Westbury Homes (Holdings) Ltd

PROPOSED DEVELOPMENT AT BICESTER FIELDS

Noise Assessment

January 1998

HALCROW

The Queen's Award For Export Achievement

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Prepared By: S J Lawson

Document Ref: 8518002

Copy No: 1

Sir William Halcrow & Partners Ltd, Red Hill House, 227 London Road, Worcester WR5 2JG
Tel 01905 768200, Fax 01905 768204

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Westbury Homes (Holdings) Ltd

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Noise Assessment

JANUARY 1989

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Signed

1. INTRODUCTION

Westbury Homes (Holdings) Ltd wish to develop land for residential use at Bicester Fields at the location shown at Figure 1. The site is situated on the southern outskirts of Bicester and bounded to the west by the B4100 London Road and to the north west by the east west railway line, which passes through Bicester Town Station.

Sir William Halcrow & Partners Ltd have been asked to carry out a railway and road traffic noise assessment for these proposals and to comment on any mitigation measures that may be required.

2. GENERAL

Noise is defined as unwanted sound and the unit of measurement is the decibel(dB).

Noise levels range from the threshold of hearing at 0dB to levels of over 130dB at which point the noise becomes painful.

Sound consists of vibrations transmitted to the ear as rapid variations in air pressure. The more rapid the fluctuation the higher the frequency of the sound. However, the sensitivity of the human ear varies with frequency, therefore most everyday noise, including railway noise and road traffic noise is measured in dB(A), the (A) suffix indicating that the measured level has been modified to allow for this phenomenon. It has been found that changes in noise level, when measured in dB(A) most closely correlate with the changes in subjective reaction.

The range of values of pressure over which the ear can hear is enormous and for convenience the decibel scale, which is logarithmic, is used as the resulting numbers correspond, generally to the noise perceived. A change in noise level of 10dB(A) represents a halving or doubling in perceived loudness.

Railway noise is comprised of relatively steady noise levels interspersed with short periods of increasing noise as the train approaches, reaching a peak as the train passes and decreasing as the train then travels away from the listener. Similarly road traffic noise levels vary with time.

A noise parameter which is used to monitor fluctuating sound levels is the L_{AeqT}.

The L_{AeqT} is the level of a notional steady sound which, at a given position and over a defined period of time, T has the same A weighted acoustic energy as the actual fluctuating sound.

3. NOISE STANDARDS AND GUIDANCE

The appropriate guidelines in considering noise levels at noise sensitive sites are contained in the document Planning Policy Guidance 24 (PPG24) which was published in September 1994 and replaced DOE Circular 10/73. PPG 24 provides advice to the planning authority when considering a planning application in a noisy area, and introduces the concept of Noise Exposure Categories (NEC's) for new residential development.

PPG24 states:

"When assessing a proposal for residential development near a source of noise, local planning authorities should determine into which of the four noise exposure categories (NECs) the proposed site falls, taking account of both day and night-time noise levels. Local planning authorities should then have regard to the advice in the appropriate NEC, as below:

NEC	
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

A recommended range of noise levels is given below for each of the NECs for dwellings exposed to noise from road, rail and mixed sources. Annex 2 provides a detailed explanation of how the boundaries of each of the NECs have been derived. Paragraph 9 of the main text explains that in some cases local planning authorities may be able to justify a range of NECs of up to 3 dB(A) above or below those recommended.

Values in the table below refer to noise levels measured on an open site at the position of the proposed dwellings, well away from any existing buildings, and 1.2m to 1.5m above the ground . The arithmetic average of recorded readings should be rounded up. Where that average falls on the boundary between NECs B and C it will be for the local planning authority to determine which is the more appropriate NEC for the proposal.

NOISE LEVELS CORRESPONDING TO THE NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS L_{AeqT} dB				
	NOISE EXPOSURE CATEGORY			
Noise Source	**A**	**B**	**C**	**D**
Road Traffic 0700 - 2300 2300 - 0700	 <55 <45	 55-63 45-57	 63-72 57-66	 >72 >66
Rail Traffic 0700 - 2300 2300 - 0700	 <55 <45	 55-66 45-59	 66-74 59-66	 >74 >66
Air Traffic 0700 - 2300 2300 - 0700	 <57 <48	 57-66 48-57	 66-72 57-66	 >72 >66
Mixed Sources 0700 - 2300 2300 - 0700	 <55 <45	 55-63 45-57	 63-72 57-66	 >72 >66

Levels of noise from road and rail traffic are often specified at one metre from a facade and these facade levels should be assumed to be 3dB(A) higher than levels measured away from any buildings, unless a more accurate figure is available. For road traffic noise in NECs C and D, L_{Aeq}. 16hr = L_{A10}. 18hr - 2dB"

4. CALCULATIONS OF RAILWAY NOISE LEVELS

In order to consider the noise implications of road and railway traffic in accordance with PPG24 it is necessary to identify noise levels during both the daytime period 0700 to 2300 (L_{aeq} 16 hours) and the night-time period 2300 to 0700 (L_{aeq} 8 hours).

The document Calculation of Railway Noise 1995 (CRN 1995) provides a method for calculating rail noise levels based on the volume and type of traffic operating during the relevant periods.

Subsequent adjustments are made for distance, type of ground cover angle of view and screening.

The present use of the railway line, which passes through Bicester Town Station and runs along the north western boundary of the site is minimal, comprising two refuse trains per day.

However there are proposals by the East West Rail Consortium to resurrect the line between Oxford and the east coast area. These proposals would significantly increase traffic on this line.

In the absence of any detailed flow data, Cherwell District Council have indicated that the adoption of the present flows on the Marylebone line through Bicester North Station could be used to provide an acceptable guide to future noise levels.

Railtrack have provided timetables for the present services at Bicester North Station and copies are included at Appendix A.

There are no freight services indicated on the above timetables. However, Railtrack believe that future passenger flows on the east west route would be somewhat lower than the Marylebone line.

Therefore the use of the Marylebone line traffic flows will overestimate future noise levels due to the passenger service.

This over estimate can therefore be taken to include a contribution from an as yet unknown volume of freight traffic.

Calculations have been carried out in accordance with (CRN 1995) and the following assumption have been made.

(a) The line will be converted to dual track at this point.

(b) That locomotives will be "on power" for 50% of the time.

(c) A speed value of 80 kph.

(d) Traffic as for the Marylebone line.

The location of the 66dB(A) daytime and 59 dB(A) night-time noise contours have been identified and these are indicated on Figure (2). These specific contour values indicate the upper limits of Noise Exposure Category B.

5. CALCULATION OF ROAD TRAFFIC NOISE LEVELS

Road traffic noise levels have been calculated in accordance with the document Calculation of Road Traffic Noise 1988 (CRTN 1988) for the area of the proposed site affected by traffic using the B4100 London Road.

The method of calculation takes into account the volume of traffic, the proportion of heavy vehicles, traffic speed, road gradient and type of road surface.

These factors are used to produce a "Basic Noise Level" for a point 10m from the near edge of the carriageway.

Corrections are then applied to allow for the affects of attenuations due to distance, type of ground cover, reduction due to natural or manmade screening and for any restriction in the angle of view.

The subsequent "free field" L_{A10} 18 hour figure has then been converted to the required L_{Aeq} 16 hour daytime level by the subtraction of 2dB(A), in accordance with Annex 2 paragraph 7 of PPG24.

The traffic noise calculations have been based upon traffic flows provided by Oxfordshire County Council. A figure of 11300 veh/24 hour Annual Average Daily Traffic (AADT) has been provided and is quoted in the document "Oxfordshire Traffic Flows 1996".

This flow has been adjusted using National Road Traffic Forecast (NRTF) High Growth tables to produce a 1999 flow of 12300 veh/24 hour AADT.

Information on the proportion of heavy commercial vehicles at this location is not available.

The B4100 to the north west of Bicester carries 7.1% heavy commercial vehicles (HCV's). Oxfordshire County Council have agreed that in comparison a figure of 10% HCV's would be applicable to the section of B4100 London Road under consideration.

The location of the 55dB(A) and 63dB(A) daytime noise contours are shown on Figure 2.

These represent the upper and lower daytime limits of Noise Exposure Category B. The location of the above daytime noise contours fall outside the area of proposed residential development, therefore it is unnecessary to identify the night-time contours.

6. MITIGATION MEASURES

The location of the railway traffic noise contours are shown on Figure 2:

The 59dB(A) night-time and 66dB(A) daytime noise contours lie approximately 3m and 5m within the site respectively, and represent the upper limit of Noise Exposure Category B (NEC B) and also the lower limit of Noise Exposure Category C (NEC C).

As a result a strip of land approximately 5m wide adjacent to the railway line boundary falls within NEC C and it is advisable that proposals should not include residential properties within this area.

Planning Policy Guidance 24 advises that for NEC B "noise should be taken into account when determining a planning application and where appropriate, conditions imposed to ensure an adequate level of protection against noise".

Therefore it is recommended that the first line of houses adjacent to the railway line should be fitted with high specification double glazed windows.

The window units should be designed to accept 28mm sealed double glazed units, and the two panes should be of different thicknesses.

A glazing arrangement of 10/12/6 would provide a noise reduction of at least 30dB(A).

The external night-time noise level at a property constructed abutting the noise contour position would be 59dB(A) plus an allowance of 3dB(A) for the facade reflection effect, giving 62dB(A).

Therefore an internal noise level at night, with the windows closed would be:-

62 dB(A) - 30 dB(A) = 32dB(A).

This compares well with the World Health Organisation's requirement of 35dB(A).

For the daytime period an internal level of 39dB(A) would arise with windows closed and approximately 54dB(A) with windows open.

The road traffic noise levels adjacent to the B4100 do not affect any residential development and therefore mitigation works are not required in this area.

7. CONCLUSIONS

The site is located to the south of Bicester and is bounded by the B4100 London Road, and the east to west route railway line passing through Bicester Town Station.

Railway noise calculations indicate that part of the site falls within Noise Exposure Categories B and C of PPG 24.

It is advisable that proposals should not include residential buildings within Noise Exposure Category C.

It is also recommended that the first line of houses adjacent to the railway line in Noise Exposure Category B should be fitted with high specification double glazed windows to reduce internal noise levels to World Health Organisation recommended levels.

Road traffic noise levels due to traffic using the B4100 London Road do not affect any areas of residential development within the site, therefore no mitigation measures are required.

APPENDIX A

BICESTER NORTH STATION RAILWAY TIMETABLES

HALCROW

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Summer 1998 Northbound

Train ID	-1- 1G75EC	-2- 5H14EA	-3- 5H09EA	-4- 5H16EA	-5- 1G01EA	-6- 1G02EA	-7- 1G03EA	-8- 1G04EA	-9- 1G06EA	-10- 1G09EA	-11- 1G12EA	-12- 1G15EC
TSDB UID	C68142	C68541	C63213	C63214	C68106	C63163	C62596	C68108	C62497	C62678	C62499	C62610
Profit Centre	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25211004	25530004	25530004
Departs From	23:10 London Marylebn	04:15 Aylesbry	04:30 Aylesbry	04:48 Aylesbry		06:10 High Wycombe	06:34 London Marylebn	07:15 London Marylebn	07:45 London Marylebn	08:10 London Marylebo	08:45 London Marylebn	09:10 London Marylebn
To	Solihull	Birmnghm Snow	Leamngtn Spa	Leamngtn Spa	Birmnghm Snow	Birmnghm Snow	Birmnghm Snow	Birmnghm Snow	Birmnghm Snow		Birmnghm Snow	Banbury
Arrives	01:23	05:53	05:49	05:55	07:08	07:54	09:14	09:21	10:01		10:54	10:37
Timing Type	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU168	DMU(N)
Days Run	*MSX*		[MO]									
Operating Chars	D //	D //	D //	D //	D B //	D B //	B //	D //	D B //	D //	D B //	D //
Accom(+Slprs)/Resvtn/Connectn												
Brand/Catering												
Princes Risborough	00a19½	04|RM33	04|RM48	05cRM03	05.46	06.19½	07.29½	07.58½	08.29½	09.01½	09.25	09.58
Bicester North	00/29½	04/49½	05/04½	05/19½	06a04	06kX44½	07c51	08aX19	08aX50	09.21	09aX43	10a18½
Aynho Jn		04/57½	05/12½	05/27½	06/13½	06/X54	08/00½	08/28½	08/59½		09/52½	10/28

Train ID	-13- 1G16EC	-14- 1G17EC	-15- 1G21EE	-16- 1G23ED	-17- 1G24ED	-18- 1G25EB	-19- 1G28EA	-20- 1G30EA	-21- 1G34EA	-22- 1G36EA	-23- 1G37EB	-24- 1G38EF
TSDB UID	C62500	C68110	C62502	C68115	C62504	C68116	C62507	C68119	C62510	C68122	C62512	C68123
Profit Centre	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004
Departs From	09:45 London Marylebn	10:10 London Marylebn	10:45 London Marylebn	11:10 London Marylebn	11:40 London Marylebn	12:10 London Marylebn	12:40 London Marylebn	13:10 London Marylebn	13:40 London Marylebn	14:10 London Marylebn	14:45 London Marylebn	15:05 London Marylebn
To	Birmnghm Snow	Banbury	Birmnghm Snow	Banbury	Birmnghm Snow	Banbury	Birmnghm Snow	Banbury	Birmnghm Snow	Birmnghm Snow	Birmnghm Snow	Birmnghm Snow
Arrives	11:54	11:32	12:54	12:32	13:54	13:30	15:01	14:32	16:54	16:31	17:01	17:33
Timing Type	DMU168	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)
Days Run												
Operating Chars	D B //	D //	D B //	D //	D B //	D //	D B //	D //	D B //	D //	D B //	D //
Accom(+Slprs)/Resvtn/Connectn												
Brand/Catering												
Princes Risborough	10.25	10.53½	11.25	11.53½	12.20½	12.53½	13.20½	13.53½	14.20½	14.53½	15/24½	15.51½
Bicester North	10a43	11a14	11a43	12a14	12a41	13a14	13aX41	14a14	14aX41	15aX14	15aX44½	16aX11½
Aynho Jn	10/52½	11/23½	11/52½	12/23½	12/50½	13/23½	13/52	14/23½	14/50½	15/23½	15/54	16/21½

Train ID	-25- 1G39EB	-26- 1G40EC	-27- 1G42EF	-28- 1G45EB	-29- 1G47EC	-30- 1G48EB	-31- 1G49EB	-32- 1G52EA	-33- 1G53EB	-34- 1G54EA	-35- 1G56EB	-36- 1G58EB
TSDB UID	C68125	C62514	C68126	C62515	C68128	C68129	C62517	C62519	C68131	C68132	C62521	C68134
Profit Centre	25211004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004
Departs From	15:38 London Marylebn	16:00 London Marylebn	16:10 London Marylebn	16:37 London Marylebn	17:00 London Marylebn	17:10 London Marylebn	17:25 London Marylebn	17:40 London Marylebn	18:00 London Marylebn	18:03 London Marylebn	18:18 London Marylebn	18:40 London Marylebn
To		Birmnghm Snow	Birmnghm Snow	Banbury	Birmnghm Snow	Birmnghm Snow	Birmnghm Snow		Birmnghm Snow		Birmnghm Snow	
Arrives		17:58	18:23	17:56	18:58	19:34	19:43		19:58		20:38	
Timing Type	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU(N)
Days Run												
Operating Chars	D //	D B //	D //	D B //	D //	D //	D B //	D B //	D //	D B //	D B //	D B //
Accom(+Slprs)/Resvtn/Connectn												
Brand/Catering												
Princes Risborough	16.18½	16/37	16.51½	17.18½	17/37	17.53½	18.10½	18.20½	18/37	18.46½	18.58½	19.21½
Bicester North	16.38	16/49½	17a12	17c40	17/49½	18a14	18a31	18.40	18/49½	19.07	19a19	19.42
Aynho Jn		16/57½	17/21½	17/49½	17/X57½	18/23½	18/40½		18/57½		19/29½	

Train ID	-37- 1G60EC	-38- 1G62EB	-39- 1G65EB	-40- 1G67EA	-41- 1G68EB	-42- 2G70EB	-43- 1G70EB	-44- 2G72EA	-45- 2G74EB	-46- 1G75EC
TSDB UID	C62522	C68135	C62524	C62663	C62526	C62666	C62528	C68174	C62670	C68142
Profit Centre	25530004	25530004	25530004	25530004	25530004	25211004	25530004	25211004	25530004	25530004
Departs From	19:00 London Marylebn	19:15 London Marylebn	19:50 London Marylebn	20:10 London Marylebn	20:45 London Marylebn	21:10 London Marylebn	21:45 London Marylebn	22:10 London Marylebn	22:45 London Marylebn	23:10 London Marylebn
To	Birmnghm Snow	Birmnghm Snow	Birmnghm Snow	Banbury	Birmnghm Snow	Banbury	Birmnghm Snow	Banbury	Banbury	Solihull
Arrives	21:06	21:37	22:09	21:36	23:16	22:38	00:04	23:38	00:15	01:23
Timing Type	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)
Days Run										
Operating Chars	D B //	D //	D B //	D //	D B //	D //	D B //	D //	D B //	D //
Accom(+Slprs)/Resvtn/Connectn										
Brand/Catering										
Princes Risborough	19/38	19.58½	20.30½	20.55½	21.30½	21.59½	22.30½	22.59½	23.34½	23.59½
Bicester North	19a55½	20a19	20aX51	21a15½	21aX50½	22a19½	22aX50½	23a19½	23aX56½	00a19½
Aynho Jn	20/05	20/28½	21/00½	21/28	22/06	22/29½	23/00½	23/29½	00/06½	

BICESTER NORTH STATION

NORTHBOUND TIMETABLE

Summer 1998 Southbound

Train ID	-1- 5Q32EA	-2- 5Q24EA	-3- 5H78EA	-4- 5H83EA	-5- 5Q74EC	-6- 1H05EA	-7- 1H08EA	-8- 1H09EA	-9- 1H11EA	-10- 1H13EA	-11- 1H14EA	-12- 1H16EA
TSDB UID	C68517	C63198	C63976	C64800	C63202	C62680	C62681	C62682	C62684	C68146	C68148	C62687
Profit Centre	25530004	25530004	25530004	25530004	25530004	25530004	25211004	25530004	25530004	25530004	25530004	25530004
Departs From	00:18 Banbury	00:18 Banbury	00:06 Leamngtn Spa	00:57 Banbury	01:32 Banbury	05:45 Banbury	06:07 Banbury	06:06 Leamngtn Spa	06:05 Solihull		06:30 Birmnghm Snow	06:49 Solihull
To	Aylesbry		Aylesbry	Aylesbry	Aylesbry	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn
Arrives	01:07		01:34	01:49	02:21	07:09	07:30	07:48	08:08	08:29	08:32	08:55
Timing Type	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU168	DMU(N)
Days Run	[MO]	[MSX]	[MSX]	[MSX]	[MSX]							
Operating Chars	D	D	D		D	D	D	D	D	D	D	D
Accom(+Slprs)/Resvtn/Connectn	//	//	//	//	//	B//	B//	B//	B//	B//	//	B//
Brand/Catering												
Aynho Jn	00/23	00/23	00/37½	01/02	01/37	05X52	06/12	06/34	06X55½	.....	07/29	07/38
Bicester North	00/31½	00+33	00k*X54	01/10½	01/45½	06.02½	06.22	06X44	07.05½	07.25	07/37½	07.48
Princes Risborough	00RM53	.....	01RM21	01RM35	02RM07	06.23½	06.42½	07.04	07.26	07.45	07/52	08.08½

Train ID	-13- 1H19EA	-14- 1H21EA	-15- 1H24EB	-16- 1H26EA	-17- 1H27EA	-18- 1H29EA	-19- 1H30EA	-20- 1H31EA	-21- 1H33EA	-22- 1H34EA	-23- 1H36EA	-24- 1H38EA
TSDB UID	C63807	C68150	C62692	C68152	C68154	C62696	C68156	C68698	C62703	C68159	C62705	C68175
Profit Centre	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004
Departs From	07:00 Birmnghm Snow	08:02 Banbury	07:30 Birmnghm Snow	08:32 Banbury	07:50 Birmnghm Snow	08:30 Birmnghm Snow		08:50 Birmnghm Snow	09:30 Birmnghm Snow	09:50 Birmnghm Snow	10:30 Birmnghm Snow	11:53 Banbury
To	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn
Arrives	09:02	09:28	09:31	09:48	10:15	10:33	10:51	11:16	11:39	12:16	12:45	13:16
Timing Type	DMU168	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)
Days Run												
Operating Chars	D	D	D	D	D	D	D	D	D	D	D	D
Accom(+Slprs)/Resvtn/Connectn	B//	B//	B//	B//	//	B//	B//	//	B//	//	B//	//
Brand/Catering												
Aynho Jn	08/X00	08/09½	08/29	08/37	09/X01	09/29½		09/59½	10/30½	10/59½	11/32	12/00½
Bicester North	08/08½	08X19½	08/37½	08X47	09.11	09/38	09.45	10.10	10.40½	11X10	11X42½	12.11
Princes Risborough	08/23	08.40	08/52	09/06½	09.31½	09/54	10.05	10.30½	11/00	11.31	12.02½	12.31½

Train ID	-25- 1H40EA	-26- 1H42EA	-27- 1H43EA	-28- 1H44EA	-29- 1H46EA	-30- 1H48EA	-31- 1H49EA	-32- 1H52EA	-33- 1H55EA	-34- 1H59EA	-35- 1H63EA	-36- 1H65EA
TSDB UID	C62707	C68163	C62709	C68178	C62711	C68180	C62712	C68179	C62714	C68700	C62716	C68699
Profit Centre	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004	25530004
Departs From	11:30 Birmnghm Snow	12:53 Banbury	12:30 Birmnghm Snow	13:53 Banbury	13:30 Birmnghm Snow	14:56 Banbury	14:30 Birmnghm Snow	15:53 Banbury	15:30 Birmnghm Snow	16:53 Banbury	16:30 Birmnghm Snow	16:41 Birmnghm Snow
To	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn	London Marylebn
Arrives	13:39	14:16	14:39	16:16	15:39	16:16	16:45	17:16	17:49	18:17	18:42	19:16
Timing Type	DMU168	DMU(N)	DMU168	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)	DMU(N)
Days Run												
Operating Chars	D	D	D	D	D	D	D	D	D	D	D	D
Accom(+Slprs)/Resvtn/Connectn	B//	//	B//	//	B//	//	B//	//	B//	//	B//	//
Brand/Catering												
Aynho Jn	12/30½	13/00½	13/30½	14/00½	14/30½	15/01	15/32½	16/00½	16/32	17/00	17/27	17/X59
Bicester North	12X40½	13X11	13X40½	14X11	14X40½	15X11	15X43	16X11	16X44½	17.11	17X37	18.09
Princes Risborough	12.58½	13.31½	13.58½	14.31½	14.58½	15.31½	16.03	16.31½	17.04½	17.31	17.57	18.29

Train ID	-37- 1H67EA	-38- 1H68EA	-39- 1H69EA	-40- 5G49EB	-41- 1H71EA	-42- 1H73EA	-43- 1H75EA	-44- 5H78EA
TSDB UID	C62721	C68185	C62722	C64128	C62723	C62724	C62725	C64799
Profit Centre	25530004	25530004	25530004	25211004	25530004	25530004	25530004	25530004
Departs From	17:30 Birmnghm Snow	18:10 Birmnghm Snow	18:40 Birmnghm Snow	19:36 Leamngtn Spa	19:30 Birmnghm Snow	20:30 Birmnghm Snow	21:30 Birmnghm Snow	23:41 Banbury
To	London Marylebn	London Marylebn	London Marylebn		London Marylebn	London Marylebn	London Marylebn	Aylesbry
Arrives	19:57	20:16	20:59		21:47	22:54	23:55	00:52
Timing Type	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU168	DMU(N)	DMU(N)	DMU(N)
Days Run								
Operating Chars	D	D	D		D	D	D	D
Accom(+Slprs)/Resvtn/Connectn	B//	B//	B//	//	B//	B//	B//	//
Brand/Catering								
Aynho Jn	18/X39	19/04	19/44½	20/04	20/X35½	21/39	22/37	23/46
Bicester North	18X51	19.14	19.54½	20+14	20X45½	21X49	22X47	23eX56
Princes Risborough	19.11½	19.32	20.15	.....	21.03½	22.09½	23.07	00RM39

BICESTER NORTH STATION

SOUTHBOUND TIMETABLE

FIGURE 1

LOCATION PLAN

HALCROW

The Queen's Award For Export Achievement

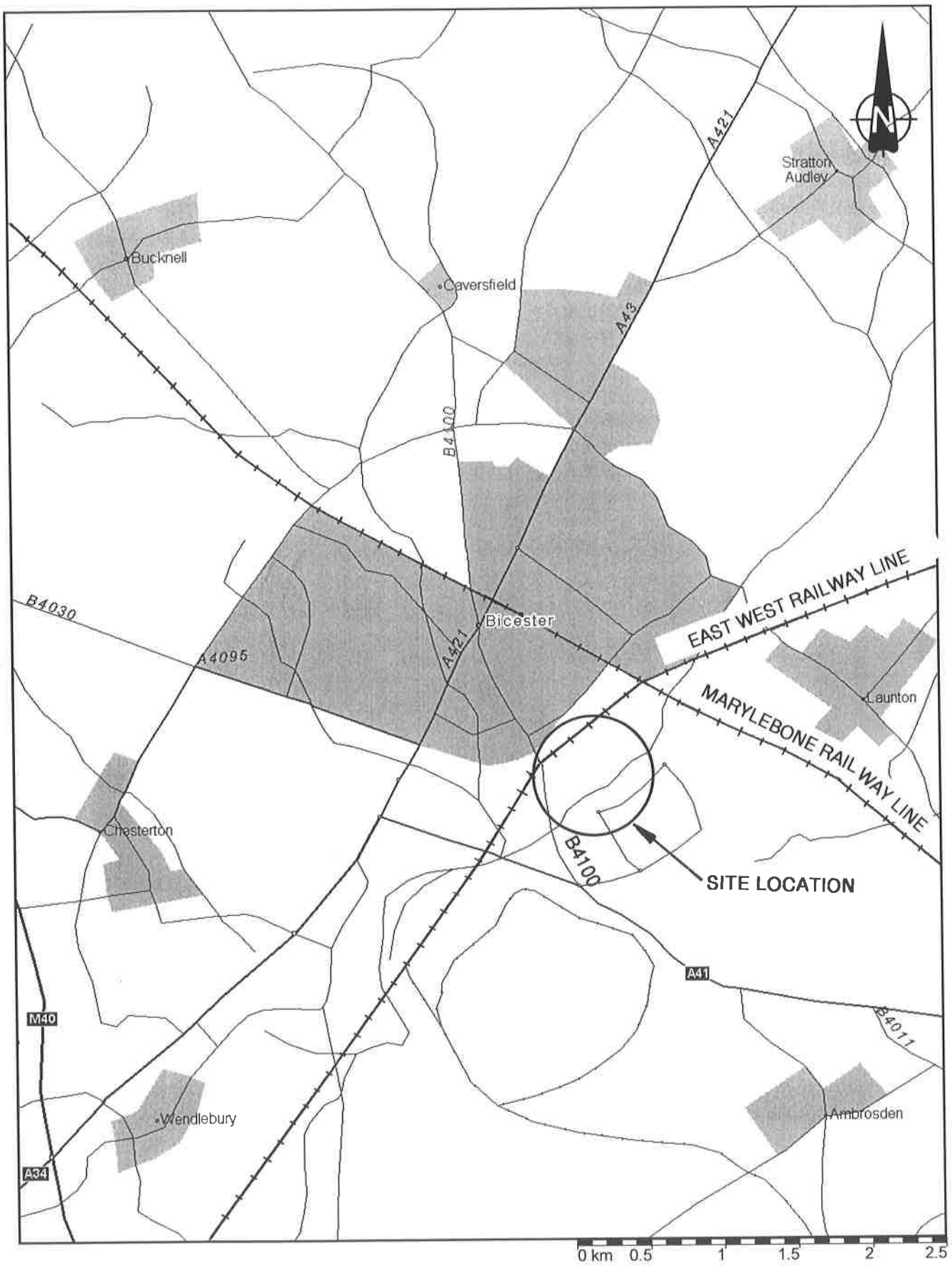

FIGURE 1
LOCATION PLAN

FIGURE 2

AREA OF INTEREST

HALCROW

The Queen's Award For Export Achievement