SCDC Health and Environmental Service Departments Response to Roger Braithwaite's Comments on Revised Application S/2307/06/F

1. H & ES are aware that intermittent small flows have been noted coming out of the bank of the Riddy Brook on the side of the Bayer site. The water quality of the flow from the bank, and of the brook immediately downstream, has been tested by the Environment Agency. Though contaminants present within the site were noted in the samples from the bank, the contaminant concentrations within the sample taken from the brook were not found to exceed the Environmental Quality Standards.

2. This is a statement of fact - no comment required.

3. The 3 reports referred to are: Preliminary Conceptual Site Model by Atkins August 2006; Derivation of Pesticide Soil Screening Values and Evaluation of the Spatial Extent of Contamination by Atkins July 2007 (containing Human Health Risk Assessment); Groundwater Modelling Report by Atkins June 2007 (containing Groundwater Risk Assessment). SCDC and the Environment Agency have agreed the reports in principle.

4. The site is currently in a demolished state with all buildings removed, except those required to remain to facilitate remediation of the more odorous soils. It is reported that all asbestos material has been removed during this process. The requirement for planning permission to undertake this work is a matter for Development Control to comment upon – to arbitrarily state that it was "without control" because it did not have planning permission is also misleading. The site was subject to Health & Safety regulation and the requirements of the Control of Asbestos Regulations 2006.

5. The land to the west of the A10, which includes the WWTP, forms part of the area designated a special site under the Part 2a Contaminated Land Regulations. The application S/2307/06/F does not include the remediation of the area to the west of the A10. At present the WWTP is being used to treat contaminated groundwater pumped from the application site. Treated water is discharged to the river. This process is regulated by the Environment Agency under a discharge consent. It is currently proposed to modify the WWTP to enable compliance with the discharge consent during the remediation and will be regulated by the Environment Agency. Owing to its role in treating effluent from the remediation site subject to this application, the WWTP is required to remain throughout the duration of the proposed site remediation. The WWTP cannot be decommissioned before the application site has been successfully remediated. We understand that the remediation of the WWTP site will then be dealt with via a separate method statement.

6. The terminology of BATNEEC (Best Available Technology Not Entailing Excessive Cost) has been used throughout the reports submitted with this application. This terminology is often used when determining the most suitable pollution control method for industrial emissions but is not usually applied in terms of contaminated land. Where sites are remediated under Part 2a, section 78E(5) of the Environmental Protection Act directs the enforcing authority to have regard to the Secretary of State's guidance (Defra Circular 01/2006) when considering what is reasonable by way of remediation. Annex 3 of this guidance gives advice on how costs and benefits should be balanced in this deliberation. However, this is not directly related to remediation undertaken within the development control regime, PPS 23 refers at para 2.53 of Annex 2 to LPA's when determining an application that a "balance should be struck between the overall social and economic benefits from the development, including remediation proposals, and the temporary impacts of the remediation process" this obviously requires an element of cost consideration.

7. The Environment Agency as regulator need to take a view as to whether the remediation proposed will adequately break the significant pollutant linkages identified under the part 2a determination. The decision will be based on validation data. Maintenance of relatively low on-site groundwater levels has been and should continue to draw any off-site contaminated groundwater towards the groundwater sumps for treatment in the WWTP.

8. This is a very basic outline of the process.

8a. The settling lagoons will be situated on hardstanding within a bunded area, as shown in drawing D907_34 of the Remediation Method Statement (RMS). The main reason for these lagoons is to remove silt from the water prior to pumping it across to the WWTP.

8b. The WWTP was originally installed and used to treat effluent from the processes carried out at the works and latterly the groundwater pumped from the site. The plant will be upgraded to ensure it can handle the remediation effluent and will be regulated by the Environment Agency under a discharge consent.

8c. The bioremediation process proposed includes monitoring for nutrients and for heterotrophic counts (procedure to measure the number of live bacteria) to ensure that the biological processes are active (see sections 7.5 and 15.5 RMS), i.e. the process is proactive in its approach and requires some degree of management, which is reflected in the RMS.

8d. There is the potential that some waste will need to be removed to landfill and provision has been made for this within the RMS. The applicant is recommended by PPS23 to "consider carefully the waste management implications when deciding the best approach to remediation" and the County Council have commented on the application accordingly.

8e. It is our understanding that the specification for the capping layer will be determined following the completion of the remediation works and the undertaking of a detailed human health Quantitative Risk Assessment. The site will not be discharged of its Part 2a status or declared suitable for the redevelopment phase until the regulators including the planning authority are satisfied that the remediation has been successful and that no unacceptable risks to receptors remain. Any soil imported to site will need to be tested to ensure that it is clean. This will be addressed by condition.

8f. Sections 7.3 and 7.4 of the Remediation Method Statement state that soils are sorted by an initial classification based on a visual and olfactory judgement to determine soil type and give a preliminary assessment of whether treatment is required prior to confirmation by laboratory testing.

9. Sections 7.5 and 10.26 of the RMS states that the treatment beds will be covered as appropriate, which will prevent volatile organic compounds (VOCs), odours and particulates from being released into the air. Any soils subject to vacuum assisted treatment will have the vapours recovered via granular activated carbon or air bio-filters as detailed in section 7.6 of the RMS.

The high bay warehouse is to be retained throughout the first phase of remediation, which is identified to contain the greatest contaminant concentrations. This is to allow the most volatile and odorous soil to be remediated in a closed environment, see section 10.12 of the RMS. The RMS proposes a monitoring regime to measure VOC's (odour) and particulates (dust).

10. The method statement takes into consideration the range of contaminants present on site and the fact that a single remediation method will not address all contaminants. The proposed ex-situ methodology will allow soils to be assessed on an individual basis during works and segregated according to the type of treatment required taking into account both

the soil type and the contaminant type. Sections 7.5 and 7.8 of the RMS state that where biological treatment or photo-degradation is not sufficient, the use of chemical oxidants may be used. The remediation contractor has experience of using this technique and, if during site works it is deemed necessary, a separate method statement will be prepared and agreed by the regulators.

11. The method statement outlines modifications that are required to be made to the WWTP to effectively treat the groundwater abstracted from the site during the remediation works. Though the WWTP is set up to treat current effluent/ surface water drainage from the site, the groundwater abstracted during the works is likely to contain higher contaminant concentrations, varying proportions of the different contaminants, and a greater proportion of silt from the dewatering of excavations. The modifications to provide additional silt separation and treatment of the chlorinated solvents prior to the primary and secondary carbon filtration address the change in nature of the fluids being treated by the WWTP and are necessary to ensure that the final effluent attains the required discharge conditions set by the Environment Agency.

12. A treatment time of 4 weeks is expected as a minimum and is dependent on the degree of contamination within the individual treatment bed, ref section 15.7 RMS. Laboratory testing will confirm when the treatment of each bed is complete and the contaminant concentrations have reached an acceptable level.

13. See comment for 8e.

14. The presence of Light Non Aqueous Phase Liquids (LNAPLs) has been addressed in section 12.9 of the RMS. It is proposed to remove the free product from the abstracted groundwater by using oil skimmers whilst it is being held in the purpose made lagoons. There has been no consideration of DNAPL (Dense Non Aqueous Phase Liquid) and provision should be made to separate this phase from the abstracted groundwater, if necessary, prior to the water being sent to the water treatment plant (WWTP). There is no specific reference to treatment of the silts within the lagoons but these will contain contaminants that will be required to be remediated.

15. The general process has been described within the RMS, however until works commence the volume of contaminated soil requiring a particular treatment will not be known.

16. Cohesive materials (clayey soil) are treated differently to granular material (sands and gravels) due to their different engineering properties. Sections 7.4 - 7.8 of the RMS details the treatment technologies appropriate for each soil and contaminant type.

17. See response to comment 15

18. In relation to working towards proposed target concentrations see response to comment 23. It will not be acceptable for soils to be replaced on site unless they are within agreed remedial targets.

19. We need to work towards these targets and with a combination of methods achieve a point where (a) the significant pollutant linkages are broken and (b) the site is suitable for the proposed use. This statement needs further exploration and is the reason that we have proposed conditions upon the planning consent.

20. There is a complex mix of contaminants beneath the site and it is a massive undertaking; what we cannot do is leave this site alone, doing nothing is not an option.

21. As stated in section 14 and 15 of the RMS, all treatment areas will be lined with an HDPE liner and lapped over a bund. Any contaminated water in the form of run off will be captured

by groundwater control measures and passed to the WWTP. Flood plain issues are addressed by the Environment Agency, however comments received from them indicate that they are satisfied that any heavy rainfall will be dealt with through the current drainage/groundwater control system put in place during the works and will therefore not lead to flooding of the site and any subsequent contamination of the brook/river with the site water. The Environment Agency has proposed a condition to prevent spoil or materials being deposited in the flood plain.

22. The discharge consent in the method statement appendices is current with a record kept on file that the holder is now Bridgemere UK Ltd. A revised consent is to be issued to take the proposed remediation into account

23. It is our understanding that some of the currently proposed targets may be overly conservative due to assumptions made during construction of the conceptual site model. During the site works, there is the opportunity to update this conceptual model with actual site data/parameters, which may have an effect on the derived targets. It is our view that this is a suitable approach though, following the agreement of the initial set of target concentrations prior to works commencing, no changes to target concentrations will be accepted without full justification in the form of a Quantitative Risk Assessment being submitted and agreed by the LPA

24. The inner and outer zone targets in Table 6.7 of the RMS refer to targets set for an inner zone of 1-20m from the surface water receptor and an outer zone of greater than 20m from the surface water receptor to the site boundary, as derived in the Atkins Groundwater Modelling Report 2007. This is fully explained in section 8.99 of the Environmental Statement.

25. Section 15.12 of the RMS proposes that each 500m3 sample bed will be tested up to 8 times and therefore the true sampling rate will be greater than 1 per $90m^3$.

26. It is noted that a wheel wash for vehicles leaving site will not be necessary during the remediation works since staff vehicles will only have access to the area designated as 'clean' and will therefore not come into contact with the area of site where remediation is being undertaken. It is the understanding that vehicles/plant operating on site to undertake the remediation will remain on site throughout the works and will therefore not be transferring contaminated soils off-site via dirty wheels. However, should it become necessary for any vehicles to be moved from the remediation area to the clean area or roadways, a wheel wash should be put in place as stated in section 10.33 of the RMS.

27. The issue of the fate of the bentonite wall has been discussed with the developers prior to the application. It has been agreed that investigation of the bentonite wall will take place at the start of the works to ascertain its condition and allow an assessment of options for its treatment during and following remediation of the site. The bentonite wall is likely to remain in place during the works to act as a barrier to offsite migration. A number of possible options have been included in section10.17 of the RMS, however, the Local Authority and the Environment Agency must be fully consulted before a decision is made on how to deal with the bentonite wall and a separate method statement for these works should be submitted and approved prior to works on the bentonite wall commencing. This could form a condition of any planning consent granted for the site.

28. See comment for point 21

29. Addressing floating free product or LNAPL with the use of oil skimmers to separate from the groundwater is a standard procedure in the remediation industry. See also comment for point 14.

30. Regulator to comment, this site is covered by a mobile treatment licence. Section 10.11 addresses security of the site. The site is no longer considered a COMAH site and therefore there is no requirement to have an off-site emergency plan under other legislation. If there is deemed to be a need to produce such detail this could be required by condition.

31. High concentrations of contaminants, such as those present at the Hauxton site, would theoretically be expected to separate out into a distinct phase or a Non Aqueous Phase Liquid (NAPL). Contaminants that are less dense than water are termed Light Non Aqueous Phase Liquids (LNAPLs) and those that are denser than water are termed Dense Non Aqueous Phase Liquids (DNAPLs).

LNAPLs have been addressed in the RMS (see comment for point 14 and 29), however, despite the widespread distribution of high concentrations of chlorinated solvents on the site, the presence of DNAPL has only been confirmed in a discrete number of locations. Details to address DNAPLs have not been included in the RMS and will be required from the applicant by way of condition.

32. The applicant will be required by condition to consider underground structures and will not be allowed to excavate without investigation of their contents.

33. Any potential pathways (including structures) that may cross the site boundary will be sealed.