The following documents listed in the Updated Document have been cross-referenced to the Grounds of Appeal or the Statement of Case.

Blue text – presents passages from Appellants Grounds of Appeal or the Statement of Case.

Purple text – our comments.

1.1. CLAIRE 2014 CAR-SOIL

From Grounds of Appeal

5.36. The CL:AIRE Guidance was prepared by the Joint Industry Working Group ("JIWG") on Asbestos in Soil and Construction & Demolition (C&D) Materials, supported by the Health and Safety Executive ("HSE"). The CL:AIRE Guidance is aimed at securing improvements within the brownfield and contaminated land industry.

5.37. The CL:AIRE Guidance, "contains industry-produced practitioners guidance"[27] to help employers comply with the Asbestos Regulations when undertaking work on soil and C&D materials that may be or are contaminated with asbestos. The CL:AIRE Guidance states that, "The primary aim of this guidance is to provide clarity about working with asbestos-contaminated soil and C&D materials. It outlines the steps that should be taken by clients, employers and others in the geoenvironmental management and construction sectors that have a duty to ensure that workers and others are not exposed to asbestos as a result of work in, on or with such materials".

5.38. The CL:AIRE Guidance is supported by JIWG decision tools[28], to which reference will be made by the Appellant in support of its case as required.

This document is not referenced in the Daneshill SOC FINAL document. It has 154 pages. It is not clear which parts of the document will be used in evidence.

1.2. CLAIRE 2014 SP1010 - Development of Category 4 Screening Levels for Assessment of Land Affected By Contamination

This document is not referenced in the Grounds of Appeal or the Daneshill SOC FINAL document. It has 148 pages. It is not clear which parts of the document will be used in evidence.

1.3. EA 2009 Updated technical background to the CLEA model Science Report SC050021-SR3

This document is not referenced in the Daneshill SOC FINAL document. It has 76 pages. It is not clear which parts of the document will be used in evidence.

1.4. EA 2013 Monitoring of particulate matter in ambient air around waste facilities TGD M17 EA 2013 Monitoring of particulate matter in ambient air around waste facilities TGD M17

7.14.4. Environment Agency guidance for monitoring at waste facilities (M17) (EA, 2013) advocates that asbestos should not be found above background levels.

To prevent the uncontrolled release of asbestos fibres there must be no drilling through asbestos cells.

The epidemiological risk implications of fibres are due, in part, to their long, thin structure (aspect ratio) and, especially for asbestos fibres, their propensity to break down into ever finer, sharp fibres. The main health impacts from asbestos are from exposure that has occurred at work, rather than from non-occupational exposure. Workplace exposure to asbestos kills more people than any other single work-related illness. The diseases can take from 15-60 years to develop – so the person who has breathed in the fibres will not immediately aware of any change in their health. Asbestos can cause two main types of disease in humans: asbestosis (scarring of lung tissue) and cancer (particularly lung cancer and mesothelioma) as detailed in Box 7.1.

Box 7.1 Diseases from Asbestos Exposure

Asbestosis: A chronic lung ailment where the inhalation of fibres causes scarring and hardening of the lung tissue. Clinically similar to silicosis, the disease is progressive and rate of progression is related to exposure. There is a clear dose-response relationship and although incurable and irreversible, early diagnosis may halt the disease.

Lung Cancer: A malignant tumour of the lungs" air passages, and may spread to other parts of the body. It should be noted that there is a synergistic effect between smoking and asbestos – exposure of the two carcinogens together significantly increases the risk of developing lunch cancer. Similar to asbestosis, there appears to be a reasonable dose-response relationship.

Mesothelioma: This disease is still the dominant occupational cancer affecting cells that make up the lining around the outside of the lungs and inside the ribs (pleura) or around the abdominal organs (peritoneum). Although the risk appears to be increased with high and persistent exposure, there has been evidence that mesothelioma may be the result of relatively short exposures. The dose-response relationship is not clear and may possibly result from non-occupational exposure.

Asbestos is a proven human carcinogen (IARC Group 1). No safe level can be proposed for asbestos because a threshold is not known to exist. Exposure should therefore be kept as low as possible and asbestos should not be found above background levels at site boundaries. Further guidance will be available in the Technical Guidance Note for landfill sites, which should be available early in 2014.

This document backs up everything we have said. Asbestos kills. Do not disturb it. There is no safe level.

1.5. HSL 2007 Investigation of the chrysotile fibres in an asbestos cement sample HSL report 2007-11

This document is not referenced in the Daneshill SOC FINAL document. This document is 30 pages long.

In any case this document supports our position that cement sheet can emit fibres and those fibres are dangerous asbestos fibres. The document says: "*When the cement is broken or crushed the chrysotile fibres are released from the cement.*

***The fibres found in both the bulk and air samples had the characteristic morphology and appearance of chrysotile asbestos. The very fine fibres (fibrils), when viewed at higher magnification, showed the characteristic tubular structure associated with chrysotile fibrils and showed no evidence of surface alteration*."**

1.6. HSE 2021 The Analysts Guide HSG248 second edition

7.10. In addition to permit-compliance air monitoring using 'standard' HSG248 air monitoring methods, Provectus has also undertaken air monitoring to a lower limit of quantification and that is capable of fibre discrimination. The additional ABS was designed to monitor source emissions during the soil processing operation, and the data indicates that quantifiable fibre emissions are infrequent and fall significantly below the environmental permit requirements for airborne asbestos concentrations measurable at the site boundary.

7.14.3. The HSE advocates a monitoring LOQ of 0.002-0.005f/ml for perimeter monitoring (HSG248, 2013. Appendix 8, Table 5.2)

7.16. In its interpretation of soil investigation results for assessing the risk specifically to workers, the HSE states in its latest guidance (HSG248, 2022) that airborne fibre concentrations are unlikely to exceed 0.01f/ml where the asbestos in soil is mostly bound/bonded and at concentrations <0.1% wt/wt (section 7.21). It goes on to state in section 7.22 that more energetic processes (including power screening of soils) may give rise to elevated fibre levels, especially if the material is dry, however, when the soil is damp or wet, it states that airborne emissions of asbestos will be suppressed and wind dilution and dispersion of emissions will reduce worker and bystander exposures.

7.28. In HSG248 (Appendix 8) it is stated (A8.4) that if the soil surface is damp, almost no release of asbestos fibres to air will occur.

It is helpful that Provectus can determine airborne asbestos fibre content better than HSG248.

There is however a requirement in the Best Available Techniques conclusions, BAT 8, to monitor Physico-chemical treatment of solid and/or pasty waste treatment processes for dust in accordance with BAT 41.

BAT 41. In order to reduce emissions of dust, organic compounds and NH3 to air, BAT is to apply BAT 14d and to use one or a combination of the techniques given below (Abatement techniques: Adsorption, Biofilter, Fabric Filter, Wet Scrubbing).

BAT 14d requires "Containment, collection and treatment of diffuse emissions" - This includes techniques such as: — storing, treating and handling waste and material that may generate diffuse emissions in enclosed buildings and/or enclosed equipment (e.g. conveyor belts); — maintaining the enclosed equipment or buildings under an adequate pressure; — collecting and directing the emissions to an appropriate abatement system (see Section 6.1) via an air extraction system and/or air suction systems close to the emission sources.

Physico-chemical treatment of solids and/or pasty waste treatment processes require the dust to be channelled and abated and at point source emission be less than 5 mg/m^3. This can only be achieved if the plant and equipment is enclosed. By enclosing the system not only is the dust managed but any asbestos fibres will also be abated, channelled and appropriately monitored.

1.7. IAQM 2016 Guidance on the assessment of mineral dust impacts for planning

This document is not referenced in the Daneshill SOC FINAL document. It is 53 pages long.

However it does say "Wherever practicable, crushing and screening should take place within fully enclosed structures, or where this is not possible (e.g. in the case of mobile plant) mineral processing should take place within a sheltered part of the quarry, away from boundaries with off-site receptors. The following measures are considered to be effective in minimizing dust emissions during the mineral processing process:

· dampen material, for example, wetting down of rock stockpiles prior to crushing operation

· protect equipment (for example, conveyors, process plant) by partial or complete enclosure within housing

· use crushing and screening plant within its design capacity

· maintain good standards of all plant and equipment.

This supports our position that dust should be minimised and the process enclosed.

1.8 IOM 1988 The release of dispersed asbestos fibres from soils

7.26. Scientific studies published in the UK and in The Netherlands have established the significance of soil moisture on asbestos fibre release from soil. The laboratory studies reported by IOM (1988) indicate that a soil moisture content of 10% reduced measured airborne fibres by a factor of 10. Similar studies by TNO and reported by RIVM (2003) indicated that a soil moisture content of 5-10% reduced the re-suspension of asbestos fibres in air by a factor of 100.

1. Even small proportions of asbestos in loose, dry soil can give rise to high airborne respirable asbestos concentrations when these materials are worked.

3. Mixtures of asbestos in dry soils with asbestos content as low as 0.001% can produce airborne respirable asbestos concentrations greater than 0.1 f ml^{-1} in dust clouds where the respirable dust concentrations are less than 5 mg m^{-3}.

5. An action limit is recommended of no higher than 0.001% asbestos in soils above which steps should be taken to minimise exposure to airborne fibres (e.g. by wetting). Any analytical method used to assess asbestos contamination in soil should be capable of detecting less than this proportion.

6. Airborne fibre concentrations are reduced by wetting the soil, larger reductions being achieved by increasing the level of wetness.

7. The addition of relatively small quantities (10%) of water can reduce the airborne fibre concentrations by an order of magnitude.

9. For the range of soils and asbestos types investigated the fibre levels can be reduced from approximately 5 f ml^{-1} to below the clearance indicator of 0.01 f ml^{-1} by the application of some 50% water to the soil.

We agree that dampening soil will lower airborne fibre release; it also lessens dust emissions.

However, note:

- **the experiment was done in an enclosed Perspex case – this indicates that the most accurate measurement needs enclosure.**
- **the dust concentration was limited to 5 mg/m^3 – this is the limit we would aim to achieve by enclosing the screener and which is the BAT-AEL for dust in the BAT conclusions.**

This supports our requirement that the plant and equipment is enclosed and abated.

1.9 IOM 2007 An assessment of risks due to asbestos on farm tracks and rights of way (ROW) in South Cambridgeshire

7.23. The Institute of Occupational Medicine ("the IOM") conducted an assessment of fibre release from farm tracks in South Cambridgeshire made with asbestos cement waste (IOM, 2007). The calculated average weekly airborne fibre concentrations resulting from pedestrian and vehicular use of these farm tracks were <0.00001 – 0.0007 f/ml. Vehicular traffic was described by the authors to be one to two vehicles per hour.

The estimated annual average concentrations of airborne asbestos fibres for the ROW range from

- 0.0002 fibres/ml (Hill Top Farm, and Whaddon Estate), through
- 0.0005 fibres/ml (Shedbury Lane, London Way, and Newling Non-lets), to
- 0.002 fibres/ml (Moor End Lane).

These concentrations may be compared with those summarised by HEI for levels in other circumstances:

- background asbestos fibres in outdoor rural air 0.00001 fibres/ml;
- outdoor urban air, 0.0001 asbestos fibres/ml;
- in well maintained buildings with asbestos in good undamaged condition, 0.00002 fibres/ml.

The paper shows that asbestos in the air is increased by asbestos being present – this is our very point.

The IOM assessment identified that there only were a few vehicles and some foot traffic, on the Rights Of Way. The risks are lower than where the soil might be dug up and screened.

1.10. RIVM 2003 Assessment of the risks of soil contamination with asbestos

7.22. The Appellant will refer to and rely upon the activity-based sampling published by the Dutch Institute of Public Health and the Environment (RIVM, 2003) which indicates that disturbance of soil containing less than 1%wt/wt 'bound' asbestos (e.g. asbestos cement) did not create detectable concentrations of asbestos fibres in air (in this case the detection limit was 0.001f/ml (1000 f/m3) by transmission electron microscope). This conclusion was based on a reported dataset of over 1000 measurements. The authors of the same Dutch guidance also concluded that the respirable fibre concentration in soil containing fragments of bound asbestos is 'nil' (less than 0.1% of the total asbestos soil concentration). This conclusion was based on 10 years of soil test data.

Because the risks of asbestos are caused by the inhalation of asbestos fibres, the emission of fibres from soil to air is crucial. The concentration of asbestos in air is determined by primary emission (the release of asbestos fibres from materials containing asbestos in or on the soil) and the secondary emission (the (re)mobilisation (resuspension) of asbestos fibres that were already released and deposited, initiated by specific activities or wind). In both cases the characteristics of the materials, like (the degree of) friability and the type of asbestos (chrysotile or amphibole) play a significant role.

The major effects on human health after inhalation of asbestos fibres concern:

• mesothelioma (cancer of the pulmonary membrane and peritoneum);

• asbestosis (brown lung disease);

• increased risks of bronchial carcinoma (lung cancer).

The latent period between first exposure to asbestos and the appearance of a disease can be substantial (up to several decades).

Limit values for risks:

The following acceptable limit values for the annual average concentration of asbestos in air have been defined:

• Maximum Permissible Risk (MPR) level: 100,000 fibre equivalents per m^3 air; (0.1 f/ml)

• Negligible Risk (NR) level: 1,000 fibre equivalents per m^3 air. (0.001 f/ml)

The following equivalent factors were assumed:

• 1 chrysotile fibre with a length > 5 µm: equivalent factor 1

• 1 chrysotile fibre with a length < 5 µm: equivalent factor 0.1

• 1 amphibole asbestos fibre with a length > 5 µm: equivalent factor 10

• 1 amphibole asbestos fibre with a length < 5 µm: equivalent factor 1

Although a protocol for assessment of the risks in and around buildings and structures is available (draft O-NEN 29916), this protocol is not directly suitable for the present goal, i.e. assessment of outdoors air quality too.

Increased fibre concentrations in the air that exceed the MPR level could only be measured for highly contaminated soils and materials with bound asbestos (at least 10,000 mg/kgdw). In such situations even the smallest activity in combination with dry air (no worst case conditions) is sufficient for exceeding the NR level in the air.

• Exceeding the MPR level in air is virtually only measured close to the asbestos source with intensive activity, like digging, tipping or driving on the site. The fibre concentration

decreases sharply with distance and is always lower than the NR level at a distance of more than some 100 metres from the source.

• In the case of less contaminated soils and mainly bound asbestos (not less than 1,000 mg/kg_{dw}), no asbestos fibres were measured in the air, even in the case of activity like digging, tipping and sieving.

FCC only want to treat wastes with less than 1,000 mg/kg chrysotile and less than 100 mg/kg other asbestos forms so they suggest that that there will be no fibre release based on this study.

The study above was not done in enclosed circumstances – the fibre monitoring was done close to the activity.

There is also a requirement in the BATc to channel and abate dust levels from physico-chemical treatment of solids and/or pasty waste processes to 5 mg/m^3 which requires the plant and equipment to be enclosed to channel the dust emission to a point source. This will abate any asbestos fibres released and allow for accurate monitoring.

Note dw means dry weight. For hazardous waste concentrations are given as is and not dry weight. If a soil holds 50% water the concentration of asbestos in the soil will be twice that "as is".

1.11 SoBRA Asbestos in Soil Human Health Risk Assessment (AiSHHRA)

From Grounds of Appeal:

5.31. The SoBRA Toolbox was developed to aid the consistency and robustness of asbestos in soil risk assessments. It sets out a number of potential assessment tools which can be utilised to determine the level of risk exposure caused by a particular activity.

7.36. The SoBRA AiSHHRA Toolbox provides a structured way of assessing the potential health risk from exposure to fugitive airborne asbestos fibres resulting from the disturbance of asbestos in soil. The estimation of health risk can be calculated using the SoBRA Excel-based spreadsheet that was developed to support SoBRA's discussion paper on guidelines for airborne concentrations of asbestos in ambient air (SoBRA, 2021b). This calculation tool requires the exposure point air concentration, and the exposure frequency and duration for 5-year time periods. The health risk from asbestos exposure is related to the cumulative exposure dose (air concentration x duration) and the age of first exposure.

7.37. The Appellant will utilise these tools to model exposure utilising a precautionary approach and taking into account the planned operational timescale for the STF of 10 years.

7.38. The near source activity-based sampling at Maw Green and ERQ has shown that the majority of reported airborne asbestos fibre concentration are less than the method LOQ (0.0005f/ml). Reported concentrations above the LOQ are infrequent and average concentrations are <0.0005f/ml. It is not reasonable to assume that off-site concentrations will be at the LOQ (i.e. 0.0005f/ml). It is therefore reasonable to assume on a precautionary basis that exposure concentrations at the Travellers' Site should not exceed 0.000005f/ml (5f/m3), i.e. at least 100 times lower than the on-site monitoring LOQ, taking into account the balance of evidence on likely air dispersion. It is expected that actual off-site receptor concentrations will be much lower than this.

7.39. The Appellant will demonstrate that the estimated lifetime risk of mesothelioma and lung cancer from the above exposure scenario is insignificant.

7.40. The Appellant will therefore demonstrate that significant pollution will not arise from the Proposed Activity.

Toolbox:

ToolboxAsbestos behaviour in soil – asbestos in soil is generally not mobile in soil and thus will tend to stay within the soil where placed, unless the soil is disturbed.

Pathways and receptors - asbestos causes harm to people via inhalation of fibres and thus exposure will only occur where people have inhaled soil dust either via soil tracked back into buildings or while they are outdoors at the site. Much of the rest of the assessment in this toolbox focusses on quantifying the release of fibres when soil is disturbed.

It may be possible screen out risks to some of all of the people potentially affected at an early stage, for instance where asbestos is or will be present at depth or below hardstanding and will not be disturbed.

Mentions the 1988 study above: "Laboratory experiments measured asbestos fibre concentrations in air (f/ml) arising from the generation of dust clouds of 5mg/m3 respirable dust concentration within a 1.3m2 test chamber, from 32 mixtures of different soil types (clay, sand, and intermediate soil), with three asbestos types (chrysotile, amosite and crocidolite) and at varying concentrations (1%, 0.1%, 0.01% and 0.001% by weight). Variation with soil moisture content (0% - 50%) was also investigated. The study normalised airborne fibre concentrations to the respirable dust concentrations. Relationships were

presented for asbestos fibres in air and asbestos concentration in soil, and these relationships were presented separately for asbestos type, soil type, and soil moisture."

It also says: The study allows for estimation of potential fibre release from soils based on soil asbestos concentration, soil type, and moisture content. However there are a number of limitations to the study.

It was limited to generation of dusts at a 5mg/m^3 nuisance limit and comparison of asbestos air concentrations to indoor clearance limits (0.01 f/ml) at the time. Mineral dust in samples posed issues with counting fibre concentrations to limits of 0.01 f/ml. It is not clear how the dust generation and sample preparation methods relate to real-world conditions. Only a very small number of samples were tested for each variable. To identify a relationship between soil concentration and air concentration required log-log scales which significantly mask variability in individual results.

The SoBRA document indicates that dust should be minimised which is our contention. We expect that the plant needs to be enclosed so that accurate emissions of dust can be measured and any emissions abated. A dust BAT-AEL of 5 mg/m^3 is prescribed in the BAT conclusions and can only be measured via a point source (channelled emission). When the activity is enclosed this also gives a more accurate way of monitoring the asbestos fibre levels.

The operator is also not limited in the permit to only 10 years of operation so the conclusions as to risk are not valid.

1.12 SoBRA 2021 Discussion paper on guidelines for airborne concentrations of asbestos fibres in ambient air

Points 7.36 to 7.40 above.

Asbestos poses a risk to people when it is airborne, and the fibres inhaled can result in diseases including mesothelioma and lung cancer. In the UK, while there are workplace exposure levels for asbestos fibres in air supporting the assessment and removal of asbestos containing materials in buildings, there is no current consensus on which air quality guidelines should be used to assess potential risks from exposure to asbestos in soils by the general population. This in turn means that there is no UK regulatory or industry-agreed good practice for the assessment of risks from asbestos in soils, which are being - or could be - released to air and subsequently inhaled.

…current background levels in the outdoor atmosphere in the Netherlands are likely to be 10-20 f/m^3 (as measured by TEM). This expected range is narrower although still potentially consistent with the assumption in CIRIA (2014) that outdoor concentrations in rural and urban areas in the UK are likely to be below 100f/m^3 (as measured by PCM).

The Institute for Environment and Health published a study of background air concentrations in the UK in 1997. This concluded that outdoor ambient concentrations were generally in the range 1-100 f/m^3, and indoor concentrations were mostly below 200 f/m^3, rising to approximately 500 f/m^3 for buildings containing asbestos in good condition (all values measured by PCM).

Dutch Intervention Value (DIV) for chrysotile in soil of 100mg/kg (0.01%wt/wt) is likely to remain precautionary (i.e. based on the graphical correlation air concentrations should remain below all calculated air guidelines) unless conditions similar to laboratory conditions prevail. The DIV for amosite of 10mg/kg (0.001%wt/wt) however is unlikely to be similarly precautionary.

There remain a number of issues that need to be resolved before an air guideline value can be proposed…

It is evident from the assessment presented in this paper that there is a clear requirement for further research into background air concentrations in the UK. This is needed to be able to benchmark the practicability of proposed air guidelines. It is also evident that a step change in air monitoring practice is required; with a move away from the use of occupational monitoring techniques that typically report to 10000f/m^3 (0.01f/ml) and use non-fibre discriminatory PCM analysis to methods capable of measuring down to at least 10f/m^3 using fibre-discriminatory SEM or TEM analysis (as advocated by the authors of CIRIA C733).

The final paragraph indicates that there is still not a consensus as to what levels and controls are needed despite the document being published in 2021.

1.13. US EPA 2006 Compilation of air pollutant emission factors AP42- Chpt 13

7.7. An initial screening of potential fibre emissions associated soil movement and treatment activities can be made using the US EPA AP-42 guidance (US EPA, 2006). The air pollutant emission factors developed in this guidance are generic but are modified by a number of site-specific activity parameters. The relevant activities envisaged at the STF are: (1) haulage of waste soil to the STF by 20 tonne tipper trucks, (2) stockpile management of pre- and post-processed soil by 360 excavator, bulldozer, and 25 tonne dumper truck, (3) mechanical screening of soil, (4) transfer to picker belt and hand picking of soil, (5) haulage of processed soil material away from STF. Use of the AP-42 emission calculations indicate that the greatest emission activities are likely to be vehicle movement on the concrete slab, and mechanical screening. Accordingly, other emission activities are likely to be insignificant by comparison.

We would not disagree with the risk factors but do disagree with the extent of the controls.

1.14. Footnote 5 – Web 'Best Available Techniques'– A future regime within the UK - Defra - Citizen Space

1.15. Footnote 6 – 'Best Available Techniques' – A future regime within the UK – Defra – Citizen Space

8.22. The current BREF and BATc documents as well as the IED comprise European legislation and guidance. Following the departure of the UK from the EU, the UK Government has started working on the development of a future regime for the development of BAT within the UK and a consultation took place on these proposals in 2021[5]. A new UK BAT regime is beginning to be implemented with four industry sectors identified as the first to undergo this review process. These sectors do not include the waste management sector. For all other industry sectors, including the waste management sector, existing EU BATc continue to have effect in the UK through the EU Withdrawal Act 2018[6].

No comment needed – the existing BATc is the control mechanism.

8.23. Neither the WT BREF nor the WT BATc refer specifically to the treatment of soils or other wastes contaminated with asbestos. Asbestos in the form of 'suspended particles, fibres' is identified as a 'polluting substance' in the list at Annex II of the IED.

8.24. Techniques for the treatment of excavated contaminated soil are discussed in Section 5.6 of the WT BREF. The treatment techniques discussed depend, of course, on the nature of the contaminants present in the soil and include thermal desorption, soil washing (which includes reference to the use of screening to remove debris), vapour extraction, solvent extraction and biodegradation. There is no discussion of the removal of asbestos from soil by the use of screening and/or hand picking. The treatment of waste asbestos is discussed in section 5.8.4 of the WT BREF but this is in reference to the shredding and mixing of material prior to thermal treatment. No specific emission control measures are referenced for these shredding and mixing processes.

Section 5.6 of the WT BREF relates to:

- **thermal treatment of soils**
- **soil washing**
- **vapour extraction**
- **solvent extraction**
- **biodegradation**

Removal of asbestos cement from soils is a relatively new treatment process not considered by the BRef group. This treatment process falls under the generic category of physico-chemical treatment of solid and/or pasty waste. The requirements for such activities include control on emissions of dust . A BAT-AEL is given for dust of 5 mg/kg which requires the emission to be channelled to a point source and abated. The screening activity needs to be enclosed and the dust managed – whilst we monitor for dust, we also expect asbestos monitoring.

8.25. Similarly, there are no techniques described in the WT BATc for the removal of asbestos from soil by the use of screening and/or hand picking. The general BAT for the prevention or minimisation of emissions of polluting substances to air must therefore be reviewed to determine the techniques which comprise BAT for the proposed activity. In addition to the specific techniques for the controls of emissions to air which are discussed further below, there are a number of general BAT techniques which relate to management systems and procedures, staff competence and training, management plans for accidents, odour and noise, and a number of other overarching systems and procedures including surface water management and monitoring of discharges to water. The application of these wider BATc measures are identified in detail in the table on pages 20 to 39 of the Treatment Process Description and Indicative BAT review July 2021 (Appeal Document 10, pdf pages

285 to 304) which formed part of the permit application documentation. There have been no adverse comments or concerns raised with regard to the generic BAT techniques in the DN, and these techniques relate also to the other soil treatment activities which have been consented in the variation issued to the EP in December 2022. Therefore it is assumed that the EA accept that these aspects of BAT are appropriate and acceptable.

5 https://consult.defra.gov.uk/airquality/industrial_emissions_bat/

6 https://www.gov.uk/government/publications/establishing-the-best-available-techniques-for-the-uk-uk-bat/establishing-the-best-available-techniques-for-the-uk-uk-bat

See above. Also note that healthcare waste is also not directly referenced in the BAT conclusions but we expect that activity to be enclosed and abated and we set an emission limit in our permits of 5 mg/kg for dust where the material is shredded as part of the activity.

1.16. Footnote 7 – Appropriate measures for permitted facilities that take chemical waste - Environment Agency - Citizen Space

1.17. Footnote 8 – Best Available Techniques - Consultation - A future regime within the UK

From Grounds of Appeal

5.22. Reference will be made to the Appropriate Measures Guidance and the Appellant's expert evidence will demonstrate that the Proposed Activity is compliant with the same.

5.23. The Appellant will make reference to and rely upon the absence of any reference to the Appropriate Measures Guidance by the EA in the determination process of the Application and/or in the DN.

8.27. The main EA guidance document for the operation of Installations is set out in 'Chemical waste: appropriate measures'[7] which comprises EA guidance for regulated facilities with an environmental permit to treat or transfer chemical waste and includes activities for the treatment of contaminated soil. This guidance reflects the WT BATc requirements and therefore sets out similar control measures to those described in the WT BATc. As for the WT BREF and the WT BATc, there is no specific guidance for treatment processes comprising the segregation of ACMs from contaminated soil.

8.28. The EA do not refer to the appropriate measures guidance in the DN, but they make reference to guidance document S5.06. In the consultation on the appropriate measures guidance prior to its implementation it is stated that:

'Currently, relevant measures and standards for permitted facilities that take chemical waste for treatment or transfer are set out in published technical guidance note EPR 5.06 Guidance for the recovery and disposal of hazardous and non-hazardous waste (May 2013). The proposed guidance, which is being consulted on, will replace this guidance note and will be available as web guidance on the gov.uk website.'8

It is therefore understood that the appropriate measures guidance is that which is applicable to the proposed development.

Agreed – the relevant standards are those given in the appropriate measures guidance and not S5.06. In the guide it clearly requires:

5. Waste treatment appropriate measures

5.1. General waste treatment

10. Where an emission is expected, all treatment or reactor vessels must be enclosed. Only vent them to the atmosphere via an appropriate scrubbing and abatement system (subject to explosion relief).

Since we expect an emission, that is dust and asbestos fibre release from the screening we expect the treatment vessel (the screener) to be enclosed, abated and monitored.

1.18. Footnote 9 - Environmental Improvement Plan 2023

1.19. Footnote 11 – DEFRA Safeguarding our Soils - A Strategy for England

1.20. Footnote 12 – The state of the environment soil Report

8.35. The protection of soil resources is a fundamental aspect of a number of the Government environmental policies and strategies. The Environmental Improvement Plan 2023[9] ("EIP 2023") is the current review of the progress towards the achievement of the Government's 25 Year Environment Plan. The prevention of valuable soil resources from being sent to landfill is identified as an objective within Goal 6 of the EIP 2023 'Using resources from nature sustainably' in Section 4 which is 'Improving and protecting soil health' and it is stated in the EIP 2023[10] that:

'In 2016, soil made up 58% of material sent to landfill in the UK. In construction projects, the careful re-use of soil can avoid soil being designated a waste material and to bring it back to beneficial use, helping create more green spaces and increasing biodiversity. We are working to:

• In 2023, publish a revised Code of Practice for the sustainable use of soil on construction sites, which will help to reduce the amount of soil sent to landfill.

• Begin development of a Soil Re-Use and Storage Depot scheme to help prevent soil that would otherwise be classified as waste going to landfill, and encourage remediation and re-use of soil. We will start piloting this by 2026.'

8.36. The treatment of soil for its beneficial use rather than disposal to landfill is therefore a key part of the Environmental Improvement Plan and the proposed facility provides a direct contribution to that objective.

8.37. The importance of soils to the environment is emphasised in the DEFRA document 'Safeguarding our Soils. A Strategy for England'11 ("the Soil Strategy") and is reiterated in the 2023 update 'State of the Environment Soil Report'12 . Chapter 7 of the Soil Strategy relates to 'Dealing with our legacy of contaminated land' and includes objectives for less reliance on 'dig and dump' techniques that involve disposing of large amounts of contaminated soils in landfill sites.

We do not dispute this but any activity that recovers soil needs to be done whilst minimising risks including those from dust and asbestos and ensuring that the treated soil is fit for further purposes.

1.21. Control of Asbestos Regulations 2012

From Grounds of Appeal:

5.20. Regulation 11(1) of the Asbestos Regulations provides that:

> "(a) Every employer must prevent the exposure to asbestos of any employee employed by that employer so far as is reasonably practicable; (b) where it is not reasonably practicable to prevent such exposure: (i) take the measures necessary to reduce exposure to asbestos of any such employee to the lowest level reasonably practicable by measures other than the use of respiratory protective equipment…"

5.21. Regulation 16 of the Asbestos Regulations provides that:

> "Every employer must prevent or, where this is not reasonably practicable, reduce to the lowest level reasonably practicable the spread of asbestos from any place where work under the employer's control is carried out."

8.31. The prevention and minimisation of emissions of asbestos fibres therefore are regulated both by the EA through the EPR and by the Health and Safety Executive (HSE) through CAR 2012. The HSE was a consultee during the application for the variation to the Environmental Permit.

Noted.

1.22. Directive of 2010/75/EU of the European Parliament and of the Council on Industrial Emissions

1.23. The Environmental Permitting (England and Wales) Regulations 2016

8.2. The legislative framework for environmental permitting is provided by European Union Directive 2010/75/EU on industrial emissions ("the IED"") and the Environmental Permitting Regulations 2016 ("the EPR") (not EPR 2010 as the EA reference in the Decision Notice (the DN)).

Noted. The IED is a reference document for EPR 2016 and is not the law in England.

2. Maw Green Landfill Site Permit Documents

4.4. The Appellant's evidence will, where relevant, make reference to and draw upon similar activities at other sites which are operated by FCC/Provectus (as referenced at paragraph 6.39 of the GoA). In particular, the Appellant intends to refer to activities and monitoring data from its site at Maw Green and Edwin Richards Quarry. Where other sites are referred to in the Appellant's evidence, detail will be provided regarding the nature of the activities undertaken at those other sites in order to ensure accurate information is available to the Inspector regarding the comparability of technical data arising from those sites.

7.9. There are inherent uncertainties in the indirect estimation of airborne asbestos fibre emissions from soil disturbance activities, and activity-based sampling ("ABS") can provide valuable direct evidence of asbestos fibre release. Provectus has undertaken daily air monitoring of its asbestos containing soil processing activities at two similar soil treatment facilities, at FCC's landfill site at Maw Green in Crewe, and at FCC's Edwin Richards Quarry landfill site at Rowley Regis near Wolverhampton. The activities and soil acceptance criteria for these two sites are similar to those proposed for Daneshill.

7.11. The ABS data for the Maw Green Soil Treatment Facility (STF) comprises 342 single point daily air samples taken across the period 15 August 2022 to 09 June 2023 that have been taken close (i.e. within 5m) to the mechanical screener used to segregate the as received soil into three size fractions prior to further treatment. No dust emission controls are fitted to this screener. All soil processing is undertaken outdoors at Maw Green.

7.12. The air monitoring data for Edwin Richards Quarry (ERQ) STF comprises 745 daily samples taken across the period 14 January 2022 and 30 June 2023, predominantly within the processing building during processing activities, and also on occasion within the storage pad. Of note, the processing activities are undertaken indoors at ERQ, and the processing activities have varied over the monitoring period, with the screener either uncovered, partially covered and with a HEPA filter[4], or not in operation.

[4] It should be noted that this reference to a screener being covered and fitted with a HEPA filter is a reference to the Appellant's trial, carried out at its ERQ site, to operate a screener with partial enclosure. The trial was not successful. The Appellant has been unable to locate any screener which is available on the market which has 'covers' and/or is partially enclosed.

7.13.3. Quantifiable levels of airborne asbestos fibres were detected at ERQ on 19 occasions (3% of ABS samples). Asbestos fibres were not detected at all in 77% of ABS samples, therefore fibres were detected, but below the limit of quantification, in 23% of ABS samples. The maximum reported airborne fibre concentration was 0.001f/ml.

7.13.4. Reported near-source air concentrations recorded at similar activities to those proposed, with similar types of controls and mitigation applied, are consistently very low. Very few airborne fibres are detected, and quantifiable concentrations are infrequent. On all the infrequent occasions when quantifiable concentrations of fibres were detected, the results were below the EA and HSE guidance threshold concentrations.

7.17. The monitoring at Maw Green and ERQ supports the HSE's guidance which states that airborne fibre concentrations are unlikely to exceed 0.01f/ml, and indicating that in practice airborne concentrations are likely to be substantially lower than 0.01f/ml even when more energetic processes such as power screening are in

operation. The Appellant will therefore demonstrate that the risk of any material level of emissions arising from the Proposed Activity is low.

7.18. The Appellant's evidence will consider and evaluate the available validation soil sample data for the material processed at the Maw Green and ERQ STFs between 19 September 2019 and 05 May 2023. Data from 76 soil samples is available from Maw Green and 278 samples from ERQ, and represents treated soil that originated from 431 different sites/projects across the UK. The data provides a reasonable indication of the type of material being generated at remediation sites in the UK and being accepted and treated by FCC/Provectus.

9. MAW GREEN PERMIT – EA DECISION MAKING

9.1. The Appellant will refer to the Permit Variation for the Maw Green site which the EA has granted in support of this Appeal (the MG Variation).

9.2. Full copies of the variation Letter, Permit and Decision Notice which relates to the MG Variation are appended at Appendix 2.1 – 2.3 of this SoC.

9.3. The activities which are encompassed by the MG Variation are the same as the Proposed Activity in this Appeal. Should it be necessary, the Appellant's evidence will address the degree of similarity between the Proposed Activity and the activities which have been authorised pursuant to the MG Variation.

9.4. In granting the MG Variation the EA has accepted that consent should be granted for the Proposed Activity.

9.5. The Appellant will contend, in light of the MG Variation, that the EA's position in refusing the Application was wholly unreasonable and that the need for this Appeal could have been entirely avoided.

The Maw Green permit should not have been issued in the form that it was and we have varied it to meet the requirements of BAT and the Appropriate Measures, and have issued it to the operator. The permit conditions match those we have issued to FCC at Daneshill.

The activities at WRG, Rowley Regis were done using mobile plant in contravention of the permit issued for the site.

The activities at Maw Green were done using non-enclosed equipment.

The controls required for dust were ignored at both sites.

Not in pack

Asbestos in Soil – A Pan European Perspective; NICOLE 2021 ("the NICOLE Report")

5.34. The purpose of the NICOLE Report is to provide an overview of best practice in the industry and examine some of existing clear standards and detailed guidance that exist in European countries regarding risks arising from asbestos in soil.

5.35. Case studies are provided within the NICOLE Report, in particular, it is noted that one such case study dealt with the demolition of remediation of a 44 acre foundry/iron works site in Ipswich[25]. Asbestos contaminated soil was fed into a three-way screener. The oversize material was proven to be suitable for reuse on site. The mid-size fraction was further processed via a handpicking station. Throughout the works, air was monitored to demonstrate control measures were suitable, allowing 65,000 tonnes of asbestos contaminated soil to be reclaimed, as opposed to disposed of in a hazardous landfill.

Physico-chemical treatment of solids and/or pasty waste treatment processes require the dust to be channelled and abated and at point source emission be less than 5 mg/m^3. This can only be achieved if the plant and equipment is enclosed. By enclosing the system not only is the dust managed but any asbestos fibres will also be abated, channelled and appropriately monitored.

Control of Asbestos Regulations 2012 - Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials: Industry guidance ("the CL:AIRE Guidance")[26]

5.36. The CL:AIRE Guidance was prepared by the Joint Industry Working Group ("JIWG") on Asbestos in Soil and Construction & Demolition (C&D) Materials, supported by the Health and Safety Executive ("HSE"). The CL:AIRE Guidance is aimed at securing improvements within the brownfield and contaminated land industry.

5.37. The CL:AIRE Guidance, "contains industry-produced practitioners guidance"[27] to help employers comply with the Asbestos Regulations when undertaking work on soil and C&D materials that may be or are contaminated with asbestos. The CL:AIRE Guidance states that, "The primary aim of this guidance is to provide clarity about working with asbestos-contaminated soil and C&D materials. It outlines the steps that should be taken by clients, employers and others in the geoenvironmental management and construction sectors that have a duty to ensure that workers and others are not exposed to asbestos as a result of work in, on or with such materials".

5.38. The CL:AIRE Guidance is supported by JIWG decision tools[28], to which reference will be made by the Appellant in support of its case as required.

Noted.

Sector Guidance EPR S5.06 – Guidance for the recovery and disposal of hazardous and non-hazardous waste ("the Guidance")

5.24. The EA has not issued specific guidance regarding BAT for the treatment of asbestos contaminated soils.

5.25. Reference is made by the EA[21] to the Guidance notwithstanding that it has been superseded by the BREF and BAT Conclusion.

5.26. Section 2 of the Guidance sets out 'Techniques for Pollution Control including 'summarised' indicative BAT requirements. It highlights that:

"The indicative BAT requirements may not always be absolutely relevant or applicable to an individual installation, when taking into account site-specific factors, but will always provide a benchmark against which individual Applications can be assessed"[22].

5.27. The Guidance confirms that for all operations, ensuring pre-acceptance controls in accordance with BAT is critical, emphasising that emissions should be prevented through operational controls where at all possible.

5.28. Section 2.2.4 of the Guidance deals specifically with fugitive emissions to air. It notes that 'conveyors' are a common source of fugitive emissions to air, although the list provided is indicative only.

5.29. Asbestos is not specifically referred to within the Guidance, however, the indicative BAT requirements for dust are stated as:

"Dust - The following general techniques should be employed where appropriate:

- *Covering of skips and vessels*
- *Avoidance of outdoor or uncovered stockpiles (where possible)*
- *Where dust creation is unavoidable, use of sprays, binders, stockpile management techniques, windbreaks and so on*
- *Regular wheel and road cleaning (avoiding transfer of pollution to water and wind blow)*

S5.06 has been superseded by Appropriate Measures guidance.

- *Closed conveyors, pneumatic or screw conveying (noting the higher energy needs), minimising drops. Filters on the conveyors to clean the transport air prior to release*
- *Regular housekeeping*
- *Enclosed silos (for storage of bulk powder materials) vented to fabric filters. The recycling of collected material should be considered under Section 2.6.*
- *Enclosed containers or sealed bags used for smaller quantities of fine materials."*

WHO Air Quality Guidelines for Europe (dated 2000) ("the WHO Guidelines")

5.30. The WHO Guidelines, which are now over 20 years old, provide the following guidance on asbestos levels stating:

"Guidelines Asbestos is a proven human carcinogen (IARC Group 1). No safe level can be proposed for asbestos because a threshold is not known to exist. Exposure should therefore be kept as low as possible.

Several authors and working groups have produced estimates indicating that, with a lifetime exposure to 1000 F/m3 (0.0005 F/ml[23] or 500 F*/m3, optically measured) in a population of whom 30% are smokers, the excess risk due to lung cancer would be in the order of 10^{-6}–10^{-5}. For the same lifetime exposure, the mesothelioma risk for the general population would be in the range 10–5–10–4. These ranges are proposed with a view to providing adequate health protection, but their validity is difficult to judge. An attempt to calculate a "best" estimate for the lung cancer and mesothelioma risk is described above."*[24]

No comment needed – it says no safe level can be proposed.