NO

BASIC DESIGN STUDY REPORT

ON

THE PROJECT OF PREPARATION FOR CONSERVATION OF VAT PHOU ARCHAEOLOGICAL SITE

IN

LAO PEOPLE'S DEMOCRATIC REPUBLIC

DECEMBER 2001

JAPAN INTERNATIONAL COOPERATION AGENCY

KOKUSAI KOGYO CO., LTD.

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Preface

In response to a request from the Government of Lao People's Democratic Republic, the Government of Japan decided to conduct a basic design study on The Project of Preparation for Conservation of Vat Phou Archaeological Site and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent a study team to Laos from the 4th of June to the 16th of July, 2001.

The team held discussions with the officials concerned from the Government of Laos, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Laos in order to discuss a basic design, and as a result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned from the Government of Lao People's Democratic Republic for their close cooperation extended to the teams.

December 2001

Takao Kawakami
President
Japan International Cooperation Agency

December 2001

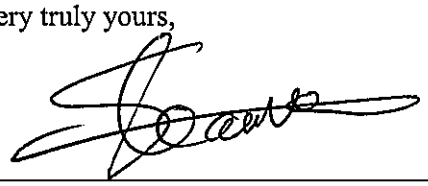
Letter of Transmittal

We are pleased to submit to you the basic design study report on The Project of Preparation for Conservation of Vat Phou Archaeological Site in Lao People's Democratic Republic.

This study was conducted by Kokusai Kogyo Co., Ltd., under a contract to JICA, during the period from May 2001 to December 2001. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Laos and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



Shinya Kawada
Project manager,
Basic design study team on
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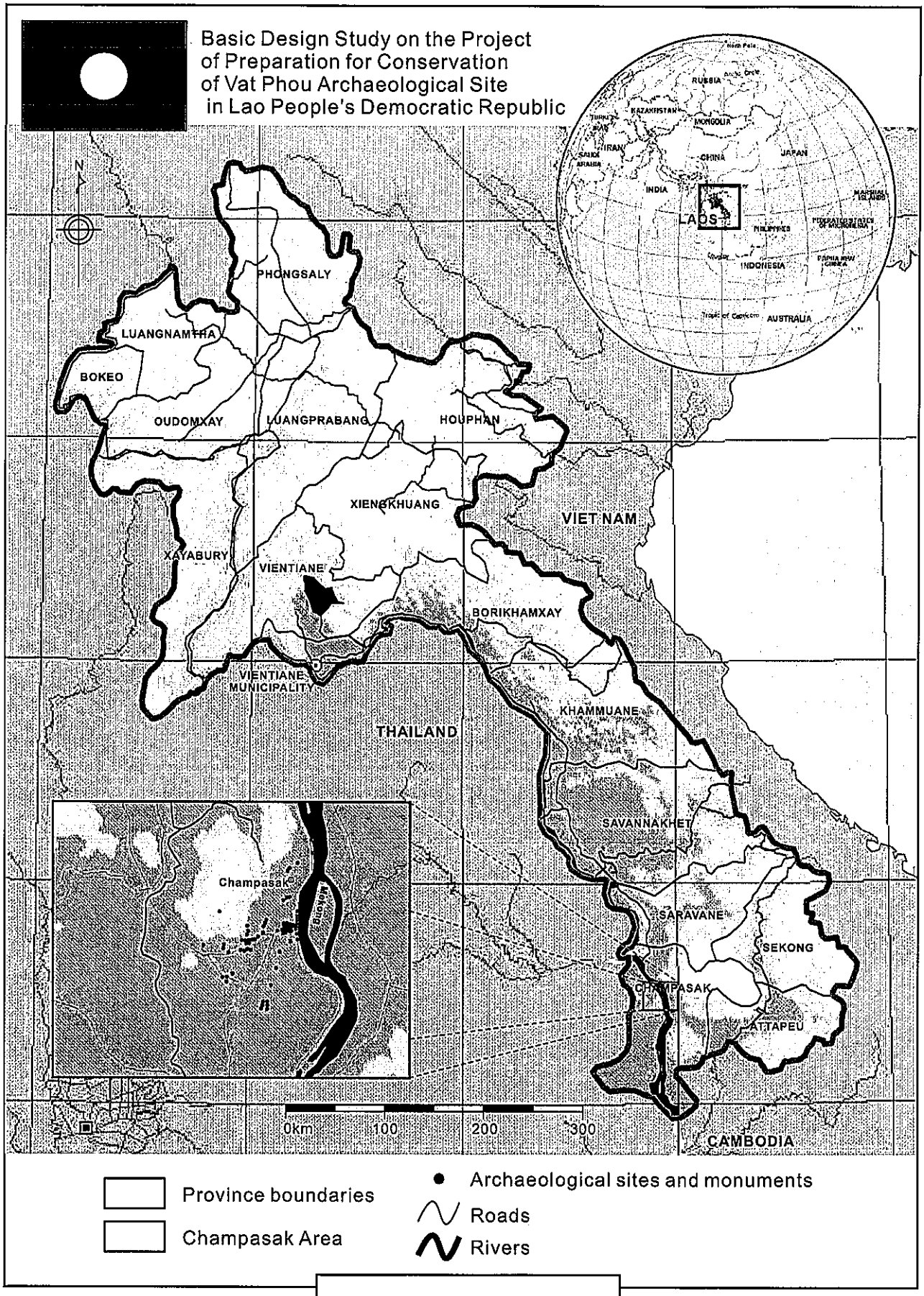

Location Map

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Abbreviations

A/P:	Authorization to Pay
B/A:	Banking Arrangement
E/N:	Exchange of Notes
GDP:	Gross Domestic Product
GNP:	Gross National Product
MDF:	Main Distribution Frame
MIC:	Ministry of Information and Culture
NGO:	Non Governmental Organizations
ODA:	Official Development Assistance
PC:	Personal Computer
PDIC:	Provincial Department of Information and Culture
UNDP:	United Nations Development Programme

Summary

Vat Phou Temple is a valuable part of the heritage of Khmer culture which dates from the 5th century. Starting with the UNDP survey in 1987, various surveys have been conducted of the cultural site with the aid of UNESCO, France, Italy, Japan, and other countries. The Champasak Heritage Management Plan, formulated as a result of cooperative activity by the UNESCO Cultural Heritage Preservation Japanese Trust Fund, which started in 1996, was approved as an official national project by the Laotian government in September 1998, and states a clear course of action concerning the restoration of cultural site. However, up to now, no restoration work has actually been carried out. The main reason for this is the erosion of the stone foundations by rainwater falling on the mountain behind Vat Phou Temple. Unless the invasion of rainwater is reduced, the temple may collapse again even after restoration work is undertaken. In addition, measuring of the stone structures in the temple site, which is essential for formulating a concrete restoration plan, has not been conducted yet.

Other than the restoration work, another problem is that residents or visitors cannot view the historical artefacts collected from the site as they are put away in a storehouse. Related parties in the Laotian government want to make the artefacts available to the public by establishing an exhibition facility.

Such being the circumstances, the Laotian government requested the Japanese government to cooperate in the preservation of the cultural site. In response to this request, the Japanese government dispatched a preliminary study team from January to February 2001. The study team exchanged opinions with the Laotian organizations concerned and the residents of Champasak province regarding the present state of the site, the concreteness of the Loation government's restoration and preservation plan, and verification of an implementation system. It was concluded that construction of an effective drainage system to minimize damage to the stone structures, as well as a repository for the safekeeping and preservation of the artefacts were needed. The need for equipment to restore the stone structures was also concluded. In addition, it was clarified that the Laotian side had a very strong interest in preserving the cultural site, and the expectations of local residents in particular were very high. Based on this, the Laotian government submitted a request in conformity with the contents of the above-mentioned preliminary study report. In response to the said request, the Japanese government dispatched a basic design study team to the site from June 4 to July 16, 2001. The study team held discussions with the related parties in the Laotian government and conducted a field survey at the project site. After completing an analysis of the field survey in Japan and formulating a plan, the study team then held meetings in Laos from October 4 to 13, 2001 to

explain the outline of the basic design.

In formulating the basic design, great consideration was given to the effects on Vat Phou Temple and its environs. For example, the requested roads for construction work and the maintenance road to the upper section of the temple site shall not be constructed because of their considerable effect on the surrounding natural. Instead, a monorail that can effectively transport material through the mountain area shall be used for the construction work in order to minimize the amount of land affected. As for the location of the drainage channels, in order not to spoil the view, the open channel shall be constructed in the wooded area on the mountainside that cannot be seen from the temple site, and the pipe culvert shall be constructed at the foot of the mountain. As for the repository, in order to avoid obstructing the view in the vicinity of Vat Phou Temple, the size of the building was reduced from the two-story building requested by the Laotian government to a one-story building. As for the air-conditioning, natural ventilation shall be used instead of electric air-conditioners for the purpose of reducing maintenance costs. As the Laotian side lacks sufficient technical ability to restore the stone structures on the temple site and there is no implementation system or concrete work procedure, the restoration equipment shall be limited to the measuring and recording equipment for stone structures required in the preliminary stage of restoration work, and educational equipment for instructing neighboring residents. The heavy equipment necessary for full-scale restoration shall be excluded from the Project. Fences shall also be excluded from the Project because the construction work shall entail the relocation of a large number of private houses and land. The existing fences will be adequate if the management of them is improved so that their original function is fulfilled (keeping water buffalo off the temple site). With regard to the restoration staff, there are no engineers skilled in the restoration techniques of stone structures so for the Champasak Heritage Management Plan to be realized, a soft component needs to be included in the basic design. That is, the transfer of technical skills to enable the restoration activities to be put into effect, as well as technical support related to the actual measuring, recording, and processing of data will be required. In addition, as the Laotian side does not have sufficient experience in exhibiting artefacts, support concerning the formulation of an exhibition plan and the actual display of the artefacts is essential for the smooth launch of the Project.

Component		Contents of the initial request	Contents of the Project
Drainage system	Access road	Flat area: 2,500 m	Flat area: 350 m (banking)
		Mountainous area: 1,000 m	Mountainous area: Temporary structures (monorail and lift)
	Drainage channel	200m	Mountainside: open channel 147.34 m Foothills: pipeculvert 55.0 m
Repository for archaeological artefacts	Structure	2-story reinforced concrete	1-story reinforced concrete
	Total floor area	2,160m^2	960m^2
Equipment for restoration		36 types (heavy equipment for restoration, measuring and recording equipment, educational equipment, etc.)	24 types (measuring and recording equipment, educational equipment, etc.)
Fence	Brick wall	2.75 km	Not included in the Project
	Wire fence	1.8 km	Not included in the Project
Soft component (technical support)			• Formulation of restoration work procedures • Measuring and recording of stone structures • Formulation of exhibition plan and actual exhibition of artefacts

The detail design of the Project will take approximately 3 months. Construction of the drainage system and repository as well as the procurement of equipment will take approximately 8.5 months.

By implementing the Project, the catchment area where the intruding rainwater collects can be reduced by 70% thereby reducing the effects of rainwater on the stone structures. The construction of a repository will ensure the safe storage of the artefacts collected from the Vat Phou site, and historically important relics shall be put on public display in the attached exhibition room, enabling the more than 20,000 people who visit the site annually to view them. In addition, coordinates data of the stone structures and drawings shall be prepared with the procured measuring and recording equipment necessary for the restoration of the stone structures and the technical support related to operation of the equipment, and this will help in the preparations for implementing the restoration work plan.

For the Project to be a success, in addition to securing maintenance expenses for the facilities and equipment, the Wat Phou management office must employ two additional persons to be in charge of the restoration, making a total of five persons required to carry on measuring, recording and restoration works. Furthermore, it is essential that the Ministry of Information and Culture dispatch three specialists in building and civil engineering to the site to provide technical guidance to the staff at the Vat Phou management office with regard to the measuring, recording and restoration work.

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Chapter 1

Background of the Project

Chapter 1 Background of the Project

The ancient temple complex of Vat Phou lies in the Champasak District, south of Pakse city, some 500 km down the Mekong River from the capital city of Vientiane. It is an area of 390 square kilometers and there are remains of two ancient Khmer cities dating from the 5th to 12th century.

It was believed to be the capital city of Chenla, which was the heartland of the state that dominated much of Southeast Asia for several centuries. It is also significant from the view of urban planning. Infrastructure like houses, roads, waterways and temples in the area have been constructed in harmony with the surrounding landscape, in front of Kao Mountain, a symbol of mountain worship.

The stone structures of greatest value are the main temple on the top terrace and northern and southern palaces. However, some of their pillars have started to slant and some parts have collapsed, because the rainwater flowing down from Mount Nak in the rear directly onto the temple site, washes away ground soil there and makes the foundations of the stone structures unstable.

During the annual Vat Phou festival, approximately 100,000 domestic visitors come to the site, and, they are allowed to climb the stone structures because of poor management at the site. This results in damage to the structures as well as injury to the visitors due to falling off the structures or falling stones.

Therefore, in 1996, UNESCO, with support from experts from Italy, Japan, France, Australia, and the United Kingdom, began a second phase of assistance to the Government of Lao PDR. The purpose was the safeguarding of not only the monuments of the Vat Phou temple complex, but of all the associated archaeological remains, cultural landscapes and sacred environment components of the Champasak Plain, the banks of the Mekong River and Phou Kao Mountain. The content of this assistance was compiled into The Champasak Heritage and Cultural Landscape Management Plan and officially adopted by the Government of Lao PDR in September 1998. It was set forth as a step towards the nomination and inscription of the site on the UNESCO World Heritage List in December 2001.

Based on this, the Government of Lao PDR requested assistance from the Government of Japan concerning the conservation of the cultural site. In response, the Government of Japan dispatched a preliminary study team to Laos during the period from January to February 2001. After conducting a field study and analyzing the present situation of the site, the study team exchanged opinions on countermeasures with concerned persons and the local people in Champasak Province. It was found that the people of Lao PDR, especially the local people, were very interested in the conservation of the cultural site. Moreover, it was ascertained that the introduction of a drainage system would be effective in avoiding further collapse of the temple, and that construction of a repository would be necessary for the preservation of artefacts. Also, restoration equipment for the stone structures will need to be procured to implement the restoration plan. Based on this study, the Government of Laos PDR submitted again a request letter including the content mentioned above.