Annex B

世界自然（香港）基金會
World Wide Fund For Nature Hong Kong

香港郵政總局信箱12721號
香港中環電車路1號
電話：(852) 2526 1011
圖文傳真：(852) 2845 2734
電子郵箱：wwf@wwf.org.hk
網址：http://www.wwf.org.hk

G.P.O. BOX 12721
No. 1 Tramway Path
Central, Hong Kong
Telephone: (852) 2526 1011
Telefax: (852) 2845 2734
E-mail: wwf@wwf.org.hk
World Wide Web: http://www.wwf.org.hk

By Fax 1/9

To: Professor K. C. Lam, Chairman, ACE EIA Subcommittee

NEW TERRITORIES NORTH DEVELOPMENT OFFICE
10 NOV 1997
RECEIVED

31 October 1997

Dear K. C.,

Main Drainage Channels for Fanling, Sheung Shui and Hinterland
EIA - Final Assessment Report

I refer to the captioned report, and ACE-EIA Paper 18/97, due to be discussed at the Subcommittee's meeting on 3 November 1997. I regret to advise you that I will not be able to attend the meeting as I shall be overseas. As such, I should appreciate it if the project proponent and relevant departments would clarify and respond to, in writing, the following issues of concern.

Status of the Reports

(1) The Initial Assessment Report (IAR) for the same project, submitted for Subcommittee's discussion in July 1997, outlined the interim results of this assessment. However, there were substantial changes in various sections of the final report, notably with regard to the disposal of dredged materials and ecological mitigation measures. Would the proponent please confirm, or otherwise, if the Final Assessment Report [FAR] supersedes the IAR. If not, please detail what the final project designs, work programmes, and mitigation measures to be implemented are.

Options for Flood Control

(2) 1.3 The FAR recognised the benefits of afforestation in terms of floodplain management; but states that '[afforestation is] not identified as a particular need for this basin'. Would the proponent please advise me of the justification for this.

(3) I raised similar concerns for the need of taking a holistic approach in floodplain management during the review of the IAR, and I was advised by the proponent that 'discussion are to be held with relevant departments to consider a management framework within current policy.' I should appreciate it if I would be advised of the results of such discussion.

Ecological Enhancement

(4) 1.5 The FAR noted that the integrated design 'provides a unique opportunity for true ecological enhancement (i.e. measurable by variables such as increase in diversity).' Would the proponent please detail what programmes have been planned to monitor or measure the 'ecological enhancement'. What variables have been chosen for measuring? What target species are being chosen as diversity indicators?

c.c. PM/NTN

Works Design

(5) Chapter 2 was titled 'Initial Works Design and Environmental Impact Minimisation', but outlined various changes to the 'original designs' for the Main Drainage Channels. Would the **proponent** please clarify if the designs outlined in the Final Report are 'initial' or 'final'. If these are 'initial' designs, please advise when the final designs would be available for review.

Ecology

(6) 3.3.10.5 Results of recent ringing study of Painted Snipe should be discussed in relation to the assessment of impacts of the project on the species.

(7) 3.4 Section 3.3.10.4 of the Report stated that '19 species were recorded as probable breeders, and 9 species were recorded as confirmed breeders in Long Valley (Appendix 5). However, most of the species recorded are known to breed in wetland habitats like Long Valley (Wu et al. 1988), hence *numbers of breeding species should be assumed to be higher* than the confirmed or probable breeders noted here' (emphasis added). Thus the loss of the wetlands (abandoned agricultural plots) at Long Valley will cause loss of breeding areas for waterbirds such as Painted Snipe (section 3.3.10.5). This impact, however, is not noted in the Summary Table 3.10.

(8) 3.4.1.5 The Final Report discussed at some length the importance of the wetlands in the river catchment areas to avifauna, particularly waterbirds (section 3.3.10). The statement, 'reduction in the extent of seasonal flooding does not pose a direct threat to wildlife in general, and may, indeed, be positive for species which are not water dependent', is therefore unhelpful. Would the **proponent** please advise us the results of the assessment of the significance of impacts to the waterbirds as a result of loss of foraging and breeding areas, based on the criteria given in Annex 8 of the Technical Memorandum (TM) of the Environmental Impact Assessment Ordinance (EIAO).

(9) The Report also predicted that 'combining the existing agricultural "wet" areas with the poldered (non free-draining) areas *may* provide enough wet areas, despite the loss of the frequent floods, to sustain [the waterbirds'] populations' (emphasis added). In this connection, I should appreciate it if the **proponent** would clarify the following:

a. What is the exact 'scale' of the non-free draining areas with 6-10 year occurrence? How does it compare with that of poldered areas with annual or biannual occurrence?

b. The Report notes that since the channeled river beds will be lower than present, poldering will be more affected by 'a vertical drainage gradient'. What are the implications of this effect, particularly in terms of minimising wetlands loss or maintenance of the floodplain functions?

c. Despite the changes discussed above, the Report states that 'there will be a *fairly large expanse* of this type of [poldered] habitats in the Long Valley area' (emphasis added). Please indicate the locations and distribution of these areas. How large is their estimated total area?

d. How large are the 'existing agricultural "wet" areas'?

e. The Report noted that agricultural land 'has drastically declined as the fields have been turned to other use', and also notes the lack of 'a management authority which could ensure long-term continuation of farming' (section 3.4.6). Please discuss what insurance, if any, there are for the maintenance of the 'existing agricultural "wet" areas'.

f. What are the basis for making the prediction quoted above?

(10) 3.4.2.1 Annex 8 of the EIAO TM notes that important habitat types in the territory include 'other habitats found to have special conservation importance by documented scientific studies'. It should be noted that the value of the Ho Sheung Heung Egretry has been documented by Young and Cha (1995) and this Final Report.

(11) 3.4.7 The Report considered the impacts of loss of riparian vegetation to channelisation on butterflies to be 'moderate'. How significant would the impacts on dragonflies be?

(12) The Report predicted that 'loss of the riparian vegetation due to project construction will result in *short- to medium-term loss* of invertebrate habitat along the affected portions of the existing channel (*44 percent of the upper Indus length*)' (emphasis added). This prediction was made in spite of the following:

- 'from an ecological perspective the most important feature of the [upper Indus] was the fact that it had an earthen (non-paved) bank and held deep water which filled the entire channel even during the dry season. This contributed to the development of dense stands of riparian vegetation, which added to the habitat quality of the water in the stream' (section 3.3.2.2);
- 'Restoration of riparian vegetation is predicted to occur naturally on the constructed embankments over a span of 2-5 years following completion of construction' (section 3.4.7);
- 'Frequency of maintenance dredging would likely be between 2-5 years' (section 4.1.2).

Would the proponent please advise us the basis on which the prediction is made.

(13) 3.4.9 How significant the impacts of cumulative loss of wetlands in NENT on herpetofauna would be?

(14) 3.4.10 What are the assessed significance of impacts of loss of habitats would be on the following species:

- waterbirds, particularly Painted Snipe;
- egrets, herons, rails and sandpipers;
- perching birds;
- kingfishers; and
- wading birds?

(15) Table 3.14 Impacts arising from Kam Tin Bypass and other 'smaller-scale' projects in the area should also be considered.

(16) 3.4.12 What are the assessed significance of impacts of loss of freshwater feeding habitats and construction disturbance on the sustenance of the Ho Sheung Heung Egretry?

3.5.1.1 The Report recognised the need to balance 'the total surface area of habitat loss with areas of *equivalent* surface area and *ecological function* through habitat improvement or creation' (emphasis added). As such, I should appreciate it if the following issues would be clarified and more fully addressed.

(17) 3.5.2 It is proposed that within the engineered channels, mitigation could be provided by means of grasscrete or reinforced grass lining of embankment above the concrete base, and reprovisioning of weirs and fabridams. It is, however, also acknowledged that these would be negated by regular maintenance (to protect the channel flow capacity) and deflation of fabridams during high water or maintenance. Would the proponent please advise me of:

a. the assessed ecological value of such mitigation; and

b. the extent to which these mitigation measures would compensate for the loss.

(18) The Report also discussed at some length the potential benefits of such mitigation (section 3.5.2.6). In this connection, I should appreciate if the following would be clarified:

a. How much water would be abstracted for 'irrigation purposes'? What are the impacts of such abstraction?

b. Is it envisaged that the channels be open for fishing or other recreational uses? How will the impacts from recreational uses be controlled so as not to compromise the nature conservation value of the sites?

c. What aquatic life are expected to inhabit the ponded or deep water habitats?

(19) 3.5.3.1 The Report proposed that following channel construction, fish ponds at the western embankment of the lower Indus be reinstated to '[commercial] fish farming'. I have previously raised concerns about the value of reinstatement of fish ponds to commercial fish-farming, and was advised that 'where fish ponds are proposed [the proponent] will consider the practicalities and relative desirability of commercial versus conservation leases'. This, however, has not been forthcoming in the Final Report. Would the proponent please advise regarding the results of any assessment of the ecological value of such commercial operations and the adequacy of reinstatement of commercial fishpond operations as mitigation, especially in view of the permanent loss of 4.68 ha of fish ponds resulting from the project and the cumulative loss of 21% of total fish ponds area in Hong Kong. Please would the Agriculture and Fisheries Department advise if the reinstated fish ponds at the upper Indus would be leased on a 'conservation lease', which would allow fish rearing but require some management activities to enhance the ecological value of the ponds.

(20)

(20) 3.5.4 I appreciate the attempted effort to use the proposed management of the abandoned stream meanders as an ecological mitigation. However, the following issues should be more fully discussed:

a. What are the management objectives, i.e. the purposes of, and reasoning behind, the various management prescriptions? Some of the objectives as stated in section 3.5.4 are potentially in conflict with one another. Which ones are the priority objectives, and what are the basis for such prioritization?

b. One of the stated objectives of the mitigation proposal was 'provision of habitats which enhance biological conservation values of areas affected by MDC works'.

A variety of different habitats would be affected MDC works (sections 3.4.1 to 3.4.6). However, since the Report concluded that the most important impact of the project would be loss of lowland wetland habitats adjacent to the rivers (section 3.4.1.1.), it is assumed that these wetlands are the targeted habitats for mitigation and management.

i. The mitigation proposal suggested that 'wetlands' would be maintained/ created in all types of abandoned meanders. Please would the **proponent** provide detailed throughput hydrological calculations to substantiate this, taking into account data of catchment input, rainfall patterns, drainage, ground water table levels, and agricultural, horticultural and fisheries abstraction.

ii. Based on the above data, please quantify, as much as possible, exact areas of 'riverine habitats', 'deep water habitats', 'shallow areas that are permanently wet', and 'seasonally inundated poldered wetlands', that would be maintained or created at the meanders.

iii. For the Type 1 meanders, it was suggested that the level of the meander and marsh area could be 'dropped as close as possible to the water table'. Please would the **proponent** explain in detail how this could be achieved. If dredging or earth excavation is envisaged, what impacts this would have on the ecology of the meanders?

iv. The Report stated that 'the marsh area [of Type 1 meander] can be connected to the river part of the meander so that water levels can be controlled to any level.' Please would the **proponent** explain how this could be achieved. How would the water levels of marsh areas in Types 2 and 3 meanders be controlled or managed? Please would the **proponent** also discuss subsequent management responsibilities for controlling the water levels.

v. Section 3.4.3 concludes that 'no woodland patch will be encroached by the proposed alignment. Therefore, impact due to floristical loss of vegetation along the river channels is predicted to be minimal.' As such, what are the justification for the proposed extensive filling and landscaping (at Type 3 meanders), and 'revegetation of land inside the meanders'/ 'meander replanting' (at Types 1 and 2 meanders)? How well does the planting

(21)

scheme meet the objective of mitigation for this project? What wildlife are expected to use these corridors of trees? Which areas affected by MDC works are the planting intended to compensate?

c. Another objective of the mitigation is 'creation of unpolluted wetlands habitats which provide ecological functions required by wildlife adversely affected by the MDC project'.

A large number of wildlife species would be adversely impacted by the MDC project (sections 3.3.7 to 3.3.11). It would not be possible to provide ecological functions required by all wildlife affected; and species targeted for mitigation included 'birds which feed by wading, diving from perches and aerial hawking', 'dragonfly', 'butterfly', 'bats and birds in restored woodlands' and 'herons and egrets'.

i. What are the basis on which these target species are chosen, rather than species of local, regional and/or international conservation importance identified earlier in the Report (section 3.3.10)?

ii. Herons and egrets prefer to feed in shallow waters and in the open. Please would the **proponent** advise the exact areas of habitats available for ardeid feeding, and provide details as to how such habitats would be designed and managed. Would the **Agriculture and Fisheries Department** please comment on the adequacy of mitigation for the herons and egrets, especially in view of the observation that 'when the area of freshwater feeding habitat within a 10 km radius of an egretry dropped below a given threshold, the population of breeding birds dropped precipitously.'

d. Some meanders would provide water purification for surface flows from the surrounding catchment. Meanwhile, the Report noted the need for creation of 'unpolluted wetland habitats' for wildlife. Please would the **proponent** provide details of the predicted pollution loading into these stream meanders, and results of initial assessment of the impacts the pollution loading would have on the ecological value of the managed meanders for wildlife. Would the **Agriculture and Fisheries Department** please comment on the acceptability of the impacts of pollution loading.

e. Some meanders are to be managed for 'passive recreation'. Please would the **proponent** advise what uses are envisaged, and how will the impacts from recreational uses be controlled so as not to compromise the nature conservation value of the sites? Would the **proponent** please also advise the designs, extent and location of the demarcation fencing. If all managed meanders are to be fenced off, please explain why monthly rubbish clearance would be needed.

(21) 3.6 Based on the calculations considered above, please would the **proponent** assess in quantitative terms as far as possible the extent of residual impacts of loss of various types of habitats. Please also indicate the significance of such residual impacts for each habitat types.

(22) I fully appreciate the need for flood control and the constraints this poses on mitigation 'within the confines of the project'. However, overseas experiences suggested that there are still opportunities to reprovision some of the ecological functions on-site. Would the **proponent** please also discuss in detail any offsite measures examined. I do not see the relevance of the statement, '[reprovision of some seasonally inundated wetlands] would be encouraging a solution to the ecological problems in the area that is highly species-specific and not sustainable for a range of taxa that, potentially, could reuse the area.' Would the **proponent** please elaborate.

(23) During the review of the IAR I emphasized the need to address the cumulative impacts of loss of part of the Beas and Indus floodplains to the proposed engineering works, 'including the increased development of the floodplain resulting from the successful implementation of the engineering works', i.e. increased development facilitated by improved flood control. I was then advised by the proponent, in their responses, that 'cumulative impacts will be assessed in the FAR'. I am therefore very disappointed by the lack of such assessment in the FAR; which instead referred to a proposed study on development of a planned, territory-wide strategy to be commissioned by the Agriculture and Fisheries Department.

(24) The territory-wide study of wetland loss and mitigation measures, though long overdue, is supported. However, it is a matter of serious concern that the AFD study still has not started and at a recent ACE meeting members were advised that AFD did not even have approved funding for this study. For the Territory Development Department to place such emphasis on a study which does not even have secure funding, when their own works programme is scheduled to commence in January 1998, raises serious doubts about the Administration's commitment to implement the Ramsar Convention on the Conservation of Wetlands, which calls for assessment of 'cumulative effects of several projects, and also strategic plans, programmes and policies' (Resolution 5.6).

(25) In view of the importance attached to the AFD study by TDD, I should be most grateful if the **Planning, Environment and Lands Bureau** would provide further details, particularly with respect of the following:

- anticipated date of funds being available to commence study;
- timetable for implementation and proposed dates for submission of deliverables;
- a copy of the (draft) study brief; and
- details of deliverables.

(26) The Report concluded that the meander management would 'provide mitigation "insurance" for the unpredictable effects of loss of the seasonal inundation of the floodplain' and would 're-create marshland habitats'. As discussed above, there remain a substantial number of issues which need to be addressed in detail before such a conclusion can be upheld. In addition, the following issues should also be discussed:

i. Would the **proponent** please describe in detail how the effects or extent of 'insurance' would be monitored or measured? Please also refer to comments on section 1.5 above.

ii. How effective would the 'insurance' measures be? Please also provide details of contingency plans, if any, to mitigate residual impacts in case of 'insurance failure'?

iii. What is the assessed significance of such 'insurance'? Would the **Agriculture and Fisheries Department** please discuss the adequacy and acceptability of such 'insurance'.

Water Quality and Sedimentation Impacts

4.1.2 The Report noted that 'since the rivers will be straightened, there is a potential that velocity will be increased and more sediments will be carried towards the downstream locations after training'.

i. What is the estimated increase in sediment loading to downstream areas?

ii. Please would the **proponent** provide details of the results of any quantitative assessment of water quality impacts arising from the proposed dredging, channelisation, and that of cumulative impacts.

iii. Please also advise the results of assessment of the impacts of increased sediment loading on the water quality and ecology of Deep Bay.

4.2 In the lower Indus where excavation will be conducted without water diversion, the Report 'strongly recommend[s] the use of silt curtains in the construction area to retain as much suspended sediment as possible'. Would the **proponent** please provide the following:

i. Details of the results of any quantitative assessment of water quality impacts arising from the proposed dredging at this section.

ii. Details of assessment of the effectiveness of the use of silt curtains.

iii. Would the proponent please also confirm that silt curtains would be employed on-site at the lower Indus during excavation works.

iv. Would the **Environmental Protection Department** please discuss the adequacy of the assessment and the acceptability of the proposed mitigation measures.

Disposal of Excavated Materials

5.3.3 In the IAR, it was suggested that a series of temporary oxidation ponds to be constructed for the dewatering and consolidation processes. Please would the **proponent** confirm that this option would not be considered and implemented.

The Report noted that the 'designated drying areas are shown in Figure 2.2'. However, Figure 2.2. did not have any key for 'designated drying areas'. There were some areas coloured with black stripes to 'indicate potential temporary areas (exact location approved at construction stage)'. Would the **proponent** please clearly indicate the location of the designated drying areas/ temporary storage areas.

The IAR discussed that 'due to the risk of metal enrichment in foodstuffs, extreme caution must be exhibited when considering deposition near agricultural areas.'

Please would the **proponent** provide results of any assessment of the environmental and public health risks arising from the deposition at designated drying areas.

5.7 It was also suggested in the IAR that dredged material be barged out. Would the **proponent** please confirm that no direct barging from the channels will be taking place.

The last sentence of the last paragraph under this section read: 'care must be taken when transferring fill from the trucks to the barges at the selected'. This is apparently an unfinished sentence. Would the **proponent** please rectify.

Others

6.2.4 The Report noted that only with 75% dust reduction, exceedance of both the 1-hour average TSP guideline level and the 24-hour average TSP AQO at the sensitive receivers is not expected. Would the **proponent** please detail how the 75% dust reduction would be achieved.

7.2 Figures 4.1 to 4.4 (showing the location of all selected representative noise receivers) are missing. from the copy of the report I received. I should appreciate it if these would be provided to me at the earliest convenience.

I should also appreciate it if a copy of the 'Comments and Responses' relevant to this FAR would be provided to me — these were included as Appendix 7 of the IAR but appear to have been omitted due to an oversight from the FAR.

I regret the length of these comments, but I look forward to receiving written responses to the above issues raised. Upon receipt of the responses, I hope I would be in a better position to review the captioned Report. I will be in town for the full Council Meeting on 24 November 1997 and will thus have to reserve my position until that time. I apologise for the inconvenience caused.

Thank you for your attention.

Yours sincerely,

P.P. D. S. Melville
Member, ACE EIA Subcommittee

c.c. Secretary, ACE EIA Subcommittee
Members, ACE EIA Subcommittee
Territory Development Department
Secretary of Planning, Environment and Lands
Director of Agriculture and Fisheries
Director of Environmental Protection

EIA for Main Drainage Channels for Fanling, Sheung Shui & Hinterland
ACE-EIA Sub-committee

Ref : The letter from World Wide Funds for Nature Hong Kong (WWFHK) dated 31 October 1997
[To facilitate matching of comments and responses hereunder, the sections of comments are numbered in the margin of WWFHK's letter (attached for reference) and reproduced in the far-left margin here]

	COMMENT	*RESPONSE*
1	Status of the Reports	The FAR supersedes the IAR.
2	*Section 1.3* Afforestation	The Teladflocoss 3 Sedimentation Study explored erosion control measures and their applicability for 13 drainage channels throughout the Territory. Afforestation was not predicted to provide any significant reduction in estimated sediment yield for this MDC.
3	Holistic Approach	Initiatives under current policy are as outlined in Section 1.3.
4	*Section 1.5* Ecological Enhancement	There will be a one-year post-construction programme to monitor the ecological performance of the meanders. Details of this programme will be worked out during the detail design stage when the designs of the abandoned meanders are finalised. The aims of the programme will be to measure and document the colonisation and use of the habitat within the meanders by a variety of wildlife including birds, amphibians, reptiles and insects.
5	Works Design	The designs contained in the report are final design. Detail design is proceeding with items such as embankments, maintenance access, bridges, fabridams and the detailed land form within the meanders.
6	*Section 3.3.10.5* Painted Snipe ringing study	The ringing study showed that the feeding, roosting, and nesting areas are not in the works areas of the channels, thus would not be subject to direct disturbance.
7	*Section 3.4* Loss of breeding habitat for Painted Snipe.	The statement regarding losses of breeding habitat for waterbirds including the Painted Snipe was made in the IAR prior to obtaining the results of the ringing study. Those results now showed that the nesting habitat of the Painted Snipe was not on the proposed works area, thus the statement overstated the potential impact, and should have been revised in the FAR. This is also true for other waterbirds.

8	*Section 3.4.1.5* Significance of impacts to waterbirds	Losses of agricultural and other wetlands on the Long Valley flood plain were minimized by channel re-alignments which moved the channels from the centre of the flood plain to the periphery, following more closely the alignments of the Rivers Beas and Sutlej. Most of the losses of agricultural wetlands would now occur on the River Indus floodplain, not in Long Valley.
9a	Scale of non-free-draining area	The 10 year non free-draining area is shown in Figure 3.8. Reference should be made to Figure 3.6 regarding the present flooding situation.
9b	Vertical drainage gradient	With lower river bed levels the area will effectively be better drained and therefore poldering will occur over an area smaller than that covered during present flooding (the difference in these areas is shown by comparing Figure 3.6 with 3.8). Long Valley will however be one of the areas well covered by poldering.
9c	Poldered areas in Long Valley	All areas shown on Figure 3.8 as non-free-draining areas will be poldered by this MDC project.
9d	Size of existing agricultural wetlands	Approximate size in Long Valley is 0.8 km^2 including areas in the Tsung Pak Long village polder. This would not change as a result of project implementation.
9e	Insurance for maintenance of existing agricultural wetlands	There is no guarantee that the Long Valley land uses will continue as they are today. However any future changes of landuse and development would be regulated by the Town Planning Ordinance and the EIA Ordinance.
9f	Basis for prediction	The basis for the data in Figures 3.6 and 3.8 are from quantitative models developed to test scenarios of the effect of various river training options on flood conditions.
10	*Section 3.4.2.1* Importance of Ho Sheung Egretry.	Comment noted.
11	*Section 3.4.7* Significance of impacts on dragonflies.	The only species recorded on the site which was considered to be uncommon or an indicator of quality riparian habitat was *Urothemis signata*. The sighting was made at the upper limit of the works area where water quality was relatively good, and overhanging riparian vegetation relatively dense. Downstream habitats supported only common and widespread species. The impact on these species would have been greater, but was mitigated by use of grasscrete paving material on the inside embankments. Grasscrete will enable colonisation by grasses, sedges, reeds. This will provide perches and egg deposition sites, and will contribute somewhat to creation of aquatic habitats which will be of use to dragonflies.
12	*Section 3.4.7* Prediction of impacts to invertebrate habitat	As noted above, use of grasscrete paving materials will enable restoration of riparian grass, sedge, and reed habitat. Short- to medium-term loss of habitat will span the construction phase. Above the Ma Wat confluence the channel bed will be grasscreted, enabling restoration of submerged and/or emergent vegetation.

13 *Section 3.4.9*
Significance of cumulative impacts to herpetofauna.

The significance of impacts to herpetofauna as a result of this project are stated in Section 3.4.9. Assessment of cumulative impacts due to future urbanisation of the NENT is beyond the scope of this project.

14 *Section 3.4.10*
Significance of impacts to birds.

- Painted Snipe breeding, feeding, and roosting habitats would be retained intact. Construction impacts would not be significant. Operations impacts are not predicted to be significant due to the retention of agricultural and other wetlands, and the maintenance of seasonally flooded areas on the Long Valley flood plain.
- Egrets, herons, rails, and sandpipers all feed on the Long Valley flood plain where habitat losses will be limited. Based on recommendations from HK Bird Watching Society (HKBWS), the extent of woodland restoration on abandoned meanders will be reduced. This will improve the habitat quality relative to these groups. Overall impacts are considered to be non-threatening to the biodiversity of these groups.
- Perching birds impacts will be moderate in the short term, and will decline with restoration of embankment and meander habitats.
- Kingfisher foraging will be affected at Ho Sheung Heung, Ngam Pin, and along the River Indus. Impacts during construction will be moderate due to loss of perches and foraging area. Fish pond and meander restoration will re-provide lost habitats. Revegetation will restore perches. Overall impact would be minimal.
- Other waders, water birds will be subject to construction stage loss of foraging habitat in rivers, nullahs, channels, ponds, and agriculture on site. Habitat restoration will re-provide all but natural river habitats (low-tide sand/mud flats). Impacts will be moderate, as the river cannot be replaced.

15 *Section 3.4.10*
Table 3.14

These projects were not considered as this drainage channel project will not affect the Kam Tin Valley.

16 *Section 3.4.12*
Ho Sheung Heung egretry

Impacts would occur during construction, as heavy equipment would be active near all feeding areas creating disturbance. Good site practice and management will be carried out to limit impacts within the works area. Impacts would decline to minimal after construction.

17a *Section 3.5.2*
Channel impact mitigation value

Ecological value of mitigation will not be greatly reduced by maintenance dredging or dam deflation. Vegetation which establishes in grasscrete (grasses, reeds, sedges) would be unaffected by dredging or by drawdown.

17b *Section 3.5.2*
Compensation value of channel impact mitigation

Neither Shenzhen River nor MDC-NYK incorporated channel impact mitigation measures as useful as those in this project. However, mitigation measures will not restore a natural riverine habitat. Overhanging vegetation and deep water will mimic, but not replace existing habitats. Perforated concrete channel beds and grasscrete slopes will enable partial compensation for lost ecological values, yet won't compromise hydraulic requirements.

18a	*Section 3.5.2.6* Water for irrigation	Water is extracted on an ad-hoc basis by farmers for irrigation. However, observation on site indicates there is flow over the existing weirs in the Upper Indus in all seasons indicating that the abstraction of irrigation water does not exceed the dry weather flow. We envisage that this situation will remain on completion of the project. With the weirs be reprovided as fabridam.
18b	*Section 3.5.2.6* Recreational uses of channels	The channels are not designed for recreational uses or fishing. Unauthorized auto-traffic will not be allowed on the maintenance accesses.
18c	*Section 3.5.2.6* Aquatic life in deep water	Fish, terrapins, and aquatic invertebrates in the water column; dragonflies, invertebrates, and perching birds on the adjacent grasscrete slopes; perching birds, invertebrates, reptiles, amphibians on outer slopes.
19	*Section 3.5.3.1* Restoration of commercial fish ponds	DLO (N) and AFD have advised that ponds should be reinstated to a sufficiently original condition to permit continued farming by the pond operators. To the consultants' knowledge all fish ponds in Hong Kong are commercially operated, and have, in general, been proven to have ecological value. DLO will consider to let these ponds by way of Short Term Tenancies (STT) under Abbreviated Tender System (ATS), though at present there is no such STT yet and it has to be worked out. DLO would circulate such STT proposals with terms and conditions to relevant departments for comments. If the tenancy conditions of such kind of STT to be negotiated with the prospective tenants are reasonable and enforecable by respective DLO, no difficulties are anticipated at this stage. The subject of "conservation leases" was raised at the ACE EIA Sub-committee meeting on 3 November 1997. Whereupon, AFD will take the opportunity to work out with DLO on such STT to ensure the ecological value of such ponds could be maintained.
20a	*Section 3.5.4* Abandoned meander management	Objectives are to reinstate riverine, marsh and pond wetland habitats, and to provide a corridor of vegetated habitat along the outside embankments. Wetlands are the priority.
20b (i)	*Section 3.5.4* Hydraulic calculations	Hydraulic calculations have been carried out for flood conditions, however, the concept is not one of routing a watercourse through a low lying area and ponds. The important element of the meanders is that they are adjacent to a major watercourse in which the water levels are known and can be maintained year round. It is by reflecting these water levels in Type 1 and 2 meanders that the wetland concept can be achieved. A typical water management plan for a Type 3 meander shows that given the annual hydrological cycle the areas will be wet during the wet season and will dry out during the dry season which is in line with normal observations of a seasonal wetland.

20b *Section 3.5.4*
(ii) Areas of habitats in meanders

See Section 3.5.6, Table 3.11 and 3.12. The exact areas which will form the different type of habitat within each meander would be formulated during the detailed design stage.

20b *Section 3.5.4*
(iii) Type 1 meander:
-Excavation impacts
-Drop meander bottom to water table level

If excavation is required, it would be done by backhoe from the periphery of the meander. Impacts would be short-term siltation of the water body and some loss of vegetation.

For details of Type 1 meanders please see full response below.

20b *Section 3.5.4*
(iv) Water levels in meanders

Site specific designs will be made at the detailed design stage. What follows is a summary of the methods to achieve water level control. Figure No. SK 210 showing the schematic arrangements of the various meander types is attached for easy reference.

TYPE 1: This type of meander is relatively simple in that the meander channel will form part of the tributary. In all cases the meander channel is much larger than the tributary draining to it so that enlargement will not be required. In the Upper Indus, the meander channel base will be below the level of the water in the river due to the fabridam so that there will always be water in the meander channel and a through-flow. A flap valve is required at the outlet to prevent backflow from the river.

In the Beas River there are no fabridams. Therefore as the meander Type 1 at Castle Peak Rd will be above the level of the proposed channel bed in low flow conditions, the meander could contain very little flow in the dry season. A small weir can be constructed as shown in the attached sketch, upstream of the outlet to the meander to retain a shallow pond under these conditions. This decision will form part of the detailed design and will depend on the practicalities of each site as well as the ecological requirements.

TYPE 2: There are three Type 2 meanders on the Upper Indus all of which have no significant tributaries. The levels of the existing channel in the meanders (varying from approximately 1.00mPD to 2.7mPD will be below the level of the water in the main channel which will be controlled to a level of approximately. 3.4mPD by the proposed weir. Given the sandy silty type of ground, the ground water level across the meander should stabilise at a level similar to that in the river.

Therefore, the base can be adjusted to form a pond (with excavation depending on depth required), raised to a level at slightly below3.4mPD to form a permanent wet area or raised slightly higher so that the area is seasonally wet as the river level rises during the wet season.

The areas between the existing channel and new channel are large and will generate runoff to the meander/channel during the wet season. There will also be runoff from the adjacent catchment but given the very flat nature of the agricultural land these catchments are difficult to define.

Therefore, an outlet with flap valve will be required to drain the meander. When there is rain, the water level will rise so that it is always slightly above the level in the river. If the river continues to rise within the embankment above the level of the ground adjacent to the meander, flooding and spillage from the meander will occur. If the water in the main channel continues to rise, the flap valve on the outlet from the meander will close to prevent back-up through the outlet pipe.

TYPE 3: This type of meander will be filled with a depression or swale which will collect rainfall. The concept is a simple one in that the depression would be seasonally wet and during intense rainfall a shallow pond would form in the depression. A weir outlet would be provided with a level close to the surrounding ground level so that if the pond filled, the water could top over the weir and discharge to the river through a flap valve.

The above explains the principles by which the wetland concept will be achieved. In terms of the water level controls, these would include standard items such as fixed weirs, flap valves etc which would be part of the normal drainage system and would be maintained by DSD. DSD have indicated that they would be responsible for maintaining the inflatable weirs on the Upper Indus.

20b *Section 3.5.4*
(v) Tree planting

As noted above, the HKBWS suggestion for reduced emphasis on tree planting has been incorporated. This will increase the area available for wetland restoration.

20c *Section 3.5.4*
(i) Targets of mitigation

The meanders are designed to provide habitat which can be utilised by a diversity of wildlife, of which wetland birds are one example. The objective is to restore riverine and marsh habitat.

20c *Section 3.5.4*
(ii) Herons and egrets

7.1 ha of abandoned meanders will be retained as mitigation. Tree planting will be de-emphasized to enhance heron-egret habitat quality. Based on early survey results along the channelled portions of the Shenzhen River, it is anticipated that herons and egrets will use both the abandoned meanders and the completed channel.

AFD considered the mitigation measures adequate.

20d *Section 3.5.4*
Water purification in meanders

Water purification in abandoned meanders was listed as a benefit because it is now widely accepted that reedbeds, ponds, and other types of wetlands function naturally in this role: it is not possible to prevent water purification in wetlands except through gross overloading with pollutants. Existing sources of pollution consist of agricultural chemicals, some petrochemicals (from farmers' pump-sets), some residential sewage, and some livestock waste. It is not anticipated that any of these sources individually or in combination would pose an unacceptable ecological risk to the performance of the meanders. AFD advised that they are not aware of any report on serious additional pollution loading due to the project.

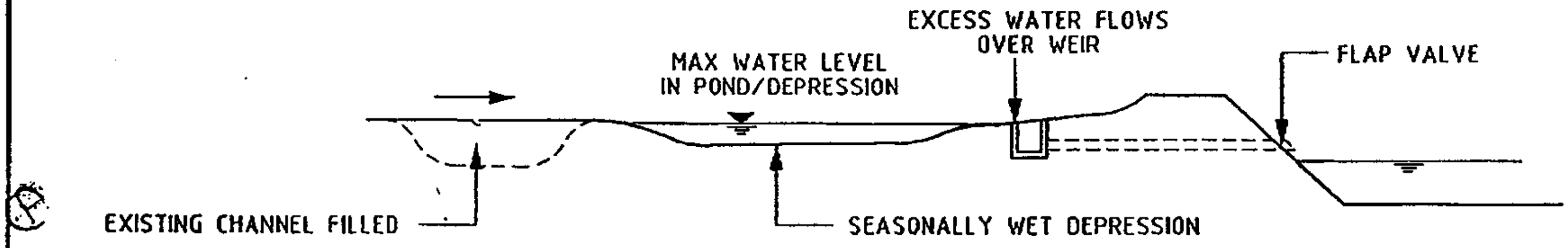
20e	*Section 3.5.4* **Passive recreation**	We anticipate passive recreational use such as bird watching and hiking. As these are existing uses within rural areas, controls are not considered necessary. We do not anticipate significant impacts to the meanders as a result of these existing activities. Fencing is not envisaged.
21	*Section 3.6* Residual impacts from direct loss	Please refer to Table 3.11, 3.12,3.13 and Section 3.5.6 for quantification of residual impacts from direct habitat loss.
21-24	*Section 3.6* -Residual impacts -Off-site mitigation -Cumulative impacts -AFD study of wetland compensation	Please refer to our memo ref. NTN/TPF 2/4/6B (Pt.13) dated 28 October 1997 to SPEL (as attached) in respect of WWFHK's comments dated 18 October 1997 on the same issue.
	"I do not see the relevance of the statement....."	This has been misquoted. Original text was: "...we do not see an advantage in trying to retain areas that are frequently inundated from *overembankment floods*. This would not only be counterproductive to the stated goals of the project which is to protect from these events, but it would be encouraging a solution to the ecological problems in the area that is highly species-specific and not sustainable for a range of taxa that, potentially, could reuse the area" (emphasis added)
25	PELB Details on proposed study on wetland compensation	AFD advised that the government is to seek funding support of the Finance Committee (FC) of the Provisional Legislative Council on 14 November 1997. Subject to the approval of the FC and subsequent selection of consultants, the proposed consultancy study would commence around February 1998. AFD would send WWFHK a copy of the draft study brief and other details soon.
26i	Mitigation insurance	Please refer to response for Section 1.5 (our point 4).
26ii	Mitigation insurance	This type of mitigation is the first of its type in the Territory and based on our knowledge and expertise we believe the design is workable. In this regard, please note that monitoring of the Shenzhen River Project has shown that many taxa including wetland birds are using the new *engineered* channel; the MDC project will be providing "natural" habitat within the meanders so we can expect the response to be even better.
26iii	Significance of mitigation insurance	AFD considered that the consultants' assessment on mitigation measures is acceptable.
	Water Quality and Sediment Impacts	
4.1.2	The Report noted that 'since the rivers will be straightened, there is a potential that velocity will be increased and more sediments will be carried towards the downstream locations after training.'	

(2)

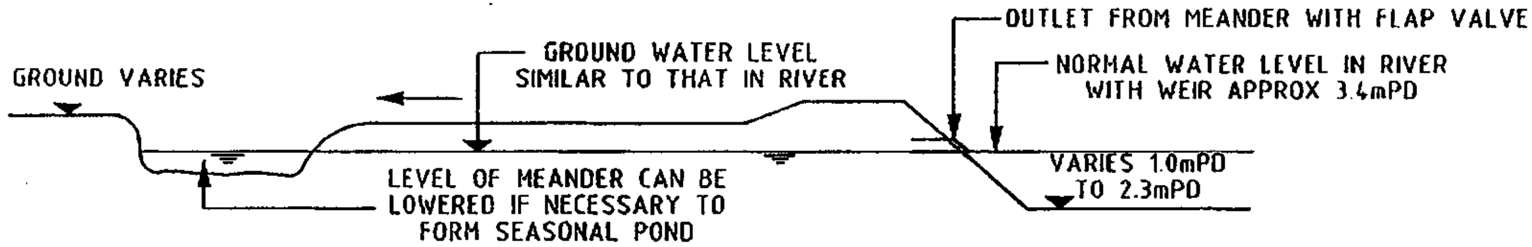
	i) What is the estimated increase in sediment loading to downstream areas?	There is no estimated increase in sediment loading to downstream areas (outside the River Indus system). Present analysis in the Tel III Sedimentation Study show that sediment transport in the River Indus is fairly stable, with marine input causing a mean *annual accretion* of the order of a few centimetres. After training, the situation is expected to remain the same with a new equilibrium being set as the tidal incursion moves further up into the channel.
	ii) Please would the proponent provide details of the results of any quantitative assessment of water quality impacts arising from the proposed dredging, channelisation, and that of cumulative impacts.	The assessment in Section 4 is based on quantitative data collected during this EIA and summarised from other sources (e.g. EPD monitoring data). The method of construction would, except in areas such as the Lower Indus, prevent water quality issues from being realised. Mitigations have been designed for those areas such as the Lower Indus at where excavation would be conducted without water diversion.
	iii) Please also advise the results of assessment of the impacts of increased sediment loading on the water quality and ecology of Deep Bay.	There would be no additional sediment loading to Deep Bay as: 1) The Tel III Sedimentation Study indicates that there would be net accumulation of catchment derived sediments within the channel which will require maintenance dredging. The channel design is now considerbaly less straight than in the original design which means more sediment will accumulate in the bends as the velocity slows down. 2) The construction of silt traps at strategic points along the rivers where major load from catchment sediments have been identified (Tel III Sedimentation Study) would also accumulate this sediment.
4.2	In the Lower Indus where the excavation will be conducted without water diversion, the Report 'strongly recommend[s] the use of silt curtains in the construction area to retain as much suspended sediment as possible'. Would the proponent please provide the following:	
	i) Details of the results of any quantitative assessment of water quality impacts arising from the proposed dredging at this section	The assessment in Section 4 is based on quantitative data collected during this EIA and summarised from other sources (e.g. EPD monitoring data).
	ii) Details of assessment of the effectiveness of the use of silt curtains	Silt curtains are known to be effective in low velocity, relatively deep water conditions. Beyond this, effectiveness would depend on how the Contractor deploys and maintains the silt curtains. These aspects would be monitored during construction stage EM&A.
	iii) Would the proponent please also confirm that silt curtains would be employed on-site at the lower Indus during excavation works	Confirmed.
	iv) Would the EPD please discuss the adequacy of the assessment and the acceptability of the proposed mitigation measures	The assessment and proposed mitigation measures are acceptable to EPD.

Disposal of Excavated Materials

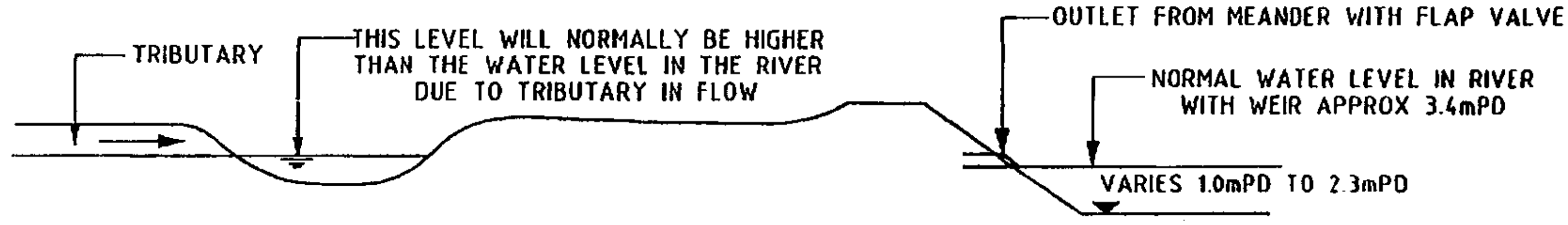
5.3.3	In the IAR, it was suggested that a series of temporary oxidation ponds to be constructed for the dewatering and consolidation processes. Please would the proponent confirm that this option would not be considered and implemented.	Confirmed.
	The Report noted that the 'designated drying areas are shown in Figure 2.2'. However Figure 2.2 did not have any key for 'designated drying areas'. There were some areas coloured with black stripes to 'indicate potential temporary areas (exact location approved at construction stage)'. Would the proponent please clearly indicate the location of the designated drying areas/temporary storage areas.	The potential temporary drying and storage areas are shown on Figure 2.2 as black stripes. These are indicative and it would be the intention of the contract to allow the contractor, subject to a performance specification, to select areas for drying and storage to suit his works programme and methods of construction.
	The IAR discussed that 'due to the risk of metal enrichment in foodstuffs, extreme caution must be exhibited when considering deposition near agricultural areas'. Please would the proponent provide results of any assessment of the environmental and public health risks arising from the deposition at designated drying areas.	These risks will be avoided by lining the drying areas if they are used. Supernatant leachate would be handled according to procedures outlined in Section 4.1.1, para 2.
5.7	It was also suggested in the IAR that dredged material be barged out. Would the proponent please confirm that no direct barging from the channels will be taking place.	Confirmed.
	The last sentence of the last paragraph under this section read: 'Care must be taken when transferring fill from the trucks to the barges at selected'. This is apparently an unfinished sentence. Would the proponent please rectify.	Sentence should read: 'Care must be taken when transferring fill from the trucks to the barges at selected transfer points'.
	Others	
6.2.4	The Report noted that only with 75% dust reduction, exceedance of both the 1-hour average TSP guideline level and the 24-hour average TSP AQO at the sensitive receivers is not expected. Would the proponent please detail how the 75% dust reduction would be achieved.	Please refer to Section 6.2.4 part c.
7.2	Figures 4.1 to 4.4 (showing the location of all selected representative noise receivers) are missing from the copy of the report I received. I should appreciate it if these would be provided to me at the earliest convenience.	Our apologies. Noise sensitive receiver figures are labelled 7.1 through 7.4. We attach those figures here.
	I should also appreciate it if a copy of the 'Comments and Responses' relevant to this FAR would be provided to me --- these were included as Appendix 7 of the IAR but appear to have been omitted due to an oversight from the FAR.	The FAR has directly taken into account all the comments and the report has been compiled accordingly.



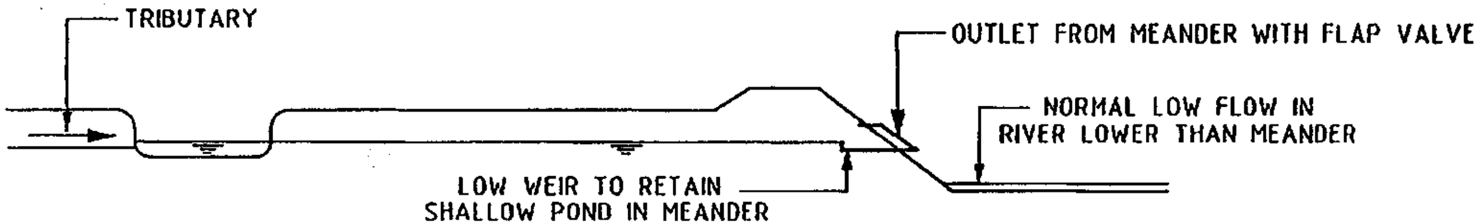
TYPE 3 MEANDER



TYPE 2 MEANDER (UPPER INDUS)



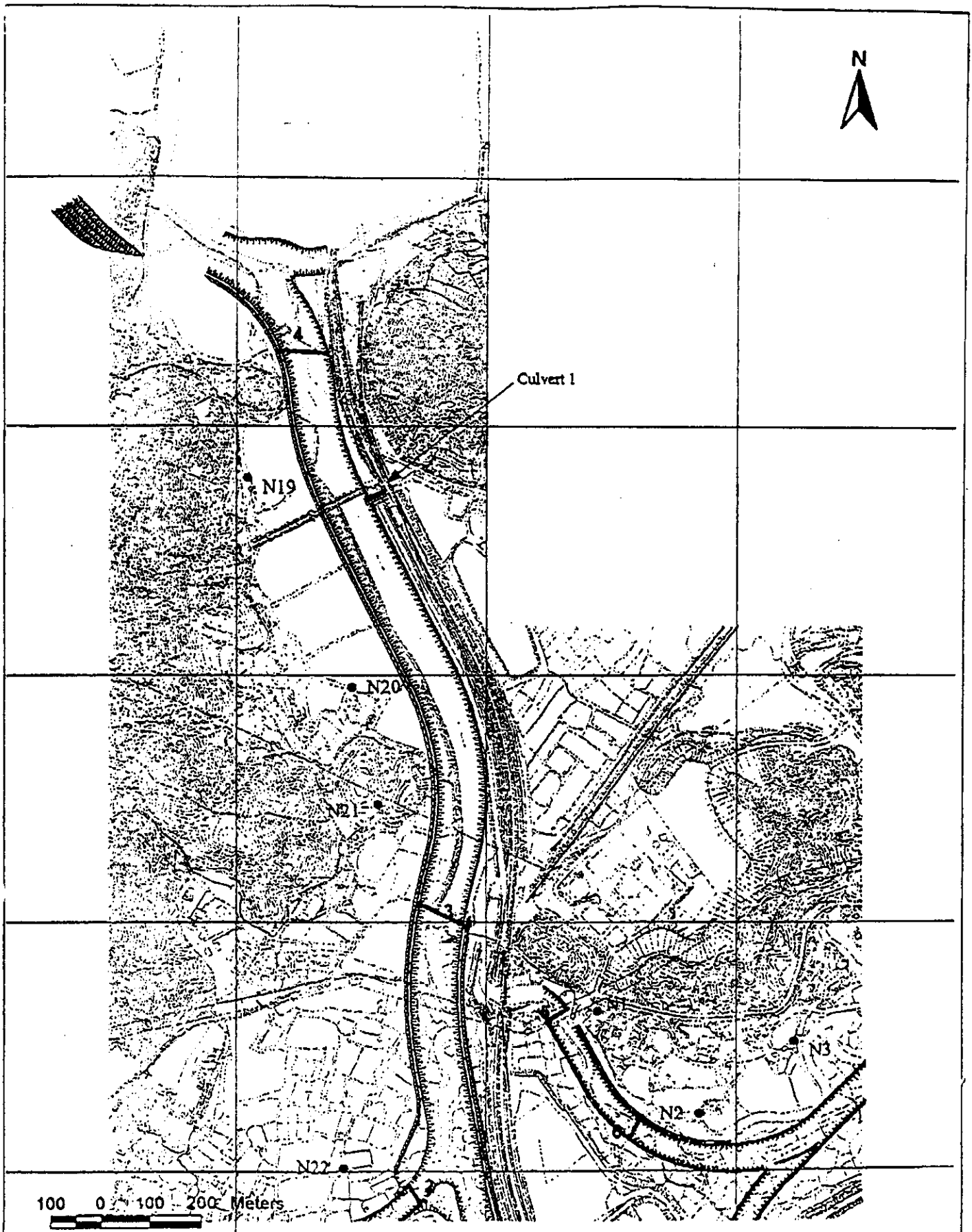
TYPE 1 MEANDER (UPPER INDUS)



TYPE 1 MEANDER (BEAS) (MEANDER 8 AT CASTLE PEAK ROAD)

MAIN DRAINAGE CHANNELS FOR FANLING SHEUNG SHUI AND HINTERLAND MEANDER WATER MANAGEMENT SCALE: N.T.S	Maunsell 茂盛(亞洲)工程顧問有限公司	JOB NO. 93996	FIGURE: SK210

Q:\PROJECTS\93996\100\SK\210.DGN

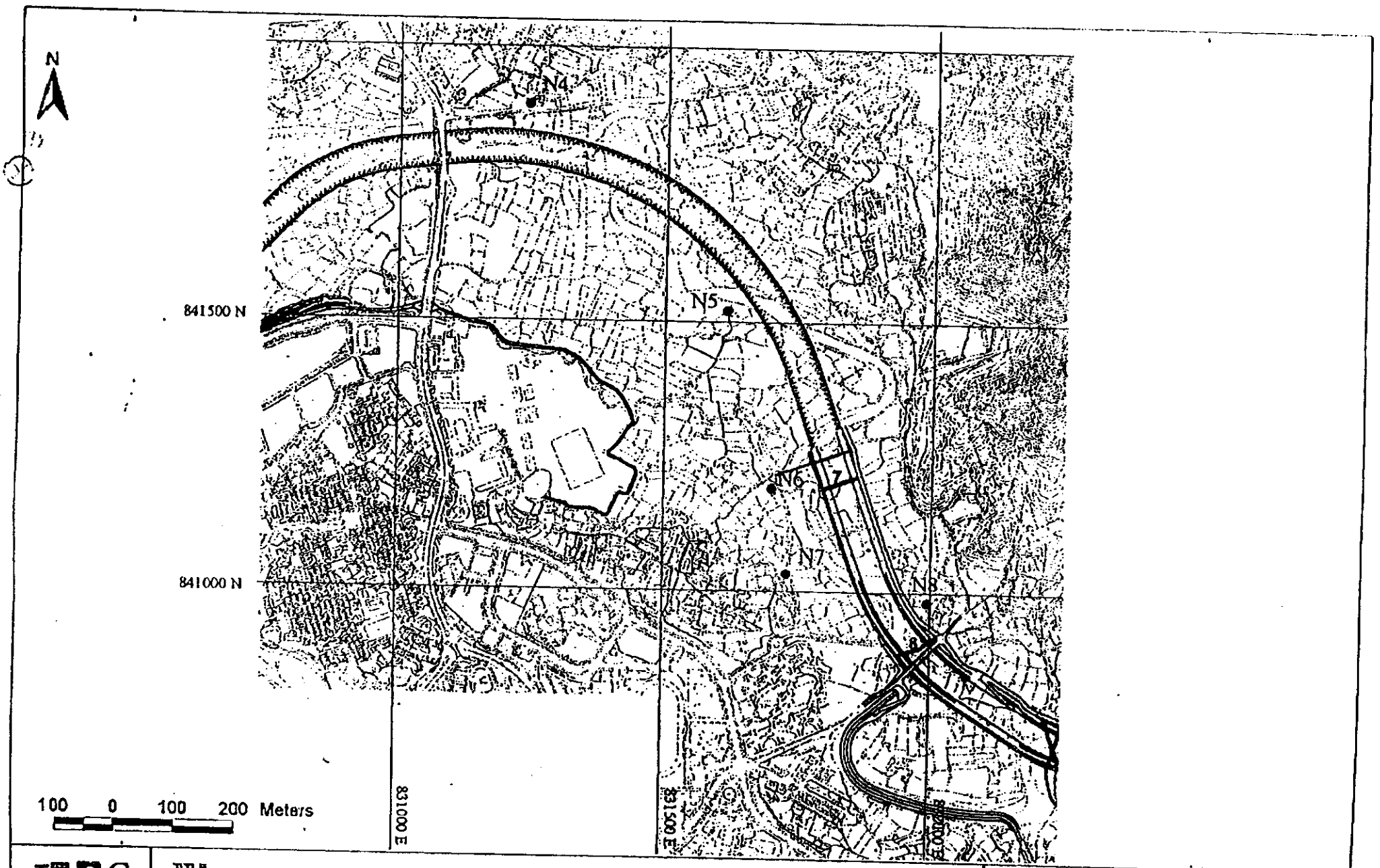


環科 CES

TITLE

Locations of Noise Sensitive Receivers and Bridges to be reprovisioned (2 - 6)

CES (ASIA) LIMITED			
PROJECT NO.	B080\dfar	DATE	September 1997
DESIGNED	Fanny Lau	DRAWING NO.	Figure 7.1

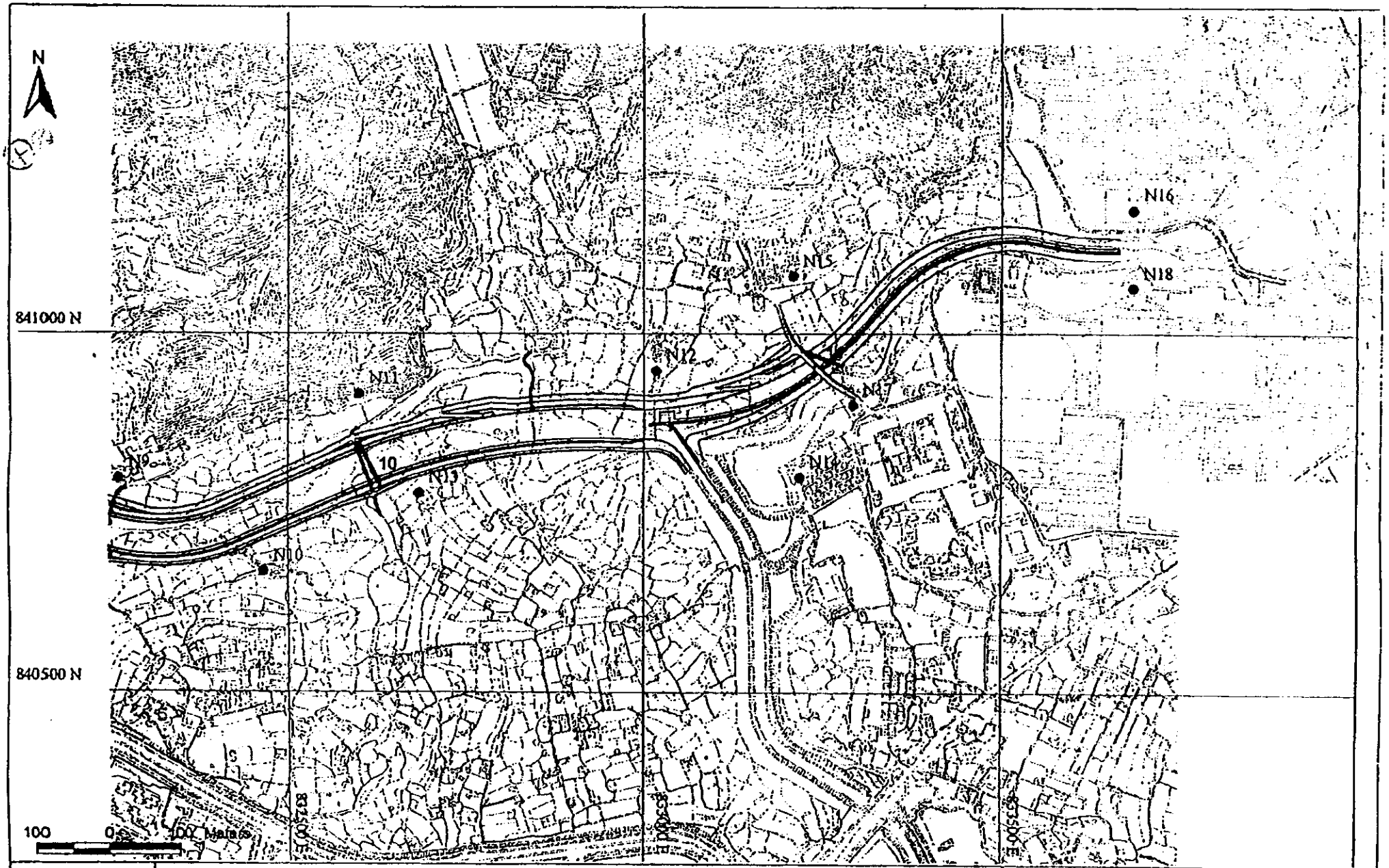


環科 CES

TITLE

Locations of Noise Sensitive Receivers
and Bridges e Reprovisioned (7 - 9)

CES (ASIA) LIMITED			
PROJECT NO.	B080	DATE	September 1997
DESIGNED	Fanny Lau	DRAWING NO.	Figure 7.2

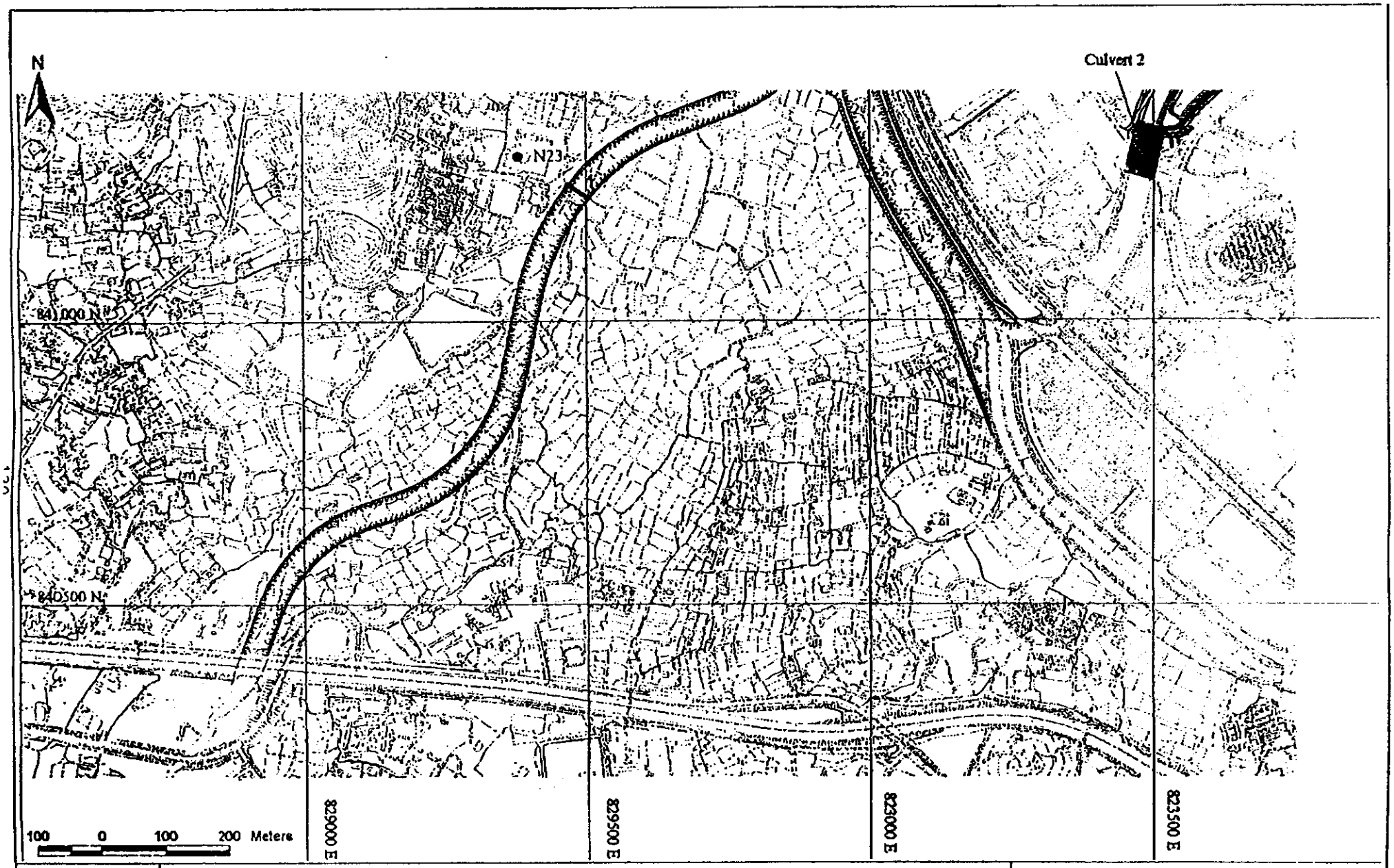


環科 CES

TITLE

Locations of Noise Sensitive Receivers
and Bridges to be Reprovisioned (10 -11)

CES (ASIA) LIMITED			
PROJECT NO.	B080	DATE	September 1997
DESIGNED	Fanny Lau	DRAWING NO.	Figure 7.3



環科 CES

TITLE

Locations of Noise Sensitive Receivers and Bridg o be reprovisioned (1)

CES (ASIA) LIMITED			
PROJECT NO.	B080	DATE	September 1997
DESIGNED	Fanny Lau	DRAWING NO	Figure 7.4