Soil Treatment UK Limited

Technical Summary

Soil Treatment UK Limited

Finmere Quarry and Landfill Site,
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1. Introduction

1.1. Westbury Environmental Limited have prepared this Technical Summary on behalf of Soil Treatment UK Limited (the Operator) to support a bespoke Environmental Permit application for a waste treatment facility at Finmere Quarry and Landfill, Banbury Road, Finmere, Oxfordshire, MK18 4AJ. The site is defined as the area within the proposed permit boundary denoted by the green line, see Drawing No. 23/009c 001 Permit Boundary Plan V1 (Site).

1.2. The Site lies within the existing active Finmere Quarry and Landfill. The quarry is divided into two sections: the northern and southern sections. The northern section of the quarry is currently operated under a landfill and waste recovery permit to complete the approved quarry restoration scheme. The southern area of the quarry includes the area where the waste operations proposed within this permit application will be located.

1.3. This application seeks to allow physical treatment of hazardous and non-hazardous construction / demolition waste and CLO Production. The proposed treatment activities include:

- Handpicking
- Screening
- Washing
- Crushing
- Storage
- Blending
- CLO Production

1.4. This Technical Summary provides a detailed description of the proposed waste activities including aspects on the waste acceptance, storage, and treatment.

1.5. Waste will be accepted, stored, and treated in accordance with the following guidance:

- JRC Science for Policy Report: Best Available Techniques (BAT) reference document for waste treatment, October 2018 (BREF).
- Commission implementing decision (EU) 2018/1147 of 10th August 2018 establishing Best Available Techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament of the Council (BAT conclusions).
- Sector Guidance Note 5.06: Guidance for the Recovery & Disposal of Hazardous and Non-Hazardous Waste, 2013 (SGN 5.06).
- CAR-SOIL Control of Asbestos Regulations 2012 – Interpretation for managing and working with Asbestos in Soil and Construction and Demolition Materials.
- Guidance on the Classification and Assessment of Waste. Technical Guidance WM3.
- Chemical Waste: Appropriate Measures for Permitted Facilities, 18th November 2020.
- Non-hazardous and Inert Waste: Appropriate Measures for Permitted Facilities, 8th December 2022.

1.6. Activities carried out under the Environmental Permit will be controlled by procedures within the Environmental Management System (EMS).

1.7. A detailed assessment of the proposed operating techniques with consideration of the Best Available Treatment (BAT) has been produced, see Environmental Permit Application, Appendix 12 Bat Assessment Report.

2. Waste Acceptance

2.1. Strict waste acceptance procedures will be implemented on Site to ensure only permitted waste types are accepted. The waste acceptance procedure includes information with regard to pre-acceptance, acceptance, and classification of waste, see Environmental Permit Application report, Appendix 4 Waste Pre-acceptance Procedure and Appendix 5 Waste Acceptance Procedure.

2.2. Hazardous waste containing the following hazardous properties will not be accepted at the Site:

- HP1 Explosive waste.
- HP9 Infectious waste.
- HP12 Waste which will release acute toxic gas.
- HP15 Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste.

2.3. Hazardous waste that has been classified, and for which the hazardous properties are known, will be accepted onto the Site. Hazardous waste accepted will typically contain a mixture of contaminating substance including heavy metals and hydrocarbons.

2.4. Wastes with different hazardous properties will be kept separate to ensure hazardous properties aren't mixed.

2.5. Hazardous waste that has not had an assessment carried out and the hazardous properties are unknown, but the waste has assumed to be hazardous, will be accepted on to the Site. This waste will be stored separately until it can be sampled, tested and a hazardous waste assessment carried out to identify the contaminating substances and hazardous properties present.

2.6. On Site testing will be undertaken on accepted unassessed waste. Rapid testing will be undertaken in house in order to determine if the waste has a high quantity of petroleum hydrocarbon (TPH) concentration >1000mg/kg.

2.7. If the unassessed waste has >1000mg/kg of TPH, it is confirmed that the waste is most likely to be classed as hazardous and will be stored in the dedicated hazardous waste storage area prior to treatment.

2.8. If the waste has <1000mg/kg TPH then further analysis will be carried out in order to determine the presence of other potential contaminants.

2.9. The results of this testing will be used to classify the waste in accordance with WM3. Wastes classified as non-hazardous will be sent to the non-hazardous storage area. Waste classified as hazardous will be stored in the hazardous storage area.

2.10. The Site will accept waste that is classified as hazardous due to the presence of asbestos (ACM). This waste could contain asbestos either in the form of identifiable bonded asbestos pieces, fibrous asbestos, or both. There may also be other contaminating substances that cause the waste to have other hazardous properties. The treatment carried out on wastes accepted on to the Site will be dependent upon the contaminating substances and the hazardous properties. It will be the responsibility of the Site Manager to determine the appropriate treatment route for wastes.

2.11. Waste containing a concentration of more than 0.1% of asbestos fibre will be rejected from the Site.

2.12. Compliance Sampling and testing will be undertaken on waste to be accepted and accepted at the Site. This testing will be carried out in the onsite laboratory by a member of appropriately qualified staff.

2.13. The onsite testing facility will use largely handheld equipment. Validation testing will be undertaken to support the analytical results obtained from onsite testing by duplicate testing on a regular basis with external accredited laboratories.

2.14. Waste that has been sampled will only need to be retained on site for a short period of time while lab results are obtained due to the handheld equipment giving immediate results.

2.15. Waste that is not acceptable on Site will be rejected in accordance with the Waste Rejection Procedure included in the EMS for the Site, see Application report, Appendix 6 Waste Rejection Procedure.

2.16. Records will be kept in association with the Waste Acceptance and Rejection Procedures.

3. Waste Storage

3.1. The EMS contains a Waste Storage & Handing Procedure that contains information on the storage of waste on Site.

3.2. Hazardous and non-hazardous waste will be stored separately. Hazardous waste is stored on impermeable surface with sealed drainage in the same area waste treatment takes place while non-hazardous waste and product is stored north of the waste treatment area on hard standing.

3.3. Waste being used for CLO production is stored on the northwestern boundary of the permitted area with sealed drainage consisting of a blind sump.

3.4. Hazardous waste with different hazardous properties will be stored separately to ensure different hazardous properties are not cross-contaminated.

3.5. The Site layout will allow the identification of wastes that are destined for a particular treatment. Storage areas/stockpiles will be dedicated to treatment types, for example the Site will have a dedicated area for hazardous wastes that are destined for washing.

3.6. Separate stockpiles will ensure that cross contamination does not occur.

3.7. Storage stockpiles will be clearly marked to identify the waste type.

3.8. Storage requirements will be controlled by the implementation of the requirements of strict waste storage procedures and waste tracking requirements.

3.9. The container for asbestos waste will always be kept locked and will be located in close proximity to the picking line.

3.10. Wastes accepted for asbestos picking will be stored in an area, separate to the storage of wastes to go directly into the treatment plant.

3.11. The storage areas will be clearly marked to show which waste batch is present in that area.

3.12. In the unlikely event that non-hazardous waste becomes contaminated with hazardous waste, the entire batch will be considered hazardous and will be treated as such.

3.13. No more than 80,000 tonnes of waste (hazardous and non-hazardous) are to be stored on Site at any one time.

3.14. Incoming waste contaminated with bonded asbestos (and which contains <0.1% asbestos fibres) will be handpicked to remove the bonded asbestos pieces. This treatment process gives rise to the need to store asbestos that has been removed from the waste. This asbestos shall be double bagged and kept within clearly identified, secure and lockable containers. This asbestos will be removed from the site and sent to a suitably licensed facility for disposal.

3.15. Waste contaminated with asbestos fibres will be covered to avoid the release of fibres. Wastes contaminated with >0.1% asbestos fibres will be rejected from the Site.

3.16. Waste being stored to create a compost like output (CLO) will be stored in a concrete bay with sealed drainage. Water will drain into a blind sump that will either be tankered off site to a suitably licenced facility or pumped out for dust suppression / dampening of compost piles.

3.17. A quarantine area will be located close to the entrance/egress of the Site. Rejected wasted will be stored in this area for no longer than five days.

4. Waste Transfer

4.1. The Site will transfer wastes off Site without treatment should there be no feasible treatment process. It is anticipated that this will include wastes that are contaminated with fibrous asbestos, and which has been evidenced as being hazardous.

4.2. It is not anticipated that a significant amount of waste will be transferred from the Site, without treatment, since the Operator intends to only accept waste that can be treated or that which requires further investigation to determine the hazardous properties present.

5. Waste Treatment

5.1. Hazardous and non-hazardous waste will be treated separately.

5.2. Non-hazardous waste will undergo some or all of the following treatment activities:

- Handpicking
- Screening
- Washing
- Crushing
- Storage
- Blending
- CLO production

5.3. Hazardous waste will undergo some or all of the following treatment activities:

- Handpicking
- Screening
- Washing

5.4. Hazardous waste treatment will be undertaken on Site in accordance with the following process flow diagrams:

- Appendix 1, Hazardous Waste Treatment Process Flow.
    - This process flow diagram provides an overview of the waste treatment activities carried out on the Site with regard to both hazardous and non-hazardous waste.
- Appendix 2, Hazardous Waste Containing Asbestos Process Flow
    - This process flow diagram provides more details regarding the different forms of asbestos and how these are managed in wastes that are only hazardous due to the presence of the asbestos.
- Appendix 3, Hazardous Waste Containing Asbestos and Other Hazardous Properties Process Flow.
    - This process flow diagram provides more details regarding the treatment of wastes that contain different forms of asbestos and other hazardous properties.

5.5. The following descriptions should be read in conjunction with the above-mentioned process flow diagrams.

5.6. The purpose of all waste treatment activities undertaken at the Site is to separate the waste fractions and remove contaminants.

Screening of hazardous waste

5.7. Waste that is washed produces a number of fractions of waste, according to particle size:

- It is anticipated that the larger fraction(s) of waste will, when sampled, tested, and assessed, be classified as non-hazardous waste.
- It is anticipated that the finer fraction(s) of the waste will, when sampled, tested, and assessed, be classified as hazardous waste.
- Therefore, this screening process will reduce the volume of hazardous waste.

5.8. The purpose of screening the hazardous waste is to remove and separate the hazardous components of the waste.

5.9. Water used in the washing treatment is recirculated through the wash plant and will undergo water treatment to remove contaminants.

5.10. Water in the wash plant is treated by adding flocculants to the contaminated water which is then put through a filter press to remove any particulates. This will produce a filter cake residue which will be sent to a suitably licensed facility.

5.11. The screening / wash plant will also remove items of contravening wastes such as metal, plastic, and wood.

5.12. The purpose of washing is to separate the waste by particle size; therefore, separating all hazardous substances present in the waste. The water itself does not 'treat' the hazardous substances but brings about the separation of fractions that are likely to be contaminated and those that are not.

5.13. Both organic and inorganic contaminants are typically bound to the surface of particles in the waste. Since smaller particles have a greater surface to volume ratio. Therefore, after treatment, the fractions of the waste that contain the smallest particles will contain the greatest concentration of contaminants. Contaminants may also be removed from the solid waste to the wash water.

5.14. Any fraction of waste from the screening process that has been classified as hazardous and is not suitable for further treatment on Site will be sent off Site as hazardous waste.

5.15. Any fraction of waste from the screening process that is classified as hazardous and is suitable for chemical treatment on Site will be treated in accordance with a treatment plan for that waste.

5.16. Any fraction of waste from the screening process that is classified as non-hazardous will be treated on Site along with other imported non-hazardous wastes. Wastes to be used to produce WRAP compliant recycled aggregates will be assigned a suitable Waste Coded at this stage.

5.17. Waste that has undergone treatment and continues to have hazardous properties (classified as hazardous) will be stored in the hazardous waste storage area to be sent off-site as hazardous waste at a suitably licensed facility.

5.18. Waste that has undergone treatment and has no hazardous properties will be sent to the non-hazardous waste storage area for recycling, or off-site for recovery.

5.19. All fractions of waste produced from the screening process will be sampled, tested, and assessed in accordance with WM3 to classify the separate waste fractions. Testing frequency will consist of two tests per 20 tonne loads, depending on the information provided in the site investigation report.

5.20. The purpose of the screening process is to separate the fractions of the waste that is non-hazardous from the fraction that contains substances causing hazardous properties. This reduces the volume of hazardous waste which will allow for the waste to be reclassified as non-hazardous.

Hazardous waste containing asbestos.

5.21. The Site will accept waste that is contaminated with asbestos. This waste could contain identifiable pieces of bonded asbestos, asbestos fibres, or both. The form that the asbestos is present in will determine how it is managed/treated.

<u>Hazardous waste containing bonded pieces of asbestos only.</u>

5.22. Hazardous waste which contains identifiable pieces of bonded asbestos only will be subject to handpicking to remove those pieces. Asbestos that has been removed from the waste shall be double bagged and kept within clearly identified, segregated and secure lockable containers. The treated waste will be checked and then stored in the non-hazardous waste storage area for non-hazardous treatment.

<u>Hazardous waste which contains identifiable pieces of bonded asbestos and other hazardous contaminants.</u>

5.23. Hazardous waste containing identifiable bonded asbestos as well as other contaminants will first be handpicked to remove all asbestos pieces. Asbestos removed from the waste shall be double bagged and kept within clearly identified, segregated and secure lockable containers.

5.24. The waste will then be transported to the hazardous waste treatment area of the Site in order to undergo further treatment via washing.

Hazardous waste containing asbestos fibres

5.25. Hazardous waste containing more than 0.1% asbestos fibres will not have any treatment take place and will be sent off Site for disposal at a suitably licenced facility.

Non-hazardous waste treatment

5.26. Non-hazardous waste accepted at the Site will undergo one or all of the following treatments:

- Handpicking
- Screening
- Washing
- Crushing
- Storage
- Blending
- CLO Production

5.27. Once treated non-hazardous waste will be used to produce recycled aggregates. Fines (typically soils) resulting from this process will be sent off Site as a waste material.

CLO production

5.28. Non-hazardous waste types with more than 5% organic compounds will be used in CLO production.

5.29. Waste consisting of, but not limited to street cleaning residues, off specification compost and mineral waste, will be blended in storage bays and continuously dampened throughout the composting process to keep the material moist. This mixture is then left for composting over a period of at least five weeks.

5.30. At the end of the process the waste will be tested to ensure it is suitably for use in the northern sections of the wider quarry's restoration scheme.

5.31. CLO output will be identified as 19 12 12 – compost like output derived from residual waste streams.

Wastewater treatment

5.32. Water used within the wash plant is treated within a wastewater treatment plant located on Site.

5.33. Contaminated water which has been used in the wash plant is pumped through pipes to the wastewater treatment plant.

5.34. The wastewater treatment plant comprises of a number of water tanks, flocculant dosing, settlement, separation, and a filter press.

5.35. Raw materials including flocculants will be stored in IBCs within the wastewater treatment plant.

5.36. Once the water has been treated within the water treatment plant it is the recirculated back through the wash plant.

5.37. The reuse of water in the wash plant means there is a constant supply of water, however, if any additional water is required to be put into the wash plant, this would be fed from the mains water supply or the lagoon.

5.38. Solids are removed from the dirty water to the filter cake produced in the filter press. This material falls into bays beneath the filter press and will be tested prior to removal from the Site.

6. Cross Contamination

6.1. To ensure there is no cross contamination of hazardous and non-hazardous waste, waste is treated in batches.

6.2. Storage of waste in separate areas of the Site will ensure that there is no cross contamination between the hazardous and non-hazardous waste.

6.3. During treatment of a batch of hazardous waste, the filter cake will be dropped into a designated bay. At such time that the wash plant is swapped to treating a non-hazardous batch, a time period (equal to the retention time of solids in the plant) will be provided prior to the filter cake being deposited into a new bay. In this way filter cake produced from the treatment of hazardous and non-hazardous waste is kept separate. Hazardous waste will be treated for a period of time before alternating to non-hazardous waste treatment. depending on waste input to the Site.

6.4. To ensure that there is no cross contamination of hazardous substances transferring from the hazardous waste to the non-hazardous waste via the water in the wash plant, the following precautions are taken:

- The retention time of the water within the wash plant will be determined.
- Following a batch of hazardous waste, a time period, equal to at least 1.5 x the retention time of the water in the wash plant, will be allowed before non-hazardous waste will be fed into the wash plant.
- This will ensure that all water coming into contact with the non-hazardous waste will have been treated within the wastewater treatment plant since being in contact with the hazardous waste.
- Water quality testing will be carried out on the treated wastewater at regular intervals, to ensure no cross contamination occurs.

6.5. Waste being composted for CLO production will take place on a separate area of the Site to the wash plant / treatment of hazardous waste, this will prevent cross-contamination from occurring.

7. Surface Water Management

7.1. All surface water runoff from the waste treatment and hazardous waste storage area will be captured by the drainage system. Water then travels to the water treatment plant via interceptors.

7.2. The waste treatment area also used to store hazardous waste will be surrounded by raised “speed bumps” to contain any surface water and prevent cross contamination to the non-hazardous waste storage area. Surface water collected in this area is collected in the interceptors and treated in the water treatment tank. Non-hazardous waste and product are stored on hardstanding to the north of the permitted area separate to the waste treatment area.

7.3. CLO bays will have their own drainage system which will capture any run-off from the dampening of the compost piles. Water will be captured in a sealed drainage system consisting of a blind sump and tankered off Site to a suitably licenced facility or re-used on Site for dust suppression / dampening of compost piles.

7.4. There will be no mixing of run off from the waste treatment area and the non-hazardous waste storage area. Surface water is stopped from entering the waste treatment area by the positioning of raised “speed bumps”. Due to extensive drainage infrastructure, it is not anticipated that the water level on the concrete pad would exceed the level of the raised “speed bumps”. However, should this event occur, it is unlikely that the water would reach the non-hazardous waste storage area.

7.5. Surface water collected from drains from the waste treatment area is fed through the interceptors and then to the water treatment plant. Clean water from the water treatment plant is fed to the wash plant. Dirty water from the wash plant is recirculated back to the water treatment plant. In this way surface water from the waste treatment area is recirculated and used on Site. Should there be excess surface water from the waste treatment area, e.g., from heavy rainfall events, this water will be tankered off Site.

7.6. Large water holding tanks are used in association with the wastewater treatment plant. These provide significant retention capacity for water on the Site.

7.7. Appropriate infrastructure will be constructed to ensure no loss of contaminated surface water over the edge of the impermeable pad in the waste treatment area.

7.8. The drainage infrastructure for the Site is being constructed new and will have been tested during commissioning. All water holding tanks will have level monitoring alarms. All aspects of the drainage system will be subject to regular maintenance checks and planned preventative maintenance in accordance with the procedure in the Environmental Management System.

Appendix 1

Hazardous Waste Treatment Process Flow Diagram

Hazardous Waste Treatment Process Flow Diagram

Colour Legend

- A – Acceptance of unclassified waste
- B – Hazardous waste screening
- C – Hazardous waste removal
- D – Non-hazardous waste

A

Waste tipped into storage area (tipped into piles for each source)

Unclassified Waste (mainly 17 09 03*)

Sample tested using in-house rapid testing facilities

Does the sample have a TPH content exceeding 1000 mg/kg?

No

Waste stored in Separate hazardous waste storage area

Sample tested for other potentially hazardous properties

Yes

B

Classified Hazardous Waste (All hazardous waste codes)

Waste stored In source-specific hazardous waste Stockpile

Yes

Is waste classified as hazardous in accordance with WM3?

No

Hazardous Waste Screening to Separate Fractions

Soil Fraction

Fractions of waste

Fractions of waste

Fractions of waste

Fractions of waste

Testing and analysis of sample carried out in accordance with WM3

Is waste classified as hazardous in accordance with WM3?

Yes

No

C

Sent off site as hazardous waste

Stored in hazardous waste treatment area

Is the waste acceptable under WRAP?

Yes

No

Sent off site as waste

D

Non-hazardous waste

Waste stored in non-hazardous waste storage area (waste types stored separately)

Waste to be recoded as 19 12 09

Non-Hazardous Waste Processing to Produce an Aggregate to a Specification

Product Storage

Soil and fines sent off Site as Waste

Sent off Site as product

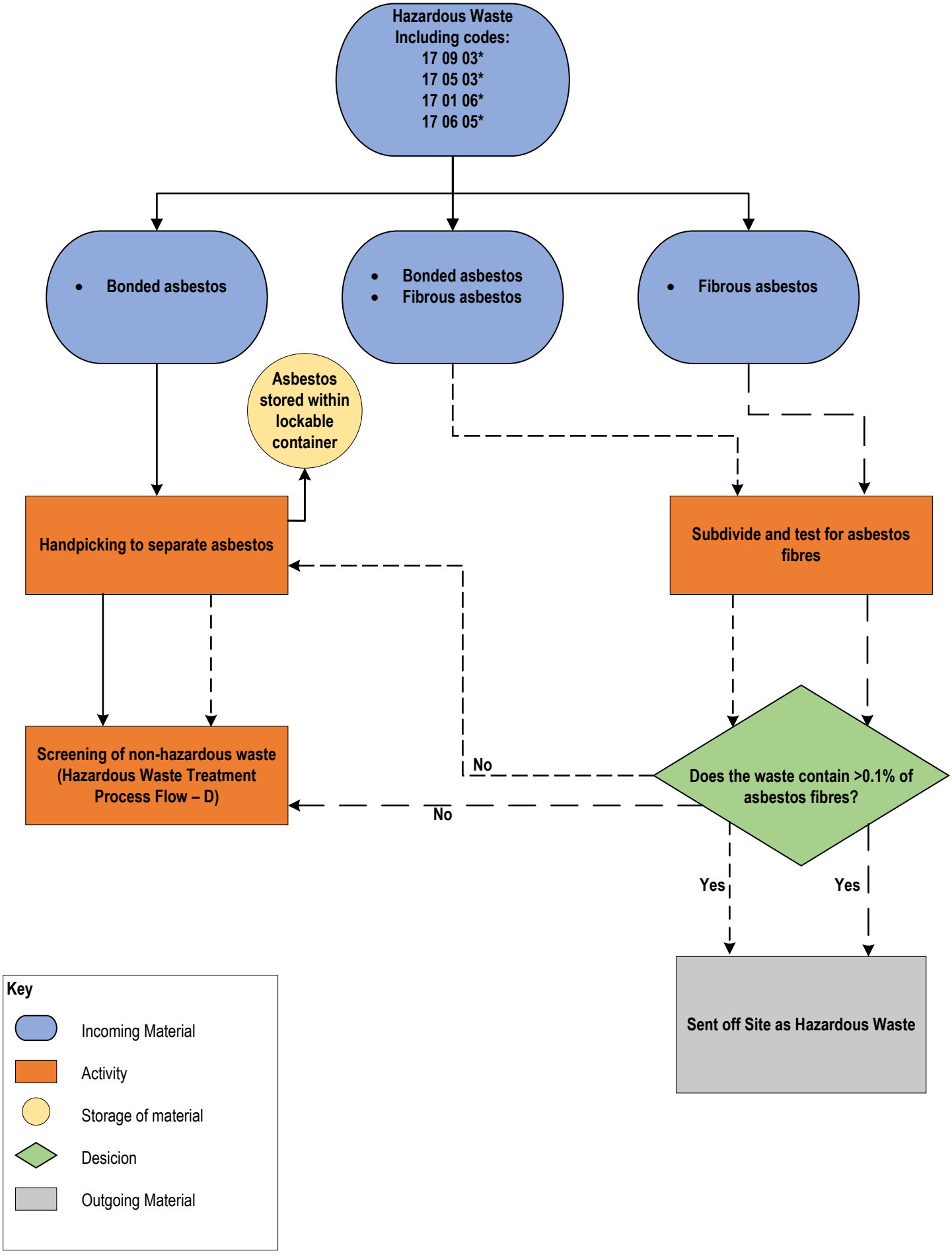
Key

- Incoming Material
- Activity
- Storage of material
- Desicion
- Outgoing Material

Appendix 2

Hazardous waste containing asbestos only

Hazardous Waste Containing Asbestos



Appendix 3

Hazardous waste containing asbestos and other hazardous properties

Hazardous Waste Containing Asbestos and Other Hazardous Properties