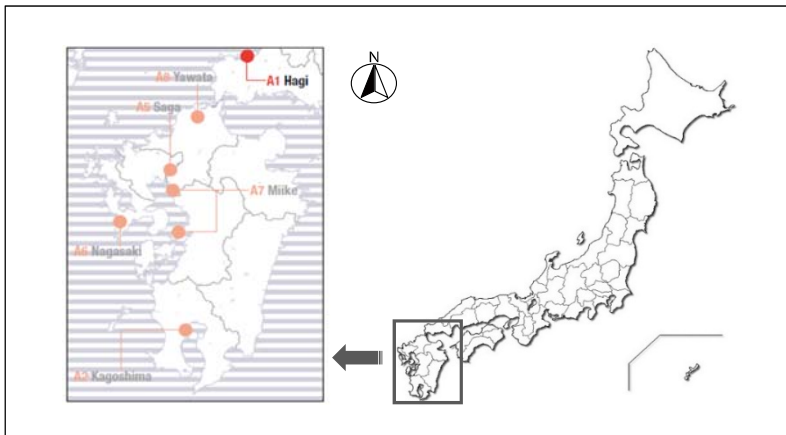


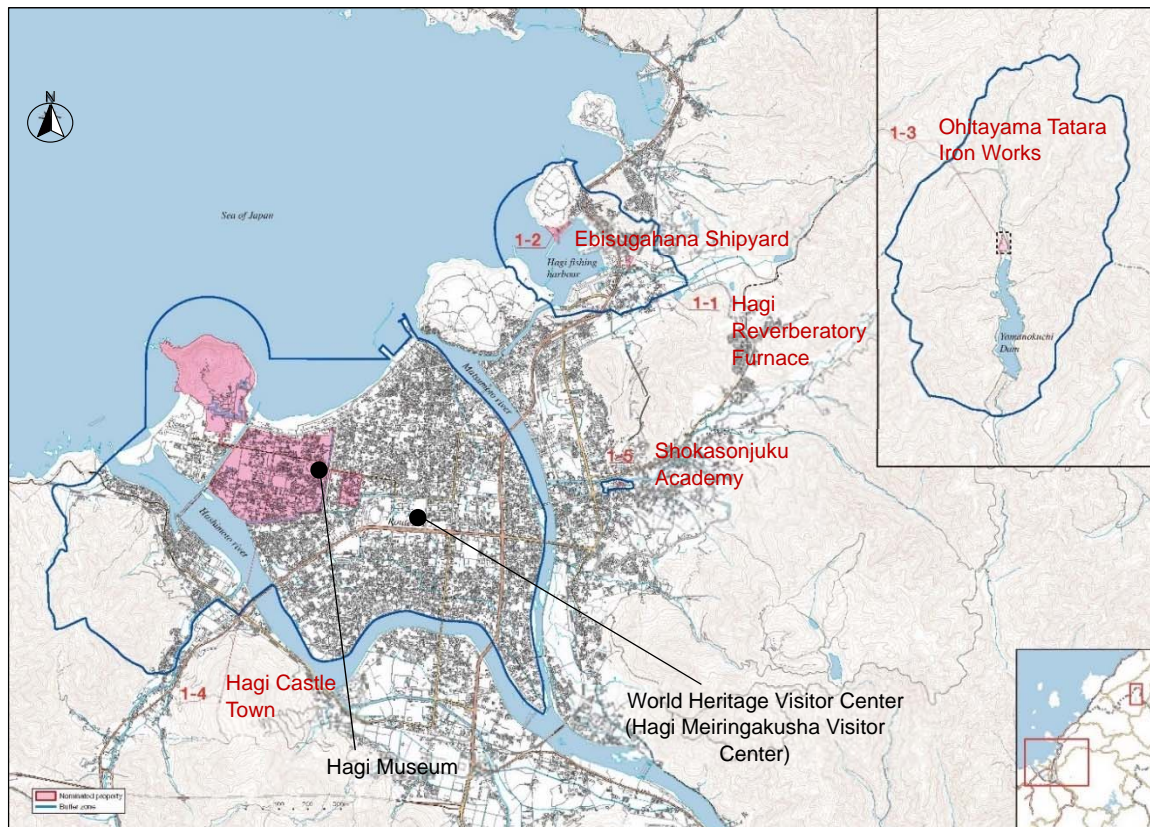
**Component Part No. 1-1 of the “Sites of Japan’s Meiji Industrial Revolution”
Conservation, Restoration, Presentation and Public Utilization Plan
for the Hagi Reverberatory Furnace (Area 1 Hagi) (Abstract)**

Hagi City drew up a Conservation, Restoration, Presentation and Public Utilization Plan for the Hagi Reverberatory Furnace (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 39th 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.

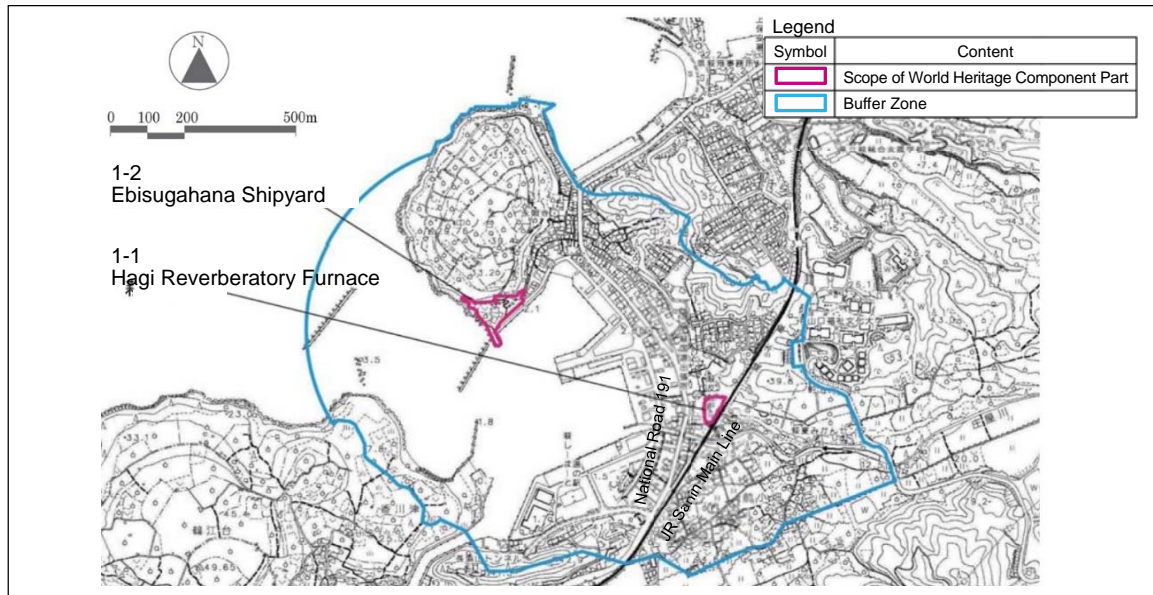
(1) Area 1 Hagi: Location



(2) Distribution of component parts of the “Sites of Japan’s Meiji Industrial Revolution” in Area 1 Hagi



(3) Scope of the Plan (Scope of Hagi Reverberatory Furnace component part and buffer zone)



1. Vision

Recognizing the site as embodying the early industrialization process of trial and error in the iron-making field, to restore degraded materials and strengthen structures in order to maintain the furnace in a stable condition and promote public utilization tailored to the particular features of the location.

The Hagi Reverberatory Furnace was an attempt by the Hagi (Choshu) Clan, which lacked Western blueprints, to build a smelting plant using local materials and traditional technologies. While the plant never became operational, it stands as a symbol of the early industrialization process of trial and error, when Japan and the Hagi (Choshu) Clan were seeking to respond to the rapid pace of industrialization. No major restorations have been made to date, with only enough work undertaken in the 1970s to stabilize the existing state of the facility, but while the brickwork at the top of the structure has seriously deteriorated, the building retains almost all its original shape and materials, the stonework at the bottom included. The furnace is one of the five component parts of Area 1 Hagi that illustrate the challenge phase of trial and error in the iron and steel manufacturing and ship-building fields. The process of historical changes and developments of the furnace centers around 1856 when surviving records indicate that the facility was operational, but began back in 1840, when the outbreak of the Opium Wars prompted the Hagi (Choshu) Clan to industrialize in order to strengthen its maritime defense, and extends through the subsequent preservation of the furnace as a symbol of Hagi's modern heritage up to the present.

To realize the theme outlined in the Vision, the necessary conservation, restoration, presentation and public utilization measures will be conducted with a focus on the following two points.

(1) Restoration as a “symbolic site”, with maintaining the original form and materials

The most critical aspect will be to maintain the original style and materials of the Hagi furnace to the greatest possible extent, while also preserving them in situ into the future. In terms of immediate restoration work, therefore, Hagi City will not undertake any large-scale dismantling and restoration work on the upper brick section but rather engage in the minimum necessary intervention, primarily mounting replacement bricks in places that have deteriorated particularly badly and supplementing this with other methods where necessary. For the lower stone portion, the city will take steps to reinforce the existing

stone materials.

The city will engage in long-term monitoring of the furnace through ongoing displacement surveys and fixed-point observations, as well as studying building methods and materials about which little has been known to date in order to accumulate new knowledge and skills for the next stage of restoration.

(2) Multiple types of public utilization to maintain and display the furnace's unique form

Maintaining and displaying the unique form of the Hagi Reverberatory Furnace will be the most effective method of explaining the value of the remains. The city will therefore also maintain and arrange the surrounding landscape and scenery which serve as the context for the furnace.

In addressing public utilization, the city will establish viewing points along visitor paths within the site that enable visitors to see the furnace in its entirety, as well as ensuring lines of movement that enable them to approach the furnace and view its appearance from multiple directions. Vegetation will be trimmed so that the furnace can also be seen from the surrounding area. The city will create a viewing point so that visitors can look out over the Ebisugahana Shipyard, a neighboring component part, from the furnace site.

In addition, the placement of existing guidance and explanation boards and their content will be updated to promote understanding of the furnace for the visitors.

2. Policy

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

(1) Promoting research and study

Research to date has not elucidated the entirety of the iron-making system at the Hagi Reverberatory Furnace, and certain details of the design and structure of the actual furnace also remain unclear. The city will continue to conduct excavation surveys and studies of relevant historical documents. The details of the furnace construction method in particular are not apparent, and as there are few prior or similar examples, the city will conduct the various types of studies needed to undertake restoration appropriately. A survey of visitors will be undertaken to confirm the extent of their impact on the site, and the city will also institute monitoring to trace changes over time.

(2) Restoring the furnace and related remains (preserving, reinforcing, and stabilizing materials and structure)

The city will restore the seriously degraded brickwork at the top of the furnace building by mounting replacement bricks made with the same types of materials and methods, supplemented with other methods as necessary. For the comparatively stable lower stonework, the city will preserve the current materials and structure and monitor these on an ongoing basis. Where damage is detected, preservation and reinforcement methods will be explored.

At the same time, because the furnace masonry employs a masonry construction¹ which is a combination of stone, brick, concrete blocks, and other materials, it has limited seismic strength. To avoid the collapse of the entire structure, the city will take secondary reinforcement and stabilization measures, such as adding the minimum necessary reinforcing material to the interior and exterior of the chimneys.

(3) Illustrating and explaining the iron-making system in the component part and the Area

Given that viewing the furnace's unique form from the outside is the best way of explaining its contribution to the Outstanding Universal Value, the city will create viewing points so that the whole furnace can be seen from key points along visitor paths.

In March 2017, in conjunction with the World Heritage Visitor Center (Hagi Meiringakusha Visitor Center) which the city built in the buffer zone in Hagi Castle Town, aging guidance and explanation boards

¹ Masonry construction; A building structure for walls assembling such materials as stone, brick, concrete blocks, and other materials.

will be updated and new boards installed in appropriate spots to provide the necessary information to enable visitors to understand the Hagi Reverberatory Furnace iron-making system, as well as the furnace's position and role in terms of Area 1 Hagi and the Sites of Meiji Japan's Industrial Revolution as a whole. In particular, explanations will be provided to help visitors to understand the close relationship between Ebisugahana Shipyard, which can be seen to the west across Obataura Inlet, and the furnace in terms of both location and significance in the context of the five component parts within the Area.

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

The city will trim and otherwise maintain vegetation so that the whole furnace can be seen from paths leading to it. Care will be taken to ensure that the furnace, which is built on a hill, can be seen from the surrounding area, and particularly that visitors can see as far as the Ebisugahana Shipyard as an adjacent component part.

(5) Utilizing the site of furnace as a cultural resource and source of information in the Area

The city will use the World Heritage Visitor Center (Hagi Meiringakusha Visitor Center) as the central source of guidance and information in Area 1 Hagi, the Hagi Museum as a source of academic and specialist guidance and information, and the Hagi Reverberatory Furnace site as a satellite facility for guidance and information dissemination.

The city will conduct regular training sessions to boost the abilities of current guides and train new guides, as well as to deepen the awareness of other stakeholders in relation to the conservation and management of the component parts of the World Heritage property.

(6) Implementing projects

The city will be responsible for managing and operating the projects included in the Plan, determining the appropriate projects and schedule with consideration to the state of the component part and the wishes of owners and managers. It will also work together with the Government of Japan and with Yamaguchi Prefectural Government to secure financial resources and the necessary specialist knowledge and personnel for implementation of the projects.

In terms of the order of implementation of the projects, the city will prioritize restoration of the furnace. The various surveys and experiments necessary to restore the upper brickwork will be implemented first, with the results evaluated and restoration launched accordingly. The phased upgrading of existing guidance and explanation boards and restoration of trails will be undertaken at the same time, coordinated with progress on the Plans of other component parts in the Area.

3. Methods

(1) Research and study

(a) Excavation surveys

From the perspective of site preservation, the city will not conduct an overall excavation survey of the furnace and surrounds. Instead, excavation surveys will be undertaken only where restoration work is needed or when facilities need to be established. If it emerges from the historical documents that related sites might exist, the city will conduct systematic surveys of those areas.

(b) Historical document surveys

The city will continue to collect, survey, analyze, and research related documents and other materials to ascertain the role that the Hagi Reverberatory Furnace has played in the local community from a full perspective of its process of historical changes and developments.

(c) Surveys needed for furnace restoration

As preparatory work to ensure that major restoration work is undertaken appropriately, the city will conduct exposure tests and other experiments using bricks created for that purpose, and will also create a mockup using more such bricks to undertake experimental restoration work. Deterioration surveys of

various parts of the furnace will be undertaken, selecting multiple set points and engaging in ongoing observations to determine the amount of movement. A survey will also be conducted to ascertain the seismic resistance of the furnace.

All these survey results will be collectively evaluated and reflected in actual restoration content and processes.

(d) Visitor surveys

The city will conduct a survey on visitor numbers, as well as regular surveys and observations of the behavior of regular visitors and their degree of understanding.

(e) Monitoring

The city will create monitoring charts that comprehensively and systematically aggregate current information, regularly assessing the state of the component part and the buffer zone.

The city will present monitoring results in annual reports for confirmation and agreement at the Hagi Conservation Council, thereafter reporting to the National Committee of Conservation and Management for Sites of Japan’s Meiji Industrial Revolution.

(2) Restoration of the furnace and related remains

(a) Furnace restoration

The city will assess the results of the various surveys undertaken prior to restoration with a focus on materials, specifications, and building methods and closely investigate restoration methods before launching actual restoration work. Detailed studies of the furnace chimneys that are only possible during restoration will be undertaken on an ad hoc basis, with the results recorded together with the content of restoration work as material for further restoration work. An ex post facto assessment will be made of building methods, design, and execution after the restoration work is complete, recording the necessary information as basic materials to be reflected in subsequent maintenance and repairs and any major restorations undertaken in the future.

(b) Restoration of related remains

Where excavation surveys of certain areas are conducted during restoration, structures in those areas that will be impacted by the survey work will be preserved and restored. Where the surface protective layer has scoured away or the possibility of tree roots impacting a structure is detected, more soil will be added to the protective layer and tree roots cut back or out.

(3) Presentation and Public Utilization of the Component Part in light of iron-making system

(a) Zoning

The city has created the following zoning to promote presentation and public utilization as a means of increasing understanding of the Hagi Reverberatory Furnace.

Zone name	Zone outline and features
Reverberatory furnace zone	Location of furnace and remains for which excavation surveys were conducted. This is also the zone from which the whole furnace can be seen, and plays a key role in enhancing understanding.
Landscape preservation zone	The hillsides around the reverberatory furnace zone, where that hilly terrain will be preserved. Part of the integrated visual landscape with the furnace, which stands on the hill, and includes two paths from the utilization zone to the furnace zone.
Utilization zone	Links the furnace and landscape preservation zones with Nationa Road 191, the main access route from the outside. Parking, toilets, and other convenience facilities are located there as the first point of contact for visitors, playing a role in promoting furnace utilization.

(b) Path

To enable visitors to understand Hagi Reverberatory Furnace’s iron-making system and to experience the whole facility, the following two routes will be established.

Outward route (Path A): Goes up the stairs in the center of the car park and proceeds to the flat area at the top of the hill, goes past the guide station, and reaches the furnace from the front.

Return route (Path B): Goes from the furnace down the walking path on the eastern side of the hill and through the narrow lane to reach the carpark.

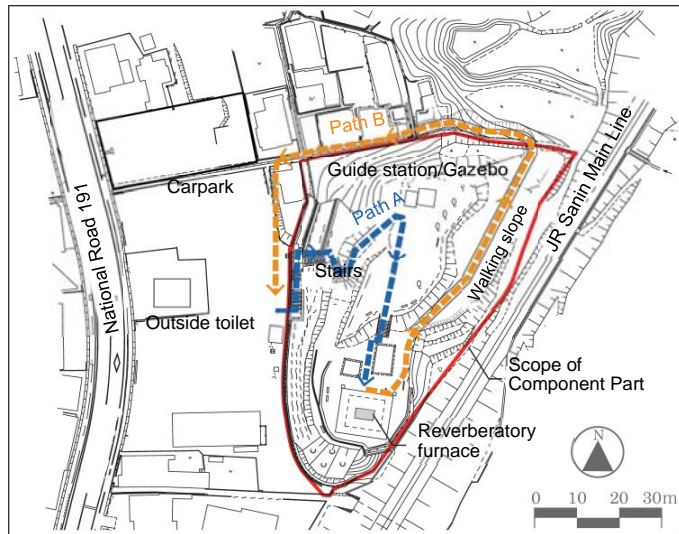


Figure 1: Path map

(c) Terrain correction

Pavement of appropriate thickness of decomposed granite blended with a small amount of cement will continue to be used for the flat area at the top of the hill. In places where the surface soil has subsided or been scoured as a result of rain or compaction from visitor traffic, etc., the city will use the pavement mentioned above to conduct repairs, maintaining an appropriate ground height.

(d) Arranging and improving landscape and planting vegetation

The trees around the furnace are significant in terms of shielding it from strong winds and also in forming the appearance of the hill together with the furnace. The city will therefore engage in systematic branch trimming and partial felling, as well as pruning trees into appropriate shapes, in order to deal with the influence of overgrown tree branches and roots and to maintain the view from the furnace as well as views of the furnace from the surrounding area. Trees growing on the sides of the hill will also be pruned to maintain the sloping terrain and the view.

(e) Guidance and explanation boards

The city will provide explanations for all of Area 1 Hagi at the World Heritage Visitor Centre in Hagi Meiringakusha Visitor Center, backed up by detailed explanations at the Hagi Museum. Information and explanation boards at the furnace will be upgraded or established as follows.

The city will set up a base explanation board at the entrance to the component part that explains the positioning of the furnace in terms of Sites of Japan’s Meiji Industrial Revolution and Area 1 Hagi as the first information provided to visitors to the furnace site.

Guidance and explanation boards will also be set up in appropriate spots along the paths so that visitors can read them while walking around the site. The detailed explanation of the actual furnace provided on the tiled explanation board will be updated, referring also to the process of the historical changes and developments of the site.

When setting up new guidance and explanation facilities, the city will maintain and manage existing facilities appropriately while reconsidering their content, design, and position.

(f) Conservation and management facilities

The city will build paths and improve the carpark to enable visitors to visit the site safely and appropriately, and to boost both the safety and convenience of going to the toilet which was established in 2016. The narrow part of the walking slope which was built to the east of the site will also be

widened and otherwise improved.

The current guide station, gazebo, benches, safety fences, stairs, and rails will be repaired on an ongoing basis and used until the end of their life. When they are then upgraded, they will be merged at their current locations with facilities with forms and designs in harmony with the site, with thought also given to other functions that should be added (rest, guidance, information, etc.).

(4) Arranging and improving landscape in the buffer zone

Pursuant to the landscape planning stipulated in Hagi City Landscape Regulations and the standards in the Hagi City Outdoor Advertising Regulations, the World Heritage Office within the Hagi City Cultural Property Protection Division will work closely with the Hagi City Town Planning Division, which is in charge of landscape administration, to arrange the landscape and preserve the scenery around the Hagi Reverberatory Furnace, nearby roads included, and constrain unplanned development.

In the carpark, which is located in the foreground of the hill on which the furnace is built, new facilities will be kept to the minimum necessary and appropriate appearance arranged in terms of both design and form, existing facilities included, to ensure a good view of the furnace while harmonizing with the surrounding landscape.

(5) Utilizing the furnace as a cultural resource and source of information in the Area

(a) Utilization measures as a source of information

At the World Heritage Visitor Center, the central facility guidance and information dissemination site, the city will explain the Outstanding Universal Value of Sites of Japan's Meiji Industrial Revolution and the five component parts of Area 1 Hagi, as well as holding regular seminars and other events for local residents, guides, and visitors. The Hagi Museum, which is an academic and specialist facility, will hold exhibitions of ancient documents and artifacts, as well as appointing a curator to explain exhibitions and engage in research, studying related ancient documents, and ensuring appropriate artifact management.

In addition, local residents will provide explanations at the furnace as guides, and the city will set up explanation boards and distribute pamphlets. Related groups will send virtual reality images via mobile phone that explain the Hagi Reverberatory Furnace.

In addition, guides at the furnace will provide explanations using explanation boards and distribute pamphlets, working towards information dissemination from the site.

(b) Approaches to engagement with local community

The city will provide support for the group supplying guides for the site to take the necessary measures to promote understanding of the site, such as securing the necessary guides, advertising for new guides, and holding study group meetings.

The city will promote local engagement by holding lectures as well as drawing and photo competitions, and actively provide information to visitors and local residents using apps and websites.

The city will inform local residents about the furnace as well as the nearby Ebisugahana Shipyard so that they develop an attachment to these sites as "precious heritage in the region".

Through employing guides, the engagement of the wider Hagi area community in the site will be strengthened, and engagement as a single entity with the local community surrounding Ebisugahana Shipyard will be promoted.

4. Projects implementation

(1) Order of priorities

The projects implementation schedule will be as in Table 1.

To ensure the preservation of the Hagi Reverberatory Furnace, the various studies and basic planning necessary to restore the seriously deteriorated upper brickwork will be undertaken over the short term

(three years; FY 2018-20). Based on the results, the restoration work will be conducted over the medium term (three years; 2021-23), along with the upgrading and new placement of guidance and explanation boards and carpark improvement. As of 2024 when restoration work has been completed (the long term), monitoring will be continued along with the necessary maintenance and studies, with administration and convenience facilities updated as necessary.

To move restoration work ahead and enhance visitor understanding of the significance of the furnace as part of the iron-making system, priority will be given to the following tasks:

- Undertaking the necessary studies for furnace restoration (creation of a mockup of the upper brickwork and exposure tests using this, etc.)
- Implementing monitoring (establishment of fixed points on the furnace and regular observation)
- Implementing furnace restoration (based on the results of the above studies)
- Establishing or upgrading guidance and explanation boards

(2) Review of implementation schedule

After the scheduled medium-term period (up until 2023), the implementation schedule will be revised in view of Plan progress. However, if any new measures become necessary, the city will review the schedule without waiting for 2023.

(3) Other

The city has carried out conservation and restoration work, etc. for the Hagi Reverberatory Furnace 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 9 million yen was spent in FY2016 and 8 million yen has been budgeted for FY2017, both including costs incurred or earmarked for plan making and the presentation and public utilization of the component part, but excluding the cost for day-to-day maintenance.

The city will also secure and appropriately allocate the human and financial resources needed for the conservation, restoration, presentation and public utilization of the other four component parts in Area 1 Hagi, thereby working in conjunction with Shoin Shrine (religious corporation); the owner of the Shokasonjuku Academy (Component Part 1-5), to ensure the smooth implementation of the projects in the Area as a whole.

Category	Project	Short term (2018 to 2020)	Medium term (2021 to 2023)	Long term (2024 onward)
(1) Research and study	(a) Excavation surveys (where necessary)		.....	.....
	(b) Survey of historical documents	.....	.....	.....
	(c) Necessary surveys for furnace restoration	.....	
	(d) Visitor surveys	.....	.....	.....
	(e) Monitoring	.....	.....	.....
(2) Restoration of furnace and related remains	(a) Furnace restoration	.....	.....	.....
	(b) Restoration of remains (as necessary)		.....	.....
(3) Presentation and public utilization in light of iron-making systems	(c) Terrain correction (repair surface as needed)			.....
	(d) Arranging and improving landscape and planting vegetation (tree management, etc.)		.....	.....
	(e) Establish new guidance and explanation boards and upgrade existing boards	.....		.....

	(f) Update administration and convenience facilities (carpark improvement, etc.)								
(4) Arranging and improving landscape in the Buffer Zone									
(5) Employing the furnace as a cultural resource and source of information in the Area									

Table 1: Project implementation schedule

5. Master Plan

The master/zoning plan and conceptional drawing after projects completion of the site are shown in Figures 2 and 3 below.

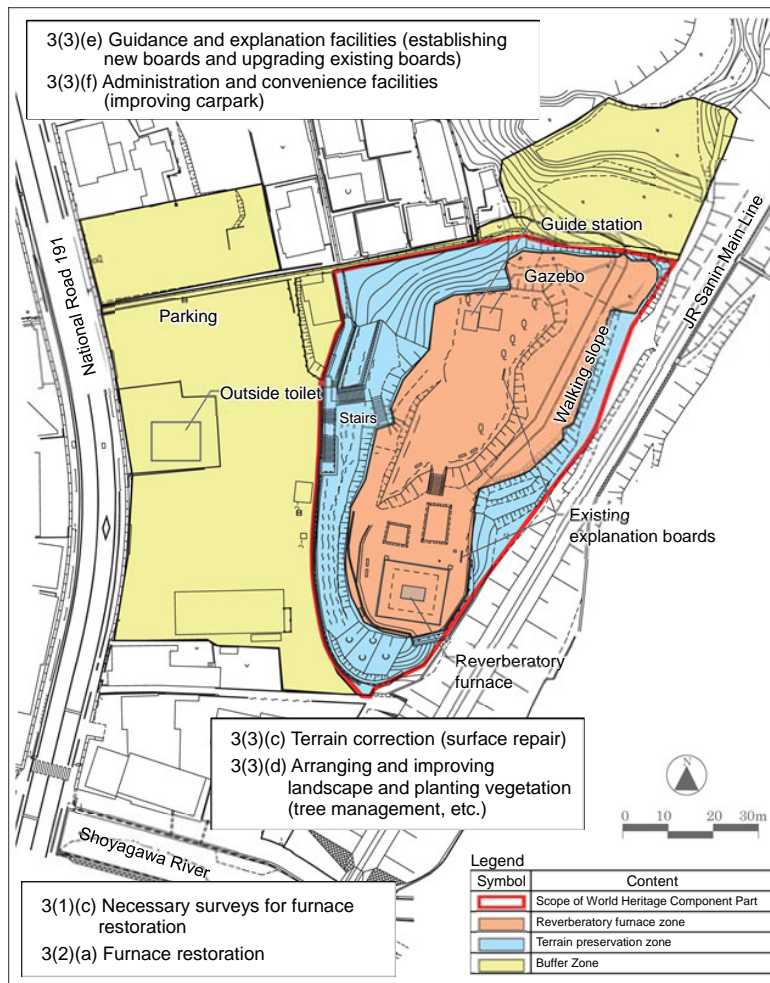


Figure 2: Master Plan



Figure 3: Conceptual drawing after projects completion of the site