REPORT OF PROCEEDINGS BEFORE

STANDING COMMITTEE ON STATE DEVELOPMENT

INQUIRY INTO DEVELOPMENT AND REMEDIATION OF THE RHODES PENINSULA

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At Sydney on Friday 8 February 2002

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The Committee met at 9.30 a.m.

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PRESENT

The Hon. Tony Kelly (Chair)

The Hon. Ian Cohen
The Hon. Dr Brian Pezzutti
The Hon. Henry Tsang
The Hon. Ian West

LUIS ERNESTO ALMARIO,

Transcript awaiting clearance from Mr Almario's solicitor

(The witness withdrew)

GREGORY JOSEPH STEWART, Acting Chief Health Officer for New South Wales, 73 Miller Street, North Sydney, sworn and examined:

STEPHEN JOHN CORBETT, Manager, Environmental Health Branch of New South Wales Health, 73 Miller Street, North Sydney, affirmed and examined:

CHAIR: Are you conversant with the terms of reference of this inquiry?

Dr STEWART: I am.

Dr CORBETT: Yes, I am.

CHAIR: Dr Stewart, you made a submission. Do you wish that to be included as part of your sworn evidence?

Dr STEWART: Yes.

CHAIR: If you should consider at any stage during your evidence that in the public interest certain evidence or documents you may wish to present to the Committee should be heard or seen only by members of the Committee, we would be happy to accede to your request and resolve into confidential session. However, Parliament has the ability to override that decision of this Committee, not that it has ever done so.

Would you like to make some opening comments first? I am sure we have heaps of questions to ask you.

Dr STEWART: The presentation I am about to give, which will take about 10 or 15 minutes, pulls out from our submission the main points, but I think there is some value in us going through that for the benefit of the Committee.

CHAIR: If you would skim through it as concisely as you can, because we have the submission and members would like to ask questions.

Dr STEWART: There are some additional things, but I will be guided by you. You have the slides with you. As indicated in the Health submission, New South Wales Health addresses two terms of reference—(e) and (i)—and these specifically relate to the impact on the health of the community. The effect on workers employed at Rhodes is not a matter for New South Wales Health, it is a matter for WorkCover. This is a summary of the submission. The presentation I am about to give will present first of all New South Wales Health's historical and ongoing role related to the Rhodes Peninsula, then the health status of the local community, the process of what is called health risk assessment and remediation, some description of dioxin and the impact of dioxin, and describes how the health status of the community can be monitored and, lastly, I will speak briefly about some health benefits of this process.

The role of New South Wales Health is our advice to other government agencies and community liaison. Health has been actively engaged in issues relating to contamination at the Rhodes Peninsula since the mid-1980s, and our participation has included representation on several statewide committees. I will not go into the detail of those, they are included in the submission, but they include the Hazardous Chemicals Advisory Subcommittee, the Fish Contaminates Advisory Committee, the Rhodes Peninsula Reference Group, which was recently convened by the Premier's Department, and in 2001 Health provided advice to New South Wales Environment Protection Authority on the tolerable level of dioxin intake to be used in the risk assessment of this site. As I said, I will be talking about dioxin in more detail later. Health also attends community meetings when invited and last December we agreed with the local community representatives to be involved in the establishment of an ongoing community

health liaison group that will consist of representatives from New South Wales Health and from the three affected area health service public health units, as well as the community, of course.

Just briefly, then, about Rhodes Peninsula. The details you know, but for Health the potential health problems relate to historical chemical contamination from industrial activity. The on-site contamination is further complicated by significant leakage into the sediment in Homebush Bay. There are three questions we are asking in relation to contamination of this site. Firstly, has contamination had any impact on current residents in the area? Secondly, can we ensure a clean-up can be done without risk to human health? Thirdly, after the clean-up would the sites be healthy places to live.

In relation to residents' health status, I think it is important that I provide some information about that, but I acknowledge upfront that this information does not specifically focus on residents of Rhodes Peninsula. The information we have is at local government area and broader than that. Nevertheless, it does provide some indication of the health status of local residents. In relation to dioxin exposure, Health is aware of and was involved in soil sampling that was undertaken on behalf of the Hazardous Chemicals Advisory Committee in 1988. That demonstrated no increase in community soil levels above that expected in an urban setting. To some extent those were reassuring findings. Understandably, the community is concerned about health status, and the liaison group we established will explore with the community mechanisms for looking at that.

I will not go into any more detail. Central Sydney is the top little space invader thing on this chart. This is all area health services in New South Wales related to all cancers. The blue line down the middle is the State average. This shows that central Sydney is below the State average for all cancers. The bars are confidence limits to do with statistical variations. In relation to central Sydney itself, these are the incident rates of all cancers for the local government areas in central Sydney. Members of the Committee will observe that Concord is right on the State average. The confidence limit bars are wider and an important point here is about statistical variations in sampling small numbers of cases and small numbers of disease, which becomes important when I talk later about health studies.

The Hon. Dr BRIAN PEZZUTTI: Is that corrected for age, sex and economic disadvantage?

Dr STEWART: We only correct for age and sex. It is hard to correct for economic disadvantage. You would not want to do that, because there are effects you want to see in relation to socio-economic status.

The Hon. Dr BRIAN PEZZUTTI: Except that Concord is a pretty wealthy suburb and the socio-economic groups that get the cancers tend to be the lower socio-economic groups. The Concord local government area is a pretty wealthy suburb by Sydney standards.

The Hon. HENRY TSANG: But the workers do not live in Concord.

The Hon. Dr BRIAN PEZZUTTI: The workers do not live there but he is talking about what is happening in the local community. So I expect to see them lower.

Dr STEWART: The Health Department always corrects for age and sex, and that is what we standardise all our data on, so we can then look at other effects such as Aboriginality, socio-economic status, and so on.

The Hon. Dr BRIAN PEZZUTTI: You do see a higher incidence of cancers in those lower socio-economic groups?

Dr STEWART: In some and not others. Breast cancer for example is higher than we would like. In relation to lung cancer, these are lung cancer rates in area health services in New South Wales. Members of the Committee will see that lung cancer rates in central Sydney are higher than the State average, statistically significantly higher than the State average. In central Sydney there is also an increase in cardiovascular disease and stroke. It is our assessment that these are all related to higher rates of smoking in the central Sydney area health service. We have data to support that. Again, I point out the wide error bars. In this case, down the bottom, far west, fourth from the bottom, emphasises the point I am making about small numbers and analysis of small numbers of cases and the error that inevitably occurs when we do that analysis. I am not talking about the rate; the point I am making is about variation. In relation to central Sydney we have these rates of lung cancer, again by local government area. Members will observe that the rate of lung cancer in the Concord local government area is below the State average but, again, with wide variation.

I now turn to health risk assessment, which is the process by which we predict whether a contaminate is likely to result in health effects. I emphasise it is an established methodology, and in Australia we have guidance published by the National Health and Medical Research Council and the National Environment Protection Council to guide the process of health risk assessment. The en Health Council has also prepared a guide to health risk assessment and it is about to be published, but we are aware of that document and use it extensively.

To undertake a risk assessment we need to consider whether there are pathways for human exposure to occur and, if so, what human exposure levels and environment levels of the contaminate would result. To use the example of lead, there are established intake levels for lead—these mostly relate to children—below which it is not thought to have any effect on the intellectual development of children and above which it is. A risk assessment for lead would consider the pathways by which lead would be available to children: eating tiny amounts of lead-contaminated soil during play, small amounts of lead from dust falling on plates, inhaling lead suspended in the air, and eating food with trace amounts of lead. Such a risk assessment, using established default amounts for each intake amount and looking at the ranges of intake by age and body weight, is able to predict safe levels of soil lead contamination for residential land.

We can undertake a process with dioxin in exactly the same way whereby levels of dioxin in soil can be assessed. In the case of dioxin, we consider direct ingestion of soil in minute amounts through dirt and dust on hands and utensils or through eating food grown in contaminated soil. The pathway of ingestion is present. When dioxin is in soil we do not need to consider inhalation because it does not volatilise in what we call "off gas" from soil. We then use accepted parameters such as the amount of soil ingested, age and the availability of a substance to be absorbed once ingested to derive a likely daily dose. This dose can then be compared with the established tolerable intake level as set by the World Health Organisation and other acknowledged world groups. The process of risk assessment accounts for sensitive populations, such as children and the elderly, and is a conservative process—that is, it looks at the worst-case scenario.

In relation to health risk assessment on the site, New South Wales Health checks operate through the planning process. There are two points at which New South Wales Health has a role. The health risk assessment will be undertaken by consultants for the proponents in preparing the environmental impact statement [EIS]. However, first, New South Wales Health has provided advice to Planning New South Wales on the important considerations to be included in the EIS. Secondly, New South Wales Health will assess the adequacy of the health risk assessment in response to the EIS. Risks associated with remediation apply to existing and future residents of Rhodes and adjacent suburbs. In this process it is important for us to consider the fact that some people may be resident on parts of the site while remediation continues.

The Hon. Dr BRIAN PEZZUTTI: Did you do this in the Union Carbide clean-up that has already occurred?

Dr STEWART: No.

The Hon. Dr BRIAN PEZZUTTI: So you did not do this in the clean-up that occurred some years ago?

Dr STEWART: We were not involved in that.

The Hon. Dr BRIAN PEZZUTTI: Why?

Dr STEWART: That process was undertaken to remediate a heavily contaminated industrial site, and different chemicals and contaminants were involved. The process was undertaken by the then Environmental Protection Authority. Is that correct, Steve?

Dr CORBETT: State Pollution Control.

Dr STEWART: Possible exposure routes include the existing contamination of soil and fish in addition to possible exposure generated by the remediation. For future residents at the site, a health risk assessment considering long-term risks must be carried out in terms of residual contaminants in soil and possible continuing contamination of fish.

I will deal briefly with dioxins. The Committee will be aware that there is a group of 200 chemicals of differing toxicity, the most toxic being TCDD—which is also the most widely studied in relation to health effects. Dioxins are the remaining contaminants identified on the Union Carbide site as posing the greatest health risk both on site and in bay sediments. It is the understanding and assessment of the Health Department that the clean-up, while driven by keeping dioxins to acceptable levels, will also account for other contaminants. As to health effects, dioxins are a particular problem because they are not readily broken down and accumulate within biological systems and bind to soils and fat. They are present throughout the environment mainly as a result of industrial contamination, and these factors combine to produce increasing body levels of contaminants as we move up the food chain.

We measure dioxins—this is a technical point but I believe it is important—to try to account for the differing toxicity of different types of dioxins. The toxicity of dioxins is combined and expressed in toxic equivalents [TEQs]—that is, their accumulated toxicity relative to TCDD, the most toxic dioxin. For example, a dioxin with one-tenth the toxicity of TCDD has one-tenth the impact of TCDD. Dioxins are usually present in extremely small concentrations and when talking about this we need to use terms such as picograms and nanograms—one-thousand billionth of a gram and one-billionth of a gram respectively. Surveys of human food consumption have shown that in industrialised countries the daily intake of dioxin is in the range of one to three picograms per kilogram of body weight per day. Expert opinion from the groups that I have mentioned is that population exposures at these levels do not cause health effects.

In relation to the effects of dioxin, much of what we know is based on experimental animals and experiments based on feeding animals fixed doses of dioxin for a lengthy period. The studies have shown effects on reproduction, including reduced fertility and abnormalities in offspring, behavioural changes and effects on the immune system. At very high levels—100 to 1,000 times the background human exposure levels—TCDD has been associated with cancers in several animal species. The lowest human equivalent dose at which any health effect of dioxin has been observed in animals is in the range of 10 to 40 picograms per kilogram of body weight per day. This abnormality was a minor abnormality in the reproductive system of some animal species—the technical description is reduced anogenital distance. That is the first observed health effect.

This slide deals with the provisional tolerable daily intake of dioxin. As with most chemicals, a safety factor is applied to determine a safe level of human exposure based on the result of the animal experiments. This is expressed as a tolerable daily intake [TDI]. This is the amount that if taken daily over a lifetime will result in adverse health effects. By applying a safety factor of 10, the World Health Organisation and the Food and Agriculture Organisation proposed in 1998 a provisional TDI range of one to four picograms per kilogram of body weight. This range was adopted by Commonwealth Health and Aged Care, which is now Health and Ageing, pending national consultation. This range was advised by Health to the New South Wales EPA in 2001 for the purposes of risk assessment of this site—precinct B. Please note that this is assumed to be a tolerable level of intake over a lifetime, and it is accepted that occasional exceedences of this intake are tolerable.

I have some international comparisons to show where the level we recommend sits within the recommended levels in other countries. In the Netherlands and Germany the level is for TCDD only and is likely to be greater than 10, which is the next level in terms of toxic equivalence. The United Kingdom, New Zealand and Canada have a level of 10 picograms. I emphasise again that the level that we advised to the EPA was one to four. The WHO is also one to four.

I will deal briefly with human health effects of dioxin. Health effects in humans have been seen only at levels encountered in industrial accidents and mainly affect workers such as herbicide producers. Workers exposed to these very high levels of dioxin may suffer from a condition called chloracne, which is a persistent form of acne induced by a range of chlorinated chemicals. Long-term studies of workers exposed to very high levels of TCDD—that is 100 or more times the amounts we are talking about in ordinary exposure—have also shown an increased rate of cancer, particularly lung cancer. The International Agency for Research on Cancer [IARC] is a WHO body that evaluates chemicals for carcinogenity and it has applied the highest rating—group one carcinogen—to TCDD. This means that there is sufficient evidence of its causing cancer in animals and limited evidence of causing cancer in humans. IARC found no evidence regarding the carcinogenity of other dioxins.

It is important to emphasise that a remediation process for the site has not yet been selected. New South Wales Health has been briefed about available options and the performance of similar technologies overseas. The information we have is that there are technologies available to clean up contamination to the sort of level suitable for residential occupation and that this has been achieved safely overseas. The remediation technology selected will be examined in the environmental impact statement—the second stage of Health's role. Assuming that the EIS finds that remediation can be performed without risk to existing residents, there are two main methods by which Health can ensure that predictions are correct. The favoured method is by monitoring environmental exposures. This will ensure that dust and air emissions are below levels associated with health impacts and, if this is shown to be the case, health effects should not arise. This method has the benefit of being active and proactive and enables corrective measures to be taken if exceedences occur.

An alternative method is to monitor selected health outcomes in the community. As I said earlier, there are known problems with health studies in small areas and it is accepted that it is very difficult to prove any effect, even if it is present. The causal link between exposure and effect is often very difficult to establish due to variations in small populations and the exposure issue. Such a study would have to gather individual data so that variations in individual person data, such as smoking and occupational exposures, could be accounted for. A further disadvantage is that these kinds of effects are not detected until months or years after an exposure. For that reason we prefer a method of monitoring environmental exposures as a preventative measure. I emphasise again that New South Wales Health has been discussing, and will continue to discuss, with residents the need and form of any health assessments.

Lastly, I will talk briefly about the benefits of remediation. Some of the benefits of this development relate to consistencies with the principles of ecologically sustainable development. They include issues broader than just the remediation of chemicals, such as the site's favourable location in relation to major transport links, employment centres and recreational facilities and the fact that it is close to a major Sydney hospital. Remediation at the site and bay may also enable lifting of the current fishing ban west of Gladesville bridge. New South Wales Health believes by using established methodologies we will be able to predict risk associated with this remediation and that established remediation methods exist to clean the site to acceptable levels. The important point is the careful management of risks associated with this process in order to minimise any impact on surrounding communities. There are some health benefits flowing from remediation of the site.

The Hon. HENRY TSANG: Mr Luis Almario, who worked as a cleaner at the Union Carbide site, gave evidence earlier today that he is suffering the same effects as animals suffer from dioxin, as you have outlined. Would you care to comment about worker safety at the Union Carbide site at that time?

Dr STEWART: I will answer that question in two ways. First, it would not be appropriate for me to comment on individual cases. I do not know anything about that gentleman's individual case. Secondly, worker safety is an issue not for New South Wales Health but for WorkCover. Our role now is about the current remediation process and assessing risks into the future. In saying that, I am not saying that there are no issues to be dealt with in relation to workers on the site, but I do not feel confident dealing with that matter.

The Hon. HENRY TSANG: Mr Almario claimed that during the 50 years operation of the Union Carbide site no New South Wales government agency showed any interest in or responsibility for supervising what went on at the site. Do you think New South Wales Health, which predated WorkCover, had a role to play in becoming aware of what was happening on the site?

Dr STEWART: We live in different times now from some 20, 30 or 40 years ago. Many industrial developments in New South Wales, Australia and the world that would have been done differently if we had had then the knowledge that we have now. I emphasise that my interest now with regard to this inquiry is in the remediation of the site and the health effects for existing and future residents.

The Hon. IAN WEST: Dr Stewart, you state in your submission that removing the current fishing ban west of the Gladesville bridge is a laudable objective.

Dr STEWART: Yes, we did.

The Hon. IAN WEST: What caused the ban to be imposed? What has to be done to achieve that laudable objective?

Dr STEWART: I can do it generally and Dr Corbett will be able to provide more details about it. Health was involved in the process some six to eight years ago in looking at contamination of fish around the Homebush Bay area with the then State Pollution Control Commission.

The Hon. IAN WEST: When was that?

Dr CORBETT: I cannot give exact dates. They commercial fishing ban was imposed in the early 1990s and then a recreational ban was imposed in the late 1990s. I can give you exact dates.

CHAIR: Please take that on notice.

Dr CORBETT: My understanding is that the recreational ban was imposed in 1998 in response to some testing of fish commissioned by the EPA.

The Hon. IAN WEST: Fin fish or shell?

Dr CORBETT: Bottom feeding fish—fin fish, yes, is my understanding.

The Hon. IAN WEST: Was anything done on shell?

Dr CORBETT: I would have to take that on notice. The question related to the impact of remediation on the fishing ban?

The Hon. IAN WEST: What was the alert that caused the ban firstly on commercial fishing and then on other types of fishing?

Dr CORBETT: The ban was imposed because the tissue concentration of dioxin in selected species of fish were above accepted levels.

Dr STEWART: Studies were done and the levels were considered.

Dr CORBETT: There have been a number of studies done over the past 15 years to document that.

The Hon. IAN WEST: Was that done as a normal course of investigation or did something prompt it?

Dr CORBETT: The EPA commissioned these studies so you would be best to direct these questions to them. My understanding is that it was a fairly logical step for them to take knowing that there were heavy contaminations of sediments in the bay with dioxins.

CHAIR: We will include those questions in the questions on notice to the EPA.

The Hon. IAN WEST: Did the Birch articles from Sydney University as to the health of the harbour have anything to do with that?

Dr CORBETT: I am not familiar with the Birch articles. I will have to take that on notice.

The Hon. IAN WEST: When and how will we achieve that objective of fishing on the western side of the Gladesville Bridge? What measurement will determine that?

Dr STEWART: The issue is about an assessment of the current contamination and the likelihood of less contamination and therefore less dioxin in the fish and when that might occur. That is a matter of ongoing sampling and looking at what kind of exposures there are in the fish that have been sampled. That is a matter for future sampling and assessment of what kinds of exposures there will be.

Dr CORBETT: It is technically quite complex to relate the concentrations in the fish to the concentrations in the sediment because you do not know where the fish have been and how long they have been there. There have been some quite sophisticated assessments done. Before the ban is lifted there would have to be a demonstration of a fall in fish tissue concentrations because that, in essence, is why the ban is there and there would have to be a demonstration of change.

The Hon. IAN WEST: Is there some concerted method of obtaining that objective? Is there a lead agency? Is there a facilitator? Is there anyone in the bureaucracy co-ordinating this objective?

Dr CORBETT: Yes, there is. There is a fish contaminant committee which is a group of agencies with expertise in the various disciplines that are needed to make that deliberation. New South Wales Health, Fisheries and the EPA are represented on that group.

The Hon. IAN WEST: Is Fisheries the lead agency?

Dr CORBETT: The lead agency is Fisheries.

The Hon. IAN WEST: Is Fisheries, as the lead agency, looking at some master plan within the basin west of the Gladesville River as to the whole Parramatta River as opposed to just Homebush Bay?

Dr STEWART: I cannot answer for Fisheries. I will take that question on notice.

The Hon. IAN COHEN: Dr Stewart, I refer to the information delivered to the Committee by Luis Almario. I know you said that in great part it was WorkCover but with Health Department initiatives but would it be reasonable that there be a historical health study on all workers that have gone through that site given there has been a lot of information and controversy about these sites over a long time and, also, given that the information you show in relation to distribution by area, these workers who work on the site do not necessarily live in Concord but are dispersed throughout the metropolitan area?

Dr STEWART: That is not a matter that is primarily the responsibility of New South Wales Heath.

The Hon. IAN COHEN: But you said there were initiatives of New South Wales Health interested in that area?

Dr STEWART: New South Wales Health has been involved in this site for sometime but it is not within my ability to make comments about studies on workers. It is not a matter that is primarily the responsibility of New South Wales Health. New South Wales Health has been involved during the years with all sorts of health studies, as we are, but I am not in a position to give any comment or assurances about those decisions.

The Hon. IAN COHEN: You discussed the acceptable dioxin levels per kilogram of weight. Why is there virtually no information in Australia about body burdens, that is, levels carried in the body, particularly when we are looking at issues of young children who are quite vulnerable to these sorts of toxic loads?

Dr STEWART: The straightforward answer to that is the studies have not been done.

The Hon. IAN COHEN: They have been done in other countries. Does New South Wales not have the equipment to deal with those?

Dr STEWART: I do not know why it is that there have been more extensive studies done in other countries.

The Hon. IAN COHEN: I put it to you that Australia is perhaps five to 10 years behind most of the developed world? The committee has heard information that a lot of tests had to be sent to Houston, Texas.

Dr STEWART: I am not sure that in relation to the evidence I am giving today and the role of New South Wales Health that the issue of body burdens is all that germane to it. The assessment that we will undertake and the method by which we are saying that health effects should be assessed and protected is the method that I have said. It is about potential exposures and emissions, and body burdens is not essential to that process.

The Hon. IAN COHEN: Does that not become essential when dealing particularly with the vulnerability of children to these types of toxic materials?

Dr STEWART: You will have to expand. I do not quite understand that question.

The Hon. IAN COHEN: Is the Department of Health take an interest in the type of remediation process that will be undertaken on the various sites?

Dr STEWART: Yes, we do take an interest in that.

The Hon. IAN COHEN: What is your opinion on the indirect or direct thermal desorption methods that have been discussed before the inquiry? Does the Department of Health have a clear opinion on a favoured method?

Dr STEWART: We take an interest in it but we are not the experts who assess that. That is an engineering method and, as the committee will know, the EPA has much more expertise than we do in that. We have had presentations about it. We have looked at presentations about the potential methods that have been used overseas. We have assessed those as appearing to remediate to the kind of levels we are looking for.

The Hon. IAN COHEN: When you say "appearing to remediate" are you aware that the POPS convention states that the process should not produce persistent organic pollutions [POPs] or dioxins and that is something that the indirect thermal desorption method would achieve?

Dr STEWART: Yes, I am aware that we should not be producing dioxins, and that is an important issue but, as you know, dioxin is produced widely in industrial settings.

The Hon. IAN COHEN: From a Department of Health perspective is that not the essential problem with which we are dealing? You said that we are moving to another culture now so surely it is incumbent on your department to take responsibility to recommend methods that will not produce dioxin?

Dr STEWART: That is precisely what my presentation said. We are going to be monitoring that very closely. My point was that we are interested in dioxin and health effects of dioxin but we do not claim to have the fundamental expertise in these remediation methods. We will be involved in assessing those and in monitoring what happens. You will need to address your questions about the remediation technology to people who have more expertise in that than I do.

The Hon. IAN COHEN: If you had a clear indication that the indirect thermal desorption method did not produce dioxin, and there was some question mark over the direct method which is essentially from my perspective incineration, would you be prepared to support that former method?

Dr STEWART: I will take on notice details about that. I do not want to make comments on remediation technologies about which I am not an expert.

Dr CORBETT: At the moment we do not have a proposal on the table. Our position is that we will be assessing whatever proposal is put in terms of its potential to cause exposure

to these substances in human beings in the population around the site. That is where we come in. That is our role and we will be assessing these technologies through that prism.

The Hon. IAN COHEN: You take my point that a slow, meticulous and clean method proven overseas would be preferable to a quick dirty method.

Dr STEWART: We take that point.

Dr CORBETT: Certainly.

The Hon. IAN COHEN: Given the topsoil and roof dust removal by Dulux at Cabarita from 30-60 houses, how is it that New South Wales Health has satisfied itself that there is no health risk to existing residents near the former Berger and Union Carbide sites from contamination from their roof dust and/or topsoil?

Dr STEWART: Roof dust is a complex issue.

The Hon. IAN COHEN: Dulux conducted a clean-up at Cabarita and I understand that your department is satisfied that there is no health risk to existing residents nearby the former Berger and Union Carbide sites, which is of concern to many local residents?

Dr STEWART: Roof dust is a difficult issue. Roof dust in every older house in Sydney has contamination. The issue of monitoring and remediating that is something we have to do on a case-by-case basis.

Dr CORBETT: We are aware of the concerns that some residents have about contamination in roof spaces. Roof spaces are a settling chamber for dusts of all kinds in urban environments and we do know from our own testing that all of our roof spaces contain lead and polycyclic aromatic hydrocarbons and a range of compounds, often in quite high concentrations because they filter out the particles which are contaminated. We are also reasonably certain that in houses in which the fabric is in tact they are not an important pathway of exposure.

Other than in exceptional circumstances we do not believe that, for example, a policy of roof-dust decontamination is going to have appreciable impact of exposure to anything that maybe there. We have done it in certain situations, most particularly in the lead-contaminated sites in Broken Hill and Lake Macquarie, but they were exceptional and that was mainly because the housing quality was poor. The important message is that we do not believe it is an important exposure pathway. The most important message is that when people renovate their houses they be scrupulous about the control of dust emanating from the roofs.

The Hon. IAN COHEN: Why did Dulux clean 30 to 60 houses?

Dr STEWART: We have a mechanism in place with the community to discuss these issues with community representatives. This is an issue that we know we will be discussing in much more detail, and monitoring remediation.

The Hon. IAN COHEN: I understand there was a request to see about a similar clean-up as had occurred on the houses on the Dulux site.

Dr STEWART: Dr Corbett has explained about the difficulties of roof dust, but this will be an issue that we will be discussing with the community. We will come to some kind of agreement or balanced approach to what we might do in that regard.

CHAIR: Within a week, earlier if possible, the Committee will forward to you some questions on notice. I have about 15 questions to which I would like you to respond—some of which the Hon. Dr Brian Pezzutti requested that I ask on his behalf. If the Hon. Ian Cohen or

other members of the Committee have additional questions they will also be forwarded to you within the week.

(The witnesses withdrew)

(Short adjournment)

Ms Raquel CARTER, Coastal Project Officer, Nature Conservation Council of New South Wales, Level Five, 362 Kent Street, Sydney, and

Mr Ben COLE, Chemical Campaigner, Total Environment Centre, Level Five, 362 Kent Street, Sydney, affirmed and examined:

CHAIR: Ms Carter, in what capacity are you appearing before the Committee?

Ms CARTER: As the Coastal Project Officer for the Nature Conservation Council of New South Wales.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Ms CARTER: Yes, I am.

CHAIR: You have made a submission to the Committee. Do you want that to be included as part of your sworn evidence?

Ms CARTER: Yes, I would like to table that submission.

CHAIR: Mr Cole, in what capacity are you appearing before the Committee?

Mr COLE: As a representative of the Total Environment Centre.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr COLE: I am.

CHAIR: If either of you, at any stage during the course of your evidence, consider that in the public interest you would prefer to give evidence or provide documents to be heard and/or seen only by members of the Committee, the Committee would be prepared to resolve into confidential session. However, I must warn you that Parliament has the power to overrule the Committee's decision—although it has not done so to date. Ms Carter, would you care to make some preliminary comments? The Committee has received your submission and you do not have to go that in detail.. That will allow more time for members of the Committee to ask questions.

Ms CARTER: We propose to provide a bit more evidence on the ecological importance of remediation. I will introduce the Nature Conservation Council [NCC] and the Total Environment Centre [TEC] as the peak non-government conservation groups in New South Wales. We are here to represent biodiversity and the ecological values of Rhodes peninsula and the surrounding areas. I would like to introduce the following key points we believe are beneficial in assisting the Committee in making recommendations on the Rhodes peninsula redevelopment and remediation proposal that are consistent with the principles of ecologically sustainable development. First is the ecological importance of remediating the area of Rhodes peninsula and other contaminated land and water in the vicinity of the site.

Ben will then elaborate by describing the necessity and scope of remediation that we feel is adequate. I will then recommend design implications for the future development of Rhodes peninsula and Ben will conclude with our overall recommendations that we urge the Committee to consider. As you are all aware, Rhodes peninsula was historically used for industrial purposes. This was outlined by the Environment Protection Authority [EPA] in discussions yesterday. What has not been emphasised, however is that the area surrounding Rhodes are high in biodiversity by supporting nursing and breeding grounds for fish, small mammals, reptiles and bird species.

The extensive wetlands area that once existed along the Parramatta River estuary has been reduced to the remnants of the Bicentennial and Newington wetlands. Since European settlement and the encroaching commercial, industrial and urban development of Rhodes peninsula and surrounding areas, these wetland remnants and their biodiversity values have been threatened, primarily with contamination constituting high levels of toxicity. Both the bicentennial and Newington wetlands occur in close vicinity to the Rhodes peninsula site and are of national significance and are listed in the national directory of important wetlands. The wetland areas provide habitat values for a number of migratory and threatened species.

Those species include the bar tailed godwit, common greenshank, Pacific golden plover, Lathams snipe, sharp tailed sandpiper and eastern curlew. I would like to remind the Committee and State agencies, and local government, that these birds are protected under international agreements—the Chinese and Australia Migratory Bird Agreement [CAMBA] and the Japanese and Australia Migratory Bird Agreement [JAMBA]. In addition, native birds such as pelicans, cormorants and herons, which are all native species, utilise these wetlands for habitat requirements. These species are piscivore species and therefore rely entirely on fish for survival.

Due to heavy industry, this once-high biodiversity-yielding area has been transformed into a toxic chemicals site. The Nature Conservation Council and the Total Environment Centre have identified, using available information, that the following contaminants are known to exist in the areas directly adjacent to Rhodes peninsula and surrounding waters and are likely to pose continued adverse environmental and ecological impacts if not addressed and remediated adequately. The following contaminants are those that are most likely to affect wildlife and human health, and are found in the waters and land in the vicinity of Rhodes peninsula: heavy metals, such as arsenic and lead; dioxins, the most toxic being 2,3,7,8-TCDD, (this dioxin has a higher level of persistency throughout the food chain and is known to be carcinogenic); polycyclic aromatic hydrocarbons [PAHs] and monocyclic aromatic carbons [MAHs]; and organohlorides—primarily chlordane.

I would now like to highlight some of the key adverse affects these chemicals have on wildlife, and the potential flow-on effects these chemicals may have on humans. Dioxins and furans are highly persistent chemicals and have both short-term toxic effects and long-term carcinogenic effects. They are likely to cause decreased body weight, liver damage and death in birds and mammals, and are likely to inhibit growth, degenerate fin tissue and decrease the response of external stimuli in fish.

Polycyclic aromatic hydrocarbons [PAHs] are known to affect the survival growth and metabolism of many living organisms. The main effects on birds and mammals include reduced embryonic survival, inhibited development, birth abnormalities and carcinogenicis. In invertebrates such as crustaceans they are likely to inhibit reproduction and inhibit emergence, which has a direct impact on high trophic levels. Organochlorides include chlordane, which has been found in extremely high levels across the sample sites. These contaminants cause abnormalities in the central nervous system and in the reproductive system, and have the potential for carcinogenic impact. One of the main impacts is that they interfere with the reproduction success of bird life and other trophic level species.

This is a significant issue considering that more than 140 different bird species inhabit the adjacent bicentennial wetlands, and at least 27 of those species are listed under CAMBA and JAMBA. It should also be noted that chlordane persists in the environment and is strongly bioaccumulated. Ben will now go onto recommend the scope and extent of remediation we consider necessary to address these ecological implications.

Mr COLE: The remediation process must consider that the destruction technology chosen must be capable of removing all of the contaminants identified as presenting an adverse effect upon the environment. The EVS assessment reported that PAHs, MAHs, organochlorine

pesticides— chlordane, DDT, deildrin, endosulfan and lindane—as well as the heavy metals arsenic, cadmium, copper, iron, lead, nickel, silver and zinc—pg 2-5 EVS assessment of Homebush Bay sediments— were all chemicals of potential concern. The selection of remediation technology must take into account the diverse range of hazardous chemicals that exist in the bay, which, if not removed during remediation, will continue to have a negative impact on the ecosystem of the bay.

As previously mentioned, a number of contaminants were identified by the EVS assessment of Homebush Bay sentiments. Resulting from past use of the land, high levels of similar contaminants have been identified throughout the bay. In particular the Union Carbide and Allied Feeds precincts have been shown to exhibit very similar levels and types of contaminants. One key contaminant is dioxin, which is highly persisted in the environment. It is vitally important, for the protection of both human and environmental health, that the removal of contaminants takes place in a holistic manner. Therefore, the development of a remediation plan must incorporate both land and sediments associated with the Union Carbide and Allied Feeds sites.

If a wholistic plan is not developed there is a higher risk that the dioxins residues and other contaminants may translocate from a contaminated site into a remediated site. That would result in high levels of dioxins and other contaminants remaining within the ecosystem and pass through the ecosystem, causing serious damage to the environment and potentially to human health.

The other advantages associated with the development of an integrated remediation plan are the assurance that all sediment and land will be remediated to the same international recognised safe concentrations, and secondly that the economy of scale associated with holistic remediation plans will potentially hold down the cost of the remediation process. It is noted from yesterday's EPA submission to this Committee that the most recent owner of the Allied Feeds flour mill did not favour a combined remedial option. The TEC and NCC suggest to the inquiry that without a wholistic approach to remediation the process may be delayed, it will not reach its desired decontamination levels and may result in higher costs associated with the remediation.

The TEC and NCC recommend to the inquiry that contamination of Rhodes Peninsula should not be dealt with in isolation. The entire Parramatta River has reached critical toxic load. Research has shown that levels of PAHs, organochlorines and heavy metals are all potentially having an adverse effect on the ecosystem of Sydney Harbour. Therefore we recommend that a review of the level of contamination throughout the Parramatta River be conducted by the Healthy Rivers Commission. I would like to table at this stage a document released by the Commonwealth Department of Health and Ageing on dioxins and a proposal for setting an Australian tolerable intake.

Document tabled.

Ms CARTER: I have one more point to add on the actual development of the peninsula. Although both the NCC and the TEC, being the peak conservation groups, do support a policy plan, compact cities, as opposed to urban sprawl; however the Rhodes Peninsula development proposal to create high-density urban living is inappropriate. This is due to the presence of wetlands of national significance. In addition, these areas are the last stronghold for migratory birds in Sydney Harbour catchment. We fear that the proposed building heights are highly likely to deter some species. For example, the eastern curlew, a migratory species, to be protected by the agreements, relies heavily on speed to escape predators and is deterred by close-in areas. It relies on open spaces for escape.

To the best of the knowledge of NCC and TEC, there will be in excess of 3,300 units and 10-storey buildings. In addition, the occupation of the area will be around 7,300. We

believe that 10-storey buildings are inappropriate in a foreshore area that is so close to wetlands of national significance and that the projected population for the area will contribute to the deterrence of species or have other ecological impacts on them, such as attacks from domestic animals, road kill accidents, noise pollution and light pollution. It is imperative that the density of the buildings are reduced in terms of height and that the majority of the area owned by the government—the former Union Carbide site—is left for open space/recreation and is allowed to act as a buffer or infiltration strip between the main road network and residential buildings and the waterway.

Water-sensitive urban design, including on-site stormwater detention, grass swales, the use of rainwater tanks, porous pavements and plenty of native vegetation is necessary for this development. Energy efficiency in design is also recommended. We strongly believe that a riparian buffer zone should be adequate to be consistent with New South Wales State rivers and estuaries policy. Therefore a 50-metre buffer zone that includes the rehabilitation and revegetation of endemic riparian species must be implemented. Ben will now go on to a further matter.

Mr COLE: We will leave that for the time being.

CHAIR: If you have some other printed material, you may table that.

Ms CARTER: I would like to table the draft catchment management targets of the Sydney Harbour Catchment Management Board.

Document tabled.

CHAIR: Any further comments that you were going to make from written material could be tabled also, if you wish. We can extract information from your printed material and submission, but members would like to ask questions about perhaps new material.

The Hon. HENRY TSANG: It appears from your submission that environmental groups have played little part in the development of SEPP 29, the transport management plan or development consultation. Have environmental groups taken part in consultations in recent months, for instance, community consultations? Have you participated in any of those submissions?

Ms CARTER: Unfortunately, the Nature Conservation Council has not participated up until now. This obviously has been because of a lack of resource, being a charity group and non-government organisation, and there may have been a lack of communication between government agencies and the NCC and the TEC in some cases. In other words, we were not really aware of all this.

Mr COLE: From the Total Environment Centre's perspective, my predecessor Mark Oakwood was involved, and I have just recently taken on the role, resulting in a gap of about three months. So there was some establishment between community and the TEC.

The Hon. IAN COHEN: I understand that there is some criticism that sampling of core sediments has not been undertaken thoroughly. Would you like to comment on that and what would be an adequate regime to properly assess the sediments in the bay? Also, how does either of your organisations feel about the process of closing off the bay and remediation by taking up the sediments and then remediating them in whatever way they decide—hopefully by the more sophisticated indirect desorption method? In ecological terms, will that be an effective and non-destructive manner of dealing with the problem?

Ms CARTER: We would like to support the World Health Organisation levels of TDI (Tolerable Daily Intake) 1 to 4 picograms per Kg of bodyweight per day as a result of

remediation. We think that is probably a good goal to aim for, considering there is not much information available. In terms of sample sites, we have looked at various studies, including the EVS document. I do not know whether the sample sites have covered all areas where we feel contamination might have occurred. This includes chlordanes as well, because they are highly persistent in the environment and remediation will not include those. So we want broader remediation plans to incorporate other chemicals of ecological concern.

Mr COLE: The other concern with core sampling that has taken place so far is that that has been focused pretty much in one section of the bay. They do not move out towards the mouth of the bay or back in towards where the Orica-Berger site was. So, even though that site has been remediated, the chance of translocation of chemicals is a concern. That sampling, which took place in 1998, probably now is not still relevant to the clean-up process that will take place in the next two or three years.

The Hon. IAN COHEN: Has there been any remediation in the waterways so far? We are talking about former sites that have been remediated, but has there been any attempt to deal with the water body in front of those sites as yet?

Mr COLE: Not that I am aware of.

Ms CARTER: We are not aware of any.

The Hon. IAN COHEN: In terms of clearing the sediments by damming up the mouth of that embayment and processing the toxic materials in situ, how does your organisation look at the issue in regard to mangrove areas and the possible destruction of those areas? Is that a problem associated with the process? Is there pollution in those mangrove areas as well, and in the sediments?

Ms CARTER: Yes.

The Hon. IAN COHEN: What is the balance on that?

Ms CARTER: That is what we also would like to know. There has not been extensive sampling undertaken in the mangrove areas where birds are likely to feed on the mudflats and where fish are likely to feed and utilise the nursing grounds of the mangroves. So we would like a recommendation put forth that those areas be looked at for remediation. After that, we would also like some rehabilitation works on the area.

Mr COLE: In regard to the areas that have already been identified as hot spots and having extremely high levels of dioxin, the Total Environment Centre supports the remediation of those using careful planning and in situ remediation of that land. That is because dioxin is biocumulative, and unless we deal with it now it will remain in the ecosystem for the next 30 or 40 years.

The Hon. IAN COHEN: There has been a fair bit of discussion about human transport, public and private, and about bottlenecks, but you are the first to raise the issue of bird movement. Have you looked at the style and design of future developments? You made some comments on preferred method of development. Is it simply a case of there being too many people on the site, or from your perspective can design measures resolve much of the problem?

Ms CARTER: I think the proposed density is too high. Height is one of the main factors, but air, noise and light pollution are other factors that I have raised. I am not sure how far these can be reduced. Curfews or something similar could help with light pollution or noise pollution in the area. In terms of road transport networks, we have not looked extensively at those. I know the road quite well, and I know that it gets congested in peak hours. That was a

matter raised by the Department of Planning yesterday, so I will not go into that. We recommend that density be reduced, not because we are not supportive of the compact city policy but because it is such a significant area.

The Hon. IAN COHEN: In terms of the aim to allow finfishing in the area, am I correct in thinking that you wish to have that ban maintained? If so, why, and for how long? Is there no way that the area can be remediated so that people can use what obviously would be a drawcard for living in the area?

Ms CARTER: Most of the fish that use these wetlands are estuary marine fish, which obviously travel to other areas probably east of the Parramatta River, Gladesville Bridge and further west of Rhodes Peninsula, so there are concerns about just lifting the bans and not having extensive monitoring afterwards to ensure that the level of dioxin and other contaminants in these species have been reduced to acceptable standards. I really recommend that this ban be kept in place until these results are obtained, which probably will not be for a number of years.

Mr COLE: We have seen recently how effective marine fishing exclusion zones have been. The fact that this area has a ban on it now could establish a breeding ground for other fish around the harbour area.

The Hon. IAN COHEN: As to removing the toxic materials at this time, how important is this immediate environment in terms of overall ability to regenerate fish? How does it rate in terms of wetlands and mangrove fish breeding areas?

Ms CARTER: If you look at the big picture, the whole catchment as the Parramatta estuary, it seems that this area is the prime sanctuary area for that kind of recruitment process to occur. If remediation happens, we believe that the area can be left as an aquatic reserve system. Possibly, we would have to have that area so declared by New South Wales Fisheries. That could help with replenishing fish stocks and the diversity of fish. Studies have proven that "no take" marine protected areas can result in 63 per cent greater species richness; an increase in the size of fish; and the potential for a significant spill-over contribution to surrounding areas from the marine protected areas. over a number of years. So we strongly recommend that this area is retained as a sanctuary zone, especially after remediation occurs. We believe there is a lot of potential for improvement and replacement of the whole estuary, not just the area.

The Hon. IAN WEST: Can you advise on the difference between the total fishing ban imposed at the moment—which I understand is a ban on finfishing, not fishing for shellfish? Can you explain the reason for that. Can you also explain the timing that you see involved in the precautionary principle as to the ban, which you speak about in the first paragraph on page 16 of your submission?

Mr COLE: In regard to finfishing, I think it was banned because it was the only thing that they tested. They tested fin fish to see how much dioxin was in their fatty tissues, and it came up to a level that was beyond World Health Organisation limits. I do not know whether any testing has been conducted on shellfish, and that potentially is why a ban has not been put on shellfish.

Ms CARTER: Also, fin fish relate directly to human health, whereas humans would not be collecting little worms to eat, and so that would not relate to human health. We are concerned about the invertebrates and the crustaceans and other species besides fin fish and biological health relating directly to the fish and birds themselves. We do not know why significant studies have not been undertaken on those issues.

The Hon. IAN WEST: Prawns are shellfish, and there is no ban on prawns?

Ms CARTER: Yes it is correct that there is no ban on prawns and other shell fish. We recommend that this is a major information gap in the whole process and there must be sampling conducted to determine the level of toxicity in crustaceans including prawns and crabs and in polychaetes to include worms, as well as other invertebrates that are likely to be consumed by fish and birds.

The Hon. IAN WEST: Prawns are not a fin fish. The ban is on fin fish.

Ms CARTER: Is it just fin fish? I thought it was on commercial fishing.

The Hon. IAN WEST: I refer to page 13 of your report, which refers to the differentiation between the Union Carbide site and the Orica and Meriton sites. You make a distinction between them. Can you elaborate a little further on that distinction, with regard to why there is a total ban on Union Carbide and not on the Orica and Meriton sites?

Ms CARTER: A total ban on what?

The Hon. IAN WEST: On development.

Ms CARTER: We were suggesting that, because the Government already owned the site, it could go straight to rehabilitation, recreation and open space, rather than having to buy it back from the developers for public open space. That was the principle behind that. As the EPA pointed out, remediation will not be necessary on that site if there is no residential development.

The Hon. IAN WEST: I refer to page 15 of your report and the second dot point: "Harbourwatch should be extended to areas west of the Gladesville Bridge where the bays are utilised for recreational activities and water sports." Can you elaborate a little further on that?

Ms CARTER: I think Harbourwatch is a program conducted by the EPA. It goes into water quality testing for recreational purposes, and that does not occur west of the Gladesville Bridge, so we thought that could be something for the Committee to explore and perhaps recommend that the EPA does consider looking at those areas for that program.

(The witnesses withdrew)

MARK DOMINIC McNAMARA, Environmental Scientist/Engineer, 48 Darlington Drive, Cherrybrook, sworn and examined:

CHAIR: In what capacity are you appearing before the Committee?

Mr McNAMARA: I am appearing before the Committee as an environmental engineer with around 15 years experience in site contamination and about an eight-year direct exposure to the development of this project.

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr McNAMARA: I am.

CHAIR: You have made a submission. Would you like that submission to be taken as part of your sworn evidence?

Mr McNAMARA: For the time being, I would like it to be held confidential. I may revise that at a later time.

CHAIR: If you should consider at any stage during your evidence that in the public interest certain evidence or documents that you might like to give to the Committee should be seen only by the Committee and not made public, the Committee would be prepared to accede to your request and resolve into confidential in camera session. However, I warn you that the Parliament has the right to override our decision and to make the evidence public, although it has not done that before. Would you like to make an opening statement? If at any stage you wish to give evidence in confidence, the room will be cleared.

Mr McNAMARA: At this stage, I do not. As I said before, I am appearing here effectively as an independent environmental scientist/engineer with around 15 years experience directly in contaminated site remediation. More particularly though, I have had a very, very detailed exposure to the evolution and development of this project, and in particular the remediation proposal, for the dioxin contamination associated with the Union Carbide site, the former Allied Feeds site and the dioxin-contaminated sediments in the bay.

My knowledge of this process and the technology behind it is largely based in extensive testing that I have been doing in association with the CSIRO Department of Energy Technology at Lucas Heights on methods for considering remediation of the dioxin sediments and soils at Homebush Bay.

I have also been fairly intimately involved in my previous employment in the negotiation and development of the commercial structure that is now put forward as supporting remediation and all the other issues that follow on from that. At this point it might be relevant, considering some of the things I have heard discussed over the last couple of days, to note that I think all the development issues, the planning issues, the parallel and associated environmental issues hang on the ability of the remediation to in fact be achieved. Without a remediation, most of the discussion we have heard over the last couple of days is largely irrelevant. I think that is a really important point to remember, and it highlights the importance of being able to deal with this quite severe contamination problem in a very diligent and effective way.

You have my written submission. Again, at this stage I am would prefer that that remain confidential for the time being. Parts of that may change as we go along. On that basis, I do not intend to spend any time going over the submission. I will leave that with you to raise questions about it as you wish. I would like to make some additional brief comments and a couple of summary points.

I think there is evidence that the current technical proposals for the remediation have not been very diligently assessed. I think there are question marks on its ability to deliver a safe and effective result for the project in remediation terms. Given the reliance of the entire project on the ability to perform a remediation, I would suggest that that creates some doubt that this project even exists at the moment.

I think there are also currently indications that the remediation proponent does not necessarily have a fixed and firm proposal that is on offer. In fact, even at the public meetings that I am aware of, and even in discussion at this inquiry to date, we have heard more than one potential thermal component to the process being discussed, suggesting again that at this stage there is no genuinely firm proposal that I am aware of that has been put forward that can be assessed diligently.

I think the process that has led to the current project structure has quite unnecessarily burdened the New South Wales taxpayer with millions of dollars in costs, risk and liability that was not necessary. I think the mechanism that created that situation really deserves some serious attention, and as a New South Wales taxpayer I am really quite concerned at what I have seen. I think the actions of various parties, components of the Government and possibly others, could be viewed at this stage as being technically pretty naive, and at best they have created a number of problems in the project. A number of those have been discussed in the submission, and I would be happy to provide further evidence once I know the details of the questions that people would like to ask of me.

I would like to raise a couple of additional matters that are not in the submission. Firstly, I finally had a response today from the United States EPA Office of Research and Development for site remediation technologies in Cincinnati. A lot of these comments are based, I suppose, on my efforts to personally justify the fact that the current proposals for remediation are going to be satisfactory, and the results I am turning up are not very good.

My assumption in all this is that the remediation that is being proposed is based on firstly recovering the material from where it sits in the ground or the sediments, separating out the core contaminated species using a thermal desportion process, condensing those back into liquid concentrate that can then be further treated, and treating that liquid concentrate using a base-catalysed dechlorination process. There may be variants on that, but I think that is the basic strategy which enabled the current remediation proposal to become the preferred proposal.

In response to that, the Office of Research and Development from the United States EPA has basically come back and said verbally that they cannot see how anyone in their right mind would attempt to apply a base-catalysed dechlorination process to this sort of material; it will not work. Several attempts were made in the United States in the early 1990s—

CHAIR: You are talking about the Waterways site now, are you not?

Mr McNAMARA: I am talking about all three sites.

CHAIR: Some of the sites do not have preferred proposals for remediation.

Mr McNAMARA: Yes. I am talking about the waterways process. I will go back one step. In association and co-operation with Bankers Trust as the former owner of the former Allied Feeds site, the initial Waterways process was designed to launch a project which had a co-ordinated approach to the entire dioxin problem, on the Rhodes peninsula sediments, the Union Carbide site and the Allied Feeds site. That process, as a key component of the call for proposals, required that the tenderers were able to meet that condition. (That is, all dioxin-contaminated Fed sites remediated in one project).

Bankers Trust put a time limit on the negotiation period that was to follow the submission of tenders. At the expiry of that time limit, the current proposal was not able to complete this component of the transaction. At that point in time Bankers Trust totally lost patience with the project, walked away, and sold their site to Meriton. The net result now is that we have split the project into two. That has a substantial cost implication for the project and a substantial quality of remediation implication for the project. Despite this, the current proposal is still being pursued. I think that, in its own right, is a question. I was not intending to get to that here in the submission, but you have raised it.

The Office of Research and Development has basically said you would be crazy to try to apply a base-catalysed dechlorination to this process; it will not work. It was tried several times in the United States in the early to mid-1990s, but it has not worked. The primary project that becomes a reference project in the technical literature worldwide for this application was not pursued through the super fund project that it was nominated for, and following that all sorts of technical problems were documented in detailed literature that exists in the United States. So we have the United States EPA, who is a developer of this particular end piece of technology, saying it should not be used at the site.

To go another step further, on the BCD Technology's web page they state quite categorically that when the chlorine content of the waste approaches 10 per cent weight by weight—this would be the liquid concentrate going to BCD treatment—it severely limits the ability of this process to be used. During the development period from 1994 to 2000 with the CSIRO trial works that we carried out created that precise liquid concentrate, and we measured weight per cent chlorine concentrations in that material approaching and occasionally in excess of 10 per cent weight by weight chlorine. So we know from direct testing of the site that the concentrate that is going to come out of the process is going to be very difficult to fit into the currently proposed remediation system.

The Hon. IAN COHEN: When you refer to concentrate, you mean concentrate from the dryland remediation as well as—?

Mr McNAMARA: Let us keep it referring to the Waterways proposal at the moment; it makes it easier for definitional terms. Whether it is in the Waterways component adjacent to the sea wall or in the Union Carbide site, those sorts of results will be generated. It may be worthwhile if I were to provide a figure that makes it easy to understand some of the things I am saying about the current remediation process.

CHAIR: We would be happy if you did that, particularly in the interests of time.

Mr McNAMARA: Sure.

The Hon. IAN COHEN: Can I just clarify something? Does the base catalysed dechlorination process occur after or before the indirect thermal desorption process?

Mr McNAMARA: So far as I am aware, the proposal is that the material will be firstly, with potentially some pretreatment, fed into a thermal desorber.

The Hon. IAN COHEN: Either indirect or direct. You can comment on that in a moment.

Mr McNAMARA: Yes. The products of that process are a hot gas phase which will contain the contaminants. At that stage essentially the process should have the contamination largely removed, if it is applied effectively. So the dioxin contamination you are considering is now in that hot gas phase. That hot gas phase has to be cooled down and condensed to produce a liquid product which then holds the contamination. At that point in time the soil

should theoretically be relatively clean. In, out of whatever it might be, a couple of hundred thousand tonnes of dirt, it will create a concentrate where all the contamination is in a very small volume. It would be a very, very nasty material. As I understand the current proposal, that is then fed to a base catalysed dechlorination reactor.

The Hon. IAN COHEN: Where will that be?

Mr McNAMARA: At this stage I believe—and this is coming from a community presentation morning—that plant is currently located in Brisbane and the proposal is to drum up this concentrate and transport it to Brisbane.

The Hon. IAN COHEN: We have already been through a debate in terms of change to regulation to allow that Brisbane company to take that. That material would only have to go to Brisbane, as I understand it, if it were the indirect thermal desorption process, otherwise the direct thermal desorption process would deal with it on site. Is that correct?

Mr McNAMARA: This is something that is new to me. The suggestion of direct thermal desorption is pretty insane, basically.

The Hon. IAN COHEN: Why?

Mr McNAMARA: Direct thermal desorption is a process with this type of feedstock—and there is ample technical data available on this—that will produce dioxin in the process. It is also something that is particularly difficult to engineer when you have an emissions problem with organo chlorines involved, to take into account on a project like this with very high fine solids content and very high water contents. There is a massive emission stream from a direct fired thermal desorber. It is very difficult to control. Again, I do not think direct fired thermal desorption has ever been seriously contemplated for this sort of material, unless there is an incineration component on the back end of it, anywhere else in the world.

The Hon. IAN COHEN: In terms of the POP convention you are quite clear that indirect thermal desorption is the only potential method that would resolve within the boundaries of that convention.

Mr McNAMARA: Yes. I am quite convinced of that. In fact, I would add that the American army corps of engineers did a study comparing direct versus indirect fired thermal desorption with chlorinated organic contamination feedstocks. Unfortunately, I do not have it with me; it is a hard paper to get. But it clearly documents the fact that there are increased dioxin concentrations in the residual soil from direct fired thermal absorption treatment when there is a chlorinated organic feedstock—it is a mouthful to say but they measured that specific effect—and a reduction when there is indirect thermal desorption.

The Hon. IAN COHEN: I understand that there has been quite a focus on the sediments in the bay.

Mr McNAMARA: Yes.

The Hon. IAN COHEN: I understand that you are concerned that a remediation order has not been placed on dioxin contaminated sites at Rhodes, given that they are detailed by you as being areas of significant risk of harm. Can you explain to the Committee where those sites are in terms of assessment? I do not quite understand. You are saying that they have not been given the highest priority. Can you clarify the situation?

Mr McNAMARA: Have you got a couple of days?

The Hon. IAN COHEN: Well, in a minute.

Mr McNAMARA: I am not too sure how to answer this question.

The Hon. IAN COHEN: Let me put it this way. Who is responsible? You can take that question on notice. You may want to answer it briefly now and then take it on notice and give us a more detailed answer. Which department is responsible? Is there any reason that these dioxin areas have not been properly identified?

Mr McNAMARA: Perhaps I can answer that and try to do it in a practical, non-legal way. The original data that was produced on those sites was made available in the 1980s when the first investigations and the design of the original clean-up were done. That data was provided to the SPCC, as it was in those days; it became the EPA. So the SPCC and the EPA have had access to that data for longer than any other authority and just about any other party who has any association with this project. I suggest that a fairly quick and simple review would show that from the original investigation data the contamination extended from what was approximately the old high tide line, through the seawall and out into the bay in one continuous stretch.

When the original remediation was approved a containment wall was put in some several metres back from the existing seawall and all the remediation activities were carried on behind that containment wall. Everything was wrapped up and packaged up and sealed off, or supposedly sealed off. So even in the original work it was quite clearly obvious there was a zone between the containment wall that was built and the existing or current seawall that contained dioxin that was leaking into the bay that was never touched. I find it quite astounding to think that people could sit back and say "the site is remediated" knowing that that fact existed.

At the same time there was data available on the boundary of the Union Carbide site and the former Allied Feed site that showed the contamination clearly continued through from the Union Carbide site to the Allied Feed site. There was no effort made to contain that boundary at all, so there was a straight leakage path out through there. Anyone standing at the seawall looking at the site can see the seepage path, the seepage coming out of the seawall. I heard the EPA yesterday claim ignorance of the fact that the site was leaking into the sediments of Homebush Bay. It is quite clear that it was leaking into the sediments of Homebush Bay. The data was available to make that judgment way before anyone else had access to it.

The Hon. IAN COHEN: To your knowledge has there been any reporting of that situation to the EPA?

Mr McNAMARA: That is a good question. Who should report it to the EPA—the site owners?

The Hon. IAN COHEN: Yourself as a person working on the site?

Mr McNAMARA: That is an interesting question too. At that stage I was independently working for Clough Engineering. I made those issues known to the Waterways Authority or what was then the Office of Marine Safety and Port Strategy probably in about 1994. A feasibility study report was provided to that organisation in late 1994 or early 1995—I cannot remember exactly now—which in fact discussed that matter very briefly and at the back but discussed and highlighted that matter.

The Hon. HENRY TSANG: The Department of Public Works and Services is responsible for selecting the winning tenderer for the remediation process on the different sites. Representatives of that department will appear before this Committee very soon. Perhaps you could be my adviser and give me a list of questions that I could ask them, for example, why they selected certain tenders, what is the process and what is the advantage. Could you do that for me over the next 10 minutes or so?

Mr McNAMARA: What I would like to do is take that question on notice and write those questions down for you. I would be happy to do that.

The Hon. IAN WEST: Was your departure from Clough Engineering connected with that company being an unsuccessful tenderer for the remediation?

Mr McNAMARA: Indirectly, of course, yes. I had been working on this and a couple of other projects for quite some years. The outcome of this process was quite frustrating for a number of people. In defence of everyone else who I may have been criticising, Clough made a lot of mistakes in that process as well. The net result of all that was that I decided it was time for a change and Clough agreed.

The Hon. IAN WEST: Do you believe that there is sufficient data to establish that the Orica site has been effectively remediated?

Mr McNAMARA: I cannot say. I have not seen that data.

The Hon. IAN COHEN: Given the enormity of the task that is ahead of all agencies, both government and private industry, and given that there seems to be, in your words, "some naivete on the part of those who were preparing submissions in terms of methods of remediation", could you see between government and industry any way of resolving some of the problems of one not talking to the other and such like where there is a more co-operative approach between government and industry and even your firm and others involved? I certainly have concerns that there is a possibility at present that there may be different remediation processes occurring on the different sites. Can you see a strategy that might be of the greatest efficiency and benefit to achieve effective remediation?

Mr McNAMARA: Again, that is a hard question. One of the shifts I have noticed in the project from 1993 to now is that over the past two years it has seriously become development driven, rather than remediation driven. That was always something that was fought against by a number of people. Now that it is development driven the whole thing is being determined by how much a person can get per square metre of land, how much they can put on it and what will it cost them to get the land into a condition to accept that development. The very strong commercial interests competing on that basis now will guard their turf. Having said that, I would like to think that there is a way that this can be brought back together as a combined genuine remediation project. To do that I think the development imperative will have to be put aside completely so that the remediation component can be effectively looked at again in isolation from the development issues.

(The witness withdrew)

GRAHAM WILLIAM WATT, Project Manager, Department of Public Works and Services, 20 Windmill Street, Millers Point, and

GEOFFREY JAMES FOGARTY, Project Manager, Department of Public Works and Services, 107 Rosedale Road, St Ives, sworn and examined:

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr WATT: I am.

Mr FOGARTY: Yes, I am.

CHAIR: If you should consider at any stage during your evidence that in the public interest certain evidence or documents you may wish to present to the Committee should be heard or seen only by members of the Committee, we would be happy to accede to your request and resolve into confidential session. However, Parliament has the ability to override that decision of this Committee, not that it has ever done so.

Would you like to make some initial comments before we ask you questions?

Mr WATT: Just some brief initial comments. The Department of Public Works and Services did not make a submission to the inquiry, because we have been essentially the project manager for the Waterways Authority. Our role has been to manage the process that has been discussed in arriving at a tender. Our involvement is limited to the waterways site. With those constraints, we would be happy to answer your questions.

The Hon. IAN WEST: Could you outline the process used to select Thiess and Trafalgar to remediate the Rhodes Peninsula site?

Mr WATT: Initially back in 1997 there had been a call for proposals at that time which shortlisted a number of firms thought capable of undertaking the work. With the time delay and a few changes there was a further advertisement for firms thought capable. There was a shortlist of four consortiums invited to submit detailed proposals. Three firms ended up submitting those proposals. Those proposals were evaluated against the objectives of the proposal and, in accordance with the evaluation criteria that had been listed in the documents, and by a committee process taking advice from a number of experts in different fields, the eventual recommendation was produced to go with Thiess.

The Hon. IAN WEST: Could you supply the Committee with those various evaluation criteria and expert advice you received in drafting the documents to determine the successful tenderer?

Mr WATT: Yes, provided there is no sort of commercial in-confidence issues involved there. That is perfectly appropriate.

The Hon. IAN WEST: Did the tendering process focus requirements on remediation of dioxin contamination?

Mr WATT: One of the objectives of the project was to remove the dioxin-based fin fishing ban in Homebush Bay and to reduce dioxin contamination on the land to a level that was acceptable to human habitation. So, to that degree they were two of the objectives.

The Hon. IAN WEST: Can you give us any understanding as to how that fin fishing ban first came about on the western side of the Gladesville Bridge?

Mr WATT: I am not aware in detail of how that was a constraint on the project when we became involved in it.

The Hon. IAN WEST: Was there a requirement to remediate other pollutants such as DDT and other heavy metals?

Mr WATT: No. The specific objective was the removal of dioxin.

The Hon. IAN WEST: Do you have any response to the criticisms made by Mr McNamara in his evidence?

Mr WATT: In the brief discussions that I heard there, I believe the process that was adopted by the DPWS was in accordance with the Government's tendering guidelines. There have been a number of reviews of that process. Since the process was completed the State Contracts Control Board had a look at it. There was a probity adviser there throughout the process and his report indicates that the Government's requirements had been followed in the process of coming to the conclusion.

The Hon. HENRY TSANG: The department is responsible for the process, but if Mr McNamara was correct, that those tenderers where, in fact, not effective in dealing with remediation, do you have any comment on his criticism that you awarded a tenderer who is not going to be effective?

Mr WATT: I would rather comment on the process we went through. The Environment Protection Authority was involved in advising the committee. We had an independent technical adviser advising the review committee as well about the technology procedures. At the end of the time they were convinced that there was a basis there, with technology, that would be successful to move forward with the project.

The Hon. IAN COHEN: Just on that point, are you saying the EPA was involved and you had an independent technical adviser, so you had information about the technology available. Could you then give the Committee an opinion on which technology, particularly indirect thermal absorption or direct thermal absorption, and what does that mean to you and how effective is each of those methods?

Mr WATT: I would rather take that question on notice. I was not personally involved in the review process. I have a general knowledge of those issues but not sufficient to answer that question.

The Hon. IAN COHEN: You have given the impression that your department, resting on the information from the EPA, et cetera—I am finding this rather frustrating. On the one hand you are saying here is a gilt-edged process you have come to where appropriate remediation will be put into place, yet the Committee has not heard, except for the opinion of one witness before you, from any government department that A, B, or C process is the one that could work. They all might work, but there is no proof. I am not confident that anyone is grasping the nettle and going for it.

Mr WATT: I cannot produce now, but I could produce—I know there have been trials of the technology, and reports as a result of those trials give sufficient levels of confidence.

The Hon. IAN COHEN: Where have those trials been done?

Mr WATT: With the technology that was talked about in Brisbane and using material from the site at Homebush Bay.

The Hon. IAN COHEN: So there had been trials of those remediation processes?

Mr WATT: Yes.

The Hon. IAN COHEN: Perhaps you could take that on notice and give the information to the Committee, and any resultant escape of dioxin, et cetera, so we have some idea?

Mr WATT: Yes.

The Hon. IAN COHEN: Has your department taken an interest in the retaining walls and the leakage from the site into the waterways and have you undertaken investigations into the level of contamination still occurring or accumulating in the waterways?

Mr WATT: There have been a number of samplings of Homebush Bay and level of dioxins in the waterways, yes, on the land and in the water. As the nature of the project has changed over time there have been consistent samplings in order to allow the risk analysis to be done that will be presented in the EIS process.

CHAIR: So it was not just an original lot of samplings? As the project changed they would go back and do some more samplings?

Mr WATT: Yes.

The Hon. IAN COHEN: There has been some statement saying that a remediation order has not been placed on the dioxin-contaminated sites at Rhodes. Given that we pretty well agree that they represent significant risk of harm, have those remediation orders been placed on the materials in the bay?

Mr WATT: That would be a better question for the EPA.

CHAIR: It was actually asked yesterday.

The Hon. IAN COHEN: And also Waterways is involved in that?

Mr WATT: Yes.

The Hon. IAN COHEN: You say you have been working with Waterways?

Mr WATT: We have been working with Waterways and Waterways has been working towards resolving the problem. So, it would be better able to answer that question.

The Hon. IAN COHEN: Has there been any investigation by your department into the type of redevelopment that can occur and costs incurred by your department, the financial burden of remediation? Has there been any assessment of that? Is there a relationship between the development, the type of development, and cost to your department of remediation?

Mr WATT: The Government's contribution to this project is limited to the amount that was advertised in the call document, and I guess to some degree developer issues were considered in the review of the proposals to make sure that what we were moving forward on some soundly-based development proposal consistent with the development requirements for the peninsula.

The Hon. IAN COHEN: Have you been able to measure materials other than dioxin—DDT phthalates and heavy metals? Have you investigated the composition of those sediments?

Mr WATT: To my knowledge, the investigation we have undertaken has focused on the dioxin, because that was the prime focus of this project.

The Hon. IAN COHEN: How do you feel about the comment that it is now development driven rather than remediation driven, and how does that sit with you, being responsible to your department?

Mr WATT: I do not think it is an appropriate comment. The EIS for this project is still to be issued, and the EIS will address the environmental issues. I think that is the avenue there. The DPWS review process established that there was a technology believed capable of doing the work. That was one of the number of considerations in producing a viable project to deliver an environmentally acceptable outcome.

The Hon. IAN COHEN: Did you hear the previous information that Mr McNamara got from the United States that the process that is being mooted as a possibility, the base catalysed dechlorination process, is not going to work?

Mr WATT: I heard that comment while I was waiting.

The Hon. IAN COHEN: Would you like to comment on that?

Mr WATT: I cannot comment on that.

The Hon. IAN COHEN: Would you take it on notice and perhaps get an official comment back?

Mr WATT: Yes.

The Hon. IAN WEST: In the documentation you gave us about the evaluation to pick the successful tenderer, can you highlight for us any measurements for outcome, and any monitoring of valuation review of the sustainability of that outcome, and anything in the documents for the contract for the tender that goes to the issue of penalty if these measurements, monitoring, evaluation, reviews are not up to scratch?

Mr WATT: Yes, I can give you what is in the review process to date in relation to those particular issues.

The Hon. IAN WEST: Are you able to advise us in summary that there are some clauses that go to the issue of future indemnities if the contracted tenderer is unable to deliver what he says he can?

Mr WATT: I will take that on notice and get back to you with those issues.

CHAIR: The questions that you take on notice, it is up to you whether you deal with them in commercial in-confidence as well.

The Hon. IAN COHEN: Just following on from the Hon. Ian West's position, I am interested that we had the Department of Health saying clearly that the culture had changed from what happened in the past. We had witnesses regarding the Union Carbide site and terrible things that have occurred in the past. Where does the buck stop now? Is there any statutory responsibility in your department to get it right, and whose door do we knock on if we see it is not right? It seems as though it is constantly lost in the realm of bureaucratic cotton wool and I can never find out who is going to be responsible for these processes.

Mr WATT: I guess ultimately whatever work is done is to be done in accordance with the environmental requirements and the legislation, and whatever penalties are available under those things would be imposed if the project does not meet those guidelines.

The Hon. IAN COHEN: So, who in your department would be responsible?

Mr WATT: I guess the project manager in our department is responsible for delivering the agreed outcomes for the project.

(The witnesses withdrew)

(Luncheon adjournment)

DOUGLAS WILLIAM MOSS, Manager, Operations and Development, New South Wales, Thiess Services Pty Ltd, 43 Fourth Avenue, Blacktown, and

JOHN WILLIAM HUNT, Environmental Scientist, Thiess Services Pty Ltd, 43 Fourth Avenue, Blacktown, affirmed and examined:

CHAIR: Are you each conversant with the terms of reference of this inquiry?

Mr MOSS: Yes, I am.

Mr HUNT: Yes.

CHAIR: Do you want your submission to be included as part of your sworn evidence?

Mr MOSS: Yes.

CHAIR: If either of you should at any stage during your evidence consider that in the public interest certain evidence or documents you may wish to present should be heard or seen only by Committee members, the Committee will be willing to accede to your request and resolve into confidential session. However, be aware that Parliament can overrule our decision—although so far it has not done that. I invite you to make some opening comments after which we will proceed to questions.

Mr MOSS: I thought I would begin by touching on Thiess' role in the project and exactly where we are at this point. Thiess responded initially to an expression of interest and then, a couple of years ago, to a formal tender process that was managed by the Department of Public Works and Services. That culminated in Thiess being selected as the preferred tenderer by the Waterways Authority and Bankers Trust in early 2000.

CHAIR: Did you say by the Waterways Authority and Bankers Trust?

Mr MOSS: Yes, at that time. We subsequently executed a contract with the Waterways Authority before Christmas on 18 December 2001. Thiess has spent a lot of time investigating the site. We have taken samples of both the Union Carbide site and the bay over the past 18 months. We have begun the risk assessment and the environmental impact statement process and we have commenced community consultation. A community liaison group has been established—some members of which are here today. In terms of timing, we are targeting having the environmental impact statement at least to a draft stage perhaps by April this year and we will look to lodge that and the development application for the remediation work with Planning New South Wales by May this year.

In terms of our support, Thiess is a contractor only. Our focus is on the construction work associated with the remediation activities: the excavation, handling, testing and treatment of the contaminated materials on the site and in the bay. We are supported in our activities by a range of organisations. Several consultants are working for us. PPK is responsible for the EIS. Egis Consulting is responsible for the risk assessment onshore and URS is supporting us in the offshore work in the bay. There are several others, but they are our key supporters from an environmental point of view. We are also supported by Focus Environmental from the United States, and we have some information from that company with us today. It is a specialist in thermal desorption technology, which is what we propose to use to treat materials on the site.

Finally, and obviously very importantly, our development partner is a company called Trafalgar Corporate Pty Ltd—I understand that Mark Davidson will give evidence after us today. In this transaction Mark's organisation will basically take title to the property as it is

remediated in stages. So, from our point of view, it is very important in that it will provide the largest part of funding for the clean-up cost. The Government will make a contribution of up to $20 million plus title to the property, and Trafalgar will make up the balance of the contributions for the clean-up works in exchange for title to the property. I will not go through our submission. I will now hand over to John, who will touch on some key points. We would also like to address some of the questions posed over the last day and a half.

Mr HUNT: I thought it might be useful to respond to the terms of reference in areas where I know there has been some confusion, misunderstanding or unanswered questions. Turning first to A, the extent of land and water contamination, I point out that on the Union Carbide site most contamination is not in the sarcophagus; it is actually in the fill that was originally below the sarcophagus when the factory was there. The sarcophagus was material scraped up later and put in that situation. However, most of the contamination—I would say perhaps 80 per cent to 90 per cent—is beneath the sarcophagus. You have already heard that there is a cut-off wall and material between it and the sea wall that is not contained by the cut-off wall. With respect to contaminants in the bay, I make the point that about 80 per cent—

CHAIR: So you are saying that that is correct?

Mr HUNT: Yes, based on the most recent investigation data available to us. Most of the opinions I am giving today are based on my knowledge of information from the various consultants. In terms of the bay, we have found that most of the contamination is within the 45-metre strip off the sea wall. So it is very close to the site—which is not surprising—and about 80 per cent of the mass of contaminants, if measured in kilograms or tonnes, is sitting in that area. However, there is a thin apron of contamination over most of the rest of the bay. There are also contaminants, including dioxin from urban run-off, in the creeks that feed into the bay. However, this is probably of an order of magnitude one or two time less than what is in the bay. Most of the contamination is near the wall and is diluted as it extends away from the wall.

I have no further comments about point B. As to point C—the necessity of remediation—from our perspective onshore, the main driver is to clean up for human health but the risk assessments also consider the impacts on the environment. Offshore the main driver is also to clean up for human health through ingestion of dioxin in fish, but the impacts on the environment must be considered offshore as well. I have no further comments about the cost of remediation. I think what has been said already is fairly straightforward.

CHAIR: Doug said that the Government will contribute up to $20 million. We heard yesterday, I think, that the Government's contribution will go only towards remediation of the bay area. Therefore, if remediation work costs $10 million, that will be the extent of the Government's contribution.

Mr MOSS: That is correct.

The Hon. Dr BRIAN PEZZUTTI: If it cost more than that the limit of what you do is capped at $21 million?

Mr MOSS: From our point of view it is, in fact, $20 million because what funds that are available to Thiess are $20 million. I think there was $21 million originally, but there have been some investigation costs and other costs by government which have eaten into that $21 million.

CHAIR: What if it cost $22 million?

Mr MOSS: We would need to negotiate. The contract would require us to negotiate with the Waterways Authority to see if there was a way forward and to come to some sort of conclusion about that.

Mr HUNT: On point D, liability for costs, I have no further comments. Point E, any risks to existing or future residents, that question has a potentially very large scope because it can take in historical risks, it can take in current risks and we have confined ourselves mainly to risks during remediation and risks after remediation. The point I want to make is that the risk assessment process which is used to determine the criteria to clean up the site for residential land use is the same process that has been used to develop Australia's criteria for common contaminants for a whole variety of land uses—low density residential, medium density, high density, commercial, industrial, open space. In that sense the process is no different. With all of those risk-derived criteria there is a notion of acceptable levels of chemical in soil and unacceptable levels that are related to the health risks that you are looking at or the environmental risks that you are looking at and that is exactly the same process that is under way for both the bay and the onshore parts of these sites.

The main driver for the bay is human health risk via fish consumption. However, the other parts that are looked at in that are actually contact human-to-sediment, recreational uses and also what effect the contaminants in the bay have on flora and fauna. For instance, the dioxins are a risk to piscivorous, or fish-eating, birds. There is the issue of residual hotspots left in the bay which can include organochlorine pesticides such as DDT and metals. In the course of the project to date the criteria to which we were working in terms of acceptable dioxin intakes has gone from 10 picograms per kilogram per day to one to four picograms per kilogram per day. Basically the risk assessment for the bay is being reviewed in the light of that change as we speak.

In relation to point F, I will make additional comments or just round up. Considering environmental questions, number one, the whole of the bay has been sampled in the most recent investigations and, I think it was said in a previous submission that the bay had not been sampled. The density of sampling has increased as we get towards the most contaminated parts to define where that bulk of contamination is. Under the contract any material taken from the bay for remediation will not be returned to the bay because the levels of metals in that material will not be addressed by the remediation technologies. They are not acceptable to put back into the bay from an environmental point of view but they are safe to reuse on land from a human health point of view simply because humans are less susceptible to health problems from the particular metals involved at the concentrations involved.

Another item that was raised was testing in the bay. The original risk assessments did test fish and invertebrates and basically they tested the range of environmental receptors. The fish were the ones found to have the problem so that is where the focus has been but there is basic information available on other accumulation in other organisms in the bay. Many of the basic data reports are actually referenced in our submission, of course, and they are publicly available.

The Hon. Dr BRIAN PEZZUTTI: When doing your sampling of the old Union Carbide site did you find evidence of high levels of cadmium or arsenates?

Mr HUNT: Interestingly, I was not going to comment on that but from our point of view the site is not a site which is noted for metal contamination. Arsenic may or may not be regarded as a metal but certainly metals in general are not perceived to be a remediation issue for the site. There is no metal on that site that we have to clean up for residential land use. The metals are basically in the bay.

The Hon. Dr BRIAN PEZZUTTI: You identify and tabulate some of the metals on page six of your submission. For example, for cadmium and you have chromium there they are not high levels?

Mr HUNT: These levels are in the bay, not onshore. In terms of levels that would be a concern onshore the copper is very low. The zinc is at moderate levels but it would not be considered a contaminant onshore. The chromium is relatively low. For reference, 300 ppm for lead is considered a safe level in soil for low density residential land use.

The Hon. Dr BRIAN PEZZUTTI: Is the 149 a problem for the bay?

Mr HUNT: In the bay it could be a problem but onshore it is not a problem.

The Hon. Dr BRIAN PEZZUTTI: You have measured it in the bay itself?

Mr HUNT: That is correct.

The Hon. Dr BRIAN PEZZUTTI: Will all these things in the bay substantially be fixed by the heat process?

Mr HUNT: No, and that requires a fairly full answer about the rationale for clean-up in the bay. Do you want me to speak to that now?

The Hon. Dr BRIAN PEZZUTTI: I will just ask a further question and then you can speak to it. If you take it out of the bay and take out the dioxins you will be able to put it onshore

Mr HUNT: That is correct.

The Hon. Dr BRIAN PEZZUTTI: That would not preclude you from doing that at these levels of concentration of the metals?

Mr HUNT: That is correct.

The Hon. Dr BRIAN PEZZUTTI: You could not put it back into the water?

Mr HUNT: No, it would not be desirable.

The Hon. Dr BRIAN PEZZUTTI: In other words, you would be improving the quality of the water by not putting it back?

Mr HUNT: That is correct.

The Hon. Dr BRIAN PEZZUTTI: From where do you get the fill to put back into the bay or will you leave it dredged?

Mr HUNT: No, the proposal is to put it back to its original topography. What is on the table at the moment that is under discussion with Fisheries and the Waterways Authority is to actually use this project to investigate the actual properties and the benefits of various sorts of fill. They would be clean fill material such as crushed shale or crushed sandstone or clean sand to actually put back a range of different materials and to then monitor the recolonisation of those different sorts of materials by the actual benthic organisms. The thought is that it is a good opportunity to get some first-hand information on that aspect because if any further work is done in marine environments, as it could be in Sydney Harbour, this is a whole knowledge: it is a data gap.

The Hon. Dr BRIAN PEZZUTTI: Arsenic is a metal—

Mr HUNT: It is a transitional metal.

The Hon. Dr BRIAN PEZZUTTI: What about arsenates?

Mr HUNT: Levels of arsenic, once again, are not high compared with what would be a human health risk. Even in terms of the numbers that are present in the bay the real question is are they biologically available? As far as I am aware there is no arsenic problem onshore and there is no arsenic problem offshore.

The Hon. Dr BRIAN PEZZUTTI: Both arsenates and also DDT and most of the dioxins are fairly tightly bound to soil are they not?

Mr HUNT: That is correct.

The Hon. Dr BRIAN PEZZUTTI: If you go to the trouble of getting out the dioxins, will this heat process rid the arsenates?

Mr HUNT: No, thermal processes in general are not appropriate for metals unless you get to extremely high temperatures.

The Hon. Dr BRIAN PEZZUTTI: Obviously the various very heavy dioxin concentrations are closure to the shore. How deep does it go?

Mr HUNT: Probably approximately 1.5 metres.

The Hon. Dr BRIAN PEZZUTTI: Then you reach sand which has none in it?

Mr HUNT: I think the original sediments there are actually silts and muds.

The Hon. Dr BRIAN PEZZUTTI: That is helpful. When you go out further does it get substantially thinner?

Mr HUNT: Further out you are probably only talking 10 centimetres at the most, if that.

The Hon. Dr BRIAN PEZZUTTI: As the concentration drops so does the depth of removal?

Mr HUNT: That is correct.

The Hon. Dr BRIAN PEZZUTTI: Will you also clean-up further up the creeks unrelated to this site?

Mr HUNT: No, this is part of the wider question as to where you actually stop the remediation. The risk assessments looked at all the contaminants in the bay. They discovered that the levels of metals in the bay, while they are elevated and impacting to some extent on marine biota, are similar to the levels of metals throughout Port Jackson and the Parramatta River. At that stage the conclusion is there is no point actually remediating the metals in the bay since it would get recontaminated by the background levels present within the whole of the system. The risk assessment therefore discounted metals. It did say that the residual DDT hotspots—because not all of the DDT is in the dioxin footprint—should be investigated because on paper they were at levels of concern. Therefore, a second detailed risk assessment was undertaken specifically for the DDT hotspots which have been mentioned by previous submitters. It found by sampling the biota within the hotspots and around the hotspots and in

the Parramatta River that they could determine no difference in the diversity and abundance of the benthic communities represented. It therefore concluded that, although on paper those DDT hot spots represented a risk, in reality they did not. It recommended that no action be taken for those hot spots that were outside the remediation site still

The Hon. Dr BRIAN PEZZUTTI: Does DDT represent a risk to humans?

Mr HUNT: In sufficient quantities any of the chemicals where would represent a risk. It is a matter of what the concentration is and the ability to be exposed to it.

The Hon. Dr BRIAN PEZZUTTI: If we use can fin fish for eating—if people who fished in a remediated site such as Pyrmont point regularly ate fish from that area, would DDT be a problem?

Mr HUNT: I can announce that question by reference to what the consultants who will conduct of the risk assessment for the bay found, and that was the EVS referred to in several of the submissions. They analysed the fish tissue for a range of organochlorine compounds, including dioxins. The only compounds they found in the fish of a level that would be a concern to human health were dioxins and chlordane; not DDT. The chlordane in the sediments is basically at a background level for the river and the larger Port Jackson. They concluded that the source of the chlordane they found in the fish was not Homebush Bay. Therefore, the recommendation was to clean up for dioxin from a human health point of view.

The Hon. Dr BRIAN PEZZUTTI: What about other, say, creepy crawlies?

Mr HUNT: They considered the impact of organochlorines on biota. The conclusion was that it was not affecting the invertebrates, the shellfish or prawns; it was affecting the fish and then into humans. It was not affecting the finish per se. It had the potential to a affect the piscivorous birds eating the fish. It did not find that the levels of impact within the biota—that is the full range of biota—were unacceptable for those chemicals—including DDT.

The Hon. Dr BRIAN PEZZUTTI: Unless I eat huge amounts of oysters from that area I am not likely to have a problem.

Mr HUNT: The best thing to do is to go back to the report. It is fairly rigorous and well-documented.

The Hon. Dr BRIAN PEZZUTTI: The only issue we have to be concerned with is the dioxin issue, is that so?

Mr HUNT: The dioxin in fish for humans and dioxin in fish for piscivorous birds.

CHAIR: Had you quite finished your presentation?

Mr HUNT: No. We answered the transport question with respect to transport of concentrates offsite if the indirect thermal desorption plant is used. We noted that the total quantity of material expected to be generated in that two-step process is about 1,000 tonnes of concentrate. Over the life of the project that would be equivalent to one- to two-truckloads per year—sorry, per week, not per year; ten to twenty tonnes per week. The BCV technology plant in Brisbane has received about 5,000 tonnes of PCBs and other chemicals over the last decade. They have been transported from all around Australia to that facility for destruction. The only other facility operating in Australia was in Perth and it shut recently. That also received large quantities of contaminants collected, mainly concentrated chemicals from all over Australia.

Th issue of transport of hazardous chemicals has numerous precedents and there are numerous regulations governing it. I would also point out that the hazards and risks associated

with transporting that material are probably significantly less than the hazards and risks associated with many common explosive, combustible and caustic chemicals that are transported in much larger quantities on a routine basis in the country. That is all I have to say on transport.

The Hon. IAN COHEN: Is that by road or by rail?

Mr HUNT: The most common form of transport is road transport.

The Hon. IAN COHEN: Are you able to inform the Committee of the regulations relating to the Queensland facility accepting that material? I understand there is a limitation.

Mr HUNT: Yes, and issue has arisen with respect to the licence. It is a situation where the facility receives probably many tens, if not hundreds, of different sorts of chemicals in mix loads. Their licence lists only a limited number of chemicals. To date that has not been an issue, because of the difficulty of nominating every chemical. When they were licensed they submitted data on dioxin destruction and the capabilities. They had conduct of tests at that stage. When they asked the Queensland EPA regarding this project, it had become a political issue. That was because some of the people involved in the process down here had made it a political issue for Queensland. That facility would need to have its licence altered to accept material from this site.

The Hon. IAN COHEN: I have consistently asked questions about whether we will see an indirect thermal desorption or a direct thermal desorption process. Can you give an opinion on that at this stage—and why? Also, how does that link him with your ability to dispose of the material to that facility if it is an indirect thermal desorption process?

Mr HUNT: In light of the questions which you have asked every speaker, I would like to spend a little time on at. That was the next issue I proposed to address. I would like to do it by referring to the whiteboard. For information we have retained the company Focus Environmental in the United States of America to advise us of thermal treatment technologies. You have heard the name William Trocksler. He is one of the principals. There have been about 171 projects in the last decade in United States of America using thermal desorption. Focus Environmental has been involved in about one-third of them, either for the technology providers, for the regulators developing the conditions under which the plants are run, or for the owners of the sites monitoring those projects. About half of those projects have been by indirect thermal desorption and about half of them have been by direct thermal desorption. I would like to point out the differences in terms of the emissions, with respect to dioxin formation and the POPs convention.

The Hon. IAN COHEN: Before you give an explanation, referring to Mr Trocksler and the US experience, have there been sites in the United States of America which have been remediated of dioxins and used for intensive residential development, as we are seeing the potential here?

Mr HUNT: That question has been asked previously at the community liaison group meeting. There is no direct analogy for this project.

The Hon. IAN COHEN: We are ran due in terms of use of the site?

Mr HUNT: It depends where this site is located. Most of the sites cleaned up there have been industrial areas returning to industrial use. Our sites are industrial areas going to residential use.

The Hon. IAN COHEN: There has not been that experience in United States of America?

Mr HUNT: There is no direct experience with dioxins, but there is experience with other chemicals with similar boiling points and similar properties for residential land use. Dioxins from the point or thermal treatment technology are not particularly special, in that they have a boiling point, hence a similar boiling point to other chemicals which are removed by thermal desorption. In that sense there is plenty of proof that the process has worked. I think this level of detail is necessary to appreciate the answer I am going to give you.

Mr MOSS: This submission we have given you is the same presentation that Bill Troxler gave to the committee group in November last year— and I believe to the EPA and the Waterways Authority, at the time he was out here.

Mr HUNT: The basic piece of equipment in indirect thermal desorption is a rotating steel kiln. The soil goes through the kiln and comes out "clean". The contaminants from the sort all come out a chimney, basically, or pipework and they are collected. I have shown them being collected in a drum here. The contaminants come out in a gas stream. The question is: What happens to this gas stream once you have taken the contaminants out? No process of removing the contaminants is 100 per cent effective. It would be 99.99 something per cent. This gas stream will have very low levels of organochlorine compounds in it. It also has very high levels of methane and other combustible hydrocarbon gases.

The choice is to let it into the atmosphere here, and at that stage it does meet world's best practice in terms of dioxin emissions—being dioxins not removed on the way through. But, the problem is with the methane and other combustible gases that there is a significant greenhouse question. What was done—this is commonly done in the US and it was done on the project here in Australia—that is introduced back into the firebox which is heating that rotating kiln from the outside. That is actually combustion and natural gas which is a very clean gas source.

The Hon. IAN COHEN: That is a co-generation situation?

Mr HUNT: Yes. It is co-generation, but there is also the issue that there are organochlorines going into that. If you wanted to you could say that that is an incineration system. It is being combusted there, but I do not think it is a good description, because it is basically 99.99 per cent indirect. This is the appropriate way to handle that off gas. The ultimate static test or testing is done at here on this stack, which is coming of the firebox. At that stage the emission also meets world's best practice. World's best practice in this case is 0.1 nanograms of dioxin for a normal cubic metre of gas. The gas coming out is hot gas and will expand it, so they calculate it back to normal temperature and pressure.

The Hon. IAN COHEN: Is the scrubbing on that exhaust?

Mr HUNT: No. These are very clean systems are. They are just using natural gas as the fuel. There is no soil going through, so there are no particulates. And the load going Ian here, in terms of firing, is extremely low. Basically, that will meet the world's best practice without much effort. It meets its typically down at around about, say, 0.01, maybe 0.03 or 0.04, something like that. The contaminant, of course, has to go off to a second distraction step, which I have just shown here as BCD. So, I have step 1 and step 2.

Moving to the directly-fired system, which we have been calling DTD, which is directly heated thermal desorption, you have a rotating steel kiln; you have soil going in; the flame within the kiln with the soil. Some of the contaminants coming out of the soil, if they are being desorbed are being combusted here. Not all of them, though, because that is not very efficient. The off gas then gets collected and goes to an after burner. I have shown the contaminants here and the after burner. You have another flame and you have an air emission.

What has happened in the last decade is they have put a fast quench on that off gas stack. The fast quench is basically a refrigerator. It takes the off gas temperature from 1,000 degrees to 30 degrees Celsius in about 30 miliseconds. That basically kills the dioxin formation process. When I have compared the commission data for this stack here and this stack here, for the 171 projects done in the last decade—50-50 direct and indirect—they have found that, on average, this emission for dioxin is less than this emission for dioxin. They are both less than the world's best practice figure.

It then becomes a very difficult argument as to where you go with this. The other differences between these plants of course is that this sort of plant here is designed for 20 tonnes but typically it will run at about 10-15 tonnes an hour—that is the ITD. These ones here can run much quicker because the heat transfer is much more efficient sense it is direct. And that is the reason for the indirect and direct. To put the heat through the steel shell first is a much slower process and requires a lot more heat. This one is a lot more efficient, and they basically run at 30 to 40 tonnes an hour.

The Hon. IAN COHEN: Is that a 24-hour process once it is up and running?

Mr HUNT: Both processes should be run on a 24-hour basis because there are significant costs in heating up that mass of steel after it has cooled down. Both processes run best, and under control, when run continuously. If you are forever starting up and shutting down you get a lot more wear and tear on various components.

The Hon. IAN COHEN: Does the DTD comply with the POPS convention?

Mr HUNT: The POPS convention says world best practice should be used, and basically that is that best available practice should be used.

The Hon. IAN COHEN: With respect, it talks about not producing dioxin, so that you do not have an additional production of dioxin.

Mr HUNT: Neither process meets that criteria of not producing dioxin. There is no remediation process that I know of that does not produce dioxin, directly or indirectly, since all of them use heat and power, and at the end of the chain there will be a power station that is putting out dioxin. Coal-fired power stations would be about two orders of magnitude below this. If you do not have the power stations putting out dioxin, you will have to have a gas source, and clean gas puts out dioxin, and all the associated support vehicles put out dioxin. So it depends where you want to draw the fence around it. The bottom line is that the non-incineration process is basically putting out the same level of dioxin as the so-called incineration process. Both are creating dioxin in the course of treating dioxin contamination or other organochlorines.

The Hon. Dr BRIAN PEZZUTTI: Even though it is 99.9 per cent free of dioxin, both processes are creating some dioxin. It depends on the amount that the 99.9 per cent is of. If it removal of 99.9 per cent of 25 million tonnes, you still end up with a couple of tonnes of emissions into the atmosphere. What I want to know is, over the two-year period what is the weight of dioxin discharged from the direct or indirect process?

CHAIR: And will that alter the balance in the environment, or the base load that would already be there anyway?

Mr MOSS: To put these plants into context, they would be about as dirty as a diesel truck.

The Hon. Dr BRIAN PEZZUTTI: Running 24 hours a day?

Mr MOSS: Correct. The figure is very similar to that.

The Hon. IAN COHEN: I understand that the proportion of dioxin emission into the general community from diesel trucks is about 3 per cent, and that the vast majority of dioxin emission is from the industrial process.

Mr MOSS: That is right.

The Hon. IAN COHEN: So that we must be careful when making that analogy.

Mr HUNT: I would like to comment further. For the indirect plant that was used at north Homebush Bay in 1999 the mass emission rate in eight hours of operation was about the same as the amount of mass omitted from one hour's operation of a diesel truck.

The Hon. Dr BRIAN PEZZUTTI: So all of those diesel vehicles running around the site picking up dirt will be producing more dioxin than the plant? Is that what you are saying?

Mr HUNT: Correct.

Mr MOSS: The data in the submission that we have just given to the Committee shows that the real concern on a site of this nature is not emissions from the stack but dust control measures for the balance of the works—the excavations and haulage, and all of the works that go on to support one of these plants. The vast bulk of emissions will come from those processes, and not from the thermal plant.

The Hon. IAN WEST: John, a moment ago you mentioned the north Homebush Bay site. What was that?

Mr HUNT: That was 400 tonnes of soil containing a very similar range of contaminants as were on this site, and probably derived from this site. That was done as part of the Olympic clean-up.

The Hon. IAN WEST: The Newington site?

Mr HUNT: That is right.

The Hon. IAN WEST: Without revealing intense commercial secrets, can you tell the Committee what are the basic cost differences between the two processes?

Mr HUNT: The ITD will take twice as long to process, all other things being equal, so that your operational costs will be twice as much; you have to have the men there for twice as long.

CHAIR: Instead of one year, it will take two years?

Mr HUNT: That is right. You will be paying the men for two years instead of one year to treat the same amount of soil. The direct one is much more efficient on gas usage, so with the indirect process the gas costs will be higher.

The Hon. IAN WEST: That is operational costs. Can you be a bit more forthcoming with regard to overall costs?

Mr HUNT: No, I cannot. I might defer that question to my colleague.

Mr MOSS: The bottom line, in global terms, is that the DTD might be $100 or $120 a tonne, and the ITD process might be $200 a tonne, or something like that.

The Hon. Dr BRIAN PEZZUTTI: Is that because of transportation costs?

Mr MOSS: No. As John said, it comes down to labour and fuel costs. In terms of the plant itself, the physical piece of gear, the costs are much the same. But we have to be on site twice as long, so we have twice as much labour cost. As well, we are using more fuel in the indirect thermal plant; because it is slower, it is not as efficient. It is probably twice the price per tonne of soil.

The Hon. Dr BRIAN PEZZUTTI: Why not use natural gas to heat it, rather than electricity?

Mr MOSS: We do use natural gas to heat it.

The Hon. IAN COHEN: From what you have been saying there seems to have been something left out of the equation. Why does the indirect process get a look-in then?

Mr HUNT: I thought it might surprise when I said that, but that is the fact of the matter. The fact is that the technology has developed in the last 10 years in particular. The first serious thermal desorption in the United States of America was in 1985. They did not start in earnest until about 1988. In a decade they have done about 171 projects. Some of the material quoted in previous submissions is out of date. The information on this generally has not been collated and published at this stage.

The Hon. IAN COHEN: The Newington site used the indirect thermal process?

Mr HUNT: That is correct.

The Hon. IAN COHEN: There, it was a much smaller quantity.

CHAIR: Only 400 tonnes or something.

Mr MOSS: I understand that in the United States of America, and I guess elsewhere too, it has been easier to license and permit the indirect thermal desorption system because, from a perception point of view, the flame does not contact the soil and therefore the question of incineration is not a question per se. So licensing it has proven to be easier compared to licensing the direct thermal desorption system. The indirect thermal absorption system, I guess as a matter of chance, in practice has been used a lot more on smaller projects, such as at North Newington for 400 tonnes. Some of the larger jobs in the United States, conversely, have been done by DTD simply because of the economics making it worthwhile to go to the extra effort required in the approvals and licensing processes, consultation with the community and all those things.

The Hon. HENRY TSANG: Both of these processes are in operation in Brisbane.

Mr MOSS: What is done in Brisbane, and what is proposed to be done in Brisbane or alternatively on site, is that second step of what is called base catalysed dechlorination. The ITD unit produces a liquid. We take the gas, which is cooled, and all the water and organic that was in the soil effectively goes into a drum, and that is the material that is potentially sent to Brisbane. But DTD is a one-stop shop.

CHAIR: If you use the DTD process, Brisbane is not an issue.

Mr MOSS: That is correct.

CHAIR: The legislation there does not have to be changed and the material does not have to be transported.

Mr MOSS: No. It is a one-stop shop.

CHAIR: And you do not run any of those other risks.

The Hon. Dr BRIAN PEZZUTTI: What else goes up the chimney apart from a small amount of dioxin?

Mr HUNT: The products of combustion of natural gas are the main ones, and they are carbon dioxide—

The Hon. Dr BRIAN PEZZUTTI: A bit of sulphur.

Mr HUNT: Yes, sulphur is an issue. Chlorine is an issue, if there is any chlorine in the system. Those are typically the things that are regulated. And nitrogen.

The Hon. Dr BRIAN PEZZUTTI: Is that scrubbed in any way?

Mr HUNT: Not on the ITD, because the ITD has only a very small component of non-methane—

The Hon. Dr BRIAN PEZZUTTI: But, as you burn this material at a higher temperature, you must volatolise more things.

Mr HUNT: The DTD does have scrubbers on it.

CHAIR: One of the submissions contained a proposal to shed this. Was it to shed one or other, or both?

Mr MOSS: The proposal is to shed the feeding side of the process. We do all the conditioning of the soil—all the drying and all the dusty stuff inside a ventilated building—and then stick the back end of the plant outside. So it will come out on a conveyor and go into a stockpile.

The Hon. Dr BRIAN PEZZUTTI: So you dry it first?

Mr MOSS: There is a lot of work done on it. Some of the material on site, for instance in the bay, is very wet. Moisture equals energy, because you have to drive off the moisture before you drive off the contaminants, so you want to dry the material as best you can to reduce the level of moisture and save on fuel.

The Hon. Dr BRIAN PEZZUTTI: But is not some of the material volatilised by the drying process alone?

Mr MOSS: We are dealing with semi-volatile contaminants, primarily some of the chlorobenzenes and dioxins.

The Hon. Dr BRIAN PEZZUTTI: Those are things that we are primarily worried about, but other materials will be volatilised by the drying process.

Mr MOSS: That is why it is done inside the enclosure—to capture any of those gases.

The Hon. Dr BRIAN PEZZUTTI: Because some of them are quite smelly.

Mr MOSS: Correct.

The Hon. Dr BRIAN PEZZUTTI: So even the water vapour from the drying process is captured in the process?

Mr MOSS: Correct.

The Hon. IAN COHEN: Will chlordane, for example, be eliminated by either remediation process?

Mr HUNT: The main contaminants on the site are in fact hydrocarbons, such as polycyclic aromatic hydrocarbons and normal petroleum hydrocarbons. They are the bulk of contaminants. The next main groups would be DDTs and related compounds, and then other organochlorines such as chlordane and dieldrin are probably present in fairly small amounts. Then dioxin is the smallest in terms of mass. Most of it is actually normal hydrocarbons, and most of the tars is naphthalene, which mothballs are made from.

The Hon. IAN COHEN: So, in answer to my question, will chlordane be eliminated by either remediation process?

Mr HUNT: Yes. The process captures all organic compounds that will boil within the temperature range at which we are working. Dioxins have a very high boiling point, and they are the chemical of concern. But all the other organics come out as well.

The Hon. HENRY TSANG: I am still a little bit ignorant of the system, and I am concerned about how you capture the dust in a bay. Do you actually form a dam and pump out the water? How do you get the soil from the bottom of the bay without getting it in the air?

Mr MOSS: I will draw a diagram on the whiteboard. This is the existing sea wall, with the top of the mud. The tide level goes from about here to there, about a metre and a half. We are talking about a 45-metre wide strip which is not far beyond the low tide mark. So, conceptually, what we are talking about is building a soil dam, and to close that dam at low tides so that we will have the least amount of water inside the enclosure.

We pump as much of that water as meets the clean water discharge criteria over the bund and into the bay—as much as is physically possible. There will be a small residual that will have to be pumped back onto shore through the water treatment plant. We then excavate the soil—and here we are talking of in the order of half a metre out of the floor of the bay. All this is 45 metres offshore. There are a few ways of doing this. We can either build the bund wall back to the foreshore, or we could build fingers, which are basically pads of soil, out into the bund. Then there is what is called a dragline or long-reach excavator, with a reach of about 25 metres.

We need to provide some access points for large machinery to go in there to scrape the material back. Conceptually, we put it into a pile against the sea wall. It will then sit there probably for a few days while most of the free water drains out. It drains back into the excavation, and we then pump it back onshore. Once we are happy with that material, it will then go onshore for treatment.

In terms of dust control, this stuff is so wet that we do not envisage any dust control problems here. Dust is more of a problem on the site, of course. This is more of a water management problem. We have used similar methods. Bund walls were used in some of the jobs we did on the Olympic site at Homebush Bay, at Wilson Park and at other locations. If we get into problems with this, we can use a steel sheet pile wall that is driven into the ground. So we have a few alternatives up our sleeve.

We excavate out the soil, and we then backfill the excavation. We would be proposing to borrow material onshore, some of the clay and shale that John spoke about, put that back in, and spread the material across the excavation.

The Hon. IAN WEST: But not the material you take out?

Mr MOSS: No. That is different material. The stuff that comes out has heavy metals in it, as John said. Also, if it goes to treatment, it is basically burnt, all the carbons are burnt out of it; it looks like a black ash after it has gone through the thermal plant. In our opinion, it would not be suitable to be put back.

The Hon. HENRY TSANG: What do you do with the burnt material?

Mr MOSS: It will stay on site. Everything that goes through the plant will stay on site. That sort of material would probably be suitable for beneath roadways and things like that.

The Hon. IAN COHEN: I understand you were involved in the AGL site, which has had a significant dust and clearance problem.

Mr MOSS: That is correct.

The Hon. IAN COHEN: Firstly, what will be the difference with this site? Secondly, I understand you are still working on the AGL site. Are you looking at that site to gain practice for both sites?

Mr MOSS: Yes. The biggest thing we have learnt from Mortlake—and it is something that has been put to us by the community—is that something in the order of half a million cubic metres of material has been brought to the site in road trucks to backfill the site. You could imagine half a million cubic metres coming in 14 cubic metre loads. You are talking about a couple of hundred trucks a day going to that site. We believe that probably more like 80 per cent of the dust that is generated on that site is from those importation activities.

The Hon. IAN COHEN: Where a you getting that quantity of material from?

Mr MOSS: It comes from all over town. Primarily, it comes from basement excavations in the city—in other words, any of the high-rise works you see around town. There is a marketplace for clean fill for use in engineering works. We are designing this as a cut-fill balance, so there is no import or export of material, except for the thousand tonnes going back—

The Hon. IAN COHEN: How are you then dealing with the exposed surface area and the dust problem?

Mr MOSS: This has been a problem at Mortlake as well. For some reason, once the areas have been brought to finish level they are generating quite a lot of dust. They have not been managed well, in terms of grassing and that sort of soil stabilisation work. We made a promise to the community that when we completed each stage we would progressively turf the surface, so we would import turf and grass the top of the site, and we do that on a progressive basis as we complete each area.

The Hon. IAN COHEN: And that has not been practical on the AGL site?

Mr MOSS: It is not a contractual requirement. Thiess' role there is very much a contracting role and doing what we are told by the project management organisation and the client. There have been several interface issues there with the developers as well, in that parts of the site have been handed over. I think overall it has not worked particularly well. We think we

have complete control of this site. We are able to grass the site as we go. Mortlake has been grassed, for example, but it has been spray-seeded, the take-up has not been great and there are those sorts of practical issues. We think we can certainly fix those issues on this job, and that has been our promise to the community.

The Hon. Dr BRIAN PEZZUTTI: How long do you reckon it is going to take you?

Mr MOSS: The total duration of the activities is probably, at the outside, five years. A more realistic estimate, if everything goes well in terms of quantities, is probably four years from start to finish.

CHAIR: And you might be a year getting approval?

Mr MOSS: Yes.

The Hon. IAN COHEN: With regard to monitoring, particularly using the direct desorption method, do you have any plan for off-site monitoring for airborne toxics in the local residential areas?

Mr HUNT: Basically there will be a fairly comprehensive monitoring plan put up as part of the EIS that is part of the remediation action plan. That plan will be developed by consultants who specialise in the area of OH&S monitoring. It will be reviewed by the EPA, and the Department of Health has indicated that they have a very strong interest in being involved in reviewing that plan because they have particular expertise. Broken Hill is a case in point, of course.

At the moment we are collecting baseline data on the site and around the site. I think there has been a proposal to put stations in the Rhodes area, near the community hall and down at Melrose Park, to find out what is happening there at the moment. I am not aware of the details or how that will be taken forward, but it is an issue that we are well aware of. It is one of the main issues that has concerned the residents. From our point of view, it is a pretty important aspect.

The Hon. Dr BRIAN PEZZUTTI: Why is it going to take a year to get the approval?

Mr MOSS: As I say, we hope to lodge our EIS probably in April or May. At that time it goes on exhibition for at least a month, which is the mandatory requirement. Jobs of this nature are sometimes extended by another month, given their complexity. Then Planning New South Wales needs to make its assessment. So you are talking about at least a couple of months for that to happen.

The Hon. Dr BRIAN PEZZUTTI: You have the EIS for the development application before the Department of Planning, I presume?

Mr MOSS: That is correct.

The Hon. Dr BRIAN PEZZUTTI: What is the chance of the Department of Planning getting all the information it needs on the EIS in the first instance?

Mr MOSS: Under the legislation, this is integrated development. The intent is that the EPA is consulted throughout the process, and it continues to be consulted by us during the development of the EIS. There is a separate technology licensing application, which we are working on, which will go to the EPA in next couple of weeks, we hope. So we hope to get to a position—

The Hon. Dr BRIAN PEZZUTTI: That is not the question I asked. The department having been given the length and breadth of the EIS as required by the department, together with the other bits and pieces that are to be provided to the Environment Protection Authority, what is the chance of the Department of Planning and the Environment Protection Authority getting it right the first time? Having got on with your EIS and your EPA application, invariably the department requires further information. What are you expecting?

Mr MOSS: That does happen, and I have been involved in proposals in developments where that has happened. It is a very complex development. There is a possibility that that is going to happen. We would hope that it does not. But, as I say, particularly in regard to the EPA we think we can address all the issues during the development of the EIS, such that we get to the EIS being exhibited and there are no surprises yet to come from the EPA. But really it is in our court to give them as much information as we possibly can as we go through the process. It is a possibility that there will be a need by the approval authorities for further information.

Mr HUNT: It could be a matter of detail, in that if we do not present them with plan X for the site and where gauge Y is located, they may approve the use of a technology and say, "We wish to set conditions to do with where you monitor some parameter, and we will do that before the plant comes on the site."

The Hon. Dr BRIAN PEZZUTTI: I do not have a problem with them setting conditions that are achievable and realistic, but often with these EIS processes I find that you get halfway through the EIS and more information is required. The department says, "We are terribly sorry, but we just forgot to mention this bit." Whole projects are delayed because of either incompetence or deliberation by the department if it does not want things to go ahead. What guarantees do you have from the department and the EPA that they will be co-operative in this area?

Mr MOSS: We have no particular guarantees about anything. But to the EPA's credit, the list of their requirements, which was provided to the Director-General of Planning, was extensive—probably the right word would be "exhaustive". It is a 22-page document, outlining various issues that we need to address.

The Hon. Dr BRIAN PEZZUTTI: You have to pay the cost of all this?

Mr MOSS: Correct.

The Hon. Dr BRIAN PEZZUTTI: And that comes out of the $21 million?

Mr MOSS: That is correct.

The Hon. Dr BRIAN PEZZUTTI: So the grateful taxpayers of New South Wales are effectively funding something that you are doing for the taxpayers?

Mr MOSS: That is correct.

The Hon. IAN WEST: In terms of the tenders you have put in, the actual costs of the methods have not been a restraining force; you have been able to put in the best available methodology for treating the contamination without fear or favour of falling short?

Mr MOSS: On the land, there is no difficulty with our approach. In the bay, there is always the question—and I think it has been raised by other people here—that it is quite a subjective process in terms of determining the extent of the work in the bay. What has put pressure on the Government's $20 million is that only in the last couple of years the criteria for dioxin in terms of the tolerable daily intake—for example, the World Health Organisation has

gone from 10 to one to four. We are at a point where, if we do more than the 45-metre strip, as we propose and as we think is justified, the job is in question.

The Hon. IAN WEST: You indicated that samples were done in the whole of the bay. Can you advise who took samples and where we can get hold of those samples?

Mr HUNT: The basic information is in the EVS report, that is the risk assessment for the bay and then the detailed risk assessment for the bay. That covers all contaminants, and it covers the whole of the bay but at different densities. The density of sampling is higher near the sea wall and lower away from the sea wall.

The Hon. IAN WEST: Who took the samples, and what is EVS?

Mr HUNT: EVS is an international company that specialises in risk assessment. They are based in Canada. It was commissioned by the Waterways Department in 1998, I think. The report has been given out to the community liaison group.

The Hon. IAN WEST: With regard to your involvement with the AGL site, without getting yourself in trouble are you able to give us a broad picture as to your dealings with the various interdepartmental oligarchies? Who were the lead agencies, and how did you get through the bureaucracy there?

Mr MOSS: The structure of that project is entirely different to what is proposed for Homebush. As I said before, Thiess is the sole contractor. We have no involvement with council, the EPA or either consent authorities. The environmental impact statement was done by AGL or the consultants, and once the consents were obtained the contract was tendered and then let.

CHAIR: You simply became the contractor?

Mr MOSS: That is correct. Part of the issue has been that you have not had the people who control the work on the ground fronting community meetings and talking to council. There have been some communication issues there, which is a bit unfortunate.

The Hon. IAN WEST: In terms of this particular tender document and the EIS that you are proposing to put up in April-May, can you give a broad picture as to the methodology and the cost constraints? In the documents, how are the outcomes measured, monitored, reviewed, evaluated and indemnified?

Mr MOSS: I will give you a precis of the contract. That is probably the best place to start. In terms of financially, government's contribution is capped at $20 million unless it agrees to pay more. All other financial risk sits with Thiess and Trafalgar as the developer. In terms of the scope of the work, the objective of the work on the land is to obtain a certificate from an auditor, who has been appointed by the New South Wales EPA under the Contaminated Land Management Act, that the site is now fit for its intended use. So the objective is to obtain a certificate from an auditor which states that the site can be developed for residential uses as proposed under the Rhodes State regional environmental plan No. 26. How we get to the point of having the auditor sign off is entirely the scope of that work as defined by Thiess at Thiess' risk.

We have total control in terms of both the scoping and the performance of the work. We are responsible for monitoring the work, not so much Thiess itself but through our consultants. We are responsible for liaising with the consent authorities and for liaising, most importantly, with the EPA and for monitoring of the works and for reporting of the monitoring of the works to the EPA during the course of the works. Waterways has an approval function in the contract in that it must give its consent—forgive me but I think it is particularly in

relation to the scope of work in the bay. Waterways has a consenting function because it will remain the owner of the bay and therefore it must give its consent as to the scope and the outcome of the works in the bay. I am pretty sure that in terms of the land we fall back to the auditor who has been appointed by the EPA.

CHAIR: And who has indemnity?

Mr MOSS: He has responsibilities and he carries insurances for that purpose. In terms of other indemnities, Thiess is entirely responsible for any of its actions during the course of the works. Environmental insurance policies have been taken out jointly in the names of Thiess and the Waterways Authority and the developers and other parties. We have never had such policies in the past. We have always done the work off our own bat but government has elected to do that this time. Basically, Thiess is liable for the performance of the works during the project.

The Hon. IAN WEST: That is during the project. When you handover to Trafalgar where does your responsibility end?

Mr MOSS: Our responsibility sits in that we are required to have done what has been approved to be done by the auditor and approved by the EPA. We cannot do things which are fraudulent to the course of the works. We have to give the outcome that we said we would give. Thiess' liability ends with its performance of its work.

CHAIR: You also said that your auditor signs off.

Mr MOSS: Correct.

CHAIR: And there is some liability in that as well.

Mr MOSS: He signs off progressively during the course of the works.

CHAIR: So if he is found to have signed off incorrectly—

Mr MOSS: It will be an issue. I think one of the insurance policies would probably commence and therefore respond at that time.

The Hon. IAN COHEN: I am absolutely perplexed, and perhaps you can get me further information. There seems to be something left hanging about the indirect and direct. I do not understand. I wonder whether you need to move to direct because of the complications of the transport of the semi-final product and licensing issues with Queensland.

CHAIR: And cost.

The Hon. IAN COHEN: And cost. It is not adding up. I should like to have that clarified either now or on notice, because it does concern me.

Mr MOSS: I can talk about that. As you said before, government's contribution is variable depending on the total cost of the bay work for example. It is capped at $20 million. If we were to go with direct-fired thermal, government's contribution would be reduced significantly. Of course, there is only a finite land value at the end of the day. The land is only worth a certain amount of money and that is tied in with the ultimate development on the site, which I am not privy to. You get to a point where during the consent process if the consent conditions become too onerous there is a point whereby the finances are simply not available. Direct-fired thermal desorption [DTD] provides greater flexibility in terms of the outcome and in terms of the financial position but the scope of work must be identical for both technologies.

The quality of the work must be the same because the risk assessment is the same. There is no difference in the outcome on site in terms of the soil concentration, how much material, where it is, et cetera. They must be the same because that is approved by the EPA and by the auditor, without regard for, basically, how we get there. I think direct fired gives us greater flexibility to deal with uncertainties and to deal with licensing issues which may arise with the regulators. Indirect thermal pushes us closer to the absolute value of this property and the $20 million. It is as basic as that. We do not have a preference beyond what I have just said—that DTD is more flexible, cost effective and shorter. We will put up both technologies in the EIS. If the community has a very strong view or if the regulators have a very strong view towards ITD, so be it. That is exactly what we have said at the Committee today. It gives us greater flexibility. I think that is probably the key issue.

(The witnesses withdrew)

(Short adjournment)

MICHAEL ASHTON DAVIDSON, Managing Director, Trafalgar Corporate Pty Ltd, level 4, 111 Harrington Street, Sydney, sworn and examined:

CHAIR: Are you conversant with the terms of reference of this inquiry?

Mr DAVIDSON: Yes.

CHAIR: Would you like the submission you have made to be included as part of your sworn evidence?

Mr DAVIDSON: Yes.

CHAIR: If you should consider at any stage during your evidence that in the public interest certain evidence or documents you may wish to present to the Committee should be heard or seen only by members of the Committee, we would be happy to accede to your request and resolve into confidential session. However, Parliament has the ability to override that decision of this Committee, not that it has ever done so.

Mr DAVIDSON: Thank you.

CHAIR: Do you want to make some opening statements and then we will ask questions?

Mr DAVIDSON: Just simply for the record that we and our partners Thiess have been working on this venture now for nearly two years. We are conversant with reasonable aspects of the remediation, but I certainly do not have any technical expertise in that field, so please do not direct any technical questions towards me, but I happy to field any questions relating to the real estate matters.

The Hon. IAN WEST: Could you explain for us Trafalgar's role in the remediation and redevelopment?

Mr DAVIDSON: We really do not have any role in the remediation. That is the responsibility of Thiess. Our role in the development is that we will act as the principal developer of the site.

The Hon. IAN WEST: The relationship between you and Thiess once you take over the real estate, what ongoing relationship is there with Thiess?

Mr DAVIDSON: We have had a long-term relationship with Thiess over a number of years.

The Hon. IAN WEST: With regard to the site.

Mr DAVIDSON: Essentially once Thiess has finished the remediation of the site there is an ongoing contractual obligation with Thiess that I am happy to discuss and take on notice. Other than that, there is no other ongoing relationship between the two of us.

The Hon. IAN WEST: Are you saying that if Thiess tell you that they have remediated the site and hand it over and then you find out in 12 months or five years time that they have not, you have got no contractual relationship?

Mr DAVIDSON: Can I take that on notice?

The Hon. HENRY TSANG: Previously Thiess explained to us the direct and indirect thermal process. One costs more and one costs less. Obviously if the community and the decision process insist on the indirect one, which ultimately costs more money, you would want to have a denser development to compensate for the costs involved? Or, for some reason that the community feels that perhaps one would take the direct one and therefore cost less, and once development of a lesser density and height for the total good of the environment, is that something you are prepared to entertain as a trade off?

Mr DAVIDSON: There are some basic economics that dictate whether or not the remediation will proceed, and once those economics go beyond a certain threshold then the full remediation will not proceed.

The Hon. HENRY TSANG: I understood that at the moment it seems quite feasible using the indirect method to treat the site and also that if the direct one is to be used it is a substantial saving, maybe saving 40 per cent of the cost of remediation.

Mr DAVIDSON: It is a bit faster.

The Hon. HENRY TSANG: It is faster, and one costs about $220 per tonne and one costs $140, if I remember. If there was a saving, would the developer who owned the land be quite happy to reduce the development so as to enhance the fauna? The earlier submission that the height, and so on—

Mr DAVIDSON: I know what you are saying. What happens is that the Government contribution is reduced.

The Hon. IAN COHEN: Mr Davidson, there is a projection of some 7,300 people to be resident in this area at some stage. How do you come to that sort of figure and is that assessed through the capacity of the site or is it driven through the expense of the remediation process, given that other sites in the area have had a significantly lower density?

Mr DAVIDSON: If I can answer the second question first, I am not sure that is entirely accurate. The site directly across Homebush Bay, known as the Waterfront, has a similar density to what is proposed for the broader Rhodes Peninsula. Those population numbers come out of Planning New South Wales statistics which were used in the creation of the REP and the DCP.

The Hon. IAN COHEN: So you are saying this is a standard density now, or what you consider to be within the ballpark of a standard density?

Mr DAVIDSON: There are other projects of a similar density in Sydney. It is not the only one.

The Hon. IAN COHEN: Banks would be rather disinclined to make loans and establish contract relationships for a future project on contaminated lands generally. What is the relationship or the driver for getting the go-ahead? Has it been just the projected density of the site?

Mr DAVIDSON: Is your question on how is this development funded?

The Hon. IAN COHEN: Yes.

Mr DAVIDSON: I would need to take that question on notice.

The Hon. IAN COHEN: I do not know whether you were here to listen to some of the earlier submissions, particularly one from the environmentalists, the Nature Conservation

Council and the Total Environment Centre. They are very concerned about the density of development on the site and they are also very concerned about the lack of green belt areas as a result of the type of development. I wonder whether you can comment on that and whether you see there is a necessity, particularly given the proximity to very important wetlands and international migratory bird species, that the type of density on the site could be having a direct impact on those valuable ecosystems, valuable for another reason?

Mr DAVIDSON: I am happy to discuss that. The site falls within the broad principles of the New South Wales Government's urban consolidation policy in that it is adjacent to a significant railway line, it is adjacent to a significant and recently upgraded road network. It is a former industrial location where heavy industrial uses have been continuous on the site for some 80 or 90 years. As far as density, other locations in Sydney have equal if not greater density than this location, and is also a large tract of land that has been master planned in great detail by formerly DUAP but now Planning New South Wales, and it is one of the few locations in Sydney where a significant master plan environment has been created.. There is an agreement with landowners, and it is embodied in the DCP, the creation of a foreshore park , the creation of significant riparian zones and, more importantly as far as the environment is concerned, the removal of toxic residue on the sea wall, that will then again encourage the rehabilitation of the environment that used to be there prior to the industrial use. So, if your question is if you end up with a better site following the redevelopment than what was their previously or what is there now, I do not think there is even a shadow of doubt that you will end up with a far significantly better environment for the bay, for the immediate wetlands, and there is significant evidence to show that human habitation around the wetlands has not damaged those wetlands, and we have first-hand experience of that.

The Hon. IAN COHEN: Whereabouts is that?

Mr DAVIDSON: Not far from here, at Silverwater on Duck River, and it is the creation of the parklands and riparian zones that do not exist at the moment, together with the ultimate linkage of cycleways and walkways through to Bicentennial Park. It literally connects the river to Bicentennial Park to the Olympic centre. It does create that corridor in a every genuine sense.

The Hon. IAN WEST: I just want to make sure that I heard the answer correctly. Did I hear you say that human habitation around Duck River and the wetlands around the river has not interfered with the ecological nature?

Mr DAVIDSON: We have recently gone through a significant court action with the Department of Land and Water Conservation, and there is significant evidence to suggest that particularly the bird life of that area has not been impacted by the industrial usage that has been carried on on those sites.

The Hon. IAN WEST: Since when?

Mr DAVIDSON: For the past 30 or so years.

The Hon. IAN COHEN: What heights are envisaged in this development? How many storeys are envisaged?

Mr DAVIDSON: The development control plan provides basically for four levels through to eight-level buildings, and there is some provision that they can be terraced, so part of the four levels may be five levels, and part of the eight levels may be a nine-level building. So, a tiering effect for view corridors, but essentially from four through to eight levels.

The Hon. IAN COHEN: There has been some criticism of access by road to and from the potential development in view of the number of units and people on the site. Will

your company have any design responsibilities if the feeders onto the main roads are blocked, do not work and create a traffic hazard?

Mr DAVIDSON: Under the section 94 plan there are substantial sums in the form of developer contributions to traffic management plans. Those plans have been designed by independent consultants in accordance with RTA policy. My understanding of those designs is that once the road network is completed within the DCP it will more than cater for the increased population on the site.

The Hon. IAN COHEN: Who is responsible for that?

Mr DAVIDSON: They are section 94 developer contributions so each landowner will pay for a portion of those works, some of which are done physically in kind and some of which are made as a contribution to authorities.

CHAIR: They are generally local government section 94 plans. Are those contributions made to the RTA or through local government to the RTA?

Mr DAVIDSON: It varies: some are made in kind and some are contributions.

CHAIR: Cash direct.

Mr DAVIDSON: Yes.

The Hon. HENRY TSANG: Some section 94 contributions include a contribution to additional open space, school facilities and so on to cater to the increasing population. We have heard earlier evidence that there are not enough schools or open space in the vicinity. Does your contribution allow a sufficient sum to buy land for schools, open space or other facilities outside the immediate vicinity?

Mr DAVIDSON: I think there is a general view that the section 94 plans will provide a significant sum of money and the necessary infrastructure and services to support the new population quite adequately.

CHAIR: Section 94 plans are supposed to encompass all of that.

Mr DAVIDSON: They are obviously not created by us; they are created by the authorities. They are very detailed—in fact, this is one of the more detailed section 94 plans that I have come across.

The Hon. HENRY TSANG: I would like to request a plan in order to see what is included.

CHAIR: It could be a big document. We will make some inquiries, but it might mean your ducking out to Canada Bay.

The Hon. IAN COHEN: I am concerned about the number of algal blooms and the level of contamination other than toxic contamination in the bay. What systems have been developed to protect that body of water from the usual run-off of such an intensive development with the added human population, pets and suchlike when there is limited riparian protection? Can you guarantee that we will not see greater organic pollution in the bay?

Mr DAVIDSON: I am not qualified to speak about issues of stormwater and urban run-off. I do not have any expertise in that area. As far as development is concerned, we are at the formative stages of creating the master plan, dealing with the density issue and so on. I simply cannot answer that question.

The Hon. IAN COHEN: There are state-of-the-art processes for dealing with stormwater run-off and capturing nutrients. Has your company looked into that?

Mr DAVIDSON: We have not even considered those issues.

The Hon. IAN COHEN: You are not at that stage?

Mr DAVIDSON: No.

The Hon. IAN COHEN: As part of your project you, together with the Government, are aiming to see the commencement of fin fishing in the bay. Is that a stated aim?

Mr DAVIDSON: The aim of the remediation in the bay is to remove the fin fishing ban.

The Hon. IAN COHEN: If we remove the fin fishing ban by removing the toxins it makes sense that you will guarantee the opportunity—

Mr DAVIDSON: I am not a promoter of people fishing in the bay; that is not our role.

The Hon. IAN COHEN: But that is an issue for people who might wish to live in the area. It seems to me that you might replace one major problem with another.

Mr DAVIDSON: In terms of stormwater and water run-off generally, modern developments in master plan areas are carried out using best possible practice. I cannot imagine any shortcuts being taken with this development.

The Hon. IAN WEST: Can you supply a copy of the significant master plan to which you referred?

Mr DAVIDSON: The development control plan?

CHAIR: It is government planning stuff.

The Hon. IAN WEST: You say that the aim is to lift the fin fishing ban.

Mr DAVIDSON: That is the Government's objective.

The Hon. IAN WEST: Is it Trafalgar's objective?

Mr DAVIDSON: It is Thiess' objective in relation to the remediation of the bay. We are not actually a party to it.

CHAIR: My understanding is that the Government said, "We want you to be able to remediate the water to such an extent that we could remove the ban". However, the Government may not remove the ban even though it reaches the desired quality due to some political reason, for instance.

Mr DAVIDSON: It is a matter of government policy.

The Hon. IAN WEST: You are saying that that has nothing to do with Trafalgar.

Mr DAVIDSON: We did not create a policy. We did not introduce the ban and we cannot lift it.

CHAIR: Trafalgar is subject to the condition that it must remediate the site to a certain standard.

The Hon. IAN WEST: I understood Mr Davidson to say that that is not Trafalgar's concern but Thiess'.

Mr DAVIDSON: It is not our role: we are not the remediating contractor.

The Hon. IAN WEST: But you will be the recipient of the remediated land as a partner with Thiess.

Mr DAVIDSON: Correct, but the bay is not our land; it is owned by Waterways.

The Hon. IAN WEST: Is it possible for you to give me a copy of some documentation that backs up the proposition that Duck River is in the same pristine condition now as 30 years ago?

Mr DAVIDSON: That is a matter of public record.

CHAIR: It is a court case. Perhaps you could supply us with the name of that case so that the Committee staff may find it easily.

Mr DAVIDSON: Certainly.

The Hon. IAN COHEN: In terms of your corporation's role in this process and looking at the real estate, we are talking about density and we had a ballpark figure as to the likely number of people, cars, traffic and so on. Is your group in any way responsible for the social balance, the facility of schools or the types of businesses, shopping facilities and so on that will be part of this residential development? Is that in your purview?

Mr DAVIDSON: Under the development control plan, certain parts of the site have commercial and retail components. That is not on our land: our land has only a residential component. The section 94 plans have contributions to deal with facilities and services that are unrelated to the land— that is, in another location. However, only residential development will occur on the site, with some minor ancillary services such as a small convenience store, home office or something of that nature. It will be predominantly residential and no other functions will occur on our land. They occur on the Rhodes peninsular generally, but on other land-holdings.

The Hon. IAN COHEN: A small school on the Rhodes Peninsular has been closed and is now a community centre. In a population of 3,500 people there might be 800 children.

Mr DAVIDSON: I do not have an opinion on that; I do not know.

The Hon. IAN COHEN: So that is not part of your responsibility in terms of the real estate balance or anything like that?

Mr DAVIDSON: Canada Bay Council has prepared the section 94 plan in concert with Planning New South Wales and it would have addressed those social infrastructure issues. The appropriate place to address them is in the section 94 plan; that is why there are such documents.

CHAIR: I am not sure that everyone understands what a section 94 plan is. As an ex-general manager of a council, I will give a quick thumbnail sketch. Years ago when developers made a development application councils could decide whether they wanted to charge the developer nothing or go to the other extreme and rip him off—it depended what the council

thought it could get out of him. The government of the day decided that councils should take a more businesslike approach and justify its decisions. For example, every new house built in a particular area would load up the downstream sewerage system to a certain extent, which would cost the community X dollars. Therefore, the contribution from the developer would have to be X divided by whatever. If the council did not have that plan in place it could not charge a section 94 contribution. So all councils should, with the assistance of government departments, have those plans in place. They are supposed to cover issues such as community open space, water, sewerage and the like. The plan is obviously quite a large document and is hopefully developed over a number of years with several different departments.

The Hon. IAN COHEN: Thank you. I am concerned that the size of this development may not have been envisaged.

CHAIR: That is a problem for the council and the Government under the legislation.

Mr DAVIDSON: If you look at the section 94 plan you will find that it is extremely comprehensive and deals with a significant amount of money.

CHAIR: One hopes that town planners at the time, including Planning New South Wales and other government departments, saw this block of land and had enough nous to propose that it be used in a certain way. I will be surprised if it is not in the plan.

The Hon. IAN COHEN: On that point, I understand that Planning New South Wales and not Canada Bay council is the consent authority for the Rhodes Peninsular. The council is not directly involved in this negotiation.

CHAIR: It would have occurred in conjunction. The only reason this development is Planning New South Wales is that it is a designated development over a certain site. The theory is the same whether it be one new house, one subdivision, one townhouse or 1,000.

Mr DAVIDSON: The Rhodes Peninsular is similar to other large urban renewal projects in the city of Sydney—I use the broader metropolitan context. For example, city west, Pyrmont and Green Square in the Mascot-Alexandria area are similar. They are former industrial locations close to infrastructure. It is about renewing that infrastructure and, very importantly, getting a new economic use from what was formerly degraded land. This development sits in the regional context of significant modern urbanisation principles.

CHAIR: Thank you for your time today.

(The witness withdrew)

PAUL MICHAEL HANLY, retired, representative of Rhodes Peninsula Group, 73 Llewellyn Street, Rhodes, on former oath:

Mr HANLY: My comments are basically in the order of the presentations the committee has heard. I believe, based on my discussions with my colleagues, that the Rhodes Peninsula Group would support the Healthy Rivers Commission Report done in conjunction with the finalisation of the plans of the Sydney Harbour Catchment Management Board. A draft of the bullet points was tabled by the Nature Conservation Council. If that is the original exhibition copy it will have no reference in it to sediments. However, the Sydney Harbour Catchment Management Board has taken on public comment to include sediment management in that catchment plan.

There was a question raised by the Hon. Ian West about indemnities. My understanding is that there are indemnities given to purchasers at Newington—that is hearsay but I have no reason to doubt the source. There has been constant reference to the independent audit process. I note that the reliability of the audit process has been thrown into doubt by events in the Sydney building industry and also now in relation to the audit of HIH and in the United States of America with Enron. There was a question about Canada Bay council and SREP 29. I was present at the Canada Bay council meeting on 18 December 200, I think, where they passed in a number of resolutions in relation to this development including rejecting it as a gross over-development.

A number of references have been made to Pyrmont and the densities and densities in other parts of Sydney. I draw the attention of the committee to the fact that Pyrmont has more than 200,000 jobs within five kilometres and certainly that is not the case at Rhodes. The arguments in favour of the densities and the comparison to Pyrmont I believe are very misdirected. In about 1993 a study by Lester Firth and Associates had about half the density for the same area as is covered by SREP 29. The idea that this has been a long term situation, and it is always going to be heavily high density, I believe is contradicted by all of the reports preceding the Hassel report.

There were a number of questions in relation to the flaws in the consultation process. Most of the flaws in the consultation process have been with government departments. There has been a failure particularly, I believe, from Planning New South Wales. Although it advertised communication points, phone numbers and email addresses there was a reluctance to reply on a number of occasions and a number of failures to reply to requests for information. Their policy is that they do not acknowledge receipt of submissions. It was only after persistent questioning that they eventually gave us a copy of the issues raised and the responses. I note that for the northside sewage tunnel that the document was put on public display in Ryde library and so I think Planning New South Wales has a problem with open communication and with providing information to the community.

A question was asked of them of the role of Concord council at a public consultation workshop and they did not disclose that there was an opportunity for public participation in the development control plan steering committee. I later found out about that and Canada Bay council nominated me as their representative. I only got to attend one meeting which was after the play had been put on exhibit so there was no public participation in the formulation of the development control plan. When Concord council declined to participate, although the Department of Urban Affairs and Planning were receiving significant correspondence from the Rhodes Peninsula Group, they did not let us know that there was that opportunity and that Concord council had failed to nominate anybody.

The Orica sediments testing analysis which has been referred to has never been made available to the public. We would be very interested to see the results of that analysis. To the best of my knowledge it is only a recent development. The community reference group was

resisted by the government authorities and Waterways and the Department of Public Works actually stood up at a meeting with their then communications consultant, whose name escapes me, from Wollongong and promised a community reference group, subject only to the availability of funding. The way that we learnt that that reference group would not be formed was from an article in the Northern District Times which is not even circulated in our area.

I notice that New South Wales Health did not mention the proposal by the Commonwealth Department of Health and Ageing to provide a new standard for dioxin intake in Australia to 70 picograms per kilogram of body weight per month which is the equivalent of 2.3. We talked about the World Health Organisation at 10 and then one to four picograms, the proposed Commonwealth standard is now 2.3 picograms. That draft has been issued and comments close on 31 March 2002 so it is quite likely that standard will be promulgated and it accords with another international standard already in existence.

The fin-fishing ban needs to be considered in the light of the works of Gavin Birch from Sydney University. The ban may need to be retained for fish stocks because of the Japanese Australia Migratory Birds Agreement [JAMBA] and China Australia Migratory Birds Agreement [CAMBA] and because of the existence of threatened and protected piscivores in the Bicentennial Park and the Newington wetlands. The various state of the environment reports and the work of Gavin Birch, copies of a number of his papers were obtained for me by PPK at the request of Thiess. I have provided a copy to the Hon. Ian West so I do not know whether to table it.

CHAIR: It will be treated as a supplement to the submission the committee has received.

Mr HANLY: There has been reference in a number of submissions to background levels of metal contamination in particular. It is clear from various extracts in the state of the environment reports, some of which are mentioned in my submission, and particularly from Birch's work that there are basically seven or eight, depending on how they are classified, heavily contaminated bays in Sydney of which all but one are between Black Wattle Bay and Homebush Bay. The majority of them adjoin the City of Canada Bay. It is misleading to talk about the background levels in Sydney Harbour quite so generally because Birch's work shows and makes clear that there are seven or eight spots which probably have the old 80:20 rule—80 per cent of the problem in 20 per cent of the area.

Again that is something which the Healthy Rivers Commission and the Sydney Harbour Catchment Management Board should consider because the fish are not only grazing in Homebush Bay but they are also grazing in these seven or eight other heavily contaminated embayments and the risk assessment done by EVS and the works done by Parametrics do not assume that there is any contamination of the fish from their grazing in those bays. They have only focussed on dioxin in Homebush Bay so when looking at DDT they have not looked at the cumulative effects from other bays. I do not know whether there would be one. They have not looked at the cumulative effects of metals from other bays. So the determination of the scope of the works—you have heard how it has been focused on the dioxins—has not taken a whole of harbour approach to the other contaminants.

There was mention of the outfall from Haslems and Powells creeks being tested. I am not aware of a public document in relation to that. Birch's work also makes clear that the outfalls of the creeks which drain into the bays are a source of contamination and that the highest levels of contamination are found in the upper embayments near the entries of those creeks. For that reason we believe that the sediments of Haslems and Powells creeks, if they have not been tested, should be. There was talk about the sediment testing across the bay. It is quite clear from the Parametrics report that its sediment testing stations were essentially from half way up the former Union Carbide site to the north and that there was relatively little testing done in the southern half of the bay. So when there has been talk of the testing of the

sediments in Homebush Bay, based on the documents that have been available to me, for which I graciously thank Waterways and Public Works, I have not seen any testing in the southern half of the bay.

The fin-fishing ban was raised. If the fin-fishing ban is not raised there are issues of communication of the fin-fishing ban to the new residents all around Homebush Bay where there is an absolute fin-fishing ban and also at Breakfast Point where there is commercial fin fishing, west of the harbour bridge. How are those residents going to know? How are residents of Millenium Waters, or whatever it is called, on the western side where the densities according to the representative from Trafalgar are the same, and the 7,300 people in SREP 29 area, and the new residents moving into Liberty Grove. How is the existing total fin-fishing ban in Homebush Bay going to be communicated to those people?

I note that there is a complete ban in Sydney Harbour on the removal of inter-tidal organisms and that that was health-based. The source of that is the state of the environment reports. Prawn trawling which was raised by the Hon. Ian West, however, regularly takes place west of Ryde Bridge. Whether that is good or bad I do not know but that is the fact of the matter. Harbourwatch refuses to recognise that people who sail sailing dinghies fall in the water and swim. They only look at swimmers per se. I can assure the committee, as a former member of the training and youth committees of the YA of New South Wales, President of the Erina Sailing Association and Treasurer of Concord/Ryde Sailing Club that dinghy sailing involves swimming for some people every Saturday and even for the best sailors on occasion. Dinghy sailing has been promoted at the Concord and Ryde sailing club by the Maritime Services Board who have leased the land to them and by Ryde council which provides the park and also through the Yaralla Sea Scouts at Rhodes and the first Epping Sea Scouts at Meadowbank. Harbourwatch should be extended for the benefit of those swimmers who swim as a result of their sailing.

I compliment Thiess on its presentation. There are a number of significant differences in the treatment proposed by Earthtech who are working for Meriton on the former Allied Feed site. They are proposing only directly fired thermal desorption—this is based on my membership of the two community liaison groups—which is a destruction process. That has been adequately explained. They also propose no shed to contain dust. This is a concern for residents. Thiess have been kind enough to acknowledge their problems at AGL and it is fair to say they have made some significant decision in terms of their proposed operations at the Union Carbide site to reduce the dust levels which would otherwise apply but there is no shed proposed for the Meriton operation. believe that that will be a cause of significant concern to the local residents.

I note that questions were asked about when these problems occurred and about leaching. I seek to table some documents from the State Pollution Control Commission [SPCC] dated approximately July 1988. There is also an extract from a consultant's report by Wickland and Finnessy to the State Pollution Control Commission which refers to the leaching. I believe that the Waterways Authority and the State Pollution Control Commission have been on notice about the problem of leaching from the sites, all the likelihood of the problem of leaching, since at least 1988.

Documents tabled.

Mr HANLY: There has been much reference to the independent audit system. I mentioned that on this project, given that 7,300 people are expected to live in the SREP 29 area, I do not believe the issue should be addressed in the manner that if it goes wrong how will they get compensation, although that is a very relevant issue. I think the question should be: How does the Government assure itself that there is no possibility of "fiddling"—please do not take this as an accusation about the remediators or whatever. All I am saying is that I think it is fair to say that there are significant problems relating to independent auditing in the building

industry. The HIH collapse, and now ENRON's collapse, have raised problems of auditing in the wider community. I believe that on this project the Environment Protection Authority [EPA] should take responsibility; it should have the sampling and testing under its own control, given the number of people whose health may be adversely affected if the clean-up has not been adequate.

I have talked about the scope of the works in the other bays and I will not go over that. I note that Thiess did not refer to the proposed Commonwealth health standard for dioxin intake. They are not cleaning up Homebush Bay. They are cleaning up a strip that is 45 metres by about 500 metres, which is about 5 per cent to 7 per cent of the bay only. It may be the most contaminated part for dioxins. However, the parametrics report indicates that there is quite significant contamination outside of that 45-metre strip.

I take on board what was said by Mr Hunt in his comments about the risk assessment, but the risk assessment has not been done on a cumulative basis with the contamination that exists in those other six or seven embayments. Unless it takes the fish-absorbing contamination from all of those embayments and takes a cumulative impact, I believe that the scope of works cannot be justified. In other words, I believe the current scope of works is inadequate.

I note that the north Newington plant had to get an amendment to its licence from the EPA to enable the disposal of some material off site. I have heard different explanations for that, but my understanding is that it did not meet the requirements that the EPA had imposed in relation to some batches, and they had to be disposed of off site, even using the indirect thermal desorption process. I do not believe this process is foolproof.

From memory, Meriton and Earthtech are proposing a different back-end process to that described by Mr Hunt—not that he should be expected to know what they are proposing. From memory, they are not proposing the fast quelch method to. Even if they both use the direct method, it seems to me from what has been said by Thiess, that they would be using the fast quelch method. But that is not necessarily the only method and certainly Meriton is proposing a different method. I cannot comment on a comparison between the two. I just draw the Committee's attention to the fact that my understanding is that it is a different method.

Thiess acknowledged AGL. I have talked about dust and that Meriton and Earthtech are not operating with a shed. I also noted that Thiess referred to the blame-shifting issue, which I think they called "interface problems" at AGL. Because there will be two machines operated by two different contractors, possibly using two different methods, the possibility of interface problems or blame-shifting exists within the SREP 29 area.

I have mentioned in the EVS parametrics sampling stations. Thiess has said that it will put up both direct and indirect methods, and that there are potential substantial cost savings. Given that the Government has already indicated that it has committed a total of $21 million to this clean-up plus the Union Carbide land, if there are many significant cost savings then, to the extent the proposed scope of works will not meet the Commonwealth Department of Health's 70 td-month, I believe that the scope of works should be increased to meet that proposed new Commonwealth standard.

I think it is clear that the density on this site has been driven by the costs of remediation. If it were Chernobyl, how many storeys and how many residents would they put on to fund the clean-up? It is clear that the social infrastructure does not exist to support the proposed population growth. I would just refreshed the Committee's memory by using the high school as an example. According to the Minister's own criteria there will be no local high school.

There was reference to the issue of open space. The open space here is one-third of what is normal. My source for that is the Hassell report. That open space has to be considered

in light of the fact that across most of Sydney you also have private open space in the form of backyards, but because these buildings are all 4-storey to 10-storey apartment blocks, there is no private open space. If anything, the open-space requirement is great are. Bicentennial Park, which was referred to as providing the open space, is quite some distance away, on foot or by bicycle. Once it is a large area of open space, it is not adjacent to this development, other than a very narrow strip down the side of the bay to Concord west railway station. Think about walking from one railway station to the next railway station to get to any significant open space.

Whilst riparian planting has been proposed under SREP 29, there is no proper riparian zone within the policy of the Department of Land and Water Conservation. Reference was made to a court case, which I have heard about but not read. I draw the Committee's attention to the fact that the Government is not complying with its policy on riparian protection, even on land that it owns—disregarding a court case by developers or other landowners. The Union Carbide site is ultimately owned by the New South Wales Government, but it is not complying with its own policy on what is a riparian protection zone, within 300 to 4 hundred yards of a wetlands of national significance—the Bicentennial Park wetlands, with Newington just around the corner.

Trafalgar advertised in the Australian Financial Review Minister Scully's statement on radio 2GB that there would be good fishing, good swimming and no more pollutants. Given the failure of the scope of works to take into account the other embayments and their impact on the cumulative intake in fish, and the hedging that has been done on the lifting of the fin-fishing ban in relation to health issues, I cannot see how those statements can be met. Homebush Bay has other problems, not only of contamination but relating to sewage and algal blooms. It features regularly in the state of the environment reports for algal blooms.

Canada Bay had negotiations on the section 94 plan but, basically, the Department of Urban Affairs and Planning [DUAP] had taken over the planning of this site. In the draft SREP 29 Concord council was listed as consent authority, but Concord council passed a motion rejecting the plan and was removed as consent authority. The city of Canada Bay at its first council meeting similarly rejected the densities proposed by SREP 29, which David Furlong has indicated are almost double or other sites in the area.

I would just like to make clear that Thiess has been very forthcoming with information and I think its community consultation program has been adequate—similarly Meriton, which got off to a shaky start. I missed the second meeting but I heard that it has improved. The timing has been terrible because of Christmas and the timing of its development application and the limited time to make comments, but McRoss has also been prepared to meet with the local community and provide presentations. I cannot say that the same information has been forthcoming from the various Government departments.

It took over three months for Public Works to answer questions that were posed to it. We only got those questions answered when the department had to front another meeting. Similarly, New South Wales Health, whilst I appreciate that he came after our request, took an inordinate amount of time and only answered in writing after departmental representatives had attended a second meeting some four months later.

I ask that the submissions that have been made by all parties to the Committee—other than that of the gentleman who requested confidentiality—be made public. We would appreciate the opportunity to review the submissions by the various Government departments. I would be grateful if that could be done. On a want to thank the Committee for taking on this inquiry. I consider that it has added an overview for the community and I am sure that it has actively engaged the various Government departments in particular in the process. For that I am grateful. I ask that the Orica sediment testing and any testing for Haslems Creek and Powells Creek outfalls also be made public. In one of the Birch papers he says:

> Heavy metal concentrations in sediments of Port Jackson are some of the highest of any estuary in Australia … and are surpassed only by four localities associated with large refineries, smelters and mine discharges …On a global basis, Port Jackson is more impacted by heavy metals than most of the harbours in the USA and all but one of the major UK estuaries provided in Table 3. Port Jackson is more influenced by heavy metals than most Greek Gulfs, all South African harbours and many major global ports …

I believe that that warrants the scope of works being investigated, to understand the cumulative impacts of all of those contaminated embayments. I believe that the only way that can be done is through a Healthy Rivers Commission investigation.

(The witness withdrew)

The Committee adjourned at 4.15 p. m.