Westminster City Hall, 64 Victoria Street, London SW1E 6QP
Main Switchboard 020 7641 6000 www.westminster.gov.uk

City of Westminster

Framework strategy for dealing with radioactive contamination arising from the circumstances surrounding the death of **Alexander Litvinenko**.

Project Report

Acknowledgements

Westminster City Council would like to acknowledge the following organisations whose advice, support and assistance in compiling this strategy have been invaluable.

Health Protection Agency

Department for Transport

HSE

Environment Agency

UK Government Decontamination Service

METROPOLITAN POLICE
Working together for a safer London

Foreword

On 23rd November 2007, Mr Alexander Litvinenko died as a result of poisoning with polonium-210. During the following weeks, a number of venues in London (and a few elsewhere) were found to be contaminated with this radioactive isotope, the majority located within the City of Westminster. The effective and efficient protection of public health required the activities of a number of different Agencies and Regulatory Bodies to be co-ordinated. Westminster City Council undertook this co-ordination role.

The following document sets out the agreed protocol for interaction between the relevant Agencies and Regulatory Bodies that was developed in the early stages of the response. The protocol was refined through experience of the operation of early drafts. It is for this reason that the text is often in the present and/or future tense.

The document is now published, in order to preserve the lessons learned in case of future incidents.

Glossary of Terms

AWE	Atomic Weapons Establishment
Bq cm^{-2}	Bequerels per square centimetre (Bq is an SI derived unit of radioactivity, defined as the activity of a quantity of radioactive material in which one nucleus decays per second)
CBRN	Chemical, Biological, Radiological or Nuclear [substances or material]
DfT	Department for Transport
EA	Environment Agency
EHO	Environmental Health Officer
FMT	Forensic Management Team
GDS	UK Government Decontamination Service
HPA	Health Protection Agency
HSE	Health & Safety Executive
LA	Local Authority
LFEPA	London Fire & Emergency Planning Authority
MPS	Metropolitan Police Service
ODPM	Office of the Deputy Prime Minister
210Po	Elemental polonium isotope with a mass number of 210
RPA	Radiological Protection Advisor
RSA93	The Radioactive Substances Act 1993
Effective dose, Sv	Sieverts - A measure of dose which can be directly related to the health detriment associated with radiation exposure
WCC	Westminster City Council

Contents

Annexes

Annex I

Checklist for prioritising actions in potentially contaminated venues

Annex II

Monitoring for polonium-210

Annex III

Principles of remediation

Annex IV

Practical options for remediation

Annex V

Packaging, transport and sentencing of waste

Appendices

Appendix A

Example of tracking matrix

Appendix B

Initial actions by agencies following identification of new site

Appendix C

Example of early stage clearance letter

Appendix D

Decision to close process diagram

Appendix E

Example of agency agreement

Appendix F

Remediation process diagram

Appendix G

Example of progress chart

Appendix H

Example of final clearance letter

Appendix I

Example of confidentiality agreement

1. Introduction

Purpose of this document

1.1. This document sets out a methodology for dealing with environmental radioactive contamination arising from the contamination of Alexander Litvinenko who died on 23rd November 2006. This methodology is designed to follow on from, and complement, the Strategic National Guidance issued by the Office of the Deputy Prime Minister (ODPM) on The decontamination of buildings and infrastructure exposed to chemical, biological, radiological or nuclear (CBRN) substances or material, published in May 2004.

Scope of this document

1.2. This strategic framework is intended to apply from the time the police or other appropriate agency first become interested in a venue to the time the venue is cleared as safe for public use. This may or may not include a remediation phase but expressly excludes any aspect of criminal investigation.

1.3. This document refers specifically to commercial premises and enforcement powers under the Health and Safety at Work Etc. Act 1974. However, the document is equally transferable to residential premises and in such cases the Housing Act 2004, Part 1, should be substituted.

1.4. This document does not include a strategy to deal with contaminated individuals, conduct of epidemiological studies or screening. In these circumstances, and for the present incident, the Health Protection Agency (HPA) agreed to manage these matters with the assistance of NHS-Direct.

Responsibilities

1.5. Westminster City Council (WCC) assumed Gold control over the recovery phase of the incident and as such accepted the responsibility for co-ordinating the response to the incident. WCC facilitated the remediation of the premises within WCC boundaries. WCC also acted as co-ordinators for premises outside WCC, whether or not these are regulated by other LAs or other regulators.

1.6. In this document where a reference is made to WCC this refers to WCC's co-ordinating role with respect to the incident. Where reference is made to LA, this refers to the appropriate primary regulatory body for that venue which may be a local authority, HSE, DfT or CAA. Where other regulatory bodies have an enforcement role, such as the HSE, they will be specifically mentioned.

Intended audience

1.7. The methodology provides a protocol for WCC who were responsible for the co-ordination of the local authority (LA) response and assumed overall "Gold" control over

the recovery phase of the incident following official handover from the Metropolitan Police Service (MPS). The document also provides protocols for the other agencies that were involved in the initial phase of the event and the subsequent remediation process. This includes other LAs, HPA, the Health and Safety Executive (HSE), Department for Transport (DfT), Environment Agency (EA) & the Government Decontamination Service (GDS).

Aim of the framework strategy

1.8. To ensure that each of the venues potentially contaminated by radioactive material are declared, or returned to a condition that is, safe for public use taking into account the intended usage of the venues and the results of specific risk assessments.

Objectives

1.9.
- A - Clarify lines of communication and responsibilities, particularly with respect to WCC's role as co-ordinators of the response to the incident.
- B - Provide guidance on extent of monitoring required to characterise the relevant contamination and remediation requirements including waste management considerations.
- C - Prioritise potentially contaminated venues notified to WCC.
- D - Provide guidance addressed to owners/occupiers of venues.
- E - Provide a framework for a consistent approach to returning premises to a condition that is safe for public use.

2. Health consequences of exposure to polonium-210

2.1. Polonium-210 (^{210}Po) is essentially a pure alpha emitting radionuclide. The very short range of alpha particles, less than a few tens of microns in body tissue, means that ^{210}Po does not pose a hazard when external to the body. The alpha particles do not penetrate intact skin. The important processes whereby the radionuclide can enter the body and become a hazard, are inhalation, ingestion and through wounds. It follows that detecting ^{210}Po on surfaces such as floors or furniture does not in itself mean that there is a risk to health: the ^{210}Po has to be removable and then transferred into the body for this to be the case.

2.2. The contamination that is currently being found tends to be extremely patchy, ie small areas of contamination on an otherwise uncontaminated surface. Since the total amount of contamination that individuals might come into contact with is dependent on both the level of contamination and the area contaminated, small spots of contamination pose a lower potential hazard than widespread contamination at the same level. As indicated in the second part of this note, the patchy nature or otherwise of the contamination is an important consideration when deciding on whether to remediate, and the type of remediation most appropriate.

2.3. ^{210}Po, which also occurs naturally in the environment, decays to a stable isotope of lead, with a physical half-life of 138 days. This means that after 138 days only half of the radioactivity originally present is left; after four years there will only be about one-thousandth of the activity left. For the levels of contamination currently being found by monitoring premises (except for a very few extreme instances), this means that, even if this contamination is left where it is, after four to five years there will be little or no further potential hazard.

Crisis 'acute' phase

3. Initial actions to be taken by WCC, MPS, AWE, LFEPA and HPA on receiving information of new affected location

Establishing lines of communication and methods for record keeping

3.1. WCC and all of the other relevant stakeholders (including the venue owner/occupier) should establish arrangements to record all relevant information and maintain records for future reference. LAs may find it useful to prepare at-a-glance documentation to show the status of each venue. An example of a tracking matrix is shown in Appendix A.

3.2. If appropriate, HPA will discuss priorities for monitoring with WCC, including other appropriate regulatory bodies as necessary.

3.3. WCC and other relevant stakeholders should consider the implications, and develop a communications strategy for:

a) those people who may be affected
b) other stakeholders (eg government & media)

Co-ordination of recovery operations

3.4. When a venue is identified as being potentially contaminated, a number of agencies must co-ordinate their activities, in order to ensure the most efficient response, both with respect to MPS investigative needs and the protection of public health. Appendix B summarises the process that has been developed to facilitate this.

3.5. In this incident WCC has assumed the role of co-ordinator for the recovery phase. WCC will expect all other agencies and relevant regulators (including other local authorities) to pass information to WCC in the first instance. These agencies and regulators may expect that WCC will liaise and co-ordinate the response.

3.6. Contaminated venues will fall into two categories: those that are subject to MPS investigation and those that require only Health Consequence Management (ie MPS investigation is not required). The initial stages for each category differ slightly and are outlined separately below

Venues subject to MPS investigation

3.7. As soon as possible following the identification of a new potentially contaminated venue MPS must notify WCC Environmental Health Officer (EHO) and HPA. The role of the Atomic Weapons Establishment (AWE) is to monitor to the extent required to ensure MPS safety. The role of HPA, where enlisted, or where HPA identifies a venue itself, is to monitor to identify risks to public health. Such monitoring may be carried out by HPA staff or by other appropriately qualified teams offered to HPA and co-ordinated by HPA staff. LA EHOs may provide assistance to HPA to facilitate monitoring, using powers under section 20 of the Health and Safety at Work Etc. Act 1974 (HASAWA) or other relevant legislation. Once HPA has completed monitoring and any mobile contamination has been removed by simple means such as wiping of surfaces, it should give a written report to WCC, who where applicable, will provide the details to the appropriate regulator. Any monitoring results produced by AWE should also be made available to WCC via HPA.

3.8. In areas that are subject to on-going MPS investigation, there will be no need for LA to ensure that these remain closed due to the presence of MPS security cordon. However, where contamination levels of public health concern have been identified, LA must ensure that the areas in question will remain closed (and be subject to exclusion) following their release from MPS control. LA should seek the co-operation of the venue owner/occupier in securing the venue in advance of release by MPS. The venue owner/occupier should confirm in writing to LA that the contaminated areas of the venue will be secured and be subject to exclusion (ie access will not be granted to anyone who does not have the express permission of WCC). Failure to provide LA with full co-operation will result in consideration of enforcement powers under HASAWA or other relevant legislation.

3.9. LA may undertake some actions in parallel with an MPS investigation prior to hand over provided that this does not interfere with any evidence which might be needed for subsequent prosecutions and/or inquiries.

3.10. Once MPS have concluded forensic evidence recovery and intend to release an area they should inform WCC. The LA should then remind the venue owner/occupier of their obligations.

3.11. Where monitoring has been carried out and no contamination has been identified the venue may move to early stage clearance (see paragraph 3.21).

3.12. In circumstances where contamination has been found within a venue, certain areas will not be considered as a crime scene by MPS. In these circumstances, HPA will monitor and report findings to WCC. Where HPA recommend that the levels of contamination present pose no public health risk the venue may also move to early stage clearance (see paragraph 3.21).

3.13. However, if HPA identify levels of contamination that do pose a public health risk LA must ensure that the areas in question will remain closed and be subject to exclusion.

Venues subject to Health Consequence Management only

3.14. Following identification of a new potentially contaminated venue the identifying agency (eg London Fire & Emergency Planning Authority (LFEPA), MPS, HPA) must notify WCC EHO and HPA.

3.15. The MPS, LA & HPA must then consider if sufficient evidence exists of a risk to public health. Evidence that should be considered includes: relevant persons who are known to have visited the venue, the time and date of the visit(s) and monitoring results of the venue (where available) or results from other venues known to have been visited by these individuals. For the purposes of this document this will hereafter be referred to as, "the timeline". LA must then ensure that the contaminated areas of the venue, as appropriate, will remain closed and be subject to exclusion.

3.16. If HPA identifies a venue in which it wishes to undertake monitoring WCC should be notified promptly and the results of the monitoring sent through as soon as they are available. WCC may also request that HPA undertake monitoring of a venue or parts of a venue for the purpose of public health protection.

3.17. If there is insufficient evidence on which to base a decision, WCC should request that HPA monitor the venue, assisted where necessary, by LA EHOs. If necessary, HPA should discuss priorities for monitoring with WCC. The results of monitoring surveys carried out under HPA co-ordination will determine whether the levels and characteristics (eg fixed/mobile, patchy/widespread) of contamination found in the venue (or parts thereof) require an appropriate remediation strategy or do not pose a public health risk. HPA should notify WCC of the results of its monitoring promptly.

3.18. Where monitoring has been carried out and no contamination has been identified, HPA should notify WCC and the venue may move to early stage clearance (see paragraph 3.21). Where contamination has been found but HPA recommend that the levels of contamination present pose no public health risk the venue may also move to early stage clearance (see paragraph 3.21).

3.19. In circumstances where contamination has been identified and HPA advise that it poses a public health risk, HPA must advise WCC whether the public health risk is immediate or whether the venue is currently safe for public access, but that remediation is required in the medium term. For example, where contamination is fixed to permanent, hard surfaces, HPA may advise that there is no current public health concern, but that remediation (eg a coat of paint) should be carried out in the medium term. Where HPA advises that there is an immediate public health risk, WCC must ensure that the areas in question will remain closed and be subject to exclusion.

Venues outside WCC boundaries or jurisdiction

3.20. In all cases, where venues are located outside of WCC boundaries or jurisdiction, WCC must be notified and liaise with those other local authorities (LAs) or regulators as appropriate. It is recommended that other LAs and regulators follow the guidance detailed in this strategy. WCC should regularly be kept informed of progress.

Early stage clearance

3.21. As soon as WCC receives the results of HPA/AWE monitoring it should determine whether the venue, in whole or part, is safe for public use. This decision should be made in collaboration with the HPA and other relevant stakeholders and take into account the results of any monitoring, the layout of the venue and the use to which it is generally put. If it is considered that a venue, in whole or part, is safe for public use, LA should send a clearance letter to the owner/occupier declaring those areas that are safe and, where applicable, those that are not. The clearance letters should be accompanied by HPA/AWE monitoring results, except where their release may prejudice an on-going MPS investigation. An example of an early stage clearance letter can be seen in Appendix C.

3.22. Where the whole, or part, of a venue is not cleared as safe for public use, LA should ensure the continued co-operation of the owner/occupier in keeping it closed and not allowing access to any unauthorised person. An authorised person is a person authorised by LA or one of the relevant regulators.

Prioritisation and the decision to close whole or part of a venue

3.23. When faced with a number of venues LA will have to consider, on the basis of the information received, an order of priority for each venue to ensure public safety. Annex I provides further guidance on the factors which should be considered during the process of prioritisation.

3.24. Once venues have been prioritised, steps will need to be taken to ensure public safety. These will include consideration of immediate closure of whole/part of venue pending the visit of the monitoring teams and the order of priority for those monitoring teams to the venues. This will establish the extent and severity of the contamination of each venue.\

3.25. Once HPA monitoring has been completed LAs should make a decision as to whether to close the whole or part of each venue on public health grounds. LA should liaise closely with the relevant regulators before making this decision. Refer to Appendix D which shows a flow diagram for dealing with the decision to close.

Initial introductory meeting with venue owner/occupier

3.26. Once LA have ensured that the contaminated areas of a venue will remain closed and be subject to exclusion, they should meet with the owner/occupier of each venue. Taking each venue in order of its determined priority, and depending on the scale of remediation likely to be needed, LA should convene and chair a meeting between the venue owner/occupier (consideration should be given to both where applicable) and HPA in order to introduce the process of remediation. Each venue should be assigned a case officer who should also attend this meeting. The case officer will be the main point of contact for the venues from this point, throughout the remediation phase and until final clearance is provided by LA.

3.27. During the meeting the building owner/occupier should be provided with the following details:

- background information to the entire incident
- the role of the relevant agencies (MPS, AWE, HPA, WCC & LA)
- facts and health consequences of ^{210}Po
- results of monitoring and implications
- the remediation process and likely timescales (where possible)
- scope of works, proposed approach and objectives for remediation
- waste implications
- financial arrangements – in the majority of cases it will be the responsibility of the owner/occupier to meet the costs for the work
- final clearance procedures and returning the venue back into use
- reminder to keep the affected parts of the venue closed and subject to exclusion

3.28. Each venue owner/occupier should also be asked to authorise LA, in writing, to act as their agents during the remediation process. The details and outcomes of the meeting should be documented. An example of an agency agreement is shown in Appendix E.

Provision of information

3.29. WCC should regularly cascade an update internally, as well as to the relevant regulators, particularly where closure of venues is considered appropriate.
The following information should be recorded for each venue:

- MPS reference number: premises are itemised in order and listed by the Police reference number.
- Venue: a general description of the premises, vehicle or other type. Vehicles should be identified by their registration details.
- Location: a sub-venue listing, defining a specific location within a venue, for example an area of the premises, specific piece of equipment or similar, for example “Room 62” or “Hoover 7G”.
- Areas/venues closed: details of which, if any, venues or parts of venues are closed.
- Priority rating score: the score applied to each venue, calculated in accordance with the scheme detailed in Annex I.
- Progress: the status of the venue with respect to progress towards remediation and final clearance.

Recovery (remediation) phase

4. Remediation process (see Appendix F)

Introduction

4.1. The process of remediation covers any action that is intended to reduce the risk to public health from future exposure to the radioactive contamination. Since the health risk from polonium-210 is only from contamination taken inside the body, remediation in this context covers a wide range of types of actions, including: measures to better fix contamination to a surface (eg painting over it), removal of a contaminated object to safe storage, setting up appropriate management controls to avoid contact with loose contamination in the future (eg sealing off an area) and appropriate disposal.

4.2. The necessity to record all relevant information has been noted in section 3.1 above. LAs may find it useful to produce a simplified chart to track progress of each venue through the remediation phase. An example of such a progress chart is included as Appendix G.

Control of waste

4.3. Any remediation that either generates wastes or relies on the adequacy of management control (eg items in storage, rooms sealed off) requires procedures to be put in place that ensure adequate control of the wastes/contaminated items/contaminated areas until such time as the wastes are removed from the site or the contaminated items/areas no longer pose a health threat (eg owing to radioactive decay). Where contamination is found in venues where the management are unused to dealing with radioactive contamination, it is important that the venue owners/management are properly informed of the risks and their responsibilities with regard to safe and legal management of any contamination. LA should ensure that suitable management controls are implemented and make periodic checks to ensure the consistent application of these where necessary.

Commissioning additional monitoring

4.4. Thorough monitoring of the venue, to adequately characterise the contamination, must be carried out before the actual process of remediation can take place.

4.5. In exceptional circumstances HPA monitoring carried out previously to clear parts of a venue for public use may be used as the basis of the monitoring required to remediate a venue. This should be agreed between LA and HPA. In all other circumstances the UK Government Decontamination Service (GDS) will provide LA with the details of all approved contractors who have the capability to carry out the necessary work.

4.6. LA should nominate two GDS contractors to provide quotations for further monitoring of a venue. This process may require site visits by the contractors. Where a venue owner/occupier wishes to award the contract to a particular contractor without a second quotation, LA should make a record of the decision and proceed with that contractor.

4.7. LA should ensure that the approved contractors are provided with any pertinent information relating to the venue to be remediated, including existing monitoring results, this strategy and any relevant guidance produced by other regulators.

4.8. The nominated contractors should each prepare a written quotation for a radiological survey of the venue. The extent of the survey should be informed by the existing AWE/HPA monitoring results and the guidance provided in Annex II. These quotes should be submitted to LA and the venue owner/occupier for approval. Where it is considered necessary, LA in collaboration with other relevant regulators/agencies may review the proposed survey to determine its adequacy. Once satisfied LA should inform the owner/occupier who should then appoint the successful contractor, arrange a start date and inform the LA case officer.

4.9. Once the survey is complete, the contractor should submit the results to the owner/occupier and LA. The results should include the location(s) of any contamination identified, the level of that contamination and the nature of the surfaces and materials affected. Floor plans, showing the location of the contamination are recommended. A LA case officer will verify that the survey covers all areas and items identified in any previous AWE/HPA surveys.

Commissioning remediation

4.10. The contractor who carried out the monitoring at the venue, together with another contractor, normally the contractor who estimated for the monitoring contract should be invited to provide an initial remediation proposal for the venue. Where a venue owner/occupier wishes to award the contract to a particular contractor without a second quotation, LA should make a record of the decision and proceed with that contractor.

4.11. The nominated contractors should each prepare an adequately detailed written quotation, hereafter referred to as the remediation proposal, for the remediation works at the venue, setting out the scope of the necessary works, timescales and costs. The quotations should be submitted to LA and the venue owner/occupier. LA should ensure that the scope of the proposed work is adequate. The owner/occupier should then appoint the successful remediation contractor and inform the LA case officer. In the preparation of this document reference should be made to guidance on practical application of the reference value and practical options for remediation given in Annexes III and IV.

4.12. Whilst it is not necessary to provide a detailed method statement at this stage the contractors' remediation proposals must identify the areas to be remediated and the method of remediation to be used in each case. Where more than one option for remediation is available, both should be clearly set out together with the consequences of such action. The proposal should also detail end point clearance criteria (eg activity concentrations on surfaces) and regulatory compliance issues (with particular respect to the Ionising Radiation Regulations 1999, Radioactive Substances Act 1993 & Radioactive Material (Road Transport) Regulations 2002).

4.13. On receipt of the remediation proposal LA, in collaboration with other relevant stakeholders, should evaluate it to ensure that it is adequate and will result in the remediation objectives being met (as agreed during the initial meeting set out in

paragraph 3.27). This evaluation will be informed by the advice on practical application of the reference value detailed in Annex III. Consideration will also be made of statutory compliance.

4.14. Once satisfied, LA should approve the proposal and at this stage the approved contractor should provide a method statement, risk assessment and, where possible, a strategy for dealing with the waste arising. Whilst there is no specific guidance for the format of such proposals, the remediation proposal should be drafted in accordance with the HSE guidance document, "Assessment of risk and plans of work for licensed asbestos removal contractors – aide memoir" (Memo 2/03 09.09.03). In addition, the proposal should take into account the views of the owner/occupier and in particular those items of a personal and/or high economic value. The method statement and risk assessments will subsequently be approved by LA, HSE, DfT and EA. Work must not start before this approval has been granted.

4.15. The contractor should commence and complete remediation operations based on the approved remediation proposal, method statement, risk assessment, etc following agreement with the owner/occupier on a start date.

4.16. In all cases, the packaging, transport and sentencing of waste arising from remediation works should be carried out in accordance with the guidance detailed in Annex V. Where the contractor has not already made arrangements for the sentencing of waste arising, further guidance is provided in Annex V. In all circumstances, the contractor should prepare a waste proposal and submit this for approval by the Environment Agency (EA) and the Department for Transport (DfT), prior to consigning the waste. This proposal may form part of the initial remediation proposal.

4.17. Ownership of the waste rests solely with the owner/occupier of the venue both whilst it is stored on the premises and during its transport towards ultimate disposal. Whilst the waste remains on the venue premises, responsibility for its security lies solely with the owner/occupier.

4.18. The approved contractor must prepare a report to confirm that the works detailed in the remediation proposal, including those with respect to waste management, have been completed and that the agreed remediation objectives have been met. The report should also include the results of any air monitoring and the findings of an appropriate post-remediation survey. The report should be submitted to the owner/occupier of the venue and to LA.

Final verification and clearance

4.19. LA will then review the final report from the decontamination contractor in order to determine whether the agreed remediation objectives have been met. The LA case officer should check that the owner/occupier is satisfied with the work carried out at this stage.

4.20. Following this check LA will supply all relevant documentation to the HPA who will conduct an evaluation and issue a clearance letter to LA. Relevant documentation means:

- Initial monitoring results

- Remediation proposal
- Confirmation of waste removal
- Final monitoring results and report.

4.21. LA should write to the owner/occupier enclosing the HPA clearance letter to provide reassurance that the venue is safe for public use and terminate the agency agreement. Where necessary, LA should advise the owner/occupier to ensure that suitable management controls of any remaining, low-level contamination are maintained for an appropriate period of time. An example of a final clearance letter is shown in Appendix H.

4.22. Where any contamination remains that is above the HPA reference level (ie > 10 Bq cm-2) or is of concern for any other reason (eg unquantified mobile fraction), which has been covered as part of the remediation works, LA should make all relevant stakeholders aware of it. They must also inform the other relevant regulatory bodies, including the local Planning and Building Control departments. As appropriate, the owner/occupier should prepare and circulate plans for appropriate future management/control of such contaminated items/areas.

Review of framework strategy

4.23. After each incident WCC should review, and where necessary revise, this framework strategy and share any lessons learned with all relevant stakeholders.

4.24. All records should be archived for a period not less than six years.

Entry to contaminated areas prior to remediation

4.25. In exceptional circumstances, venue owner/occupiers may wish to retrieve possessions from contaminated areas prior to remediation. Due to the inherent risks involved, WCC should satisfy itself that the reason for retrieval of the item(s) is sufficiently important. Should this be the case, WCC may arrange for one of the approved contractors to enter the contaminated areas to retrieve the item(s). The venue owner/occupier should not normally be allowed to enter the areas themselves (but in exceptional cases may be allowed in under appropriate escort) and the operation should be supervised by the WCC case officer. All costs incurred, in particular those of the contractor, must be met by the venue owner/occupier.

Confidentiality

4.26. WCC will seek to ensure that appropriate confidentiality is maintained throughout the recovery process with respect to all information provided by the interested organisations. In order to achieve this WCC will share information only to the extent necessary and only in so far as data protection requirements permit. WCC may, where it considers appropriate, ask certain organisations or individuals to sign a confidentiality agreement. An example of such an agreement can be seen in Appendix I. WCC will also ensure that costs, prices and personal information are removed from documentation when it is shared or circulated. In order to assist WCC, contractors should prepare two versions of their documentation: one unaltered set and a second set with sensitive or confidential material removed.

ANNEX I - Checklist for prioritising actions in venues potentially contaminated with polonium-210

AI.1 Where a number of venues are identified as contaminated, it may not be possible to initiate action on all of them simultaneously. Under such circumstances it will be necessary to prioritise resources for action including the closure of venues, monitoring, remediation and communications.

AI.2 The following criteria are provided as a framework to assist in the consideration of the factors relevant to prioritisation. It is intended that these criteria be considered, together with any other relevant information. On the basis of this assessment, an overall judgement should be made to determine the relative priority for each venue.

1. Is there credible evidence of a high and immediate risk to the public?
- high measurements in venue: measurements already made in venue may indicate immediate and high risk
- high measurements in other, linked venues: the link between this venue and others should be of a nature that makes it likely that contamination in this venue will be at similar (high) levels to those already measured in other venues
- specific, credible information that such an immediate and high risk exists: eg witness statements, police information

2. Can access to the venue/item/area be readily restricted?
- small objects, such as chairs may be moved to a locked room
- discrete areas, such as toilets, bedrooms, etc may be locked or cordoned off with minimal disruption to the rest of the venue

3. What is known about the public health risk?
- Contamination:
  - is the contamination mobile or fixed? (Can it easily be spread around, resuspended or wiped onto skin, with the risk of subsequent intake?)
  - what are the levels of contamination?
  - what is the extent and pattern of the contamination? (Is it patchy, widespread, very variable in level etc?)
- How likely are people to be exposed?
  - what is the area/item used for? (If a restaurant, play area for small children, toilet/bathroom or bedroom, people may be more likely to ingest or inhale it.
- how long are people likely to stay there/near it? (The longer they stay, the more likely they are to be exposed, or the higher their exposure is likely to be.)
- are vulnerable groups likely to use the area/item? (Young children are generally more prone to internal contamination than adults; disabled people may spend longer in a contaminated area or behave in a

different way to able-bodied people and so be more at risk; elderly people may spend longer, but are generally less at risk from radiation exposure.)

- how many people are likely to use the area/item? (Larger numbers of people generally increase the collective public health risk, but may either increase (eg cause resuspension) or decrease (eg provide shielding against exposure to the radiation) the individual health risk.).

4. What are the implications for Communication?

- what is likely to be the impact on the 'message' response agencies are trying to give out? (eg if a complete venue is closed, will public knowledge of this closure, regardless of the public importance of the venue, undermine the message that the risk to the public is small?)
- how 'visible' is the area/item? (Closing a major public area, or prohibiting access to a well known venue would be highly visible to the public and could raise anxiety, whereas closing off a hotel bedroom would not be noticed by the public.)

AI.3 Once a judgement about the relative priority of each of the venues has been made, this should be recorded. It should be remembered, however, that as new venues are identified the priority of existing venues may change depending upon the circumstances of each case.

ANNEX II - Monitoring for polonium-210

Initial monitoring by AWE / HPA

AII.1 Monitoring would normally only be carried out in areas and for surfaces where there is credible reason to believe there may be contamination. For example, in the current situation, where the MPS have information suggesting that particular rooms, tables/chairs and other public locations were visited by individuals of interest to them, it is reasonable to first monitor these items/locations. If no contamination is found, it is extremely unlikely that contamination will be found in other locations in the premises. If on the other hand, contamination is found at these primary locations, then it is reasonable to monitor in other places in the vicinity where the individual might have walked, placed his/her hands or used the toilet. Where significant contamination is found in these locations, it may be prudent to sample other locations within the premises that are not expected to be contaminated, for reassurance purposes. However, it is important to strike a balance between the need for reassurance that there is no significant risk to the public and the amount of monitoring carried out. Unless a reasonable mechanism can be identified for contamination being spread to a location or item, the only reason for monitoring such locations/items would be because they were included within a limited sample of locations presumed uncontaminated and being monitored to confirm this assumption.

AII.2 Surface contamination detectors measure total surface activity within the area of the detector probe. The initial measurement therefore does not distinguish between contamination that is mobile and therefore potentially available for causing harm, and contamination that is fixed to the surface and therefore poses minimal hazard. This initial measurement also does not tell us anything about levels of contamination elsewhere on the surface – ie this may be one small spot of contamination on an otherwise contamination-free surface, or wider areas of the surface may be contaminated at varying levels. Having quantified the level of surface contamination, the next step is to determine both the extent of the spread of the contamination and the fraction of this contamination that is mobile. The extent of spread is determined by additional surface monitoring, whilst wiping the surface and measuring the level of contamination that is removed can provide information on the fraction that is mobile.

Guidance on further monitoring prior to remediation

AII.3 Where initial monitoring carried out by HPA is not considered adequate for the remediation phase, further monitoring will be necessary by a contractor, prior to any work taking place. Although HPA monitoring may not have identified every contaminated item within a venue, it is assumed that HPA monitoring will have identified all of the contaminated areas. It will therefore not usually be necessary for full characterisation surveys to be carried out. Rather, any subsequent survey should be carried out in each of the areas identified by the HPA, in accordance with the following guidance:

100% survey all floors, horizontal surfaces (tables, shelves etc) and walls monitored to a height of 2 metres with random areas chosen and monitored above this height if initial monitoring results indicate that contamination may be present at a higher level both on the walls and ceilings. The area around any extract ventilation unit whether sited on the wall or ceiling should always be monitored.

AII.4 WCC will ensure that HPA reports are provided to the contractor carrying out the additional monitoring so that they are informed about the location(s) where this further monitoring is required.

ANNEX III – Principles of remediation

Why remediation, not decontamination?

AIII.1 In applying the HPA reference level for polonium-210, it is important to distinguish between the terms 'remediation' and 'decontamination'. Remediation refers to any action taken to reduce the risk posed by the contamination; one form of remediation is decontamination. Decontamination refers to the removal and disposal of part or all of the contamination from the location where it was measured. Because polonium-210 poses no hazard whilst it is external to the body, but poses a significant hazard if it enters the body through inhalation, ingestion or wounds, in many situations it will be better to avoid abrasive decontamination techniques which might re-mobilise the contamination. For this reason, and because polonium-210 has a relatively short half-life, disposal of discrete items, or the adoption of remediation techniques that enhance the long term fixing of the contamination to the surface (eg covering the contamination with paint, polyurethane etc) will generally be preferred to abrasive decontamination options. However, where contamination is left in situ, it may also be necessary to consider documentation of the location of contamination patches and/or management control of the surfaces in question for a period until the activity has substantially decayed.

HPA reference level for ^{210}Po

AIII.2 In the following discussion it is important to understand the meaning intended by the term 'mobile'. 'Mobile' is here used to mean contamination that is not fixed (eg by chemical bonding) to the underlying surface. It does not indicate any assumption about the nature of the underlying surface, or whether this surface is part of a portable or removable item, as opposed to a permanent fixture.

AIII.3 The main current hazard is from mobile ^{210}Po. The HPA recommends that areas should not be declared safe for general access (ie for access by non-specialists or those not supported by specialists) unless the mobile component of the detected ^{210}Po is removed.

AIII.4 Whilst fixed ^{210}Po contamination does not pose a current hazard, depending upon circumstances and the nature of the surface, it is possible that fractions of the fixed contamination may gradually wear off over time. Whilst the contamination found in most locations will gradually decay away over a period of four-five years , it is also possible that during the next four-five years the item or surface that is contaminated may be transferred elsewhere and/or damaged in such a way as to release the contamination for uptake by people. It is therefore important to have a reference level for contamination that is currently fixed to aid decisions on whether, and what form of, further remediation may be required.

AIII.5 HPA recommends a value of 10 Bq cm^{-2} to be used as a reference level for measured levels of fixed surface contamination of ^{210}Po. This value is based on cautious calculations carried out to estimate levels of dose that might be received from exposure to contamination at this level. A number of scenarios have been considered involving people of different ages, engaged in a range of behaviours, resulting in inhalation of resuspended material, direct entry of contamination into wounds or ingestion of material. On the basis of these assessments, it is not expected that any individual would receive doses exceeding 1 mSv (ie the annual dose limit for members of the

public) for a level of contamination of 10 Bq cm^{-2}, regardless of future treatment of that surface, if the contamination is currently fixed to a hard surface.

AIII.6 Some surfaces are difficult to monitor for alpha contamination (eg inside small enclosed spaces, on soft furnishings or on very irregular surfaces). Similarly, if access to the contamination is difficult, it can be difficult to determine what component of the contamination is mobile. In such circumstances, HPA-RPD recommends that the items / surfaces be treated as if they presented a mobile contamination hazard (ie follow the process indicated in AIII.8).

Mobile contamination

AIII.7 Options for removal of mobile contamination include: wiping, washing, 'bagging' of contaminated objects and their removal to safe temporary storage to await appropriate decontamination or disposal. This removal of mobile contamination should be carried out by specialists. Cleaning materials used should be 'bagged' and removed to safe temporary storage pending decontamination or appropriate disposal. Note that the appropriate management/disposal of contaminated wastes is subject to legislative control and should be discussed with the Environment Agency, Department for Transport and other relevant regulators (see Appendix F).

AIII.8 In deciding whether the item/surface should be preserved or disposed of, it is important to consider a number of factors, as indicated below:

- what value does the owner place on the item?
- how likely is it that there is mobile contamination?
- could further monitoring be carried out to better inform the decision?
- how extensive is the contamination, and how likely is someone to come into contact with it?
- how might future normal activities (eg use, cleaning) affect the risk of re-mobilising contamination?
- what options are there for preventing the spread of mobile contamination?

Fixed Contamination

AIII.9 Where it is established that the contamination is fixed to a hard surface, the HPA 10 Bq cm^{-2} reference level should be applied as follows. (A diagrammatical representation of this is shown in Figure 1 below).

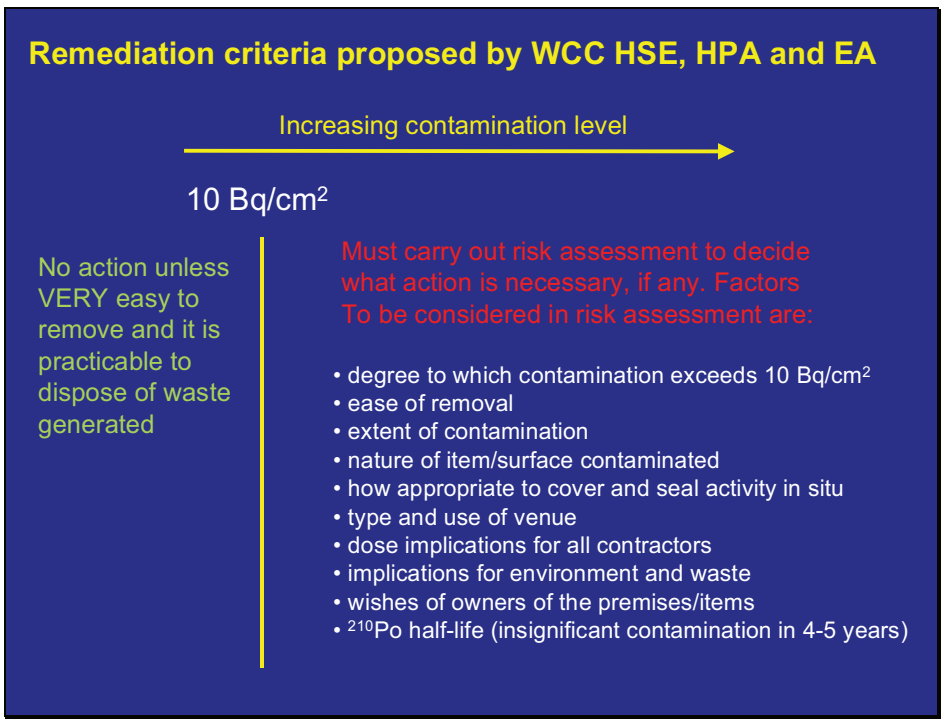
AIII.10 Where surfaces are identified as being contaminated with fixed contamination above 10 Bq cm^{-2} a risk assessment (ie a balancing of the health risks and other relevant factors) should be carried out which takes into account the following factors to decide whether remediation is necessary:

- the degree to which the contamination level exceeds 10 Bq cm^{-2}
- ease of removal
- the extent of contamination (is it small spots or more widespread?)
- the nature of the item/surface contaminated and how appropriate it is to cover

and seal contamination in-situ
- the type and use of venue
- dose implications for all contractors
- implications for the environment and waste
- the wishes of key stakeholders, in particular the owners of the premises/items.

Figure 1 Practical application of reference level

AIII.11 In many cases, it will be sufficient to provide additional reassurance that the contamination is truly 'fixed', eg by applying a coat of paint, rather than decontaminating the surface. In other cases, particularly if the item is portable and of low value (both in terms of



replacement cost and emotional value) the optimum remediation will be to remove the item. A further option for soft furnishings is to ensure that the item is suitably covered to prevent any spread of contamination and then removed to safe storage until the radioactivity has decayed away. In all cases, any remediation should be carried out by specialists and, where decontamination is carried out, the surface should be re-monitored after decontamination to check both the residual level of contamination and that no remaining contamination is mobile. Further discussion of how to take account of the factors identified above is provided in Annex IV.

AIII.12 Surfaces contaminated with fixed contamination below 10 Bq cm^{-2} (other than soft furnishings, where it is advisable to treat all contamination as potentially mobile) do not require remediation on health grounds. However, there may be other reasons, such as reassurance or commercial concerns for further remediation. If further remediation is carried out, the risk

assessment requirement in paragraph AIII.9 applies.

AIII.13 For any surface that is not decontaminated to a level of fixed contamination below 10 Bq cm^{-2}, consideration should be given as to whether it is appropriate to document the location of the contamination and to review/re-monitor it at appropriate intervals to check whether any circumstances have changed such as to make it more likely that the contamination will become mobile again (eg paint flaking off the surface), and whether any (and how much) contamination is wearing off the surface over time. In making this decision a number of factors should be considered, most importantly: the degree to which the contamination level exceeds 10 Bq cm^{-2}, the extent of contamination (is it small spots or more widespread?), and the wishes of key stakeholders, in particular the owners of the premises/items.

ANNEX IV - Practical options for remediation

AIV.1 As discussed in Annex III, it is necessary to consider a number of factors before determining the most appropriate remediation option for a contaminated item or surface. The key factors, listed in Annex III, are discussed in more detail below. However, it should be emphasised that these are not necessarily the only factors that might need to be considered. It is important that any decision on any appropriate remediation option should be informed by all relevant considerations.

AIV.2 The degree to which the contamination level exceeds 10 Bq cm^{-2} - The reference level of 10 Bq cm^{-2} has been selected to represent a level of fixed contamination which, if left as it is, would not, under any foreseeable circumstances, represent a hazard to the general public. It does not represent the boundary between a 'safe' and an 'unsafe' level. A level of contamination several times the reference level is very unlikely to pose a health hazard, whilst a level of contamination even 100 times this level need not pose a health hazard if managed appropriately. Therefore, it is important to ensure that remediation measures taken are proportionate to the risk posed. In particular, decontamination of hard surfaces on which the remaining contamination is fixed, will often represent a disproportionate response to the risk.

AIV.3 Ease of Removal - When HPA teams monitor a venue, they first monitor the total contamination on a surface, and then wipe the surface and measure the contamination that has transferred to the wipe. If significant contamination has transferred, then the surface is cleaned non-destructively (eg wet wiping) to remove the majority of easily removable contamination. Therefore, any contamination detected by HPA teams that remains after they have monitored will mainly be fixed to the surface. Therefore, in the context of remediation work, 'ease of removal' is a factor that requires consideration in two ways. If it is recognised that the HPA monitoring may not (for whatever reason) have adequately characterised the contamination that is present, and so a further survey is conducted, and this further survey indicates additional contamination, this newly identified contamination may still have a mobile component that can be simply removed by simple wiping/washing. In this case, this form of cleaning should always be carried out. For contamination that is fixed, 'ease of removal' refers to whether or not the technique required to decontaminate a surface is likely to re-mobilise and disperse some of the contamination, or whether all removed contamination will be retained as part of the process. ^{210}Po only poses a health risk when it is mobile. Therefore, decontamination techniques that are likely to re-mobilise the contamination should only be considered when other options (eg direct disposal of the contaminated item) are not available or judged inappropriate.

AIV.4 The extent of contamination (is it small areas or more widespread?) - The risk posed by fixed contamination is only expressed if that contamination becomes re-mobilised again, and is inhaled, ingested or taken into the body through wounds. Small amounts of polonium-210 occur naturally; small intakes by individuals do not pose a health hazard. Therefore, it is not solely the contamination density (ie Bq/cm^2) that determines the risk posed but also the total amount of radioactivity present (ie Bq). If contamination is in the form of small areas of low total radioactivity, then even if all of it is re-mobilised, the risk posed is unlikely to be significant. On the other hand, if the contamination is widespread, even at relatively low levels of contamination density, the total

amount of radioactivity present will be high and so there is a greater chance that future re-mobilisation of the contamination could result in a significant intake by an individual and hence health risk to that individual.

AIV.5 The nature of the item/surface contaminated - There are a number of issues associated with the nature of the item/surface which are relevant to a decision on remediation. Broadly, it is helpful to categorise items/surfaces as follows:

(i) items /surfaces which are difficult to monitor (eg soft furnishings), not of exceptional value
(ii) portable items, hard surfaces, not of exceptional value
(iii) hard surfaces, not removable
(iv) items of exceptional value.

Advice on items/surfaces which are difficult to monitor

AIV.5.1 The HPA reference level of 10 Bq cm^{-2} applies solely to fixed contamination on hard (relatively flat) surfaces because it is recognised that some items/surfaces (eg soft furnishings) are particularly difficult to monitor accurately. It is also unlikely that contamination can be assumed to remain fixed on some surfaces, including soft furnishings. HPA advice is that contamination on such items/surfaces should be treated as mobile unless it can be demonstrated to be fixed. Therefore, where practicable, if contamination is detected at all on soft furnishings or other items/surfaces that are difficult to monitor, then disposal of low value items and secure storage of high value items until the activity has decayed away are the preferred options. In all circumstances where contamination exists on items/surfaces that are difficult to monitor and it is considered desirable not to remove or damage them, HPA advice should be interpreted as requiring a specific risk assessment to be carried out.

AIV.5.2 For easily washable items with minimal depth (eg light weight curtains) thorough washing may be an option, as monitoring of these is likely to be reasonably reliable (compared with upholstered seats etc). Where the contamination consists of a few spots on flooring, removal of the contaminated areas only may be appropriate (eg if the flooring is carpet tiles).

Advice on hard surfaces and portable items

AIV.5.3 Remediation of hard surfaces will be influenced by whether or not the surfaces can be easily removed, whether a suitable 'fixing' agent can be applied to them and their value. If it is decided that the level and spread of contamination on a hard surface cannot simply be left, the two preferred options are either that a 'fixing' agent is applied to the surface (eg paint or a coat of polyurethane) or that the surface is disposed of. This latter is generally only an option for portable or easily removable surfaces. For hard surfaces that are permanent (eg walls) the preferred option is either simply to note the location and avoid future activities that might re-mobilise the contamination until it has decayed away, or to cover the surface with a protective layer. Actual decontamination of such surfaces will rarely form the preferred option because the act of removal of the contamination is likely to re-mobilise it, thereby causing a hazard to those removing it. As with soft furnishings, portable hard surfaces of exceptional value (whether economic or personal value) can be stored appropriately until the activity has decayed away. Figure 2 summarises the remediation options that are potentially viable for different items/surfaces.

AIV.6 Type and use of venue. The type and use of a venue will influence the ease with which the venue (or parts thereof) can be closed pending remediation and the likelihood of management controls regarding future treatment of the surface being effective. The type and use of the venue may also influence the timescales available for agreeing and implementing the remediation. It is important to recognise these factors when determining the best remediation option.

AIV.7 Dose implications for all contractors. Any remediation work must be carried out under the Ionising Radiation Regulations 1999. These require the work to be justified in advance (ie it must be clear that the health benefits of carrying out the work outweigh the health risks to those carrying it out and handling any wastes). Consideration of the health risks posed to contractors means that abrasive decontamination methods are likely only to be considered for highly contaminated surfaces, since re-mobilisation of the contamination by such methods may expose the contractors to an inhalation hazard.

AIV.8 Implications for the environment and waste. Any wastes resulting from remediation work (including contaminated wipes, whole items and decontamination wastes) must be dealt with according to the relevant regulations. These require consideration to be given to the minimisation of waste volumes and, where possible, the segregation of wastes according to the level of contamination. Whilst waste is 'on-site' prior to movement to a designated holding or disposal site, the waste must be properly managed and accounted for. Decisions on remediation should take account of these aspects when determining the best option. Prior advice on the application of exemptions should be sought from the DfT, EA and other relevant regulators.

AIV.9 The wishes of key stakeholders, in particular the owners of the premises/items. In determining the remediation strategy, it is essential that the owners of the premises and/or items are fully involved in the discussions. In particular, they may identify other social or economic factors that need to be considered.

Management control for contamination left in-situ

AIV.10 LA should ensure that there are appropriate management arrangements in place where areas of contamination (above the reference level) have been left in situ. These arrangements should ensure that any restrictions on future treatment of the contaminated surfaces (eg renovation) are known to persons with responsibility for those surfaces for the whole period of time until the contamination will have decayed to below 10 Bq cm^{-2}.

Figure 2 Potential remediation options for surfaces contaminated above 10 Bq/cm^2*

PRACTICABLE OPTIONS						
	1	2	3	4	5	6
SURFACE	Leave in situ, clean normally (wet) and do nothing further	Remove contaminated area or whole item	Specialist decontamination	Cover surface with appropriate material	Store until radiation decays	Provide information to owner/occupier
Soft Furnishings and other items/surfaces that are hard to measure	Yes (exceptionally)	Yes	Washing may be appropriate for some items	No	Yes	Necessary for 1 & 5
Hard surfaces removable	Yes	Yes	Yes (least preferred)	Yes	Yes	Necessary for 1, 4 & 5
Hard surfaces permanent	Yes	No	Yes (least preferred)	Yes	No	Necessary for 1, possibly 3 & 4
Personal belongings	No	Yes (low personal value)	Yes (least preferred)	Yes (limited circumstances)	Yes (high personal value)	Necessary for 4 & 5
Any surface - high economic value	Yes	No	Yes (least preferred)	Yes	Yes	Necessary for all

Notes: Green indicates default remediation option for WCC. Options coloured amber require specific justification. It is not expected that options coloured red would ever be justified.

* Simple measures to remove/contain contamination (eg disposal of small volume, low value items) may be considered for items contaminated below 10 Bq/cm^2, but, with the exception of items/surfaces that are difficult to measure, it is not considered that levels of contamination below this reference level pose a public health risk.

ANNEX V – Packaging, transport and sentencing of waste

AV.1 Waste disposal must be carried out only following consultation with the Environment Agency, Department for Transport and other relevant regulators to ensure compliance with statutory and other requirements.

Owners & consignors

AV.2 Ownership of the waste rests securely with the owner/occupier of the venue. Accordingly, the owner/occupier must meet the costs associated with the transport, storage and final disposal of that waste. It is the contractor's responsibility to act as consignor of the waste and as such the contractor must prepare, suitably package and present all waste for appropriate transport and disposal. The contractor, acting as the consignor of the waste, should arrange for it to be removed from the venue and sent for appropriate storage or disposal. Contractors should ensure that these operations are carried out in compliance with the relevant legislation and within the remit of any exemption order applied.

Packaging

AV.3 Packaging used by contractors for the removal, including transport of, contaminated items must be selected on the basis of the activity and form of the contamination and the requirements of the transport Regulations. The following paper provides guidance on the selection of appropriate packaging:

"A Note on the Selection of Transport Package Types based on Activity or Activity Concentration of Polonium-210". Department for Transport: Dangerous Goods Division – Information Note – dated 06/12/06.

AV.4 Further information/advice is always available from DfT Dangerous Goods Division.

Transport

AV.5 The contractor/consignor will need to ensure that transport of radioactive contaminated waste must proceed within the requirements of SI 1093 – The Radioactive Material (Road Transport) Regulations 2002. When packaging waste, consideration must be given to the suitability of the packaging for long term storage (should this become the chosen option), and record keeping should be of a level that avoids the need for double handling of waste. The following paper provides more detailed advice on preparation for transport and consignors responsibilities:

"TRANSPORT OF RADIOACTIVE MATERIAL BY ROAD - CONSIGNORS RESPONSIBILITIES". Department for Transport: Dangerous Goods Division – Information Note – dated 07/12/06.

AV.6 Further information/advice is always available from DfT Dangerous Goods Division whose contact details are on the above mentioned information note.

Sentencing

AV.7 In addition, the contractor should ensure that Environment Agency requirements are satisfied as set out in:

a) Alexander Litvinenko Incident: Expected Standards for the Management of Radioactive Waste within the Provisions of SI 3169 - The Radioactive Substances (Emergency Exemption) (England and Wales) Order 2006

b) The Radioactive Substances (Phosphatic Substances Rare Earths etc) Exemption Order 1962

c) Guidance on disposal options and criteria for Polonium contaminated Waste (Version 3.0 07/02/2007)

Waste routes

AV.8 This guidance is issued to enable contractors to prepare remediation proposals. It identifies categories of waste which will require immediate disposal, and waste which is to be packaged, contained and stored on the originating premises for later removal.

AV.9 The guidance details the relevant regulators' minimum standards for waste transport and sentencing. Should any contractor or owner/occupier wish to employ alternative or higher criteria, approval should be sought from LA and other relevant regulators in advance.

AV.10 Appropriate sentencing will depend upon the volume of the waste, the degree of contamination of the item(s) involved, its level of activity and the statutory thresholds which determine the route of disposal (which may include decay storage).

Guidance on waste disposal categories

Category 1 - Waste not controlled under The Radioactive Substances Act 1993

AV.11 Any waste which can be demonstrated to be < 0.37Bq/g as ^{210}Po will be treated as uncontaminated material and will be disposed of via the normal disposal route appropriate for the materials involved without further controls under the Radioactive Substances Act 1993 (RSA 93). Such material must however be excluded from recycling waste streams. Where surface contamination is present, activity can be averaged over the mass of the immediate contaminated surface in order to satisfy the activity/mass concentration criterion, (ie sections of carpets, floor tiles, table/desk tops and upholstery coverings etc). As contamination could be loose, fixatives can be used as a precautionary tie down on the surfaces involved.

AV.12 Survey records and activity inventories for wastes consigned under this category are to be kept.

AV.13 The contractor is to allow in its proposals to undertake the necessary waste disposal of these materials.

Category 2 - Waste which is exempt under The Radioactive Substances Act 1993.

AV.14 Waste which can be demonstrated to be >0.37Bq/g but<14.8Bq/g as ^{210}Po will be treated as exempt radioactive material, as defined under The Radioactive Substances (Phosphatic Substances Rare Earths etc) Exemption Order 1962. Such material should be disposed of to a suitable landfill with the full understanding and agreement of the landfill operator. Such waste must be excluded from recycling waste streams. No one item consigned should contain more than 10kBq as ^{210}Po.

AV.15 Where surface contamination is present, the activity can be averaged over the mass of the contaminated object in order to satisfy the activity/mass concentration criterion. As contamination could be loose, fixatives can be used as a precautionary tie down on the surfaces involved.

AV.16 Survey records and activity inventories for wastes consigned under this category are to be kept.

AV.17 The contractor is to allow in its proposals to undertake the necessary waste disposal of these materials.

Category 3 - Other material

AV.18 All other contaminated materials that fall outside categories 1 and 2 are to be fully characterised. Copies of the records are to be passed to the site occupier and to LA for their retention pending final disposal. Characterisation will include a full physical description of the material involved, a survey record providing detailed contamination concentrations and a calculation providing a best estimate of the total ^{210}Po activity associated with the material. Contamination on each item is to be tied down using an appropriate fixative and each item is to be securely wrapped and sealed in plastic with a label providing unique identifying details. Smaller items are then to be placed in lidded steel drums and stored on the premises involved, pending identification of disposal routes. Ideally, measures should be taken to size reduce the materials to fit into the steel drums, however if this is impractical, larger items should be triple wrapped and placed within an appropriate robust outer package such as a wooden or stout cardboard box with appropriate labels.

AV.19 The accumulation, storage and disposal of category 3 waste is covered under The Radioactive Substances (Emergency Exemption) (England and Wales) Order 2006 and requires no authorisation.

AV.20 The contractor will not be responsible for the planning of disposal of such items. However, if suitable disposal routes are identified, the contractor may be asked to undertake the necessary disposal under a variation to the contract.

WCC notification of available disposal routes

AV.21 It is expected that contractors will make suitable arrangements for the transport and sentencing of waste arising from decontamination operations. In circumstances where this is not possible, WCC will attempt to identify available waste routes and facilitate access to them. Contractors must advise LA at the earliest possible opportunity in the event that they are unable to identify suitable waste routes.

Appendix A: Example of tracking matrix

Status of Whimbrel Premises

MPS Ref. No.	Venue	Location	Priority Rating	Comms. Factor	AWE	Police Release	HPA	Contam. to be Remediated	LA	Remediation									Open to public	Formal LA sign off	Formal HSE sign off	Notes
										Estimate	Instruct 1	Monitor	Instruct 2	Started	Finished	Waste	EA sign off	Final survey				
1	Shop		28	10				Y														
2	Hotel	Rm 1	21	5				Y														
		Rm2	28	5				Y														
		WC	0	5				N														
3	Office	Office a	16	1				Y														
		Office b	15	1				N														
4	Office 2	Boardroom	6	1				Y														
		Office a	3	1				N														
		Office b	4	1				N														
5	Hotel 2	Rm 1	3	1				N														
		Rm2	0	1				N														
		Laundry	2	1				N														
6	Office 3	Office a	6	1				N														
		Office b	4	1				N														
7	Vehicle		28	10				N														
8	Café	Basement	21	5				Y														
		Ground floor	28	5				Y														
		WC	0	5				N														
9	Office 4	WC	16	1				Y														
		Office a						N														
10	Office 5	Office a	6	1				Y														
		Office b	3	1				N														
		Hold: >			1	0	0			0	1	2	1	5	1	1	1	0	0	11	11	0
					0	0	0			0	0	1	3	4	9	10	10	11	11	0	0	0
		Closed/Complete: >			11	20	19			22	10	8	7	2	1	0	4	0	0	11	8	1
		Not Applicable: >			10	2	3			0	11	11	11	11	11	11	11	11	11	0	3	21
																			% Open =	50%		

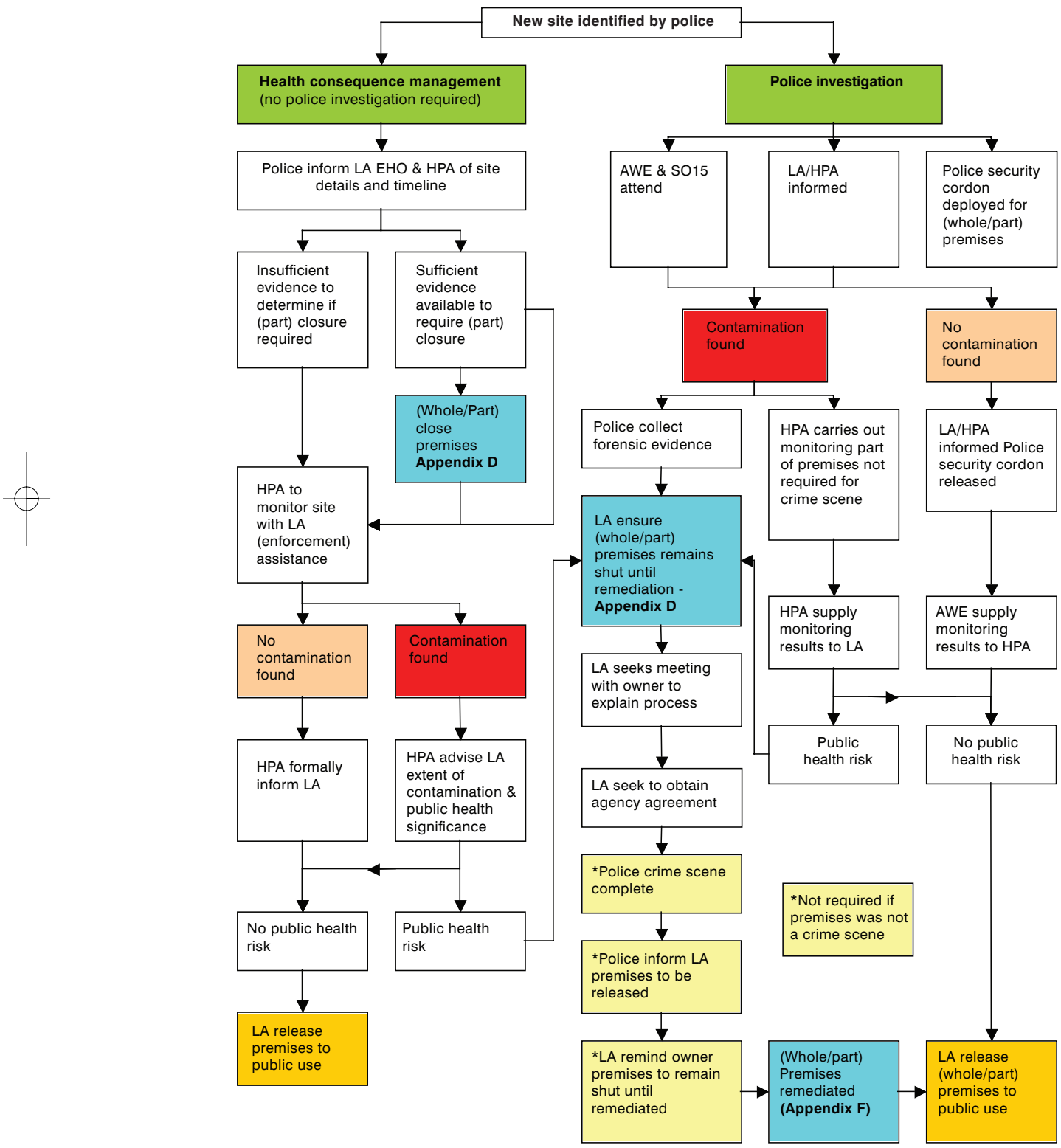
Key

Items shown red item not closed/complete by agency

Items shown green item closed/cleared by agency

Yes = 9
N/K = 0
No=13

Appendix B – Initial actions by MPS, AWE, HPA and LA



Appendix C: Example of early stage clearance letter

City of Westminster

This matter is being dealt with by:
<NAME>
Direct line: (020) 7641 <EXT>
Email: <…>@westminster.gov.uk

<ADDRESS>

Date: <…>

Dear Sir/Madam

<VENUE DETAILS >
Polonium-210 (Po-210) contamination

I refer to the polonium contamination that occurred at your premises sometime between 1st October and 30th November 2006.

I am writing to inform you that the council has received the attached report from the Health Protection agency (HPA), to inform us that following a comprehensive programme of measurement for Po-210 activity and any remediation measures by HPA staff that, with the exception of the rooms/areas noted below, they consider that the premises are safe for public use.

In order to reduce contamination to acceptable levels the areas/items listed below will need to be remediated and they must not be made available for staff or public use without the express and written permission of the council

- <PARTICULARS>
-

We are seeking further clarification on <AREAS> which are still the subject of the police enquiry.

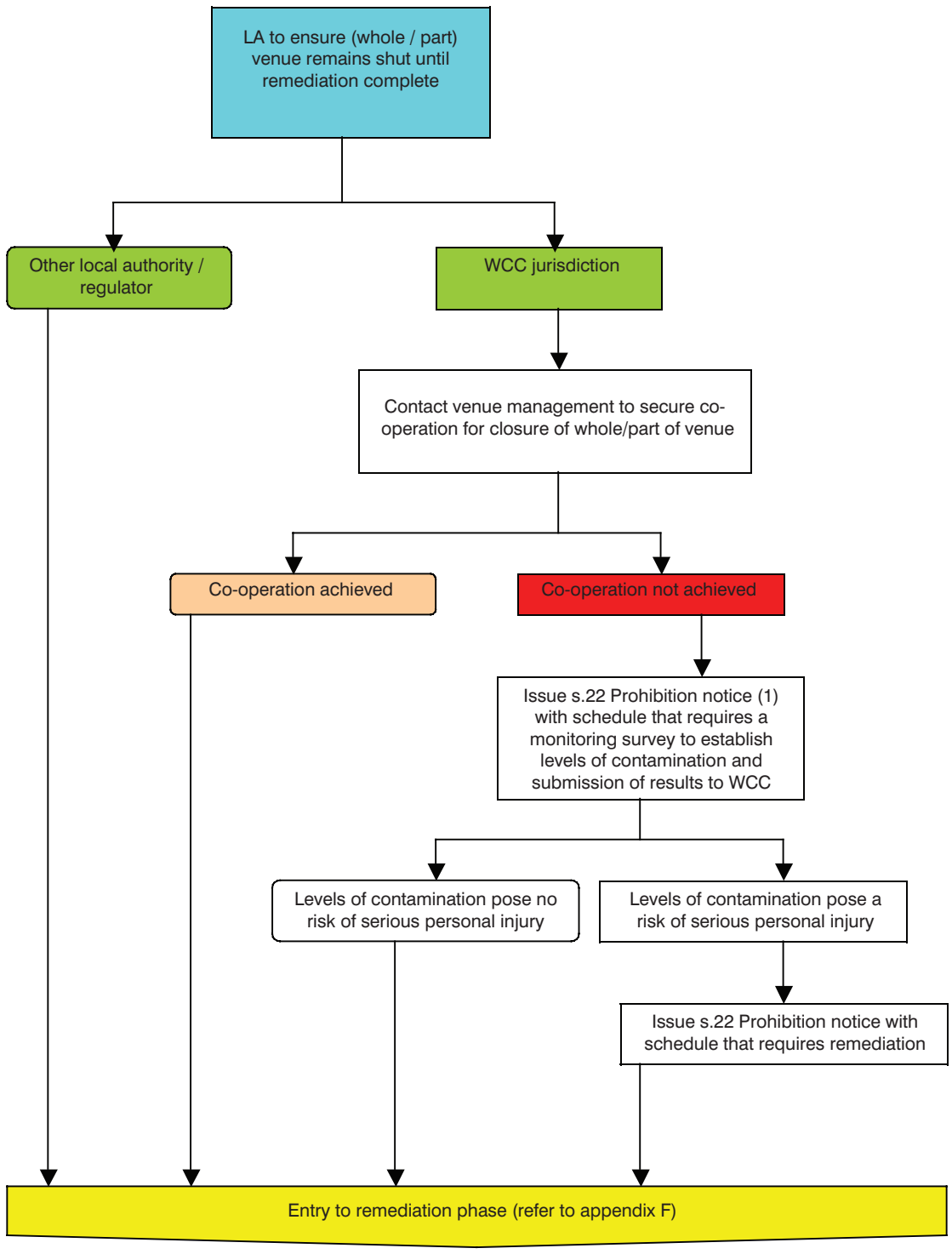
As a result of the attached report received from the HPA, I am reassured that the premises, apart from the areas/items listed above, are safe for staff and public use.

If you are unclear about any aspect of this letter or wish to discuss it further please contact my officer <NAME> who will be pleased to assist you.

Yours faithfully

Peter Rogers
Chief Executive, Westminster City Council
Chairman, Recovery Group, Operation <…>.

Appendix D: Decision to close process diagram



Appendix E: Example of agency agreement

Agency Agreement –Remediation Services

THIS AGREEMENT is made the day of 2006

BETWEEN -

(1) whose address is

('the Principal'); and

(2) The LORD MAYOR AND CITIZENS OF THE CITY OF WESTMINSTER of City Hall, 64 Victoria Street, London SW1P 6QE ('the Agent').

BACKGROUND

(A) The Agent is acting as lead local authority in accordance with the Strategic National Guidance on the decontamination of buildings and infrastructure exposed to Chemical, Biological, Radiological or Nuclear (CBRN) substances or material.
(B) The Principal is the owner/occupier of the premises known as which have suffered radioactive contamination and in relation to which the Principal is responsible under the Guidance for commissioning a contractor to carry out remediation services.

In consideration of the Principal paying to the Agent the sum of £1.00 (the receipt and adequacy of which the Agent acknowledges) and in consideration of the Agent agreeing to carry out the Purposes IT IS AGREED as follows -

1. DEFINITIONS

In this Agreement, the following words shall have the following meanings:

"Contract"	a contract between a Contractor and the Principal for the provision of the Services;
"Contractor(s)"	the specialist remediation contractor or contractors appointed by the Principal to undertake the Services;
"Guidance"	the ODPM publication entitled "Strategic National Guidance on the decontamination of buildings and infrastructure exposed to Chemical, Biological, Radiological or Nuclear (CBRN) substances or material";
"Purposes"	advising and assisting the Principal in meeting the requirements and guidelines for owners/occupiers set out in the Guidance (in conjunction, as appropriate, with other interested statutory agencies) including – • facilitating and co-ordinating the process of identifying Contractor(s) from the framework arrangements established by the Government Decontamination Service who will survey the

Premises, advise on options for remediation and, where necessary, undertake such remediation (which may include decontamination) work;

- advising any Contractor undertaking the Services on the extent of the survey work to be carried out at the Premises and the appropriate options for remediation that are necessary to protect public health;

Provided That the Purposes shall not include the provision of legal advice by the Agent on the terms and conditions of any contract to be entered into between the Principal and a Contractor;

"Premises"	the premises known as ;
"Services"	the remediation services required to be carried out at the Premises by the Contractor(s) under the Contract(s) having regard to the Guidance and any related technical or other guidance referred to in the Guidance;
"Term"	means the period from the date of this Agreement until verification and sign-off of any remediation work by the Agent acting in its capacity as lead authority in accordance with the Guidance.

2. APPOINTMENT

The Principal appoints the Agent for the Purposes for the Term of this Agreement which the Agent agrees to use all reasonable endeavours to carry out.

3. ASSISTANCE

The parties shall provide all reasonable assistance and information to each other in order for the Purposes to be achieved.

4. DISCLAIMER AND INDEMNITY

4.1 The Agent shall bear no responsibility or liability for any loss or damage caused to or suffered by the Principal as a result of, or in connection with:

- any contamination at the Premises;
- the acts or omissions of the Contractor or his performance of the Services;
- the adequacy or suitability of the terms and conditions contained in any Contract.

4.2 The Principal shall indemnify the Agent for any cost, loss, claim or damage which the Agent incurs in the performance of its obligations under this Agreement save to the extent that such cost, loss, claim or damage arises directly from the Agent's negligence or default under this Agreement.

4.3 The Principal shall be responsible for all payments due to a Contractor under a Contract.

5. STATUS OF THE AGENT

Nothing in this Agreement shall constitute the creation, establishment or relationship of partnership, joint venture, or employer and employee between the parties.

6. LIMITED STATUS

The Agent shall not enter into any contracts, nor give any warranty for or on behalf of the Principal or pledge the credit of the Principal.

7. TERMINATION

The Principal may terminate this Agreement on 2 weeks' notice.

8. GENERAL

8.1. This Agreement may only be amended in writing signed by duly authorised representatives of the parties.

8.2. Neither Party may assign, delegate, sub-contract, mortgage, charge or otherwise transfer any or all of its rights and obligations under this Agreement without the prior written agreement of the other Party.

8.3. This Agreement contains the whole agreement between the parties. The parties confirm that they have not entered into this Agreement on the basis of any representation that is not expressly incorporated into this Agreement.

8.4. For the purposes of the Contracts (Rights of Third Parties Act 1999), and not withstanding any other provision of this Agreement, this Agreement is not intended to, and does not, give any person who is not a party to it any right to enforce any of its provisions.

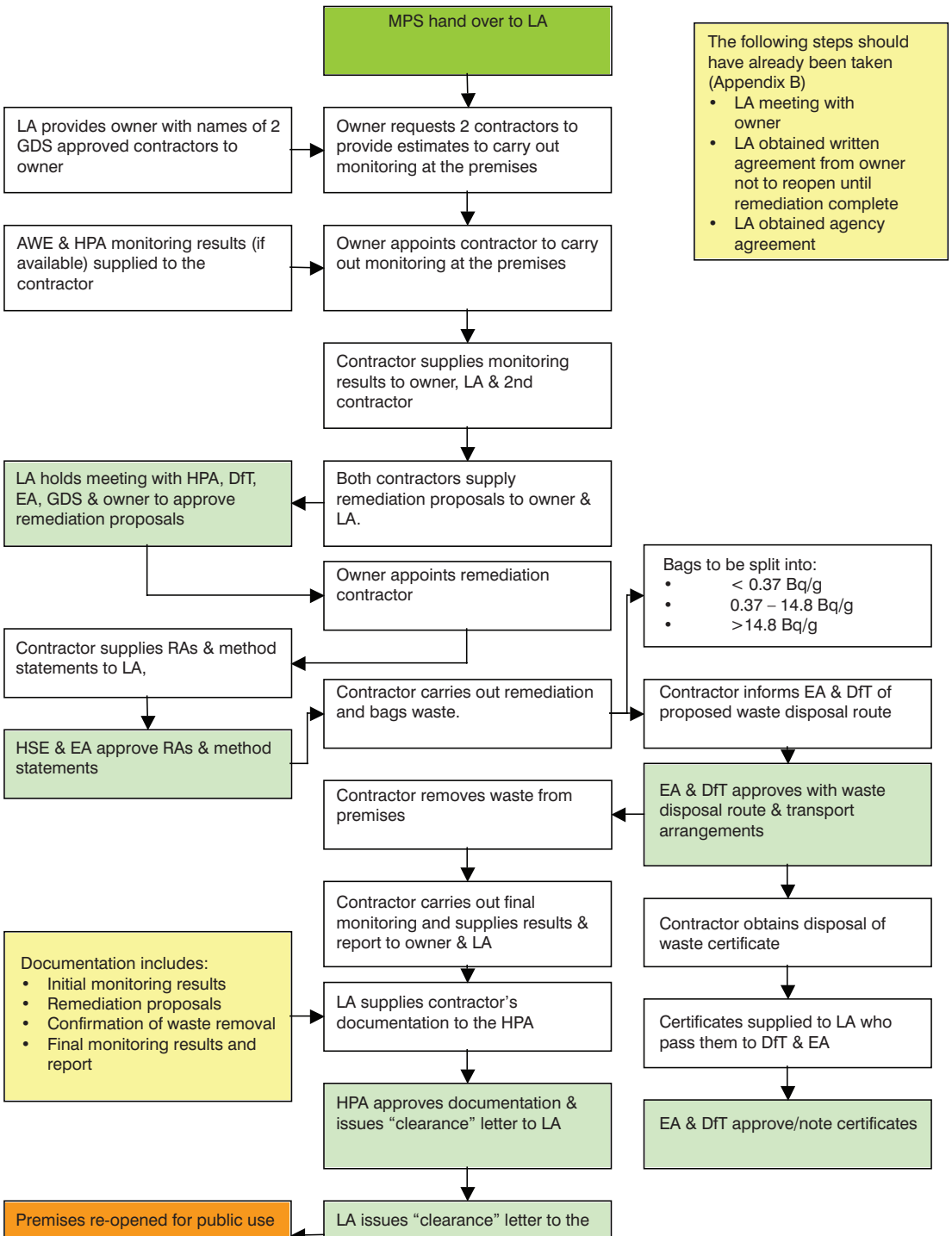
8.5. The parties acknowledge that the Agent may, in its capacity as lead authority under the Guidance, contract directly with a contractor (who may be a Contractor) to carry out verification of any remediation work at the Premises that has been done under a Contract. The Principal hereby agrees to grant such a licence or licences as may be reasonably required by the Agent or its contractors or sub-contractors to enable such verification to be undertaken.

AGREED by the parties through their authorised signatories:

For and on behalf of (name):
Signature:
Print name:
Job Title:
Date:

For and on behalf of (name):
Signature:
Print name:
Job Title:
Date:

Appendix F: Remediation Process



Appendix G: Example of progress chart: page 1

Venue	Case Officer	AWE or HPA results rec'd	Clearance lts sent	Secure?	Date Meetings held	Agency agreements sent and date signed	Contractors chosen and date introduced	Dates estimates for monitoring rec'd	Monitoring contractor chosen and date instructed by owner	Date monitoring results received & 2nd (named) contractor appointed	Date monitoring results received & 2nd (named) contractor appointed	Date remediation (named) contractor appointed
1	AA	AWE only	N/A	Undrtkng rec'd	<date>	Sent has been queried & awaited (AA mtg 1 02/01	Contractor Yes	Contractor <date>				
							Contractor <date>	Contractor <date>				
2	BB	Y	Y	Undrtkng rec'd & police	<date>	Sent <date> should get back today	Contractor <date>	Contractor <date>				
							Contractor <date>	Contractor awaited				
3	CC	Y	Y	Undrtkng rec'd	<date>	<date>	Contractor <date>	Contractor <date>				
							Contractor <date>	Contractor awaited				
4	DD	Y	Y	Undrtkng rec'd	<date>	Given <date>with solicitor	Contractor <date>	Contractor awaited				
							Contractor <date>	Contractor awaited				
5	EE	Y	Y	Undrtkng rec'd	<date>	Signed <date>	Contractor <date>	Contractor <date>				
							Contractor <date>	Contractor awaited				
6	FF	Y	Y	Undrtkng rec'd	<date>	<date>	Contractor Yes	<date> (need to clarify issues)				
							Contractor Yes	Contractor <date>				

Appendix G: Example of progress chart: page 2

Venue	Case Officer	Date monitoring results received	SecDate spec rec'd by monitoring contractor	Meeting for EA, HPA, DfT, WCC, GDS meet to discuss remediation proposal	Date remediation approved by Agencies	Date remediation & monitoring docs sent to HPA	Date remediation started	Date inventory of waste rec'd	Date certificate of receipt of waste rec'd	Date final monitoring report rec'd	Date formal letter from HPA rec'd
		2nd (named) contractor appointed	Date spec received by 2nd contractor		Date remediation contractor appointed		Date remediation completed (not incl. waste)	Date waste removed & temp/perm storage site	Date of EA sign off for waste	Date final monitoring report sent to HPA	Date Premises cleared by WCC
1	AA	Contractor <date>	Contractor <date>	<date>	<date>	<date>	<date>	<date>	<date>	<date>	<date>
					Contractor <date>		<date>	<date> incineration	<date>	<date>	<date>
2	BB	Contractor <date>	Contractor	Contractor <date>	Contractor <date>	<date>	Contractor <date>	<date>& <date> (2)	<date>	Area 1 <date>	Area 1 <date>
			<date> Quote rec'd				Contractor <date>	waste remov'd in 3 trips	awaited	Area 1 <date>	Area 1 <date>
3	CC	Contractor <date>	Contractor <date>	<date>	<date>	<date>	<date>	<date>	<date>	Area 1 <date>	Area 1 <date>
		NB some rooms cleared			Contractor <date>		<date>	<date>	<date>	<date>	<date>
4	DD	Contractor <date>	Contractor <date>	Contractor <date>	Contractor <date>	<date>	<date>			<date>	<date>
			Contractor <date>		Owner apptd Contractor		<date>	<date>Still on site		<date>	
5	EE	Contractor <date>	Contractor <date>	Contractor <date>	Contractor <date>	<date>	Prohibition notice served			<date>	
			Insufficient detail		Owner apptd Contractor						
6	FF	Contractor <date>	Contractor <date>	<date>	<date>	<date>	<date>	All waste in area x		<date>not Area 2	<date>not Area 2
			Part spec rec'd		Contractor <date>		<date> except chute			<date>not Area 2	<date>not Area 2

Appendix H: Example of final clearance letter

City of Westminster

This matter is being dealt with by:
<NAME>
Direct line: (020) 7641 <EXT>
Email: <...>@westminster.gov.uk

<ADDRESS>

Date: <...>

Dear Sir/Madam

<VENUE DETAILS>
Polonium-210 (Po-210) contamination

I refer to the polonium contamination that occurred at your premises sometime between 1st October and 30th November 2006.

I am writing to inform you that the council has received the attached report from the Health Protection Agency (HPA) to inform us that they are satisfied that the premises can be returned to normal use.

I am therefore reassured that the premises are safe for staff and public use and consider that the undertaking you provided to the council to exclude people, until remediation has been satisfactorily carried out, has been discharged. Further, the agency agreement has likewise served its purpose and is terminated.

This has been a very difficult time for you, your staff and your customers and I would like to thank you for your co-operation and wish you well in the future.

If you are unclear about any aspect of this letter or wish to discuss it further please contact my officer <NAME> who will be pleased to assist you.

Yours faithfully,

Peter Rogers
Chief Executive, Westminster City Council
Chairman, Recovery Group, Operation <...>.

Appendix I: Example of confidentiality agreement

THIS AGREEMENT is made the day of 2007

BETWEEN [name] of [address] ("the Consultant") of the one part and [name] of [address] ("the Contractor") of the other part.

BACKGROUND

A. The Contractor has entered into the agreements with third parties listed in the schedule attached to this Agreement for the provision of certain specialist [radiological decontamination services].
B. The Consultant has been appointed by governmental or local governmental agencies to [describe service to be undertaken by HPA or RPA as appropriate] (the "[HPA][RPA]Services").
C. It is anticipated that in the course of carrying out the [HPA][RPA] Services the Consultant may become aware of or have disclosed to it information, know-how, practices, procedures, methodologies, documents and/or their contents belonging to or relating to the Contractor, or to its business or the services that it provides, that are confidential and/or commercially sensitive.

In consideration of the Contractor paying to the Consultant of the sum of £10 (the receipt of which is hereby acknowledged by the Consultant) IT IS AGREED AS FOLLOWS –

1. CONFIDENTIAL INFORMATION

In this Agreement "Confidential Information" means any information, know-how, details of practices, procedures, methodologies and the existence of or contents of any documents which relate to the Contractor, or to its business or the services that it provides, of which the Consultant becomes aware in the course of or as a result of providing the [HPA][RPA] Services, whether such confidential information is provided orally or in a written, electronic, physical or visual form.

2.DUTY OF CONFIDENTIALITY

2.1. The Consultant will use the Confidential Information solely for the purpose of providing the [HPA][RPA] Services to the relevant governmental or local governmental client(s) who commissioned the [HPA][RPA] Services.
2.2. The Consultant will not disclose the Confidential Information to any third party other than third parties who need to have access to the Confidential Information for the purposes of advising, assisting or acting as sub-contractors or sub-consultants to the Consultant in relation to the provision of the [HPA][RPA] Services.
2.3. In relation to any third party who is given access to the Confidential Information in accordance with clause 2.2 above, the Consultant will only disclose Confidential Information to the extent strictly necessary for the provision of the [HPA][RPA] Services and the Consultant shall ensure that the third party complies with the same duty of confidentiality in relation to the Confidential Information as is placed upon the Consultant.
2.4. The duty of confidentiality under this clause 2 shall not apply to the use of or a disclosure of Confidential Information where the Consultant can show that the Confidential Information used or disclosed has already come into the public domain other than as a

result of a breach of this Agreement or the Consultant is required to disclose the Confidential Information by law.

2.5. The duty of confidentiality under this clause 2 shall continue indefinitely but shall cease to apply to any information coming into the public domain otherwise than by breach by the Consultant of its obligations contained in this Agreement.

3. LIABILITY FOR BREACH

3.1. The parties agree that any breach of the duty of confidentiality in clause 2 above by the Consultant or any third party to whom the Consultant releases Confidential Information, may result in legal proceedings being commenced against the Consultant, including a claim for the recovery of any losses or damages incurred by the Contractor as a result of that breach.

3.2. The Consultant shall be liable for and shall fully indemnify and keep indemnified the Contractor against all liabilities, damages, costs, losses, claims, demands and proceedings arising from, or in connection with, any breach of the duty of confidentiality in clause 2 above, however arising, by the Consultant or any third party to whom the Consultant releases Confidential Information.

4. The parties agree that this Agreement shall be subject to English Law and hereby agree to submit to the exclusive jurisdiction of the English Courts.

5. This Agreement constitutes the entire agreement and understanding between the Contractor and the Consultant in relation to the Confidential Information and supersedes all prior representations, arrangements, understandings, agreements, statements, representations or warranties (whether written or oral).

6. In this Agreement the term “Consultant” includes the Consultant together with its employees, sub-contractors, agents and advisers.

IN WITNESS whereof the Contractor and the Consultant have hereunto set their hands the day and year first above written.

For the Contractor

SIGNED by)
)
in the presence of:-)
Witness signs:
Name:
Address:
Occupation

For the Consultant

SIGNED by)
)
in the presence of:-)
Witness signs:
Name:
Address:
Occupation