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1. INTRODUCTION

This executive summary outlines the findings and recommendations of the Environmental Impact Assessment Study for the proposed concrete batching plant at Telegraph Bay for Cyberport Development. The executive summary is structured as follows:

- Background
- Project Description
- Scope of the Study
- Potential Impacts and mitigation measures
- Environmental monitoring and audit requirements
- Conclusions

2. BACKGROUND

The approved EIA report "Infrastructural Works for the Proposed Development at Telegraph Bay" (hereinafter called "approved EIA Report") has assumed that ready-mixed concrete in concrete mixer trucks would be delivered by barges to Telegraph Bay for the construction of Cyberport. In fact, the barge traffic would create marine traffic and environmental impacts during the peak period. In case where a large quantity of concrete is required, the progress of concreting would be limited by the available berthing place. In this connection, an on-site concrete batching plant is desirable from an operational point of view.

In order to facilitate the construction works for the Cyber Port Development, the Project Proponent intends to erect a concrete batching plant for the day-to-day consumption at the site. However, the proposed facility has the potential to cause adverse cumulative impacts on the air quality and to a lesser extent the noise level, water quality, waste management and visual quality at the nearby sensitive receivers. As the issue was not addressed in the approved EIA Report for the proposed development, the establishment of the proposed facility is considered to constitute a Material Change to the approved EIA Report. An EIA report has been prepared to address this Material Change in fulfilment of the requirement of the Environmental Impact Assessment Ordinance (EIAO).

Maunsell Consultant Asia Limited (MCAL) in association with Maunsell Environmental Management Consultants Limited (MEMCL) were commissioned by Cyber-Port Limited to assess the potential environmental impact of constructing and operating the proposed concrete batching plant on the nearby sensitive receivers. The assessment has also addressed the cumulative effect due to the concurrent construction activities on site including advance works and main construction works.

Besides, the proposed concrete batching plant would reduce significantly the noise and air pollution from barges for the delivery of materials and concrete mixer trucks to the site. It would also eliminate marine traffic impact and reduce environmental impacts caused by one of the concrete batching plant off-site which is currently operated by Ready Mixed Concrete (H.K.) Limited (RMC).

Table 1 summarizes the potential environmental benefits for an on site concrete batching plant.

Table 1 Comparison between on site concrete batching plant and concrete delivery by barges

	Concrete delivery by barges	Concrete Batching Plant on Site
Barge Traffic	4 to5 barges per day for Stage 1 Up to 26 barges per day for Stage 2	2- 3 barges per day for two days a week
Air Quality impact	High, due to the exhaust emissions from the barges	Low, due to the low number of barges operating and the batching plant is totally enclosed
Noise Impact	Medium, but high during misty weather. In case that land transportation is used, the delivery of concrete will increase the traffic noise impact on the nearby sensitive receivers.	Low, due to the low number of barges operating and the batching plant is totally enclosed.
Water Quality Impact	High risk of polluting the harbour due to barges	Low risk
Marine Traffic Impact	High	Low
Visual Impact	High, particularly when dark smokes are emitted from a large number of barges	Low, as the earth mound and future buildings will reduce the visual impact
Delivery Timing Control	Little control on the timing due to the busy marine traffic	Good control on concrete delivery
Potential for Mitigation	Mitigation measures are difficult to implement on barges.	Easy to implement. As the concrete batching plant is stationary, the mitigation measures (such as totally enclose the plant) can easily be applied.

3. PROJECT DESCRIPTION

Ready Mixed Concrete (H.K.) Limited (RMC) has proposed to install a concrete batching plant with a maximum hourly production of 300m^3 concrete. Location of the proposed batching plant is shown in Figure 1.

The siting of the concrete batching plant has been carefully examined. The present location is considered the best in terms of environmental and visual impacts. It is quite far away from Baguio Villa and is anticipated that the existing earth mound and the future commercial buildings would partially screen the plant at this location from the sensitive receivers, and hence the potential visual impact can be much reduced. For other locations further south along the seawall, the earth mound and the future commercial buildings can only screen a small portion of the proposed concrete batching plant, the advantage of using earth mound and buildings to reduce the visual impact may not be guaranteed

As the operation of a concrete batching plant with the silo capacity exceeding 50 tonnes is a specified process (S.P.) under the Air Pollution Control Ordinance (APCO), application for a S.P. license is required in order to conduct the works.

The actual operation of the plant will be subject to the issuance date of the Environmental Permit and the S.P. License. The plan is for the concrete batching plant to operate until November 2001 when the land lease for the plant expires; thereafter the need for such a concrete batching plant will be re-visited.

The proposed concrete batching plant will be divided into two stages. For stage 1 concrete batching plant, it is a mobile plant of cement silo capacity of 45 tonnes. For stage 2 concrete batching plant, the total cement silo capacity is of 800 tonnes. When the Stage 2 plant is in operation, the mobile batching plant Mob 60 would be used as a standby and will not be operated concurrently with the Stage 2 plant.

In Stage 2, cement is directly pumped from the barge to the cement silos by conveyors. There are totally six cement silos – two are 200 tonnes and four are 100 tonnes. The two 200 tonnes silos are interconnected while the other four silos are also connected. Two dust collectors would serve each group of silos and one dust collector would serve the two mixers. Therefore, totally five dust collectors would be employed in the Stage 2 plant.. The general layout plan of the concrete batching plant is shown in Fig.2.

Aggregates would be transferred from a barge to the sea front receiving hopper by conveyor. Afterwards, the aggregates would be transported to a group of five 200 tonnes aggregate storage bins by enclosed belt conveyors. Moreover, each mixer is equipped with an overhead storage bin composing of four compartments. Each compartment can hold 40 tonnes of aggregates..

Three sets of generators would be used in the plant - two sets for the batching plant and the other for maintenance workshop.

The activities between the commencement and completion of on-site concrete production (i.e. December 2000 to December 2001) will comprise: (a) main construction works for the Cyberport development; and (b) construction and operation of the concrete batching plant.

The main construction works include construction of Cyberport Phase C1, C2, C3 and R1, Sewage Treatment Plant, Southern Access Road, Northern Access Road, Road D1, D2 and L1.

4. SCOPE OF THE STUDY

The EIA study has addressed the likely potential air quality, noise, visual, waste management and water quality impacts of the project.

A mobile batching plant of total cement silo capacity of 45 tonnes (i.e. Stage 1) would not be operated concurrently with a more permanent batching plant of total cement silo capacity of 800 tonnes (i.e. Stage 2). As a worst case scenario, the assessment has therefore only focused on the impacts arising from the proposed Stage 2 batching plant.

5. SUMMARY OF POTENTIAL IMPACTS

An Environmental Impact Assessment (EIA) has been prepared to provide information on the nature of environmental impacts likely to arise from the construction, operation and decommissioning of the proposed concrete batching plant at Telegraph Bay. The EIA has also assessed the acceptability of the identified environmental impacts on representative sensitive receivers (SRs) following the implementation of the proposed mitigation measures.

The assessment methodologies adopted for the study follow the guidelines as outlined in the Technical Memorandum on Environmental Impact Assessment Process. Quantitative assessments have been carried out with the use of computer models and standard theoretical principles, which are accepted by the Environmental Protection Department. The environmental assessment findings accurately reflect the potential environmental impacts associated with the proposed concrete batching plant.

5.1 Air Quality Impacts

5.1.1 Construction Phase

As the construction period of the concrete batching plant is short (< 120 days) and the amount of excavated material is small (approximately 1200m^3), the impact arising from the construction phase of the plant is not considered significant.

5.1.2 Operational Phase

During operation phase, the concrete batching plant should strictly follow the requirements stipulated in the Best Practicable Means Requirement for Cement Works (Concrete Batching Plant) and the Air Pollution Control (Construction Dust) for dust control. Besides, the following practices will also be incoporated:

- Dust collectors will be sized to exceed the requirement of the Specified Processes Regulation.
- For Stage 1, the cement tankers will be working inside enclosure with cladding to reduce air emission.
- For stage 2, cement will be transferred directly from barges to the plant. There is no need for cement tankers for intermediate transfer.

With the implementation of the mitigation measures at the concrete batching plant and the concurrent construction site at the Telegraph Bay, the predicted cumulative 1-hour and 24 hour TSP concentration are expected to comply with the Air Quality Objectives.

Figure 3 shows the locations of the representative air sensitive receivers.

5.2 Noise Impacts

5.2.1 Construction Phase

Taking into account the concurrent construction activities, the cumulative noise levels of the construction of the proposed concrete batching plant at certain noise sensitive receivers (NSRs), including domestic premises and educational institutions, would exceed the respective construction noise limits. Mitigation measures or combinations of measures have been evaluated to reduce the identified impacts, including:

- use of silenced Powered Mechanical Equipment (PME);
- good site practices.

With the implementation of the suggested mitigation measures, the predicted noise levels during the construction of the proposed concrete batching plant at the nearby domestic premises, as well as the schools (during normal hours and examination period), would comply with the noise criteria.

5.2.2 Operation Phase

The cumulative noise levels due to the operation of the concrete batching plant would also exceed the noise limits. Mitigation measures, similar to those applied in the construction phases, will also be incorporated.

- use of silenced Powered Mechanical Equipment (PME);
- good site practices.

With the implementation of the suggested mitigation measures, the predicted noise levels during the operation of the concrete batching plant at the nearby domestic premises, as well as the schools (during normal hours and examination period), would comply with the noise criteria.

Figure 4 shows the locations of the representative noise sensitive receivers.

5.3 Waste Impacts

5.3.1 Construction Phase

Construction activities to be carried out for the Cyberport development will result in the generation of a variety of wastes and materials, which can be divided into distinct categories, based on their composition and ultimate method of disposal. The identified waste types include:

- excavated materials;
- general refuse.

If not properly managed, the handling and disposal of these wastes may cause environmental nuisance and impacts.

5.3.2 Operation Phase

A concrete recycling machine will be installed on-site to recycle concrete waste in order to reduce material consumption and waste generation. Concrete waste material will be broken down into slurry water and aggregates. Sludge will be generated during the recycling process and will require off-site disposal.

The other waste arising during the operational phase would be chemical wastes, such as fuel and lubrication oils, used by the loaders and trucks.

Diesel fuel will be stored in drums and in a completely bunded area as per government safety regulations. Used oils will be stored in containers and disposed off-site by licensed contractors. Provided that the storage and disposal of chemical wastes are in accordance with the requirements, adverse environmental impacts are not expected.

5.3.3 Mitigation Measures

Table 2 provides a summary of the various waste types likely to be generated during the construction and operation of the concrete batching plant, together with the recommended handling and disposal methods.

With the provision of adequate waste collection, treatment and disposal facilities, and implementation of the recommended mitigation measures, there will not be any unacceptable residual waste impacts.

Table 2 Summary of Waste Handling Procedures and Disposal Routes

Waste Type	Handling	Disposal
Excavated Material	Re-use on site	Not applicable
Chemical Wastes	Recycle on-site or by licensed companies Stored on-site in accordance with government regulations	By licensed contractor to facility licensed to receive chemical waste, such as Chemical Waste Treatment Facility
General Refuse	Provide on-site refuse collection facilities	Refuse station for compaction and containerisation and then to landfill Private hygiene company

5.4 Water Quality Impacts

5.4.1 Construction Phase

Construction Runoff and Drainage

During site formation works, soil surfaces would be exposed and an elevated level of suspended particles would be present in the surface run-off. As the proposed site for the concrete batching plant is located near the seawall, the coastal waters could potentially be impacted by sediment laden and polluted runoff if construction runoff from the site is uncontrolled. Sources of water pollution include release of grouting and cement materials with rain wash, wash water from dust suppression sprays, and fuel, oil and other lubricants from maintenance of construction vehicles and mechanical equipment.

Mitigation measures should be implemented to control construction site runoff, and to minimise the chances of introducing sediment and pollutants into the nearby coastal waters. With the implementation of adequate construction site drainage and the provision of sediment removal facilities, it is expected that unacceptable water quality impacts would not arise.

General Construction Activities

Uncontrolled discharge of debris and rubbish, such as packaging and used construction materials, could result in floating refuse with associated impacts on the aesthetic quality of the coastal waters; and spillage of liquids stored on-site, such as oil, diesel and solvents etc, are likely to result in water quality impacts if they enter the water column.

Good construction practices and site management measures should be observed to ensure that rubbish, fuels and solvents do not enter the nearby coastal waters. Open drainage channels and culverts near the works areas should be covered to block the entrance of large debris and refuse.

Sewage Effluent

Domestic sewage would be generated from the workforce during the construction phase. It is unlikely that sewage generated from the site would have a significant water quality impact, provided that sewage is not discharged directly into storm water drains adjacent to the construction site. Temporary sanitary facilities such as portable chemical toilets should be used on-site and properly maintained.

5.4.2 Operation Phase

All water used within the concrete batching plant will be collected, stored and recycled to reduce resource consumption. This includes water used in the concrete batching process, trunk cleaning, yard cleaning and spraying. As no wastewater will be discharged outside the boundary of the plant, there will not be any potential water quality impacts associated with the operation of the facility.

5.5 Visual Impacts

The sensitive receivers to the concrete batching plant will be Baguio Villa, Aegean Terrace and Pok Fu Lam Garden and Chi Fu Fa Yuen.

As Pok Fu Lam Garden and Aegean Terrace are located at higher levels, the plant will not block the view of these receivers towards the existing landscape features.

The total dimension of the proposed Stage 1 and 2 concrete batching plant is 95m × 45m × ~24m. As the heights of the lower floors in Baguio Villa are around 30-40 mPD. The plant will only obstruct a very small part of the view of the sensitive receivers in the lower floors of Baguio Villa during the operation stage. The proposed concrete batching plant is only a small, temporary, low-rise structure near the seawall of a large

construction site at Telegraph Bay. At present, it is partially screened by an existing earth mound. By the time the office blocks in Cyberport Phases C1, C2 and C3 are erected, the plant will be further screened from the views of the nearby sensitive receivers. As such, it is not expected to have a significant visual impact on sensitive receivers in the neighbourhood. A photomontage of the proposed stage 2 concrete batching plant as viewed from Baguio Villas is shown in Figure 5.

In order to increase the visual compatibility of the concrete batching plant, it is suggested to paint reflective surfaces and the external façade into dull green.

The construction of the plant is temporary and will be decommissioned after the project is finished. It will have no permanent effect on the sensitive receivers.

5.6 Environmental Monitoring and Audit (EM&A)

An Environmental Monitoring and Audit programme has been recommended during construction and operation of the concrete batching plant. The EM&A requirements cover air quality, noise, water quality, waate management. With the inclusion of the recommended EM&A requirement into the work programs, it is anticipated that the construction and operation of the concrete batching plant can be carried out with full compliance of the standards set by the EIA Technical Memorandum.

6. CONCLUSIONS

While the Cyberport can continue to be constructed using concrete delivered by barges to the site from an off-site concrete batching plant, there are obviously overall environmental benefits by setting up an on-site concrete batching plant. It reduces significantly air pollution and noise from barges for the delivery of materials and concrete mixer trucks to the site. Besides, it eliminates marine traffic impact and reduces environmental impacts caused by one of RMC's concrete batching plants off-site.

The approved EIA report has assessed the potential impact without this proposed plant. However, it has been shown that with appropriate mitigation measures, adverse impacts due to the additional plant are unlikely to occur. It is recommended that all identified mitigation measures in the EIA Report should be implemented. Also, the current environmental monitoring and audit programme on site should continue to be implemented to monitor the environmental performance of the contractors and the plant operator.