



ENVIRONMENT PROTECTION AUTHORITY

Your reference      MP10\_0192  
Our reference:      DOC12/11550  
Our contact      John Coffey 9995-5621

Mr Andrew Beattie  
Senior Planner  
Department of Planning & Infrastructure  
23 Bridge Street  
Sydney NSW 2000

Dear Mr Beattie

### Homebush Bay Bridge (MP10\_0192) Environmental Assessment review

We refer to your correspondence dated 16 March 2012 to the Environment Protection Authority (EPA) inviting our submission, including any recommended conditions of approval for the Homebush Bay Bridge project (MP10\_0192). We appreciate the request to comment as the EPA has had and will continue to have an active role in the management of the legacy issues relating to this precinct. The EPA has reviewed the Environmental Assessment (EA) and provides the following response.

In summary the EPA is supportive of the project as it would provide a sustainable transport link for movement of residents between their apartments on either side of Homebush Bay and:

- train and cross regional bus services;
- the Sydney-Parramatta ferry service;
- retail and commercial facilities at Rhodes;
- employment zones; and
- open space at Sydney Olympic Park.

It would encourage walking and cycling to work as a viable alternative to vehicular use.

The project is not a *Scheduled Activity* within the *Protection of the Environment Operations (POEO) Act 1997* and hence will not require an *Environmental Protection Licence* under the provisions of the POEO Act.

A useful outcome of this project would be a bridge that has the potential to constrain boating activity and hence disturbance of un-remediated contaminated sediments within the bulk of Homebush Bay (Bay). This could be achieved, if the height of the western side of the bridge were to be lowered. That change in height of the bridge would put in place a passive and enduring barrier to stop larger vessel access to the Bay and help minimise disturbance of the dioxin contaminated sediments that remain within the Bay. It would also preclude further potential infrastructure developments within the Bay that would enable larger vessels to operate from the residential development sites on the western side of Homebush Bay.

Should reduction of height of the western side of the bridge not be possible or accepted by Roads and Maritime Services (RMS), the owner of the Bay, RMS should be requested to outline what actions they would take to limit disturbance of the un-remediated contaminated sediments that remain throughout the Bay. This could be achieved by limiting access of larger and more powerful vessels in the Bay, restricted boat channels, limiting speed for all boats and as noted above, by

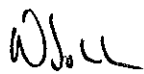
prevention of any new infrastructure developments within the Bay that would facilitate any large or powerful vessel access that could result in greater disturbance of sediments in the Bay.

The EPA considers the project feasible, in terms of being able to be carried out with minimal mobilisation of residual contaminated sediments that remain in Homebush Bay, as long as there is appropriate and comprehensive environmental management.

In **Attachment 1** we provide detailed comments on the EA for your consideration and where appropriate relevant responses from the applicant. In **Attachment 2** we provide recommended conditions of approval.

Should you have any questions with regard to this matter please contact John Coffey of the Contaminated Sites section on 9995-5621.

Yours sincerely

 3/5/2012

**Niall Johnston**  
**Manager Contaminated Sites Section**  
**Environment Protection Authority (EPA)**

Cc: Mr M Wright - RMS

## **ATTACHMENT 1**

### **Detailed comments on the Homebush Bay Bridge (MP10\_0192) Environmental Assessment**

#### **Contamination in Homebush Bay**

The EPA notes that the dioxin levels in Homebush Bay are some of the highest ever seen across the globe, with the concentrations at depth being higher than those in the surface layers. Sediments with the Homebush Bay dioxins signature have been distributed throughout much of the Sydney Harbour (Harbour). Concentrations of dioxins found near Darling Harbour in 2004, a distance of approximately 15km from Homebush Bay, were still about 100 fold higher than normal background levels.

The concentrations of dioxins in sediments in the Bay are highly variable as is often seen where sediments are contaminated. In one location in one of the hot spots, samples were collected at various times and by various people throughout the investigation and remediation phases. The concentrations of dioxins in sediments from this location ranged from 4,000 picograms/gram (pg/g) (equal to 4 billionths of a gram of dioxins per gram of sediment) to 750,000 pg/g. Such variability would be anticipated in the sediments at depth as well. Typical background levels in clean sediments in urban areas are of the order of 0.1-10 pg/g.

This variability would also be anticipated to apply to all locations in the Bay, including the western side. It should be assumed that there is the chance that there are elevated levels of dioxins right across the Bay. The levels on the western side would not be anticipated to reach the extremes of those that were found on the eastern side of the Bay; i.e. >100 000 pg/g, but it is possible that levels of 100-1000 pg/g would be found, which is still well above acceptable levels. The detection limit used during the URS study of the Bay sediments in 2002 was 100 pg/g and this study only measured 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (2,3,7,8 TCDD) and while this is the most toxic dioxin, is only one of the 17 dioxins and furans of concern. Total toxic equivalents (TEQ) for the 17 dioxin compounds were estimated in the Homebush Bay risk assessment to be approximately 3 fold higher than the 2,3,7,8-TCDD values alone.

The two sediment remediation projects that have been completed in the Bay were designed to minimise human health risks for people who occasionally enter the Bay. The smaller of these remediation projects being to deal with very high levels of lead in sediments in front of the former Berger Paints site, now the location of the Ikea and Rhodes retail shopping complex. The much larger remediation project addressed the very elevated concentrations of dioxins and other associated chlorinated hydrocarbons, including herbicides and insecticides along the eastern side of the Bay, in the vicinity of and emanating from the former Union Carbide plant. This work had the benefit of reducing the risk posed to people and achieved some reduction in the ecological risk in the Bay, but did not fully address the contamination in the Bay, or remove all ecological risk. As a result, the pathway still exists for dioxins, attached to sediments, to move from the un-remediated areas in the Bay into the Harbour. Consequently every effort is necessary to minimise that movement. This is accepted global practice for the management of contaminated sediments. This also means that the accumulation of dioxins in fish in the Harbour is unlikely to be reduced sufficiently by the recent remediation activities to enable the lifting of fishing restrictions although the extreme levels (some 60 fold the acceptable values) found in some fish in 2005-2006 may no longer be found in a few years time.

The remediation for dioxins involved removal of 0.5 metres (m) of sediments over approximately 10% of the area of the Bay (about 8 hectares) along the eastern side of the Bay in front of and adjacent to the former Union Carbide site. That area being the location of the highest concentrations of dioxins and other chlorinated hydrocarbons in the Bay. The investigations of the

contamination showed that it extended to at least 1m depth in the sediments on the eastern side of the Bay.

The remediation for dioxins was not sufficient to allow a ramping up of recreation in the Bay. It was only sufficient to mean that occasional contact by humans with the sediments would not pose a risk. The environmental management plan for the Bay, which Roads and Maritime Service (RMS) is now preparing, should include limiting/managing use for recreation to minimise any disturbance of the residual contaminated sediments and human exposure to those sediments.

We consider the Bridge is a good proposal for the area but that it should be built cautiously with a good appreciation of the scale of the contamination in the area.

### **Rowing NSW proposal for sprint course**

The use of part of the Bay for a rowing course should create minimal disturbance of the residual contaminated sediments, if planned and carried out in a suitable manner. Rowing NSW must be fully briefed on the contamination status of the Bay and they need to carefully consider and document, how best to establish and use the course to minimise disturbance of the sediments and exposure of participants to the un-remediated sediments. Participants should also be briefed on the contamination status of the Bay and provided with facilities such as showers and small craft wash-down areas where they exit the Bay and encouraged to minimise their contact with the sediments.

It is an activity that will require appropriate consideration both for its potential for exposure of participants to contaminated sediments and for disturbance and mobilisation of contaminated sediments.

### **Wharves within the Bay**

Figure 2.1 shows a wharf on the western side of the Bay upstream of the Bridge that is either new or scheduled for redevelopment. Figure 12.1 also shows a range of wharves and pontoons in the Bay. Any development that would facilitate increased boating activity within such a heavily contaminated part of the Harbour that could add to the mobilisation of the highly contaminated sediments within the Bay is considered counterproductive by the EPA. It would have the potential to prolong the impact of contaminants such as dioxins on the body of Sydney Harbour.

### **Wentworth Point Master Plan (2010-2011)**

The latest version of this Master Plan has not been provided to EPA for review. The extract of this version in the EA appears to have a significantly larger number of wet berths than was proposed previously. While the number of wet berths does not affect the bridge proposal, it should be noted that this level of development in the waters of Homebush Bay could have detrimental impacts on mobilisation of the residual contamination in the Bay.

### **Choice of location of the Bridge**

It should be noted that while the preferred location of the bridge appears logical, it does mean the bridge goes through the most contaminated section of the Bay sediments, under the remediated areas of the Bay. It is likely that the sediments at depths of 0.5 – 1.0 m in this section on the eastern side near Gauthorpe St could have extremely high levels of contamination. Consequently, construction techniques for the bridge will need to be well considered to ensure that the clean sediments on top and the highly contaminated underlying sediments are not disturbed; hence careful planning, management and monitoring are required.

## Bridge design

The design of the deck of the bridge (e.g. figure 4.5) shows balustrades that could allow rock throwing into the Bay that would disturb sediments. Every effort should be made to minimise this potential.

## Vertical clearance of bridge

The EA describes the bridge as having a minimum vertical clearance above water on the western side of 5.7m above mean high water spring level. The principal reason given for this height and for at least 20 m in width between piers being to provide accessibility to emergency services vessels and workboats associated with construction and maintenance of the bridge and other infrastructure on Homebush Bay. Also, a clearance width of at least 39 m between bridge pile caps is required with 3 m minimum headroom (at HWSL) for the proposed Rowing NSW race course.

The EPA notes that current infrastructure within the Bay, to the south of the proposed bridge, includes berthing locations described in section 12.1.1 as:

- A floating timber structure of an unknown historical use located at the southern end of the bay near Bennelong Avenue ('E' on Figure 12.1). This structure is in disrepair and unlikely to be functional;
- Two fixed timber wharves/jetties ('B' and 'D' on Figure 12.1); and
- One floating pontoon wharf ('C' on Figure 12.1) south of the proposed bridge alignment.

Only the floating pontoon wharf appears to be regularly used for what is stated as *'launching small recreational craft such as small yachts, kayaks'*.

Current vessel usage in the Bay to the south of the proposed bridge is noted as typically limited to recreational craft such as kayaks, canoes, and small sailing yachts and powerboats up to 15–20 m long.

It is noted that *'Such activity being limited because except for a narrow section of deeper water along its western boundary, Homebush Bay is relatively shallow, with much of the bay less than one m deep at low tide. The southern half of the bay is particularly shallow, with some areas exposed at low tide. This shallowness restricts the type and size of vessels that can physically navigate the bay.'* The EPA notes that there is currently no regulated restriction by the Roads and Maritime Services (RMS) on boat movement or speed in the Bay.

The EPA notes that virtually all of the potentially shallow sediments within the Bay remain un-remediated and contaminated with the legacy of past industrial activities. For these reasons, the shallowness of the waters and the residual contaminant levels, the EPA considers that every opportunity should be taken to limit further disturbance of the Bay sediments.

To that end, while rowing is considered a lower impact water use, the opportunity to prevent entry by larger vessels to the inner portion of the Bay would justify reducing the western bridge height to the minimum level of 3 metres. The EPA considers the potential environmental benefits would more than off-set the very occasional inconvenience of not being able to have access for infrastructure maintenance. It would also permanently prevent the ability for potential new large boat access pontoon infrastructure in the inner Bay. Leaving the door open to such developments and associated large vessel usage and the consequent disturbance of un-remediated contaminated sediments within the Bay and their potential impact on the greater Harbour is considered a very significant missed environmental protection opportunity.

For these reasons the EPA opposes the provision of what is considered unnecessary navigation clearance under the western end of the bridge.

Should reduction of height of the western side of the bridge not be possible or accepted by RMS, the owner of the Bay, RMS should be requested to outline what actions it would take to limit disturbance of sediments by larger and fast vessels in the Bay and to prevent any new infrastructure developments within the Bay that would facilitate any additional larger vessel access in the Bay. The preparation of an Environmental Management Plan for the Bay, which RMS have committed to prepare and are understood to be currently working on, would be the instrument where these actions and commitments could be recorded.

### **Wentworth Point use as construction base**

It is considered beneficial that most of the land based project activities will occur on the western side of the Bay.

### **Fill**

Section 4.8.5 refers to the use of local fill from projects around the Bay for earthworks, required as part of the Bridge. As is well documented, some of the projects around the Bay are on sites that were contaminated, so it should be ensured that any local fill is of an appropriate quality.

### **Marine based construction activities**

Section 4.8.6 considers how the construction activities will be undertaken in Homebush Bay. It states that the barges that would be used to enable piling to occur will be moored in place with concrete blocks and that the blocks will be removed at the end of the works. This suggests some lack of appreciation of the need to minimise disturbance of the sediments. How these concrete blocks will be installed, whether or not they should be removed and how they will be removed, if they must be, needs to be carefully outlined in the detailed management plans.

This section also outlines that temporary piles may be installed to facilitate load testing and that these will be removed. Again this is a potentially problematic activity with regard to the potential for disturbance of sediments, depending on where this needs to occur. How this will be done needs to be fully addressed in the management plans, including consideration of the environmental merit of not removing such test piles.

This section also outlines the need for a range of vessels to be present in the Bay during the construction. Minimising the number of vessels present at any one time in the Bay should be a goal of the management plan. Also an alternate proposal of barging the concrete into the Bay is not endorsed.

### **Consultation**

As noted on page 73, the Office of Environment and Heritage (OEHL)/EPA were not consulted extensively during the development of this EA. This oversight reinforces the need for active consideration and appreciation of the level of contamination at the site.

### **Environmental Risk Analysis**

Chapter 7 details the risk analysis that was undertaken for the assessment. The major contamination issue is only mentioned on the fourth page of the table. More appropriate presentation would have been useful in identifying this as one of, if not the most important issue that needs consideration. Visual amenity issues should be considered a second order issue in relation to the contamination issues relevant to this development.

## **Fishing ban**

Section 13.1.1 describes the fishing bans present in Sydney Harbour. It describes the commercial fishing ban put in place in 2006 as precautionary. The EPA is not quite sure what is meant by that comment, as the ban was put in place because fish had levels of dioxins up to 60 times higher than acceptable. Also all species of fish and crustaceans collected in the Harbour contained detectable levels of dioxins. It was necessary to put the fishing ban in place to protect human health. Also no mention is made of the recreational fishing restrictions that are in place in Sydney Harbour because of the elevated levels of dioxins in fish, resulting from dioxins migrating from Homebush Bay. This would have added to the appreciation of readers that all consumption of fish from the Harbour is discouraged.

## **Construction control measures**

Page 154 to 156 outline the control measures to be implemented to minimise contamination. Figure 13.1 implies that there is no contamination on the western side of the Bay, which is not correct, as discussed above. There is limited analysis of the sediments on the western side and most of it was undertaken with methods that have higher detection limits than would be available now. So it is not appropriate to state that there is no contamination there.

### **Section 13.1.2**

In the first paragraph of this section it describes the land remediation that occurred at Rhodes but the description is incorrect. This raises concerns about what information the proponents were provided by RMS or Thiess Services (Thiess).

### **Section 13.1.3**

On page 160 there is a paragraph in the middle of the page which describes the samples taken by Thiess at the base of the excavation in the Bay prior to back filling with the clean fill. The description appears to imply that Thiess did not do the analysis very well and the EA implies that the detection limits were too high to be useful. This is contrary to the understanding that the EPA has been given.

## **Pea Gravel**

Placement of this material will need to be done very carefully to minimise disturbance of contaminated sediments and their mobilization out of the Bay. For this reason the activity necessitates a detailed consideration and description of this procedure in the management plan. (page 164)

## **Vibrations**

Page 164 mentions the potential for the vibrations from piling to cause disturbance of the sediments. This matter will need to be addressed in the management plan.

## **Ephemeral turbidity**

Page 166 mentions that ephemeral turbidity events won't have adverse environmental effects. Any movement of the sediments maintains the higher levels of this contamination throughout much of the Harbour and so contributes to the accumulation of dioxins in fish. This is an adverse effect and so this conclusion is incorrect.

## **Turbidity triggers**

The second last paragraph on page 166 flags that if turbidity inside the silt curtain and downstream is lower than the upstream value then management actions will be implemented. We assume they mean higher not lower. Fifteen minute intervals for taking turbidity measurements during works is excellent.

### **Construction Management Plan**

The EPA will require that the Construction Management Plan (CMP) be subject to our approval.

### **Mitigation and management measures**

On page 169 it is stated that dredging or bored piles won't be used in the declared areas. As the whole Bay is contaminated this design principle should apply to the whole Bay. Also this section discusses the removal of the silt curtain after the piling is done, but implies that there would still be works in the water to be undertaken. EPA considers controls and turbidity monitoring and other types of chemical monitoring, will need to be in place until all works in the water are completed.

### **Recycled water pipeline for Sydney Water**

In page 172 it is stated that surface water will not be affected by the operation of the bridge because there won't be a sewer line etc. However, earlier in the EA the potential for a recycled water pipeline in the bridge is discussed. A rupture of such a pipeline, depending on its size, would be of concern due more to the disturbance of the sediments than the water quality implications. The management plan for the operation of the bridge should consider this type of incident, just as it plans for the control of stormwater on the bridge.

### **Water management**

Water treatment is mentioned for stormwater from the on land construction areas. No details are provided. This will need to be addressed in the CMP.

### **Draft Statement of Commitments**

As stated in the draft statement of commitments, it must address the listed objectives. It must also specifically address a range of details. For these see the recommended conditions of approval below.

## **ATTACHMENT 2**

### **Recommended conditions of approval**

#### **Construction Management Plan (CMP)**

The CMP must be submitted to the Director General and the EPA for approval. The Plan shall include, but not necessarily be limited to:

- Process and timing of installation and removal of sediment control devices (silt curtains) which should be installed before any other works, such as pea gravel installation, take place and should remain in place for all works in the water and only removed once works begin above high tide level;
- Process for placement of pea gravel;
- Process for installation and removal, if necessary, of concrete mooring blocks;
- Piling technique
  - piles should be installed using the same method right across the Bay;
  - how piling will be undertaken from barges and from land; and
  - how piling will be undertaken on land and through the remediation layers on the eastern side.
- Consideration and justification of the need for temporary piles for load testing and process for installation and removal of the piles if really necessary;
- Description of vibrations during piling and potential effects should it occur and the steps to minimise vibrations and most specifically disturbance of sediments from this activity;
- Weather conditions under which work will not commence or will cease;
- How proponents will minimise number of vessels in the water at any one time as a principle of managing the construction;
- Monitoring program – details of locations for turbidity monitoring and installation of semi permeable membrane devices (SPMDs) and visual monitoring for plumes and sheens; as well as details of frequency; contingency measures; turbidity triggers;
- Proposed definition of clean fill should be documented. Virgin excavated natural material (VENM) or other;
- Water treatment processes for water collected on site at eastern and western construction locations;
- Acid sulphate soil management plan; and
- What will be covered by the long term management plan for the bridge once it is constructed.

For the long term bridge management plan, the issue of recycled water pipeline and how ruptures would be addressed should be addressed.

#### **Noise**

EPA recommended consent conditions in relation to construction only of the bridge for noise are:

- Construction should be restricted to the hours between 7:00am and 6:00pm Monday to Friday; 8:00am to 1:00pm on Saturdays, and at no time on Sundays or Public Holidays;
- Percussive, or impact, pile driving, including but not limited to percussive sheet piling shall:
  - be restricted to the hours between 8:00am and 5:00pm Monday to Friday; 8:00am to 12:00 noon Saturdays, and at no time on Sundays or Public Holidays;
  - not be undertaken over a continuous period of more than three hours. "Continuous" includes any period during which there is less than a 60 minute respite between ceasing and recommencement.
- The proponent shall prepare prior to, and implement during construction, a Construction Noise and Vibration Management Plan (Plan). The Plan shall include, but not necessarily be limited to:
  - the approved hours of construction;
  - details of activities and a schedule of works;
  - the appropriate noise and vibration objectives for each identified noise sensitive receiver;
  - identification of activities that have the potential to generate noise and/or vibration levels greater than the identified objectives at surrounding sensitive receivers, particularly residential receivers;
  - assessment of potential noise impacts from the proposed work methods including noise from vehicles and noise impacts from required traffic diversions;
  - plant and equipment that will operate (eg pumps), outside approved hours of construction and justification for it;
  - respite times to be implemented for particularly noise activities (such as percussive piling);
  - all feasible and reasonable noise mitigation measures including works timetabling to minimise noise impacts and / or the use of alternative methods to be implemented where potential noise impacts exceeds the relevant objectives;
  - reiteration of the commitments made in the Statement of Commitments in the EA, and where there is additional detail on these in the Plan;
  - a detailed description of what actions and mitigation measures would be implemented to ensure that these works would comply with the noise and vibration objectives;
  - a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often monitoring would be conducted, how the results of the monitoring would be recorded, and, if any non-compliance is detected;
  - procedures to notify and inform residents of activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints;
  - site contact person and appropriate telephone number; and
  - description and commitment to work practices which minimise noise; and management and mitigation measures which minimise impact.

EPA does not require to be consulted on development of the Noise Management Plan (NMP), or have a copy submitted to them. However, in the event of any noise complaints that are responded to by EPA we would expect to see a copy of the NMP and evidence of its implementation.