



NHS Devon
NHS Plymouth
Torbay Care Trust

Whitecleave Quarry **A Rapid Prospective 'Desk-top' Health Impact Assessment**

January 2012



Acknowledgements

HIA Steering Group Members

Tina Henry: Head of Health Improvement, NHS Devon
Mike Wade: Specialty Registrar in Public Health, NHS Devon
Sue Penaluna: Devon County Council
Bruce Braithwaite: MVV - the applicant
Garry Gray: URS Scott Wilson (Consultant)
Dave Brogden: Environment Agency (EA)
Pete Smith: Health Protection Agency (HPA)
David Eaton: Environmental Health, Teignbridge District Council
Neil Smith: Resident and Chair of Buckfastleigh Community Forum
Tim Drey: Resident
Dr Mike Rodger: Resident and member of Buckfastleigh Community Forum (last meeting)
Holly Warren: In attendance

The template for this document has been compiled by Public Health Plymouth utilising the HUDU checklist and is used by permission for the purposes of the Whitecleave Quarry HIA.

Thanks to all members of the steering group for their professionalism and assistance in producing the HIA. With particular thanks to the resident representatives who provided essential insight to a complex and difficult process. Thanks also to Daniel Janota Dartmoor National Park, Gary Powell Teignbridge District Council, Buckfastleigh Medical Practice and Simon Chant Public Health Intelligence team for the health profile data.

Preface

This report is based upon the structure and content of the NHS Plymouth's Health Impact Assessment (HIA) Framework which was launched in 2004. The purpose and intentions of this Framework are to:

- encourage debate on the use of HIA to inform decision making on projects, policies or programmes that might affect people's health
- work towards integrated assessments of policies across a range of organisations and groups.

The values underpinning the HIA Framework are derived from the 1999 World Health Organisations' Gothenburg Consensus Paper and NHS London's statement for HIA which identified five values of HIA:

- democracy
- equity
- sustainable development
- ethical use of evidence
- promotion of health and equality.

This rapid desk-top HIA of the construction and operation of a recycling plant at Whitecleaves Quarry, Buckfastleigh for the Incinerator Bottom Ash (IBA) from an Energy from Waste (EfW) facility in Devonport, Plymouth affords the Developers, MVV Devonport, an opportunity of enhancing the positive health impacts but also to minimise potential negative health impacts that could arise from the construction and life-cycle of the plant. It also considers the development of a Material Recycling Facility (MRF) within the same site.

The rapid desk-top HIA has been written by Garry Gray (URS Scott Wilson) and Tina Henry (NHS Devon) under the guidance of a steering group chaired by NHS Devon with representation from the Health Protection Agency, Devon County Council, Environment Agency, Teignbridge District Council Environmental Health and resident representation. An independent literature review was undertaken by the HPA and Mike Wade (Specialty Registrar).

Preface	2
Executive Summary	4
Direct Impacts.....	4
Indirect Impacts	5
Mitigation and Planning Control Measures.....	6
Recommendations to enhance potential positive impacts.....	7
1 A rapid prospective health impact assessment of the construction of an IBA and MRF Facility at Whitecleave Quarry, Buckfastleigh, Devon.	
1.1 Background.....	9
1.2 Rationale for the rapid health impact assessment	13
1.3 Method.....	14
2 The Health Impacts	19
2.1 Direct Influences	19
2.2 Indirect Influences.....	19
3 Discussion	20
3.1 Identifying the Impacts of the Whitecleave Quarry proposal.....	20
3.2 Direct Influences	20
3.3 Indirect Influences.....	22
4 Study Limitations	25
5 Concluding Remarks	26
6 References	28
Appendix 1: Healthy Urban Development Unit Checklist	30
Appendix 2: Health Profile and Objections maps of Buckfastleigh Area (Summary)	41
Appendix 3: Brief Literature Review	47

Executive Summary

This rapid desk-top health impact assessment study of the proposed development at Whitecleaves Quarry, Buckfastleigh to process Incinerator Bottom Ash (IBA) and a Material Recycling Facility (MRF) is based on the judgements of senior public health staff and is supported by a selected review of evidence from published and grey literature sources. Lay perspectives have been drawn from letters sent to the Planning Authority provided by Devon County Council and from direct involvement of resident's representatives on the Steering Group for the HIA.

This rapid HIA adapted the Healthy Urban Development Unit checklist for planning proposals and identified a number of issues of public health concern (Appendix 1), arising from the proposals, against which the Planning Authority should seek assurance from the Applicant.

Direct impacts are those that occur as a direct consequence of the activity and indirect impacts are those that are by-products of the proposal such as the potential impacts on the wider economy or social cohesion in the town and are based on the HUDU checklist classifications. The Direct and Indirect Impacts identified by the rapid HIA are listed below:

Direct Impacts

Housing and Neighbourhood Amenity

- The proposal has the potential to impact upon existing housing and neighbourhood amenity due to the increase and change of activity at the site (Negative impact)

Access to Public Services

- The proposal does not impact on access public services as there are no community facilities within the proposal (No impact)

Opportunities for Physical Activity

- The proposal has the potential to impact on physical activity of the workers on the site (Positive impact)
- The proposal has the potential to impact negatively on residents and visitors physical activity (Negative impact)

Air Quality and Noise and Vibration

The proposal includes measures aimed at minimising construction impacts, including dust, noise and vibration. The proposal includes measures to mitigate these impacts

- The proposal would be a source of additional air pollution (Negative impact)
- The proposal would be a source of additional noise (Negative impact)
- The proposal would be a source of additional dust (Negative impact)
- The proposal would include the effects of vibration and air overpressure during the construction phase (Negative impact)

Accessibility and Transport

- The site is served by public transport, the site by nature requires vehicle use so does not minimise the need to travel other than to work on site (Negative/Positive impact)
- There is access to site buildings at ground level and the site will have disabled parking. (Positive impact)
- The proposal does not incorporate traffic calming measures (Negative impact)

Indirect Impacts

Crime Reduction and Community Safety

- The site has implemented security measures to discourage crime on site (Positive impact)
- The community has had engagement and consultation about the proposal the perception is that this is not adequate (Negative/Positive impact)

Access to Healthy Food

- Visits by a mobile food vendor are proposed to reduce car trips no mention is made that it would offer healthy food options (Negative impact)
- Food safety risks relating to local producers and growers are not addressed by the proposal (Negative impact)

Access to Work

- The proposal does create local jobs. (Positive impact)
- The proposal creates opportunities for local suppliers including childcare which is not provided on site. (Positive impact)
- The impact on the wider economy is a concern of residents and businesses due to detracting from a tourist destination (Negative impact)

Social Cohesion and Social Capital

- The proposal is isolated from the main town, issues about the road access causing severance could impact on local residents (Negative impact)
- The proposal does not reduce health inequalities in the town (Negative impact)
- The proposal does not have a positive impact on health outcomes for local residents (Negative impact)
- The proposal does not include any community facilities (Negative impact)
- The proposal does have the potential to cause community severance (Negative impact)
- The proposal could impact negatively on house values (Negative impact)
- The proposal could impact negatively on tourism (Negative impact)

Resource Minimisation

- The need to remove the spur and impact needs to be addressed
- The use of the site has the potential to have a lower impact than traditional quarrying (Positive impact)
- The site is some distance from the EfW facility and by its nature disposes of non-recycled waste (Negative impact)
- The site facilitates recycling of materials (Positive impact)
- The site offers sustainable construction (Positive impact)
- Agencies have been involved in the decision making process and conduct of the HIA (Positive impact)

Climate Change

- The proposal does not incorporate renewable energy (Negative impact)
- The proposal does not provide a sustainable approach to transport of the vehicles (Negative impact)
- The proposal does provide a sustainable approach to staff transport (Positive impact)
- The proposal has an impact on biodiversity (Negative impact)
- A flood risk assessment has been completed (Negative impact)

- The proposal incorporates sustainable drainage (Negative impact)

General

- The proposal has a negative impact on improving aspirations for the area (Negative impact)
- Public concern regarding health risks and poor risk communication has been increasing (Negative impact)
- There are self-reported concerns relating to emotional health and well-being (Negative impact)
- There are concerns regarding the impact on local water supplies (Negative impact)

The overall public health concerns identified by the HIA fall into three main areas:

- Traffic movements and road use
- Air quality and noise pollution
- Public concern regarding perceived risks relating to IBA

Mitigation and Planning Control Measures

As a result of this Rapid HIA exercise, the steering group has identified a number of concerns which it is believed can either be dealt with by mitigation measures, or controlled by the application of appropriate planning conditions.

Mitigation Measures

The public health concerns that it is believed can be dealt with by mitigation measures are:

Housing and Neighbourhood Amenity

The proposal has the potential to impact upon existing housing amenity

- MVV need to provide assurance that there will be no detrimental impact on housing or neighbourhood amenity
- The proposal does not provide sufficient enhancements to local amenity. The removal of the spur to allow the development is a source of public concern and will have a visual impact and potentially increase noise and dust, assurance is required that the amenity and visual impacts will be minimised.
- Suggestions have been made to address visual impact of site through improved signage, improved access and vegetation cover.

Social Cohesion and Social Capital

The proposal has the potential to impact on social cohesion and social capital.

- Improved risk and general communication is essential to allay public concerns regarding risks to health. A formally constituted liaison committee and complaint route should be established.
- The proposal should consider the measures that can be taken to enhance the local environment, social environment and social capital in the town. Consideration should be given to wider community enhancements.
- The applicant must ensure the proposal does not exacerbate health inequalities.

Air quality, Noise and Neighbourhood Amenity

The proposal has the potential to impact on air quality, noise pollution and neighbourhood amenity.

- To address potential impact from exposure to risks from IBA details of complaints, monitoring and evidence in relation to similar plants in the UK should be used to inform required mitigation.

Resource Minimisation

- The developer should undertake BREEAM Assessment of the building to mitigate any negative impacts on use of resources or climate change.

Control and Planning Conditions

The public health concerns that are believed can be controlled by appropriate planning conditions are:

Opportunities for Physical Activity

The proposal has potential to reduce opportunities for physical activity.

- To enhance potential positive health impacts and mitigate negative impact of potential accidents due to increased HGV movement's consideration of the potential safety improvements in the Highways assessment should be considered.
- The impact on pedestrians using the adjacent school bus stop must be considered.

Air Quality, Noise and Neighbourhood Amenity

The proposal has the potential to impact negatively on the health of the local population and local environment.

- The EA are asked to provide an update on incinerator bottom ash processing plants in England, and details about any complaints/monitoring/evidence in relation to these activities that would be relevant to planning conditions and controls.
- A cautionary approach within a risk management framework must be adopted when determining the application and applying conditions relating to the movement, processing and handling and storing IBA.
- To prevent deterioration in air quality and compliance with air quality standards assurance is required from Environmental Health that the air quality and dust suppression measures are adequate.
- To minimise the noise and vibration impact assurance is required from Environmental health that the proposed controls during construction and development and operation are adequate.
- The applicant must provide a mechanism for dust and odour management which includes community involvement in trigger levels and management.
- Vehicle noise mitigation is required including consideration of restriction of the hours of operation.
- If Highway changes are introduced air quality modelling may be required for potential reduced speed.

Access to Healthy Food

The applicant must provide assurance that there is no risk of contamination to local foodstuffs including local organic producers.

Climate Change

The proposal does not detail how it will ensure sustainable construction

- A BREEAM assessment of the new building should be undertaken by the applicant.

General

The proposal has the potential to impact negatively on the wider environment.

- The mitigation to prevent contamination of local water supplies must be clearly evidenced.
- Assurance must be provided that there is no negative impact from removing the rock spur.
- Visual screening, noise screening and enhancements to the streetscape/landscape should be considered to minimise the negative impact of the development on the local environment.
- A school bus stop is adjacent to the site entrance and the applicant should provide assurance of the safety of pedestrians at these times.

Recommendations to enhance potential positive impacts

The following recommendations would enhance the potential positive impacts to maximise health benefit.

Opportunities for Physical Activity

Assurance must be provided that the plant workforce will be encouraged and incentivised towards active travel to work.

To enhance potential positive health impacts safety improvements raised in the Highways assessment should be considered. The proposal should support development of cycle routes in the area.

Crime Reduction and Community Safety

Security measure should enhance onsite security.

Access to Work

To enhance positive impacts the proposal should consider how it can further enhance and develop local job opportunities.

The workplace travel plan must demonstrate it can deliver positive health impacts.

The travel statement should minimise the impact from HGV use there is local concern that this is not the case.

The proposal needs to demonstrate a positive impact on the local economy.

Resource Minimisation

The development must demonstrate sustainable construction.

General Recommendations

1. That Devon County Council Planning Services read and give due consideration to this report and its findings.
2. That MVV Environment Devonport Ltd read and give due consideration to this report and its findings and provide assurances as indicated.

1 A rapid prospective health impact assessment of the construction of an IBA and MRF Facility at Whitecleave Quarry, Buckfastleigh, Devon.

1.1 Background

Description of the Application Site and Surroundings

The proposed development will take place at Whitecleave Quarry, which is a 'hard rock' (Dolerite) quarry with a 'Review of Old Minerals Permission' (ROMP) for the extraction of rock until 2042. The Quarry is located off Strode Road/Plymouth Road, within Buckfastleigh parish, Teignbridge district and the county of Devon. The town of Buckfastleigh lies to the north-north-west of the quarry.

The Site covers an area of approximately 3.7 hectares and the quarry covers an area of approximately 9 hectares and is bounded to the north, south and east by a woodland belt at the top of the steep quarry face. Beyond the woodland lies farmland.

The Site has vehicular access from the north by a junction and private haul road beneath the A38, exiting on to the B3380 Strode Road. This access is shared with a coach hire company which currently occupies land adjacent to the Site and their site is visible from the A38. The lower, front, part of the Site is adjacent to the access comprises of a brick built, two storey maintenance and welfare site building and hard-standing.

The current configuration of the quarry and the Site shows that the centre of the Site consists of a large quarry void, with steep sides to the north and east. To the south of the void is a small plateau at approximately +60m AOD with a large 'outcrop' of rock rising to approximately +95m AOD. The quarry void is dewatered on a regular basis. Site offices consisting of a single story modular building are located in the northern part of the Site and are occupied by Sam Gilpin Demolition Ltd (SGDL) who are the leaseholders and current occupiers of the Site and quarry.

The quarry is not located within the Dartmoor National Park or the South Devon Area of Outstanding Natural Beauty (AONB). A small part of the Site at the southern end is located within the boundary of Potters Wood Site of Special Scientific Interest (SSSI), as shown by ES Figure 7.1. It is noted that the Site's existing planning permission (93/3304/32/9DCC) permits mineral extraction within the SSSI boundary. The Site is not subject to any other statutory or non-statutory nature conservation designations.

Buckfastleigh Caves SSSI is located 800m to the north of the quarry. Buckfastleigh Caves forms part of the European designated site of South Hams Special Area of Conservation (SAC).

Residential properties are located to the north of the A38, where the land slopes up away from the road providing views of the road and some areas of the quarry, notably the back wall of the quarry which has now been partly overgrown with vegetation.

To the north of the quarry, 200m across the A38, is the town of Buckfastleigh, with a population of approximately 4,000 residents. The A38 separates the Site from the town. Beyond Buckfastleigh the land is formed of farmland and ultimately the moors of Dartmoor.

Whitecleave Quarry Planning History

The Site has a long history of commercial use, with a planning permission for the winning and working of minerals being granted in 1950, although the site has a history of mineral extraction predating this permission, with maps from 1886 showing a quarry at the site. Since 1950, the quarry has been extended on 3 occasions and various other planning permissions have been issued, including permissions granted for the tipping of spoil and construction of various associated buildings. It is understood that quarrying operations most recently ceased in 2003, although some consented mineral reserve remains. In 2002 a new set of planning conditions was issued for the Site under ROMP procedures.

Planning permission 93/3304/32/9DCC is considered to be the main extant planning permission for the quarry. This consent permits the winning and working of minerals from within the areas shown by Drawing PA04 in the

Planning Application (PA), Consented Development. It is estimated that there remains approximately 678,000 tonnes of consented mineral reserve that is yet to be extracted at Whitecleave Quarry. The consented extraction areas cover approximately 1.08 hectares and extends to a maximum depth of +15m AOD in the main quarry void and +38m and +50m elsewhere.

The existing planning consent permits the use of blasting as a method of mineral extraction, subject to submission and approval of a scheme. The consent also contains a number of planning conditions that seek to ensure the operation of the development in a manner that does not have any unacceptable impact on the environment or the amenity of the nearby community.

Condition 1 of planning permission 93/3304/32/9DCC requires all activities approved under the planning consent to cease on the 22nd February 2042 and the Site to be restored in accordance with the approved restoration scheme by that date. The approved restoration for the Site is to allow the quarry void to fill with water.

Although elements of the proposed development would be permitted under the existing planning permission (93/3304/32/9DCC), the construction and operation of recycling facilities would represent a change of use from the quarrying activity that is currently permitted. It is also proposed to amend the area from which minerals will be won to create a larger plateau for the IBA processing facility, although the total volume and area of material to be extracted will be lower than the amount of existing consented reserve because the quarry would not be worked to the permitted depth. For these reasons, a new planning application is required to seek approval for the development proposals. Should planning permission for this proposed development be granted, the proposed recycling facilities would be constructed instead of the restoration scheme that is associated with the previous planning consent.

The Proposed Development

MVV Environment Devonport Limited (MVV) has been awarded the South West Devon Waste Partnership's (SWDWP) residual waste treatment and disposal contract. MVV's proposal is to construct and operate Energy from Waste (EfW) facility, incorporating Combined Heat and Power (CHP) technology, on land currently situated in the north east of Her Majesty's Naval Base Devonport, Plymouth. As part of this development, a by-product of the EfW process; Incinerator Bottom Ash (IBA), would be transferred off-site to a facility that is licensed to receive and recycle such material.

MVV have submitted a planning application (the focus of this HIA) for a new facility to be operated by SGLD at Whitecleave Quarry that would:

- Process non-hazardous waste (such as the IBA product from the Devonport EfW CHP plant) into a viable re-cycled material for the construction market.
- Produce material from the re-cycling of demolition waste, within a Materials Recycling Facility (MRF), that can be amalgamated with the IBA product to enhance the marketability of both products.

The MRF will have the capacity to process 25,000 tonnes of construction and demolition waste. It is expected to separate the waste into its various streams converting them to a resource material as opposed to landfill, diverting up to 80% or 20,000 tonnes from landfill depending on the variation of material coming into site.

The IBA facility will have the capacity to process all of the IBA output from the proposed Devonport EfW CHP plant. The EfW at Devonport will process up to 265,000 tonnes per annum (tpa) of residual waste under certain conditions. However, it is expected that actual tonnages will be lower as waste composition changes and recycling activity increases over time. The total tonnage throughput is currently anticipated to be 245,000 tpa. This translates into IBA outputs ranging from 57,000 tpa to a maximum of 65,000 tpa, depending on the composition of the waste treated at the Devonport facility. This is based on the calculation that IBA will form between 23.5% and 26% of the total inputs into the Devonport facility. The variation of between 10-15% is dependent on the type of waste that is received and processed at the Devonport Facility.

The MRF Facility

The MRF will be a freestanding and independent facility operated by SGDL. It will require the installation of six concrete bays covered by a sorting unit for construction and demolition waste to be separated into its various waste streams. The picking line will be fed by a conveyor and the waste sorted by hand and dropped into the bays which will hold the segregated material. The conveyor will be supplied by lorries coming to site depositing

waste. In turn a 20 tonne excavator will feed the conveyor; a wheeled loading shovel will be used for material management.

The construction and demolition waste will comprise of material brought in from SGDL demolition sites. The waste is identified and described as concrete, bricks, tiles, ceramics, wood, glass, plastic, bituminous mixtures, metals, gypsum, soil and stones and or a mixture of the above; as described in the European Waste Catalogue issued by the EA.

Once the waste has been sorted into its various recycle streams the resulting rubble will be crushed in the quarry base (which in due course may be elevated by filling with the Dolerite) and stockpiled on site to use with stone quarried from the site. The resulting blended aggregate will conform to Waste Resource Action Programme (WRAP) protocol for recycled materials and supports The Department of Environment Food and Rural Affairs (DEFRA) strategic priority on sustainable consumption and production. Currently SGDL sends approximately 4,000 tonnes of waste per year to landfill and would look to reduce the quantity going to landfill by up to 80%.

Depending on construction demand the waste streams/product will be diverted to a diverse number of markets for re-use. The majority of this product will be re-used locally in the south west but liaison with the National Industrial Symbiosis Programme (NISP) enables partnership working on a local, regional and international scale.

This processing facility will be managed to ensure dust suppression and noise reduction.

The IBA Facility

The development of the IBA facility will also be operated by SGDL using IBA material from the EfW facility in Plymouth. It will require changes to the existing site topography and layout. The re-profiling of the area will be completed by drilling and blasting the existing Dolerite in a sequenced extraction. It is estimated that in the region of 250,000-300,000t of material will need to be extracted to create a larger plateau for the IBA operation. This approach potentially extends the sustainable life of the primary aggregate (Dolerite) and reduces the risk of sterilising the asset. The IBA facility will consist of a concrete slab c 8000m², a building, a settlement lagoon and storage bays for the incoming and processed material. The current offices will be utilised by the operator for training and commercial purpose.

The Incinerator Bottom Ash (IBA) would be brought to Whitecleave Quarry by lorries with 20-25 ton net load, directly from the Devonport EfW site, using the A38 dual carriageway.

On site the IBA will be stored in the designated input storage area for 3 to 6 weeks for the maturation process – with up to 7,500 tons overall storage capacity. The storage area will have a concrete base to ensure the area's impermeability. Water that drains off is collected in the settlement lagoon and reused to enhance the maturation process and to suppress dust. The material forms a hard surface, which should not generate dust or odour.

The mechanical processing mainly consists of screening and sizing operations and the removal of ferrous and non-ferrous metals.

After being conveyed in the receiving stockpiles both fractions are stored outside on separate open piles. The wheel loaders are able to store the aggregate up to heights of up to 8 metres.

The IBA processing plant includes a building of approximately 750m², where the mechanical processing is carried out, an input storage and traffic area of approximately 6,000m² as well as a lagoon of approximately 375m², where surface water is collected and also a site weighbridge.

Appropriate tests will be established as part of the Environmental Permit obtained for the site and would be undertaken on the raw product at the EfW facility in order to manage any organic and inorganic toxic substances to ensure that only non-hazardous waste from the EfW will be transported to the IBA processing facility at Buckfastleigh. The processed IBA can be used for numerous applications including utility pipe bedding, a lightweight aggregate for masonry, a component in bituminous mixes, but mainly as an aggregate for road construction.

The final product will be transported off site to its end use site. The resulting movements of HGVs will be comparable to the movements of vehicles entering the site with the un-refined product from the EfW plant. However there will be a reduction in terms of IBA tonnage as a result of the maturation process by between 10% and 15% due to moisture loss.

Other Project Elements

In addition to these principal components, there will also be access roads and trafficked areas for operational purposes; dust control system; turning circle, security gating, drainage and connections to infrastructure; hard and soft landscaping, and ecological mitigation.

The layout has been designed so that the properties in the nearby town of Buckfastleigh will be screened as much as possible from the nearby proposed operations.

Regulating Waste Management Sites in the UK

The Hazardous Waste (England and Wales) Regulations 2005 refer to the "List of Wastes" that forms part of The List of Wastes Regulations (England) 2005.

Any waste that may potentially be Hazardous Waste must be categorised correctly. This involves assessing the waste against the 15 Hazardous Properties (H1-H15) to see if any substance within the waste exceeds the threshold limit. Each Hazardous Property has a number of indicative Risk Phrases (R01-R68) which indicate the specific risk each substance poses. For some properties this involves a straightforward threshold limit, others require a more complicated calculation.

These regulations apply to the determination of the hazard status of IBA and the construction and demolition waste that the proposed facility at Whitecleave Quarry would process.

The facilities cannot be operated without an appropriate Environmental Permit issued, under the Environmental Permitting Regulations (England and Wales) 2010 by the Environment Agency. Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency for approval a protocol for the sampling and testing of incinerator bottom ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.

Incinerator Bottom Ash

The combustion of municipal solid waste (MSW) and similar commercial wastes in a modern EfW plant results in a coarse residue that falls through the grate and is removed. This material is termed Incinerator Bottom Ash (IBA). The composition of IBA resulting from the burning of MSW type wastes is mainly ceramics, slags, glassy materials and metallic materials.

The sampling and test requirements for IBA in England at this time are based on the industry guidance in *A Sampling And Testing Protocol For The Assessment of Hazard Status of Incinerator Bottom Ash* (ESA, 2010). The results of the analysis will confirm the classification of the bottom ash as non-hazardous or hazardous.

This analysis cannot be undertaken for the proposed Devonport EfW CHP facility until it is commissioned.

Emissions from Quarrying, IBA recycling and General Waste Material Recycling

During processing of the IBA the mineral phases are weathered by exposure to liquid water, atmospheric water (gas), oxygen and carbon dioxide. During this process soluble salts (potassium, sodium, chlorine and nitrate are dissolved into water, reducing the alkalinity of the material. Exposure to carbon dioxide results in changes in the chemical form of calcium, magnesium, sulphate and iron. The material is also subject to screening and grading, with oversize material, ferrous and non-ferrous metals being removed. The composition of the resulting weathered IBA is reported to be similar to alkaline or volcanic soils (Cresswell D, 2007).

In a study (Environment Agency, 2002) of four sites where IBA from EfW was processed using a similar approach. The possible sources of off-site impacts were identified as those arising from particulate matter being blown by the wind and the leaching of soluble components from ash stockpiles.

Public Concern of Quarrying, IBA recycling and General Waste Material Recycling

The EfW HIA details a number of references relating to public concern regarding waste management, the WHO Scientific review (WHO 2007) itemises further the public concerns with regard to perceived risks from waste management to be at the 'unacceptable' end of the scale.

In 2010 a planning application was submitted to the Infrastructure Planning Commission for the Rookery South Resource Recovery Facility at Stewart in Bedfordshire. In reaching the decision it was reported that they accepted that fears relating to emissions exceeding standards or harmful emissions not regulated or monitored in themselves, could be detrimental to their health and wellbeing and, as such, it was accepted that this is a matter that bears on the decision.

However they found no evidence to support the view expressed by several local residents that any permit issued by the EA would fail in its objective of protecting human health or people with characteristics protected under the Equality Act 2010 and they found no evidence to support the view that the EA would be unwilling to monitor and, if necessary, enforce compliance with the terms of any such permit. (Infrastructure Planning Commission 2011)

1.2 Rationale for the rapid health impact assessment

The proposal to process the IBA product and operate an MRF in Whitecleave Quarry has the potential to result in health and social issues which need to be considered and assessed against scientific evidence, alongside public concern. The IBA and MRF facility impacts could be experienced by the local community over the next twenty years or more in Buckfastleigh. The rationale for the rapid prospective health impact assessment (HIA) was twofold; firstly, to be used as the method to inform the planning decision regarding the proposal and secondly to afford the Applicants an opportunity to respond to adverse health impacts, where identified via mitigation measures and to enhance, where possible, positive impacts on health where identified by this HIA study. The request for a HIA was made by Buckfastleigh Community Forum and Buckfastleigh Town Council.

1.2.1 The definition of health and health impact assessment used

The definition of health from the World Health Organisation (1946) offers a broad concept of health and was used as the basis of understanding health in the study.

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being, without distinction of race, religion, political belief, economic or social condition”.

For the purposes of this HIA the ‘Gothenburg Consensus paper’, also from the World Health Organisation (WHO 1994), was used as the basis to understand health impact assessment and the nature of health impacts:

Health Impact(s) are the overall effects, direct or indirect, of a policy, strategy, programme or project on the health of a population. (This may include direct effects on the health of the members of the population and more indirect effects through intermediate factors that influence the determinants of health of the population. Such impacts may be felt immediately, in the short term, or after a longer period of time).

Health Impact Assessment is a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.

There is no agreed methodology for undertaking a HIA, but they may be conducted retrospectively, prospectively or concurrently; this HIA was a rapid desk-top prospective study.

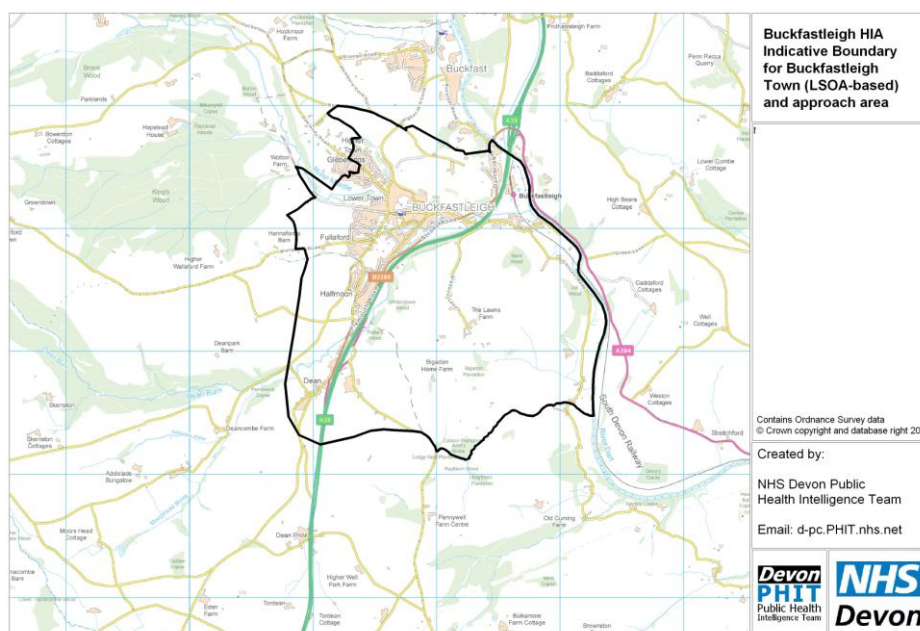
1.3 Method

HIA Scope and Objectives

The terms of reference of the HIA steering group, the HIA scope and objectives were established at a meeting of the Steering Group on 13th October 2011. The purpose of the HIA is to inform the planning decision making process for the Waste Planning Authority on the planning application.

The geographical area considered from the HIA is shown in Figure 1. The area includes the main lower super output areas and part of Lower Dean likely to be impacted by the development.

Figure 1: Geographical area considered for the HIA



Many general concerns about the potential for public health to be adversely affected and for there to be general environmental degradation of the area, were raised. These concerns sat alongside uncertainty about the nature of the risks posed by the proposed development and the potential effectiveness of the controls available to manage those risks.

There is considerable overlap between the issues raised. The following themed groupings capture the full range of issues discussed at the Steering Group scoping meeting.

Key health related issues discussed:

1 Road Vehicle Movements

1a Road User Safety: risk of severance, in particular on Strode Road and Plymouth Road, and road safety for pedestrians, cyclists and other road users.

1b Road Vehicle Noise: specific consideration of the nature of noise at residential properties on local roads.

1c Road Vehicle Emissions: exposure to pollutants including oxides of nitrogen, particulate matter, heavy metals, polycyclic aromatic hydrocarbons (PAH) and odorous substances emitted from vehicles exhaust systems or fugitive emissions from the transportation of IBA.

2 Emissions of Substances Generated by On-Site Preparatory Works and Construction Works

2a Emissions to freshwater environments: the risk and consequences of exposure to pollutants through the food chain or drinking water and the risk of degradation of the wider environment.

2b Noise emissions: the potential for noise from onsite activities (including blasting) to adversely affect the amenity, or sleep of local residents.

2c Emissions to atmosphere: the risk and consequences of exposure to pollutants including particulate matter (dust, PM₁₀ and PM_{2.5}), heavy metals, PAH and odorous substances emitted from the processing of minerals, soils and construction materials.

2d Mitigation Measures: in particular confirmation was sought that appropriate physical and management controls have been included in the proposed facilities.

3 Emissions of Substances Generated by Proposed On-Site Operational Activities

3a Emissions to freshwater environments: the risk and consequences of exposure to pollutants through the food chain or drinking water and the risk of degradation of the wider environment, from the processing of IBA and C&D materials.

3b Noise emissions: the potential for noise from onsite activities to adversely affect the amenity, or sleep of local residents

3c Emissions to atmosphere: the risk and consequences of exposure to pollutants including particulate matter (dust, PM₁₀ and PM_{2.5}), heavy metals, PAH and odorous substances emitted from the processing of IBA and C&D materials.

3d Mitigation Measures: in particular confirmation was sought that appropriate physical and management controls have been included in the proposed facilities

4 Public Health and Well Being

4a Access to information: in particular a need for more detailed information about the nature of IBA and associated regulation of its classification, transfer and treatment was identified.

4b Health inequalities and vulnerable groups: perception of inequalities within local community compared to wider population. In particular, emotional health and well-being, respiratory and circulatory diseases and the underlying health conditions for vulnerable groups and the wider community.

4c Sustainability: Broad issue of sustainability was raised but no specific points made.

4d Community cohesion: different communities identified within study area and level of engagement of these communities in planning process identified as not being comparable.

4e Financial concerns: the potential effect of the development on the prices of individual properties. The wider effect of continued industrial land uses was raised in the context of emerging aspirations within the community to move towards a more tourism/commuter based society.

4f Effectiveness of regulatory controls: There is a perception amongst parts of the community that they have no control over events, with associated feelings of helplessness leading to apathy, negativity and disenfranchisement. Confidence in the effectiveness of regulatory controls is an issue for some.

Assessment Scenario

The Whitecleave Quarry site currently has existing permissions to undertake quarrying operations until 2042, although in recent years there has only been limited activity on the site. Local residents have expressed concerns that recent activity at the site might not be consistent with existing permissions, although this view is not supported by the relevant regulatory authorities. To specifically address this issue, the effects on health of

the proposed development are considered against a baseline scenarios based on the current situation as would be observed visiting the study area at this time.

Health Profile

A mini-health profile of Buckfastleigh was compiled using data and reports relevant to inequalities in health. The profile is an integral part of the baseline information for the HIA and can be found in Appendix 2.

Literature review

A brief literature review of the evidence of impacts on health from IBA was undertaken (Appendix 3) and was used to inform the rapid HIA.

This HIA study was undertaken using a desk-top approach; extensive public participation was not possible because of time constraints. Public concerns were therefore identified by a thematic analysis of letters from the public responding to the local authority concerning the planning application and through resident’s representation on the Steering Group.

1.3.1 Issues of Public Concern

Planning Applications afford members of the public an opportunity to raise any issues of concern or objection to the planning proposal. These objections and concerns are put into the public domain as part of the overall consultation process. In order to determine public concern in relation to the planning proposal the letters of representation to the County Planning Authority were reviewed by the Planning Officer to provide a count of objections and concerns to develop themes.

Method to identify areas of Public Concern

A total of 174 letters (October 2011) to the local authority (in response to the Planning Application) from residents in Buckfastleigh and the surrounding area were analysed for themes. Letters and objections continue to be submitted but the steering group took the view that the themes had reached saturation. All local letters were included in the analysis. Corporate concerns were excluded. Of the 174 different people who raised concerns, all had a full postal address for mapping origin of concern (Figure 2). When multiple letters were identified from the same residents, additional concerns were pooled with the original letter of representation to avoid duplication.

Figure 2 shows that majority of residents’ letters of objection or concern originated from the areas of adjacent to the site or along the transport route; a number of concerns were raised by residents in other areas who would be less directly affected by the proposal; these include residents in areas such as the town centre.

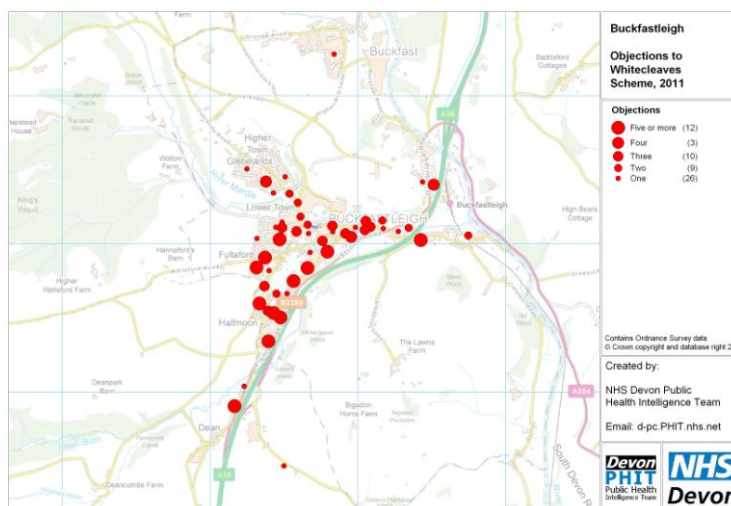


Figure 2: Map of Buckfastleigh showing origin of residents objecting to the proposal, based on Postcode and weighted to represent number of concerned residents.

1.3.2 Recurrent themes of public expressed concerns – a summary

The effect of site traffic

Of the 174 residents raising concerns to the proposal the issues of the increase in traffic and heavy good vehicles was a common theme. Residents were concerned that there would be extra congestion and more generally about the presence of traffic (n=155).

‘I object because of an increase in heavy traffic to and from the site and increased pollution caused by this extra traffic. This is of personal importance to myself due to being asthmatic’

Pollution (short and long term)

109 residents raised concerns about the impact of noise, 123 residents raised concerns about dust as a consequence of the proposed development. Some residents expressed concern that any additional air pollution would exacerbate asthmatic and allergic conditions of themselves and their children, or lead to worsening of respiratory disease. 10 residents were concerned about the odour that would be caused by the facility and its activity. Blasting was raised by 15 residents.

A number of residents expressed more general concerns regarding pollution of the local environment to humans, animals, local water quality and landscape; some residents expressed fear of the effect of the additional pollution on their locally grown crops.

42 raised concerns about toxic ash.

Many residents raised health concerns (n=86) many reporting individual health vulnerabilities particularly relating to respiratory conditions.

‘I am concerned about the air quality levels in the town both to myself and my family’
‘My son also suffers from very bad asthma and dust and fumes from this is a major concern’

Choice of site location

6 residents raised concerns about distance from Plymouth and 20 that the proposal was against the DWLP. Proximity to housing, childcare, schools, care homes, and the playground and sports field were raised. The visual impact of the proposed facility on the landscape was raised by 27 residents with residents concerned that proposed facility would degrade views from the National Park. 109 residents felt that the noise from the plant and traffic would impact on local residents.

‘It will undo all the hard work put into regeneration of Buckfastleigh’
‘Please find somewhere else to locate it away from built up areas’

Cumulative risk

Residents were concerned with cumulative risk of extending the life of an already industrial area. This risk was expressed in terms of personal safety, as well as the cumulative environmental impact and potential adverse impacts on the growth of local leisure and tourism business.

‘This is an area which already suffers from A38 proximity’

Economic impact

38 Residents raised concerns about the impact of the development on house prices in the future. 98 raised concerns about the impact on tourism businesses.

'Buckfastleigh is one of the gateways to the national Park'

'It will have a dramatic effect on the monetary value of our home'

'The town has made extra successful strides to become a recognised tourist centre in recent years....and this development puts all this in jeopardy'

Public engagement and consultation

Although the Applicant (MVV) have engaged in consultation with the local community many residents raised concern that there has not been sufficient consultation, or that they feel that insufficient information has been provided by local authorities this was expressed through Buckfastleigh Community Forum and the Town Council.

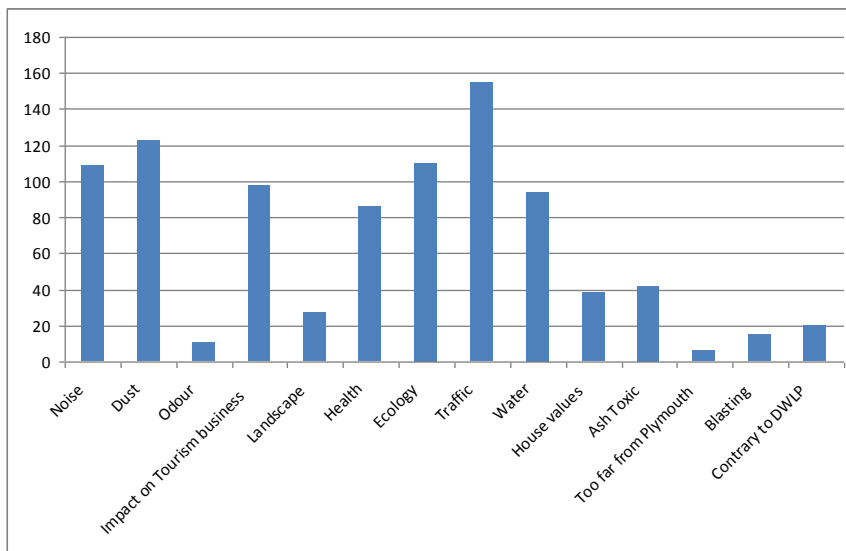
38 letters supported Buckfastleigh Community Forum and subsequent to the analysis of the letters a number of forms were received by the planning authority but at this point themes had reached saturation.

'I have no confidence that controls will be implemented or controlled at the site'

'At a public meeting I attended, no firm estimate could be given as regards the range and impact of these environmental changes'

Figure 3 shows the range of concerns of residents.

Figure 3: Concerns highlighted by residents for the planning application (up to October 2011)



Appendix 2 maps objection themes by location to demonstrate the patterns of concern.

2 The Health Impacts

2.1 Direct Influences

Direct Influence	✓	X	Neutral
Housing & Neighbourhood Amenity The proposal has the potential to impact upon existing housing and neighbourhood amenity.		X	
Access to Public Services The proposal does not impact on access to public services and there are no community facilities within the proposal, consideration should be given community offer			✓
Opportunities for Physical Activity The proposal could have a positive impact on workers on site who will be encouraged to walk and cycle to work The proposal could have a negative impact on physical activity for local cyclists and visitors unless mitigation is in place	✓	X	
Air Quality and Noise The proposal will be an additional source of noise, dust and air pollution During construction there will be vibration effects in addition to the above		X	
Accessibility and Transport The proposal is accessible for people with mobility problems. The proposal is accessible on foot and by public transport	✓		

2.2 Indirect Influences

Indirect Influence	✓	X	Neutral
Crime Reduction and Community Safety The proposal suggests enhanced security measures			✓
Access to Healthy Food The proposal does not evidence access to healthy food The proposal has the potential to impact on local food growing and businesses		X	
Access to Work The proposal creates jobs The proposal provides opportunities for local businesses	✓		
Social Cohesion and Social Capital The proposal has an impact on emotional health and well-being and raises public concerns. The proposal does not include measures to impact positively on health inequalities The proposal has a negative impact on perceptions of the area as a tourism destination The proposal has the potential to impact negatively on local businesses		X	
Resource Minimisation The proposal is an alternative land use The proposal does not encourage people to recycle The proposal makes use of recycled products and reduces landfill The proposal incorporates sustainable design and construction	✓		
Climate Change The proposal does not incorporate renewable energy The proposal does not encourage sustainable transport The proposal has been flood risk assessed The proposal incorporates sustainable drainage systems to deal with surface run-off The proposal incorporates measures to maintain and enhance biodiversity			✓

3 Discussion

3.1 Identifying the Impacts of the Whitecleave Quarry proposal

The qualitative analysis of public responses to the planning application for the MVV proposal identified the following areas of local public concern;

- Impact of additional site traffic on congestion
- Proximity of development to existing homes and vulnerable sites
- Air pollution and effects on health
- Noise
- General pollution
- Long term effects on health
- The perceived risk associated with IBA
- Traffic exhaust emissions
- Visual impact
- Lack of public engagement and impact on emotional health and well-being
- Odour
- Impact on local vulnerable populations and deprivation
- House prices and economic impact
- Risk to safety from additional site traffic
- Effect on local food sources

There is considerable overlap in the issues raised by the public and the associated sources and pathways that relate to impacts on health which are considered collectively under a smaller number of themes. It is against this background information and the literature review findings and evidence submitted with the application that the following judgements have been made by the HIA Steering Group in assessing the potential impacts of the proposal.

3.2 Direct Influences

Housing and Neighbourhood Amenity

Buckfastleigh does not have a current Parish or Town plan. Previous consultations with residents (unpublished 2006) demonstrated the importance of access to services and transport and a desire for an improved retail offer, an unpublished parish planning process in 2008 hi-lighted the concerns regarding traffic noise, at that time leisure and tourism were important priorities for the area. Access to the A38 was also important to residents.

Dartmoor National Park consulted on their Development Management and Development Delivery Plan in July 2011. In the draft: Buckfastleigh's vision looks to: sustain and improve the range of local shops and services for the community and the tourist economy, provide opportunities for high quality housing development and conserve the town's distinctive heritage as a mill town.

From the consultation several considered that there was a need to improve tourism in the town, and were concerned the impact development at Whitecleave might have on tourism interests. Several considered that the one way system does not work effectively in terms of promoting tourist access to the town, and that it should be reversed. Most of the responses related to housing provision, with the issue of creating a dormitory town.

The amenity impacts include increased traffic flow and dust, the visual impact of the proposal and impact on green space and landscape and potential odour. The proposal does not provide sufficient enhancements to local amenity. The removal of the spur to allow the development is a source of public

concern and will have a visual impact and potentially increase noise and dust assurance is required that the health impacts will be minimised.

Access to Public Services

The proposal does not have community facilities or facilitate shared public use; the proposal removes the potential to create local amenity space from the site.

To mitigate the impact the proposal should provide a community enhancement offer to Buckfastleigh.

Opportunities for Physical Activity

The proposal will allow employees to walk and cycle to work and showers are provided. The concerns regarding traffic increases and movement of HGV's could have a negative impact on physical activity if use of the B3380 does not facilitate safe walking and cycling routes. The road currently experiences very low accident numbers but traffic remains the highest concern of local residents.

To enhance potential positive health impacts and mitigate negative impact of potential accidents due to increased HGV movement's consideration of the potential safety improvements raised in the Highways assessment should be considered.

Air Quality and Noise and Vibration

The Environmental Statement identifies the deterioration in air quality due to PM₁₀ and dust. The impacts are identified assuming no dust suppression and assume no increase in traffic above existing permissions. The assumption is that the levels will not exceed air quality standards. The conclusion is that the dust impact will be nuisance dust which is not normally a general risk to human health. It is difficult to model and predict fugitive dust potential.

EH have reviewed the assumptions and have made a response to the planning application at the date of publication a final response had not been received and site visits to similar plants are proposed.

The noise and vibration assessment looked at both the construction and operational phases the outcome was that the impact would be negligible. Mitigation was required to the crusher and to mitigate impact on one receptor, cladding to the building was required in mitigation; the impact of road noise was assessed as negligible.

Dust and noise impacts were the two largest concerns of residents after traffic.

EH have reviewed the assumptions and have made a response to the planning application at the date of publication a final response had not been received and site visits to similar plants are proposed.

The hazardous/non-hazardous nature of the IBA has been evidenced as a concern of residents. The proposal will only be permitted to process non-hazardous waste however the classification has been a matter of concern to residents. The Health Protection Agency incinerator position statement states:

'Provided that solid ash residues and cooling water are handled and disposed of appropriately, atmospheric pollution remain the only significant route of exposure to people' (HPA 2010)

A literature review of the risk associated with IBA was undertaken (Appendix 3) concluding that there was limited evidence relating to this issue and concluded that a cautionary approach within a risk management framework should be adopted when managing IBA.

The EA would require a sampling regime at the EfW plant to categorise the waste as hazardous or non-hazardous. The sampling protocol would be deemed statistically valid.

To mitigate against the potential impact from exposure to risks from IBA details of complaints, monitoring and evidence in relation to similar plants in the UK should be used to inform required precautions.

A cautionary approach should be adopted when determining the application and setting conditions relating to the moving, processing and handling and storing IBA.

To mitigate against deterioration in air quality assurance is required that the air quality and dust suppression measures and noise and vibration mitigation will reduce the negative health impact.

Accessibility and Transport

The proposal has addressed impact on mobility impaired and local transport is accessible from adjacent to the site or in town. The applicant is producing a workplace travel plan.

By design the proposal does not reduce care use as HGV's will travel onto and off-site as part of the process. The Highways report does suggest a number of measures to improve traffic management. Access to the site is along the gateway to Buckfastleigh and should enhance the tourist destination.

The workplace travel plan should enhance positive health impacts.

The Highways report should be considered to mitigate negative health impacts and enhance positive health impacts for other road and footpath users.

3.3 Indirect Influences

Crime Reduction and Community Safety

The proposal has considered security measures and should evidence an independent assessment of site security proposals.

The applicant has a Statement of Community Involvement and has undertaken a number of exercises to engage with local residents. Evidence from correspondence and the HIA process has identified that the process has not been effective in addressing public concerns particularly relating to the 'toxicity' of the IBA which has been quoted on many occasions.

Improved risk communication is essential to allay public concerns regarding risks to health. The depth of concerns should not be underestimated.

Access to Healthy Food

The proposal does not positively impact on healthy food choices, the mobile food vendor should be sourced to provide a healthy food offer to workers. Public concerns have been raised regarding the impact of dust and particulate matter contaminating local food growing and impacting local food producers promoting an organic local product.

The air quality assessment should address the risk of contamination to local foodstuffs

Access to Work

The proposal creates up to 12 jobs locally with some opportunity for local businesses and suppliers, this needs to be balanced with the wider impact on the local economy, a number of local businesses have expressed concern regarding the impact on local businesses.

The proposal needs to demonstrate a positive impact on the local economy.

Social Cohesion and Social Capital

The proposal has provided an opportunity for local residents to interact and raise concerns about the future of Buckfastleigh. The development does not provide opportunities for social interaction.

The health profile (Appendix 2) evidences that the health of the population in Buckfastleigh is comparatively good. The more deprived area is above the town centre further from the development. The area is not statistically higher than the rest of Devon in the main disease areas. Respiratory and hospital admissions are higher in the most deprived area. The proposal does not positively impact on reducing health inequalities. The public have raised concerns that Buckfastleigh is perceived as a 'dumping ground.'

The proposal does not provide community facilities or increase volunteering. There is a perception that the use of the B3380 will increase severance between those above and below the road. Highways mitigation could reduce severance.

There is public concern regarding the impact on house prices and tourism of the area, the ES concludes that the impact on tourism is not significant.

The proposal should consider the measures that can be taken to enhance the local environment, social environment and social capital in the town. Consideration should be given to wider community enhancements.

Resource Minimisation

The proposal is perceived to have some benefits over quarry use but there are local views that the site could be put to other uses. The site does incorporate recycling measures however the site does not encourage local recycling and disposes of waste that has been incinerated rather than recycled. Overall the site is recycling waste by-products. The site does not have a BREEAM assessment for sustainable construction.

The removal of the rock spur has caused concern for local residents due to its visual, biodiversity and environmental impacts.

The development should demonstrate its own commitment to waste management.

The appropriate agencies have been involved in the application process and participated in the HIA.

A BREEAM assessment should be undertaken by the applicant.

Climate Change

The site does not incorporate renewable energy. The site addresses workers sustainable approach to transport but does not provide mitigation against the impact from increased HGV use and distance travelled.

Concerns have been raised by residents regarding ecology and the speed at which biodiversity is rebalanced with a net negative impact. Concern has been raised regarding the removal of the spur and impact on biodiversity.

The proposal has undertaken a flood risk assessment and proposals for sustainable drainage. The planning decision must address adequacy.

Reassurance is required from the EA regarding the impact on biodiversity and adequacy of the flood risk assessment and drainage proposals which should be clearly communicated to residents.

General

Some issues not addressed in the themes above include the risk to local water supplies from operation of the site. The environmental permit will address the pathway to water supplies however residents have raised concerns regarding leachate from the development contaminating local water supplies.

The mitigation to prevent contamination of local water supplies must be clearly demonstrated.

Public anxiety regarding the nature of the development in a residential, tourist area has been expressed through objections letters and debate at the local community forum. The impact on emotional health and well-being has been demonstrated and improved risk communication and public reassurance that all potential health risks will be mitigated and positive impacts enhanced should seek to allay residents' concerns.

Public reassurance of mitigating measures must be assured through improved communication.

4 Study Limitations

The study is a rapid prospective and desktop health impact assessment; timing and staffing resources did not permit a comprehensive HIA (see Ison 2000), to be undertaken and it is based on the HIA judgements of the senior public health staff and a multi-professional and stakeholder Steering Group.

There are limitations to the rapid thematic analysis of resident's letters of representation, as this was only a sample of the local populations view. Those less able or inclined to convey their opinions in writing may not be represented in this analysis. More in depth 1:1 or focus group interviews would have been advised to capture this detail of qualitative analysis and include harder-to-reach groups concerns (Green and Thorogood, 2004). Additionally only those letters made publicly available through Devon County Council were analysed. Other letters of representation may have been submitted to local councillors and/or MVV. This could have resulted in under-representation of resident views in the analysis. Due to the timescales involved analysis was brief and the level of depth limited, this means that less frequent concerns were omitted from the overall analysis.

The HIA has included a mix of literature based evidence and perceptions and fears from local residents, the impacts of which are more difficult to evidence and illustrate a number of areas where reassurance rather than controls may be required.

The HIA had limited information on IBA as the EfW plant has not been commissioned and many studies were not relevant, future HIA will have the benefit of increased knowledge base and research. In this case it has been recommended that a cautionary approach is taken.

5 Concluding Remarks

It is the policy of Public Health in Devon to conduct a HIA on large proposed developments or those which cause widespread public concern in order to encourage debate and to inform decision making on projects and policies that might affect people's health. In this case the proposal was small but the public perception of health impacts was high.

The advantage of conducting a prospective HIA is that it provides an opportunity to identify potential impacts prior to a development, making it possible to influence plans before they are implemented. It would have been preferable to have conducted a participative HA, but this was not possible within the time available. Instead, consideration has been given to the full range of documents relating to the proposal that are available in the public domain. This HIA report has been scrutinised and approved by the multi-professional Steering Group.

As a result of this exercise, the Primary Care Trust has identified a number of concerns which it is believed can either be dealt with by mitigation, or controlled by the application of appropriate planning conditions.

Those concerns that it is believed can be dealt with by mitigation are:

Housing and Neighbourhood Amenity

The proposal does not provide sufficient enhancements to local amenity. The removal of the spur to allow the development is a source of public concern and will have a visual impact and potentially increase noise and dust assurance is required that the health impacts will be minimised.

Access to Public Services

To mitigate the impact the proposal should provide a community enhancement offer to Buckfastleigh.

Opportunities for Physical Activity

To enhance potential positive health impact and mitigate negative impact of potential accidents due to increased HGV movement's consideration of the potential safety improvements raised in the Highways assessment should be considered.

Air Quality Noise and Vibration

To mitigate against the potential impact from exposure to risks from IBA details of complaints, monitoring and evidence in relation to similar plants in the UK should be used to inform required precautions.

A cautionary approach should be adopted when determining the application and deciding planning controls for moving, processing and handling and storing IBA.

To mitigate against deterioration in air quality assurance is required that the air quality and dust suppression measures and noise and vibration mitigation will reduce the negative health impact.

Accessibility and Transport

The workplace travel plan should enhance positive health impacts.

The travel statement should adequately minimise the impact from HGV use.

The Highways report should be considered to mitigate negative health impacts and enhance positive health impacts for other road and footpath users.

Crime Reduction and Community Safety

Improved risk communication is essential to allay public concerns regarding risks to health. The depth of concerns should not be underestimated.

Access to Healthy Food

The air quality assessment should consider the risk of contamination to local foodstuffs

Access to Work

The proposal needs to demonstrate a positive impact on the local economy.

Social Cohesion and Social Capital

The proposal should consider the measures that can be taken to enhance the local environment, social environment and social capital in the town. Consideration should be given to wider community enhancements.

Resource Minimisation

A BREEAM assessment should be undertaken by the applicant.

Climate Change

Reassurance is required regarding the impact on biodiversity and adequacy of the flood risk assessment and drainage proposals.

General

The mitigation to prevent contamination of local water supplies must be clearly demonstrated.

Public reassurance of mitigating measures must be assured through improved communication.

6 References

- Abbott J et al. (2003), Environmental and Health Risks Associated with the Use of Processed Incinerator Bottom Ash in Road Construction, Report ref AEAT/ENV/R/0716, BREWEB, October 2003.
- Bell A. (2002), *Solid Residues from Municipal Waste Incinerators in England and Wales* –A report on an investigation by the Environment Agency. Environment Agency.
- Dartmoor National Park Authority (2011) Development Management and Delivery Development Plan Document Consultation Draft July 2011
- Chen H.L., Chen I.J., Chia T.P. (2010), Occupational Exposure and DNA strand breakage of workers in bottom ash recovery and fly ash treatment plants. *Journal of Hazardous Materials*. 174, pp. 23-27.
- Cresswell D. (2007), Characterisation of Mineral Wastes, Resources and Processing technologies – Integrated waste management for the production of construction material, Case Study: Municipal Waste Incinerator Ash in manufactured Aggregate, MinRes Report WRT 177/WR0115,
- Environment Agency (2010), Guidance H1 Environmental Risk Assessment – Overview V2.0, Environment Agency, April 2010
- Environment Agency (2011), Guidance – HWR01 What is a Hazardous Waste? A guide to Hazardous Waste Regulations, Environment Agency, April 2011.
- Environment Agency (2011), Guidance - WM2 Hazardous waste: Interpretation of the definition and classification of hazardous waste, Environment Agency 2011.
- Enviros Consulting Ltd, University of Birmingham, et al. (2004). Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes.
- Environmental Services Association (ESA) (2010), A Sampling and Testing Protocol For The Assessment of Hazard Status of Incinerator Bottom Ash, WRc Report Reference UC 8052.9, WRc October 2010.
- Gatrell, A. C. (2002). *Geographies of Health: an introduction*. Cornwall, Blakwell Publishers.
- Green J and Thorogood N (2004). *Qualitative Methods for Health Research*. London: SAGE
- Giusti, L. (2009). "A review of waste management practices and their impact on human health." *Waste Management* 29(8): 2227-2239.
- Health Protection Agency (2010) *The Impact on Health of Emissions to Air from Municipal Waste incinerators – Advice from the Health Protection Agency*
- HM Government (2005a), *The Hazardous Waste (England and Wales) Regulations 2005*
- HM Government (2005b), *The List of Waste Regulations (England) 2005*
- Infrastructure Planning Commission (2011), *The Planning Act 2008, Rookery South Resource Recovery Facility Order, Panel's Decision and Statement of Reasons, IPC Reference EN0100011, Dated 13th October 2011.*
- Liu, H.H., Shih T.S., Chen I.J., Chen H.L. (2008), Lipid Peroxidation and Oxidative Status Compared in Workers at a Bottom Ash Recovery Plant and Fly Ash Treatment Plants. *Journal of Occupational Health*. 50: pp. 492-497.
- Martuzzi M., Tickner J.A. (2004), *The precautionary principle: protecting public health, the environment and the future of our children*. World Health Organisation.
- Maynard R. et al, (2010), *The Impact on Health of Emissions to Air from Municipal Waste Incinerators, Advice from the Health Protection Agency, Health Protection Agency, February 2010.*

- Marmot Review Team (2011). "The Health Impacts of Cold Homes and Fuel Poverty". Marmot Review Team, Department of Epidemiology and Public Health, University College London.
- MVV Environment Devonport Limited (2011), "Whitecleave Quarry: Environmental Statement". Volume 1 Main Text
- MVV Environment Devonport Limited (2011), "Whitecleave Quarry: Environmental Statement". Volume 2 Figures
- MVV Environment Devonport Limited (2011), "Whitecleave Quarry: Environmental Statement". Volume 3 Appendices
- MVV Environment Devonport Limited (2011), "Whitecleave Quarry: Environmental Statement". Volume 4 Non Technical Summary
- MVV Environment Devonport Limited (2011), "Whitecleave Quarry: Planning Application Support Statement".
- MVV Environment Devonport Limited (2011), Whitecleave Quarry: Transport Statement
- Public Health Plymouth (2011) A Rapid Prospective 'desk-top' Health Impact Assessment.
- Stern A.H., Munshi A.A., Goodman A.K. (1989), Potential exposure levels and health effects of Neighbourhood Exposure to a Municipal Incinerator Bottom Ash. *Archives of Environmental Health*. 44, 1, pp. 40-48.
- University of Birmingham, ENVIROS. 2004. *Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes*. Department of Environment, Food and Rural Affairs.
- World Health Organisation (1946) The World Health Organisation Constitution. Geneva: WHO
- World Health Organisation (1999) Health Impact Assessment: Gothenburg consensus paper (December 1999). Europe: WHO.
- World Health Organization Regional Office for Europe (2007). Population health and waste management: scientific data and policy options. Report of a WHO workshop Rome, Italy, 29–30 March 2007, World Health Organization Regional Office for Europe.
- Xiao, Y., Oorsprong M., Yang Y., Voncken J.H.L. (2008), Vitrification of bottom ash from a municipal solid waste incinerator. *Waste Management*. 28, pp. 1020-1026.

Appendix 1: Healthy Urban Development Unit Checklist

1. Direct Influences				
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
1.1 Housing and Neighbourhood Amenity				
Does the proposal have the potential to impact upon existing housing amenity?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	<p>The Environmental Statement identifies the potential for dust impacts on amenity if appropriate mitigation is not adopted.</p> <p>The Environmental Statement identifies an increase in traffic flows above existing levels.</p>	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal have the potential to impact upon existing visual amenity?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement identifies the potential impact on visual amenity from the proposed development. The Environmental Statement reported a significant visual impact from loss of woodland although <i>mitigation measures</i> would be put in place to reduce any impact.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal protect and enhance green space?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement includes measures to protect and <i>enhance green space</i> .	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal provide high quality amenity space?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	The proposed development will not be open to the public and the site is not currently open to the public.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Does the proposal have the potential to impact upon existing landscape of the area?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	<p>The Environmental Statement identifies the potential impact on the visual impact on landscape character and visual amenity of the proposed development.</p> <p>Residents have raised concerns regarding the removal of the rock spur</p>	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal have the potential to impact upon the existing Odour climate in the area?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement assesses Odour in the Air Quality chapter and identifies mitigation measures to reduce any generation of odour.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.

			<input type="checkbox"/> +ve	
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			20%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.

Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
1.2 Access to Public Services				
Does the proposal facilitate multiple building uses for different public services?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	The proposed development will not be open to the public and the site is not currently open to the public.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Are community facilities provided within the proposal?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	The proposed development will not be open to the public and the site is not currently open to the public.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			0%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.

Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
1.3 Opportunities for Physical Activity				
Does the proposal prioritise and encourage walking (e.g. Home Zones, walking plans, wide and safe streets etc.)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The transport chapter within the Environmental Statement suggests measures to improve pedestrian access to the site (for employees and visitors) to be addressed further in the Work Place Travel Plan	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed. Mitigation is considered necessary to protect cyclists and pedestrians.
Does the proposal prioritise and encourage cycling (e.g. cycle lanes, secure cycle stands, office shower facilities)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The transport chapter within the Environmental Statement suggests measures to improve access to the site via cycling, which is to be addressed further in the Work Place Travel Plan	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed. The negative impact on cycling by residents and visitors must be addressed.
Does the proposal ensure that buildings are designed to maximise physical activity (e.g. positioning of stairwells, shower rooms, secure cycle parking)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	Secure cycle parking and showers are provided.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	
Does the proposal address open space and natural space deficiency for the Plant Employees?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a		<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			50%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
1.4 Air Quality and Noise				
Does the proposal minimise construction impacts (including dust and noise)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement identifies the potential for construction dust impacts on amenity and the appropriate mitigation measures to be adopted.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.

Blasting noise and vibration (amenity and distraction).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The effect of noise from blasting during the construction phase and mitigation measures are discussed as part of the overall construction noise levels in the Noise and Vibration Chapter of the Environmental Statement.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Blasting vibration (amenity and structural effects).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The effect of vibration and air overpressure from blasting during the construction phase and mitigation measures are discussed in the Noise and Vibration Chapter of the Environmental Statement.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal minimise air pollution?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement identifies the potential impact on air quality and details the appropriate mitigation measures to be adopted to minimise any impact.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal minimise noise pollution?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement identifies the potential impact on noise levels and details the appropriate mitigation measures to be adopted to minimise any impact.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed. N
Does the proposal promote good air quality (through for example planting of trees or provision of green/brown roofs etc)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement identifies mitigation measures to improve air quality at the site.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			0%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
1.5 Accessibility and Transport				
Is the proposal including buildings, accessible for people with mobility problems or disability impairment?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The proposed development will not be open to the public; however, access to the existing site office building and the proposed IBA Processing Building will be at ground level.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	

Is the proposal easily accessible and well served by public transport?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The transport chapter within the Environmental Statement identifies access to the site (for employees and visitors) by public transport, which will be addressed further in the Work Place Travel Plan.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the workplace travel plan will promote sustainable travel to work.
Does the proposal minimise the need to travel especially by car (e.g. by cutting down trips as result of good access or incorporation of local facilities)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The transport chapter within the Environmental Statement identifies access to the site (for employees and visitors), which will be addressed further in the Work Place Travel Plan that is under development.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal incorporate measures to assist people who are car dependent (e.g. disabled Blue Badge holders etc)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	Disabled parking to be included.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	
Does the proposal incorporate traffic calming measures aimed at reducing and minimising road traffic injuries (e.g. use of Home Zones and 30 mph limit)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	The transport chapter within the Environmental Statement assess accidents and safety in the area surrounding the site. The Highways report suggests some mitigation.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			60%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.

2. Indirect Influences				
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
2.1 Crime Reduction and Community Safety				
Has the proposal 'designed out crime'?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a <input type="checkbox"/> D/k	Yes security measures are incorporated to discourage crime on site.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	Evidence of security provision needs to be provided
Has the local community been engaged and consulted with regards to the proposal?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	MVV is committed to developing and sustaining the Local Liaison Committee. Planning Application Supporting Statement includes Statement of Community Involvement. An Open Day was held on 5 th November 2011). There were 162	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve	Proposals for future engagement with communities must be provided.

		visitors and 25 feedback forms were filled in.	<input type="checkbox"/> +ve	
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			0%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
2.2 Access to Healthy Food				
Does the proposal facilitate local access to healthy food supply?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	It is intended to arrange for a mobile food delivery company to visit site to provide lunch/snack items to reduce the number of individual car trips (from PASS Transport Assessment). Local food producers have raised potential negative impact	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that access to healthy food will be provided.
Does the proposal avoid food being monopolised locally by a single provider?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	It is intended to arrange for a mobile food delivery company to visit site to provide lunch/snack items to reduce the number of individual car trips (from PASS Transport Assessment).	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			0%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
2.3 Access to Work				
Does the proposal provide access to employment and training opportunities?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	New employment opportunities at both the IBA and MRF facilities. Details are provided in the Planning Application Supporting Statement	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide evidence of local benefit with regard to local employment and training
Does the proposal provide diversity in jobs for local residents?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	Range of employment opportunities provided within the facility. Details are provided in the Planning Application Supporting Statement	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve	The applicant needs to provide evidence of local benefit with regard to local employment and training

			<input checked="" type="checkbox"/> +ve	
Does the proposal provide childcare facilities?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/a		<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Does the proposal provide opportunities for local businesses?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	Potentially supply of materials during construction phase. Food provision and other supply opportunities during operational phase.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The negative impact on wider businesses is addressed in other sections
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			100%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
2.4 Social Cohesion and Social Capital				
Does the proposal contribute towards opportunities for social interaction?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a		<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Has the proposal addressed local inequalities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	Health inequalities exist between the northern and southern/surrounding Buckfastleigh, the proposal does not reduce health inequalities. Perception of residents that will make it worse. See appendix 3	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to consider the impact on local health inequalities
Does the proposal incorporate community facilities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	The proposed development will not be open to the public and the site is not currently open to the public.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Does the proposal provide voluntary sector opportunities?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a		<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve	

			<input type="checkbox"/> +ve	
Does the proposal avoid community severance (by major roads, large commercial schemes etc)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The transport chapter within the Environmental Statement assess community severance. The transport authority is currently reviewing this issue on behalf of the planning officer.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal impact on House values?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a	Not directly mentioned in the Environmental Statement, but effect on amenity is discussed in section 1.1 of this table. Use of best practicable means for construction elements. Longer term operational impacts have been assessed and mitigation measures included where appropriate at the detailed design are intended to minimise loss of amenity (e.g. transport, landscape, air quality and noise and vibration).	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Does the proposal impact on tourism in the area?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement has a Chapter dedicated to tourism and socioeconomic factors, considering the effects on many aspects of tourism and the local economy. The Environmental Statement identifies that the development does not present any significant threat to the future viability of the tourism sector in Buckfastleigh, Dartmoor National Park and the English Riviera or other tourism operations in the surrounding area.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			0%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
2.5 Resource Minimisation				
Does the proposal make best use of existing land?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement discusses the sites location and any alternatives to the proposed development considered.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.

Does the proposal encourage recycling (including building materials)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement identifies the recycling and re use of materials at the site.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal incorporate sustainable design and construction?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement presents the design and construction of the facility.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Are waste management facilities incorporated within the proposal?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The proposal is for IBA and MRF facilities. The MVV proposal does not detail arrangements for the management of waste generated on site although there is a legal duty of care to manage such waste.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input type="checkbox"/> -ve <input checked="" type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Have Environmental Health, Environment Agency or Health Protection Agency been informed about potential hazards related to the proposal?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement identifies the need for an Environmental Permit at the site.	<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			60%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.
Issue	Included in proposal	Details and evidence	Potential health impact, relative to baseline	Action or mitigation required
2.6 Climate Change				
Does the proposal incorporate renewable energy?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/a		<input type="checkbox"/> n/a <input checked="" type="checkbox"/> no diff <input type="checkbox"/> -ve <input type="checkbox"/> +ve	
Does the proposal provide a sustainable approach to transport?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The transport chapter within the Environmental Statement identifies access to the site (for employees and visitors), which will be addressed further in the Work Place Travel Plan that is under development.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.

Does the proposal maintain or enhance biodiversity?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement includes measures to maintain and enhance biodiversity.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Has the proposal been flood risk assessed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement includes a Flood risk assessment (Chapter 10).	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Does the proposal incorporate sustainable drainage systems to safely deal with surface runoff?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/a	The Environmental Statement includes within it measures on drainage systems and dealing with increased surface water run-off.	<input type="checkbox"/> n/a <input type="checkbox"/> no diff <input checked="" type="checkbox"/> -ve <input type="checkbox"/> +ve	The applicant needs to provide assurance that the impacts can be effectively mitigated using the controls proposed.
Overall positive impacts for this category (Add up the total number of positive impacts and divide by the number of relevant issues above and multiply by 100, this gives a percentage outcome)			0%	Outcomes above 50 percent equal a positive outcome for this category, while that below equals a negative outcome for health. This informs the tick box Summary Table outlined in Stage 3 of the Checklist.

Feedback: A key purpose of Watch Out for Health is as a tool to improve policies, projects and planning applications so as to not only better consider health but also help realise actual positive outcomes from implementation. Going through the Checklist at Stage 2 should enable you to come up with an appreciation and assessment of the extent to which health has been covered in a plan, project or proposal. A simple overview can be gained by using Table 3 below in relation to the two main sections (i.e. direct and indirect influences) analysed.

Table 3: Summary overview

1. Direct influences			
	Potential health impact		
	Positive (✓)	Negative (✓)	N/A/ Neutral (✓)
1.1 Housing & Neighbourhood		(✓)	
1.2 Access to Public Services			(✓)
1.3 Opportunities for Physical Activities			(✓)
1.4 Air Quality and Noise		(✓)	
1.5 Accessibility and Transport	(✓)		
Overall Impact		(✓)	

2. Indirect influences			
	Potential health impact		
	Positive (✓)	Negative (✓)	N/A/ Neutral (✓)
2.1 Crime Reduction and Community Safety			(✓)
2.2 Access to Healthy Food		(✓)	
2.3 Access to Work	(✓)		
2.4 Social Cohesion and Social Capital		(✓)	
2.5 Resource Minimisation	(✓)		
2.6 Climate Change		(✓)	
Overall Impact		(✓)	

Appendix 2

Health Profile of Buckfastleigh and Objections Maps (Summary)

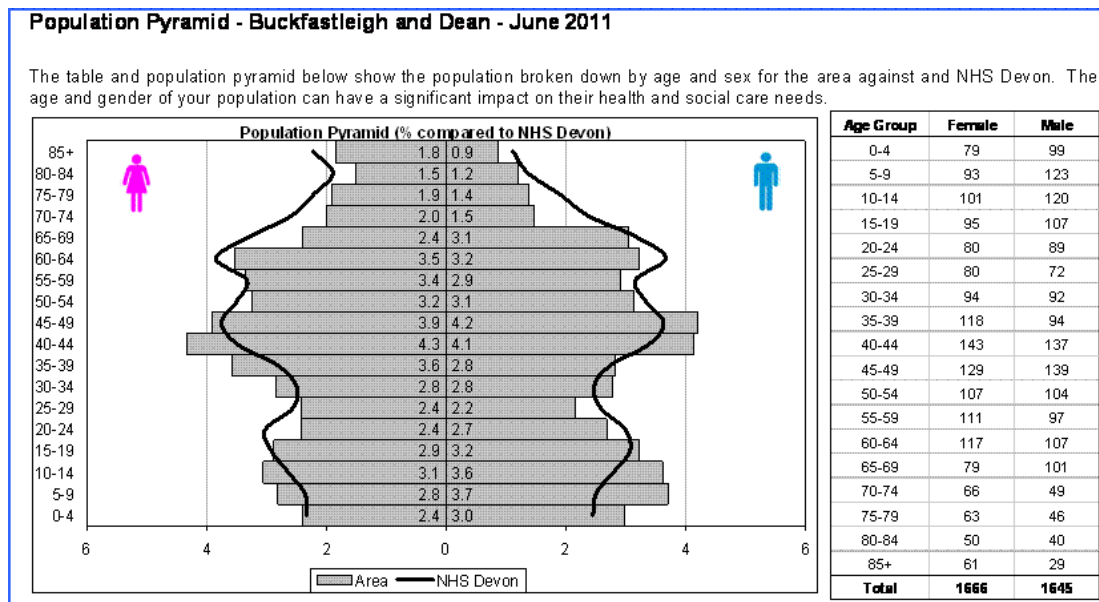
“Health Profiles” are the Department of Health’s programme to improve availability and accessibility to health and health-related information in England. The profiles give a snapshot overview of health for each local authority in England. Health Profiles are produced annually by the Public Health Observatories in England working in partnership and are commissioned by the Department of Health. A link to the latest profile for Teignbridge is provided below for information. It shows that the health of people in Teignbridge is generally better than the England average. It notes that the priorities in Teignbridge relate to lifestyle factors.

http://www.apho.org.uk/default.aspx?QN=HP_METADATA&AreaID=50422

Health Profile Data

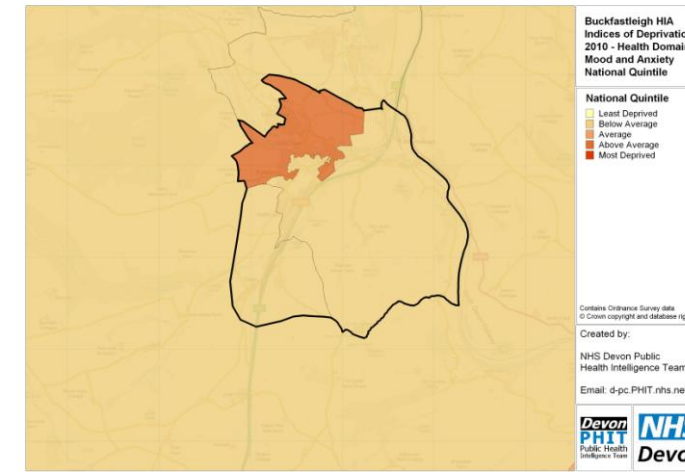
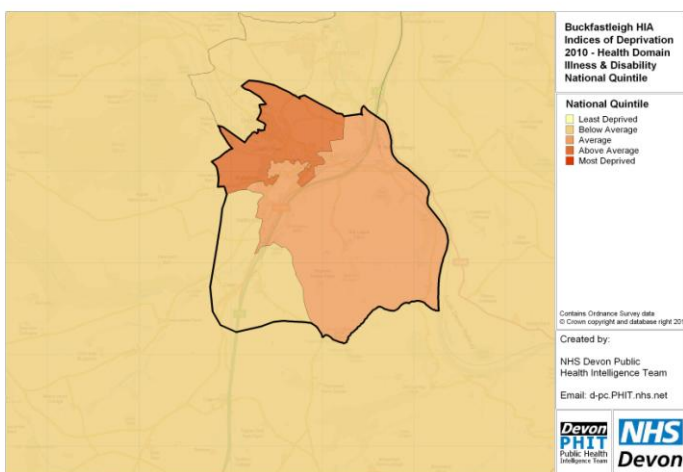
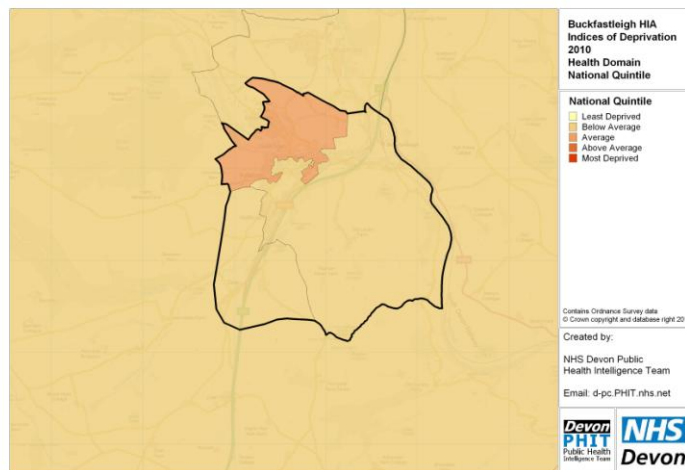
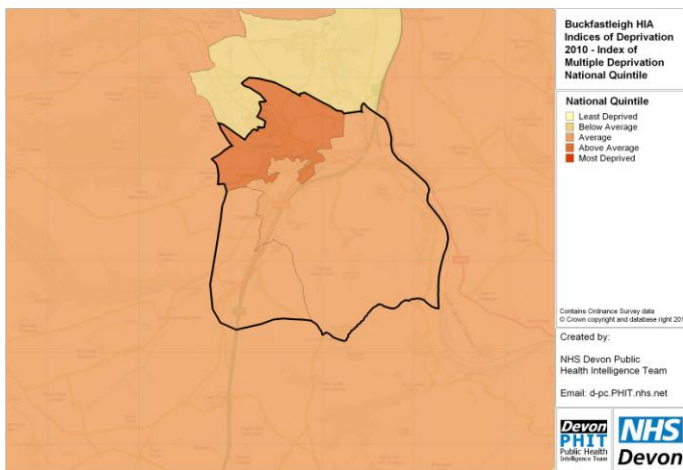
Population Profile

Buckfastleigh has a higher younger and working age population than Devon as a whole. This highlights its position as a commuter location with large working age population.



Deprivation Indices

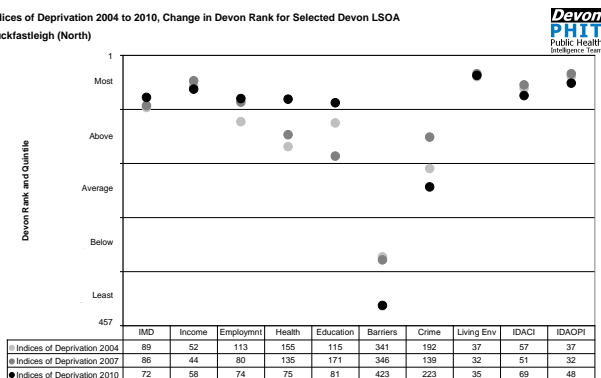
The indices of multiple deprivation in the Buckfastleigh area are in the below average quintile and one area is average. For the health domain the area is in the least deprived quintile nationally and only one Lower super output area (LSOA) is below average. The illness and disability domain is below average and one area average, one area is in the average quintile for mood and anxiety the remaining area is below the national average.



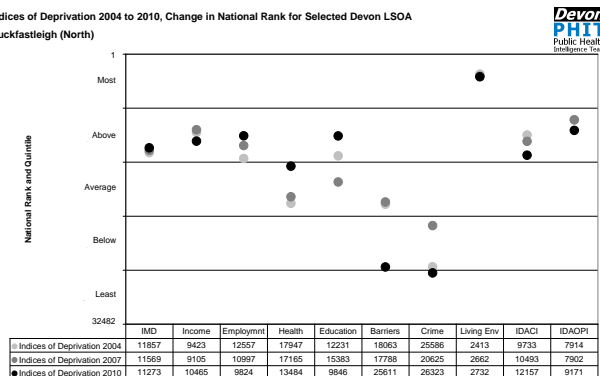
Changes in Deprivation

Over time (IMD 2004-2010) Buckfastleigh North is becoming more deprived in most domains and Buckfastleigh South and surrounding are becoming less deprived, particularly in employment, health and education.

Indices of Deprivation 2004 to 2010, Change in Devon Rank for Selected Devon LSOA
Buckfastleigh (North)



Indices of Deprivation 2004 to 2010, Change in National Rank for Selected Devon LSOA
Buckfastleigh (North)



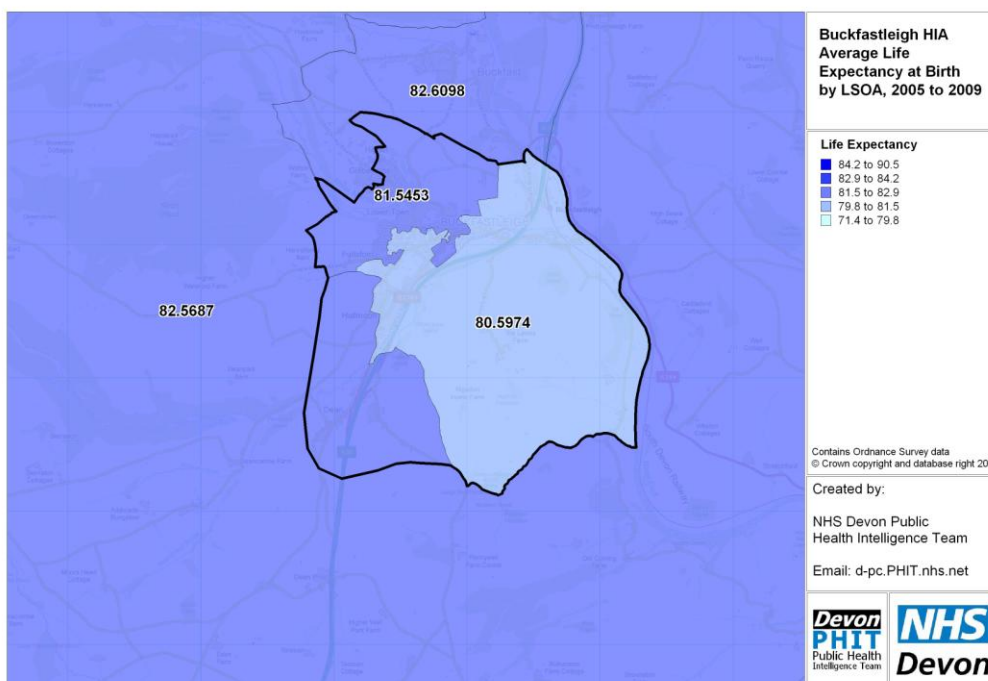
Health Indicators

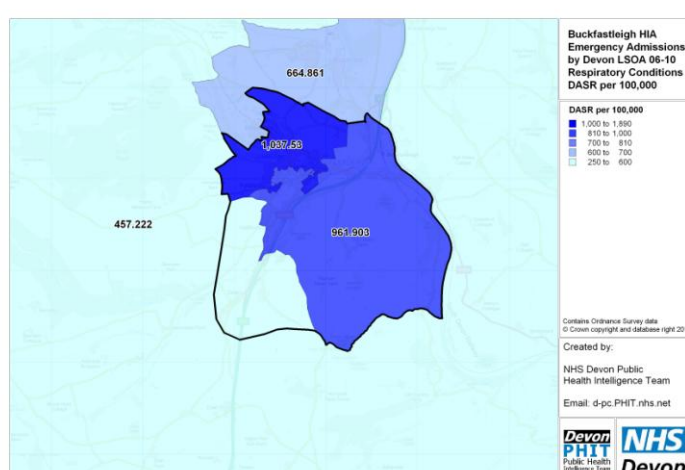
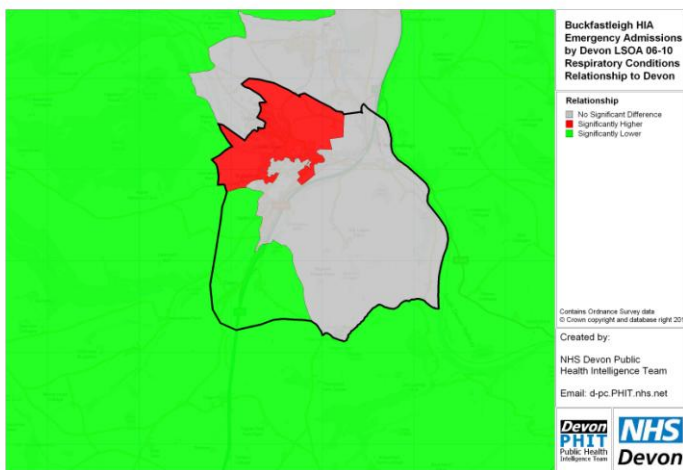
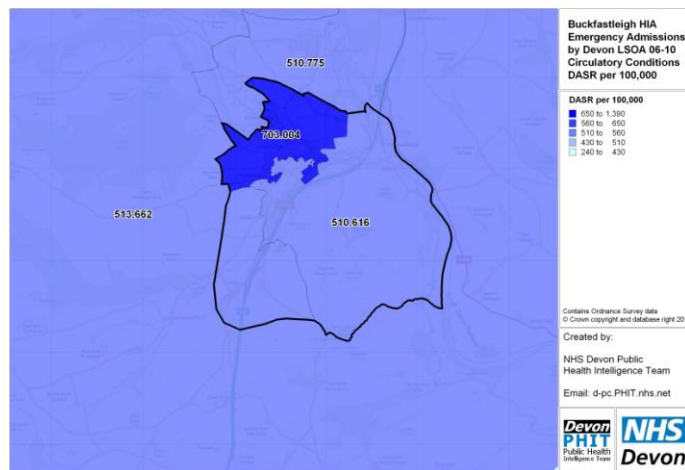
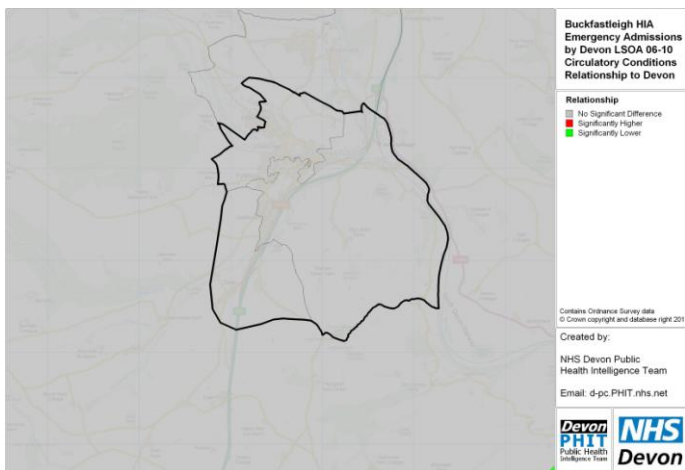
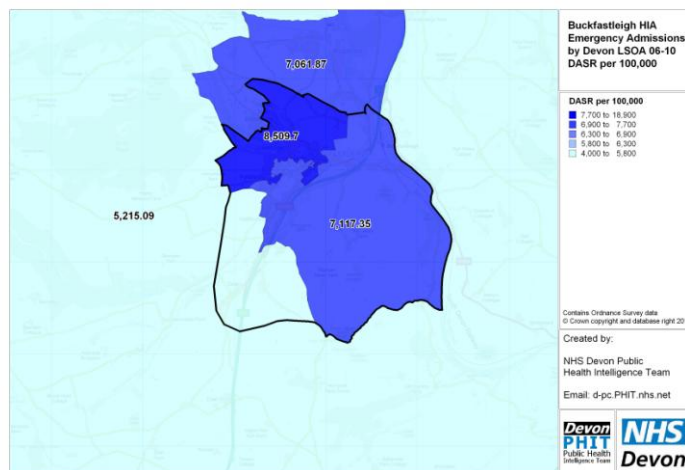
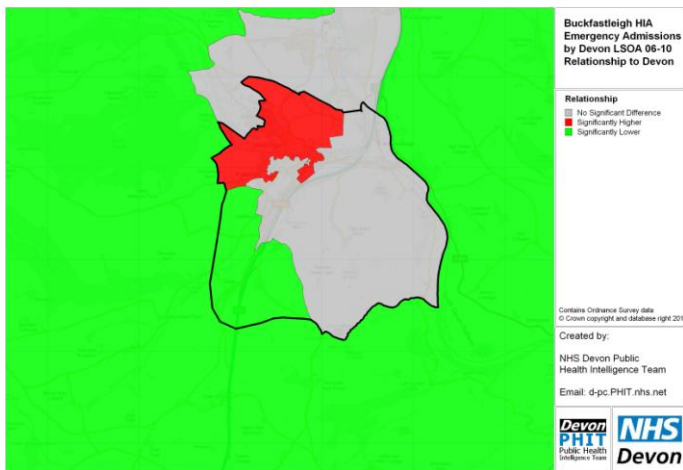
Life expectancy in the area is high when compared nationally and to Devon, emergency admissions are significantly higher than Devon in the most deprived part of Buckfastleigh, with a standardised rate of 8509.7 per 100,000 population compared to 5215.09 in the more rural area. Emergency admissions for circulator conditions are not significantly from Devon but are higher in the more deprived area, emergency admissions for respiratory conditions are significantly higher in the most deprived area.

The health of Buckfastleigh residents compares well with Devon and national statistics. The most deprived area is not closest to the site.

Vulnerable populations

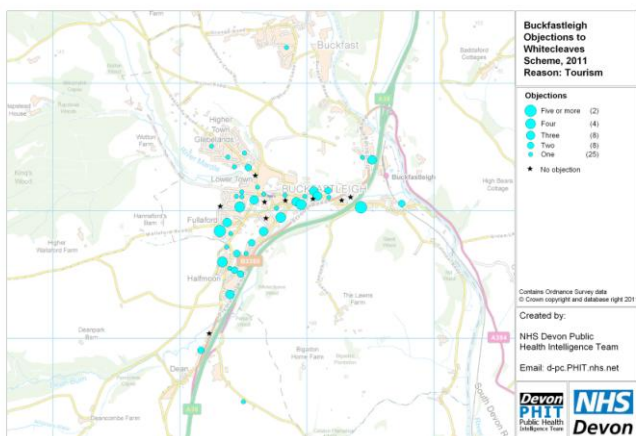
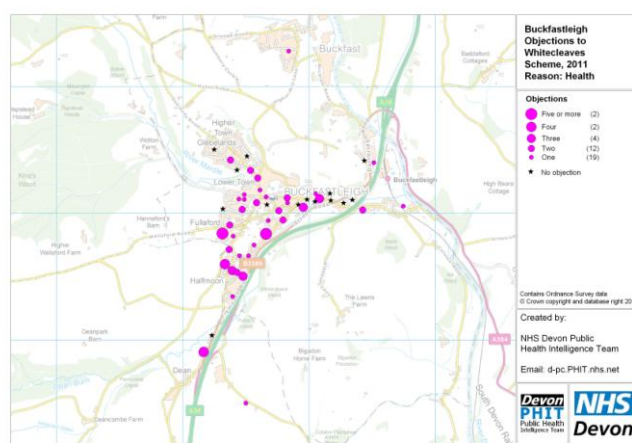
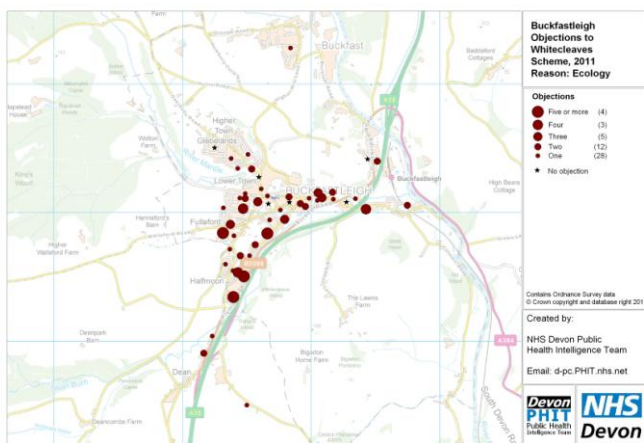
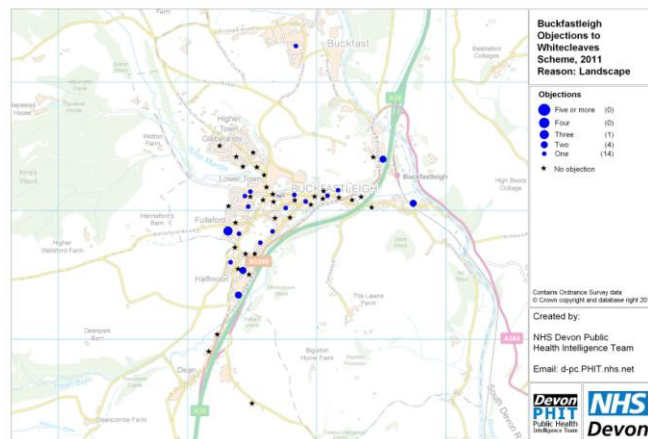
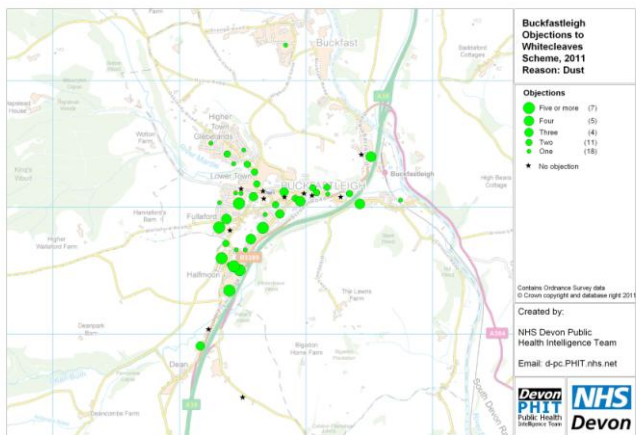
The area has one GP practice where a large proportion of the area will be registered. The practice population have a prevalence of many disease conditions significantly lower than Devon, learning disability prevalence is significantly higher. This is due to the Camp Hill facility and associated local settling of the learning disability population in the local community. There is no community hospital and two nursing home facilities. The nearest community hospital is in Ashburton, secondary care needs are met predominantly from Torbay hospital. The area has two day nurseries a children’s centre and a primary school which are situated in the town centre area which is not directly situated adjacent to the site but residents living adjacent to the site will access these facilities. There is a playing field opposite the site. There will be pockets of deprivation within communities and cases of individual poor health which may be exacerbated by poor air quality and exposure to dust. There are individuals who will be more anxious about potential health risks and this could have an impact on their emotional health and well-being.

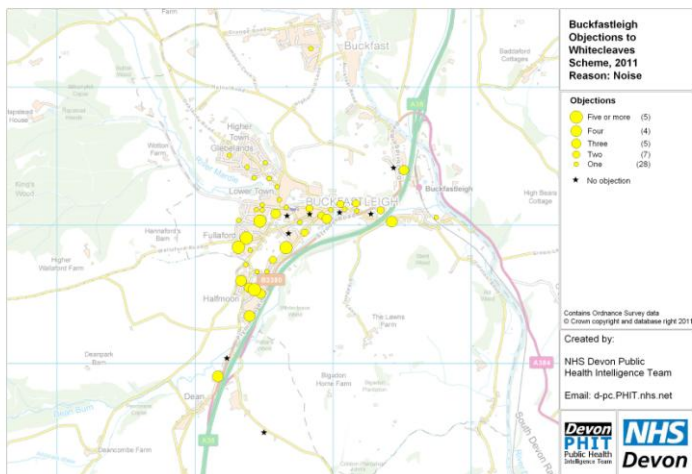
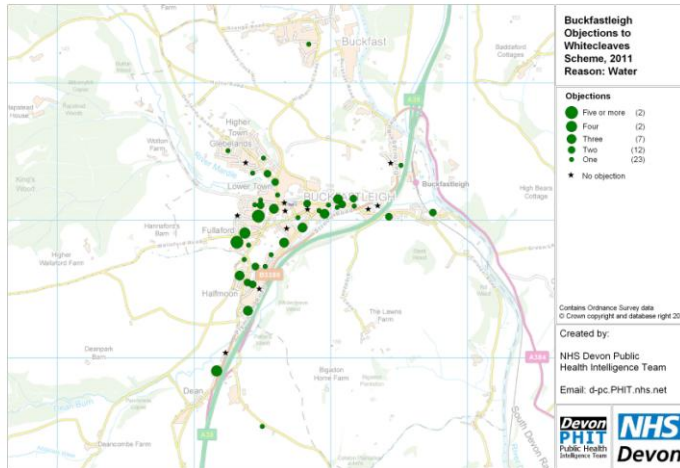
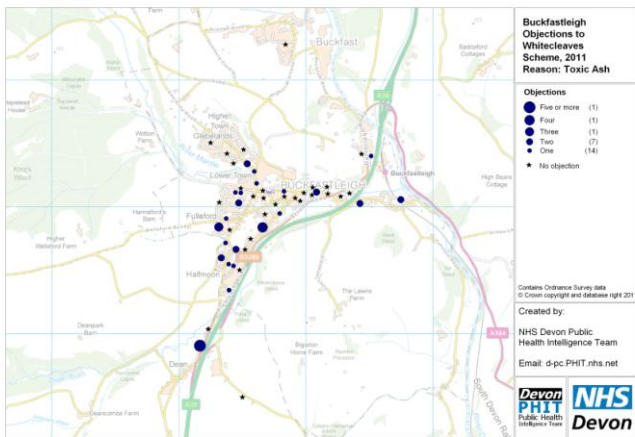




Residents concerns by area

The objection letters show the spread of concern by postcode, the larger the dot the greater number of objections.





Appendix 3

Brief Literature Review

A rapid evidence review on the impact of incinerator bottom ash on human health.

Introduction

This brief literature review on the potential impact of incinerator bottom ash (IBA) to human health and wellbeing has been conducted to inform a desk-top health impact assessment of the IBA processing facility and the Material Recycling Facility (MRF) proposed at Whitecleave Quarry, Buckfastleigh. The review has drawn together headline findings from relevant secondary literature sources to summarise published impacts on health arising from the management of IBA as a waste material.

In relation to health impacts, NHS Evidence, PubMed and Scirus were searched using the following terms: 'Bottom Ash', 'Health', 'Health Impact', 'Health Effect', 'Health Risk', 'Hazard' and 'Exposure' combined with Boolean operators AND/OR as appropriate. Online searches of the HIA Association of Public Health Observatories Gateway _ and the World Health Organisation HIA site www.who.int/hia/en were conducted to identify additional secondary literature sources.

Abstracts were reviewed to discern relevance to the situation at Whitecleave Quarry and health impacts concerning IBA that would be relevant to the local population as outlined via the steering group meetings. Studies concerning more generalised topics about IBA namely the products created from recycling have not been considered in this review.

The Environment Agency website, the Health Protection Agency website and The Infrastructure Planning Commission website produced other relevant publications and documents for the literature review.

Summary:

A brief review of the literature highlights the paucity of robust studies that consider the potential health impact of close and direct exposure to the workforce and indirect exposure to residents and others geographically close to a processing site especially in relation to a UK context. Although evidence provided by the EA (2002), almost a decade ago reports no additional health risk posed by IBA from municipal solid waste incinerators, this is based on analysis of IBA from sites over a short period of time, focusing on dioxin exposure and based on the knowledge-base of toxigenicity / toxic equivalence at that time.

Due to limitations in the study design and focus of the studies identified they provide limited value in relation to this enquiry.

On that basis, a cautionary approach should be applied within a risk management framework and demonstrated in relation to the planning application for the transport, storage, handling and processing of IBA.

Studies reviewed:

Bell, A. 2002. *Solid Residues from Municipal Waste Incinerators in England and Wales - A report on an investigation by the Environment Agency.* Environmental Agency.

This report outlines a study conducted by the Environment Agency (EA) into solid residues produced between 1996 and 2000 by municipal waste incinerators in England and Wales. The study is a response to public concern over exposure to dioxins in various ash piles stored in the South East of England.

The study assessed the materials contained in the IBA and the risks to health as a consequence of exposure based on what was known at time of reporting in relation to toxicity and toxic equivalency of what was identified.

Despite the limited controls to IBA storage in the sites concerned, the EA found that stored IBA (at the incinerator or other storage sites) did not provide additional risk to the public's exposure to dioxins, described at levels similar to urban soils.

'Bottom ash, whether at the incinerators themselves or at sites where the ash is either stored, recovered or disposed of, does not contribute significantly to the public's exposure to dioxins...Dioxins are present in incinerator bottom ash at levels similar to urban soils and to other commonly used secondary aggregates.' (pp. 2-3).

Changes that have occurred following publication of this study in relation to the composition of waste itself (e.g. increase in reuse and recycling) alongside incineration and processing technologies may impact on the generalisability of findings in relation to the Whitecleave Quarry development.

University of Birmingham, ENVIROS. 2004. *Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes.* Department of Environment, Food & Rural Affairs.

Although limited in its consideration of storing and processing IBA, this report outlines a possible process of exposure and potential harms using the source, pathway and receptor model (p.15):

- Source – bottom ash created through incineration resulting in the potential emission of metals (zinc, lead, copper, arsenic) dioxins and furans;
- Pathway – residues to land via re-use and storage;
- Receptor – sensitive receptors exposed to ash deposits / products from re-use.

In relation to potential harms, authors report that some of the constituent emissions that make-up bottom ash have been investigated in connection with cancer and birth defects (p. 15) but do not comment further on the findings of these studies.

Authors report that *'the existence of less information on solid residues compared to emissions to air should not be taken to imply that solid residues are of less concern. Instead, it highlights a need for further research...'* (p.256)

The authors also advocate for further investigation into the potential exposure to contaminants following re-use of municipal solid waste incinerator ash under conditions specific to the UK.' (p. 261).

Stern, A.H., Munshi, A.A., Goodman, A.K. 1989. Potential Exposure Levels and health Effects of Neighbourhood Exposure to a Municipal Incinerator Bottom Ash. *Archives of Environmental Health.* 44,1, pp.40-48.

Authors study the adverse health effects resulting from neighbourhood exposure to soil and dust from a municipal incinerator ash landfill site. Findings cannot be generalised to the Whitecleaves proposal as there were no pollution control devices for the incinerator of interest and ash was sent to landfill and not for treatment / recycling.

Health risk modelling on the basis of soil samples indicated an elevated level of lead (which 'could lead to a blood lead level in exposed children above that currently defining a case of lead poisoning,') (p. 47). However, authors report a small health effect based on exposure to other substances and no significantly increased cancer risk.

Chen, H.L., Chen, I.J., Chia, T.P. 2010. Occupational Exposure and DNA strand breakage of workers in bottom ash recovery and fly ash treatment plants. *Journal of Hazardous Materials.* 174, pp. 23-27.

This paper explores differences in DNA strand breakage between blue and white collar workers working in either a bottom ash recovery plant or from three different fly ash treatment plants. The total sample is small (37 workers in

the bottom ash factory and 41 from the three fly ash plants). It is not possible to discern from the text the proportion of white and blue collar workers in each setting which could be a cause of bias in the study). Authors conclude that workers in the fly ash sites had higher levels (statistically significant) of DNA damage compared to those in the bottom ash site and that not using protective equipment was an additional risk factor.

Important limitations with this study include:

- No population baseline levels of DNA strand breakage provided for comparison or clarity on what researchers considered to be a clinically important difference from the outset of the study;
- No clinical context regarding the long term health impacts of DNA breakage and at what level;
- Generalising this study to a UK context is an issue. The setting of the study is Taiwan where there may be several differences in: municipal solid waste / waste policies, the incineration process, governance and health and safety practices on site.

Liu, H.H., Shih, T.S., Chen, I.J., Chen, H.L. 2008. Lipid Peroxidation and Oxidative Status Compared in Workers at a Bottom Ash Recovery Plant and Fly Ash Treatment Plants. *Journal of Occupational Health*. 50: pp. 492-497.

Using the same sample of workers as Chen et al. (2010), the authors compare oxidative damage using biological markers. Authors report that little is known about oxidative stress in workers at bottom and fly ash treatment plants. Despite differences in baseline characteristics between those working at fly ash and bottom ash sites (e.g. length of time worked), the analysis shows that when age, working period and smoking are considered and adjusted for, there was a positive correlation between working at a fly ash site and an increase in one of the markers used.

Important limitations with this study include:

- No population baseline levels of the biological markers used are provided for comparison or clarity on what researchers considered to be a clinically important differences at the beginning of the study;
- No clinical context regarding the long term health impacts of oxidative stress or threshold levels of the different biological markers used;
- Whether this study can be generalised to a UK context is an issue. The setting of the study is Taiwan where there may be several differences in: municipal solid waste / waste policies, the incineration process, governance and health and safety practices on site.

Mitigation measures summary:

Information about the effectiveness of the mitigation measures adopted at existing IBA processing and storage facilities, with respect to the protection of health, is very limited. Measures adopted have been the same as those typically adopted at other installations handling dusty materials or materials with the potential to pollute freshwater systems.

Based on the evidence review it is important to note that 'absence of evidence of risk' should never be confused with, or taken as, 'evidence of absence of risk' (WHO 2007) and it is proposed that a cautionary approach within a risk management framework is adopted when determining any planning controls and determining the application.