

Appendix 2.5

HUMAN HEALTH TECHNICAL NOTE

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Environmental Statement

Volume III: Appendix 2.5

September 2019

1. Introduction

CBRE Ltd has been appointed by Merseyside Pension Fund to undertake a review of how health and wellbeing have been incorporated into the design of the proposed scheme at Fort Halstead, Sevenoaks. This technical note addresses the requirements of the 2017 EIA Regulations in terms of the consideration of human health and summaries how this has been achieved throughout the various technical chapters of the Environmental Statement. This includes the cumulative impact of the proposed development from a biopsychosocial perspective (physical and psychological health, social interaction and health behaviour).

The technical note comprises:

- Section 2 Baseline Health Conditions;
- Section 3 Residual Effects Review; and
- Section 4 High- level Assessment of the Cumulative Effects and Conclusion.

Nature of Application

The description of the development as it appears on the hybrid planning application is as follows:

In detail:

- Demolition of existing buildings;
- Change of use and works to buildings Q13 and Q14 (including landscaping and public realm);
- Primary and secondary accesses.

In outline:

- Development of business space (use classes B1a/b/c) of up to 27,659 sq m GEA;
- Works within the 'X' enclave relating to energetic testing operations, including fencing, access, car parking;
- Development of up to 750 residential dwellings;
- Development of a mixed-use village centre (use classes A1/A3/A4/A5/B1a/D1/D2);
- Development of a one form entry primary school;
- Change of use of Fort Area and bunkers to Historic Interpretation Centre (use class D1) with workshop space;
- Roads, pedestrian and cycle routes, public transport infrastructure, car parking, utilities infrastructure, drainage;
- Landscaping, landforming and ecological mitigation works.

Professional expertise has been used to assess the likely form and qualities of the proposed development with regards to potential impacts on health. This has enabled appropriate cumulative impacts to be assumed for the purpose of this technical note, allowing the identification of realistic predicted impacts of the proposed development.

Information Used

The following documents have been used to inform the assessment:

- Public Health England's Health Profile for Sevenoaks (2017); and
- Kent's Joint Strategic Needs Assessment (2016).

Details of these documents are contained in Section 2.

People Potentially Affected

The people potentially affected by the proposed development include:

- New residents of the proposed development;
- New workforce of the proposed development within the operational phase;
- Existing residents considered to live in close proximity to the application site;
- Existing employees who work on or in close proximity to the application site;
- Construction phase employees; and
- Visitors to the proposed development.

Specific consideration is given to potential impacts on vulnerable people within these population groups where appropriate. The vulnerable people considered include:

- Older people;
- Pregnant women;
- Children under the age of 16 years;
- Young people aged 16-25 years;
- Students;
- Unemployed people and their families;
- People on a low income and their families;
- Homeless people;
- People with pre-existing medical conditions (chronic or acute);
- People with mental health problems;
- People with a physical disability;
- People with a learning disability;
- Carers;
- People from Black and Minority Ethnic (BME) groups;
- Refugees and asylum seekers; and
- People from the traveller community.

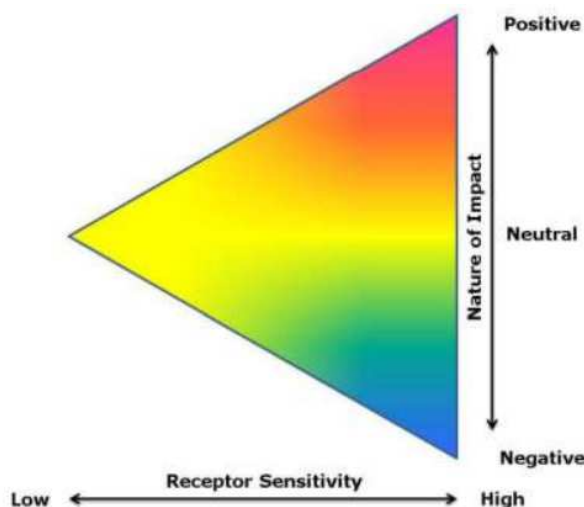
Impact Prediction and Significance Criteria

Several criteria have been used to determine whether the potential health impacts from the proposed development are significant. So far as appropriate, the health impacts are assessed qualitatively using definitive standards and legislation.

The significance of impacts has been assessed, taking into consideration a range of criteria including:

- Sensitivity of the receptor;
- Reversibility and duration (short term, medium term, long term) of the impact;
- Nature of the impact (direct/indirect, positive/negative);
- Extent of influence and magnitude of the impact; and
- Inter-relationship between impacts.

Figure 1
Impact and Receptor Sensitivity Relationship



The significance of residual impacts following mitigation reflects judgements as to sensitivity of the affected receptor(s) and the nature and magnitude of the predicted changes. For example, an adverse impact on a receptor of low sensitivity will be of lesser significance than the same impact on a receptor of high sensitivity (refer to Figure 1).

The following terms have been used to define the significance of effects, where they are predicted to occur:

- Major Positive or Negative – where the proposed development would cause a significant improvement or deterioration to existing health;
- Moderate Positive or Negative- where the proposed development would cause a marginal improvement or deterioration to existing health;
- Minor Positive or Negative- where the proposed development would cause a barely perceptible improvement or deterioration to existing health; and
- Neutral- no discernible improvement or deterioration to existing health.

2. Baseline Health Conditions

Health is largely determined outside of the ‘health’ service- a point reinforced in the report *Securing Good Health for the Whole Population* [1], which uses the term ‘National Sickness Service’. This service deals with almost an exclusive focus, on the urgent need to improve short-term access and quality to health services. Investments in social systems and places in which people spend their time and live their lives are a requirement of effective health improvements.

The health map (refer to Figure 2), originally developed by Barton and Grant [2] shows the complex interrelationships between health, physical, lifestyle, economic and social environments. people are at the core of the map, being surrounded by layers of influences that could theoretically be modified. The first of these is lifestyle, for example a person could decide to give up smoking. Beyond this, the map shows how the individual is situated in a community, a broader social world comprising social networks and social support that can affect an individual’s health.

As the health map radiates outwards, wider influences exist that impact on decisions to stop smoking for example. The map also illustrates how human health is intimately connected to the health of the wider environment and ecosystems – pointing to the importance of integrating health and sustainable development agendas.

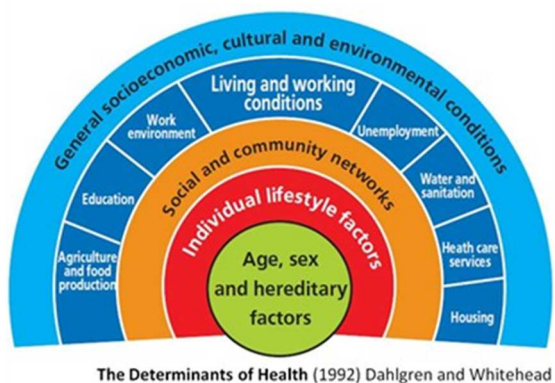
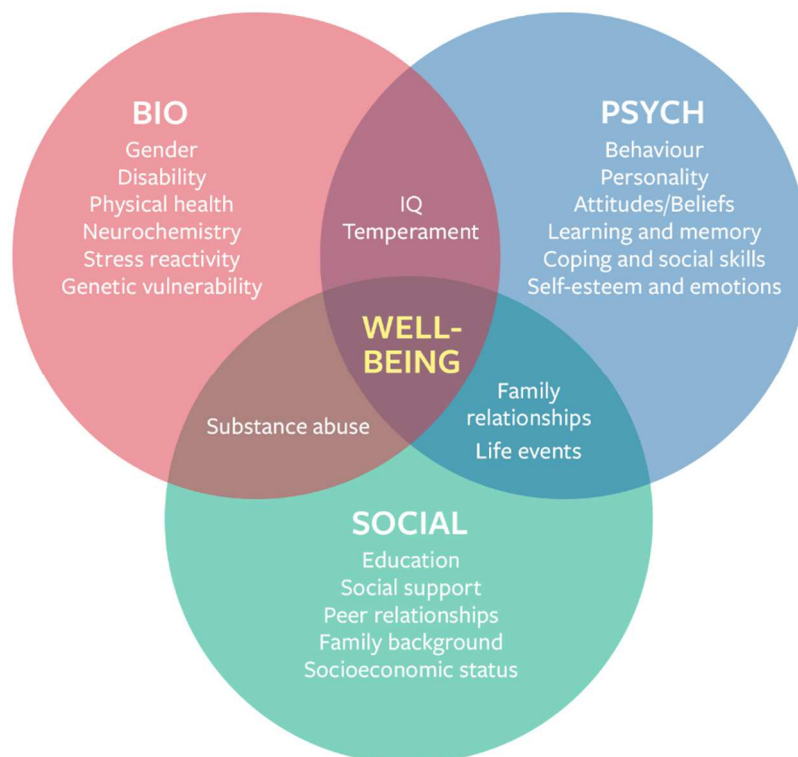


Figure 2
A Health Map for the Human Habitat

Before the determinants of health were established, George Engel in 1977 ‘argued that medicine in general and psychiatry in particular ought to shift from a biomedical perspective of disease to a biopsychosocial (BPS) perspective on health’. He argued that the biomedical perspective was too simplistic, and that in order to address health related issues meaningfully a holistic approach was necessary. The World Health Organisation (WHO) supports Engel’s view as it ‘defines its central mission as improving wellbeing which is defined as overall state of health and happiness at the biological, psychological and social levels. [3] The BPS perspective recognises that, in addition to behavioural, social and biology, factors play a major role in human health. This theory is supported by the determinants of health theory (Dahlgren and Whitehead, 1992).

The biopsychosocial model (refer to Figure 3) is a broad view that attributes health to the interaction between biomedical factors (genes/nutrition), psychological factors (emotions/behaviours) and social factors (socioeconomics/environment/stress).

Figure 3
The Biopsychosocial Model



The Local Governments and Public Involvements in Health Act 2007 required local authorities and Clinical Commissioning Groups (CCG) (former, Primary Care Trusts (PCTs)) to produce a Joint Strategic Needs Assessment (JSNA) of the health and wellbeing of their local communities. The JSNA provides a core of evidence informing the local authority’s Health and Wellbeing Strategy and the priorities of the Health and Wellbeing Board.

The Kent Joint Strategic Needs Assessment (JSNA) provides an overall assessment of the needs of the population of Kent and determines the priorities for commissioning services. The JSNA is the outcome of a continuous process of strategic assessment and planning with the outputs, in the form of evidence and analysis of needs, being used to help determine the actions of the Council, the local NHS and other partners need to take to improve the wellbeing of the local population and reduce inequalities.

Health Profiles are produced by the Public Health England with funding from the Department of Health. They are designed to help local government and health services identify problems in their areas and decide how to tackle them. They provide a snapshot of the overall health of the local population and highlight potential problems through comparison with other areas and the average for England for 32 indicators.

The Sevenoaks Health Profile 2018 shows that health in Sevenoaks is generally worse compared to the England average [4]. It performs significantly worse for the following indicators:

- Diabetes;
- Dementia; and
- Road Safety.

These indicators and their respective implications identify what underlying key determinants may be driving poor health within Sevenoaks. Consequently, the baseline conditions of this technical note have informed the following sections.

Many of the ES technical chapters have addressed the potential implications of their topics on human health by virtue of set target values or objectives (e.g. air quality, noise or contaminated land) based on human health tolerances or through the consideration of policy requirements and targets promoting human health tolerances or through the consideration of policy requirements and targets promoting healthier behaviours (for example, active modes of travel such as walking and cycling).

Consequently, it is considered that the following chapters have already addressed the consideration of human health implications:

Air Quality

- Humans can be adversely affected by exposure to air pollutants in ambient air. Air Quality Standards are concentrations recorded over a given time period, which are considered to be acceptable in terms of what is scientifically known about the effects of each pollutant on health and on the environment. They can also be used as a benchmark to indicate whether air pollution is getting worse. The European Union has developed an extensive body of legislation which establishes health-based standards and objectives for several pollutants present in the air.
- The EU Ambient Air Quality Directive and fourth Daughter Directive contain Limit Values and Target Values. The national Air Quality Objectives and EU limit and target values with which the UK must comply are summarised in the National Air Quality Objectives of the Air Quality Strategy. These objectives and target values have been assessed within the ES.

Noise & Vibration

- In assessing environmental noise, noise levels are usually quoted in A-weighted decibels – dB(A). The decibel scale is a logarithmic measure of sound intensity relative to a reference value. The A-weighted characteristic is applied to sound pressure levels in order to reflect the variation in sensitivity of the human ear to different frequencies.
- World Health Organisation: Guidelines for Community Noise (1999) - The World Health Organisation has prepared the Guidelines for Community Noise in order to protect people from the harmful effects of noise in non-industrial environments. The risks to health of exposure to noise were evaluated and guideline levels were drawn up.

Ground Conditions & Contamination

- The contaminated land regime under Part 2A of the Environmental Protection Act 1990 provides a risk-based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment. The regime does not consider future uses which could need a specific grant of planning permission. To ensure a site is suitable for its new use and to prevent unacceptable risk from pollution, the implications of contamination for a new development are considered as part of the planning application process, for example through Environmental Impact Assessment.

- Relevant government bodies such as the Environment Agency and DEFRA use chemical exposure modelling methods and consider the toxicological basis of potential contaminants to subsequently set Health Criteria Values that serve as benchmarks for protecting human health. The Health Criteria Values enable the derivation of Soil Guideline Values and may be used in the overall assessment of risks to human health from land contamination.

3. Residual Effects Review

This section contains a review of the residual effects from the ES where applicable and identifies whether they are biomedical, social or psychological in nature.

The following residual effects have been reviewed:

- Socio-Economics;
- Biodiversity;
- Transportation and Access;
- Air Quality;
- Noise & Vibration;
- Ground Conditions & Contamination; and
- Water Resources & Flood Risk.

EFFECT CATEGORY	STAGE OF DEVELOPMENT	RESIDUAL EFFECT DESCRIPTION	SIGNIFICANCE	HEALTH IMPLICATIONS
Air Quality	Construction	Potential damage to health at all existing sensitive receptors	Negligible Adverse	<p>Effect: Dust emissions and GHG emissions produced during the construction phase have the potential to migrate off-site, this is unavoidable for any development. For offsite receptors, the potential for adverse effects from dust and GHG emissions will be reduced as far as possible by the means of best practice measures including dust suppression techniques and damping down of equipment. Construction works will also be provided with correct Personal Protective Equipment (PPE) and follow appropriate measures as set out in the Construction Environmental Management Plan (CEMP)</p> <p>Biopsychological perspective: Because of dust emissions, there is the potential for a medium/low risk of poor air quality, which can affect respiratory systems and is of a greater significance for those who already suffer from respiratory ailments for example asthma. However, the application of best practice measures on site and the temporary nature of these works will limit the effects.</p>
Air Quality	Operation	The residual impact of operational traffic and plant on concentrations of NO2, PM10 and PM2.5	Negligible Adverse	<p>Effect: The increase in GHG emissions arising from the proposed development will not result in GHG concentrations exceeding the AQS objectives, thus there are considered to be no effects on human health</p>
Noise & Vibration	Construction	Temporary noise generation associated with construction	Negligible/ Moderate Adverse	<p>Effect: The construction of the proposed development will result in temporary negligible/ moderate adverse noise effects. Prior to construction, a construction programme will be subject to a CEMP approval by Kent County Council/SDC. Demolition and construction contractors will be subject to controlling noise with Best Practicable Means as per Control of Pollution Act, 1974 and minimum mitigation measures as specified in BS 5228.</p> <p>Biopsychological perspective: Noise is seen to have direct health effects,</p>

which are divisible into auditory and non-auditory. Auditory effects are a result of impairment of hearing and occur almost exclusively in industrial settings. Environmental noise levels do not produce these effects, but non-auditory effects include, most commonly, sleep disturbance, annoyance, interruption of speech and social interaction and loss of concentration.

Exposure to noise has been shown to be associated with increased levels of stress hormones in the blood. These include the adrenal corticosteroids and also adrenaline and noradrenaline which reflect activity of the sympathetic system. However, such increases in concentrations are harmful is uncertain but some authors have linked such changes with the possibility of long-term effects on blood pressure and on cardiovascular disease.

There is no real evidence that noise brings about mental illness, there is some evidence to suggest that noise-sensitive people are more prone to mental illness and that the effects of noise may be more pronounced in mentally ill people.

However, it is anticipated that the potential for such biopsychosocial effects will be limited in nature, given the relatively short-term nature of when such magnitude of noise impacts will occur and the temporary nature of the construction period.

Noise & Vibration	Operation	None anticipated, using Best Practice Guidance – no discernible increase in noise caused by operation of proposed development.	Negligible Adverse	Effect: As no obvious increase in noise levels are predicted it is anticipated that there will be no biopsychosocial effect.
Ground Conditions	Construction	Inhalation of asbestos fibres and windblown dust during demolition and construction activities and direct contact or inhalation of elevated lead, copper, PAH, petroleum hydrocarbons during construction activities	Negligible Beneficial	Effect: The construction of the proposed development may result in construction workers becoming contaminated result in temporary major adverse noise effects. A Construction Environmental Management Plan (CEMP) should be developed to place environmental controls on the construction activities to ensure any construction related impacts are minimised.

Ground Conditions	Operation	Direct contact or inhalation of contaminants to future site users	Negligible Beneficial	Effect: Capping layers installed in gardens and landscaped areas will break the pathway to the risk of asbestos fibres, lead, copper, PAH & petroleum hydrocarbons leaving no residual impact
		Direct contact or inhalation of contaminants to maintenance workers	Negligible Beneficial	Effect: Installation of all services in clean service corridors will ensure there is no residual impact to maintenance workers from direct contact with contaminants.
Water Resources & Flood Risk	Operation	Increase in foul water discharge from site, if unmanaged could result in any receiving waterbody's water quality to deteriorate. However, an implementation of a new foul water drainage system 'design intervention' will limit the risk of this occurring.	Negligible Beneficial	Effect: Without implementation of a new foul water drainage system 'design intervention', an increase in foul water discharge from site to nearby waterbodies could result in a decrease in water quality which if used for consumptive purposes could have an adverse effect on human health.
Ecology	Operation	Creation of greenspace	Minor to major Beneficial	Biopsychological perspective: The creation of greenspace can beneficially improve both the physical and mental health of people

4. Summary

The proposed development is not anticipated to have any permanent significant adverse health effects. The limited health effects that are anticipated to be adverse, such as noise impacts are anticipated to be temporary in nature and associated with the construction works.

The proposed development has been identified to have some beneficial health effects during its operation such as the creation of greenspace, which has been shown to have a beneficial effect on people's physical and mental well-being.

5. Bibliography

- [1] D. Wanless, "Securing Good Health for the Whole Population: Final Report," 2004.
- [2] H. a. G. M. Barton, "A Health Map for the Local Human Habitat.," Journal of the Royal Society for the Promotion of Health, vol. 126(6), pp. 252-261, 2006.
- [3] G. Henriques, "The Biopsychosocial Model and its Limitations," Psychology Today, 2015.
- [4] P. H. England, "Health Profile 2018: Sevenoaks," 2018. [Online]. Available: <https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/gid/1938132696/pat/6/par/E12000008/ati/101/are/E07000111>.