Defence Infrastructure Organisation

Redevelopment of MOD Bicester

Addendum to Environmental Statement

April 2012

AMEC Environment & Infrastructure
UK Limited

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Report for

Philippa Charles
Project Manager, DIO
Sutton Coldfield

Main Contributors

Bev Coupe
Rachel Dimmick
Louise French
George Gibbs
Ian Hepplewhite
Annie Hindley
Nick Layton
James McGavin

Issued by

.....
Rachel Dimmick

Approved by

.....
Karen Wilson

AMEC Environment & Infrastructure UK Limited

Gables House
Kenilworth Road
Leamington Spa
Warwickshire CV32 6JX
England
Tel: +44 (0) 1926 439000
Fax: +44 (0) 1926 439010

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1. Introduction

1.1 Purpose of the Report

1.1.1 This report forms an Addendum to the Environmental Statement (ES) completed by AMEC E&I UK Ltd in September 2011 in support of an outline planning application by the Defence Infrastructure Organisation (DIO) for the redevelopment of MOD Bicester. This report has been produced in response to a request received from Cherwell District Council (CDC) dated 30.12.11 under Regulation 22 of *The Town and Country Planning (Environmental Impact Assessment) Regulations 2011* (hereinafter referred to as the EIA Regulations). This report should be read in conjunction with the ES.

1.1.2 Each section of this report presents the responses to the questions raised by CDC under the same headings. Each section starts with the CDC questions followed by DIO's response. The number in brackets after each chapter heading refers to the number of the relevant query from CDC's Regulation 22 request.

1.1.3 The convention used in the ES and this report is to use 'impacts' only within the context of the term EIA, which describes the process from scoping through ES preparation to subsequent monitoring and other work. Otherwise, this document uses the word 'effects' when describing the environmental consequences of the proposed development.

2. Description of Development (6)

2.1 CDC Request

6.1 A number of points of detail that relate to the description of development require clarification:

6.1.1 Paragraph 2.3.3 - It is not clear how public access to the southern part of Graven Hill Wood will be prevented.

6.1.2 Paragraph 1.1.3 - refers to 9.9ha of interim private open space, 'reserved for future development'. In Figure 3.1 this parcel becomes 'amenity grassland' which could imply more open access. Please can you clarify if future development is proposed, and if so, its impacts should be assessed.

6.1.3. Paragraph 3.3.13 - assumes that construction activities will be restricted Monday to Friday from 7am until 7pm. Table 8.5 later indicates that construction will be restricted to between the hours of 8am until 6pm. Please can you clarify what has been assessed.

2.2 DIO Response

Access to the southern part of Graven Hill Wood (6.1.1)

2.2.1 Paragraph 2.3.3 discusses the factors that influenced the design of the indicative masterplan for Graven Hill. Information on how access to Graven Hill Wood will be limited is discussed in greater detail in paragraph 12.8.4 in the Biodiversity chapter. This explains that footpaths would only be created in the northern part of the woodland with no footpaths in the southern part of the woodland to discourage people from walking through the southern part of the woodland.

Interim private open space (6.1.2)

2.2.2 No future development is proposed for this area of land at present and no effects have therefore been assessed in the ES.

Construction working hours (6.1.3)

2.2.3 The CDC website[1] recommends (in relation to the timing of building work in the district) that building activity that can be heard beyond the boundary of a site should not start before 08:00hrs and does not carry on beyond 18:00hrs during weekday

[1] http://www.cherwell.gov.uk/index.cfm?articleid=922

hours, is limited to between 08:00hrs and stops at 13:00hrs on Saturdays with no working on Sundays, Bank and Public Holidays. The noise assessment (Table 8.5) has assumed these recommended hours as construction working hours for construction (i.e. building) activity noise where such noise will be audible beyond the boundary of the site.

2.2.4 The traffic assessment has assumed (paragraph 3.3.13) that construction activity will be limited to 07:00 to 19:00 hours on weekdays and 07:00-13:00 on Saturdays to account for staff travelling to and from the site(s) to start and finish work and for HGV traffic movements. However as construction traffic does not comprise 'building activity' as outlined in CDC's requirements this is considered to be an appropriate assumption.

3. Traffic and Transport (7)

3.1 CDC Request

7.1.1. In chapter 6, construction traffic has been scoped out of the ES. Paragraph 6.6.1 indicates that, 'assessment of potential effects associated with construction traffic has not been considered as the quantum will be smaller in number, even at peak construction, than the operation of the development and has therefore been scoped out'. However, the following points needs to be addressed within the ES, a) construction traffic will be different in composition, with increases in HGV's in particular; b) the extended nature of the construction period and hence the long term nature of the associated impacts at Graven Hill; and c) the potential combined impact of construction and operational traffic in the latter phases of the development at Graven Hill.

7.1.2. Can you explain why in table 6.8 the generation of residential traffic volume appears to be very low and why HGV movements are omitted?

7.1.3. Paragraph 6.8.12 identified a number of roads that exceed the 30% threshold for the am or pm period. In accordance with paragraph 6.7.3 of the ES, an assessment of these impacts is required

7.1.4. The neighbouring villages of Ambrosden, Arncott and Wendlebury have not been considered in the TA or ES for the development in terms of traffic distribution or impact. These issues will need to be addressed.

7.1.5. The TA does not consider the increase in HGV movements in relation to the Palmer Avenue / B4011 and the B4011 / A41 junctions. An assessment of these junctions must be submitted for review.

7.1.6. The modelling work within the TA assumed the provision of up to 30% affordable housing. However, the submission clearly only provides for up to 20% affordable housing. The applicant should ensure that areas of assessment reliant on this data are updated as necessary and correct.

3.2 DIO Response

Construction traffic movements (7.1.1)

3.2.1 To address this comment, an estimation of the average daily number of vehicle movements associated with the construction of the Graven Hill development and C Site development has been undertaken and are set out in the following sections.

C Site Construction Traffic

3.2.2 As set out in section 1.4 of the Design and Access Statement, the proposed C Site development will be constructed over three phases: Phase 1 (2013) - demolition of buildings and upgrading of rail lines; Phase 2 (2013-2014) - levelling of the site which will generate material to be reused for landscaping; and Phase 3 (2014-2015) - construction of the Fulfilment Centre, internal fittings and completion of remaining hardstandings, roadways and parking.

3.2.3 Phase 3 has been identified as the worst case scenario for construction traffic movements as during this phase the greatest amounts of material would need to be brought onto the site. Estimations have been made based on the quantum of materials and resultant number of HGV loads. It has been estimated that there would be approximately 12,685 HGV deliveries over an 18 month build programme and a five day working week. This results in an average of 34 deliveries per day, or 68 two-way HGV movements. Within the 18 month construction programme, there would be a shorter term peak of around 50 deliveries per day, or 100 two-way HGV movements, throughout a 12 hour working day of 07:00 to 19:00.

3.2.4 The Socio Economics section of the ES (section 9.8) identified that the construction stage would result in up to 143 full time employees per year. Using an assumption of 1.5 employees per light vehicle gives 95 vehicles, which would arrive for the working day between 07:00 and 10:00 and depart between 16:00 and 19:00. The construction flows of 100 HGV movements (during the short term peak of construction) and 190 light vehicle movements are lower than the operational flows over the same 12 hour period which are 143 and 390 respectively.

3.2.5 The construction flows are also considerably lower than the existing traffic flows at C Site that would no longer happen as a result of the redevelopment. As the construction traffic generation at C Site is lower than both existing and proposed operational traffic levels, it has been scoped out of the ES.

Graven Hill Construction Traffic

3.2.6 No guidance or methodology exists which can be used to calculate the amount of construction traffic from the type of development such as that proposed at Graven Hill. At this outline planning stage, there is no detailed demolition and construction programme that can be referred to, to derive the quantum of materials and estimate the HGV loads. In the absence of industry standard data, the construction traffic figures quoted in the Transport Assessment (TA) and ES for the permitted South West Bicester (Kingsmere) development, which is comparable in scale and mix of development to that of Graven Hill, have been used. The proposed use of this construction traffic data is predicated on the basis that the transport technical work for South West Bicester was reviewed and approved by the highway authority.

3.2.7 In identifying the construction traffic flows for Graven Hill, the quantum of development, based on development area, has been compared against the Kingsmere Development and a flow factor based on hectares identified.

3.2.8 The South West Bicester development is summarised in Table 3.1.

Table 3.1 South West Bicester Development Design Mix

Land Use	Size	Development Area (ha)
Residential	1,585 units	46.62
B1(c)/B2 Light Industry	20,000m^2	2.00
Primary School	630 pupils	3.78
Secondary School	650 pupils	3.14
Local Retail	1,000m^2	1.60
Hotel/Restaurant/ Bar	100 rooms	1.00
Health Village	N/A	2.69
Total		**60.83**

3.2.9 The Graven Hill development comprises the following design mix.

Table 3.2 Graven Hill Development Design Mix

Land Use	Size	Development Area (ha)
Residential	1,900 units	55.40
B1(a) Office	2,160 m^2	0.60
B1(b) R&D, B1(c)/B2 Light Industry	22,920 m^2	5.70
B8 Warehousing	66,680 m^2	Already on-site*
Primary School	420 pupils	3.40
Local Retail	2,323 m^2	4.60
Hotel/Restaurant/ Bar	100 rooms	1.50
Total		**71.20**

* South West Bicester (Kingsmere) does not include B8 development

3.2.10 Ancillary to both developments is the construction of new junctions; internal estate roads and landscaped open spaces.

3.2.11 With reference to the South West Bicester ES, the number of construction vehicle movements was estimated to be 145 per day, with a maximum HGV proportion identified as 25% of the total vehicles, which equates to 36 HGVs. By dividing the level of construction traffic (145 movements per day) by the South West Bicester development area (60.83ha), a factor of 2.38 vehicle movements per hectare can be derived.

3.2.12 Applying this factor to the development area for the proposed Graven Hill development, results in an estimated 170 daily construction traffic trips, of which 43 (25%) would be HGVs, the remaining 127 being light vehicles. This is substantially less than the existing traffic at Graven Hill which, over a 12 hour period from 07:00 to 19:00, has been recorded as 861 light vehicles and 112 HGVs.

3.2.13 In order to identify the potential construction traffic generation in the AM and PM peak hours, the light vehicle (LGV) traffic, which is considered to account for employee travel to site, has been split over three morning hours (07:00, 08:00, 09:00) arrivals, and three evening hours (17:00, 18:00, 19:00) departures. It is assumed that employees will arrive and depart at staggered times to take account of a 10 hour shift time.

3.2.14 HGV traffic has been split evenly over the 12 hour day since it is assumed that these will arrive at regular intervals. The resultant 12 hour profile is shown in Table 3.3.

Table 3.3 Graven Hill Development: 12 hour Construction Vehicle Movement Profile

	Hour commencing											
Veh	**07:00**	**08:00**	**09:00**	**10:00**	**11:00**	**12:00**	**13:00**	**14:00**	**15:00**	**16:00**	**17:00**	**18:00**
LGV	21	22	21	-	-	-	-	-	-	21	22	21
HGV	4	4	4	4	4	4	4	4	4	4	4	4
Total	**25**	**26**	**25**	**4**	**4**	**4**	**4**	**4**	**4**	**25**	**26**	**26**

3.2.15 Since the detail of the calculations for the estimation of construction traffic presented within the ES for the South West Bicester development were not provided, it is considered that the methodology presented above is the most appropriate way of determining the anticipated level of construction traffic for Graven Hill at this early stage in the planning process.

Combined Effect of the Graven Hill Development and Construction Traffic

3.2.16 Site clearance is anticipated to occur during 2014, enabling construction to commence in 2015. An 11 year old build-out programme is proposed from 2015 to 2026 over three phases, assuming the construction of 150 dwellings per year. Phase 1 will include the construction of B2 light industrial units and the local centre mixed uses, which includes the retail, community uses and primary school. Phase 2 will include the remaining B2 and local centre mixed uses, which includes the office and hotel development, and the initial stages of B8. Phase 3 will include the remaining B8.

3.2.17 The anticipated cumulative operational traffic generation in the AM and PM peak hours over the construction programme is presented in Appendix A. The tables in Appendix A summarise the development construction assumptions over the three phases and the resultant annual growth in development traffic generation.

3.2.18 With reference to Table 3 in Appendix A, it can be seen that the volume of construction traffic, as presented in Table 3.3, is less than the annual growth in traffic each year. Therefore, in terms of total traffic, the combined effect of construction and operational traffic in the latter phases of the development at Graven Hill is less than the full operational traffic. In terms of HGV traffic, the movements associated with construction are less than the existing.

3.2.19 Calculations have been made of the number of HGVs generated by the development during the peak hours (based on the proportions set out in Table 3.4 of this document), which is shown in Table 4 in Appendix A. This shows that there is an annual increase in the peak hour of one HGV, towards the latter phases of the development's construction. In this case, there is a greater cumulative effect when considering the addition of the construction traffic. However, the level of effect is low and non existent if the existing HGV traffic is taken into consideration and netted out.

3.2.20 It is therefore concluded that the worst case scenario, that considered the full operational development, was as set out in the ES. The above information demonstrates that the additional traffic from the construction works, when combined with the traffic from the later stages of the operational development, will not result in significant effects (see also chapters 4 and 5 of this report with regards to air quality and noise effects).

Clarification on Table 6.8 (7.1.2)

3.2.21 Table 6.8 in the ES chapter is a summary of the external vehicle generation by land use and has been based on Chapter 8 of the TA which sets out the methodology and resultant traffic generation for the Graven Hill development and C Site.

3.2.22 The methodology for calculating the residential trip rates has been based on the following, which is reported on in full in chapter 8 of the TA.

- Person trip rates were derived from the South West Bicester (Kingsmere) TA which was accepted by the local highway authority. Person trip rates are based on the number of trips per dwelling by all forms of transport. Table 8.3 in the TA sets out the person trip rates.
- Identification of person trip generation by journey purpose based on the Department for Transport (DfT) National Travel Survey (NTS) data. This sets out the proportion of trips by journey purpose by different times of the day, including commuting/business, education, shopping, personal business and leisure. Table 8.4 in the TA sets out the assumptions.
- Identification of internalisation of trips, based on assumptions of number of trips which would be contained within the site. Assumptions on containment include: 5% of commuting/business trips; 95% of primary education; and 100% of convenience shopping. The full list of assumptions is provided in Section 8.1.15 of the TA.
- Identification of modal splits by journey purpose based on the 2001 Census data and the NTS data. This is set out in Table 8.8 of the TA.

- Identification of external trips by journey purpose and modal share. This is set out in Table 8.9 of the TA.

3.2.23 The figures presented within Table 6.8 of the ES represent the external trips only and do not take account of any traffic travelling internally, i.e. trips taken within the site.

3.2.24 With respect to the second query concerning the omission of HGVs, Table 6.8 in the ES shows the total vehicle generation (i.e. both cars and HGVs combined).

3.2.25 The only development types within Graven Hill likely to regularly generate this type of traffic are the B1(b) R&D, B1(c)/B2 Light Industry and B8 Warehousing.

3.2.26 Information concerning the proportion of HGVs generated by these development types has been obtained from the TRICS Database for the selected surveys submitted as part of the TA, the details of which are provided within Table 3.4.

Table 3.4 Proportion of HGVs for Commercial Development within Graven Hill

Land Use	Size	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		Total Vehicles	HGV	HGV %	Total Vehicles	HGV	HGV %
B1(b) R&D	2,400m^2	37	2	6.0	29	2	6.1
B1(c)/B2 Light Industry	22,920m^2	154	9	6.0	131	8	6.1
B8 Warehousing	66,680m^2	25	7	27.1	29	9	32.1
Total	**92,000** m^2	**216**	**18**	**8.3**	**189**	**19**	**10.1**

3.2.27 As can be seen from the above, the proportion of HGVs generated by the development are relatively small, accounting for 18 of the 216 trips generated in the AM Peak and 19 of the 189 trips generated during the PM peak.

3.2.28 When considered against the total external trips generated by the development, the proportion of HGVs equates to 1.6% during the AM period (18 HGVs and 1,112 total two way traffic) and 1.7% during the PM peak period (19 HGVs and 1,092 total two way traffic).

3.2.29 Therefore the level of HGVs is not significant and requires no further consideration.

Exceedence of 30% threshold (7.1.3)

3.2.30 As already referenced, the traffic data provided in Tables 6.11 and 6.12 of the ES are derived from the Oxfordshire County Council (OCC) Saturn Traffic Model. This is a strategic network, 'dynamic' assignment model: traffic becomes reassigned on the road network in response to congestion and delay. Therefore, when comparing the change in traffic numbers in the '2031 Base' with the '2031 Base + Development', the model output shows not just the development traffic assigned onto the network, but

also the background traffic flow's response to increased capacity and congestion through reassignment. Increases in HGV movements on routes are not due to the development generated HGV traffic but due to reassignment of HGV traffic that is already on the network.

3.2.31 In spite of this, a further assessment in line with IEMA Guidelines has been undertaken to assess the effects of increases in traffic on links which have not been previously considered. Table 3.5 provides a summary of the road link, traffic generated and proportionate increase anticipated as part of the development of both sites.

Table 3.5 Change in Traffic Flow

Time Period	Road Link*	2031 Base		2031 Base + Development		Change			
						Total Vehicles		HGVs	
		Total Vehicles	HGVs	Total Vehicles	HGVs	Number	%	Number	%
AM	1	234	22	242	30	8	3.4	8	36.4
PM	1	174	10	182	18	8	4.6	8	80.0
PM	2	1,800	10	1,940	30	140	7.8	20	200.0
PM	3	1,739	54	1,899	74	160	9.2	20	37.0
PM	4	1,950	30	2,090	60	140	7.2	30	100.0
PM	5	720	10	680	22	-40	-5.6	12	120.0

* Road Links

1. Palmer Avenue between Ploughley Road and B4011
2. Oxford Road north of Pingle Drive
3. Oxford Road south of Pingle Drive
4. A4421 Neunkirchen
5. B4011 south of A41

3.2.32 The following provides a brief summary of links one to five (link six is the same as link one and has been covered within the link one subheading).

Link 1: Palmer Avenue between Ploughley Road and B4011

3.2.33 Palmer Avenue is a single all purpose carriageway subject to a derestricted speed limit of 60mph. A footway is present along the southern side of the carriageway which varies in width but typically measures approximately 1.6m. The footway is delineated by a solid white line with no physical kerb line present along the length of Palmer Avenue. There are no dedicated cyclist facilities and no crossing points. The majority land use to the north of the carriageway is agricultural land holdings and to the south, military orientated developments, which mainly comprise large areas of maintained grassland and woodland, with some smaller buildings interspersed. Other than C Site there are no major trip generators or attractors located at either end or along Palmer Avenue.

Link 2: Oxford Road north of Pingle Drive

3.2.34 This link is a short section of highway subject to a 30mph speed limit. It is approximately 170m in length; the carriageway is largely single lane and is bound by roundabouts to the north and south. A footway is provided along the east of the carriageway which is partly separated from the carriageway by a grassed verge. The footway is wide and typically measures 2.2m. There are no dedicated cyclist facilities and no crossing points. Unmarked bus stops are present to either side of the carriageway although no footway is provided along the western side.

Link 3: Oxford Road south of Pingle Drive

3.2.35 This link is a short section of highway subject to a 30mph speed limit. It is approximately 160m in length. The carriageway provides dual lanes and is bound by a roundabout to the north and south of the link. The northern roundabout provides access into Bicester Village Retail Park and the southern roundabout provides access onto the A41. A footway is located along the eastern side of the carriageway which is segregated by a grassed verge. The footway provides access to a traffic-free pedestrian route to the south and Bicester Village Retail Park to the north. The footway has a typical width of 1.8m. There are no dedicated cyclist facilities, no crossing points and no public transport links.

Link 4: A4421 Neunkirchen

3.2.36 The Neunkirchen section of the A4421 is an all purpose dual lane carriageway subject to a 50mph speed limit. It has an approximate length of 290m and provides a segregated footway along the western side of the carriageway. There is no development to the east of the carriageway, which largely comprises open grassland. To the west there is a large residential area. None of the dwellings front Neunkirchen and a tree line occupies the boundary of the residential development separating it from the carriageway. There are no dedicated cyclist facilities but an uncontrolled crossing point is provided to the south of the link.

Link 5: B4011 south of A41

3.2.37 The B4011 is a rural classified highway subject to a 50mph speed limit. There are no footways, crossings, public transport links or dedicated cyclist facilities and development to either side is limited to agricultural land holdings, a small number of dwellings and other Military land uses, which mainly comprise maintained landscaped areas with buildings interspersed.

3.2.38 In line with the ES, the effects of the anticipated increase in traffic for each link will be assessed against the following effects.

- Severance and Pedestrian Delay;
- Driver Delay;
- Pedestrian Amenity;
- Fear and Intimidation; and

- Accidents and Safety.

3.2.39 Based on the information presented above, the following sets out the effects of the development traffic on the five environmental effects identified above.

Link 1: Palmer Avenue between Ploughley Road and B4011

- *Severance and Pedestrian Delay*: The link provides a single footway along the southern side of the carriageway, there are no crossings, no significant traffic generators or attracters and as such pedestrian activity is expected to be minimal. The increase in overall traffic is less than 10% and although it is anticipated that HGVs will increase by 36.4% in the AM and 80% in the PM this only equates to an additional eight HGVs during each time period. It is therefore considered that this environmental effect is not likely to be significant.

- *Driver Delay*: The overall increase in traffic is less than 10% during both the AM and PM peak; therefore it is considered that this environmental effect is not likely to be significant.

- *Pedestrian Amenity*: In accordance with the IEMA guidelines, pedestrian amenity is only affected when traffic flow is either doubled or halved. The former being a detrimental effect and the latter being a beneficial effect. Since the overall traffic increase is less than 10% it is considered that this environmental effect is not likely to be significant.

- *Fear and Intimidation*: Although the existing footway is delineated by a solid white line and not a physical kerb line, there are no local facilities directly accessed along this link, there are no developments which would generate an increase in vulnerable road users such as children or elderly people and as such it is considered that the likely footfall along this route is minimal. HGV traffic from C Site is currently encouraged to utilise Palmer Avenue and as such any pedestrians currently utilising this route will be accustomed to this type of traffic utilising the highway. The increase in HGVs is anticipated to be eight in the AM peak period and eight in the PM peak period which equates to just over one additional HGV movement every 10 minutes. As such it is considered that this environmental effect is not likely to be significant.

- *Accidents and Safety*: Only two slight accidents have occurred on this link in the last five years and none involved vulnerable road users. The overall anticipated increase in traffic is less than 10%, as such it is considered that this environmental effect is not likely to be significant.

Link 2: Oxford Road north of Pingle Drive

- *Severance and Pedestrian Delay*: The link provides a single footway along the eastern side of the carriageway, there are no crossings and no developments along the western side of the carriageway thus negating the need to cross. It is therefore considered that this environmental effect is not likely to be significant.

- *Driver Delay*: The overall increase in traffic is less than 10% during the PM peak; therefore it is considered that this environmental effect is not likely to be significant.

- *Pedestrian Amenity*: In accordance with the IEMA guidelines, pedestrian amenity is only affected when traffic flow is either doubled or halved. The former being a detrimental effect and the latter being a beneficial effect. Since the overall traffic increase is less than 10% it is considered that this environmental effect is not likely to be significant.

- *Fear and Intimidation*: The existing footway is primarily segregated from the carriageway by a grassed verge. Where the verge terminates the footway is approximately 2.2m wide which allows pedestrians/vulnerable users to traverse the footway away from the edge of the carriageway. Wider footways assist in reducing the level of fear and intimidation experienced by users. As such it is considered that this environmental effect is not likely to be significant.

- *Accidents and Safety*: No accidents have occurred on this link in the last five years. As such it is considered that this environmental effect is not likely to be significant.

Link 3: Oxford Road south of Pingle Drive

- *Severance and Pedestrian Delay*: The link provides a single footway along the eastern side of the carriageway, there are no crossings and only a Petrol Filling Station (PFS), and associated roadside restaurant, are present on the western side of the carriageway. Due to the lack of any pedestrian facilities, coupled with the nature of the existing development, it is unlikely that existing pedestrians would need to the cross the carriageway and thus be affected by an increase in traffic. It is therefore considered that this environmental effect is not likely to be significant.

- *Driver Delay*: The overall increase in traffic is less than 10% during the PM peak; therefore it is considered that this environmental effect is not likely to be significant.

- *Pedestrian Amenity*: In accordance with the IEMA guidelines, pedestrian amenity is only affected when traffic flow is either doubled or halved. The former being a detrimental effect and the latter being a beneficial effect. Since the overall traffic increase is less than 10% it is considered that this environmental effect is not likely to be significant.

- *Fear and Intimidation*: The existing footway is primarily segregated from the carriageway by a grassed verge. Where the verge terminates the footway is over 4.0m wide which allows pedestrians/vulnerable users to traverse the footway away from the edge of the carriageway. Wider footways assist in reducing the level of fear and intimidation experienced by users. As such it is considered that this environmental effect is not likely to be significant.

- *Accidents and Safety*: Eleven accidents have occurred along this link in the last five years, nine of which were classified as slight in severity and two were classed as serious. None of the accidents involved pedestrians or cyclists and only one

accident involved a motorcycle. The increase in the overall traffic is expected to be less than 10% and as such it is considered that this environmental effect is not likely to be significant.

Link 4: A4421 Neunkirchen

- *Severance and Pedestrian Delay*: The link provides a single footway along the western side of the carriageway; there are no crossings and no developments present on the western side of the carriageway. Due to the lack of any pedestrian facilities it is unlikely that existing pedestrians would need to cross the carriageway and thus become affected by an increase in traffic. It is therefore considered that this environmental effect is not likely to be significant.

- *Driver Delay*: The overall increase in traffic is less than 10% during the PM peak; therefore it is considered that this environmental effect is not likely to be significant.

- *Pedestrian Amenity*: In accordance with the IEMA guidelines, pedestrian amenity is only affected when traffic flow is either doubled or halved. The former being a detrimental effect and the latter being a beneficial effect. Since the overall traffic increase is less than 10% it is considered that this environmental effect is not likely to be significant.

- *Fear and Intimidation*: The existing footway is segregated from the carriageway by a grassed verge thus increasing the distance between pedestrians/vulnerable users and the edge of the carriageway. Wider footways assist in reducing the level of fear and intimidation experienced by users. As such it is considered that this environmental effect is not likely to be significant.

- *Accidents and Safety*: Two serious accidents have occurred along this link in the last five years, one of which involved a pedal cycle. The pedal cycle incident involved the rider losing control in snow/ice, leaving the footway, entering the carriageway and colliding with a vehicle. The other accident involved an altercation between three vehicles. Although one of the accidents involved a vulnerable road user, it is considered that this incident is an isolated event and does not constitute any significant local safety issue. Since the overall increase in traffic is less than 10% it is considered that this environmental effect is not likely to be significant.

Link 5: B4011 south of A41

- *Severance and Pedestrian Delay*: There are no footways along this link, no crossings, no cycle facilities and no public transport links. As such there is unlikely to be a significant number of pedestrians using this route and therefore it is considered that this environmental effect is not likely to be significant.

- *Driver Delay*: As a result of the development the amount of overall traffic will reduce by 5.6%, therefore it is considered that this environmental effect is not likely to be significant.

- *Pedestrian Amenity*: In accordance with the IEMA guidelines, pedestrian amenity is only affected when traffic flow is either doubled or halved. The former being a detrimental effect and the latter being a beneficial effect. Since the overall traffic increase is less than 10% it is considered that this environmental effect is not likely to be significant.
- *Fear and Intimidation*: There are no footways or crossing and only minor developments interspersed within the adjacent land uses. As such there is unlikely to be a significant number of pedestrians using this route and therefore it is considered that this environmental effect is not likely to be significant.
- *Accidents and Safety*: A total of 19 accidents were recorded along this link, 12 were classified as slight, 6 were classified as serious and 1 was fatal. Three of the accidents involved motorcycles and none involved pedestrians or cyclists. Although there are a disproportionate number of accidents along this route, the majority of accidents were attributed to adverse weather conditions and not to a highway design or maintenance defect. Furthermore it is anticipated that there will be a reduction in overall traffic of 5.6%. The increase in HGVs equates to two additional movements per hour which is not considered to be substantial. Since the overall increase in traffic is less than 10% it is considered that this environmental effect is not likely to be significant.

3.2.40 Table 3.6 summarises all predicted negative traffic and transport effects assessed in this chapter of the ES.

Table 3.6 Environmental Effects Summary Table

Receptor	Effect	Significance	Rationale
The users of local roads	Severance and Pedestrian Delay	Not Significant	No crossing facilities, footways present along one side of the carriageway, developments tend to be located on the same side as the footway and thus no reason to cross the carriageway.
	Driver Delay	Not Significant	All increases in total traffic are less than 10%.
	Pedestrian Amenity	Not Significant	All increases in total traffic are less than 10%.
	Fear and Intimidation	Not Significant	Footways are largely segregated from the carriageway, located in remote rural areas with low expected footfall or not present due to a lack of surrounding development.
	Accidents and Safety	Not Significant	No significant safety issues identified. Increases in total traffic are less than 10%.

Effects on villages of Ambrosden, Arncott and Wendlebury (7.1.4)

3.2.41 Ploughley Road, Ambrosden has been considered within section 6.8 of the ES.

3.2.42 Arncott and Wendlebury have not been included within the assessment as the development traffic will not route through these settlements. On that basis, there are no effects associated with the development requiring assessment.

Palmer Avenue/B4011 and B4011/A41 junctions (7.1.5)

3.2.43 An addendum to the TA has been submitted, which provides details concerning the junction capacity assessments undertaken at the Palmer Avenue/B4011 and B4011/A414 priority controlled junctions.

Changes in affordable housing percentage (7.1.6)

3.2.44 At the time the traffic modelling work was undertaken by Halcrow (at the request of OCC on behalf of DIO) the proportion of affordable housing was set at 30%.

3.2.45 A calculation has been made of the difference in person trips that would be generated by 30% and 20% affordable housing, based on the person trip rates identified in Table 8.3 of the TA. This is summarised in Table 3.7 which shows an increase in 42 person trips in the AM peak and 38 in the PM peak (associated with the development assuming the smaller 20% proportion of affordable housing).

Table 3.7 Changes in Traffic Flows with 20% Affordable Housing

Trip Rate/Generation by Housing Type		AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		In	Out	Total	In	Out	Total
Private housing - 80% (1,520 units)	Person trip rate/unit	0.236	0.862	1.098	0.616	0.377	0.993
	Person trip generation	359	1310	1669	936	573	1509
Affordable housing - 20% (380 units)	Person trip rate/unit	0.189	0.69	0.879	0.493	0.302	0.795
	Person trip generation	72	262	334	187	115	302
1900 Housing Units (20% Affordable)	Person trip generation	431	1572	2003	1124	688	1811
1900 Housing Units (30% Affordable)	Person trip generation	422	1540	1961	1100	674	1774
Difference	Person trip generation	+9	+33	+42	+23	+14	+38

3.2.46 With reference to Table 8.4 in the TA, the revised person trip generations by journey purpose are shown in Table 3.8.

Table 3.8 Residential Person Trip Generations by Journey Purpose (20% Affordable Housing)

Journey Purpose	Original DfT proportions[1]			Person Trip Generation			
	AM	PM	12-hour	AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
				In	Out	In	Out
Commuting/Business	28%	39%	23%	118	432	438	268
Education/Escort Education	48%	3%	13%	205	747	34	21
Shopping	5%	12%	20%	19	71	138	84
Other Escort/Personal Business	15%	20%	22%	62	228	225	138
Leisure/Other	6%	26%	23%	26	94	292	179
Total	**100%**	**100%**	**100%**	**431**	**1,572**	**1,127**	**690**

3.2.47 With reference to Table 8.5 in the TA, the summary of the person trips in the AM and PM peaks periods by journey purpose, the revised figures are shown in Table 3.9.

Table 3.9 Breakdown of Journey Purpose Person Trips by Time Period (20% Affordable Housing)

Journey Purpose		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		In	Out	In	Out
Commuting/ Business	All	**118**	**432**	**438**	**268**
Education/Escort Education	All	**205**	**747**	**34**	**21**
	Primary	95	347	16	10
	Secondary	68	250	11	7
	Higher/Further	27	97	4	3
	Private	14	52	2	1
Shopping	All	**19**	**71**	**138**	**84**
	Food	9	33	63	39
	Convenience	8	31	60	36
	Comparison	2	8	15	9
Other Escort/ Personal Business	All	**62**	**228**	**225**	**138**
Leisure/Other	All	**26**	**94**	**292**	**179**
	Visits	9	31	164	100
	Sport/Entertainment	4	16	58	36
	Holidays/Days Out	4	16	35	21
	Other	9	31	35	21
Total		**431**	**1572**	**1127**	**690**

3.2.48 With reference to Table 8.6 in the TA, the internal person trips by journey purpose, the revised figures are shown in Table 3.10.

Table 3.10 Internal Person Trips by Journey Purpose (20% Affordable Housing)

Journey Purpose		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
		In	Out	In	Out
Commuting/Business	**All**	**6**	**22**	**22**	**13**
Education/Escort Education	**All**	**90**	**330**	**15**	**9**
	Primary	90	330	15	9
	Secondary	0	0	0	0
	Higher/Further	0	0	0	0
	Private	0	0	0	0
Shopping	**All**	**10**	**37**	**72**	**44**
	Food	2	7	13	8
	Convenience	8	31	60	36
	Comparison	0	0	0	0
Other Escort/ Personal Business	**All**	**9**	**34**	**34**	**21**
Leisure/Other	**All**	**6**	**20**	**40**	**24**
	Visits	1	3	16	10
	Sport/ Entertainment	0	2	6	4
	Holidays/Days Out	0	0	0	0
	Other	4	16	18	11
Total		**121**	**443**	**182**	**112**

3.2.49 With reference to Table 8.7 in the TA, the calculated external person trips in the AM and PM peak periods broken down by journey purpose, the revised figures are shown in Table 3.11.

Table 3.11 External Person Trips by Journey Purpose (20% Affordable Housing)

		AM Peak (08:00-09:00)		PM Peak (17:00-18:00)	
Journey Purpose		**In**	**Out**	**In**	**Out**
Commuting/Business	**All**	**112**	**411**	**416**	**255**
Education/Escort Education	**All**	**114**	**417**	**19**	**12**
	Primary	5	17	1	0
	Secondary	68	250	11	7
	Higher/Further	27	97	4	3
	Private	14	52	2	1
Shopping	**All**	**9**	**34**	**66**	**40**
	Food	7	26	51	31
	Convenience	0	0	0	0
	Comparison	2	8	15	9
Other Escort/ Personal Business	**All**	**53**	**194**	**191**	**117**
Leisure/Other	**All**	**20**	**74**	**252**	**155**
	Visits	8	28	147	90
	Sport/ Entertainment	4	14	53	32
	Holidays/Days Out	4	16	35	21
	Other	4	16	18	11
Total		**309**	**1,129**	**944**	**578**

3.2.50 With reference to Tables 8.8 in the TA which sets out the modal splits by journey purpose for external trips and Tables 8.9 to 8.12, the revised figures for traffic generation are summarised in Table 3.12.

Table 3.12 Modal Splits by Journey Purpose - External Trips (20% Affordable Housing)

Journey Purpose	% Car Driver	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Commuting/ Business	65.0	73	267	340	271	166	437
Primary education	50.0	2	9	11	0	0	0
Secondary education	35.0	24	88	112	4	2	6
Further/ Higher education	35.0	9	34	43	2	1	3
Private education	21.0	3	11	14	0	0	0
Food shopping	60.0	4	16	20	30	19	49
Convenience shopping	0.0	0	0	0	0	0	0
Comparison shopping	65.0	1	5	6	10	6	16
Personal Business/ Escort	48.5	26	94	120	93	57	150
Leisure/Other	35.3	7	26	33	89	54	143
Total		**150**	**549**	699	**499**	**305**	804

3.2.51 The increase in traffic generation from the 30% affordable housing scenario to the 20% affordable housing scenario, as summarised in Table 3.13.

Table 3.13 Summary of Traffic Increase

Residential Traffic generation	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	In	Out	Total	In	Out	Total
1,900 Housing Units (20% Affordable)	150	549	699	499	305	804
1,900 Housing Units (30% Affordable)	147	537	685	488	299	787
Difference in traffic generation	+3	+12	+14	+11	+6	+17

3.2.52 This is considered an insignificant increase in the volume of traffic to warrant further assessment in terms of traffic, air quality or noise effects.

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4. Air Quality (8)

4.1 CDC Request

8.1.1. Construction traffic and demolition has not been included within the air quality assessment. An Assessment of this is required.

8.1.2. Paragraph 7.6.9 scoped out potential dust effects on Arncott Bridge SSSI, despite paragraph 12.6.4 indicating that this SSSI is only 40 metres to the north of the site boundary i.e. within the direction of the prevailing wind. An assessment of the impact on the SSSI is required.

4.2 DIO Response

Construction and demolition traffic effects (8.1.1)

C Site

4.2.1 The additional construction and demolition traffic as a result of the proposed development at C Site equates to an additional 100 HGV traffic movements and an additional 190 construction employee traffic movements per day (see paragraphs 3.2.3 and 3.2.4 of this report). These movements are based on the peak construction year of 2015 and therefore represent the worst-case construction year when the greatest amount of activity is expected. As stated above in paragraph 3.2.5 of this report the demolition / construction traffic flows at C Site would be lower than both the existing and proposed operational traffic flows. However, further detail has been provided below to explain why effects will not be significant.

4.2.2 The construction traffic will follow a designated route from C Site to the A41. This will take traffic through Lower Arncott and via Palmer Avenue and the B4011. Few residential receptors are located along this route.

4.2.3 This additional construction traffic is predicted to increase annual mean NO_2 and PM_{10} concentrations by less than 1 µg m^{-3}. As the existing background concentrations in the area are all well below the annual mean air quality objective (AQO of 40 µg m^{-3}) for both these pollutants (12.6µg m^{-3} - NO_2 and 18.8µg m^{-3} - PM_{10}), the addition of the peak construction traffic in 2015 will not have a significant effect on the air quality in the area along the construction route during the construction period. Therefore there will be no significant air quality effects associated with construction and demolition traffic travelling to and from C Site.

Graven Hill

4.2.4 The additional construction and demolition traffic as a result of the proposed development at Graven Hill equates to an additional 43 HGV traffic movements per

day and 127 construction employee traffic movements per day (see paragraph 3.2.12 of this report). The traffic for the Graven Hill site will also follow a designated route, using the A41.

4.2.5 This additional construction traffic is predicted to increase annual mean NO_2 and PM_{10} concentrations by less than 1µg m^{-3}. As the existing background concentrations in the area are all well below the annual mean air quality objective (AQO of 40µg m^{-3}) for both these pollutants, the addition of the construction traffic associated with Graven Hill will not have a significant effect on the air quality in the area along the construction route during the construction period. Therefore there will be no significant air quality effects associated with construction and demolition traffic travelling to and from Graven Hill.

4.2.6 C Site and Graven Hill are not planned to be constructed at the same time and therefore cumulative effects associated with construction traffic from both sites will not occur.

Dust effects on Arncott Bridge SSSI (8.1.2)

4.2.7 The SSSI is only 40m from the MOD ownership boundary of C Site. However, as stated in paragraph 7.6.9 of the ES (Air Quality chapter) the SSSI "*is more than 200m from areas of construction*". Construction activities with the potential to cause dust include: concrete crushing; wind blown material from uncovered stockpiles; construction traffic movements on unpaved ground; soil stripping and earth moving. However none of these activities will take place within 350m of the SSSI. Furthermore there are many tried and tested management measures which can be implemented to control and prevent wind blown dust. In addition, there is also vegetation and buildings present between these areas of construction and the SSSI which would are likely to act as screens or barriers to the movement of dust also limiting the amount of dust that could potentially reach the SSSI. The effects of dust on the SSSI resulting from construction activities are therefore unlikely to be significant.

5. Noise and Vibration (9)

5.1 CDC Request

9.1.1 The assessment approach and determinations of impact magnitude and significance are vague and ill defined. A more robust approach, including a worst case scenario (as opposed to the creation of noise limits), involving typical construction/demolition activities occurring simultaneously in proximity to sensitive receptors is required.

9.1.2 Site suitability noise assessment modelling work indicates that some areas of proposed residential properties fall within zones classed as NEC 'C' (figures 8.2 and 8.3) where according to PPG24 'Planning permission should not normally be granted'. Can you explain why the assessment work has not been used to change the design and layout of the proposal to avoid this issue?

5.2 DIO Response

Construction and demolition activity noise (9.1.1)

Overview

5.2.1 An assessment of the noise effects from construction and demolition activities is based on the guidance and assessment criteria presented in BS5228-1:2009 *Code of Practice for noise and vibration control on construction and open sites* parts 1 and 2. This guidance also sets out information on noise levels from numerous construction and demolition machinery for reference.

5.2.2 A construction programme (specifying the number, type and duration of use of items of plant) and methodology for demolition and construction are yet to be developed, therefore a detailed construction and demolition noise assessment is not yet possible. However, based on AMEC's understanding of the construction phasing plans and experience of other similar developments, a quantitative noise assessment has been undertaken based on assumed construction plant lists and locations. Where necessary, appropriate measures which will minimise adverse effects have been described and will form part of the proposed development.

Assessment Methodology - Construction and Demolition Noise (fixed and mobile plant)

5.2.3 In accordance with the guidance of BS5228-1:2009 the ES identified noise limits for construction activities at the nearest potentially affected noise sensitive receptors which were based on existing pre-construction ambient noise levels.

5.2.4 Existing pre-construction ambient noise levels at locations near to each of the potentially affected receptors were measured on 28-30 March 2011. The receptors

that were considered in the construction noise assessment, along with the associated representative pre-construction ambient noise levels are shown in Table 5.1.

Table 5.1 Sensitive Receptors and Assumed Pre-Construction Ambient Noise Levels, L_{Aeq}

Receptor	Representative Monitoring Location	Pre-Construction Ambient Noise Level L_{Aeq}, dB	BS5228-1:2009 Adopted Noise Limit L_{Aeq}, dB
Graven Hill			
Langford Park Farm	D/E2	56.1	65.0
Wretchwick Farm	D/E1	57.2	65.0
Wretchwick End Cottages	D/E1	57.2	65.0
Bramlow	D/E5	45.5	65.0
C Site			
Brook Farm	C2	52.8	65.0
Ploughley Road	C1	48.8	65.0
Norris Road	C3	48.6	65.0
Green Lane (Section B)	C3	48.6	65.0
Green Lane (Section C)	C3	48.6	65.0

5.2.5 BS5228-1:2009 states that where existing ambient noise levels are below 65dB $L_{Aeq, T}$ (when rounded to the nearest 5dB), a noise limit of 65dB $L_{Aeq, 12hr (07:00-19:00hrs)}$ should be considered for total ambient noise plus construction noise.

5.2.6 As shown in Table 5.1, based on the long term monitoring data obtained between the 28-30 March 2011, pre-construction ambient noise levels are not expected to exceed 60dB $L_{Aeq, 12hr}$ at any of the existing noise sensitive receptors in the vicinity of either the Graven Hill or C Sites. Therefore a limit of 65dB $L_{Aeq, 12hr (07:00-19:00hrs)}$ will be appropriate for all receptors. Higher limits would be applicable if measured pre-construction ambient noise levels were higher.

5.2.7 The determination of significance in EIA is based on the sensitivity of a particular receptor (which depends on local circumstances), as well as the magnitude of change in noise levels (which is related to existing ambient noise levels, and predicted noise levels due to the development). In determining significance, professional judgement is also taken into account regarding the timing, frequency and duration of noise effects (please also refer to Table 8.7 in the ES).

5.2.8 The magnitude criteria used in the assessment of construction activity noise effects is summarised as follows.

- Low Magnitude: Construction Noise + Total Pre-Construction Ambient Noise Level does not exceed 60dB $L_{Aeq, 12hr (07:00-19:00hrs)}$.
- Medium Magnitude: Construction Noise + Total Pre-Construction Ambient Noise Level does not exceed 65dB $L_{Aeq, 12hr (07:00-19:00hrs)}$.
- High Magnitude: Construction Noise + Total Pre-Construction Ambient Noise Level exceeds 65dB $L_{Aeq, 12hr (07:00-19:00hrs)}$.

5.2.9 The proposed construction phasing of the development at C Site is relatively short and predicted to be completed over a period of two years, whereas Graven Hill is predicted to take approximately 13 years, due to the size of the site and proposed phasing of the development.

5.2.10 As a worst-case, the noise assessment has considered periods when the noisiest predicted construction phases across the two sites are to occur at the closest approximate distances to the surrounding sensitive receptors. These would not happen concurrently as the two developments happen over separate timescales. The demolition and construction elements covered in the assessment are listed below (unless otherwise stated these elements will occur on both sites):

- earthworks - including the creation of landscape bunds (C Site only), SUDS ponds, or new playing fields (Graven Hill only);
- removal of hardstanding;
- demolition of the existing warehouse;
- site clearance - including the removal of railway lines;
- road surfacing;
- access road construction;
- housing construction; and
- warehouse construction.

5.2.11 In the absence of a detailed plant list, based on experience of other similar projects AMEC has adopted an assumed plant complement across each operation, as shown in Table 5.2. The full list of construction and demolition equipment used in the assessment for each receptor is given in Appendix B.

5.2.12 The assumed plant list has been sufficient to undertake indicative noise calculations in accordance with the methodology set out in BS5228:2009. These indicative calculations have been made at the nearest sensitive receptors. The calculation process, in simple terms, involves the following factors:

- Noise emission data - based on either manufacturer's published information or measured data is assigned to each item of plant. The assumed list of plant and associated sound pressure levels are presented in Table 5.2.

- Distance between noise source and receptor - based on OS base mapping data and development plans.
- Ground attenuation - related to the ground cover between the source and the receptor.
- Barrier attenuation - related to any barriers between the source and the receptor.
- On-time of plant - the amount of time the plant will be active.

5.2.13 Where uncertainties exist which could affect the outcome of the noise predictions, assumptions have been adopted. Examples of these assumptions include:

- Location - all plant is assumed to operate at the closest area of working - this approach provides an understanding of the worst-case noise exposure throughout the works.
- 'On-time' of plant - experience has shown that some items of plant are likely to operate more than others and that for plant items that are highly used, the maximum 'on-time' is typically less than around 83%. On-times for each item of plant are presented in Table 5.2.

Table 5.2 Assumed Plant List

Phase	Plant Type	Sound Pressure Level at 10m, dB(A)	On-Time (%)	No. of Plant
Earthworks				
	Tracked Excavator	70	83	2
	Dozer	79	83	2
	Wheeled Loader	76	83	1
	Dump Truck (tipping fill)	79	83	2
Removal of Hardstanding				
	Pulveriser mounted on excavator 30t	76	83	1
	Breaker Mounted on Wheeled Backhoe 7.4t	92	83	1
	Tracked Excavator (loading dump truck) 44t	85	83	1
	Articulated dump truck (dumping rubble) 22t	80	83	3
	Tracked Crusher 47t	82	83	1
	Concrete mixer truck (discharging) and concrete pump (pumping) 26t	75	83	1
Demolition of Existing Warehouses				
	Pulveriser mounted on excavator 30t	76	83	1
	Breaker Mounted on Wheeled Backhoe 7.4t	92	83	1

Phase	Plant Type	Sound Pressure Level at 10m, dB(A)	On-Time (%)	No. of Plant
	Lump Hammer	81	83	1
	Tracked Excavator (loading dump truck) 44t	85	83	1
	Articulated dump truck (dumping rubble) 22t	80	83	3
	Tracked Crusher 47t	82	83	1
Site Clearance (including Railway Line)				
	Tracked Excavator	70	83	2
	Dozer	79	83	2
	Wheeled Loader	76	83	1
	Dump Truck (tipping fill)	79	83	2
	Angle Grinder (grinding steel)	80	83	1
Road Surfacing				
	Backhoe Mounted Hydraulic Breaker	88	83	1
	Wheeled Excavator	73	83	2
	Tracked Excavator	70	83	2
	Wheeled Loader	76	83	1
	Dump Truck (tipping fill)	79	83	2
	Dozer 14t	77	83	1
	Road Roller	80	83	2
	Asphalt Paver (+tipper lorry) 18t	84	83	1
Access Road Construction				
	Backhoe Mounted Hydraulic Breaker	88	83	1
	Wheeled Excavator	73	83	2
	Tracked Excavator	70	83	2
	Wheeled Loader	76	83	1
	Dump Truck (tipping fill)	79	83	2
	Dozer 14t	77	83	1
	Road Roller	80	83	2
	Asphalt Paver (+tipper lorry) 18t	84	83	1
Housing Construction				
	Tracked Excavator	70	83	2
	Dozer (towing roller)	81	83	2
	Wheeled Loader	76	83	1
	Dump Truck (tipping fill)	79	83	2

Phase	Plant Type	Sound Pressure Level at 10m, dB(A)	On-Time (%)	No. of Plant
	Tracked Excavator	70	83	2
	Concrete Mixer Truck	80	83	3
	Articulated Dump Truck 23t	81	83	3
	Telescopic Handler 4t	79	83	2
	Wheeled Mobile Crane	70	83	1
Warehouse Construction				
	Tracked Excavator	70	83	2
	Dozer	79	83	2
	Wheeled Loader	76	83	1
	Dump Truck (tipping fill)	79	83	2
	Tracked Excavator	70	83	2
	Concrete Pump	75	100	1
	Articulated Dump Truck 23t	81	83	3
	Telescopic Handler 4t	79	83	2
	Wheeled Mobile Crane	70	83	1
	Hydraulic Hammer Rig 4t hammer	87	83	1

Predicted effects and their significance - Construction and Demolition Noise (fixed and mobile plant)

5.2.14 Using the assumed plant lists, the predicted noise levels have been calculated at the nearest sensitive receptors when plant is operating at the closest positions. A summary of these predictions are given in Table 5.3.

5.2.15 With reference to construction phasing, the earth bund to the east of the warehouse at C Site is to be completed prior to the construction of the new warehouse. Therefore, barrier attenuation corrections based on cross-section drawings (see Appendix C) have been applied to noise levels at Norris Road and Green Lane during the construction of the warehouse.

Table 5.3 Predicted Construction Noise Levels at Receptors with Plant Operating at Closest Position and Assessment Against BS5228 Magnitude Criteria

Receptor	Worst-Case Construction Phase	Construction Noise, $L_{Aeq, 12hr}$, dB	Representative Pre-Construction Ambient Noise Monitoring Location	Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Construction + Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Magnitude Criteria
Langford Park Farm (Graven Hill)						
	Demolition of Existing Warehouse	61.4	D/E2	56.1	62.5	Medium
	Housing Construction	56.2	D/E2	56.1	59.2	Low
	Earthworks for New Playing Fields	65.8	D/E2	56.1	66.2	High
Wretchwick Farm (Graven Hill)						
	Demolition of Existing Warehouse	67.0	D/E1	57.2	67.4	High
	Housing Construction	68.0	D/E1	57.2	68.3	High
	Road Surfacing	71.5	D/E1	57.2	71.7	High
Wretchwick End Cottage (Graven Hill)						
	Site Clearance inc Railway Line	56.6	D/E1	57.2	59.9	Low
	Housing Construction	61.1	D/E1	57.2	62.6	Medium
	Road Surfacing	63.2	D/E1	57.2	64.2	Medium
Bramlow (Graven Hill)						
	Demolition of Existing Warehouse	67.4	D/E5	45.5	67.4	High
	Housing Construction	63.0	D/E5	45.5	63.1	Medium

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Receptor	Worst-Case Construction Phase	Construction Noise, $L_{Aeq, 12hr}$, dB	Representative Pre-Construction Ambient Noise Monitoring Location	Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Construction + Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Magnitude Criteria
	Railway Line Replacement	72.9	D/E5	45.5	72.9	High
Brook Farm (C Site)						
	Removal of Hardstanding	65.6	C2	52.8	65.8	High
	Earthworks & Hardstanding	57.9	C2	52.8	59.1	Low
	Earthworks SuDs Pond	65.8	C2	52.8	66.0	High
	Railway Line Replacement	71.3	C2	52.8	71.4	High
Ploughley Lane (C Site)						
	Removal of Hardstanding	69.2	C1	48.8	69.2	High
	Earthworks & Hardstanding	57.2	C1	48.8	57.8	Low
	Demolition of Existing Warehouse	69.4	C1	48.8	69.4	High
Norris Road (C Site)						
	Removal of Hardstanding	85.9	C3	48.6	85.9	High
	Earthworks	77.9	C3	48.6	77.9	High
	Demolition of Existing Warehouse	70.0	C3	48.6	70.0	High
	Access Road Construction	71.3	C3	48.6	71.3	High
	Construction of Warehouse	61.8	C3	48.6	62.0	Medium
Section B Green Lane (C Site) - see Figure 3.5 of the ES						

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Receptor	Worst-Case Construction Phase	Construction Noise, $L_{Aeq, 12hr}$, dB	Representative Pre-Construction Ambient Noise Monitoring Location	Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Construction + Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Magnitude Criteria
	Removal of Hardstanding	80.9	C3	48.6	80.9	High
	Earthworks	72.9	C3	48.6	72.9	High
	Demolition of Existing Warehouse	63.3	C3	48.6	63.4	Medium
	Access Road Construction	68.0	C3	48.6	68.0	High
	Construction of Warehouse	57.4	C3	48.6	57.9	Low
Section C Green Lane (C Site) - see Figure 3.5 of the ES						
	Removal of Hardstanding	79.0	C4	50.9	79.0	High
	Earthworks	70.9	C4	50.9	70.9	High
	Demolition of Existing Warehouse	62.7	C4	50.9	63.0	Medium
	Access Road Construction	66.1	C4	50.9	66.2	High
	Construction of Warehouse	54.0	C4	50.9	55.7	Low

5.2.16 The results in Table 5.3 are summarised below.

- Wretchwick End Cottages (Graven Hill): The noise levels from construction activities are predicted to result in a construction + ambient noise level of less than 65dB $L_{Aeq, 12hr}$, with some phases falling within the 60dB $L_{Aeq, 12hr}$ criteria. The resultant magnitude of noise effect at this property can therefore be described as 'Low/Medium'.

- Langford Park Farm (Graven Hill): Noise levels from demolition and construction activities are predicted to fall within the 65dB $L_{Aeq, 12hr}$, criteria for this receptor. However during the earthworks phase predicted noise levels at the closest proximity to the property show a small exceedance of 1.2dB. The resultant magnitude of noise effect of construction during this phase can therefore be described as 'High'.

- Wretchwick Farm (Graven Hill): There are construction phases that result in noise levels exceeding 65 $L_{Aeq, 12hr,}$ which therefore fall within the 'High' category of magnitude.

- Bramlow (Graven Hill): There are construction phases that result in noise levels exceeding 65 $L_{Aeq, 12hr,}$ which therefore fall within the 'High' category of magnitude. The greatest exceedance is predicted to be 7.9dB during the replacement of railway line replacement.

- Ploughley Road (C Site): There are predicted exceedances of the 65dB $L_{Aeq, 12hr}$, criteria of approximately 4dB during the removal of hardstanding and demolition of the warehouse. The noise levels predicted during earthworks are predicted to fall within the 60dB $L_{Aeq, 12hr}$, criteria, resulting in an effect of 'Low' magnitude.

- Norris Road and Green Lane (C Site): The proposed development will include an earth bund along the eastern boundary of the site primarily to mitigate the visual effects of the warehouse although this will also mitigate noise from employee vehicles travelling down the access road along the eastern side of the warehouse to the employee car park to the rear of the warehouse. The bund will also mitigate noise associated with the construction of the warehouse as the bund will be put in place prior to the warehouse. However, noise levels from works required prior to the construction of the earth bund, such as removal of the hardstanding car park and the construction of the earth bund itself will not benefit from noise reduction by the earth bund. Therefore the resultant noise levels at the closest receptors during a majority of the assessed construction phases where the bund is not present result in an effect of 'High' magnitude.

5.2.17 For several elements of the proposed demolition and construction activities the magnitude of effect is likely to be high. However as stated above this assessment is based on a worst-case situation when demolition/construction activities are taking place at the very closest point between the noise source and receptor. This situation is likely to be very short in duration (for example between two and four weeks duration, possibly less for the removal of car park hardstanding and replacement of the railway line) and effects will reduce as activity moves further away from this closest point.

5.2.18 Further reductions in noise would be achieved through using quieter plant. Using a pulveriser mounted on an excavator or the excavator bucket itself rather than a breaker mounted on a wheeled backhoe, as assumed in the plant list in Table 5.2 to break up hardstanding and demolish the warehouses would achieve a reduction in noise levels of around 10dB(A). In particular this would help to reduce the noise effects for those properties along Norris Road and Green Lane.

5.2.19 As previously stated demolition and construction activities at the closest point to the receptors assessed above would be of a short duration and noise levels would decrease as activities moved further into the site. In addition activities would be limited to standard daytime hours and therefore although some effects fall within the 'high magnitude' of effect, given the short duration and timing of works (08.00 to 18.00 Monday to Friday and 08.00 to 13.00 Saturday)and medium sensitivity of the receptors affected (see paragraph 8.7.5 of the ES) effects are unlikely to be significant.

5.2.20 To provide an indication of the noise levels which would occur for the majority of the time further predictions have been undertaken assuming the plant is operating towards the centre of the area of works. This assessment also assumes that a pulveriser mounted on an excavator or the excavator bucket is used to break-up the hardstanding.

Table 5.4 Predicted Construction Noise Levels at Receptors When Operating Towards Centre of Works and Assessment against BS5228 Magnitude Criteria

Receptor	Worst-Case Construction Phase	Construction Noise, $L_{Aeq, 12hr}$, dB	Representative Pre-Construction Ambient Noise Monitoring Location	Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Construction + Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Magnitude Criteria
Langford Park Farm (Graven Hill)						
	Demolition of Existing Warehouse	53.6	D/E2	56.1	58.0	Low
	Housing Construction	47.6	D/E2	56.1	56.7	Low
	Earthworks for New Playing Fields	50.8	D/E2	56.1	57.2	Low
Wretchwick Farm (Graven Hill)						
	Demolition of Existing Warehouse	60.2	D/E1	57.2	62.0	Medium
	Housing Construction	56.9	D/E1	57.2	60.1	Medium
	Road Surfacing	63.2	D/E1	57.2	64.2	Medium
Wretchwick End Cottage (Graven Hill)						
	Site Clearance inc Railway Line	53.7	D/E1	57.2	58.8	Low
	Housing Construction	55.5	D/E1	57.2	59.4	Low
	Road Surfacing					Medium
		59.6	D/E1	57.2	61.6	

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Receptor	Worst-Case Construction Phase	Construction Noise, $L_{Aeq, 12hr}$, dB	Representative Pre-Construction Ambient Noise Monitoring Location	Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Construction + Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Magnitude Criteria
Bramlow (Graven Hill)						
	Demolition of Existing Warehouse	60.8	D/E5	45.5	60.9	Medium
	Housing Construction	55.5	D/E5	45.5	55.9	Low
	Railway Line Replacement	65.0	D/E5	45.5	65.0	Medium
Brook Farm (C Site)						
	Removal of Hardstanding	53.5	C2	52.8	56.2	Low
	Earthworks & Hardstanding	50.4	C2	52.8	54.8	Low
	Earthworks SuDs Pond	56.2	C2	52.8	57.8	Low
	Railway Line Replacement	61.6	C2	52.8	62.1	Medium
Ploughley Lane (C Site)						
	Removal of Hardstanding	63.9	C1	48.8	64.0	Medium
	Earthworks & Hardstanding	54.8	C1	48.8	55.8	Low
	Demolition of Existing Warehouse	64.4	C1	48.8	64.5	Medium
Norris Road (C Site)						
	Removal of Hardstanding	70.1	C3	48.6	70.1	High
	Earthworks	66.6	C3	48.6	66.7	High
	Demolition of Existing Warehouse	55.6	C3	48.6	56.4	Low
	Access Road Construction	64.8	C3	48.6	64.9	Medium

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Receptor	Worst-Case Construction Phase	Construction Noise, $L_{Aeq, 12hr}$, dB	Representative Pre-Construction Ambient Noise Monitoring Location	Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Construction + Pre-Construction Ambient Noise Level, $L_{Aeq, 12hr}$ dB	Magnitude Criteria
	Construction of Warehouse	54.1	C3	48.6	55.2	Low
Section B Green Lane (C Site) - see Figure 3.5 of the ES						
	Removal of Hardstanding	70.1	C3	48.6	70.1	High
	Earthworks	66.6	C3	48.6	66.7	High
	Demolition of Existing Warehouse	57.3	C3	48.6	57.8	Low
	Access Road Construction	63.4	C3	48.6	63.5	Medium
	Construction of Warehouse	50.9	C3	48.6	52.9	Low
Section C Green Lane (C Site) - see Figure 3.5 of the ES						
	Removal of Hardstanding	67.2	C4	50.9	67.3	High
	Earthworks	63.7	C4	50.9	63.9	Medium
	Demolition of Existing Warehouse	56.2	C4	50.9	57.3	Low
	Access Road Construction	62.2	C4	50.9	62.5	Medium
	Construction of Warehouse	48.3	C4	50.9	52.8	Low

Graven Hill

5.2.21 As shown in Table 5.4 by assuming the plant is operating towards the centre of the works and that a breaker mounted on a wheeled backhoe is replaced with a quieter alternative there are no occurrences of the 'High' noise magnitude for receptors at Graven Hill. Taking into account the medium sensitive of receptors potentially affected by demolition and construction noise at Graven Hill, overall effects are unlikely to be significant.

C Site

5.2.22 The results from Table 5.4 indicate that there may still be effects of 'high' magnitude for those receptors closest to C Site, e.g. at Norris Road and Green Lane (section B) as a result of earthworks associated with the landscaping bund and removal of hardstanding and with the removal of hardstanding at Green Lane (section C).

5.2.23 The largest exceedances of the 65dB $L_{Aeq, 12hr}$, criteria is predicted to be 5.1dB, and to occur during the removal of the hardstanding used for the car park (Green Lane section B).

5.2.24 Further reductions in noise levels would be achieved with the use of site hoardings and, where necessary, temporary acoustic barriers for periods when works are required at the closest positions to the receptors along Norris Road and Green Lane. Typically this measure would achieve a minimum noise reduction of at least 5dB. Incorporation of this measure into the management of the demolition and construction works would ensure that noise levels would comply with noise construction limit set out in the ES.

Revisions to the Construction Environmental Management Plan

5.2.25 As set out in the ES, a Construction Environmental Management Plan (CEMP) would form part of the management of the overall development and be implemented by the site contractor(s) for both Graven Hill and C Site. The requirement for a CEMP at both sites could be ensured through planning conditions requiring contractors to produce a CEMP for CDC's approval prior to any demolition/construction work commencing on site as set out in Table 3.3 of the ES. Following the additional assessment of construction and demolition activity noise effects the following elements are recommended to be included in the CEMP:

- Both sites: use of a pulveriser mounted on an excavator or the excavator bucket to break up hardstanding and demolish existing buildings within close proximity to existing receptors or an alternative method which is of similar noise output.

- C Site: inclusion of site hoardings/temporary acoustic barriers along the boundary of the site with Green Lane and Norris Road during demolition works, removal hardstanding and creation of the landscape bund. Once this element of construction was complete the earth bund itself will screen these receptors from ongoing construction works.

5.2.26 Overall taking into account the additional measures incorporated into the development as a result of the quantitative construction noise assessment, it is considered the overall the magnitude of noise effects during the construction phase is 'Medium'. For

existing/proposed residential receptors in the areas surrounding Graven Hill and C Site, which are of medium sensitivity, it is concluded that the effects of construction are not likely to be significant.

Residential development within Planning Policy Guidance (PPG) 24 Noise Exposure Category (NEC) C (9.1.2)

5.2.27 PPG24 *Planning and Noise* (1994) gave general guidance to local authorities on the use of the planning system[2] to:

> *"…minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business."*

5.2.28 The guidance outlined the considerations to be taken into account in determining planning applications, both for noise sensitive developments and for activities which will generate noise. PPG24 acknowledged that:

> *"Much of the development which is necessary for the creation of jobs…will generate noise. The planning system should not place unjustifiable obstacles in the way of such development. Nevertheless, local planning authorities must ensure that development does not cause an unacceptable degree of disturbance".*

5.2.29 The general principle of the approach is that the planning system should, wherever practicable, ensure separation of noise sensitive development and noisy activities. Where this is not possible, local planning authorities should consider whether it is practicable to sufficiently reduce the effects of noise through the use of conditions or planning obligations.

5.2.30 As shown in Figures 8.2 and 8.3 of the ES, some limited areas proposed for residential development fall within the NEC C category, whereas the majority of areas for residential development fall within NEC B and A categories. The advice given for residential developments within NEC C is:

> *"Planning permission should not normally be granted. Where is it considered that permission should be given, for example because there is no alternative quieter site available, conditions should be imposed to ensure a commensurate level of protection against noise".*

[2] It should be noted that since the completion of the ES, the National Planning Policy Framework (NPPF) has now replaced PPG24. Under the NPPF it is for local planning authorities to set environmental criteria against which planning applications will be assessed so as to ensure that permitted operations do not have unacceptable adverse effects on the natural and historic environment or human health, including those effects from noise. The NPPF does not specify specific noise exposure categories (NECs) relating to site suitability for noise sensitive development as PPG24 did, but in the absence of other measurement criteria and the fact that the NPPF came into force post-application, we have provided a response against PPG24.

5.2.31 Currently the application is at the outline planning stage, therefore detailed designs for housing layouts and the location of sensitive rooms are not available to enable detailed calculations of internal noise levels within specific sensitive rooms. However, as shown in Tables 8.19-8.21 of the previously submitted ES, internal noise levels can meet the design criteria set out within British Standard 8233:1999 *Sound insulation and noise reduction for buildings - code of practice* through the use of standard glazing specifications, such as 10/12/6mm. This is demonstrated for all properties, including those within NEC C.

5.2.32 At the detailed design stage it may be possible to orientate the internal layout of buildings so that noise sensitive rooms such as living rooms and bedrooms are orientated away from noise sources. However, notwithstanding this, it has been demonstrated that currently internal noise limits can be met through the use of standard glazing specifications and hence the site masterplan has not been amended to avoid areas within NEC C.

5.2.33 Based on the findings of the assessments undertaken within the noise chapter of the ES, and as a majority of the areas for residential development fall within NEC B and A, the overall site is considered suitable for housing development. The ES also demonstrates that internal noise levels can meet design criteria set out within BS8233:1999 through the use of standard doubling glazing units. Finalised details of the glazing units will be decided at detailed design stage.

Noise from Construction Traffic

5.2.34 In response to paragraph 7.1.1 of CDC's request (potential effects from construction traffic) further information on the potential noise effects from construction traffic is provided below.

Assessment Methodology - Construction Traffic Noise

Graven Hill

5.2.35 As set out in paragraph 3.2.12 of this report, there would be an estimated 170 daily construction traffic trips, of which 43 (25%) would be HGVs, the remaining 127 being light vehicles. The likely worst-case effects in relation to construction traffic noise are expected to occur towards the near completion of the development when construction is still ongoing but the development is also largely operational. Traffic would be routed from Graven Hill along the A41. Information from the ES (see Table F3.1 in Appendix F) indicates that the greatest increase in 18 hour traffic flows along the A41 as a result of the development will occur on the section south of Neunkirchen Way. Adding the additional construction traffic to the traffic from the 'with-development' scenario gives a percentage increase of 8% in both total and HGV traffic flows (with operational traffic alone the increase is 7.2%).

5.2.36 As a general rule of thumb a doubling (i.e. 100%) of road traffic flows is required for the minimum audible change in road traffic noise (3dB(A)) to occur. Guidance[3] states that a 25% increase in road traffic flows is needed for a 1dB(A) increase in road traffic noise levels, which is the minimum change that studies have shown can be detected by the human ear in the short term (e.g. on opening of a road project). As worst-case flows are likely to be well below these criteria, significant effects from construction traffic associated with Graven Hill are unlikely.

C Site

5.2.37 An assessment of the noise effects from construction traffic has been undertaken for the construction period at C Site for those receptors located along the construction route from the A41 to the site.

5.2.38 Receptors potentially sensitive to changes in road traffic noise include existing residential properties situated on, or close to, any road segment expected to experience a change in road traffic volumes due to traffic associated with the construction of the development. Construction traffic from the A41 will travel south along the B4011, Palmer Avenue, and then access the site from the Ploughley Road entrance. Residential properties have been identified on the B4011, and limited numbers of dwellings on Palmer Avenue and Ploughley Road.

5.2.39 To assess construction traffic noise effects baseline traffic figures for 2015 have been growthed from traffic counts undertaken in 2011, as construction phase 3 for C Site, which is estimated to occur in 2015, would produce the greatest number of construction traffic movements.

5.2.40 For the purposes of the assessment it is assumed that construction traffic is concentrated during the morning peak (07:00-10:00) and evening periods (16:00-19:00). It has been assumed within the traffic assessment that there will be a maximum of 100 HGV movements due to construction over the 12 hour daytime period, of which a majority of these movements are assumed to occur during the assessed morning and evening peak periods.

5.2.41 The prediction method for calculating the change in road traffic noise during construction is based on the calculation methodology set out within the Department of Transport publication *Calculation of Road Traffic Noise* (CRTN) (1988).

5.2.42 However, as a large percentage of the traffic flows associated with construction will be HGVs, it is necessary to calculate the expected Basic Noise Levels (BNLs) using the methodology set out in CRTN. The BNL is the noise level at a reference distance of 10m from the carriageway edge, therefore should not be considered the actual noise level experienced at the receptor, rather the calculated change in noise level associated with construction traffic.

[3] Highways Agency, (November 2011). Design Manual for Roads and Bridges: Volume 11, Section 3, Part 7, HD 213/11 - revision 1, Noise and Vibration

5.2.43 The change in noise level with respect to BNLs before and during construction is used as the basis for evaluating significance based upon the guidance presented within the *Design Manual for Roads and Bridges* (Vol. 11, 2011) (DMRB). DMRB recommends that the magnitude of noise effects should be categorised in terms of those during the 'short term' and those with 'long term' effects. The classifications of magnitude of noise effects given in DMRB are shown below in Table 5.5.

Table 5.5 Classification of Magnitude of Noise Effects in the Short and Long Term

Noise Change, $L_{A10, 18hr}$	**Magnitude of Effect**
Short Term	
0	No change
0.1-0.9	Negligible
1.0-2.9	Minor
3.0-4.9	Moderate
5.0+	Major
Long Term	
0	No Change
0.1-2.9	Negligible
3.0-4.9	Minor
5.0-9.9	Moderate
10+	Major

5.2.44 Construction activities at C Site are expected to last for a period of approximately two years, therefore the 'short term' magnitude criteria are assumed to be relevant at the beginning of the construction phase. Towards the end of the construction phase, when surrounding receptors have become more accustomed to construction traffic flows, then use of the 'long term' magnitude criteria becomes more relevant.

5.2.45 The classification of magnitude of effect for the assessment (in line with Table 8.7 in the ES which specifies three categories of magnitude) is low (0-1dB), medium (1-3dB) and high (3dB+) to ensure a conservative estimate.

Predicted Effects and Their Significance - Construction Traffic Noise

5.2.46 The percentage change in traffic flows along proposed construction access routes have been calculated along with the predicted changes in noise level and associated DMRB magnitudes. These are shown in Table 5.6.

5.2.47 The largest percentage changes in HGV flows are predicted to occur along each of the assessed routes during the period 18:00-19:00 and the largest is predicted to be a 27.8% increase along Palmer Avenue.

5.2.48 With reference to the magnitude criteria set out within DMRB, the resultant change in basic noise level (L_{A10}) indicate mostly 'negligible' changes along the B4011 and Ploughley Road, and at worst a 'minor' change across all three routes.

5.2.49 As no changes in noise level are predicted to be 3dB+, then an overall magnitude of effect of 'medium' can be assumed for the effect of construction noise. Referring to section 8.7 of the ES and the criteria set out in ES Table 8.7, this indicates that the noise effects from HGV traffic from C Site are unlikely to be significant.

Table 5.6 Predicted Changes in Road Traffic Flows and Noise Levels during Construction: Baseline and Construction Year 2015

Period	B4011			Palmer Avenue			Ploughley Road		
	% Increase in HGV	Noise Change, $L_{A10, 18hr}$ dB	DMRB Magnitude	% Increase in HGV	Noise Change, $L_{A10, 18hr}$ dB	DMRB Magnitude	% Increase in HGV	Noise Change, $L_{A10, 18hr}$ dB	DMRB Magnitude
07:00-08:00	3.7	+0.5	Negligible	15.7	+1.5	Minor	4.2	+0.6	Negligible
08:00-09:00	4.6	+0.6	Negligible	16.4	+1.7	Minor	4.7	+0.8	Negligible
09:00-10:00	6.4	+0.8	Negligible	20.0	+1.6	Minor	5.7	+0.8	Negligible
16:00-17:00	3.9	+0.5	Negligible	16.5	+1.7	Minor	4.4	+0.7	Negligible
17:00-18:00	4.1	+0.6	Negligible	22.7	+2.4	Minor	6.3	+1.2	Minor
18:00-19:00	7.2	+1.0	Minor	25.8	+2.4	Minor	7.5	+1.3	Minor

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6. Landscape and Visual Effects (10)

6.1 CDC Request

10.1.1 The use of photomontages is disappointing and overall, it is considered that the ES falls short of best practice in terms of indicating the physical presence of the development in the landscape. In particular, the photomontage for viewpoint 7 in relation to C Site is unhelpful. The generation of additional viewpoints, wireframes and photomontages has already been requested via the letter from Cherwell District Council dated 7th December 2011.

6.2 DIO Response

6.2.1 This section provides a response to the points raised by the CDCs Landscape Officer (email Judith Ward to Laura Bailey 03 November 2011. Subject: 11/01494/OUT Site C Ploughley Road MOD Bicester). Comments are noted by paragraph, following the paragraph order in the CDC Landscape Officer's email, which for convenience are also reproduced in the sections below. No points were made regarding viewpoints 6 and 10, which were not visited by CDC.

6.2.2 Subsequent to discussions between CDC and DIO the following drawings are provided in Appendix C.

- Figure 1: Section locations and detailed view of landscaping mound.
- Figures 2 and 3: Revised sections.
- Figures 4-6: New photomontage for viewpoint 4 showing existing situation (Figure 4), view on completion of development (Figure 5) and view 15 years post completion of development when planting has matured (Figure 6).
- Figures 7-9: Photomontage for new viewpoint to the north of viewpoint 4 showing existing situation (Figure 7), view on completion of development (Figure 8) and view 15 years post completion of development when planting has matured (Figure 9).
- Figures 10-16: Wireframes for C Site (new viewpoint to the north of viewpoint 4 and viewpoints 4, 7 and 12) and Graven Hill (viewpoints 5,9 and 23). Note that these show the proposed development without the incorporated planting measures.

6.2.3 CDC's Landscape Officer comments are indicated in italics.

Paragraph 1:

> *"MOD Bicester site C is located in a flat, low lying area comprised of lowland meadows, low sparse hedges and little intervening woodland. Large structures are visible for long distances and form prominent features in a flat landscape".*

6.2.4 The site is located to the west of Arncott Hill. Paragraph 11.5.22 of the ES notes the screening effects of Arncott Hill and its wooded areas. The result of which is that long distance views are restricted to only parts of the surrounding landscape to the north, west and south.

Paragraph 2:

> *"Site C has a number of buildings on it of various sizes. 5 scattered buildings of various sizes are to be demolished to be replaced with one building 240x320m. This building is 6 times the size of the largest of the existing buildings on the site. The proposed building will be 18.6m in height. Compared to existing buildings which are approx 9-10m high. Some of this height will be offset by sinking the building 2-4m into the ground'.*

6.2.5 The largest building on C Site is building C32, shown on the site asset register as having a footprint measuring 14,390m^2. The new building is planned to have a footprint of 70,400m^2, plus a canopy on its west side measuring 320m x20m = 6,400m^2. The overall area is therefore less than six times the area of building C32.

6.2.6 In terms of landscape character and setting, there will clearly be an increase in overall development footprint on site; however this is more realistically presented as a percentage increase from the overall existing footprint. The site asset register shows a total existing footprint of 131,132m^2. Of this figure, 35,711m^2 will be demolished. The net increase in floor area will therefore be 95,421m^2 + 70,400m^2 = 165,821m^2 i.e. 26.5%.

Paragraph 3:

> *"It is also proposed to provide some mounding 3.13-4.26m high. It is not clear where the mounding will be but I would assume it is in the areas of proposed woodland planting. This will help with the screening but won't reduce the actual height of the building. I estimate that the proposed building will be slightly lower than the height of the water tower, probably extending half way up the top tank. This provides a rough guide as to where the building will be seen from as the water tower is an important landmark on the site and easily identifiable from a distance".*

6.2.7 The mounding locations are indicated on the attached Figure 1.

6.2.8 We agree the water tower is evident in wider views from the west; however, it is the existing buildings which are most prominent in the landscape, primarily due to their light colour, combined with the currently limited screening vegetation along the site's western boundary. The proposals include significant new screen planting to supplement that already in place. In addition, and in contrast to the existing development, significant opportunity exists to employ materials and finishes to the exterior of the new building that will reduce its visual and landscape effects.

Viewpoints:

> *Viewpoint 1. "The building will be visible from here but due to distance and intervening vegetation the impact will be mild".*

6.2.9 In line with the guidance in the GVLIA, we would not use 'mild' in our terminology, but we interpret this comment as being in accordance with our assessment i.e. the magnitude of visual change will be negligible.

"Viewpoint 2. The view from the road, with properties in front shows that immediate views will be of existing vegetation behind the properties, looking to the south rather than south west from where the building will be visible. The impact will be moderate".

6.2.10 All of the northern site boundary will be planted to screen the new building. We agree that this will result in a moderate effect (i.e. impact) on views from this location. However, this is assessed to be beneficial, as existing views of buildings (filtered by some limited intervening vegetation) will be replaced by a new backdrop of screen planting, supplementing the existing vegetation on site.

"Viewpoint 3. The building will be visible behind the screening. It is within 240m of The Plough PH and due to its size will have moderate impact".

6.2.11 Viewpoint 3 currently offers similar views to those from viewpoint 2. At its closest, the proposed screen planting in this case is a similar distance to that from viewpoint 2. The relative distance of the viewpoint to the building, and the relative difference between screen planting height at maturity and the height of the building is such that the building will be screened. The effect will therefore be similar to that described for viewpoint 2.

"Viewpoint 4. This viewpoint is misleading. I feel that the location should have been slightly to the north and the site entrance as the building will be visible from Murcott Road. Impact moderate. Some existing screening in summer".

6.2.12 Viewpoint 4. The viewpoint itself is not misleading as it represents the view in proximity to the local residents in this part of the village. However, a further photomontage, slightly to the north of viewpoint 4, has been produced (see Figures 7 to 9 enclosed). The proposed screen planting has been positioned to address views from the most sensitive receptors (i.e. local residential properties). From Murcott Road, at the immediate entrance to the site, there will be views into the site including oblique views of the north side of the building. The view will be transient and partially screened. Whilst the effect will be significant, we consider that it will be beneficial as the site entrance area will be improved by the removal of existing, intrusive features and the provision of an improved landscape setting.

"Viewpoint 5. Limited visibility of the site due to intervening buildings and vegetation, although the water tower is clearly visible. Within the restricted view of the site it will be visible".

6.2.13 Comment noted

"Viewpoint 7. This is the area of greatest impact in my opinion. The existing buildings are very close to the rear gardens of these properties and loom over them. A much taller building will cut out most of the view of the sky. It is probably not without significance that 3 properties that back onto the site are for sale. The impact

here is highly significant. Just because there are existing buildings does not mean that a much higher one won't have much additional impact".

6.2.14 We agree that the existing buildings are very close to the rear gardens, a factor which has been considered carefully as part of the site design work. Reference to the Design and Access Statement Page 55 'Eastern Landscape Buffer Sections', demonstrates that the relative distance of existing buildings to the residential properties, compared to that of the new building, results in no greater effect in relation to 'cutting out…the view of the sky'. During the outline design process the position of the new building was tested to ensure that within the operational constraints applicable to the site's use, the effect of the new building on these properties would be minimised. This process resulted in maximising its offset from the eastern boundary and also reducing the estimated floor level. By doing so, as indicated on the sections (illustrated in Figures 2 and 3 enclosed), the perceived height of the building, will be broadly commensurate with the existing building heights.

"Viewpoint 8. Some existing screening from views from Murcott Road especially in summer. The height and extent of the new building will be strongly visible".

6.2.15 We agree that existing vegetation located to the west of the public open space provides screening for the new development; with only the upper parts visible. However, in addition to screening provided by existing vegetation, proposed screen planting has been positioned along the eastern edge of the site to address views from sensitive receptors such as residents of Murcott Road and users of the adjacent public open space.

6.2.16 The proposed planting will in time to mature to filter views of the upper parts of the building's eastern elevation. Whilst the upper parts of the building's southern elevation will be visible on the skyline, such views will be partially filtered through existing vegetation and will represent a low magnitude of visual change (affecting a small part of the view, partially screened, viewed within the background and set in context of existing built form).

"Viewpoint 9. Negligible views. The proposed building will be largely concealed by existing buildings".

6.2.17 Comment noted.

"Viewpoint 11. Negligible views due to intervening vegetation, topography and distance".

6.2.18 Viewpoint 11: Comment noted.

"Viewpoint 12. The view from here is open due to very flat topography, no intervening features and lack of hedgerow planting. There is very little screening proposed so visibility will remain of a large dominant building".

6.2.19 Screening will be improved as a result of additional planting on the site's western boundary. Subject to detailed design, screen planting width is estimated to be minimum 15m, widening significantly towards the south-west where additional space is available. Sufficient screening will therefore occur at maturity to increase the

beneficial 'filtering effect' from the public footpath. The widening of the screen planting to the south-west will increase this benefit. As indicated in Figures 11.45 and 11.46 of the ES, during construction and once construction is complete there is the potential for significant negative effects. However, once the planting has matured (estimated to take up to 15 years) significant adverse effects are unlikely (as indicated in the Figure 11.46).

"Viewpoint 13. The topography here is very flat and open views and lack of screening result in considerable visibility from the Merton Road".

6.2.20 Viewpoint 13: It's unclear whether this comment refers to the existing baseline, or the proposed development. The existing buildings are already prominent in the landscape, primarily due to their light colour, combined with the currently limited screening vegetation along the site's western boundary. The proposals include significant new screen planting to supplement that already in place. In addition, and in contrast to the existing development, significant opportunity exists to employ materials and finishes to the exterior of the new building that will reduce its visual effects.

Paragraph 4:

"It is unfortunate that the shed cannot be sited closer to the NW boundary and away from the immediate housing. But this would create noise next to the properties and not at the back of the building as proposed. This would not be any improvement".

6.2.21 We consider that a balance has been achieved in the design and siting of the building as indicated. The factors taken into account include the operational requirements of the new development (which have determined the scale of the building) and the objective of minimising any significant effects on landscape and visual receptors whilst at the same time having regard to other potential effects such as noise. (A separate noise assessment has also been undertaken in the ES and in section 5 of this report.)

"In conclusion this is a very, very large building. It is tall, deep and long and will form a very solid mass in the landscape. No detail of the design has been provided but it is likely to be an enormous shed".

6.2.22 Clearly this is a large building; the detail of its external design (to reduce apparent scale and mass by appropriate design treatment) will be an important part of the detailed design. It is however being proposed on a site that is currently occupied by existing large-scale buildings of a similar appearance.

"The existing sheds are quite dominant from some viewpoints and they are relatively small compared with this 'super-shed"

6.2.23 We agree that the existing sheds are dominant from some viewpoints.

"It is also sited roughly parallel with the boundaries unlike the sheds which it replaces which are at varying angles, thereby varying the impact from any one point".

6.2.24 We do not agree that the angle of the existing buildings or proposed building to particular viewpoints is a particular factor in the level of effect as in each case

development is seen from more than one viewpoint and no individual building is entirely visible from any one viewpoint.

"The MOD clearly recognises that this is a very large structure as they have proposed to both sink the building and build bunds round it. The building will be very close to housing on Green Lane and this impact will be far, far greater than at present".

6.2.25 We do not agree that the effect of the new building on housing at Green Lane will be 'far, far greater than at present'. The conclusions of the Landscape and Visual Assessment (chapter 11 of the ES) are that in the short-term during construction and for 15 years post construction whilst planting is maturing there will be some significant adverse effects for some receptors. In the longer term (post 15 years completion of the development), once planting has matured the majority of receptors will not experience significant visual effects. Furthermore, the planting and landscaping measures which form part of the proposed development will in the longer term have significant positive effects for some residents in the surrounding area (see Table 11.7 of the ES) as this will provide screening of the site which is not available at present. The sections shown at page 55 of the Design and Access Statement provide evidence to support this conclusion.

"While there are obviously buildings in this landscape at present, replacing 5 large buildings with one enormous one is not in my opinion appropriate on this site."

6.2.26 We do not agree that it is inappropriate to replace five buildings with one new building. It appears that an assumption has been made by CDC that the building design will not employ any variation in external materials and finishes, to reduce the appearance of scale and mass. Whilst there will be an increase in building footprint, this increase is not out of character with the current, overall scale of development on site and currently evident in the wider landscape.

6.2.27 The landscape character assessment reported in the ES concluded that the proposed development will be of a scale that will result in no more than a medium magnitude of change, in the context of the isolated hills and woodland and mixed uses landscape character type applicable to this area. In addition, the site lies within an area identified as requiring 'landscape intervention' to restore, conserve and enhance its character. The existing development on site is noted (see paragraph 11.10.5 of the ES) as detracting from the landscape.

6.2.28 The Cherwell Landscape Assessment has identified a number of positive interventions. These include hedgerow tree and woodland planting, the provision of a strong and distinctive landscape framework with the consideration of long views over open countryside. The proposals respond to all of these interventions, within the constraints imposed by the site's future operational requirements.

7. Water Resources (11)

7.1 CDC Request

11.1.1 Paragraph 13.6.5 identifies the need for 'appropriate upgrades' to Bicester STW as various developments in the surrounding area come to fruition. Should these upgrades require additional land take for physical infrastructure, it is possible that the parcel of land which is adjacent to the existing STW to the south west and which lies outside Flood Zone 2 and 3 (see figure 13.1) may be put forward as the best alternative. As this would be immediately adjacent to a zone of proposed development, the impact of this needs addressing.

7.2 DIO Response

7.2.1 As Statutory Undertaker the responsibility for assessing the potentially significant effects (as part of an EIA) from a proposed extension to Bicester STW would lie with Thames Water, should the STW need to be upgraded in the future. It would also be Thames Water's responsibility to implement measures within the STW upgrade to mitigate any significant environmental effects on sensitive receptors in the surrounding area including residential dwellings within Graven Hill should this development be granted planning permission.

7.2.2 Thames Water is aware of the DIO proposals and has seen and signed-off the confidential odour assessment completed for the Graven Hill development. Thames Water will also be aware of potential future development in the wider area which may necessitate the future expansion of its STW. As far as DIO is aware Thames Water has not objected to the planning application, which indicates that it does not have an issue with the potential presence of the proposed development and the potential effects which could arise should Thames Water need to upgrade the STW in the future.

7.2.3 It should be noted that an upgrade to the STW would not necessarily require a physical extension to the STW to the south-west as indicated in paragraph 11.1.1 of the Regulation 22 request. For example, an upgrade may be achieved through altering the treatment process. As part of the upgrade Thames Water would review different options for treatment and identify measures which could be incorporated into the upgrade design to mitigate potential effects.

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8. Alternatives (12)

8.1 CDC Request

12.1.1 It is noted that the ES states that the consideration of alternatives was influenced by environmental factors, albeit that the exact nature of the option for C Site (options 1 to 6) are very limited. However, the GVA master plan noted that in commercial terms, the Graven Hill site (Site D and E) is best placed to accommodate redevelopment for residential uses and speculative commercial/employment uses and hence, should be promoted for residential-led development to maximise potential disposal receipts. It goes on to say that DE should also seek to locate DSDA's future requirements on Site C to minimise delivery risk and maximise potential disposal receipts.

12.1.2 Please can you clarify the apparent contradiction noted in paragraph 12.1.1 above in relation to the rationale for site selection.

12.1.3 In addition, the ES fails to consider the wider MOD land holdings around the Bicester environs and their suitability as alternative locations. An assessment of these sites should be considered.

8.2 DIO Response

Clarification on disposal

8.2.1 Paragraph 12.1.1 is not contradictory as the location of DSDA's future requirements on C site minimises delivery risk and maximises potential disposal receipts *across the whole of the scheme*, i.e. consolidation on C site frees up the more valuable land within the Bicester estate, maximising returns to the Exchequer.

Alternative sites in Bicester

8.2.2 It should be noted that the EIA Regulations (Schedule 4) state that that an ES should include an "*outline*" of the main alternatives "*studied by the applicant*" and an indication of the main reasons for the choice made, taking into account the environmental effects. The inference is that if the applicant has not studied alternatives there is no need to include them in the ES, although it is widely accepted best practice to do so. Furthermore, only an outline is required rather than a detailed discussion of the alternatives that have been considered. Finally it should be noted that the consideration of alternatives can apply to the consideration of alternative site layouts and alternative operational programmes rather than purely the consideration of alternative site locations.

8.2.3 Paragraph 2.2.10 of the ES provides an outline as to why other sites at MOD Bicester are not considered suitable for redevelopment. None of the alternative sites around

Bicester are large enough. C site has the right combination of space with building capacity that could be retained for operation alongside the Fulfilment Centre to provide a single site solution.

8.2.4 It is considered that the remainder of chapter 2 of the ES provides sufficient detail on the alternative site layouts considered by the applicant (section 2.3) and well as the alternative operational modes required at C Site (section 2.2).

9. Mitigation and Monitoring (13)

9.1 CDC Request

13.1.1 There is no attempt to explain the likely effectiveness of the mitigation, monitoring arrangements are limited in scope and the environmental effects of mitigation are not given consideration. Important mitigation measures and proposed monitoring arrangements are yet to be agreed and finalised and are considered incomplete.

13.1.2 In view of the above, please can you provide further details as to how the proposed mitigation and monitoring will be delivered.

9.2 DIO Response

Effectiveness of mitigation

9.2.1 The EIA Directive and Regulations require an assessment to be undertaken of "*the development*" - not of the development with and without mitigation. To meet this requirement, we have presented the scheme (Graven Hill and C Site proposals) as a single entity. This means that the scheme includes any measures that AMEC agreed with DIO during the scheme design process and that these will be implemented during the development process. Measures have been included because they mitigate or compensate for potential adverse effects, deliver agreed enhancement or meet best practice, technical or design requirements.

9.2.2 Where these measures have been adopted for environmental reasons, we describe them as 'environmental measures' rather than mitigation. This is because mitigation is often associated with additional measures over and above what constitutes the scheme (rather than measures that have been incorporated as part of the scheme).

9.2.3 This iterative approach to mitigating potentially significant environmental effects as part of the EIA process means the appropriate measures are identified at an early stage and incorporated into the final design of the scheme and where appropriate, into the management of demolition, construction and operational activities.

9.2.4 Experience and evidence has shown that these measures are capable of being fully effective in mitigating significant environmental effects. For example, many of the measures to control and manage effects from construction activities are standard tried and tested measures that are routinely used on construction sites. Other measures are incorporated into the development layout and therefore significant effects on receptors will be avoided through the design of the development. Any measures which were either not accepted by DIO or were unlikely to be effective were not included as part of the proposed development.

9.2.5 Notwithstanding the measures incorporated for Graven Hill and C Site, the ES identifies some significant adverse effects which cannot be mitigated (see the conclusions section in the non-technical summary). These comprise traffic noise effects associated with early morning shift changeover at C Site and landscape (Graven Hill) and visual (both sites) effects during construction and in the short term (once both developments are complete [up to 15 years post development] which will occur until the planting schemes have matured).

9.2.6 All other measures are considered to be fully effective in mitigating significant adverse effects.

Monitoring arrangements

9.2.7 Without further detail as to why (or which) monitoring arrangements are considered to be limited in scope it is difficult to respond to this comment fully.

9.2.8 The planning application was submitted on the understanding that CDC would wish to impose conditions or other controls relating to the implementation of the environmental measures. This is because, in the absence of such controls, we understand there would be a concern that they would not be able to enforce the implementation of the measures.

9.2.9 To this end, information was included in the ES (see Table 3.3) about the delivery of each relevant environmental measure, including:

- who will be responsible for its delivery; and
- the mechanism that will be used to commit the developer to its implementation (e.g. planning condition etc.).

9.2.10 Monitoring is proposed as a means of checking that the measures which have been incorporated into the development to mitigate significant adverse effects are working (i.e. that they are mitigating significant environmental effects) rather than as a means of mitigation themselves. The ES references the following in relation to monitoring.

- C Site employee travel survey every two years from completion and traffic survey every five years from completion (paragraph 3.4.15 of the ES). The results from this monitoring will be issued to CDC and the purpose of the monitoring is to ensure that the package of measures set out in the C Site travel plan are working. The responsibility for implementing this monitoring would lie with the developer of the site and it is considered that the requirement to undertaken this monitoring could be implemented by way of planning condition with the detail of the surveys to be agreed and approved by CDC prior to implementation.
- Monitoring of HGV movements during construction (see Tables 3.3 and 6.7 of the ES) again to ensure that the measures to mitigate potential effects from HGV traffic during construction are working. The requirement to undertake this monitoring would form part of the Construction Environmental Management Plan (CEMP) which as indicated in Table 3.3 could be implemented by way of a planning condition. The detail of the CEMP cannot be set out at this stage as the application is at an outline stage and developer/contractor(s) are not yet involved

with the project. Should the development be granted outline planning permission then at the reserved matters stage the developer(s) at Graven Hill and MOD at C Site would employ contractors to clear and develop each site. It is at the reserved matters stage that a detailed CEMP could be developed incorporating the measures set out in the ES (to meet the requirements of a planning condition) and agreed and approved by CDC prior to any works at the sites starting.

Environmental effects of mitigation

9.2.11 Measures which will mitigate environmental effects have been incorporated into the proposed development either as part of the design itself or as a management measure that will be implemented during the demolition, operation or construction of the development. As required by the EIA Regulations a "*description of the likely significant effects of the development on the environment*" has been provided in the ES.

9.2.12 As stated in paragraph 4.3.8 of the ES "*AMEC's approach to EIA is to assess the effects of the proposed development as they stand at the 'design freeze' i.e. incorporating the environmental measures that have been designed into the proposed development*". As it is the proposed development (with mitigation incorporated) which has been assessed then any potentially significant environmental effects from mitigation have been assessed as part of the assessment of the overall development, e.g. noise or visual effects associated with the screening bund at C Site.

Incomplete mitigation and monitoring measures

9.2.13 Without specific information as to which measures this is referring to, or in what way measures are considered incomplete it is not possible to provide a response to this query.

Delivery of mitigation and monitoring

9.2.14 An outline of this information is provided in Table 3.3 of the ES. It should be noted that whilst the EIA Regulations require "*a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects*" they do not require the provision of information on how these measures will be secured. It is considered that at this outline stage the information provided in Table 3.3 gives adequate information on how mitigation could be implemented throughout the development, and secured by CDC at this stage. The fact that an environmental impact assessment has been undertaken in relation to this proposal, does not enable the flexibility given by the outline planning application process to be undermined. Conditions are capable of being worded so as to secure the measures identified in the ES (and in particular at Table 3.3).

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Appendix A
Additional Information on Assessment of Traffic Effects

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Table 1 - Assumptions on Development Construction over Three Phases

			Development Assumptions p.a.												
			Phase 1				Phase 2					Phase 3			
Land Use	Unit of measurement	Size	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	dwelling units	1,900	150	300	450	600	750	900	1,050	1,200	1,350	1,500	1,650	1,800	1,900
Hotel	room number	100					100	100	100	100	100	100	100	100	100
School	pupil number	420 pupil	420	420	420	420	420	420	420	420	420	420	420	420	420
Local Retail	m^2GFA	1,858 465	1,858	2,323	2,323	2,323	2,323	2,323	2,323	2,323	2,323	2,323	2,323	2,323	2,323
B1 Office	m^2GFA	2,160	540	1,080	1,620	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160
B1(b) R&D	m^2GFA	2,400	300	600	900	1,200	1,500	1,800	2,100	2,400	2,400	2,400	2,400	2,400	2,400
B2/B1C	m^2GFA	20,520	2,565	5,130	7,695	10,260	12,825	15,390	17,955	20,520	20,520	20,520	20,520	20,520	20,520
B8	m^2GFA	66,680	5,129	10,258	15,388	20,517	25,646	30,775	35,905	41,034	46,163	51,292	56,422	61,551	66,680

Table 2 - Summary of Trip Rates & Total Traffic Generation

Land Use	Size	Trip Rates					
		AM Peak			PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential1	trip rate/unit	0.08	0.28	0.36	0.26	0.16	0.41
Hotel2	100 rooms	22.40	24.50	46.90	25.20	18.90	44.10
School4	420 pupils	56.23	11.33	67.56	1.15	2.29	3.44
Local Retail2	2,323sqm	1.46	1.35	2.81	0.90	0.95	1.86
B1 Office3	trip rate/100sqm	1.42	0.12	1.54	0.12	1.09	1.21
B1(b) R&D	trip rate/100sqm	1.42	0.12	1.54	0.12	1.09	1.21
B2/B1C2	trip rate/100sqm	0.49	0.26	0.75	0.21	0.43	0.64
B82	trip rate/100sqm	0.03	0.01	0.04	0.01	0.03	0.04

Land Use	Size	Traffic Generation					
		AM Peak			PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential	1,900	147	537	685	488	299	787
Hotel	100	22	25	47	25	19	44
School	420 pupil	56	11	68	1	2	3
Local Retail	2,323	34	31	65	21	22	43
B1 Office	2,160	31	3	33	3	24	26
B1(b) R&D	2,400	34	3	37	3	26	29
B2/B1C	20,520	101	53	154	43	88	131
B8	66,680	17	8	25	8	20	29
Total		**442**	**672**	**1114**	**592**	**501**	**1093**

Table 3 - Development Traffic Generation per Year

Total Cumulative Development Traffic Generation per year

	Phase 1																							
	2015						2016						2017						2018					
	AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour		
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Residential	12	42	54	39	24	62	23	85	108	77	47	124	35	127	162	116	71	186	46	170	216	154	94	249
Hotel																								
School	56	11	68	1	2	3	56	11	68	1	2	3	56	11	68	1	2	3	56	11	68	1	2	3
Local Retail	27	25	52	17	18	34	34	31	65	21	22	43	34	31	65	21	22	43	34	31	65	21	22	43
B1 Office	8	1	8	1	6	7	15	1	17	1	12	13	23	2	25	2	18	20	31	3	33	3	24	26
B1(b) R&D	4	0	5	0	3	4	9	1	9	1	7	7	13	1	14	1	10	11	17	1	18	1	13	15
B2/B1C	13	7	19	5	11	16	25	13	39	11	22	33	38	20	58	16	33	49	50	27	77	21	44	65
B8	1	1	2	1	2	2	3	1	4	1	3	4	4	2	6	2	5	7	5	3	8	3	6	9
Total	**121**	**87**	**208**	**63**	**65**	**129**	**165**	**144**	**309**	**113**	**115**	**228**	**202**	**195**	**397**	**159**	**161**	**319**	**240**	**246**	**486**	**204**	**206**	**410**

Additional Development Traffic Generation per year

	Phase 1																							
	2015						2016						2017						2018					
	AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour		
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Residential	12	42	54	39	24	62	12	42	54	39	24	62	12	42	54	39	24	62	12	42	54	39	24	62
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School	56	11	68	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Retail	27	25	52	17	18	34	7	6	13	4	4	9	0	0	0	0	0	0	0	0	0	0	0	0
B1 Office	8	1	8	1	6	7	8	1	8	1	6	7	8	1	8	1	6	7	8	1	8	1	6	7
B1(b) R&D	4	0	5	0	3	4	4	0	5	0	3	4	4	0	5	0	3	4	4	0	5	0	3	4
B2/B1C	13	7	19	5	11	16	13	7	19	5	11	16	13	7	19	5	11	16	13	7	19	5	11	16
B8	1	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1	2	2
Total	**121**	**87**	**208**	**63**	**65**	**129**	**44**	**57**	**101**	**50**	**50**	**100**	**37**	**51**	**88**	**46**	**45**	**91**	**37**	**51**	**88**	**46**	**45**	**91**

Table 3 - Development Traffic Generation per Year (cont.)

	Phase 2																											
	2019						2020						2021						2022						2023					
	AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour		
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Residential	58	212	270	193	118	311	70	255	324	231	142	373	81	297	378	270	165	435	93	339	432	308	189	497	105	382	486	347	212	559
Hotel	22	25	47	25	19	44	22	25	47	25	19	44	22	25	47	25	19	44	22	25	47	25	19	44	22	25	47	25	19	44
School	56	11	68	1	2	3	56	11	68	1	2	3	56	11	68	1	2	3	56	11	68	1	2	3	56	11	68	1	2	3
Local Retail	34	31	65	21	22	43	34	31	65	21	22	43	34	31	65	21	22	43	34	31	65	21	22	43	34	31	65	21	22	43
B1 Office	31	3	33	3	24	26	31	3	33	3	24	26	31	3	33	3	24	26	31	3	33	3	24	26	31	3	33	3	24	26
B1(b) R&D	21	2	23	2	16	18	26	2	28	2	20	22	30	3	32	3	23	25	34	3	37	3	26	29	34	3	37	3	26	29
B2/B1C	63	33	96	27	55	82	75	40	116	32	66	98	88	47	135	37	77	115	101	53	154	43	88	131	101	53	154	43	88	131
B8	6	3	10	3	8	11	8	4	12	4	9	13	9	5	14	5	11	16	10	5	16	5	13	18	12	6	17	6	14	20
Total	**292**	**320**	**612**	**274**	**264**	**539**	**322**	**370**	**692**	**319**	**304**	**623**	**352**	**421**	**772**	**364**	**343**	**707**	**381**	**471**	**852**	**409**	**383**	**792**	**394**	**514**	**908**	**448**	**408**	**856**

	Phase 2																											
	2019						2020						2021						2022						2023					
	AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour		
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Residential	12	42	54	39	24	62	12	42	54	39	24	62	12	42	54	39	24	62	12	42	54	39	24	62	12	42	54	39	24	62
Hotel	22	25	47	25	19	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Retail	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1 Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1(b) R&D	4	0	5	0	3	4	4	0	5	0	3	4	4	0	5	0	3	4	4	0	5	0	3	4	0	0	0	0	0	0
B2/B1C	13	7	19	5	11	16	13	7	19	5	11	16	13	7	19	5	11	16	13	7	19	5	11	16	0	0	0	0	0	0
B8	1	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1	2	2
Total	**52**	**75**	**127**	**70**	**58**	**128**	**30**	**50**	**80**	**45**	**39**	**84**	**30**	**50**	**80**	**45**	**39**	**84**	**30**	**50**	**80**	**45**	**39**	**84**	**13**	**43**	**56**	**39**	**25**	**64**

Table 3 - Development Traffic Generation per Year (cont.)

	Phase 3																							
	2024						2025						2026						2027					
	AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour		
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Residential	116	424	540	385	236	621	128	467	594	424	260	684	139	509	649	463	283	746	147	537	685	488	299	787
Hotel	22	25	47	25	19	44	22	25	47	25	19	44	22	25	47	25	19	44	22	25	47	25	19	44
School	56	11	68	1	2	3	56	11	68	1	2	3	56	11	68	1	2	3	56	11	68	1	2	3
Local Retail	34	31	65	21	22	43	34	31	65	21	22	43	34	31	65	21	22	43	34	31	65	21	22	43
B1 Office	31	3	33	3	24	26	31	3	33	3	24	26	31	3	33	3	24	26	31	3	33	3	24	26
B1(b) R&D	34	3	37	3	26	29	34	3	37	3	26	29	34	3	37	3	26	29	34	3	37	3	26	29
B2/B1C	101	53	154	43	88	131	101	53	154	43	88	131	101	53	154	43	88	131	101	53	154	43	88	131
B8	13	6	19	6	16	22	14	7	21	7	17	24	16	8	23	8	19	27	17	8	25	8	20	29
Total	**407**	**557**	**964**	**487**	**433**	**920**	**420**	**600**	**1020**	**527**	**458**	**985**	**433**	**643**	**1076**	**566**	**483**	**1049**	**442**	**672**	**1114**	**592**	**501**	**1093**

	Phase 3																							
	2024						2025						2026						2027					
	AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour			AM Peak			PM Peak Hour		
Land Use	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Residential	12	42	54	39	24	62	12	42	54	39	24	62	12	42	54	39	24	62	8	28	36	26	16	41
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Retail	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1 Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1(b) R&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2/B1C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B8	1	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1	2	2	1	1	2	1	2	2
Total	**13**	**43**	**56**	**39**	**25**	**64**	**13**	**43**	**56**	**39**	**25**	**64**	**13**	**43**	**56**	**39**	**25**	**64**	**9**	**29**	**38**	**26**	**17**	**44**

Table 4 - Development Traffic and HGV Generation per Year

Total Cumulative Development Traffic and HGV Generation per year

			Phase 1															
			2015				2016				2017				2018			
	HGV %		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Land Use	**AM**	**PM**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**
Residential			54	0	62	0	108	0	124	0	162	0	186	0	216	0	249	0
Hotel			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School			68	0	3	0	68	0	3	0	68	0	3	0	68	0	3	0
Local Retail			52	0	34	0	65	0	43	0	65	0	43	0	65	0	43	0
B1 Office			8	0	7	0	17	0	13	0	25	0	20	0	33	0	26	0
B1(b) R&D	6%	6%	5	0	4	0	9	1	7	0	14	1	11	1	18	1	15	1
B2/B1C	6%	6%	19	1	16	1	39	2	33	2	58	3	49	3	77	5	65	4
B8	27%	32%	2	1	2	1	4	1	4	1	6	2	7	2	8	2	9	3
Total	**-**	**-**	**208**	**2**	**129**	**2**	**309**	**4**	**228**	**4**	**397**	**6**	**319**	**6**	**486**	**8**	**410**	**8**

Additional Development Traffic and HGV Generation per year

			Phase 1															
			2015				2016				2017				2018			
	HGV %		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Land Use	**AM**	**PM**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**
Residential	0	0	54	0	62	0	54	0	62	0	54	0	62	0	54	0	62	0
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School	0	0	68	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Retail	0	0	52	0	34	0	13	0	9	0	0	0	0	0	0	0	0	0
B1 Office	0	0	8	0	7	0	8	0	7	0	8	0	7	0	8	0	7	0
B1(b) R&D	6%	6%	5	0	4	0	5	0	4	0	5	0	4	0	5	0	4	0
B2/B1C	6%	6%	19	1	16	1	19	1	16	1	19	1	16	1	19	1	16	1
B8	27%	32%	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Total							**101**	**2**	**100**	**2**	**88**	**2**	**91**	**2**	**88**	**2**	**91**	**2**

Table 4 - Development Traffic and HGV Generation per Year (cont.)

	Phase 2																			
	2019				2020				2021				2022				2023			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Land Use	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**
Residential	270	0	311	0	324	0	373	0	378	0	435	0	432	0	497	0	486	0	559	0
Hotel	47	0	44	0	47	0	44	0	47	0	44	0	47	0	44	0	47	0	44	0
School	68	0	3	0	68	0	3	0	68	0	3	0	68	0	3	0	68	0	3	0
Local Retail	65	0	43	0	65	0	43	0	65	0	43	0	65	0	43	0	65	0	43	0
B1 Office	33	0	26	0	33	0	26	0	33	0	26	0	33	0	26	0	33	0	26	0
B1(b) R&D	23	1	18	1	28	2	22	1	32	2	25	2	37	2	29	2	37	2	29	2
B2/B1C	96	6	82	5	116	7	98	6	135	8	115	7	154	9	131	8	154	9	131	8
B8	10	3	11	4	12	3	13	4	14	4	16	5	16	4	18	6	17	5	20	6
Total	**612**	**10**	**539**	**10**	**692**	**12**	**623**	**11**	**772**	**14**	**707**	**13**	**852**	**16**	**792**	**15**	**908**	**16**	**856**	**16**

	Phase 2																			
	2019				2020				2021				2022				2023			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Land Use	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**
Residential	54	0	62	0	54	0	62	0	54	0	62	0	54	0	62	0	54	0	62	0
Hotel	47	0	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Retail	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1 Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1(b) R&D	5	0	4	0	5	0	4	0	5	0	4	0	5	0	4	0	0	0	0	0
B2/B1C	19	1	16	1	19	1	16	1	19	1	16	1	19	1	16	1	0	0	0	0
B8	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Total	**127**	**2**	**128**	**2**	**80**	**2**	**84**	**2**	**80**	**2**	**84**	**2**	**80**	**2**	**84**	**2**	**56**	**1**	**64**	**1**

Table 4 - Development Traffic and HGV Generation per Year (cont.)

	Phase 3															
	2024				2025				2026				2027			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Land Use	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**
Residential	540	0	621	0	594	0	684	0	649	0	746	0	685	0	787	0
Hotel	47	0	44	0	47	0	44	0	47	0	44	0	47	0	44	0
School	68	0	3	0	68	0	3	0	68	0	3	0	68	0	3	0
Local Retail	65	0	43	0	65	0	43	0	65	0	43	0	65	0	43	0
B1 Office	33	0	26	0	33	0	26	0	33	0	26	0	33	0	26	0
B1(b) R&D	37	2	29	2	37	2	29	2	37	2	29	2	37	2	29	2
B2/B1C	154	9	131	8	154	9	131	8	154	9	131	8	154	9	131	8
B8	19	5	22	7	21	6	24	8	23	6	27	9	25	7	29	9
Total	**964**	**17**	**920**	**17**	**1020**	**17**	**985**	**17**	**1076**	**18**	**1049**	**18**	**1114**	**18**	**1093**	**19**

	Phase 3															
	2024				2025				2026				2027			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Land Use	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**	**Total**	**HGV**
Residential	54	0	62	0	54	0	62	0	54	0	62	0	36	0	41	0
Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
School	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Retail	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1 Office	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B1(b) R&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2/B1C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B8	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Total	**56**	**1**	**64**	**1**	**56**	**1**	**64**	**1**	**56**	**1**	**64**	**1**	**38**	**1**	**44**	**1**

Appendix B
Assumed Construction and Demolition Equipment List

Defence Infrastructure Organisation

amec

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Bramlow - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxxx	xxxxxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxx
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	160	52.08	4.02	0.00	56.10	47.90	1.00	160.00	0.01	1.00	0.83	0.83	47.09
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	160	52.08	4.02	0.00	56.10	-28.10	1.00	160.00	0.01	1.00	0.83	0.83	-28.91
Breaking Windows	Lump Hammer	81	1	109	109	160	52.08	4.02	0.00	56.10	52.90	1.00	160.00	0.01	1.00	0.83	0.83	52.09
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	160	52.08	4.02	0.00	56.10	56.90	1.00	160.00	0.01	1.00	0.83	0.83	56.09
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	160	52.08	4.02	0.00	56.10	56.67	1.00	160.00	0.01	1.00	0.83	0.83	55.86
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	160	52.08	4.02	0.00	56.10	53.90	1.00	160.00	0.01	1.00	0.83	0.83	53.09
					118													**61**

Activitiy	Plant	SPL @10m	No.	Level		Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
Housing Construction																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	300	57.54	5.39	0.00	62.93	38.08	1.00	300.00	0.00	1.00	0.83	0.83	37.27
	Dozer (towing roller)	81	2	109	112	300	57.54	5.39	0.00	62.93	49.08	1.00	300.00	0.00	1.00	0.83	0.83	48.27
	Wheeled Loader	76	1	104	104	300	57.54	5.39	0.00	62.93	41.07	1.00	300.00	0.00	1.00	0.83	0.83	40.26
	Dump Truck (tipping fill)	79	2	107	110	300	57.54	5.39	0.00	62.93	47.08	1.00	300.00	0.00	1.00	0.83	0.83	46.27
Construction	Tracked Excavator	70	2	98	101	300	57.54	5.39	0.00	62.93	38.08	1.00	300.00	0.00	1.00	0.83	0.83	37.27
	Concrete Mixer Truck	80	3	108	113	300	57.54	5.39	0.00	62.93	49.84	1.00	300.00	0.00	1.00	0.83	0.83	49.03
	Articulated Dump Truck 23t	81	3	109	114	300	57.54	5.39	0.00	62.93	50.84	1.00	300.00	0.00	1.00	0.83	0.83	50.03
	Telescopic Handler 4t	79	2	107	110	300	57.54	5.39	0.00	62.93	47.08	1.00	300.00	0.00	1.00	0.83	0.83	46.27
	Wheeled Mobile Crane	70	1	98	98	300	57.54	5.39	0.00	62.93	35.07	1.00	300.00	0.00	1.00	0.83	0.83	34.26
					119													**56**

Activitiy	Plant	SPL @10m	No.	Level		Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
Railway Line Replacement																		
Breaking Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	125	49.94	3.48	0.00	53.42	62.58	1.00	125.00	0.01	1.00	0.83	0.83	61.77
Removing Broken Surface	Wheeled Excavator	73	2	101	104	125	49.94	3.48	0.00	53.42	50.59	1.00	125.00	0.01	1.00	0.83	0.83	49.78
Earthworks	Tracked Excavator	70	2	98	101	125	49.94	3.48	0.00	53.42	47.59	1.00	125.00	0.01	1.00	0.83	0.83	46.78
	Wheeled Loader	76	1	104	104	125	49.94	3.48	0.00	53.42	50.58	1.00	125.00	0.01	1.00	0.83	0.83	49.77
	Dump Truck (tipping fill)	79	2	107	110	125	49.94	3.48	0.00	53.42	56.59	1.00	125.00	0.01	1.00	0.83	0.83	55.78
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	125	49.94	3.48	0.00	53.42	51.58	1.00	125.00	0.01	1.00	0.83	0.83	50.77
Rolling and Compaction	Road Roller	80	2	108	111	125	49.94	3.48	0.00	53.42	57.59	1.00	125.00	0.01	1.00	0.83	0.83	56.78
Laying Track	Wheeled Mobile Crane 80t	76	1	104	104	125	49.94	3.48	0.00	53.42	50.58	1.00	125.00	0.01	1.00	0.83	0.83	49.77
	Angle Grinder (grinding steel)	80	1	108	108	125	49.94	3.48	0.00	53.42	54.58	1.00	125.00	0.01	1.00	0.83	0.83	53.77
	Hand-held Welder	73	2	101	104	125	49.94	3.48	0.00	53.42	50.59	1.00	125.00	0.01	1.00	0.83	0.83	49.78
					119													**65**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Bramlow

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxxx	xxxxxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxx
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	130	50.28	3.57	0.00	53.85	50.15	1.00	130.00	0.01	1.00	0.83	0.83	49.34
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	130	50.28	3.57	0.00	53.85	66.15	1.00	130.00	0.01	1.00	0.83	0.83	65.34
Breaking Windows	Lump Hammer	81	1	109	109	130	50.28	3.57	0.00	53.85	55.15	1.00	130.00	0.01	1.00	0.83	0.83	54.34
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	130	50.28	3.57	0.00	53.85	59.15	1.00	130.00	0.01	1.00	0.83	0.83	58.34
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	130	50.28	3.57	0.00	53.85	58.92	1.00	130.00	0.01	1.00	0.83	0.83	58.11
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	130	50.28	3.57	0.00	53.85	56.15	1.00	130.00	0.01	1.00	0.83	0.83	55.34
					122													**67**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Housing Construction**												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	150	51.52	3.88	0.00	55.40	45.61	1.00	150.00	0.01	1.00	0.83	0.83	44.80
	Dozer (towing roller)	81	2	109	112	150	51.52	3.88	0.00	55.40	56.61	1.00	150.00	0.01	1.00	0.83	0.83	55.80
	Wheeled Loader	76	1	104	104	150	51.52	3.88	0.00	55.40	48.60	1.00	150.00	0.01	1.00	0.83	0.83	47.79
	Dump Truck (tipping fill)	79	2	107	110	150	51.52	3.88	0.00	55.40	54.61	1.00	150.00	0.01	1.00	0.83	0.83	53.80
Construction	Tracked Excavator	70	2	98	101	150	51.52	3.88	0.00	55.40	45.61	1.00	150.00	0.01	1.00	0.83	0.83	44.80
	Concrete Mixer Truck	80	3	108	113	150	51.52	3.88	0.00	55.40	57.37	1.00	150.00	0.01	1.00	0.83	0.83	56.56
	Articulated Dump Truck 23t	81	3	109	114	150	51.52	3.88	0.00	55.40	58.37	1.00	150.00	0.01	1.00	0.83	0.83	57.56
	Telescopic Handler 4t	79	2	107	110	150	51.52	3.88	0.00	55.40	54.61	1.00	150.00	0.01	1.00	0.83	0.83	53.80
	Wheeled Mobile Crane	70	1	98	98	150	51.52	3.88	0.00	55.40	42.60	1.00	150.00	0.01	1.00	0.83	0.83	41.79
					119													**63**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Railway Line Replacement**												
Breaking Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	60	43.56	1.89	0.00	45.45	70.55	1.00	60.00	0.02	1.00	0.83	0.83	69.74
Removing Broken Surface	Wheeled Excavator	73	2	101	104	60	43.56	1.89	0.00	45.45	58.56	1.00	60.00	0.02	1.00	0.83	0.83	57.75
Earthworks	Tracked Excavator	70	2	98	101	60	43.56	1.89	0.00	45.45	55.56	1.00	60.00	0.02	1.00	0.83	0.83	54.75
	Wheeled Loader	76	1	104	104	60	43.56	1.89	0.00	45.45	58.55	1.00	60.00	0.02	1.00	0.83	0.83	57.74
	Dump Truck (tipping fill)	79	2	107	110	60	43.56	1.89	0.00	45.45	64.56	1.00	60.00	0.02	1.00	0.83	0.83	63.75
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	60	43.56	1.89	0.00	45.45	59.55	1.00	60.00	0.02	1.00	0.83	0.83	58.74
Rolling and Compaction	Road Roller	80	2	108	111	60	43.56	1.89	0.00	45.45	65.56	1.00	60.00	0.02	1.00	0.83	0.83	64.75
Laying Track	Wheeled Mobile Crane 80t	76	1	104	104	60	43.56	1.89	0.00	45.45	58.55	1.00	60.00	0.02	1.00	0.83	0.83	57.74
	Angle Grinder (grinding steel)	80	1	108	108	60	43.56	1.89	0.00	45.45	62.55	1.00	60.00	0.02	1.00	0.83	0.83	61.74
	Hand-held Welder	73	2	101	104	60	43.56	1.89	0.00	45.45	58.56	1.00	60.00	0.02	1.00	0.83	0.83	57.75
					119													**73**

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Brook Farm - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxxx	xxxxxx	xxxxxx	xxxxxx
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Removal of Hardstanding**												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	300	57.54	5.39	0.00	62.93	41.07	1.00	300.00	0.00	1.00	0.83	0.83	40.26
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	300	57.54	5.39	0.00	62.93	-34.93	1.00	300.00	0.00	1.00	0.83	0.83	-35.74
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	300	57.54	5.39	0.00	62.93	50.07	1.00	300.00	0.00	1.00	0.83	0.83	49.26
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	300	57.54	5.39	0.00	62.93	49.84	1.00	300.00	0.00	1.00	0.83	0.83	49.03
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	300	57.54	5.39	0.00	62.93	47.07	1.00	300.00	0.00	1.00	0.83	0.83	46.26
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	300	57.54	5.39	0.00	62.93	40.07	1.00	300.00	0.00	1.00	0.83	0.83	39.26
					117													**54**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Earthworks & Hardstanding**												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	300	57.54	5.39	0.00	62.93	38.08	1.00	300.00	0.00	1.00	0.83	0.83	37.27
	Dozer	79	2	107	110	300	57.54	5.39	0.00	62.93	47.08	1.00	300.00	0.00	1.00	0.83	0.83	46.27
	Wheeled Loader	76	1	104	104	300	57.54	5.39	0.00	62.93	41.07	1.00	300.00	0.00	1.00	0.83	0.83	40.26
	Dump Truck (tipping fill)	79	2	107	110	300	57.54	5.39	0.00	62.93	47.08	1.00	300.00	0.00	1.00	0.83	0.83	46.27
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	300	57.54	5.39	0.00	62.93	40.07	1.00	300.00	0.00	1.00	0.83	0.83	39.26
					114													**50**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Earthworks SuDs Pond**												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	170	52.61	4.15	0.00	56.76	44.25	1.00	170.00	0.01	1.00	0.83	0.83	43.44
	Dozer	79	2	107	110	170	52.61	4.15	0.00	56.76	53.25	1.00	170.00	0.01	1.00	0.83	0.83	52.44
	Wheeled Loader	76	1	104	104	170	52.61	4.15	0.00	56.76	47.24	1.00	170.00	0.01	1.00	0.83	0.83	46.43
	Dump Truck (tipping fill)	79	2	107	110	170	52.61	4.15	0.00	56.76	53.25	1.00	170.00	0.01	1.00	0.83	0.83	52.44
					114													**56**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Railway Line Replacement**												
Breaking Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	170	52.61	4.15	0.00	56.76	59.24	1.00	170.00	0.01	1.00	0.83	0.83	58.43
Removing Broken Surface	Wheeled Excavator	73	2	101	104	170	52.61	4.15	0.00	56.76	47.25	1.00	170.00	0.01	1.00	0.83	0.83	46.44
Earthworks	Tracked Excavator	70	2	98	101	170	52.61	4.15	0.00	56.76	44.25	1.00	170.00	0.01	1.00	0.83	0.83	43.44
	Wheeled Loader	76	1	104	104	170	52.61	4.15	0.00	56.76	47.24	1.00	170.00	0.01	1.00	0.83	0.83	46.43
	Dump Truck (tipping fill)	79	2	107	110	170	52.61	4.15	0.00	56.76	53.25	1.00	170.00	0.01	1.00	0.83	0.83	52.44
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	170	52.61	4.15	0.00	56.76	48.24	1.00	170.00	0.01	1.00	0.83	0.83	47.43
Rolling and Compaction	Road Roller	80	2	108	111	170	52.61	4.15	0.00	56.76	54.25	1.00	170.00	0.01	1.00	0.83	0.83	53.44
Laying Track	Wheeled Mobile Crane 80t	76	1	104	104	170	52.61	4.15	0.00	56.76	47.24	1.00	170.00	0.01	1.00	0.83	0.83	46.43
	Angle Grinder (grinding steel)	80	1	108	108	170	52.61	4.15	0.00	56.76	51.24	1.00	170.00	0.01	1.00	0.83	0.83	50.43
	Hand-held Welder	73	2	101	104	170	52.61	4.15	0.00	56.76	47.25	1.00	170.00	0.01	1.00	0.83	0.83	46.44
					119													**62**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Brook Farm

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxxx	xxxxxx	xxxxxx	xxxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	150	51.52	3.88	0.00	55.40	48.60	1.00	150.00	0.01	1.00	0.83	0.83	47.79
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	150	51.52	3.88	0.00	55.40	64.60	1.00	150.00	0.01	1.00	0.83	0.83	63.79
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	150	51.52	3.88	0.00	55.40	57.60	1.00	150.00	0.01	1.00	0.83	0.83	56.79
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	150	51.52	3.88	0.00	55.40	57.37	1.00	150.00	0.01	1.00	0.83	0.83	56.56
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	150	51.52	3.88	0.00	55.40	54.60	1.00	150.00	0.01	1.00	0.83	0.83	53.79
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	150	51.52	3.88	0.00	55.40	47.60	1.00	150.00	0.01	1.00	0.83	0.83	46.79
					122													**66**
Earthworks & Hardstanding																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	150	51.52	3.88	0.00	55.40	45.61	1.00	150.00	0.01	1.00	0.83	0.83	44.80
	Dozer	79	2	107	110	150	51.52	3.88	0.00	55.40	54.61	1.00	150.00	0.01	1.00	0.83	0.83	53.80
	Wheeled Loader	76	1	104	104	150	51.52	3.88	0.00	55.40	48.60	1.00	150.00	0.01	1.00	0.83	0.83	47.79
	Dump Truck (tipping fill)	79	2	107	110	150	51.52	3.88	0.00	55.40	54.61	1.00	150.00	0.01	1.00	0.83	0.83	53.80
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	150	51.52	3.88	0.00	55.40	47.60	1.00	150.00	0.01	1.00	0.83	0.83	46.79
					114													**58**
Earthworks SuDs Pond																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	70	44.90	2.23	0.00	47.13	53.88	1.00	70.00	0.01	1.00	0.83	0.83	53.07
	Dozer	79	2	107	110	70	44.90	2.23	0.00	47.13	62.88	1.00	70.00	0.01	1.00	0.83	0.83	62.07
	Wheeled Loader	76	1	104	104	70	44.90	2.23	0.00	47.13	56.87	1.00	70.00	0.01	1.00	0.83	0.83	56.06
	Dump Truck (tipping fill)	79	2	107	110	70	44.90	2.23	0.00	47.13	62.88	1.00	70.00	0.01	1.00	0.83	0.83	62.07
					114													**66**
Railway Line Replacement																		
Breaking Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	70	44.90	2.23	0.00	47.13	68.87	1.00	70.00	0.01	1.00	0.83	0.83	68.06
Removing Broken Surface	Wheeled Excavator	73	2	101	104	70	44.90	2.23	0.00	47.13	56.88	1.00	70.00	0.01	1.00	0.83	0.83	56.07
Earthworks	Tracked Excavator	70	2	98	101	70	44.90	2.23	0.00	47.13	53.88	1.00	70.00	0.01	1.00	0.83	0.83	53.07
	Wheeled Loader	76	1	104	104	70	44.90	2.23	0.00	47.13	56.87	1.00	70.00	0.01	1.00	0.83	0.83	56.06
	Dump Truck (tipping fill)	79	2	107	110	70	44.90	2.23	0.00	47.13	62.88	1.00	70.00	0.01	1.00	0.83	0.83	62.07
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	70	44.90	2.23	0.00	47.13	57.87	1.00	70.00	0.01	1.00	0.83	0.83	57.06
Rolling and Compaction	Road Roller	80	2	108	111	70	44.90	2.23	0.00	47.13	63.88	1.00	70.00	0.01	1.00	0.83	0.83	63.07
Laying Track	Wheeled Mobile Crane 80t	76	1	104	104	70	44.90	2.23	0.00	47.13	56.87	1.00	70.00	0.01	1.00	0.83	0.83	56.06
	Angle Grinder (grinding steel)	80	1	108	108	70	44.90	2.23	0.00	47.13	60.87	1.00	70.00	0.01	1.00	0.83	0.83	60.06
	Hand-held Welder	73	2	101	104	70	44.90	2.23	0.00	47.13	56.88	1.00	70.00	0.01	1.00	0.83	0.83	56.07
					119													**71**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Langford Park Farm - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxx	xxxxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxx
						Demolition of Existing Warehouse												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	310	57.83	5.46	0.00	63.28	40.72	1.00	310.00	0.00	1.00	0.83	0.83	39.91
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	310	57.83	5.46	0.00	63.28	-35.28	1.00	310.00	0.00	1.00	0.83	0.83	-36.09
Breaking Windows	Lump Hammer	81	1	109	109	310	57.83	5.46	0.00	63.28	45.72	1.00	310.00	0.00	1.00	0.83	0.83	44.91
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	310	57.83	5.46	0.00	63.28	49.72	1.00	310.00	0.00	1.00	0.83	0.83	48.91
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	310	57.83	5.46	0.00	63.28	49.49	1.00	310.00	0.00	1.00	0.83	0.83	48.68
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	310	57.83	5.46	0.00	63.28	46.72	1.00	310.00	0.00	1.00	0.83	0.83	45.91
					118													**54**

Activitiy	Plant	SPL @10m	No.	Level														
						Housing Construction												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	550	62.81	6.70	0.00	69.51	31.50	1.00	550.00	0.00	1.00	0.83	0.83	30.69
	Dozer	79	2	107	110	550	62.81	6.70	0.00	69.51	40.50	1.00	550.00	0.00	1.00	0.83	0.83	39.69
	Wheeled Loader	76	1	104	104	550	62.81	6.70	0.00	69.51	34.49	1.00	550.00	0.00	1.00	0.83	0.83	33.68
	Dump Truck (tipping fill)	79	2	107	110	550	62.81	6.70	0.00	69.51	40.50	1.00	550.00	0.00	1.00	0.83	0.83	39.69
Construction	Tracked Excavator	70	2	98	101	550	62.81	6.70	0.00	69.51	31.50	1.00	550.00	0.00	1.00	0.83	0.83	30.69
	Concrete Pump	75	1	103	103	550	62.81	6.70	0.00	69.51	33.49	1.00	550.00	0.00	1.00	1.00	1.00	33.49
	Articulated Dump Truck 23t	81	3	109	114	550	62.81	6.70	0.00	69.51	44.26	1.00	550.00	0.00	1.00	0.83	0.83	43.45
	Telescopic Handler 4t	79	2	107	110	550	62.81	6.70	0.00	69.51	40.50	1.00	550.00	0.00	1.00	0.83	0.83	39.69
	Wheeled Mobile Crane	70	1	98	98	550	62.81	6.70	0.00	69.51	28.49	1.00	550.00	0.00	1.00	0.83	0.83	27.68
					118													**48**

Activitiy	Plant	SPL @10m	No.	Level														
						Earthworks for New Playing Fields												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	280	56.94	5.24	0.00	62.18	38.83	1.00	280.00	0.00	1.00	0.83	0.83	38.02
	Dozer	79	2	107	110	280	56.94	5.24	0.00	62.18	47.83	1.00	280.00	0.00	1.00	0.83	0.83	47.02
	Wheeled Loader	76	1	104	104	280	56.94	5.24	0.00	62.18	41.82	1.00	280.00	0.00	1.00	0.83	0.83	41.01
	Dump Truck (tipping fill)	79	2	107	110	280	56.94	5.24	0.00	62.18	47.83	1.00	280.00	0.00	1.00	0.83	0.83	47.02
					114													**51**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Langford Park Farm

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxxx	xxxxxx	xxxxxx	xxxxxx
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	225	55.04	4.76	0.00	59.80	44.20	1.00	225.00	0.00	1.00	0.83	0.83	43.39
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	225	55.04	4.76	0.00	59.80	60.20	1.00	225.00	0.00	1.00	0.83	0.83	59.39
Breaking Windows	Lump Hammer	81	1	109	109	225	55.04	4.76	0.00	59.80	49.20	1.00	225.00	0.00	1.00	0.83	0.83	48.39
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	225	55.04	4.76	0.00	59.80	53.20	1.00	225.00	0.00	1.00	0.83	0.83	52.39
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	225	55.04	4.76	0.00	59.80	52.97	1.00	225.00	0.00	1.00	0.83	0.83	52.16
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	225	55.04	4.76	0.00	59.80	50.20	1.00	225.00	0.00	1.00	0.83	0.83	49.39
					122													**61**

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
Housing Construction																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	250	55.96	4.99	0.00	60.95	40.06	1.00	250.00	0.00	1.00	0.83	0.83	39.25
	Dozer	79	2	107	110	250	55.96	4.99	0.00	60.95	49.06	1.00	250.00	0.00	1.00	0.83	0.83	48.25
	Wheeled Loader	76	1	104	104	250	55.96	4.99	0.00	60.95	43.05	1.00	250.00	0.00	1.00	0.83	0.83	42.24
	Dump Truck (tipping fill)	79	2	107	110	250	55.96	4.99	0.00	60.95	49.06	1.00	250.00	0.00	1.00	0.83	0.83	48.25
Construction	Tracked Excavator	70	2	98	101	250	55.96	4.99	0.00	60.95	40.06	1.00	250.00	0.00	1.00	0.83	0.83	39.25
	Concrete Pump	75	1	103	103	250	55.96	4.99	0.00	60.95	42.05	1.00	250.00	0.00	1.00	1.00	1.00	42.05
	Articulated Dump Truck 23t	81	3	109	114	250	55.96	4.99	0.00	60.95	52.82	1.00	250.00	0.00	1.00	0.83	0.83	52.01
	Telescopic Handler 4t	79	2	107	110	250	55.96	4.99	0.00	60.95	49.06	1.00	250.00	0.00	1.00	0.83	0.83	48.25
	Wheeled Mobile Crane	70	1	98	98	250	55.96	4.99	0.00	60.95	37.05	1.00	250.00	0.00	1.00	0.83	0.83	36.24
					118													**56**

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
Earthworks for New Playing Fields																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	70	44.90	2.23	0.00	47.13	53.88	1.00	70.00	0.01	1.00	0.83	0.83	53.07
	Dozer	79	2	107	110	70	44.90	2.23	0.00	47.13	62.88	1.00	70.00	0.01	1.00	0.83	0.83	62.07
	Wheeled Loader	76	1	104	104	70	44.90	2.23	0.00	47.13	56.87	1.00	70.00	0.01	1.00	0.83	0.83	56.06
	Dump Truck (tipping fill)	79	2	107	110	70	44.90	2.23	0.00	47.13	62.88	1.00	70.00	0.01	1.00	0.83	0.83	62.07
					114													**66**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Norris Road - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxx	xxxxxxxxxx	xxxxxx	xxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	65	44.26	2.06	0.00	46.32	57.68	1.00	65.00	0.02	1.00	0.83	0.83	56.87
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	65	44.26	2.06	0.00	46.32	-18.32	1.00	65.00	0.02	1.00	0.83	0.83	-19.13
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	65	44.26	2.06	0.00	46.32	66.68	1.00	65.00	0.02	1.00	0.83	0.83	65.87
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	65	44.26	2.06	0.00	46.32	66.45	1.00	65.00	0.02	1.00	0.83	0.83	65.64
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	65	44.26	2.06	0.00	46.32	63.68	1.00	65.00	0.02	1.00	0.83	0.83	62.87
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	65	44.26	2.06	0.00	46.32	56.68	1.00	65.00	0.02	1.00	0.83	0.83	55.87
					117													**70**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Earthworks**												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	65	44.26	2.06	0.00	46.32	54.69	1.00	65.00	0.02	1.00	0.83	0.83	53.88
	Dozer	79	2	107	110	65	44.26	2.06	0.00	46.32	63.69	1.00	65.00	0.02	1.00	0.83	0.83	62.88
	Wheeled Loader	76	1	104	104	65	44.26	2.06	0.00	46.32	57.68	1.00	65.00	0.02	1.00	0.83	0.83	56.87
	Dump Truck (tipping fill)	79	2	107	110	65	44.26	2.06	0.00	46.32	63.69	1.00	65.00	0.02	1.00	0.83	0.83	62.88
					114													**67**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Demolition of Existing Warehouse**												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	130	50.28	0.00	11.00	61.28	42.72	1.00	130.00	0.01	1.00	0.83	0.83	41.91
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	130	50.28	0.00	11.00	61.28	-33.28	1.00	130.00	0.01	1.00	0.83	0.83	-34.09
Breaking Windows	Lump Hammer	81	1	109	109	130	50.28	0.00	11.00	61.28	47.72	1.00	130.00	0.01	1.00	0.83	0.83	46.91
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	130	50.28	0.00	11.00	61.28	51.72	1.00	130.00	0.01	1.00	0.83	0.83	50.91
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	130	50.28	0.00	11.00	61.28	51.49	1.00	130.00	0.01	1.00	0.83	0.83	50.68
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	130	50.28	0.00	11.00	61.28	48.72	1.00	130.00	0.01	1.00	0.83	0.83	47.91
					118													**56**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Access Road Construction**												
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	130	50.28	3.57	0.00	53.85	62.15	1.00	130.00	0.01	1.00	0.83	0.83	61.34
Removing Broken Road Surfac	Wheeled Excavator	73	2	101	104	130	50.28	3.57	0.00	53.85	50.16	1.00	130.00	0.01	1.00	0.83	0.83	49.35
Earthworks	Tracked Excavator	70	2	98	101	130	50.28	3.57	0.00	53.85	47.16	1.00	130.00	0.01	1.00	0.83	0.83	46.35
	Wheeled Loader	76	1	104	104	130	50.28	3.57	0.00	53.85	50.15	1.00	130.00	0.01	1.00	0.83	0.83	49.34
	Dump Truck (tipping fill)	79	2	107	110	130	50.28	3.57	0.00	53.85	56.16	1.00	130.00	0.01	1.00	0.83	0.83	55.35
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	130	50.28	3.57	0.00	53.85	51.15	1.00	130.00	0.01	1.00	0.83	0.83	50.34
Rolling and Compaction	Road Roller	80	2	108	111	130	50.28	3.57	0.00	53.85	57.16	1.00	130.00	0.01	1.00	0.83	0.83	56.35
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	130	50.28	3.57	0.00	53.85	58.15	1.00	130.00	0.01	1.00	0.83	0.83	57.34
					119													**65**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Construction of Warehouse**												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	195	53.80	0.00	11.00	64.80	36.21	1.00	195.00	0.01	1.00	0.83	0.83	35.40
	Dozer	79	2	107	110	195	53.80	0.00	11.00	64.80	45.21	1.00	195.00	0.01	1.00	0.83	0.83	44.40
	Wheeled Loader	76	1	104	104	195	53.80	0.00	11.00	64.80	39.20	1.00	195.00	0.01	1.00	0.83	0.83	38.39
	Dump Truck (tipping fill)	79	2	107	110	195	53.80	0.00	11.00	64.80	45.21	1.00	195.00	0.01	1.00	0.83	0.83	44.40
Construction	Tracked Excavator	70	2	98	101	195	53.80	0.00	11.00	64.80	36.21	1.00	195.00	0.01	1.00	0.83	0.83	35.40
	Concrete Pump	75	1	103	103	195	53.80	0.00	11.00	64.80	38.20	1.00	195.00	0.01	1.00	1.00	1.00	38.20
	Articulated Dump Truck 23t	81	3	109	114	195	53.80	0.00	11.00	64.80	48.97	1.00	195.00	0.01	1.00	0.83	0.83	48.16
	Telescopic Handler 4t	79	2	107	110	195	53.80	0.00	11.00	64.80	45.21	1.00	195.00	0.01	1.00	0.83	0.83	44.40
	Wheeled Mobile Crane	70	1	98	98	195	53.80	0.00	11.00	64.80	33.20	1.00	195.00	0.01	1.00	0.83	0.83	32.39
Piling	Hydraulic Hammer Rig 4t hammer	87	1	115	115	195	53.80	0.00	11.00	64.80	50.20	1.00	195.00	0.01	1.00	0.83	0.83	49.39
					120													**54**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Norris Road

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxx	xxxxxxxxxx	xxxxxx	xxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	18	33.11	2.00	0.00	35.11	68.89	1.00	18.00	0.06	1.00	0.83	0.83	68.09
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	18	33.11	2.00	0.00	35.11	84.89	1.00	18.00	0.06	1.00	0.83	0.83	84.09
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	18	33.11	2.00	0.00	35.11	77.89	1.00	18.00	0.06	1.00	0.83	0.83	77.09
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	18	33.11	2.00	0.00	35.11	77.67	1.00	18.00	0.06	1.00	0.83	0.83	76.86
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	18	33.11	2.00	0.00	35.11	74.89	1.00	18.00	0.06	1.00	0.83	0.83	74.09
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	18	33.11	2.00	0.00	35.11	67.89	1.00	18.00	0.06	1.00	0.83	0.83	67.09
					122													**86**
Earthworks																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	18	33.11	2.00	0.00	35.11	65.90	1.00	18.00	0.06	1.00	0.83	0.83	65.10
	Dozer	79	2	107	110	18	33.11	2.00	0.00	35.11	74.90	1.00	18.00	0.06	1.00	0.83	0.83	74.10
	Wheeled Loader	76	1	104	104	18	33.11	2.00	0.00	35.11	68.89	1.00	18.00	0.06	1.00	0.83	0.83	68.09
	Dump Truck (tipping fill)	79	2	107	110	18	33.11	2.00	0.00	35.11	74.90	1.00	18.00	0.06	1.00	0.83	0.83	74.10
					114													**78**
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	41	40.26	0.00	11.00	51.26	52.74	1.00	41.00	0.02	1.00	0.83	0.83	51.94
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	41	40.26	0.00	11.00	51.26	68.74	1.00	41.00	0.02	1.00	0.83	0.83	67.94
Breaking Windows	Lump Hammer	81	1	109	109	41	40.26	0.00	11.00	51.26	57.74	1.00	41.00	0.02	1.00	0.83	0.83	56.94
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	41	40.26	0.00	11.00	51.26	61.74	1.00	41.00	0.02	1.00	0.83	0.83	60.94
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	41	40.26	0.00	11.00	51.26	61.52	1.00	41.00	0.02	1.00	0.83	0.83	60.71
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	41	40.26	0.00	11.00	51.26	58.74	1.00	41.00	0.02	1.00	0.83	0.83	57.94
					122													**70**
Access Road Construction																		
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	71	45.03	2.26	0.00	47.28	68.72	1.00	71.00	0.01	1.00	0.83	0.83	67.91
Removing Broken Road Surfac	Wheeled Excavator	73	2	101	104	71	45.03	2.26	0.00	47.28	56.73	1.00	71.00	0.01	1.00	0.83	0.83	55.92
Earthworks	Tracked Excavator	70	2	98	101	71	45.03	2.26	0.00	47.28	53.73	1.00	71.00	0.01	1.00	0.83	0.83	52.92
	Wheeled Loader	76	1	104	104	71	45.03	2.26	0.00	47.28	56.72	1.00	71.00	0.01	1.00	0.83	0.83	55.91
	Dump Truck (tipping fill)	79	2	107	110	71	45.03	2.26	0.00	47.28	62.73	1.00	71.00	0.01	1.00	0.83	0.83	61.92
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	71	45.03	2.26	0.00	47.28	57.72	1.00	71.00	0.01	1.00	0.83	0.83	56.91
Rolling and Compaction	Road Roller	80	2	108	111	71	45.03	2.26	0.00	47.28	63.73	1.00	71.00	0.01	1.00	0.83	0.83	62.92
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	71	45.03	2.26	0.00	47.28	64.72	1.00	71.00	0.01	1.00	0.83	0.83	63.91
					119													**71**
Construction of Warehouse																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	80	46.06	0.00	11.00	57.06	43.95	1.00	80.00	0.01	1.00	0.83	0.83	43.14
	Dozer	79	2	107	110	80	46.06	0.00	11.00	57.06	52.95	1.00	80.00	0.01	1.00	0.83	0.83	52.14
	Wheeled Loader	76	1	104	104	80	46.06	0.00	11.00	57.06	46.94	1.00	80.00	0.01	1.00	0.83	0.83	46.13
	Dump Truck (tipping fill)	79	2	107	110	80	46.06	0.00	11.00	57.06	52.95	1.00	80.00	0.01	1.00	0.83	0.83	52.14
Construction	Tracked Excavator	70	2	98	101	80	46.06	0.00	11.00	57.06	43.95	1.00	80.00	0.01	1.00	0.83	0.83	43.14
	Concrete Pump	75	1	103	103	80	46.06	0.00	11.00	57.06	45.94	1.00	80.00	0.01	1.00	1.00	1.00	45.94
	Articulated Dump Truck 23t	81	3	109	114	80	46.06	0.00	11.00	57.06	56.71	1.00	80.00	0.01	1.00	0.83	0.83	55.90
	Telescopic Handler 4t	79	2	107	110	80	46.06	0.00	11.00	57.06	52.95	1.00	80.00	0.01	1.00	0.83	0.83	52.14
	Wheeled Mobile Crane	70	1	98	98	80	46.06	0.00	11.00	57.06	40.94	1.00	80.00	0.01	1.00	0.83	0.83	40.13
Piling	Hydraulic Hammer Rig 4t hammer	87	1	115	115	80	46.06	0.00	11.00	57.06	57.94	1.00	80.00	0.01	1.00	0.83	0.83	57.13
					120													**62**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Plougley Road - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	115	49.21	3.30	0.00	52.52	51.48	1.00	115.00	0.01	1.00	0.83	0.83	50.67
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	115	49.21	3.30	0.00	52.52	-24.52	1.00	115.00	0.01	1.00	0.83	0.83	-25.33
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	115	49.21	3.30	0.00	52.52	60.48	1.00	115.00	0.01	1.00	0.83	0.83	59.67
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	115	49.21	3.30	0.00	52.52	60.25	1.00	115.00	0.01	1.00	0.83	0.83	59.44
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	115	49.21	3.30	0.00	52.52	57.48	1.00	115.00	0.01	1.00	0.83	0.83	56.67
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	115	49.21	3.30	0.00	52.52	50.48	1.00	115.00	0.01	1.00	0.83	0.83	49.67
					117													**64**

Activitiy	Plant	SPL @10m	No.	Level														
Earthworks & Hardstanding																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	200	54.02	4.51	0.00	58.53	42.48	1.00	200.00	0.01	1.00	0.83	0.83	41.68
	Dozer	79	2	107	110	200	54.02	4.51	0.00	58.53	51.48	1.00	200.00	0.01	1.00	0.83	0.83	50.68
	Wheeled Loader	76	1	104	104	200	54.02	4.51	0.00	58.53	45.47	1.00	200.00	0.01	1.00	0.83	0.83	44.67
	Dump Truck (tipping fill)	79	2	107	110	200	54.02	4.51	0.00	58.53	51.48	1.00	200.00	0.01	1.00	0.83	0.83	50.68
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	200	54.02	4.51	0.00	58.53	44.47	1.00	200.00	0.01	1.00	0.83	0.83	43.67
					114													**55**

Activitiy	Plant	SPL @10m	No.	Level														
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	115	49.21	3.30	0.00	52.52	51.48	1.00	115.00	0.01	1.00	0.83	0.83	50.67
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	115	49.21	3.30	0.00	52.52	-24.52	1.00	115.00	0.01	1.00	0.83	0.83	-25.33
Breaking Windows	Lump Hammer	81	1	109	109	115	49.21	3.30	0.00	52.52	56.48	1.00	115.00	0.01	1.00	0.83	0.83	55.67
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	115	49.21	3.30	0.00	52.52	60.48	1.00	115.00	0.01	1.00	0.83	0.83	59.67
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	115	49.21	3.30	0.00	52.52	60.25	1.00	115.00	0.01	1.00	0.83	0.83	59.44
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	115	49.21	3.30	0.00	52.52	57.48	1.00	115.00	0.01	1.00	0.83	0.83	56.67
					118													**64**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Plougley Road

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	108	48.67	3.17	0.00	51.84	52.16	1.00	108.00	0.01	1.00	0.83	0.83	51.36
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	108	48.67	3.17	0.00	51.84	68.16	1.00	108.00	0.01	1.00	0.83	0.83	67.36
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	108	48.67	3.17	0.00	51.84	61.16	1.00	108.00	0.01	1.00	0.83	0.83	60.36
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	108	48.67	3.17	0.00	51.84	60.94	1.00	108.00	0.01	1.00	0.83	0.83	60.13
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	108	48.67	3.17	0.00	51.84	58.16	1.00	108.00	0.01	1.00	0.83	0.83	57.36
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	108	48.67	3.17	0.00	51.84	51.16	1.00	108.00	0.01	1.00	0.83	0.83	50.36
					122													**69**

Activitiy	Plant	SPL @10m	No.	Level														
Earthworks & Hardstanding																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	160	52.08	4.02	0.00	56.10	44.91	1.00	160.00	0.01	1.00	0.83	0.83	44.10
	Dozer	79	2	107	110	160	52.08	4.02	0.00	56.10	53.91	1.00	160.00	0.01	1.00	0.83	0.83	53.10
	Wheeled Loader	76	1	104	104	160	52.08	4.02	0.00	56.10	47.90	1.00	160.00	0.01	1.00	0.83	0.83	47.09
	Dump Truck (tipping fill)	79	2	107	110	160	52.08	4.02	0.00	56.10	53.91	1.00	160.00	0.01	1.00	0.83	0.83	53.10
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	160	52.08	4.02	0.00	56.10	46.90	1.00	160.00	0.01	1.00	0.83	0.83	46.09
					114													**57**

Activitiy	Plant	SPL @10m	No.	Level														
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	108	48.67	3.17	0.00	51.84	52.16	1.00	108.00	0.01	1.00	0.83	0.83	51.36
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	108	48.67	3.17	0.00	51.84	68.16	1.00	108.00	0.01	1.00	0.83	0.83	67.36
Breaking Windows	Lump Hammer	81	1	109	109	108	48.67	3.17	0.00	51.84	57.16	1.00	108.00	0.01	1.00	0.83	0.83	56.36
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	108	48.67	3.17	0.00	51.84	61.16	1.00	108.00	0.01	1.00	0.83	0.83	60.36
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	108	48.67	3.17	0.00	51.84	60.94	1.00	108.00	0.01	1.00	0.83	0.83	60.13
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	108	48.67	3.17	0.00	51.84	58.16	1.00	108.00	0.01	1.00	0.83	0.83	57.36
					122													**69**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Section B Green Lane - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxx	xxxxxxxxx	xxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	65	44.26	2.06	0.00	46.32	57.68	1.00	65.00	0.02	1.00	0.83	0.83	56.87
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	65	44.26	2.06	0.00	46.32	-18.32	1.00	65.00	0.02	1.00	0.83	0.83	-19.13
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	65	44.26	2.06	0.00	46.32	66.68	1.00	65.00	0.02	1.00	0.83	0.83	65.87
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	65	44.26	2.06	0.00	46.32	66.45	1.00	65.00	0.02	1.00	0.83	0.83	65.64
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	65	44.26	2.06	0.00	46.32	63.68	1.00	65.00	0.02	1.00	0.83	0.83	62.87
Pumping Concrete	Concrete mixer truck (discharging) and concrete pu	75	1	103	103	65	44.26	2.06	0.00	46.32	56.68	1.00	65.00	0.02	1.00	0.83	0.83	55.87
					117													**70**
Earthworks																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	65	44.26	2.06	0.00	46.32	54.69	1.00	65.00	0.02	1.00	0.83	0.83	53.88
	Dozer	79	2	107	110	65	44.26	2.06	0.00	46.32	63.69	1.00	65.00	0.02	1.00	0.83	0.83	62.88
	Wheeled Loader	76	1	104	104	65	44.26	2.06	0.00	46.32	57.68	1.00	65.00	0.02	1.00	0.83	0.83	56.87
	Dump Truck (tipping fill)	79	2	107	110	65	44.26	2.06	0.00	46.32	63.69	1.00	65.00	0.02	1.00	0.83	0.83	62.88
					114													**67**
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	85	46.59	0.00	13.00	59.59	44.41	1.00	85.00	0.01	1.00	0.83	0.83	43.60
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	85	46.59	0.00	13.00	59.59	-31.59	1.00	85.00	0.01	1.00	0.83	0.83	-32.40
Breaking Windows	Lump Hammer	81	1	109	109	85	46.59	0.00	13.00	59.59	49.41	1.00	85.00	0.01	1.00	0.83	0.83	48.60
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	85	46.59	0.00	13.00	59.59	53.41	1.00	85.00	0.01	1.00	0.83	0.83	52.60
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	85	46.59	0.00	13.00	59.59	53.18	1.00	85.00	0.01	1.00	0.83	0.83	52.37
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	85	46.59	0.00	13.00	59.59	50.41	1.00	85.00	0.01	1.00	0.83	0.83	49.60
					118													**57**
Access Road Construction																		
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	147	51.35	3.84	0.00	55.18	60.82	1.00	147.00	0.01	1.00	0.83	0.83	60.01
Removing Broken Road Surfac	Wheeled Excavator	73	2	101	104	147	51.35	3.84	0.00	55.18	48.83	1.00	147.00	0.01	1.00	0.83	0.83	48.02
Earthworks	Tracked Excavator	70	2	98	101	147	51.35	3.84	0.00	55.18	45.83	1.00	147.00	0.01	1.00	0.83	0.83	45.02
	Wheeled Loader	76	1	104	104	147	51.35	3.84	0.00	55.18	48.82	1.00	147.00	0.01	1.00	0.83	0.83	48.01
	Dump Truck (tipping fill)	79	2	107	110	147	51.35	3.84	0.00	55.18	54.83	1.00	147.00	0.01	1.00	0.83	0.83	54.02
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	147	51.35	3.84	0.00	55.18	49.82	1.00	147.00	0.01	1.00	0.83	0.83	49.01
Rolling and Compaction	Road Roller	80	2	108	111	147	51.35	3.84	0.00	55.18	55.83	1.00	147.00	0.01	1.00	0.83	0.83	55.02
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	147	51.35	3.84	0.00	55.18	56.82	1.00	147.00	0.01	1.00	0.83	0.83	56.01
					119													**63**
Construction of Warehouse																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	225	55.04	0.00	13.00	68.04	32.97	1.00	225.00	0.00	1.00	0.83	0.83	32.16
	Dozer	79	2	107	110	225	55.04	0.00	13.00	68.04	41.97	1.00	225.00	0.00	1.00	0.83	0.83	41.16
	Wheeled Loader	76	1	104	104	225	55.04	0.00	13.00	68.04	35.96	1.00	225.00	0.00	1.00	0.83	0.83	35.15
	Dump Truck (tipping fill)	79	2	107	110	225	55.04	0.00	13.00	68.04	41.97	1.00	225.00	0.00	1.00	0.83	0.83	41.16
Construction	Tracked Excavator	70	2	98	101	225	55.04	0.00	13.00	68.04	32.97	1.00	225.00	0.00	1.00	0.83	0.83	32.16
	Concrete Pump	75	1	103	103	225	55.04	0.00	13.00	68.04	34.96	1.00	225.00	0.00	1.00	1.00	1.00	34.96
	Articulated Dump Truck 23t	81	3	109	114	225	55.04	0.00	13.00	68.04	45.73	1.00	225.00	0.00	1.00	0.83	0.83	44.92
	Telescopic Handler 4t	79	2	107	110	225	55.04	0.00	13.00	68.04	41.97	1.00	225.00	0.00	1.00	0.83	0.83	41.16
	Wheeled Mobile Crane	70	1	98	98	225	55.04	0.00	13.00	68.04	29.96	1.00	225.00	0.00	1.00	0.83	0.83	29.15
Piling	Hydraulic Hammer Rig 4t hammer	87	1	115	115	225	55.04	0.00	13.00	68.04	46.96	1.00	225.00	0.00	1.00	0.83	0.83	46.15
					120													**51**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Section B Green Lane

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
xxxxxxxxxxxxxx					xxxxxx	xxxxxxxxx	xxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxxx	xxxxxx	xxxxxx	xxxxxx
						Removal of Hardstanding												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	32	38.10	2.00	0.00	40.10	63.90	1.00	32.00	0.03	1.00	0.83	0.83	63.09
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	32	38.10	2.00	0.00	40.10	79.90	1.00	32.00	0.03	1.00	0.83	0.83	79.09
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	32	38.10	2.00	0.00	40.10	72.90	1.00	32.00	0.03	1.00	0.83	0.83	72.09
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	32	38.10	2.00	0.00	40.10	72.67	1.00	32.00	0.03	1.00	0.83	0.83	71.86
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	32	38.10	2.00	0.00	40.10	69.90	1.00	32.00	0.03	1.00	0.83	0.83	69.09
Pumping Concrete	Concrete mixer truck (discharging) and concrete pu	75	1	103	103	32	38.10	2.00	0.00	40.10	62.90	1.00	32.00	0.03	1.00	0.83	0.83	62.09
					122													**81**

Activitiy	Plant	SPL @10m	No.	Level														
						Earthworks												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	32	38.10	2.00	0.00	40.10	60.91	1.00	32.00	0.03	1.00	0.83	0.83	60.10
	Dozer	79	2	107	110	32	38.10	2.00	0.00	40.10	69.91	1.00	32.00	0.03	1.00	0.83	0.83	69.10
	Wheeled Loader	76	1	104	104	32	38.10	2.00	0.00	40.10	63.90	1.00	32.00	0.03	1.00	0.83	0.83	63.09
	Dump Truck (tipping fill)	79	2	107	110	32	38.10	2.00	0.00	40.10	69.91	1.00	32.00	0.03	1.00	0.83	0.83	69.10
					114													**73**

Activitiy	Plant	SPL @10m	No.	Level														
						Demolition of Existing Warehouse												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	70	44.90	0.00	13.00	57.90	46.10	1.00	70.00	0.01	1.00	0.83	0.83	45.29
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	70	44.90	0.00	13.00	57.90	62.10	1.00	70.00	0.01	1.00	0.83	0.83	61.29
Breaking Windows	Lump Hammer	81	1	109	109	70	44.90	0.00	13.00	57.90	51.10	1.00	70.00	0.01	1.00	0.83	0.83	50.29
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	70	44.90	0.00	13.00	57.90	55.10	1.00	70.00	0.01	1.00	0.83	0.83	54.29
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	70	44.90	0.00	13.00	57.90	54.87	1.00	70.00	0.01	1.00	0.83	0.83	54.06
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	70	44.90	0.00	13.00	57.90	52.10	1.00	70.00	0.01	1.00	0.83	0.83	51.29
					122													**63**

Activitiy	Plant	SPL @10m	No.	Level														
						Access Road Construction												
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	97	47.74	2.93	0.00	50.67	65.33	1.00	97.00	0.01	1.00	0.83	0.83	64.52
Removing Broken Road Surfac	Wheeled Excavator	73	2	101	104	97	47.74	2.93	0.00	50.67	53.34	1.00	97.00	0.01	1.00	0.83	0.83	52.53
Earthworks	Tracked Excavator	70	2	98	101	97	47.74	2.93	0.00	50.67	50.34	1.00	97.00	0.01	1.00	0.83	0.83	49.53
	Wheeled Loader	76	1	104	104	97	47.74	2.93	0.00	50.67	53.33	1.00	97.00	0.01	1.00	0.83	0.83	52.52
	Dump Truck (tipping fill)	79	2	107	110	97	47.74	2.93	0.00	50.67	59.34	1.00	97.00	0.01	1.00	0.83	0.83	58.53
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	97	47.74	2.93	0.00	50.67	54.33	1.00	97.00	0.01	1.00	0.83	0.83	53.52
Rolling and Compaction	Road Roller	80	2	108	111	97	47.74	2.93	0.00	50.67	60.34	1.00	97.00	0.01	1.00	0.83	0.83	59.53
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	97	47.74	2.93	0.00	50.67	61.33	1.00	97.00	0.01	1.00	0.83	0.83	60.52
					119													**68**

Activitiy	Plant	SPL @10m	No.	Level														
						Construction of Warehouse												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	106	48.51	0.00	13.00	61.51	39.50	1.00	106.00	0.01	1.00	0.83	0.83	38.69
	Dozer	79	2	107	110	106	48.51	0.00	13.00	61.51	48.50	1.00	106.00	0.01	1.00	0.83	0.83	47.69
	Wheeled Loader	76	1	104	104	106	48.51	0.00	13.00	61.51	42.49	1.00	106.00	0.01	1.00	0.83	0.83	41.68
	Dump Truck (tipping fill)	79	2	107	110	106	48.51	0.00	13.00	61.51	48.50	1.00	106.00	0.01	1.00	0.83	0.83	47.69
Construction	Tracked Excavator	70	2	98	101	106	48.51	0.00	13.00	61.51	39.50	1.00	106.00	0.01	1.00	0.83	0.83	38.69
	Concrete Pump	75	1	103	103	106	48.51	0.00	13.00	61.51	41.49	1.00	106.00	0.01	1.00	1.00	1.00	41.49
	Articulated Dump Truck 23t	81	3	109	114	106	48.51	0.00	13.00	61.51	52.27	1.00	106.00	0.01	1.00	0.83	0.83	51.46
	Telescopic Handler 4t	79	2	107	110	106	48.51	0.00	13.00	61.51	48.50	1.00	106.00	0.01	1.00	0.83	0.83	47.69
	Wheeled Mobile Crane	70	1	98	98	106	48.51	0.00	13.00	61.51	36.49	1.00	106.00	0.01	1.00	0.83	0.83	35.68
Piling	Hydraulic Hammer Rig 4t hammer	87	1	115	115	106	48.51	0.00	13.00	61.51	53.49	1.00	106.00	0.01	1.00	0.83	0.83	52.68
					120													**57**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Section C Green Lane - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxxx	xxxxxx	xxxxxx	xxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxxx	xxxxxx	xxxxxx	xxxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	85	46.59	2.65	0.00	49.24	54.76	1.00	85.00	0.01	1.00	0.83	0.83	53.96
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	85	46.59	2.65	0.00	49.24	-21.24	1.00	85.00	0.01	1.00	0.83	0.83	-22.04
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	85	46.59	2.65	0.00	49.24	63.76	1.00	85.00	0.01	1.00	0.83	0.83	62.96
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	85	46.59	2.65	0.00	49.24	63.54	1.00	85.00	0.01	1.00	0.83	0.83	62.73
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	85	46.59	2.65	0.00	49.24	60.76	1.00	85.00	0.01	1.00	0.83	0.83	59.96
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	85	46.59	2.65	0.00	49.24	53.76	1.00	85.00	0.01	1.00	0.83	0.83	52.96
					117													**67**
Earthworks																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	85	46.59	2.65	0.00	49.24	51.77	1.00	85.00	0.01	1.00	0.83	0.83	50.97
	Dozer	79	2	107	110	85	46.59	2.65	0.00	49.24	60.77	1.00	85.00	0.01	1.00	0.83	0.83	59.97
	Wheeled Loader	76	1	104	104	85	46.59	2.65	0.00	49.24	54.76	1.00	85.00	0.01	1.00	0.83	0.83	53.96
	Dump Truck (tipping fill)	79	2	107	110	85	46.59	2.65	0.00	49.24	60.77	1.00	85.00	0.01	1.00	0.83	0.83	59.97
					114													**64**
Demolition of Existing Warehouse																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	77	45.73	0.00	15.00	60.73	43.27	1.00	77.00	0.01	1.00	0.83	0.83	42.46
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	77	45.73	0.00	15.00	60.73	-32.73	1.00	77.00	0.01	1.00	0.83	0.83	-33.54
Breaking Windows	Lump Hammer	81	1	109	109	77	45.73	0.00	15.00	60.73	48.27	1.00	77.00	0.01	1.00	0.83	0.83	47.46
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	77	45.73	0.00	15.00	60.73	52.27	1.00	77.00	0.01	1.00	0.83	0.83	51.46
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	77	45.73	0.00	15.00	60.73	52.04	1.00	77.00	0.01	1.00	0.83	0.83	51.23
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	77	45.73	0.00	15.00	60.73	49.27	1.00	77.00	0.01	1.00	0.83	0.83	48.46
					118													**56**
Access Road Construction																		
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	165	52.35	4.09	0.00	56.44	59.56	1.00	165.00	0.01	1.00	0.83	0.83	58.75
Removing Broken Road Surfac	Wheeled Excavator	73	2	101	104	165	52.35	4.09	0.00	56.44	47.57	1.00	165.00	0.01	1.00	0.83	0.83	46.76
Earthworks	Tracked Excavator	70	2	98	101	165	52.35	4.09	0.00	56.44	44.57	1.00	165.00	0.01	1.00	0.83	0.83	43.76
	Wheeled Loader	76	1	104	104	165	52.35	4.09	0.00	56.44	47.56	1.00	165.00	0.01	1.00	0.83	0.83	46.75
	Dump Truck (tipping fill)	79	2	107	110	165	52.35	4.09	0.00	56.44	53.57	1.00	165.00	0.01	1.00	0.83	0.83	52.76
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	165	52.35	4.09	0.00	56.44	48.56	1.00	165.00	0.01	1.00	0.83	0.83	47.75
Rolling and Compaction	Road Roller	80	2	108	111	165	52.35	4.09	0.00	56.44	54.57	1.00	165.00	0.01	1.00	0.83	0.83	53.76
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	165	52.35	4.09	0.00	56.44	55.56	1.00	165.00	0.01	1.00	0.83	0.83	54.75
					119													**62**
Construction of Warehouse																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	240	55.60	0.00	15.00	70.60	30.41	1.00	240.00	0.00	1.00	0.83	0.83	29.60
	Dozer	79	2	107	110	240	55.60	0.00	15.00	70.60	39.41	1.00	240.00	0.00	1.00	0.83	0.83	38.60
	Wheeled Loader	76	1	104	104	240	55.60	0.00	15.00	70.60	33.40	1.00	240.00	0.00	1.00	0.83	0.83	32.59
	Dump Truck (tipping fill)	79	2	107	110	240	55.60	0.00	15.00	70.60	39.41	1.00	240.00	0.00	1.00	0.83	0.83	38.60
Construction	Tracked Excavator	70	2	98	101	240	55.60	0.00	15.00	70.60	30.41	1.00	240.00	0.00	1.00	0.83	0.83	29.60
	Concrete Pump	75	1	103	103	240	55.60	0.00	15.00	70.60	32.40	1.00	240.00	0.00	1.00	1.00	1.00	32.40
	Articulated Dump Truck 23t	81	3	109	114	240	55.60	0.00	15.00	70.60	43.17	1.00	240.00	0.00	1.00	0.83	0.83	42.36
	Telescopic Handler 4t	79	2	107	110	240	55.60	0.00	15.00	70.60	39.41	1.00	240.00	0.00	1.00	0.83	0.83	38.60
	Wheeled Mobile Crane	70	1	98	98	240	55.60	0.00	15.00	70.60	27.40	1.00	240.00	0.00	1.00	0.83	0.83	26.59
Piling	Hydraulic Hammer Rig 4t hammer	87	1	115	115	240	55.60	0.00	15.00	70.60	44.40	1.00	240.00	0.00	1.00	0.83	0.83	43.59
					120													**48**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Section C Green Lane

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxx	xxxxxxx	xxxxxxx	xxxxxx	xxxxxxx	xxxxxxxxx	xxxxxx	xxxxxx	xxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx
Removal of Hardstanding																		
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	40	40.04	2.00	0.00	42.04	61.96	1.00	40.00	0.03	1.00	0.83	0.83	61.15
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	40	40.04	2.00	0.00	42.04	77.96	1.00	40.00	0.03	1.00	0.83	0.83	77.15
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	40	40.04	2.00	0.00	42.04	70.96	1.00	40.00	0.03	1.00	0.83	0.83	70.15
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	40	40.04	2.00	0.00	42.04	70.73	1.00	40.00	0.03	1.00	0.83	0.83	69.92
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	40	40.04	2.00	0.00	42.04	67.96	1.00	40.00	0.03	1.00	0.83	0.83	67.15
Pumping Concrete	Concrete mixer truck (discharging) and concrete	75	1	103	103	40	40.04	2.00	0.00	42.04	60.96	1.00	40.00	0.03	1.00	0.83	0.83	60.15
					122													**79**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Earthworks**												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	40	40.04	2.00	0.00	42.04	58.97	1.00	40.00	0.03	1.00	0.83	0.83	58.16
	Dozer	79	2	107	110	40	40.04	2.00	0.00	42.04	67.97	1.00	40.00	0.03	1.00	0.83	0.83	67.16
	Wheeled Loader	76	1	104	104	40	40.04	2.00	0.00	42.04	61.96	1.00	40.00	0.03	1.00	0.83	0.83	61.15
	Dump Truck (tipping fill)	79	2	107	110	40	40.04	2.00	0.00	42.04	67.97	1.00	40.00	0.03	1.00	0.83	0.83	67.16
					114													**71**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Demolition of Existing Warehouse**												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	60	43.56	0.00	15.00	58.56	45.44	1.00	60.00	0.02	1.00	0.83	0.83	44.63
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	60	43.56	0.00	15.00	58.56	61.44	1.00	60.00	0.02	1.00	0.83	0.83	60.63
Breaking Windows	Lump Hammer	81	1	109	109	60	43.56	0.00	15.00	58.56	50.44	1.00	60.00	0.02	1.00	0.83	0.83	49.63
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	60	43.56	0.00	15.00	58.56	54.44	1.00	60.00	0.02	1.00	0.83	0.83	53.63
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	60	43.56	0.00	15.00	58.56	54.21	1.00	60.00	0.02	1.00	0.83	0.83	53.40
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	60	43.56	0.00	15.00	58.56	51.44	1.00	60.00	0.02	1.00	0.83	0.83	50.63
					122													**63**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Access Road Construction**												
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	115	49.21	3.30	0.00	52.52	63.48	1.00	115.00	0.01	1.00	0.83	0.83	62.67
Removing Broken Road Surfac	Wheeled Excavator	73	2	101	104	115	49.21	3.30	0.00	52.52	51.49	1.00	115.00	0.01	1.00	0.83	0.83	50.68
Earthworks	Tracked Excavator	70	2	98	101	115	49.21	3.30	0.00	52.52	48.49	1.00	115.00	0.01	1.00	0.83	0.83	47.68
	Wheeled Loader	76	1	104	104	115	49.21	3.30	0.00	52.52	51.48	1.00	115.00	0.01	1.00	0.83	0.83	50.67
	Dump Truck (tipping fill)	79	2	107	110	115	49.21	3.30	0.00	52.52	57.49	1.00	115.00	0.01	1.00	0.83	0.83	56.68
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	115	49.21	3.30	0.00	52.52	52.48	1.00	115.00	0.01	1.00	0.83	0.83	51.67
Rolling and Compaction	Road Roller	80	2	108	111	115	49.21	3.30	0.00	52.52	58.49	1.00	115.00	0.01	1.00	0.83	0.83	57.68
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	115	49.21	3.30	0.00	52.52	59.48	1.00	115.00	0.01	1.00	0.83	0.83	58.67
					119													**66**
Activitiy	**Plant**	**SPL @10m**	**No.**	**Level**		**Construction of Warehouse**												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	124	49.87	0.00	15.00	64.87	36.14	1.00	124.00	0.01	1.00	0.83	0.83	35.33
	Dozer	79	2	107	110	124	49.87	0.00	15.00	64.87	45.14	1.00	124.00	0.01	1.00	0.83	0.83	44.33
	Wheeled Loader	76	1	104	104	124	49.87	0.00	15.00	64.87	39.13	1.00	124.00	0.01	1.00	0.83	0.83	38.32
	Dump Truck (tipping fill)	79	2	107	110	124	49.87	0.00	15.00	64.87	45.14	1.00	124.00	0.01	1.00	0.83	0.83	44.33
Construction	Tracked Excavator	70	2	98	101	124	49.87	0.00	15.00	64.87	36.14	1.00	124.00	0.01	1.00	0.83	0.83	35.33
	Concrete Pump	75	1	103	103	124	49.87	0.00	15.00	64.87	38.13	1.00	124.00	0.01	1.00	1.00	1.00	38.13
	Articulated Dump Truck 23t	81	3	109	114	124	49.87	0.00	15.00	64.87	48.90	1.00	124.00	0.01	1.00	0.83	0.83	48.09
	Telescopic Handler 4t	79	2	107	110	124	49.87	0.00	15.00	64.87	45.14	1.00	124.00	0.01	1.00	0.83	0.83	44.33
	Wheeled Mobile Crane	70	1	98	98	124	49.87	0.00	15.00	64.87	33.13	1.00	124.00	0.01	1.00	0.83	0.83	32.32
Piling	Hydraulic Hammer Rig 4t hammer	87	1	115	115	124	49.87	0.00	15.00	64.87	50.13	1.00	124.00	0.01	1.00	0.83	0.83	49.32
					120													**54**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Wretchwick End Cottages - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxx	xxxxxx	xxxxxx	xxxxxxx	xxxxxx	xxxxxxx	xxxxx	xxxxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxx
Site Clearance inc Railway Line																		
Site Clearance	Tracked Excavator	70	2	98	101	235	55.42	4.86	0.00	60.28	40.73	1.00	235.00	0.00	1.00	0.83	0.83	39.92
	Dozer	79	2	107	110	235	55.42	4.86	0.00	60.28	49.73	1.00	235.00	0.00	1.00	0.83	0.83	48.92
	Wheeled Loader	76	1	104	104	235	55.42	4.86	0.00	60.28	43.72	1.00	235.00	0.00	1.00	0.83	0.83	42.91
	Dump Truck (tipping fill)	79	2	107	110	235	55.42	4.86	0.00	60.28	49.73	1.00	235.00	0.00	1.00	0.83	0.83	48.92
	Angle Grinder (grinding steel)	80	1	108	108	235	55.42	4.86	0.00	60.28	47.72	1.00	235.00	0.00	1.00	0.83	0.83	46.91
					115													**54**
Housing Construction																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	300	57.54	5.39	0.00	62.93	38.08	1.00	300.00	0.00	1.00	0.83	0.83	37.27
	Dozer (towing roller)	81	2	109	112	300	57.54	5.39	0.00	62.93	49.08	1.00	300.00	0.00	1.00	0.83	0.83	48.27
	Wheeled Loader	76	1	104	104	300	57.54	5.39	0.00	62.93	41.07	1.00	300.00	0.00	1.00	0.83	0.83	40.26
	Dump Truck (tipping fill)	79	2	107	110	300	57.54	5.39	0.00	62.93	47.08	1.00	300.00	0.00	1.00	0.83	0.83	46.27
Construction	Tracked Excavator	70	2	98	101	300	57.54	5.39	0.00	62.93	38.08	1.00	300.00	0.00	1.00	0.83	0.83	37.27
	Concrete Mixer Truck	80	3	108	113	300	57.54	5.39	0.00	62.93	49.84	1.00	300.00	0.00	1.00	0.83	0.83	49.03
	Articulated Dump Truck 23t	81	3	109	114	300	57.54	5.39	0.00	62.93	50.84	1.00	300.00	0.00	1.00	0.83	0.83	50.03
	Telescopic Handler 4t	79	2	107	110	300	57.54	5.39	0.00	62.93	47.08	1.00	300.00	0.00	1.00	0.83	0.83	46.27
	Wheeled Mobile Crane	70	1	98	98	300	57.54	5.39	0.00	62.93	35.07	1.00	300.00	0.00	1.00	0.83	0.83	34.26
					119													**56**
Road Surfacing																		
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	210	54.44	4.61	0.00	59.06	56.94	1.00	210.00	0.00	1.00	0.83	0.83	56.14
Removing Broken Road Surface	Wheeled Excavator	73	2	101	104	210	54.44	4.61	0.00	59.06	44.95	1.00	210.00	0.00	1.00	0.83	0.83	44.15
Earthworks	Tracked Excavator	70	2	98	101	210	54.44	4.61	0.00	59.06	41.95	1.00	210.00	0.00	1.00	0.83	0.83	41.15
	Wheeled Loader	76	1	104	104	210	54.44	4.61	0.00	59.06	44.94	1.00	210.00	0.00	1.00	0.83	0.83	44.14
	Dump Truck (tipping fill)	79	2	107	110	210	54.44	4.61	0.00	59.06	50.95	1.00	210.00	0.00	1.00	0.83	0.83	50.15
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	210	54.44	4.61	0.00	59.06	45.94	1.00	210.00	0.00	1.00	0.83	0.83	45.14
Rolling and Compaction	Road Roller	80	2	108	111	210	54.44	4.61	0.00	59.06	51.95	1.00	210.00	0.00	1.00	0.83	0.83	51.15
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	210	54.44	4.61	0.00	59.06	52.94	1.00	210.00	0.00	1.00	0.83	0.83	52.14
					119													**60**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Wretchwick End Cottages

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxxx				xxxxxxx	xxxxxxxx	xxxxxx	xxxxxx	xxxxxxx	xxxxxx	xxxxxxx	xxxxx	xxxxxxxx	xxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxx
Site Clearance inc Railway Line																		
Site Clearance	Tracked Excavator	70	2	98	101	180	53.11	4.28	0.00	57.38	43.63	1.00	180.00	0.01	1.00	0.83	0.83	42.82
	Dozer	79	2	107	110	180	53.11	4.28	0.00	57.38	52.63	1.00	180.00	0.01	1.00	0.83	0.83	51.82
	Wheeled Loader	76	1	104	104	180	53.11	4.28	0.00	57.38	46.62	1.00	180.00	0.01	1.00	0.83	0.83	45.81
	Dump Truck (tipping fill)	79	2	107	110	180	53.11	4.28	0.00	57.38	52.63	1.00	180.00	0.01	1.00	0.83	0.83	51.82
	Angle Grinder (grinding steel)	80	1	108	108	180	53.11	4.28	0.00	57.38	50.62	1.00	180.00	0.01	1.00	0.83	0.83	49.81
					115													**57**

Activitiy	Plant	SPL @10m	No.	Level		Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
Housing Construction																		
Earthwork and Remediation	Tracked Excavator	70	2	98	101	180	53.11	4.28	0.00	57.38	43.63	1.00	180.00	0.01	1.00	0.83	0.83	42.82
	Dozer (towing roller)	81	2	109	112	180	53.11	4.28	0.00	57.38	54.63	1.00	180.00	0.01	1.00	0.83	0.83	53.82
	Wheeled Loader	76	1	104	104	180	53.11	4.28	0.00	57.38	46.62	1.00	180.00	0.01	1.00	0.83	0.83	45.81
	Dump Truck (tipping fill)	79	2	107	110	180	53.11	4.28	0.00	57.38	52.63	1.00	180.00	0.01	1.00	0.83	0.83	51.82
Construction	Tracked Excavator	70	2	98	101	180	53.11	4.28	0.00	57.38	43.63	1.00	180.00	0.01	1.00	0.83	0.83	42.82
	Concrete Mixer Truck	80	3	108	113	180	53.11	4.28	0.00	57.38	55.39	1.00	180.00	0.01	1.00	0.83	0.83	54.58
	Articulated Dump Truck 23t	81	3	109	114	180	53.11	4.28	0.00	57.38	56.39	1.00	180.00	0.01	1.00	0.83	0.83	55.58
	Telescopic Handler 4t	79	2	107	110	180	53.11	4.28	0.00	57.38	52.63	1.00	180.00	0.01	1.00	0.83	0.83	51.82
	Wheeled Mobile Crane	70	1	98	98	180	53.11	4.28	0.00	57.38	40.62	1.00	180.00	0.01	1.00	0.83	0.83	39.81
					119													**61**

Activitiy	Plant	SPL @10m	No.	Level		Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
Road Surfacing																		
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	150	51.52	3.88	0.00	55.40	60.60	1.00	150.00	0.01	1.00	0.83	0.83	59.79
Removing Broken Road Surface	Wheeled Excavator	73	2	101	104	150	51.52	3.88	0.00	55.40	48.61	1.00	150.00	0.01	1.00	0.83	0.83	47.80
Earthworks	Tracked Excavator	70	2	98	101	150	51.52	3.88	0.00	55.40	45.61	1.00	150.00	0.01	1.00	0.83	0.83	44.80
	Wheeled Loader	76	1	104	104	150	51.52	3.88	0.00	55.40	48.60	1.00	150.00	0.01	1.00	0.83	0.83	47.79
	Dump Truck (tipping fill)	79	2	107	110	150	51.52	3.88	0.00	55.40	54.61	1.00	150.00	0.01	1.00	0.83	0.83	53.80
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	150	51.52	3.88	0.00	55.40	49.60	1.00	150.00	0.01	1.00	0.83	0.83	48.79
Rolling and Compaction	Road Roller	80	2	108	111	150	51.52	3.88	0.00	55.40	55.61	1.00	150.00	0.01	1.00	0.83	0.83	54.80
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	150	51.52	3.88	0.00	55.40	56.60	1.00	150.00	0.01	1.00	0.83	0.83	55.79
					119													**63**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Wretchwick Farm - Centre of Works

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx
						Demolition of Existing Warehouse												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	170	52.61	4.15	0.00	56.76	47.24	1.00	170.00	0.01	1.00	0.83	0.83	46.43
	Breaker Mounted on Wheeled Backhoe 7.4t		1	28	28	170	52.61	4.15	0.00	56.76	-28.76	1.00	170.00	0.01	1.00	0.83	0.83	-29.57
Breaking Windows	Lump Hammer	81	1	109	109	170	52.61	4.15	0.00	56.76	52.24	1.00	170.00	0.01	1.00	0.83	0.83	51.43
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	170	52.61	4.15	0.00	56.76	56.24	1.00	170.00	0.01	1.00	0.83	0.83	55.43
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	170	52.61	4.15	0.00	56.76	56.01	1.00	170.00	0.01	1.00	0.83	0.83	55.20
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	170	52.61	4.15	0.00	56.76	53.24	1.00	170.00	0.01	1.00	0.83	0.83	52.43
					118													**60**

Activitiy	Plant	SPL @10m	No.	Level														
						Housing Construction												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	265	56.46	5.12	0.00	61.58	39.43	1.00	265.00	0.00	1.00	0.83	0.83	38.62
	Dozer (towing roller)	81	2	109	112	265	56.46	5.12	0.00	61.58	50.43	1.00	265.00	0.00	1.00	0.83	0.83	49.62
	Wheeled Loader	76	1	104	104	265	56.46	5.12	0.00	61.58	42.42	1.00	265.00	0.00	1.00	0.83	0.83	41.61
	Dump Truck (tipping fill)	79	2	107	110	265	56.46	5.12	0.00	61.58	48.43	1.00	265.00	0.00	1.00	0.83	0.83	47.62
Construction	Tracked Excavator	70	2	98	101	265	56.46	5.12	0.00	61.58	39.43	1.00	265.00	0.00	1.00	0.83	0.83	38.62
	Concrete Mixer Truck	80	3	108	113	265	56.46	5.12	0.00	61.58	51.19	1.00	265.00	0.00	1.00	0.83	0.83	50.38
	Articulated Dump Truck 23t	81	3	109	114	265	56.46	5.12	0.00	61.58	52.19	1.00	265.00	0.00	1.00	0.83	0.83	51.38
	Telescopic Handler 4t	79	2	107	110	265	56.46	5.12	0.00	61.58	48.43	1.00	265.00	0.00	1.00	0.83	0.83	47.62
	Wheeled Mobile Crane	70	1	98	98	265	56.46	5.12	0.00	61.58	36.42	1.00	265.00	0.00	1.00	0.83	0.83	35.61
					119													**57**

Activitiy	Plant	SPL @10m	No.	Level														
						Road Surfacing												
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	150	51.52	3.88	0.00	55.40	60.60	1.00	150.00	0.01	1.00	0.83	0.83	59.79
Removing Broken Road Surface	Wheeled Excavator	73	2	101	104	150	51.52	3.88	0.00	55.40	48.61	1.00	150.00	0.01	1.00	0.83	0.83	47.80
Earthworks	Tracked Excavator	70	2	98	101	150	51.52	3.88	0.00	55.40	45.61	1.00	150.00	0.01	1.00	0.83	0.83	44.80
	Wheeled Loader	76	1	104	104	150	51.52	3.88	0.00	55.40	48.60	1.00	150.00	0.01	1.00	0.83	0.83	47.79
	Dump Truck (tipping fill)	79	2	107	110	150	51.52	3.88	0.00	55.40	54.61	1.00	150.00	0.01	1.00	0.83	0.83	53.80
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	150	51.52	3.88	0.00	55.40	49.60	1.00	150.00	0.01	1.00	0.83	0.83	48.79
Rolling and Compaction	Road Roller	80	2	108	111	150	51.52	3.88	0.00	55.40	55.61	1.00	150.00	0.01	1.00	0.83	0.83	54.80
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	150	51.52	3.88	0.00	55.40	56.60	1.00	150.00	0.01	1.00	0.83	0.83	55.79
					119													**63**

65 dB Criterion

AMEC UK LIMITED
BICESTER CONSTRUCTION PHASE
PREDICTION OF NOISE LEVELS BASED ON BS5228

Loc: Wretchwick Farm

Activitiy	Plant	SPL @10m	No.	Level	SWL dB(A)	Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
	xxxxxxxxxxxxx				xxxxxxx	xxxxxxxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxx	xxxxxxxx	xxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxx
						Demolition of Existing Warehouse												
Breaking up Concrete	Pulverizer mounted on excavator 30t	76	1	104	104	135	50.61	3.65	0.00	54.26	49.74	1.00	135.00	0.01	1.00	0.83	0.83	48.93
	Breaker Mounted on Wheeled Backhoe 7.4t	92	1	120	120	135	50.61	3.65	0.00	54.26	65.74	1.00	135.00	0.01	1.00	0.83	0.83	64.93
Breaking Windows	Lump Hammer	81	1	109	109	135	50.61	3.65	0.00	54.26	54.74	1.00	135.00	0.01	1.00	0.83	0.83	53.93
Dumping Brick Rubble	Tracked Excavator (loading dump truck) 44t	85	1	113	113	135	50.61	3.65	0.00	54.26	58.74	1.00	135.00	0.01	1.00	0.83	0.83	57.93
	Articulated dump truck (dumping rubble) 22t	80	3	108	113	135	50.61	3.65	0.00	54.26	58.51	1.00	135.00	0.01	1.00	0.83	0.83	57.70
Crushing Concrete / Rubble	Tracked Crusher 47t	82	1	110	110	135	50.61	3.65	0.00	54.26	55.74	1.00	135.00	0.01	1.00	0.83	0.83	54.93
					122													**67**

Activitiy	Plant	SPL @10m	No.	Level		Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
						Housing Construction												
Earthwork and Remediation	Tracked Excavator	70	2	98	101	95	47.55	2.89	0.00	50.44	50.57	1.00	95.00	0.01	1.00	0.83	0.83	49.76
	Dozer (towing roller)	81	2	109	112	95	47.55	2.89	0.00	50.44	61.57	1.00	95.00	0.01	1.00	0.83	0.83	60.76
	Wheeled Loader	76	1	104	104	95	47.55	2.89	0.00	50.44	53.56	1.00	95.00	0.01	1.00	0.83	0.83	52.75
	Dump Truck (tipping fill)	79	2	107	110	95	47.55	2.89	0.00	50.44	59.57	1.00	95.00	0.01	1.00	0.83	0.83	58.76
Construction	Tracked Excavator	70	2	98	101	95	47.55	2.89	0.00	50.44	50.57	1.00	95.00	0.01	1.00	0.83	0.83	49.76
	Concrete Mixer Truck	80	3	108	113	95	47.55	2.89	0.00	50.44	62.33	1.00	95.00	0.01	1.00	0.83	0.83	61.52
	Articulated Dump Truck 23t	81	3	109	114	95	47.55	2.89	0.00	50.44	63.33	1.00	95.00	0.01	1.00	0.83	0.83	62.52
	Telescopic Handler 4t	79	2	107	110	95	47.55	2.89	0.00	50.44	59.57	1.00	95.00	0.01	1.00	0.83	0.83	58.76
	Wheeled Mobile Crane	70	1	98	98	95	47.55	2.89	0.00	50.44	47.56	1.00	95.00	0.01	1.00	0.83	0.83	46.75
					119													**68**

Activitiy	Plant	SPL @10m	No.	Level		Dist. (m)	Dist. Attn.	Grnd Attn	Barrier Attn	Total Attn	Result SPL	trav'se dist.	Min. dist.	Dist. Ratio	equiv. on-time	Act'vty Dur.	Corr Ontime	Noise Level
						Road Surfacing												
Breaking Road Surface	Backhoe Mounted Hydraulic Breaker	88	1	116	116	70	44.90	2.23	0.00	47.13	68.87	1.00	70.00	0.01	1.00	0.83	0.83	68.06
Removing Broken Road Surface	Wheeled Excavator	73	2	101	104	70	44.90	2.23	0.00	47.13	56.88	1.00	70.00	0.01	1.00	0.83	0.83	56.07
Earthworks	Tracked Excavator	70	2	98	101	70	44.90	2.23	0.00	47.13	53.88	1.00	70.00	0.01	1.00	0.83	0.83	53.07
	Wheeled Loader	76	1	104	104	70	44.90	2.23	0.00	47.13	56.87	1.00	70.00	0.01	1.00	0.83	0.83	56.06
	Dump Truck (tipping fill)	79	2	107	110	70	44.90	2.23	0.00	47.13	62.88	1.00	70.00	0.01	1.00	0.83	0.83	62.07
Spreading Chipping / Fill	Dozer 14t	77	1	105	105	70	44.90	2.23	0.00	47.13	57.87	1.00	70.00	0.01	1.00	0.83	0.83	57.06
Rolling and Compaction	Road Roller	80	2	108	111	70	44.90	2.23	0.00	47.13	63.88	1.00	70.00	0.01	1.00	0.83	0.83	63.07
Paving	Asphalt Paver (+tipper lorry) 18t	84	1	112	112	70	44.90	2.23	0.00	47.13	64.87	1.00	70.00	0.01	1.00	0.83	0.83	64.06
					119													**72**

Appendix C
Additional Landscape and Visual Figures

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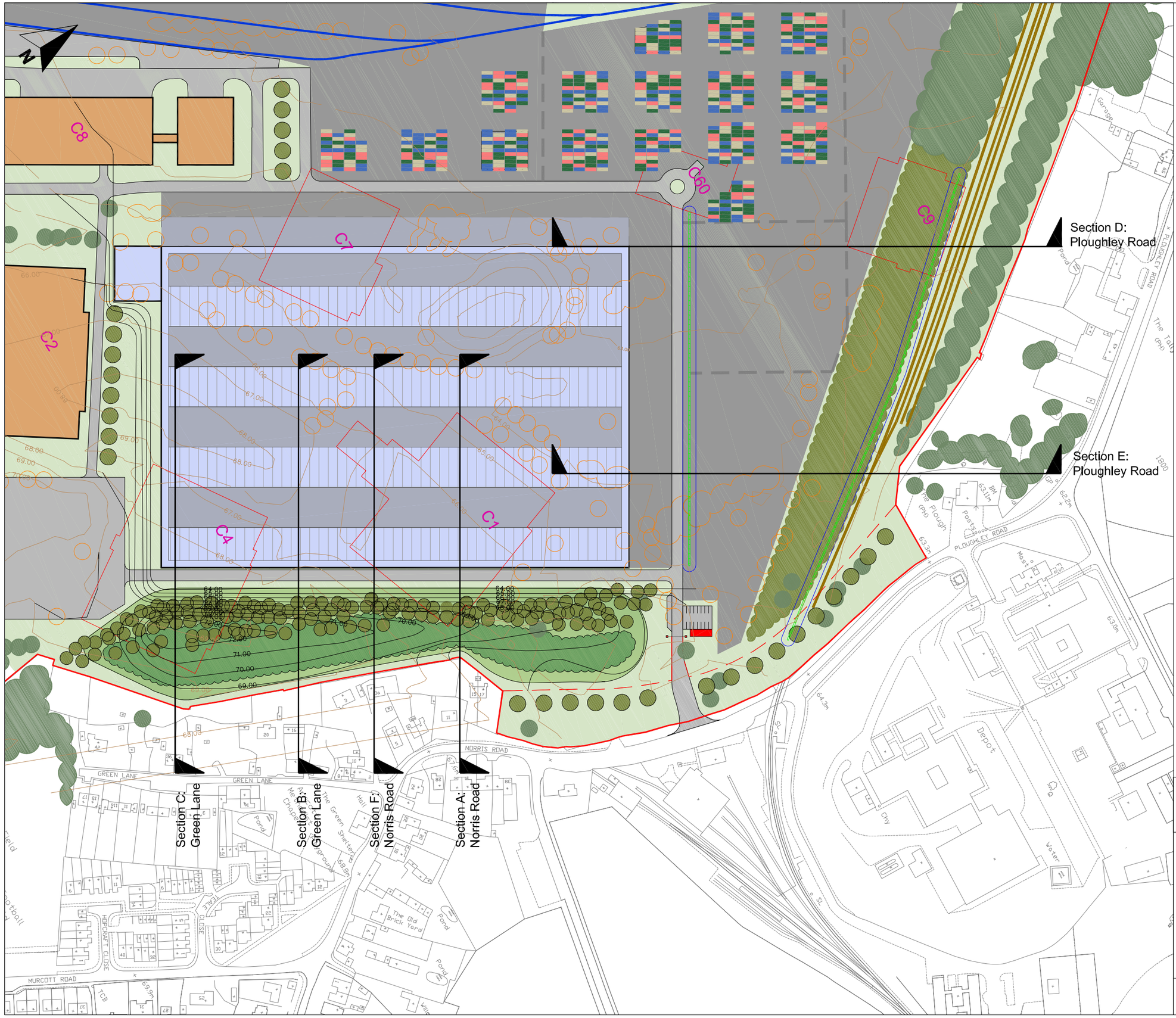

Key

- Site boundary (83.3ha)
- Employment
- Existing building retained
- Buildings to be demolished
- Open space
- Woodland/screening
- Hardstanding
- New main entrance guardhouse position
- Swale drainage system
- Proposed tree planting
- Proposed trees retained
- Trees to be removed
- Re-aligned Security Fence
- Section lines
- Existing Contours (69.00)
- Proposed Contours (71.00)

0 m — 150 m

Scale 1:2500 @ A3

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Redevelopment of MOD Bicester
Environmental Statement

Figure 1
Section Locations

April 2012
27808-L478.dwg RattD

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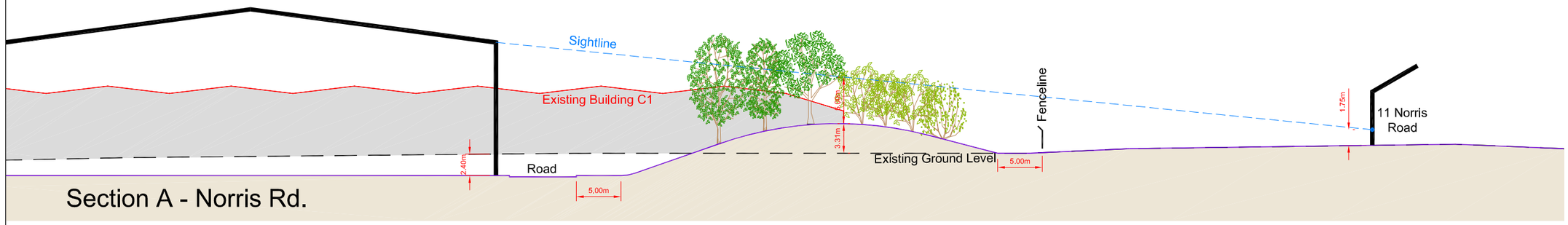
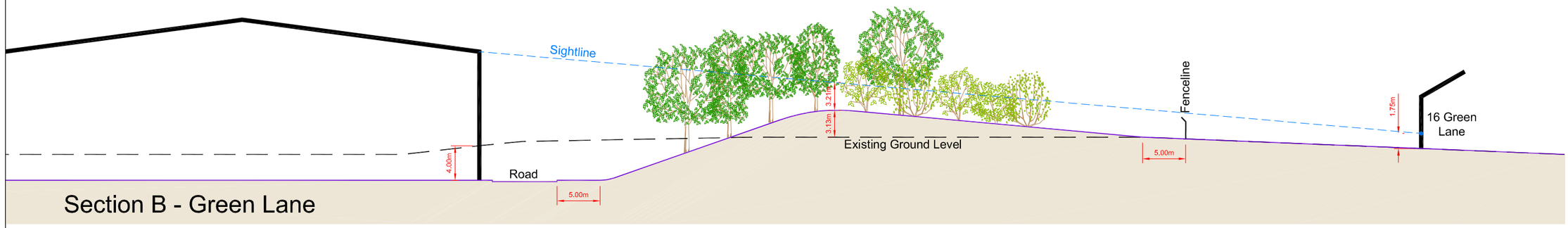
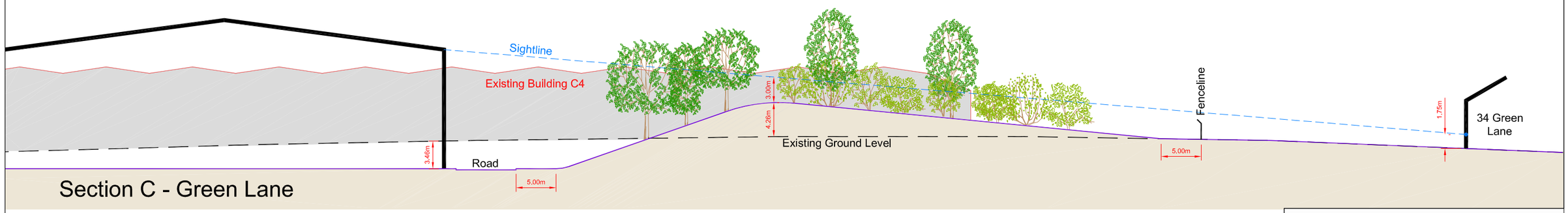


Section A - Norris Rd.



Section B - Green Lane



Section C - Green Lane

0 m 25 m

Scale 1:500 @ A3

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Redevelopment of MOD Bicester
Environmental Statement

Figure 2
C Site: Proposed Sections A, B & C

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27808-L386a.dwg RattD

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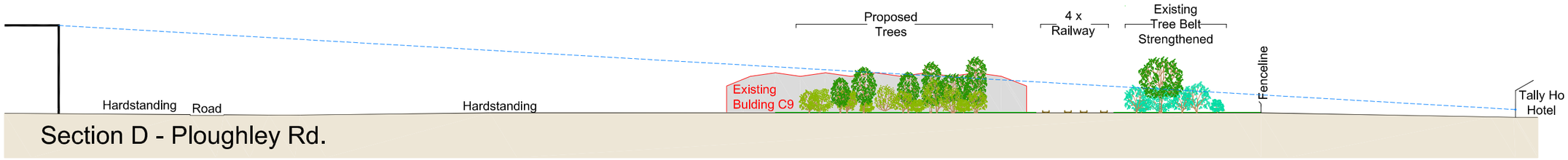
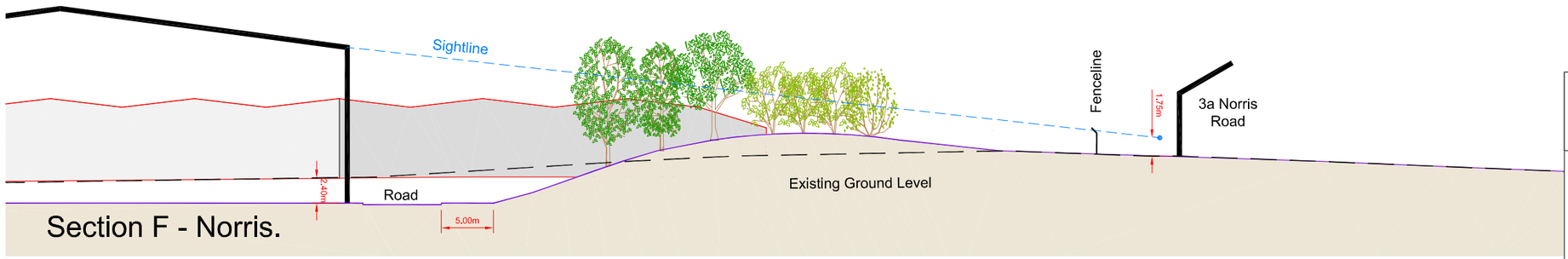


Section D - Ploughley Rd.

Section E - Ploughley Rd.

0 m 50 m

Scale 1:1,000 @ A3



Section F - Norris.

0 m 25 m

Scale 1:500 @ A3

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Redevelopment of MOD Bicester
Environmental Statement

Figure 3
C Site: Proposed Sections D, E & F

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Environmental Statement

Figure 4
C Site Photomontage Viewpoint 4 Existing

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27808-L479.indd bernb

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Redevelopment of MOD Bicester
Environmental Statement

Figure 5
C Site Photomontage Viewpoint 4
0 Years Completion

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27808-L480.indd bernb

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Environmental Statement

Figure 6
C Site Photomontage Viewpoint 4
15 Years Post Completion

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Redevelopment of MOD Bicester
Environmental Statement

Figure 7
C Site Photomontage
North of Viewpoint 4
Exisiting

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27808-L482.indd bernb

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Redevelopment of MOD Bicester
Environmental Statement

Figure 8
C Site Photomontage
North of Viewpoint 4
0 Years Completion

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Redevelopment of MOD Bicester
Environmental Statement

Figure 9
C Site Photomontage
North of Viewpoint 4
15 Years Completion

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Redevelopment of MOD Bicester
Environmental Statement

Figure 10
C Site Wireframe Viewpoint 4
0 Years Completion

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27808-L487.indd tugwc

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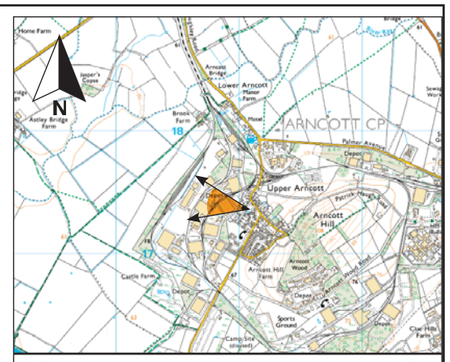
Redevelopment of MOD Bicester
Environmental Statement

Figure 11
C Site Wireframe
North of Viewpoint 4
0 Years Completion

April 2012
27808-L488.indd tugwc

amec



0 km 3 km

Scale 1:50,000@A3

0 Years Completion

Viewpoint parameters:

Grid reference:	E461076, N217366
Elevation:	71m AOD
Direction of centre of view:	272°
Angle of view:	41.96°
Viewing distance:	45cm @ A3

The visualisations show scale and massing only and are not intended to reflect detailed building design and materials.

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Redevelopment of MOD Bicester
Environmental Statement

Figure 12
C Site Wireframe Viewpoint 7
0 Years Completion

April 2012
27808-L489.indd tugwc

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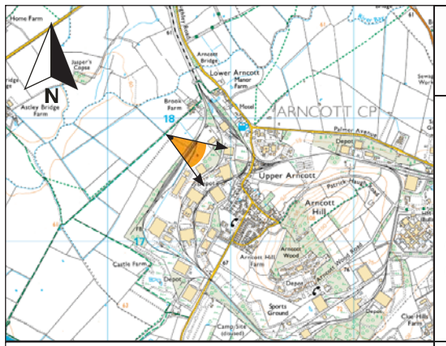
The visualisations aim to provide a realistic representation of the proposed development, based on the current information and photomontage methodology.

0 Years Completion Panorama

Viewpoint parameters:

Grid reference:	E460571, N217961
Elevation:	62.8m AOD
Direction of centre of view:	124°
Angle of view:	56.52°
Viewing distance:	45cm @ A3

The visualisations show scale and massing only and are not intended to reflect detailed building design and materials.



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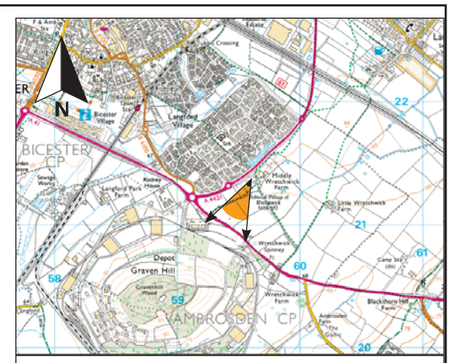
Redevelopment of MOD Bicester
Environmental Statement

Figure 13
C Site Wireframe Viewpoint 12
0 Years Completion

April 2012
27808-L490.indd tugwc

amec

The visualisations aim to provide a realistic representation of the proposed development, based on the current information and photomontage methodology.



0 km 3 km

Scale 1:50,000@A3

2022 Phase 2 Completion

Viewpoint parameters:

Grid reference:	E459589, N221380
Elevation:	67.7m AOD
Direction of centre of view:	206°
Angle of view:	41.96°
Viewing distance:	45cm @ A3

The visualisations show scale and massing only and are not intended to reflect detailed building design and materials.

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Redevelopment of MOD Bicester
Environmental Statement

Figure 14
Graven Hill Wireframe Viewpoint 5
2022 Phase 2 Completion

April 2012
27808-L491.indd tugwc

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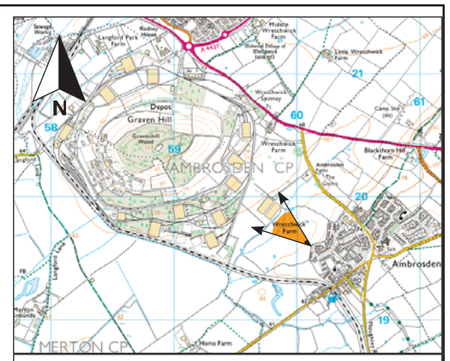
The visualisations aim to provide a realistic representation of the proposed development, based on the current information and photomontage methodology.

2022 Phase 2 Completion



0 km 3 km

Scale 1:50,000@A3

Viewpoint parameters:

Grid reference:	E460120, N219595
Elevation:	72m AOD
Direction of centre of view:	307°
Angle of view:	41.96°
Viewing distance:	45cm @ A3

The visualisations show scale and massing only and are not intended to reflect detailed building design and materials.

Defence Infrastructure Organisation

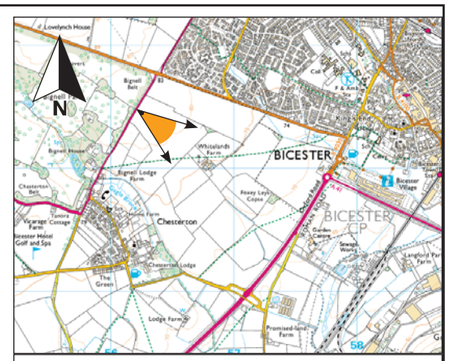
Redevelopment of MOD Bicester
Environmental Statement

Figure 15
Graven Hill Wireframe Viewpoint 9
2022 Phase 2 Completion

April 2012
27808-L492.indd tugwc

amec

The visualisations aim to provide a realistic representation of the proposed development, based on the current information and photomontage methodology.



2022 Phase 2 completion

Viewpoint parameters:

Grid reference:	E456229, N222478
Elevation:	82m AOD
Direction of centre of view:	127°
Angle of view:	37.62°
Viewing distance:	45cm @ A3

The visualisations show scale and massing only and are not intended to reflect detailed building design and materials.

Defence Infrastructure Organisation

Redevelopment of MOD Bicester
Environmental Statement

Figure 16
Graven Hill Wireframe Viewpoint 23
2028 Phase 3 Completion

April 2012
27808-L493.indd tugwc

amec

The visualisations aim to provide a realistic representation of the proposed development, based on the current information and photomontage methodology.