

## Component Part No.2-2 of the "Sites of Japan's Meiji Industrial Revolution" Conservation, Restoration, Presentation and Public Utilization Plan for Terayama Charcoal Kiln (Area 2 Kagoshima) (Abstract)

Kagoshima City drew up a Conservation, Restoration, Presentation and Public Utilization Plan for the Terayama Charcoal Kiln (hereinafter referred to as “Plan”) in FY 2016 and 2017, which became a source of “Conservation Work Programme” pursuant to Recommendation b) in Decision: 39 COM 8B. 14 as adopted by the World Heritage Committee at its 39<sup>th</sup> session in 2015. The Plan comprises detailed measures for the conservation, restoration, presentation and public utilization of the component part of the “Sites of Japan’s Meiji Industrial Revolution: Iron and Steel, Shipbuilding and Coal Mining” (hereinafter referred to as “Sites of Japan’s Meiji Industrial Revolution”). This document provides an abstract of the Plan.

### 1. Vision

Maintain in good condition those remains and its settings embodying the production system for hard charcoal, which served as the fuel for the Shuseikan Project; enhance the value and attractiveness of these, and the visitor environment.

The Terayama Charcoal Kiln was a large kiln built for the mass production of powerful-firing hard charcoal to supply the fuel needed for the Shuseikan Project. In addition to representing the hard charcoal production system, the site also forms part of the whole Shuseikan industrial system which illustrates the phase of trial and error experimentation in the iron and steel manufacturing field that took place at the Sites of Japan’s Meiji Industrial Revolution.

The city will serve as the main agent in not only maintaining the kiln itself as remains contributing to the Outstanding Universal Value of the World Heritage property, but also undertake surveys of surrounding remains that embody the whole charcoal production system, and conserve the settings, such as the forests that provided the raw materials and the streams that supplied the cooling water after firing.

The city will enhance explanation functions so that visitors can understand the hard charcoal production system as well as the role which the site played in supplying fuel to the Shuseikan Project and ensure a safe observing environment.

#### (1) Conduct surveys of and conserve (maintain, repair and restore) the charcoal kiln and related remains

The city will conduct a displacement measurement survey of the kiln’s masonry, which remains above ground in the same condition as when it was built, engaging in conservation and restoration where necessary under the direction of experts, and maintaining the masonry in a stable condition. If any underground archaeological remains related to hard charcoal production are discovered through excavation surveys, appropriate measures will be taken to conserve them underground.

#### (2) Conserve (maintain, repair and arrange) the settings, which is closely related to kiln operation,

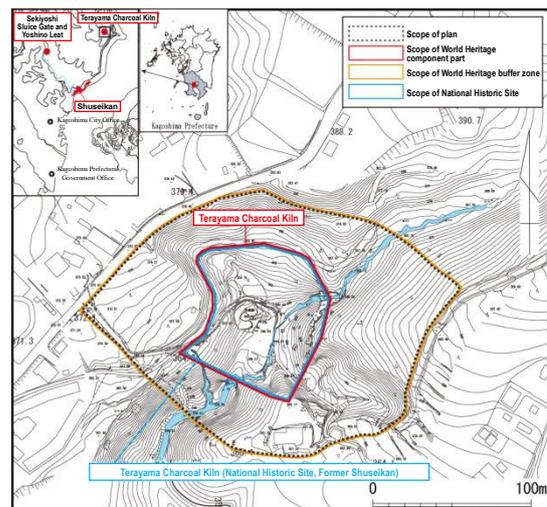


Figure 1: Scope of Plan

### **and arrange and improve later installations appropriately for landscape**

The *Castanopsis sieboldii*, tan oak, and other evergreen broad-leaved trees around the kiln which supplied the raw materials for the kiln, as well as the stream running down the eastern side of the kiln which was necessary to secure the charcoal cooling water for the production process, are both essential elements in understanding the hard charcoal production system. Therefore, the city will appropriately manage and maintain elements and undertake conservation and restoration, arrange and improve landscape where necessary. The significance of trees and concrete installations from later times that hamper understanding of the original hard charcoal production system will be carefully judged, and, where necessary, these will be felled, removed, or arranged, improved.

### **(3) Provide clear explanations of the original kiln operation**

To enable visitors to understand the role of the kiln in the hard charcoal production and utilization system from the sequence of coal production processes (gathering raw materials, firing the kiln, extracting and cooling the charcoal) to transportation to Shuseikan, as well as the use of hard charcoal in the reverberatory furnace, etc., the city will install explanation boards for the site of the charcoal kiln based on excavation survey results, in addition to installing planar markers indicating the locations, scales, and structures of the underground archaeological remains of related facilities.

Explanations will encompass the process of historical changes and developments of the component part, beginning with the dispatch of engineers to Kii and Kumano region and focusing on the period when the construction of kiln was completed and in operation, but also including the prior period when the area was used by the Satsuma Clan's feudal lord, Shimadzu as the Yoshino grazing lands, as well as the latter post-operational period through to the present day, when it has been protected as a symbol of the region.

Where explanation boards are installed, and planar markers laid down for underground archaeological remains, care will be taken to harmonize these with the terrain and the natural landscape surrounding the site of the charcoal kiln. Where necessary, measures for the safety of paths leading to the kiln in order to maintain a safe observation environment.

## **2. Policy**

The policy consisting of following five items has been set to actualize the Vision:

### **(1) Promoting research and study**

The city will undertake the following research and surveys.

The historical document survey will seek to elucidate the entirety of the hard charcoal production system, including the sequence of the processes conducted at the Terayama Charcoal Kiln and the location of the related facilities at that time, while the excavation survey will focus on understanding the actual state of the storehouse remains and other related facilities, as well as elucidating the structure of the kiln. Where the excavation survey reveals carbide, this will be subjected to a physico-chemical analysis. At the same time of the historical document and excavation surveys, the city will also conduct measurement and ground surveys as necessary. In addition, displacement measurements of the kiln masonry will be continued to identify and analyze the behavior of each stone materials. A visitor survey will be undertaken to confirm the extent of visitor impact on conservation of the component part, while monitoring will also be implemented to identify any changes in the component part.

### **(2) Conserving, reinforcing and stabilizing of materials, substance and structures of masonry of the kiln**

To maintain constituent elements of Terayama Charcoal Kiln contributing to the Outstanding Universal Value, such as the kiln masonry, etc. the city will engage in regular monitoring, and if damaged areas, or areas where damage could potentially occur, are discovered, will undertake systematic restoration in order of

priority as determined with reference to the views of experts, etc., to stabilize and strengthen those areas. Restoration of exposed structures will be undertaken with due sensitivity to maintaining the structures and materials used at the time. Underground archaeological remains that have so far been detected will be given a protective earth layer of an appropriate thickness and then maintained in a stable condition underground.

**(3) Illustrating and explaining the hard charcoal-production system at the component part**

The city will deploy guides to the site of the charcoal kiln and set up information boards to explain to visitors (a) the hard charcoal production system, (b) the role that the kiln played in the Shuseikan Project; and (c) the connection to other historic sites in the area. At the guidance facility which is scheduled to be built within the Shuseikan grounds, the owner (who will also install the facility)<sup>1</sup> will create exhibits of Terayama Charcoal Kiln and provide an explanation for this. The results of surveys conducted by the city will be actively reflected in the content of explanations and exhibits.

**(4) Arranging and improving landscape from a scenic perspective**

The city will preserve the *Castanopsis sieboldii* and tan oak trees within the component part which supplied the raw materials for the kiln, and concrete installation and barrier fences that were added later period will be arranged for landscape. In the buffer zone, the city will maintain the surrounding forests where *Castanopsis sieboldii* and tan oak are distributed, as well as working to maintain a safe and pleasant walking environment along the nature trail.

Where monitoring identifies spots that have or might have a negative impact on the landscape, the owner of the spot will improve the landscape to prevent or mitigate that impact based on the views of experts and in conjunction with the city and other relevant administrative institutions.

**(5) Implementing projects**

The city will set out a clear implementation schedule that delineates short, medium and long-term phases and the various projects to be addressed within those phases to ensure the steady and phased implementation of the Plan.

The owners and managers of each of the component parts of Area 2 Kagoshima and the related buffer zones will be responsible for managing and operating the each project regarded as necessary for the three phases pursuant to the Plan. In addition to the owners and managers, the Government of Japan and Kagoshima Prefectural Government, local neighborhood associations, NPOs, and other relevant institutions and groups will coordinate at the Shuseikan Conservation Council and the Partnership Council for Modern Industrial Heritage Sites in Kagoshima to ensure steady progress on each of the conservation, restoration, presentation and public utilization projects.

**3. Methods**

**(1) Research and Study**

The city will undertake the following surveys.

**(a) Historical document surveys**

Because Nariakira Shimadzu dispatched Yamamoto Tosuke to Kii and Kumano region to collect information in preparation for building the kiln, a survey will be conducted on the structure of kilns and the hard charcoal production process in Kii and Kumano, and information will be collected on Nishu Oteyama (Miyakonojo City and Ayacho, Higashimorokata district in Miyazaki Prefecture), which was managed by the Yamamoto family.

**(b) Excavation surveys**

Additional excavation surveys will be conducted on the structure of the interior of the kiln masonry, as well as surveys of facilities related to the charcoal-producing process (setting materials in the kiln, firing

---

<sup>1</sup> The Shuseikan guidance facility will be built by the owner, Shimadzu, Ltd.

the kiln, refining and cooling the charcoal, etc.) and the remains of these. Where an excavation survey reveals carbide, this will be subjected to a physico-chemical analysis.

**(c) Measurement and ground surveys**

Measurement and ground surveys will be conducted as necessary based on the results of the historical document and excavation surveys. In addition, displacement measurements of the kiln masonry will be continued to identify and analyze the behavior of the each stone materials.

**(d) Visitor surveys**

The city will conduct a survey on visitor numbers, as well as observations of visitor behavior and the length of their visits, to ascertain their impact on the state of the component part as well as the degree of visitor satisfaction.

**(g) Monitoring**

Every year city will inspect the component part and the buffer zone and ascertain their current state. Individual data for the component part will comprise detailed records of the parts and materials of each constituent element, while individual data for the buffer zone will comprise records of the landscape from multiple points selected within and outside the component part. Monitoring charts aggregating the above information will also be used.

**(2) Conservation and restoration**

**(a) Target**

The city will conserve and restore masonry and other constituent elements of the component part contributing to the Outstanding Universal Value. The location of each of these elements is noted in Figure 2.

**(b) Basic concept and methods**

**Charcoal kiln (including the foreground) and monument to the charcoal kiln**

Where areas of the kiln masonry are found to have loosened or swollen, the city will conduct displacement measurement surveys over multiple years and, based on the results, specify which areas need to be restored, undertaking that work using the optimal methods. The extent of restoration work will be kept to a minimum pursuant to expert guidance. If sheets for covering, sandbags, or other items have been temporarily installed to prevent rain damage, these will be removed before the restoration work.

While no areas of the monument to the kiln (Figure 2) appear to be in need of urgent repair at this point, the state of the monument will be monitored and restoration work undertaken if any deterioration or damage is identified.

**(3) Presentation and public utilization of the component part in light of hard charcoal production system**

In the scope of the component part, all the constituent elements of the hard charcoal production system, including the kiln, the flat ground where the related facilities are thought to have been located, and the surrounding forests are converged. The city will therefore treat the area as one unified zone, using the component part not only as a tourism resource but also as a resource contributing to school and social education as well as regional revitalization. Zoning is shown in Figure 4.

**(a) Tour route**

A route will be set out between the car park of Terayama Fureai Park around 800 meters to the south of the component part and the car park to be built next to Prefectural Road 220 around 100 meters west, using the nature trail to take visitors through to the kiln and its foreground (Figure 5).

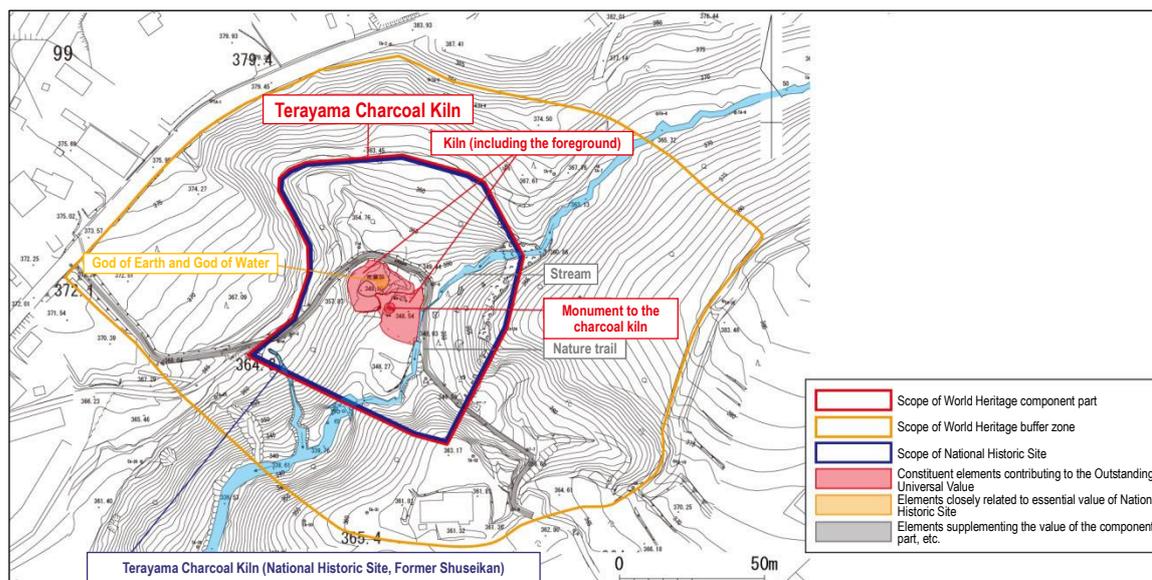


Figure 2: Constituent elements, subject to conservation and restoration, etc.

**(b) Planar markers for presentation of underground archaeological remains and environmental improvement**

An excavation survey will be undertaken of the original related facilities such as storehouse and others. Based on the results, planar markers will be installed to provide information on the locations, scales, and structures of underground archaeological remains. In the foreground of the kiln, a layer of earth will be maintained to protect underground archaeological remains. The stone monument standing to the southeast of the kiln obstructs the front view of the kiln and will therefore be moved to a more appropriate spot. Improvements will be made to rain runoff on the nature trail and the surface of the trail.

**(c) Arranging and improving landscape and planting vegetation**

The artificial wooden fence that restricts visitors from going inside the masonry of the kiln will be upgraded into a barrier of a design and materials suited to the landscape. The concrete embankment along the edge of the stream will be arranged using natural stone in a way that maintains continuity with the downstream stone embankment. Cedars and other trees planted in later years will be progressively felled while maintaining and planting the *Castanopsis sieboldii* and tan oak trees which supplied the raw materials for hard charcoal.

**(d) Guidance and information boards**

A World Heritage Plaque as one of the Sites of Japan’s Meiji Industrial Revolution will be set up in the foreground, highlighting the Outstanding Universal Value of the World Heritage property as a whole and the fact that the kiln is one of the 23 component parts of the property. The results of future surveys will be reflected in the content of guidance boards, etc., for related facilities in the vicinity of the kiln.

**(e) Administrative and utility facilities**

Given trends in visitor numbers, a car park and toilets will be set up next to Prefectural Road 220 at the western end of the nature trail, which is close to the kiln (Figure 5).

**(4) Arrangement and improvement of landscape in the buffer zone**

The city and the relevant administrative institutions will conserve the excellent local environment and landscape through regulations pursuant to the Landscape Act, the Natural Parks Act, and the City Planning Act. The city will also work to protect the wild *Castanopsis sieboldii* and tan oak trees which supplied the raw material for charcoal, as well as maintaining a good walking environment along the nature trail.

#### 4. Projects Implementation

##### (1) Order of priorities

The schedule for implementation of those projects which should be undertaken on a priority basis in the each zone will be as in Table 1. Projects which will be given particular priority in the short term phase are as follows:

- Masonry displacement measurement and kinetic analysis
- Restoration of the kiln and the kiln monument
- Establishment of a World Heritage Plaque
- Improvement of the surface of the nature trail

Category	Project	Short term					Medium term	Long term
		2017	2018	2019	2020	2021	2022-31	2032 onward
(1) Research and study	(a) Additional research on kiln structure							
	(b) Excavation surveys on storehouse remains and other related facilities							
	(c) Masonry displacement measurement and kinetic analysis							
(2) Conservation and restoration of buildings and historical and archaeological remains and objects	(d) Restoration of kiln and monument of kiln							
(3) Presentation and Public utilization in light of industrial systems	(e) keeping earth layer for the foreground							
	(f) Protection of the wild <i>Castanopsis sieboldii</i> and tan oak trees which were the raw material for charcoal							
	(g) Establishment of a new carpark and toilets based on visitor trends							
	(h) Installation of a World Heritage Plaque							
	(i) Improvement of the surface of the nature trail							
	(j) Improvement of nature trail drainage							
	(k) Upgrading of barrier fence							
	(l) Arrangement of concrete water channel for landscape							
	(m) Updating of guidance boards based on survey results							
	(n) Installation of planar markers for underground archaeological remains of storehouse and other related facilities							
(o) Shifting of the monument								

Table 1: Project implementation schedule

##### (2) Review of implementation schedule

The schedule will be reviewed after the medium-term phase (15 years) based on the state of project progress. Where new measures need to be taken, a review will be considered prior to that time.

##### (3) Other

Kagoshima City has carried out conservation and restoration work, etc. for the Shuseikan by securing necessary funds\* making use of various subsidy programs available in FY2016 and FY2017, the first two years following inscription of the property on the World Heritage List. To ensure the smooth implementation of the project, it plans to continue such efforts to secure necessary funds in partnership with relevant institutions.

\* Approximately 2 million yen was spent in FY2016 (including the amount spent for improvement of visiting path) and 3 million yen has been budgeted for FY2017 (including the amount earmarked for masonry displacement measurement and kinetic analysis), both including costs incurred or

earmarked for the presentation and public utilization of the component part, but excluding the cost for day-to-day maintenance.



Figure 3: Conceptual drawing after project completion of Terayama Charcoal Kiln

## 5. Basic Plan

The Terayama Charcoal Kiln basic plan and conceptional drawing after projects completion of the component part are shown in Figures 4 and 5.

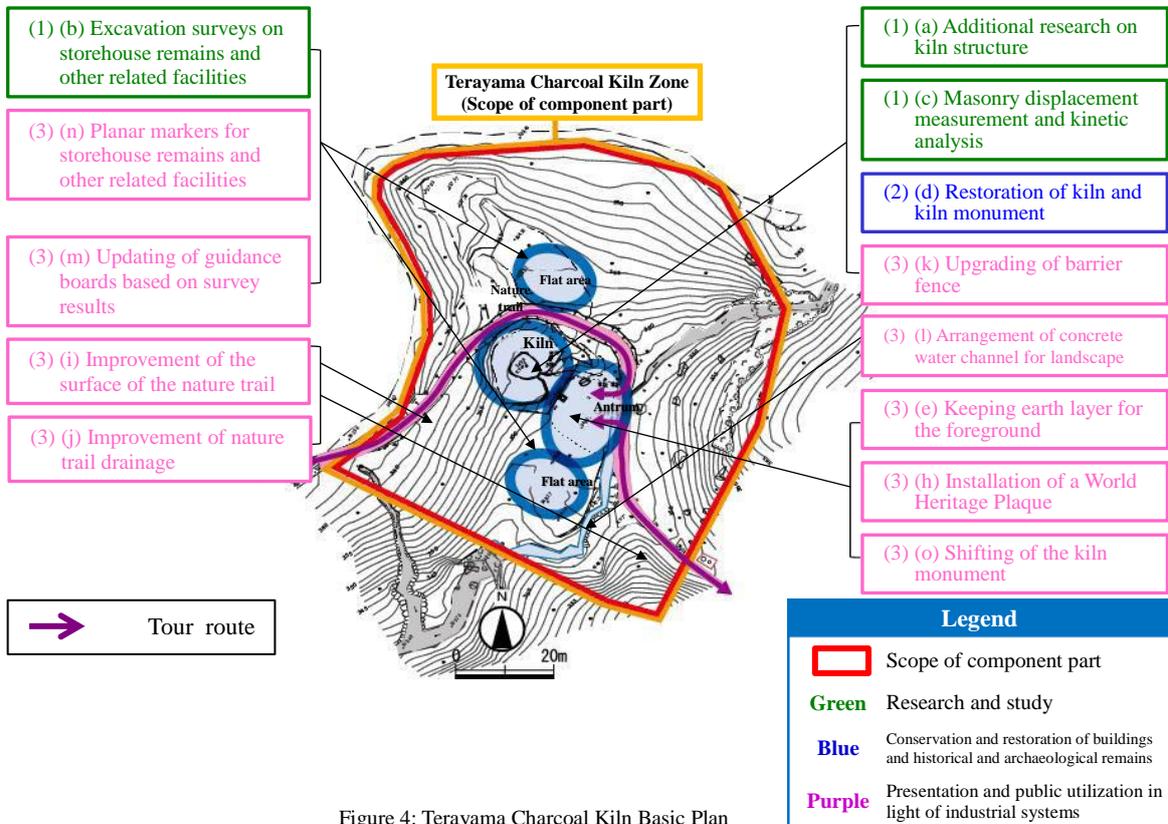


Figure 4: Terayama Charcoal Kiln Basic Plan

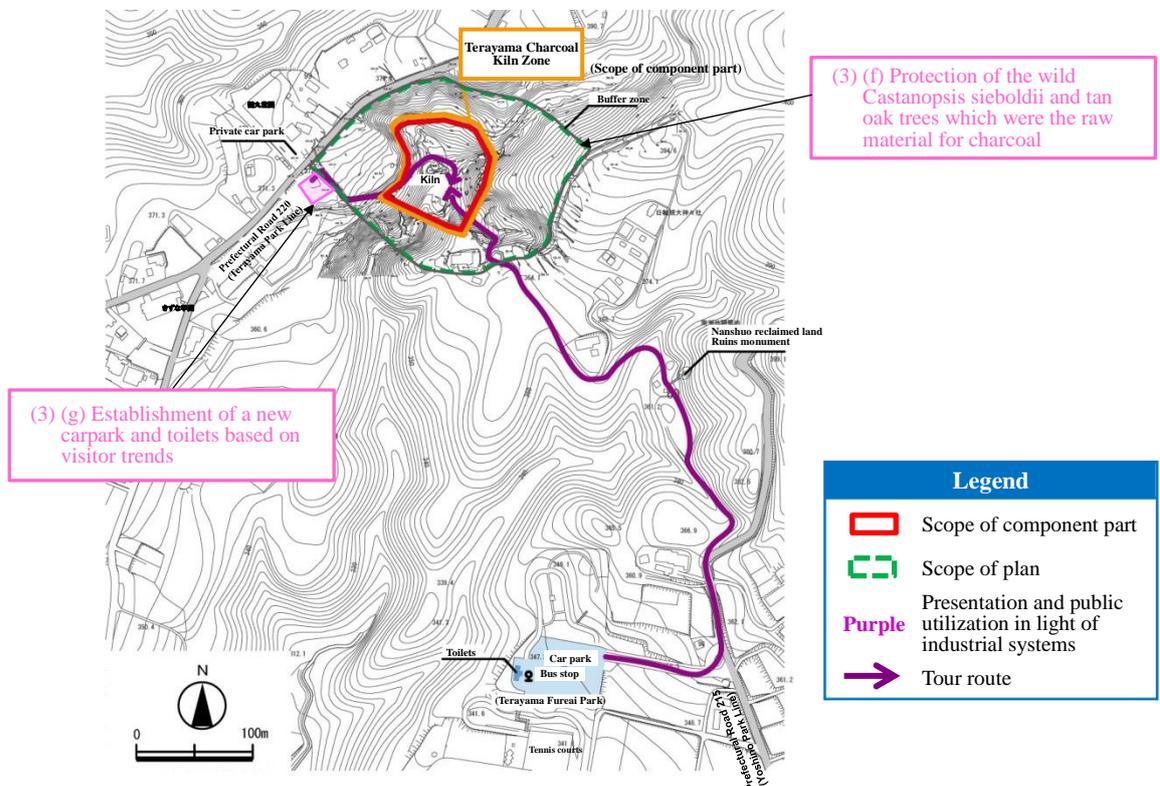


Figure 5: Terayama Charcoal Kiln vicinity Basic Plan