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RE: Summary of Asbestos Works and Asbestos Air Monitoring

1.0 Introduction

The purpose of this Memorandum is to provide a non-technical summary of the asbestos situation at Holloway Park, how this is being managed and, in particular, how and why asbestos air monitoring is undertaken and what the results mean.

On the basis that asbestos air monitoring specialists have been monitoring the Holloway Park site since works began in 2022, our key takeaway messages to date are as follows:

1. This site is nothing unusual and it is very common for Brownfield sites to have some element of asbestos contamination;
2. The perceived risks associated with asbestos are almost always higher than the actual risks present;
3. The management of asbestos at Holloway Park is taken very seriously, and all works undertaken are in accordance with relevant guidance/legislation and the risks to both site staff and any local residents/workers are demonstrably low.

What follows has been provided further to a number of technical reports that have been completed for this site and that have been used for a variety of purposes (e.g. to comply with health and safety legislation, to support the sites Planning Permission etc). While these documents are very thorough and suit the needs of various stakeholders (the local Planning Authority, Environment Agency, HSE etc) it is accepted that they are very technical in nature and do not explain, in non-technical terms, the great lengths to which the site team has gone to protect both site workers and local residents/workers.

The below is structured as a discussion around the following:

1. What was known about asbestos before redevelopment started and what needed to be done?
2. What changed in relation to asbestos once work started?
3. What work is being undertaken at the site that involves asbestos?
4. How the site goes about making sure the works are safe and, especially in relation to providing reassurance asbestos air monitoring.

2.0 What was known about asbestos before redevelopment started

Before redevelopment of the site started there were two main sources of information that told us about asbestos at the site. These were:

1. Asbestos information from surveys of the existing buildings; and
2. Information contained within site investigation reports undertaken at the site. In other words, asbestos present in the soil at the site and not in buildings. Asbestos is often

present in Made Ground (i.e. the shallow soils that are not natural due to development, disturbance etc) because over time buildings are demolished and “rubble” tends to end up in shallow soils either by accident or on purpose. Historically this material may have contained asbestos, hence why we test for asbestos during a site investigation.

2.1 Asbestos Surveys

In terms of asbestos surveys, these used to be called Type, 1, 2 or 3 Surveys. The difference in surveys essentially related to whether any physical sampling of asbestos took place (and how thorough this was) or whether the survey was just based on visual observations.

We no longer refer to asbestos surveys as Types 1 to 3. Instead, we would draw attention to the two types of asbestos survey that are relevant here:

- Management asbestos surveys; and
- Refurbishment/Demolition surveys.

Management Surveys are undertaken in commercial/industrial buildings (i.e. the workplace) or multi-tenancy properties that may contain asbestos. The purpose of this type of survey is to identify if, and where, asbestos is present and produce an asbestos management plan. The main reasons this approach is taken is so that:

1. Asbestos in the building is monitored to make sure that condition does not degrade to the point it becomes a risk to human health. At that point the asbestos will be removed; and
2. It provides an asbestos register which informs any contractors working on the building where asbestos is located such that they do not accidentally disturb it during their works. A vast number of buildings have this type of survey/management plan in place. This includes buildings such as schools, hospitals and, in this case, prisons.

A Refurbishment/Demolition survey (which was undertaken for the former Holloway buildings) is what is really important in this context. There is a legal requirement to undertake this sort of survey before a building is demolished. This type of survey was undertaken for all buildings scheduled for demolition at Holloway. The report identified where asbestos was present in the buildings. The report was then passed to the Demolition Contractor (Downwell Demolition) and all asbestos was removed from the buildings before any intrusive demolition (knocking buildings down, crushing concrete etc) was undertaken.

The point from the above is that in order to avoid the spread of asbestos, or release of asbestos fibres, during the demolition of existing buildings a full survey is undertaken and the asbestos identified is removed under controlled conditions before anything is disturbed or broken up.

Causing asbestos cross-contamination at a site is not only very poor practice but is an expensive mistake. Crushed brick and concrete is cheap to dispose of and, more often than not, it is actually valuable to a site for use in road construction, piling mats etc. If the Demolition Contractor does not act appropriately and contaminates the crushed materials with asbestos then it becomes hazardous waste and cannot be reused on site. Disposal of hazardous waste containing asbestos is very expensive (typically more than £3000 per lorry load). It is therefore in the best interest of all parties that this situation does not occur.

Due to the above the Holloway Project Team has undertaken the correct background work to avoid this situation and a qualified Licensed Asbestos Removal Contractor (LARC) which holds a license from the HSE has been employed to remove the asbestos identified. Only then has Downwell demolished the buildings present. This has avoided any asbestos cross-contamination issues at this site, which in turn reduces risks to human health.



2.2 Site Investigation Data

Information about asbestos in the ground (which is separate to the discussion above regarding buildings) comes from a number of site investigations that have been undertaken at the site.

Whereas now the construction industry goes to extreme lengths (as discussed above) to avoid causing asbestos contamination, this was not always the case. Rubble often contained asbestos and was used on site, particularly when that rubble was derived from buildings built prior to 1999 when asbestos was completely banned in construction.

The above means that asbestos could be present on any “Brownfield” site. In fact, when we undertake site investigations on Brownfield sites we assume that asbestos could be present until proven otherwise. The discovery of at least some asbestos in the ground during a site investigation is an extremely common occurrence.

In the case of the Holloway site an Environmental Consultancy (Waterman) produced a number of reports for the site based on site investigation. During the site investigation trial pits are dug or boreholes are drilled so that the quality of the soils can be investigated and samples taken for laboratory analysis.

The Waterman investigations reported that asbestos fibres or fragments of asbestos containing material were present in soils at seven locations around the site and that concentrations ranged between <0.001% and 0.015%. These are low concentrations (for example the hazardous waste threshold for asbestos is 0.1%), however asbestos was still present and needed to be addressed.

So, from the above information, and before redevelopment of the site started, it was known that asbestos was present in some areas and that it could be present elsewhere. Going back to the discussion above, this meant that it should be assumed that asbestos is present and this should be reflected in the approach to the development of the site and any risk assessments produced.

The Holloway Project Team took the above a step further and undertook some further sampling of its own. This sampling indicated the following:

1. Although loose asbestos fibres were initially identified in 5 samples out of 14 tested the actual concentration was below 0.001%. This essentially means that the asbestos present was at such low concentrations that it could not be measured;
2. Three actual suspected “fragments” of asbestos were tested for asbestos and the laboratory analysis proved that these fragments did, indeed contain asbestos.

As discussed earlier, this is an extremely common situation on a Brownfield site. The practical upshot of the asbestos identified at the site was:

1. That works in the ground involving any asbestos would need to be undertaken in accordance with the requirements of the Control of Asbestos Regulations. This meant producing an asbestos risk assessment, and this was undertaken by SLR;
2. That the site would need to be ‘remediated’ to make it safe for development and future use.

In relation to Point 2 above, the remediation strategy was produced by Waterman. There are generally two options to deal with asbestos in the ground on a development site:

1. The soils containing asbestos are completely removed;
2. The soils containing the asbestos are encapsulated beneath a covering of clean soils, building footprint or roads so that humans do not come into contact with them in the future.

The site therefore had both of the above options available. The idea was that a qualified organisation would undertake an asbestos watching brief (where trained operatives physically



stand over the excavations looking for asbestos) and deal with any asbestos identified in the ground by either removal or encapsulation.

To support the remediation works, SLR was asked to provide most of the documentation (risk assessments, validation reports etc) and the asbestos removal works in the ground are being undertaken by Horizon Environmental. Like Downwell Demolition, Horizon is a Licensed Asbestos Removal Contractor and holds the correct licence from the HSE.

3.0 What changed in relation to asbestos once work started?

The short answer to this question is that not much has changed at the site, although:

1. Further asbestos was identified; BUT
2. The approach to the remediation of the site remains largely the same.

In April 2023 Horizon reported the presence of suspected pieces of asbestos beneath a concrete slab as it undertook its Watching Brief. Samples of this material were tested and this confirmed that the material contained asbestos fibres.

In the weeks that followed, fragments of asbestos continued to be identified at the site and were dealt with by Horizon under their asbestos watching brief. Collectively a decision was then taken to assume that asbestos could be present anywhere at the site in Made Ground as a precaution.

The above is of no real consequence to the development of the site because the existing remediation strategy allowed for dealing with asbestos. The key thing that changed was the way in which the Project Team chose to deal with the remediation of soils going forward. As discussed above there are two options for dealing with asbestos in soil:

1. Remove the soil that contains asbestos (or remove the asbestos itself); or
2. Encapsulate the asbestos-containing soils to avoid future contact with it.

At this stage a precautionary approach was taken at Holloway. Rather than deal with asbestos in a peace meal approach, a decision was taken to remove all Made Ground (which contains the asbestos) from the site as waste. This is a more expensive option, but it provides more certainty that all asbestos has been removed.

This means that, under the supervision of Horizon, all Made Ground is being stripped from the site and removed as waste. Ultimately this will result in an asbestos-free site. There remains a possibility that in some areas a decision will be made to encapsulate Made Ground rather than remove it (for example where made Ground is very deep), however to date this has not occurred.

All of the work at the site in relation to asbestos is undertaken under controlled conditions and this is discussed in the sections that follow.

4.0 What work is being undertaken at the site that involves asbestos?

From the discussion in the above sections, the first asbestos task was to identify the asbestos in the existing buildings. This was achieved via the Refurbishment/Demolition Survey.

The next step was the removal of the asbestos from the buildings and the demolition of the buildings once the asbestos had been removed. This work is undertaken by Downwell Demolition.



Having dealt with the buildings, the next task is groundworks and remediation. As discussed above the current policy is that all Made Ground will be removed from the site until only natural ground remains. This is a voluntary, precautionary approach. The procedure is as follows:

1. Dedicated risk assessments are produced by SLR and Horizon Environmental (and any other party required to do so);
2. The risk assessments detail all the precautions that need to be undertaken, including personal protective equipment, respiratory equipment, decontamination facilities, damping down soils, asbestos air monitoring etc;
3. Horizon maintains its asbestos Watching Brief during groundworks. Trained operatives (who hold the highest (Cat C) level of asbestos training) are present at the site to identify any asbestos as excavations take place and take appropriate action;
4. In a systematic manner, Made Ground is removed across the site until natural ground has been encountered;
5. If occasional fragments of asbestos are identified during excavation, Horizon will simply remove these fragments, place them in asbestos bags and into a sealed skip for later removal;
6. If too many fragments of asbestos are present to remove them at the face of the excavation then there are two choices:
 - a. All of that Made Ground containing asbestos fragments is removed from the site as hazardous waste (i.e. soil and all); or
 - b. Horizon will treat the material on site (by hand picking or mechanical means) to remove all of the visible asbestos. The soil can then be tested and removed as non-hazardous waste. The fragments of asbestos are, again, placed in bags and disposed from site via a sealed skip;
7. As parcels of land are stripped of Made Ground an SLR Engineer attends site to confirm that Made Ground has been removed. Sometimes this is undertaken in conjunction with another task, for example when former fuel tanks are removed and we are required to test the soil beneath them to ensure that the soils are clean;
8. Finally, and at the end of the process, all of the information generated will be used to write a Remediation Validation Report. This will be used to prove that the site was successfully remediated and will be submitted to the Local Authority in support of the discharge of Planning Conditions. At that point the report also becomes accessible to members of the public via Islington Council's Planning Portal.

5.0 How the site goes about making sure the works are carried out safely

Some of what follows has been discussed in a previous Briefing Note of July 2023. The below provides a recap in terms of general asbestos health and safety measures and a more detailed discussion in relation to asbestos air monitoring.

5.1 General Asbestos Procedures

The first step undertaken on any site where asbestos is present is compliance with the Control of Asbestos Regulations, also known as CAR 2012.

CAR 2012 applies when:

- Asbestos fibres are present (in this case in the Made Ground at the site) at above a "trace" concentration. A trace concentration is anything above 0.0001% asbestos;
- More than isolated and random fragments of visible asbestos are present.



Based on the discussion in Section 2 we know that asbestos fibres have been detected above trace concentrations and that fragments of asbestos in the Made Ground are quite common. This means that CAR 2012 applies and the site is required to make sure that any works undertaken comply with these Regulations.

There are numerous individual Regulations that must be followed in CAR 2012. The way this is achieved is to begin with a very detailed Asbestos Risk Assessment and Plan of Work. In this case this document has already been produced by SLR and it sets out how the site will manage asbestos risks to humans both on and off-site.

The Asbestos Risk Assessment provides a lot of information that relates to how workers will stay safe on site while working with asbestos, however of most concern to local residents/businesses is how a site will prevent the release of asbestos fibres over the boundary of the site. The focus of the rest of this document is to describe how the site prevents the release of asbestos fibres over the boundary of the site and how this can be proven with monitoring.

The ways in which asbestos risks are managed at the site, and the release of asbestos fibres from the working area prevented, include:

- Making sure staff have the correct training and, in this case, the use of a specialist contractor (a LARC);
- Undertaking a continual asbestos Watching Brief so that when asbestos is identified it is immediately dealt with (which is undertaken by Horizon);
- Having designated working areas where asbestos has been identified so that staff are protected and areas of the site are not cross-contaminated;
- Using suppression (for example water or certain chemical suppressants) to reduce the likelihood of asbestos fibre release;
- Using the correct Personal Protective Equipment (PPE) and Respiratory Protective Equipment (RPE), which often means site staff are required to wear disposable overalls and half face masks; and
- Preventing the release of asbestos fibres by minimising excavator drop heights and avoid the double-handling of materials where possible.

All of the above are techniques used at Holloway and, while some of the above can appear quite alarmist to the casual observer (particularly site staff wearing full asbestos PPE), in fact, given the requirements of CAR 2012 it is standard practice.

5.2 Asbestos Air Monitoring

Asbestos fibre air monitoring during earthworks at Holloway Park is undertaken for two main reasons:

1. To demonstrate that risks to on-site works are within acceptable limits;
2. To demonstrate that asbestos fibres are not being released over the boundary of the working area (and therefore over the boundary of the whole site).

Asbestos air monitoring at Holloway is undertaken as a combination of:



1. Air monitors around the perimeter of the working area (where asbestos removal takes place in a discreet area) or site boundary (if asbestos removal work was to take place across the wider site); and
2. Personal air monitors (for example within the cab of excavators).

The way the asbestos monitors work is by placing an air pump in a set location, for a specified amount of time. The air pump passes the atmospheric air through a filter and this filter captures any asbestos fibres present.

After a specified amount of time (which can vary, as discussed below) the filters are removed from the monitors. The attending analyst will usually be present nearby to quickly process filters.

The filters used to capture asbestos fibres are placed under a microscope and the analyst counts the number of fibres present in each microscope field. This means that the results of asbestos air monitoring are available almost immediately. They are not required to be sent to a laboratory. This in turn means that if there was ever an unacceptable number of asbestos fibres recorded (discussed below in more detail) the analyst can report this back immediately to the work party and works will be ceased until further controls are implemented.

The amount of asbestos fibre in the air is described as fibres per millilitre (f/ml) of air and the detection limit is based on the volume of air pulled through the filter by the air pump, the number of graticules counted and several other factors.

At this point it is worth noting that because asbestos has been used in the UK for so long, there are already low, but detectable, concentrations of asbestos present in the air, particularly in urban areas. This means that quite apart from any work taking place on an asbestos-contaminated site there are already asbestos fibres (at very low concentrations) in our air. The purposes of asbestos fibre monitoring at a site like Holloway Park is to ensure that unacceptable levels of asbestos are not being released by the works undertaken on site.

Attached to this Briefing Note are all of the asbestos air monitoring results for August and September 2023. These are divided into AFC (airborne fibre count) and PAM (personal air monitoring) certificates.

PAM asbestos monitoring reports are based on a personal air monitor that has been placed about the person (or, for example, within the cab of an excavator) of an individual working in potentially asbestos-contaminated soils at the site.

AFC asbestos monitoring reports are based on the actual measurement of asbestos fibres in the air. This is the type of asbestos air monitoring that is relevant to local residents and workers as it helps the site prove that an unacceptable release of asbestos fibres has not occurred.

Monitors will sometimes be placed in fixed locations around the boundary of the site, but more often will be placed closer to where the works are taking place. The placement of the monitors will be dependent on factors such as:

1. The location of other workers on site, outside the boundary of the working asbestos area;
2. The location of off-site residents and workers;
3. Proximity to the area in which asbestos could be disturbed; and
4. Wind direction.

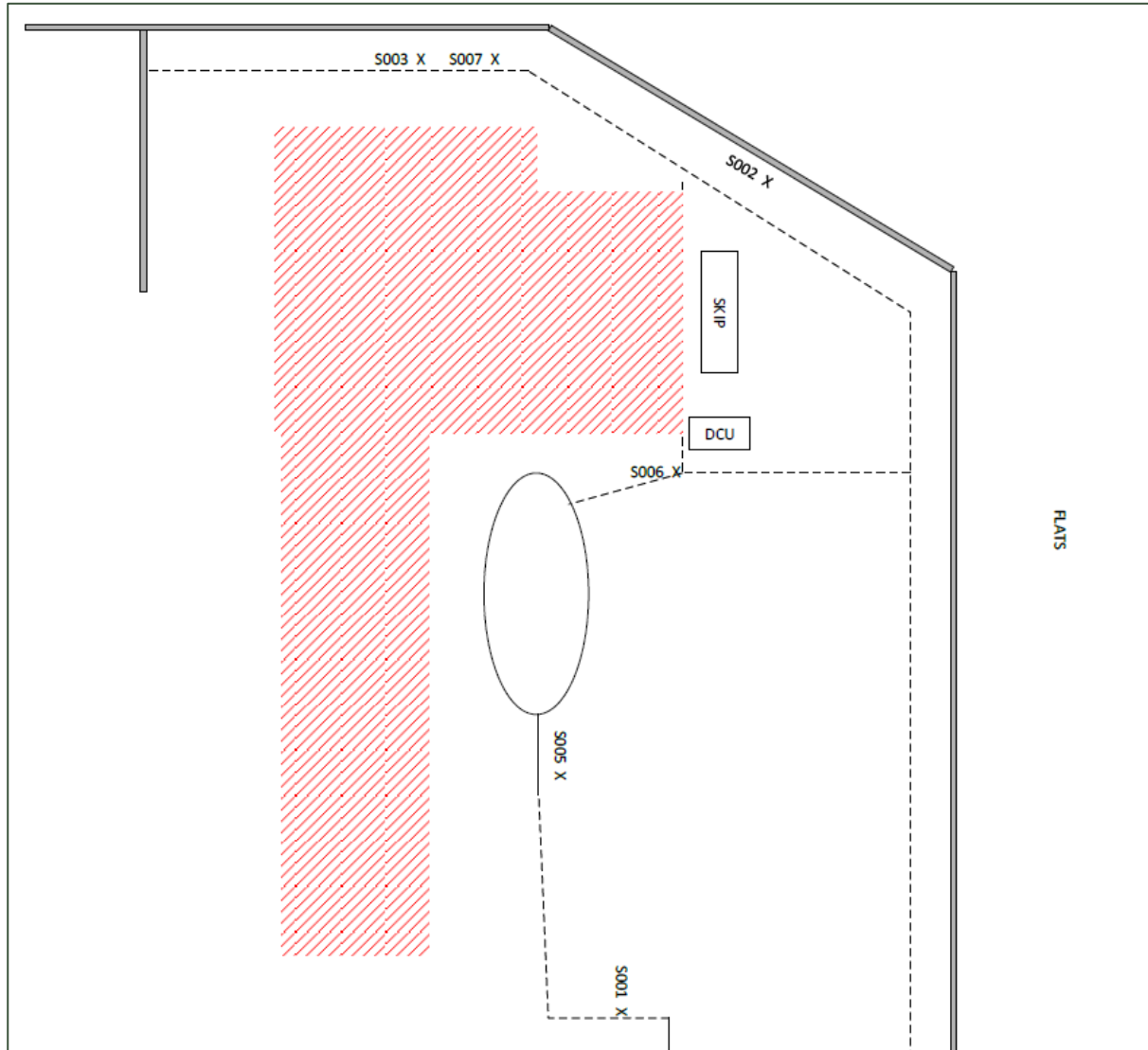
At the start of each air monitoring session the attending analyst will determine the most appropriate place to locate the asbestos air monitors. The analyst will also provide a drawing of where the monitors were located.



Example

Taking the air monitoring undertaken on 6 September 2023 as an example the analyst provided the following drawing in relation to where asbestos air monitoring devices were placed during that session.

In the below drawing the S001 to S007 numbers are the location of the air monitors and the red hatched area is the area in which works were taking place. DCU relates to where the decontamination unit used by site staff was located.



In terms of interpreting the asbestos air monitoring undertaken at the site, the HSE sets guidance in relation to limits of asbestos fibres in air and the air monitoring undertaken at Holloway Park is compared to this limit.

The HSE sets the legal Control Limit of asbestos in air at 0.1 asbestos fibres per cubic centimetre (f/cm³) of airborne fibres averaged over a four-hour period. This is the same as 0.1 fibres per millilitre (f/ml) of air. At Holloway Park this means that the asbestos fibre air monitoring must demonstrate that asbestos in air is present at less than 0.1 f/ml.

To achieve the above the analyst on site will actually work to an ideal detection limit of 0.01f/ml. That is to say that the analyst will prove that the actual concentration of asbestos fibres is at least ten times less than the legal Control Limit. This is sometimes called the Clearance Indicator.



In practice the analyst can often prove that the concentration of asbestos fibres in the air is even lower than 0.01f/ml. In the attached asbestos air monitoring results the important values are those shown in the last column of the results table. In the below example (taken from monitoring undertaken on 8 September 2023) it can be seen that the detection limit the analyst achieved was 0.005f/ml and on that basis the actual concentration of asbestos fibres was less than 0.005f/ml (<0.005f/ml).

Sample Number	Sample Location (Refer to diagram)	No of fibres counted	No of fields counted	No of fields rejected	Calculated result (f/ml)	* Limit of quantification (f/ml)	Reported result (f/ml)
S001	SP01	3	194	0	0.001	0.005	< 0.005
S002	SP02	5.5	194	0	0.001	0.005	< 0.005
S003	SP03	4.5	194	1	0.001	0.005	< 0.005
S004	Field Blank	---	---	---	---	---	---
S005	SP01	3	197	0	0.001	0.005	< 0.005
S006	SP02	3	197	0	0.001	0.005	< 0.005
S007	SP03	4	197	0	0.001	0.005	< 0.005
		END					

In the majority of cases the same result as above has been achieved. In cases where the reported results is higher than the above (for example <0.01f/ml) this is only because less time was available to undertake the analysis, resulting in less volume of air passing through the filter. This means that the detection limit is slightly higher.

The important points to note from the above are:

1. The legal Control Limit for asbestos in air is 0.1f/ml over a four-hour period;
2. At Holloway Park the above has never been breached;
3. Concentrations of asbestos fibres in air have been reported at <0.01f/ml or better;
4. The concentrations recorded have therefore been at least ten times lower than the Control Limit, but in reality are much lower than that.

A final point worth discussion is SLR (and myself personally) has worked on sites of this nature over a long period of time. This has included sites with very significant levels of asbestos contamination. In all that time (more than 20 years) I have never had a situation during a ground remediation involving asbestos where the legal Control Limit for asbestos fibre release has been exceeded. The reality is that asbestos in soils are less prone to the release of asbestos fibres and an outdoor remediation project is not located within an enclosed space.

I would regard working with asbestos in the built environment (i.e.in a building) as a much higher risk. The dangers associated with exposure to asbestos, in part, came about when contractors were not aware of the presence of asbestos in buildings and were exposed during their works (for example by drilling or sawing through asbestos products). This is a very different situation than removing asbestos from Made Ground in an outdoor environment with the correct procedures in place and is the reason why a different type of asbestos air monitoring is undertaken when a contractor removes asbestos from a building.

6.0 Summary

In terms of a summary of the contents of this Briefing Note:

1. The presence of asbestos at the site (both in buildings and in soil) were known before the project commenced;
2. The above meant that asbestos risk was managed from day one and that when additional asbestos was identified procedures were in place to deal with this;
3. Every available precaution is taken to avoid the release of asbestos during groundworks/remediation activities;



4. The effectiveness of the above can be proven via the asbestos air monitoring at the site which indicates that asbestos fibre release has never breached the legal Control Limit or, in fact, come close to this.

