

Noise Baseline Assessment

Halsnead Masterplan SPD

January 2017

Knowsley Metropolitan Borough Council

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1 Introduction

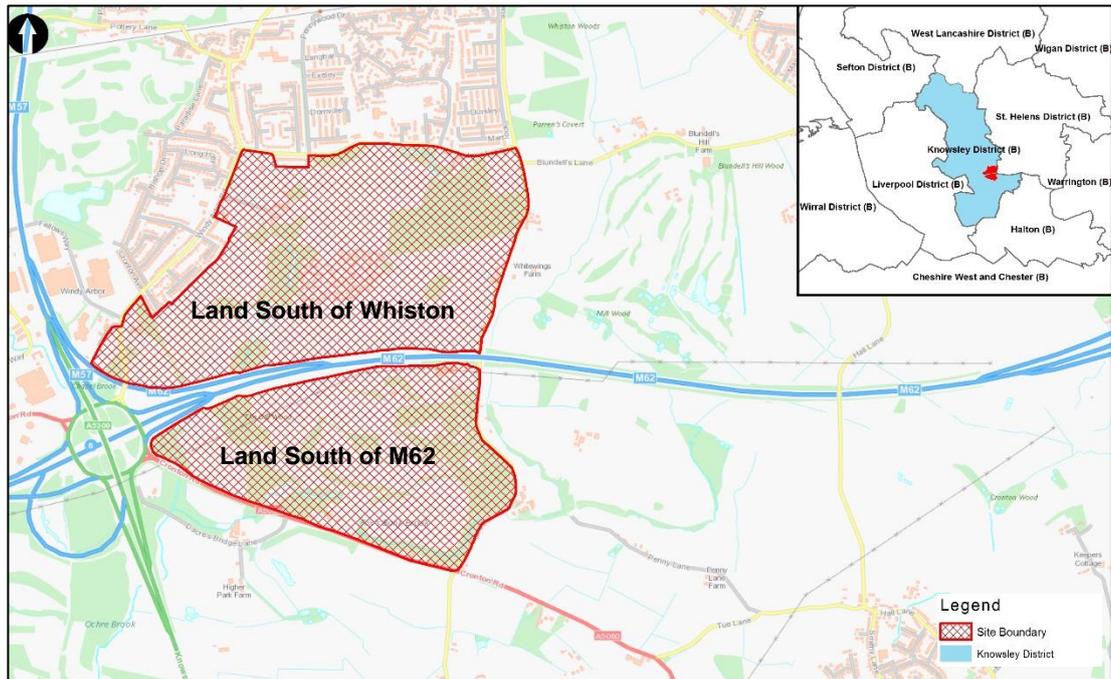
1.1 Background

- 1.1.1 Mott MacDonald and Turley have been commissioned by Knowsley Metropolitan Borough Council (KMBC) to produce a masterplan Supplementary Planning Document (SPD) to help guide delivery of a Sustainable Urban Extension (SUE), covering two sites formerly known as “Land south of Whiston” located to the north of the M62 as well as “Land south of the M62”. These two sites have collectively been termed ‘Halsnead’.
- 1.1.2 The SUE was until recently designated as Green Belt land however on adoption of the Local Plan Core Strategy (2016) it was allocated for development. The Local Plan Core Strategy (SUE2) identifies the largest SUE locations as needing additional planning guidance and the site under consideration in this report forms the largest and most complex SUE. The Local Plan identifies that this SUE has the capacity to accommodate upwards of 1,500 new homes, at least 22.5 hectares of employment land, and a new country park.
- 1.1.3 The preparation of the masterplan is currently at baseline stage and a range of evidence has been collected from a number of different disciplines to inform an up to date evidence base for the study area. This evidence is presented within a series of coordinated studies which ensure the constraints and opportunities are fully understood to inform the development of a deliverable masterplan.

1.2 Site Location

- 1.2.1 The site consists of two parts, a northern part and a southern part, with the two separated by the M62. There are multiple land ownerships across the SUE making a comprehensive masterplan important to ensure that development expectations are managed and there is a common design framework to make best use of the site. The final masterplan will practically function as a planning instrument, both as a guide to developers and as a material planning consideration to help bring development proposals into conformity. Together the two parts of the site total 176 hectares of development land. The site can be seen in Figure 1.1.

Figure 1.1: Site Location



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1.2.2 The northern part of the site is bounded by existing residential development to the west and north and by Fox's Bank Lane to the east, a rural road which provides an underpass under the M62. The southern part of the site is bordered by the A5080 Cronton Road, with the south eastern corner of the site being bounded by the former Cronton Colliery. Currently in the centre of the northern part of the site is Halsnead Park, a mobile home park. Adjacent to this is a medium sized lake and surrounding woodland.

1.3 Scope of Report

This desktop assessment identifies existing and projected sources of noise and the influence this will have on the location and orientation of appropriate noise attenuation or screening infrastructure for the site.

2 Legislation, Policy and Guidance

2.1 National Legislation

2.1.1 Local authorities have statutory controls on noise and vibration: Sections 60 and 61 of the Control of Pollution Act 1974 [Crown, 1974] concern impacts relating to construction sites; and The Environmental Protection Act 1990 [Crown, 1990] which places a duty on local authorities to serve abatement notices where noise from premises, vehicles and machinery which are judged to constitute a statutory nuisance. Compliance with these controls is required although the requirements fall outside the planning system.

2.2 National Policy and Guidance

National Planning Policy Framework

2.2.1 The National Planning Policy Framework (NPPF) [DCLG, 2012] came into force in March 2012. Paragraph 109 of the NPPF states that: “*the planning system should contribute to and enhance the natural and local environment by:preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability*”

2.2.2 Paragraph 123 of the NPPF states “*Planning policy and decisions should aim to:*

- *avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- *mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions placed on them because of changes in nearby land uses since they were established; and*
- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.”*

The Noise Policy Statement for England

- 2.2.3 The Noise Policy Statement for England (NPSE) [DEFRA, 2010] was issued by the Department for the Environment, Food and Rural Affairs (DEFRA) in 2010. Its purpose is to promote *“good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”*. The three main aims are to:
- *“avoid significant adverse impacts on health and quality of life”* from *“environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development”*;
 - *“mitigate and minimise adverse impacts on health and quality of life”* from *“environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development”*; and
 - *“where possible, contribute to the improvement of health and quality of life”*... *“through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development”*.
- 2.2.4 Within the aims stated above there are several key phrases that lead to additional concepts now considered in the assessment of noise impact, these and their definitions are detailed below:
- No Observed Effect Level (NOEL): this is the level below which no effect can be detected.
 - Lowest Observed Adverse Effect Level (LOAEL): this is the level above which adverse effects on health and quality of life can be detected.
 - Significant Observed Adverse Effect Level (SOAEL): this is the level above which significant adverse effects on health and quality of life occur.
- 2.2.5 There are no pre-defined levels for these effect levels as it is acknowledged that they will be different for different sources, different receptors and at different times.

Noise Planning Practice Guidance

- 2.2.6 Planning Practice Guidance is a Government web-based resource which provides guidance on how the policy set out in NPPF may be interpreted in practice for a range of issues. There is a subsection of PPG relating

specifically to noise which we refer to here as Noise Planning Practice Guidance (NPPG).

2.2.7 NPPG advises that:

“Local planning authorities’ plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- *Whether or not a significant adverse effect is occurring or likely to occur;*
- *Whether or not an adverse effect is occurring or likely to occur; and*
- *Whether or not a good standard of amenity can be achieved.*

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during construction wherever applicable) is, or would be, above or below the significant observed adverse effect level.....”

2.3 Local Policy

Knowsley Local Plan Core Strategy

2.3.1 The Knowsley Local Plan Core Strategy [KMBC, 2016] was adopted in January 2016. While this is a high level document, there are a number of statements pertinent to noise in the context of new development. Policy CS2 of the Core Strategy sets out Development Principles. Principle 4 is to:

*“Recognise environmental limits, protect and enhance environmental assets, enhance local character and promote quality of place by:
j) Minimising negative impact upon flood risk, air quality, water quality, land quality, soil quality, and noise or vibration levels and ensuring any negative impacts are appropriately mitigated. Development that will have an unacceptable impact upon any of the above will only be permitted where the benefits of the proposal clearly outweigh the harm.”*

2.3.2 Paragraph 9.6 of subsection “Protecting Local Amenity” of the explanatory text for Policy CS19 “Design Quality and Accessibility in New Development”, states “The design of new development should avoid unacceptable impacts which affect the amenity and living conditions of occupiers of buildings. Such

effects can include generation of noise, light and air pollution and harmful overbearing and loss of privacy through overlooking.”

Knowsley Replacement Unitary Development Plan Saved Policies

2.3.3 The Knowsley Unitary Development Plan [KMBC,2006] has been superseded however a number of policies are “saved” and remain current. Saved Policy ENV 2 “*Noise and Vibration*” states:

“1. Development that will either cause an unacceptable increase in noise or vibration levels or itself be subject to unacceptable noise or vibration from an existing source will not be permitted.

2. Where developments are permitted, conditions may be attached to the planning permission to ensure effective noise insulation or other required mitigation measures are carried out.”

2.4 Guidance

The World Health Organization's (WHO) Guidelines for Community Noise 1999

2.4.1 The WHO Guidelines for Community Noise [WHO, 1999] is a broad document that gives information and guideline noise levels for non-industrial areas. The levels given represent the results of scientific studies that have been undertaken with regard to the health impacts that can occur as a result of different noise levels that occur for different reasons within a community.

2.4.2 For residential areas the WHO Guidelines recommend that annual average external noise level during daytime hours does not exceed 50 to 55dB $L_{Aeq,16hr}$ to prevent moderate to serious annoyance respectively. During the night the annual average guideline value is 30 dB $L_{Aeq,8hr}$ inside bedrooms to minimise sleep disturbance. External annual average noise levels should not exceed 45 dB $L_{Aeq,8hr}$ in order to achieve the internal level of 30 dB $L_{Aeq,8hr}$ with partially open windows.

- 2.4.3 The World Health Organization's (WHO) 'Guidelines for Community Noise' are intended to guide the long-term management of community noise to help meet the WHO's core objective of "*the attainment by all peoples of the highest possible levels of health*". They set out various recommended noise guide values for specific activities. These values represent the onset of specific effects such as annoyance or sleep disturbance. For night time noise, WHO gives an annual average level of $L_{Aeq,8hours}$ 45dB and also recommends that for single events, "*For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB L_{Amax} more than 10-15 times per night.*" Allowing for a 15 dB reduction through an open window gives an external level of 60 dB L_{Amax} 10-15 times per night. However, WHO also states: "*It is estimated that 80 – 90% of the reported cases of sleep disturbance in noisy environments are for reasons other than noise originating outdoors. For example, sanitary needs; indoor noises from other occupants; worries; illness; and climate.*"

World Health Organization "Night Noise Guidelines for Europe" 2009.

- 2.4.4 The WHO Night Noise Guidelines for Europe 2009 [WHO, 2009] reviewed available evidence of health effects of night-time noise across Europe, and derived health-based guideline values. The guidelines recommended an interim target of 55 dB L_{Night} , outside to protect the public. This target value is an annual average $L_{Aeq,8h}$ dB from 23:00 to 07:00.

BS 8233 Guidance on sound insulation and sound reduction for buildings

- 2.4.5 British Standard 8233 [BSI, 2014] (hereafter referred to as BS8233) provides information on the design of rooms and buildings so that they have internal acoustic environments appropriate to their functions. It deals with control of noise from outside the building, noise from plant and services within it, and room acoustics for non-critical situations.

2.4.6 BS8233 states desirable internal ambient noise levels to be achieved within dwellings, Table 3.1 below details these levels.

Table 2.1: Reproduction of BS8233 Table 4: Indoor ambient noise levels for dwellings

Activity	Location	07:00 – 23:00	23:00 – 07:00
Resting	Living Room	35 dB LAeq,16hr	
Dining	Dining Room/Area	40 dB LAeq,16hr	
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16hr	30 dB LAeq,8hr

Source: BS8233:2014, Page 24

2.4.7 It is possible to achieve a slightly higher noise level if a development is considered necessary or desirable. BS8233 states that under these circumstances it is possible to relax the internal target levels by up to 5 dB and still achieve reasonable internal noise conditions.

2.4.8 Design criteria for external noise is also provided, with the target levels applicable to amenity spaces associated with the residential properties (such as gardens and patios). In these areas it is desirable that the external noise level does not exceed 50dB L_{Aeq, T}, though a higher target level of 55 dB L_{Aeq, T} is possible in noisier environments.

2.4.9 Where it is not possible to meet the external levels stated above, a development should be designed so that the external areas achieve the lowest practicable noise levels.

British Standard (BS) 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise

2.4.10 British Standard (BS) 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (2009+A1:2014) [BSI, 2014] provides a methodology for predicting noise levels generated by fixed and mobile plant used for a range of typical construction operations. The standard

includes a database of noise levels at a reference distance of 10m from the source and a simple noise propagation model that can be used to make allowances for effects such as source-receiver distances, ground properties and utilisation time.

BS 5228 Code of construction practice for noise and vibration control on construction and open sites – Part 2: Vibration

- 2.4.11 BS 5228 'Code of construction practice for noise and vibration control on construction and open sites – Part 2: Vibration' (2009+A1:2014) [BSI, 2014] provides guidance on the effect of vibration and the likelihood it will cause complaint and cosmetic damage to buildings.

BS 4142 Method for rating and assessing industrial and commercial sound.

- 2.4.12 British Standard 4142 provides a means of assessing likely adverse impacts from the introduction of a new sound source to an area.
- 2.4.13 The level of sound from proposed new plant, the 'rating level', is predicted in terms of dB L_{Aeq} , and compared to the existing background sound level, in terms of dB $L_{A90,T}$. If the new source is impulsive, intermittent or tonal in nature, then the 'rating level' includes a penalty, to account for the character of the sound.
- 2.4.14 The following conclusions may be drawn based upon the difference between the rating level and background sound level:

“Typically, the greater this difference, the greater the magnitude of the impact.

A difference of around +10 dB or more is likely to be an indication of a significant adverse impact depending on the context.

A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.”

3 Sources of Information Relevant to Noise

3.1.1 The evaluation of noise constraints upon the site has been informed by review of Ordnance Survey mapping, open source aerial imagery, noise mapping published by DEFRA, site photographs prepared by Mott MacDonald and published information relating to previous planning applications in the vicinity.

3.2 Recent Planning Applications and Assessments

3.2.1 The principal recent noise assessment relating to the SUE is the Environmental Statement (ES) produced in 2003 in support of an outline planning application for commercial development on the former Cronton Colliery site (Planning reference 03/01148/OUT) [SKM, 2003]. This planning application was withdrawn. The ES reports noise measurements during day and night-time periods at a number of locations in the around the Land South of the M62 site, with a single measurement location situated at the Halsnead Park site. The key noise measurements from Table 9.1 of the ES are reproduced in Table 4.1 for ease of reference.

Table 3.1: Noise Data from 2003 ES for Redevelopment Proposal Cronton Colliery Site.

Location	Low Reading L_{Aeq} dB(A)	High Reading L_{Aeq} dB(A)	Average Reading L_{Aeq} dB(A)
1 Halsnead Park mobile home park	50.0	60.8	55.7
2 Halsnead Farm	49.6	61.6	56.4
3 Bluebell Farm	45.6	64.6	56.2
4 Cronton Road/ Fox Bank Lane (Assumed at road junction)	46.6	67.3	60.6
5 Fox's Bank Cottages	40.7	73.3	64.0
6 Park Villas	43.5	69.4	64.0
7 Tarbock Lodge	46.1	59.9	53.6
8 Proposed Hotel (located within boundaries of southern site)	44.6	62.8	57.2

3.2.2 The reported “Low Reading” generally occurs during the night-time (23:00 – 07:00). The “High Reading” generally occurs during the day-time period (07:00 – 23:00). The results of the survey provide some indication of the noise climate, although current noise levels are expected to be different due to growth in traffic flows since 2003, and changes in the acoustic performance of the road surface due to trafficking and maintenance. In addition, a scheme of highways resurfacing has been implemented at Tarbock Island in the intervening period which may have influenced the noise climate. For the purpose of assessing potential constraints, these measured levels along with those calculated to inform the DEFRA noise mapping are compared in sections 4.2 and 4.3 below with the appropriate criteria for the masterplan area..

3.3 DEFRA Noise Maps

3.3.1 Noise mapping for the site has been accessed using the Extrim Noise Map Viewer [Extrim Ltd., 2016].

3.3.2 The noise mapping reviewed is a product of the strategic noise mapping exercise undertaken by Defra in 2012 to meet the requirements of the Environmental Noise Directive (Directive 2002/49/EC) and the Environmental Noise (England) Regulations 2006 (as amended) [CROWN, 2006].

3.3.3 The following noise mapping for the site has been reviewed

- $L_{Aeq,16h}$ - the annual average noise level (in dB) for the 16-hour period between 0700-2300.
- L_{night} - the night time annual average noise level (in dB) where night is defined as 2300-0700.

3.3.4 Noise Action Planning Important Areas (IAs) for roads are also shown on the mapping. These areas provide a framework for the local management of the Important Areas. There is an IA located around Halsnead Farm at the north east corner of the Land South of the M62 site.

3.3.5 For copyright reasons, the noise maps cannot be reproduced here, however a textual discussion of the information contained within the maps is included in Section 4.

4 Noise Constraints

4.1.1 The noise constraints on both elements of the SUE clearly relate to traffic noise emanating primarily from the M62, but also the A5080 Cronton Road to the south and the Tarbock Island interchange between A5300, M62 and M57 to the west of the site. The following discussion gives a fuller analysis of the traffic noise constraints based on information derived from the sources discussed in Section 4.

4.2 Land South of Whiston

4.2.1 For the Land South of Whiston element, the DEFRA noise mapping reveals that during the day-time, the noise levels within a zone which, depending upon topography, reaches some 80 to 150m from the motorway are predicted to be in the range $L_{Aeq,16hour}$ 65.0 – 79.9 dB and a more significant band reaching to the perimeter of the existing mobile home park site of $L_{Aeq,16hour}$ 60.0 – 64.9 dB. The majority of the remainder of the site falls within the range $L_{Aeq,16hour}$ 55.0 – 59.9 dB. With reference to the WHO Guidelines for Community Noise this indicates that the majority of the site falls above the threshold for serious annoyance in outdoor amenity areas.

4.2.2 The day-time noise level of $L_{Aeq,T}$ 60.8 dB reported in the 2003 ES for the former Cronton Colliery site falls within the range of the noise map prediction for that part of the site during the day-time.

4.2.3 During the night-time, the DEFRA noise mapping indicates that there will be a zone which, depending upon topography, reaches up to 100 – 200m from the motorway, which will experience noise levels of L_{night} 60.0 and 64.9 dBA. A further zone which encompasses most of the eastern half of the site will experience noise levels of L_{night} 55.0 – 59.9 dBA. The remainder of the site falls within the range L_{night} 50.0 – 54.9 dBA.

4.2.4 The night time noise level of $L_{Aeq,T}$ 50.0 dB reported in the 2003 ES for the former Cronton Colliery site falls within the range of the noise map prediction for that part of the site during the night-time.

4.2.5 With reference to the WHO Guidelines for Community Noise, noise levels across the site will exceed the noise level outside bedrooms of $L_{Aeq,8hr}$ 45dB recommended to achieve the internal level of $L_{Aeq,8hr}$ 30 dB with partially open

windows. In the context of BS8233 the external noise level required to achieve desirable internal ambient noise levels within bedrooms would be exceeded.

- 4.2.6 A large proportion of the site will experience noise levels which exceed the recommended interim target of $L_{\text{night}} 55$ dBA outside to protect residents from adverse health effects from noise.
- 4.2.7 It is noted that there is a Noise Important Area (NIA) centred around Halsnead Farm immediately to the south of the M62 opposite the south eastern corner of the site. While the NIA is actually located on the Land South of the M62 element of the SUE, it is reasonable to assume that similar noise conditions exist at similar proximity to the north of the motorway and this should be considered as a constraint on residential development close to the M62 on the land South of Whiston Site.

4.3 Land South of the M62

- 4.3.1 For the Land South of the M62 element, the DEFRA noise mapping reveals that during the day-time the entire site is subject to noise levels in excess of $L_{\text{Aeq},16\text{hours}} 55.0$ dB, due to traffic noise emanating from the M62 and A5080 Cronton Road to the south. There is a substantial zone, predominantly in the north of the site, where noise levels are in the range $L_{\text{Aeq},16\text{hour}} 60.0 - 64.9$, and a zone close to the M62, encompassing Halsnead Farm and the noise important area where noise levels are predicted to be in the range $L_{\text{Aeq},16\text{hour}} 70.0 - 74.9$ dB.
- 4.3.2 The day-time noise levels measured for the 2003 ES for redevelopment of the Cronton Colliery Site generally fall within the daytime ranges predicted by the noise mapping, although the highest measured level at Halsnead Farm was below the $L_{\text{Aeq},16\text{hour}} 70.0 - 74.9$ dB range.
- 4.3.3 During the night-time the noise levels measured across the site for the 2003 ES were generally greater than $L_{\text{night}} 50.0$ dBA with large portions of the site, particularly the northern and western parts exceeding $L_{\text{night}} 55$ dBA

- 4.3.4 Employment land use is less sensitive to traffic noise than residential receptors. The relatively high noise levels across the site do not necessarily present a constraint to commercial development although it would be important to protect more sensitive commercial premises such as office developments from excessive external noise levels.
- 4.3.5 In the case of the country park use for the former colliery site, with reference to the WHO Guidelines for Community Noise the entire site falls above the threshold for serious annoyance in outdoor amenity areas.

4.4 Mitigation for Land South of Whiston

- 4.4.1 The noise levels predicted by DEFRA noise mapping and in historic measurements for the Land South of Whiston are significant across the site. They are of an order for which it could be concluded that without mitigation, WHO and BS8233 recommendations for internal ambient noise levels both within and external to dwellings would be exceeded.
- 4.4.2 In practice, it is likely that where new houses are interposed between the M62 and other new residences within the main body of the site, the massing of the houses themselves will provide acoustic shielding both for outdoor amenity areas and other houses within the development and may well result locally in external noise levels which will not require acoustic mitigation measures to be implemented.
- 4.4.3 For “front line” properties proposed adjacent to the M62, and for facades of properties across the site with direct line of site to the M62, mitigation measures will need to be implemented so that desirable noise levels both internally and in external amenity areas are achieved.
- 4.4.4 Mitigation which can be considered include:
- Noise screening (such as earth bunds, acoustic fences, or a combination of these measures) along the boundary with the motorway;
 - Setting out of housing to minimise traffic noise impacts, e.g. facing gable ends towards the motorway and arranging layouts so houses on the periphery of the development provide optimum shielding for those within the heart of the development;

- Screening of acoustic amenity areas with substantial walls or fences;
- Façade insulation measures, primarily based around attenuation of natural ventilation pathways in order to avoid the need to open windows; and
- Mechanical ventilation systems for dwelling situated in close proximity to the M62.

- 4.4.5 An 80 – 100m buffer zone will be incorporated within the site along the length of the boundary with the M62 and the sliproad at Junction 6. This buffer zone offers the opportunity to incorporate landscaped noise screening for motorway noise which could take the form of landscaped earth bunds, proprietary noise fences or a combination of these two measures (fence atop a bund).
- 4.4.6 The key principal is to remove line of sight between the motorway and residences. Screening may provide up to 10dB of noise reduction, however its effectiveness is very much dependent upon topography. The land South of Whiston has an upward sloping aspect from east to west. For the western part of the boundary with the M62 and associated sliproad, the motorway is within a cutting and has limited line of sight to the proposed residential area. Despite the cutting, noise levels remain high. This means that incorporation of a noise bund/fence here will provide relatively limited additional mitigation.
- 4.4.7 Further east along the motorway boundary, where there is greater line of sight to the motorway, the presence of a noise bund/fence will be more effective. At the eastern extremity of the site however, where the motorway is elevated with respect to the site boundary, the noise bund/fence would need to be substantial to remove line of sight. The efficacy of the noise bund/fence should be determined by detailed acoustic computer modelling in future assessment and design phases for the site.
- 4.4.8 The landscaped noise bund/fence will have the secondary benefit of visually screening the motorway from residences
- 4.4.9 Note that the presence of a buffer zone incorporating a noise bund/fence not in isolation ensure that noise levels external to and within “front-line” properties are consistent with current guidance. The other measures set out in paragraph 4.4.4 above will also be required.

4.5 Mitigation for Land South of M62

- 4.5.1 It is not anticipated that noise mitigation would be required to make the site suitable for commercial development although it would be advisable to set sites out such that external areas close to the motorway where good speech communication is important for safe operation are shielded from motorway noise by the massing of buildings. Similarly facades of office or other sensitive commercial accommodation should be designed to attenuate traffic noise to levels acceptable for the type of work undertaken within. This may entail fully mechanical ventilation of buildings close to the motorway.
- 4.5.2 With respect to the proposed country park, options for mitigation are limited as noise levels across the site are predicted to be relatively high and not conducive to a tranquil environment. Advantage could be taken of existing land-forms and local landscaping could be employed to provide some shielding from motorway noise.
- 4.5.3 Large buildings forming part of the commercial development could provide some acoustic shielding from motorway noise, although this would be balanced by visual intrusion of such structures.
- 4.5.4 For any commercial development, due consideration should be given through the planning and licensing process to ensure that associated noise emissions do not produce significant adverse impacts at existing noise sensitive receptors, or at new noise sensitive receptors within the masterplan area.

5 Recommended Future Work

- 5.1.1 It is clear from the noise constraints discussed above that assessment of traffic noise impacts on the site will form a key part of any future assessment in support of planning applications for development, particularly for the Land South of Whiston element of the SUE.
- 5.1.2 The following are recommended as future work in support of any such application:
- Noise survey across the site, preferably utilising continuous noise logging over a number of days to confirm the current day-time and night-time noise climate and to validate any computer noise modelling undertaken for the site.
 - Computer modelling of traffic noise, based upon traffic flows to confirm likely noise impacts on proposed residences and businesses and to determine the effectiveness of the proposed noise screening along the M62 boundary.
- 5.1.3 Terms of reference for any noise survey and assessment carried out in support of planning application should be agreed in advance with KMBC Environmental Health Department and should take into account the policy and guidance set out in Section 2 of this report.
- 5.1.4 Proposed noise mitigation measures associated with any proposed planning application should be agreed with KMBC.

6 Summary

- 6.1.1 A desktop study of potential noise constraints on development at the proposed South Whiston and Land South of the M62 Sustainable Urban Extension has been undertaken.
- 6.1.2 Relevant legislation, policy and acoustic guidance has been presented.
- 6.1.3 Noise mapping information published by DEFRA and noise survey data published in support of a previous planning application have been considered.
- 6.1.4 Noise constraints on the SUE sites have been identified. The sites have been found to be subject to a challenging noise environment due to traffic noise emanating from the adjacent M62 and surrounding road network.
- 6.1.5 Noise attenuation measures will be required as part of the site development. These include a noise bund/fence along the site boundary with the M62 in conjunction with measures specific to the setting and design of proposed residential properties.

7 References

- 7.1.1 BRITISH STANDARDS INSTITUTE. (2014). BS 4142:2014. Methods for rating and assessing industrial and commercial sound.
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