

**PRIVY COUNCIL APPEAL NO. 47 OF 2003**

**IN THE PRIVY COUNCIL  
ON APPEAL FROM THE COURT OF APPEAL OF BELIZE**

**BETWEEN:**

**(1) THE BELIZE ALLIANCE OF CONSERVATION  
NON-GOVERNMENTAL ORGANISATIONS  
(2) PHYLLIS DART  
(3) GODSMAN ELLIS**

**Appellants**

**-and-**

**(1) THE DEPARTMENT OF THE ENVIRONMENT  
(2) BELIZE ELECTRICITY COMPANY LIMITED**

**Respondents**

**CASE FOR THE FIRST RESPONDENT**

**ANNEXE II**

**Summary of material relating to geology, wildlife, archaeology and  
associated mitigation measures**

1. This annexe deals with the specific deficiencies alleged in the EIA and in the information available to the NEAC and DOE at the time they made their respective decisions. The EIA itself canvassed the impact of the project in much more detail and over a wider range of impacts. It is sufficient to note the main headings.

1.1. Pages 6-17 set out a detailed project justification, including a comparison of other alternative forms of electricity generation. The methodology for the EIA was described at pp 18-32.

- 1.2. The project description [pp 33 to 50] included maps and drawings showing the general design of the dam.
- 1.3. The discussion of construction planning and methodology [50-61] stated that construction would proceed according to accepted industry standards and that “contract specifications will include standard environmental protection measures and specific measures included in this document”.
- 1.4. Section 4 gave a thorough description of the existing environment derived from direct observations, consultations and interviews and secondary sources [4.0 p. 66]. This dealt with the physical footprint of the entire area of the project, including the dam itself, the reservoir and transmission line [p. 66-7], the physiography [67-72], geology [72-83], water resources and hydrology [83-101], climate and air quality [101-5], noise [105], biological resources and species at risk [106-133], socio economic impacts [134-149], reserves and parks [150-2], heritage/archaeology resources [152-3], country gender profile [pp 153-161].
- 1.5. Chapter 5 dealt with the identification of valued environmental components. These were assembled under 19 headings including the impact of karst geology on the reservoir [165], species at risk [166], and archaeological/heritage resources [168].
- 1.6. Chapter 6 discussed mitigation measures. They are dealt within detail where appropriate below. This is a major part of the report, covering 74 pages. It deals in turn with mitigation arising from construction activities [171-201 and from operation of the facility [201-244].
- 1.7. Chapter 7 was entitled Environmental Management Plan. It stated that “The protection, mitigation and enhancement measures that are part of the EMP as well as the prescribed monitoring studies will be part of the Environmental Compliance Plan (ECP) to be agreed upon between the proponent and the Government of Belize represented by the Department of the Environment. The terms and conditions that will be eventually

embodied in the ECP will respect the requirements of Sections 20 (7) of the Belize Environmental Protection Act, 1992... The ECP will contain environmental protection and mitigation measures that constitute commitments by the Proponent and its contractors during the engineering, construction and operation stages of the Project...

*"The EMP will ensure, along with the ECP, that the environmental commitments and recommendations are implemented in full. This begins by incorporating mitigation measures and other environmental considerations into the plans and specifications and then to continue overseeing how they are carried out during construction and operation".*

## **GEOLOGY**

1.8. As the issues have later been developed there are really two points in issue:

1.8.1. The nature of the bedrock – is it granite or sandstone and does it make a practical difference?

1.8.2. Whether the reservoir rim permeability was compromised by the presence of limestone features such as caves and sinkholes.

1.8.3. The complaint appears to be that by failing to provide this information the EIA failed to comply with Regulation 19(g) in that it failed to provide the data necessary to identify and assess the main effects which the proposed development is likely to have.

## **Material in the EIA**

1.9. The EIA deals with Geology and Seismicity at pp 72-80 of the main report. Paragraph 4.2.2.2 described the methodology.

1.9.1. As to the rock type at the dam site it asserted that [p. 78]: "At the proposed dam site area, outcrops forming the floor of the river valley consist almost entirely of granitic intrusives". Subsequent investigation (see below) has shown that the description of the rock type may be incorrect but that it does not affect the suitability of the site to hold a dam. There is therefore no material deficiency because the difference in rock types does not mean that any "significant effect" has been misdescribed, nor is the project materially different from that described in the EIA.

1.9.2. As to limestone features, it noted that this followed the course of the Macal and Rasapulco rivers "but at a distance inland from the river valleys. Subsequent investigation (see below) has shown this assessment to be correct. There is therefore no room for alleging that the EIA was deficient.

1.10. The EIA also recognised that further surveys might be appropriate despite the fact that investigations to date had not shown any cause for concern and that the valley walls of most of the reservoir were sandstone. It said [para 6.6.1 – p. 235-6]:

"Although investigations up to now indicate that this is not a major concern, given the nature of geological formations in the area and the possibility that geological contacts may be inaccurate in some instances, additional investigations are warranted that are in line with the conventional approach with regard to geotechnical matters on hydropower projects.

“Mitigation: The potential effect relates to uncertainty regarding the existence of karstic landforms below the full supply level of the reservoir that could have effects on reservoir filling and on Project operation. The appropriate mitigation is to reduce the uncertainty by conducting further investigations including precise mapping of geological contacts and landforms. Such fieldwork should be completed during final Project design. Depending on the results of the field program, mitigation measures could include sealing cavities (if identified).

“Significance of Residual Impact Residual significant adverse impacts are unlikely, subject to the results of additional geotechnical fieldwork and development of an appropriate technical action plan”.

1.11. This type of investigation did not indicate that any significant matter was left over for further investigation. It was the type of cautionary work that did not affect the decision whether or not to proceed. If minor cavities had been found, then they could be sealed.

1.12. The report also addressed seismic activity. It noted [at p. 79 para 4.2.2.3] that the area was one of “moderate to high seismicity”, and that between 1856 and 1994 there had been 678 earthquakes, including 6 equal to or greater than Richter level 7. Measures to deal with this were addressed at paragraph 6.6.2.1. The report read:

“The Chalillo dam has been designed to satisfy current international dam safety requirements under all conditions of reservoir loading. With respect to seismic loadings, it has been designed to resist failure under earthquake conditions in which a seismic coefficient of .2 g. was adopted. It is noted that this is equivalent to the value used in the most active seismic areas of the U.S.A., including California. Also instrumentation will be included in the dam to monitor the performance of the dam during operation These measures make it unlikely that a dam failure could occur because of seismic events.

“A contingency plan will, nonetheless, be designed. Such a contingency plan is a requirement and will be developed by the proponent prior to dam construction in accordance with existing local emergency preparedness plans in effect”.

## 2. **Additional information available by the time of the NEAC decision**

2.1. On 23<sup>rd</sup> September 2001, the NRDC submitted a report [75-100]. It took the point that there was a "significant risk" of limestone caves [85]. It also drew attention to the risk of earthquakes [86].

2.2. The NEAC first met on 24<sup>th</sup> October 2001 [252-5]. A member noted that the information on geology was not sufficient [254 para 31.13] and that the rock types described in the report (i.e. granite) were not likely to exist. Some members also noted that the area was one of moderate to high seismic activity.

2.3. Further information about rock types was requested from BECOL by a letter dated 25<sup>th</sup> October 2001 [51-2] and was provided in a letter dated 7<sup>th</sup> November 2001. That letter maintained that:

2.3.1. Limestone features are at "elevations above the upper reservoir limit"

2.3.2. The valley floor is granite.

2.4. The next NEAC meeting was on 8<sup>th</sup> November. The geology member was still not satisfied with the description of rock types. The minutes record [256-62]:

2.4.1. 2.16: One member suggested that geological data was inaccurate and the bed was likely to be sandstone "Sandstone is adequate for dam construction but dam design must consider this type of rock. In order to ensure that the dam does not crack, the foundation and sides would need to be anchored. The member felt that the NEAC

should not accept the geology information as it is inaccurate". The member also suggested that some slopes will need to be grouted.

2.4.2. At 2.18 some members expressed concern about the seismicity of the area.

2.5. The meeting was then addressed by representatives from BECOL.

2.5.1. In relation to seismicity, BECOL personnel explained that the dam "is not only designed to withstand the short peak, but also to withstand aftershocks of longer duration and earthquakes greater than 7 of the Richter scale" [3.01 p. 260].

2.5.2. There was a lengthy discussion about the geology of the site. At 3.05 "The member from GPD stated that although he disagrees with the naming and description of the rock type of the project area, he felt that the competency of the rock type that does exist there could withstand a dam. However, he felt there would have to be changes to the engineering design to include proper grouting as well as other structural modifications to secure the dam".

2.5.3. It was agreed that the samples would be viewed and a telephone conference arranged the next day between the NEAC member from GPD and the geologist who prepared the report.

2.6. The conclusion about limestone was not challenged. The GPD member said: "karstic formation would most likely occur above the reservoir area" [2.17].

2.7. The samples were viewed on 9<sup>th</sup> November 2001. The NEAC met again that day. The minutes record:

2.7.1. "The Chairman presented a summary of the teleconference on geotechnical aspects of the project held earlier that day. He informed the NEAC that the cores were examined by the member from GPD. According to the member, there was the misdescription of some rocks by the EIA preparers. The member maintains the position that despite the additional information and explanation by BECOL that the rock referred to as 'granite' is in fact not granite. The member reiterated that he is not questioning the competency of rocks for the construction of a dam but rather the accuracy of the description of the rocks. The Chairman went on to say that the issue appears now to be a 'judgment call' of the geologist as geology, not being an exact science allows for a difference of opinion. Other geologists will be brought in to do another assessment of the rock formation. In the event that the members from GPD's opinion proves to be accurate then the issues with respect to adjustments of the engineering design will be addressed in the ECP. The chairman stated that the NEAC is not questioning the professional integrity of the EIA preparers or that of the member from GPD but the committee must ensure that accurate information is sought. The Chairman recommended that since the question on the Geology did not really affect the fact that the dam could be constructed that the NEAC should go ahead and make a decision [para 1.01 - . 263]

2.7.2. It was agreed that the rocks would be subjected to independent analysis.

2.8. The GPD member joined the majority in voting in favour of the project being given clearance.

2.9. The above demonstrates the rigour with which the NEAC went about their job, In no sense was the recommendation for clearance a rubber stamping exercise. They critically examined the EIA and called for further investigation and information where appropriate. They only approved it when they were satisfied with the additional information given. At the time of the decision the available information was that the site was competent to hold the dam and that the reservoir was not permeable. The members had also addressed the issue of seismic activity and had raised the issue with BECOL.

2.10. Some engineering modifications would have to be made but that is the kind of matter that would normally be left to a later stage in the project. It is not suggested that those changes affect the environmental impact of the project or that they involve significant effects required to be identified as part of the EIA. Detailed designs for the dam were not included in the initial EIA and it has never been suggested that the EIA was defective for that reason. This point is made by Jeremy Gilbert Green [affidavit of 18<sup>th</sup> April 2002 p. 295] that at the EIA stage a final design for the dam has not yet been settled on [para 9].

### **3. Additional information/measures at the time of the decision of 5<sup>th</sup> April 2002.**

3.1. In January 2002 Zulfiquar Aziz conducted surveys in the area of the reservoir. He confirmed that the reservoir was watertight [Affidavit of James Code dated 30<sup>th</sup> April 2002 para 10 p. 393].

- 3.2. At a meeting on 7<sup>th</sup> February 2002 between the Geology and Petroleum Office and James Code it was agreed that further mapping of the site would take place [Code para 8 p. 390].
- 3.3. Additional studies of the rock samples from the dam site confirmed that the rock type was suitable to hold a dam [Code para 11 p. 391].
- 3.4. Thus by the time of the decision to give clearance to the project, the DOE had all necessary information as to whether the site could properly hold the dam. Nonetheless, the ECP also includes measures for further mapping to be carried out and for the detailed designs to be submitted to the DOE for approval before works are carried out [paragraph 6.49-6.55 pp 450]. The water level is fixed at a maximum of 400 metres above sea level.

#### **4. IMPACT ON FLORA AND FAUNA**

- 4.1. The Appellant's case here, so far as understood is that:
- 4.1.1. Further studies recommended by the Natural History Museum (NHM) had not been undertaken and so the information in the report was deficient with the result that it did not accurately state the significant likely effects on flora and fauna. To the extent that further studies were required in the ECP, this was an impermissible attempt to postpone matters to a later stage in the process.
- 4.1.2. The EIA failed adequately to state the mitigation measures proposed.

4.2. Although the Appellants complain separately about the effects on flora and fauna and mitigation, they are considered together below. The discussion of mitigation in the EIA report cannot conveniently be separated from an assessment of likely impact.

## 5. **Information in the EIA**

### 5.1. **Likely effects on flora and fauna**

5.2. This starts at section 4.3 of the main report. This gave a detailed description of the general habitat consisting of 4 major vegetation communities made up of riparian (riverine) vegetation, lowland forest, pine forest and orchard savannah and broadleaf forest. The relevant characteristics are specified in detail, complete with maps and comparative tables and a description of the species found there (pp 106-116).

5.3. Pp 118-123 describe the species potentially at risk in Belize and identify those found within the study area.

5.3.1. In relation to plants, two particular species are identified in the reservoir area "Ceratozamia robusta, (listed by UNEP as rare ); and Schippia concolor, (listed by IUCN as vulnerable as UNEP-WCMC as endangered)" and 4 species in the transmission line corridor: "Mahogany (Swietenia macrophylla; listed by IUCN as vulnerable ), Milady (Aspidosperma megalocarpon; listed by IUCN as lower risk), Oak (Quercus spp; listed by IUCN as vulnerable) and Palmetto

(*Schippia concolor*; listed by IUCN as vulnerable and UNEP-WCMC as endangered)” [4.3.2.1 p. 118]

5.3.2. Mammal species at risk in the project area are identified at 4.3.2.2 [p. 120], and birds at 4.3.2.3 [122-3]. This section drew attention specifically to the scarlet macaw saying “it has been suggested that the Central population of the scarlet macaw from Mexico to Nicaragua is a separate subspecies (*Ara macao cyanoptera*) differing from the South American race by its slightly larger size and having more blue on its wings (Wiedenfeld 1994)”, 4.3.2.4 [p. 123] referred to herpetile species at risk, noting the presence of Morelet’s crocodile.

5.4. Impact resulting from construction activities is discussed in detail at pp 182-9 where mitigation measures are proposed.

5.4.1. p. 183-4 noted that riparian floodplain was extremely rare in Belize, amounting to 0.05% of the surface area of the country. The Macal and Raspaculo valleys were one of the most biologically diverse areas in the Selva Maya. The report discussed the importance of this habitat, in particular for the scarlet macaw. It recognised that “Impacts to the Chiquibul National Park and the riparian floodplain habitat are likely to be significant and will require mitigation”.

5.4.2. Mitigation is described as “Consult with/obtain a permit from the Minister of Natural Resources for areas of the Chiquibul National Park within the Project footprint. Measures to mitigate potential effects on riparian floodplain habitat include those identified in Chapter 7 (this chapter deals with construction activities)”.

5.4.3. The report considered that residual adverse effects were unlikely for the Forest reserves or National Park but accepted that there would be significant adverse effects to the riparian floodplain.

5.5. This plainly identified the risk to these habitats. The contrary is not suggested. This description of mitigation measures was criticised below in that it did not specify mitigation as such but only that a permit would be obtained. This does not make the EIA deficient for the following reasons:

5.5.1. Mitigation measures have to be seen in the context of the harm that will be likely to be caused. This part of the report was addressed to construction measures. The long term harm to forested areas and the National Park was assessed as unlikely. Some disruption caused by construction activities would be inevitable. The requirement for consultation and a permit from the Minister was a sensible way of ensuring that this was dealt with responsibly with minimal disruption. This is the type of measure than can be left to the good sense of the appropriate decision makers (see *Smith v Secretary of State* [2003] EWCA Civ 262 at para 33).

5.5.2. Pp 184-6 identified plant species at risk and correctly stated that for them significant impacts would occur from clearing and grubbing. Clearance was to be by hand with no heavy machinery or burning of debris. It is significant that at least 2/3 of the transmission line right of way was due to be cleared in any event to control an infestation of Southern Pine Bark Beetle [185]. It was nonetheless accepted that there would be a loss of vegetation and that "of importance are the potential effects on plant species at risk". The species at risk were again identified. Transplantation was proposed as a mitigative measure but it was conceded that the success of this kind of

programme was unproven. The EIA proposed that the specific details of the transplantation programme would be developed and tested in consultation with experts, prior to construction.

5.5.3. Pp 186 – 9 identified animal species at risk, concentrating on Baird's Tapir, the Scarlet Macaw (thought to be a distinct sub-species found in Belize and Guatemala), and Morelet's crocodile. These were described as "keystone indicator species". "This method of assessment is founded on the basis that measures taken to mitigate effects of the Project on these three species will mitigate effects on the other known species at risk identified for the Project area".

5.6. The report accepted that "significant impacts could occur to these populations due to habitat alteration (e.g., clearing, grubbing) resulting from the proposed Project construction activities". It identified mitigation measures but accepted that the scope for these was limited in the reservoir area. It said:

5.6.1. "Mitigation: Measures to mitigate potential effects on species at risk include minimizing the Project footprint within all designated areas, maximizing the retention of existing vegetation on the perimeter of the Project site and instituting an anti-poaching patrol to minimize the hunting pressure on species at risk. Specifically for the scarlet macaw, utilize nesting boxes (very limited success) and/or captive breeding initiatives. Specifically for Morelet's crocodile, consider relocation upriver (unproven), and develop alternative travel corridors.

5.6.2. "Significance of Residual Impact Due to the unproven or limited effectiveness of the identified mitigative measures, and due to

information deficiencies, it is likely that significant adverse effects will result from the proposed Project. Therefore, these species will be displaced and if they are endangered, population-level effects are likely. Specifically for the scarlet macaw, if the Belize population represents distinct sub-species, significant adverse residual effects are likely to result from Project development. If the Belize population is not distinct sub-Species, significant adverse residual effects to the macaw are unlikely”.

5.7. Similar points were made in relation to the impoundment of the reservoir itself [p. 227 para 6.3.2.1], although making the further point that the area affected is larger than the area affected in construction.

5.8. The submissions in the main report drew on the additional documents in Volume 2 of the supporting document. They included:

5.8.1. A baseline data report on terrestrial ecology dated 16<sup>th</sup> February 2000, with various appendices. This also included an extensive review of the literature in relation to the 3 main species referred to.

5.8.2. A draft report prepared by NHM dated 24<sup>th</sup> May 2001. This was presented together with a covering note to the effect that it was a draft report only and although data contained in it had been included in the main EIA report, the compilers of that report believed that there were inaccuracies in the NHM report and that it did not incorporate information obtained later in the 2000 season. The NHM draft report did recommend further study. Despite this, it did identify significant habitat loss for the macaw, crocodile and tapir and a loss of some 80% of the riparian shrubland habitat in Belize (although the basis for this assertion is controversial since it is based on the

assertion that 18 km of the Rasapucló river will be flooded and not 10km).

### **Consideration by the NEAC**

5.9. By the time the EIA report came before the NEAC, the NEAC also had submissions by the NRDC (above) and letters from objectors. These included a letter from Alastair Rogers [17<sup>th</sup> September 2001 p. 101], who had conducted part of the NHM study. He said:

“The WIA is in fact a full, albeit preliminary report. Its conclusions are very clear and fully justified. I am also quite certain these conclusions would be re-inforced – not fundamentally changed – by further research...we know more than enough to justify the conclusions reached so far...”

5.10. In the light of this material it is impossible to suggest that wildlife studies were inadequate. The Appellant’s real complaint is that the DOE decided to go ahead in the light of evidence of damage to the environment. But they have never sought to challenge the decision on that basis, nor could they do so. Approval of this project involves the assessment of matters of policy balancing environmental concerns with the economic interests of the Belizean people.

5.11. At the NEAC meeting on 24<sup>th</sup> October 2001 [minutes 252-5], there does not appear to have been any suggestion that the information about wildlife was fundamentally deficient. A minority (the ANDA and the BACONGO representatives) said that clearance should not be granted because of insufficient mitigation measures. This is not a complaint about the adequacy of the information provided but a complaint that more

ought to be done, and presumably, if it cannot be done then the project should not have clearance.

5.12. A member (not identified) stated [para 3.07 p. 254] that there was a lack of clear mitigation measures arising from the construction of transmission lines. In fact this was dealt with in section 7 of the Main report and section 6 also dealt with some construction methods.

5.13. In the event, the only further information requested about mitigation or impact on wildlife was in the most general terms. In his letter of 25<sup>th</sup> October 2001 Mr Fabro asked for "more details on the management of the project, mitigative measures and proposed monitoring plan" [51-2]. The response referred to the measures that would be developed in the ECP [p. 53-9].

5.14. The minutes of the meeting of 8<sup>th</sup> November 2001 [256-62] do not complain of inadequate data. They do refer to mitigation measures at:

1.05 – the chairman stated that the ECP will have to specify all mitigation measures with a budget.

2.04/2.07-9 A discussion of and suggestion that the EIA compile a comprehensive mitigation report. This appears to be in the context of increased mercury levels in fish.

2.11 – A member from ANDA suggested that they would be submitting suggested mitigation measures to the NEAC.

2.12-3 – Discussion of a performance bond to back mitigation measures contained in the ECP.

2.21 – “The chairman commented that there was little mitigation measures recommended in the EIA with respect to wildlife and ecology. However, he felt that there was sufficient information in the annexes that needed to be considered. The mitigation plan in the main document was deficient with respect to potential impacts on some wildlife species and no monitoring plans for wildlife was contained in the main report”. At para 2.23 it is suggested that there should be further studies to investigate how parrots would adapt to artificial nests and studies to investigate the impacts on wildlife populations.

3.03: “The chairman informed BECOL personnel that the EIA should have identified additional specific commitments with respect to mitigation and monitoring, in particular those with respect to wildlife”

5.15. The minutes of the 9<sup>th</sup> November 2001 meeting [263-7] record [1.03 – p. 264] “the chairman recommended that the NEAC consider granting clearance on the basis that a draft ECP be devised with the agreement that mitigation measures for major issues be detailed”. He suggested [1.12] that public meetings might be held later to “get suggestions for additional mitigation measures”.

5.16. So, by the time the NEAC and the DOE made their decisions, there was clear evidence about the impact of the project on flora and fauna. This would be significant, and in many respects mitigation measures were untested and might well fail. The DOE decided to grant clearance in full knowledge of the consequences.

## 6. **The ECP**

6.1. The ECP is at pages 427-60. Section 2, pages 3 to 7, and section 4, pages 9 to 10 of the ECP, contain very detailed mitigation measures addressing the points that have been raised in the course of the EIA process. They include:

6.1.1. Strict controls on the manner and times at which large trees are to be cleared, especially during the nesting season for macaws, together with a programme for artificial nesting cavities for these birds [para 2.01-5].

6.1.2. A strict no-hunting policy and a prohibition on firearms [PARA 2.07]. Baird's Tapir and Morelet's crocodiles were at risk from hunting.

6.1.3. Continuing surveys of wildlife [2.08].

6.1.4. Controls on blasting [2.09].

6.2. It is not clear whether the Appellant challenges these measures. Their complaint appears to be either that they were not included in the EIA or that they ought to have been concluded before clearance was given. But it is clear that these measures are directed to implementation and are measures to control what are acknowledged to be significant effects.

## 7. **ARCHAEOLOGY**

7.1. The EIA main report [pp 152-3] described a survey conducted in the reservoir area and the corridor for the proposed power line. It found 2 sites in the reservoir area, one consisting of ten structures oriented to form a private plaza. A quarry site was also found in proximity to this site. A second site was located near Rubber camp further upstream, and consisted of five structures that are elevated on a platform.

7.2. In fact, in later evidence it has been suggested that only one of these sites is likely to be flooded as the reservoir is filled, and this has not been challenged.

7.3. In the area of the proposed power line corridor between the existing Mollejon power generating station and the proposed Chalillo dam facility, a total of eight (8) prehistoric Maya structures were found, of which six were located outside the corridor itself. For these sites the EIA report noted [4.6.7] that:

“Since the survey did not include any excavation component, no archaic remains were found in any of the sites. It is likely that only a deposit of significant size such as evidence of a tool-making site, or camp feature would require any kind of formal mitigation.

“... the proposed power line corridor will represent minimal intrusion (from an archeological standpoint) in that work in the corridor will essentially consist of equipment moving through the area planting poles and then other equipment running cables. Since the construction does not involve the establishment of significant infrastructure in the area, the survey was deemed sufficient to prevent the destruction of archeological structures”.

7.4. The report also stated,

7.4.1. At para 6.2.3.6 (mitigation in relation to construction activities):

7.4.1.1. That drilling and blasting; clearing and grubbing; and excavation may compromise site integrity.

7.4.1.2. That the Commissioner for Archaeology had not yet determined what mitigative measures were necessary but the developer would “continue its consultation with the

Commissioner to develop an appropriate mitigation plan for construction”.

7.4.1.3. Significance of Residual Impact: Residual significant adverse effects are unlikely with implementation of an approved mitigation plan.

7.5. This passage does not assert that there are no significant adverse effects because of the presence of mitigation measures. It reaches that conclusion because of a combination of the nature of the sites concerned, the fact that, as stated earlier, the sites (in the transmission line ROW) were not directly affected by the construction activities, and the availability of mitigation measures. In any event, the NEAC and DOE reached an independent conclusion.

7.6. Para 6.3.3.4 (dealing with mitigation measures in the area affected by the reservoir) made the same points as above [p. 232].

7.7. In his judgment Rowe P concentrates on the 8 structures in the corridor and not on the 2 in the reservoir area. This an immaterial omission. The point is that the NEAC was properly satisfied that there was no issue of significant adverse impact that could not be dealt with by appropriate measures.

7.8. This issue was discussed by Mr Thompson, the member of the NEAC at the meeting on 24<sup>th</sup> October. He is recorded as saying:

“he is confident that the archaeological work in the area could be completed before the construction of the dam commences. The member stated that a more extensive survey of the area needs to be done. This includes test pitting and excavation of some areas. He informed the

committee that the Archaeology department does not have the resources to carry out these activities, but informed the members that BECOL assured him that they would bear all related costs”

7.9. Mr Thompson expands on this in his affidavit of 17<sup>th</sup> April 2002 [268-70].

“We reviewed the Information presented closely and reviewed available Information on past studies In the Maya Mountain region. We found that the archaeological remains in the area were not of the magnitude of our major archaeological sites. We observed that what existed there were mostly small mounds consistent with ancient Maya settlement patterns. These small mounds can be found all over Belize given that the Archaeological records Indicates that present day Belize was heavily populated by the ancient Maya”.

7.10. He was content that further investigation of the area could be carried out following the ECP. He is clear in his affidavit [paragraph 6] that the object of this was to establish population size in the area. There is no question of any major monument being at risk.

7.11. The ECP makes the following provision “In order to mitigate the impacts on the cultural resources and archaeological features within the impoundment area for the reservoir and in the proposed corridor for the transmission line from the Chalillo site to the Mollejon site, BECOL shall comply with the following:

1.01 BECOL shall ensure that further archaeological surveys of the impoundment area for the reservoir are conducted prior to the filling of the reservoir. It shall be necessary that during the clearance of vegetation within the reservoir area that an accredited archaeologist be included as a member of

the supervision team. This archaeologist shall report all findings directly to the Department of Archaeology (DOA) prior to the impoundment area being inundated.

1.02 BECOL shall ensure that excavation of sites or structures identified by the Archaeologist as being worthy of being excavated is conducted under the supervision of the DOA. Excavation shall be limited to sites or structures directly within the impoundment area or those that could be directly impacted by the transmission line. Excavation of any site or structure within the impoundment area shall be conducted from a lower to a higher elevation sequence with those in the lower sequence being excavated first.

1.03 The archaeological surveys, excavation and salvaging shall be conducted during the estimated 18-months construction phase. If excavation and salvaging within the impoundment area is incomplete then the remaining archaeological works, at higher elevations, shall be conducted during the subsequent dry seasons. BECOL shall assist in this endeavor by controlling the level of the impounded water within the reservoir.

7.12. The costs of these works, estimated at \$300,000 are to be borne by BECOL. Again, the measures do not in truth leave anything relating to the significant effects of the project for future consideration. The DOE, advised by the experts in the NEAC had made a judgment about the significance of the sites that might be compromised by the project. The archaeology member sought investigations primarily to determine settlement patterns in the area. It has never been suggested that there are remains of such major significance that they would need physically to be salvaged.