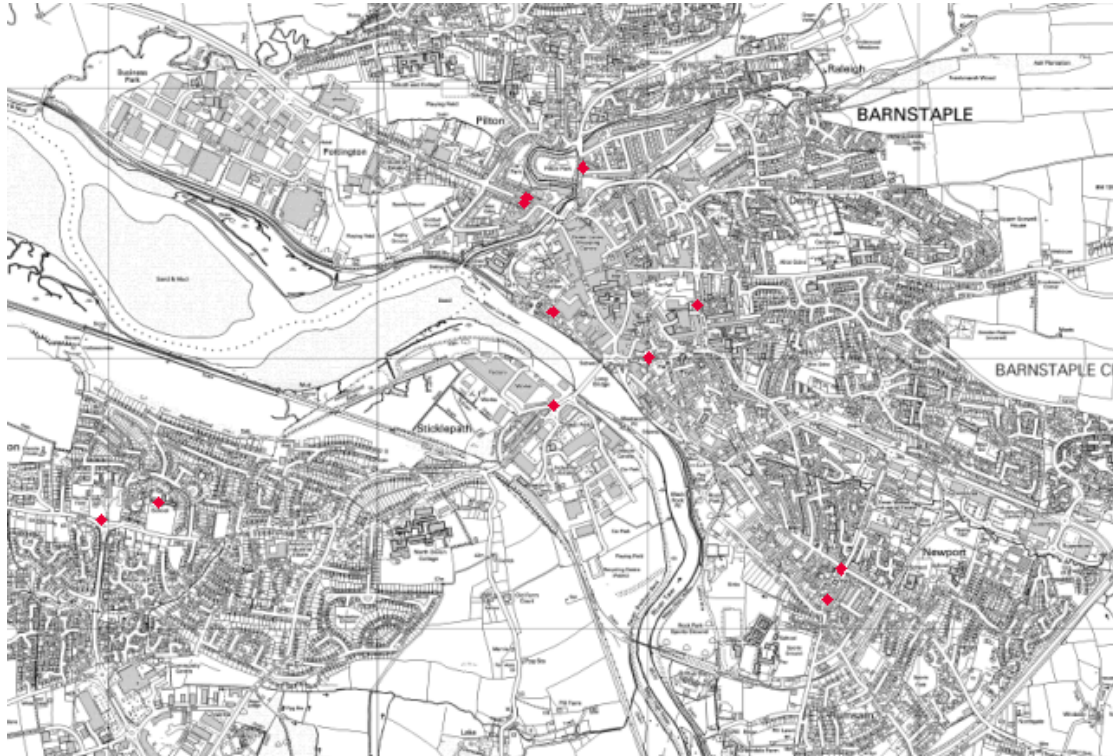
Nitrogen Dioxide Diffusion Tube Monitoring Locations

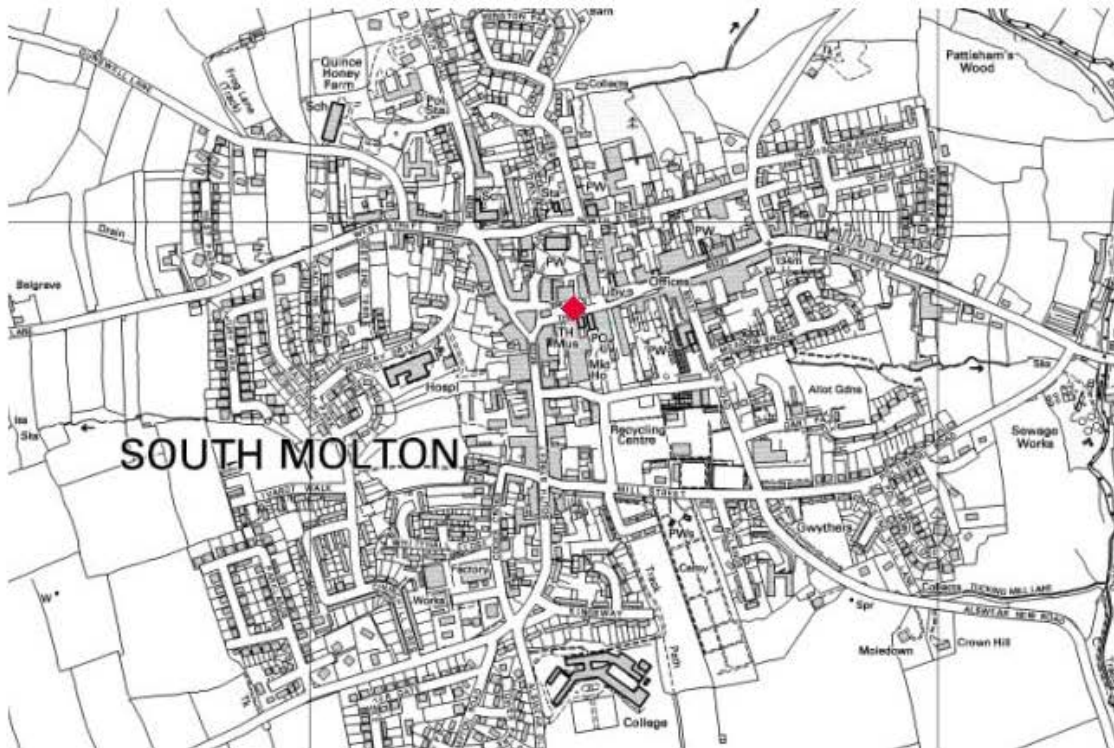
Site No.	Location	Description	Site Type	Comments
1	Broad Street, South Molton	Lamp post, middle of main square		
2	Hollowtree Road, Newport, Barnstaple	Lamp post, 1m from road, congested junction		2m from residential façade. Discontinued Jan 2005
3	Cedars Roundabout, Barnstaple	Lamp post, 2 metres from road, congested junction		
4	Sticklepath School, Sticklepath, Barnstaple	School façade, >50m from nearest road	Urban background	
5	Alexandra Road, Barnstaple	Lamp post, 2m from road	Urban Kerbside	Representative of residential façade further along road.
6	Medical Centre, Vicarage Street, Barnstaple	Telegraph pole in car park, >15m from road	Urban Intermediate	Discontinued Jan 2005
7	Pilton Causeway, Barnstaple	Lamp post, 1m from road, congested road	Urban Kerbside	Residential façade 4m further from road
8	High Street, Ilfracombe	Signpost 1m from road	Urban Kerbside	residential exposure on opposite side of road
9	Church Street, Ilfracombe	Lamp post 1m from road	Urban Kerbside	
10	The Square, Braunton	Signpost <1m from road, congested junction	Urban Kerbside	residential façade 3m further from road
11	Prixford, Barnstaple	Telegraph pole <1m from road	Rural roadside	Potential impact from CCGT project. Discontinued Jan 2005
12	West Yelland, Barnstaple	Lamp post 2-3m from road, adjacent proposed CCGT power station	Urban Kerbside	Discontinued Feb 2004
13	Lower Sticklepath Roundabout,	Signpost 1m from road,		Represents residential

	Barnstaple	adjacent former DCC NO2 monitor		exposure at Osborne Terrace
14	Rolle Street (1), Barnstaple	Lamp post 1m from congested road in Street Canyon		Residential exposure 3m further from road
15	Rolle Street (2), Barnstaple	Telegraph pole 1m from congested road in Street Canyon		Directly opposite site 14 Commenced Feb 2005
16	London Inn, Caen Street, Braunton	House façade, 1m from congested road		Commenced Feb 2005
17	Castle Street, Barnstaple	House façade 1m from congested road in Street Canyon		Commenced Feb 2005
18	South Street, Newport, Barnstaple	Lamp post 1m from occasionally congested road		Residential exposure 2m further from road Commenced Feb 2005
19	Newport Road, Newport, Barnstaple	Residential façade 1m from congested junction		Commenced Feb 2005
20	Belle Meadow Court, Belle Meadow Road, Barnstaple	Residential façade 3m from congested road		Commenced Mar 2005

Appendix 2

Maps of Current Nitrogen Dioxide Monitoring Locations





Appendix 3

Diffusion Tube Monitoring of Nitrogen dioxide

Current Laboratory

Gradko International Ltd
St. Martins House
Wales Street
Winchester
Hampshire
SO23 0RH

Quality Control

Participant in WASP laboratory analysis scheme; measurement accuracy assessed monthly by AEA Technology as part of UK No2 Survey QA/QC Scheme.

Tube Preparation Method

20% TEA in Water

Bias Adjustment Factor

The bias adjustment factors for 2003 and 2004 are 0.96 and 0.95 respectively. These figures were obtained from the Air Quality Management Resource Centre website operated the University of the West England, and are derived from co-location studies for the tube preparation and laboratory form across the UK. Copies of the output sheets from the website are on the following pages.

http://www.uwe.ac.uk/aqm/review/diffusiontube280205.xls - Microsoft Internet Explorer provided by North Devon District Council

Address: http://www.uwe.ac.uk/aqm/review/diffusiontube280205.xls

B10 = Analysed By1

Spreadsheet Version Number: 02/05b

Follow the steps below **in the correct order** to show the results of **relevant** collocation studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used

This spreadsheet will be updated periodically and the factors may therefore be subject to change. This should not discourage their immediate use. [R&A website](#)

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Step 1:	Step 2:	Step 3:	Step 4:						
Select the Laboratory that Analyses Your Tubes from the Pop-Up List	Select a Preparation Method from the Pop-Up List	Select a Year from the Pop-Up List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor² shown in blue at the foot of the final column.						
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data ³	If you have your own collocation study then see footnote ⁴ . If uncertain what to do then contact the Review and Assessment Helpdesk 0117 344 3668 aqm-review@uwe.ac.uk.						

Analysed By ¹	Method ² To undo your selection, choose (All) from the pop-up list	Year ⁵ To undo your selection, choose (All)	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in Water	2003	Dudley MBC	9	52	52	0.6%	0.99
Gradko	20% TEA in Water	2003	Exeter CC	12	39	41	-4.4%	1.05
Gradko	20% TEA in Water	2003	Charnwood BC	12	32	33	-4.5%	1.05
Gradko	20% TEA in Water	2003	LB Ealing	9	45	41	10.7%	0.90
Gradko	20% TEA in Water	2003	LB Ealing	10	58	59	-2.6%	1.03
Gradko	20% TEA in Water	2003	North Warwickshire BC	10	50	47	5.2%	0.95
Gradko	20% TEA in Water	2003	South Lakeland DC	12	39	35	11.8%	0.99
Gradko	20% TEA in Water	2003	Bromsgrove DC	10	49	52	-5.3%	1.06
Gradko	20% TEA in Water	2003	Mid Beds DC	12	39	38	1.4%	0.99
Gradko	20% TEA in Water	2003	AEA Tech intercomparison	12	39	31	27.7%	0.78
Gradko	20% TEA in Water	2003	Highland Council	9	27	24	11.4%	0.90
Gradko	20% TEA in Water	2003	Overall Factor² (11 studies)				Use	0.96

¹ For Casella Stanger use Gradko; for Staffordshire County Analyst use Staffordshire CC SS; For Kent SS in 2004 contact the R&A helpdesk

² In this situation it would be reasonable to use data from the nearest year; except for Kent SS tubes, for which you should contact the R&A helpdesk

³ Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor

⁴ If you have your own collocation study, please send your data to us, so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a factor, i.e. -16% is -0.16. Next add 1 to this value, e.g. -0.16 + 1.00 = 0.84 in this example, then take the inverse to give the bias adjustment factor 1/0.84 = 1.19. (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close). For further details, including how to calculate bias, see the accompanying note

⁵ Where an annual data set falls into two years it has been ascribed to the year in which most of the data fall.

To add data download a questionnaire or contact: BenWarner@aqconsultants.co.uk

At the time that this spreadsheet was published, completed data questionnaires were still being received. Questionnaires received too late to be included here will be included in the April 2005 update

collocation data

Filter Mode Unknown Zone

Start Novell-delivered Applicati... Novell GroupWise - Mailbox http://www.uwe.ac.uk... Microsoft Word - Progres... 14:04

http://www.uwe.ac.uk/aqm/review/diffusiontube280205.xls - Microsoft Internet Explorer provided by North Devon District Council

Address http://www.uwe.ac.uk/aqm/review/diffusiontube280205.xls

B10 = Analysed By

Spreadsheet Version Number: 02/05b

Follow the steps below **in the correct order** to show the results of **relevant** collocation studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used

This spreadsheet will be updated periodically and the factors may therefore be subject to change. This should not discourage their immediate use.

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Step 1: Select the Laboratory that Analyses Your Tubes from the Pop-Up List

Step 2: Select a Preparation Method from the Pop-Up List

Step 3: Select a Year from the Pop-Up List

Step 4: Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor² shown in blue at the foot of the final column.

If a laboratory is not shown, we have no data for this laboratory.

If a preparation method is not shown, we have no data for this method at this laboratory.

If a year is not shown, we have no data².

If you have your own collocation study then see footnote⁴. If uncertain what to do then contact the Review and Assessment Helpdesk 0117 344 3668 aqm-review@uwe.ac.uk.

Analysed By	Method <small>To undo your selection, change (All) from the pop-up list</small>	Year ⁵ <small>To undo your selection, change (All)</small>	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) ($\mu\text{g}/\text{m}^3$)	Automatic Monitor Mean Conc. (Cm) ($\mu\text{g}/\text{m}^3$)	Bias (B)	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in Water	2004	Dudley MBC	12	32	29	12.9%	0.89
Gradko	20% TEA in Water	2004	Dudley MBC	12	49	50	-1.0%	1.01
Gradko	20% TEA in Water	2004	Macclesfield BC	12	33	38	-14.9%	1.18
Gradko	20% TEA in Water	2004	South Lakeland DC	12	36	27	34.0%	0.75
Gradko	20% TEA in Water	2004	Exeter CC	12	35	39	-11.9%	1.13
Gradko	20% TEA in Water	2004	Pushmoor BC	12	39	30	27.4%	0.79
Gradko	20% TEA in Water	2004	LB Ealing	10	55	54	0.0%	1.00
Gradko	20% TEA in Water	2004	Overall Factor² (7 studies)				Use	0.95

¹ For Casella Stanger use Gradko; for Staffordshire County Analyst use Staffordshire CC SS; For Kent SS in 2004 contact the R&A helpdesk

² Overall factors have been calculated using orthogonal regression to allow for uncertainty in both the automatic monitor and diffusion tube. The uncertainty of the diffusion tube has been assumed to be double that of the automatic monitor

³ In this situation it would be reasonable to use data from the nearest year, except for Kent SS tubes, for which you should contact the R&A helpdesk

⁴ If you have your own collocation study, please send your data to us, so that it can be included here. If this is not possible, but you wish to combine these factors with your own, select and copy the relevant data from this spreadsheet and paste them into a new one (otherwise your calculations will include hidden data). Then add your own data and calculate the bias. To obtain a new correction factor that includes your data, average the bias (B) values, expressed as a factor, i.e. -16% is -0.16. Next add 1 to this value, e.g. $-0.16 + 1.00 = 0.84$ in this example, then take the inverse to give the bias adjustment factor $1/0.84 = 1.19$. (This will not be exactly the same as the correction factor calculated using orthogonal regression as used in this spreadsheet, but will be reasonably close). For further details, including how to calculate bias, see the accompanying note

⁵ Where an annual data set falls into two years it has been ascribed to the year in which most of the data fall.

To add data download a questionnaire or contact: Ben Farmer@aqcconsultants.co.uk

At the time that this spreadsheet was published, completed data questionnaires were still being received. Questionnaires received too late to be included here will be included in the April 2005 update.

collocation data

8 of 300 records found

Unknown Zone

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Appendix 4

Barnstaple Western Bypass and Downstream Bridge

Appendix 5

Tarka Line Timetable

Extracts from Wessex Trains booklet C Devon & Cornwall – Winter/Spring Train Times: - 12 December 2004 to 10 June (Weekdays), 22 May (Weekends) 2005

Table 2 Exmouth to Exeter & Barnstaple		Monday to Friday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Exmouth	d	0601	0710	0755	0824	0854	0924	0954	1024	1054	1124	
Lymstone Village	d	0605	0714	0759	0828	0858	0928	0958	1028	1058	1128	
Lymstone Commando	d	06x09	07x18	08x01		09x02		10x00		11x00		
Exton	d	06x09	07x18	08x03		09x02		10x02		11x02		
Topsham	d	0613	0722	0807	0837	0906	0936	1006	1036	1106	1136	
Digby & Sowton	d	0617	0726	0811	0841	0910	0940	1010	1040	1110	1140	
Polsloe Bridge	d	0620	0729	0815		0914		1013		1113		
St James' Park	d	0623	0731	0819		0916		1016		1116		
Exeter Central	a	0625	0734	0822	0846	0919	0945	1018	1045	1118	1145	
Exeter St David's	d	0625	0734	0823	0847	0919	0946	1019	1046	1119	1146	
Paignton	a	0628	0737	0826	0850	0922	0949	1022	1049	1122	1149	
London Waterloo	a	0744cn	0848			1014		1114		1219	1305	
London Paddington	a	1019c		1149c		1349c				1549c		
Bristol Temple Meads	a	0900	1000	1120		1223v	1223	1340v	1340	1420v	1420	
Bristol Temple Meads	a	0923	1025	1025	1059v			1158v	1158	1321v	1321	
Bristol Temple Meads	d	0546		0700				0944				
London Paddington	d							0730				
London Waterloo	d							0710				
Paignton	d		0625		0749					0918		
Exeter St David's	d	0543	0638	0742		0851				1050		
Newton St Cyres	d											
Crediton	d	0553	0648	0753		0902				1101		
Yeoford	d											
Copplestone	d											
Morchard Road	d											
Lapford	d	07x02										
Eggesford	d	0614	0710	0815		0922				1122		
King's Nympton	d	07x16	08x21									
Portsmouth Arms	d		08x25									
Umberleigh	d	07x26	08x31									
Chapelton	d		08x35									
Barnstaple	a	0639	0739	0844		0948				1148		
Destination						Cardiff						

Table 2 Exmouth to Exeter & Barnstaple		Monday to Friday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Exmouth	d	1154	1224	1254	1324	1354	1424	1454	1524	1554		1624
Lymstone Village	d	1158	1228	1258	1328	1358	1428	1458	1528	1558		1628
Lymstone Commando	d	12x00		13x00		14x00		15x00		16x00		
Exton	d	12x02		13x02		14x02		15x02		16x02		
Topsham	d	1206	1236	1306	1336	1406	1436	1506	1536	1606		1636
Digby & Sowton	d	1210	1240	1310	1340	1410	1440	1510	1539	1610		1640
Polsloe Bridge	d	1213		1313		1413		1513		1613		
St James' Park	d	1216		1316		1416		1516		1616		
Exeter Central	a	1218	1245	1318	1345	1418	1445	1518	1545	1618		1645
Exeter St David's	a	1218	1247	1318	1346	1418	1446	1519	1545	1619	1638	1646
Paignton	a	1221	1250	1321	1349	1421	1449	1522	1549	1622	1641	1649
London Waterloo	a	1314	1404	1422		1515		1614		1714		1741
London Paddington	a			1649c	1745c					1949c		
London Paddington	a	1505v	1505	1635v	1635	1737v	1737	1825v	1825	1904v	1904	1904v
Bristol Temple Meads	a	1425v	1425	1516v	1523	1553v	1619	1625v	1725	1825v	1825	1825v
Bristol Temple Meads	d		1144			1344		1510		1544		
London Paddington	d		1005			1205		1305		1405		
London Waterloo	d		0920			1020		1220				
Paignton	d		1119			1319		1441		1519		
Exeter St David's	d		1251			1451		1551		1649		
Newton St Cyres	d											
Crediton	d		1302			1501		1601		1706		
Yeoford	d		13x06							17x06		
Copplestone	d											
Morchard Road	d											
Lapford	d		13x18							17x17		
Eggesford	d		1325			1522		1622		1725		
King's Nympton	d					15x28				17x31		
Portsmouth Arms	d											
Umberleigh	d					15x38				17x41		
Chapelton	d											
Barnstaple	a		1349			1550		1647		1753		
Destination												

Table 2 Exmouth to Exeter & Barnstaple		Monday to Friday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Exmouth	d	1854	1724	1754	1824		1854	1924	1954	2124	2222	2317
Lymstone Village	d	1658	1728	1758	1828		1858	1928	1958	2128	2226	2321
Lymstone Commando	d	17x00		18x00	18x30		19x00	19x30	20x00	21x30	22x28	23x23
Exton	d	17x02		18x02	18x32		19x02	19x32	20x02	21x32	22x30	23x25
Topsham	d	1709	1736	1809	1837		1907	1936	2007	2136	2234	2329
Digby & Sowton	d	1713	1740	1813	1841		1911	1942	2011	2140	2238	2333
Polsloe Bridge	d	1716		1816	1844		1915	1946	2014	2143	2241	2336
St James' Park	d	1719		1819	1847		1917	1948	2017	2147	2245	2340
Exeter Central	a	1721	1745	1821	1849		1919	1950	2019	2151	2246	2341
Exeter St David's	a	1722	1747	1822	1849		1920	1951	2019	2153	2246	2341
Paignton	a	1725	1750	1825	1852		1923	1954	2022	2156	2249	2344
London Waterloo	a	1822		1924			2018	2110	2230		2351	
London Paddington	a	2036v	2036	2120v	2120			2330r	2330r			0511
Bristol Temple Meads	a	1925v	1925	2021v	2021		2137v	2137	2137	2359		
Bristol Temple Meads	d		1644			1744				1949		
London Paddington	d		1505			1605				1803		
London Waterloo	d		1420							1620		
Paignton	d		1654			1756				1935		
Exeter St David's	d		1751			1919				2037		
Newton St Cyres	d		17x59			19x26				20x44		
Crediton	d		1805			1932				2051		
Yeoford	d		18x12			19x38				20x57		
Copplestone	d		18x17							21x02		
Morchard Road	d		18x19							21x05		
Lapford	d		18x23			19x48				21x08		
Eggesford	d		1830			1956				2116		
King's Nympton	d		18x36			20x02						
Portsmouth Arms	d		18x40			20x06						
Umberleigh	d		18x46			20x13				21x31		
Chapelton	d		18x50			20x16						
Barnstaple	a		1900			2026				2143		
Destination												Cardiff

Table 2 Exmouth to Exeter & Barnstaple		Saturday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Exmouth	d		0612	0707	0754	0824	0854	0924	0954	1024	1054	1124
Lymstone Village	d		0616	0711	0758	0828	0858	0928	0958	1028	1058	
Lymstone Commando	d				08x00		09x00	09x30	10x00		11x00	
Exton	d				08x02		09x02	09x32	10x02		11x02	
Topsham	d		0622	0717	0806	0836	0906	0936	1006	1036	1106	1136
Digby & Sowton	d		0626	0721	0810	0840	0910	0940	1010	1040	1110	1140
Polsloe Bridge	d				0813		0913	0943	1013		1113	
St James' Park	d				0816		0916	0946	1016		1116	
Exeter Central	a		0631	0726	0818	0845	0918	0948	1018	1045	1118	1145
Exeter St David's	a		0632	0728	0818	0846	0918	0948	1018	1046	1119	1146
Paignton	a		0635	0731	0821	08						

Table 2 Exmouth to Exeter & Barnstaple		Saturday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	
Exmouth	d	1154	1224	1254	1324	1354	1424	1454	1524	1554	—	1624
Lymptstone Village	d	1158	1228	1258	—	1358	—	1458	1528	1558	—	1628
Lymptstone Commando	d	12x00	—	13x00	—	14x00	—	15x00	—	16x00	—	16x30
Exton	d	12x02	—	13x02	—	14x02	—	15x02	—	16x02	—	16x32
Topsham	d	1206	1236	1306	1336	1406	1436	1506	1536	1606	—	1636
Digby & Sowton	d	1210	1240	1310	1340	1410	1440	1510	1540	1610	—	1640
Polsloe Bridge	d	1213	—	1313	—	1413	—	1513	—	1613	—	1643
St James' Park	d	1216	—	1316	—	1416	—	1516	—	1616	—	1646
Exeter Central	a	1218	1245	1318	1345	1418	1445	1518	1545	1618	—	1648
Exeter St David's	a	1218	1247	1320	1346	1418	1446	1518	1547	1618	1642	1648
Paignton	a	1221	1250	1323	1349	1421	1449	1521	1550	1621	1645	1651
London Waterloo	a	—	—	—	1649c	—	—	—	1949c	—	—	—
London Paddington	a	1505v	1505	1720v	1720	1720v	1720	1820	1820	1908v	—	1908
Bristol Temple Meads	a	1616v	1425	1516v	1523	1553v	1616	1625	1721	1811v	1825	1825
Bristol Temple Meads	d	—	1144	—	—	—	1244	—	1344	—	1525	—
London Paddington	d	—	1005	—	—	—	1205	—	1305	—	1405	—
London Waterloo	d	—	0920	—	—	—	1020	—	1220	—	—	—
Paignton	d	—	1119	—	—	—	1319	—	1437	—	1550	—
Exeter St David's	d	—	1251	—	—	—	1451	—	1551	—	1649	—
Newton St Cyres	d	—	—	—	—	—	—	—	—	—	—	—
Crediton	d	—	1301	—	—	—	1501	—	1601	—	1700	—
Yeoford	d	—	13x08	—	—	—	—	—	—	—	17x06	—
Copplestone	d	—	—	—	—	—	—	—	—	—	—	—
Morchard Road	d	—	—	—	—	—	—	—	—	—	17x13	—
Lapford	d	—	13x18	—	—	—	—	—	—	—	17x17	—
Eggesford	d	—	1325	—	—	—	1522	—	1622	—	1725	—
King's Nympton	d	—	—	—	—	—	15x28	—	—	—	17x31	—
Portsmouth Arms	d	—	—	—	—	—	—	—	—	—	—	—
Umberleigh	d	—	—	—	—	—	15x40	—	16x39	—	17x43	—
Chapelton	d	—	—	—	—	—	—	—	—	—	—	—
Barnstaple	a	—	1349	—	—	—	1550	—	1649	—	1753	—
Destination												

Table 2 Exmouth to Exeter & Barnstaple		Saturday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	
Exmouth	d	—	1654	1724	1754	1824	1854	1954	2116	2317	—	—
Lymptstone Village	d	—	1658	1728	1758	1828	1858	1958	2120	2321	—	—
Lymptstone Commando	d	—	17x00	—	18x00	18x30	19x00	20x00	21x22	23x23	—	—
Exton	d	—	17x02	—	18x02	18x30	19x02	20x02	21x24	23x25	—	—
Topsham	d	—	1709	1736	1809	1836	1906	2007	2128	2329	—	—
Digby & Sowton	d	—	1713	1740	1813	1840	1910	2011	2132	2333	—	—
Polsloe Bridge	d	—	1716	—	1817	1843	1913	2014	2135	2336	—	—
St James' Park	d	—	1703	1719	—	1819	1846	1916	2017	2138	2339	—
Exeter Central	a	—	1705	1721	1745	1821	1849	1918	2019	2140	2341	—
Exeter St David's	a	—	1705	1721	1747	1822	1849	1918	2019	2140	2341	—
Paignton	a	—	1708	1724	1750	1825	1852	1921	2022	2143	2344	—
London Waterloo	a	—	—	—	2204c	2257c	0005g	—	—	—	—	—
London Paddington	a	—	2038v	2038	2118v	2118	2230v	2257	—	—	—	—
Bristol Temple Meads	a	—	1825v	1916v	1925	2025v	2025	2240v	2240	—	—	—
Bristol Temple Meads	d	—	—	1544	—	1744	—	1849	—	—	—	—
London Paddington	d	—	—	1505	—	1605	—	1805	—	—	—	—
London Waterloo	d	—	—	1420	—	—	—	1620	—	—	—	—
Paignton	d	—	—	1645	—	1719	—	1935	—	—	—	—
Exeter St David's	d	—	—	1751	—	1919	—	2037	—	—	—	—
Newton St Cyres	d	—	—	17x59	—	19x26	—	20x44	—	—	—	—
Crediton	d	—	—	1805	—	1932	—	2051	—	—	—	—
Yeoford	d	—	—	18x12	—	19x38	—	20x57	—	—	—	—
Copplestone	d	—	—	18x17	—	—	—	21x02	—	—	—	—
Morchard Road	d	—	—	18x19	—	—	—	21x05	—	—	—	—
Lapford	d	—	—	18x23	—	19x48	—	21x08	—	—	—	—
Eggesford	d	—	—	1830	—	1956	—	2116	—	—	—	—
King's Nympton	d	—	—	18x36	—	20x02	—	—	—	—	—	—
Portsmouth Arms	d	—	—	18x40	—	20x06	—	—	—	—	—	—
Umberleigh	d	—	—	18x46	—	20x13	—	21x31	—	—	—	—
Chapelton	d	—	—	18x50	—	20x18	—	—	—	—	—	—
Barnstaple	a	—	—	1901	—	2026	—	2143	—	—	—	—
Destination												

Table 2 Exmouth to Exeter & Barnstaple		Sunday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	
Exmouth	d	—	1105	1205	1305	1405	1505	1605	1705	1805	1905	2005
Lymptstone Village	d	—	1109	1209	1309	1409	1509	1609	1709	1809	1909	2009
Lymptstone Commando	d	—	11x11	12x11	13x11	14x11	15x11	16x11	17x11	18x11	19x11	20x11
Exton	d	—	11x13	12x13	13x13	14x13	15x13	16x13	17x13	18x13	19x13	20x13
Topsham	d	—	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017
Digby & Sowton	d	—	1121	1221	1321	1421	1521	1621	1721	1821	1921	2021
Polsloe Bridge	d	—	1124	1224	1324	1424	1524	1624	1724	1824	1924	2024
St James' Park	d	—	1134	1227	1327	1427	1527	1627	1727	1827	1927	2029
Exeter Central	a	—	1136	1229	1329	1429	1529	1629	1729	1829	1929	2036
Exeter St David's	d	—	1137	1231	1336	1431	1531	1631	1731	1830	1931	2037
Paignton	a	—	1140	1234	1339	1434	1534	1634	1734	1833	1934	2040
London Waterloo	a	—	—	1334	1448	1533	—	1735	—	1938	—	2135
London Paddington	a	—	—	1658c	—	1858c	—	2004c	—	2258c	—	—
Bristol Temple Meads	a	—	—	1518v	1618	1718v	1806	1916v	2012	2106v	2223	—
Bristol Temple Meads	d	—	—	1318	—	1515	1553v	1717	1806v	1922	2013v	2145
London Paddington	d	—	—	1025	—	1244	—	1400	—	1544	—	1744
London Waterloo	d	—	—	0830	—	1105	—	1305	—	1505	—	1705
Paignton	d	—	—	—	—	—	—	1220	—	1420	—	—
Exeter St David's	d	—	—	—	—	1214	—	1430	—	1643	—	1829
Newton St Cyres	d	—	0950	1150	—	1350	—	1550	—	1745	—	1947
Crediton	d	—	1004	1200	—	1404	—	1604	—	1801	—	2001
Yeoford	d	—	10x10	12x07	—	14x10	—	16x10	—	18x08	—	20x07
Copplestone	d	—	—	10x15	—	1415	—	16x15	—	—	—	20x12
Morchard Road	d	—	10x18	12x14	—	14x18	—	16x18	—	18x15	—	20x15
Lapford	d	—	10x22	12x18	—	14x22	—	16x22	—	18x19	—	20x19
Eggesford	d	—	1030	1225	—	1430	—	1630	—	1831	—	2027
King's Nympton	d	—	10x36	12x31	—	14x36	—	16x36	—	18x37	—	20x33
Portsmouth Arms	d	—	—	10x40	—	14x40	—	16x40	—	—	—	20x37
Umberleigh	d	—	1046	12x43	—	1446	—	1646	—	1849	—	20x43
Chapelton	d	—	10x52	—	—	14x52	—	16x52	—	—	—	20x49
Barnstaple	a	—	1059	1253	—	1459	—	1659	—	1859	—	2056
Destination												

Table 2 Exmouth to Exeter & Barnstaple		Sunday		
Train Operator		WE	WE	WE
Exmouth	d	2105	2205	2335
Lymptstone Village	d	2109	2209	2339
Lymptstone Commando	d	21x11	22x11	23x41
Exton	d	21x13	22x13	23x43
Topsham	d	2117	2217	2347
Digby & Sowton	d	2121	2221	2351
Polsloe Bridge	d	2124	2224	2354
St James' Park	d	2127	2225	2357
Exeter Central	a	2129	2237	2359
Exeter St David's	a	2131	2237	2359
Paignton	a	2134	2240	0002
London Waterloo	a	—	—	—
London Paddington	a	—	—	0511
Bristol Temple Meads	a	—	—	—
Bristol Temple Meads	d	—	—	—
London Paddington	d	—	—	—
London Waterloo	d	—	—	—
Paignton	d	—	—	—
Exeter St David's	d	—	—	—
Newton St Cyres	d	—	—	—
Crediton	d	—	—	—
Yeoford	d	—	—	—
Copplestone	d	—	—	—
Morchard Road	d	—	—	—
Lapford	d	—	—	—
Eggesford	d	—	—	—
King's Nympton	d	—	—	—
Portsmouth Arms	d	—	—	—
Umberleigh	d	—	—	—
Chapelton	d	—	—	—
Barnstaple	a	—	—	—
Destination				

Table 2 Barnstaple to Exeter & Exmouth		Monday to Friday									
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Origin		N/A									
Barnstaple	d	0642	0747	0855	0951						
Chapelton	d	06x48			09x57						
Umberleigh	d	06x51	07x55	08x03							
Portsmouth Arms	d	06x58									
King's Nympton	d	07x02	08x05								
Eggesford	d	0710	0815	0924	1016						
Lapford	d	07x15	08x20								
Morchard Road	d	07x19	08x24	09x32							
Copplestone	d	07x22									
Yeoford	d	07x26	08x31	09x39	10x29						
Crediton	d	0733	0837	0945	1036						
Newton St Cyres	d			09x49							
Exeter St David's	a	0746	0851	0957	1047						
Paignton	a	0848	1014	1114	1219						
London Waterloo	a	1149		1349	1549						
London Paddington	a			1340	1420						
Bristol Temple Meads	a	1000	1223	1340	1420						
Bristol Temple Meads	d	0923	1025	1120	1158						
London Paddington	d		0700	0729v	0844	0844v	0944				
London Waterloo	d										
Paignton	d	0625	0724	0824	0918	0710c					
Exeter St David's	d	0536	0628	0749	0821	0851	0918	0953	1000	1020	1050
Exeter Central	a	0539	0631	0730	0753	0824	0854	0921	0958	1003	1023
St James' Park	d	0641	0732	0756	0827	0854				1024	1054
Polisloe Bridge	d	0644	0759	0830	0900	0927				1026	
Digby & Sowton	d	0545	0647	0737	0802	0833	0903	0930	1002	1032	1100
Topsham	d	0549	0651	0741	0807	0837	0907	0935	1007	1037	1107
Exton	d		07x44	08x10	08x40	09x10	09x38			10x40	
Lymstone Commando	d	0552	07x46	08x12	08x42	09x12	09x40			10x42	
Lymstone Village	d	0656	0747	0814	0843	0914	0941	1012		1043	1112
Exmouth	a	0558	0700	0752	0819	0849	0919	0946	1016		1048

Table 2 Barnstaple to Exeter & Exmouth		Monday to Friday									
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Origin		N/A									
Barnstaple	d	1154			1352						
Chapelton	d										
Umberleigh	d	12x02									
Portsmouth Arms	d										
King's Nympton	d				14x09						
Eggesford	d		1219		1416						
Lapford	d				14x21						
Morchard Road	d		12x27								
Copplestone	d										
Yeoford	d				14x30						
Crediton	d		1239		1437						
Newton St Cyres	d										
Exeter St David's	a		1250		1449						
Paignton	a		1404		1614						
London Waterloo	a		1649		1949						
London Paddington	a		1505		1737						
Bristol Temple Meads	a		1425		1619						
Bristol Temple Meads	d	0944v	1044	1044v	1110	1144v	1244	1244v	1244	1244v	1510v
London Paddington	d	0905	1005v		1030	1105v	1205	1205v	1305	1305v	
London Waterloo	d	0820c		0920c	1020c				1220c		
Paignton	d	1018	1119	1224	1319	1426	1519				
Exeter St David's	d	1120	1150	1220	1252	1320	1350	1420	1451	1520	1543
Exeter Central	a	1123	1154	1223	1254	1323	1354	1423	1454	1523	1546
St James' Park	d	1124	1154	1224	1254	1324	1354	1424	1454	1523	1554
Polisloe Bridge	d	1126	1226	1326	1426	1525				1624	
Digby & Sowton	d	1129	1229	1329	1429	1528				1629	
Topsham	d	1137	1207	1237	1307	1337	1407	1437	1507	1537	1632
Exton	d	11x40	12x40	13x40	14x40	15x39				16x40	
Lymstone Commando	d	11x42	12x42	13x42	14x42	15x41				16x42	
Lymstone Village	d	1143	1212	1243	1312	1343	1412	1443	1512	1543	1643
Exmouth	a	1148	1216	1248	1316	1348	1416	1448	1516	1548	1648

Table 2 Barnstaple to Exeter & Exmouth		Monday to Friday									
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Origin		N/A									
Barnstaple	d	1555	1657	1800	1929	2048	2146				
Chapelton	d			18x06							
Umberleigh	d	16x03	17x05	18x10	19x37	20x56	21x54				
Portsmouth Arms	d			18x16							
King's Nympton	d	16x13		18x21	19x47	21x07	22x05				
Eggesford	d	1622	1724	1832	1956	2115	2212				
Lapford	d			18x37	20x01	21x21	22x17				
Morchard Road	d			18x41							
Copplestone	d			18x44							
Yeoford	d			18x48	21x30						
Crediton	d	1640	1742	1856	2015	2137	2231				
Newton St Cyres	d			18x59	21x41	22x35					
Exeter St David's	a	1654	1755	1909	2025	2150	2245				
Paignton	a	1822	1924	2018	2230	2351					
London Waterloo	a	2204	2257								
London Paddington	a	1904	2036	2330r	2330r	0511					
Bristol Temple Meads	a	1925	1925	2021	2137	2359					
Bristol Temple Meads	d	1544	1544v	1644	1644v	1744v	1849v			2111	
London Waterloo	d	1408	1408v	1505	1505v	1605v	1605v	1803	1903	1935	
Paignton	d		1420c			1620c					
Paignton	d		1624	1719	1756	1826					
Exeter St David's	d	1658	1720	1756	1818	1850	1923	2053	2151	2246	
Exeter Central	a	1659	1723	1759	1821	1853	1926	2056	2154	2249	
St James' Park	d	1659	1724	1800	1824	1854	1926	2056	2155	2250	
Polisloe Bridge	d		1726	1826		1926	2058	2157	2252		
Digby & Sowton	d		1729	1829		1931	2101	2200	2255		
Topsham	d	1705	1732	1805	1832	1859	1935	2105	2203	2258	
Exton	d	1709	1737	1809	1837	1907	1939	2109	2207	2302	
Exton	d	17x12	17x40	18x12	18x40	19x10	19x42	21x12	22x10	23x05	
Lymstone Commando	d	17x14	17x42	18x14	18x42	19x12	19x44	21x14	22x12	23x07	
Lymstone Village	d	1715	1743	1816	1843	1913	1946	2115	2214	2309	
Exmouth	a	1720	1748	1821	1848	1918	1951	2120	2219	2314	

Table 2 Barnstaple to Exeter & Exmouth		Saturday									
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE
Origin		N/A									
Barnstaple	d	0642			0747					0853	
Chapelton	d									08x59	
Umberleigh	d	06x48			07x55					09x03	
Portsmouth Arms	d	06x58								09x09	
King's Nympton	d	07x03			08x06					09x14	
Eggesford	d	0711			0815					0924	
Lapford	d	07x16			08x20					09x29	
Morchard Road	d	07x20			08x24					09x33	
Copplestone	d	07x23								09x36	
Yeoford	d	07x28			08x31					09x41	
Crediton	d	0735			0839					0947	
Newton St Cyres	d									09x51	
Exeter St David's	a	0747			0850					1000	
Paignton	a	0914			1014					1128	
London Waterloo	a	1149								1349	
London Paddington	a	1005			1200					1320	
Bristol Temple Meads	a	0918			1023					1118	
Bristol Temple Meads	d		0546	0700v	0700	0725v					
London Paddington	d										
London Waterloo	d										
Paignton	d	0625	0715	0749			0849			0924	
Exeter St David's	d	0547	0635	0720	0750	0820	0842	0852	0950	1001	1020
Exeter Central	a	0550	0638	0723	0753	0823	0845	0855	0953	1004	1023
St James' Park	d	0551	0640	0724	0754	0824	0854		0924	0954	1024
Polisloe Bridge	d	0642	0726	0756	0826	0856		0926	0956		1026
Digby & Sowton	d	0645	0729	0759	0829	0859		0929	0959		1029
Topsham	d	0556	0648	0732	0802	0832	0902		0932	1002	1032
Exton	d	0600	0652	0736	0806	0836	0906		0936	1006	1036
Exton	d			07x39	08x09	08x39	09x09		09x39	10x09	10x39
Lymstone Commando	d		06x58	07x41	08x11	08x41	09x11		09x41	10x11	10x41
Lymstone Village	d	0605	0657	0743	0813	0843	0913		0943	1013	1043
Exmouth	a	0609	0702	0748	0818	0848	0918		0948	1018	1048

Table 2 Barnstaple to Exeter & Exmouth		Saturday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	
Origin												
Barnstaple	d	0951	--	--	--	1155	--	--	--	1352	--	--
Chapelton	d	--	--	--	--	--	--	--	--	--	--	--
Umberleigh	d	09x59	--	--	--	12x03	--	--	--	--	--	--
Portsmouth Arms	d	--	--	--	--	--	--	--	--	--	--	--
King's Nympton	d	10x10	--	--	--	12x14	--	--	--	14x09	--	--
Eggesford	d	1017	--	--	--	1221	--	--	--	1416	--	--
Lapford	d	10x22	--	--	--	--	--	--	--	14x21	--	--
Morchard Road	d	--	--	--	--	--	--	--	--	--	--	--
Copplestone	d	--	--	--	--	--	--	--	--	--	--	--
Yeoford	d	10x32	--	--	--	--	--	--	--	14x30	--	--
Crediton	d	1038	--	--	--	1239	--	--	--	1437	--	--
Newton St Cyres	d	--	--	--	--	--	--	--	--	--	--	--
Exeter St David's	a	1050	--	--	--	1251	--	--	--	1449	--	--
Paignton	a	1305	--	--	--	1405	--	--	--	1614	--	--
London Waterloo	a	1549	--	--	--	1649	--	--	--	1949	--	--
London Paddington	a	1320	--	--	--	1505	--	--	--	1720	--	--
Bristol Temple Meads	a	1218et	--	--	--	1425	--	--	--	1616	--	--
Bristol Temple Meads	d	0944	--	0955	1044v	1110	1125v	1244	1344v	1344	1355v	--
London Paddington	d	0735	0735v	0905	1005v	1005	--	1030	1205v	--	--	1305
London Waterloo	d	0710c	--	--	0820c	0920c	--	--	1020c	--	--	1220c
Paignton	d	--	1018	--	1119	--	1224	--	1319	--	1405	--
Exeter St David's	d	1050	1120	1150	1220	1252	1320	1350	1420	1450	1520	1544
Exeter Central	a	1054	1123	1154	1223	1254	1323	1354	1423	1454	1523	1547
St. James' Park	a	1054	1124	1154	1224	1254	1324	1354	1424	1455	1524	1554
Polsloe Bridge	a	--	1126	--	1228	--	1328	--	1426	--	1526	--
Digby & Sowton	a	1059	1132	1159	1232	1259	1332	1359	1432	1500	1532	1559
Topsham	a	1105	1136	1205	1236	1305	1336	1405	1437	1507	1536	1607
Exton	a	--	11x39	--	12x38	--	13x39	--	14x40	--	15x39	--
Lymestone Commando	a	--	11x41	--	12x41	--	13x41	--	14x42	--	15x41	--
Lymestone Village	a	1110	1143	1210	1243	1310	1343	1410	1443	1512	1543	1612
Exmouth	a	1114	1148	1214	1248	1314	1348	1414	1448	1516	1548	1616

Table 2 Barnstaple to Exeter & Exmouth		Saturday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	
Origin												
Barnstaple	d	--	1555	--	1657	--	1800	--	1929	2048	2146	--
Chapelton	d	--	--	--	--	18x06	--	--	--	--	--	--
Umberleigh	d	--	16x03	--	17x05	--	18x10	--	19x37	20x56	21x54	--
Portsmouth Arms	d	--	--	--	--	18x16	--	--	--	--	--	--
King's Nympton	d	--	16x13	--	17x16	--	18x21	--	19x48	21x07	22x05	--
Eggesford	d	--	1622	--	1724	--	1832	--	1956	2115	2212	--
Lapford	d	--	--	--	--	--	--	18x37	--	20x01	21x21	22x17
Morchard Road	d	--	--	--	--	--	--	18x41	--	--	--	--
Copplestone	d	--	--	--	--	--	--	18x44	--	--	--	--
Yeoford	d	--	--	--	--	--	--	18x48	--	21x30	--	--
Crediton	d	--	1640	--	1742	--	1856	--	2015	2137	2231	--
Newton St Cyres	d	--	--	--	--	--	--	18x59	--	--	21x41	22x35
Exeter St David's	a	--	1653	--	1755	--	1909	--	2028	2151	2245	--
Paignton	a	--	1800	--	1854	--	2014	--	2144	--	--	--
London Waterloo	a	--	--	--	2204	--	--	--	--	--	--	--
London Paddington	a	--	1908	--	2118	--	2230	--	2257	--	--	--
Bristol Temple Meads	a	--	1825	--	1925	--	2025	--	2240	--	--	--
Bristol Temple Meads	d	1510v	1544	1544v	1644	1644v	--	1744v	1849	1944	2025	--
London Paddington	d	1305v	1405	1405v	1505	1505v	--	1605v	1805	1905	2005	--
London Waterloo	d	--	--	--	1420c	--	--	--	1620c	--	--	1820c
Paignton	d	1519	--	1624	--	1719	--	1824	--	--	--	--
Exeter St David's	d	1620	1654	1720	1756	1820	--	1920	2044	2151	2246	--
Exeter Central	a	1623	1657	1723	1759	1823	--	1923	2047	2154	2249	--
St. James' Park	d	1624	1658	1724	1800	1824	--	1924	2049	--	2250	--
Polsloe Bridge	d	1626	--	1726	--	1826	--	1926	2051	--	2252	--
Digby & Sowton	d	1629	--	1729	--	1829	--	1929	2054	--	2255	--
Topsham	d	1632	1704	1732	1806	1832	--	1932	2058	--	2258	--
Exton	d	1636	1708	1736	1810	1836	--	1936	2102	--	2302	--
Lymestone Commando	d	16x39	17x11	17x39	18x13	18x39	--	19x39	21x05	--	23x05	--
Lymestone Village	d	16x41	17x13	17x41	18x15	18x41	--	19x41	21x07	--	23x07	--
Exmouth	a	1648	1719	1748	1821	1848	--	1948	2113	--	2314	--

Table 2 Barnstaple to Exeter & Exmouth		Sunday										
Train Operator		WE	WE	WE	WE	WE	WE	WE	WE	WE	WE	
Origin												
Barnstaple	d	--	--	1106	--	1308	--	1508	--	1708	--	1908
Chapelton	d	--	--	11x12	--	1314	--	1514	--	1716	--	19x14
Umberleigh	d	--	--	11x16	--	13x18	--	15x16	--	17x16	--	19x18
Portsmouth Arms	d	--	--	11x22	--	13x24	--	15x27	--	17x27	--	19x24
King's Nympton	d	--	--	11x27	--	13x29	--	15x27	--	17x27	--	19x29
Eggesford	d	--	--	1134	--	1336	--	1534	--	1734	--	1936
Lapford	d	--	--	11x39	--	13x41	--	15x39	--	17x39	--	19x42
Morchard Road	d	--	--	11x43	--	13x45	--	15x43	--	17x43	--	19x46
Copplestone	d	--	--	11x46	--	13x48	--	15x46	--	17x46	--	19x49
Yeoford	d	--	--	11x51	--	1353	--	15x50	--	17x50	--	19x53
Crediton	d	--	--	1158	--	1402	--	1602	--	1759	--	2002
Newton St Cyres	d	--	--	1202	--	14x05	--	--	--	--	--	20x05
Exeter St David's	a	--	--	1211	--	1417	--	1618	--	1811	--	2014
Paignton	a	--	--	1334	--	1533	--	1735	--	1938	--	2135
London Waterloo	a	--	--	1658	--	1858	--	2004	--	2258	--	--
London Paddington	a	--	--	1518	--	1716	--	1952	--	2106	--	2308
Bristol Temple Meads	a	--	--	1318	--	1553	--	1742	--	1924	--	2145
Bristol Temple Meads	d	--	--	1025	1244v	--	1400v	1512	1644v	--	1744v	1848v
London Paddington	d	--	--	0830	1105v	--	1305v	--	1505v	1505	1605v	1705v
London Waterloo	d	--	--	--	--	--	1220c	--	1420c	--	--	1620c
Paignton	d	--	--	--	1214	--	1430	1536	1622	--	1816	1942
Exeter St David's	d	1014	1126	1214	1326	1414	1526	1619	1727	1813	1926	2016
Exeter Central	a	1017	1129	1217	1329	1419	1529	1623	1730	1817	1929	2019
St. James' Park	d	1021	1130	1221	1330	1421	1530	1624	1731	1821	1930	2021
Polsloe Bridge	d	1023	1132	1223	1332	1423	1532	1626	1733	1823	1932	2023
Digby & Sowton	d	1030	1135	1230	1335	1430	1535	1630	1736	1830	1935	2030
Topsham	d	1033	1139	1233	1339	1433	1539	1632	1740	1832	1939	2033
Exton	d	1037	1143	1237	1343	1437	1543	1637	1744	1837	1943	2037
Lymestone Commando	d	10x40	11x46	12x40	13x46	14x40	15x46	16x40	17x47	18x40	19x46	20x40
Lymestone Village	d	10x42	11x48	12x42	13x48	14x42	15x48	16x42	17x49	18x42	19x48	20x42
Exmouth	a	1044	1149	1244	1349	1445	1549	1644	1751	1844	1949	2044

Table 2 Barnstaple to Exeter & Exmouth		Sunday												
Train Operator		WE	WE											
Origin														
Barnstaple	d	--	--	2133								--	--	--
Chapelton	d	--	--	21x39								--	--	--
Umberleigh	d	--	--	21x43								--	--	--
Portsmouth Arms	d	--	--	21x49								--	--	--
King's Nympton	d	--	--	21x54								--	--	--
Eggesford	d	--	--	2201								--	--	--
Lapford	d	--	--	22x06								--	--	--
Morchard Road	d	--	--	22x10								--	--	--
Copplestone	d	--	--	22x13								--	--	--
Yeoford	d	--	--	22x18								--	--	--
Crediton	d	--	--	2224								--	--	--
Newton St Cyres	d	--	--	22x28								--	--	--
Exeter St David's	a	--	--	2237								--	--	--
Paignton	a	--	--	2237								--	--	--
London Waterloo	a	--	--	--								--	--	--
London Paddington	a	--	--	0511								--	--	--
Bristol Temple Meads	a	--	--	--								--	--	--
Bristol Temple Meads	d	1939v	2120v	--								--	--	--
London Paddington	d	1833v	--	--								--	--	--
London Waterloo	d	--	--	1820c								--	--	--
Paignton	d	2023	2210	--								--	--	--
Exeter St David's	d	2126	2305	--								--	--	--
Exeter Central	a	2129	2308	--								--	--	--
St. James' Park	d	2130	2308	--								--	--	--
Polsloe Bridge	d	2132	2310	--								--	--	--
Digby & Sowton	d	2135	2313	--								--	--	--
Topsham	d	2139	2317	--								--	--	--
Exton	d	2143	2321	--								--	--	--
Lymestone Commando	d	21x46	23x24	--								--	--	--
Lymestone Village	d	21x48	23x26	--								--	--	--
Exmouth	a	2149	2327	--								--	--	--