Particle modelling of pollutant dispersion from the temporarily diverted YTB Stormwater Culvert – Scenario 2C

1. The particle model used is similar to that described in Appendix 4A.

2. The modelled pollutant elevations in Victoria Harbour due to the discharge from the new YTB Stormwater Culvert are shown in Figures 4E.1 to 4E.4. The depth averaged pollutant elevation is reduced rapidly from the maximum of 37.7 mgL^{-1} at the temporarily diverted storm culvert outfall to less than 5 mgL^{-1}, i.e. more than 7 times dilution, within 120m from the new waterfront around YTB. Similar trends are revealed in the top 5m layer results. The mean pollutant elevation in Victoria Harbour WCZ and under the proposed concrete decking at YTB are both less than 5mgL^{-1}. The maximum pollution elevation at the existing WSRs, namely, CKLSPS and YTSPS are 3.7 mgL^{-1} and 23 mgL^{-1} respectively.

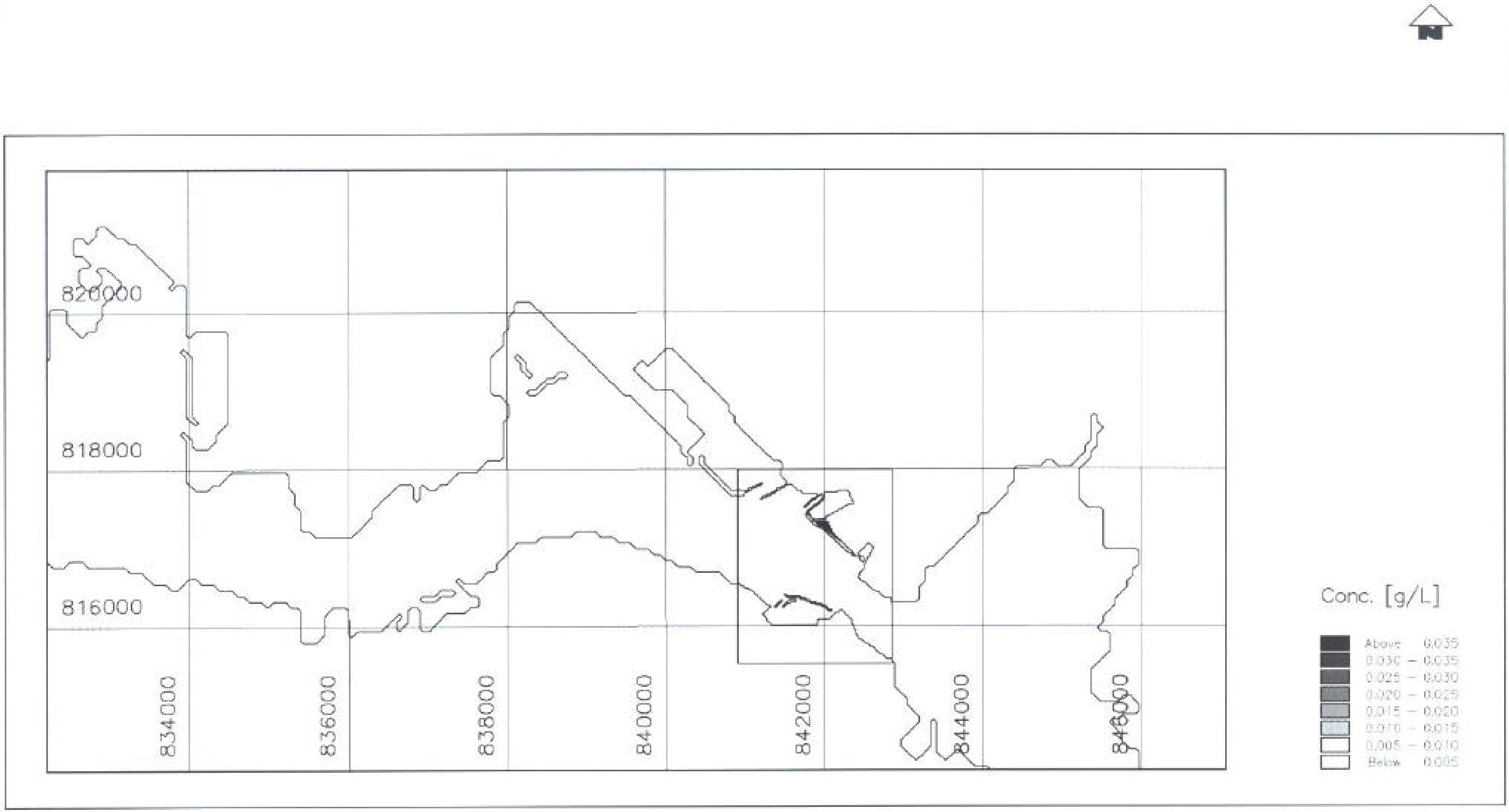
3. Based on the ratio between the actual and the modelled pollution loads of each pollutant, the actual pollutant elevation in Victoria Harbour can be estimated (Appendix 4A). The predicted increase in BOD_5, SS, Ammoniacal Nitrogen and *E. Coli.*, corresponding to the modelled pollutant elevation, are shown in Table 4E.1.

Table 4E.1 Estimated Pollutant Elevation due to the Temporarily Diverted YTB Stormwater Culvert Discharge

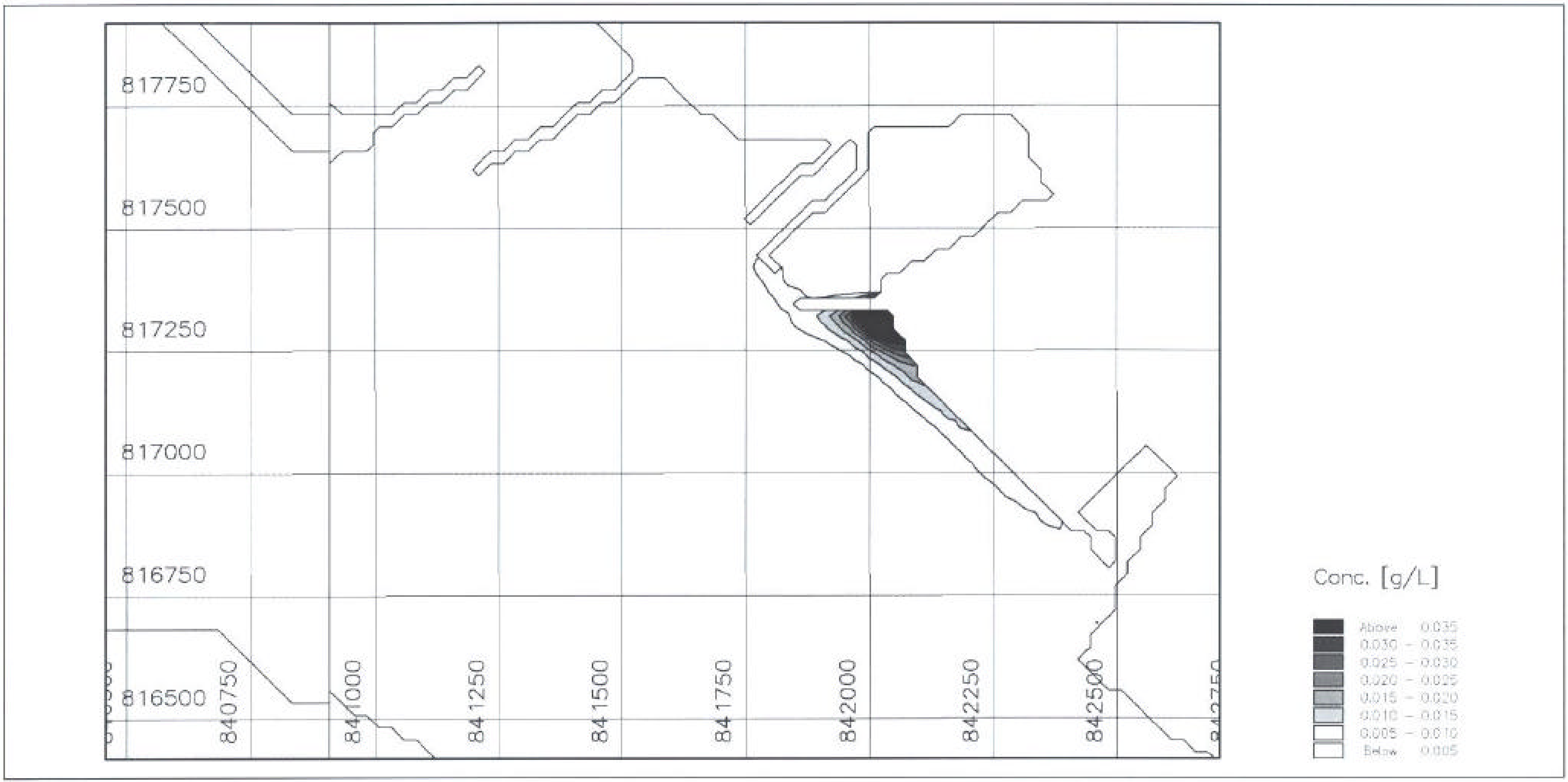
Modelled Pollutant Elevation (1) [mgL^{-1}]	BOD_5 (2) [mgL^{-1}]	SS (2) [mgL^{-1}]	Ammoniacal Nitrogen (2) [mgL^{-1}]	*E. Coli.* (2) [count per 100mL]
5	0.04	0.05	2.86×10^{-3}	2370
10	0.09	0.09	5.72×10^{-3}	4740
15	0.13	0.14	8.58×10^{-3}	7109
20	0.17	0.18	1.14×10^{-2}	9479
25	0.21	0.23	1.43×10^{-2}	11849
30	0.26	0.27	1.72×10^{-2}	14218
35	0.3	0.32	2×10^{-2}	16588

Notes:
1. Modelled pollutant elevation corresponds to an arbitrary pollutant discharge rate of 1 kg s^{-1} (86400 kg day^{-1}) at the outfall of the temporarily diverted YTB Stormwater Culvert.
2. Calculations were based on the pollution load in the YTB stormwater culvert in year 2011 as shown in Table 4.15, assuming 5% residual flows remain from expedient connections and including the pollution load from surface runoff.
3. The results presented are based on the Full Reclamation option for YTB.

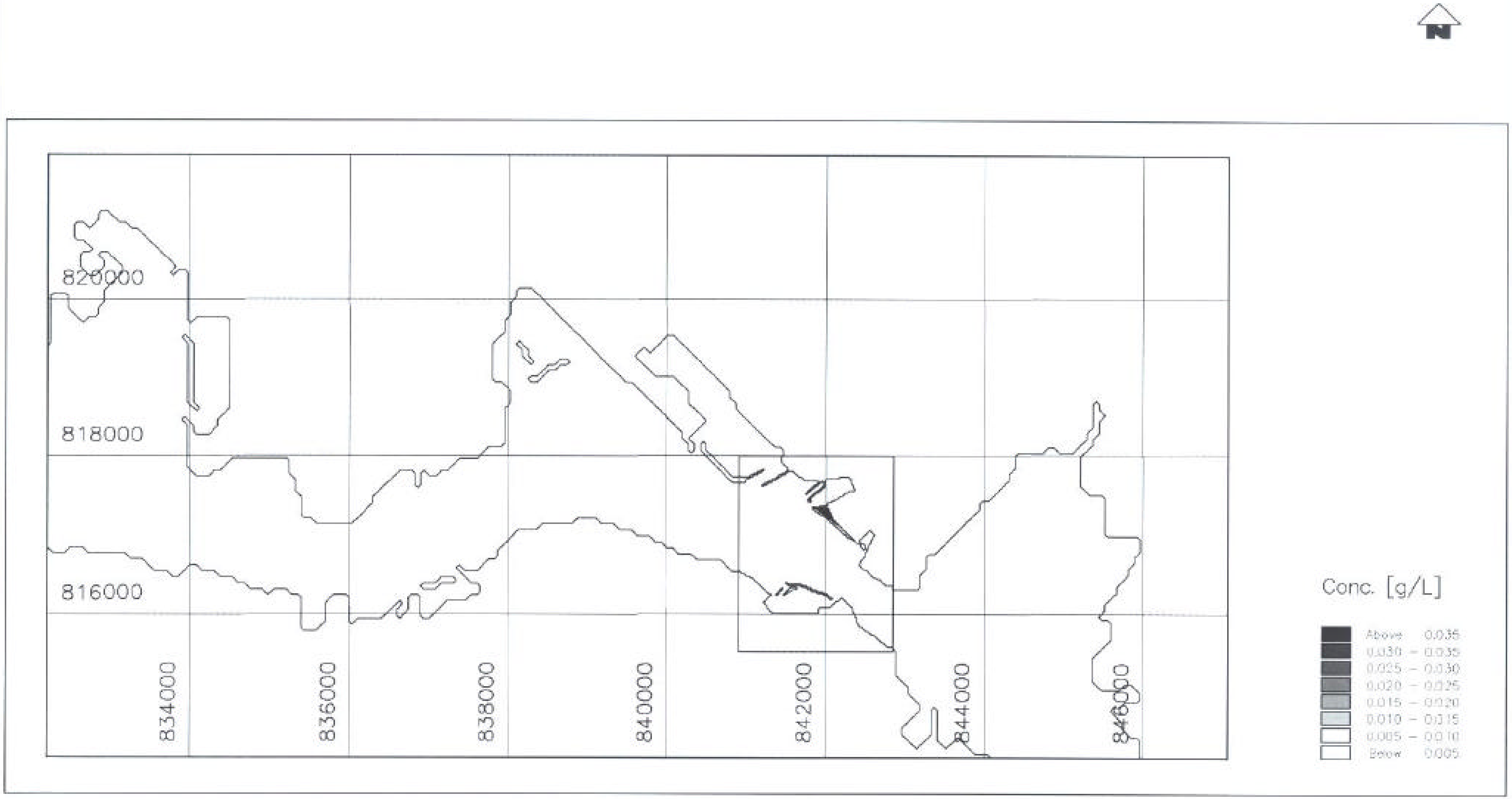
4. The modelled pollutant age distributions showed that the pollutants will take an average time of less than 2 hours to travel away from the outfall of the temporarily diverted YTB stormwater culvert into Victoria Harbour (Figures 4E.5 to 4E.8). This indicates that tidal current prevents the accumulation of pollutants in Victoria Harbour and thus, unacceptable water quality is not expected during the construction phase.



Maunsell In association with WHA, DLN, EHS, MEMCL, MGS	YAU TONG BAY DEVELOPMENT ENVIRONMENTAL IMPACT ASSESSMENT STUDY IMPACT OF TEMPORARY STORMWATER CULVERT (SCENARIO 2C), DEPTH AVERAGED POLLUTANT CONCENTRATION IN DRY SEASON, SPRING AND NEAP TIDES	MAIN WEALTH DEVELOPMENT LIMITED Scale: AS SHOWN Date: JUNE 99 Figure No. 4E.1



Maunsell in association with WHA, DLN, EHS, MEMCL, MGS	YAU TONG BAY DEVELOPMENT ENVIRONMENTAL IMPACT ASSESSMENT STUDY IMPACT OF TEMPORARY STORMWATER CULVERT (SCENARIO 2C), DEPTH AVERAGED POLLUTANT CONCENTRATION IN DRY SEASON, SPRING AND NEAP TIDES (ENLARGED)	MAIN WEALTH DEVELOPMENT LIMITED Scale: AS SHOWN Cad Ref.: A16796/2Cpolev.dwg Date: JUNE 99 Figure No.: 4E.2



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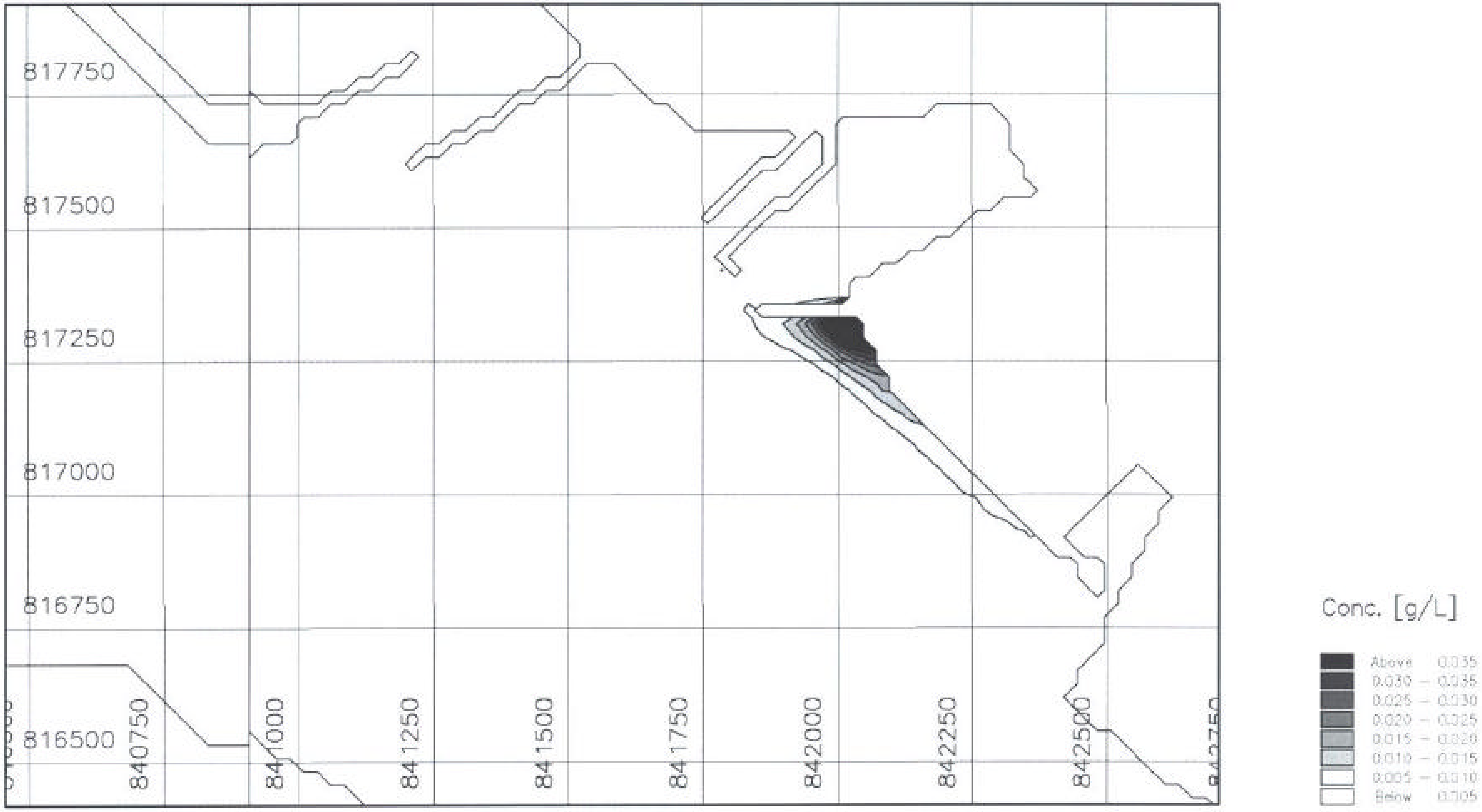
YAU TONG BAY DEVELOPMENT
ENVIRONMENTAL IMPACT ASSESSMENT STUDY

IMPACT OF TEMPORARY STORMWATER CULVERT (SCENARIO 2C), TOP 5m LAYER AVERAGED POLLUTANT CONCENTRATION IN DRY SEASON, SPRING AND NEAP TIDES

MAIN WEALTH DEVELOPMENT LIMITED

Scale	Cad Ref.
AS SHOWN	A10798/Ytpllbu.dwg
Date	Figure No.
JUNE 99	4E.3



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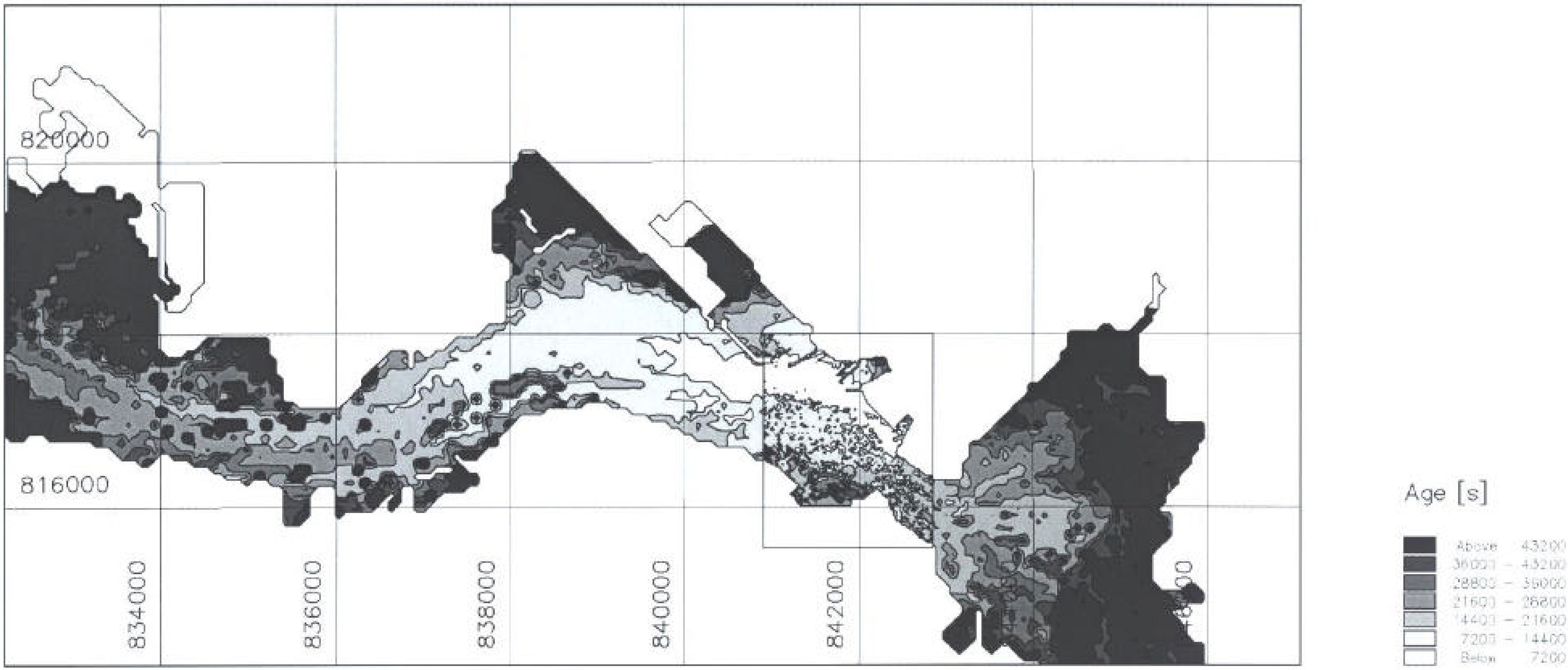

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YAU TONG BAY DEVELOPMENT
ENVIRONMENTAL IMPACT ASSESSMENT STUDY

IMPACT OF THE TEMPORARY STORMWATER CULVERT (SCENARIO 2C), DEPTH AVERAGED POLLUTANT AGE IN DRY SEASON, SPRING AND NEAP TIDES

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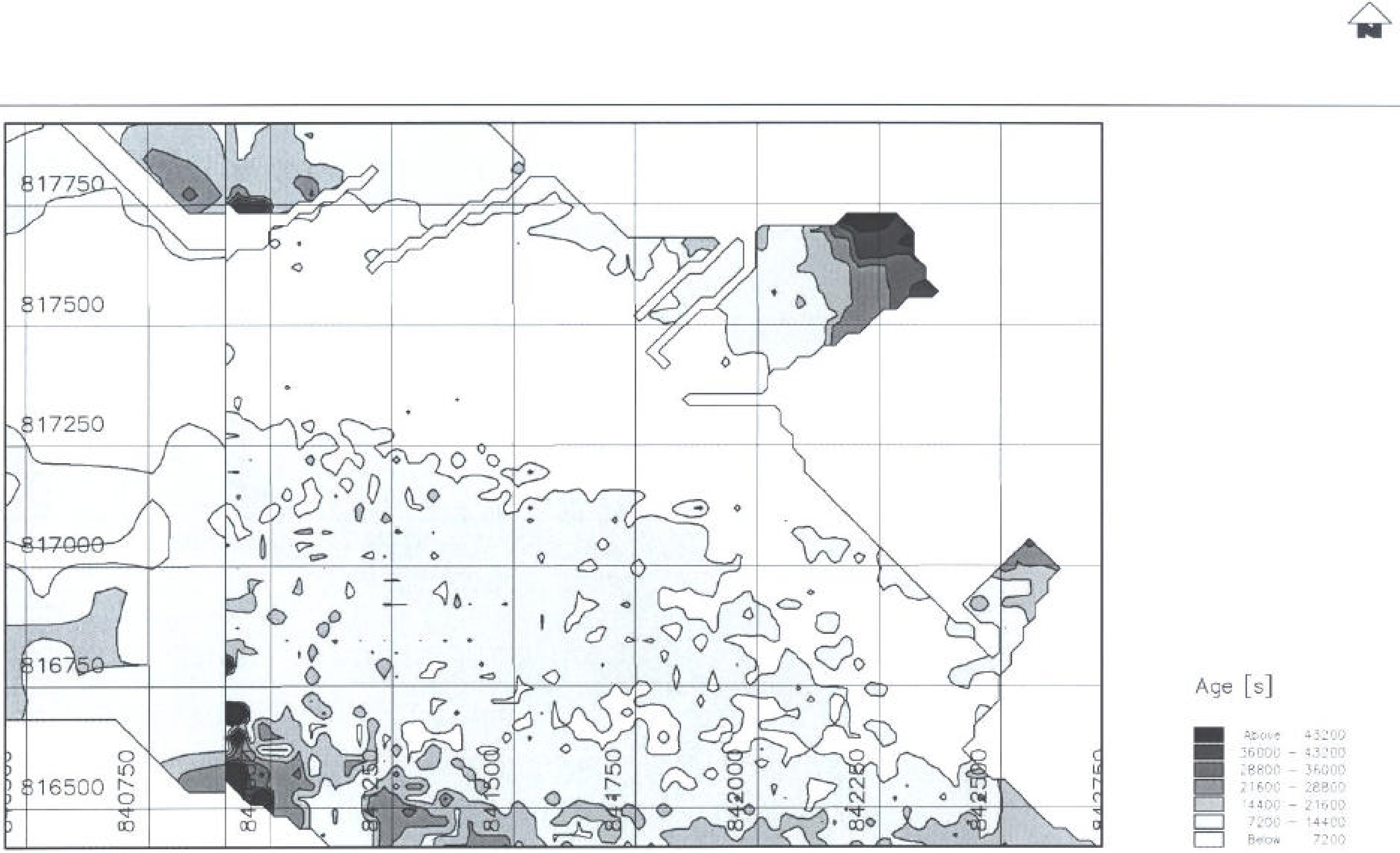
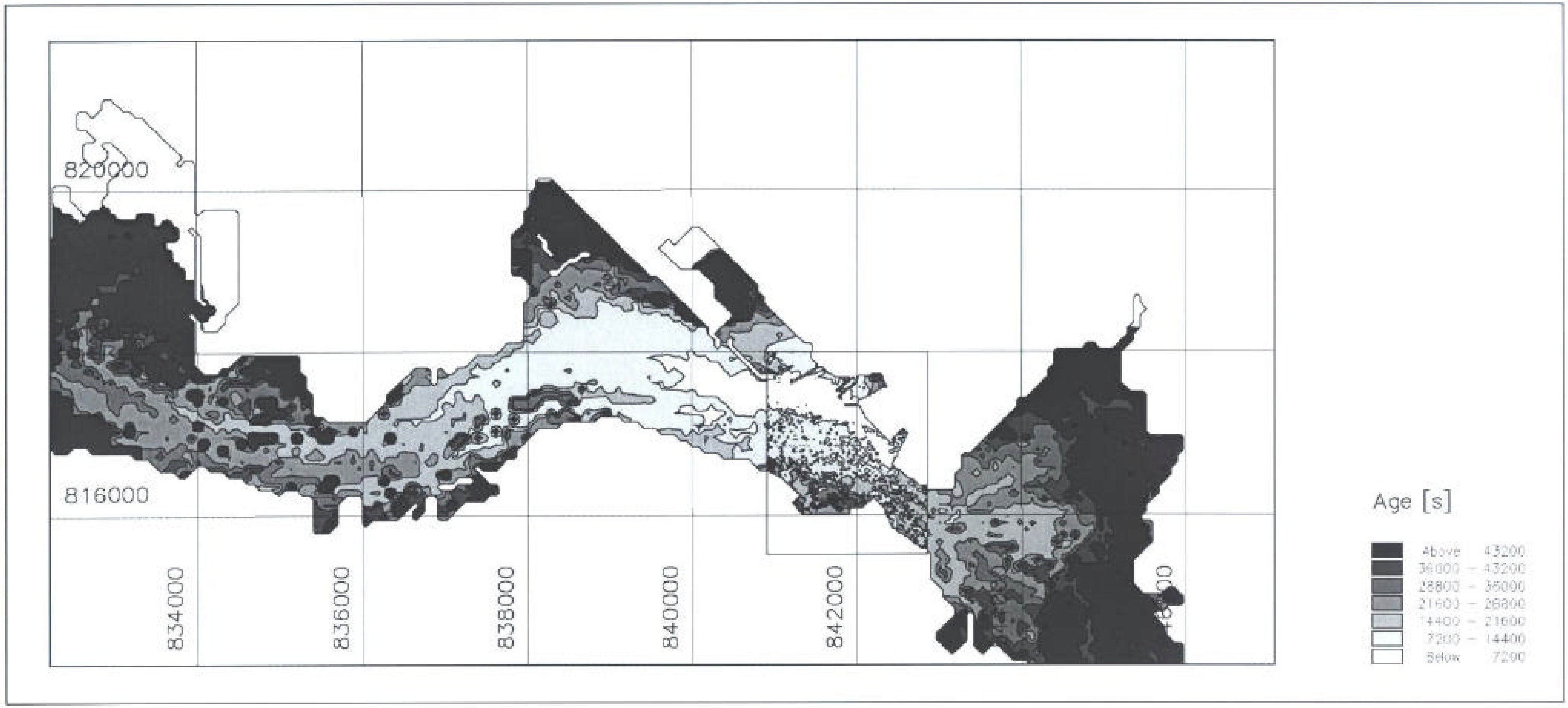
Scale AS SHOWN	Cad Ref.
Date JUNE 99	Figure No. 4E.5



Maunsell In association with WHA, DLN, EHS, MEMCL, MGS	YAU TONG BAY DEVELOPMENT ENVIRONMENTAL IMPACT ASSESSMENT STUDY IMPACT OF THE TEMPORARY STORMWATER CULVERT (SCENARIO 2C), DEPTH AVERAGED POLLUTANT AGE IN DRY SEASON, SPRING AND NEAP TIDES (ENLARGED)	MAIN WEALTH DEVELOPMENT LIMITED Scale: AS SHOWN Date: JUNE 99 Figure No. 4E.6



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YAU TONG BAY DEVELOPMENT
ENVIRONMENTAL IMPACT ASSESSMENT STUDY

IMPACT OF THE TEMPORARY STORMWATER CULVERT (SCENARIO 2C), TOP 5m LAYER AVERAGED POLLUTANT AGE IN DRY SEASON, SPRING AND NEAP TIDES

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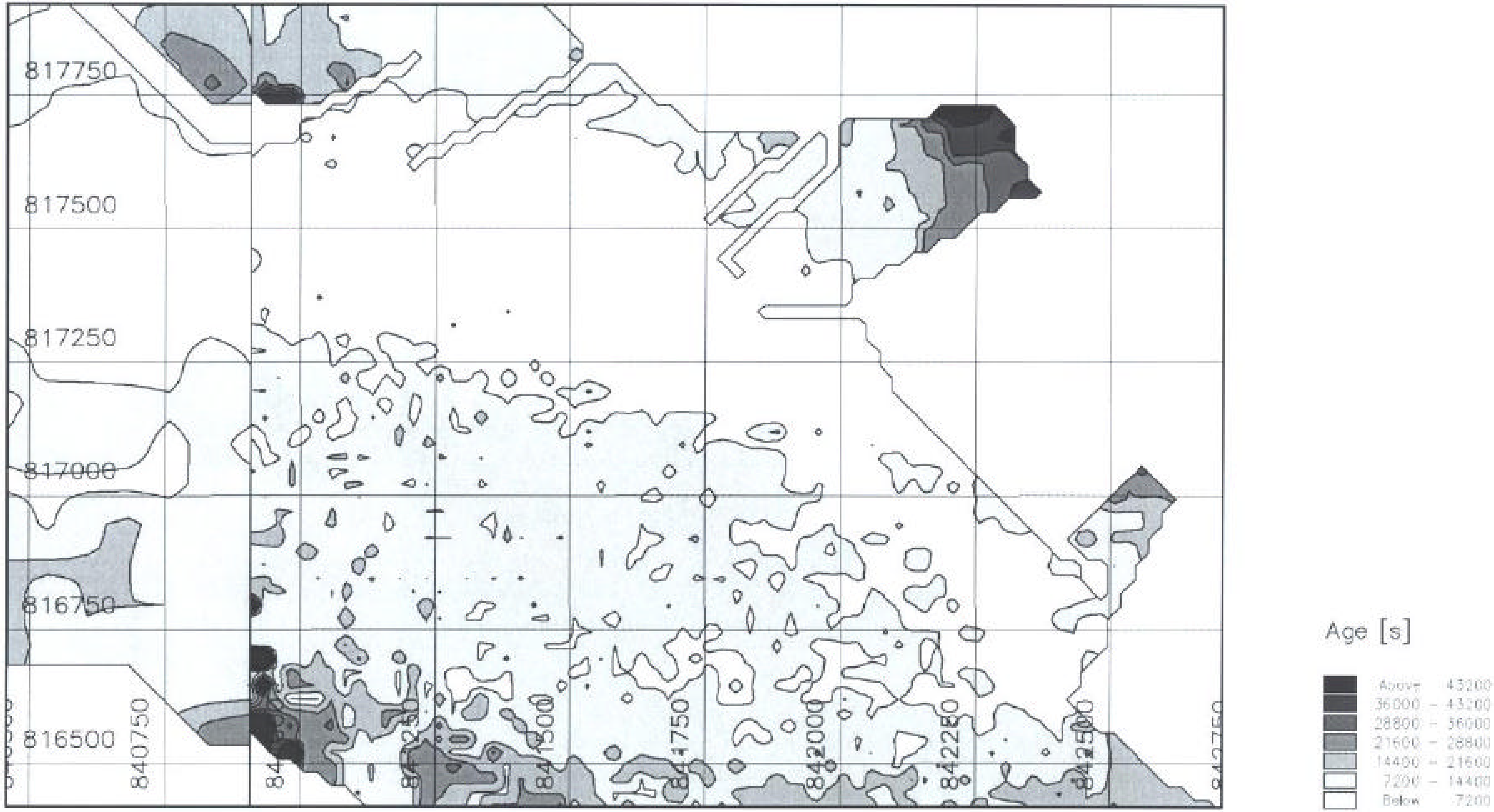
Scale: AS SHOWN	
Date: JUNE 99	Figure No. 4E.7



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ENVIRONMENTAL IMPACT ASSESSMENT STUDY

IMPACT OF THE TEMPORARY STORMWATER CULVERT (SCENARIO 2C), TOP 5m LAYER AVERAGED POLLUTANT AGE IN DRY SEASON, SPRING AND NEAP TIDES (ENLARGED)

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Scale: AS SHOWN	Cad Ref. A16790/[illegible]
Date: JUNE 99	Figure No. 4E.8